

990258

Aldred Custcraft



NO LIEN CONSTRUCTION CONTRACT

It is specifically agreed by and between LEVER BROTHERS COMPANY, hereinafter referred to as "Lever" or "Owner", and G. MAZZONI S.P.A. hereinafter referred to as "Contractor," as follows:

1. Lever has issued to Contractor Purchase Order No. PL-10262 to engineer, manufacture and deliver four pelletizing refiners, four duplex pre-refiners, four duplex vacuum plidders and one rework refiner in conformity with the terms, conditions and documents set forth therein, a copy of said Purchase Order being attached hereto as Exhibit "A" and specifically made a part hereof.

2. That said Construction Contract shall be performed at the property of Lever in Hammond, Indiana, and commonly known as 1200 Calumet Avenue, and legally described as per Exhibit "B" attached hereto and specifically made a part hereof.

3. That as part of the consideration for the Contract it is to be performed on a NO LIEN CONTRACT BASIS, as provided by the provisions of said Purchase Order and pursuant to letter dated March 2, 1988, April 15, 1988 and April 29, 1988.

4. That this document shall be recorded with the Office of the Recorder of Lake County, Indiana, and pursuant to the provisions of Indiana Code 32-8-3-1 shall serve as notice to any and all contractors, subcontractors, mechanics, journeymen, laborers, or persons that NO LIEN shall attach to the real estate, building, structure or any other improvement of the Owner arising out of the performing of labor upon, furnishing materials or machinery for or doing business with the Owner or the Contractor under this Contract or upon said property.

IN WITNESS WHEREOF, the parties have caused this Contract to be executed by their duly authorized representatives

Aug 23 11 29 AM '88
SANDY POINT, INDIANA 46207
RECORDER, LAKE COUNTY
LILLIAN A. BLASTICK

5/18/88

and to become effective upon the 2 day of August,
1988.

LEVER BROTHERS COMPANY

By: Frank S. Walters

Printed
Name: Frank S. Walters

Title: Purchasing Vice President
Household Products

ATTEST:

By: Melinda M. Sweet

Printed
Name: Melinda M. Sweet

Title: Assistant Secretary

G. MAZZONI S.P.A.

By: Aldo Mazzone

Printed
Name: Aldo Mazzone

Title: Amministratore

ATTEST:

By: Giancarlo Corradini

Printed
Name: Giancarlo Corradini

Title: Direttore Commerciale

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL -10262

THIS NUMBER AND CODE NO. BELOW MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO: **G. MAZZONI S.P.A.**
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO:

Mr. H. Welk
 ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER: 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		F.O.B. C.I.F. Hammond, Indiana

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				Thermoresistance and digital indicator for each stage: -soap inlet and discharge temperature -cooling water inlet and discharge temperature.	860,000/Ea. Less Discount 7%+4%+3%	x 4 units 2,979,040
				<u>EXTRUSION PRESSURE INDICATORS</u> The pressure is measured by a "DYNISCO" transducer, fitted in the worm support. Pressure is indicated by a "DYNISCO" analog pressure indicator with double set point alarm and voltage output signal. for each stage.	3,620,000/Ea. Less Discount 7%+4%+3%	x 4 units 12,539,680
				Drive Couplings.	5,800,000/Ea. Less Discount 7%+4%+3%	x 4 units 20,091,200
				SUB TOTAL DUPLEX REFINER		768,038,080

SECURITY OF INFORMATION
 IS GOOD BUSINESS
 FOR BOTH OF US
 WE DEPEND UPON YOU TO KEEP
 ALL INFORMATION CONFIDENTIAL

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AS QUOTED BY:

Please invoice promptly, IN DUPLICATE. Address to:
 ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632
 This order is not binding until Acknowledgment Copy is executed and returned to us.
 WE RESERVE THE RIGHT TO EXTEND MATURITY TO EIGHT DAYS FROM DATE INVOICE IS RECEIVED.

HSSO Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

APPROVED BY

AUTHORIZED SIGNATURE

[Handwritten Signature]

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL.

BY (AUTHORIZED SIGNATURE) <i>[Handwritten Signature]</i>	FOR (FIRM NAME) G. MAZZONI	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
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MAZZONI REDUCER, MODEL R-400/31/P

Calculation Summary

Rating according to Specification SG-059.04 - Rev. A (1/10/1987)

A) Maximum power transmitted by each gear at 15 rpm of the low speed shaft. The power declared by SG-059.04 at service factor SF = 2.25 is 50 kW; the power calculated at the same service factor is:

Coupling Gear	Fast		Intermediate		Low	
	Pinion	Gear	Pinion	Gear	Pinion	Gear

ISO STANDARDS:

Bending Strength Power	kW	108	108	87	94	88	96
Pitting Resistance Power	kW	80	90	71	91	68	84

AGMA STANDARDS:

Bending Strength Power	kW	125	136	69	86	60	74
Pitting Resistance Power	kW	91	125	61	85	54	72

B) Shaft Stress at service factor SF = 2.25 with 50 kW at 15 rpm of the low speed shaft (see drawing No. 500290038A):

Shaft		I (Fast)	II	III	IV (Low)	
Rpm		960	236.3	55.8	15	
Diameter	mm	80	120	115	173	147
Bending : moment	kg	254.8	937.5	500.8	2746.5	1681.2
stress	kg/mm ²	4.9	5.4	3.4	5.4	5.4
Torsion : moment	m . kg	116.2	471.5	471.5	1994.7	1994.7
stress	kg/mm ²	1.2	1.4	1.6	2	3.2

Steel shaft allowable stress from AGMA 420.04 and for 39NiCrMo3 UNI 7845 steel with 90 kg/mm² (128,000 psi) of Tensile Strength and over 1 million cycles is: bending 12 kg/mm² (17,500 psi), torsion 6.6 kg/mm² (9,500 psi).

PARALLEL SHAFT GEAR REDUCERS

Model : R-400/31

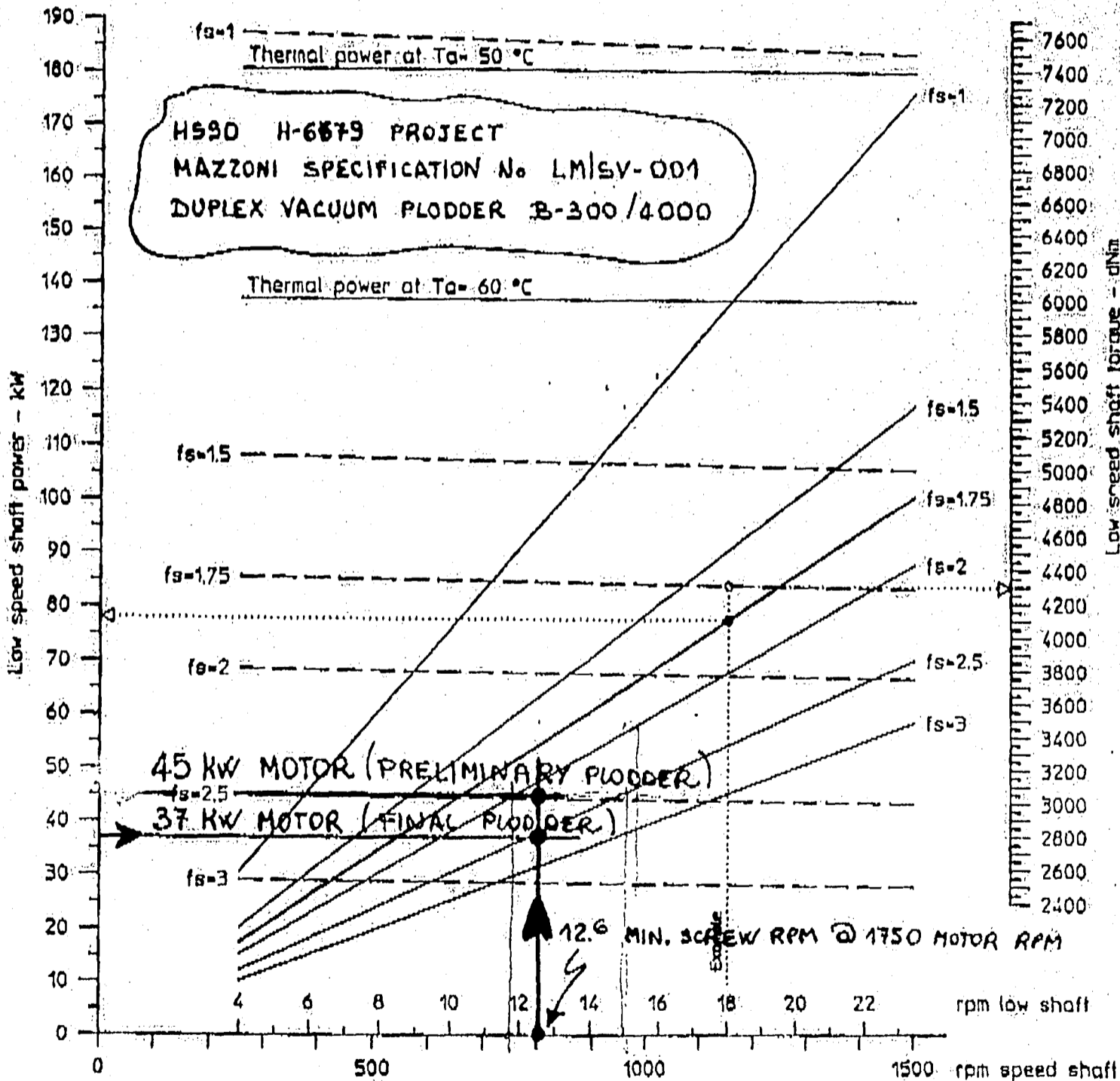
Gear ratio i = 64.009

RATING CURVES

-- Torque
 — Power

T_a = temperature of air licking the reducer
 f_s = service factor, i.e. ratio between maximum power that reducer can transmit at those revolutions and power installed motor (minus yields)
 Thermal power : It is the power that can be applied in the inlet of the reducer licked by air at T_a temperature, without exceeding 95 °C oil temperature

- Load capacity verified according to AGMA , DIN , ISO standards



- VALUES WITH 1.75 SERVICE FACTOR REFERRED TO LOW SPEED SHAFT -

REV.	rpm	4	6	8	10	12	14	16	18	20	22
TORQUE	dNm	4342	4336	4330	4323	4317	4311	4304	4298	4292	4286
POWER	kW	17.5	26.2	34.9	43.6	52.2	60.8	69.4	77.9	86.5	95

MAZZONI-FALK-ELLI REDUCER COMPARISON

Reducer	Mazzoni R3	Mazzoni R-400/31/P	Mazzoni R-450/31/P	Falk 405-A3	Falk 465-A3	Falk 485-A3	Elli C3/400	Elli C3/450	
Application	B-350 old type	B-350 new standard type	B-400 new standard type	No. 2405 replace No. 1 R3	corresponds to R-400	corresponds to R-450	corresponds to R-400	corresponds to R-450	
		B-350 new type oversized for HSSO	B-350 new type oversized for HSSO						
Torque at 15 rpm at SF=1 (from catalog)	kg.m lb.m	2500 + 2500 217 + 217	7650 664	10700 928	2670 232	8825 766	12155 1055	7852 682	9970 865
Ratio		1:36.3	1:64	1:80	1:38	1:58	1:78	1:63	1:80
Inlet shaft ø	mm in	52 2.05	52 2.05	62 2.44	44.5 1.75	63.5 2.50	76.2 3.00	55 2.165	65 2.559
Outlet shaft ø	mm in	109 4.29	170 (1) 6.69	200 (1) 7.48	127 5	184 7.25	216 8.50	200 (1) 7.87	220 (1) 8.66
Dimensions	mm in	1250 x 870 x h 1300 49.2 x 34.2 x h 51.2	1530 x 615 x h 900 60.2 x 24.2 x h 35.4	1640 x 590 x h 1000 64.6 x 23.2 x h 39.4	1036 x 579 x h 541 40.8 x 22.8 x h 21.3	1473 x 737 x h 787 58 x 29 x h 31	1676 x 838 x h 889 66 x 33 x h 35	1480 x 600 x h 870 58.3 x 23.6 x h 34.3	1670 x 690 x h 965 65.8 x 27.2 x h 38
Weight	kg lb	2340 (2) 5160 (2)	2300 5070	2800 6170	852 1880	2360 5200	3400 7500	2000 4410	2700 5950

- 1) Values relevant to the hollow shaft hole.
- 2) This weight includes the support weight.

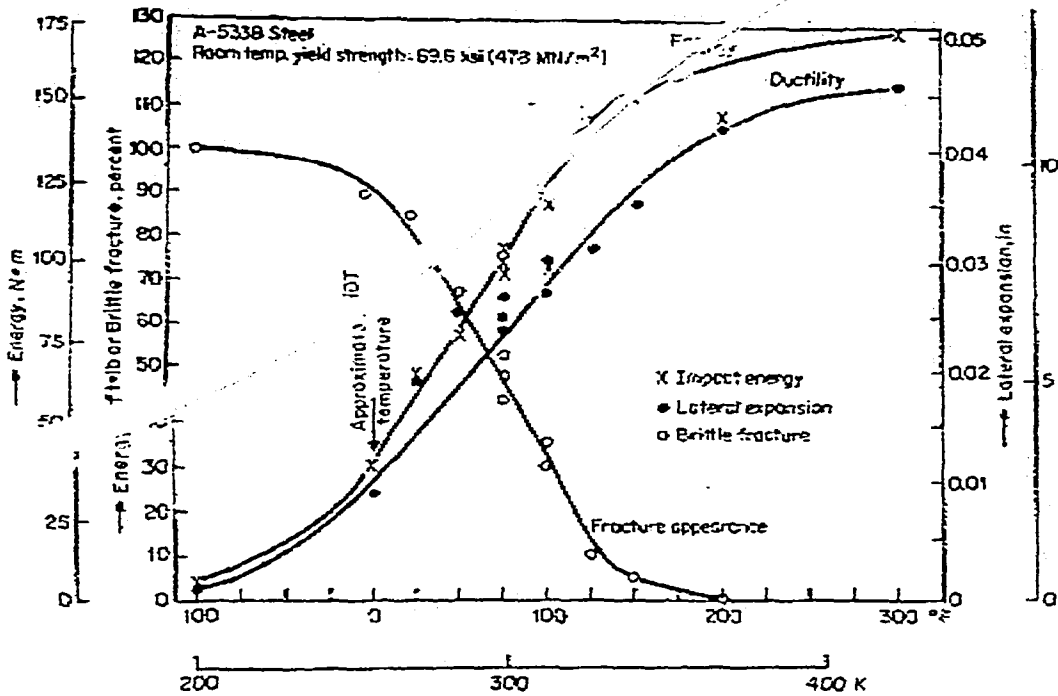


Fig. 14 CVN transition curves. (Data from Westinghouse R&D Lab.)

that as K_I is increased, a value K_{Ic} is reached at which unstable crack propagation occurs. K_{Ic} depends on plate thickness B , as

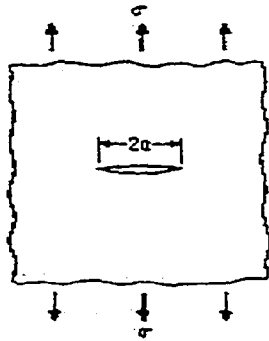


Fig. 15 Through-thickness crack geometry.

shown in Fig. 16. It attains a constant value when B is great enough to provide plane-strain conditions at the crack tip. The low plateau value of K_{Ic} is an important material property known as the plane-strain critical stress intensity or fracture toughness K_{Ic} . Values for a number of materials are shown in Table 4. They are influenced strongly by processing and small changes in composition, so that the values shown are not necessarily typical. K_{Ic} can be used in the critical form of Eq. (1):

$$(K_{Ic})^2 = Q\sigma^2 = \sigma_{cr}^2 \quad (2)$$

to predict failure stress when a maximum flaw size in the

material is known or to determine maximum allowable flaw size when the stress is set. The predictions will be accurate so long as plate thickness B satisfies the plane-strain criterion $B \geq (2.5)(K_{Ic}/\sigma_{cr})^2$. They will be conservative if a plane-strain condition does not exist. A big advantage of the fracture-mechanics approach is that stress intensity can be calculated by equations analogous to (1) for a wide variety of geometries.

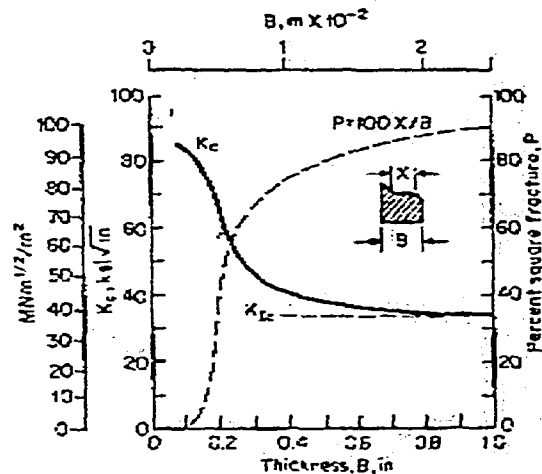


Fig. 16 Dependence of K_{Ic} and fracture appearance (in terms of percentage of square fracture) on thickness of plate specimens. Based on data for aluminum 7075-T6. (From Stanley and Brown, STP-381, ASTM.)

Table 4. Room-Temperature K_{Ic} Values on High-Strength Materials*

Material	0.1% YS, 1,000 in ² (MN/m ²)	K_{Ic} , 1,000 in ² √in (MN m ^{1/2} /m ²)
18% Ni maraging steel	300 (2,068)	46 (50.7)
18% Ni maraging steel	270 (1,850)	71 (76)
18% Ni maraging steel	198 (1,390)	87 (96)
Titanium 6-4 alloy	152 (1,022)	19 (43)
Titanium 6-4 alloy	140 (980)	25 (27.5)
Aluminum alloy 7075-T6	73 (518)	26 (28.5)
Aluminum alloy 7075-T6	64 (450)	30 (33)

*Determined at Westinghouse Research Laboratories.

types of crack, and loadings (P. C. Paris and G. C. Sih, "Stress Analysis of Cracks," STP-381, ASTM, 1965). Failure occurs in all cases when K_I reaches K_{Ic} . Fracture mechanics also provides a framework for predicting the occurrence of stress-corrosion cracking by using Eq. (2) with K_{Ic} replaced by K_{Isc} , which is the material parameter denoting resistance to stress-corrosion crack propagation in a particular medium (see B. F. Brown, The Application of Fracture Mechanics to Stress-Corrosion Cracking, Metall. Rev., 13, 1968, p. 171).

Two standard test specimens for K_{Ic} determination are specified in ASTM E399, which also specifies details of specimen preparation and test procedure.

FATIGUE

Fatigue is generally understood as the gradual deterioration of a material which is subjected to repeated loads. In fatigue testing, a specimen is subjected to periodically varying constant-amplitude stresses by means of mechanical or magnetic devices. The applied stresses may alternate between equal positive and negative values, from zero to maximum positive or negative values, or between unequal positive and negative values. The most common loading is alternate tension and compression of equal numerical values obtained by rotating a smooth cylindrical specimen while under a bending load. A series of fatigue tests are made on a number of specimens of the material at different stress levels. The stress endured is then plotted against the number of cycles sustained. By choosing lower and lower stresses, a value may be found which will not produce failure, regardless of the number of applied

Table 5. Typical Approximate Fatigue Limits for Reversed Bending

Metal	Tensile strength, 1,000 lb/in ²	Fatigue limit, 1,000 lb/in ²	Metal	Tensile strength, 1,000 lb/in ²	Fatigue limit, 1,000 lb/in ²
Cast iron	20-30	6-18	Copper	32-50	12-17
Malleable iron	30	24	Steel	70-120	20-50
Cast steel	60-80	24-32	Phosphor bronze	55	22
Aluminum	44	24	Titanium, heat treated	65	21
Plain carbon steels	50-150	22-75	Cast aluminum alloys	38-49	6-11
SAE 6150, heat-treated	200	70	Wrought aluminum alloys	25-70	6-25
Nickel alloy	125	40	Magnesium alloys	20-45	7-17
Brasses, various	25-75	7-20	Molybdenum, as cast	94	45
Zirconium, cast bar	52	16-18	Titanium (Ti-75Al)	91	45

Source: E. A. Gurney, p. 6, 1966, McGraw-Hill.

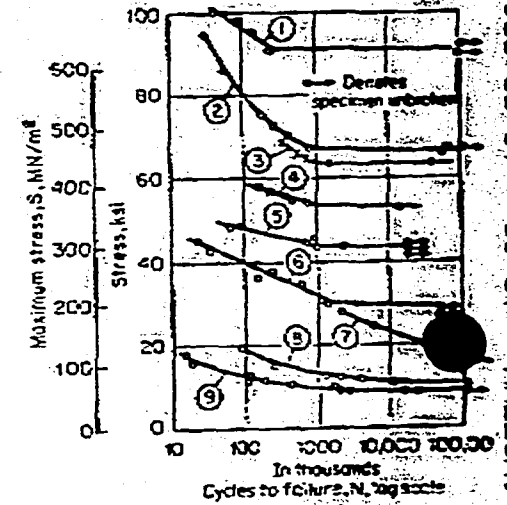


Fig. 17 S-N Diagrams from fatigue tests: (1) 1.20 C steel, as drawn SAE J33 K2; (2) SAE 3420, quenched, drawn 1.20 C; (3) alloy structural steel; (4) SAE 1050, quenched, drawn 1.20 C; (5) SAE 4130, normalized, annealed; (6) alloy structural steel; (7) Duralumin; (8) copper, annealed; (9) cast iron. (Reversed bending)

cycles. This stress value is called the fatigue limit. The $S-N$ is called the stress-cycle diagram or S-N diagram. In recording the data on cartesian coordinates, either S plotted vs. the logarithm of the number of cycles (Fig. 17) both stress and cycles are plotted on logarithmic scale diagrams show a relatively sharp bend in the curve at fatigue limit for ferrous metals. The fatigue limit is established for most steels between 7 and 10 million. Nonferrous metals usually show no clearly defined limit. The S-N curves in these cases indicate a continuous decrease in stress values to several hundred million cycles both the stress value and the number of cycles should be reported.

The mean stress (the average of the maximum and minimum stress values for a cycle) has a pronounced effect on the stress range (the algebraic difference between the maximum and minimum stress values). Several empirical

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56 MECHANICAL PROPERTIES OF MATERIALS

made by the distortion-energy theory, according to which the criterion is

$$(\sigma_1 - \sigma_2)^2 + (\sigma_2 - \sigma_3)^2 + (\sigma_3 - \sigma_1)^2 = 2\sigma_{ys}^2$$

Stress-strain curves in the plastic region for combined stress loading can be constructed. However, a particular stress state does not determine a unique strain value. The latter will depend on the stress state path which is followed.

Plane strain is a condition where strain is confined to two dimensions. There is generally stress in the third direction, but because of mechanical constraints, strain in this dimension is prevented. Plane strain occurs in certain metalworking operations. It can also occur in the neighborhood of a crack tip in a tensile loaded member if the member is sufficiently thick. The material at the crack tip is then in triaxial tension, which condition promotes brittle fracture. On the other hand, ductility is enhanced and fracture is suppressed by triaxial compression.

Stress Concentration In a structure or machine part having a notch or any abrupt change in cross section, the maximum stress will occur at this location and will be greater than the stress calculated by elementary formulas based upon simplified assumptions as to the stress distribution. The ratio of this maximum stress to the nominal stress (calculated by the elementary formulas) is the stress-concentration factor K_t . This is a constant for the particular shape and is independent of the material, provided it is isotropic. The stress-concentration factor may be determined experimentally or, in many cases, theoretically from the mathematical theory of elasticity. The factors shown in Figs. 6 to 13 were determined from both

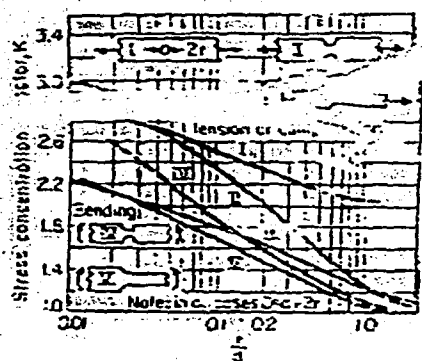


Fig. 6 Flat plate with semicircular fillets and grooves or with holes, in tension or compression.

photoelastic tests and the theory of elasticity. Stress concentration will cause failure of brittle materials if the concentrated stress is larger than the ultimate strength of the material. In ductile materials, concentrated stresses higher than the yield strength will generally cause local plastic deformation and redistribution of stresses (rendering them more uniform). On the other hand, even with ductile materials areas of stress concentration are possible sites for fatigue if the component is cyclically loaded.

FRACTURE AT LOW STRESSES

Materials under tension sometimes fail by rapid fracture at stresses much below their strength level as determined in tests

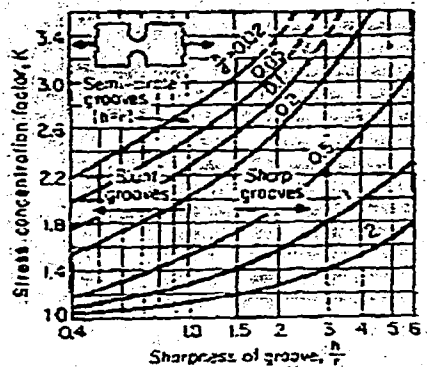


Fig. 7 Flat plate with grooves, in tension.

on carefully prepared specimens. These brittle, unstable, or catastrophic failures originate at preexisting stress-concentrating flaws which may be inherent in a material.

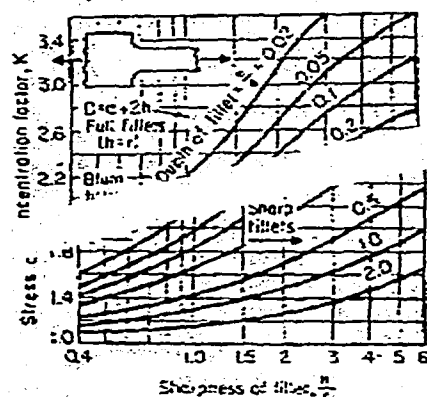


Fig. 8 Flat plate with fillets, in tension.

The transition-temperature approach is often used to ensure fracture-safe design in structural-grade steels. These materials exhibit a characteristic temperature, known as the ductile-brittle transition (DBT) temperature, below which they are susceptible to brittle fracture. The transition-temperature approach to fracture-safe design ensures that the transition temperature of a material selected for a particular application is suitably

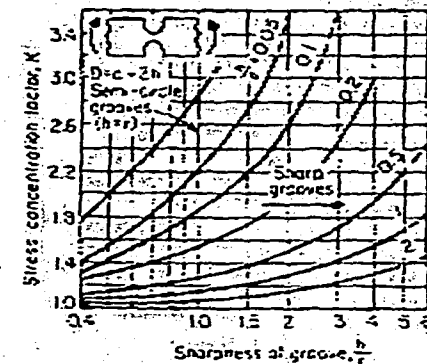


Fig. 9 Flat plate with grooves, in bending.

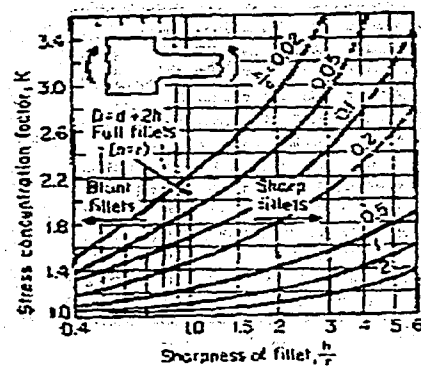


Fig. 10 Flat plate with fillets, in bending.

matched to its intended use temperature. The DBT can be detected by plotting certain impact test results against temperature. The DBT can be detected by plotting certain impact test results against temperature. The DBT can be detected by plotting certain impact test results against temperature.

usually the transition to brittle behavior occurs in the transition-temperature range in which the material is normally used. The range may extend over a 200°F (110 K)

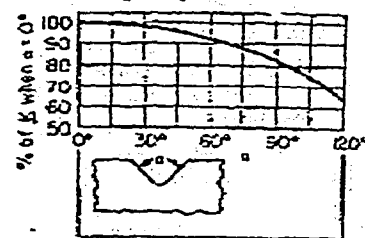


Fig. 11 Flat plate with angular notch, in tension or bending.

interval. The nil-ductility temperature (NDT), determined by the drop-weight test (see ASTM E208), is an important reference point in the transition range. When NDT for a particular steel is known, temperature-stress combinations can be specified which define the limiting conditions under which catastrophic fracture can occur. (See W. S. Pellini and P. P. Puzak, *NRL Repts.* 5920 and 6010 (1961).)

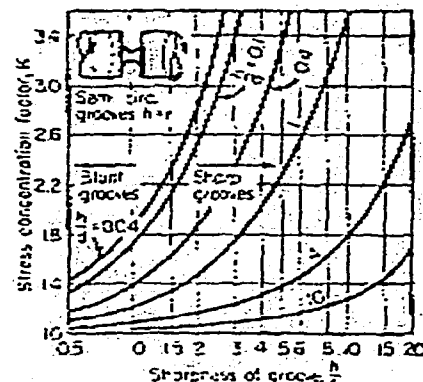


Fig. 12 Stress concentration factors for grooved shaft in tension.

FRACTURE AT LOW STRESSES

In the Charpy V-notch (CVN) impact test, a specimen (Fig. 25) is used which is loaded in bending. The energy absorbed in fracturing the specimen is measured. The rate of strain rate is high. This ensures a conservative measure of toughness. In some materials, toughness is reduced at high strain rates. A CVN impact energy vs. temper-

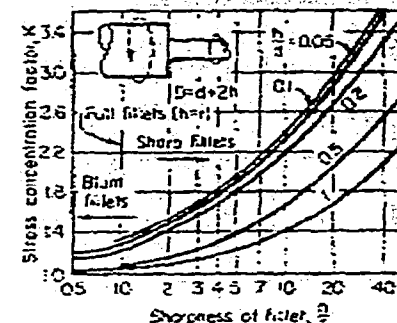


Fig. 13 Stress concentration factors for fillet on shaft in tension.

curve is shown in Fig. 24, which also shows the transition given by percent brittle fracture and by percent lateral extension. The CVN energy has no analytical significance. It is useful mainly as a guide to the fracture behavior of material for which an empirical correlation has been established between impact energy and some rigorous fracture criterion. For a particular grade of steel the CVN curve correlated with NDT. (See ASME Boiler and Pressure Code, sec. III, NB-2300.)

Fracture Mechanics This analytical method is useful for ultra-high-strength alloys, transition-temperature materials below the DBT temperature, and some low-strength materials in heavy section thickness.

Fracture-mechanics theory (see Irwin, *Dimensional Geometric Aspects of Fracture*, in "Fracture of Engineering Materials," ASM, 1964; also STP-381, ASTM, 1966) with cracks of maximum acuity where crack-tip radii are of the order of interatomic dimensions. This ensures that the effect of a crack is conservatively evaluated, since an energy is used in initiating unstable propagation. The discussion is concerned with a through-thickness or tension-loaded plate (Fig. 15) which is large enough so that crack-tip stress field is not affected by the plate edge. Fracture-mechanics theory states that unstable crack extension occurs when the work required for an incremental extension, namely, surface energy and energy expended in local plastic deformation, is exceeded by the elastic energy released at the crack tip. The elastic energy remaining one of the crack tips in Fig. 15 is characterized by the stress intensity factor K_I , which has units of $\text{lb}/\text{in}^{3/2}$ or $\text{N}/\text{m}^{3/2}$. It is a function of applied nominal stress σ , crack length a , and a geometry factor Q :

$$K_I = \sigma \sqrt{Qa}$$

For the situation of Fig. 15, for a particular material Q

**AGMA STANDARD PRACTICE FOR
ENCLOSED SPEED REDUCERS OR INCREASERS
USING SPUR, HELICAL, HERRINGBONE
AND SPIRAL BEVEL GEARS**

4. Service Factors

4.1 Before a reducer can be selected for any given application, the equivalent horsepower is computed by multiplying the specified or actual horsepower by the service factor for the particular load classification for which the unit is to be used. It is necessary that the unit selected have a capacity equal to or in excess of this equivalent horsepower. The recommended service factors for various load classifications and duration of service are shown for several types of prime movers in Table 1.

4.2 Load classifications for various applications are given in Table 2. They are classified into three commonly recog-

nized load classifications: Uniform, Moderate Shock, and Heavy Shock.

4.3 Service factors represent the normal relationship between gear design power rating and the continuous power requirements. Applications involving unusual or severe loading or requiring a high degree of dependability should be carefully reviewed with the manufacturer before a service factor is applied.

4.3.1 Applications with high-torque motors and motors for intermittent operations, and applications where extreme repetitive shock occurs or where high-energy loads must be absorbed, as when stalling, require special consideration and are not covered by the service factors given in Table 1.

Table 1 Service Factors

Prime Mover	Duration of Service	Driven Machine Load Classifications		
		Uniform	Moderate Shock	Heavy Shock
Electric Motor, Steam Turbine, or Hydraulic Motor	Occasional 1/2 hr. per day	0.50	0.80	1.25
	Intermittent 3 hrs. per day	0.80	1.00	1.50
	Over 3 hrs. up to and incl. 10 hrs. per day	1.00	1.25	1.75
	Over 10 hrs. per day	1.25	1.50	2.00
Multi-Cylinder Internal Combustion Engine	Occasional 1/2 hr. per day	0.80	1.00	1.50
	Intermittent 3 hrs. per day	1.00	1.25	1.75
	Over 3 hrs. up to and incl. 10 hrs. per day	1.25	1.50	2.00
	Over 10 hrs. per day	1.50	1.75	2.25
Single Cylinder Internal Combustion Engine	Occasional 1/2 hr. per day	1.00	1.25	1.75
	Intermittent 3 hrs. per day	1.25	1.50	2.00
	Over 3 hrs. up to and incl. 10 hrs. per day	1.50	1.75	2.25
	Over 10 hrs. per day	1.75	2.00	2.50

4.4 When drives are equipped with brakes on the input, and the torque rating of the brake exceeds the rating of the motor, the rating of the brake dictates the selection of the gear unit.

4.5 The recommended service factors for Dry Dock Crane applications are given in Table 3. Due to the nature of these crane drives, the service factors are to be used for any duration of service.

4.6 When a fluid coupling is used between the prime mover and the gear unit, the service factor given in Table 1 for moderate or heavy shock may be modified based on the

unit manufacturer's analysis and recommendation for the application.

4.7 The maximum momentary or starting load must not exceed 200 per cent of rated load (100 per cent overload). Rated load is defined as the unit rating with a service factor of 1.0.

4.8 The service factors listed for paper mill applications are consistent with those shown in TAPPI (Technical Association of the Pulp and Paper Industry) Standard 406.08, "Service Factors for Gears on Major Equipment in the Paper and Pump Industry."

**AGMA STANDARD PRACTICE FOR
ENCLOSED SPEED REDUCERS OR INCREASERS
USING SPUR, HELICAL, HERRINGBONE
AND SPIRAL BEVEL GEARS**

Table 11: Lubrication Recommendations

Type of Unit	Low Speed Centers	Ambient Temperature, Deg F			
		-40 to 0	-20 to +25	15F to 60F Use AGMA No.	50F to 125F Use AGMA No.
Parallel Shaft Single Reduction	Up to 8 in. Over 8 in. up to 20 in. Over 20 in.	Automatic Transmission Fluid (or similar product*)	SAE 10W/30 or 10W/40 Motor Oil (or similar product*)	2-3	3-4
				2-3	4-5
				3-4	4-5
Parallel Shaft Double Reduction	Up to 8 in. Over 8 in. up to 20 in. Over 20 in.			2-3	3-4
				3-4	4-5
				3-4	4-5
Parallel Shaft Triple Reduction	Up to 8 in. Over 8 in. up to 20 in. Over 20 in.	2-3	3-4		
		3-4	4-5		
		4-5	5-6		
Planetary Gear Unit	OD Housing up to 16 in. OD Housing over 16 in.	2-3	3-4		
		3-4	4-5		
Spiral or Straight Bevel Gear Units	Cone Distance up to 12 in. Cone Distance Over 12 in.	2-3	4-5		
		3-4	5-6		

*When they are available, good quality industrial oils having similar properties are preferred over the automotive oils. The recommendation of automotive oils for use at ambient temperatures below +15°F is intended only as a guide pending widespread development of satisfactory low temperature industrial oils. Consult gear manufacturer before proceeding.

7.7.1.1 Under normal operating conditions, the lubricant should be changed every 2500 hours of operation or every six months, whichever comes first. Extended change periods may be established through periodic testing of oils.

7.7.1.2 A rapid rise and fall in temperature may produce condensation, resulting in the formation of sludge. Dust, dirt, chemical particles or chemical fumes also react with the lubricant. Sump temperatures in excess of those listed in Table 1 of Standard AGMA 250.03 will result in accelerated degradation of the lubricant. Under these conditions the lubricant should be changed every one to three months depending on severity.

7.7.2 Cleaning and Flushing. The lubricant should be drained while the gear drive is at operating temperature. The drive should be cleaned with a flushing oil.

7.7.2.1 Used lubricant and flushing oil should be completely removed from the system to avoid contaminating the new charge.

7.7.2.2 The use of a solvent should be avoided unless the gear drive contains deposits of oxidized or contaminated lubricant which cannot be removed with a flushing oil. When persistent deposits necessitate the use of a solvent, a flushing oil should be used to remove all traces of solvent from the system.

7.7.2.3 The interior surfaces should be inspected where possible, and all traces of foreign material removed. The new charge of lubricant should be added and circulated to coat all internal parts.

8. Lubrication - EP

(Lubricants with Extreme
Pressure (EP) Qualities)

8.1 These specifications apply only when gears are designed and rated in accordance with AGMA Standards. Normal service life can be anticipated from EP lubricants at temperatures from 160 to 200 deg F, depending on

**AGMA STANDARD PRACTICE FOR
ENCLOSED SPEED REDUCERS OR INCREASERS
USING SPUR, HELICAL, HERRINGBONE
AND SPIRAL BEVEL GEARS**

particular lubricant selected. Above this temperature, reduced life of lubricant must be anticipated. In circulating oiling systems and in splash oiling systems the temperature of the oil in the sump should be measured. Units operating above these temperatures or those operating in extremely humid or chemical-laden atmospheres may be subject to excessive sludge formation or corrosive products and should be referred to the gear manufacturer and lubricant supplier for their recommendations.

8.2 Type of Lubricant. Extreme pressure (EP) gear lubricants are petroleum-based lubricants containing special chemical additives and meeting the specifications shown in Table 6 of Standard AGMA 250.03. Mild EP gear lubricants recommended for enclosed gear drives are those containing either lead naphthenate or sulfur-phosphorous additives.

Mild EP gear lubricants should be used *only* when specified by the gear drive manufacturer.

8.3 Viscosity. The oil which is specified by number should be within the specified viscosity range shown in Table 10. Furthermore, it should have a minimum viscosity index (ASTM D 2270) of 90.

8.4 Lubrication Recommendation. Table 12 shows the grade of oil to use for drives of all types. The lubricant selected must have a pour point below the lowest temperature expected.

8.5 Lubricant Maintenance. The specifications of paragraph 7.7 are to be followed.

Table 12 Recommended EP Lubricants

Type of Unit	Low Speed Centers	Ambient Temperature Deg F	
		15°F to 60°F Use AGMA No.	50°F to 125°F Use AGMA No.
Parallel Shaft Single Reduction	Up to 8 in.	2 - 3 EP	3 - 4 EP
	Over 8 in. up to 20 in.	2 - 3 EP	4 - 5 EP
	Over 20 in.	3 - 4 EP	4 - 5 EP
Parallel Shaft Double Reduction	Up to 8 in.	2 - 3 EP	3 - 4 EP
	Over 8 in. up to 20 in.	3 - 4 EP	4 - 5 EP
	Over 20 in.	3 - 4 EP	4 - 5 EP
Parallel Shaft Triple Reduction	Up to 8 in.	2 - 3 EP	3 - 4 EP
	Over 8 in. up to 20 in.	2 - 3 EP	4 - 5 EP
	Over 20 in.	4 - 5 EP	5 - 6 EP
Planetary Gear Unit	OD Housing up to 16 in.	2 - 3 EP	3 - 4 EP
	OD Housing over 16 in.	3 - 4 EP	4 - 5 EP
Spiral or Straight Bevel Gear Units	Cone Distance up to 12 in.	2 - 3 EP	4 - 5 EP
	Cone Distance over 12 in.	3 - 4 EP	5 - 6 EP

LIST OF CUSTOMERS USING OUR
 300-MM DIAMETER TWIN-SCREW PLODDER
 "SR/B-300" SIMPLEX REFINER
 "DR/B-300" DUPLEX REFINER
 "DVP/B-300" DUPLEX VACUUM PLODDER
 "TVP/B-300" TRIPLEX VACUUM PLODDER

Customer	Model	Q-tity	Product
<u>ALGERIA</u>			
Extraction De Smet	SR/B-300	1	Soap Base
Simmering-Graz-Pauker A.G.	SR/B-300	1	Soap Base
<u>AUSTRALIA</u>			
Paterson Zochonis	DVP/B-300	1	
<u>CANADA</u>			
Procter & Gamble, Hamilton	SR/B-300	1	Soap Base
<u>CHILE</u>			
Lever Santiago	DVP/B-300	1	Toilet Soap
<u>CHINA</u>			
Lever Shanghai	DVP/B-300	1	Toilet Soap
<u>EGYPT</u>			
Kato Aromatic	SR/B-300	1	Soap Base
Misr Oil & Soap	DVP/B-300	1	Toilet Soap
	SR/B-300	1	Soap Base
<u>FRANCE</u>			
Colgate Palmolive S.A., Courbevoie	SR/B-300	1	Superfatted Toilet Soap
U G S, Yainville	DVP/B-300	2	Laundry Soap
<u>GERMANY (FEDERAL REPU- BLIC)</u>			
Beiersdorf A.G.	DR/B-300/M-350	1	Soap Base
Henkel KGaA	SR/B-300	5	Methylcellulose
<u>GREAT BRITAIN</u>			
John Drury	SR/B-300	1	Soap Base
<u>HONDURAS</u>			
Inhalsa	TVP/B-300	1	Laundry Soap

2

Customer	Model	Q-tity	Product
<u>INDONESIA</u>			
LEVER Jakarta	DVP/B-300	4	Toilet Soap
	DVP/B-300	1	S L B
P.T. Bukit Perak	SR/B-300	1	Soap Base
<u>ITALY</u>			
Fissi	SR/B-300	1	Soap Base
Italsilva	TVP/B-300/M350/ M-350	1	Laundry Soap
Mira Lanza S.p.A.	SR/B-300	1	Toilet Soap
<u>IVORY COAST</u>			
Cosmivoire	DVP/B-300/M-350	1	Laundry Soap
<u>MALAYSIA</u>			
Colgate Palmolive (Malaysia)	DVP/B-300	1	S L B
<u>MEXICO</u>			
Mariano Salgado S.A. de C.V.	SR/B-300	1	Soap Base
Procter & Gamble	DVP/B-300/M-400	1	Toilet Soap
<u>NETHERLANDS</u>			
Unichema International	DR/B-300	1	Soap Base
<u>NIGERIA</u>			
Lever Aba	DVP/B-300	1	S L B
Lever Apapa	DVP/B-300	2	Toilet Soap
Nasco Household Products	DCB/B-300	1	Laundry / Toilet Soap
<u>PAKISTAN</u>			
Kohinoor Chemical Co.	DVP/B-300	1	Laundry / Toilet Soap
	SR/B-300	1	Laundry Soap
Lever Rahim Yar Khan	DVP/B-300	1	Toilet Soap
<u>PHILIPPINES</u>			
Lever	DVP/B-300	1	S L B
	DVP/B-300	1	Toilet Soap
	SR/B-300	1	Soap Base

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL 10262

THIS NUMBER AND CODE NO. BELOW MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO: G. MAZZONI S.P.A.
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO: Mr. H. Welk
ORIGINAL
LEVER BROTHERS COMPANY, INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		P.O. # C.I.F. Hammond, Indiana

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
	Four			DUPLEX VACUUM PLODDERS FOR 10,000 LB/HR CAPACITY Twin-Worm Duplex Vacuum Plodder, model 'B-350/5000', having the following main characteristics: -capacity: 5,000 kg/h of H.S.S.O. bars using refining screens up to 50 U.S. mesh screens to be 8,20,30,40 mesh ea. set. -driven by the following varidrive motors (LBC Supply): - 55 kW for the preliminary stage - 45 kW for the final stage. (Drive system to be capable of taking 55 kW motor and operate 24 Hrs a day 7 days a week with 4 to 5 stoppages per minute within the total range of Speeds) -each stage equipped with two constant pitch worms of 350 mm dia. made in AISI 304 stainless steel preliminary stage will be fitted with an R-450/31/P reduce with service factor 2.7 at 11.5 worm rpm final stage will be fitted with an R-450/31/P reducer with service factor 3.3 at 11.5 worm rpm. L/D Ratio 3. 20 Blades are required for plodder knife. Widened Platforms with handrail on Lefthanside of Plodder	264,750,000/Ea Less Discount 7%+4%+3% x 4 units	917,094,000
					2,570,000/Ea. Less Discount 7%+4%+3% x 4 units	8,902,880

AS QUOTED BY: Page 6 of 16

Please invoice promptly, IN DUPLICATE. Address to:
ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632
This order is not binding until Acknowledgment Copy is executed and returned to us.

WE RESERVE THE RIGHT TO EXTEND MATURITY OF PAYMENT ON INVOICES EIGHT DAYS FROM DATE INVOICE IS RECEIVED.

HSSO Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

APPROVED BY: *[Signature]*
AUTHORIZED SIGNATURE: *[Signature]*

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL

BY (AUTHORIZED SIGNATURE) <i>[Signature]</i>	FOR (FIRM NAME) G. MAZZONI <i>[Signature]</i>	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
-------------------------------------------------	-----------------------------------------------------	----------------	------------------------------------------------------------------------------------------------------------------------------

Customer	Model	Q-tity	Product
<u>SENEGAL</u>			
N.S.O.A.	DVP/B-300	1	Laundry Soap
<u>SOUTH AFRICA</u>			
Sealake Industries	DVP/B-300	1	Laundry Soap
<u>SRI LANKA</u>			
Lever Brothers (Ceylon) Ltd	DVP/B-300	2	Laundry Soap
<u>SUDAN</u>			
El Kono Soap & Glycerine Factory	DVP/B-300	1	Laundry Soap
	SR/B-300	1	Laundry Soap
El Managil Soap Factory	DVP/B-300	1	Laundry Soap
<u>SYRIA</u>			
Ets H. & GH. Toumeh	SR/B-300	1	Soap Base
Kachlan Takieddine and Co.	DCB/B-300/M-350	1	Laundry/Toilet Soap
<u>TURKEY</u>			
Evyap	DVP/B-300	4	Toilet Soap
	SR/B-300	1	Laundry Soap
Sabuncuzade	DVP/B-300	1	Laundry/Toilet Soap
<u>UGANDA</u>			
Mukwano Industries 'U' Ltd	TVP/B-300	1	Laundry/Toilet Soap
<u>U.S.A.</u>			
Lever Bros Co., Los Angeles	DVP/B-300	1	Synthetic Toilet Soap (DOVE)
	SR/B-300	1	Toilet Soap
	SR/B-300	1	Soap Base
The Adrew Jergens Co.			
<u>VENEZUELA</u>			
Las Llaves S.A.	TVP/B-300	2	Laundry Soap
<u>ZAIRE</u>			
Amato Frères & Cie S.z.a.r.l.	DVP/B-300	1	Laundry Soap
Marsavco	DVP/B-300	1	Toilet Soap

LIST OF CUSTOMERS USING OUR
 350-MM DIAMETER TWIN-SCREW PLODDER
 "SR/B-350" SIMPLEX REFINER
 "DR/B-350" DUPLEX REFINER
 "DVP/B-350" DUPLEX VACUUM PLODDER
 "TVP/B-350" TRIPLEX VACUUM PLODDER

Customer	Model	Q-ty	Product
<u>ALGERIA</u>			
Extraction De Smet	DVP/B-350/B-400	1	Laundry Soap
	DVP/M-400/B-350	1	Toilet Soap
Simmering-Graz-Pauker A.G.	DVP/M-400/B-350	1	Toilet Soap
	DVP/B-350/B-400	1	Laundry Soap
<u>AUSTRALIA</u>			
Colgate-Palmolive Pty Ltd	SR/B-350	1	Soap Base
<u>CAMEROUN</u>			
C.C.C	TVP/B-350	1	Laundry/Transparent
<u>EGYPT</u>			
Misr Oil & Soap	DVP/B-350	1	Laundry Soap
<u>GERMANY (FEDERAL REPUBLIC)</u>			
Luhns & Co. GmbH	SR/B-350	1	Soap Base
<u>GREAT BRITAIN</u>			
Cussons	DVP/B-350	1	Laundry / Soap Base
Lever Bros Ltd	DVP/B-350	3	Toilet Soap
<u>INDIA</u>			
Lever Kandla	DVP/B-350	2	Toilet Soap
<u>INDONESIA</u>			
P.T. Sayap Mas Utama	SR/B-350	1	Soap Base
<u>ITALY</u>			
Lever Casalpusterlengo	DVP/B-350	1	Toilet Soap
<u>MEXICO</u>			
Colgate-Palmolive S.A.	SR/B-350	1	Soap Base

Customer	Model	Q-tity	Product
<u>NIGERIA</u>			
I.E.A.	DVP/B-350	1	Laundry/Soap Base
Paterson Zochonis	DVP/B-350	1	Soap Base
Paterson Zochonis, Aba	DVP/B-350	1	Laundry Soap
	DVP/B-350	3	Toilet Soap
	DVP/B-350	1	Laundry/Soap Base
Paterson Zochonis, Apapa	DVP/B-350	1	Laundry Soap
<u>PHILIPPINES</u>			
Colgate Palmolive Philippines	SR/B-350	1	Soap Base
Procter & Gamble	DVP/B-350	1	S L B
	SR/B-350	1	S L B
<u>SOUTH AFRICA</u>			
Lever	DVP/B-350	1	Toilet Soap
	SR/B-350	5	Toilet Soap
	SR/B-350	1	Soap Base
<u>TURKEY</u>			
Evyap	SR/B-350	1	Soap Base
<u>U. S. A.</u>			
Colgate Palmolive Co., Jersey City	SR/B-350	1	Soap Base
Colgate Palmolive Co., Kansas City	SR/B-350	2	Soap Base
Lever Bros Co., Hammond	DVP/B-350	3	Synthetic Toilet Soap
	SR/B-350	3	Soap Base
The Andrew Jergens Co.	DR/B-350	1	Soap Base
The Dial Corporation, Omaha	SR/B-350	1	Soap Base
<u>U.S.S.R.</u>			
Technopromimport	DR/B-400/B-350	2	Soap Base
	SR/B-350	2	Soap Base
	DVP/B-350	3	Soap Base
	DVP/B-350	2	Toilet soap

611-39-321-624-64
LEVER BROS. ENGINEERING

TRANSMISSION REPORT

05-12-88 01:13PM

TTI NO. 0039331684511
DURATION 01:35
NO. PAGES 02/04
CODE OK

OK = ACTIVITY COMPLETE
01 = TRANSMISSION ERROR
02 = CALL FIELD ENGINEER

Bad Original

LEVER BROTHERS COMPANY

FACSIMILE TRANSMISSION

TO: G. MAZZONI, SpA
Viale Trentino 10/12
21052 Busto Arsizio
ITALY
Attention: Mr. Guido Mazzoni
011-39-331-684-511

Dear Mr. Mazzoni:

In discussions Lever Brothers has had with Mr. Aldo Mazzoni Re: The Mazzoni Drives, we have agreed to send suggested modifications to the Mazzoni Drives to you. Understand that Mr. Aldo Mazzoni will return to your office on Monday, May 16, 1988 to pursue this matter.

The following items need your immediate attention:

1. Since we have had extensive shaft failures, all the shafts should be designed with proper details. Wherever there is a change in shaft diameter suitable radii or under cuts, with smooth ground surfaces, must be provided so that the possibility of stress concentration at the corners is minimized. In all cases, stress calculations must be provided to support the shaft and bearing size selections.
2. Adequate land area must be provided when gears, or other parts are located against a shaft shoulder. The corners must be treated as in #1 above.
3. Since we have experienced severe pitting of the gears on all our drives, we will need to review specifications for the case hardening of the gears and will want Mazzoni to demonstrate that the hardness of the surfaces has been properly increased beyond the current designs.
4. The coupling of the primary reducers with the secondary dual output thrust units needs modification. Mazzoni's proposed design is by insertion of the input shaft of the thrust unit into the hollow shaft of the primary gear reducer. This is a potential area for possible increased stresses due to minor misalignment. Also, this is a potential source for freeze up of the connection due to fretting corrosion. We would prefer to see the primary and secondary units separated and coupled with a suitable mechanical coupling that will tolerate minor misalignment.
5. The arrangement of the primary and secondary units and the mounting of these units on the duplex plodders or refiners should allow for easy and quick maintenance and replacement in the event of failure of any of these units. The reducers and thrust units should be capable of being removed individually and replaced without having to disassemble the entire unit or provide temporary supports for the worm barrels.
6. We have encountered severe wear of the "thrust plate" reducing the effectiveness of the plate as a means of compensating for minor angular misalignment between the drive shafts and the worms. To ensure an improved design that will prevent transference of any misalignment to the output shaft, this plate should be provided with a spherical surface and with a suitable sealed lubrication arrangement.
7. Any welded hub gears will have to be reviewed for details of construction since we have encountered failures on welded hubs.

Continued ...

Fax. to Mazzoni, SpA - Continued

To ensure that the above modifications are properly interpreted and executed, we need to have Mazzoni submit drawings, details and calculations for our review and approval, with no loss of schedule.

Also, please confirm your warranty for the modified drives for the full term of two years from start-up. Please clarify your response time in the event of failure during the warranty period. We would also like to have an indication of the cost of Spare Drives.

We expect your reply by Wednesday, May 18, 1988.

Sincerely,



**F.A. DRESCHER
Purchasing Agent -
Engineering**

FAD/sd

**cc: R. Caciula -6584/E2D
D. Cotrupe -6547/E2D
J.A. Grabelle-Hammond
U. Oesch 6586/E2D
K.P. Radhakrishnan - 6589/E2D
H. Weik -Hammond
P.V. Krishnayya-Hammond**

1047

LEVER BROTHERS COMPANY

To:	°Name F. A. DRESCHER	°Location 6561/E2D	°From P. V. KRISHNAYYA	°Location 427
cc:	C. P. BUTTS	481	°Date May 11, 1988	°Typed by jk
	R. V. CACIULA	6584/E2D		4483n
	D. L. CHARZEWSKI	201		
	D. P. COTRUPE	6547/E2D	Via: FAX	
	J. A. GRABELLE	422		
	J. J. JERMOLOWICZ	403		
	U. OESCH	6586/E2D		
	K. P. RADHAKRISHNAN	6589/E2D		
	H. F. WELK	401		

MAZZONI PLODDER AND REFINER DRIVES

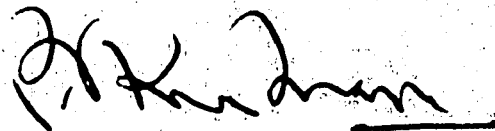
Per our very lengthy telephone conference this morning, followed by the phone conversation with Mr. Aldo Mazzoni, noted below are the items that need to be conveyed to Mazzoni:

1. Since we have had extensive shaft failures, all the shafts should be designed with proper details. Wherever there is a change in shaft diameter suitable radii or under cuts, with smooth ground surfaces, must be provided so that the possibility of stress concentration at the corners is minimized. In all cases, stress calculations must be provided to support the shaft and bearing size selections.
2. Adequate land area must be provided when gears, or other parts are located against a shaft shoulder. The corners must be treated as in #1 above.
3. Since we have experienced severe pitting of the gears on all our drives, we will need to review specifications for the case hardening of the gears and will want Mazzoni to demonstrate that the hardness of the surfaces has been properly increased beyond the current designs.
4. The coupling of the primary reducers with the secondary dual output thrust units needs modification. Mazzoni's proposed design is by insertion of the input shaft of the thrust unit into the hollow shaft of the primary gear reducer. This is a potential area for possible increased stresses due to minor misalignment. Also, this is a potential source for freeze up of the connection due to fretting corrosion. We would prefer to see the primary and secondary units separated and coupled with a suitable mechanical coupling that will tolerate minor misalignment.
5. The arrangement of the primary and secondary units and the mounting of these units on the duplex plidders or refiners should allow for easy and quick maintenance and replacement in the event of failure of any of these units. The reducers and thrust units should be capable of being removed individually and replaced without having to disassemble the entire unit or provide temporary supports for the worm barrels.

6. We have encountered severe wear of the "thrust plate" reducing the effectiveness of the plate as a means of compensating for minor angular misalignment between the drive shafts and the worms. To ensure an improved design that will prevent transference of any misalignment to the output shaft, this plate should be provided with a spherical surface and with a suitable sealed lubrication arrangement.
7. Any welded hub gears will have to be reviewed for details of construction since we have encountered failures on welded hubs.

To ensure that the above modifications are properly interpreted and executed, we need to have Mazzoni submit drawings, details and calculations for our review and approval, with no loss of schedule.

Also, as we indicated to Mr. Mazzoni, they have to confirm their warranty for the modified drives for the full term of two years from start-up. Full liability for all costs, in case of failure, including loss of production would be most desirable. They should also clarify their response time in the event of a failure during the warranty period.



P. V. Krishnayya

LEVER BROTHERS COMPANY

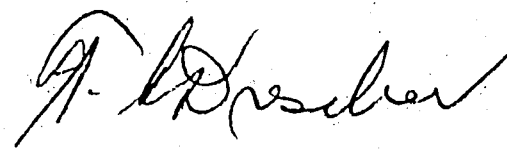
To:	°Name P. Krishnaya	°Location Hammond Plant	°From F.A. Drescher	°Location 6561/E2D
cc:	K. Radhakrishnan U. Oesch D. Cotrupe	6589/E2D 6586/E2D 6547/E2D	°Date 5/10/88	°Typed by sd

Reference: Mazzoni Plidders and Refiners

Mazzoni is charging Lever Bros. approximately \$143,000 (15%) as handling costs for the use and installatin for Falk drives. I spoke to Mr. Corridini and Aldo Mazzoni today and they commented as follows:

1. The cost includes handling from Genoa Port to Mazzoni factory and uncrating.
2. Custom formalities (appear they have to cover duty and recover later).
3. Administrative and logistical costs and warehousing.
4. Burden of installing Falk drives which is new to them.
5. Interest costs on funds which they have to advance to Falk.
6. Mr. Mazzoni is addament not to reduce this mark-up since it is customary for vendor to mark-up buy out items. Also he feels it unethical for Falk to provide Lever Brothers with the price information quoted to Mazzoni.
7. Mazzoni also feels since this was forced on him that he is entitled to a small mark-up or profit on these handling costs. Mazzoni did not mention mark-up when we mentioned at the meeting in Hammond that they are just passing through the costs to us.
8. I think that you should speak to him on this. He can be reached at the Hyatt Regency in Pheonix at (602) 252-1234, Room 360 or at the booth number: (602) 376-1076, Wed. morning at 8:15 a.m. (5/11/88). We will hold-up placing the Letter of Intent until then.

1041



**G. MAZZONI** S.p.A.

VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE

0331 - 684.064

FAX 0331 - 684511

TELEX 330576 GMAZZI

P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. F.A. Drescher

Lever Brothers Company

818, Sylvan Avenue

Englewood Cliffs, NJ 07632

U.S.A.

SAP/LM/lr

Fax Message F-1087

BUSTO ARSIZIO,

May 18, 1988

Re: Mazzoni Drives for Project "HSSO"

Dear Mr. Drescher:

Reference is made to your 5/12/1988 fax message - ref. FAD/sd.

We confirm that all the requested modifications to the primary reducers and the secondary dual output thrust units supplied by Mazzoni and to be fitted to the "B-300/4000" Duplex Refiners having barrel L/D = 5 and to "B-350/5000" Duplex Vacuum Plidders having barrel L/D = 3, will be carried out except for the thrust plates' spherical surface lubrication as per paragraph 6.

All the requested modifications have already been discussed during the meeting held with Mr. L. Spitz, Mr. A. Negri and Mr. D. Baggini at Hammond on March 30, 1988.

We comment on your requests, step by step:

1) Shaft failures

The extensive failures of the shafts of the R3 primary reducer now fitted to the "B-350" vacuum plidders operating at Hammond are due to:

- 1.1. Presence of sharp edge grooves which are now superseded by the ones in accordance with UNI 4386/75 Standards (Mazzoni Standard NI-50.01 is attached).
- 1.2. Overload of reducers, which are now operating with 75 HP motor at 15 r.p.m. with 1.40 service factor which is lower than the minimum required according to the attached AGMA 420.04 Standards, Dec. 1975 - page 6.

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL-10262

THIS NUMBER AND CODE NO. BELOW MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO: **G. MAZZONI S.P.A.**
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO: **Mr. H. Welk**
ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		F.O.B. C.I.F. Hammond, Indiana


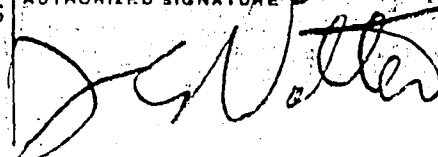
ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				Epoxy Paint	1,670,000/Ea. Less Discount 7%+4%+3% x4 units	5,784,480
				Thermoresistance and digital indicator for: -soap inlet and discharge temperature -cooling water inlet and discharge temperature	860,000/Ea. 7%+4%+3% x4 units	2,979,040
				<u>EXTRUSION PRESSURE INDICATORS</u>		
				The pressure is measured by a "DYNISCO" transducer, fitted in the worm support. Pressure is indicated by a "DYNISCO" analog pressure indicator with double set point set point alarm and voltage output signal for each stage.	3,620,000/Ea. Less Discount 7%+4%+3% x 4 units	12,539,680
				Drive Couplings	6,900,000/Ea. Less Discount 7%+4%+3% x 4 units	23,901,600
				SUB-TOTAL DUPLEX VACUUM PLODDERS:		971,201,680
				AS QUOTED BY:		

SECURITY OF INFORMATION
 GOOD BUSINESS
 FOR BOTH OF US
 WE DEPEND UPON YOU TO KEEP
 ALL INFORMATION CONFIDENTIAL

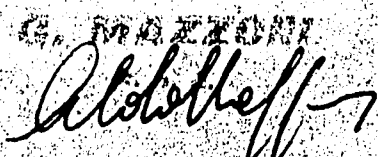
Page 7 of 16

Please invoice promptly, IN DUPLICATE. Address to:
 ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632
 This order is not binding until Acknowledgment Copy is executed and returned to us.

WE RESERVE THE RIGHT TO EXTEND MATURITY DATE OF DISCOUNT INVOICES EIGHT DAYS FROM DATE INVOICE IS RECEIVED.

APPROVED BY

 AUTHORIZED SIGNATURE


THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL

BY (AUTHORIZED SIGNATURE) 	FOR (FIRM NAME) G. MAZZONI	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
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The enclosed booklet includes a two-sheet "Calculation Summary" which sums up the Shaft Stress values for the R3 reducer (the existing one) and R-400/3I/P reducer (the new one for "B-300/4000"); please note that the Shaft Stress values of the R-400 reducer are considerably lower than the ones of the R3 reducer.

- 2) The attached assembly drawing 500290038B of the "R-400/3I/P" shows that a proper band area is foreseen when gears are located against a shaft shoulder and that the corners are treated with adequate radii.
- 3) The severe pitting experienced on the existing R3 primary reducer gears can be justified in the light of the overload which the reducer is submitted to, as already shown in point 1); in any case, the material of new reducer gears has been replaced with Carburized & Case Hardened Steel (60 HRC for pinions and 55 HRC for gears), the material of R3 reducer gears is Induction Hardened Steel (460 HB); this information is also shown in the R3 and R-400 reducer calculations attached to our fax message F-623 of March 9, 1988.
- 4) The mechanical coupling between the Mazzoni reducer and secondary unit can be fitted without any problems.

The extra-price including coupling cost and new machine design is:

- 4.1.) For each "B-300/4000" (two couplings) Italian Lire 5,800,000.--
- 4.2.) For each "B-350/5000" (two couplings) Italian Lire 6,900,000.--

However, in our opinion, the mechanical coupling insertion is not necessary since we have been using the solution without it for a long time without any problems on the plidders equipped with R1 and R2 reducers (M-300, M-350, M-400, B-250 and B-300); the solution without the mechanical coupling allows the perfect alignment too (suitable coupling surfaces are processed in order to align reducer-support-barrel by joining them in one single piece) and an easy disassembly of both the primary reducer and secondary unit (also separately, i.e. the complete primary reducer extraction from plodder is not necessary to remove the secondary unit).

Mounting by means of hollow shaft is a very recommendable solution from a mechanical point of view, and is proposed by all the European reducer manufacturers. Therefore, we are surprised that it is not foreseen in the Falk catalogue.

We enclose our assembly drawing 600020008A, showing the suggested solution without mechanical coupling.

- 5) Your request is already foreseen with the new reducers (see point 4).
- 6) The thrust plate between worm and support shaft, in the case of the plidders now operating at Hammond, consists of two conical surfaces (with different taper and consequently, laying on a line); the new thrust plate is spherical, as per your request, with a wide contact surface.



However, its lubrication cannot be foreseen, since under the vacuum effect the lubricant, in spite of seals (difficult to be installed), might be sucked up and pollute the products. Please pay attention to the fact (already discussed at Hammond) that our supports are equipped with a safety chamber, so that any oil leaking through seals comes out without polluting the product. We enclose assembly drawing 500070077A of twin-worm plodder support.

- 7) The new gears are not welded; they are obtained from a bar or forging.
- 8) As requested by Mr. Radhakrishnan on the phone on 5/16/1988, we confirm that the new plodders can bear the whole motor speed range without any service factor reductions, provided that the motor supplies a constant torque; in other words, the drive pulley sizing must be carried out at maximum motor speed; then, lower speeds (and outputs) will be obtained by reducing the motor revolutions. The attached specifications LM/SV-001 and LM/SV-008 show all the technical data relevant to the "B-300/4000" and "B-350/5000" plodder sizing.
- 9) As already advised, we confirm that our equipment is guaranteed against defects arising from faulty design, materials or workmanship within a period of twelve calendar months (24 months for gear reducers) after testing but not later than eighteen months (30 months for gear reducers) from shipment date. We will accept liability to repair or replace any part that proves defective under normal use and service within the specified period (F.O.B. Hammond, import duties excluded). We will not be liable for improper handling on your part or due to causes not attributable to us.

Moreover, we undertake to keep at your disposal some spare parts for the whole agreed guarantee period in order to allow a quick "response time" in case of need.

- 10) We append the F.O.B. prices for one set of spare drives:

10.1) For "B-300/4000" Simplex and Duplex Refiners

- | | |
|-----------------------------------------------------|----------------------------|
| 1 Complete primary gear reducer,
type R-400/31/P | Italian Lire 20,970,000.-- |
| 1 Complete secondary dual output
thrust unit | Italian Lire 12,300,000.-- |

10.2) For "B-350/5000" Duplex Vacuum Plodder:

- | | |
|-------------------------------------------------------|----------------------------|
| 1 Complete primary gear reducer,
type "R-450/31/P" | Italian Lire 24,230,000.-- |
| 1 Complete secondary dual output
thrust unit | Italian Lire 15,650,000.-- |



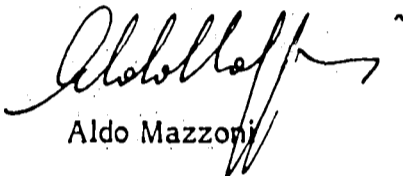
Please note that the above prices are exactly the same as the ones already advised and have not been increased as usual when the spare part supply is foreseen.

We hope you will appreciate our gesture. I would like to express my conviction of the three enormous advantages that Lever will have by purchasing all primary and secondary reducer units from Mazzoni for both refiners and vacuum plodders:

- 1) one sole manufacturer/supplier
- 2) no warranty problems
- 3) elimination of the complete \$50,000 engineering costs required for assembly of the non-Mazzoni components
- 4) considerable price reduction.

Yours sincerely,

G. MAZZONI S.p.A.


Aldo Mazzoni

P.S. All the drawings which are out-of-format for fax transmission are being sent by courier service.

Encls.:

- NI-50.01 Standard
- Booklet handed over to people who attended 3/30/1988 meeting at Hammond
- Assembly drawing 500290038B of "R-400/3I/P" reducer
- Assembly drawing 600020008A of the "B-300" Duplex Refiner
- Assembly drawing 500070077B of the twin-worm plodder support
- LM/SV-001 specification
- LM/SV-008 specification

cc: G. Mazzoni U.S.A., Inc.
Mr. S. Rogora
A - SAP

REV	DESCRIZIONE	DATA	REV	DESCRIZIONE	DATA
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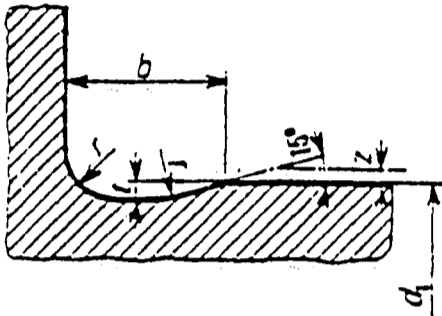
Norma interna ricavata da UNI 4386/75

Dimensioni in mm

- La presente norma stabilisce le gole di scarico di superficie di parti da rettificare per impieghi generali e per parti soggette a sollecitazioni alterne.
- Le dimensioni sono valide per pezzi finiti.

Forma E

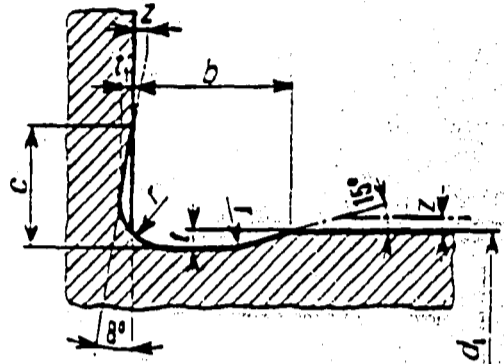
(per una superficie da rettificare)



Z = sovrammontato di rettifica

Forma F

(per due superfici da rettificare)



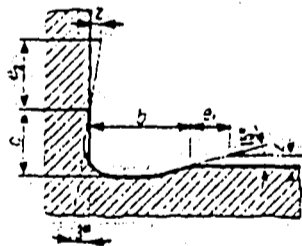
d1 = diametro finale di lavorazione

- Le gole della presente norma devono avere, di regola, rugosità R_a di 3,2 micron. Nel caso di rugosità diversa, la stessa deve essere precisata nella designazione.

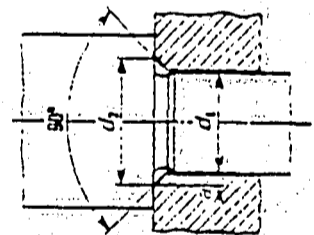
Diametro d_1	Indicazione per la designazione	Forma	r +0,1 0	t	b	c	t_1 +0,05 0
fino a 18	E 0,6 x 0,2	E	0,6	0,2	2		
oltre 18 fino a 50	E 1 x 0,2	E	1	0,2	2,5		
oltre 50 fino a 80	E 1,6 x 0,3	E	1,6	0,3	4		
oltre 80	E 2,5 x 0,4	E	2,5	0,4	5		
fino a 18	F 0,6 x 0,2	F	0,6	0,2	2	1,4	0,1
oltre 18 fino a 50	F 1 x 0,2	F	1	0,2	2,5	1,8	0,1
oltre 50 fino a 80	F 1,6 x 0,3	F	1,6	0,3	4	3,1	0,2
oltre 80	F 2,5 x 0,4	F	2,5	0,4	5	4,8	0,3

INFLUENZA DEL SOVRAMMETALLO

La presenza del sovrammontato Z comporta l'aumento di b e c rispettivamente delle grandezze e_1 ed e_2 riportate nel prospetto seguente



$$d_2 = d_1 + 2a$$



z	e_1	e_2	z	e_1	e_2
0,1	0,37	0,71	0,5	1,87	3,56
0,15	0,56	1,07	0,6	2,24	4,27
0,2	0,75	1,42	0,7	2,61	4,98
0,25	0,93	1,78	0,8	2,99	5,69
0,3	1,12	2,14	0,9	3,36	6,4
0,4	1,49	2,85	1	3,73	7,12

Gola	2a min	Gola	2a min
E 0,6 x 0,2	0,8	F 0,6 x 0,2	0,2
E 1 x 0,2	1,6	F 1 x 0,2	0,8
E 1,6 x 0,3	2,6	F 1,6 x 0,3	1,1
E 2,5 x 0,4	4,2	F 2,5 x 0,4	1,9



BOOKLET
HANDED OVER TO PEOPLE
WHO ATTENDED 3/30/1988 MEETING AT HAMMOND



March 29, 1988

REDUCER OBSERVATIONS

1. MAZZONI R3 REDUCER IS FUNCTIONAL WITH 60 HP (45 kW) @ 15 RPM AND 1.75 SERVICE FACTOR (SEE CUSTOMER REFERENCE LIST)
2. LEVER HAMMOND APPLICATION REQUIRES 2.0 SERVICE FACTOR (AGMA REFERENCE 420.04 PAGE 6 - ELECTRIC MOTORS OVER 10 HOURS PER DAY WITH HEAVY SHOCK)
3. THE HAMMOND R3 REDUCERS WITH 75 HP DRIVES @ 15 RPM HAVE A SERVICE FACTOR REDUCED TO 1.4
4. UNDER THE ABOVE LISTED CONDITIONS THE R3 WILL BRAKE DUE 43% OVERLOAD OVER THE MAXIMUM (2.0 : 1.4 = 42.8%)
5. R3 WILL BRAKE EVEN WITHOUT ANY PRODUCT IF USED WITH 3 TO 4 STARTS AND STOPS PER MINUTE

3
 4 **PLODDER SPECIFICATION SHEET**

5
 6 Module used for: design, inquiry, order issue, operating manual,
 7

8 PLODDER
 9 Model DUPLEX VACUUM PLODDER B-300/400
 10 Plodder PRELIMINARY FINAL
 11
 12 Worm type CONSTANT →
 13 Worm material AISI 304 →
 14 Worm revolutions rpm 11.9 10.8
 15 Extrusion type LTC-B3 TC
 16 Refining screen B. 41. mesh →
 17 Supporting screen → →
 18 Drilled plate:
 19 hole (No) x diam. (mm) 504 x 12 mm →
 20 Cross-sectional area % 40 →
 21 Bar extrusion → TWIN SLUG
 22 Production rate kg/h 6000 →
 23

PRODUCT:
 Type NORMAL TOILET SOAP (7)
 Trade-name →
 Fed Extruded
 Shape PALLETS CONTINUOUS SLUG
 Density kg/m³ 610 1035
 Temperature °C 32 ± 35 35 ± 38

24
 25
 26
 27 REDUCER (3) (B)
 28 Model R-400/31/P →
 29 Reduction ratio 1:66 →
 30 Pulley pitch diam. mm 600 →
 31 Races: No x type 6 x 5V →
 32 High-speed shaft rpm 816 ± 204 →
 33 Low-speed shaft rpm 12.6 ± 3.2 →
 34 Service factor (2) 2.6 3.2
 35 ACCORDING TO AGMA STANDARDS
 36 SEE NOTE (B)
 37
 38
 39

WORM THRUST BEARING SUPPORT (3)
 Max. extrusion pressure bar 40
 Life hours > 150'000

COOLING LINE
 Plodder Preliminary Final
 Min. inlet press. bar 3 3
 Inlet temperat. °C 5 ± 7 →
 Outlet temperat. °C 11 ± 13 10 ± 12
 Flow rate m³/h 1.7 1.7
 Transferred heat kcal/h 11'000 10'000

40 MOTOR SUPPLIED AND INSTALLED BY OTHERS
 41 Make AT LEVER BROTHERS HAMMOND PLANT.
 42 Model DC →
 43 Power kW 45 ± 11.3 37 ± 9.3
 44 Fixed or variable speed VARIABLE SPEED →
 45 Revolutions rpm 1750 ± 440 →
 46 Variation ratio 4+1 →
 47 Pulley pitch diam. mm 280 →
 48
 49
 50

HEATING LINE (4) HOT WATER PROVIDED BY C.V.S.T.
 Temperature °C 20 ± 25 →
 Flow rate m³/h 0.6 →

51
 52
 53 PNEUMATIC CLUTCH
 54 Make FAWICK AIRFLEX →
 55 Model 12 CB 3EO →
 56 Torque rating dN-m 150.5 →
 57 % 275 (1) 334 (1)
 58 Compr. air press. bar 5.25 5.25
 59
 60

NOTES
 (1) Defined as ratio between the torque rating and the driving torque available with the shown pulleys.
 (2) The service factor varies with the transmission ratio, and therefore with the driving pulley diameter, varies.
 (3) Load capacity of the reducer gears and support reversing gear (twin-worm plodders) is in compliance with AGMA, DIN and ISO standards.
 (4) Envisaged to send hot water to the barrels during long shutdowns; Duplex plodders have separate lines.
 (5) CUSTOMER'S REFERENCE
 (6) #1 DP460, #2 DP560, #3 DP660, #4 DP160
 (7) DESIGN DATA WILL BE CONFIRMED ALSO FOR HSSO PRODUCT AFTER TESTING AT OUR TEST ROOM.
 (8) THE REDUCER, THE WORM THRUST BEARING SUPPORT AND THE OTHER MECHANICAL PARTS GUARANTEED 3 START-UPS/MINUTE, 24 HOURS/DAY, 5 DAYS/WEEK.

62	R	D					
63	e	C					
64	v	B					
65							
66	A	Issue. Comp.	Date: 10/1/88	Appr.	Date	Compiler	Date

MAZZONI REDUCER, MODEL R3

Calculation Summary

Rating 45 kW at 15 rpm at Service Factor SF = 1.75

- A) Maximum power transmitted by each gear at 15 rpm of the low speed shaft at service factor SF = 1.75:

Coupling	Fast		Low	
	Pinion	Gear	Pinion	Gear

ISO STANDARDS:

Bending Strength Power	kW	66	76	52	58
Pitting Resistance Power	kW	94	136	60	76

AGMA STANDARDS:

Bending Strength Power	kW	--	--	--	--
Pitting Resistance Power	kW	--	--	--	--

- B) Shaft Stress at service factor SF = 1.75 with 45 kW at 15 rpm of the low speed shaft (see drawing No. 0995/1):

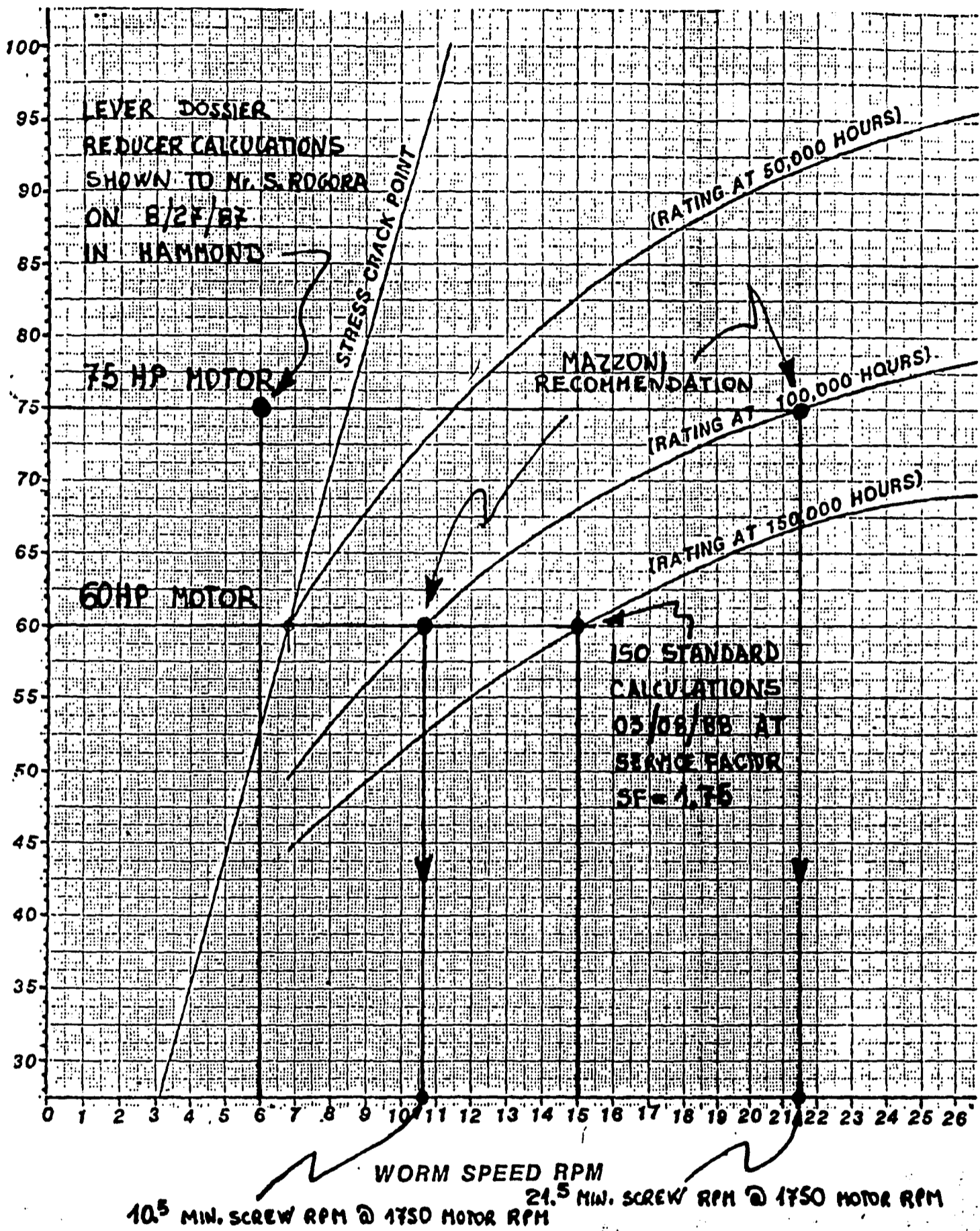
Shaft	I (Fast)		II	III	IV	V (Low)	
	Old shaft	Revised shaft					
Rpm	545	→	61	54	15	15	
Diameter	mm	59	67	74	83	109	109
Bending : moment	m . kg	193.14	→	168.3	480.5	636.7	945
stress	kg/mm ²	9.5	6.5	4.2	8.5	5	7.4
Torsion : moment	m . kg	78.8	→	704.4	398	1432	→
stress	kg/mm ²	1.8	1.33	8.8	3.5	5.6	→

Steel shaft allowable stress from AGMA 420.04 and for 39NiCrMo3 UNI 7845 steel with 90 kg/mm² (128.000 psi) of Tensile Strength and over 100.000 to 1 million cycles is: bending 13 kg/mm² (19.000 psi), torsion 8 kg/mm² (11.500 psi).



PLODDER REDUCER 'R3'-HP vs RPM

TWIN SCREW B-350 (HAMMOND)



Progetto: LEVER HAMMOND

Argomento

Revisione

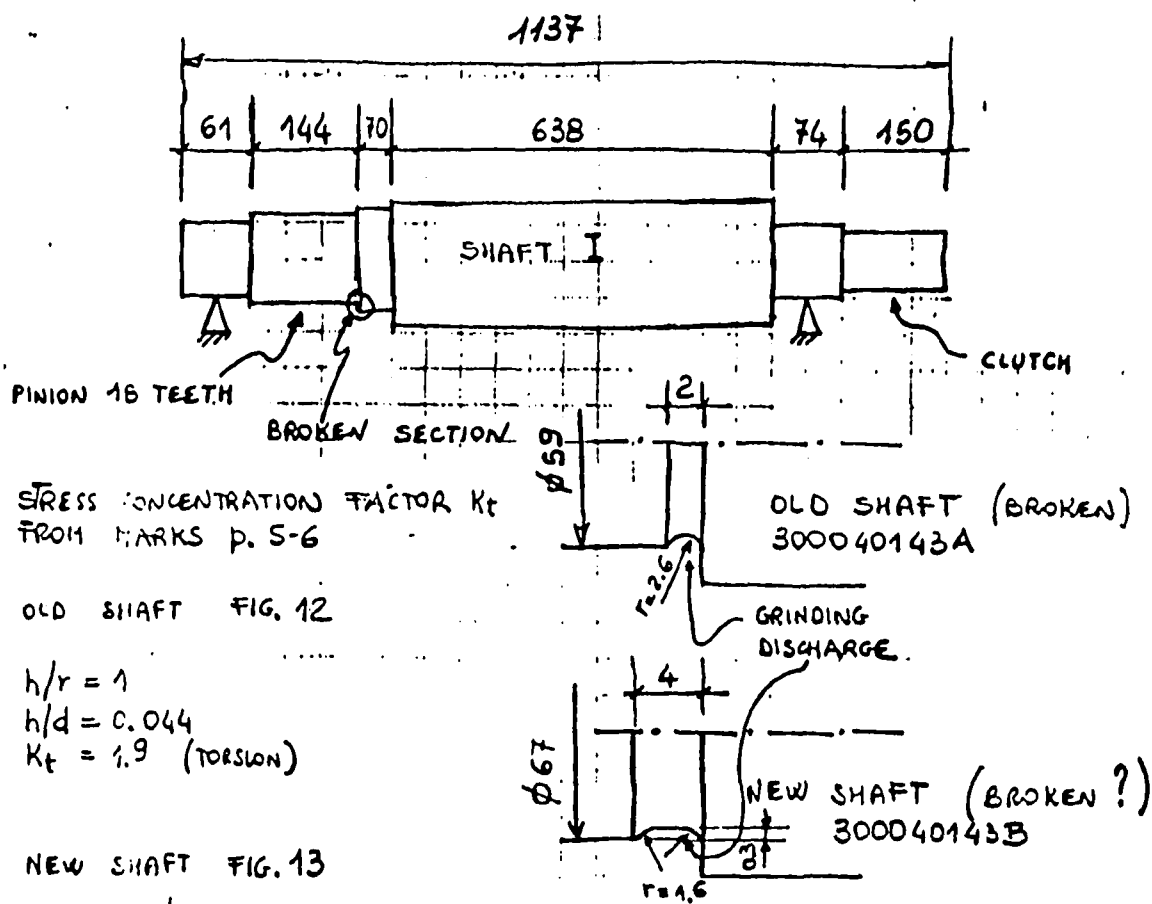
Impianto: PLODDER B-350

Date 28/3/88

Apparechio: R3 REDUCER

RII, Dis. N.

Foglio N. 1



STRESS CONCENTRATION FACTOR K_t
FROM MARKS p. 5-6

OLD SHAFT FIG. 12

$h/r = 1$
 $h/d = 0.044$
 $K_t = 1.9$ (TORSION)

NEW SHAFT FIG. 13

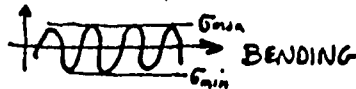
$h/r = 0.3/1.6 = 0.19$
 $h/d = 0.3/67 = 0.0044$
 $K_t = 1.3$ (TORSION)

RATING 60 HP @ 15 rpm WITH SERVICE FACTOR SF=1.75

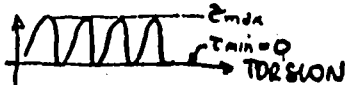
RATIO 1:36.3

SHAFT I LOADS:

1) ALTERNATE BENDING FATIGUE DUE TO MATING GEARS: BETWEEN EQUAL POSITIVE AND NEGATIVE VALUES:



2) ALTERNATE TORSIONAL FATIGUE DUE TO START/STOP WITH THE CLUTCH (3 to 4 TIME PER MINUTE): FROM ZERO TO MAXIMUM POSITIVE VALUES:



THE SECOND LOAD IS NOT PERMITTED IN R3 REDUCER AT SF=1.75

TO ALLOW THE SECOND LOAD IS NECESSARY SF=2 OR MORE

WITH 75HP @ 15 rpm R3 REDUCER HAS A SF=1.4

G. MAZZONI S.p.A.

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL -10262

THIS NUMBER, AND CODE NO. BELOW, MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES, AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO : **G. MAZZONI S.P.A.**
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO : **Mr. H. Welk**
ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA	F.O.B. C.I.F. Hammond, Indiana	

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
	One			SIMPLEX REWORK REFINER Model M 300/2000 For an hourly capacity of 1500 Kg of HSSO Pellets driven by 2.2 kW varidrive motor (LBC Supply) 300 mm dia AISI 304 SS constant pitch worm fitted with an R-400/31/P reducer with a service factor of 2.7 at 11.5 worm rpm. screen to be 8,20,30,40 mesh each set.	60,360,000 Less Discount 7%+3%	54,450,730
				Widened Platform with Handrail on lefthand side of Plodder	1,690,000 7%+3%	1,524,549
				Epoxy Paint	830,000/ Less Discount 7%+3%	748,743
				Thermoresistance and digital indicator for: - soap inlet and discharge temperature - cooling water inlet and discharge temperature	520,000 Less Discount 7%+3%	469,092
				EXTRUSION PRESSURE INDICATION The pressure is measured by a "DYNISCO" transducer, fitted in the worm support. Pressure is indicated by a "DYNISCO" analog pressure indicator with double set point alarm and voltage output signal.	1,810,000 Less Discount 7%+3%	1,632,801

SECURITY OF INFORMATION IS GOOD BUSINESS FOR BOTH OF US
 WE DEPEND UPON YOU TO KEEP ALL INFORMATION CONFIDENTIAL

AS QUOTED BY:

Please invoice promptly, IN DUPLICATE. Address to:
 ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632
 This order is not binding until Acknowledgment Copy is executed and returned to us.
 WE RESERVE THE RIGHT TO EXTEND MATURITY DATE FOR **15** DAYS FROM DATE INVOICE IS RECEIVED.
HSSO Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

APPROVED BY: *[Signature]*
 AUTHORIZED SIGNATURE: *[Signature]*

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL

BY (AUTHORIZED SIGNATURE) <i>[Signature]</i>	FOR (FIRM NAME) G. MAZZONI	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
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MAZZONI REDUCER, MODEL R-400/31/P

Calculation Summary

Rating according to Specification SG-059.04 - Rev. A (1/10/1987)

- A) Maximum power transmitted by each gear at 15 rpm of the low speed shaft.
The power declared by SG-059.04 at service factor SF = 2.25 is 50 kW; the power calculated at the same service factor is:

Coupling Gear	Fast		Intermediate		Low	
	Pinion	Gear	Pinion	Gear	Pinion	Gear

ISO STANDARDS:

Bending Strength Power	kW	108	108	87	94	88	96
Pitting Resistance Power	kW	80	90	71	91	68	84

AGMA STANDARDS:

Bending Strength Power	kW	125	136	69	86	60	74
Pitting Resistance Power	kW	91	125	61	85	54	72

- B) Shaft Stress at service factor SF = 2.25 with 50 kW at 15 rpm of the low speed shaft (see drawing No. 500290038A):

Shaft		I (Fast)	II		III		IV (Low)
Rpm		960	236.3		55.8		15
Diameter	mm	80	120	115	173	147	254/170
Bending : moment	m . kg	254.8	937.5	500.8	2746.5	1681.2	2525.5
	stress	kg/mm ²	4.9	5.4	3.4	5.4	5.4
Torsion : moment	m . kg	116.2	471.5	471.5	1994.7	1994.7	7500
	stress	kg/mm ²	1.2	1.4	1.6	2	3.2

Steel shaft allowable stress from AGMA 420.04 and for 39NiCrMo3 UNI 7845 steel with 90 kg/mm² (128.000 psi) of Tensile Strength and over 1 million cycles is: bending 12 kg/mm² (17.500 psi), torsion 6.6 kg/mm² (9.500 psi).



PARALLEL SHAFT GEAR REDUCERS

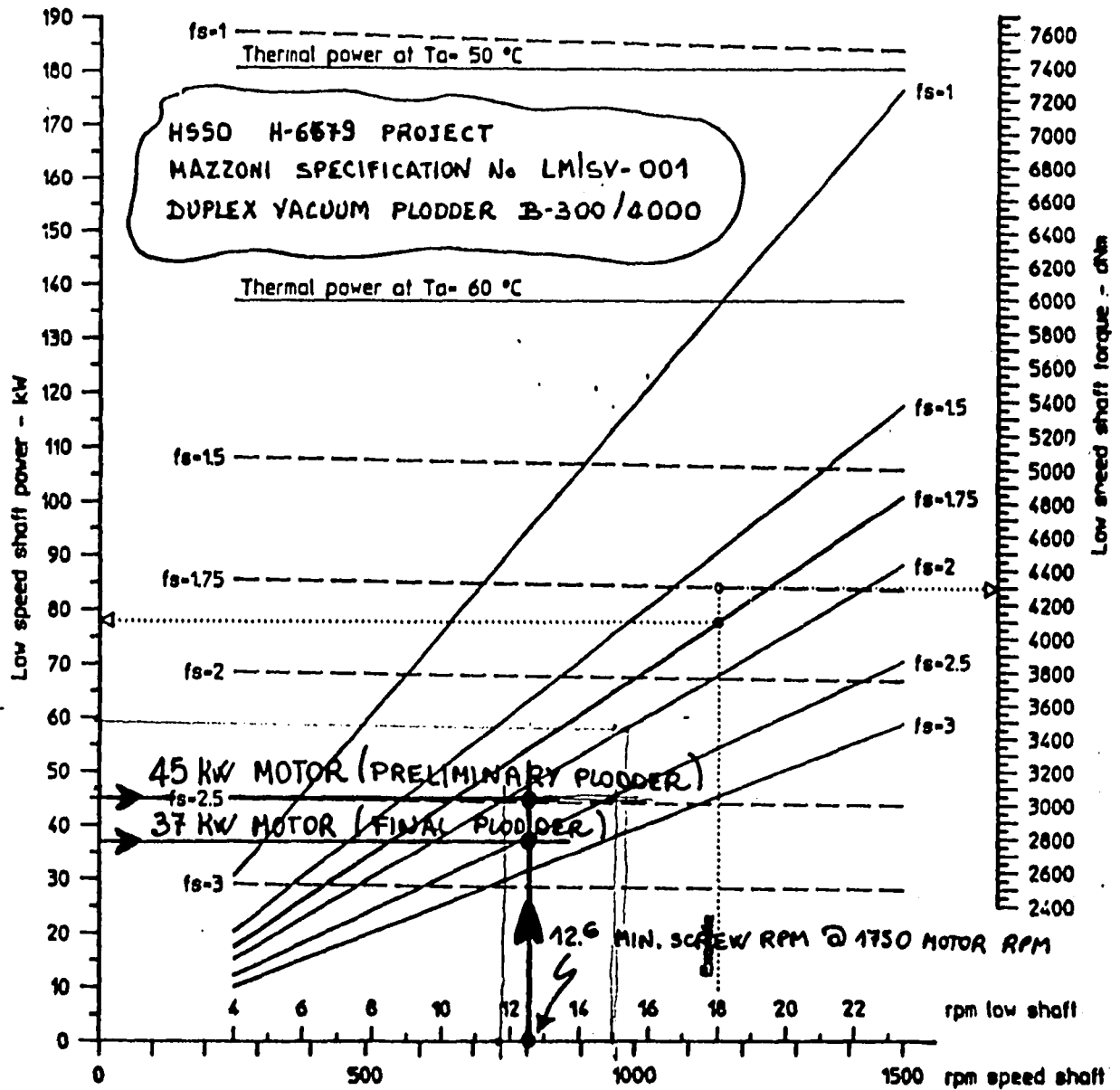
Model : R-400/31/P
 Gear ratio 1 = 64,009

RATING CURVES

— — Torque
 — — Power

T_a = temperature of air licking the reducer
 f_s = service factor, i.e. ratio between maximum power that reducer can transmit at those revolutions and power installed motor (minus yields)
 Thermal power : it is the power that can be applied in the inlet of the reducer licked by air at T_a temperature, without exceeding 95 °C oil temperature

- Load capacity verified according to AGMA , DIN , ISO standards



- VALUES WITH 1.75 SERVICE FACTOR REFERRED TO LOW SPEED SHAFT -

REV.	rpm	4	6	8	10	12	14	16	18	20	22
TORQUE	dNm	4342	4336	4330	4323	4317	4311	4304	4298	4292	4286
POWER	KW	17.5	26.2	34.9	43.6	52.2	60.8	69.4	77.9	86.5	95

SG-059.04 - Rev A 01/10/87

MAZZONI

MAZZONI-FALK-ELLI REDUCER COMPARISON

Reducer	Mazzoni R3	Mazzoni R-400/31/P	Mazzoni R-450/31/P	Falk 405-A3	Falk 465-A3	Falk 485-A3	Elli C3/400	Elli C3/450	
Application	B-350 old type	B-350 new standard type	B-400 new standard type	No. 2 405 replace No. 1 R3	corresponds to R-400	corresponds to R-450	corresponds to R-400	corresponds to R-450	
		B-300 new type oversized for HSSO	B-350 new type oversized for HSSO						
Torque at 15 rpm at SF=1 (from catalog)	kg.m lb.m	2500 + 2500 217 + 217	7650 664	10700 928	2670 232	8825 766	12155 1055	7852 682	9970 865
Ratio		1:36.3	1:64	1:80	1:38	1:58	1:78	1:63	1:80
Inlet shaft ø	mm in	52 2.05	52 2.05	62 2.44	44.5 1.75	63.5 2.50	76.2 3.00	55 2.165	65 2.559
Outlet shaft ø	mm in	109 4.29	170 (1) 6.69	200 (1) 7.48	127 5	184 7.25	216 8.50	200 (1) 7.87	220 (1) 8.66
Dimensions	mm in	1250 x 870 x h 1300 49.2 x 34.2 x h 51.2	1530 x 615 x h 900 60.2 x 24.2 x h 35.4	1640 x 590 x h 1000 64.6 x 23.2 x h 39.4	1036 x 579 x h 541 40.8 x 22.8 x h 21.3	1473 x 737 x h 787 58 x 29 x h 31	1676 x 838 x h 889 66 x 33 x h 35	1480 x 600 x h 870 58.3 x 23.6 x h 34.3	1670 x 690 x h 965 65.8 x 27.2 x h 38
Weight	kg lb	2340 (2) 5160 (2)	2300 5070	2800 6170	852 1880	2360 5200	3400 7500	2000 4410	2700 5950

- (1) Values relevant to the hollow shaft hole.
 (2) This weight includes the support weight.

March 21, 1988
 G. MAZZONI S.p.A.

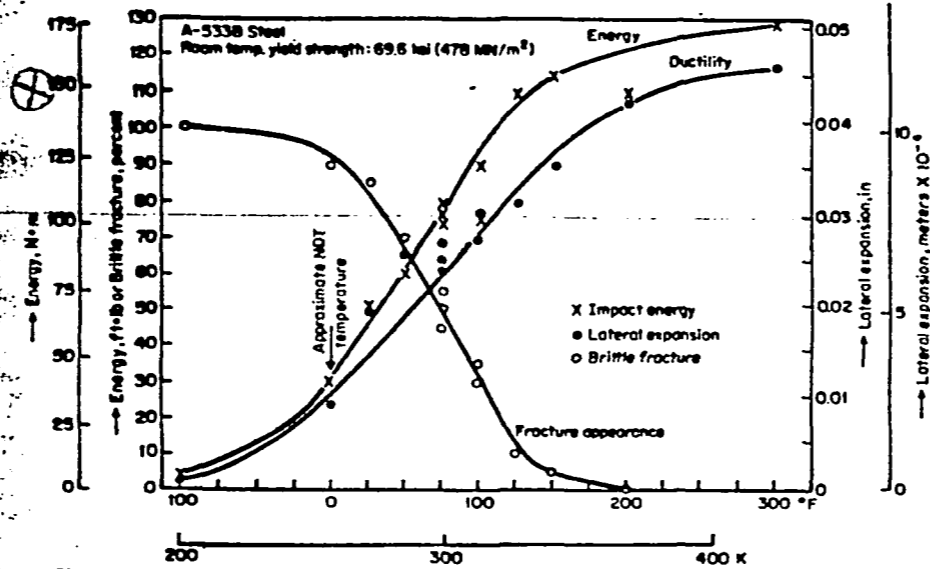


Fig. 16 CVN transition curves. (Data from Westinghouse B-3-D Lab.)

that as K_I is increased, a value K_{Ic} is reached at which unstable crack propagation occurs. K_{Ic} depends on plate thickness B , as

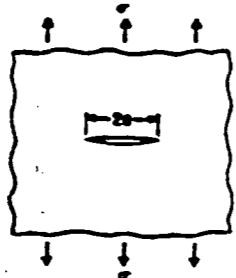


Fig. 18 Through-thickness crack geometry.

shown in Fig. 16. It attains a constant value when B is great enough to provide plane-strain conditions at the crack tip. The low plastic value of K_{Ic} is an important material property known as the plane-strain critical stress intensity or fracture toughness K_{Ic} . Values for a number of materials are shown in Table 4. They are influenced strongly by processing and small changes in composition, so that the values shown are not necessarily typical. K_{Ic} can be used in the critical form of Eq. (1)

$$K_{Ic}^2 = Q\sigma_u^2 \quad (2)$$

to predict failure stress when a maximum flaw size in the

material is known or to determine maximum allowable flaw size when the stress is set. The predictions will be accurate so long as plate thickness B satisfies the plane-strain criterion: $B \geq (2.5)(K_{Ic}/\sigma_u)^2$. They will be conservative if a plane-strain condition does not exist. A big advantage of the fracture-mechanics approach is that stress intensity can be calculated by equations analogous to (1) for a wide variety of geometries,

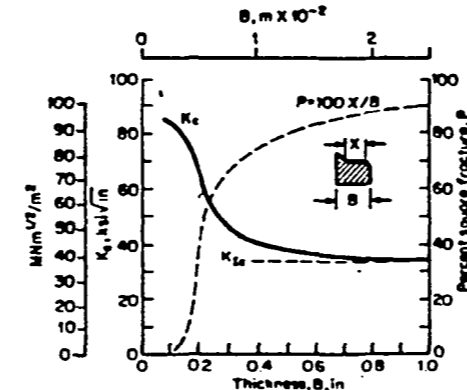


Fig. 19 Dependence of K_{Ic} and fracture appearance (in terms of percentage of square fracture) on thickness of plate specimens. Based on data for aluminum 7075-T6. (From Soudki and Brice, STP-181, ASTM.)

Table 4. Room-Temperature K_{Ic} Values on High-Strength Materials*

Material	0.2% YS, 1,000 in ² (MN/m ²)	K_{Ic} , 1,000 in ² √in (MN m ^{3/2} /m ²)
18% Ni maraging steel	300 (2,060)	46 (30.7)
18% Ni maraging steel	270 (1,810)	71 (46)
18% Ni maraging steel	198 (1,340)	87 (56)
Titanium 6-4 alloy	152 (1,022)	39 (25)
Titanium 6-4 alloy	140 (960)	75 (48.5)
Aluminum alloy 7075-T6	73 (516)	24 (15.6)
Aluminum alloy 7075-T6	64 (440)	39 (25)

*Determined at Westinghouse Research Laboratories.

types of crack, and loadings (P. C. Paris and G. C. Sih, "Stress Analysis of Cracks," STP-181, ASTM, 1965). Failure occurs in all cases when K_I reaches K_{Ic} . Fracture mechanics also provides a framework for predicting the occurrence of stress-corrosion cracking by using Eq. (2) with K_{Ic} replaced by K_{Isc} , which is the material parameter denoting resistance to stress-corrosion-crack propagation in a particular medium (see B. F. Brown, The Application of Fracture Mechanics to Stress-Corrosion Cracking, Metall. Rev., 13, 1968, p. 171).

Two standard test specimens for K_{Ic} determination are specified in ASTM E199, which also specifies details of specimen preparation and test procedure.

FATIGUE

Fatigue is generally understood as the gradual deterioration of a material which is subjected to repeated loads. In fatigue testing, a specimen is subjected to periodically varying constant-amplitude stresses by means of mechanical or magnetic devices. The applied stresses may alternate between equal positive and negative values, from zero to maximum positive or negative values, or between unequal positive and negative values. The most common loading is alternate tension and compression of equal numerical values obtained by rotating a smooth cylindrical specimen while under a bending load. A series of fatigue tests are made on a number of specimens of the material at different stress levels. The stress endured is then plotted against the number of cycles sustained. By choosing lower and lower stresses, a value may be found which will not produce failure, regardless of the number of applied

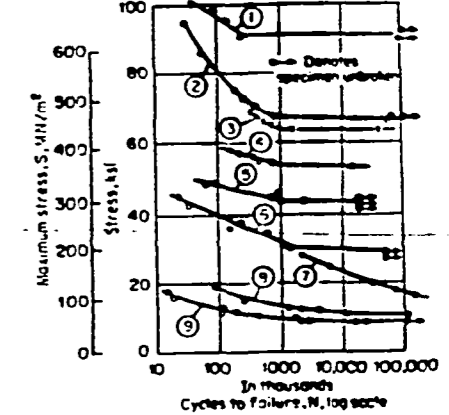


Fig. 17 S-N diagrams from fatigue tests: (1) 1.20 C steel, quenched, drawn 1400 (113 K); (2) SAE 420, quenched, drawn 1200 (82.7 K); (3) after structural steel; (4) SAE 1140, quenched, drawn 1200 (82.7 K); (5) SAE 4140, normalized, annealed; (6) military structural steel; (7) aluminum; (8) copper, annealed; (9) cast iron. (Reversed bending.)

cycles. This stress value is called the fatigue limit. The diagram is called the stress-cycle diagram or S-N diagram. Instead of recording the data on cartesian coordinates, either stress plotted vs. the logarithm of the number of cycles (Fig. 17) both stress and cycles are plotted to logarithmic scales. S-N diagrams show a relatively sharp bend in the curve near the fatigue limit for ferrous metals. The fatigue limit may be established for some steels between 2 and 10 million cycles. Nonferrous metals usually show no clearly defined fatigue limit. The S-N curves in these cases indicate a continuous decrease in stress values to several hundred million cycles; both the stress value and the number of cycles sustained should be reported.

The mean stress (the average of the maximum and minimum stress values for a cycle) has a pronounced influence on the stress range (the algebraic difference between the maximum and minimum stress values). Several empirical forms

Table 5. Typical Approximate Fatigue Limits for Reversed Bending

Metal	Tensile strength, 1,000 lb/in ²	Fatigue limit, 1,000 lb/in ²	Metal	Tensile strength, 1,000 lb/in ²	Fatigue limit, 1,000 lb/in ²
Cast iron	20-50	6-10	Copper	32-50	12-17
Malleable iron	50	24	Aluminum	70-120	20-30
Cast steel	60-80	24-32	Phosphor bronze	55	12
Armco iron	44	24	Titanium, annealed	65	21
Plain carbon steel	60-150	25-75	Cast aluminum alloys	18-30	6-11
SAE 6150, heat-treated	200	80	Wrought aluminum alloys	25-70	6-16
Niraltloy	125	80	Magnesium alloys	20-45	7-17
Brasses, various	25-75	7-20	Allyl, various, as cast	4-6	41
Zirconium crystal bar	52	16-18	Titanium (Ti-5Al)	91	41

Source: 1,000 lb/in² = 6.894 × stress, MN/m².

made by the *distortion-energy* theory, according to which the criterion is

$$(\sigma_1 - \sigma_2)^2 + (\sigma_2 - \sigma_3)^2 + (\sigma_3 - \sigma_1)^2 = 2(\sigma_w)^2$$

Stress-strain curves in the plastic region for combined stress loading can be constructed. However, a particular stress state does not determine a unique strain value. The latter will depend on the stress-state path which is followed.

Plane strain is a condition where strain is confined to two dimensions. There is generally stress in the third direction, but because of mechanical constraints, strain in this dimension is prevented. Plane strain occurs in certain metalworking operations. It can also occur in the neighborhood of a crack tip in a tensile loaded member if the member is sufficiently thick. The material at the crack tip is then in triaxial tension, which condition promotes brittle fracture. On the other hand, ductility is enhanced and fracture is suppressed by triaxial compression.

Stress Concentration In a structure or machine part having a notch or any abrupt change in cross section, the maximum stress will occur at this location and will be greater than the stress calculated by elementary formulas based upon simplified assumptions as to the stress distribution. The ratio of this maximum stress to the nominal stress (calculated by the elementary formulas) is the stress-concentration factor K_t . This is a constant for the particular shape and is independent of the material, provided it is isotropic. The stress-concentration factor may be determined experimentally or, in many cases, theoretically from the mathematical theory of elasticity. The factors shown in Figs. 6 to 13 were determined from both

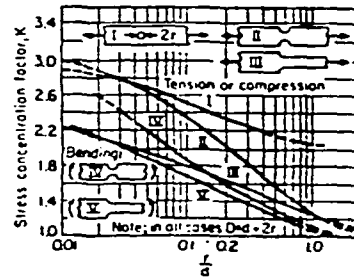


Fig. 6 Flat plate with semi-circular fillets and grooves or with holes, in tension or compression.

photoelastic tests and the theory of elasticity. Stress concentration will cause failure of brittle materials if the concentrated stress is larger than the ultimate strength of the material. In ductile materials, concentrated stresses higher than the yield strength will generally cause local plastic deformation and redistribution of stresses (rendering them more uniform). On the other hand, even with ductile materials areas of stress concentration are possible sites for fatigue if the component is cyclically loaded.

FRACTURE AT LOW STRESSES

Materials under tension sometimes fail by rapid fracture at stresses much below their strength level as determined in tests

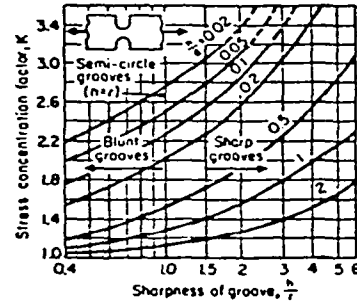


Fig. 7 Flat plate with grooves, in tension.

on carefully prepared specimens. These brittle, unstable, or catastrophic failures originate at preexisting stress-concentrating flaws which may be inherent in a material.

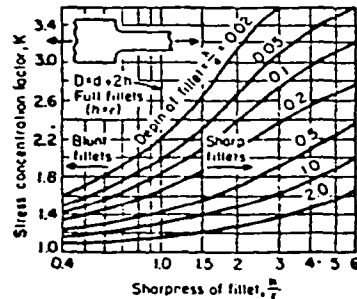


Fig. 8 Flat plate with fillets, in tension.

The transition-temperature approach is often used to ensure fracture-safe design in structural-grade steels. These materials exhibit a characteristic temperature, known as the *ductile-brittle transition* (DBT) temperature, below which they are susceptible to brittle fracture. The transition-temperature approach to fracture-safe design ensures that the transition temperature of a material selected for a particular application is suitably

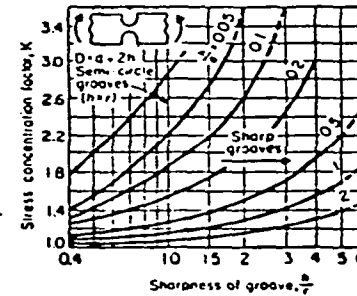


Fig. 9 Flat plate with grooves, in bending.

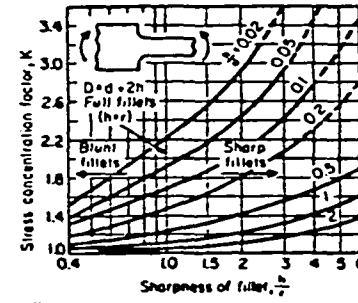


Fig. 10 Flat plate with fillets, in bending.

matched to its intended use temperature. The DBT can be detected by plotting certain measurements from tensile or impact tests against temperature. Usually the transition to brittle behavior occurs over a transition-temperature range in which behavior is complex, being neither fully ductile nor fully brittle. The range may extend over a 200°F (110 K)

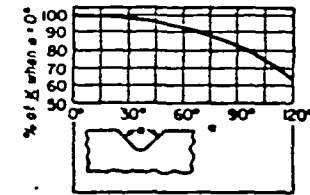


Fig. 11 Flat plate with angular notch, in tension or bending.

interval. The all-ductility temperature (NDT), determined by the drop-weight test (see ASTM E208), is an important reference point in the transition range. When NDT for a particular steel is known, temperature-stress combinations can be specified which define the limiting conditions under which catastrophic fracture can occur. (See W. S. Pellini and P. P. Puzak, *NRL Repts.* 5920 and 6030 1963.)

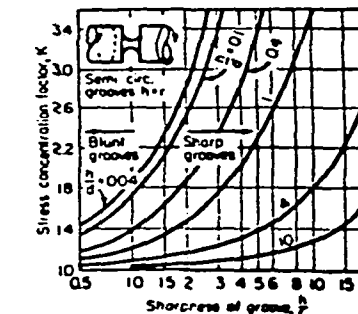


Fig. 12 Stress-concentration factors for grooved shaft in tension.

In the Charpy V-notch (CVN) impact test, a notched specimen (Fig. 15) is used which is loaded in bending (ASTM A370-71). The energy absorbed from a swinging pendulum in fracturing the specimen is measured. The pendulum strikes the specimen at 16 to 19 ft (4.86 to 5.80 m/s) so that specimen deformation associated with fracture occurs at a rapid strain rate. This ensures a conservative measure of toughness, since in some materials, toughness is reduced at high strain rates. A CVN impact energy vs. temper-

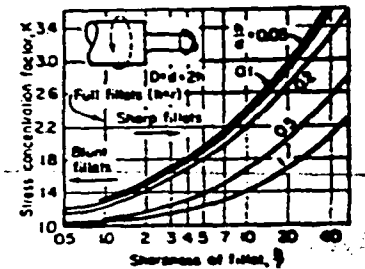


Fig. 13 Stress-concentration factors for fillet shaft in tension.

curve is shown in Fig. 14, which also shows the transition given by percent brittle fracture and by percent lateral extension. The CVN energy has no analytical significance. This is useful mainly as a guide to the fracture behavior of material for which an empirical correlation has been established between impact energy and some rigorous fracture criterion. For a particular grade of steel the CVN curve is correlated with NDT. (See *ASME Boiler and Pressure Vessel Code*, sec. III, NB-2100.)

Fracture Mechanics This analytical method is used for ultra-high-strength alloys, transition-temperature materials below the DBT temperature, and some low-strength materials in heavy section thickness.

Fracture-mechanics theory (see Irwin, *Dimensional Geometric Aspects of Fracture*, in "Fracture of Engine Materials," ASM, 1964; also STP-381, ASTM, 1965) with cracks of maximum acuity where crack tip radius is of the order of interatomic dimensions. This ensures the effect of a crack is conservatively evaluated, since strain energy is used in initiating unstable propagation. The prediction is concerned with a through-thickness crack section-loaded plate (Fig. 15) which is large enough so the crack-tip stress field is not affected by the plate edges. Fracture-mechanics theory states that unstable crack growth occurs when the work required for an increment of extension, namely, surface energy and energy consumed in local plastic deformation, is exceeded by the elastic energy released at the crack tip. The elastic stress field around one of the crack tips in Fig. 15 is characteristic

of the stress intensity K_I , which has units of $\text{lb}/\text{in}^2 \sqrt{\text{in}}$ or $\sqrt{\text{N}/\text{m}^2}$. It is a function of applied nominal stress σ , crack length a , and a geometry factor Q :

$$K_I = Q\sigma\sqrt{a}$$

for the situation of Fig. 15. For a particular material it is

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4. Service Factors

4.1 Before a reducer can be selected for any given application, the equivalent horsepower is computed by multiplying the specified or actual horsepower by the service factor for the particular load classification for which the unit is to be used. It is necessary that the unit selected have a capacity equal to or in excess of this equivalent horsepower. The recommended service factors for various load classifications and duration of service are shown for several types of prime movers in Table 1.

4.2 Load classifications for various applications are given in Table 2. They are classified into three commonly recog-

nized load classifications: Uniform, Moderate Shock, and Heavy Shock.

4.3 Service factors represent the normal relationship between gear design power rating and the continuous power requirements. Applications involving unusual or severe loading or requiring a high degree of dependability should be carefully reviewed with the manufacturer before a service factor is applied.

4.3.1 Applications with high-torque motors and motors for intermittent operations, and applications where extreme repetitive shock occurs or where high-energy loads must be absorbed, as when stalling, require special consideration and are not covered by the service factors given in Table 1.

Table 1 Service Factors

Prime Mover	Duration of Service	Driven Machine Load Classifications		
		Uniform	Moderate Shock	Heavy Shock
Electric Motor, Steam Turbine, or Hydraulic Motor	Occasional ½ hr. per day	0.50	0.80	1.25
	Intermittent 3 hrs. per day	0.80	1.00	1.50
	Over 3 hrs. up to and incl. 10 hrs. per day	1.00	1.25	1.75
	Over 10 hrs. per day	1.25	1.50	2.00
Multi-Cylinder Internal Combustion Engine	Occasional ½ hr. per day	0.80	1.00	1.50
	Intermittent 3 hrs. per day	1.00	1.25	1.75
	Over 3 hrs. up to and incl. 10 hrs. per day	1.25	1.50	2.00
	Over 10 hrs. per day	1.50	1.75	2.25
Single Cylinder Internal Combustion Engine	Occasional ½ hr. per day	1.00	1.25	1.75
	Intermittent 3 hrs. per day	1.25	1.50	2.00
	Over 3 hrs. up to and incl. 10 hrs. per day	1.50	1.75	2.25
	Over 10 hrs. per day	1.75	2.00	2.50

4.4 When drives are equipped with brakes on the input, and the torque rating of the brake exceeds the rating of the motor, the rating of the brake dictates the selection of the gear unit.

4.5 The recommended service factors for Dry Dock Crane applications are given in Table 3. Due to the nature of these crane drives, the service factors are to be used for any duration of service.

4.6 When a fluid coupling is used between the prime mover and the gear unit, the service factor given in Table 1 for moderate or heavy shock may be modified based on the

unit manufacturer's analysis and recommendation for the application.

4.7 The maximum momentary or starting load must not exceed 200 per cent of rated load (100 per cent overload). Rated load is defined as the unit rating with a service factor of 1.0.

4.8 The service factors listed for paper mill applications are consistent with those shown in TAPPI (Technical Association of the Pulp and Paper Industry) Standard 406.08, "Service Factors for Gears on Major Equipment in the Paper and Pump Industry."

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Table 11 Lubrication Recommendations

Type of Unit	Low Speed Centers	Ambient Temperature Deg F			
		- 40 to 0	- 20 to + 25	15F to 60F Use AGMA No.	50F to 125F Use AGMA No.
Parallel Shaft Single Reduction	Up to 8 in. Over 8 in. up to 20 in. Over 20 in.	Automatic Transmission Fluid (or similar product*)	SAE 10W/30 or 10W/40 Motor Oil (or similar product*)	2 - 3	3 - 4
				2 - 3	4 - 5
				3 - 4	4 - 5
Parallel Shaft Double Reduction	Up to 8 in. Over 8 in. up to 20 in. Over 20 in.			2 - 3	3 - 4
				3 - 4	4 - 5
				3 - 4	4 - 5
Parallel Shaft Triple Reduction	Up to 8 in. Over 8 in. up to 20 in. Over 20 in.	2 - 3	3 - 4		
		3 - 4	4 - 5		
		4 - 5	5 - 6		
Planetary Gear Unit	OD Housing up to 16 in. OD Housing over 16 in.	2 - 3	3 - 4		
		3 - 4	4 - 5		
Spiral or Straight Bevel Gear Units	Cone Distance up to 12 in. Cone Distance Over 12 in.	2 - 3	4 - 5		
		3 - 4	5 - 6		

*When they are available, good quality industrial oils having similar properties are preferred over the automotive oils. The recommendation of automotive oils for use at ambient temperatures below +15°F is intended only as a guide pending widespread development of satisfactory low temperature industrial oils. Consult gear manufacturer before proceeding.

7.7.1.1 Under normal operating conditions, the lubricant should be changed every 2500 hours of operation or every six months, whichever comes first. Extended change periods may be established through periodic testing of oils.

7.7.1.2 A rapid rise and fall in temperature may produce condensation, resulting in the formation of sludge. Dust, dirt, chemical particles or chemical fumes also react with the lubricant. Sump temperatures in excess of those listed in Table 1 of Standard AGMA 250.03 will result in accelerated degradation of the lubricant. Under these conditions the lubricant should be changed every one to three months depending on severity.

7.7.2 Cleaning and Flushing. The lubricant should be drained while the gear drive is at operating temperature. The drive should be cleaned with a flushing oil.

7.7.2.1 Used lubricant and flushing oil should be completely removed from the system to avoid contaminating the new charge.

7.7.2.2 The use of a solvent should be avoided unless the gear drive contains deposits of oxidized or contaminated lubricant which cannot be removed with a flushing oil. When persistent deposits necessitate the use of a solvent, a flushing oil should be used to remove all traces of solvent from the system.

7.7.2.3 The interior surfaces should be inspected where possible, and all traces of foreign material removed. The new charge of lubricant should be added and circulated to coat all internal parts.

8. Lubrication - EP

(Lubricants with Extreme
Pressure (EP) Qualities)

8.1 These specifications apply only when gears are designed and rated in accordance with AGMA Standards. Normal service life can be anticipated from EP lubricants at temperatures from 160 to 200 deg F, depending on

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particular lubricant selected. Above this temperature, reduced life of lubricant must be anticipated. In circulating oiling systems and in splash oiling systems the temperature of the oil in the sump should be measured. Units operating above these temperatures or those operating in extremely humid or chemical-laden atmospheres may be subject to excessive sludge formation or corrosive products and should be referred to the gear manufacturer and lubricant supplier for their recommendations.

8.2 Type of Lubricant. Extreme pressure (EP) gear lubricants are petroleum-based lubricants containing special chemical additives and meeting the specifications shown in Table 6 of Standard AGMA 250.03. Mild EP gear lubricants recommended for enclosed gear drives are those containing either lead naphthenate or sulfur-phosphorous additives.

Mild EP gear lubricants should be used *only* when specified by the gear drive manufacturer.

8.3 Viscosity. The oil which is specified by number should be within the specified viscosity range shown in Table 10. Furthermore, it should have a minimum viscosity index. (ASTM D 2270) of 90.

8.4 Lubrication Recommendation. Table 12 shows the grade of oil to use for drives of all types. The lubricant selected must have a pour point below the lowest temperature expected.

8.5 Lubricant Maintenance. The specifications of paragraph 7.7 are to be followed.

Table 12 Recommended EP Lubricants

Type of Unit	Low Speed Centers	Ambient Temperature Deg F	
		15°F to 60°F Use AGMA No.	50°F to 125°F Use AGMA No.
Parallel Shaft Single Reduction	Up to 8 in.	2 - 3 EP	3 - 4 EP
	Over 8 in. up to 20 in.	2 - 3 EP	4 - 5 EP
	Over 20 in.	3 - 4 EP	4 - 5 EP
Parallel Shaft Double Reduction	Up to 8 in.	2 - 3 EP	3 - 4 EP
	Over 8 in. up to 20 in.	3 - 4 EP	4 - 5 EP
	Over 20 in.	3 - 4 EP	4 - 5 EP
Parallel Shaft Triple Reduction	Up to 8 in.	2 - 3 EP	3 - 4 EP
	Over 8 in. up to 20 in.	2 - 3 EP	4 - 5 EP
	Over 20 in.	4 - 5 EP	5 - 6 EP
Planetary Gear Unit	OD Housing up to 16 in.	2 - 3 EP	3 - 4 EP
	OD Housing over 16 in.	3 - 4 EP	4 - 5 EP
Spiral or Straight Bevel Gear Units	Cone Distance up to 12 in.	2 - 3 EP	4 - 5 EP
	Cone Distance over 12 in.	3 - 4 EP	5 - 6 EP

LIST OF CUSTOMERS USING OUR
 300-MM DIAMETER TWIN-SCREW PLODDER
 "SR/B-300" SIMPLEX REFINER
 "DR/B-300" DUPLEX REFINER
 "DVP/B-300" DUPLEX VACUUM PLODDER
 "TVP/B-300" TRIPLEX VACUUM PLODDER

Customer	Model	Q-tity	Product
<u>ALGERIA</u>			
Extraction De Smet	SR/B-300	1	Soap Base
Simmering-Graz-Pauker A.G.	SR/B-300	1	Soap Base
<u>AUSTRALIA</u>			
Paterson Zochonis	DVP/B-300	1	
<u>CANADA</u>			
Procter & Gamble, Hamilton	SR/B-300	1	Soap Base
<u>CHILE</u>			
Lever Santiago	DVP/B-300	1	Toilet Soap
<u>CHINA</u>			
Lever Shanghai	DVP/B-300	1	Toilet Soap
<u>EGYPT</u>			
Kato Aromatic	SR/B-300	1	Soap Base
Misr Oil & Soap	DVP/B-300	1	Toilet Soap
	SR/B-300	1	Soap Base
<u>FRANCE</u>			
Colgate Palmolive S.A., Courbevoie	SR/B-300	1	Superfatted Toilet Soap
U G S , Yainville	DVP/B-300	2	Laundry Soap
<u>GERMANY (FEDERAL REPU- BLIC)</u>			
Beiersdorf A.G.	DR/B-300/M-350	1	Soap Base
Henkel KGaA	SR/B-300	5	Methylcellulose
<u>GREAT BRITAIN</u>			
John Drury	SR/B-300	1	Soap Base
<u>HONDURAS</u>			
Inhalsa	TVP/B-300	1	Laundry Soap

Customer	Model	Q-tity	Product
<u>INDONESIA</u>			
LEVER Jakarta	DVP/B-300	4	Toilet Soap
	DVP/B-300	1	SLB
P.T. Bukit Perak	SR/B-300	1	Soap Base
<u>ITALY</u>			
Fissi	SR/B-300	1	Soap Base
Italsilva	TVP/B-300/M350/ M-350	1	Laundry Soap
Mira Lanza S.p.A.	SR/B-300	1	Toilet Soap
<u>IVORY COAST</u>			
Cosmivoire	DVP/B-300/M-350	1	Laundry Soap
<u>MALAYSIA</u>			
Colgate Palmolive (Malaysia)	DVP/B-300	1	SLB
<u>MEXICO</u>			
Mariano Salgado S.A. de C.V.	SR/B-300	1	Soap Base
Procter & Gamble	DVP/B-300/M-400	1	Toilet Soap
<u>NETHERLANDS</u>			
Unichema International	DR/B-300	1	Soap Base
<u>NIGERIA</u>			
Lever Aba	DVP/B-300	1	SLB
Lever Apapa	DVP/B-300	2	Toilet Soap
Nasco Household Products	DCB/B-300	1	Laundry /Toilet Soap
<u>PAKISTAN</u>			
Kohinoor Chemical Co.	DVP/B-300	1	Laundry /Toilet Soap
	SR/B-300	1	Laundry Soap
Lever Rahim Yar Khan	DVP/B-300	1	Toilet Soap
<u>PHILIPPINES</u>			
Lever	DVP/B-300	1	SLB
	DVP/B-300	1	Toilet Soap
	SR/B-300	1	Soap Base

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL 10262

THIS NUMBER, AND CODE NO. BELOW, MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO: G. MAZZONI, SpA
Viale Trentino 10/12
21052 Busto Arsizio
ITALY

LEVER BROTHERS COMPANY
DELIVER TO: 1155 ORIGINALS blvd.
Hammond, Indiana 46320
Attention: Mr. H. Welk

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		F.O.B. CIF Hammond, Indiana

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				Drive Coupling	2,900,000	
					Less Discount	
					7% & 3%	2,616,085
				Subtotal Rework Refiner:		61,442,000
				Spare Primary and Secondary Drive for B-300: Refiners similar to the one provided with the machines	33,270,000	
					Less Discount	
					7% & 3%	30,012,870
				Spare Primary and Secondary Drive for B-350: Duplex Vacuum plidders similar to the one provided with the machines	39,880,000	
					Less Discount	
					7% & 3%	39,975,750
				Inland Ocean Freight All Units: Insurance All Units		86,000,000
				Freight and Insurance Calculated on the basis of 14 Units at the rates quoted in your bid proposal.		
				Complete Total Purchase Order Price:		2,334,576,380

SECURITY OF INFORMATION
IS GOOD BUSINESS
FOR BOTH OF US
WE DEPEND UPON YOU TO KEEP
ALL INFORMATION CONFIDENTIAL

Page 9 of 16

AS QUOTED BY:

Please invoice promptly, IN DUPLICATE. Address to: HSSO PROJECT ACCOUNTANT
ACCOUNTS PAYABLE, Lever Brothers Co., 1200 Calumet
This order is not binding until Acknowledgment Copy is executed and returned to us.
WE RESERVE THE RIGHT TO EXTEND MATURITY DATE OF DISCOUNT INVOICES EIGHT DAYS
FROM DATE INVOICE IS RECEIVED.

APPROVED BY
[Signature]
AUTHORIZED SIGNATURE
[Signature]

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL.

BY (AUTHORIZED SIGNATURE) <i>[Signature]</i>	FOR (FIRM NAME) G. MAZZONI	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
-------------------------------------------------	-------------------------------	----------------	------------------------------------------------------------------------------------------------------------------------------

Customer	Model	Q-tity	Product
<u>SENEGAL</u>			
N.S.O.A.	DVP/B-300	1	Laundry Soap
<u>SOUTH AFRICA</u>			
Sealake Industries	DVP/B-300	1	Laundry Soap
<u>SRI LANKA</u>			
Lever Brothers (Ceylon) Ltd	DVP/B-300	2	Laundry Soap
<u>SUDAN</u>			
El Konoz Soap & Glycerine Factory	DVP/B-300	1	Laundry Soap
	SR/B-300	1	Laundry Soap
El Managil Soap Factory	DVP/B-300	1	Laundry Soap
<u>SYRIA</u>			
Ets H. & GH. Toumeh	SR/B-300	1	Soap Base
Kachlan Takieddine and Co.	DCB/B-300/M-350	1	Laundry/Toilet Soap
<u>TURKEY</u>			
Evyap	DVP/B-300	4	Toilet Soap
	SR/B-300	1	Laundry Soap
Sabuncuzade	DVP/B-300	1	Laundry/Toilet Soap
<u>UGANDA</u>			
Mukwano Industries 'U' Ltd	TVP/B-300	1	Laundry/Toilet Soap
<u>U.S.A.</u>			
Lever Bros Co., Los Angeles	DVP/B-300	1	Synthetic Toilet Soap (DOVE)
	SR/B-300	1	Toilet Soap
The Adrew Jergens Co.	SR/B-300	1	Soap Base
<u>VENEZUELA</u>			
Las Llaves S.A.	TVP/B-300	2	Laundry Soap
<u>ZAIRE</u>			
Amato Frères & Cie S.z.a.r.l.	DVP/B-300	1	Laundry Soap
Marsayco	DVP/B-300	1	Toilet Soap

LIST OF CUSTOMERS USING OUR
 350-MM DIAMETER TWIN-SCREW PLODDER
 "SR/B-350" SIMPLEX REFINER
 "DR/B-350" DUPLEX REFINER
 "DVP/B-350" DUPLEX VACUUM PLODDER
 "TVP/B-350" TRIPLEX VACUUM PLODDER

Customer	Model	Q-tity	Product
<u>ALGERIA</u>			
Extraction De Smet	DVP/B-350/B-400	1	Laundry Soap
	DVP/M-400/B-350	1	Toilet Soap
Simmering-Graz-Pauker A.G.	DVP/M-400/B-350	1	Toilet Soap
	DVP/B-350/B-400	1	Laundry Soap
<u>AUSTRALIA</u>			
Colgate-Palmolive Pty Ltd	SR/B-350	1	Soap Base
<u>CAMEROUN</u>			
C.C.C	TVP/B-350	1	Laundry/Transparent
<u>EGYPT</u>			
Misr Oil & Soap	DVP/B-350	1	Laundry Soap
<u>GERMANY (FEDERAL REPUBLIC)</u>			
Luhns & Co. GmbH	SR/B-350	1	Soap Base
<u>GREAT BRITAIN</u>			
Cussons	DVP/B-350	1	Laundry /Soap Base
Lever Bros Ltd	DVP/B-350	3	Toilet Soap
<u>INDIA</u>			
Lever Kandla	DVP/B-350	2	Toilet Soap
<u>INDONESIA</u>			
P.T. Sayap Mas Utama	SR/B-350	1	Soap Base
<u>ITALY</u>			
Lever Casalpusterlengo	DVP/B-350	1	Toilet Soap
<u>MEXICO</u>			
Colgate-Palmolive S.A.	SR/B-350	1	Soap Base



Customer	Model	Q-tity	Product
<u>NIGERIA</u>			
I.E.A.	DVP/B-350	1	Laundry/Soap Base
Paterson Zochonis	DVP/B-350	1	Soap Base
Paterson Zochonis, Aba	DVP/B-350	1	Laundry Soap
	DVP/B-350	3	Toilet Soap
	DVP/B-350	1	Laundry/Soap Base
Paterson Zochonis, Apapa	DVP/B-350	1	Laundry Soap
<u>PHILIPPINES</u>			
Colgate Palmolive Philippines	SR/B-350	1	Soap Base
Procter & Gamble	DVP/B-350	1	S L B
	SR/B-350	1	S L B
<u>SOUTH AFRICA</u>			
Lever	DVP/B-350	1	Toilet Soap
	SR/B-350	5	Toilet Soap
	SR/B-350	1	Soap Base
<u>TURKEY</u>			
Evyap	SR/B-350	1	Soap Base
<u>U. S. A.</u>			
Colgate Palmolive Co., Jersey City	SR/B-350	1	Soap Base
Colgate Palmolive Co., Kansas City	SR/B-350	2	Soap Base
Lever Bros Co., Hammond	DVP/B-350	3	Synthetic Toilet Soap
	SR/B-350	3	Soap Base
The Andrew Jergens Co.	DR/B-350	1	Soap Base
The Dial Corporation, Omaha	SR/B-350	1	Soap Base
<u>U.S.S.R.</u>			
Technopromimport	DR/B-400/B-350	2	Soap Base
	SR/B-350	2	Soap Base
	DVP/B-350	3	Soap Base
	DVP/B-350	2	Toilet soap

3
 4 **PLODDER SPECIFICATION SHEET**

5
 6 Module used for: design, inquiry, order issue, operating manual,

7
 8 **PLODDER**

9 Model	DUPLEX VACUUM PLODDER B-300/4000	
10 Plodder	PRELIMINARY	FINAL
11		
12 Worm type	CONSTANT	→
13 Worm material	AISI 204	→
14 Worm revolutions rpm	11,9	10,8
15 Extrusion type	LTC-B3	TC
16 Refining screen	B vs mesh	→
17 Supporting screen	/	/
18 Drilled plate:		
19 hole (No) x diam. (mm)	504 x 12 mm	/
20 Cross-sectional area %	40	/
21 Bar extrusion	/	TWIN SLUG
22 Production rate kg/h	4000	→

9 **PRODUCT**

Type	NORMAL TOILET SOAP (7)	
Trade-name		
Shape	Fed	Extruded
Density kg/m ³	PELLETS	CONTINUOUS SLUG
Temperature °C	610	1035
	32 ÷ 35	35 ÷ 38

18 **WORM THRUST BEARING SUPPORT (3)**

Max. extrusion pressure	bar	40
Life	hours	≥ 150'000

24 **COOLING LINE**

	Preliminary	Final
Plodder		
Min. inlet press.	bar 3	3
Inlet temperat.	°C 5 ÷ 7	→
Outlet temperat.	°C 11 ÷ 13	10 ÷ 12
Flow rate	m ³ /h 1,7	1,7
Transferred heat	kcal/h 11'000	10'000

27 **REDUCER (3) (B)**

28 Model	R-400/31/P →	
29 Reduction ratio	1:66 →	
30 Pulley pitch diam. mm	600 →	
31 Races: No x type	6 x 5V →	
32 High-speed shaft rpm	816 ÷ 204 →	
33 Low-speed shaft rpm	12,6 ÷ 3,2 →	
34 Service factor (2)	2,6 → 3,2	
35	ACCORDING TO AGMA STANDARDS	
36	SEE NOTE (B)	

34 **HEATING LINE (4)**

(4) HOT WATER PROVIDED BY CVST.	
Temperature	°C 20 ÷ 25 →
Flow rate	m ³ /h 0,6 →

40 **MOTOR** SUPPLIED AND INSTALLED BY OTHERS

AT LEVER BROTHERS HAMMOND PLANT.		
41 Make		
42 Model	DC →	
43 Power kW	45 ÷ 11,3	37 ÷ 9,3
44 Fixed or variable speed	VARIABLE SPEED →	
45 Revolutions rpm	1750 ÷ 440 →	
46 Variation ratio	4 ÷ 1 →	
47 Pulley pitch diam. mm	280 →	

40 **NOTES**

- (1) Defined as ratio between the torque rating and the driving torque available with the shown pulleys.
- (2) The service factor varies with the transmission ratio, and therefore with the driving pulley diameter, varies.
- (3) Load capacity of the reducer gears and support reversing gear (twin-worm plidders) is in compliance with AGMA, DIN and ISO standards.
- (4) Envisaged to send hot water to the barrels during long shutdowns; Duplex plidders have separate lines.
- (5) CUSTOMER'S REFERENCE
- (6) #1 DP460, #2 DP560, #3 DP660, #4 DP760
- (7) DESIGN DATA WILL BE CONCERNED ALSO FOR "HSSO" PRODUCT AFTER TESTING AT OUR TEST ROOM.
- (8) THE REDUCER, THE WORM THRUST BEARING SUPPORT AND THE OTHER MECHANICAL PARTS GUARANTEE 3 START-UPS/MINUTE, 24 HOURS/DAY, 7 DAYS/WEEK.

53 **PNEUMATIC CLUTCH**

54 Make	FAWICK AIRFLEX →	
55 Model	12 CB 350 →	
56 Torque rating dN.m	150,5 →	
57 %	275 (1)	334 (1)
58 Compr. air press. bar	5,25	5,25

62 R	D				
63 e	C				
64 v	B				
65					
66	A	Issue. Comp. <u>MB</u> Date <u>20/1/88</u> Appr. _____ Date _____	Compiler	Date	Approval Date

PLODDER SPECIFICATION SHEET

6 Module used for: design, inquiry, order issue, operating manual

8 **PLODDER**

9 Model DUPLEX VACUUM PLODDER B-350/5000

10 Plodder	<u>PRELIMINARY</u>	<u>FINAL</u>
12 Worm type	<u>CONSTANT</u>	<u>→</u>
13 Worm material	<u>AISI 304</u>	<u>→</u>
14 Worm revolutions rpm	<u>9</u>	<u>B 2</u>
15 Extrusion type	<u>LTC-B3</u>	<u>TC</u>
16 Refining screen	<u>50 US mesh</u>	<u>WITHOUT SCREEN</u>
17 Supporting screen	<u>/</u>	<u>/</u>
18 Drilled plate:		
19 hole (No) x diam. (mm)	<u>1260 x 8</u>	<u>/</u>
20 Cross-sectional area %	<u>33%</u>	<u>/</u>
21 Bar extrusion	<u>/</u>	<u>TWIN SLUG</u>
22 Production rate kg/h	<u>4536 (10000 lb)</u>	<u>→</u>

8 **PRODUCT**

9 Type NORMAL TOILET SOAP (7)

10 Trade-name	<u>Fed</u>	<u>Extruded</u>
12 Shape	<u>PELLETS</u>	<u>CONTINUOUS SLUG</u>
13 Density kg/m ³	<u>610</u>	<u>1035</u>
14 Temperature °C	<u>32 ÷ 35</u>	<u>35 ÷ 38</u>

27 **REDUCER (3) (B)**

28 Model R-450/31/P

29 Reduction ratio	<u>1:80</u>	<u>→</u>
30 Pulley pitch diam. mm	<u>600</u>	<u>→</u>
31 Races: No x type	<u>8 x 5V</u>	<u>→</u>
32 High-speed shaft rpm	<u>919 ÷ 230</u>	<u>→</u>
33 Low-speed shaft rpm	<u>11.5 ÷ 2.9</u>	<u>→</u>
34 Service factor (2)	<u>2.7</u>	<u>3.3</u>

35 ACCORDING TO AGMA STANDARDS
 36 SEE NOTE (B)

18 **WORM THRUST BEARING SUPPORT (3)**

19 Max. extrusion pressure bar	<u>40</u>
20 Life hours	<u>≥ 150'000</u>

24 **COOLING LINE**

25 Plodder	<u>Preliminary</u>	<u>Final</u>
26 Min. inlet press. bar	<u>3</u>	<u>3</u>
27 Inlet temperatur. °C	<u>5 ÷ 7</u>	<u>→</u>
28 Outlet temperatur. °C	<u>12 ÷ 14</u>	<u>10 ÷ 12</u>
29 Flow rate m ³ /h	<u>2.1</u>	<u>→</u>
30 Transferred heat kcal/h	<u>15'000</u>	<u>10'000</u>

34 **HEATING LINE (4) HOT WATER PROVIDED BY CUST.**

35 Temperature °C	<u>20 ÷ 35</u>	<u>→</u>
36 Flow rate m ³ /h	<u>0.7</u>	<u>→</u>

40 **MOTOR** SUPPLIED AND INSTALLED BY OTHERS AT LEVER BROTHERS HAMMOND PLANT.

41 Make	<u>DC</u>	<u>→</u>
42 Model	<u>DC</u>	<u>→</u>
43 Power kW	<u>55 ÷ 13.8</u>	<u>45 ÷ 11.3</u>
44 Fixed or variable speed	<u>VARIABLE SPEED</u>	<u>→</u>
45 Revolutions rpm	<u>1750 ÷ 440</u>	<u>→</u>
46 Variation ratio	<u>4 ÷ 1</u>	<u>→</u>
47 Pulley pitch diam. mm	<u>315</u>	<u>→</u>

- 40 **NOTES**
- (1) Defined as ratio between the torque rating and the driving torque available with the shown pulleys.
 - (2) The service factor varies with the transmission ratio, and therefore with the driving pulley diameter, varies.
 - (3) Load capacity of the reducer gears and support reversing gear (twin-worm plodders) is in compliance with AGMA, DIN and ISO standards.
 - (4) Envisaged to send hot water to the barrels during long shutdowns; Duplex plodders have separate lines.
 - (5) CUSTOMER'S REFERENCE.....
 - (6) #1 DP460, #2 DP560, #3 DP660, #4 DP760
 - (7) DESIGN DATA WILL BE OBTAINED ALSO FOR "HSSO" PRODUCT AFTER TESTING AT OUR TEST ROOM.
 - (8) THE REDUCER, THE WORM THRUST BEARING SUPPORT AND THE OTHER MECHANICAL PARTS GUARANTEE... 3... START UPS / MINUTE... 24 HOURS / DAY, 7 DAYS / WEEK.

53 **PNEUMATIC CLUTCH**

54 Make	<u>FAWICK AIRFLEX</u>	<u>→</u>
55 Model	<u>14CB400</u>	<u>→</u>
56 Torque rating dN·m	<u>222</u>	<u>→</u>
57 %	<u>370 (1)</u>	<u>450 (1)</u>
58 Compr. air press. bar	<u>5,25</u>	<u>5,25</u>

62 R	D				
63 e	C				
64 v	B				
65					
66	A	Issue. Comp. <u>MB</u>	Date <u>11/3/88</u>	Appr. _____	Date _____
		Compiler	Date	Approval	Date



Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, New Jersey 07632
(201) 894-6000

April 8, 1988

Mr. S. Rogora
G. Mazzone
P. O. Box 421
Busto Arsizio, Italy
21052

Reference your telex 3391/A2 to G. Hyson

Dear Mr. Rogora:

Considering the time schedule, we may not be able to conduct trials at Mazzone
with HSSO product.

Regards,


K. Radhakrishnan

KPR:1v1
6265k

cc: G. Hyson
F. Drescher
U. Oesch
D. Cotrupe

G. GERALD HYSON

APR - 7 1988

CC: F. DRESCHER
K. RADHAKRISHNAN

INCOMING MSG - APR 7, '88 2:58.58

LEVER BROS NJ EC
330576 GMAZZ I

TELEX NO. 3391/A2

07/04/1988

ATTN MR G.G. HYSON

RE PROJECT HSSO - H-6579 - HAMMOND, IN
TESTS WITH YR HSSO PRODUCT

REFERRING TO OUR FAX MESSAGE NO. F-706, DATED 3/17/88, PARA. 5)
, WE WOULD LIKE TO KNOW IF THE REQUESTED QUANTITY OF 1,000 KGS
OF HSSO PRODUCT HAS BEEN DELIVERED TO US.
YR PRODUCT MUST REACH US WITHIN APRIL 15TH. AFTER SUCH A
DEADLINE IT WILL BE IMPOSSIBLE TO CARRY OUT THE TRIALS ON OUR
NEW DESIGNED B-300 TWIN-WORM DUPLEX VACUUM PLODDER, AS THIS
UNIT SHALL HAVE TO BE DELIVERED TO OUR CUSTOMER.
IN ANTICIPATION OF YR REPLY
BEST RGDS
G. MAZZONI SPA

..

CC-MAZZUSA/SAP/SR

330576 GMAZZ I
LEVER BROS NJ EC

....

DISCONNECTED - APR 7, '88 3:02:25

**G. MAZZONI** S.p.A.

VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE



0331 - 684.064



FAX 0331 - 684511



TELEX 330576 GMAZZI



P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. G. Gerald Hyson
 LEVER BROTHERS COMPANY (INC)
 818 Sylvan Avenue
 Englewood Cliffs, NJ 07632
 U.S.A.

TB:A2:gm

BUSTO ARSIZIO,

March 17, 1988

FAX MESSAGE No. F-706

=====

Re: PROJECT HSSD - H-6579 - HAMMOND, IN

Dear Mr Hyson:

We thank you for your telex dated 14th instant, and as requested we are pleased to telofax you revised quotations for:

1A. No.4 (FOUR) SIMPLEX PELLETIZING REFINERS FOR 8,000 LB/HR CAPACITY

We propose you our Twin Worm Simplex Pelletizing Refiner, model 'B-300/4000', having the following main characteristics:

- capacity: 4,000 Kg/h of toilet soap pellets using refining screens up to 50 U.S. mesh
- driven by a 45 kW varidrive motor
- equipped with two constant pitch worms made in AISI 304 stainless steel - dia. of the worms 300 mm
- the plodder will be fitted with an R-400/31/P reducer with service factor 2.6 at 12.6 worm rpm.

As regards plodder specifications you may refer to the data given for the preliminary plodder of the attached sheet LM/SV-004 (already in your hand) relevant to the B-300/4000 Duplex Refiner.

PRICES: as per our detailed quotation No.24030 dated 2/18/88.

PRICE ALLOWANCE for the non-supply of the R-400/31/P reducer:
Lit. 20,970,000.--, as per fax message F-610 of
 3/8/88 addressed to Mr. P.K. Radhakrishnan.

EXTRA COST FOR THE SUPPLY of a large feed hopper: Lit. 1,420,000.--.



LEVER BROS CO (INC)

3/17/88

1B. No.4 (FOUR) DUPLEX PRE-REFINERS FOR 8,000 LB/HR CAPACITY

Also in this case we propose you our Twin-Worm Duplex Pre-Refiner, model 'B-300/4000', having the following main characteristics:

- capacity 4,000 kg/h of toilet soap pellets using refining screens up to 50 U.S. mesh
- driven by two 45 kW varidrive motors
- each stage equipped with two constant pitch worms of 300 mm dia. made in AISI 304 stainless steel
- each stage will be fitted with an R-400/31/P reducer with service factor 2.6 at 12.6 worm rpm
- plodder specifications: as per attached sheet LM/SV-004.

PRICES: as per our detailed quotation No.23997 dated 2/5/88.

PRICE ALLOWANCE for the non-supply of the two R-400/31/P reducers:
Lit. 41,940,000.--.

EXTRA COST for the supply of a large feed hopper for the preliminary stage, suitable to receive two soap batches from the amalgamator: Lit. 1,420,000.--.

We will foresee a connection for the level control (of your supply) in such a position that the proposed hopper may receive the second soap batch from the amalgamator without any problem.

2. No.4 (FOUR) DUPLEX VACUUM PLODDERS FOR 10,000 LB/HR CAPACITY

We propose you our new Twin-Worm Duplex Vacuum Plodder, model 'B-350/5000', having the following main characteristics:

- capacity: 5,000 kg/h of toilet soap bars using refining screens up to 50 U.S. mesh
- driven by the following varidrive motors:
 - 55 kW for the preliminary stage
 - 45 kW for the final stage
- each stage equipped with two constant pitch worms of 350 mm dia. made in AISI 304 stainless steel
- preliminary stage will be fitted with an R-450/RI/P reducer with service factor 2.7 at 11.5 worm rpm
- final stage will be fitted with an R-450/RI/P reducer with service factor 3.3 at 11.5 worm rpm
- plodder specifications: as per attached sheet LM/SV-008. *WMS 225 940 000*

PRICE for one B-350/5000 Duplex Vacuum Plodder: Lit. 264,750,000.--.

OPTIONALS: exactly the same listed for the B-300/4000 Duplex Vacuum Plodder, as per our quote 23965 dated 1/26/88, except for the extra cost for the supply of a bi-conical extrusion head in place of the simple cone, that for the B-350/5000 model is of Lit. 7,450,000.--.



LEVER BROS. CO (INC)

5/17/88

PRICE ALLOWANCE for the non supply of the two R-450/3I/P reducers:
Lit. 48,460,000.--.

EXTRA COST for the supply of a large feed hopper for the preliminary
 stage: Lit. 1,420,000.--.

It goes without saying that also for all today's prices are valid the sales conditions as set out in our fax message F-601 dated 3/7/88, to Mr. Drescher.

3. MINIMUM TEMPERATURE RISE THROUGH REFINERS AND PLODDERS

Please refer to the attached plodder specifications LM/SV-004 and 008.

4. GEAR BOXES

The reducers are sized according to the attached AGMA Standards 420.04 - page 6 - table 1 for the following application:

prime mover : electric motor
 duration of service : over 10 hours per day
 driven machine load classification: heavy shock.

The minimum service factor foreseen by the above AGMA Standards for this application is 2.00; the service factors foreseen in the quoted machines are never less than 2.25; therefore, the sizing of the reducers is correct.

The machines can operate at the minimum revolutions mentioned in the LM/SV Specifications with the shown drive and driven pulleys; since at low worm revolutions also the motors will operate at low revolutions, you have to install constant torque motors with separate fan in the whole speed variation range.

MAZZONI CANNOT ACCEPT TO REDUCE DRIVE PULLEY DIAMETER to obtain low worm revolutions with high motor revolutions; in fact, by operating in this way the service factor would go below the values fixed by the AGMA Standards.

5. TEST WITH YR HSSO PRODUCT

With regard to the tests to be performed in our workshop with your HSSO product on our newly designed B-300 twin-worm plodder, please ship us, as soon as possible, 1,000 kg of HSSO. We expect to be ready to conduct above trials towards the end of this month.

In about ten days we will advise you of the exact date to arrange for your technicians' visit.

As to product shipment, please send it to the Milan International Airport and follow the listed instructions:

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL-10262

THIS NUMBER, AND CODE NO. BELOW, MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO • **G. MAZZONI S.P.A.**
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO • **Mr. H. Wellk**
ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER: 8/2/88	DELIVERY REQUIRED: See Below	TERMS: See Below
SHIP VIA:		F.O.B.: C.I.F. Hammond, Indiana

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				Delivery of the Equipment in a timely manner is most important to Lever Brothers		
				<u>Lot 1</u>		
				Two (2) Pelletizing Refiners		
				Two (2) Duplex Refiners		
				Two (2) Duplex Plidders		
				One (1) Rework Refiner		
				Arrival F.O.B. Italian Port of Export No later than March 15, 1989		
				<u>Lot 2</u>		
				Two (2) Pelletizing Refiners		
				Two (2) Duplex Refiners		
				Two (2) Duplex Plidders		
				Two (2) Spare Drives Primary and Secondary Arrival		
				F.O.B. Italian Seaport No later than June 15, 1989		
				The above dates for Arrival of equipment at Italian Port of export are for purposes of assessing Liquidated		

SECURITY OF INFORMATION IS GOOD BUSINESS FOR BOTH OF US. WE DEPEND UPON YOU TO KEEP ALL INFORMATION CONFIDENTIAL.

AS QUOTED BY: **Page 10 of 16**

Please invoice promptly, IN DUPLICATE. Address to:
 ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632
 This order is not binding until Acknowledgment Copy is executed and returned to us.
 WE RESERVE THE RIGHT TO EXTEND MATURITY TO FORTY EIGHT DAYS FROM DATE INVOICE IS RECEIVED.

HSSO Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

APPROVED BY: *[Signature]*
 AUTHORIZED SIGNATURE: *[Signature]*

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL

BY: (AUTHORIZED SIGNATURE): <i>[Signature]</i>	FOR: (FIRM NAME): G. MAZZONI	DATE: 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
---------------------------------------------------	----------------------------------------	------------------------	------------------------------------------------------------------------------------------------------------------------------



LEVER BROS CO (INC)

3/17/88

G. MAZZONI SPA - Busto Arsizio
 c/o: ANTONELLI TRANSIT AIR S.r.l.
 Milan Airport - AIFREIGHT PREPAID
 Milan, Italy

Indicate on the Airway Bill "Notify consignee on arrival of material by calling 0331/684064"

The correct address is:

G. MAZZONI S.P.A.
 Via Trentino 10/12
 21052 BUSTO ARSIZIO, Italy.

- b. Send with the Airway Bill:
- pro-forma invoice in 4 copies, with exact specifications of the airfreighted product
 - packing list in 4 copies
 - certificate of origin in 1 copy (not applicable for ECC countries for which circulation certificate is requested)
- c. The day the goods leave, please telex us the following:
- Airway Bill Number
 - Name of airline, flight number and departure date
- d. Send us via airmail, special delivery, or DHL Courier:
- 3 copies of the pro-forma invoice
 - 2 copies of the packing list
 - 1 copy of the Airway Bill.

Your co-operation will greatly facilitate prompt handling and processing of your shipment.

Looking forward to receiving your news and hoping to be favoured with your valued orders,

Very truly yours,
 G. MAZZONI S.p.A.

A. Mazzoni
 A. Mazzoni

Attach:

cc: Mr. K.P. Radhakrishnan, Englewood Cliffs
 Mr. F.A. Dresher, Englewood Cliffs
 G. Mazzoni USA Inc.
 SAP/SR/D

G. MAZZONI
S.p.A.

G. MAZZONI S.p.A.

VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE

0331 - 684.084

FAX 0331 - 684511

TELEX 330576 GMAZZI

P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. G. Gerald Hyson
Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
U.S.A.

A/rm

Handwritten: HARRY STEVENS
FEB 1 - 1988

BUSTO ARSIZIO, January 26, 1988

Re: Project HSSO - H-6579
4 (four) Duplex Vacuum Plidders for Hammond, Indiana

Dear Mr. Hyson:

Referring to your above enquiry dated 1/14/88, we are pleased to send you, herewith enclosed, our detailed quotation, in quadruplicate, regarding 4 (four) Duplex Vacuum Plidders, model "B-300/4000", each having an hourly capacity of 4,000 kg of toilet soap bars.

As requested, our proposal has been issued in accordance with your below listed documents:

- General Conditions - Sale & Delivery (GC-1)
- General Conditions - Installation & Service Personnel (GC-4)
- General Specification - Equipment Noise (GS-18).

As regards:

- Specification 5900K and Vendor Data Requirements - Exhibit # 1
- General Specification Machinery Guards - GS-12
- DC Variable Speed Drive Controller - Specification # 16645
- Clean Design 5887K,

you may refer to our enclosure No. 1, being part of our above quotation No. 23965, where we have answered and commented, item by item, all points of your above detailed specifications.

Attached, you will also find:

- current service charges for sending our technician
- preliminary dimension drawing No. LMIS-0018
- table SG-057, showing the worm characteristics of the new Mazzone modular plidders.

Gear Reducers

Plidders will be equipped with new parallel helical gear reducers, made of carburized steel, of our design and manufacture, with load capacity verified according to AGMA, DIN and ISO standards. Calculation data of each reducer can be found in the enclosed specifications LM/SV and in the quotation of each machine.

However, if desired, our company is available for collaborating with your Technical Department on the development of new alternative solutions of mutual interest.

With regard to the manufacture characteristics of the above gear reducers, we guarantee their good operation within a period of 24 months (instead of 12) from the start-up, but not later than 30 months from the shipment date, provided that units are kept in good conditions from their receipt up to their start-up.

Moreover, should the reducers be damaged due to causes not imputable to us, we will engage ourselves to carry out technological modifications on them in accordance with your requests at a reasonable cost and with the supply of spare parts, if any, at special reduced prices.

We will not quote mechanical spare parts for the above gear reducers, since, as already advised, we guarantee the free replacement of these parts within a period of 24 operating months from the start-up, should mechanical problems (due to faulty reducer designing or manufacturing) be experienced.

For your information only, we are pleased to attach one copy of the ISO Standards relevant to the "Calculation of Load Capacity of Spur and Helical Gears".

Last but not least, we also enclose:

- drawing 500290039 (2 sheets), showing the new reducer installed on our 'B-300' twin-worm plidders
- drawing 500070077A, showing the twin-worm plodder support
- drawing 500390003A, showing the assembling of the pneumatic clutch to the high speed shaft of the reducer
- diagram SG 059.04 - Rev. A, showing the rating curves.

Discounts

As per agreement in force, our today's prices are subject to 7% Unilever discount. However, as from your 1/14/88 enquiry we realize that you will order more identical units simultaneously, we will also grant you a special quantity discount.

Freight and insurance charges

Since the units making up the first lot (2 Chip-Mixers, 2 Duplex Vacuum Plodders, 2 Simplex Pelletizing Refiners, 2 Simplex Pre-Refiners and 1 Rework Refiner) will be shipped all together, we do not indicate separate freight and insurance expenses for each item, but a total cost for all above items making up the first lot:

- Approx. ocean freight expenses up to Baltimore/New York, THC charges and trucking expenses up to Hammond Factory (import duty excluded):
LIT. 30.000.000,-
- Approx. insurance expenses: LIT. 8.000.000,-

We appreciate the opportunity of submitting our proposal for this new HSSO Project and we trust that you may find it possible to favour us with your valued order. We would welcome any comment you may have on our proposal and should you desire any possible changes, please do not hesitate to contact us and we will do our best to accomodate you.

Very truly yours,

G. MAZZONI S.p.A.


G. Corradini

Encl.

cc.: G. Mazzoni U.S.A. Inc., St. Louis
cc.: SAP+SR



G. MAZZONI

G. MAZZONI S.p.A.

VIALE TRENINO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE

0331 - 684.064

FAX 0331 - 684511

TELEX 330576 GMAZZI

P.O. BOX 421 - 21052 BUSTO ARSIZIO

Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
U.S.A.

'B-300/4000'

January 26, 1988

BUSTO ARSIZIO.

PROJECT HSSO - H-6579 HAMMOND, INDIANA

QUOTATION NO. 23965

4 (FOUR) DUPLEX VACUUM PLODDERS

(twin-worm)

MODEL: B-300/4000

CAPACITY OF EACH UNIT: 4,000 KG/H OF TOILET SOAP BARS.

Each Duplex Vacuum Plodder is designed for the final refining, compacting and air free extrusion of the product. The unit consists of two individual plidders mounted in tandem and connected to each other by a vacuum chamber.

The preliminary stage is a refining stage. Refining is achieved by using fine refining screens.

The final stage is for compaction and air free extrusion of the product. In some cases this stage can also be used for some refining too. Each plodder of the Duplex Vacuum Plodder consists of various modular elements:

- base
- reducer
- thrust bearing
- worm barrels and worms
- drive motor
- pelletizing head (preliminary stage)
- conical extrusion head (final stage)
- feed section
- electric controls

BASE

The base is made from heavy fabricated steel members and plates. This welded rigid base assures proper alignments and quiet vibration free operation. The base supports and connects the reducer, the thrust bearing and the worm barrel. It also protects and encloses the main drive motor, the V-belts and transmission pulleys between the drive and the reducer. The external surfaces of the base are covered with easily removable attractive side steel plates which permit quick easy internal inspection and maintenance. The working horizontal surfaces are covered with non-skid heavy duty checkered service platforms.

REDUCER

New parallel helical gear reducer, made of carburized steel. The shafts rotate on conical roller bearings. All gears are lubricated in an oil bath.

SUPPORT AND THRUST BEARING

The support connects the reducer with the extruder barrel and encloses the thrust bearing. Shaft and thrust bearing are considerably sized for torque transmission and to bear the axial thrust determined by the worm in working and start-up conditions under load.

WORM BARRELS AND WORMS

Two stainless steel worm barrels, each housing two 'CONSTANT' pitch refining worms for the refining and the extrusion stages. The worms are made of AISI 304 stainless steel. The front end of each worm is supported by a multi-ribbed plate ("spider") to reduce wear to a minimum. Each worm barrel is jacketed for high efficiency and 'high velocity' water cooling. The cooling water circuits and the worm barrels will be thermally insulated.

PELLETIZING-REFINING GROUP (preliminary stage only)

New pelletizing head designed for:

- reducing the frontal resistances (thus lowering the soap temperature)
- easy replacement of the drilled plate (composed of two reduced thickness discs)
- easy and quick cleaning of the pelletizing group.

The pelletizing-refining group consists of:

- a) worm support (spider)
- b) refining screens of 8 U.S. mesh
- c) pelletizing group composed of easy to remove and to replace interchangeable drilled plates with 12 mm diameter holes

- d) pelletizing group support which holds items a) and c) together
- e) reinforced knife holding shafts with special anti-scuffing material bushings, and with relevant knives embedded in item d)
- f) mechanical device mounted on bearings for opening and tilting the entire hinged pelletizing group.

FEED SECTION

The inlet of the preliminary plodder will have a flange for mounting a feed hopper (LEVER supply).

EXTRUSION CONICAL HEAD

Newly designed shorter extrusion conical head for better compaction and easier cleaning.

The extrusion group is complete with worm support (spider). In option, it may also be fitted with compression plate.

The conical extrusion head assembly with temperature control and thermometer is mounted on a movable trolley for ease of operation. A constant optimum slug extrusion temperature assures a smoother finish to the extruded slug.

The end of the cone will be threaded to receive a soap log die holder to be designed and supplied by LEVER. Die plate will be foreseen for twin log discharge.

The extrusion conical head will be also complete with a DYNISCO pressure transducer with indicator.

VACUUM CHAMBER AND VACUUM PUMP

The pellets from the preliminary plodder fall down into a vacuum chamber that serves as a feed hopper for the final plodder.

The vacuum chamber is made of stainless steel and is provided with heating jacket to prevent sweating. Vacuum chamber will be also provided with three sight glasses (one sight glass with wiper) and access mandoor.

We will also supply two connections for level controls and two 1" NPT connections for pressure switches, whose specifications have to be supplied to us at the time of the order.

Liquid ring vacuum pump to keep vacuum in the chamber is **EXCLUDED FROM OUR SUPPLY**; we will supply relevant connection.

MOTORS AND CLUTCHES

Each Duplex Vacuum Plodder requires the listed motors and clutches (motors of LEVER supply):

For Preliminary Stage

- SCR variable speed motor, 45 kW power,
- Airflex pneumatic clutch.

For Final Stage

- SCR variable speed motor, 37 kW power,
- Airflex pneumatic clutch.

For the Vacuum Pump

Fixed speed motor, kW power.

Matched V-belts and pulleys provide the most effective power transmission between the drive motor and the inlet shaft of the reducer.

For remote control, automatic operation of the preliminary and final stages pneumatic clutches are provided. These clutches stop and start the rotation of the worms without stopping and starting the motors.

AUTOMATION PREMOUNTING AND ACCESSORIES

Each Duplex Vacuum Plodder is supplied with these components:

- service floors without handrails
- vacuum gauge and electric contact vacuum control to maintain the vacuum within preset values
- control system for keeping dry the inner vacuum chamber wall
- independent premounted cooling water circuits for preliminary and final stages, complete with solenoid valves, thermometers and ball valves
- thermostatically controlled heater to ensure a constant extrusion head temperature
- two tachometer generators
- two jog buttons for the preliminary and final stages.

MATERIALS AND CONSTRUCTION SYSTEMS

All parts in contact with soap are made of AISI 304 stainless steel.

The plodder worms are made of AISI 304 stainless steel.

The construction is of the "modular" type, consisting of individual and interchangeable components.

PRICE for each unit:

SEE FAX
LIT. 225.940.000,-

EXCLUSIONS:

- two variable speed motors and starters for the plodders, but including Airflex pneumatic clutches, pulleys and V-belts for motors
- one fixed speed motor and starter for vacuum pump
- feed hopper for preliminary stage
- control panel - we will supply all control and power elements wired to a common terminal strip. Terminal strip housed in a NEMA-4 enclosure located on the left side of the unit. Enclosure will be externally mounted.
- air compressor, if any
- electric wiring from and to the plodder
- start-up of the unit
- anything else not specified in our proposal.

OPTIONALS:

EXTRA COSTS:

A) PLODDERS ARRANGED AT RIGHT-ANGLE

PRICE: LIT. 2.540.000,- (for each unit)

B) WIDENED PLATFORMS WITH PREMOUNTED HANDRAILS

On the left hand side of the plodder.

PRICE for plodders arranged "in line": LIT. 2.570.000,- (for each unit)

PRICE for plodders arranged "at right angle":
LIT. 3.650.000,- (for each unit)

C) EPOXY PAINT.

PRICE: LIT. 1.670.000,- (for each unit)

D) BI-CONICAL EXTRUSION HEAD

PRICE: LIT. 6.430.000,- (for each unit)

E) TEMPERATURE INDICATION

Besides the standard water outlet thermometer, we can supply a thermoresistance and digital indicator for:

- soap inlet and discharge temperature
- cooling water inlet and discharge temperature.

The thermoresistance which indicates the soap outlet temperature is fitted in the worm support.

PRICES for each unit:

First temperature indication: LIT. 520.000,-
Second temperature indication: LIT. 340.000,-
Each temperature indication besides the second one: LIT. 170.000,-

Temperature indication with mV signal and two alarm contacts, for each temperature: LIT. 520.000,-

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL-10262

THIS NUMBER AND CODE NO. BELOW MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO: **G. MAZZONI S.P.A.**
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO:

Mr. H. Welk
 ORIGINAL
LEVER BROTHERS COMPANY, INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		F.O.B. C.I.F. Hammond, Indiana

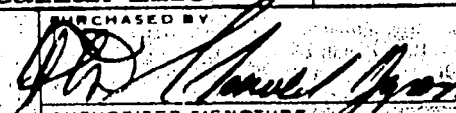
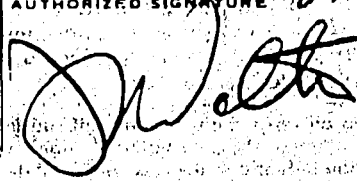
ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				<p>Damages for late shipment. Both parties recognize that Mazzoni's responsibility is to deliver the goods C.I.F. Lever Brothers Plant, Hammond, Indiana</p> <p>Mazzoni will pay liquidated damages at the rate of 0.5% (Half Percent) per week of delay beyond the above stated dates with a maximum liquidated damages of 5% (Five Percent) of the purchase order amount.</p> <p>The above clause shall not be applicable in the event the delay is due to reasons of force majeure.</p> <p><u>Terms of payment</u></p> <p>Thirty Five Percent (35%) of the Purchase Order price shall be payable upon receipt of Purchase Order by Mazzoni and the opening of the Bank Guaranty in the amount of thirty five percent (35%) of the Purchase Order amount by Mazzoni. (787,001,733) Italian Lire</p> <p>Fifty Five Percent (55%) of the Purchase Order price upon presentation by Mazzoni of an invoice accompanied by a copy of the ocean bill of lading.</p> <p>AS QUOTED BY: 1st. Shipment: (660,108,184) Italian Lire</p>		

SECURITY OF INFORMATION IS GOOD BUSINESS FOR BOTH OF US
 WE DEPEND UPON YOU TO KEEP ALL INFORMATION CONFIDENTIAL

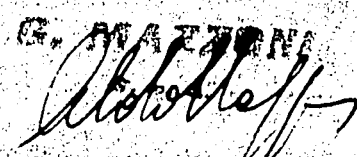
Page 11 of 16

Please invoice promptly, IN DUPLICATE. Address to:
 ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632
 This order is not binding until Acknowledgment Copy is executed and returned to us.
 WE RESERVE THE RIGHT TO EXTEND MATURITY DATE OF DISCOUNT INVOICES EIGHT DAYS FROM DATE INVOICE IS RECEIVED.

HSSD Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

PURCHASED BY

 AUTHORIZED SIGNATURE


THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL

BY (AUTHORIZED SIGNATURE) 	FOR (FIRM NAME) G. MAZZONI	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
------------------------------------------------------------------------------------------------------------------	-------------------------------	----------------	------------------------------------------------------------------------------------------------------------------------------

F) EXTRUSION PRESSURE INDICATION

The pressure is measured by a "DYNISCO" transducer, fitted in the worm support. Pressure is indicated by a "DYNISCO" analog pressure indicator with double set point alarm and voltage output signal.

In addition to the "DYNISCO" pressure transducer and indicator fitted to the spider of the final plodder extrusion conical head, already included in the basic machine price, alternatively, we also quote you the extra cost for an additional "DYNISCO" pressure transducer and indicator, to be fitted to the spider of the preliminary plodder pelletizing group.

PRICE for each pressure transducer and indicator: ✓ LIT. 1.810.000,-

Note:

Since we supply standard worm supports with connections for thermoresistance and pressure transducer, it is possible to purchase the basic machine without them and to install this equipment at any later date.

Couplings per Gaf

SALES CONDITIONS

GOODS DELIVERED

F.O.B. Northern Italy Port, packing included. Packing according to Unilever Packing Specifications dated March 1978.

APPROX. SHIPPING SPECIFICATIONS for the first lot (2 Duplex Vacuum Plidders)

- 2 cases, each having the following weight and dimensions:
 - gross weight : 12,000 kgs
 - dimensions : 6.40 x 2.00 x 3.20 mts

PRICES ARE FIRM AND NOT LIABLE TO ADJUSTMENT.

LESS 7% UNILEVER DISCOUNT.

QUANTITY DISCOUNT

Exceptionally, in addition to the 7% Unilever discount, in case of contemporaneous order for more identical units, we are willing to grant you the following additional special quantity discounts:

- 2% (two per cent) for two identical units
- 3% (three per cent) for three identical units
- 4% (four per cent) for four identical units.

DELIVERY DATE

For goods at our workshop, completed and ready for your inspection, if any, and shipment (as regards delivery date to the Italian seaport, you may consider about 15 days after your inspection date):

- 1st lot: 2 plidders: 9 months from receipt of your firm order and all technical details, except Force Majeure.
- 2nd lot: 2 plidders: 12 months from receipt of your firm order and all technical details, except Force Majeure.

Since two units (2nd lot) will be released within six months from your order date, should you decide to cancel them, we will charge you the following cancellation fees:

1 month from the order:	0
2 months from the order:	0
3 months from the order:	10%
4 months from the order:	20%
5 months from the order:	30%
6 months from the order:	50%.

PENALTY CLAUSE FOR LATE SHIPMENT

We accept penalties at a rate of 0.5% (half percent) per week of delay over 60 days from scheduled delivery date, with a maximum penalty of 5% (five per cent).

PAYMENT TERMS

- 20% advanced with the order,
- 70% against shipping documents,
- 10% after commissioning, but not later than 12 months after shipment date.

INSTALLATION

If requested, one of our servicemen will assist in the start-up of the machine(s) and will train your personnel in the operation and maintenance of the equipment.

All travelling and living expenses plus a daily labor rate will be on the customer's account.

GUARANTEES

Our equipment is guaranteed against defects arising from faulty design, materials or workmanship within a period of twelve calendar months (24 months for gear reducers) after testing but not later than eighteen months (30 months for gear reducers) from shipment date. We will accept liability to repair or replace any part that proves defective under normal use and service within the specified period (F.O.B. Genoa). We will not be liable for improper handling on your part or due to causes not attributable to us.

PRODUCT LIABILITY

We manufacture our plants and machines to the highest safety standards contemplated by the Italian laws, and, if required by our Customers, to any local safety regulation, being clearly understood that this may involve a price increase.

However, please rest assured that as already previously made, we will do our best to conform, as best as possible, our units to your OSHA Clauses and Federal Regulations, on the basis of the data and knowledges in our possession.

Any special safety device or arrangement required by local laws not specifically requested in writing by Customers when placing the order will be the sole responsibility of the Customer who should require a certification of the plant and/or machines from local safety inspector prior to put in operation the plant and/or machines. Any supplementary protection or safety device resulting eventually necessary will be for the Customer's cost and expense.

Copy of our current insurance policy covering "product liability" was sent to you with our letter dated 9/7/87.

As far as your General Conditions (GC-1), (GC-4) and Equipment Noise Specification (GS-18) are concerned, please note the following:

GENERAL CONDITIONS (GC-1)

We are in agreement with the above General Conditions for sale and delivery, except for point 8 "Insurance", which is dealt with separately and point 12 "Equal Employment Opportunity Certificate of Compliance". In fact we believe the "Contract and Purchase Order Supplement" would only apply to US Companies and not to Italian Companies as there could be some regulations which are not in line with Italian legislation. However, we will do our best to comply with such rules and regulations if possible and if applicable.

GENERAL CONDITIONS - INSTALLATION & SERVICE PERSONNEL (GC-4)

Our technicians will be sent over according to our Standard Conditions, which are attached to the quotation. These are our current conditions and are valid now.

Regarding **INSURANCE**, item 3 of your GC-4 General Conditions, we confirm you that our Service Personnel are usually covered by our Insurance Policy for personal injury or accident; as well as third party liability and damage to property, as per our Insurance Policy sent to you with our letter dated 9/7/87.

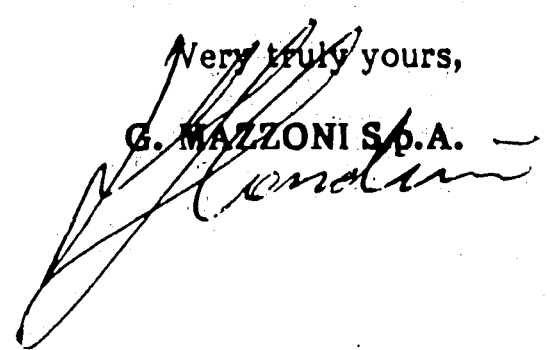
EQUIPMENT NOISE SPECIFICATION (GS-18)

We are sorry but we have not the necessary instrumentation to check the noise level in accordance with your above specifications. However, please note that the standard noise level of our machinery in operation without product and with our standard motors is: 80-81 dB(A) for amalgamator and pladders.

QUOTATION VALIDITY

This offer expires in 60 (sixty) days.

Very truly yours,
G. MAZZONI S.p.A.





Lever Brothers Company (Incorporated), Englewood Cliffs

January 26, 1988

ENCLOSURE NO. 1

(being part of our quotation # 23965)

As far as your Equipment Specification # 5900K is concerned, please find our comments hereunder:

1.0 GENERAL

1.1 Our attached quotation # 23965 already considers your Specifications GC-1, GC-4 and GS-18, see our notes on page 10.

As regards the other Specifications and precisely:

- GS-12 Machinery Guards

Please refer to para. "Product Liability", on page 9 of our quotation.

- 16845 DC Variable Speed Drive Controller

We have already contacted our motor supplier who will confirm us if RELIANCE DC varidrive motors, that we think to propose, meet your above specifications.

- Clean Design

All our machines are foreseen for an easy clean-up and are already designed to avoid that product and debris may collect under the unit.

Manufacturing features may be verified from the existing units supplied to your Hammond Factory in 1985.

However, in case of an order, additional devices may be defined with your technicians in order to study further protections that you will consider necessary.

1.2 OK

1.3 OK, see our comments.

1.4 Attached, please find our current service charges for sending our service personnel.

For your information, the time required to check the installation carried out by your local staff and to start-up the Duplex Vacuum Plodder is of about 2-3 days (supposing that the control system, in accordance with our ladder diagrams, and the wire assembly have already been completed correctly).

2.0 CAPACITY

We are proposing plidders of new design, equipped with 1/5 length/diameter ratio barrel which, if compared with the traditional ones, offer:

- higher production, having the same worm revolutions
- higher extrusion pressure
- better heat transfer in the barrel jacket.

As regards the temperature of 35-38°C of the soap bar leaving the Duplex Vacuum Plidders, above value cannot be guaranteed since it depends on the inlet temperature, we can only guarantee the temperature increase in the Duplex Vacuum Plodder which will be less than 2-3°C and such a value is acceptable if normal or superfatted toilet soap is processed, based on the low temperature of your cooling water. Being the soap processed by you a COMBO one, i.e. a combination between soap and synthetic, what stated hereunder applies.

All supplied technical data refer to normal toilet soap; since we do not know your product, above data must be ascertained with a test to be performed at our factory before going on with the final order definition. We will need 500 kg for each processed type.

The Duplex Vacuum Plidders will be capable of being shut-down and started-up three times/minute, see also point 7.6 for reducer design.

Regarding rpm, please refer to the attached diagram LM/SV-001.

3.0 DESCRIPTION

3.1 Preliminary Plodder

Our standard rotating knife may have from 10 to 20 blades. In case of an order, please confirm blade number.

Pressure Plate

The thickness increase of the refining drilled discs does not tally with 2-3°C temperature increase required in the Duplex Vacuum Plodder.

Owing to low temperature (5-7°C) of cooling water fed to barrels, during shut-downs the product cools in contact with cooling jacket and therefore, the start-up after becomes difficult. Therefore, a circuit of water with temperature controlled at 30-35°C (to be fed to barrels during prolonged shut-downs) is to be envisaged.

Refining Screens

Our standard foresees the supply of 2 sets of refining screens of 4 different types. In case of an order, please advise the desired range.

3.2 Vacuum Chamber

Positions of the various connections will be defined after placing the order.

3.3 Final Plodder

The extrusion cone will be complete with a local "DYNISCO" pressure transducer with panel indicator.

3.4 OK

3.5 Plodder Drives

A graph of torque versus output is not available, however please bear in mind that varying the worm rpm, the torque remains constant. Therefore, increasing the rpm number, the absorbed power linearly increases; for example: doubling the rpm the power doubles. The power needed to produce the requested output, is indicated in the attached specification LM/SV-001.

4.0 QUOTATION

4.1 We have proposed twin-screw plidders only.

4.2 Not considered.

4.3 OK for the separate external cooling water supply connections, but regarding flexible hoses, due to assembling requirements, it might be necessary to foresee an internal section made of a reinforced flexible hose, this to avoid the wear and tear of time. However, in case of an order, this particular will be defined, by mutual consent, between the technicians of your and our Company.

4.4 OK

4.5 OK

4.6 Optional Extras

- a) OK, see extra cost on page 6 of our quote and preliminary dimension drawing.
- b) OK, see extra cost on page 6 of our quote.
- c) OK, see extra cost on page 6 of our quote.
- d) The additional cost (wages) for sending one of our technicians for 2-3 days to check the installation and to start-up the plodder is approx. LIT. 1.000.000,-/1.500.000,-.
In addition, you will have to pay for all travelling and living expenses in local currency - please refer to the attached current service charges.
- e) OK, see extra cost on page 6 of our quote.
- f) We are awaiting technical data and prices from our local supplier. As soon as we receive them, we will send a telex with the price of the two RELIANCE DC varidrive motors.
- g) Separately, we quote the extra cost for the additional supply, if any, of temperature and extrusion pressure indication devices.

5.0 ADDITIONAL INFORMATION

Please refer to the attached diagram LM/SV-001.

6.0 STANDARDIZATION

6.1 Some parts of the plidders (such as bearings, seals, etc.) might be easily found in U.S.A., but logically other parts of our manufacture, such as gears etc., will not be available in the U.S.A.

6.2 OK.

7.0 VENDOR RESPONSIBILITY

7.1 Preliminary drawings for approval will be submitted within 60 days from the order date, while certified drawings will be submitted within 30 days from receipt of your approval.

7.2 OK

7.3 OK

7.4 OK

7.5 a) Recommended spare part lists will follow within 15-20 days.

b) Complete part lists will be submitted after placing the order.

7.6 We hereby declare that our gearboxes have been calculated according to AGMA, DIN and ISO standards - see also our covering letter. Reducers capable of withstanding, with the already shown guarantees, the loads requested by you, i.e. the unit will be capable of withstanding repeated starts and stops, as many as 3 per minute, are installed in the Duplex Vacuum Plidders. The attached specifications LM/SV-001 summarize all the reducer and drive calculation data as well as the worm revolutions and the motors necessary to obtain the output requested in the above conditions.

We reiterate how the reducer service factors calculated according to AGMA standards are 2.6 and 3.2 for preliminary and final plodder respectively.

According to AGMA standards 420.04 Dec. 1975 page 6 Table 1 the least necessary service factor in the requested working conditions, i.e. with electric motor, Heavy Shock Driven Machine Load Classifications, over 10 hours per day must be 2. Therefore, the reducers are considerably oversized and even the maximum value foreseen in the table 1, i.e. 2.50 is exceeded.

8.0 SHIPPING

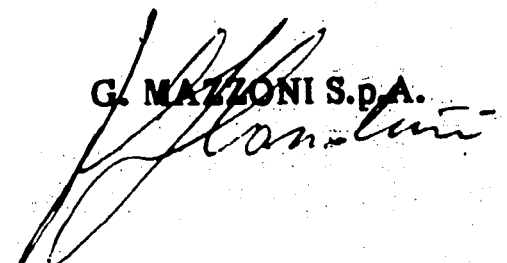
8.1 OK

8.2 OK

8.3 OK, see budget price on page 3 of our covering letter.

8.4 OK

G. MAZZONI S.p.A.



CONDITIONS FOR FIELD SERVICE**DAILY RATES****Regular Time**

The service rendered by our servicemen for plant installation and start-up will be charged at a rate of Italian Lire 60,000.-- per each working and travelling hour.

Non-working Holidays, save Sundays, while abroad will be invoiced at a rate of 8 (eight) working hours per day.

Overtime

All hours worked in excess of 40 (forty) hours per week will be charged at a rate of Italian Lire 90,000.-- per hour. No overtime rates apply while travelling.

The daily charges will be invoiced to the customer upon the completion of our servicemen's assignment.

MAXIMUM STAY TIME

Unless otherwise stipulated, our servicemen have the right to come back to Italy, for a short period, after 3 consecutive months of service and if an additional period time of stay of one month or more is required.

If the additional stay time is less than one full month, the servicemen can continue his stay time with no interruption.

If required, they will be replaced by other equivalent servicemen of our company.

In any case the serviceman has the right to come back for Christmas holidays. All travelling expenses will be wholly on the customer's account.

LIVING EXPENSES

Living expenses will be charged at a rate of Italian Lire 156,000.-- per day, or more so as to be sufficient to assure an adequate standard of living at site.

The customer is requested to pay the living expenses directly to our servicemen on a weekly basis.

These expenses are to be paid in advance.

In case customer provides full board and lodging to our serviceman's full satisfaction he has to give him a daily pocket money of Italian Lire 32,500.-- in local currency.

All local taxes, if any, to be levied on the fees and on the living expenses paid to our servicemen, will be wholly on the customer's account.

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-4000

PURCHASE ORDER NO. PL-10262

THIS NUMBER AND CODE NO. BELOW MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO •

G. MAZZONI S.P.A.
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO •

Mr. H. Welk
ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		C.I.F. Hammond, Indiana

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				<p>2nd. Shipment: (662,608,825) Italian Lire Ten percent (10%) of the purchase order price at time of start up but no later than twelve (12) months after shipment. (224,857,638) Italian Lire</p> <p>Mazzoni guarantees it will repair or replace C.I.F. Lever Brothers Plant, Hammond Indiana any equipment which becomes defective in design, material or workmanship within a period of twelve months after start up but in no event later than twenty four Months after shipment (Twenty Four months after start-up but in no event later than thirty six months after shipment for Drives)</p> <p>Mazzoni shall make available design drawings, calculations and Engineering data for review by representatives of Lever Brothers (including Lever Brothers Technical Consultants) in the offices of Mazzoni.</p> <p>In accordance with commercial spec 08409 Mazzoni shall provide to Lever Brothers Company within two weeks of Purchase Order a fabrication milestone schedule to facilitate order follow-up by Lever Brothers Company.</p> <p>Mazzoni will inform LBC at least 2 wks in advance when the equipment are ready for shipment for LBC to arrange for inspection.</p>		

SECURITY OF INFORMATION IS GOOD BUSINESS FOR BOTH OF US
WE DEPEND UPON YOU TO PROTECT ALL INFORMATION CONFIDENTIAL

AS QUOTED BY: Page 12 of 16

Please invoice promptly, IN DUPLICATE. Address to:
ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632
This order is not binding until Acknowledgment Copy is executed and returned to us.
WE RESERVE THE RIGHT TO EXTEND MATURITY DATE OF DISCOUNT INVOICES EIGHT DAYS FROM DATE INVOICE IS RECEIVED.

HSSO Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

APPROVED BY: *[Signature]*
AUTHORIZED SIGNATURE: *[Signature]*

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL BY (AUTHORIZED SIGNATURE) FOR (FIRM NAME) DATE

G. MAZZONI
[Signature]

DATE
8/2/88

THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.

TRAVELLING EXPENSES

Round trip, tourist class, air fare from Milan, Italy, will be on the customer's account. If a trip from Milan will exceed 5 flying hours a business (club) class air ticket is to be provided.

Daily local transportation to and from the factory is to be provided by the customer.

INSURANCE

Our servicemen are already insured against accidents, also for third party liability and property damages.

In case our servicemen have to go to countries where there is a state of war, civil war, declared or undeclared, the customer must effect an insurance against war death and permanent disablement resulting from such a state of political disturbance.


The customer shall have to furnish evidence of this effect prior to the departure of our servicemen.

PAYMENT TERMS

The listed services will be invoiced when our servicemen are dismissed by the customer.

We reserve the right to ask for a downpayment or an irrevocable letter of credit against these services, before our servicemen's departure.

G. MAZZONI S.p.A.



Customer's Signature

for acceptance:



G. MAZZONI S.p.A.

VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE



0331 - 684.064



FAX 0331 - 684511



TELEX 330576 GMAZZI



P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. F. A. Drescher
Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
U.S.A.

A/rm

BUSTO ARSIZIO, February 5, 1988

F. DRESCHER

**Re: Project HSSO - H-6579
4 (four) Duplex Pre-Refiners for Hammond, Indiana**

Dear Mr. Drescher:

Referring to your above enquiry dated 1/27/88, we are pleased to send you, herewith enclosed, our detailed quotation, in quadruplicate, regarding 4 (four) Duplex Pre-Refiners, model "B-300/4000", each having an hourly capacity of 4,000 kg of toilet soap pellets.

As requested, our proposal has been issued in accordance with your below listed documents:

- General Conditions - Sale & Delivery (GC-1)
- General Conditions - Installation & Service Personnel (GC-4)
- General Specification - Equipment Noise (GS-18).

As regards:

- Specification 5958K and Vendor Data Requirements - Exhibit # 1
- General Specification Machinery Guards - GS-12
- DC Variable Speed Drive Controller - Specification # 16645.
- Clean Design 5887K,

you may refer to our enclosure No. 1, being part of our above quotation No. 23997, where we have answered and commented, item by item, all points of your above detailed specifications.

Attached, you will also find:

- current service charges for sending our technician
- preliminary dimension drawing No. LMIS-0020
- table SG-057, showing the worm characteristics of the new Mazzoni modular plidders.



Gear Reducers

As made for the Duplex Vacuum Plidders (our quotation # 23965 dated 1/26/88) also the Duplex Refiners will be equipped with new parallel helical gear reducers, made of carburized steel, of our design and manufacture, with load capacity verified according to AGMA, DIN and ISO standards. Calculation data of each reducer can be found in the enclosed specifications LM/SV and in the quotation of each machine. Please also refer to our telex No. 955/SAP of 1/29/88 sent to your attention.

However, if desired, our company is available for collaborating with your Technical Department on the development of new alternative solutions of mutual interest.

With regard to the manufacture characteristics of the above gear reducers, we guarantee their good operation within a period of 24 months (instead of 12) from the start-up, but not later than 30 months from the shipment date, provided that units are kept in good conditions from their receipt up to their start-up.

Moreover, should the reducers be damaged due to causes not imputable to us, we will engage ourselves to carry out technological modifications on them in accordance with your requests at a reasonable cost and with the supply of spare parts, if any, at special reduced prices.

We will not quote mechanical spare parts for the above gear reducers, since, as already advised, we guarantee the free replacement of these parts within a period of 24 operating months from the start-up, should mechanical problems (due to faulty reducer designing or manufacturing) be experienced.

For your information only, one copy of the ISO Standards relevant to the "Calculation of Load Capacity of Spur and Helical Gears" was attached to our quotation for the 'B-300/4000' Duplex Vacuum Plidders.

Last but not least, we also enclose:

- drawing 500290039 (2 sheets), showing the new reducer installed on our 'B-300' twin-worm plidders
- drawing 500070077A, showing the twin-worm plodder support
- drawing 500390003A, showing the assembling of the pneumatic clutch to the high speed shaft of the reducer
- diagram SG 059.04 - Rev. A, showing the rating curves.

Discounts

As per agreement in force, our today's prices are subject to 7% Unilever discount. However, as from your 1/14/88 enquiry we realize that you will order more identical units simultaneously, we will also grant you a special quantity discount.



Freight and insurance charges for the first lot, consisting of two (2) Duplex Refiners:

- **Approx. ocean freight expenses up to Baltimore/New York, THC charges and trucking expenses up to Hammond Factory (import duty excluded):**
LIT. 11.000.000,-
- **Approx. insurance expenses:**
LIT. 3.000.000,-

The above costs must be added to the values of LIT. 30.000.000,- and LIT. 8.000.000,- proposed on 1/26/88 for freight and insurance expenses respectively, since we suppose that also two of the four proposed Duplex Refiners will be part of the first lot which is now consisting of 2 Chip-Mixers, 2 Duplex Vacuum Plodders, 2 Duplex Refiners, 2 Simplex Pelletizing Refiners, 2 Simplex Pre-Refiners and 1 Rework Refiner.

We appreciate the opportunity of submitting our proposal for this new HSSO Project and we trust that you may find it possible to favour us with your valued order. We would welcome any comment you may have on our proposal and should you desire any possible changes, please do not hesitate to contact us and we will do our best to accomodate you.

Very truly yours,

G. MAZZONI S.p.A.

A. Mazzoni

Encl.
cc : G. Mazzoni U.S.A. Inc., St. Louis
cc : SAP+SR



G. MAZZONI S.p.A.

VIALE TRENINO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE



0331 - 684.064



FAX 0331 - 684511



TELEX 330576 GMAZZI



P.O. BOX 421 - 21052 BUSTO ARSIZIO

Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
U.S.A.

'B-300/4000'

February 5, 1988

BUSTO ARSIZIO.

PROJECT HSSO - H-6579 HAMMOND, INDIANA

QUOTATION NO. 23997

4 (FOUR) DUPLEX PRE-REFINERS

(twin-worm)

MODEL: B-300/4000

CAPACITY OF EACH UNIT: 4,000 KG/H OF TOILET SOAP PELLETS.

Each Duplex Refiner is designed for the double homogenizing, refining and pelletizing of soap and similar products. Refining is achieved by using fine refining screens. Mazzoni refiners are constructed to use 55 European mesh size (American mesh number 50) refining screens.

Each Duplex Refiner is set up by two individual Simplex Refiners mounted in tandem and connected each other by an intermediate hopper.

Each plodder consists of various modular elements:

- base
- reducer
- thrust bearing
- worm barrels and worms
- pelletizing head
- feed section
- drive motor
- electric controls



BASE

The base is made from heavy fabricated steel members and plates. This welded rigid base assures proper alignments and quiet vibration free operation. The base supports and connects the reducer, the thrust bearing and the worm barrel. It also protects and encloses the main drive motor, the V-belts and transmission pulleys between the drive and the reducer. The external surfaces of the base are covered with easily removable attractive side steel plates which permit quick easy internal inspection and maintenance. The working horizontal surfaces are covered with non-skid heavy duty checkered service platforms.

REDUCER

New parallel helical gear reducer, made of carburized steel. The shafts rotate on conical roller bearings. All gears are lubricated in an oil bath.

SUPPORT AND THRUST BEARING

The support connects the reducer with the extruder barrel and encloses the thrust bearing. Shaft and thrust bearing are considerably sized for torque transmission and to bear the axial thrust determined by the worm in working and start-up conditions under load.

WORM BARRELS AND WORMS

Two stainless steel worm barrels, each housing two 'CONSTANT' pitch refining worms for the refining and the extrusion stages. The worms are made of AISI 304 stainless steel. The front end of each worm is supported by a multi-ribbed plate ("spider") to reduce wear to a minimum. Each worm barrel is jacketed for high efficiency and 'high velocity' water cooling. The cooling water circuits and the worm barrels will be thermally insulated.

PELLETIZING-REFINING GROUP (for preliminary and final stages)

New pelletizing head designed for:

- reducing the frontal resistances (thus lowering the soap temperature)
- easy replacement of the drilled plate (composed of two reduced thickness discs)
- easy and quick cleaning of the pelletizing group.

The pelletizing-refining group consists of:

- a) worm support (spider)
- b) refining screens of 20 U.S. mesh
- c) pelletizing group composed of easy to remove and to replace interchangeable drilled plates, as per our standards, with holes having an outlet diameter of 8 mm and which are embedded to 9.5 mm dia. See also the attached diagram 400060238A.



- d) pelletizing group support which holds items a) and c) together
- e) reinforced knife holding shafts with special anti-scuffing material bushings, and with relevant knives embedded in item d)
- f) mechanical device mounted on bearings for opening and tilting the entire hinged pelletizing group.

FEED SECTION

The inlet of the preliminary plodder will have a flange for mounting a feed hopper (LEVER supply).

INTERMEDIATE HOPPER

Placed between the two simplex refiners, of dustproof type and easy to inspect. Fitted with two sight-glasses, one on each side. Transparent cover made of plexiglas. Two connections for level controls and one 3" connection for dust collector of your supply, whose specifications have to be supplied at the time of the order.

MOTORS AND CLUTCHES

Each Duplex Refiner requires the listed motors and clutches (motors of LEVER supply):

For Preliminary Stage

- SCR variable speed motor, 45 kW power,
- Airflex pneumatic clutch.

For Final Stage

- SCR variable speed motor, 45 kW power,
- Airflex pneumatic clutch.

Matched V-belts and pulleys provide the most effective power transmission between the drive motor and the inlet shaft of the reducer.

For remote control, automatic operation of the preliminary and final stages pneumatic clutches are provided. These clutches stop and start the rotation of the worms without stopping and starting the motors.



AUTOMATION PREMOUNTING AND ACCESSORIES

Each Duplex Refiner is supplied with these components:

- service floors without handrails
- independent premounted cooling water circuits for preliminary and final stages, complete with solenoid valves, thermometers and ball valves
- two tachometer generators
- two jog buttons for the preliminary and final stages.

MATERIALS AND CONSTRUCTION SYSTEMS

All parts in contact with soap are made of AISI 304 stainless steel.

The plodder worms are made of AISI 304 stainless steel.

The construction is of the "modular" type, consisting of individual and interchangeable components.

PRICE for each unit:

LIT. 207.200.000,-



EXCLUSIONS:

- two variable speed motors and starters for the plodders, but including Airflex pneumatic clutches, pulleys and V-belts for motors
- feed hopper for preliminary stage
- control panel - we will supply all control and power elements wired to a common terminal strip. Terminal strip housed in a NEMA-4 enclosure located on the left side of the unit. Enclosure will be externally mounted.
- air compressor, if any
- electric wiring from and to the plodder
- start-up of the unit
- anything else not specified in our proposal.



OPTIONALS:

EXTRA COSTS:

A) PLODDERS ARRANGED AT RIGHT-ANGLE

PRICE: LIT. 2.540.000,- (for each unit)

B) WIDENED PLATFORMS WITH PREMOUNTED HANDRAILS

On the left hand side of the plodder.

PRICE for plidders arranged "in line": LIT. 2.570.000,- (for each unit)

PRICE for plidders arranged "at right angle": LIT. 3.650.000,- (for each unit)

C) EPOXY PAINT.

PRICE: LIT. 1.670.000,- (for each unit)

D) TEMPERATURE INDICATION

Besides the standard water outlet thermometer, we can supply a thermoresistance and digital indicator for:

- soap inlet and discharge temperature
- cooling water inlet and discharge temperature.

The thermoresistance which indicates the soap outlet temperature is fitted in the worm support.

PRICES for each unit:

First temperature indication:	LIT. 520.000,-
Second temperature indication:	LIT. 340.000,-
Each temperature indication besides the second one:	LIT. 170.000,-

Temperature indication with mV signal and two alarm contacts, for each temperature: LIT. 520.000,-

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE

ENGLEWOOD CLIFFS, N.J. 07632

TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL -10262

THIS NUMBER, AND CODE NO. BELOW, MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO • G. MAZZONI S.P.A.
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO • Mr. H. Welk
ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		F.O.B. C.I.F. Hammond, Indiana

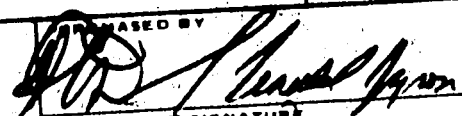
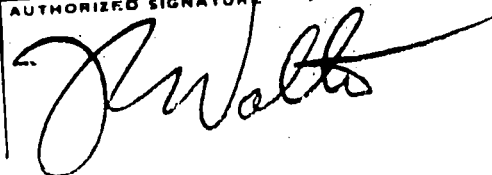
ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				<p>Vendor shall provide to Lever Brothers Company a monthly progress report to be issued by the tenth (10th.) of the month. The report must include the following information:</p> <ul style="list-style-type: none"> a. Engineering Status b. Material and Purchase Status c. Fabrication and Assembly status <p>A Bank Guarantee in the amount of thirty five percent (35%) of the value of the Purchase Order shall be provided by Supplier to Purchaser through a Prime New York Bank, at time of acceptance of this purchase order. The funds under this Guarantee shall be available upon presentation of a sight draft by Lever Brother to the Bank accompanied by a Notarized, statement Certifying Supplier did not utilize the thity five percent (35%) advance payment for engineering and purchase of materials on Lever Brothers project HSSO-6579. This Guarantee shall remain valid until equipment is delivered to the site Hammond, Indiana.</p> <p>This is a no-lien contract and all equipment furnished is pursuant to a no-lien contract, which will be recorded in the office of the recorder at Lake County, Indiana.</p>		

SECURITY OF INFORMATION
 IS GOOD BUSINESS
 FOR BOTH OF US
 WE DEPEND UPON YOU TO
 ALL INFORMATION CONFIDENTIAL

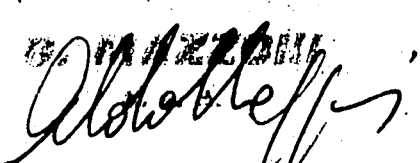
AS QUOTED BY: Page 13 of 16

Please invoice promptly, IN DUPLICATE. Address to:
 ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632.
 This order is not binding until Acknowledgment Copy is executed and returned to us.
 WE RESERVE THE RIGHT TO EXTEND MATURITY OF PAYMENT TO FORTY FIVE (45) DAYS
 FROM DATE INVOICE IS RECEIVED.

HSSO PROJECT ACCOUNT
 1200 CALUMET AVENUE
 HAMMOND, INDIANA 46320

APPROVED BY

 AUTHORIZED SIGNATURE


THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL.

BY (AUTHORIZED SIGNATURE) 	FOR (FIRM NAME) G. MAZZONI S.P.A.	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
-------------------------------------------------------------------------------------------------------------------	--------------------------------------	----------------	------------------------------------------------------------------------------------------------------------------------------



E) EXTRUSION PRESSURE INDICATION

The pressure is measured by a "DYNISCO" transducer, fitted in the worm support. Pressure is indicated by a "DYNISCO" analog pressure indicator with double set point alarm and voltage output signal.

PRICE for each pressure transducer and indicator: 2 LIT. 1.810.000,-

Note:

Since we supply standard worm supports with connections for thermoresistance and pressure transducer, it is possible to purchase the basic machine without them and to install this equipment at any later date.

completi fono fat



SALES CONDITIONS

GOODS DELIVERED

F.O.B. Northern Italy Port, packing included. Packing according to Unilever Packing Specifications dated March 1978.

APPROX. SHIPPING SPECIFICATIONS for the first lot (2 Duplex Refiners)

- 2 cases, each having the following weight and dimensions:
 - gross weight : 11,800 kgs
 - dimensions : 6.40 x 2.00 x 3.00 mts

PRICES ARE FIRM AND NOT LIABLE TO ADJUSTMENT.

LESS 7% UNILEVER DISCOUNT.

QUANTITY DISCOUNT

Exceptionally, in addition to the 7% Unilever discount, in case of contemporaneous order for more identical units, we are willing to grant you the following additional special quantity discounts:

- **2% (two per cent) for two identical units**
- **3% (three per cent) for three identical units**
- **4% (four per cent) for four identical units.**

DELIVERY DATE

For goods at our workshop, completed and ready for your inspection, if any, and shipment (as regards delivery date to the Italian seaport, you may consider about 15 days after your inspection date):

- 1st lot: 2 plidders: 9 months from receipt of your firm order and all technical details, except Force Majeure.
- 2nd lot: 2 plidders: 12 months from receipt of your firm order and all technical details, except Force Majeure.

Since two units (2nd lot) will be released within six months from your order date, should you decide to cancel them, we will charge you the following **cancellation fees**:

1 month from the order:	0
2 months from the order:	0
3 months from the order:	10%
4 months from the order:	20%
5 months from the order:	30%
6 months from the order:	50%.



PENALTY CLAUSE FOR LATE SHIPMENT

We accept penalties at a rate of 0.5% (half percent) per week of delay over 60 days from scheduled delivery date, with a maximum penalty of 5% (five per cent).

PAYMENT TERMS

- 20% advanced with the order,
- 70% against shipping documents,
- 10% after commissioning, but not later than 12 months after shipment date.

INSTALLATION

If requested, one of our servicemen will assist in the start-up of the machine(s) and will train your personnel in the operation and maintenance of the equipment.

All travelling and living expenses plus a daily labor rate will be on the customer's account.

GUARANTEES

Our equipment is guaranteed against defects arising from faulty design, materials or workmanship within a period of twelve calendar months (*24 months for gear reducers*) after testing but not later than eighteen months (*30 months for gear reducers*) from shipment date. We will accept liability to repair or replace any part that proves defective under normal use and service within the specified period (F.O.B. Genoa). We will not be liable for improper handling on your part or due to causes not attributable to us.

PRODUCT LIABILITY

We manufacture our plants and machines to the highest safety standards contemplated by the Italian laws, and, if required by our Customers, to any local safety regulation, being clearly understood that this may involve a price increase.

However, please rest assured that as already previously made, we will do our best to conform, as best as possible, our units to your OSHA Clauses and Federal Regulations, on the basis of the data and knowledges in our possession.

Any special safety device or arrangement required by local laws not specifically requested in writing by Customers when placing the order will be the sole responsibility of the Customer who should require a certification of the plant and/or machines from local safety inspector prior to put in operation the plant and/or machines. Any supplementary protection or safety device resulting eventually necessary will be for the Customer's cost and expense.

Copy of our current insurance policy covering "product liability" was sent to you with our letter dated 9/7/87.



As far as your General Conditions (GC-1), (GC-4) and Equipment Noise Specification (GS-18) are concerned, please note the following:

GENERAL CONDITIONS (GC-1)

We are in agreement with the above General Conditions for sale and delivery, except for point 8 "Insurance", which is dealt with separately and point 12 "Equal Employment Opportunity Certificate of Compliance". In fact we believe the "Contract and Purchase Order Supplement" would only apply to US Companies and not to Italian Companies as there could be some regulations which are not in line with Italian legislation. However, we will do our best to comply with such rules and regulations if possible and if applicable.

GENERAL CONDITIONS - INSTALLATION & SERVICE PERSONNEL (GC-4)

Our technicians will be sent over according to our Standard Conditions, which are attached to the quotation. These are our current conditions and are valid now.

Regarding **INSURANCE**, item 3 of your GC-4 General Conditions, we confirm you that our Service Personnel are usually covered by our Insurance Policy for personal injury or accident, as well as third party liability and damage to property, as per our Insurance Policy sent to you with our letter dated 9/7/87.

EQUIPMENT NOISE SPECIFICATION (GS-18)

We are sorry but we have not the necessary instrumentation to check the noise level in accordance with your above specifications. However, please note that the standard noise level of our machinery in operation without product and with our standard motors is: 80-81 dB(A) for amalgamator and plodders.

QUOTATION VALIDITY

This offer expires in 60 (sixty) days.

Very truly yours,

G. MAZZONI S.p.A.



Lever Brothers Company (Incorporated), Englewood Cliffs

February 5, 1988

ENCLOSURE NO. 1

(being part of our quotation # 23997)

As far as your Equipment Specification # 5958K is concerned, please find our comments hereunder:

1.0 GENERAL

1.1 Our attached quotation # 23997 already considers your Specifications GC-1, GC-4 and GS-18, see our notes on page 10.

As regards the other Specifications and precisely:

- GS-12 Machinery Guards

Please refer to para. "Product Liability", on page 9 of our quotation.

- 16645 DC Variable Speed Drive Controller

We have already contacted our motor supplier who will confirm us if RELIANCE DC varidrive motors, that we think to propose, meet your above specifications.

- Clean Design

All our machines are foreseen for an easy clean-up and are already designed to avoid that product and debris may collect under the unit.

Manufacturing features may be verified from the existing units supplied to your Hammond Factory in 1985.

However, in case of an order, additional devices may be defined with your technicians in order to study further protections that you will consider necessary.

1.2 OK

1.3 OK, see our comments.



1.4 Attached, please find our current service charges for sending our service personnel.

For your information, the time required to check the installation carried out by your local staff and to start-up the Duplex Refiners is of about 2-3 days (supposing that the control system, in accordance with our ladder diagrams, and the wire assembly have already been completed correctly).

2.0 CAPACITY

We are proposing plidders of new design, equipped with 1/5 length/diameter ratio barrel which, if compared with the traditional ones, offer:

- higher production, having the same worm revolutions
- higher extrusion pressure
- better heat transfer in the barrel jacket.

As regards the temperature of 35-38°C of the soap bar leaving the Duplex Refiners, above value cannot be guaranteed since it depends on the inlet temperature, we can only guarantee the temperature increase in the Duplex Refiner which will be less than 2-3°C and such a value is acceptable if normal or superfatted toilet soap is processed, based on the low temperature of your cooling water. Being the soap processed by you a COMBO one, i.e. a combination between soap and synthetic, what stated hereunder applies.

All supplied technical data refer to normal toilet soap; since we do not know your product, above data must be ascertained with a test to be performed at our factory before going on with the final order definition. We will need 500 kg for each processed type.

The Duplex Refiners will be capable of being shut-down and started-up three times/minute, see also point 7.6 for reducer design.

Regarding rpm, please refer to the attached diagram LM/SV-004.

3.0 DESCRIPTION

3.1 Preliminary Refining Section

Our standard rotating knife may have from 10 to 20 blades. In case of an order, please confirm blade number.

Pressure Plate

The thickness increase of the refining drilled discs does not tally with 2-3°C temperature increase required in the Duplex Refiner.

Owing to low temperature (5-7°C) of cooling water fed to barrels, during shut-downs the product cools in contact with cooling jacket and therefore, the start-up after becomes difficult. Therefore, a circuit of water with temperature controlled at 30-35°C (to be fed to barrels during prolonged shut-downs) is to be envisaged.



Tapered Holes

As described in our quotation, item c) on page 2, interchangeable drilled plates will be provided with holes as per our standard design, viz. having an outlet diameter of 8 mm and which are embedded to 9.5 mm dia., as per attached drawing 40060238A.

For the time being, we do not quote the requested tapered holes provided with 12 mm holes inlet and 8 mm discharge, because in accordance with our experience, the proposed standard holes are more indicated for the extrusion of compacted soap pellets, when refining screens are placed before the drilled plate.

However, if expressly desired, we might propose you drilled plates with tapered holes, with relevant extra cost.

Refining Screens

We have foreseen standard 20 mesh screens, as requested. However, since our standard supply foresees 2 sets of refining screens of 4 different types, in case of an order, please advise the desired range.

3.2 Intermediate Hopper

OK, positions of the various connections will be defined after placing the order.

3.3 Final Refiner

The same note as per para. 3.1 (preliminary refining section).

3.4 OK

3.5 Refiner Drives

A graph of torque versus output is not available, however please bear in mind that varying the worm rpm, the torque remains constant. Therefore, increasing the rpm number, the absorbed power linearly increases; for example: doubling the rpm the power doubles. The power needed to produce the requested output, is indicated in the attached specification LM/SV-004.

4.0 QUOTATION

4.1 We have proposed twin-screw plidders only.

4.2 Not considered.



4.3 OK for the separate external cooling water supply connections, but regarding flexible hoses, due to assembling requirements, it might be necessary to foresee an internal section made of a reinforced flexible hose, this to avoid the wear and tear of time. However, in case of an order, this particular will be defined, by mutual consent, between the technicians of your and our Company.

4.4 OK

4.5 OK, but the NEMA-4 enclosure located on the left side of the machine will be externally mounted.

4.6 Optional Extras

- a) OK, see extra cost on page 6 of our quote and preliminary dimension drawing.
- b) OK, see extra cost on page 6 of our quote.
- c) OK, see extra cost on page 6 of our quote.
- d) The additional cost (wages) for sending one of our technicians for 2-3 days to check the installation and to start-up the plodder is approx. LIT. 1.000.000,-/1.500.000,-.
In addition, you will have to pay for all travelling and living expenses in local currency - please refer to the attached current service charges.
- e) We are awaiting technical data and prices from our local supplier. As soon as we receive them, we will send a telex with the price of the two RELIANCE DC varidrive motors.
- f) Separately, we quote the extra cost for the additional supply, if any, of temperature and extrusion pressure indication devices.

5.0 ADDITIONAL INFORMATION

Please refer to the attached diagram LM/SV-004.

6.0 STANDARDIZATION

6.1 Some parts of the plidders (such as bearings, seals, etc.) might be easily found in U.S.A., but logically other parts of our manufacture, such as gears etc., will not be available in the U.S.A.

6.2 OK.



7.0 VENDOR RESPONSIBILITY

7.1 Preliminary drawings for approval will be submitted within 60 days from the order date, while certified drawings will be submitted within 30 days from receipt of your approval.

7.2 OK

7.3 OK

7.4 OK

7.5 a) Recommended spare part lists will follow within 15-20 days.

b) Complete part lists will be submitted after placing the order.

7.6 We hereby declare that our gearboxes have been calculated according to AGMA, DIN and ISO standards - see also our covering letter. Reducers capable of withstanding, with the already shown guarantees, the loads requested by you, i.e. the unit will be capable of withstanding repeated starts and stops, as many as 3 per minute, are installed in the Duplex Refiners. The attached specifications LM/SV-004 summarize all the reducer and drive calculation data as well as the worm revolutions and the motors necessary to obtain the output requested in the above conditions.

We reiterate how the reducer service factors calculated according to AGMA standards are 2.6 for preliminary and final stage.

According to AGMA standards 420.04 Dec. 1975 page 6 Table 1 the least necessary service factor in the requested working conditions, i.e. with electric motor, Heavy Shock Driven Machine Load Classifications, over 10 hours per day must be 2. Therefore, the reducers are considerably oversized and even the maximum value foreseen in the table 1, i.e. 2.50 is exceeded.

Please also refer to our telex No. 955/SAP of 1/29/88 sent to your attention.

8.0 SHIPPING

8.1 OK

8.2 OK



8.3 OK, see budget price on page 3 of our covering letter.

8.4 OK

G. MAZZONI S.p.A.

Altoleffi

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL -10262

THIS NUMBER AND CODE NO. BELOW, MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO • **G. MAZZONI S.P.A.**
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO • **Mr. H. Welk**
ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		F.O.B. C.I.F. Hammond, Indiana

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				<p>"The terms of this Agreement shall be construed and interpreted under and all respective rights and duties of the parties shall be governed by the laws of the State of Indiana. Any action or proceeding against either party relating to this Agreement may be brought and enforced in the court of the State of Indiana or of the United States in the Northern District of Indiana, and each party irrevocably submits to the jurisdiction of such court in respect of any such action or proceeding".</p> <p>As a result of this submission to the jurisdiction of the court of the State of Indiana, you will have to agree to designate, appoint and empower an Agent with an Indiana address to receive for it and on its' behalf service of process in respect to any sub action or proceeding.</p>		

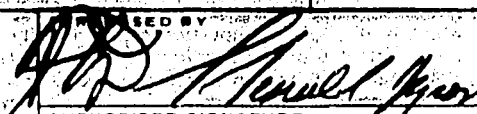
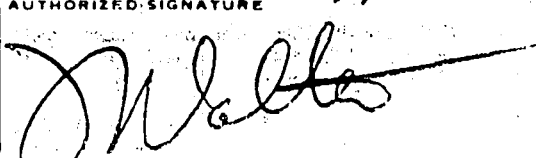
SECURITY OF INFORMATION
 IS GOOD BUSINESS
 FOR BOTH OF US
 WE DEPEND UPON YOU TO KEEP
 ALL INFORMATION CONFIDENTIAL

Page 14 of 16

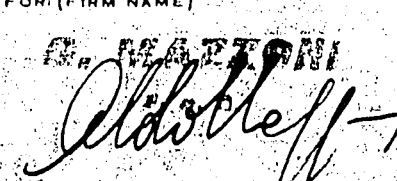
Please invoice promptly, IN DUPLICATE. Address to:
 ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood-Cliffs, N.J. 07632
 This order is not binding until Acknowledgment Copy is executed and returned to us.

WE RESERVE THE RIGHT TO EXTEND MATURITY DATE OF DISCOUNT INVOICES EIGHT DAYS FROM DATE INVOICE IS RECEIVED.

HSSO Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

APPROVED BY

 AUTHORIZED SIGNATURE


THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL

BY (AUTHORIZED SIGNATURE) 	FOR (FIRM NAME) G. MAZZONI	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
------------------------------------------------------------------------------------------------------------------	--------------------------------------	----------------	------------------------------------------------------------------------------------------------------------------------------



CONDITIONS FOR FIELD SERVICE

DAILY RATES

Regular Time

The service rendered by our servicemen for plant installation and start-up will be charged at a rate of Italian Lire 60,000.-- per each working and travelling hour.

Non-working Holidays, save Sundays, while abroad will be invoiced at a rate of 8 (eight) working hours per day.

Overtime

All hours worked in excess of 40 (forty) hours per week will be charged at a rate of Italian Lire 90,000.-- per hour. No overtime rates apply while travelling.

The daily charges will be invoiced to the customer upon the completion of our servicemen's assignment.

MAXIMUM STAY TIME

Unless otherwise stipulated, our servicemen have the right to come back to Italy, for a short period, after 3 consecutive months of service and if an additional period time of stay of one month or more is required.

If the additional stay time is less than one full month, the servicemen can continue his stay time with no interruption.

If required, they will be replaced by other equivalent servicemen of our company.

In any case the serviceman has the right to come back for Christmas holidays. All travelling expenses will be wholly on the customer's account.

LIVING EXPENSES

Living expenses will be charged at a rate of Italian Lire 156,000.-- per day, or more so as to be sufficient to assure an adequate standard of living at site.

The customer is requested to pay the living expenses directly to our servicemen on a weekly basis.

These expenses are to be paid in advance.

In case customer provides full board and lodging to our serviceman's full satisfaction he has to give him a daily pocket money of Italian Lire 32,500.-- in local currency.

All local taxes, if any, to be levied on the fees and on the living expenses paid to our servicemen, will be wholly on the customer's account.



TRAVELLING EXPENSES

Round trip, tourist class, air fare from Milan, Italy, will be on the customer's account. If a trip from Milan will exceed 5 flying hours a business (club) class air ticket is to be provided.

Daily local transportation to and from the factory is to be provided by the customer.

INSURANCE

Our servicemen are already insured against accidents, also for third party liability and property damages.

In case our servicemen have to go to countries where there is a state of war, civil war, declared or undeclared, the customer must effect an insurance against war death and permanent disablement resulting from such a state of political disturbance.

The customer shall have to furnish evidence of this effect prior to the departure of our servicemen.

PAYMENT TERMS

The listed services will be invoiced when our servicemen are dismissed by the customer.

We reserve the right to ask for a downpayment or an irrevocable letter of credit against these services, before our servicemen's departure.

G. MAZZONI S.p.A.

Customer's Signature

for acceptance:



G. MAZZONI S.p.A.

VIALE TRENINO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE



0331 - 684.064



FAX 0331 - 684511



TELEX 330576 GMAZZI



P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. G. Gerald Hyson
Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
U.S.A.

A/rm

February 18, 1988

BUSTO ARSIZIO,

Re: Project HSSO - H-6579
4 (four) Simplex Pelletizing Refiners for Hammond, Indiana

Dear Mr. Hyson:

As agreed with Mr. W. M. Neuner on occasion of his kind visit of 16th inst., we are pleased to enclose our detailed quotation, in quadruplicate, regarding 4 (four) Simplex Pelletizing Refiners, model "B-300/4000", each suitable for an hourly capacity of 4,500 kg of toilet soap pellets.

As made for the 'M-300/2000' Simplex Pelletizing Refiners proposed on 1/26/88, also today's quotation has been issued in accordance with your below listed documents:

- General Conditions - Sale & Delivery (GC-1)
- General Conditions - Installation & Service Personnel (GC-4)
- General Specification - Equipment Noise (GS-18).

As far as all technical documentation is concerned, you may refer to the drawings, tables, diagrams, etc., attached to our quotation # 23997 of 2/5/88 for the four 'B-300/4000' Duplex Pre-Refiners, while the preliminary dimension drawing of the proposed machines will follow as soon as possible.

Also for the Simplex Pelletizing Refiners we would like to point out that all the supplied technical data refer to normal toilet soap, since we do not know the exact characteristics of your product; above data must be verified with a test to be performed at our factory before going on with the final order definition. We will need 500 kg for each processed type.

At your disposal for any further detail you might need, we are,

Very truly yours,

G. MAZZONI S.p.A.

G. Corradini

Encl.

cc : G. Mazzone U.S.A. Inc., St. Louis
cc : SAP+SR



G. MAZZONI S.p.A.

VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE



0331 - 684.064



FAX 0331 - 684511



TELEX 330576 GMAZZI



P.O. BOX 421 - 21052 BUSTO ARSIZIO

Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
U.S.A.

'B-300/4000'

BUSTO ARSIZIO, February 18, 1988

PROJECT HSSO - H-6579 HAMMOND, INDIANA

QUOTATION NO. 24030

4 (FOUR) SIMPLEX PELLETIZING REFINERS

(twin-worm)

MODEL: B-300/4000

**CAPACITY OF EACH UNIT: 4,500 KG/H OF TOILET
SOAP PELLETS.**

Each Simplex Pelletizing Refiner is designed for the homogenizing, refining and pelletizing of soap and similar products.

Refining is achieved by using fine refining screens.

Mazzoni refiners are constructed to use 55 European mesh size (American mesh number 50) refining screens.

The plodder consists of various modular elements:

- base
- reducer
- thrust bearing
- worm barrel and worm
- pelletizing head
- feed section
- drive motor
- electric controls.



BASE

The base is made from heavy fabricated steel members and plates. This welded rigid base assures proper alignments and quiet vibration free operation. The base supports and connects the reducer, the thrust bearing and the worm barrel. It also protects and encloses the main drive motor, the V-belts and transmission pulleys between the drive and the reducer. The external surfaces of the base are covered with easily removable attractive side steel plates which permit quick easy internal inspection and maintenance. The working horizontal surfaces are covered with non-skid heavy duty checkered service platforms.

REDUCER

New parallel helical gear reducer, made of carburized steel. The shafts rotate on conical roller bearings. All gears are lubricated in an oil bath.

SUPPORT AND THRUST BEARING

The support connects the reducer with the extruder barrel and encloses the thrust bearing. Shaft and thrust bearing are considerably sized for torque transmission and to bear the axial thrust determined by the worm in working and start-up conditions under load.

WORM BARRELS AND REFINING WORMS

Two stainless steel worm barrels house two '**CONSTANT**' pitch refining worms made of AISI 304 stainless steel. The front end of each worm is supported by a multi-ribbed plate ("spider") to reduce wear to a minimum. The worm barrels are jacketed for high efficiency and "high velocity" water cooling. The cooling water circuit and the worm barrels will be thermally insulated.

PELLETIZING-REFINING GROUP

New pelletizing head designed for:

- reducing the frontal resistances (thus lowering the soap temperature)
- easy replacement of the drilled plate (composed of two reduced thickness discs)
- easy and quick cleaning of the pelletizing group.

The pelletizing-refining group consists of:

- a) worm support (spider)
- b) refining screens of 8 U.S. mesh
- c) pelletizing group composed of easy to remove and to replace interchangeable drilled plate
- d) pelletizing group support which holds items a) and c) together



- e) reinforced knife holding shafts with special anti-scuffing material bushings, and with relevant knives embedded in item d)
- f) mechanical device mounted on bearings for opening and tilting the entire hinged pelletizing group.

FEED SECTION

The inlet of the preliminary plodder will have a flange for mounting a feed hopper (LEVER supply).

MOTOR AND CLUTCH

Each Simplex Pelletizing Refiner requires the listed motor and clutch (motor of LEVER supply):

- SCR variable speed motor, 45 kW power
- Airflex pneumatic clutch.

Matched V-belts and pulleys provide the most effective power transmission between the drive motor and the inlet shaft of the reducer.

For remote control, automatic operation of the Simplex Pelletizing Refiner a pneumatic clutch is provided. This clutch stops and starts the rotation of the worms without stopping and starting the motor.

AUTOMATION PREMOUNTING AND ACCESSORIES

Each Simplex Pelletizing Refiner is supplied with these components:

- service floors without handrails
- premounted cooling water circuit complete with thermometer, ball valve and solenoid valve
- one tachometer generator.

MATERIALS AND CONSTRUCTION SYSTEMS

All parts in contact with soap are made of AISI 304 stainless steel.

The plodder worms are made of AISI 304 stainless steel.

The construction is of the "modular" type, consisting of individual and interchangeable components.

PRICE for each unit:

LIT. 102.500.000,-



EXCLUSIONS:

- feed hopper
- variable speed motor and starter, but including Airflex pneumatic clutch, pulleys and V-belts for motor
- control panel - we will supply all control and power elements wired to a common terminal strip.
- air compressor, if any
- electric wiring from and to the plodder
- start-up of the unit
- anything else not specified in our proposal.



OPTIONALS:

EXTRA COSTS:

A) WIDENED PLATFORM WITH HANDRAILS

On the left hand side of the plodder.

PRICE: LIT. 1.690.000,- (for each unit) —

B) TEMPERATURE INDICATION

Besides the standard water outlet thermometer, we can supply a thermoresistance and digital indicator for:

- soap inlet and discharge temperature
- cooling water inlet and discharge temperature.

The thermoresistance which indicates the soap outlet temperature is fitted in the worm support.

PRICES for each unit:

First temperature indication: LIT. 520.000,- —

Second temperature indication: LIT. 340.000,-

Each temperature indication besides the second one: LIT. 170.000,-

Temperature indication with mV signal and two alarm contacts, for each temperature: LIT. 520.000,-

C) EXTRUSION PRESSURE INDICATION

The pressure is measured by a "DYNISCO" transducer, fitted in the worm support. Pressure is indicated by a "DYNISCO" analog pressure indicator with double set point alarm and voltage output signal.

PRICE for each pressure transducer and indicator: LIT. 1.810.000,- —

Note:

Since we supply standard worm supports with connections for thermoresistance and pressure transducer, it is possible to purchase the basic machine without them and to install this equipment at any later date.

D) EPOXY PAINT

PRICE: LIT. 830.000,- (for each unit) —

completa firma fax



SALES CONDITIONS

GOODS DELIVERED

F.O.B. Northern Italy Port, packing included. Packing according to Unilever Packing Specifications dated March 1978.

APPROX. SHIPPING SPECIFICATIONS

- 1 case: gross weight : 7,000 kgs
dimensions : 4.30 x 2.10 x 2.15 mts

PRICES ARE FIRM AND NOT LIABLE TO ADJUSTMENT.

LESS 7% UNILEVER DISCOUNT.

QUANTITY DISCOUNT

Exceptionally, in addition to the 7% Unilever discount, in case of contemporaneous order for more identical units, we are willing to grant you the following additional special quantity discounts:

- **2% (two per cent) for two identical units**
- **3% (three per cent) for three identical units**
- **4% (four per cent) for four identical units.**

DELIVERY DATE

For goods at our workshop, completed and ready for your inspection, if any, and shipment (as regards delivery date to the Italian seaport, you may consider about 15 days after your inspection date):

- 1st lot: 2 pladders: 9 months from receipt of your firm order and all technical details, except Force Majeure.
- 2nd lot: 2 pladders: 12 months from receipt of your firm order and all technical details, except Force Majeure.

Since two units (2nd lot) will be released within six months from your order date, should you decide to cancel them, we will charge you the following cancellation fees:

1 month from the order:	0
2 months from the order:	0
3 months from the order:	10%
4 months from the order:	20%
5 months from the order:	30%
6 months from the order:	50%.



PENALTY CLAUSE FOR LATE SHIPMENT

We accept penalties at a rate of 0.5% (half percent) per week of delay over 60 days from scheduled delivery date, with a maximum penalty of 5% (five percent).

PAYMENT TERMS

- 20% advanced with the order,
- 70% against shipping documents,
- 10% after commissioning, but not later than 12 months after shipment date.

INSTALLATION

If requested, one of our servicemen will assist in the start-up of the machine(s) and will train your personnel in the operation and maintenance of the equipment.

All travelling and living expenses plus a daily labor rate will be on the customer's account.

GUARANTEES

Our equipment is guaranteed against defects arising from faulty design, materials or workmanship within a period of **twelve** calendar months (~~24 months for gear reducers~~) after testing but not later than **eighteen** months (~~30 months for gear reducers~~) from shipment date. We will accept liability to repair or replace any part that proves defective under normal use and service within the specified period (F.O.B. Genoa). We will not be liable for improper handling on your part or due to causes not attributable to us.

PRODUCT LIABILITY

We manufacture our plants and machines to the highest safety standards contemplated by the Italian laws, and, if required by our Customers, to any local safety regulation, being clearly understood that this may involve a price increase.

However, please rest assured that as already previously made, we will do our best to conform, as best as possible, our units to your OSHA Clauses and Federal Regulations, on the basis of the data and knowledges in our possession.

Any special safety device or arrangement required by local laws not specifically requested in writing by Customers when placing the order will be the sole responsibility of the Customer who should require a certification of the plant and/or machines from local safety inspector prior to put in operation the plant and/or machines. Any supplementary protection or safety device resulting eventually necessary will be for the Customer's cost and expense.

Copy of our current insurance policy covering "product liability" was sent to you with our letter dated 9/7/87.

STATE OF NEW YORK)
)
COUNTY OF NEW YORK)

Before me, a Notary Public, in and for said County and State, personally appeared Frank S. Walters and Melinda M. Sweet, the Purchasing Vice President, Household Products and Assistant Secretary, respectively, of LEVER BROTHERS COMPANY, as its duly authorized officers and representatives and acknowledged the execution of this Contract.

Dated this 2nd day of August, 1988.

Teresa W. Low
Notary Public

My Commission Expires:

February 28, 1990

Authorized in:

New York County

TERESA W. LOW
NOTARY PUBLIC, STATE OF NEW YORK
NO. 4787858
QUALIFIED IN PUTNAM COUNTY
CERTIFICATE FILED IN NEW YORK COUNTY
COMM. EXPIRES FEBRUARY 28, 1990

STATE OF)
)
COUNTY OF)

Before me, a Notary Public, in and for said County and State, personally appeared _____ and _____, the _____ and _____, respectively, of G. MAZZONI S.P.A., as its duly authorized officers and representatives and acknowledged the execution of this Contract.

Dated this _____ day of _____, 1988.

Notary Public

My Commission Expires:

County of Residence:

This instrument prepared by William H. Eichhorn, Esq., Eichhorn, Eichhorn & Link, 200 Russell Street, Hammond, Indiana 46325-6328 (219) 931-0560.

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL 10262

THIS NUMBER, AND CODE NO. BELOW MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES, AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO: G. MAZZONI, SpA
Viale Trentino 10/12
21052 Busto Arsizio
ITALY

LEVER BROTHERS COMPANY
DELIVER TO: 1155 Orange Hill
Hammond, Indiana 46320
Attention: Mr. H. Welk

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA:		F.O.B. CIF Hammond, Indiana

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				For Accounting Purposes Only, charge to:		
				<u>Lite</u>		
	4PF	25955	180400 RC		61,442,000	
	4PF	26022	180400 RC		95,476,500	
	4PF	26107	180400 RC		95,476,500	
	4PF	26189	180400 RC		95,476,500	
	4PF	26262	180400 RC		95,476,500	
	4PF	26045	180400 RC		192,009,520	
	4PF	26130	180400 RC		192,009,520	
	4PF	26212	180400 RC		192,009,520	
	4PF	26286	180400 RC		192,009,520	
	4PF	26049	180300 RC		242,800,420	
	4PF	26134	180300 RC		242,800,420	
	4PF	26216	180300 RC		242,800,420	
	4PF	26290	180300 RC		242,800,420	
			Gear Box B300		30,012,870	
			Gear Box B350		35,975,750	
			Freight and Insurance		86,000,000	
				AS QUOTED BY:	2,334,576,380	

Page #15 of 16

Please invoice promptly, IN DUPLICATE. Address to:

ACCOUNTS PAYABLE, Lever Brothers Co., 80000000000000000000000000000000

This order is not binding until Acknowledgment Copy is executed and returned to us.

WE RESERVE THE RIGHT TO EXTEND MATURITY DATE OF DISCOUNT INVOICES UP TO 60 DAYS FROM DATE INVOICE IS RECEIVED.

HSSO PROJECT ACCOUNTANT

1200 Calumet
Hammond, IND 46320

AUTHORIZED SIGNATURE

[Signature]
[Signature]

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL

BY (AUTHORIZED SIGNATURE)

FOR (FIRM NAME)

DATE

THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.

G. MAZZONI

8/2/88



As far as your General Conditions (GC-1), (GC-4) and Equipment Noise Specification (GS-18) are concerned, please note the following:

GENERAL CONDITIONS (GC-1)

We are in agreement with the above General Conditions for sale and delivery, except for point 8 "Insurance", which is dealt with separately and point 12 "Equal Employment Opportunity Certificate of Compliance". In fact we believe the "Contract and Purchase Order Supplement" would only apply to US Companies and not to Italian Companies as there could be some regulations which are not in line with Italian legislation. However, we will do our best to comply with such rules and regulations if possible and if applicable.

GENERAL CONDITIONS - INSTALLATION & SERVICE PERSONNEL (GC-4)

Our technicians will be sent over according to our Standard Conditions, which were attached to our quotation # 23997 of 2/5/88 for the four 'B-300/4000' Duplex Pre-Refiners.

Regarding **INSURANCE**, item 3 of your GC-4 General Conditions, we confirm you that our Service Personnel are usually covered by our Insurance Policy for personal injury or accident, as well as third party liability and damage to property, as per our Insurance Policy sent to you with our letter dated 9/7/87.

EQUIPMENT NOISE SPECIFICATION (GS-18)

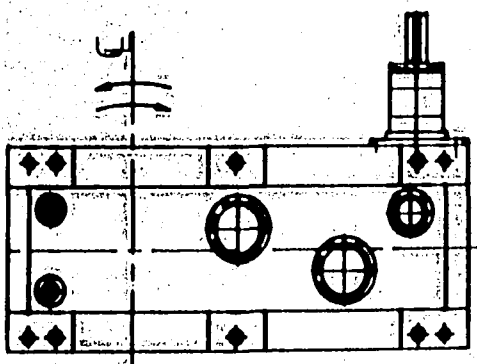
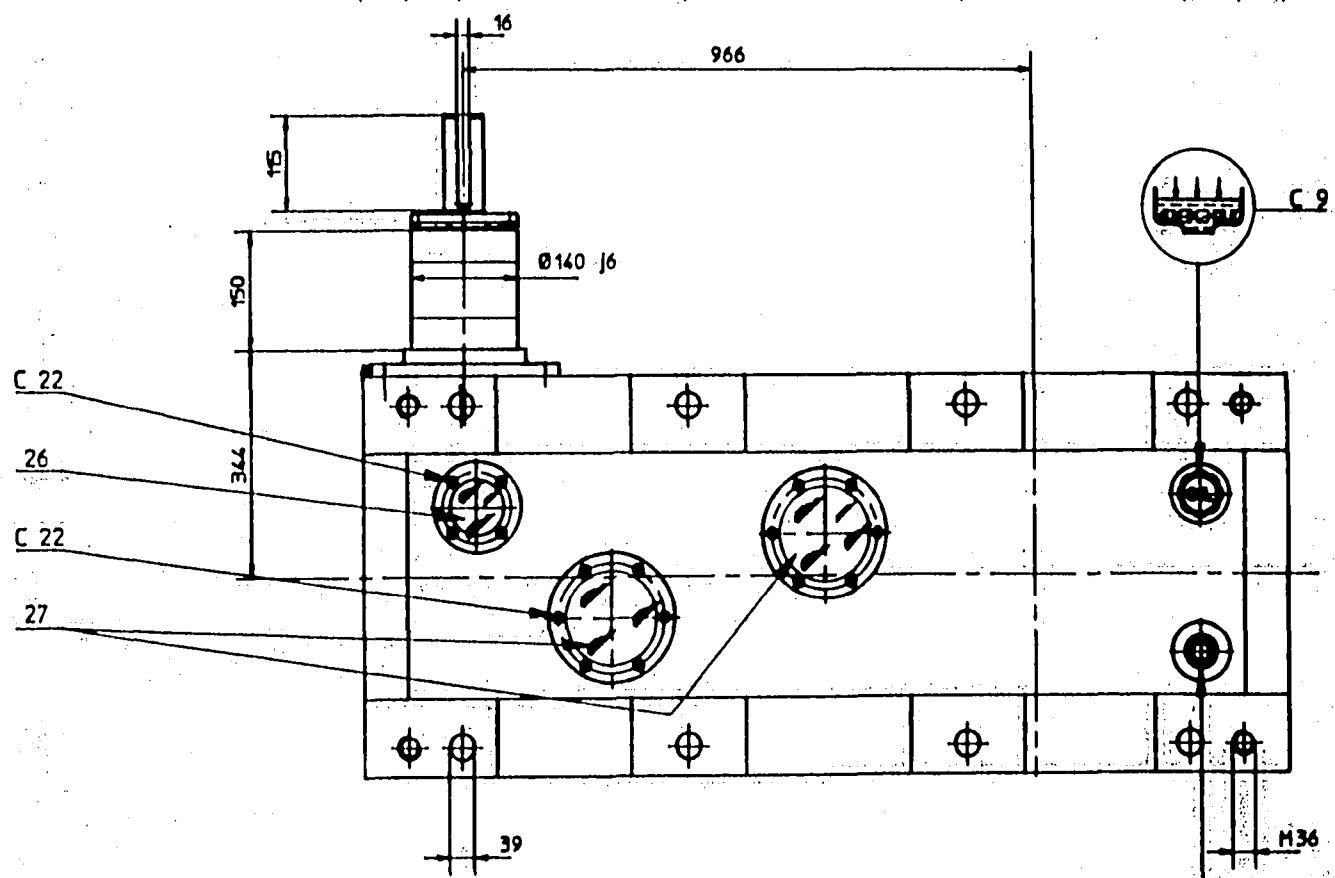
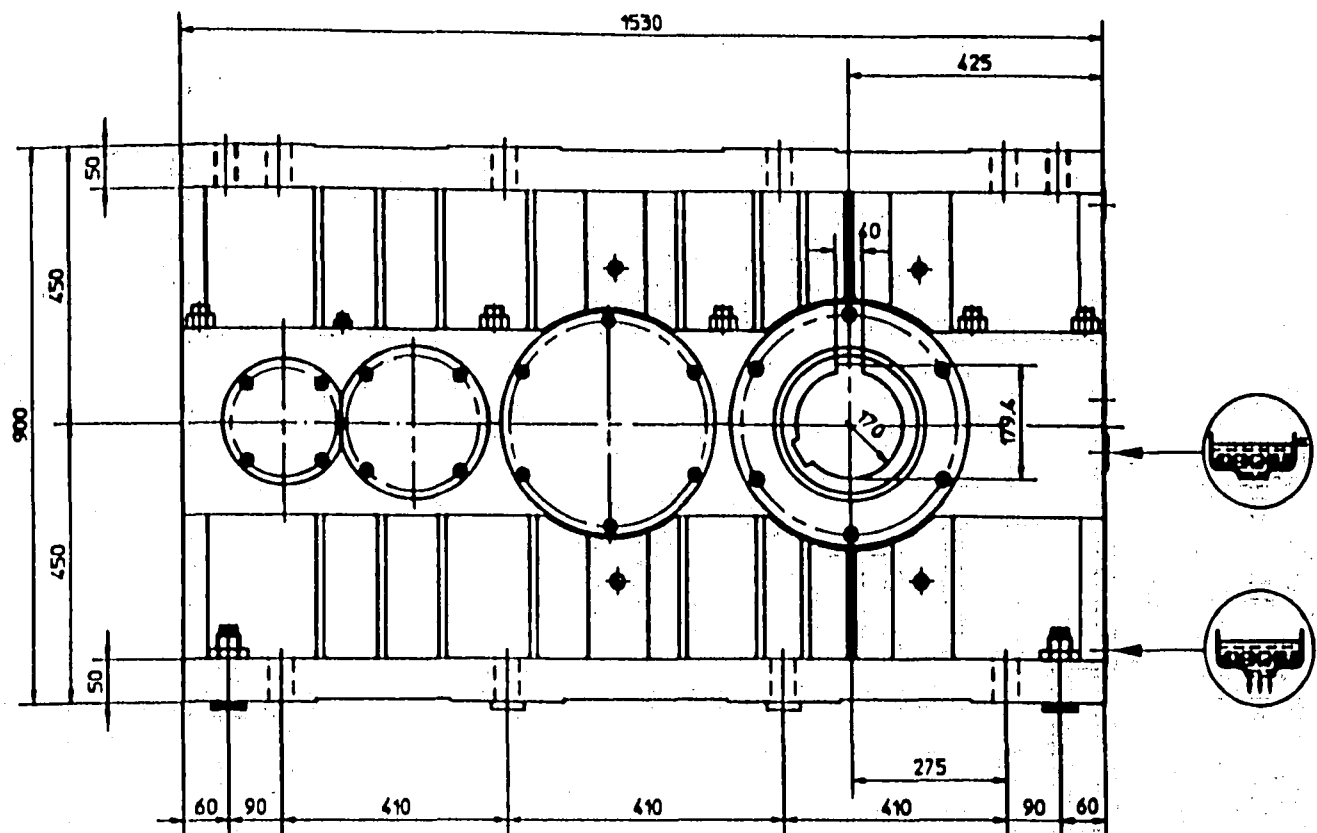
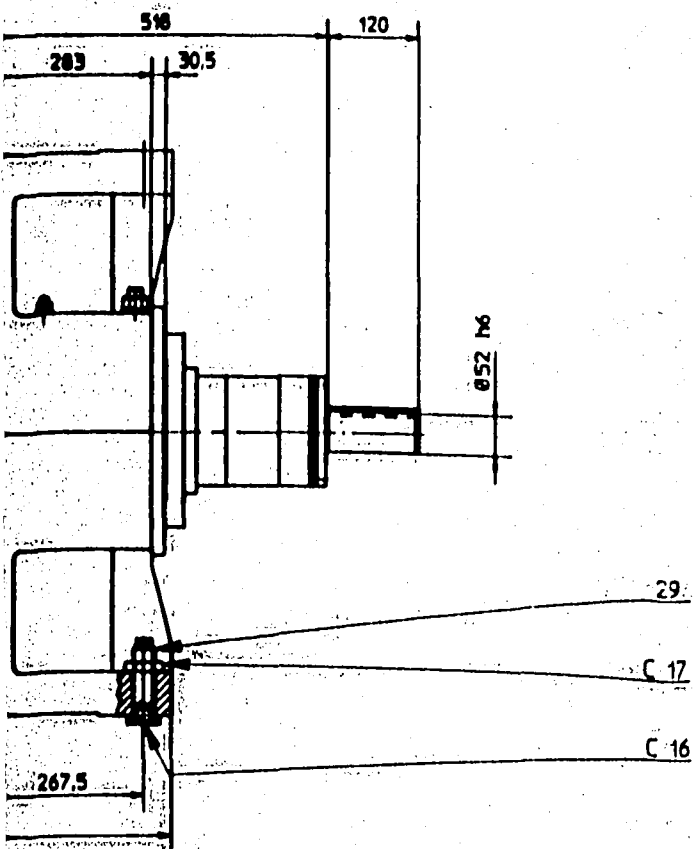
We are sorry but we have not the necessary instrumentation to check the noise level in accordance with your above specifications. However, please note that the standard noise level of our machinery in operation without product and with our standard motors is: 80-81 dB(A) for amalgamator and plidders.

QUOTATION VALIDITY

This offer expires in 60 (sixty) days.

Very truly yours,

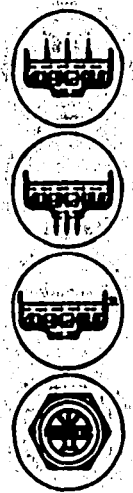
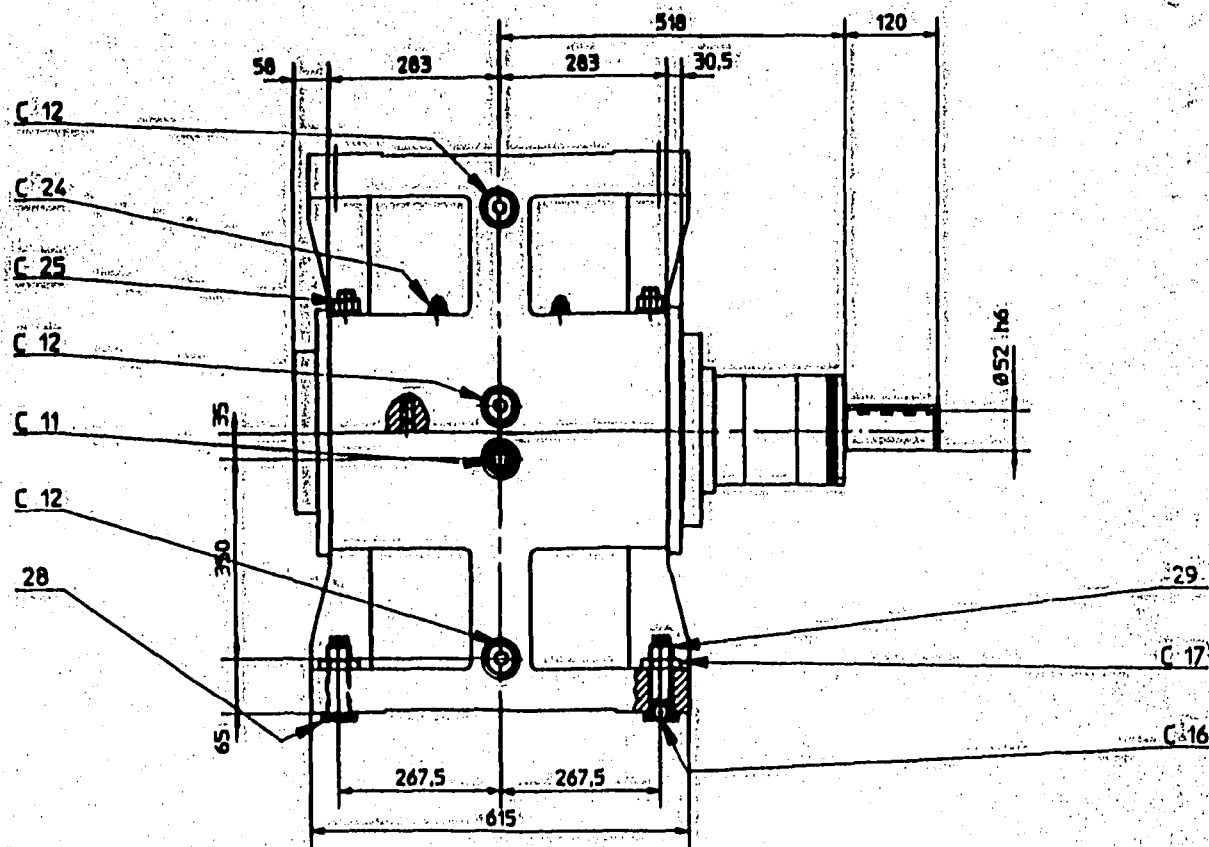

G. MAZZONI S.p.A.



MASSA.....Kg. 2300
 QUANTITA' D'OLIO.....Kg. 130
 TIPO DI OLIO.....EP 6
 RAPPORTO DI TRASMISSIONE R 1:64

FIGURA 2

REDUTTORE R-400/SI/P



CARICO OLIO

SCARICO OLIO

LIVELLO OLIO

SONDA MAGNETICA

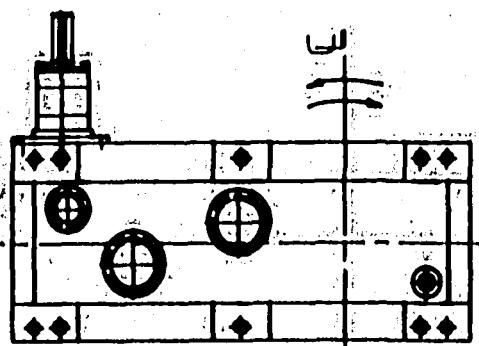


FIGURA 1

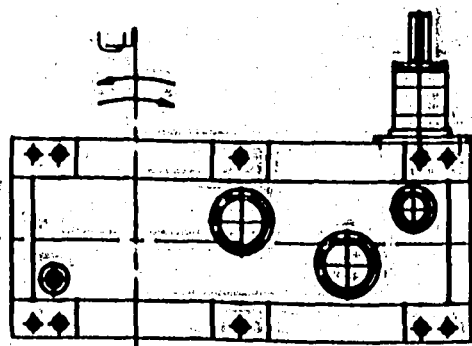
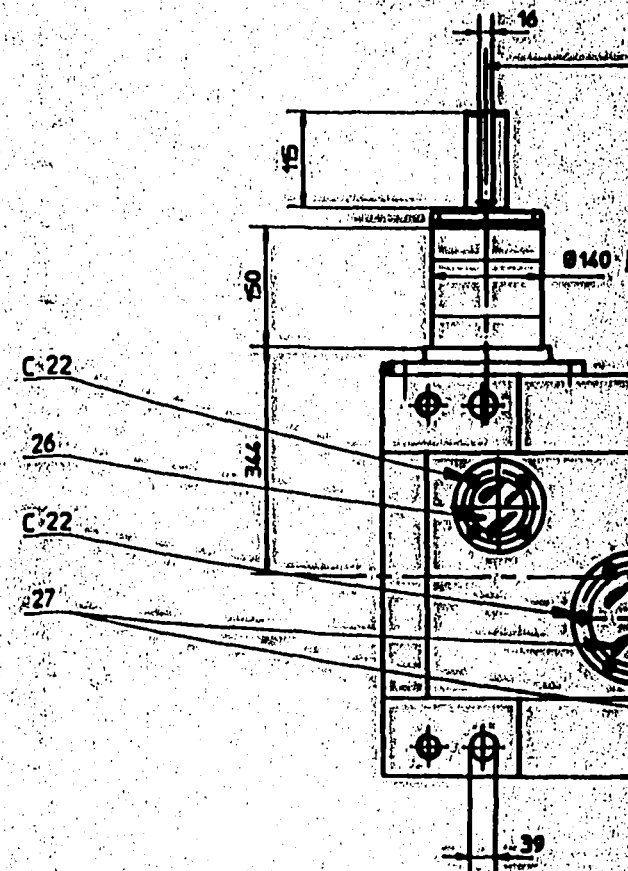
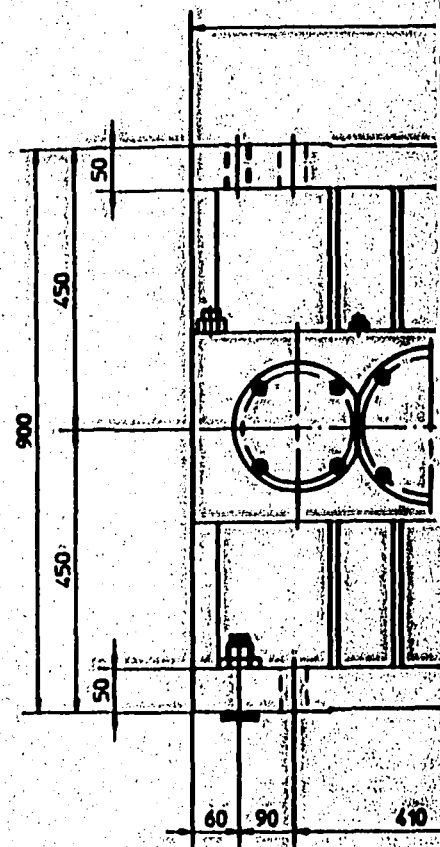
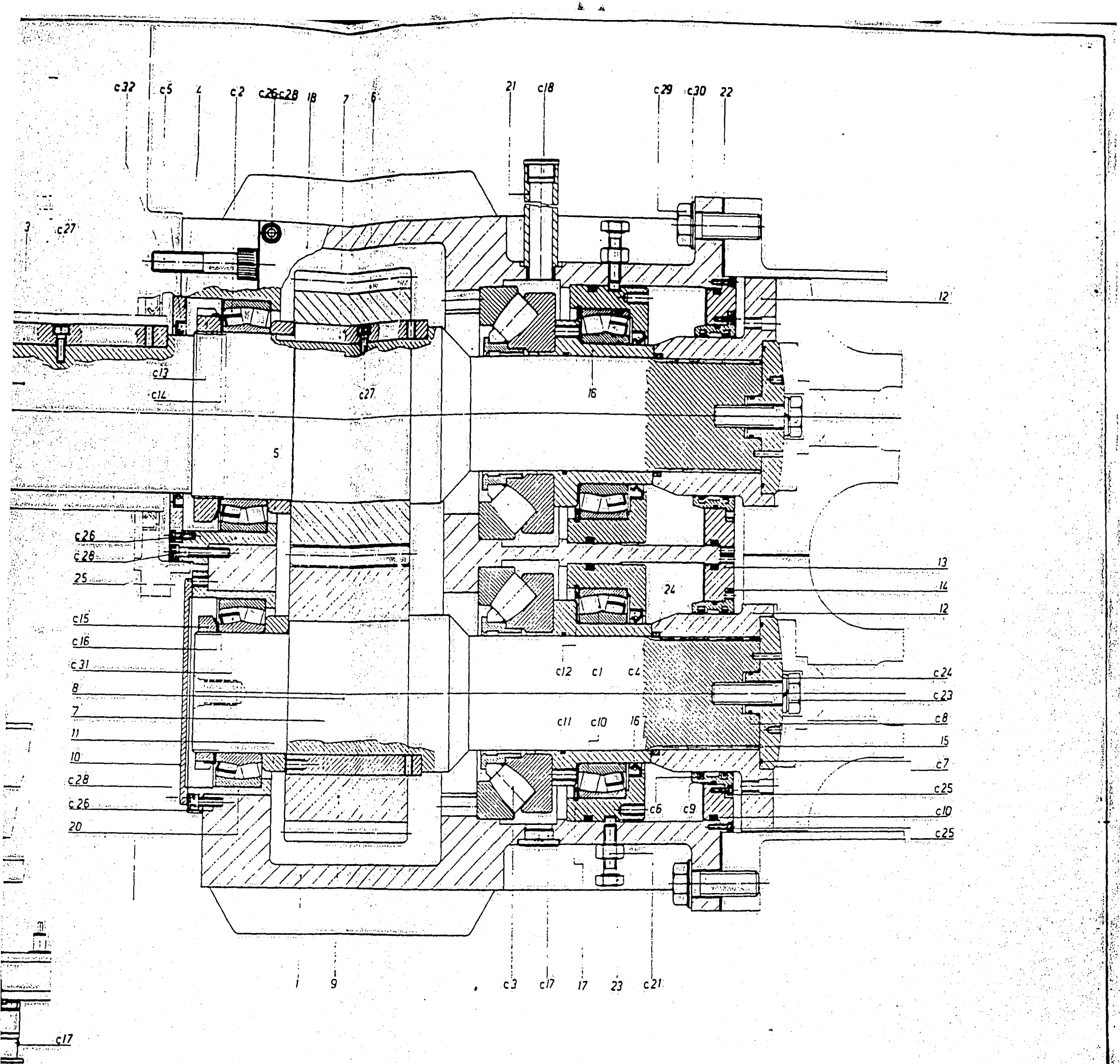
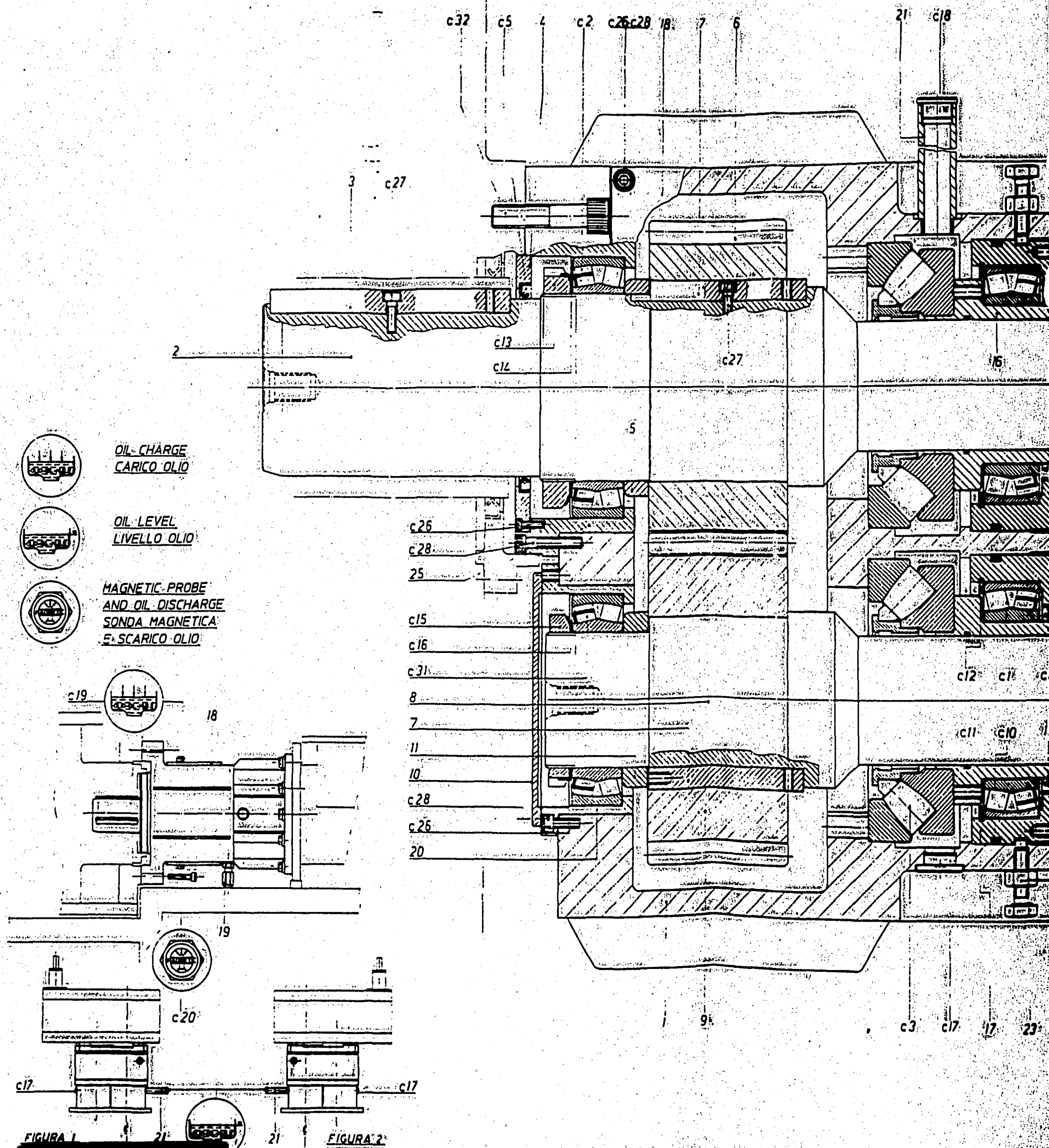


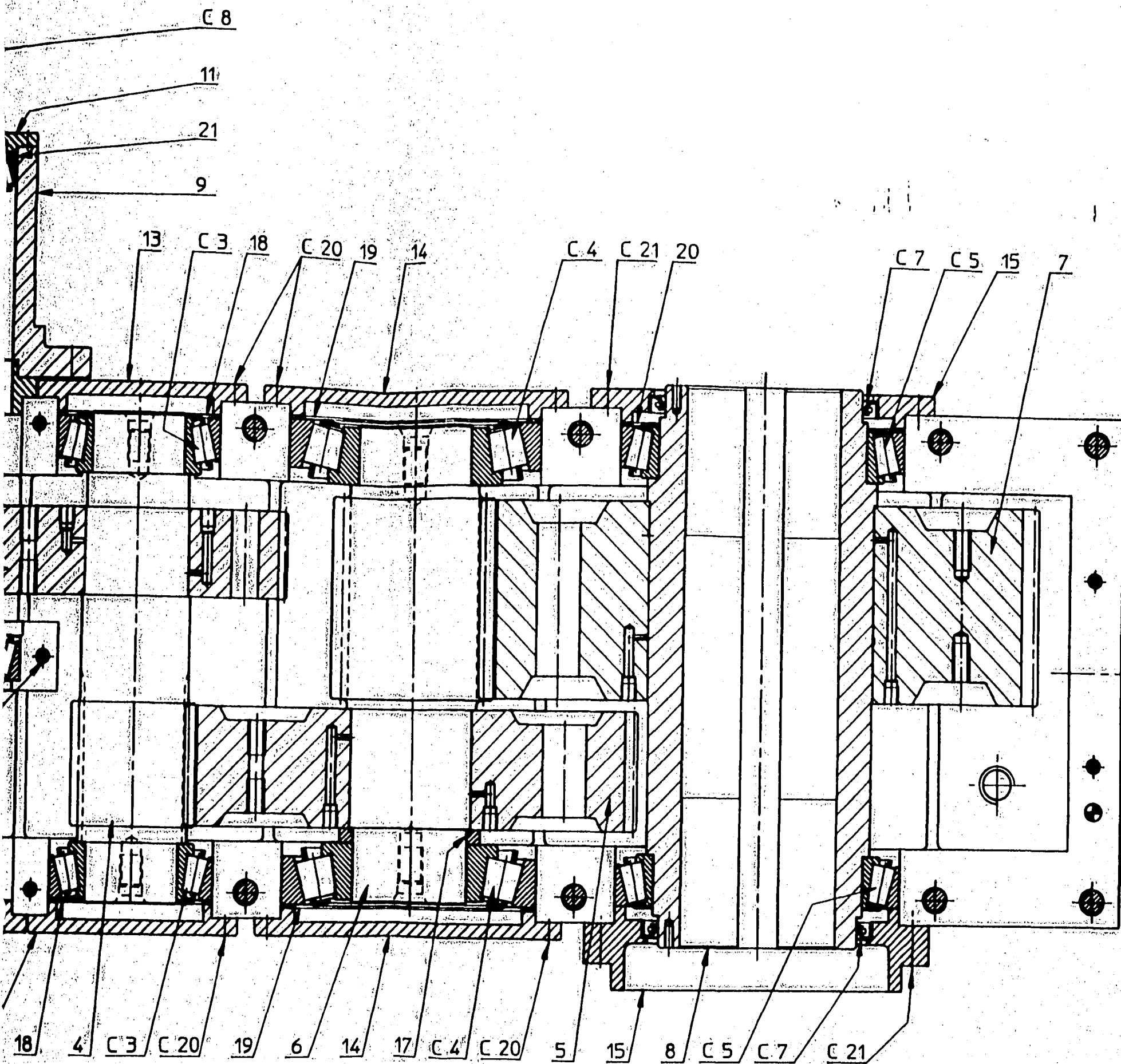
FIGURA 2

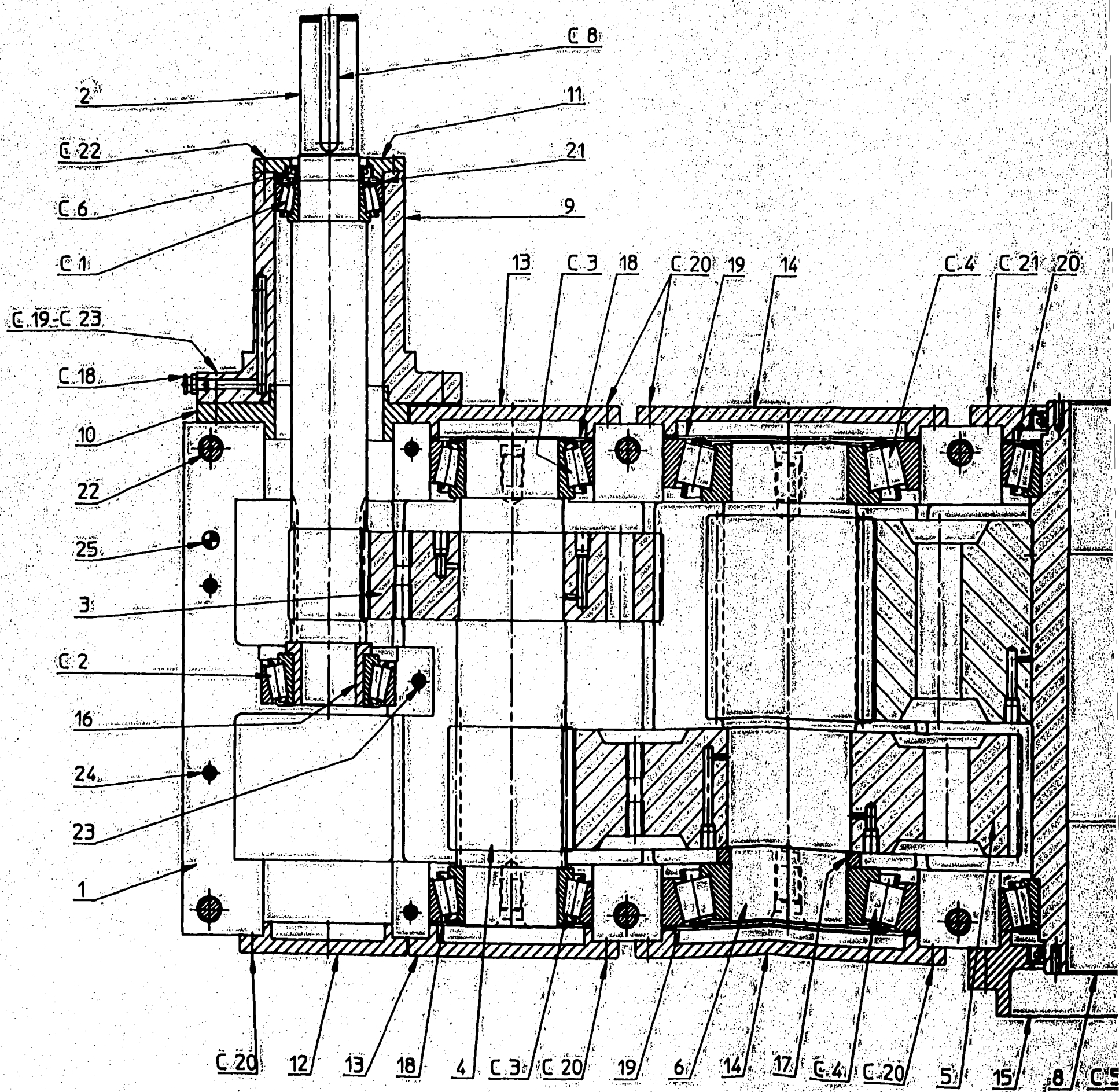


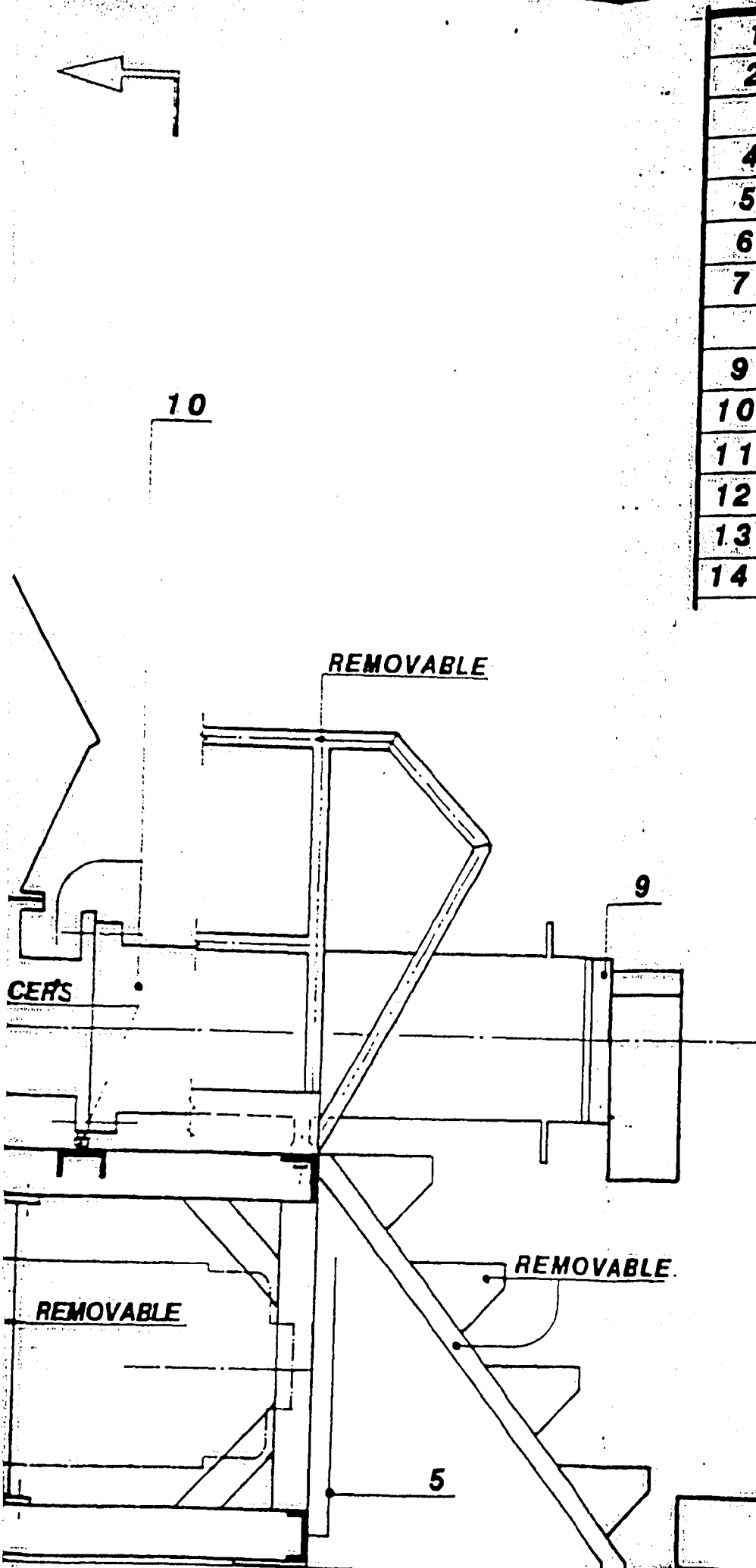
MASSA
QUANTITA' D'OLIO
TIPO DI OLIO
RAPPORTO DI TRAS







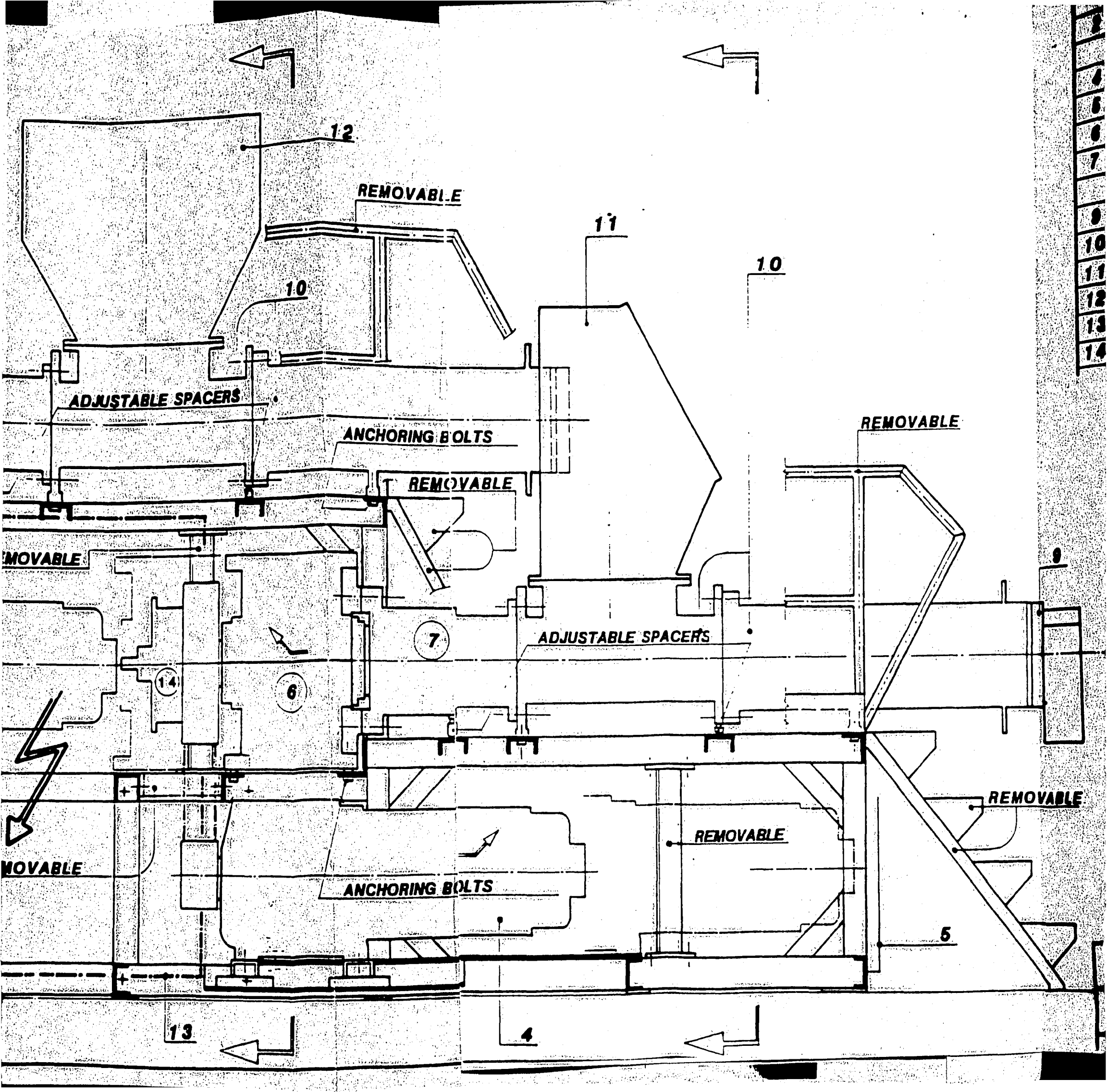




1	BASE	
2	WATER CIRCUIT	
4	MOTOR	
5	PANEL FITTING	
6	GEARBOX	
7	SUPPORT	
9	PLATE EXTRUSION GROUP	
10	BARREL(1st and 2nd zone)	
11	INTERMEDIATE HOPPER	
12	HOPPER	
13	ELECTRIC BOARD	
14	AIR CLUTCH	

DUPLEX REFINER PLODDER MODEL DR/B-300		Date March-1988	Drawn <i>[Signature]</i>
G. MAZZONI S.p.A.		Drawing No. 600020008A	Model - No.
BUSTO ARSIZIO ITALY			

This drawing is reserved property and cannot be copied, reproduced, or otherwise used without the written permission of G. Mazzoni S.p.A.



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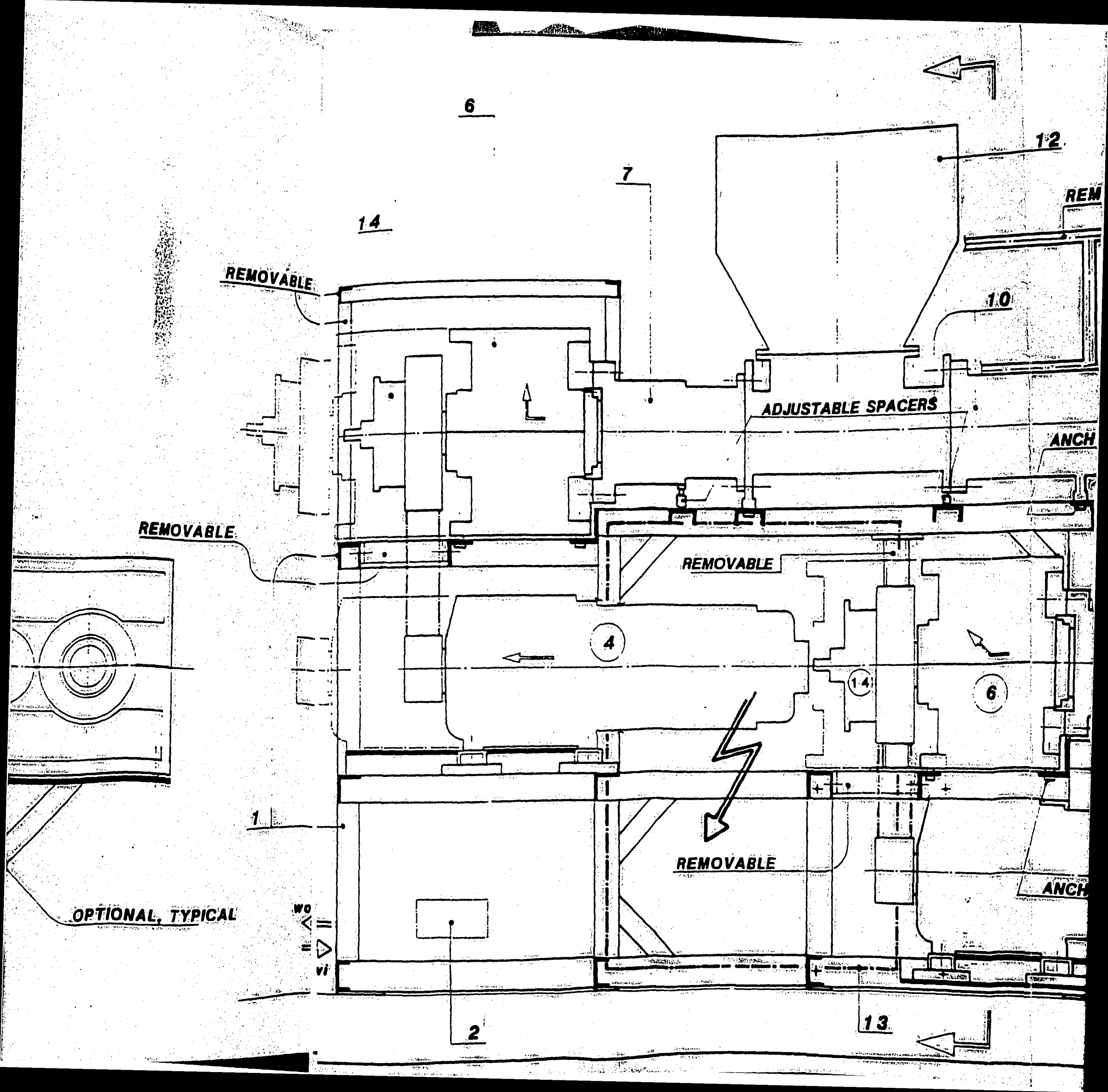
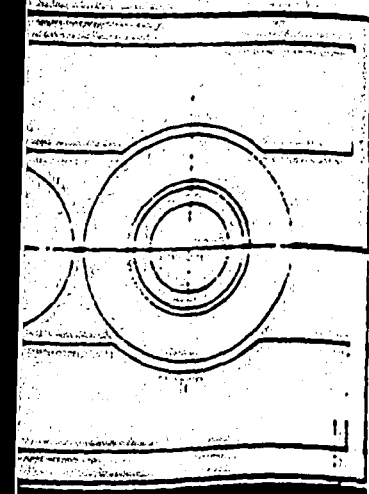
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LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL-10262

THIS NUMBER AND CODE NO. BELOW MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below according to terms and conditions printed on face and reverse side hereof.

G. MAZZONI S.P.A.

Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO:

Mr. H. Welk
ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		F.O.B. C.I.F. Hammond, Indiana

Marks on Crates as follows:

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				Marks on Crates as follows:		
			15-4-SR400	Rework Refiner	25955	
			15-2-SR410	Pelletizing Refiners	26022	
			15-2-SR510		26107	
			15-2-SR610		26189	
			15-2-SR710		26262	
			15-2-SR470	Duplex Refiners	26045	
			15-2-SR570		26130	
			15-2-SR670		26212	
			15-2-SR770		26286	
			15-1-DP460	Duplex Vacuum Bladders	26049	
			15-1-DP560		26134	
			15-1-DP660		26216	
			15-1-DP760		26290	

SECURITY OF INFORMATION IS GOOD BUSINESS FOR BOTH OF US. WE DEPEND UPON YOU TO KEEP ALL INFORMATION CONFIDENTIAL.

AS QUOTED BY: Page 16 of 16

Please invoice promptly, IN DUPLICATE. Address to: ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632. This order is not binding until Acknowledgment Copy is executed and returned to us. WE RESERVE THE RIGHT TO EXTEND MATURITY DATE TO 15 DAYS FROM DATE INVOICE IS RECEIVED.

HSSD Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

APPROVED BY: [Signature]
AUTHORIZED SIGNATURE: [Signature]

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL

BY (AUTHORIZED SIGNATURE) G. MAZZONI [Signature]	FOR (FIRM NAME) G. MAZZONI	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
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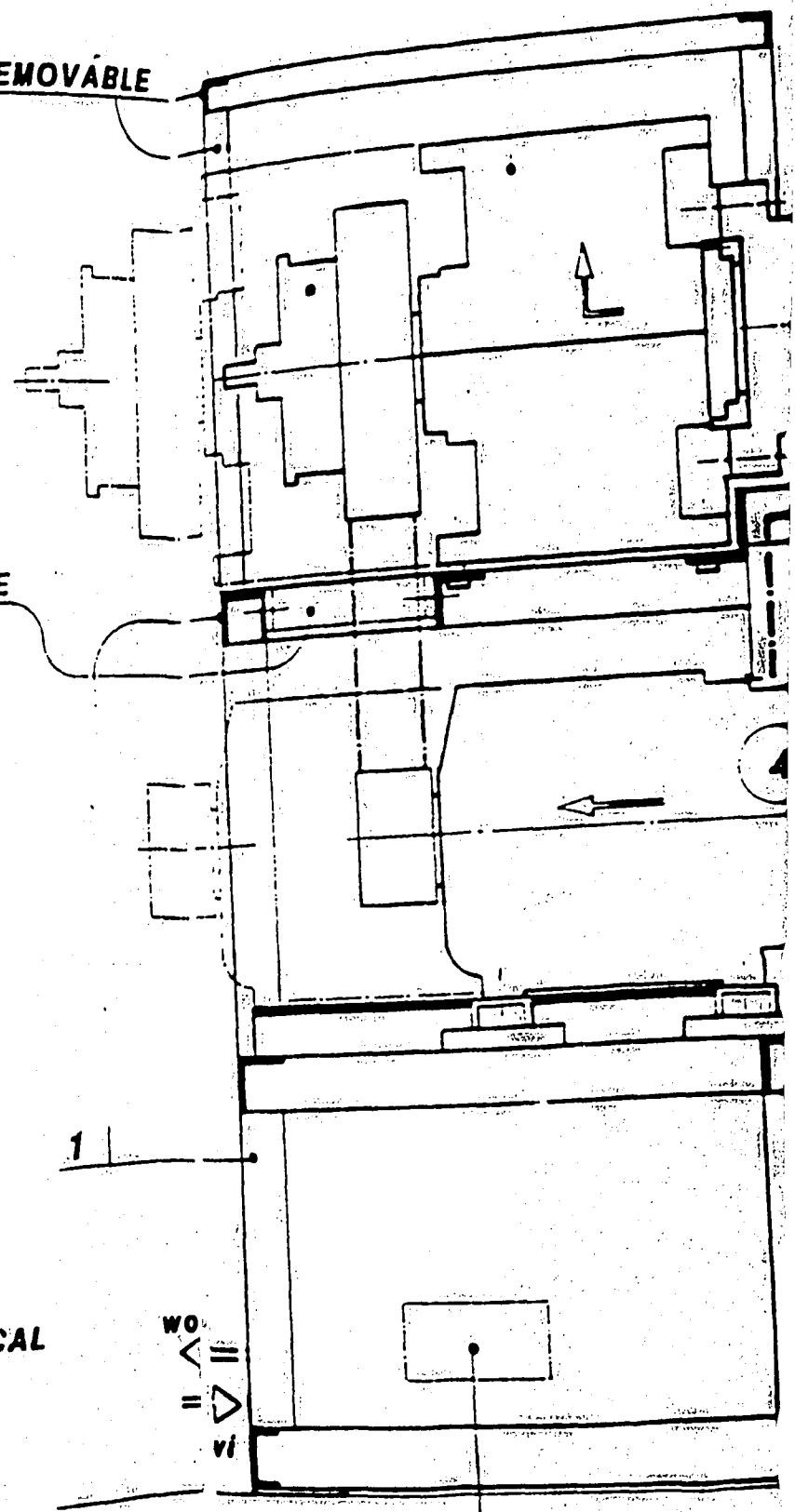
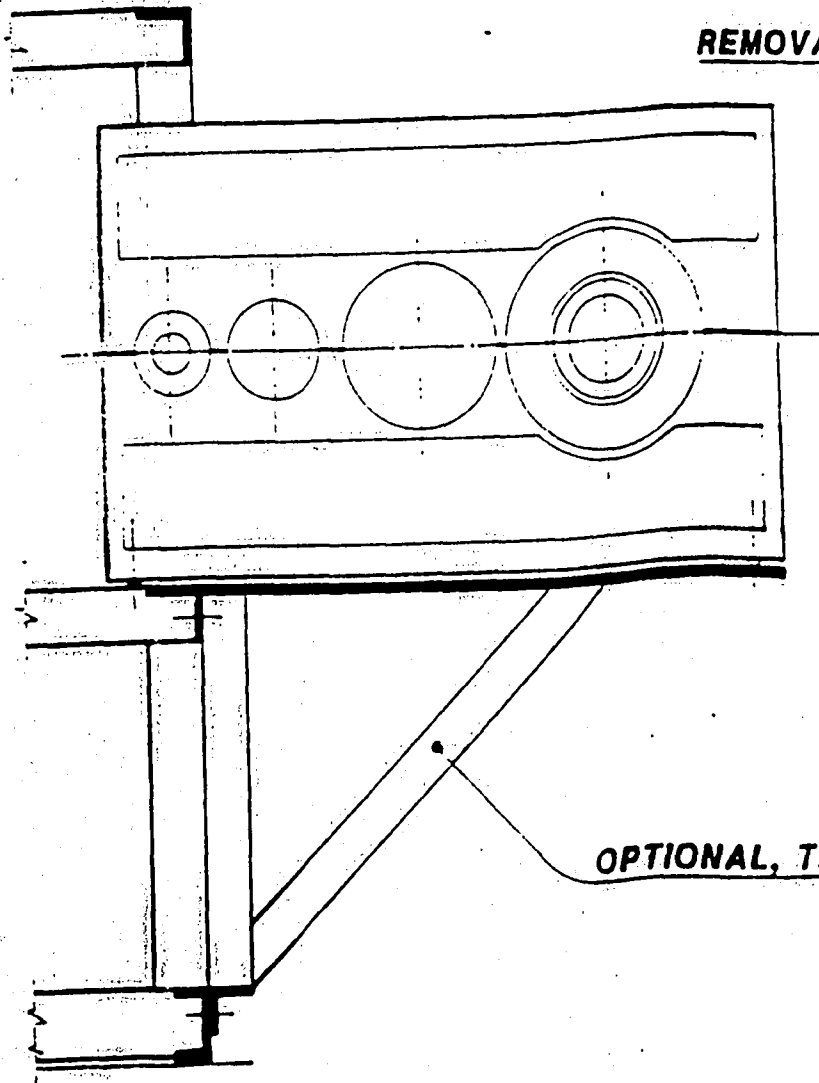
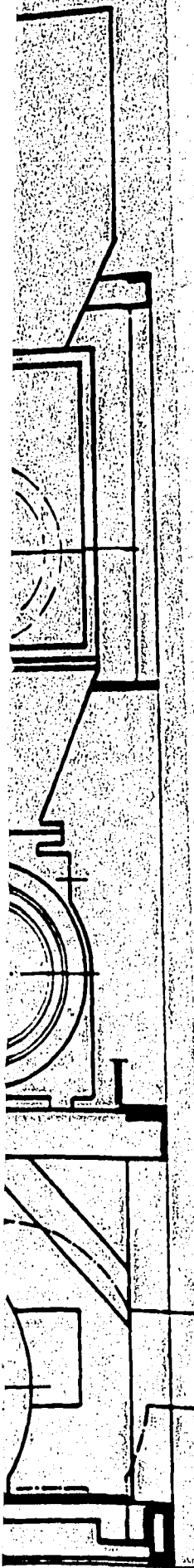
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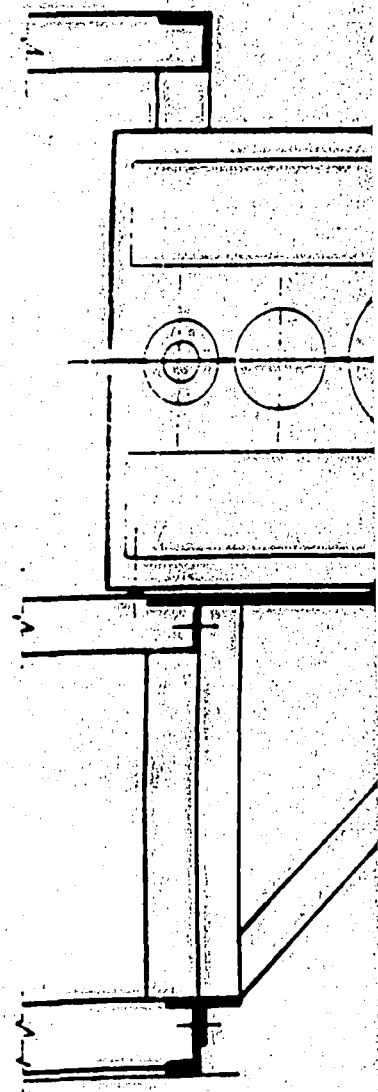
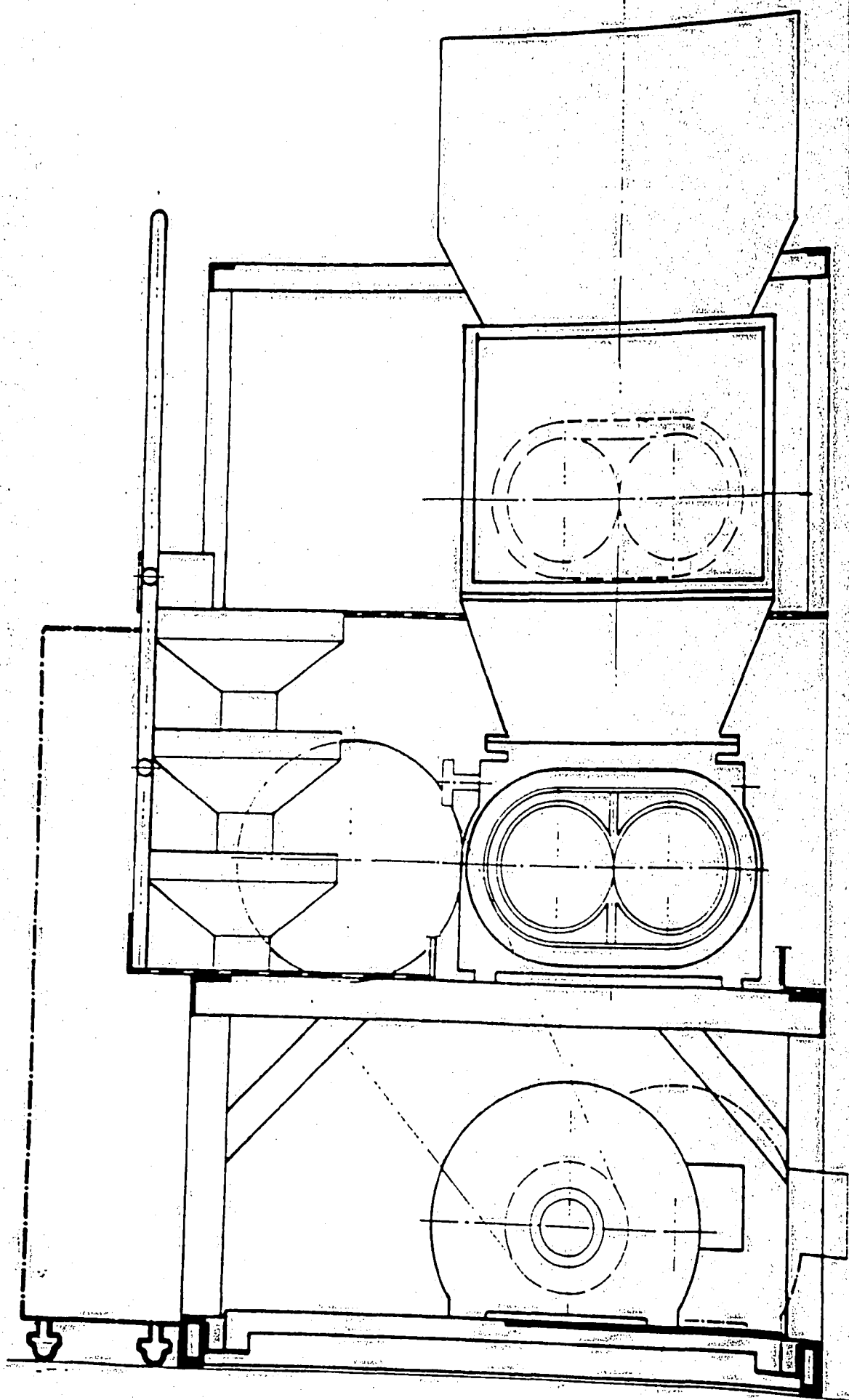
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LEVER BROTHERS COMPANY

HOUSEHOLD PRODUCTS ENGINEERING

818 SYLVAN AVENUE

ENGLEWOOD CLIFFS NJ 07632

FACS TELEPHONE NO. 201-894-8132

DATE 5/27/88

TO: P. KRISHNAYYA

HAMMOND PLANT

FROM: F. A. DRESCHER

NUMBER OF PAGES TO FOLLOW 1

IF NOT PROPERLY RECEIVED CALL 201-894-8542

**G. MAZZONI S.p.A.**

VIALE TRENINO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE



0331 684084



FAX 0331 - 684511



TELEX 330576 GMAZZI



P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. F.A. Drescher

LEVER BROTHERS COMPANY

818 Sylvan Avenue

Englewood Cliffs, NJ 07632

U.S.A.

D/ccc

BUSTO ARSIZIO, May 27, 1988

Re: Your fax of May 24 and our telephone conversation of May 25

Dear Mr. Drescher,

In response to the requests you made to us this week, we would like to confirm the following:

- a) As I told you on the phone, Mazzoni's policy is not to give out manufacturing drawings to any of its customers, whatever the case may be, for obvious confidential reasons. Your request to receive these drawings and specifications seems a bit incomprehensible to us since Mazzoni guarantees these components. However, in this special case and to once again illustrate Mazzoni's willingness to collaborate with Lever, we are willing to make available - on Mazzoni premises - these drawings for Lever engineers to analyze. Any of Lever's representatives are welcome to our engineering offices in Busto Arsizio to go over these design details.
- b) All Mazzoni machinery, and eventual replacement of parts under warranty, will be delivered C.I.F. Hammond, as already stated in our telex dated Feb. 5, 1988.
- c) For that which regards exactly when our warranty goes into effect, we are still perplexed since we do not know when the machinery will be started up. I have spoken to my brother Guido, and we remain firm that it is impossible to accept an "open" warranty, i.e. not specifying a time limit for the actual start-up of the machinery, for various, obvious reasons which are recognized by everyone in the world of industry. You will find these conditions to be

The actual start-up of the machines for a normal and continuous production could possibly take place after months of repeatable, intermittent, discontinuous start-ups of the machines for your own various reasons. These



abuse on the machines.

For this reason, the definition of "start-up" needs to be clarified.

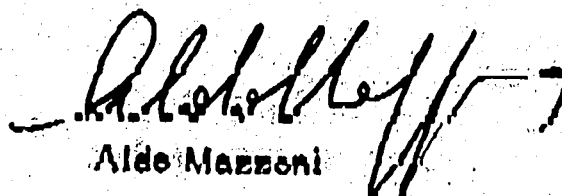
- d) Mazzoni will accept responsibility for repair and/or replacement of parts showing excessive stress and/or wear after 12 months of continuous operation, as long as the inspection is carried out by a specialized laboratory which is acceptable to both Lever and Mazzoni, with the presence of a Mazzoni technician on site. Therefore, Mazzoni requests that prior to the time for inspection Lever proposes a third-party candidate for carrying out the inspection and a specific date.
- e) We reconfirm that the delivery time remains to be nine and twelve months, for the first and second lots respectively, from the date of a faxed letter establishing the order. This is the same delivery time established during our meeting in Hammond on May 4, 1988. As I told you by phone this week, Mr. Drescher, we will do our utmost to shorten these times by one month, i.e. eight and eleven months, but I cannot make this delivery time official.
- f) With reference to paragraph c) above, Mazzoni could accept the extension of the warranty if we also receive orders for the cutters and mixers, and we hereby state to be open to collaborating with Lever for the design and construction of a new mixing system which is more adaptable to your product.

I hope the above answers meet Lever's needs, and on those points which it is impossible for Mazzoni to change general policy, I hope you understand our reasonings.

Again, I would like to reiterate my belief that it would be opportune for Lever to purchase not only the plodders and refiners complete with drives, but also the mixers and cutters from Mazzoni. Total supply of all these components from one sole manufacturer is deemed by us to be only advantageous to Lever.

We hope to hear of your final decision very soon, and if in the meantime you need any further assistance, please don't hesitate to ask.

Sincerely yours,


Aldo Mazzoni

cc: A, SAP, S. Rogora, G. Mazzoni U.S.A., Inc.

June 6, 1988


Via Facsimile: 011-39-331-684-511

Mr. Aldo Mazzone
G. MAZZONI, SpA
Viale Trentino 10/12
21052 Busto Arsizio
ITALY

Dear Aldo:

We are pleased to inform you that the purchase order for the supply of 4 Palletizing Refiners, 4 Duplex Pre-Refiners, 4 Duplex Plodders and 1 Rework Refiner is PL-10262.

Best Regards,


F.A. Drescher
Purchasing Agent -
Engineering

1063p



FAX COVER SHEET

Date APRIL 6, 1988

Number F-812

From: G. MAZZONI S.p.A.

ALDO MAZZONI

To: LEVER BROS.

Attn. MR. K. RADHAKRISHNAN
MR. F. DRESCHER ✓

Fax Numbers

331-684511

001-201-894-6132





Total pages including this cover sheet: 2

Special instructions: _____

CCI: _____



G. MAZZONI S.p.A. VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA
COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE

-  0331 - 684.084
-  FAX 0331 - 684511
-  TELEX 330576 GMAZZI
-  P.O. BOX 421 - 21052 BUSTO ARSIZIO

Messrs.
K. Radhakrishnan and F. Drescher
LEVER BROTHERS COMPANY
818 Sylvan Avenue
Englewood Cliffs, New Jersey 07632
U.S.A.

D/ccc

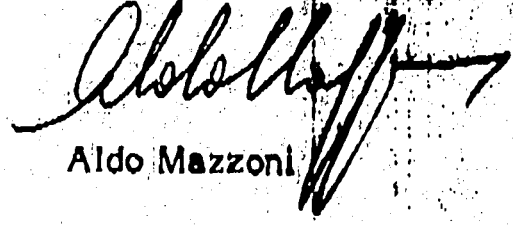
BUSTO ARSIZIO, April 6, 1988

Dear Messrs. Radhakrishnan and Drescher,

With reference to your fax dated April 4, I would like to express my pleasure in understanding that you plan to place your order with G. Mazzone S.p.A.

We are currently examining your proposed conditions with care, and within the next few days you will receive our complete, specific answers to your questions.

Sincerely yours,



Aldo Mazzone

cc: A, SR, SAP/EM, G. Mazzone U.S.A., Inc.

C.C.I.A.A. 38857 Milano - C.C.I.A.A. 47255 Varese - Torre e di Busto Arsiz. P.02 Soc. N. 5578 - Codice Fiscale e Partita IVA: 0098653022



FAX COVER SHEET

Date 16th March 1988

Number F-698

From: G. MAZZONI S.p.A.

To: LEVER BROTHERS CO. INC.

Mr. Aldo Mazzoni

Attn: Mr. F.A. Dreacher

Fax Numbers

331-684511

001-201-894-6132

Total pages including this cover sheet: 2

Special instructions: _____

cc: D - VIR - BAP - S.R. - Mazzoni U.S.A. Inc.



G. MAZZONI S.p.A. VIALE TRENINO 10/12 - 21052 BUSTO ARSIZIO - ITALIA
COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE

☎ 0331 - 884.064
📠 FAX 0331 - 004511
📠 TELEEX 330676 GMAZZI
📠 P.O. BOX 121 - 21052 BUSTO ARSIZIO

F.A. Drescher
Lever Brothers Company Inc.
818 Sylvan Avenue
Englewood Cliffs
New Jersey 07632
U.S.A.

A/GC/rp

BUSTO ARSIZIO, March 15, 1988.

FAX MESSAGE F-698

Re: Specification No. 0840p covering Commercial Conditions

Dear Mr. F.A. Drescher:

We refer to our fax message No. F-601 dated March 7, 1988.

Point 6.0 Performance Bond

Please be advised that we have found a reliable insurance company in Italy with connection in U.S.A. which can arrange the performance bond in the form you have requested.

The premium will not exceed 1,20% on the goods value for one year.

Such cost will be supported by you as explained in our above fax message.

Yours sincerely,

G. MAZZONI S.p.A.

A. Mazzoni
A. Mazzoni

cc: D - VIR - SAP - S.R. - MAZZONI U.S.A. INC

C.C.I.A.A. Milano - C.C.I.A.A. 47295 Varese - Tribunale di Busto Arsizio Reg. Imp. N. 5673 - Casella Postale P. 112 114 - 0018155112

PARCEL 1:

A part of the U. S. Government Lots Number One (1) and Number Two (2) in the East One-half (E 1/2) of Section One (1), Township Thirty-Seven (37) North, Range Ten (10) West of the Second Principal Meridian, Lake County, Indiana, described as:

Commencing at a point seventeen and three-tenths feet (17.3') North of the Southeast corner of said U. S. Government Lot Number One (1), Thence North Eight Hundred Eighty-nine and twenty-one one hundredths feet (889.21') on the East line of said Section One (1) to a point Fifty feet (50') southwesterly by a rectangular measurement from the center line of the One Hundred Foot (100') right-of-way of the Pittsburgh, Fort Wayne and Chicago Railway; thence Northwesterly Thirteen Hundred Fifty-five and thirty-four One-hundredths feet (1355.34') parallel to and fifty feet (50') southwesterly by rectangular measurement from said center line of the railroad right-of-way to the Wolf River center line, as established by agreement dated December 3rd, 1903, thence southwesterly seven hundred thirty-seven and twenty-two one-hundredths feet (737.22') on said center line to the original center line of Indianapolis Boulevard (before same was widened to one hundred feet (100') by an addition of twenty feet (20') along the northeasterly side thereof; thence Southeasterly fifteen hundred one and seventy-six one-hundredths feet (1501.76') along said center line of Indianapolis Boulevard to a point; thence Northeasterly one hundred seventy-five and eighty-nine one-hundredths feet (175.89') by rectangular measurement from said center line; thence East One Hundred Seventy-five and eighty-nine one-hundredths feet (175.89') to the place of beginning; Excepting from the above description a tract of land two hundred feet (200') in width lying adjacent to and parallel to a line which is fifty feet (50') distant Southwesterly by rectangular measurement from the center line of the above described one hundred foot (100') right-of-way of the Pittsburgh, Fort Wayne, and Chicago Railway containing nineteen and five tenths (19.5) acres, exclusive of streets.

PARCEL 2:

That part of the east half of Section 1, Township 37 North, Range 10 West of the 2nd P.M., in Lake County, Indiana, described as follows: Beginning at the intersection of the center line of Indiana Boulevard as it was in the year 1922, with the center line of Calumet Avenue, thence north along the said center line of Calumet Avenue 495.32 feet, thence west at right angles to the last described line 175.89 feet to a point, thence southwesterly at an angle of 140 degrees 54 minutes with said last described line and at right angles to the said center line of Indiana Boulevard as it was in the year 1922, 175.89 feet to the said center line of Indiana Boulevard as it was in the year 1922, thence southeasterly along said center line 495.32 feet to the place of beginning, containing two acres, more or less, the same being parts of Lots 1 and 2, in the old (Government) survey of Section 1 aforesaid, situated in the City of Hammond, in Lake County, Indiana;

Excepting so much of said real estate as has been dedicated for street purposes in Indianapolis Boulevard and Calumet Avenue in the City of Hammond, Lake County, Indiana.

EXHIBIT B

PAGE 1 OF 2 PAGES

PRIVATE WIRE TELEGRAPH MESSAGE

FROM: G. GERALD HYSON

EXT. 6580/E2D

BUDGET NO. 4175

DATE: 3/14/88

=====

TO: G. MAZZONI, SpA
Viale Trentino 10/12
21052 Busto Arsizio
ITALY
Attention: G. Corridini

Telex #325836 GMAZZ I

We may need higher throughput from our Plodders and Refiners to meet future requirements. Could you please telefax revised quote for the following:

1. Pelletizing Refiners and Duplex Pre-Refiners to have 8,000 lb./hr. capacity using 40 mesh screen. Indicate size, HP and the type of screws required. All units to have twin screws.
2. Duplex Vacuum Plodders. Capacity required is 10,000 lb./hr. Indicate size, HP and type of screws required. All units to have twin screws.
3. Minimum temperature rise through Refiners and Plodders.
4. Gear Boxes to be designed for at least 50% more horsepower. Possibility of units being run at low RPM until full capacity requirements are established.
5. All other conditions remain the same.
6. Telefax quote. Decision to be made during this week.

Regards

G. GERALD HYSON - Purchasing Manager -
LEVER BROTHERS COMPANY
Englewood Cliffs, NJ Tlx: 133137

cc: Mr. L. Spitz - Via Fax: (312)-965-9036

Bcc: F. Drescher - 6561/E2D
K. Radhakrishnan - 6589/E2D



FAX COVER SHEET

Date March 7, 1988
Number F-601

From: G. MAZZONI S.p.A.

To: LEVER BROS. CO. INC., ENGLEWOOD CLIFFS

Mr. ALDO MAZZONI

Attn: Mr. F.A. DRESCHER

cc: Mr. Radhakrishnan

Fax Numbers

331-684511

001-201-894-6132

Total pages including this cover sheet: 6

Special Instructions: _____

cc: D - SAP - SR - G. Mazzoni U.S.A. Inc.

*Copies given to
A.A. and K.R.*



G. MAZZONI S.p.A.

VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE



0331 - 684.084



FAX 0331 - 084511



TELEX 933076 GMAZZI



P.O. BOX 421 21052 BUSTO ARSIZIO

F.A. Drescher
Lever Brothers Company Inc.
818 Sylvan Avenue
Englewood Cliffs
New Jersey 07632
U.S.A.

A/GC/rp

BUSTO ARSIZIO, March 7, 1988

FAX MESSAGE F-601

Re: Specification No. 0840p covering Commercial Conditions

Dear Mr. F.A. Drescher:

Reference is made to your letter dated February 12, 1988 and the discussions you had in Englewood Cliffs with our Mr. Sergio Rogora and Mr. Danilo Baggini and we have the pleasure to confirm you hereunder the following:

- 1.0 **Progress Milestone Schedule and Report**
We will provide to Lever Bros. Co. within two weeks of Purchase Order a preliminary milestone schedule and after two months from Purchase Order we will provide the final schedule.
We will also provide a monthly progress report as requested in point 1.2 of your specifications.
- 2.0 **Inspection and Tests**
As agreed we will arrange for your engineer to inspect the equipment at our manufacturing facilities and we will carry out idle test without soap.
Lever Bros. Co. will send us one electric driving motor to be fitted in all the B-300 mm. plodder to make a running test.
One machine will also be run idle during the inspection of your engineer.
- 3.0 **Problem Resolution**
We agree on your request but limited to our guarantee period.
- 4.0 **Performance Guarantee**
 - 4.1 As agreed you will send us 1 ton of product to be tested on our D-300 prodders with longer barrel which will be available in a short time.
We will inform you in advance when a test on these machines can be carried out and when your technician should be in Italy to witness the test.



Our shipping department will give you full instructions concerning the shipment of the product to Italy.

Final guarantee on the production of our plidders with HSSO product will be given to you only after such test has been carried out.

Please note that as discussed in your offices with our delegates the test is intended to guarantee the screw r.p.m., motor power and reducer service factor, but not to change the machine from model "B-300" to model "B-350".

4.2 Performance test at Lever Bros. Factory Hammond will be carried out on the basis of one 8 hour working shift per day for five days.

4.3 The guarantee that our equipment will operate at a minimum of 95% mechanical efficiency means that the efficiency of the equipment supplied by us will allow a tolerance of 5% maximum in comparison with the guaranteed production.

Such production has been defined to be 350 bph of 5.99 ounces with 25% of flashes coming from soap presses which are recycled to the Duplex Vacuum Plidders.

Consequently the guarantee production of our Duplex Vacuum Plidders will be:

$$350 \times 60 \times 5.35 \times 28.35 \times 1.25/1000 = 3981 \text{ kg/h less 5\% tolerance}$$

The production guarantee for the Amalgamators and Duplex Refiners will be:

$$350 \times 60 \times 5.35 \times 28.35 \times 1/1000 = 3185 \text{ kg/h less 5\% tolerance (the recycle product will be sent to the Duplex Vacuum Plidder hopper)}$$

Regarding the amalgamators the dosing cycle adopted by you will be of 5' max. with 12 batches/h; our weighing hopper will guarantee the discharge of the product in 15". The amalgamator will have to discharge into a hopper supplied by you having a capacity of 2 soap batches with level control placed in such a position to allow one batch of soap to be over level control.

The amalgamator should be stopped empty and will wait for the consent of the level control to perform a new batch.

The specific weight of the HSSO product is 1070 kg/m³.

We agree on points 4.4 and 4.5.

5.0 Availability of drawings

We have noted your requirements and as agreed during the visit of our delegates we will send you in the next few days all calculations of the reduction gear units according to AGMA standards so that you can submit them to your consultant.



6.0 Performance Bond

We have examined your performance bond through an insurance company in U.S.A.

We have no objections to provide you with the performance bond from a qualified insurance company in Italy but since your request came after we have submitted you our quotation, our prices do not include the cost of such performance bond which is in the region of 1,25 - 1,5% for annum.

We are now dealing the matter with a reliable insurance company in Italy who has also branches in the U.S.A. and we will submit you the cost of the performance bond in the next few days.

7.0 Instructions Maintenance and Operation Manuals

As agreed during the visit of our delegates we will send you 3 months prior to shipment of the equipment only the electric wiring diagrams and the P & I diagrams.

Final operation manuals will be sent with the machines.

8.0 Bank Guaranty for down-payment

We have noted that you need a bank guaranty under the form of a stand-by Letter of Credit.

We agree on giving you such bank guaranty as soon you have decided to place the order with us.

However to avoid delays, misunderstanding, etc., we would prefer that the bank guarantee is issued on the basis of a draft that you will send us in due time, and at the same time of receipt of your down payment.

You may bind the negotiation of your down payments to the receipt of our bank guarantee.

Last but not least, Bank Guarantee will guarantee you of the reimbursement of the advance payment, only in the case we have refused or failed to ship the ordered equipment within the scheduled delivery date, i.e. January 15, 1989 for the first lot and April 15, 1989 for the second lot valid for a firm order placed in March 1988. Advance funds will be available against a sight draft on the Bank accompanied by a notarized statement certifying the above.

The guarantee will correspond to the amount of your down-payment and will become null and void after the shipment of the equipment.



Various Matters

1) Delivery

We have noted that 4 manufacturing lines will be ordered simultaneously.

The first 2 lines have to be delivered 9 months from date of your order, the second two lines have to be delivered 12 months from your order.

This means that if the order is placed within March 1989 the delivery of the first lot will take place by 15th Jan. 1989 whereas the second lot will be delivered by 15th April 1989.

In order to speed up the matter we are prepared to accept your Letter of Intent; the official order can follow some weeks later.

Above delivery dates are the dates on which the equipment has been inspected by your engineer and is ready for shipment at our works.

2) Prices

2a Wave of penalties

If you decide not to apply any penalty clause on your order we will be prepared to increase our quantity discount from 4 to 5%.

2b Special additional discount

If your down payment will be increased from 20% to 30% and you will place your order for the 4 complete lines at the same time including all weighing hoppers, all amalgamators, all plodder refiners, duplex vacuum plidders, pelletiser, rework refiner and cutting machines we would be prepared to grant you a special additional discount of 5% (five per cent).

This means that in this case you will enjoy a 7% Unilever discount plus a possible 5% quantity discount, plus another special additional 5% discount because of down payment increased to 30% and order placed for all equipment we have quoted according to your specifications.

3) Shipment

We have already quoted you our equipment providing shipment CIF Hammond via Baltimore by sea freight.

The insurance from warehouse to warehouse will include the value of the goods plus the value of freight plus 10%.



Please note that it is not possible for us to pay your customs duties because our company is not importing the goods in the U.S.A. and our government (foreign exchange authorities) does not allow us to use foreign exchange to pay customs duties for other companies abroad. We think that you should entrust your Customs agent to pay such duties on your behalf.

4) Cancellation fees for second lot

Even if the second lot (2 finishing lines) will be ordered simultaneously with the first lot (2 lines) we will charge you our fees for a possible cancellation only after 3 months from the date of your order (date of your letter of intent).

After such 3 months the cancellation fees will be calculated as follows:

- on the 4th month from date of order: 10%
- on the 5th month from date of order: 20%
- on the 6th month from date of order: 35%
- on the 7th month from date of order: 50%
- on the 8th month from date of order: 70%
- on the 9th month from date of order: 80%
- on the 10th month from date of order: 90%
- on the 11th and 12th month from date of order: 100%

5) It has been agreed that all documents will be sent to you by 'DHL' courier and also your order and specifications will be sent to us by telefax followed by official signed documents through 'DHL' courier.

We hope the above information covers all the points mentioned in your specification number 0840p and we are at your complete disposal for any further detail you may need.

Many thanks for your co-operation and kindest regards.

Yours sincerely,

G. MAZZONI S.p.A.

A. Mazzoni

cc: Mr. Radhakrishnan, Lever Bros. Co., Englewood Cliffs, New Jersey
G. Mazzoni U.S.A.
D - SAP - SR



Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, New Jersey 07632
(201) 894-6000

March 7, 1988

Via DHL

Mr. S. Rogora
G. MAZZONI
Viale Trentino 10/12
21052 Busto Arsizio
ITALY

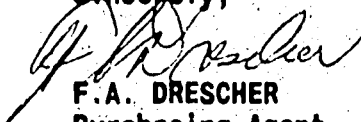
Re: Project HSS0 - H6579

Gentlemen:

Please find enclosed a supplemental specification for all gear driven equipment. This supplemental specification applies to all specifications on which we have asked you to quote on this project.

May we please have your comments and response at your earliest convenience.

Sincerely,


F.A. DRESCHER
Purchasing Agent -
Engineering

FAD/sd
ENCL:

HSSO PROJECT H-6579
SUPPLEMENTAL SPECIFICATIONS
FOR ALL GEAR DRIVEN EQUIPMENT

1. Power Gear Drives

- a. Gear drives must be sealed and lubricated unless otherwise agreed to by Lever Brothers Company.
- b. Gear drive manufacturers must certify that their drives are suitable for the machine operation as specified by the machine builder.
- c. Power gearing drives to be built to the American Gear Manufacturers Association Standard AGMA 390.03, minimum Quality Level of 8. Standard, AGMA 360.01, Manual for Machine Tool Gearing, should be followed in the design of power gearing drives.

2. Switches

- a. Use proximity switches where possible.
- b. Limit switches, where necessary, must be plug-in or plug-in head type.

3. Bearings

- a. Antifriction bearings are preferred to Journal bearings of either plastic or metal.
- b. Use only antifriction sizes confirming to the Antifriction Bearing Manufacturers Association Standards. All bearings must have at least two sources.
- c. Loads and speeds must be within the manufacturer's ratings.
- d. Bearing B-10 life is based on the Antifriction Bearings Manufacturers Association Standards and must be a minimum of 30,000 hours.
- e. Oscillating antifriction bearings must rotate more than one revolution of their antifriction rolling elements.

4. Use a minimum safety factor of 3 based on the yield stress for steel and aluminum structural components and shafting.

5. Fasteners

- a. Socket head cap screws are preferred over hex head cap screws.
- b. Hex head cap screws, where used, must be class 5.



Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, New Jersey 07632
(201) 894-6000

February 12, 1988

Via DHL

Mr. S. Rogora
G. MAZZONI
Viale Trentino 10/12
21052 Busto Arsizio.
ITALY

Reference: HSS0 Project H-6579 - Hammond, Indiana

Dear Mr. Rogora:

The attached documents, Specification #16670 - Electrical & Control Requirements, and Specification #0840p - covering Commercial Conditions, form a part of our original Request for Quotation on the above subject project.

Kindly take these into consideration in your review of this Request for Quotation. Lever Brothers Company, Inc. would appreciate receiving any written comments, questions and responses at your earliest convenience.

Please also forward audited Financial Statements for our financial people to review.

Thank you for your cooperation in this regard.

Sincerely,

F.A. DRESCHER
Purchasing Agent -
Engineering

FAD/sd

ENCL:

0870p

PARCEL 3:

All that certain piece or parcel of land situated in the City of Hammond, Township of North, County of Lake and State of Indiana, and being part of the Northeast Quarter of Section One, Township Thirty-seven North, Range Ten West of the Second Principal Meridian, bounded and described as follows, viz:

BEGINNING at a point where the Northeasterly line of land of Lever Brothers Company meets the middle line of Calumet Avenue, eighty feet wide, in the line dividing Section One, Township Thirty-Seven North, Range Ten West of the Second Principal Meridian from Section Six, Township Thirty-seven North, Range Nine West of the Second Principal Meridian, at the distance of six hundred and forty-six feet and eight one-hundredths of a foot measured due North along said Section dividing line from a point at the East Quarter corner of said Section One; extending from said beginning point North fifty degrees eleven minutes two seconds West, by said land of Lever Brothers Company, crossing the Westerly line of said Calumet Avenue and by land now or formerly of the Shedd Estate, the distance of one thousand six hundred and thirty-nine feet to a point, said line being immediately contiguous to and superimposed upon the present northeast boundary line of property now owned by Lever Brothers Company; thence by land of the Pittsburgh, Fort Wayne and Chicago Railway Company the following two courses and distances:

(1) North thirty-nine degrees forty-eight minutes fifty-eight seconds East Eighty feet to a point, and (2) South fifty-three degrees forty-nine minutes six seconds East, recrossing said Westerly line of Calumet Avenue, one thousand four hundred and ninety-six feet and thirty-five one-hundredths of a foot to a point in the said middle line of Calumet Avenue in said line dividing Section One, Township Thirty-seven North, Range Ten West of the Second Principal Meridian from Section Six, Township Thirty-seven North, Range Nine West of the Second Principal Meridian, and thence due South, along said middle line of Calumet Avenue, being along said last mentioned Section dividing line, the distance of two hundred and twenty-seven feet and fifty-seven one-hundredths of a foot to the place of beginning, CONTAINING four acres and six thousand six hundred and seven ten-thousandths of an acre, more or less.

(Being part of the same premises (1) a portion of which was conveyed to the Grantor by Deed from the City of Hammond dated November 6th, 1924, and recorded in Lake County, Indiana, in Deed Book No. 341, page 570; (2) another portion of which was conveyed to said Grantor by Deed from Charles B. Shedd, et al, dated August 18th, 1924, recorded as aforesaid in Deed Book 338, page 235 (3) and the other portion of which was quit-claimed to said Grantor by deed from the First Trust and Savings Bank of Hammond, Lake County, Indiana, dated November 5th, 1924, recorded as aforesaid in Deed Book 341, page 569, Excepting, Reserving and Subject as in said Deeds set forth.)

UNDER AND SUBJECT (1) to the right of way or easement, fifty feet wide, for railroad switch and the easement for wagon road reserved by Charles B. Shedd, et al, in their deed dated August 18th, 1924, above recited, and (2) if and to the extent the same may now affect the land above described, to the water way dedicated by Agreement between Oliver Forsyth and E.A. Shedd dated December 3rd, 1901, and subject to any rights of the State of Indiana and the United States of America in said water way.

EXHIBIT B

PAGE 2 OF 2 PAGES

LEVER BROS NJ EC
325836 GMAZZ I
ZCZC
325836 GMAZZ I

;AUT. TRS. PLS. DON'T INT.;

TELEX NO. 1173/A2

FEBRUARY 5TH, 1988

ATTN MR F.A. DRESCHER

RE PROJECT H-6579 - HAMMOND, IN

WE THANK YOU FOR YR 2/4 TLX.

1. PRICES OF ALL OUR PROPOSAL ARE GROSS, AND THEREFORE 7 PCT UNILEVER DISCOUNT PLUS QUANTITY DISCOUNT, IF ANY, HAVE TO BE DEDUCTED FROM THE FOB NORTHERN ITALIAN PORT FIGURES.
2. YOU MAY REFER TO PAGE NO. 2 OF OUR COVERING LETTERS DATED 1/26 AND 1/27, WHERE WE HAVE SPECIFIED FREIGHT AND INSURANCE EXPENSES UP TO YR HAMMOND JOBSITE.
3. AS ALREADY MADE FOR ALL PREVIOUS SUPPLIES OF OUR SOAP PLANTS/EQUIPMENT TO YOUR U.S.A. FACTORIES, AND IN ACCORDANCE WITH INTERNATIONAL GUARANTEE STANDARDS, WE ALWAYS GUARANTEE THE FREE-OF-CHARGE REPLACEMENT OF THE PARTS WHICH PROVES TO BE DEFECTIVE WITHIN A SPECIFIED PERIOD, BUT NOT FOR THE CORRESPONDING FREIGHT/INSURANCE EXPENSES WHICH USUALLY ARE FOR CUSTOMER'S ACCOUNT. HOWEVER, ALREADY IN AN ENDEAVOUR TO BE EXCEPTIONALLY FAVORABLY DISPOSED TO YOU, FOR THIS SPECIAL H-6579 PROJECT, WE WILL ALSO ACCEPT TO PAY SEA FREIGHT AND INSURANCE EXPENSES (IMPORT DUTIES EXCLUDED), FOR ANY FREE-OF-CHARGE REPLACEMENT PARTS THAT WE WILL SHIP TO YOU WITHIN THE AGREED GUARANTEE PERIOD.
4. PENALTY CLAUSE. WE HAVE PROPOSED THE SAME CONDITIONS OF THE DEFI PROJECT. FURTHERMORE, THIS CLAUSE HAS BEEN WRITTEN IN ACCORDANCE TO MR HYSON'S SPECIFIC REQUEST, PLEASE REFER TO MR HYSON'S LETTER DATED 4/15/87, PAGE 2, PARA. 5.2, REGARDING "MAZZONI EQUIPMENT FOR H650 PROJECT". HOWEVER, AS PER OUR TELEX 70/A2 OF 1/8/88 TO YR MR K RADHAKRISHNAN, WE AGAIN CONFIRM YOU THAT FOR AN ORDER PLACED WITHIN FEBRUARY, UNDOUBTLESS WE WILL MAKE READY ALL UNITS MAKING UP THE FIRST LOT BY DECEMBER 1ST, 1988.

AT YR COMPLETE DISPOSAL FOR ANY FURTHER CLARIFICATION,

BEST RGDS
G. MAZZONI SPA

CC-D/SAP/SR/MAZZUSA

NNNN
LEVER BROS NJ EC

.....
TO REPLY FROM TELEX I OR II (TWX) DIAL 100 FROM EASYLINK USE /WUW.
EST 1054 FEB/05/1988



G. MAZZONI s.p.a.

VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE



0331 - 684.064



FAX 0331 - 684511



TELEX 330576 GMAZZI



P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. G. Gerald Hyson
Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
U.S.A.

FAO ~~HARRY STEVENS~~
FEB 1 - 1988

A/rm

BUSTO ARSIZIO, January 26, 1988

Re: Project HSSO - H-6579
1 (one) Simplex Rework Refiner for Hammond, Indiana

Dear Mr. Hyson:

Referring to your above enquiry dated 1/15/88, we are pleased to send you, herewith enclosed, our detailed quotation, in quadruplicate, regarding **1 (one) Simplex Rework Refiner, model "M-300/2000"**, designed for an hourly capacity of **1,500 kg** of toilet soap pellets.

As requested, our proposal has been issued in accordance with your below listed documents:

- General Conditions - Sale & Delivery (GC-1)
- General Conditions - Installation & Service Personnel (GC-4)
- General Specification - Equipment Noise (GS-18).

As regards:

- Specification 5914K and Vendor Data Requirements - Exhibit # 1
- General Specification Machinery Guards - GS-12
- DC Variable Speed Drive Controller - Specification # 16645
- Clean Design 5887K,

you may refer to our enclosure No. 1, being part of our above quotation No. 23966, where we have answered and commented, item by item, all points of your above detailed specifications.

Attached, you will also find:

- current service charges for sending our technician
- preliminary dimension drawing No. LMIS-0017
- table SG-057, showing the worm characteristics of the new Mazzoni modular plidders.



Gear Reducers

Plidders will be equipped with new parallel helical gear reducers, made of carburized steel, of our design and manufacture, with load capacity verified according to AGMA, DIN and ISO standards. Calculation data of each reducer can be found in the enclosed specifications LM/SV and in the quotation of each machine.

However, if desired, our company is available for collaborating with your Technical Department on the development of new alternative solutions of mutual interest.

With regard to the manufacture characteristics of the above gear reducers, we guarantee their good operation within a period of 24 months (instead of 12) from the start-up, but not later than 30 months from the shipment date, provided that units are kept in good conditions from their receipt up to their start-up.

Moreover, should the reducers be damaged due to causes not imputable to us, we will engage ourselves to carry out technological modifications on them in accordance with your requests at a reasonable cost and with the supply of spare parts, if any, at special reduced prices.

We will not quote mechanical spare parts for the above gear reducers, since, as already advised, we guarantee the free replacement of these parts within a period of 24 operating months from the start-up, should mechanical problems (due to faulty reducer designing or manufacturing) be experienced.

For your information only, we have attached one copy of the ISO Standards relevant to the "Calculation of Load Capacity of Spur and Helical Gears" to the quotation of the 'B-300/4000/86' Duplex Vacuum Plidders.

Last but not least, we also enclose:

- drawing 5002900A (2 sheets), showing the reducer installed on our 'M-300' single-worm plidders
- drawing 500070079A, showing the single-worm plodder support
- drawing 500390002A, showing the pneumatic clutch to the high speed shaft of the reducer
- diagram SG 059.01 - Rev. A, showing the rating curves.

Discounts

As per agreement in force, our today's prices are subject to 7% Unilever discount.



Freight and insurance charges

Since the units making up the first lot (2 Chip-Mixers, 2 Duplex Vacuum Plodders, 2 Simplex Pelletizing Refiners, 2 Simplex Pre-Refiners and 1 Rework Refiner) will be shipped all together, we do not indicate separate freight and insurance expenses for each item, but a total cost for all above items making up the first lot:

- **Approx. ocean freight expenses up to Baltimore/New York, THC charges and trucking expenses up to Hammond Factory (import duty excluded):**
LIT. 30.000.000,-
- **Approx. insurance expenses:**
LIT. 8.000.000,-

We appreciate the opportunity of submitting our proposal for this new HSSO Project and we trust that you may find it possible to favour us with your valued order. We would welcome any comment you may have on our proposal and should you desire any possible changes, please do not hesitate to contact us and we will do our best to accomodate you.

Very truly yours,

G. MAZZONI S.p.A.


G. Corradini

Encl.

cc : G. Mazzoni U.S.A. Inc., St. Louis

cc : SAP+SR



G. MAZZONI S.p.A.

VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE



0331 - 684.064



FAX 0331 - 684511



TELEX 330576 GMAZZI



P.O. BOX 421 - 21052 BUSTO ARSIZIO

Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
U.S.A.

'M-300/2000'

BUSTO ARSIZIO, **January 26, 1988**

PROJECT HSSO - H-6579 HAMMOND, INDIANA

QUOTATION NO. 23966

1 (ONE) SIMPLEX REWORK REFINER

(single-worm)

MODEL: M-300/2000

CAPACITY: 1,500 KG/H OF TOILET SOAP PELLETS.

The Simplex Rework Refiner is designed for the homogenizing, refining and pelletizing of soap and similar products.

Refining is achieved by using fine refining screens.

Mazzoni refiners are constructed to use 55 European mesh size (American mesh number 50) refining screens.

The plodder consists of various modular elements:

- base
- reducer
- thrust bearing
- worm barrel and worm
- pelletizing head
- feed section
- drive motor
- electric controls.



BASE

The base is made from heavy fabricated steel members and plates. This welded rigid base assures proper alignments and quiet vibration free operation. The base supports and connects the reducer, the thrust bearing and the worm barrel. It also protects and encloses the main drive motor, the V-belts and transmission pulleys between the drive and the reducer. The external surfaces of the base are covered with easily removable attractive side steel plates which permit quick easy internal inspection and maintenance. The working horizontal surfaces are covered with non-skid heavy duty checkered service platforms.

REDUCER

New parallel helical gear reducer, made of carburized steel. The shafts rotate on conical roller bearings. All gears are lubricated in an oil bath.

SUPPORT AND THRUST BEARING

The support connects the reducer with the extruder barrel and encloses the thrust bearing. Shaft and thrust bearing are considerably sized for torque transmission and to bear the axial thrust determined by the worm in working and start-up conditions under load.

WORM BARREL AND REFINING WORM

One stainless steel worm barrel houses a 'CONSTANT' pitch refining worm made of AISI 304 stainless steel. The front end of the worm is supported by a multi-ribbed plate ("spider") to reduce wear to a minimum. The worm barrel is jacketed for high efficiency and "high velocity" water cooling. The cooling water circuit and the worm barrel will be thermally insulated.

PELLETIZING-REFINING GROUP

New pelletizing head designed for:

- reducing the frontal resistances (thus lowering the soap temperature)
- easy replacement of the drilled plate (composed of one reduced thickness disc)
- easy and quick cleaning of the pelletizing group.

The pelletizing-refining group consists of:

- a) worm support (spider)
- b) refining screens of 8 U.S. mesh
- c) pelletizing group composed of easy to remove and to replace interchangeable drilled plate
- d) pelletizing group support which holds items a) and c) together
- e) reinforced knife holding shafts with special anti-scuffing material bushings, and with relevant knives embedded in item d).



FEED SECTION

The inlet of the preliminary plodder will have a flange for mounting a feed hopper (LEVER supply).

MOTOR AND CLUTCH

The Simplex Rework Refiner requires the listed motor and clutch (motor of LEVER supply):

- SCR variable speed motor, 22 kW power
- Airflex pneumatic clutch.

Matched V-belts and pulleys provide the most effective power transmission between the drive motor and the inlet shaft of the reducer.

For remote control, automatic operation of the Simplex Rework Refiner a pneumatic clutch is provided. This clutch stops and starts the rotation of the worm without stopping and starting the motor.

AUTOMATION PREMOUNTING AND ACCESSORIES

Each Simplex Rework Refiner is supplied with these components:

- service floors without handrails
- premounted cooling water circuit complete with thermometer, ball valve and solenoid valve
- one tachometer generator.

MATERIALS AND CONSTRUCTION SYSTEMS

All parts in contact with soap are made of AISI 304 stainless steel.

The plodder worm is made of AISI 304 stainless steel.

The construction is of the "modular" type, consisting of individual and interchangeable components.

PRICE:

LIT. 60.360.000,-

Couplines from fax



EXCLUSIONS:

- feed hopper
- variable speed motor and starter, but including Airflex pneumatic clutch, pulleys and V-belts for motor
- control panel - we will supply all control and power elements wired to a common terminal strip.
- air compressor, if any
- electric wiring from and to the plodder
- start-up of the unit
- anything else not specified in our proposal.



OPTIONALS:

EXTRA COSTS:

A) WIDENED PLATFORM WITH HANDRAILS

On the left hand side of the plodder.

PRICE:

LIT. 1.690.000,- ✓

B) ROTARY FEEDER (bridge breaker)

PRICE:

LIT. 9.000.000,-

C) TEMPERATURE INDICATION

Besides the standard water outlet thermometer, we can supply a thermoresistance and digital indicator for:

- soap inlet and discharge temperature
- cooling water inlet and discharge temperature.

The thermoresistance which indicates the soap outlet temperature is fitted in the worm support.

PRICES:

First temperature indication:

LIT. 520.000,- ✓

Second temperature indication:

LIT. 340.000,- ✓

Each temperature indication besides the second one:

LIT. 170.000,-

Temperature indication with mV signal and two alarm contacts, for each temperature:

LIT. 520.000,- ✓

D) EXTRUSION PRESSURE INDICATION

The pressure is measured by a "DYNISCO" transducer, fitted in the worm support. Pressure is indicated by a "DYNISCO" analog pressure indicator with double set point alarm and voltage output signal.

PRICE for pressure transducer and indicator:

LIT. 1.810.000,- ✓



Note:

Since we supply standard worm supports with connections for thermoresistance and pressure transducer, it is possible to purchase the basic machine without them and to install this equipment at any later date.

E) EPOXY PAINT.

PRICE:

LIT. 830.000,- ✓ —

1260

TO: A.B. MANDELSBERG

LOCATION: 3477/19

DATE: 4/11/88

FROM: F.A. DRESCHER

LOCATION: 6561/E2D

SUBJECT

=====

REFERENCE No.

=====

HSSO PROJECT Hammond

Spec. 5900K, 5958K, 5919K and 5914K

Please find enclosed the Purchase Order for Mazzoni S.P.A. for the supply of Four(4) Pelletizing Refiners, 4 Duplex Pre Refiners, 4 Duplex Plidders and 1 Reworks Refiner in the amount of two billion, three hundred thirty four million, five hundred seventy six thousand, three hundred eighty Italian Lire(2,334,576,380) which at the exchange rate of 1280 Lire to one dollar equals \$1,823,888 U.S. Dollars.

G. Mazzoni and Company has agreed to replace or repair any equipment in warranty at our plant, are delivering the equipment CIF - Hammond, Indiana, They are also opening a Bank Guaranty on a prime U.S. Bank equal to the thirty five percent(35%) down payment. They have agreed to the waiver of lien, the no-lien contract and establishing an agent in Hammond to receive legal process. Please note the purchase order contains the wording required by you that the purchase order will be interpreted in accordance with the laws of the State of Indiana. I understand by Italian Law a vendor may not place a lien on the property of a third party.

After signature by Mr. Frank Walters, please return all copies of the purchase order to me except for the two white copies, which should be sent to the vendor. Please have Sheila Ashcroft return the two original white copies to my attention after recording with the County. I will return the original to the vendor with certain information on the implementation of the project.

Frank Walters
F.A. Drescher
F.A. Drescher

RECEIVED

JUN 22 1988

ANDREA B. GREEN



SALES CONDITIONS

GOODS DELIVERED

F.O.B. Northern Italy Port, packing included. Packing according to Unilever Packing Specifications dated March 1978.

APPROX. SHIPPING SPECIFICATIONS

- 1 case: gross weight : 6,600 kgs
dimensions : 4.10 x 2.00 x 2.55 mts

PRICES ARE FIRM AND NOT LIABLE TO ADJUSTMENT.

LESS 7% UNILEVER DISCOUNT.

DELIVERY DATE

For goods at our workshop, completed and ready for your inspection, if any, and shipment (as regards delivery date to the Italian seaport, you may consider about 15 days after your inspection date): 9 months from receipt of your firm order and all technical details, except Force Majeure.

PENALTY CLAUSE FOR LATE SHIPMENT

We accept penalties at a rate of 0.5% (half percent) per week of delay over 60 days from scheduled delivery date, with a maximum penalty of 5% (five per cent).

PAYMENT TERMS

- 20% advanced with the order,
- 70% against shipping documents,
- 10% after commissioning, but not later than 12 months after shipment date.

INSTALLATION

If requested, one of our servicemen will assist in the start-up of the machine(s) and will train your personnel in the operation and maintenance of the equipment.

All travelling and living expenses plus a daily labor rate will be on the customer's account.



GUARANTEES

Our equipment is guaranteed against defects arising from faulty design, materials or workmanship within a period of **twelve calendar months (24 months for gear reducers)** after testing but not later than **eighteen months (30 months for gear reducers)** from shipment date. We will accept liability to repair or replace any part that proves defective under normal use and service within the specified period (F.O.B. Genoa). We will not be liable for improper handling on your part or due to causes not attributable to us.

PRODUCT LIABILITY

We manufacture our plants and machines to the highest safety standards contemplated by the Italian laws, and, if required by our Customers, to any local safety regulation, being clearly understood that this may involve a price increase.

However, please rest assured that as already previously made, we will do our best to conform, as best as possible, our units to your OSHA Clauses and Federal Regulations, on the basis of the data and knowledges in our possession.

Any special safety device or arrangement required by local laws not specifically requested in writing by Customers when placing the order will be the sole responsibility of the Customer who should require a certification of the plant and/or machines from local safety inspector prior to put in operation the plant and/or machines. Any supplementary protection or safety device resulting eventually necessary will be for the Customer's cost and expense.

Copy of our current insurance policy covering "product liability" was sent to you with our letter dated 9/7/87.

As far as your General Conditions (GC-1), (GC-4) and Equipment Noise Specification (GS-18) are concerned, please note the following:

GENERAL CONDITIONS (GC-1)

We are in agreement with the above General Conditions for sale and delivery, except for point 8 "Insurance", which is dealt with separately and point 12 "Equal Employment Opportunity Certificate of Compliance". In fact we believe the "Contract and Purchase Order Supplement" would only apply to US Companies and not to Italian Companies as there could be some regulations which are not in line with Italian legislation. However, we will do our best to comply with such rules and regulations if possible and if applicable.

GENERAL CONDITIONS - INSTALLATION & SERVICE PERSONNEL (GC-4)

Our technicians will be sent over according to our Standard Conditions, which are attached to the quotation. These are our current conditions and are valid now.



Regarding **INSURANCE**, item 3 of your **GC-4 General Conditions**, we confirm you that our **Service Personnel** are usually covered by our **Insurance Policy** for personal injury or accident, as well as **third party liability** and **damage to property**, as per our **Insurance Policy** sent to you with our letter dated **9/7/87**.

EQUIPMENT NOISE SPECIFICATION (GS-18)

We are sorry but we have not the necessary instrumentation to check the noise level in accordance with your above specifications. However, please note that the standard noise level of our machinery in operation without product and with our standard motors is: **80-81 dB(A)** for amalgamator and plidders.

QUOTATION VALIDITY

This offer expires in **60 (sixty) days**.

Very truly yours,
G. MAZZONI S.p.A.



Lever Brothers Company (Incorporated), Englewood Cliffs

January 26, 1988

ENCLOSURE NO. 1

(being part of our quotation # 23966)

As far as your Equipment Specification # 5914K is concerned, please find our comments hereunder:

1.0 GENERAL

- 1.1 Our attached quotation # 23966 already considers your Specifications GC-1, GC-4 and GS-18, see our notes on pages 8 and 9.

As regards the other Specifications and precisely:

- GS-12 Machinery Guards

Please refer to para. "Product Liability", on page 8 of our quotation.

- 16645 DC Variable Speed Drive Controller

We have already contacted our motor supplier who will confirm us if RELIANCE DC varidrive motors, that we think to propose, meet your above specifications.

- Clean Design

All our machines are foreseen for an easy clean-up and are already designed to avoid that product and debris may collect under the unit.

Manufacturing features may be verified from the existing units supplied to your Hammond Factory in 1985.

However, in case of an order, additional devices may be defined with your technicians in order to study further protections that you will consider necessary.

1.2 OK

1.3 OK, see our comments.



1.4 Attached, please find our current service charges for sending our service personnel.

For your information, the time required to check the installation carried out by your local staff and to start-up the Simplex Rework Refiner is of about 2-3 days (supposing that the control system, in accordance with our ladder diagrams, and the wire assembly have already been completed correctly).

2.0 CAPACITY

We are proposing plidders of new design, equipped with 1/5 length/diameter ratio barrel which, if compared with the traditional ones, offer:

- higher production, having the same worm revolutions
- higher extrusion pressure
- better heat transfer in the barrel jacket.

Regarding rpm, please refer to the attached diagram LM/SV-002.

3.0 DESCRIPTION

3.1 Refiner

Owing to low temperature (5-7°C) of cooling water fed to barrels, during shut-downs the product cools in contact with cooling jacket and therefore, the start-up after becomes difficult. Therefore, a circuit of water with temperature controlled at 30-35°C (to be fed to barrels during prolonged shut-downs) is to be envisaged.

Flexible Hoses

Due to assembling requirements, it might be necessary to foresee an internal section made of a reinforced flexible hose, this to avoid the wear and tear of time. However, in case of an order, this particular will be defined, by mutual consent, between the technicians of your and our Company.

3.2 Drive

The mechanical oversizing of the M-300 Simplex Plidders is greater than requested 50% and in all our plidders never less than 75%.

Refining Screens

Our standard foresees the supply of one set of 4 different refining screens. In case of an order, please advise the desired range.



3.3 Lubrication

In our opinion, a centralized lubrication system is not required on the plidders; we enclose a copy of the plodder instruction manual chapter relevant to the lubrication points.

3.4 OK

3.5 Optional Extras

- a) OK, see extra cost on page 5 of our quote.
- b) OK, see extra cost on page 5 of our quote.
- c) The additional cost (wages) for sending one of our technicians for 2-3 days to check the installation and to start-up the plodder is approx. LIT. 1.000.000,-/1.500.000,-.
In addition, you will have to pay for all travelling and living expenses in local currency - please refer to the attached current service charges.
- d) We are awaiting technical data and prices from our local supplier. As soon as we receive them, we will send a telex with the price of the RELIANCE DC varidrive motor.
- e) Separately, we quote the extra cost for the additional supply, if any, of temperature and extrusion pressure indication devices.
- f) We note that for the rework refiner, you do not request the optional twin-screw design.

However, considering that the purpose of this plodder is to rework recycled logs and excess pieces expelled by conveyors placed before the press, which may also have large dimensions, to avoid any possible feeding problem, we would advise the purchase of a twin-worm Simplex Rework Refiner, in place of the single-worm model.

Twin-worm plidders with two counter-rotating, touching but not intermeshing worms can recycle all the different recycle materials into pellets.

For your information, the price of a twin-worm Simplex Rework Refiner, model 'B-250', for a capacity of 1,500 kg/h of toilet soap pellets, driven by a 22 kW SCR varidrive motor and having the same manufacturing characteristics of the 'M-300' single-worm one, is of LIT. 82.470.000,-.

4.0 ELECTRICAL

4.1 OK

4.2 OK



5.0 ADDITIONAL INFORMATION

Please refer to the attached diagram LM/SV-002.

6.0 STANDARDIZATION

6.1 Some parts of the plodder (such as bearings, seals, etc.) might be easily found in U.S.A., but logically other parts of our manufacture, such as gears etc., will not be available in the U.S.A.

6.2 OK

7.0 EQUIPMENT FINISH & COLOR

We do not know GLID-GUARD-4500 SERIES SYSTEM. Please send us more detailed specifications, to contact a local supplier and find a paint having the requested characteristics.

Alternatively, on page 6 of our quotation, we have indicated the extra cost for the epoxy paint, which is the type of paint used for the units recently supplied to Los Angeles and to Hammond.

8.0 VENDOR RESPONSIBILITY

8.1 Preliminary drawings for approval will be submitted within 60 days from the order date, while certified drawings will be submitted within 30 days from receipt of your approval.

8.2 OK

8.3 OK

8.4 OK

8.5 a) Recommended spare part lists will follow within 15-20 days.

b) Complete part lists will be submitted after placing the order.

8.6 We hereby declare that our gearboxes have been calculated according to our AGMA, DIN and ISO standards - see also our covering letter. Calculation extremes are illustrated in the attached diagram LM/SV-002.



9.0 SHIPPING

9.1 OK

9.2 OK

9.3 OK, see budget price on page 3 of our covering letter.

9.4 OK

G. MAZZONI S.p.A.
[Handwritten signature]



CONDITIONS FOR FIELD SERVICE

DAILY RATES

Regular Time

The service rendered by our servicemen for plant installation and start-up will be charged at a rate of Italian Lire 60,000.-- per each working and travelling hour.

Non-working Holidays, save Sundays, while abroad will be invoiced at a rate of 8 (eight) working hours per day.

Overtime

All hours worked in excess of 40 (forty) hours per week will be charged at a rate of Italian Lire 90,000.-- per hour. No overtime rates apply while travelling.

The daily charges will be invoiced to the customer upon the completion of our servicemen's assignment.

MAXIMUM STAY TIME

Unless otherwise stipulated, our servicemen have the right to come back to Italy, for a short period, after 3 consecutive months of service and if an additional period time of stay of one month or more is required.

If the additional stay time is less than one full month, the servicemen can continue his stay time with no interruption.

If required, they will be replaced by other equivalent servicemen of our company.

In any case the serviceman has the right to come back for Christmas holidays. All travelling expenses will be wholly on the customer's account.

LIVING EXPENSES

Living expenses will be charged at a rate of Italian Lire 156,000.-- per day, or more so as to be sufficient to assure an adequate standard of living at site.

The customer is requested to pay the living expenses directly to our servicemen on a weekly basis.

These expenses are to be paid in advance.

In case customer provides full board and lodging to our serviceman's full satisfaction he has to give him a daily pocket money of Italian Lire 32,500.-- in local currency.

All local taxes, if any, to be levied on the fees and on the living expenses paid to our servicemen, will be wholly on the customer's account.



TRAVELLING EXPENSES

Round trip, tourist class, air fare from Milan, Italy, will be on the customer's account. If a trip from Milan will exceed 5 flying hours a business (club) class air ticket is to be provided.

Daily local transportation to and from the factory is to be provided by the customer.

INSURANCE

Our servicemen are already insured against accidents, also for third party liability and property damages.

In case our servicemen have to go to countries where there is a state of war, civil war, declared or undeclared, the customer must effect an insurance against war death and permanent disablement resulting from such a state of political disturbance.

The customer shall have to furnish evidence of this effect prior to the departure of our servicemen.

PAYMENT TERMS

The listed services will be invoiced when our servicemen are dismissed by the customer.

We reserve the right to ask for a downpayment or an irrevocable letter of credit against these services, before our servicemen's departure.

G. MAZZONI S.p.A.
[Handwritten signature]

Customer's Signature

for acceptance:

HSSO MANUFACTURE
PROJECT H-6579
PURCHASE ORDER RELEASE AUTHORITY

The following Equipment/Service is released for purchase:

Equipment/Service Description Refiners and Plodders

Specification Number 5900k; 5958k; 5919k; 5914k

Reference Number As per attached sheet

Vendor: Mazzoni - Italy

Estimated Cost: 2,306,503,820 Liras (\$1,845,200)

Budget Cost: \$2,256,000

\$2,746,000 (including motors and controllers)

Authority	Date	Purchase Conditions	
		None	Attached
Discipline Engineer	<u>[Signature]</u> 5.31.88		
Discipline Manager	<u>[Signature]</u> 6-1-88		
Project Manager Engr./Const.	<u>[Signature]</u> 6/1/88		X
Project Manager	<u>[Signature]</u> 6/3/88 - see my attached memo of date		
Project Engr. Manager	<u>[Signature]</u> 6/1/88		
Director of Engineering	<u>[Signature]</u> 6/8		
Purchasing	<u>[Signature]</u> 6/21/88		



TRAVELLING EXPENSES

Round trip, tourist class, air fare from Milan, Italy, will be on the customer's account. If a trip from Milan will exceed 5 flying hours a business (club) class air ticket is to be provided.

Daily local transportation to and from the factory is to be provided by the customer.

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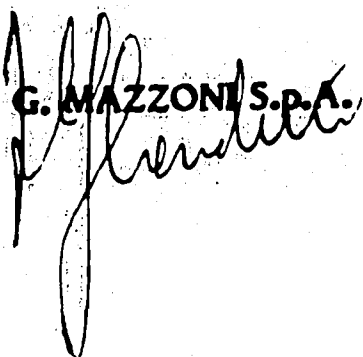
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PAYMENT TERMS

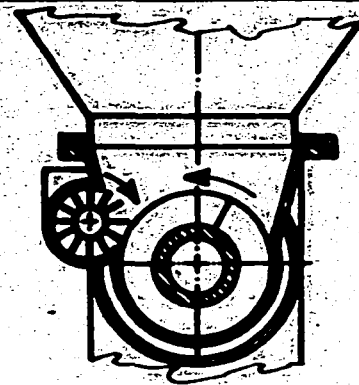
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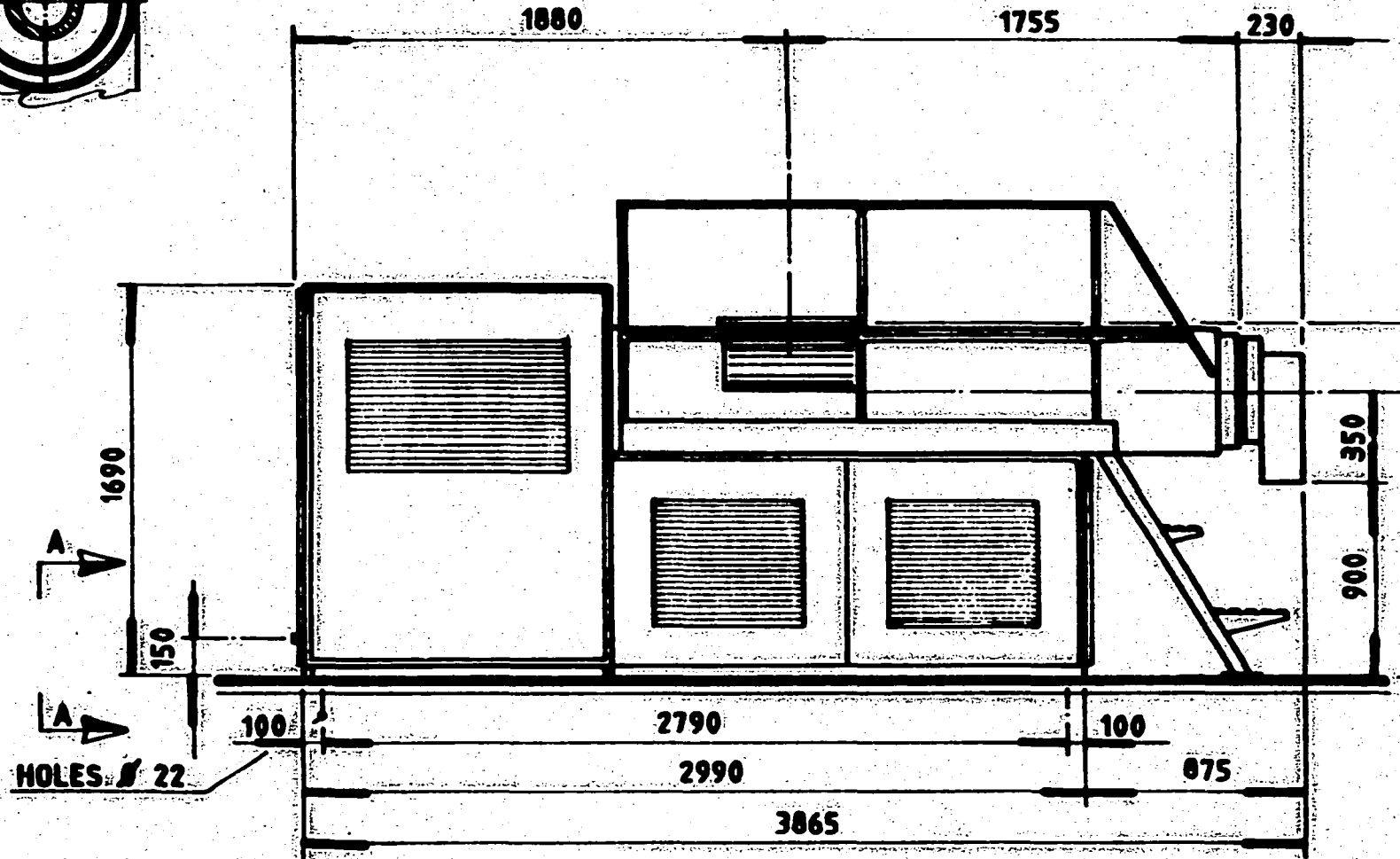
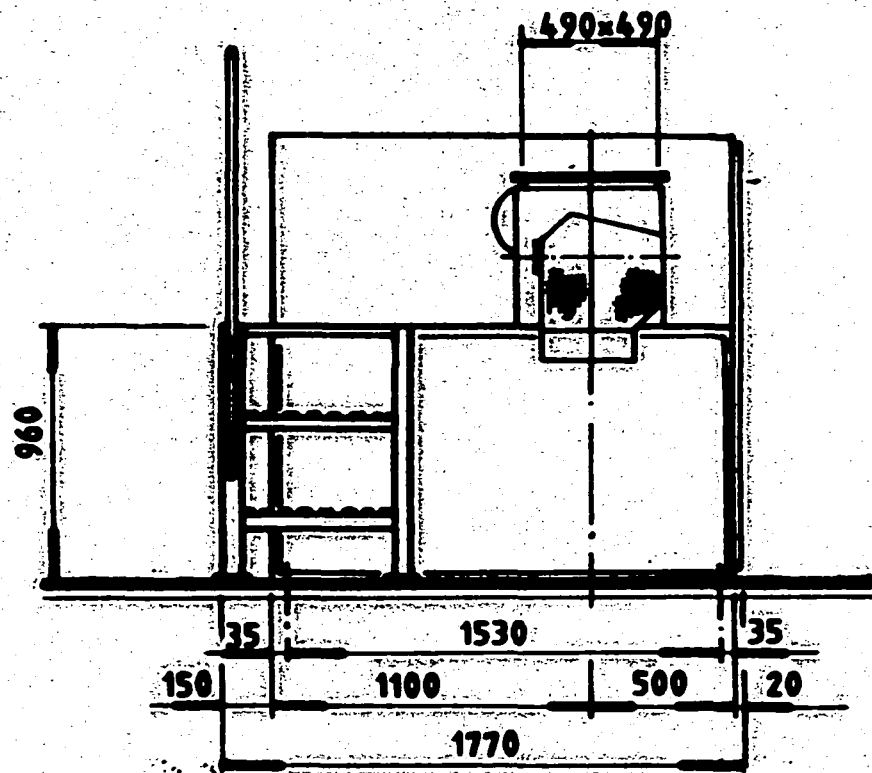
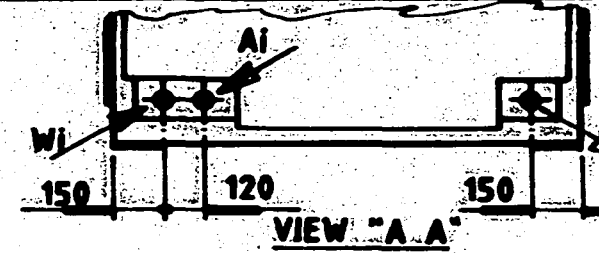
G. MAZZONI S.p.A.


Customer's Signature

for acceptance:



ROTARY FEEDER



HOLES \varnothing 22

OUTPUT RATE	DRIVE MOTOR	WATER CONSUMPTION	
		min	max
1500	22	m^3/h	$1 m^3/h$
Kg/h	Kw	°C	5 °C

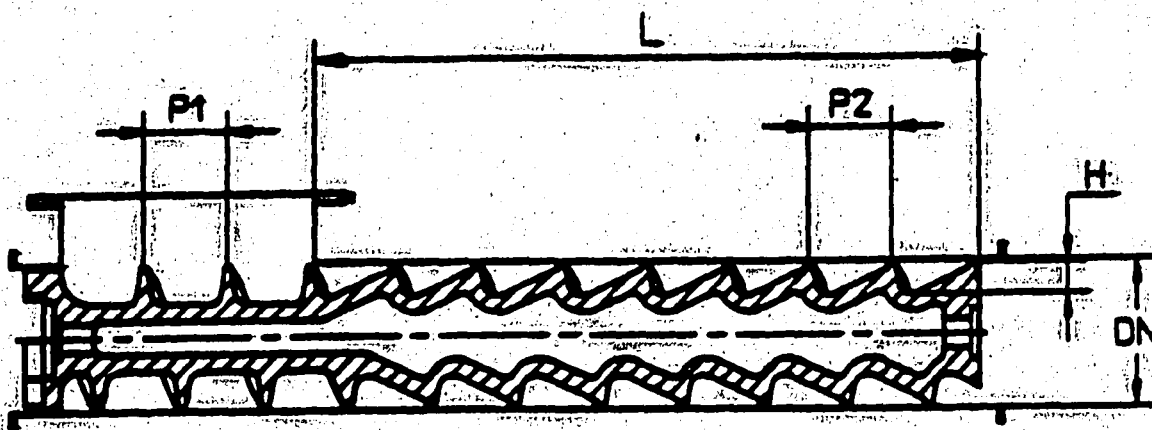
MACHINE WEIGHT 5000 Kg
 A1 COMPRESSED AIR INLET 1/2" H
 W1 COOLING WATER INLET 1 1/2" F
 W2 COOLING WATER OUTLET 1 1/2" F

LEVER HAMMOND Project H6579 HSSO REWORK REFINER
SIMPLEX REFINER PLODDER
MODEL SR/M300/1500/L/TS

G. MAZZONI S.p.A. BUSTO ARSIZIO ITALY

Date
 J u n y 1988
 Drawing No.
 LMIS-0017

This drawing is MAZZONI's property and is not to be copied or used for any purpose without their written consent.



SEGA-86

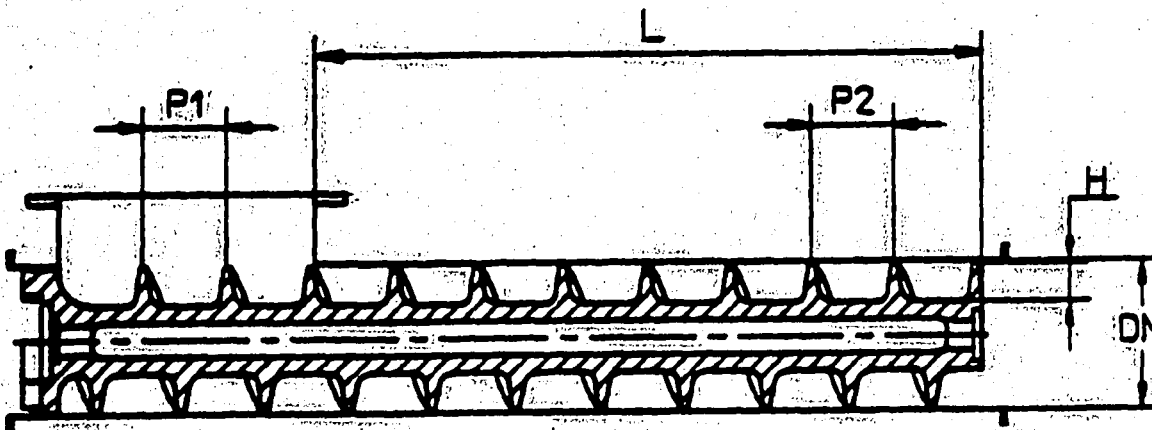
DN	L/DN	L	P1	P2	H
100	6	600	100	60	25
150	5	750	150	90	38.5
200	5	1000	120	120	52
250	5	1250	150	150	65
300	5	1500	180	180	80
350	5	1750	210	210	92.5
400	5	2000	240	240	105

FUNCTIONS

- REFINING
- EXTRUSION
- NORMAL & HIGH PRESSURE

USES

- REFINER FLOODERS
- EXTRUSION FLOODERS
- DRYER FLOODERS
- NORMAL SOAP
- REFINING WITH COOLING PLATE



CONSTANT-86

DN	L/DN	L	P1	P2	H
100	6	600	100	60	25
150	5	750	150	90	38.5
200	5	1000	120	120	52
250	5	1250	150	150	65
300	5	1500	180	180	80
350	5	1750	210	210	92.5
400	5	2000	240	240	105

FUNCTIONS

- REFINING
- EXTRUSION
- LOW PRESSURE

USES

- REFINER FLOODERS
- EXTRUSION FLOODERS
- SUPERFATTED PRODUCTS
- SYNTETIC PRODUCTS



NOTE:

PRODUCT	NORMAL AND SUPERFATTED SOAP	SYNTETIC LAUNDRY BAR	SYNTETIC TOILET BAR
WORM MATERIAL	SILUMIN	NI-RESIST	SILUMIN

-FOR THE ABOVE OR DIFFERENT PRODUCTS WE SUPPLY AISI 304 OR AISI 316 WORMS UPON CUSTOMER'S SPECIFIC REQUEST.

-THE SEGA WORM IS MORE SUITABLE FOR A REFINING WITH SCREENS FINER THAN 0.8 WHILE THE CONSTANT WORM FOR 0.8 AND COARSER SCREENS.

RATING CURVES

--- Torque

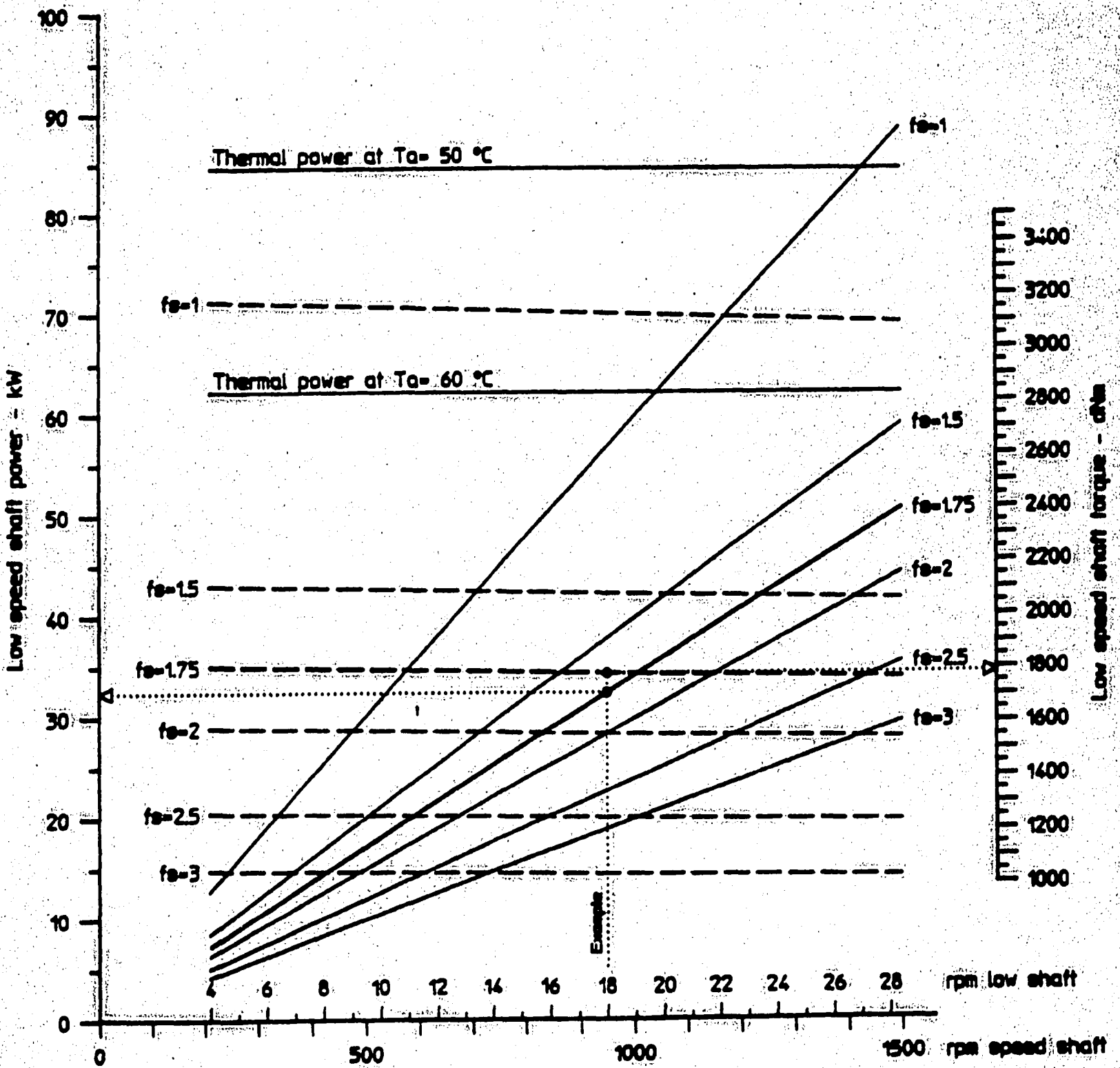
— Power

Ta = temperature of air licking the reducer

fs = service factor, i.e. ratio between maximum power that reducer can transmit at those revolutions and power installed motor (minus yields)

Thermal power: it is the power that can be applied, in the inlet of the reducer licked by air at Ta temperature, without exceeding 95 °C oil temperature

- Load capacity verified according to AGMA, DIN, ISO standards.



- VALUES WITH 1.75 SERVICE FACTOR REFERRED TO LOW SPEED SHAFT -

REV.	rpm	4	6	8	10	12	14	16	18	20	22
TORQUE	dNm	1812	1809	1805	1801	1798	1794	1790	1787	1783	1780
POWER	KW	7.3	10.9	14.5	18.1	21.7	25.3	28.9	32.4	35.9	39.4



Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, New Jersey 07632
(201) 894-6000

January 15, 1988

VIA DHL

Mr. Sergio Rogora
G. MAZZONI, SpA
Viale Trentino 10/12
21052 Busto Arsizio
ITALY

Dear Mr. Rogora:

REQUEST FOR QUOTATION
PELLETIZING REFINER
PROJECT HSSO - H-6579 - Specification #5919K
HAMMOND, INDIANA

Please submit your proposal in quadruplicate to cover furnishing four (4) Simplex Refiners for the Lever Brothers Hammond Plant in accordance with the following attached documents:

Specification 5919K, dated 1/12/88
General Conditions GC-1, Rev. 6, dated 10/5/71
General Specification - GS-18 - Equipment Noise, Rev. #1, dated 10/12/71
Vendor Data Requirements - Exhibit #1
General Conditions GC-4, Rev. 3, dated 2/27/81
General Specification Machinery Guards, GS-12, Rev. 1, dated 6/24/71,
DC Variable Speed Drive Controller - Specification #16645
Clean Design 5887K

All units will be purchased on the basis that all four Simplex Refiners will be ordered simultaneously. Two units to be released immediately for fabrication and delivery. The remaining two will be released within six months. Your proposal must include the following:

1. A complete description of the equipment proposed.
2. Unit prices for each item.
3. Include information on standard options.
4. All recommended options to be quoted separately along with payment terms.
5. Total firm lump sum price FOB jobsite (Hammond, Indiana) or as an alternative, the estimated cost of trucking to Hammond, Indiana.
6. Quote Unilever Discount percentage to be deducted from above price.
7. Price to include export packaging conforming to Unilever Crating Specifications dated March 1978.
8. Recommended Spare Parts List together with prices.
9. Vendor shall ascertain and be responsible for all permits, etc. Also, vendor to obtain route clearance for requirements for overland shipment.
10. Best date of delivery of each unit.
11. Guaranteed delivery dates of each unit.

Continued

12. Time required to submit approval drawings.
13. Time required to submit certified drawings.
14. Terms of payment.
15. Include a schedule of cancellation fees for the last two Refiners shown as a percentage of the price on a month by month basis.
16. A statement that your offering is in strict accordance with the specifications and Lever Brothers Company's General Conditions #GC-1. Any exceptions taken to the Specifications and/or General Conditions must be specifically stated in your proposal.
17. Approximate weight and dimension of each Refiner.
18. Include normal allowance, if any, for installation and service personnel.
19. Cost of Service/Installation Personnel.
20. All other data as required by the above referenced documents.

Failure to quote your price as FOB Jobsite may result in the imposition of a penalty in the evaluation of your bid or may result in disqualification.

Time of delivery is of the essence and our Purchase Order will stipulate that failure to comply will be cause for cancellation by Lever Brothers Co. without any penalty to Lever Brothers Co.

The bid should be in our hands no later than 11:00 a.m., E.S.T., Tuesday, January 26, 1988. Direct all commercial questions to Mr. G.G. Hyson, (201) 894-6580, and technical questions to Mr. S. Schavlan (201) 894-6569.

Lever Brothers reserves the right to reject any and all proposals, with or without cause, and to accept the proposal that best serves its interests. Errors appearing in the bid will not be relieved after the award of the contract, and the successful bidder will be held strictly accountable for their bid as submitted.

Please acknowledge receipt of this request for quotation and indicate your willingness to comply.

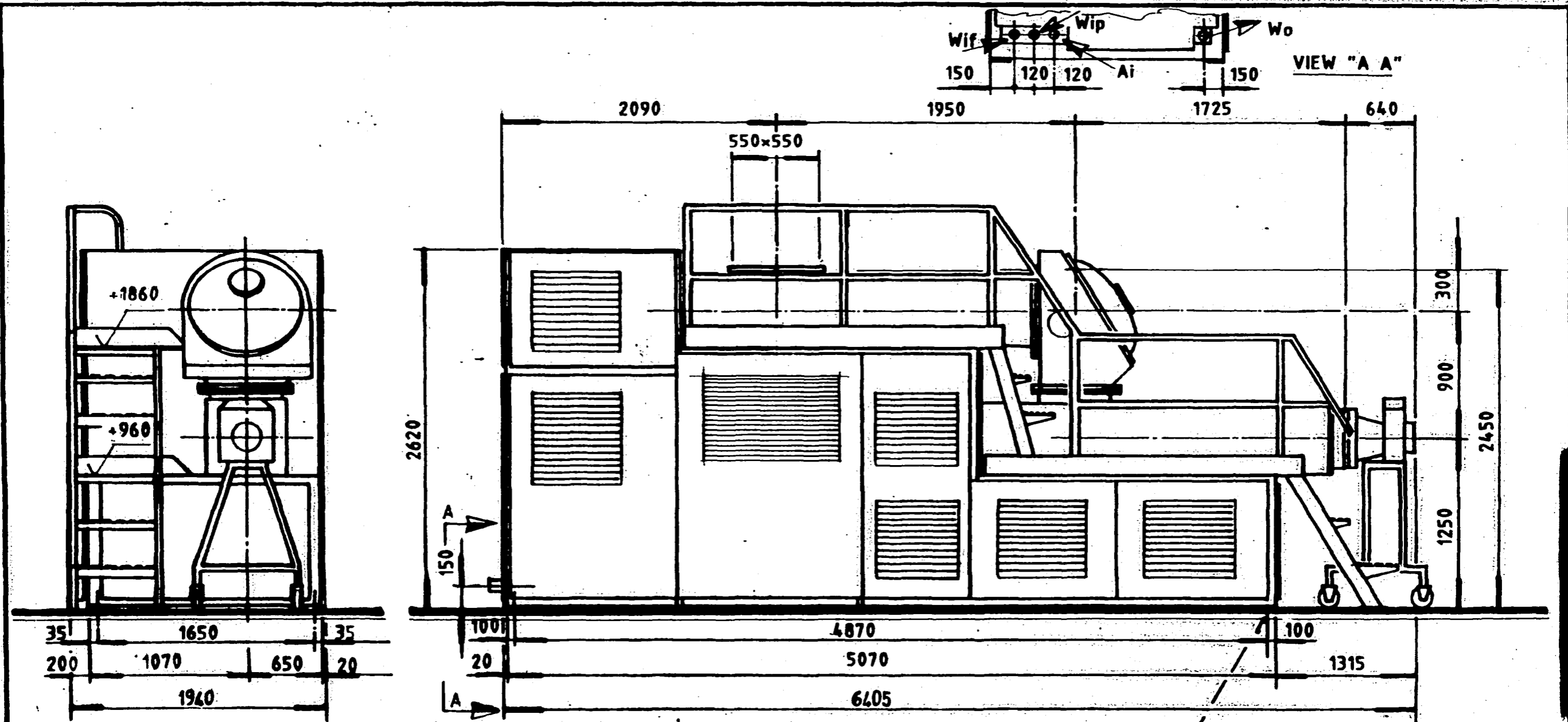
Very truly yours,

G. GERALD HYSON
Purchasing Manager -
Engineering

GGH/sd
ENCL:

cc: Messrs: S. Schavlan -6569/E2D
K. Radhakrishnan -6589/E2D

0794p



OUTPUT RATE	DRIVE MOTOR	WATER CONSUMPTION	
		MLH	MAX
4000 Kg/h	PRELIMINARY PLODDER: 45 Kw	m ³ /h	1.7 m ³ /h
	FINAL PLODDER: 37 Kw		
	VACUUM PUMP: 5.5 Kw	°C	5 °C

Machine weight 11000 Kg
 Wip Cooling water inlet 1 1/2" (Prelm. Plodder)
 Ai Compressed air inlet 1/2" (Final Plodder)
 Wif Cooling water inlet 1 1/2" (Final Plodder)
 Wo Cooling water outlet 1 1/2"

HOLES Ø 22

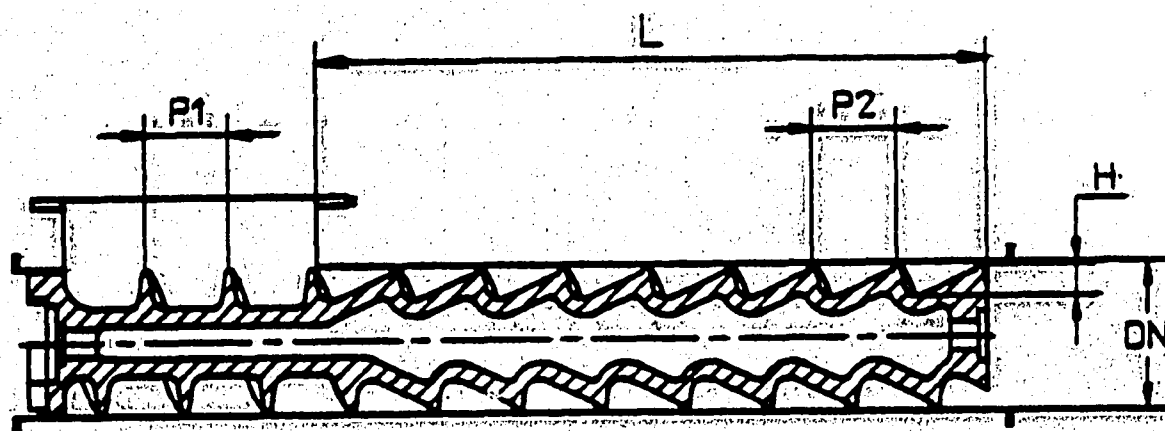
LEVER HAMMOND Project H6579
DUPLEX VACUUM PLODDER
MODEL DVP/B300/4000/LIL/TS

G. MAZZONI S.p.A. BUSTO ARSIZIO ITALY	Date January 1988	Drawn Colombo
	Drawing No. LMIS-0018	Sheet No. 1 of 1

This drawing is MAZZONI's property and is not to be copied or used for any purpose without their written authority.

NEW MAZZONI TYPE 88 MODULAR PLODDERS

WORM TYPES



SEGA-86

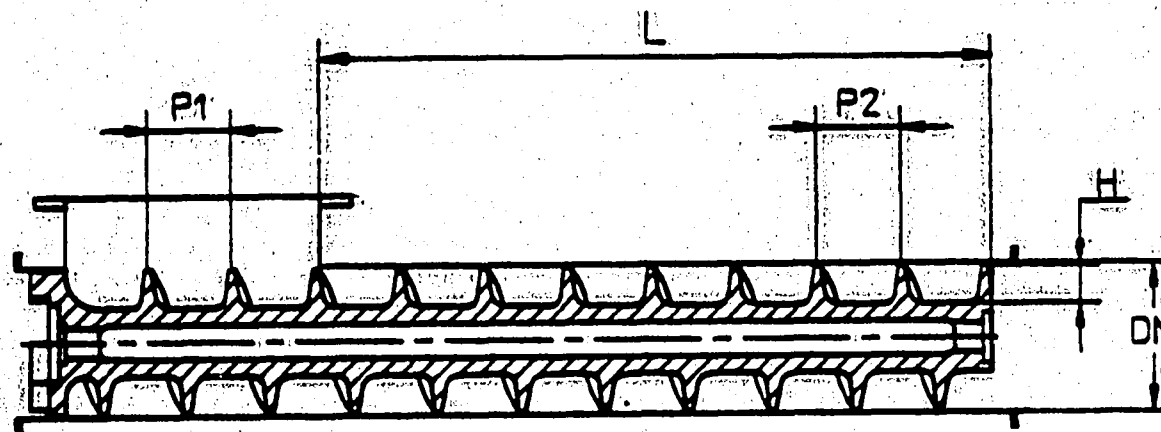
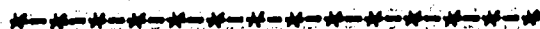
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FUNCTIONS

- REFINING
- EXTRUSION
- NORMAL & HIGH PRESSURE

USES

- REFINER PLODDERS
- EXTRUSION PLODDERS
- DRYER PLODDERS
- NORMAL SOAP
- REFINING WITH COOLING PLATE



CONSTANT-86

DN	L/DN	L	P1	P2	H
100	6	600	100	60	25
150	5	750	150	90	38.5
200	5	1000	120	120	52
250	5	1250	150	150	65
300	5	1500	180	180	80
350	5	1750	210	210	92.5
400	5	2000	240	240	105

FUNCTIONS

- REFINING
- EXTRUSION
- LOW PRESSURE

USES

- REFINER PLODDERS
- EXTRUSION PLODDERS
- SUPERFATTED PRODUCTS
- SYNTETIC PRODUCTS



NOTE:

PRODUCT	NORMAL AND SUPERFATTED SOAP	SYNTETIC LAUNDRY BAR	SYNTETIC TOILET BAR
WORM MATERIAL	SILUMIN	NI-RESIST	SILUMIN

-FOR THE ABOVE OR DIFFERENT PRODUCTS WE SUPPLY AISI 304 OR AISI 316 WORMS UPON CUSTOMER'S SPECIFIC REQUEST.

-THE SEGA WORM IS MORE SUITABLE FOR A REFINING WITH SCREENS FINER THAN 0.8 WHILE THE CONSTANT WORM FOR 0.8 AND COARSER SCREENS.

PARALLEL SHAFT GEAR REDUCERS

Model : R-400/31/P

Gear ratio: $i = 64.009$

RATING CURVES

— — Torque

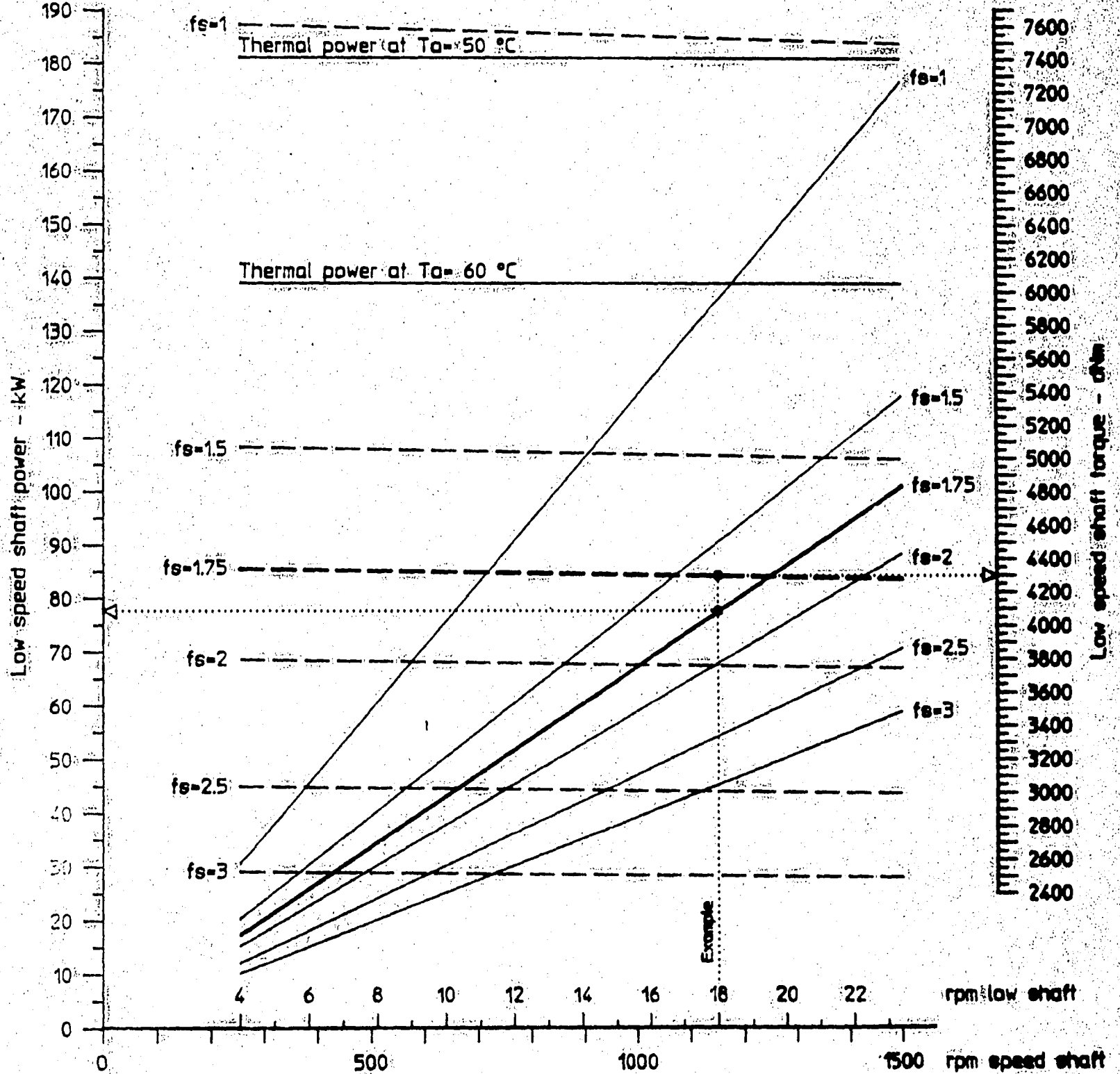
— — Power

T_a = temperature of air licking the reducer

f_s = service factor, i.e. ratio between maximum power that reducer can transmit at those revolutions and power installed motor (minus yields)

Thermal power : It is the power that can be applied in the inlet of the reducer licked by air at T_a temperature, without exceeding 95 °C oil temperature

- Load capacity verified according to AGMA , DIN , ISO standards.



- VALUES WITH 1.75 SERVICE FACTOR REFERRED TO LOW SPEED SHAFT -

REV.	rpm	4	6	8	10	12	14	16	18	20	22
TORQUE	dNm	4342	4336	4330	4323	4317	4311	4305	4298	4292	4286
POWER	kW	17.5	26.2	34.9	43.6	52.2	60.8	69.4	77.9	86.5	95

PURCHASE REQUEST

*WHEN USING MORE THAN ONE CHARGE TO ACCOUNT NO. OR ASSET NO. INDICATE PER LINE ITEM.

**LEVER BROTHERS COMPANY
ENGLEWOOD CLIFFS**

P.O. NO.

PL - 10262

ASSET NO.

SEE ATTACHED LISTING

REQUESTED BY: K.P. RADHAKRISHNAN	DEPT.: HHPD ENGINEERING	CHARGE ACCOUNT NO.: PROJECT 6579*	APPROVED BY: <i>[Signature]</i>
DATE REQUESTED: 5.31.1988	ORDERED FOR: HAMMOND PLANT	DELIVERY REQUIRED: 9 MONTHS FOR 1st LOT 12 MONTHS FOR 2nd LOT	DELIVERY PROMISED: 9 months for First Lot - 2 Lins 12 months for Second Lot - 2 Lins

QUANTITY	UNIT	COMPLETE DESCRIPTION	FOR PURCH. USE ONLY
4 Nos		Simplex Pelletizing refiners B300/4000 Model, L/D ratio 5; 8000 lb/HR product Capacity using 50 mesh screens; driven by 45 KW motor, 304 SS Screws and modified Mangoni Gear box drive system.	ITALIAN LIRE 381,906,000 381,906,000
4 Nos		Duplex Refiners, model B300/4000 Model L/D ratio 5; 8000 lb/HR Product Capacity using 50 mesh screens, driven by 45 KW motor, 304 SS Screws and modified Mangoni Gear box drive system.	768,038,080 768,038,080
4 Nos		Duplex Vacuum Plodders, model B350/ 5000, L/D ratio 3, 10,000 lb/HR product Capacity using 50 mesh screens on the refining side driven by 55 KW motor, 304 SS Screws and modified Mangoni Gear box drive system suitable for 5 start and stop per minute running at low RPM.	970,023,920 970,023,920

CONF. _____ TAX _____ FOR PURCHASING USE ONLY

VENDOR: G. MAZZONI S.p.A. VIALE TRENTO 10/12 21052 BUSTO ARSIZIO ITALY	TERMS: 35% WITH P.O. 35% ON SHIP 30% ON START-UP	BUYER: DRESCHER/HYSON
	SHIP VIA:	DATE PURCHASED:
	EOB: C.I.F. HAMMOND IND.	QUOTED BY: G. CORRADINI

REWORK REFINER

1.0 GENERAL

1.1 This specification covers one (1) Simplex Refiner to be supplied for installation by others in Lever Brothers Company, Hammond, Indiana Plant.

The following Lever Brothers Company General Specifications shall be considered to be part of this specification:

GC-1 Sale and Delivery of Mechanical Equipment
GC-4 Installation and Service Personnel
GC-18 Equipment Noise
GS-12 Machinery Guards
16645 DC Variable Speed Drive Controller
Clean Design
Lever Brothers Company Vendor Data Requirements

1.2 Any and all references to this equipment including but not limited to; shipping crates, invoices, certified prints, etc. must indicate Equipment Index, Reference No. and Chart of Account according to the following table.

<u>Item</u>	<u>Equip. Index</u>	<u>Ref. No.</u>	<u>Chart of Acct.</u>
Rework Refiner	SR400	4PF4SR400	180400RC

1.3 Vendor shall include in his quotation any and all objections to any portion of this specification.

1.4 Vendor shall include in his quotation, the normal allowance, if any, for installation and service personnel.

2.0 CAPACITY

The refiner shall be single screw plidders capable of refining 1500 kg/hr of bars at a speed of 10 rpm. Temperature of material entering refiner will range from 65 - 85°F. (15.5 - 29.4°F). The feed will be in the form of unwrapped soap bars or logs returned from process either immediately or after aging.

3.0 DESCRIPTION

3.1 Refiner - The unit shall contain a single screw capable of delivering the required capacity through an 8 mesh screen and pelletizing head fitted with rotating knife. Pellet sizes will be approximately 10MM diameter x 15-20MM length. Opening and closing of pelletizing head along with screen removal shall be a quick and simple operation. Screw will be held in place with a spider.

The barrel of the refiner will be jacketed for the circulation of 40 - 42°F cooling water. Premounted supply and return piping complete with temperature indicators, solenoid valve and manual bypass valve shall be supplied and piped to a convenient location. Internal hoses are unacceptable. Internal water connections shall be hard piped. The inlet of the refiner shall have a flange for mounting a feed hopper to be supplied by others.

If any part or all of the jacketed section of the barrel or cooling water pipe is located within the cowl it shall be insulated with heavy density fiberglass or approved equal. Any insulation containing asbestos is not permitted.

- 3.2 Drive - Unit is to be driven by a variable speed constant torque motor with a maximum speed of 1,750 RPM and limited to a speed ratio of 4:1 or a minimum speed of 440 RPM. These motors will be supplied and installed by others at Lever Brothers Hammond Plant.

The supplier is to furnish a belt drive with both pulleys as well as necessary gear reducers. The maximum allowable screw speed is 16 RPM. The drive train shall include a Fawick type Airflex Element assembly clutch mounted on the motor output shaft. The clutch shall be sized to operate at an air pressure of 75 psi (5.25 kg/cm²).

The supplier is to specify the motor horsepower necessary to refine the quantities of product indicated. The power train, however, shall be designed for a horsepower 50% greater than required at maximum speed.

The drive unit shall include a tachometer generator with an output signal of 4 - 20 mA to monitor the reducer input speed.

Proposal shall include the range of screws supplied and quantity of each.

3.3 LUBRICATION REQUIREMENTS

All equipment requiring lubrication shall be equipped with a Lincoln auto-lube-grease system with SSL-32 stainless steel injectors. Stainless steel tubing is required on all static lines. If the seller feels there isn't enough lubrication points to warrant an auto system, the seller should list the number of lubrication points.

Note: These would need to be piped to a single central relubrication point.

- 3.4 Materials of Construction - All parts in contact with the product are to be made of type 304 stainless steel.

3.5 Optional Extras - The quote shall include the cost of, at least, the following extra features. The supplier can at his discretion include items which he feels may be desirable.

- A. Wide platforms - 42"
- B. Packer screw (bridge breaker) at the hopper inlet
- C. Additional cost for servicemen over and above that in the base quotation.
- D. Cost for variable speed drive of proper HP in accordance with specification 16645 DC Variable Speed Drive Controller.

4.0 ELECTRICAL

- 4.1 Solenoid valves to be 110 volt, 1 phase, 60 cycle
- 4.2 All switches, pushbuttons etc., to be prewired to a common terminal strip.

5.0 ADDITIONAL INFORMATION REQUIRED -- To be supplied with quotation

- A. Diameter of tube _____ MM
- B. Outside diameter of screw _____ MM
- C. Root diameter of screw _____ MM
(If diameter varies gives minimum and maximum and where change occurs on screw).
- D. Length of screw - Total _____ MM
- E. Length of screw in hopper _____ MM
- F. Pitch of screw
(If pitch of screw varies give range of variation and where change occurs on screw).
- G. Drawing with section cut through screw flight.

NOTE: The inclusion in the quotation of a drawing(s) showing the above information is acceptable.

6.0 STANDARDIZATION

- 6.1 All components shall conform to U.S. Standards. All parts such as gears, bearings, seats, etc. should be selected such that they are readily available within the U.S.A.

6.2 Vendor shall assure that all parts of the unit are standard. Parts manufactured unique for a single machine are not acceptable.

7.0 EQUIPMENT FINISH & COLOR

All equipment surfaces not considered as being "Corrosion Protected" are to be painted - with one primer coat and two finish coats in accordance with the Glidden Paint Company -

GLID-GUARD-4500 Series SYSTEM.

Primer: Glid-Guard No. 5251/5252 Chromate Primer

Finish: Glid-Guard Epoxy Chemical Resistant Finish No. 5250/5242 tinted w/1/1/8 oz. Yellow Oxide, 1/ 1/8 oz. Lemon Yellow & 3/4 oz. Neutral Toner per gallon.

Color: To match sample furnished by Lever Brothers Company.

8.0 VENDOR RESPONSIBILITY

8.1 Vendor shall follow the schedule outlined in Exhibit 1 - Vendor Data Requirements.

8.2 The items required by purchaser shall be quoted as a system which means the vendor shall supply all the necessary services and hardware to make the system function in accordance with the intents and purposes of this specification.

8.3 Upon receipt of purchase order, vendor shall furnish three sets of drawings as outlined below. Drawings shall be reviewed and shall be approved by Lever prior to the start of construction. All drawings and data sheets shall be identified by the Lever Brothers Company project Number, Job Location, Buyer's Purchase Order Number, Equipment and Instrument Tag Number and Service. The following list of drawings and documents are required:

- a) Dimensioned arrangement and outline drawings to also show installation details.
- b) Point-to-point connection during diagrams, schematic diagrams and construction details of all components.

8.4 Approval drawings will be reviewed by Lever Brothers Company and returned to vendor with one of the following statements:

- a) Approval as noted - Vendor will make corrections as noted and issue certified drawings.
- b) Approved - Vendor will issue certified drawings.
- c) Not approved - Vendor will make noted changes and reissue approval drawings.

8.5 In addition to the certified drawings and documents listed in 8.3 above. Vendor will submit the following items with his quotation.

- a) A recommended spare parts list with price list.
- b) Complete parts list with all principal parts identified.

8.6 Vendor shall submit with his bid complete design calculations for the gearboxes.

9.0 SHIPPING

9.1 All parts shall be crated and protected from the elements during shipping.

9.2 Each crate shall be clearly labeled on 4 sides with its contents.

9.3 Vendor shall supply with the quote, the estimated shipping costs from the manufacturing site to Hammond.

9.4 Vendor shall ascertain and be responsible for all permits etc., to obtain the route clearance requirements for overland shipping.

1. GENERAL

The following data constitute a part of the Inquiry and Purchase Order and are to be supplied as indicated:

2. MAILING INSTRUCTIONS

Drawings and data per listing below are to be forwarded to:

Lever Brothers Company
 818 Sylvan Avenue
 Englewood Cliffs, NJ 07632
 ATTN: HMPD Eng'g. Dept. J. Pandolfo

Project No. H-6206

3. All data furnished to be certified and bear the following identification:

Facility: Hammond Facility
 Location: Hammond, Indiana
 Purchaser: Lever Brothers Company

P.O. No.: _____

Job No.: H-6579

Spec No.: _____

4. FORM OF DRAWINGS

"P" designates Manufacturer's standard print.
 "R" designates a full size transparency from which legible prints may be made.
 "M" designates a 105 mm microfilm.

5. TIME LIMITS

- a) Approval drawings, when required, must be submitted within 2 weeks from receipt of Purchase Order.
- b) LBC will review and return drawing
- c) Final drawings must be submitted within 2 weeks from receipt of approved drawings.

6. DRAWINGS

Vendor's drawings will be reviewed and approved only as to arrangement and conformance to the specifications and related drawings, and approval shall not be construed to relieve or mitigate the Vendor's responsibility for accuracy or adequacy and suitability of materials and/or equipment represented thereon.

- a) PRELIMINARY DRAWINGS shall be Manufacturer's standard drawings in sufficient detail to layout equipment drives, and access for maintenance and operation and design of foundations and supports.
- b) DWGS FOR COMMENTS shall be transparencies complete with equipment number(s) and purchase order number. Initial drawings must show all information necessary for Purchaser's design of foundations and any connections to other equipment.
- c) FINAL DRAWINGS shall be transparencies complete with equipment number(s) and purchase order number, stamped "CERTIFIED FOR CONSTRUCTION" and signed by a person authorized to bind the partnership or corporation. Certification warrants delivered equipment shall conform to the final drawings. Should delivered equipment fail to conform, Vendor shall furnish all materials, labor, and equipment required to correct such failures to the satisfaction of the Owner.

ITEM	Description	Number and Form Required		
		With Each Proposal	Issue After Receipt of P.O.	
			Comments	Final
A	General Arrangement	1R	8 P	1R+10P
B	Outline Drawing and Foundation Requirement	1R	8 P	1R+10P
C	Detail Shop Drawings	1R	8 P	1R+10P
D	Welding Procedures			
E	Calculations	1R	8 P	1R+10P
F	Completed Data Sheets	1R	8 P	1R+10P
G	Curves			
H	Complete Parts List Including Vendor & Orig. Mfg. Parts List	1R	8 P	1R+10P
J	List of Recommended Spare Parts for 1 Year Operation/Prc.	1R	8 P	1R+10P
K	Instruction Manuals			10P
L	Certified Data Books			10P
N	Certified Performance Data			10P
O	Cross-Section with Parts Description		8 P	1R+10P
R	Wiring Diagrams		8 P	1R+10P
S	Lubrication Schedule			10P
U	Piping and Instrument Diagrams	1R	8 P	1R+10P
V	Code Certificates			1R+10P
W	Instrumentation Bill of Materials		8 P	1R+10P
X	Anchorage and Loading Diagrams		8 P	1R+10P
Y	Motor Specification Sheet	1R	8 P	1R+10P
Z	List of Special Tools (For Erection and Maintenance)	1R	8 P	1R+10P
		Project No. H-6579		

GENERAL CONDITIONS (GC-4)

INSTALLATION & SERVICE PERSONNEL

LEVER BROTHERS CO.

General Specification

**GENERAL CONDITIONS GC-4
INSTALLATION & SERVICE PERSONNEL**

NO.	DATE	REVISION	APP'D.
3	2/27/81	Eliminated P.2.5, Amended P.3.1 & References to Eng. Dept. Eliminated	
2	8/10/75	Issued To Plants	
1	10/ 2/74	Original Issue	

2915-01 2/81

1.0 Intent of this Specification

- 1.1 The purpose of this specification is to provide instructions for service personnel working in a Lever Brothers facility. Lever works for maximum safety of all personnel and protection of its facilities and products.
- 1.2 The service personnel's company (contractor) shall all times comply with any applicable laws, ordinances, statutes, rules and regulations of federal, state, county and municipal governing bodies, particularly those relating to wages, hours and safe working conditions in accordance with applicable OSHA standards. His company shall furnish bonds, security or deposits required to perform their work.
- 1.3 All sales, use, unemployment or other taxes imposed by municipal, county, state and federal agencies shall be paid by the contractor.

2.0 Instructions

- 2.1 Upon receiving a contract or purchase order covering service work on Lever's premises, the contractor must designate one individual to act as liaison with Lever Brothers. Lever will designate an employee to act as liaison with the contractor. All questions concerning the service work or installation should be directed to the Lever representative.
- 2.2 In the event of conflict, verbal instructions purported to have come from Lever will not be recognized unless confirmed in writing.
- 2.3 Lever's approval must be obtained in writing before any modifications or substitutions are made.
- 2.4 The contractor will be required to execute and return to Lever one copy of the "Equal Employment Opportunity" Certificate of Compliance.

3.0 Insurance

- 3.1 "The Contractor shall carry and maintain policies of insurance in the amounts listed below and in such form and with such Companies as may be satisfactory to the Owner:

Coverage	Amounts
Workmen's Compensation	Statutory
Employer's Liability	\$100,000
Public Liability	\$500,000/\$1,000,000
Property Damage	\$100,000
Automobile Public Liability	\$500,000/\$1,000,000
Automobile Property Damage	\$100,000

- 3.2 On contracts in excess of \$100,000 or those involving unusual perils, the limits of coverage shall be reviewed and increased, if such is deemed necessary by Lever Brothers Company.
- 3.3 Whenever applicable, the contractor shall carry appropriate insurance covering the contractor's responsibility for damage to, or destruction of, property belonging to Lever while in the care, custody or control of the contractor, or over which the contractor is for any purpose exercising physical control.
- Limits of liability shall be determined in accordance with the maximum value of the property at risk and in consultation with the Lever Brothers Company representative.
- 3.4 All sub-contractors performing work on the job shall be required to carry and maintain policies of insurance in the amounts stated in Paragraph 3.1 above.
- 3.5 The contractor and sub-contractor shall file with Lever Brothers certificates showing that such insurance is in force and the date of policy expiration. Such certificates shall be filed with the Purchasing Department at the location where the work is to be performed before such work is undertaken. It shall be the contractor's responsibility to see that all sub-contractors working for him have filed such certificates with Lever Brothers Company.
- 3.6 Lever Brothers Company shall be named as an additional insured in all policies required under this section, or in the alternative contractor's insurance carriers shall waive all rights of subrogation against Lever Brothers Company.
- 3.7 The contractor shall assume, and shall require its sub-contractors to assume, such risks or loss or damage as is customarily insured under an Equipment Floater Policy in respect to its construction machinery tools, and/or equipment supplied by contractor or sub-contractor, and employees' tools and effects.

4.0 Work Procedure

- 4.1 During the job the contractor will use only thoroughly competent personnel with extensive experience in the type of work covered by the purchase order.
- 4.2 If any person is deemed incapable he shall be replaced upon written request from Lever Brothers.
- 4.3 The serviceman shall use such methods, tools, and equipment to produce a satisfactory quality of workmanship and to secure the completion of the contracted work within the agreed upon schedule.

- 4.4 All material, tools, plans, etc., necessary for the serviceman's work shall be provided and maintained entirely at the serviceman's own risk.
- 4.5 The serviceman must keep the premises free from accumulation of his rubbish at all times. At the completion of the work the serviceman must remove all his rubbish, temporary equipment and tools.
- 4.6 Disposal of rubbish and surplus items must comply with all statutory requirements in regard to air pollution, noise control and waste disposal.
- 4.7 Any required notice or communication shall be deemed sufficiently given when sent by one party to the other by prepaid registered or certified mail to the purchase order address of the other party.
- 4.8 All non-Lever employees must sign in and obtain an identification tag from the Lever security guard. The tag must be returned to the guard at the completion of the job.

5.0 Safety

- 5.1 Smoking, except in specifically designated locations, is prohibited in all buildings and yards at all times.
- 5.2 Lunches and other foods must be eaten only in approved locations.
- 5.3 Whenever an open flame, welding or other possible ignition source must be used, Lever must be notified in advance.
- 5.4 The removal of any electric light fixture or tampering with any electrical equipment by the serviceman must be approved by Lever in advance.

Any machinery guards or other safety devices that are removed in the performance of the contractor's work, must be reinstalled by the contractor at the conclusion of his work so that the machine is returned to a safe operating condition.
- 5.5 Scaffolds, ladders and staging shall be constructed in accordance with good safety practices that conform to OSHA requirements. No tools or equipment will be left on any locations where they can fall.
- 5.6 Work areas shall be kept clean and free of debris.
- 5.7 The contractor shall supply his own serviceman with proper protective equipment such as eye shields, gloves, clothing, etc., as may be required. In certain areas, safety eye glasses must be worn at all times.
- 5.8 For Lever's product protection, no glass containers of any type shall be brought into a work location without prior approval.

PURCHASE REQUEST

**LEVER BROTHERS COMPANY
ENGLEWOOD CLIFFS**

WHEN USING MORE THAN ONE CHARGE TO ACCOUNT NO. OR ASSET NO. INDICATE PER LINE ITEM.

P.O. NO.

ASSET NO.

SEE ATTACHED LISTING

REQUESTED BY: R. P. RADHAKRISHNAN	DEPT.: HFD ENGINEERING	CHARGE ACCOUNT NO.: P-5 6577*	APPROVED BY: <i>[Signature]</i>
DATE REQUESTED: 5.31.88	ORDERED FOR: HAMMOND PLANT	DELIVERY REQUIRED: 9 months for 1st lot 12 months for 2nd lot	DELIVERY PROMISED: 9 months for 1st lot - 2 lots 12 months for 2nd lot

QUANTITY	UNIT	COMPLETE DESCRIPTION	FOR PURCH. USE ONLY
1 No.		Powack Refiner, model M300/2000; 4D3 3500 lb/hr product driven by 22 KW motor 304 SS screw and modified Mangoni Gear box drive system.	61,447,000 5,750,000
		options: 1) wide Platforms 2) Epoxy paint 3) Product temperature for each stage 4) Pressure transmitter for each stage 5) Drive Couplings between gear box and thrust units	5,750,000 5,750,000 5,750,000
1 Set		modified Gear box and thrust unit for B300 units as spare	30,012,870
1 Set		modified Gear box and thrust unit for B350 model plodders as spare.	35,975,750
		* Equipment reference and price details as per attached sheets.	
		OCEAN FRT. + INLAND FRT.	46,662,000
		MARINE WAR RISK + INLAND INSURANCE	12,443,200
			C.I.F. HAMMOND IND.

CONF. _____ TAX _____	FOR PURCHASING USE ONLY	TOTAL	2,306,503,820
VENDOR: G. MAZZONI S.P.A. VIALE TRENTO 10/12 21052 BUSTO ARSIZIO ITALY	TERMS: 35% WITH P.O. 5% ON SHIP. 10% ON START-UP	SHIP VIA:	BUYER: DRESCHER/HYSON DATE PURCHASED:
	QUOTED BY: G. CORRADINI		

- 5.9 Lever assumes no responsibility for first aid or medical treatment in connection with injuries to a contractor's employee. The contractor should make independent arrangements for such services.

6.0 Miscellaneous Regulations

- 6.1 Tools, ladders and other equipment will not be furnished by Lever Brothers except by special arrangement.
- 6.2 Contractor's personnel are restricted to the location where work is assigned, plus the adjoining smoking, eating and lavatory areas.
- 6.3 Upon request a specific area will be assigned to the contractor for the storage of equipment, tools and supplies. The contractor must supply his own security boxes and assumes full responsibility for safeguarding his own items. Lever Brothers will assume no responsibility for the replacement of the contractor's equipment that may be damaged or stolen.

7.0 Definitions

- 7.1 Owner: Wherever the word Owner occurs in this specification, it refers to Lever Brothers Company, 330 Park Avenue, New York, N.Y.
- 7.2 Contractor means the individual, partnership, firm or corporation performing the specified work at the job site.
- 7.3 Engineer means the engineer in charge for Lever Brothers Company or his designated representative.
- 7.4 Work: The term "work" includes labor or material, or both. Work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

**PROJECT H6579
HAMMOND, INDIANA HSSO PLANT
SPECIFICATION 0840p**

1.0 Progress Milestone Schedule and Report

- 1.1 Vendor shall provide to Lever Brothers Company within two weeks of Purchase Order a fabrication milestone schedule to facilitate order follow-up by Lever Brothers Company. All units fabricated with cancellation charges on half of the order.
- 1.2 Vendor shall provide to Lever Brothers Company a monthly progress report to be issued by the tenth (10th.) of the month. The report must include the following information:
 - a. Engineering Status
 - b. Material and Purchased Status
 - c. Fabrication and Assembly Status

2.0 Inspection and Tests

- 2.1 Lever Brothers Company has the right to inspect the equipment at the manufacturing facilities of vendor upon two (2) weeks prior notice. Equipment shall be uncovered and available for review, observation and inspection by representatives of Lever Brothers Company.
- 2.2 Prior to shipment, the vendor will conduct machine performance demonstration tests for Lever Brothers Company representatives unless specifically waived by Lever Brothers Company. All Performance Tests to be conducted with the equipment ready for installation prior to crating for shipment. Final machine inspection shall be scheduled sufficiently in advance of shipment date so that the promised delivery date of the equipment will not be delayed.
- 2.3 Test material required by the vendor shall be specified and scheduled at least 60 days in advance of its need so as not to delay promised delivery.

3.0 Problem Resolution

- 3.1 All expenses and problems which arise from defects in workmanship material or otherwise, such as, but not limited to:
 - a. Engineering, design, shop and field labor
 - b. Material parts
 - c. Equipment removal transport and re-installation
 - d. Travel and living expenses of vendor engineersshall be for the account of and payable by vendor.

4.0 Performance Guarantee

- 4.1 Vendor guarantees that the equipment to be furnished in accordance with the terms of the Purchase Order will be capable of processing materials/product to the given capacity as stated in technical specs. The equipment shall be capable of satisfactory operation for 7 days per week/3 shifts for continuous operation.
- 4.2 A Performance Test will be run at Lever's factory as soon as the plant is satisfactorily operable. The Performance Test will be of five (5) days (three shifts per day) duration and will demonstrate the capability of the unit to meet the stated capacity.
- 4.3 Vendor guarantees that their equipment will operate at a minimum of 99% mechanical efficiency.

Continued

- 2 -
PROJECT H6579
HAMMOND, INDIANA HSSO PLANT
SPECIFICATION 0840p

- 4.4 Test results will be reviewed with the vendor upon completion of the testing. If the system fails the Acceptance Test, the vendor will have the opportunity to repair, modify or exchange any portions of the system, at his own expense, preparatory to another test within thirty (30) days.
- 4.5 Should the vendor fail the second test, then Lever reserves the right as its sole option to return the complete plant to vendor on a freight collect basis for an immediate full refund of the entire purchase price.
- 5.0 Availability of Drawings
In the event of problems not otherwise correctable, the vendor will make available at his manufacturing facilities shop and fabrication drawings for review by Lever Brothers Company.
- 6.0 Performance Bond
Vendor will provide a Performance Bond valued at 100% of the purchase price to insure the success of its Performance under the Purchase Order. The bond will be obtained from a Surety Company, satisfactory to Lever prior to Lever making the down payment. The Performance Bond is to be set-up so that it does not expire until the satisfactory completion of the Performance Test at Lever's plant.
- 7.0 Instructions, Maintenance of Operation Manuals
Vendor shall provide eight copies of instructions, maintenance and operation manuals three (3) months prior to shipment of equipment.
- 8.0 Bank Guaranty
If any advance payments are required by vendor under the Purchase Order, at time of issuance of Purchase Order or prior to that date, vendor shall provide a Bank Guaranty drawn on a first class New York Bank equal to the amount of the advance payment. This document shall guaranty the use of the funds paid by Lever Brothers Company on this project. Funds would be available to Lever Brothers Company by sight draft on the Bank accompanied by a notarized statement, certifying that the vendor has not used these funds properly and not progressed with the manufacture.
- 9.0 High Efficiency Motors on Equipment shall be provided.
- 10.0 The maximum sound level shall not exceed 79.DB. All other conditions of GS-18 remain in full force and in effect.

GENERAL CONDITIONS - SALE AND DELIVERY

1. DELIVERY

Supplier shall stipulate normal delivery in his bid proposal. Firm delivery dates may be required to be stipulated before issuing a purchase order.

2. PERFORMANCE GUARANTEE

Equipment shall be fully guaranteed to meet all performance requirements as set forth in equipment specifications forming the bid inquiry. Equipment shall also be guaranteed to meet requirements of Equipment Noise Specification GS - 18.

3. FABRICATION GUARANTEE

Supplier shall guarantee that the materials, equipment or apparatus supplied under this specification are free from all defects in design, workmanship, and materials and will give satisfactory performance under the specified operating and service conditions. Supplier shall replace at no cost to Lever Brothers Company any part which proves defective under normal operating and service conditions within one year of installation, unless otherwise stipulated.

Supplier shall furnish standard manufacturer's guarantees covering such items as pumps, motors, reducers, and other manufactured items.

4. TESTING AND SHIPPING

All items of mechanical equipment, except as specified, shall be fully assembled and shop tested prior to shipment. All such tests are subject to witnessing by Lever Brothers Company's representatives. Where complete shop assembly is impractical, the foregoing may be omitted. The supplier assumes full responsibility for proper fit of component parts in field assembly and shall furnish upon request a qualified field representative to supervise assembly and to take any corrective measures required.

All equipment shall be shipped in assembled units whenever consistent with good shipping practice. All disassembled units shall be clearly piece marked to facilitate field assembly. All machined surfaces shall be greased or otherwise protected from rusting and shall be protected from mechanical injury during shipment and unloading.

References:

GS - 18: Equipment Noise Specification

		REVISED PAR. 11 & REF. SHEET NO	
6	10-5-71	REVISED PAR. 2, 7, 10 & 11	S.G.
5	11- -70	VARITYPED FOR PRINTING	J.P.
NO.	DATE	REVISION	APP'D
APPROVED		LEVER BROTHERS CO.	
BY	DATE	ENGINEERING DEPT.	
<i>A.S. S.</i>	11- -70	GENERAL CONDITIONS	
<i>A.S. S.</i>	10-20-71	SALE AND DELIVERY OF MECHANICAL EQUIPMENT	

224 - 477A

5. FIELD ENGINEERING SERVICE

Supplier shall stipulate in his bid proposal all field engineering services normally furnished other than as specified in paragraph 4 above. Where there is a charge for such services, the bid proposal shall clearly state daily rates and expense allowances.

6. PATENT INDEMNITY

Supplier agrees to defend, at its own expense, any suit or legal proceeding instituted against Purchaser and to pay any damages and costs awarded therein against Purchaser, insofar as the same are based on a claim that the apparatus furnished, or any part thereof, in itself constitutes an infringement of any United States patent, provided Purchaser gives Supplier prompt written notice of such infringement claim and of the institution of such suit or proceeding and also gives Supplier all necessary authority, information and reasonable assistance to enable Supplier to settle or defend the same.

In case said apparatus or any part thereof is held in such suit to constitute an infringement and its use is enjoined, Supplier also agrees to procure for Purchaser, at Supplier's own expense, the right to continue using said apparatus or part, or modify same so that it becomes non-infringing, or replace it with non-infringing apparatus or part, or remove the apparatus and refund the purchase price paid therefor by Purchaser.

not much help to Lever

7. BID PROPOSALS

Bid proposals shall include outline dimension drawings, wiring diagrams, catalog data, photographs, and the like, to facilitate preliminary layout work. The submittal of Vendor's drawings is covered by paragraph 11. Bid proposals and supporting data shall be submitted in triplicate. Bid proposal shall state that, "Supplier agrees to comply with and be bound by General Conditions GC - 1."

8. INSURANCE

The supplier shall assume all responsibility for any damages to person or property arising out of the performance of work on our premises, and should carry appropriate workmen's compensation and liability insurance coverage with respect thereto. The supplier also agrees to supply appropriate certificates of such insurance, naming Lever as an additional insured upon request.

9. MARKING

Each piece of equipment, or sub-assembly thereof, and its container shall be clearly marked with the proper piece-mark or item number as specified on the purchase order or equipment specification.

10. MANUALS AND INSTRUCTIONS

At the time of delivery, Supplier shall furnish 4 copies each of the following:

- a. Installation Instructions
- b. Operating Instructions
- c. Lubrication and Maintenance Recommendations
- d. List of Recommended Spare Parts
- e. Wiring Diagrams
- f. Complete Parts Lists and/or Prints for Ordering Purposes.

11. SUBMITTAL OF DRAWINGS

PROPOSAL DRAWINGS :

Each proposal shall be accompanied by three (3) copies each of an outline dimension drawing and other relevant data such as wiring diagrams, etc. Where such drawings are subject to dimensional changes they should be clearly labelled " Preliminary ." Where dimensions are firm and may be used for final layout work, they should be labelled " Certified for Construction ".

DRAWING APPROVALS :

Following receipt of Purchase Order, the Vendor shall submit to Lever Brothers Company for approval two (2) prints or one (1) Ozalid transparency each of all construction drawings to be supplied. One print will be returned to the Vendor stamped "Approved", "Approved as Noted" or "Not Approved". If either of the latter, Vendor must make the appropriate changes on his drawing and resubmit for approval. This procedure shall be repeated until final approval is obtained. Any shop or field work done prior to receipt of approved drawings which requires alterations or replacement will be at the Vendor's expense. A print stamped "Approved" in no way implies a waiver of any of the other conditions of this specification.

CERTIFIED PRINTS :

After final approval Vendor shall submit four (4) certified prints or one certified Ozalid transparency of each drawing.

MAILING OF TRANSPARENCIES :

Transparencies shall not be folded; they must be submitted rolled or flat; protected in mailing from being crushed or creased .

12. EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATE OF COMPLIANCE

The supplier contractor will be required at the issuance of a purchase order or contract to execute one copy of the attached " Equal Employment Opportunity " Certificate of Compliance and return same to the Lever Brothers Company Purchasing Division.

Lever Brothers Company wishes to comply with the requirements of Executive Order 11246, as amended, relating to equal employment opportunity and nonsegregated facilities; Executive Order 11625 relating to minority business enterprise; Executive Order 11701 (CFR 60-250) relating to the Employment of Veterans; and the Rehabilitation Act of 1973 (41 CFR Part 60-741) relating to the Employment of Handicapped Persons.

Your signature below will confirm that you accept the above-mentioned provisions. If you believe that you are exempt from any of these provisions, would you please send us a letter stating the facts upon which you base your exemption.

Vice President - Purchasing
Lever Brothers Company

EQUAL EMPLOYMENT OPPORTUNITY CLAUSE

(1) The supplier will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin. The supplier will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, age or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rate of pay or other forms of compensation; the selection of training, including apprenticeship. The supplier agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

(2) The supplier will, in all solicitations or advertisements for employees placed by or on behalf of the supplier, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin.

(3) The supplier will send to each labor union or representative or workers with which it has a collective bargaining agreement or other contract, or understanding, a notice, advising the labor union or workers' representative of the supplier's commitments under Section 202 of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The supplier will comply with all applicable provisions of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The supplier certifies that it has filed with the appropriate federal agency all reports due under the applicable filing requirements, including a complete and accurate report on Standard Form 100 (EEO-1) or will file such reports within 30 days after the signing of this agreement or the award of any purchase order, as the case may be, and will continue to file such reports as required.

(6) In the event of the supplier's noncompliance with the nondiscrimination clauses of this contract or with any of said rules, regulations or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, or by rules, regulations, or orders of the Secretary of Labor on equal employment opportunity or as otherwise provided by law.

(7) The supplier will include the provisions of paragraph (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, so that such provisions will be binding upon each subcontractor or vendor. The supplier will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event the supplier becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the supplier may request the United States to enter into such litigation to protect the interests of the United States.

(8) The supplier certifies that it has developed and has on file a current written affirmative action compliance program for each of its establishments in accordance with the regulations of the Secretary of Labor promulgated under Executive Order 11246, as amended.

CERTIFICATION OF NON-SEGREGATED FACILITIES

Supplier certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The phrase "segregated facilities" includes facilities which are in fact segregated on a basis of race, color, creed or national origin, because of explicit directive or by habit, local custom, or otherwise. Supplier agrees that it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Employment Opportunity Clause.

E.O. 11625 - MINORITY BUSINESS ENTERPRISE

(a) It is the policy of the Government that minority business enterprises shall have the maximum practicable opportunity to participate in the performance of Government contracts.

(b) The supplier agrees to use its best efforts to carry out this policy in the award of its subcontracts to the fullest extent consistent with the efficient performance of the contract. As used in the contract, the term "Minority Business Enterprise" means a business, at least 50 percent of which is owned by minority group members or, in the case of publicly owned businesses, at least 51 percent of the stock of which is owned by minority group members. For the purposes of this definition, minority group members are Negroes, Spanish-speaking American persons, American-Orientals, American-Indians, American-Eskimos, and American Aleuts. Supplier may rely on written representations by subcontractors regarding their status as minority business enterprise in lieu of an independent investigation.

EMPLOYMENT OF VETERANS

(1) As provided in E.O. 11701 (41 CFR 60-250) the supplier agrees that all employment openings of the supplier which exist at the time of execution of this contract and those which occur during the performance of this contract, including those not generated by the contract and including those occurring at an establishment of the contractor other than the one wherein the contract is being performed by excluding those of independently operated corporate affiliates, shall, to the maximum extent feasible, be offered for listing at an appropriate local office of the Federal-State Employment Service system wherein the opening occurs and to provide such periodic reports to such local office regarding employment openings and hires as may be required; Provided, that this provision shall not apply to openings which the contractor fills from within the contractor's organization or are filled pursuant to a customary and traditional employee-union hiring arrangement and that the listing of employment openings shall involve only the normal obligations which attach to the placing of job orders.

(2) The supplier agrees further to place the above provision in any subcontract directly under this contract.

(3) As provided in Section 2012 of the Vietnam Veterans Readjustment Act of 1974, with respect to all Contracts in the amount of \$10,000 or more, the supplier shall take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era.

EMPLOYMENT OF HANDICAPPED PERSONS

It is hereby agreed that the following provisions which are set forth in regulations promulgated pursuant to the Rehabilitation Act of 1973 are made a part of any existing or future contract between the contractor and Lever Brothers Company.

(a) The supplier will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The supplier agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as the following: Employment, upgrading, demotion or transfer, recruitment or recruitment advertising; layoff or termination, rate of pay or other forms of compensation, and selection for training, including apprenticeship.

(b) The supplier agrees, that, if a handicapped individual files a complaint with the supplier that he is not complying with the requirements of the Act, he will (1) investigate the complaint and take appropriate action consistent with the requirements of 41 CFR 741.26 and 41 CFR 741.29 and (2) maintain on file for three years, the record regarding the complaint and the actions taken.

(c) The supplier agrees that, if a handicapped individual files a complaint with the Department of Labor that it has not complied with the requirements of the Act, (1) it will cooperate with the Department in its investigation of the complaint, and (2) will provide all pertinent information regarding its employment practices with respect to the handicapped.

(d) The supplier agrees to comply with the rules and regulations of the Secretary of Labor in 41 CFR Part 60-741.

(e) In the event of the supplier's non-compliance with the requirements of this clause, the contract may be terminated or suspended in whole or in part.

(f) This clause shall be included in all subcontracts over \$2,500.

The Provisions of the above clauses are hereby
accepted and compliance with them is hereby certified.
(Please type or print all but signature.)

Company Name _____ Signature _____

Address _____ Title _____

GENERAL CONDITIONS (GC-4)

INSTALLATION & SERVICE PERSONNEL

LEVER BROTHERS CO.

General Specification

**GENERAL CONDITIONS GC-4
INSTALLATION & SERVICE PERSONNEL**

NO.	DATE	REVISION	APP'D.
3	2/27/81	Eliminated P 2.5, Amended P 3.1 & References to Eng. Dept. Eliminated	
2	8/10/75	Issued To Plants	
1	10/ 2/74	Original Issue	

2915-01 281

1.0 Intent of this Specification

- 1.1 The purpose of this specification is to provide instructions for service personnel working in a Lever Brothers facility. Lever works for maximum safety of all personnel and protection of its facilities and products.
- 1.2 The service personnel's company (contractor) shall all times comply with any applicable laws, ordinances, statutes, rules and regulations of federal, state, county and municipal governing bodies, particularly those relating to wages, hours and safe working conditions in accordance with applicable OSHA standards. His company shall furnish bonds, security or deposits required to perform their work.
- 1.3 All sales, use, unemployment or other taxes imposed by municipal, county, state and federal agencies shall be paid by the contractor.

2.0 Instructions

- 2.1 Upon receiving a contract or purchase order covering service work on Lever's premises, the contractor must designate one individual to act as liaison with Lever Brothers. Lever will designate an employee to act as liaison with the contractor. All questions concerning the service work or installation should be directed to the Lever representative.
- 2.2 In the event of conflict, verbal instructions purported to have come from Lever will not be recognized unless confirmed in writing.
- 2.3 Lever's approval must be obtained in writing before any modifications or substitutions are made.
- 2.4 The contractor will be required to execute and return to Lever one copy of the "Equal Employment Opportunity" Certificate of Compliance.

3.0 Insurance

- 3.1 "The Contractor shall carry and maintain policies of insurance in the amounts listed below and in such form and with such Companies as may be satisfactory to the Owner:

Coverage	Amounts
Workmen's Compensation	Statutory
Employer's Liability	\$100,000
Public Liability	\$500,000/\$1,000,000.
Property Damage	\$100,000
Automobile Public Liability	\$500,000/\$1,000,000
Automobile Property Damage	\$100,000

3.2 On contracts in excess of \$100,000 or those involving unusual perils, the limits of coverage shall be reviewed and increased, if such is deemed necessary by Lever Brothers Company.

3.3 Whenever applicable, the contractor shall carry appropriate insurance covering the contractor's responsibility for damage to, or destruction of, property belonging to Lever while in the care, custody or control of the contractor, or over which the contractor is for any purpose exercising physical control.

Limits of liability shall be determined in accordance with the maximum value of the property at risk and in consultation with the Lever Brothers Company representative.

3.4 All sub-contractors performing work on the job shall be required to carry and maintain policies of insurance in the amounts stated in Paragraph 3.1 above.

3.5 The contractor and sub-contractor shall file with Lever Brothers certificates showing that such insurance is in force and the date of policy expiration. Such certificates shall be filed with the Purchasing Department at the location where the work is to be performed before such work is undertaken. It shall be the contractor's responsibility to see that all sub-contractors working for him have filed such certificates with Lever Brothers Company.

3.6 Lever Brothers Company shall be named as an additional insured in all policies required under this section, or in the alternative, contractor's insurance carriers shall waive all rights of subrogation against Lever Brothers Company.

3.7 The contractor shall assume, and shall require its sub-contractors to assume, such risks or loss or damage as is customarily insured under an Equipment Floater Policy in respect to its construction machinery tools, and/or equipment, supplied by contractor or sub-contractor; and employees' tools and effects.

4.0 Work Procedure

4.1 During the job the contractor will use only thoroughly competent personnel with extensive experience in the type of work covered by the purchase order.

4.2 If any person is deemed incapable he shall be replaced upon written request from Lever Brothers.

4.3 The serviceman shall use such methods, tools, and equipment to produce a satisfactory quality of workmanship and to secure the completion of the contracted work within the agreed upon schedule.

LEVER BROTHERS COMPANY

To:	°Name J. S. Kumar	°Location 6578/E2D	°From U. Oesch	°Location 6586/E2D
cc:	P. Krishnaya R. Caciula D. Cotrupe K. Radhakrishnan	Hammond 6584/E2D 6547/E2D 6589/E2D	°Date June 1, 1988	°Typed by 1v1 6415k


HSSO PROJECT

MAZZONI PLODDERS/REFINERS

POSITION PAPER

Attached you find a Position Paper on Mazzoni Plidders/Refiners for the HSSO project.

We recommend placing the order immediately with Mazzoni for the plidders and refiners with their modified drives.



Ulrich Oesch

- 4.4 All material, tools, plans, etc., necessary for the serviceman's work shall be provided and maintained entirely at the serviceman's own risk.
- 4.5 The serviceman must keep the premises free from accumulation of his rubbish at all times. At the completion of the work the serviceman must remove all his rubbish, temporary equipment and tools.
- 4.6 Disposal of rubbish and surplus items must comply with all statutory requirements in regard to air pollution, noise control and waste disposal.
- 4.7 Any required notice or communication shall be deemed sufficiently given when sent by one party to the other by prepaid registered or certified mail to the purchase order address of the other party.
- 4.8 All non-Lever employees must sign in and obtain an identification tag from the Lever security guard. The tag must be returned to the guard at the completion of the job.

5.0 Safety

- 5.1 Smoking, except in specifically designated locations, is prohibited in all buildings and yards at all times.
- 5.2 Lunches and other foods must be eaten only in approved locations.
- 5.3 Whenever an open flame, welding or other possible ignition source must be used, Lever must be notified in advance.
- 5.4 The removal of any electric light fixture or tampering with any electrical equipment by the serviceman must be approved by Lever in advance.

Any machinery guards or other safety devices that are removed in the performance of the contractor's work, must be reinstalled by the contractor at the conclusion of his work so that the machine is returned to a safe operating condition.
- 5.5 Scaffolds, ladders and staging shall be constructed in accordance with good safety practices that conform to OSHA requirements. No tools or equipment will be left on any locations where they can fall.
- 5.6 Work areas shall be kept clean and free of debris.
- 5.7 The contractor shall supply his own serviceman with proper protective equipment such as eye shields, gloves, clothing, etc., as may be required. In certain areas, safety eye glasses must be worn at all times.
- 5.8 For Lever's product protection, no glass containers of any type shall be brought into a work location without prior approval.

- 5.9 Lever assumes no responsibility for first aid or medical treatment in connection with injuries to a contractor's employee. The contractor should make independent arrangements for such services.

6.0 Miscellaneous Regulations

- 6.1 Tools, ladders and other equipment will not be furnished by Lever Brothers except by special arrangement.
- 6.2 Contractor's personnel are restricted to the location where work is assigned, plus the adjoining smoking, eating and lavatory areas.
- 6.3 Upon request a specific area will be assigned to the contractor for the storage of equipment, tools and supplies. The contractor must supply his own security boxes and assumes full responsibility for safeguarding his own items. Lever Brothers will assume no responsibility for the replacement of the contractor's equipment that may be damaged or stolen.

7.0 Definitions

- 7.1 **Owner**: Wherever the word Owner occurs in this specification, it refers to Lever Brothers Company, 390 Park Avenue, New York, N.Y.
- 7.2 **Contractor** means the individual, partnership, firm or corporation performing the specified work at the job site.
- 7.3 **Engineer** means the engineer in charge for Lever Brothers Company or his designated representative.
- 7.4 **Work**: The term "work" includes labor or material, or both. Work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

Issued: 09/25/51
Revised: 06/29/54
Revised: 01/01/61
Revised: 09/22/70
Revised: 12/01/75

Approved by:

T. J. Clevenger
G. P. Davidson
H. R. Macdonald
R. R. Siegel
A. J. Wells

LEVER BROTHERS COMPANY
SAFETY STANDARD NO. 9
FOR
INSTRUCTIONS FOR OUTSIDE CONTRACTORS

SECTION 1 - GENERAL

- 1.1 Upon receiving a contract or purchase order covering performance of work on Company premises, the Contractor shall designate one individual (hereafter described as "field superintendent") to act as liaison between the Contractor and Lever Brothers Company. Lever Brothers Company will designate an employee to act as liaison with the Contractor. All questions pertaining to this standard shall be directed to the designated liaison.
- 1.2 The following instructions include minimum requirements only, and the omission of any specific provisions shall in no way relieve the Contractor of his normal responsibility for the safe conduct of the work of his employees.
- 1.3 To improve communications and to create awareness, Lever's liaison shall be responsible for completing the "Outside Contracting Report" prior to starting any project. (See attachment #1)

This report is designed to cover specific procedures and to insure compliance in all respects. A copy of the report must be submitted to the Safety Superintendent, Department involved and Watch Office.

- 1.4 Each plant shall develop and issue to all Contractors and their employees an "Outside Contractor's Safe Practice Card." (See attachment #2). Lever's liaison shall issue these cards accordingly.
- 1.5 All Contractors must report to and sign in daily at the plant Watch Office and comply with all local security procedures.

SECTION 2 - FIRE SAFETY

- 2.1 In many of our processes, there is the possibility of release of explosive gases, vapors or dusts. In order to prevent fires, the following precautions shall be taken.

- 2.1.1 Smoking is prohibited in all buildings and yards, except in specifically designated locations.
- 2.1.2 Whenever it is necessary to use open flames or other possible ignition sources, advance notice must be given to the Lever Liaison by the Contractor and specific approval must be obtained daily before proceeding.
- 2.1.3 Whenever open flames are used, fire safety must be given special attention. The Engineering Department must determine if a fire watch is necessary on each job. If the Engineering Department determines that a fire watch is necessary, a worker must be assigned to the work area who will be responsible for fire safety. The worker assigned may be either an outside Contractor or a Lever employee as local plant agreements dictate. This worker must be approved by Lever Engineering and shall be stationed at each job site with adequate fire extinguishers and proper fire safety instructions.
- 2.1.4 The removal of light bulbs or any tampering with electrical equipment is prohibited.
- 2.1.5 Broken crates, excelsior, wrapping paper and other combustible waste shall be removed and properly disposed of daily.
- 2.1.6 Arrangements shall be made for the safe storage and handling of flammables prior to delivery. Daily supplies of flammable liquids shall be kept in labelled Underwriter's approved safety cans.
- 2.1.7 All drop cloths, tarpaulins and other textiles which are brought into the Plant, must be flame-retardant.

SECTION 3 - PERSONNEL SAFETY

- 3.1 In order to prevent accidents to both Lever and Contractor's employees the following minimum precautions shall be taken.
 - 3.1.1 Scaffolds and stagings shall be constructed in accordance with accepted safety standards such as Lever's "Safety Standard No. 2"
 - 3.1.2 Protruding nails shall be removed or bent over.
 - 3.1.3 Floor or excavation holes shall be adequately guarded, and warning lights shall be provided. Lever's "Safety Standard No. 10, Excavation/Trench Work" shall apply.
 - 3.1.4 Welding cables, extension cords, etc., shall be arranged to eliminate hazards and shall be in good condition to eliminate the danger of electric shock.
 - 3.1.5 Work areas shall be kept clean and free of debris.

- 3.1.6 Shields shall be provided when needed around welding operations to prevent injury to the eyes of persons in the vicinity.
- 3.1.7 Explosive powered tools shall not be used unless specific advance approval is obtained from the Lever Plant Engineering Manager. Such approval will be limited to licensed operators.
- 3.1.8 The Contractor shall be responsible for his employees wearing required personal protective equipment. In certain areas of the Plant, Lever requires all persons entering the area to wear safety glasses at ALL times. Personal protective equipment shall be worn by all contractors and their employees as required by Lever Brothers Company.
- 3.1.9 All equipment used on the job site by the Contractor must be in compliance with the law. Defective or sub-standard equipment will not be used. Hoists, ladders, electrical equipment, scaffolding, hand and powered tools must meet Lever Safety Standard requirements.
- 3.1.10 Work areas that may require testing of the atmosphere for flammable vapors and oxygen deficiency shall be complied with accepted safety standards such as, Lever Safety Standard No. 13, "Confined Space Entry Procedures". Contractors are required to supply their own testing equipment.
- 3.1.11 It is the Contractor's responsibility to instruct his employees to comply with all Lever rules and regulations. Safe work practices and good working habits shall be adhered to.

SECTION 4 - PRODUCT PROTECTION

To prevent contamination of our products, the following precautions shall be taken.

- 4.1 Contractors shall provide protection around their work as needed for the location.
- 4.2 Glass containers or glassware of any kind shall not be brought into the plant, unless specifically needed and advance arrangements are made.

SECTION 5 - INSURANCE COVERAGE

Before work is started, the Contractor shall furnish Lever Brothers Company with certificates of insurance coverage as follows:

- 5.1 Workmen's Compensation
- 5.2 General Liability with bodily injury limits of not less than \$100,000 per person in any one accident, and not less than \$300,000 for more than one person in the same accident, and property limits of not less than \$100,000.

SECTION 5 - INSURANCE COVERAGE

- 5.3 Automobile Liability with bodily injury limits of not less than \$100,000 per person in any one accident, and not less than \$300,000 for more than one person in the same accident, and property damage limits of not less than \$100,000.

SECTION 6 - FIRST AID

Lever Brothers Company assumes no responsibility for first aid or subsequent treatment in connection with injuries sustained by employees of the Contractor. The Contractor shall make independent arrangements for such services.

SECTION 7 - OTHER REGULATIONS

- 7.1 Lunches shall not be eaten in the Plant except in approved locations.
- 7.2 Tools, ladders and other equipment will not be furnished by Lever Brothers Company.
- 7.3 Specific approval shall be obtained for locations where working clothes, tools, materials and other equipment may be stored.
- 7.4 Contractor's workers are definitely restricted to the location where work is assigned.
- 7.5 Lever's materials or equipment shall not be removed from the Plant by the Contractor without first obtaining a pass or delivery order.
- 7.6 Contractors shall assume full responsibility for the safeguarding of tools and other equipment used in connection with the work, as Lever Brothers Company assumes no responsibility for the replacement of such equipment which is lost, damaged or stolen.
- 7.7 Elevators shall not be used by Contractors unless approval is obtained in advance from Lever's liaison.

OUTSIDE CONTRACTING REPORT

Safety Standard No. 9
Attachment No. 1

PROJECT _____

Copies: Dept. Supt. _____
Safety Supt. _____
Watch Office _____

Location _____

Date of this report _____

Contracting Company _____

Prepared by _____

Address & phone # _____

Lever Engineer _____

Expected starting date _____

Estimated duration of work _____

	<u>YES</u>	<u>NO</u>	<u>REMARKS</u>
1. Has "the contractor" received a copy of Lever Standard #9?	_____	_____	_____
2. Has Safety Standard #9 been discussed with "the contractor's" site supervisor?	_____	_____	_____
3. Will any vehicles, cranes, office trailers or other oversized equipment be used or stored on premises?	_____	_____	_____
4. Has an approved site been selected for equipment and construction materials? (Location approved by the effected department?)	_____	_____	_____
5. Will any combustible or hazardous materials be used or stored on the premises?	_____	_____	_____
6. Have arrangements been made for the proper use and storage of combustibles? (Minimum amounts and approved containers at a suitable location?)	_____	_____	_____
7. Have necessary permits been obtained by Lever Brothers and "the contractor"? (Welding, cutting, trailer-office etc)	_____	_____	_____
8. Will "the contractor" use any plant utilities? (Water, electricity, air, sewers, etc.)	_____	_____	_____
9. Have arrangements been made with the department for use of plant utilities?	_____	_____	_____
10. Will pedestrain or vehicular traffic be detoured at any time during the construction period?	_____	_____	_____
11. Have posters been prepared to detour unauthorized personnel. (All plant personnel not responsible for project development) safely around the construction site?	_____	_____	_____
12. Will any barriers, warning lights, shoring, etc. be required? (This is "the contractor's" responsibility.)	_____	_____	_____
13. Is all the necessary equipment now available or on order?	_____	_____	_____
14. Does Gate House have list of all sub-contractors?	_____	_____	_____
15. Will Fire Watch be required?	_____	_____	_____

REMARKS - INDICATE APPROPRIATE NUMBER

OUTSIDE CONTRACTOR'S SAFE PRACTICE REMINDERS

NOTE - The following items are not to be meant as a complete list of reminders. - They are only the bare basics to help insure a safe operation for all concerned. For additional information refer to the complete standard, Safety Standard No. 9. Instructions for Outside Contractors, which was issued with your work contract. Please comply with this Safety Standard in all respects.

1. Are you using safe tools and equipment?
2. Is your equipment properly guarded? Does it present a hazard to passers by?
3. Is the construction/work area identified and roped off?
4. If using open flame equipment, is your fire extinguisher in place? Do you have one? If you do, is it adequate in size and of the proper type? Do you need a fire watch?
5. Never leave open-flame equipment unattended.
6. If gasoline is used as a fuel, it must be stored in a labelled Underwriter's Approved safety can. This means a properly designed container with self closing dispensing faucet, and the screen flame arrestor in place. Do not store excessive amounts of gasoline in our Plant.
7. When using propane or other fuels be sure the handling and storing is done in a safe manner.
8. Keep construction/work area clean and orderly.
9. Do not block fire hydrants, doorways, aisles, etc.
10. Smoking is not permitted in all buildings and yards. Only in specifically designated areas.
11. Keep Lever's project engineer or assigned contact informed.

TAKE TIME TO BE SAFE

Specifications for Asbestos Insulation Removal

The following specifications are designed to provide proper asbestos emission control and personnel protective guidelines as required by EPA, OSHA, and other Federal, State or Local Agencies, to prevent exposure of contractors' workers, plant personnel, and the community.

Asbestos exposure in excess of the allowable limits may be expected while removing dry asbestos insulation from existing vessels, piping, fittings, pumps, ducts, etc. Therefore, in order to safely remove asbestos, and to insure safe working conditions, the following specifications are to be met:

1. Documentation of Performance in Asbestos Removal;
2. Scope of Work;
3. Worker's Protective Equipment;
4. Decontamination;
5. Pre-Asbestos Removal Preparations;
6. Methods of Asbestos Removal; and
7. Air Monitoring.

G. G. HYSON

FEB 16 1982

Specification #1 - Documentation of Performance in Asbestos Removal

The contractor shall furnish documentation of successful performance in asbestos removal. This should include the name and address of the company, location of work performed, and a record of air monitoring for asbestos as required by OSHA 1910.1001.

Specification #2 - Scope of Work

- A. Contractor shall furnish all labor, materials, services, insurance, and equipment necessary for the complete removal of all asbestos located at the site in accordance with the guidelines and regulations of the responsible EPA, OSHA, State or Local Agency.
- B. Contractor shall ensure that his employees have had instructions on the dangers of asbestos exposure, on respirator use, personal hygiene, and OSHA regulations.

Specification #3 - Worker's Protective Equipment

Work clothes will consist of full body disposable protective clothing and head cover. Respirators and other protective equipment as required by OSHA and plant regulations shall be used.

Specification #4 - Decontamination

All workers without exception:

- A. Will change work clothes at a designated area prior to start of day's work. Locker facilities must be provided to ensure that regular street or work clothes are not contaminated.
- B. All work clothes must be removed in the work area and the disposable clothing shall be sealed in a impermeable container and properly identified.

Any contaminated clothing to be laundered shall be handled in the same manner as above, to warn the laundry company of the clothes' contamination.

- C. Workers must adhere to strict personal hygiene practices by vacuuming and washing before lunch and at the end of each day's work. Hygiene facilities, supplies, etc., are the contractors responsibility.
- D. No smoking, eating, or drinking is allowed at the work site. At no time is a worker to leave the work site in their contaminated clothing.

Specification #5 - Pre-Asbestos Removal Preparation

- A. Caution signs - Work area must be posted with signs 20" x 14" to warn all employees. Sign specification shall conform as specified in OSHA 1910.145(D)(4).
- B. Contractor must seal up all openings as needed with polyethylene taped securely in place (6 mil minimum thickness).
- C. Toilet facilities should exist in the work area to avoid contamination problems. If none exist, contractor will provide portable service.

Specification #6 - Methods of Asbestos Removal

- A. Wet Method - The asbestos material must be sprayed with water. A fine spray must be applied to prevent fiber disturbance. The asbestos should be sufficiently saturated to prevent emission of airborne fibers in excess of the exposure limits prescribed in the OSHA standard.
- B. Wet insulation is to be slit with a hand cutting tool and carefully removed. The insulation is not to be dropped to the floor. It must be lowered carefully and immediately placed in sealable containers, bags, and drums, and identified.
- C. Housekeeping - Area must be maintained free of asbestos accumulations. Using brooms, brushes, or air to clean is prohibited. Hosing area down or vacuuming are the only approved methods. This cleaning must be done daily. After complete removal of asbestos, the area will be wet cleaned. After a 24 hour period to allow for dust settling, the area will be wet cleaned again. Twenty-four hours after the second cleaning, all floor surfaces will be thoroughly wet mopped.
- D. All polyethylene material, tape, cleaning material, clothing, etc., that is properly sealed and labelled as asbestos contaminated, must be removed from the premises.

Specification #7 - Air Monitoring

- A. Throughout the removal and cleaning operations, air sampling monitoring must be conducted. The methods and the equipment used are described in OSHA standards 1910.93A
- B. Air monitoring shall be performed to provide samples during asbestos removal in the following areas:
 - 1. Immediate work area;
 - 2. Outside work area barriers.
- C. Lever Brothers Company reserves the right to require contractors' personnel to wear personal asbestos monitoring devices. This monitoring is solely for Lever Brothers Company and does not relieve the contractor of his responsibilities.

HSSO PROJECT

PLODDERS AND REFINERS

POSITION PAPER

Plodders and Refiners are long lead items. For HSSO project, these were scheduled to be purchased during early March. Quotations were received from Mazzoni, Binacchi and Bonnot and evaluated in the middle of February.

Based on price, Bonnot was the highest (\$3MM) and hence not considered for further evaluation in spite of Lever having operational experience. Binacchi was rejected on account of higher cost (\$2.2MM) and lack of operational experience. Mazzoni's price was the lowest (\$1.9MM)

Building 15 has three Mazzoni Twin Screw Plodders (14") in operation. Plodder drives gave problems. These are being replaced with Falk drives.

Mazzoni offered a modified version of their drives for HSSO project. These are designed according to AGMA Standards with a service factor of 2.24 and are capable of sustaining frequent stoppages (3 to 4 per minute as it happens now on Dove/Caress lines). They also warranty the drives for a period of 24 months from the date of startup.

Construction features of these units were jointly discussed by Hammond Plant, HHPD Engineering and Mazzoni. Lever suggested improvement in some of the design details based on a consultant recommendation. Mazzoni has agreed to make all the modifications desired by Lever.

Falk drives were considered as an alternative. Design details were discussed and Falk drives were found to be technically feasible. However, this option resulted in an increase in cost of \$500,000 and a delay of 2 months in delivery.

We were also concerned with the split responsibility and the overall warranty of the machines fitted with Falk drives.

HHPD Engineering recommend placing orders immediately with Mazzoni for the plodders and refiners with their modified drives.

Further delay in placing the orders with Mazzoni will adversely affect our construction schedule and the startup of the first two lines.

6415k
KPR
6/1/88

SAFETY CHECKLIST FOR ASBESTOS REMOVAL BY OUTSIDE CONTRACTOR

	YES	NO
1. Have all the entrances to the asbestos removal site been properly roped off to prevent inadvertent entry?	_____	_____
2. Have OSHA specified "Caution" signs been placed at all entrances to the removal site?	_____	_____
3. Has the contractor provided appropriate clothing and necessary personal protective equipment for his laborers removing asbestos?	_____	_____
4. Has the contractor made arrangements for daily changes of work clothes for his laborers?	_____	_____
5. Has the contractor contacted the Plant Safety Manager for an approval on the respirator he wishes to furnish his laborers?	_____	_____
6. Has the contractor provided bags, drums, and labels for the proper removal of the stripped asbestos from the site?	_____	_____
7. Has the proper means of wetting the asbestos been explained?	_____	_____
8. Has the contractor provided air monitoring equipment for sampling the concentration of airborne asbestos in the work area?	_____	_____
9. Has the contractor sealed any openings to other operating areas to prevent airborne asbestos from escaping the site?	_____	_____
10. Has the contractor provided a change area and a shower facility for his laborers?	_____	_____
11. Has the contractor agreed to do all work in accordance with Lever specification GC-3 and Lever Safety Standard #14 <u>in writing?</u>	_____	_____

IF ALL ANSWERS ARE "YES" THEN THE CONTRACTOR MAY BEGIN WORK! IF ANY ANSWERS WERE "NO", THE CONTRACTOR MUST TAKE THE NECESSARY STEPS TO CORRECT THE DEFICIENCY BEFORE WORK IS STARTED!

GENERAL SPECIFICATION

GS-12

FOR

MACHINERY GUARDS

REFERENCES:

- GC-1 **SALE AND DELIVERY OF MECHANICAL EQUIPMENT**
- GC-2 **SUBMITTAL OF VENDORS' DRAWINGS**
- GC-3 **GENERAL CONDITIONS CONTRACT WORK**
- MCS-16 **CONSTRUCTION STANDARD FOR MACHINERY GUARDS**

					LEVER BROTHERS CO.
					ENGINEERING DEPT.
					GENERAL SPECIFICATION
					MACHINERY GUARDS
1	6/24/71	Rev. Par. 3.14, 3.24, 3.34-12	SG	VJA	
0	4/24/70	ORIGINAL ISSUE	AM	AM	
NO.	DATE	REVISION	APP'D.		SPECIFICATION GS-12

STANDARD MACHINERY GUARDS

1.0 SCOPE OF THIS SPECIFICATION

- 1.1 This specification is to become part of all project and packaging machine specifications to the extent that it is applicable. The cost of standard guards, per this specification, shall be included in the base cost of the machine.
- 1.2 Special guards may be required on this machine. Such guards will be specified separately and specifically and shall be subject to separate pricing when defined. No provision shall be made in the base cost for providing special guards, unless called for elsewhere in the specifications. (See also 5.0).

2.0 DEFINITION OF STANDARD GUARDS

- 2.1 In general, the design for machinery guards shall be in accordance with the American Standard Safety Code for Mechanical Power Transmission Apparatus, Cableways and Related Equipment; applicable State Codes and the United States Department of Labor Bureau of Labor Standards for Mechanical Guards.
- 2.2 Standard guards shall be enclosures which can be clearly identified and defined or illustrated by the descriptions in these specifications.
- 2.3 Exceptions to these specifications may be suggested by the manufacturer if he considers that his standard machine enclosure conflicts with, or provides the equal of, these standard specifications. The exception will be subject to Lever's approval, and will be acceptable only if, in Lever's opinion, seller's design furnishes equal protection. The exception must be presented in written or graphic form and must be accepted in writing by Lever.

3.0 STANDARD GUARD DETAILS - POWER TRANSMISSION

3.1 For Chains & Sprockets - Must:

- 3.11 Be fully enclosed
- 3.12 Provide clearance for tension adjustment
- 3.13 Be easily removable and replaceable
- 3.14 Be constructed in accordance with typical details. Packaging machinery manufacturer's standard fabrication will be accepted if it conforms to intent of NCS-16A for protection, accessibility, and quality of construction.
- 3.15 Permit lubrication of chain and bearings without removal.

3.2 For Belts & Pulleys - Must:

- 3.21 Be fully enclosed
- 3.22 Make provision for tension adjustment
- 3.23 Be easily removable and replaceable
- 3.24 Be constructed in accordance with Standard Details MCS-16B. Packaging machinery manufacturer's standard fabrication will be accepted if it conforms to intent of MCS-16B for protection, accessibility, and quality of construction.
- 3.25 Permit lubrication of bearings without removal

3.3 For Gears, Fixed Ratio - Must:

- 3.31 Be fully enclosed
- 3.32 Permit or provide for continuous lubrication without removal
- 3.33 Be easily removable and replaceable
- 3.34 Be constructed in accordance with Dwg. MCS-16C. Packaging machinery manufacturer's standard fabrication will be accepted if it conforms to intent of MCS-16C for protection, accessibility, and quality of construction.

3.4 For Gears - Timing or Size Change - Must:

- 3.41 Conform to all requirements of 3.3 and
- 3.42 Be provided with a fixed half and a removable half which can be opened and closed without removing any screws or bolts, to permit changing.

3.5 For Couplings, Clutches, etc. - Must:

- 3.51 Be enclosed with a guard of the type shown in Dwg. MCS-16F.

3.6 Shafting, Handwheels, etc. - Must:

- 3.61 Have no exposed keys, keyways, set screws, spokes or other projections, or, if they do, must
- 3.62 Be enclosed in a guard of the type shown on Dwg. MCS-16G

4.0 STANDARD GUARD DETAILS - OTHER THAN POWER TRANSMISSION

4.1 For Conveying Belts

4.11 Side guards are required at entrance side of pulleys, as shown on Dwg. MCS-16E.

4.12 Takeup pulleys are to be enclosed as shown on Dwg. MCS-16E. Automatic takeup where applicable.

4.2 For Conveying Chains

4.21 Side guards are required as shown on Dwg. MCS-16D.

4.22 Idlers are to be enclosed as shown on Dwg. MCS-16E.

4.23 Carrier lugs, if any, are to be guarded so as to eliminate shear points as shown on Dwg. MCS-16D.

5.0 SPECIAL GUARDS

5.1 Special guards which may be required, as indicated in Paragraph 1.2, will be the subject of separate negotiations. The seller shall inform Lever at what stage of construction it may be possible to review and agree on the need for special guarding. No provision is to be made in the original proposal for such special guarding, either as regards cost or construction time.

GENERAL SPECIFICATION GS-18

EQUIPMENT NOISE

LEVER BROTHERS CO.

ENGINEERING DEPT.

General Specification

EQUIPMENT NOISE

GS-18

NO.	DATE	REVISION	APP'D.
1	10/12/71	Rev. Sect. 7.C & added Sect. SG	SG
0	7/23/71	Original Issue	

GS-18
GENERAL SPECIFICATION

EQUIPMENT NOISE

1.0 GENERAL

- 1.1 This specification is intended to establish the limiting value of noise generated by the equipment to be purchased. It provides a uniform method of conducting and recording noise tests to be made on such machinery.
- 1.2 Tests are to be made by the vendor and may be witnessed by the purchaser. Confirming or additional measurements by the purchaser shall be permissible.

2.0 INSTRUMENTS

- 2.1 The sound level shall be determined by a sound level meter meeting the standards of the U.S.A., Standards Institute and operating on the A-weighting network with slow meter response.
- 2.2 Instruments shall be calibrated as recommended by the instrument manufacturer. Calibration of the meter and microphone shall be made before the test.

3.0 NOISE TESTS

- 3.1 The tests will be made at the factory or in a test room provided by the vendor at his expense. The test room should preferably provide conditions free of extraneous sounds.
- 3.2 Ambient sound levels within the test room should be 6 dB or more below the sound level that prevails when the tested equipment is in operation.
- 3.3 Unless otherwise specified, equipment tested should be at full load.
- 3.4 The placement of the microphone during the test shall be such as to protect it from air currents, electric or magnetic fields and other disturbing influences that might affect the readings obtained. The microphone shall be positioned at ear level and a horizontal distance of three (3) feet from the nearest major surface. The entire area surrounding the equipment shall be explored to insure that the maximum noise levels are measured.
- 3.5 Measurements shall be made at a minimum of six (6) points approximately sixty (60) degrees apart in the plane specified in paragraph 3.4 starting with the line of maximum noise level.

4.0 SOUND LEVEL SPECIFICATION

- 4.1 The location and orientation of the microphone for measurement of total (ambient plus machinery) and ambient noise levels shall be identical. If either the machine or ambient noise levels fluctuate appreciably, maximum levels shall be recorded.

If the difference between total and ambient levels is less than 3 dB, the ambient level is unsatisfactory for measuring the noise produced by the machine. If the difference is 10 dB or more, the higher readings shall be assumed as the noise level generated by the equipment. For differences of 3 to 10 dB, the machinery noise level shall be determined by the following correction values:

<u>Difference between total and ambient levels, dB</u>	<u>Correction to be subtracted from total sound level, dB</u>
3	3
4-5	2
6-9	1
10	0

5.0 SOUND LEVELS

- 5.1 All equipment shall be guaranteed not to exceed a noise level of 85 dBA at a distance of three (3) feet in any direction. This requirement applies to basic machine and the drive unit, including motor, speed reduction unit, couplings, chains, belts, etc., when a complete package is furnished.

6.0 RECORDING OF DATA

- 6.1 Before shipment of equipment, the vendor shall transmit to Lever Brothers Company a completed copy of Equipment Noise Specification Data Sheet 7.0, which forms a part of this specification.

7.0 EQUIPMENT NOISE SPECIFICATION

Type of Equipment _____

Manufacturer _____ Vendor _____

Vendor's Nos-Order _____ Serial _____ Shop _____

Purchaser's Project _____ Machine No. _____ Order _____

Equipment Specifications: Model No. _____ Serial No. _____

Size _____ Capacity _____

Speed _____ R.P. _____

Machine Load - % Capacity _____

Test Room - Dimensions Length _____ Width _____ Height _____

Material Floor _____ Wall _____ Ceiling _____

Noise Description Continuous _____ Intermittent _____ Impact _____

Does Narrow Band Noise Exist Yes _____ No _____

Narrow Band Analyser Used Yes _____ No _____

Octave Band Analyser Used Make _____ Serial No. _____

Sound Level Meter Make _____ Serial No. _____

Microphone Type Make _____ Serial No. _____

Microphone Cable Used Yes _____ No _____

Reading Corrected Yes _____ No _____

Meter Speed Used Fast _____ Slow _____

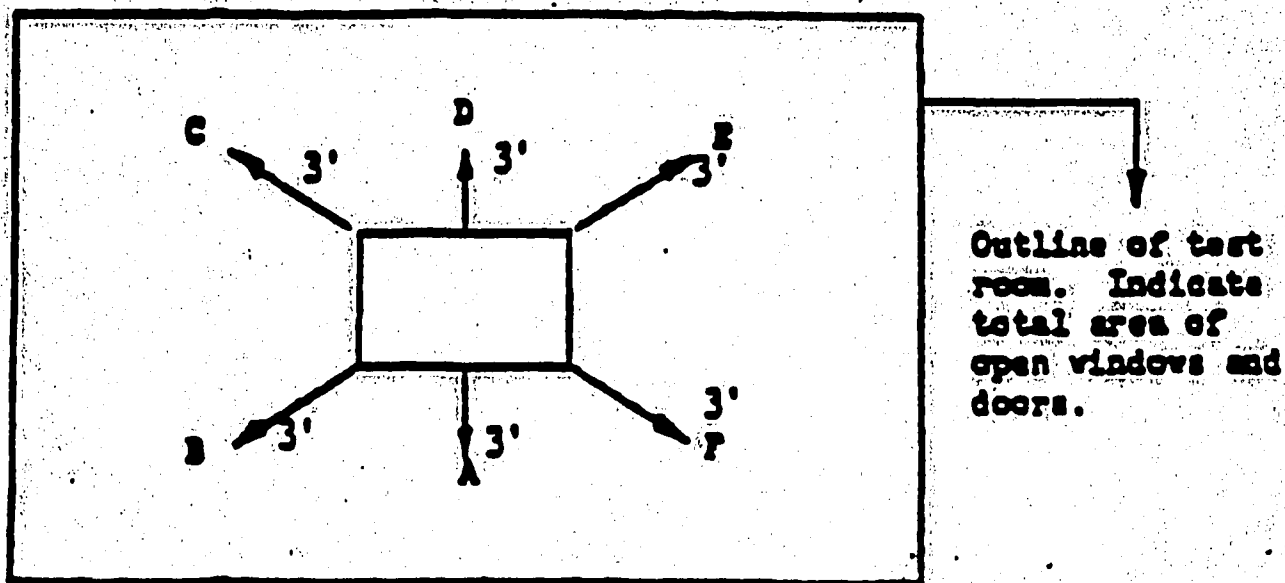
For equipment which due to its size must be tested outdoors, the following additional information shall be furnished:

1. A description of the test environment where the equipment is located, including the position of the equipment.
2. Operating conditions for which measurements were made.
3. Pertinent meteorological data, if important.
4. Location of the microphone, including angle of orientation of the microphone, with respect to the equipment.
5. Description of background noises and their sources.

7.0 EQUIPMENT NOISE SPECIFICATION (Cont'd)

Location of Microphones

Indicate on the sketch below the position of the equipment as placed in the room and orient the machine by some identifying feature. Note the sound level readings at appropriate locations such as A-F.



8.0 EQUIPMENT SELECTION

- 8.1 Preferential consideration will be given to vendors whose equipment complies with Par. 5.1, providing all other conditions of CC-1 "Sale and Delivery of Mechanical Equipment" are fully satisfied.
- 8.2 Failure to meet requirements of Par. 5.1 does not automatically disqualify the vendor's bid proposal. Vendor shall submit his test results and an evaluation will be made by Lever Brothers Company to determine final equipment selection.

Certifico io sottoscritto dott. Adalberto Ferrari
Notaio residente in Busto Arsizio e iscritto nel
collegio notarile di Milano, che fatta rinuncia
col mio consenso all'assistenza dei testimoni, i
Signori:

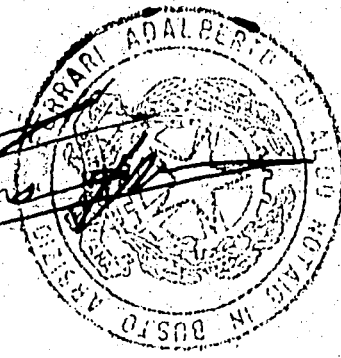
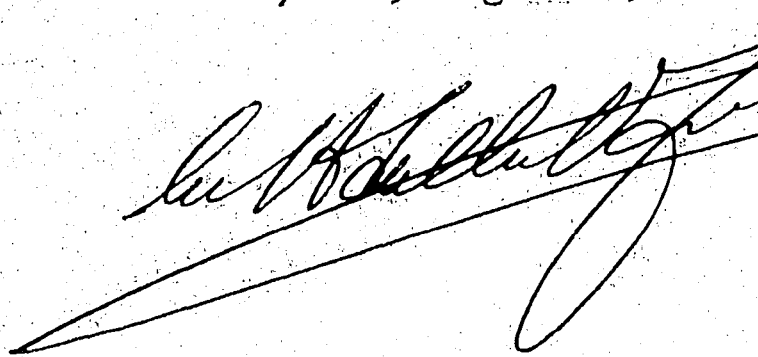
MAZZONI ALDO nato a Milano il 15 febbraio 1937 e
residente in Busto Arsizio via I. Nievo n.3, quale
Amministratore;

CORRADINI GIANCARLO nato a Milano il 29 giugno
1932 e residente in Busto Arsizio, via Corta n.7
Direttore Commerciale;

della società: "G.MAZZONI S.P.A." con sede in Bu-
sto Arsizio, viale Trentino n.10/12;

delle cui identità personali e qualifiche sono cer-
to, hanno sottoscritto quanto precede alla mia pre-
senza.

Busto Arsizio, li 15 luglio 1988



LEVER BROTHERS COMPANY

To: °Name
F.A. Drescher

°Location
6561/E2D

°From
B. Jacobowitz
°Date
March 14, 1988

°Location
6328/E1B
°Typed by
cm/0028E

Re: G. Mazzone
Italy

Cost: \$1,600,000

Timetable: Purchase end of Feb. 1988

Terms: 20% with Purchase Order
70% on Shipment
10% on Start-Up

Credit has been approved for subject account as long as we have a performance bond covering this order.

Barbara

GENERAL CONDITIONS (GC-4)

INSTALLATION & SERVICE PERSONNEL

LEVER BROTHERS CO.

General Specification

**GENERAL CONDITIONS GC-4
INSTALLATION & SERVICE PERSONNEL**

NO.	DATE	REVISION	APP'D.
3	2/27/81	Eliminated P.2.5, Amended P.3.1 & References to Eng. Dept. Eliminated	
2	8/10/75	Issued To Plants	
1	10/ 2/74	Original Issue	

2915-01 281

1.0 Intent of this Specification

- 1.1 The purpose of this specification is to provide instructions for service personnel working in a Lever Brothers facility. Lever works for maximum safety of all personnel and protection of its facilities and products.
- 1.2 The service personnel's company (contractor) shall all times comply with any applicable laws, ordinances, statutes, rules and regulations of federal, state, county and municipal governing bodies, particularly those relating to wages, hours and safe working conditions in accordance with applicable OSHA standards. His company shall furnish bonds, security or deposits required to perform their work.
- 1.3 All sales, use, unemployment or other taxes imposed by municipal, county, state and federal agencies shall be paid by the contractor.

2.0 Instructions

- 2.1 Upon receiving a contract or purchase order covering service work on Lever's premises, the contractor must designate one individual to act as liaison with Lever Brothers. Lever will designate an employee to act as liaison with the contractor. All questions concerning the service work or installation should be directed to the Lever representative.
- 2.2 In the event of conflict, verbal instructions purported to have come from Lever will not be recognized unless confirmed in writing.
- 2.3 Lever's approval must be obtained in writing before any modifications or substitutions are made.
- 2.4 The contractor will be required to execute and return to Lever one copy of the "Equal Employment Opportunity" Certificate of Compliance.

3.0 Insurance

- 3.1 "The Contractor shall carry and maintain policies of insurance in the amounts listed below and in such form and with such Companies as may be satisfactory to the Owner:

Coverage	Amounts
Workmen's Compensation	Statutory
Employer's Liability	\$100,000
Public Liability	\$500,000/\$1,000,000
Property Damage	\$100,000
Automobile Public Liability	\$500,000/\$1,000,000
Automobile Property Damage	\$100,000

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Property Damage	\$100,000
Automobile Public Liability	\$500,000/\$1,000,000
Automobile Property Damage	\$100,000

3.2 On contracts in excess of \$100,000 or those involving unusual perils, the limits of coverage shall be reviewed and increased, if such is deemed necessary by Lever Brothers Company.

3.3 Whenever applicable, the contractor shall carry appropriate insurance covering the contractor's responsibility for damage to, or destruction of, property belonging to Lever while in the care, custody or control of the contractor, or over which the contractor is for any purpose exercising physical control.

Limits of liability shall be determined in accordance with the maximum value of the property at risk and in consultation with the Lever Brothers Company representative.

3.4 All sub-contractors performing work on the job shall be required to carry and maintain policies of insurance in the amounts stated in Paragraph 3.1 above.

3.5 The contractor and sub-contractor shall file with Lever Brothers certificates showing that such insurance is in force and the date of policy expiration. Such certificates shall be filed with the Purchasing Department at the location where the work is to be performed before such work is undertaken. It shall be the contractor's responsibility to see that all sub-contractors working for him have filed such certificates with Lever Brothers Company.

3.6 Lever Brothers Company shall be named as an additional insured in all policies required under this section, or in the alternative, contractor's insurance carriers shall waive all rights of subrogation against Lever Brothers Company.

3.7 The contractor shall assume, and shall require its sub-contractors to assume, such risks or loss or damage as is customarily insured under an Equipment Floater Policy in respect to its construction machinery tools, and/or equipment, supplied by contractor or sub-contractor; and employees' tools and effects.

4.0 Work Procedure

4.1 During the job the contractor will use only thoroughly competent personnel with extensive experience in the type of work covered by the purchase order.

4.2 If any person is deemed incapable he shall be replaced upon written request from Lever Brothers.

4.3 The serviceman shall use such methods, tools, and equipment to produce a satisfactory quality of workmanship and to secure the completion of the contracted work within the agreed upon schedule.

- 4.4 All material, tools, plans, etc., necessary for the serviceman's work shall be provided and maintained entirely at the serviceman's own risk.
- 4.5 The serviceman must keep the premises free from accumulation of his rubbish at all times. At the completion of the work the serviceman must remove all his rubbish, temporary equipment and tools.
- 4.6 Disposal of rubbish and surplus items must comply with all statutory requirements in regard to air pollution, noise control and waste disposal.
- 4.7 Any required notice or communication shall be deemed sufficiently given when sent by one party to the other by prepaid registered or certified mail to the purchase order address of the other party.
- 4.8 All non-Lever employees must sign in and obtain an identification tag from the Lever security guard. The tag must be returned to the guard at the completion of the job.

5.0 Safety

- 5.1 Smoking, except in specifically designated locations, is prohibited in all buildings and yards at all times.
- 5.2 Lunches and other foods must be eaten only in approved locations.
- 5.3 Whenever an open flame, welding or other possible ignition source must be used, Lever must be notified in advance.
- 5.4 The removal of any electric light fixture or tampering with any electrical equipment by the serviceman must be approved by Lever in advance.

Any machinery guards or other safety devices that are removed in the performance of the contractor's work, must be reinstalled by the contractor at the conclusion of his work so that the machine is returned to a safe operating condition.
- 5.5 Scaffolds, ladders and staging shall be constructed in accordance with good safety practices that conform to OSHA requirements. No tools or equipment will be left on any locations where they can fall.
- 5.6 Work areas shall be kept clean and free of debris.
- 5.7 The contractor shall supply his own serviceman with proper protective equipment such as eye shields, gloves, clothing, etc., as may be required. In certain areas, safety eye glasses must be worn at all times.
- 5.8 For Lever's product protection, no glass containers of any type shall be brought into a work location without prior approval.

- 5.9 Lever assumes no responsibility for first aid or medical treatment in connection with injuries to a contractor's employee. The contractor should make independent arrangements for such services.

6.0 **Miscellaneous Regulations**

- 6.1 Tools, ladders and other equipment will not be furnished by Lever Brothers except by special arrangement.
- 6.2 Contractor's personnel are restricted to the location where work is assigned, plus the adjoining smoking, eating and lavatory areas.
- 6.3 Upon request a specific area will be assigned to the contractor for the storage of equipment, tools and supplies. The contractor must supply his own security boxes and assumes full responsibility for safeguarding his own items. Lever Brothers will assume no responsibility for the replacement of the contractor's equipment that may be damaged or stolen.

7.0 **Definitions**

- 7.1 **Owner:** Wherever the word Owner occurs in this specification, it refers to Lever Brothers Company, 390 Park Avenue, New York, N.Y.
- 7.2 **Contractor** means the individual, partnership, firm or corporation performing the specified work at the job site.
- 7.3 **Engineer** means the engineer in charge for Lever Brothers Company or his designated representative.
- 7.4 **Work:** The term "work" includes labor or material, or both. Work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

GENERAL CONDITIONS — SALE AND DELIVERY

1. DELIVERY

Supplier shall stipulate normal delivery in his bid proposal. Firm delivery dates may be required to be stipulated before issuing a purchase order.

2. PERFORMANCE GUARANTEE

Equipment shall be fully guaranteed to meet all performance requirements as set forth in equipment specifications forming the bid inquiry. Equipment shall also be guaranteed to meet requirements of Equipment Noise Specification GS-18.

3. FABRICATION GUARANTEE

Supplier shall guarantee that the materials, equipment or apparatus supplied under this specification are free from all defects in design, workmanship, and materials and will give satisfactory performance under the specified operating and service conditions. Supplier shall replace at no cost to Lever Brothers Company any part which proves defective under normal operating and service conditions within one year of installation, unless otherwise stipulated.

Supplier shall furnish standard manufacturer's guarantees covering such items as pumps, motors, reducers, and other manufactured items.

4. TESTING AND SHIPPING

All items of mechanical equipment, except as specified, shall be fully assembled and shop tested prior to shipment. All such tests are subject to witnessing by Lever Brothers Company's representatives. Where complete shop assembly is impractical, the foregoing may be omitted. The supplier assumes full responsibility for proper fit of component parts in field assembly and shall furnish upon request a qualified field representative to supervise assembly and to take any corrective measures required.

All equipment shall be shipped in assembled units whenever consistent with good shipping practice. All disassembled units shall be clearly piece - marked to facilitate field assembly. All machined surfaces shall be greased or otherwise protected from rusting and shall be protected from mechanical injury during shipment and unloading.

Reference:

GS-18: Equipment Noise Specification

		REVISED PAR. 11 & REF. SHEET NO	
6	10-8-71	REVISED PAR. 2, 7, 10 & 11	S.G.
5	11-70	VARITYPED FOR PRINTING	
NO.	DATE	REVISION	APP'D
APPROVED		LEVER BROTHERS COMPANY	
BY	DATE	ENGINEERING DEPT.	
	11-70	GENERAL CONDITIONS	
	10-20-71	SALE AND DELIVERY OF MECHANICAL EQUIPMENT	
		GC-1	

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5. FIELD ENGINEERING SERVICE

Supplier shall stipulate in his bid proposal all field engineering services normally furnished other than as specified in paragraph 4 above. Where there is a charge for such services, the bid proposal shall clearly state daily rates and expense allowances.

6. PATENT INDEMNITY

Supplier agrees to defend, at its own expense, any suit or legal proceeding instituted against Purchaser and to pay any damages and costs awarded therein against Purchaser, insofar as the same are based on a claim that the apparatus furnished, or any part thereof, in itself constitutes an infringement of any United States patent, provided Purchaser gives Supplier prompt written notice of such infringement claim and of the institution of such suit or proceeding and also gives Supplier all necessary authority, information and reasonable assistance to enable Supplier to settle or defend the same.

In case said apparatus or any part thereof is held in such suit to constitute an infringement and its use is enjoined, Supplier also agrees to procure for Purchaser, at Supplier's own expense, the right to continue using said apparatus or part, or modify same so that it becomes non-infringing, or replace it with non-infringing apparatus or part, or remove the apparatus and refund the purchase price paid therefor by Purchaser.

7. BID PROPOSALS

Bid proposals shall include outline dimension drawings, wiring diagrams, catalog data, photographs, and the like, to facilitate preliminary layout work. The submittal of Vendor's drawings is covered by paragraph 11. Bid proposals and supporting data shall be submitted in triplicate. Bid proposal shall state that, "Supplier agrees to comply with and be bound by General Conditions GC - 1."

8. INSURANCE

The supplier shall assume all responsibility for any damages to person or property arising out of the performance of work on our premises, and should carry appropriate workmen's compensation and liability insurance coverage with respect thereto. The supplier also agrees to supply appropriate certificates of such insurance, naming Lever as an additional insured upon request.

9. MARKING

Each piece of equipment, or sub-assembly thereof, and its container shall be clearly marked with the proper piece - mark or item number as specified on the purchase order or equipment specification.

10. MANUALS AND INSTRUCTIONS

At the time of delivery, Supplier shall furnish 4 copies each of the following:

- a. Installation Instructions
- b. Operating Instructions
- c. Lubrication and Maintenance Recommendations
- d. List of Recommended Spare Parts
- e. Wiring Diagrams
- f. Complete Parts Lists and / or Prints for Ordering Purposes.

11. SUBMITTAL OF DRAWINGS

PROPOSAL DRAWINGS

Each proposal shall be accompanied by three (3) copies each of an outline dimension drawing and other relevant data such as wiring diagrams, etc. Where such drawings are subject to dimensional changes they should be clearly labelled "Preliminary." Where dimensions are firm and may be used for final layout work, they should be labelled "Certified for Construction".

DRAWING APPROVALS

Following receipt of Purchase Order, the Vendor shall submit to Lever Brothers Company for approval two (2) prints or one (1) Ozalid transparency each of all construction drawings to be supplied. One print will be returned to the Vendor stamped "Approved", "Approved as Noted", or "Not Approved". If either of the latter, Vendor must make the appropriate changes on his drawing and resubmit for approval. This procedure shall be repeated until final approval is obtained. Any shop or field work done prior to receipt of approved drawings which requires alterations or replacement will be at the Vendor's expense.

A print stamped "Approved" in no way implies a waiver of any of the other conditions of this specification.

CERTIFIED PRINTS

After final approval Vendor shall submit four (4) certified prints or one certified Ozalid transparency of each drawing.

MAILING OF TRANSPARENCIES

Transparencies shall not be folded; they must be submitted rolled or flat, protected in mailing from being crushed or creased.

12. EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATE OF COMPLIANCE

The supplier contractor will be required at the issuance of a purchase order or contract to execute one copy of the attached "Equal Employment Opportunity" Certificate of Compliance and return same to the Lever Brothers Company Purchasing Division.

To: Our Suppliers

Lever Brothers Company wishes to comply with the requirements of Executive Order 11246, as amended, relating to equal employment opportunity and nonsegregated facilities; Executive Order 11625 relating to minority business enterprise; Executive Order 11701 (CFR 60-250) relating to the Employment of Veterans; and the Rehabilitation Act of 1973 (41CFR Part 60-741) relating to the Employment of Handicapped Persons.

Your signature below will confirm that you accept the above-mentioned provisions. If you believe that you are exempt from any of these provisions, would you please send us a letter stating the facts upon which you base your exemption.

Vice President - Purchasing

Vice President - Purchasing
Lever Brothers Company

EQUAL EMPLOYMENT OPPORTUNITY CLAUSE

(1) The supplier will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin. The supplier will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, age or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rate of pay or other forms of compensation; the selection of training, including apprenticeship. The supplier agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.

(2) The supplier will, in all solicitations or advertisements for employees placed by or on behalf of the supplier, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin.

(3) The supplier will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice, advising the labor union or workers' representative of the supplier's commitments under Section 202 of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The supplier will comply with all applicable provisions of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The supplier certifies that it has filed with the appropriate federal agency all reports due under the applicable filing requirements, including a complete and accurate report on Standard Form 100 (EEO-1) or will file such reports within 30 days after the signing of this agreement or the award of any purchase order, as the case may be, and will continue to file such reports as required.

(6) In the event of the supplier's non-compliance with the non-discrimination clauses of this contract or with any of said rules, regulations or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, or by rules, regulations, or orders of the Secretary of Labor on equal employment opportunity or as otherwise provided by law.

(7) The supplier will include the provisions of paragraph (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, so that such provisions will be binding upon each subcontractor or vendor. The supplier will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for non-compliance. Provided, however, that in the event the supplier becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the supplier may request the United States to enter into such litigation to protect the interests of the United States.

(8) The supplier certifies that it has developed and has on file a current written affirmative action compliance program for each of its establishments in accordance with the regulations of the Secretary of Labor promulgated under Executive Order 11246, as amended.

CERTIFICATION OF NON SEGREGATED FACILITIES

Supplier certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The phrase "segregated facilities" includes facilities which are in fact segregated on a basis of race, color, creed or national origin, because of explicit directive or by habit, local custom, or otherwise. Supplier agrees that it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Employment Opportunity Clause.

E. O. 11625 - MINORITY BUSINESS ENTERPRISE

(a) It is the policy of the Government that minority business enterprises shall have the maximum practicable opportunity to participate in the performance of Government contracts.

(b) The supplier agrees to use its best efforts to carry out this policy in the award of its subcontracts to the fullest extent consistent with the efficient performance of the contract. As used in the contract, the term "Minority Business Enterprise" means a business, at least 50 percent of which is owned by minority group members or, in the case of publicly owned business, at least 51 percent of the stock of which is owned by minority group members. For the purpose of this definition, minority group members are Negroes, Spanish-speaking American persons, American-Orientals, American-Indians, American-Eskimos, and American Alnauts. Supplier may rely on written representations by subcontractors regarding their status as minority business enterprises in lieu of an independent investigation.

EMPLOYMENT OF VETERANS

(1) As provided in E. O. 11701 (41 CFR 60-250) the supplier agrees that all employment openings of the supplier which exist at the time of execution of this contract and those which occur during the performance of this contract, including those not generated by the contract and including those occurring at an establishment of the contractor other than the one wherein the contract is being performed by excluding those of independently operated corporate affiliates, shall, to the maximum extent feasible, be offered for listing at an appropriate local office of the Federal-State Employment Service system wherein the opening occurs and to provide such periodic reports to such local office regarding employment openings and hires as may be required. Provided, that this provision shall not apply to openings which the contractor fill from within the contractor's organization or are filled pursuant to a customary and traditional employee-union hiring arrangement and that the listing of employment openings shall involve only the normal obligations which attach to the placing of job orders.

(2) The supplier agrees further to place the above provision in any subcontract directly under this contract.

(3) As provided in Section 2012 of the Vietnam Veterans Readjustment Act of 1974, with respect to all contracts in the amount of \$10,000 or more, the supplier shall take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era.

EMPLOYMENT OF HANDICAPPED PERSONS

It is hereby agreed that the following provisions which are set forth in regulations promulgated pursuant to the Rehabilitation Act of 1973 are made a part of any existing or future contract between the contractor and Lever Brothers Company.

(a) The supplier will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The supplier agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as the following: Employment, upgrading, demotion or transfer, recruitment or recruitment advertising; layoff or termination, rate of pay or other forms of compensation, and selection for training, including apprenticeship.

(b) The supplier agrees that, if a handicapped individual files a complaint with the supplier that his not complying with the requirements of the Act, he will (1) investigate the complaint and take appropriate action consistent with the requirements of 41 CFR 741-26 and 41 CFR 741-19 and (2) maintain on file for three years, the record regarding the complaint and the actions taken.

(c) The supplier agrees that, if a handicapped individual files a complaint with the Department of Labor that it has not complied with the requirements of the Act, (1) it will cooperate with the Department in its investigation of the complaint, and (2) will provide all pertinent information regarding its employment practices with respect to the handicapped.

(d) The supplier agrees to comply with the rules and regulations of the Secretary of Labor in 41 CFR Part 60-741.

(e) In the event of the supplier's non-compliance with the requirements of this clause, the contract may be terminated or suspended in whole or in part.

(f) This clause shall be included in all subcontracts over \$2,500.

The Provisions of the above clauses are hereby accepted and compliance with them is hereby certified.
(Please type or print all but signature.)

Company Name _____

Signature _____

Address _____

Title _____

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SPEED LETTER

TO MR. P. R. Krishnayya

FROM LEVER BROTHERS COMPANY

CC: V. oesch D. Cotrupe

818 SYLVAN AVENUE

R. Caciula

ENGLEWOOD CLIFFS, N.J. 07632

SUBJECT Pladders and Refiners

MESSAGE DATE 5 . 31 . 1988

Attached is P.R. No 10262 dated 5.31.88 for your authorization. In view of the lengthy discussions we had in the past regarding Mangoni drives it was considered prudent to order two sets of spare drives (one each for B-300 and B-3500) as an insurance. This is a deviation from the normal practice of the plant raising a separate capital proposal for spare parts. If you feel that spare drives are to be processed the normal manner, please let us know. We can then delete the drives before placing the official order. It should be noted that Mangoni has given a special price for the drives without charging a premium associated with spare parts.

SIGNED Radhakrishnan

SECTION 16645
DC VARIABLE SPEED DRIVE CONTROLLER

PART I - GENERAL

1.1 DESCRIPTION

- A. This specification together with the required data sheets covers the requirements for D.C. variable speed drive controllers.
- B. All conflicts between the requirements of this specification, purchase order, required data list, data sheets, and codes shall be referred to LBC for clarification before proceeding with the manufacture of the affected parts.
- C. The electrical drive equipment specified herein, and its associated D.C. motor and reducers (if required) be products of the same manufacturing company.

1.2 BIDS

- A. The bidder shall make one quotation in accordance with this specification and the attached LBC Standards.
- B. All exceptions to this specification must be clearly indicated.
- C. The bidder shall furnish two copies of the following with the quotation:
 - 1. Preliminary dimension drawings
 - 2. Total weight(s)
 - 3. Complete list of electrical components, devices, and accessories
 - 4. Technical bulletins.

1.3 PACKING AND SHIPPING

- A. Vendor shall prepare and crate all equipment covered by this specification in such a manner as to protect it against damage in transit, and shall be responsible for the repair at his expense of all damage due to improper preparation or crating.

1.4 CONSTRUCTION AND CONFORMANCE

A. The D.C. drive controller equipment and wiring shall comply with the latest requirements of the following codes:

1. Institute Of Electrical And Electronic Engineers (IEEE)
2. National Electric Code (NEC)
3. National Electrical Manufacturers Assoc. (NEMA)
4. Underwriters Laboratories (U.L.)
5. Occupational Safety And Health Act (OSHA)
6. Local And State Codes And Standards
7. LBC Safety Standard #5

PART 31 - PRODUCTS

2.1 The D.C. drive controller shall be furnished in a NEMA type 1 enclosure. All hardware shall be fabricated from corrosion resistant material or suitably plated, or anodized and painted. The enclosure shall include provisions for entry of power and control cables.

2.2 The D.C. drive controller shall be designed for complete front accessibility with easily removable assemblies to allow for efficient maintainability when required.

2.3 Plug-in printed circuit boards are acceptable if they have a locking device to provide positive seating and connection.

2.4 POWER REQUIREMENTS

A. The D.C. drive controller shall be generally required to operate from a three-phase, 480 volt, 60 Hz supply. The vendor shall optionally quote other input power source controllers (220 volts or 115 volts A.C. three-phase or single phase), if in the vendor's judgment the design application and economic considerations justify a different input voltage other than 480 volts.

B. Unless specified in the request for quotation or purchase order, an isolation transformer shall be provided. Transformers shall have fully isolated primary and secondary windings. Transformers shall be dry type with air cooling, with a 480 volt, 60 HZ primary and a 480 volt secondary.

C. If a 220 volts or 115 volts controller is quoted, the isolation transformer shall also serve as a step-down transformer with a 480 volt, 60 HZ primary and a 220 volt or 115 volt secondary.

- D. The drive controller shall be capable of operating at properly rated voltage without use of an isolation transformer.
- E. All transformers shall be provided in a NEMA rated enclosure for separate mounting.

2.5 ELECTRONIC CONTROLLER DESIGN

- A. The D.C. drive controller shall be of the adjustable armature voltage type. The basic design shall consist of a solid state full wave power module for conversion of A.C. power to adjustable D.C. The basic method for changing the speed of the motor shall be to vary the voltage applied to the armature.
- B. Control electronics and switching components shall be digital solid state with electronic regulation circuitry.
- C. Thyristor protection shall be provided in the form of fast acting A.C. line current limiting fuses and isolated heat sinks.
- D. A solid state regulator shall control the firing of the thyristors in the power module. Thyristors shall be arranged in a "full wave" configuration with noise immunity.
- E. A.C. circuit boards shall be kept to a minimum and interconnecting wires minimized. A.C. card terminations shall be made to captive screw-type terminal board points for positive connections and to similar terminals.

2.5 CONTROL PERFORMANCE REQUIREMENTS

- A. The drive controller shall be suitable for use across a 20:1 speed range at constant torque.
- B. The drive controller shall provide 50% of rated armature voltage with a 240 volt maximum field voltage for a 460 volt supply, 90 volt armature field voltage for a 115 volt input and 240 volt armature, 50% of field for a 230 volt supply.
- C. Maximum speed adjustment range shall be 50 to 100% of rated speed. Minimum speed range shall be 0 to 50% of rated speed.
- D. The drive controller shall be capable of acceleration/deceleration control over a range of 0 to 50 seconds.

- E. Speed regulation shall be $\pm 1\%$ of motor base speed utilizing tachometer feedback (see Section 9.0) to reduce speed error.
- F. If the attached data sheet indicates a design requirement for constant horsepower, the drive controller shall be furnished with constant horsepower operation above base speed by motor field control. Circuitry shall be provided inclusive of the field controller, electronic field loss protection, and overspeed protection.

2.7 PROTECTIVE FEATURES

- A. Each drive controller shall include the following basic protective features:
 1. An incoming line circuit breaker mounted on the drive enclosure door shall be provided for personnel protection. The circuit breaker shall be capable of providing a positive disconnect between the drive enclosure and all three phases of the incoming A.C. line.
 2. The circuit breaker's operating handle shall be mechanically interlocked with the door. Provision shall be made for closing the switch and energizing the controller with the door open and for opening the door without opening the switch for testing and maintenance purposes.
 3. The drive controller shall be provided with a fully rated D.C. output contactor internal to the controller enclosure to provide a positive means for disconnecting drive controller output voltage from the motor terminals. Any trip of the D.C. drive controller as described in this specification shall occur by dropping out the D.C. loop contractor.
 4. Three auxiliary output contactor contacts shall be supplied internal to the controller enclosure. The auxiliary contacts shall be normally close for interlocking purposes and shall trip the output contactor coil when energized.
 5. Motor overcurrent protection shall be provided consisting of a thermal overload relay internal to the drive controller enclosure and prewired to drive output. Upon trip, the relay output contact opens tripping off the drive controller.
 6. Motor overcurrent protection shall be extended to approximately fifty percent of motor base speed.

7. The drive controller shall be capable of providing 150% automatic overload capacity of rated current for one minute. Instantaneous current trip above 150% of rated drive current shall be provided.
8. Transient voltage protection shall be provided to protect control components from A.C. line transient.
9. Field loss protection shall be provided by sensing field current and causing a trip of the drive controller through a fault relay.

2.8 OPERATOR'S CONTROLS

- A. Operator control devices shall be door mounted on the drive controller or located on a local control station. The attached data sheet shall specify the desired location of the operator devices. If a local control station is specified, the operator devices shall generally be arranged as shown on sketch 1 with monitoring meters remotely located on the drive enclosure.
- B. Operator control devices shall be door mounted on the drive controller or located on a local control station. The attached data sheet shall specify the desired location of the operator devices. If a local control station is specified, the operator devices shall generally be arranged as shown on sketch 1 with monitoring meters remotely located on the drive enclosure.
- C. Operator control devices shall be door mounted on the drive controller or located on a local control station. The attached data sheet shall specify the desired location of the operator devices. If a local control station is specified, the operator devices shall generally be arranged as shown on sketch 1 with monitoring meters remotely located on the drive enclosure.
- D. All operator devices whether door mounted or located on a operator's control station shall be factory installed and pre-wired.
- E. A one-turn speed potentiometer shall be furnished for local speed setting. Drive speed shall be proportional to speed potentiometer setting.
- F. A three position selector switch shall be provided for the following selected modes of operation.
 1. HAND - provides a means for the operator to operate the drive controller and motor manually. Once the selector switch is in the hand position, the drive controller and motor can be enabled and disabled from the local start/stop selector switch.

2. OFF - provides a means for the operator to disable the drive controller and motor from operating in automatic or hand mode. The selector switch can only be enabled when the selector switch is in the off position and the stop button is depressed.

3. AUTOMATIC - provides a means for the drive controller and motor to be enabled from a remote digital signal from Lever Brothers' computer. The operator may choose to have the drive controller speed controlled by an adjustable local speed potentiometer or by a remote speed setpoint by adjusting the local remote setpoint selector switch (see 7.8).

G. A two position selector switch shall be provided which shall be functional only when the HANC - OFF selector switch is in the off position for the selected mode of operation:

1. START - the drive controller and motor is enabled. The operator may choose to have the drive controller follow the adjustable local speed control potentiometer or follow a remote setpoint by adjusting the local/remote setpoint selector switch (see 7.8).

2. STOP - the drive controller and motor is disabled.

H. An additional and separate two position selector switch shall be provided for the following selected modes of operation:

1. LOCAL SETPOINT - speed regulation is maintained through a local speed control potentiometer which drive speed proportional to potentiometer position. In this mode of operation, the drive controller is completely isolated from remote computer control.

2. REMOTE SETPOINT - the drive controller follows a remote 4-20 ma analog speed setpoint downloaded from Lever Brothers' computer. Remote setpoint shall be proportional to rated armature voltage.

I. The drive controller shall be capable of providing an analog 4-20 ma output signal proportional to controller output armature voltage (speed setpoint).

- I. This feedback signal shall be used in Lever Brothers' computer to implement local setpoint tracking; while in local setpoint, the computer shall follow and remember the controller's output armature voltage. When a switch-over to remote setpoint takes place, the computer will maintain the controller at the last local setpoint voltage setting. The operator at the computer console may choose to continue to drive the controller at the local voltage setpoint or transmit a new desired armature voltage speed setpoint. This transfer of control between local setpoint and remote setpoint shall be "bumpless".
- J. A jog pushbutton shall be furnished. This pushbutton shall provide motor and controller operation at an independently adjustable pre-set speed as long as the job pushbutton is depressed, and the HAND - OFF - AUTOMATIC selector switch is in the off position. When the pushbutton is released, the controller and motor are brought to a stop.
- K. The following monitoring meters shall be furnished:
 1. Speed Meter - Provides indication of the armature voltage calibrated in 0-100% RPM.
 2. Ammeter - Provides indication of the armature current as a percent on a scale of 0 to 150%. Control transformer shall be furnished, mounted inside the controller enclosure.
- L. An indicating light shall be provided to indicate power on.
- M. An indicating light shall be provided to indicate motor run.

2.9 CONTROLLER I/O INTERFACE REQUIREMENT

- A. The following remote inputs and outputs shall be generally available with the drive controller.
 1. Inputs:
 - a. Motor run status - whenever the driven motor is running, the controller enabled relay will be energized and a corresponding auxiliary contact shall be closed providing an remote indication at Lever Brothers' computer.

- b. Automatic mode status - Whenever the drive is in automatic mode, a relay will be energized and corresponding auxiliary contacts shall be closed providing a remote indication to Lever Brothers computer.
- c. Remote node status - Whenever the drive is in local setpoint/remote setpoint mode, a relay will be energized and a corresponding auxiliary contact shall be closed providing a remote indication to Lever Brothers computer.
- d. Remote speed indicator - The drive controller shall be capable of providing a 4-20 ma proportional to speed signal.
- e. Fault Indicator - Auxiliary contacts for circuit breaker trip, fuse loss, trip and motor overcurrent trip shall be provided and energized in series with their normally closed status relays. During a circuit breaker fault, fuse loss or overcurrent trip (as described in sections 6.5 and 6.9), a relay will be energized through auxiliary contacts. When any auxiliary contact is open upon a fault, it will provide a fault input to Lever Brothers computer.

2. Outputs:

- a. Remote Start - The drive controller shall be enable and the motor started in response to a maintained digital signal from Lever Brothers computer. The remote digital signal shall energize an internal interposing relay inside the drive enclosure. The interposing relay shall receive its 110 V D.C. control power from Lever Brothers Computer. The interposing relay shall then close an internal auxiliary contact and enable the controller and start the drive motor. The drive controller shall not be enabled and the motor started until the hand/off/automatic selector switch is in the automatic mode.

- b. Remote Setpoint - the drive controller shall be capable of being controlled automatically in response to a speed signal from Lever Brothers' computer. The speed signal shall be an analog 4-20 ma signal. The drive controller shall only follow the remote setpoint signal when the local setpoint/remote setpoint selector switch is in the remote setpoint mode.
- B. All relay auxiliary contacts shall be maintained Form 'C' dry contacts rated 120 V D.C., 60 HZ, 5 Amps.
- C. All relay coils and auxiliary contacts shall be internal to the drive controller enclosure.
- D. All signal conversion cards, including signal buffering and filtering required by the vendor to properly interface with Lever Brothers' computer shall be furnished by the vendor.

2.10 SPEED REGULATION

- A. The drive controller shall be capable of $\pm 1\%$ improved speed regulation. Speed regulation shall compensate for temperature variations, load changes, and line voltage variations.
- B. A motor mounted tachometer shall be used to feedback speed error to the drive controller. The tachometer shall be mounted at the factory by the drive controller vendor.
- C. If the driven motor is not supplied by the drive manufacturer, then the drive manufacturer shall provide all mounting accessories and tachometer for field installation on the motor.
- D. An installation detail of the tachometer mounting shall be furnished for field installation, if required. A bill of materials shall also be included identifying any required bolts, brackets, etc.

2.11 AUTOMATIC RESTART

- A. The drive controller shall provide equipment and personnel safety protection during an under voltage or input power loss by preventing automatic restart of the drive controller.

2.12 ELECTRICAL REQUIREMENTS

- A. Each electrical component shall be calibrated and scaled by the vendor in his factory. The vendor shall demonstrate that the controller is working by test and simulation to the satisfaction of the purchaser's representative. Changes, corrections, and/or additions to make the controller function properly shall be done without additional cost to Lever Brothers Company.
- B. All Form 'C' auxiliary contacts which interface to Lever Brothers' computer shall be wired to a dedicated terminal block strip. Terminal blocks shall be provided with captive screw-type terminals. All common neutrals shall be jumpered together.
- C. All other incoming and outgoing wiring shall terminate on a separate terminal block strip. Low level signal wiring shall be separated from power wiring. Wiring shall conform with the requirements of the National Electrical Code and the local and state code regulations of St. Louis, Missouri.
- D. The drive controller shall be furnished with an isolated control circuit transformer. The control circuit transformer shall supply all 110 VAC control power required for the controller to function properly unless otherwise specified. The control circuit transformer shall mount inside the drive enclosure.
- E. Point-to-point connection wiring diagrams shall be made and then submitted to the purchaser for approval prior to fabrication.

2.13 CONTROLLER DIAGNOSTICS

- A. The drive controller shall be furnished with a diagnostics tester card. The card shall monitor drive controller signals and shall identify failed circuit boards by illuminating a LED on a fault indication panel or on a faceplate next to that failed circuit board identifying name.
- B. Monitoring points shall include but shall not be limited to:
 - 1. Power On
 - 2. Overcurrent
 - 3. Field Loss
 - 4. Phase Loss

2.14 SPARE PARTS

- A. A recommended spare parts list (with pricing) for one year of operation shall be quoted.
- B. The drive controller shall be furnished with a limited number of spare parts for use during system start-up. The spare parts shall include but shall not be limited to:
 - 1. Six Power Fuses
 - 2. Six Control Fuses
 - 3. Power Module

The vendor shall identify any other parts or components considered 'high failure' and essential during start-up.

2.15 NAMEPLATES

- A. Laminated 3/32 in. thick plastic nameplates to be supplied with inscriptions as per data sheets.
- B. The master nameplate to be 2" high by 6" long with 1" high black engraved lettering on a white plate.
- C. Function nameplates to be 1" high by 3" long with black engraved lettering on a white plate.
- D. Each nameplate to be fastened with two stainless steel self tapping screws.

PART III - EXECUTION

3.1 TESTING AND INSPECTION

- A. The D.C. drive controller shall be completely wired and tested at the factory.
- B. Lever Brothers Co. reserves the right to inspect the D.C. drive prior to shipment. Supplier will provide LBC's inspector(s) a 3 weeks advance notice of when and where equipment may be inspected.
- C. The D.C. drive controller including any material or equipment contained therein which contains defects, improper construction, excessive repairs, used parts, or not in accordance with this specification are subject to rejection. LBC reserves the right to rejection at job site if above conditions are discovered even after factory acceptance.

3.2 DRAWINGS AND DATA

- A. In addition to the information requested to be furnished by the manufacturer as a bidder, the manufacturer shall furnish the number of copies of drawings as specified on the required data list. All drawings must be approved by Lever Brothers Company prior to construction. All drawings and data to be identified by the Lever Brothers Co. project number, job location, buyer's purchase order number, item number, and service. Revision boxes to describe the latest revision in full detail and an indication of revisions shall be made at the last revised information by such means as a triangle enclosed revision number. A certification statement to include the words "Certified Correct" plus certifier's signature, title and data must be indicated. The following list of drawings is required:
1. Certified dimensioned outline drawings showing equipment layouts and the front view and floor plan of the D.C. drive controller including location of floor channels and anchor bolts, exact locations of and space available for conduit entrance, weights for foundation design, and location or tie-in dimension of the panel with relation to the anchor bolts.
 2. Certified wiring diagrams for each contactor, breaker, switch, etc. with all terminal markings and connections for other circuits.
 3. Certified internal connection diagrams of relays, instruments, and control switches.
 4. Certified unit connection diagrams.
 5. Typical mounting details, sectional views including wiring through locations and dimensions, and assembly of drive panel to show accessibility of equipment and terminals.
 6. Bill of material for each drawing showing all component ratings and catalog numbers.
 7. Complete parts list with all principal parts identified as to manufacturer and type or model number.
 8. A recommended spare parts list (with pricing) for one year of operation.
 9. Installation, maintenance, and operating instructions.
- B. All drawings, etc. to be sent to the addressee specified on the required data list.

LEVER BROTHERS COMPANY
D.C. VARIABLE SPEED DRIVE CONTROLLER

DATA SHEET

PROJECT _____ JOB NO. _____ DATE _____

MOTOR

Power: _____ Volts: _____ Phase: _____ HZ
Enclosure Type: _____ Service Factor: _____
NEMA Class: _____ Insulation Class: _____
Rated Horsepower: _____ Rated Speed: _____

DRIVE CONTROLLER

Isolation Transformer: _____ Primary Voltage: _____
Secondary Voltage: _____
Operator Controls Location: _____
Drive Enclosure Mounting: _____

APPLICATION

Load Type: _____ Process Media: _____
Speed Range: _____ Starting Torque: _____
Normal Torque: _____

1.0 GENERAL

1.1 This specification covers four (4) Simplex Refiners to be supplied for installation by others in Lever Brothers Company, Hammond, Indiana Plant.

All units will be purchased with two released for immediate fabrication and delivery. The remaining two will be released within 6 mos. of the initial purchase order.

The following Lever Brothers Company General Specifications shall be considered to be part of this specification:

GC-1 Sale and Delivery of Mechanical Equipment
GC-4 Installation and Service Personnel
GS-18 Equipment Noise
GS-12 Machinery Guards
16645 DC Variable Speed Drive Controller
Clean Design
Lever Brothers Company Vendor Data Requirements

1.2 Any and all references to this equipment including but not limited to; shipping crates, invoices, certified prints, etc. must indicate Equipment Index, Reference No. and Chart of Account according to the following table.

<u>Item</u>	<u>Equip. Index</u>	<u>Ref. No.</u>	<u>Chart of Acct.</u>
Pelletizing Refiner #1	SR410	4PF2410	180400RC
Pelletizing Refiner #2	SR510	4PF2510	180400RC
Pelletizing Refiner #3	SR610	4PF2610	180400RC
Pelletizing Refiner #4	SR710	4PF2710	180400RC

1.3 Vendor shall include in his quotation any and all objections to any portions of this specification.

1.4 Vendor shall include in his quotation, the normal allowance, if any, for installation and service personnel.

2.0 CAPACITY

The refiner shall be single screw design capable of refining 2200 kg/hr of bars at a speed of 10 rpm. Temperature of material entering refiner will range from 65 - 85°F (15.5 - 29.4°C). The feed will be in the form of unwrapped soap bars or logs returned from process either immediately or after aging.

3.0 DESCRIPTION

3.1 Refiner - The unit shall contain a single screw capable of delivering the required capacity through a pelletizing head fitted with rotating knife. Pellet sizes will be approximately 10MM diameter x 15 - 20MM length. Opening and closing of pelletizing head shall be a quick and simple operation. Screw will be held in place with a spider type retention device.

The barrel of the refiner will be jacketed for the circulation of 40 - 42°F cooling water. Premounted supply and return piping complete with temperature indicators, solenoid valve and manual bypass valve shall be supplied and piped to a convenient location. Internal hoses are unacceptable. Internal water connections shall be hard piped. The inlet of the refiner shall have a flange for mounting a feed hopper to be supplied by others.

If any part or all of the jacketed section of the barrel or cooling water pipe is located within the cowl it shall be insulated with heavy density fiberglass or approved equal. Any insulation containing asbestos is not permitted.

3.2 Drive - Unit is to be driven by a variable speed constant torque motor with a maximum speed of 1,750 RPM and limited to a speed ratio of 4:1 or a minimum speed of 440 RPM. These motors will be supplied and installed by others at Lever Brothers Hammond Plant.

The supplier is to furnish a belt drive with both pulleys as well as necessary gear reducers. The maximum allowable screw speed is 16 RPM. The drive train shall include a Fawick type Airflex Element assembly clutch mounted on the motor output shaft. The clutch shall be sized to operate at an air pressure of 75 psi (5.25 kg/cm²).

The supplier is to specify the motor horsepower necessary to refine the quantities of product indicated. The power train, however, shall be designed for a horsepower 50% greater than required at maximum speed.

The drive unit shall include a tachometer generator with an output signal of 4-20 mA to monitor the reducer input speed.

Proposal shall include the range of screws supplied and quantity of each.

3.3 LUBRICATION REQUIREMENTS

All equipment requiring lubrication shall be equipped with a Lincoln auto-lube-grease system with #SL-32 stainless steel injectors. Stainless steel tubing is required on all static lines. If the seller feels there isn't enough lubrication points to warrant an auto system, the seller should list the number of lubrication points.

Note: These would need to be piped to a single central relubrication point.

3.4 Material of Construction - All parts in contact with the product are to be made of type 304SS.

3.5 Optional Extras - The quote shall include the cost of, at least, the following extra features. The supplier can at his discretion include items which he feels may be desirable.

- A. Wide platforms - 42"
- B. Packer screw (bridge breaker) at the hopper inlet
- C. Additional cost for servicemen over and above that in the base quotation.
- D. Cost for Variable Speed Drive of proper HP in accordance with specification 16645 DC Variable Speed Drive Controller.
- E. Optional twin screw design

4.0 ELECTRICAL

4.1 Solenoid valves to be 110 volt, 1 phase, 60 cycle

4.2 All switches, pushbuttons etc., to be prewired to a common terminal strip

5.0 ADDITIONAL INFORMATION REQUIRED--To be supplied with quotation

- A. Diameter of tube _____ MM
- B. Outside diameter of screw _____ MM
- C. Root diameter of screw _____ MM
(If diameter varies gives minimum and maximum and where change occurs on screw).
- D. Length of screw - Total _____ MM
- E. Length of screw in Hopper _____ MM
- F. Pitch of screw
(If pitch of screw varies give range of variation and where change occurs on screw).
- G. Drawing with section cut through screw flight.

Note: The inclusion in the quotation of a drawing(s) showing the above information is acceptable.

6.0 STANDARDIZATION

6.1 All components shall conform to U.S. Standards. All parts such as gears, bearings, seats, etc. should be selected such that they are readily available within the U.S.A.

6.2 Vendor shall assure that all parts of the unit are standard. Parts manufactured unique for a single machine are not acceptable.

7.0 EQUIPMENT FINISH & COLOR

All equipment surfaces not considered as being "Corrosion Protected" are to be painted - with one primer coat and two finish coats in accordance with the Glidden Paint Company -

GLID-GUARD-4500 Series SYSTEM.

Primer: Glid-Guard No. 5251/5252 Chromate Primer

Finish: Glid-Guard Epoxy Chemical Resistant Finish No. 5250/5242 tinted w/1-1/8 oz. Yellow Oxide, 1 1/8 oz. Lemon Yellow & 3/4 oz. Neutral Toner per Gallon.

Color: To match sample furnished by Lever Brothers Company.

8.0 VENDOR RESPONSIBILITY

8.1 Vendor shall follow the schedule outlined in Exhibit 1 - Vendor Data Requirements.

8.2 The items required by purchaser shall be quoted as a system which means the vendor shall supply all the necessary services and hardware to make the system function in accordance with the intents and purposes of this specification.

8.3 Upon receipt of purchase order, vendor shall furnish three sets of drawings as outlined below. Drawings shall be reviewed and shall be approved by Lever prior to the start of construction. All drawings and data sheets shall be identified by the Lever Brothers Company Project Number, Job Location, Buyer's Purchase Order Number, Equipment and Instrument Tag Number and Service. The following list of drawings and documents are required:

- a) Dimensioned arrangement and outline drawings to also show installation details.
- b) Point-to-point connection during diagrams, schematic diagrams and construction details of all components.

8.4 Approval drawings will be reviewed by Lever Brothers Company and returned to vendor with one of the following statement:

- a) Approval as noted - Vendor will make corrections as noted and issue certified drawings.
- b) Approved - Vendor will issue certified drawings.
- c) Not approved - Vendor will make noted changes and reissue approval drawings.

8.5 In addition to the certified drawings and documents listed in 8.3 above. Vendor will submit the following items with his quotation.

- a) A recommended spare parts list with price list.
- b) Complete parts list with all principal parts identified.

8.6 Vendor shall submit with his bid complete design calculations for the gearboxes.

9.0 SHIPPING

9.1 All parts shall be crated and protected from the elements during shipping.

9.2 Each crate shall be clearly labeled on 4 sides with its contents.

9.3 Vendor shall supply with the quote, the estimated shipping costs from the manufacturing site to Hammond.

9.4 Vendor shall ascertain and be responsible for all permits, etc., to obtain the route clearance requirements for overland shipping.

1.0 GENERAL

1.1 This specification covers four (4) Simplex Refiners to be supplied for installation by others in Lever Brothers Company, Hammond, Indiana Plant.

All units will be purchased for immediate fabrication and delivery.

The following Lever Brothers Company General Specifications shall be considered to be part of this specification:

- GC-1 Sale and Delivery of Mechanical Equipment
- GC-4 Installation and Service Personnel
- GS-18 Equipment Noise
- GS-12 Machinery Guards
- 16645 DC Variable Speed Drive Controller
- Clean Design
- Lever Brothers Company Vendor Data Requirements
- BCS4 Vertical Ladders & Safety Cages
- 0840p Supplemental Specifications
- P-1-1975 Pneumatic Standards

1.2 Any and all references to this equipment including but not limited to; shipping crates, invoices, certified prints, etc. must indicate Asset No., Reference No. and Chart of Account according to the following table.

<u>Item</u>	<u>Asset No.</u>	<u>Ref. No.</u>	<u>Chart of Acct.</u>
Pelletizing Refiner #4	15-2-26022	4PF2-26022	180400RC
Pelletizing Refiner #5	15-2-26107	4PF2-26107	180400RC
Pelletizing Refiner #6	15-2-26189	4PF2-26189	180400RC
Pelletizing Refiner #7	15-2-26262	4PF2-26262	180400RC

2.0 CAPACITY

The refiner shall be single screw design capable of refining 10,000 lbs/hr of flakes at a speed of 10 rpm. Temperature of material entering refiner will range from 65 - 100°F. The feed will be in the form of soap flakes having a bulk density of 32 lbs/ft³.

The maximum temperature rise must not exceed 3°F across the entire unit.

1. GENERAL

The following data constitute a part of the Inquiry and Purchase Order and are to be supplied as indicated

2. MAILING INSTRUCTIONS

Drawings and data per listing below are to be forwarded to:

Lever Brothers Company
 818 Sylvan Avenue
 Englewood Cliffs, NJ 07632
 ATTN: HHPD Eng'g. Dept. J. Pandolfo

Project No. H-6206

3. All data furnished to be certified and bear the following identification:

Facility: Hammond Facility
 Location: Hammond, Indiana
 Purchaser: Lever Brothers Company

P.O. No.: _____

Job No.: H-6579

Spec No.: _____

4. FORM OF DRAWINGS

"P" designates Manufacturer's standard print.
 "R" designates a full size transparency from which legible prints may be made.
 "M" designates a 105 mm microfilm.

5. TIME LIMITS

- a) Approval drawings, when required, must be submitted within 2 weeks from receipt of Purchase Order.
- b) LBC will review and return drawing
- c) Final drawings must be submitted within 2 weeks from receipt of approved drawings.

6. DRAWINGS

Vendor's drawings will be reviewed and approved only as to arrangement and conformance to the specifications and related drawings, and approval shall not be construed to relieve or mitigate the Vendor's responsibility for accuracy or adequacy and suitability of materials and/or equipment represented thereon.

- a) PRELIMINARY DRAWINGS shall be Manufacturer's standard drawings in sufficient detail to layout equipment drives, and access for maintenance and operation and design of foundations and supports.
- b) DWGS FOR COMMENTS shall be transparencies complete with equipment number(s) and purchase order number. Initial drawings must show all information necessary for Purchaser's design of foundations and any connections to other equipment.
- c) FINAL DRAWINGS shall be transparencies complete with equipment number(s) and purchase order number, stamped "CERTIFIED FOR CONSTRUCTION" and signed by a person authorized to bind the partnership or corporation. Certification warrants delivered equipment shall conform to the final drawings. Should delivered equipment fail to conform, Vendor shall furnish all materials, labor, and equipment required to correct such failures to the satisfaction of the Owner.

ITEM	Description	Number and Form Required		
		With Each Proposal	Issue After Receipt of P.O.	
			Comments	Final
A	General Arrangement	1R	8 P	1R+10P
B	Outline Drawing and Foundation Requirement	1R	8 P	1R+10P
C	Detail Shop Drawings	1R	8 P	1R+10P
D	Welding Procedures			
E	Calculations	1R	8 P	1R+10P
F	Completed Data Sheets	1R	8 P	1R+10P
G	Curves			
H	Complete Parts List Including Vendor & Orig. Mfg. Parts List	1R	8 P	1R+10P
J	List of Recommended Spare Parts for 1 Year Operation /Prc.	1R	8 P	1R+10P
K	Instruction Manuals			10P
L	Certified Data Books			10P
N	Certified Performance Data			10P
O	Cross-Section With Parts Description		8 P	1R+10P
R	Wiring Diagrams		8 P	1R+10P
S	Lubrication Schedule			10P
U	Piping and Instrument Diagrams	1R	8 P	1R+10P
V	Code Certificates			1R+10P
W	Instrumentation Bill of Materials		8 P	1R+10P
X	Anchorage and Loading Diagrams		8 P	1R+10P
Y	Motor Specification Sheet	1R	8 P	1R+10P
Z	List of Special Tools (For Erection and Maintenance)	1R	8 P	1R+10P
		Project No. H-6579		

SPECIFICATION FOR
DUPLEX PRE-REFINERS
HAMMOND HSSO PLANT
PROJECT H6579

					LEVER BROTHERS CO.
					Engineering Department
					EQUIPMENT SPECIFICATION
					DUPLEX PRE-REFINERS
1	JAN 26 1988	ISSUED FOR BID	1	1	SPEC. NO. 5958K
No.	Date	Revision	App'd.		

1.0 General

- 1.1 This specification covers four (4) Duplex Pre-Refiners to be installed in Lever Brothers Company, Hammond, Indiana.

All units will be purchased with two released for immediate fabrication and delivery. The remaining two will be released within 6 mos. of the initial purchase order.

The following Lever Brothers Company General Specification shall be considered to be part of this specification.

GC - 1 Scale and Delivery of Mechanical Equipment
GC - 4 Installation and Service Personnel
GS - 18 Equipment Noise
Lever Brothers Company Vendor Data Requirements
Clean Design
GS - 12 Mechanical Guards
16645 DC Variable Speed Drive Controller

- 1.2 Any and all references to this equipment including but not limited to; shipping crates, invoices, certified prints, etc. must indicate Equipment Index, Reference No. and Chart of Account according to the following table.

<u>Item</u>	<u>Equipment Index</u>	<u>Reference No.</u>	<u>Chart of Account</u>
Duplex Pre-Refiner #1			
Duplex Pre-Refiner #2		PROVIDED LATER	
Duplex Pre-Refiner #3			
Duplex Pre-Refiner #4			

- 1.3 Vendor shall include in his quotation any and all objections to any portion of this specification.
- 1.4 Vendor shall include in quotation the normal allowance, if any, for installation and service personnel.

2.0 Capacity

The Duplex Pre-Refiners shall be capable of refining 8800 #/hr (4000 Kg/hr) of soap product at 10 rpm through a 20 mesh screen. The temperature of the plodded log will be approximately 95-100°F. (35°C-38°C).

The maximum temperature rise allowed is 2-3°F.

NOTE: The unit must be capable of withstanding repeated starts and stops, as many as 3 per minute.

3.0 Description

- 3.1 Preliminary Refining Section - The two refiners are to be arranged in series. The preliminary refining section shall contain screw(s), refining screen with pelletizing plate, and rotating knife. Capacity of 4000 Kg/hr shall be achieved while using a standard 20 mesh screen in the refining section and pelletizing plate with tapered holes. The taper shall be such to provide 12mm holes inlet and 8mm discharge. Screen replacement shall be a quick and simple operation. The rotating knife shall have a maximum of 24 blades. The blade shall be sufficiently reinforced to cut the pellets (even when cold) without becoming deformed.

The type of screw and the pressure plate recommended should be the ones which contribute the least temperature rise. Experience has shown the standard designs to have inadequate strength. Pressure plates stronger than standard design must be included with this bid.

The inlet of the refining section shall have a flange for mounting a feed hopper to be supplied by others.

The barrel of this section will be jacketed for the circulation of cooling water available at 40-44°F. Supply and return piping complete with temperature indications shall be supplied and piped to a convenient location. If any part or all of the jacketed section of the barrel is located within the cowl it shall be insulated with heavy density fiberglass or approved equal. Any insulation containing asbestos is not permitted.

- 3.2 Intermediate Hopper. The manufacturer shall provide an intermediate hopper between the two refiners adequate for continuous operation. The hopper shall be sealed and dust tight. The following connections shall be provided:

1. Three sight glasses. One on each side and one on front end.
2. Easy opening door for access to discharge end of preliminary refiner for removal and replacement of screens.
3. Two connections for level control, one low and one high.
4. One 3" connection to owners dust collector.

- 3.3 Final Refiner - The final refiner shall contain screw(s) similar to the preliminary refiner. The barrel of this section shall be jacketed for the circulation of cooling water with piping and temperature indicators similar to that supplied with preliminary refining section.

The capacity of the final refiner shall be 4000 kg/hr. The pelletizing plate and screen shall be similar to the preliminary refiner, discharging to a chute provided by others.

- 3.4 Materials of Construction - All parts in contact with the product shall be made of type 304SS stainless steel including the screw(s).

- 3.5 Refiner Drives - Both screws are to be driven by variable speed constant torque SCR motors with a maximum speed of 1750 RPM and limited to a speed ration of 4:1 or a minimum speed of 440 RPM. These motors will be supplied and installed by others at Lever Brothers Hammond Plant.

The supplier is to furnish a belt drive, with both pulleys, as well as the necessary gear reducers. The maximum allowable refiner screw speed is 13 RPM. Each drive train shall include a Fawick type Airflex Element assembly clutch mounted on the reducer input shaft. The clutch shall be sized to operate at an air pressure of 75 PSI (5.25 Kg/cm²).

The supplier is to specify the motor horsepower necessary to plod the quantities of Lever 2000 indicated at proposed screw speed. The power train however shall be designed for a horsepower 50% greater than that required at maximum speed.

- o Modular drive components are required.
- o Extrusion screws are to be mounted separately from the gear box for ease of maintenance.

While specifying the drive and horsepower of the motor required, it should be kept in mind that Lever 2000 has a tendency to harden at a low temperature requiring additional load to plod.

Each drive unit shall include a tachometer generator with an output signal of 4-20 ma to monitor the reducer input speed.

A graph of torque versus output must be included in proposal.

Each drive shall be capable of withstanding shock loadings - starts and stops - as often as three times per minute as the normal mode of operation, 24 hours per day, 7 days per week. Previous units have broken down at the gear box.

4.0 Quotation

- 4.1 The vendor shall also quote for a twin screw refiner of equivalent capacity in case a single screw refiner is recommended, or vice versa.
- 4.2 Any quotation for a single screw duplex vacuum pre-refiner shall include a packer screw (bridge breaker) at the hopper inlet of each screw.
- 4.3 Quotation shall include separate external cooling water supply connections, one for the upper barrel and one for the lower barrel. Water connections shall be piped with schedule 80 galvanized pipe, no internal hoses are permitted.
- 4.4 Quotation shall include jog button at discharge end of upper screw and lower screw.
- 4.5 Unit shall be complete with connection for water solenoid valves, jog buttons, air solenoids valves; etc. prewired to a common terminal strip. Terminal strip to be housed in a NEMA - 4 enclosure located at left side of the machine. Enclosure to be mounted internally. 25% extra space shall be provided for additional I/O.

4.6 Optional Extras - The quote shall also include the cost of at least the following extra features. The supplier can at his discretion include quotes for additional items which he feels may be desirable.

- a) 42" wide platforms with premounted hand rails (no ladders are permitted)
- b) Right angled arrangement.
- c) Epoxy paint.
- d) Cost for servicemen over and above that in the base quotation.
- e) Cost for 75 HP drives in accordance with specification 16645 DC variable speed drive controller.

5.0 Additional Information Required - To be supplied with quotation.

	<u>Preliminary</u>	<u>Final</u>
A. <u>Refiners</u> -		
1. Diameter of Tube	_____ mm	_____ mm
2. Outside Diameter of Screw	_____ mm	_____ mm
3. Root Diameter of Screw.	_____ mm	_____ mm
4. Length of Screw - Total	_____ mm	_____ mm
5. Length of Screw in Hopper	_____ mm	_____ mm
6. Pitch of Screw	_____ mm	_____ mm
7. Size and Mesh of Screen	_____ mm	_____ mm
8. Number of holes in Plate	_____ mm	_____ mm
9. Size and type of holes in Plate	_____ mm	_____ mm
10. Percent open area in the plate.	_____ mm	_____ mm

B. Drawing with section out through screw flight.

NOTE: The inclusion in the quotation of a drawing(s) showing the information is acceptable.

6.0 Standardization

- 6.1 All parts such as gears, bearings, seals etc. (see also spare parts attached). which must be replaced must be selected such that they are readily available within the U.S.A.
- 6.2 Vendor shall assure that all parts of the refiner are interchangeable between each section. Parts manufactured unique for a single machine are not acceptable.

7.0 Vendor Responsibility

- 7.1 Vendor shall follow the schedule outlined in Exhibit 1 - Vendor Data Requirements.
- 7.2 The items required by purchaser shall be quoted as a system which means the vendor shall supply all the necessary services and hardware to make the system function in accordance with the intents and purposes of this specification.
- 7.3 Upon receipt of purchase order, vendor shall furnish three sets of drawings as outlined below. Drawings shall be reviewed and shall be approved by Lever prior to the start of construction. All drawings and data sheets shall be identified by the Lever Brothers Company Project Number, Job Location, Buyer's Purchase Order Number, Equipment and Instrument Tag Number and Service. The following list of drawings and documents are required:
- a) Dimensioned arrangement and outline drawings to also show installation details.
 - b) Point-to-point connection during diagrams, schematic diagrams and construction details of all components.
- 7.4 Approval drawings will be reviewed by Lever Brothers Company and returned to vendor with one of the following statements:
- a) Approval as noted - Vendor will make corrections as noted and issue certified drawings.
 - b) Approved - Vendor will issue certified drawings.
 - c) Not approved - Vendor will make noted changes and reissue approval drawings.

7.5 In addition to the certified drawings and documents listed in 7.3 above. Vendor will submit the following items with his quotation.

- a) A recommended spare parts list with price list.
- b) Complete parts list with all principal parts identified.

7.6 Vendor shall submit with his bid complete design calculations for the gearboxes.

8.0 Shipping

8.1 All parts shall be crated and protected from the elements during shipping.

8.2 Each crate shall be clearly labeled on 4 sides with its contents.

8.3 Vendor shall supply with the quote, the estimated shipping costs from the manufacturing site to Hammond.

8.4 Vendor shall ascertain and be responsible for all permits etc., to obtain the route clearance requirements for overland shipping.

3.0 DESCRIPTION

3.1 Refiner - The unit shall contain a single screw capable of delivering the required capacity through a pelletizing head fitted with rotating knife. Pellet sizes will be approximately 10MM diameter x 15 - 20MM length. Opening and closing of pelletizing head shall be a quick and simple operation. Screw will be held in place with a spider type retention device.

The barrel of the refiner will be jacketed for the circulation of 40 - 60°F cooling water. Premounted supply and return piping complete with temperature indicators, solenoid valve and manual bypass valve shall be supplied and piped to a convenient location. Internal hose connections must be rated for 150 psi. Internal water connections shall be hard piped. The inlet of the refiner shall have a flange for mounting a feed hopper to be supplied by others.

The type of screw and the pressure plate recommended should be the ones which contribute the least temperature use. Experience has shown the standard designs to have inadequate strength. Pressure plates must be stronger than the standard design. Also hinge assemblies must be reinforced. Pins have bent on existing units.

If any part or all of the jacketed section of the barrel or cooling water pipe is located within the cowling it shall be insulated with heavy density fiberglass or approved equal. Any insulation containing asbestos is not permitted.

Vendors must provide temperature and pressure indication on the discharged products. All instrumentation must be supplied in British Units. Every solenoid valve must be equipped with a manual bypass.

3.2 Drive - Unit is to be driven by a variable speed constant torque motor with a maximum speed of 1,750 RPM and limited to a speed ratio of 4:1 or a minimum speed of 440 RPM. These motors will be supplied and installed by others at Lever Brothers Hammond Plant.

The supplier is to furnish a belt drive with both pulleys as well as necessary gear reducers. The maximum allowable screw speed is 16 RPM. The drive train shall include a Fawick type Airflex Element assembly clutch mounted on the motor output shaft. The clutch shall be sized to operate at an air pressure of 75 psi (5.25 kg/cm²).

The supplier is to specify the motor horsepower necessary to plod the quantities of Dove and HSSO indicated at proposed screw speed. The power train however shall be designed for a horsepower 50% greater than that required at maximum speed.

GENERAL CONDITIONS - CONTRACT WORK

1.0 INTENT OF SPECIFICATIONS

It is the intent of the specifications to provide a complete and acceptable installation of the work described. Anything mentioned in the specifications and not shown on the drawings or shown on the drawings and not mentioned in the specifications shall be considered as required and shall be furnished as shown or called for in either the drawings or specifications. In case of discrepancies the matter shall be submitted to the Owner immediately for clarification.

Lever Brothers Company's Safety Std. No. 9 "Instructions for Outside Contractors" is a part of these General Conditions.

2.0 WORKMANSHIP AND MATERIALS

- 2.1 The work described in these specifications or shown on the drawings, and all work dependent upon or necessary to the completion of the work as described, shown or reasonably implied in the drawings or specifications, shall be executed in the best, most thorough and workmanlike manner known to the trade.
- 2.2 Materials shall be new and of the highest quality. Where not specifically shown or mentioned, materials shall be as the Owner directs. Any materials or workmanship condemned by the Owner as being inferior and unsuitable, or not conforming with the requirements as stated, shall be immediately removed from the site and replaced with proper materials without additional cost to the Owner.
- 2.3 The work when finished shall be delivered in perfect and undamaged state, without exception, leaving the premises clean and ready for use.
- 2.4 Each Contractor shall be responsible for all cutting and patching of the building required for the installation of his work. All cutting shall be done so as to result in a minimum of damage to the premises. All patching shall return the premises to their original condition as nearly as is practical.

13	2/27/81	AMENDED PARAGRAPH 16 -	
		ARTICLE 16.1 + 16.7 & REFERENCES TO	
		ENGINEERING DEPT. ELIMINATED	
12	5/8/75	AMENDED PARAGRAPH 3 -	R.P.
		ARTICLE 13.1	
11	4-18-73	ADDED TO ARTICLES 13.1 & 19.5	R.P.
10	9-1-71	ADDED ARTICLE 26.0	
9	11-20-70	VARITYPED FOR PRINTING	C.N.
NO.	DATE	REVISION	APP'D
APPROVED		LEVER BROTHERS CO.	
BY	DATE	GENERAL CONDITIONS	
<i>R.V.F.</i>	11-20-70	CONTRACT WORK	
	9-1-71		
<i>C.J.F.</i>	4-18-73		
<i>R.V.</i>	5-8-75		
			GC-3

101

2915

3.0 EXAMINATION OF SITE

- 3.1 Before submitting any proposal it shall be the responsibility of the Contractor to familiarize himself with all conditions at the site relative to existing work, materials to be matched, working space available, safety precautions required and all other conditions necessary to the making of an intelligent bid. No increase in cost or extension in performance time will be considered for failure to know the site conditions.

4.0 DRAWINGS AND PRINTS

- 4.1 Figured dimensions shall be followed, and detail drawings in preference to small scale drawings. The Contractor shall verify all dimensions in the field before any work is fabricated.
- 4.2 Immediately upon receipt of purchase order, where design is involved requiring Owner's comment and approval, Contractor shall prepare and transmit three (3) copies of all drawings to the Owner for approval. Drawings with corrections noted by Owner shall be revised by the Contractor and three (3) revised prints shall be submitted. When drawings are approved by Owner, Contractor shall immediately forward to Owner four (4) copies of such drawings marked "Approved for Construction". No shop work shall be done until such drawings have been received by Owner.

5.0 INSTRUCTIONS

- 5.1 In the event of conflict, verbal instructions or information purported to have come from the Owner's office will not be recognized unless confirmed in writing before such work is started. This applies to information given both while estimating and after the contract is awarded.

6.0 SUBSTITUTIONS

- 6.1 It will be understood that the proposals are based on the materials specified, and any request to substitute any other material shall be so mentioned in the proposal. Any request for substitution after the contract is awarded shall likewise be accompanied with the difference in price.
- 6.2 Whenever the words "or equal", "similar to", "approved", or words of similar meaning are mentioned herein, they shall mean that the materials, appliances, process or workmanship shall be equal in the opinion of the Owner.
- 6.3 The Owner's approval shall be obtained in writing before any substitutions are made.

7.0 GUARANTEES

- 7.1 Equipment shall be fully guaranteed to meet all performance requirements as outlined in accompanying Equipment Specifications.
- 7.2 Supplier shall guarantee that the materials, equipment or apparatus furnished under this Specification shall be free from all defects in design, workmanship and materials, and shall give proper and continuous service under all conditions of service required and specified, or which may be reasonably inferred. Supplier shall repair or replace, at his own expense, any part which under normal and proper use proves defective within one year from date of acceptance of the work by the Owner.

8.0 PERMITS AND FEES

- 8.1 The Building Permit shall be obtained by the building contractor after approval of Owner, and this permit shall be paid for by Owner. The Contractors shall obtain and pay for all other permits, inspection certificates, licenses or other privileges necessary to complete the work, and legal evidence of such shall be delivered to the Owner.

9.0 SUITABLE CONSTRUCTION EQUIPMENT

- 9.1 The Contractor shall use such methods, tools and equipment for the performance of the work as will produce a satisfactory quality of workmanship and rate of progress which, in the opinion of the Owner, will secure the completion of the contract within the time agreed upon.
- 9.2 Space at the job site will be provided, by the Owner, for the Contractor's construction shanty. The location of the space shall be as directed by the Owner. The Contractor shall maintain such space and structures in a safe and sanitary condition.
- 9.3 Each Contractor shall, for the duration of his work, provide and maintain sanitary facilities for all crafts in his employ unless other arrangements are provided.
- 9.4 All materials, tools, plans, etc., at the site and necessary to the prosecution of the work shall be provided and maintained entirely at the risk of the Contractor.

10.0 CORRECTION OF WORK BEFORE FINAL PAYMENT

- 10.1 The Contractor shall promptly remove from the location of the work all materials condemned by the Owner as being unfit, unsafe, unsound or at variance with the true intent and purpose of the contract, whether incorporated in the work or not, and shall promptly replace and re-execute his own work in accordance with the contract and without expense to the Owner, and shall bear the expense of making good all work of any other contractors destroyed or damaged by such removal or replacement.

- 10.2 If the Contractor does not remove such condemned work and materials within five days after such rejection, the Owner may, at the Contractor's expense, have such work removed and replaced. If the Contractor does not pay all costs and expenses incident to such removal within ten days thereafter, the Owner may thereupon sell the removed material at private sale without further notice to the Contractor, and shall account only for the net proceeds thereof after deducting all costs and expenses incident to such removal and sale.

11.0 CORRECTION OF WORK AFTER FINAL PAYMENT

- 11.1 The Contractor shall not be relieved of responsibility for faulty materials, apparatus or workmanship by any provisions in the contract documents, by final payment or by failure of the Owner to detect the same, and unless otherwise specified, he shall remedy any defects due thereto which shall appear within a period of one year after the date of completion.

12.0 OTHER CONTRACTS

- 12.1 The Owner reserves the right to let other contracts in connection with the work. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs. All work shall be scheduled and coordinated to avoid interference with plant operations.
- 12.2 If any part of the Contractor's work depends for proper execution or results upon the work of any other Contractor, the Contractor shall inspect and promptly report in writing to the Owner any defects in such work that render it unsuitable for proper execution and results. The failure of the Contractor to so inspect and report shall constitute an acceptance of the other Contractor's work as fit and proper for the reception of his work, except as to defects which may develop in the other Contractor's work after the execution of his work.
- 12.3 To insure the proper execution of his work the Contractor shall measure any work already in place affecting the proper execution of his portion of the job, and shall at once report to the Owner any discrepancy between the executed work and the drawings.

13.0 LAWS AND REGULATIONS

- 13.1 The Contractor, its employees and representatives, shall at all times comply with any applicable laws, ordinances, statutes, rules and regulations, Federal, State, County and municipal; particularly those relating to wages, hours and working conditions. The Contractor shall furnish bonds, security or deposits required to permit performance of the work. This includes compliance with latest O.S.H.A. requirements.

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The supplier/contractor will be required at the issuance of a purchase order or contract to execute one copy of the attached "Equal Employment Opportunity" Certificate of Compliance and return same to the Lever Brothers Company Purchasing Division.

Settlement of jurisdictional disputes shall be responsibility of contractor.

- 13.2 All sales, use, unemployment or other taxes imposed by municipal, county, state and federal agencies shall be paid by Contractor.

14.0 PERFORMANCE SCHEDULES

- 14.1 The Contractor shall stipulate normal availability of materials and equipment and approximate construction time in response to bid inquiry. A firm schedule will be developed at the time of contract commitment. It is essential that the established schedules be met to avoid jeopardizing the overall construction schedules.
- 14.2 Immediately upon award of the contract, the Contractor shall prepare and submit a definite progress schedule and furnish same to the Owner for approval. The Contractor shall execute all portions of the work in accord with the approved schedule.
- 14.3 If necessary, in order to complete the work within the time stated in the contract, or if, in the opinion of the Owner, it becomes necessary in order to maintain the progress schedules, for the Contractor or his Sub-contractors to work after regular hours, the Contractor or his Sub-contractors shall, immediately upon request, work such overtime, additional shifts, Sundays, or holidays as may be required, without additional cost to the owner.
- 14.4 The Contractor will be reimbursed for any overtime requested by the Owner to advance the original scheduled completion date in accordance with Article 15.

15.0 BID PROPOSALS

- 15.1 Bid proposals shall be submitted in original and quadruplicate copy with all copies signed. Bidders shall thoroughly examine the plans and specifications. If there is any obscurity as to meaning or intent of any part of the plans or specifications the bidder should ask for clarification or an explanation before submitting his bid. Lever reserves the right to reject any and all proposals.
- 15.2 Proposals covering the supplying of mechanical equipment shall include outline dimension drawings, wiring diagrams, catalog data, etc., whenever available.
- 15.3 Bid proposals shall include the following information. Omission of any part of this information in the bid proposal may be considered cause for rejection of the bid.

- a. Contract price on fixed basis unless the Owner agrees to the submission of an upset price (cost-plus-not to exceed a fixed maximum).
- b. An enumeration of the drawings and specifications used in preparation of the proposal.
- c. A statement of the number of calendar days required to complete the job after award of contract.
- d. The statement: "Contractor agrees to comply with, and shall be bound by Lever's GC-3 entitled "General Conditions - Contract Work" and Lever's Safety Standard No. 9 - Instructions for Outside Contractors."
- e. A listing of any substitutions proposed for materials or equipment called for in the plans or specifications as called for in Article 6.0.

15.4 The following clause shall be amended to the bid proposal before a contract is awarded.

"This proposal is based on _____ hours of field work. The wage rates (including overhead and profit) used in figuring this work are as follows: _____"

"If overtime work in the field is required by the Purchaser to advance the original schedule of completion, it will be billed at the following rates: _____"

"Any overtime required other than that required to maintain the schedule, will be billed on the basis of actual man-hours worked but in no case shall the hours billed exceed the total hours of the base proposal less the hours worked on straight time."

"If Lever desires to advance the scheduled completion date and requests overtime work to do so and the total estimated hours of work are insufficient to complete the unfinished work on the contract, Lever shall pay only for the premium time at the rates stated above."

16.0 INSURANCE

16.1 The Contractor shall carry and maintain policies of insurance in the amounts listed below and in such form and with such Companies as may be satisfactory to the Owner:

<u>Coverage</u>	<u>Amounts</u>
Workmen's Compensation	Statutory
Employer's Liability	\$100,000
Public Liability	\$500,000/\$1,000,000
Property Damage	\$100,000
Automobile Public Liability	\$500,000/\$1,000,000
Automobile Property Damage	\$100,000

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16.1 (Cont'd)

On contracts in excess of \$100,000, or those involving unusual perils, the limits of coverage shall be reviewed and increased, if such is deemed necessary by Lever Brothers Company.

- 16.2 Whenever applicable, the contractor shall carry appropriate insurance covering the contractor's responsibility for damage to, or destruction of, property belonging to Lever while in the care, custody or control of the contractor, or as to which the contractor is for any purpose exercising physical control. Limits of liability shall be determined in accordance with the maximum value of the property at risk and in consultation with the Lever Brothers Company representative (rigging operations are of primary concern in this area).
- 16.3 All Sub-Contractors performing work on the job shall be required to carry and maintain policies of insurance in the amounts stated in Paragraph 16.1.
- 16.4 The Contractor and Sub-Contractor shall file with Lever Brothers certificates showing that such insurance is in force and the date of policy expiration. Such certificates shall be filed with the Purchasing Department at the location where the work is to be performed before such work is undertaken. It shall be the contractor's responsibility to see that all Sub-Contractors working for him have filed such certificates with Lever Brothers Company.
- 16.5 Lever Brothers Company shall be named as an additional insured in all policies required under this Section 16, or in the alternative, contractor's insurance carriers shall waive all rights of subrogation against Lever Brothers Company.
- 16.6 The Contractor shall assume, and shall require its sub-contractors to assume, such risk of loss or damage as is customarily insured under an Equipment Floater Policy in respect to its construction machinery, tools, and/or equipment, shanties and/or field offices (and contents thereof) supplied by Contractor or Sub-contractor; and employees' tools and effects.
- 16.7 "The contractor hereby assumes entire responsibility and liability for any and all damage or injury of any kind or nature whatever (including death resulting therefrom) to all persons, whether employees of the contractor or otherwise, and to all property, caused by, resulting from, arising out of, or occurring in connection with the execution of the work provided for in this contract, including, without limitation, any negligent act or omission of either party hereto. The contractor specifically agrees to indemnify the owner and hold it harmless for the negligent acts or omissions of the owner, its agents, servants, or employees, the contractor or otherwise, except that the contractor assumes no liability for the sole negligent acts of the owner, its agents, servants, or employees. If any person shall make a claim for any damage or injury (including death resulting therefrom) as herein above described, the contractor agrees to indemnify and save harmless the owner, and/or its agents, servants and employees from and against any and all loss, expense, damage or injury that the owner, its agents, servants or employees may sustain as a result of any such claim and the contractor agrees to assume on behalf of the owner, and/or its agents, servants or employees the defense of any action at law or equity which may be brought against the owner, and/or its agents, servants or employees upon such claim and to pay all costs and expenses of whatever nature resulting therefrom and in connection therewith, and to pay on behalf of the owner and/or its agents, servants or employees upon their demand the amount of any judgment that may be entered against the owner, and/or its agents, servants or employees in any such action."

17.0 CLEANING UP

- 17.1 Contractors shall, at all times, keep the premises free from accumulation of waste material or rubbish caused by their employees or work. At the completion of his work, the Contractor shall remove all its rubbish, temporary structures, tools, scaffolding and surplus materials from the site and leave his work "broom clean" or its equivalent unless more exactly specified. In case of dispute regarding responsibility for rubbish, the Owner may remove the rubbish and charge the cost of such removal to the several Contractors involved as the Owner may determine to be just.
- 17.2 Rubbish shall not be burned without proper authorization. Contractor, his employees and representatives shall comply with all statutory requirements in regard to air pollution and waste disposal.

18.0 TEMPORARY UTILITIES

- 18.1 A limited amount of power and water will be supplied by Owner and will be available to Contractors if required. Temporary wiring will be provided by Owner to the site only.
- 18.2 All temporary facilities in the way of pipes, wires, fixtures, etc. as well as connections to owner's facilities shall be removed to the owner's satisfaction and at the Contractor's expense on the completion of the Contractor's work.
- 18.3 Where possible the owner will provide an area for the Contractor to set up facilities for job supervision. If such space is not available within a building, the Contractor shall provide temporary office and storage facilities to suit his convenience for the performance of the work, and shall remove the same from the premises on completion of the work. All such buildings or facilities shall be located as directed by the Owner and shall be kept neat in appearance. The Contractor shall provide locks for any enclosures he erects for protection of his equipment, tools and materials.

19.0 DEFINITIONS

- 19.1 Owner: Wherever the word Owner occurs in the specification, it refers to Lever Brothers Company, 390 Park Avenue, New York, N.Y.
- 19.2 Contractor means the individual, partnership, firm, or corporation performing the specified work at the job site.
- 19.3 Engineer means the Engineer in Charge of Construction for Lever Brothers Company or his designated representative.
- 19.4 Work: The term "work" includes labor or material or both. Work described in words which so applied have a well-known technical or trade meaning shall be held to refer to such recognized standards.

19.5 Abbreviation: The initials used below will designate the following organizations and codes:

A.C.I.	The American Concrete Institute
A.G.A.	The American Gas Association
A.I.E.E.	The American Institute of Electrical Engineers
A.I.S.C.	The American Institute of Steel Construction
A.S.A.	The American Standards Association
A.S.H.A.E.	The American Society of Heating and Air Conditioning Engineers
A.S.M.E.	The American Society of Mechanical Engineers
A.S.T.M.	The American Society for Testing Materials
A.W.W.A.	The American Water Works Association
F.I.A.	Factory Insurance Association
I.P.C.E.A.	The Insulated Power Cable Engineers Association
N.B.F.U.	The National Board of Fire Underwriters
N.E.C.	The National Electric Code
N.E.M.A.	The National Electrical Manufacturers Assn.
O.S.H.A.	The Occupational Safety and Health Act
A.N.S.I.	American National Standard Institute

20.0 TIME AND MANNER OF PAYMENTS

20.1

On jobs of extended duration partial payments may be requisitioned by the Contractor on a monthly basis. Such requisitions for payment shall be based on the value of the material delivered and work erected and completed as estimated by the Owner. Within ten (10) days eighty five percent (85%) of the value thus determined, less previous payments and less such sums as the Owner may be entitled to retain under provisions of the contract, shall be paid to the Contractor. The fifteen percent (15%) retention on the requisition for final payment shall be held by the owner until the expiration of (30) days after the work has been completed according to the contract and delivered to and accepted by the Owner, or until such time as Waivers of Lien are given the Owner as called for in Article 21. The acceptance of the final payment by the Contractor shall be held to be a waiver of any and all claims against the owner arising out of or in connection with this agreement.

20.2 No payment will be made to the Contractor for material not delivered upon the premises.

21.0 LIENS:

- 21.1 Contractor on his own behalf and (insofar as he is able to contract in that particular) on behalf of all of his Subcontractors and suppliers of material and labor hereby expressly waives the benefits of the Mechanics Lien Laws of the State in which the equipment and machinery, being constructed, erected or repaired, is located. The Contractor hereby agrees to procure from each and every one of his Subcontractors and suppliers of material or labor a release of any claim to mechanics lien which they or any of them may have under the Mechanics Lien Laws of the State in which the equipment and machinery, being constructed, erected, or repaired, is located and in addition agrees to furnish the Owner with each and every other document, affidavit or assurance which, in the opinion of the Owner, is necessary or appropriate to insure the Owner immunity from mechanics liens on account of anything done by Contractor, or those acting under him or as his Subcontractors in carrying out the terms of the contract and any and all work orders for additions thereto, all as a condition of payments by the Owner on account of this contract, or on account of any of said work orders for additions thereto. Payments made by the Owner without requiring strict compliance with the terms of this paragraph shall not be construed as a waiver by the Owner of the right to insist upon such compliance as a condition of later payments.
- 21.2 If at any time there shall be evidence of the existence, whether or not same has been asserted, of any lien or claim arising out of or in connection with the performance or default in performance of the contract for which the Owner or representatives of the Owner or any property of either or any property installed on the premises might be or become liable, then the Owner shall have the right to retain out of any payment then due or thereafter to become due, in addition to the amounts set forth in the contract, an amount sufficient to discharge such lien or satisfy such claim and to reimburse the Owner and/or the representatives of the Owner for all costs and expenses in connection therewith, including reasonable attorney fees; and the Owner at its sole discretion, shall have the right to so apply any amounts so retained if the Contractor does not have said lien or claim discharged or satisfied within ten (10) days after notice.
- 21.3 Neither the final payment nor any part of the retained percentage shall become due until the Contractor shall deliver to the Owner a complete release of all liens arising out of the contract, or receipts in full in lieu thereof and an affidavit that, so far as he has knowledge or information, the releases and receipts cover all the labor and materials for which a lien could be filed. Contractor shall, if any Subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner to indemnify it against any and all liens or claims which may at any time be filed or asserted by such Subcontractor.

- Modular drive components are required.
- Extrusion screws are to be mounted separately from the gear box for ease of maintenance.

While specifying the drive and horsepower of the motor required, it should be kept in mind that Dove and HSSO has a tendency to harden at a low temperature requiring additional load to plod.

Each drive unit shall include a tachometer generator with an output signal of 4-20 ma to monitor the reducer input speed.

Drive replacement shall be easy and require minimum of personnel. Manufacturer shall provide drawing and detail replacement procedure.

A graph of torque versus output must be included in the operating manual.

Each drive shall be capable of withstanding shock loadings - starts and stops - as often as three times per minute as the normal mode of operation, 24 hours per day, 7 days per week.

3.3 Lubrication Requirements

- A. Grease Lubrication System - The recommended grease lubrication system is from the Lincoln Company. It must be air driven, and controlled by the machine control system.

Recommended components are:

Injectors - #83724, Series SL 32 stainless steel;

Pump - #83834, with #83898 end of line failure alarm for 1 to 35 injectors;

Pump - #83167 with #69630 pressure switch for 36 and more injectors;

Lubricant filter - #84004;

Low level reservoir cutoff - #83671

Control Panel

Amber light - System "On"

Red light - Low level reservoir;

Red light - Low line pressure

Audible alarm - low level reservoir requirements.

21.4 If the amounts retained by the Owner are sufficient for the aforesaid purposes, or if any such lien or claim remains undischarged or unsatisfied after all payments have been made to the Contractor, then the Contractor shall promptly refund to the Owner all moneys that may have been paid to discharge such lien or satisfy such claim, including all costs and expenses and reasonable attorney's fees in connection therewith.

22.0 CANCELLATION OF CONTRACT

If the Contractor shall become insolvent, or if a petition in bankruptcy shall be filed against the Contractor, or if any execution or attachment shall be levied on any property of the Contractor, then the Owner may give the Contractor thirty (30) days' written notice of intention to terminate this agreement specifying the cause thereof, and, thereupon, at the expiration of the said thirty days, if said cause shall continue to exist, this agreement shall terminate. If a petition in bankruptcy shall be filed by the Contractor or if the Contractor shall take advantage of any insolvency act, or if it shall make a general assignment for the benefit of creditors, or if a receiver or trustee shall be appointed of this property, then, in any of said events, Owner shall have the right to terminate this agreement forthwith upon written notice to Contractor. If the Engineer finds that the Contractor is neglecting or is unable to provide equipment or materials or to perform the work required, is careless or incompetent, is not prosecuting the work with promptness and diligence, or is failing in any way to comply with the contract, specifications or drawings, the Owner shall have the right, after having first given the Contractor at least two (2) days' notice in writing of such intention, to enter upon the work immediately upon the day mentioned in such notice, exclude the Contractor and his employees, retain or remove the equipment, tools, implements and materials thereon, obtain other equipment, tools, implements, materials, and labor, if necessary, enter into other contracts for work or materials, remove such parts of the work as the Owner considers necessary, and complete the work according to the specifications and drawings, charging to the Contractor the cost of completing the work, including the cost of obtaining new proposals and letting new contracts, if any, together with the damages caused by the delays thus occasioned in completing the work. In such event, the Contractor shall be entitled to no further payments under this contract until the work is completed. If the cost to the Owner of thus completing the work, together with any damages caused by delay as aforesaid shall exceed the balance due to the Contractor on account of the contract price, the Contractor shall forthwith pay such excess amount to the Owner, but if the balance due on the contract price shall exceed the expense incurred by the Owner in so completing the work, together with any damages for delay, such excess shall be paid by the Owner to the Contractor.

23.0 NOTICE

Any notice that may be given hereunder shall be deemed to have been sufficiently given by one party when, and only when, sent by registered mail in a postpaid envelope to the other party at the address as set forth in the Owner's purchase order submitted in acceptance of Contractor's proposal.

24.0 SUPERVISION OF WORK AND QUALIFIED PERSONNEL

24.1 At all times during the construction, the Contractor shall have in charge of the work a thoroughly competent superintendent with extensive experience in the type of work to be performed under this contract. A satisfactory superintendent shall not be withdrawn without the consent of Lever Brothers Company.

24.2 Should any employee assigned to work on this contract be deemed incapable by Lever Brothers Company, he shall, upon written request, be replaced by one who is satisfactory.

25.0 SUB-CONTRACTOR

25.1 A list of Sub-Contractors who shall perform work on the Lever Brothers Company premises shall be provided. This list shall be reviewed by the Contractor with Lever Brothers Company.

25.2 Lever Brothers Company reserves the right to approve all Sub-Contractors.

26.0 AUTHORIZATION FOR EXTRA WORK

26.1 The drawings and accompanying specifications furnished to the Contractor clearly define the scope of contract work. The Contractor shall not be entitled to additional compensation for labor, materials, or other services above and beyond the scope of the contract without prior written agreement and authorization by the owner for the performance of this work.

To: Our Suppliers

Lever Brothers Company wishes to comply with the requirements of Executive Order 11246, as amended, relating to equal employment opportunity and nonsegregated facilities; Executive Order 11625 relating to minority business enterprise; Executive Order 11701 (CFR 60-250) relating to the Employment of Veterans; and the Rehabilitation Act of 1973 (41 CFR Part 60-741) relating to the Employment of Handicapped Persons.

Your signature below will confirm that you accept the above-mentioned provisions. If you believe that you are exempt from any of these provisions, would you please send us a letter stating the facts upon which you base your exemption.

Vice President - Purchasing
Lever Brothers Company

EQUAL EMPLOYMENT OPPORTUNITY CLAUSE

(1) The supplier will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin. The supplier will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, age or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rate of pay or other forms of compensation; the selection of training, including apprenticeship. The supplier agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

(2) The supplier will, in all solicitations or advertisements for employees placed by or on behalf of the supplier, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin.

(3) The supplier will send to each labor union or representative or workers with which it has a collective bargaining agreement or other contract or understanding, a notice, advising the labor union or workers' representative of the supplier's commitments under Section 202 of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The supplier will comply with all applicable provisions of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The supplier certifies that it has filed with the appropriate federal agency all reports due under the applicable filing requirements, including a complete and accurate report on Standard Form 100 (EEO-1) or will file such reports within 30 days after the signing of this agreement or the award of any purchase order, as the case may be, and will continue to file such reports as required.

(6) In the event of the supplier's noncompliance with the nondiscrimination clauses of this contract or with any of said rules, regulations or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, or by rules, regulations, or orders of the Secretary of Labor on equal employment opportunity or as otherwise provided by law.

(7) The supplier will include the provisions of paragraph (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, as amended by Executive Order 11375 of October 13, 1967, so that such provisions will be binding upon each subcontractor or vendor. The supplier will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the event the supplier becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the supplier may request the United States to enter into such litigation to protect the interests of the United States.

(8) The supplier certifies that it has developed and has on file a current written affirmative action compliance program for each of its establishments in accordance with the regulations of the Secretary of Labor promulgated under Executive Order 11246, as amended.

CERTIFICATION OF NON SEGREGATED FACILITIES

Supplier certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The phrase "segregated facilities" includes facilities which are in fact segregated on a basis of race, color, creed or national origin, because of explicit directive or by habit, local custom, or otherwise. Supplier agrees that it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Employment Opportunity Clause.

E.O. 11625 - MINORITY BUSINESS ENTERPRISE

(a) It is the policy of the Government that minority business enterprises shall have the maximum practicable opportunity to participate in the performance of Government contracts.

(b) The supplier agrees to use its best efforts to carry out this policy in the award of its subcontracts to the fullest extent consistent with the efficient performance of the contract. As used in the contract, the term "Minority Business Enterprise" means a business, at least 50 percent of which is owned by minority group members or, in the case of publicly owned businesses, at least 51 percent of the stock of which is owned by minority group members. For the purposes of this definition, minority group members are Negroes, Spanish-speaking American persons, American-Orientals, American-Indians, American-Eskimos, and American Aleuts. Supplier may rely on written representations by subcontractors regarding their status as minority business enterprise in lieu of an independent investigation.

EMPLOYMENT OF VETERANS

(1) As provided in E.O. 11701 (41 CFR 60-250) the supplier agrees that all employment openings of the supplier which exist at the time of execution of this contract and those which occur during the performance of this contract, including those not generated by the contract and including those occurring at an establishment of the contractor other than the one wherein the contract is being performed by excluding those of independently operated corporate affiliates, shall, to the maximum extent feasible, be offered for listing at an appropriate local office of the Federal-State Employment Service system wherein the opening occurs and to provide such periodic reports to such local office regarding employment openings and hires as may be required; Provided, that this provision shall not apply to openings which the contractor fills from within the contractor's organization or are filled pursuant to a customary and traditional employee-union hiring arrangement and that the listing of employment openings shall involve only the normal obligations which attach to the placing of job orders.

(2) The supplier agrees further to place the above provision in any subcontract directly under this contract.

(3) As provided in Section 2012 of the Vietnam Veterans Readjustment Act of 1974, with respect to all Contracts in the amount of \$10,000 or more, the supplier shall take affirmative action to employ and advance in employment qualified disabled veterans and veterans of the Vietnam era.

EMPLOYMENT OF HANDICAPPED PERSONS

It is hereby agreed that the following provisions which are set forth in regulations promulgated pursuant to the Rehabilitation Act of 1973 are made a part of any existing or future contract between the contractor and Lever Brothers Company.

(a) The supplier will not discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant for employment is qualified. The supplier agrees to take affirmative action to employ, advance in employment and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices such as the following: Employment, upgrading, demotion or transfer, recruitment or recruitment advertising; layoff or termination, rate of pay or other forms of compensation, and selection for training, including apprenticeship.

(b) The supplier agrees, that, if a handicapped individual files a complaint with the supplier that he is not complying with the requirements of the Act, he will (1) investigate the complaint and take appropriate action consistent with the requirements of 41 CFR 741.26 and 41 CFR 741.29 and (2) maintain on file for three years, the record regarding the complaint and the actions taken.

(c) The supplier agrees that, if a handicapped individual files a complaint with the Department of Labor that it has not complied with the requirements of the Act, (1) it will cooperate with the Department in its investigation of the complaint, and (2) will provide all pertinent information regarding its employment practices with respect to the handicapped.

(d) The supplier agrees to comply with the rules and regulations of the Secretary of Labor in 41 CFR Part 60-741.

(e) In the event of the supplier's non-compliance with the requirements of this clause, the contract may be terminated or suspended in whole or in part.

(f) This clause shall be included in all subcontracts over \$2,500.

The Provisions of the above clauses are hereby accepted and compliance with them is hereby certified.
(Please type or print all but signature.)

Company Name _____ Signature _____

Address _____ Title _____

1.0 General

- 1.1 This specification covers four (4) duplex vacuum plodders to be installed in Lever Brothers Company, Hammond, Indiana.

All units will be purchased with two released for immediate fabrication and delivery. The remaining two will be released within 6 mos. of the initial purchase order.

The following Lever Brothers Company General Specification shall be considered to be part of this specification.

GC - 1 Scale and Delivery of Mechanical Equipment
GC - 4 Installation and Service Personnel
GC - 18 Equipment Noise
Lever Brothers Company Vendor Data Requirements
Clean Design
GS - 12 Mechanical Guards
16645 DC Variable Speed Drive Controller

- 1.2 Any and all references to this equipment including but not limited to; shipping crates, invoices, certified prints, etc. must indicate Equipment Index, Reference No. and Chart of Account according to the following table.

<u>Item</u>	<u>Equipment Index</u>	<u>Reference No.</u>	<u>Chart of Account</u>
Plodder #1	DP 460	4PF1 08460	180300 RC
Plodder #2	DP 560	4PF1 08560	180300 RC
Plodder #3	DP 660	4PF1 08660	180300 RC
Plodder #4	DP 760	4PF1 08760	180300 RC

- 1.3 Vendor shall include in his quotation any and all objections to any portion of this specification.
- 1.4 Vendor shall include in quotation the normal allowance, if any, for installation and service personnel.

2.0 Capacity

The duplex vacuum plodders shall be capable of plodding 8800 #/hr (4000 Kg/hr) of soap product at 10 rpm. The temperature of the plodded log will be approximately 95-100°F. (35°C-38°C).

The maximum temperature rise allowed is 2-3°F.

NOTE: The unit must be capable of withstanding repeated starts and stops, as many as 3 per minute.

3.0 Description

- 3.1 Preliminary Plodders (Refining Section) - The two plodders are to be arranged in series connected by a vacuum chamber. The preliminary plodder or (refining section) shall contain screw(s), refining screen with pelletizing plate, and rotating knife. Capacity of 4000 Kg/hr shall be achieved while using a standard 8 mesh screen in the refining section and pelletizing plate with 12 mm dia holes and approximated 50% free area. Screen replacement shall be a quick and simple operation. The rotating knife shall have a maximum of 24 blades. The blade shall be sufficiently reinforced to cut the pellets (even when cold) without becoming deformed.

The type of screw and the pressure plate recommended should be the ones which contribute the least temperature rise. Experience has shown the standard designs to have inadequate strength. Pressure plates stronger than standard design must be included with this bid.

The inlet of the refining section shall have a flange for mounting a feed hopper to be supplied by others.

The barrel of this section will be jacketed for the circulation of cooling water available at 40-44°F. Supply and return piping complete with temperature indications shall be supplied and piped to a convenient location. If any part or all of the jacketed section of the barrel is located within the cowl it shall be insulated with heavy density fiberglass or approved equal. Any insulation containing asbestos is not permitted.

Proposal shall include the range of screens to be supplied and quantity of each.

- 3.2 Vacuum Chamber - The vacuum chamber which receives the soap pellets from the refining section also serves as a feed hopper for the final plodder. This hopper shall be jacketed to prevent sweating and should have at least the following connections:

1. Three sight glasses. One on each side and one on front end.
2. Easy opening door for access to discharge end of preliminary plodder for removal and replacement of screens.
3. Two connections for level control, one low and one high.
4. Connections for vacuum pump.
5. Vacuum gage, minimum 6" diameter to read absolute press in MM Hg.

6. System with controls to eliminate condensation in the vacuum chamber.
7. Two 1" NPT connection for pressure switches.

3.3 Final Plodder - The final plodder shall contain screw(s) terminating at a support plate. The barrel of this section shall be jacketed for the circulation of cooling water with piping and temperature indicators similar to that supplied with refinery section.

Beyond the screw will be an extrusion cone complete with a heating section. This heater will be a thermostatically controlled immersion electric heater for an oil filled jacket around the end of the cone. Electric characteristics are 120 volt, 1 phase, 60 cycle.

The extrusion cone shall be mounted on casters. The connection between the cone and the main barrel shall be designed for simple and quick operation. The end of the cone shall be threaded to receive a soap log die holder to be designed and supplied by Lever Brothers. Die plate will provide for twin log discharge.

The extrusion cone will be complete with a pressure gage calibrated in Kg/cm² and PSI suitably installed to read the internal pressure in the cone. Range 0-30 Kg/cm².

As indicated in Section 3.1 above if any portion or all of the jacketed section is inside the cowl that portion shall be insulated.

3.4 Materials of Construction - All parts in contact with the product shall be made of type 304SS stainless steel including the screw(s).

3.5 Plodder Drives - Both screws are to be driven by variable speed constant torque SCR motors with a maximum speed of 1750 RPM and limited to a speed ration of 4:1 or a minimum speed of 440 RPM. These motors will be supplied and installed by others at Lever Brothers Hammond Plant.

The supplier is to furnish a belt drive, with both pulleys, as well as the necessary gear reducers. The maximum allowable plodder screw speed is 13 RPM. Each drive train shall include a Fawick type Airflex Element assembly clutch mounted on the reducer input shaft. The clutch shall be sized to operate at an air pressure of 75 PSI (5.25 Kg/cm²).

The supplier is to specify the motor horsepower necessary to plod the quantities of Lever 2000 indicated at proposed screw speed. The power train however shall be designed for a horsepower 50% greater than that required at maximum speed.

- o Modular drive components are required.
- o Extrusion screws are to be mounted separately from the gear box for ease of maintenance.

While specifying the drive and horsepower of the motor required, it should be kept in mind that Lever 2000 has a tendency to harden at a low temperature requiring additional load to plod.

Each drive unit shall include a tachometer generator with an output signal of 4-20 ma to monitor the reducer input speed.

A graph of torque versus output must be included in proposal.

Each drive shall be capable of withstanding shock loadings - starts and stops - as often as three times per minute as the normal mode of operation, 24 hours per day, 7 days per week.

4.0 Quotation

- 4.1 The vendor shall also quote for a twin screw plodder of equivalent capacity in case a single screw plodder is recommended, or vice versa.
- 4.2 Any quotation for a single screw duplex vacuum plodder shall include a packer screw (bridge breaker) at the hopper inlet of each screw.
- 4.3 Quotation shall include separate external cooling water supply connections, one for the upper barrel and one for the lower barrel. Water connections shall be piped with schedule 80 galvanized pipe, no internal hoses are permitted.
- 4.4 Quotation shall include jog button at discharge end of upper screw and lower screw.
- 4.5 Unit shall be complete with connection for water solenoid valves, jog buttons, air solenoids valves; etc. prewired to a common terminal strip. Terminal strip to be housed in a NEMA - 4 enclosure located at left side of the machine. Enclosure to be mounted internally?

4.6 Optional Extras - The quote shall also include the cost of at least the following extra features. The supplier can at his discretion include quotes for additional items which he feels may be desirable.

- a) 42" wide platforms with premounted hand rails (no ladders are permitted)
- b) Right angled arrangement.
- c) Epoxy paint.
- d) Cost for servicemen over and above that in the base quotation.
- e) Twin extrusion cone.
- f) Cost for 75 HP drives in accordance with specification 16645 DC variable speed drive controller.

5.0 Additional Information Required - To be supplied with quotation.

	<u>Preliminary</u>	<u>Final</u>
A. <u>Plodders</u> -		
1. Diameter of Tub	_____mm	_____mm
2. Outside Diameter of Screw	_____mm	_____mm
3. Root Diameter of Screw.	_____mm	_____mm
4. Length of Screw - Total	_____mm	_____mm
5. Length of Screw in Hopper	_____mm	_____mm
6. Pitch of Screw	_____mm	_____mm
B. <u>Preliminary Plodder</u>		
1. Size and Mesh of Screen	_____mm	_____mm
2. Number of holes in Plate	_____mm	_____mm
3. Size and type of holes in Plate	_____mm	_____mm
4. Percent open area in the plate.	_____mm	_____mm
C. <u>Final Plodder Cone</u>		
1. Length	_____mm	
2. Diameter of Large End	_____mm	
3. Diameter of Small End	_____mm	
D. Drawing with section out through screw flight.		

NOTE: The inclusion in the quotation of a drawing(s) showing the information is acceptable.

- B. Lubrication of enclosed gear drives must be in accordance with the American Gear Manufacturers Association Standard AGMA 350.03.

Note: If the seller feels there isn't enough lubrication points to warrant an auto system, the seller should list the number of lubrication points. These would need to be piped to a single central relubrication point.

3.4 Material of Construction - All parts in contact with the product are to be made of type 304SS.

3.5 Options Required

- A. Wide platforms - 42"
- B. Refining stage will have temperature and pressure transmitters on the product side.
- C. By-passes around solenoid valves on the water system are required.
- D. Epoxy paint.

4.0 ELECTRICAL

4.1 Solenoid valves to be 110 volt, 1 phase, 60 cycle

4.2 All switches, pushbuttons etc., to be prewired to a common terminal strip

5.0 ADDITIONAL INFORMATION REQUIRED--To be supplied with vendor prints

- A. Diameter of tube _____ MM
- B. Outside diameter of screw _____ MM
- C. Root diameter of screw _____ MM
(If diameter varies gives minimum and maximum and where change occurs on screw).
- D. Length of screw - Total _____ MM
- E. Length of screw in Hopper _____ MM
- F. Pitch of screw _____
(If pitch of screw varies give range of variation and where change occurs on screw).
- G. Drawing with section cut through screw flight.
- H. Pressure plate thickness _____ MM

Note: The inclusion in the quotation of a drawing(s) showing the above information is acceptable. However, the final operating manuals shall contain this data tabulated.



6.0 Standardization

- 6.1 All parts such as gears, bearings, seals, etc. (see also spare parts attached), which must be replaced must be selected such that they are readily available within the U.S.A.
- 6.2 Vendor shall assure that all parts of the refiner-plodder are interchangeable between the refiner-plodder, parts manufactured unique for a single machine are not acceptable.

7.0 Vendor Responsibility

- 7.1 Vendor shall follow the schedule outlined in Exhibit 1 - Vendor Data Requirements.
- 7.2 The items required by purchaser shall be quoted as a system which means the vendor shall supply all the necessary services and hardware to make the system function in accordance with the intents and purposes of this specification.
- 7.3 Upon receipt of purchase order, vendor shall furnish three sets of drawings as outlined below. Drawings shall be reviewed and shall be approved by Lever prior to the start of construction. All drawings and data sheets shall be identified by the Lever Brothers Company Project Number, Job Location, Buyer's Purchase Order Number, Equipment and Instrument Tag Number and Service. The following list of drawings and documents are required:
- a) Dimensioned arrangement and outline drawings to also show installation details.
 - b) Point-to-point connection during diagrams, schematic diagrams and construction details of all components.
- 7.4 Approval drawings will be reviewed by Lever Brothers Company and returned to vendor with one of the following statements:
- a) Approval as noted - Vendor will make corrections as noted and issue certified drawings.
 - b) Approved - Vendor will issue certified drawings.
 - c) Not approved - Vendor will make noted changes and reissue approval drawings.

7.5 In addition to the certified drawings and documents listed in 7.3 above. Vendor will submit the following items with his quotation.

- a) A recommended spare parts list with price list.
- b) Complete parts list with all principal parts identified.

7.6 Vendor shall submit with his bid complete design calculations for the gearboxes.

8.0 Shipping

8.1 All parts shall be crated and protected from the elements during shipping.

8.2 Each crate shall be clearly labeled on 4 sides with its contents.

8.3 Vendor shall supply with the quote, the estimated shipping costs from the manufacturing site to Hammond.

8.4 Vendor shall ascertain and be responsible for all permits etc., to obtain the route clearance requirements for overland shipping.

1. GENERAL

The following data constitute a part of the Inquiry and Purchase Order and are to be supplied as indicated:

2. MAILING INSTRUCTIONS

Drawings and data per listing below are to be forwarded to:

Lever Brothers Company
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
ATTN: MHPD Eng'g. Dept. J. Pandolfo

Project No. H-6206

3. All data furnished to be certified and bear the following identification:

Facility: Hammond Facility
Location: Hammond, Indiana
Purchaser: Lever Brothers Company

P.O. No.: _____

Job No.: H-6579

Spec No.: _____

4. FORM OF DRAWINGS

"P" designates Manufacturer's standard print.
"R" designates a full size transparency from which legible prints may be made.
"M" designates a 105 mm microfilm.

5. TIME LIMITS

- a) Approval drawings, when required, must be submitted within 2 weeks from receipt of Purchase Order.
- b) LBC will review and return drawing.
- c) Final drawings must be submitted within 2 weeks from receipt of approved drawings.

6. DRAWINGS

Vendor's drawings will be reviewed and approved only as to arrangement and conformance to the specifications and related drawings, and approval shall not be construed to relieve or mitigate the Vendor's responsibility for accuracy or adequacy and suitability of materials and/or equipment represented thereon.

- a) PROPOSAL DRAWINGS shall be Manufacturer's standard drawings in sufficient detail to layout equipment drives, and access for maintenance and operation and design of foundations and supports.
- b) DWGS FOR COMMENTS shall be transparencies complete with equipment number(s) and purchase order number. Initial drawings must show all information necessary for Purchaser's design of foundations and any connections to other equipment.
- c) FINAL DRAWINGS shall be transparencies complete with equipment number(s) and purchase order number, stamped "CERTIFIED FOR CONSTRUCTION" and signed by a person authorized to bind the partnership or corporation. Certification warrants delivered equipment shall conform to the final drawings. Should delivered equipment fail to conform, Vendor shall furnish all materials, labor, and equipment required to correct such failures to the satisfaction of the Owner.

ITEM	Description	Number and Form Required		
		With Each Proposal	Issue After Receipt of P.O.	
			Comments	Final
A	General Arrangement	1R	8 P	1R+10P
B	Outline Drawing and Foundation Requirement	1R	8 P	1R+10P
C	Detail Shop Drawings	1R	8 P	1R+10P
D	Welding Procedures			
E	Calculations	1R	8 P	1R+10P
F	Completed Data Sheets	1R	8 P	1R+10P
G	Curves			
H	Complete Parts List including Vendor & Orig. Mfg. Parts List	1R	8 P	1R+10P
J	List of Recommended Spare Parts for 1 Year Operation /Prc.	1R	8 P	1R+10P
K	Instruction Manuals			10P
L	Certified Data Books			10P
N	Certified Performance Data			10P
O	Cross-Section With Parts Description		8 P	1R+10P
R	Wiring Diagrams		8 P	1R+10P
S	Lubrication Schedule			10P
U	Piping and Instrument Diagrams	1R	8 P	1R+10P
V	Code Certificates			1R+10P
W	Instrumentation Bill of Materials		8 P	1R+10P
X	Anchorage and Loading Diagrams		8 P	1R+10P
Y	Motor Specification Sheet	1R	8 P	1R+10P
Z	List of Special Tools (For Erection and Maintenance)	1R	8 P	1R+10P
		Project No. H-6579		

Clean Design

It is of utmost importance that the machine be designed for easy clean-up. It is desired that a skirt be placed all around the machine, such that product and debris does not collect under the machine. Where applicable, a pan inside the machine may be required to eliminate the potential of product and/or debris collecting under the machine inside the skirted area. The seller should provide sketches and/or pictures of the concept planned for this machine.

Any other clean design feature should be listed as well. Equipment support legs must be totally enclosed. Mechanical tubing is required in place of angle structural members. Electrical raceways with conduit takeoffs shall be employed in preference to large quantities of random conduits originating from one or more junction boxes.

Where possible all instrumentation shall be flush mounted to the machine housing.

6.0 STANDARDIZATION

- 6.1 All components shall conform to U.S. Standards. All parts such as gears, bearings, seats, etc. should be selected such that they are readily available within the U.S.A.
- 6.2 Vendor shall assure that all parts of the unit are standard. Parts manufactured unique for a single machine are not acceptable.

7.0 EQUIPMENT FINISH & COLOR

All equipment surfaces not considered as being "Corrosion Protected" are to be painted - with one primer coat and two finish coats in accordance with the Glidden Paint Company -

GLID-GUARD-4500 Series SYSTEM.

Primer: Glid-Guard No. 5251/5252 Chromate Primer

Finish: Glid-Guard Epoxy Chemical Resistant Finish No. 5250/5242 tinted w/1-1/8 oz. Yellow Oxide, 1 1/8 oz. Lemon Yellow & 3/4 oz. Neutral Toner per Gallon.

Color: To match sample furnished by Lever Brothers Company.

8.0 VENDOR RESPONSIBILITY

- 8.1 Vendor shall follow the schedule outlined in Exhibit 1 - Vendor Data Requirements.
- 8.2 The items required by purchaser shall be delivered as a system which means the vendor shall supply all the necessary services and hardware to make the system function in accordance with the intents and purposes of this specification.
- 8.3 Upon receipt of purchase order, vendor shall furnish eight (8) sets of drawings along with one (1) set of reproducible prints. Drawings shall be reviewed and shall be approved by Lever prior to the start of construction. All drawings and data sheets shall be identified by the Lever Brothers Company Project Number, Job Location, Buyer's Purchase Order Number, Equipment and Instrument Tag Number and Service. The following list of drawings and documents are required:
- a) Dimensioned arrangement and outline drawings to also show installation details.
 - b) Point-to-point connection during diagrams, schematic diagrams and construction details of all components.

3

8.4 Approval drawings will be reviewed by Lever Brothers Company and returned to vendor with one of the following statement:

- a) Approval as noted - Vendor will make corrections as noted and issue certified drawings.
- b) Approved - Vendor will issue certified drawings.
- c) Not approved - Vendor will make noted changes and reissue approval drawings.
- d) Complete design calculations for the gearboxes and thrustwasher are required to be submitted with the vendor print package.

8.5 Complete design calculations for the gearboxes and thrustwasher are required to be submitted with the vendor print package.



9.0 SHIPPING

9.1 All parts shall be crated and protected from the elements during shipping.

9.2 Each crate shall be clearly labeled on 4 sides with its contents.

9.3 Vendor shall ascertain and be responsible for all permits, etc., to obtain the route clearance requirements for overland shipping.

1. GENERAL

The following data constitute a part of the Inquiry and Purchase Order and are to be supplied as indicated

2. MAILING INSTRUCTIONS

Drawings and data per listing below are to be forwarded to:

Lever Brothers Company
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
ATTN: HHPD Eng'g. Dept., F. Drescher

Project No. H6579

3. All data furnished to be certified and bear the following identification:

Facility: Hammond Facility
Location: Hammond, Indiana
Purchaser: Lever Brothers Company

P.O. No.: _____

Job No.: H-6579

Spec No.: _____

4. FORM OF DRAWINGS

"P" designates Manufacturer's standard print.
"R" designates a full size transparency from which legible prints may be made.
"M" designates a 105 mm microfilm.

5. TIME LIMITS

- a) Approval drawings, when required, must be submitted within 2 weeks from receipt of Purchase Order.
- b) LBC will review and return drawing
- c) Final drawings must be submitted within 2 weeks from receipt of approved drawings.

6. DRAWINGS

Vendor's drawings will be reviewed and approved only as to arrangement and conformance to the specifications and related drawings, and approval shall not be construed to relieve or mitigate the Vendor's responsibility for accuracy or adequacy and suitability of materials and/or equipment represented thereon.

- a) PROPOSAL DRAWINGS shall be Manufacturer's standard drawings in sufficient detail to layout equipment drives, and access for maintenance and operation and design of foundations and supports.
- b) DWGS FOR COMMENTS shall be transparencies complete with equipment number(s) and purchase order number. Initial drawings must show all information necessary for Purchaser's design of foundations and any connections to other equipment.
- c) FINAL DRAWINGS shall be transparencies complete with equipment number(s) and purchase order number, stamped "CERTIFIED FOR CONSTRUCTION" and signed by a person authorized to bind the partnership or corporation. Certification warrants delivered equipment shall conform to the final drawings. Should delivered equipment fail to conform, Vendor shall furnish all materials, labor, and equipment required to correct such failures to the satisfaction of the Owner.

Item	Description	Number and Form Required		
		With Each Proposal	Issue After Receipt of P.O.	Final
A	General Arrangement	1R	8P	11R+8P+2M
B	Outline Drawing and Foundation Requirement	1R	8P	11R+8P+2M
C	Detail Shop Drawings	1R	8P	11R+8P+2M
D	Welding Procedures			
E	Calculations	1R	8P	8P
F	Completed Data Sheets	1R	8P	11R+8P+2M
G	Curves			
H	Complete Parts List including Vendor & Orig. Mfg. Parts List	1R	8P	11R+8P+2M
J	List of Recommended Spare Parts for 1 Year Operation/Prc.	1R	8P	11R+8P+2M
K	Instruction Manuals			8P
L	Certified Data Books			8P
M	Certified Performance Data			8P
O	Cross-Section with Parts Description		8P	11R+8P+2M
R	Wiring Diagrams		8P	11R+8P+2M
S	Lubrication Schedule		8P	11R+8P+2M
U	Piping and Instrument Diagrams	1R	8P	11R+8P+2M
V	Code Certificates			11R+8P+2M
W	Instrumentation Bill of Materials		8P	11R+8P+2M
X	Anchorage and Loading Diagrams		8P	11R+8P+2M
Y	Motor Specification Sheet	1R	8P	11R+8P+2M
Z	List of Special Tools (For Erection and Maintenance)	1R	8P	11R+8P+2M
		Project No. H6579		
Item:	Vendor Drawing and Data Requirements	Spec. No.		Rev.

Berlitz Translation Services
2 North LaSalle Street
Suite 1810
Chicago, IL 60602
312/782-7778
Telecopier: 312/782-7793

No. 05656



STATE OF ILLINOIS

COUNTY OF COOK

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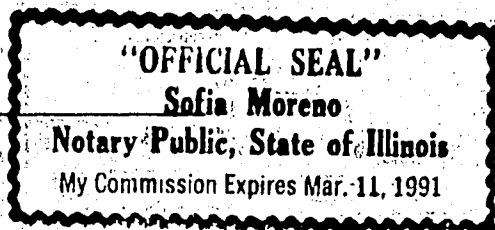
C E R T I F I C A T I O N

This is to certify that the following is, to the best of our knowledge and belief, a true and accurate translation into English of the attached Italian-language document.

Christine H.A.
BERLITZ TRANSLATION SERVICE

Sworn and subscribed to before me this 1st day of August, 1988.

Sofia Moreno
NOTARY PUBLIC



HSSO PROJECT H-6579
SUPPLEMENTAL SPECIFICATIONS
FOR ALL GEAR DRIVEN EQUIPMENT

1. Power Gear Drives

- a. Gear drives must be sealed and lubricated unless otherwise agreed to by Lever Brothers Company.
- b. Gear drive manufacturers must certify that their drives are suitable for the machine operation as specified by the machine builder.
- c. Power gearing drives to be built to the American Gear Manufacturers Association Standard AGMA 390.03, minimum Quality Level of 8. Standard, AGMA 360.01, Manual for Machine Tool Gearing, should be followed in the design of power gearing drives.

2. Switches

- a. Use proximity switches where possible.
- b. Limit switches, where necessary, must be plug-in or plug-in head type.

3. Bearings

- a. Antifriction bearings are preferred to Journal bearings of either plastic or metal.
- b. Use only antifriction sizes confirming to the Antifriction Bearing Manufacturers Association Standards. All bearings must have at least two sources.
- c. Loads and speeds must be within the manufacturer's ratings.
- d. Bearing B-10 life is based on the Antifriction Bearings Manufacturers Association Standards and must be a minimum of 30,000 hours.
- e. Oscillating antifriction bearings must rotate more than one revolution of their antifriction rolling elements.

4. Use a minimum safety factor of 3 based on the yield stress for steel and aluminum structural components and shafting.

5. Fasteners:

- a. Socket head cap screws are preferred over hex head cap screws.
- b. Hex head cap screws, where used, must be class 5.

1.0 General

1.1 This specification covers four (4) Duplex Pre-Refiners to be installed in Lever Brothers Company, Hammond, Indiana.

All units will be purchased for immediate fabrication and delivery.

The following Lever Brothers Company General Specification shall be considered to be part of this specification.

- GC - 1 Sale and Delivery of Mechanical Equipment
- GC - 4 Installation and Service Personnel
- GC - 18 Equipment Noise
- Lever Brothers Company Vendor Data Requirements
- Clean Design
- GS - 12 Mechanical Guards
- 16645 DC Variable Speed Drive Controller
- BCS4 Vertical Ladders and SAFETY Cages
- 16670 Electrical and Control Requirements
- 0840p Supplemental Specifications
- P-1-1975 Pneumatic Standards

1.2 Any and all references to this equipment including but not limited to; shipping crates, invoices, certified prints, etc. must indicate Equipment Index, Reference No. and Chart of Account according to the following table.

<u>Item</u>	<u>Asset No.</u>	<u>Reference No.</u>	<u>Chart of Account</u>
Duplex Pre-Refiner #4	15-2-26045	4PF2-26045	180400RC
Duplex Pre-Refiner #5	15-2-26130	4PF2-26130	180400RC
Duplex Pre-Refiner #6	15-2-26212	4PF2-26212	180400RC
Duplex Pre-Refiner #7	15-2-26286	4PF2-26286	180400RC

2.0 Capacity

The Duplex Pre-Refiners shall be capable of refining 8800 #/hr (4000 Kg/hr) of soap product at 10 rpm through a 50 mesh screen. The temperature of the soap noodles will be maximum 100°F.

The maximum temperature rise shall not exceed 3°F.

NOTE: The unit must be capable of withstanding repeated starts and stops, as many as 5 per minute.

3.0 Description

3.1 Refining Stage - The two refiners are to be arranged in series. The preliminary refining section shall contain screw(s), refining screen with pelletizing plate, and rotating knife. Capacity of 4000 Kg/hr shall be achieved while using a standard 50 mesh screen in the refining section and pelletizing plate with tapered holes. The taper shall be such to provide 12mm holes inlet and 8mm discharge. Screen replacement shall be a quick and simple operation. The rotating knife shall have a maximum of 24 blades. The blade shall be sufficiently reinforced to cut the pellets (even when cold) without becoming deformed.

The type of screw and the pressure plate recommended should be the ones which contribute the least temperature rise. Experience has shown the standard designs to have inadequate strength. Pressure plates stronger than standard design must be included with this bid. Also hinge assemblies must be reinforced. Pins have bent on existing units.

The inlet of the refining section shall have a flange for mounting a feed hopper to be supplied by others.

The barrel of this section will be jacketed for the circulation of cooling water available at 40-50°F. Supply and return piping complete with temperature indications shall be supplied and piped to a convenient location. If any part or all of the jacketed section of the barrel is located within the cowl it shall be insulated with heavy density fiberglass or approved equal. Any insulation containing asbestos is not permitted.

All instrumentation must be supplied in British units. Every solenoid valve must have a manual bypass. Internal hose connections must be rated for 150 psi.

3.2 Intermediate Hopper. The manufacturer shall provide an intermediate hopper between the two refiners adequate for continuous operation. The hopper shall be sealed and dust tight. The following connections shall be provided:

1. Three sight glasses. One on each side and one on front end.
2. Easy opening door for access to discharge end of preliminary refiner for removal and replacement of screens.
3. Two connections for level control, one low and one high.
4. One 3" connection to owners dust collector.

- 3.3 Final Refiner - The final refiner shall contain screw(s) similar to the preliminary refiner. The barrel of this section shall be jacketed for the circulation of cooling water with piping and temperature indicators similar to that supplied with preliminary refining section.

The capacity of the final refiner shall be 4000 kg/hr. The pelletizing plate and screen shall be similar to the preliminary refiner, discharging to a chute provided by others.

Vendor must provide product temperature and pressure indication on each of the refiner plates.

- 3.4 Materials of Construction - All parts in contact with the product shall be made of type 304SS stainless steel including the screw(s).

- 3.5 Refiner Drives - Both screws are to be driven by variable speed constant torque SCR motors with a maximum speed of 1750 RPM and limited to a speed ration of 4:1 or a minimum speed of 440 RPM. These motors will be supplied and installed by others at Lever Brothers Hammond Plant.

The supplier is to furnish a belt drive, with both pulleys, as well as the necessary gear reducers. The maximum allowable refiner screw speed is 13 RPM. Each drive train shall include a Fawick type Airflex Element assembly clutch mounted on the motor input shaft. The clutch shall be sized to operate at an air pressure of 75 PSI (5.25 Kg/cm²).

The supplier is to specify the motor horsepower necessary to plod the quantities of Dove or HSSO indicated at proposed screw speed. The power train however shall be designed for a horsepower 50% greater than that required at maximum speed.



- o Modular drive components are required.
- o Extrusion screws are to be mounted separately from the gear box for ease of maintenance.

While specifying the drive and horsepower of the motor required, it should be kept in mind that Dove or HSSO has a tendency to harden at a low temperature requiring additional load to plod.

Each drive unit shall include a tachometer generator with an output signal of 4-20 ma to monitor the reducer input speed.

A graph of torque versus output must be included in the operating manual.

Each drive shall be capable of withstanding shock loadings - starts and stops - as often as three times per minute as the normal mode of operation, 24 hours per day, 7 days per week. Previous units have broken down at the gear box.

- 3.6 Equipment shall include separate external cooling water supply connections, one for the upper barrel and one for the lower barrel. Water connections shall be piped with schedule 80 galvanized pipe, hoses must be rated at 150 psi. 
- 3.7 Equipment shall include jog button at discharge end of upper screw and lower screw.
- 3.8 Unit shall be complete with connection for water solenoid valves, jog buttons, air solenoids valves with manual by-passes; etc. prewired to a common terminal strip. Terminal strip to be housed in a NEMA - 4 enclosure located at left side of the machine. Enclosure to be mounted internally. 25% extra space shall be provided for additional I/O. 
- 3.9 Options Required
- a) 42" wide platforms with premounted hand rails (no ladders are permitted)
 - b) Epoxy paint.
 - c) By-pass around solenoid valves on the water system.
 - d) Refining stage will have temperature and pressure transmitters on the product side.

5.0 Additional Information Required - To be supplied with vendor prints.

	<u>Preliminary</u>	<u>Final</u>
A. <u>Refiners</u> -		
1. Diameter of Tube	_____ mm	_____ mm
2. Outside Diameter of Screw	_____ mm	_____ mm
3. Root Diameter of Screw.	_____ mm	_____ mm
4. Length of Screw - Total	_____ mm	_____ mm
5. Length of Screw in Hopper	_____ mm	_____ mm
6. Pitch of Screw	_____ mm	_____ mm
7. Size and Mesh of Screen	_____ mm	_____ mm
8. Number of holes in Plate	_____ mm	_____ mm
9. Size and type of holes in Plate	_____ mm	_____ mm
10. Percent open area in the plate.	_____ mm	_____ mm
11. Pressure plate thickness.	_____ mm	_____ mm

B. Drawing with section out through screw flight.

NOTE: The final operating manual shall contain the data tabulated.

6.0 Standardization

- 6.1 All parts such as gears, bearings, seals etc. (see also spare parts attached). which must be replaced must be selected such that they are readily available within the U.S.A.
- 6.2 Vendor shall assure that all parts of the refiner are interchangeable between each section. Parts manufactured unique for a single machine are not acceptable.

7.0 Vendor Responsibility

- 7.1 Vendor shall follow the schedule outlined in Exhibit 1 - Vendor Data Requirements.
- 7.2 The items required by purchaser shall be delivered as a system which means the vendor shall supply all the necessary services and hardware to make the system function in accordance with the intents and purposes of this specification.
- 7.3 Upon receipt of purchase order, vendor shall furnish eight (8) sets of drawings along with one (1) reproducible set. Drawings shall be reviewed and shall be approved by Lever prior to the start of construction. All drawings and data sheets shall be identified by the Lever Brothers Company Project Number, Job Location, Buyer's Purchase Order Number, Equipment and Instrument Tag Number and Service. The following list of drawings and documents are required:
 - a) Dimensioned arrangement and outline drawings to also show installation details.
 - b) Point-to-point connection during diagrams, schematic diagrams and construction details of all components.
- 7.4 Approval drawings will be reviewed by Lever Brothers Company and returned to vendor with one of the following statements:
 - a) Approval as noted - Vendor will make corrections as noted and issue certified drawings.
 - b) Approved - Vendor will issue certified drawings.
 - c) Not approved - Vendor will make noted changes and reissue approval drawings.
- 7.5 Complete design calculations for the gearboxes and thrustwasher are required to be submitted with the vendor prints package.

3

8.0 Lubrication Requirements

- A. Grease Lubrication System - The recommended grease lubrication system is from the Lincoln Company. It must be air driven, and controlled by the machine control system.

Recommended components are:

Injectors - #83724, Series SL 32 stainless steel;

Pump - #83834, with #83898 end of line failure alarm for 1 to 35 injectors;

Pump - #83167 with #69630 pressure switch for 36 and more injectors;

Lubricant filter - #84004;

Low level reservoir cutoff - #83671

Control Panel

Amber light - System "On"

Red light - Low level reservoir;

Red light - Low line pressure

Audible alarm - low level reservoir requirements.

- B. Lubrication of enclosed gear drives must be in accordance with the American Gear Manufacturers Association Standard AGMA 350.03.

Note: If the seller feels there isn't enough lubrication points to warrant an auto system, the seller should list the number of lubrication points. These would need to be piped to a single central relubrication point.

2

9.0 Equipment Finish & Color

All equipment surfaces not considered as being "Corrosion Protected" are to be painted - with one primer coat and two finish coats in accordance with the Glidden Paint Company -

GLID-GUARD-4500 Series SYSTEM.

Primer: Glid-Guard No. 5251/5252 Chromate Primer

Finish: Glid-Guard Epoxy Chemical Resistant Finish No. 5250/5242 tinted w/1/1/8 oz. Yellow Oxide, 1/1/8 oz. Lemon Yellow & 3/4 oz. Neutral Toner per gallon.

Color: To match sample furnished by Lever Brothers Company.

10.0 Shipping

- 10.1 All parts shall be crated and protected from the elements during shipping.
- 10.2 Each crate shall be clearly labeled on 4 sides with its contents.
- 10.3 Vendor shall ascertain and be responsible for all permits etc., to obtain the route clearance requirements for overland shipping.

Berlitz Translation Services
2 North LaSalle Street
Suite 1810
Chicago, IL 60602
312/782-7778
Telecopier: 312/782-7793

No. C5656



I, the undersigned, Dr. Adalberto Ferrari, Notary residing in Busto Arsizio and registered with the Milan Notarial Bar, hereby certify that after waiving the use of witnesses, with my consent, Messrs.

ALDO MAZZONI, born in Milan on February 15, 1937 and residing in Busto Arsizio, via I. Nievo no. 3, as Manager; and

GIANCARLO CORRADINI, born in Milan on June 29, 1932 and residing in Busto Arsizio, via Corta no. 7, as Business Manager

of the "G. MAZZONI S.P.A." company, headquartered in Busto Arsizio, viale Trentino no. 10/12,

whose identities and qualifications are well known to me, and subscribed all of the foregoing in my presence.

Busto Arsizio, July 15, 1988

/signature/

/stamp/

/there is a stamp in the left margin/

1. GENERAL

The following data constitute a part of the Inquiry and Purchase Order and are to be supplied as indicated

2. MAILING INSTRUCTIONS

Drawings and data per listing below are to be forwarded to:

Lever Brothers Company
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
ATTN: HHPD Eng'g. Dept., F. Drescher

Project No. H6579

3. All data furnished to be certified and bear the following identification:

Facility: Hammond Facility
Location: Hammond, Indiana
Purchaser: Lever Brothers Company

P.O. No.: _____

Job No.: H-6579

Spec No.: _____

4. FORM OF DRAWINGS

"P" designates Manufacturer's standard print.
"R" designates a full size transparency from which legible prints may be made.
"M" designates a 105 mm microfilm.

5. TIME LIMITS

- a) Approval drawings, when required, must be submitted within 2 weeks from receipt of Purchase Order.
- b) LBC will review and return drawing
- c) Final drawings must be submitted within 2 weeks from receipt of approved drawings.

6. DRAWINGS

Vendor's drawings will be reviewed and approved only as to arrangement and conformance to the specifications and related drawings, and approval shall not be construed to relieve or mitigate the Vendor's responsibility for accuracy or adequacy and suitability of materials and/or equipment represented thereon.

- a) PROPOSAL DRAWINGS shall be Manufacturer's standard drawings in sufficient detail to layout equipment drives, and access for maintenance and operation and design of foundations and supports.
- b) DWGS FOR COMMENTS shall be transparencies complete with equipment number(s) and purchase order number. Initial drawings must show all information necessary for Purchaser's design of foundations and any connections to other equipment.
- c) FINAL DRAWINGS shall be transparencies complete with equipment number(s) and purchase order number, stamped "CERTIFIED FOR CONSTRUCTION" and signed by a person authorized to bind the partnership or corporation. Certification warrants delivered equipment shall conform to the final drawings. Should delivered equipment fail to conform, Vendor shall furnish all materials, labor, and equipment required to correct such failures to the satisfaction of the Owner.

I T E M	Description	Number and Form Required		
		With Each Proposal	Issue After Receipt of P.O.	
A	General Arrangement		Comments	Final
B	Outline Drawing and Foundation Requirement	1R	8P	1R, 8P, 2M
C	Detail Shop Drawings	1R	8P	1R, 8P, 2M
D	Welding Procedures	1R	8P	1R, 8P, 2M
E	Calculations			
F	Completed Data Sheets	1R	8P	8P
G	Curves	1R	8P	1R, 8P, 2M
H	Complete Parts List including Vendor & Orig. Mfg. Parts List	1R		
J	List of Recommended Spare Parts for 1 Year Operation /Prc.	1R	8P	1R, 8P, 2M
K	Instruction Manuals		8P	1R, 8P, 2M
L	Certified Data Books			8P
N	Certified Performance Data			8P
O	Cross-Section with Parts Description			8P
R	Wiring Diagrams		8P	1R, 8P, 2M
S	Lubrication Schedule		8P	1R, 8P, 2M
U	Piping and Instrument Diagrams			8P
V	Code Certificates	1R	8P	1R, 8P, 2M
W	Instrumentation Bill of Materials			1R, 8P, 2M
X	Anchorage and Loading Diagrams		8P	1R, 8P, 2M
Y	Motor Specification Sheet		8P	1R, 8P, 2M
Z	List of Special Tools (For Erection and Maintenance)	1R	8P	1R, 8P, 2M
				Project No. H6579
Vendor Drawing and Data Requirements			Spec. No.	Rev.

HSSO PROJECT H-6579
SUPPLEMENTAL SPECIFICATIONS
FOR ALL GEAR DRIVEN EQUIPMENT

1. Power Gear Drives

- a. Gear drives must be sealed and lubricated unless otherwise agreed to by Lever Brothers Company.
- b. Gear drive manufacturers must certify that their drives are suitable for the machine operation as specified by the machine builder.
- c. Power gearing drives to be built to the American Gear Manufacturers Association Standard AGMA 390.03, minimum Quality Level of 8. Standard, AGMA 360.01, Manual for Machine Tool Gearing, should be followed in the design of power gearing drives.

2. Switches

- a. Use proximity switches where possible.
- b. Limit switches, where necessary, must be plug-in or plug-in head type.

3. Bearings

- a. Antifriction bearings are preferred to Journal bearings of either plastic or metal.
- b. Use only antifriction sizes conforming to the Antifriction Bearing Manufacturers Association Standards. All bearings must have at least two sources.
- c. Loads and speeds must be within the manufacturer's ratings.
- d. Bearing B-10 life is based on the Antifriction Bearings Manufacturers Association Standards and must be a minimum of 30,000 hours.
- e. Oscillating antifriction bearings must rotate more than one revolution of their antifriction rolling elements.

4. Use a minimum safety factor of 3 based on the yield stress for steel and aluminum structural components and shafting.

5. Fasteners

- a. Socket head cap screws are preferred over hex head cap screws.
- b. Hex head cap screws, where used, must be class 5.

G.MAZZONI

G.MAZZONI S.p.A.

VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE

0331 - 684.064

FAX 0331 - 684511

TELEX 330576 GMAZZ I

P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. F.A. Drescher
LEVER BROS. CO.
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
U.S.A.

D/ccc

BUSTO ARSIZIO, April 29, 1988

Re: HSSO Project H6579 - Hammond, Indiana

Dear Mr. Drescher,

Please excuse my delay in responding to your letters of March 2 and April 15, 1988.

Please be advised that G. Mazzoni S.p.A. agrees to the waiver of lien and will also establish an Agent in the State of Indiana. We are giving Mr. Luis Spitz authorization to pursue whatever legal recourse is necessary for the establishment of the Agent.

I hope that this late response is satisfactory to you and Lever Brothers.

Sincerely yours,


Aldo Mazzoni

cc: Mr. Luis Spitz
A, SR, SAP/TB

G. MAZZONI

G. MAZZONI S.p.A.

VIALE TARENTINO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE

0331 - 684.064

FAX 0331 - 684511

TELEX 330576 GMAZZ I

P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. F.A. Drescher
LEVER BROS. CO.
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
U.S.A.

D/ccc

BUSTO ARSIZIO, April 22, 1988

Dear Sir/Madam,

We would like to announce that Mr. Luis Spitz has been appointed Director of Operations of G. Mazzone U.S.A., Inc. as well as Technical-Commercial Assistant to the Board of Directors of G. Mazzone S.p.A., Italy.

You may contact Mr. Spitz at the following address:

Mr. Luis Spitz
3225 Old Orchard Road
Skokie, IL 60077

Tel: (312) 965-5151

Fax: (312) 965-9030

Our commercial offices located in St. Louis, Missouri will be closed very shortly. Mr. Giulio Perla, General Manager of G. Mazzone U.S.A., Inc., will be transferred to Mazzone in Italy.

G. Mazzone S.p.A., through its affiliates worldwide, strives to continuously improve its collaboration with devoted customers such as yourself. Please feel free to contact Mr. Spitz whenever you have any questions or requests, and our staff in Italy will always be available to your needs if you desire to contact us directly.

Sincerely yours,


Aldo Mazzone
Director

cc: Mr. Luis Spitz
SR, A



Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, New Jersey 07632
(201) 894-6000

April 22, 1988

Mr. L. SPITZ, INC.
5225 Orchard Road
Skokie, Illinois 60077

Dear Mr. Spitz:

Please find enclosed my letter of March 2, 1988 and April 15, 1988 to Mr. Aldo Mazzoni. This should help you in your endeavors to set up an agency in Hammond to receive legal process.

Sincerely,

A handwritten signature in cursive script, appearing to read "F.A. Drescher".

F.A. DRESCHER
Lever Brothers
Purchasing Agent -Engineering

cc: G. G. Hyson
D. Cotrupe
K. Radhakrishnan



Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, New Jersey 07632
(201) 894-6000

April 15, 1988

Mr. Aldo Mazzoni
G. MAZZONI
Viale Trentino 10/12
21052 Busto Arsizio
ITALY

Reference: HSSO Project H6579
Hammond, Indiana


Dear Mr. Mazzoni:

On March 2, 1988 I had sent you the attached letter in reference to liens and the establishing of an agent in Hammond Indiana. I have never received a response to this letter. Subsequent to the March 2, 1988 letter I was informed that Mr. Luis Spitz was pursuing this matter however in telephone discussions he has indicated that nothing has been accomplished in this regard since we are still having discussions on the gearboxes and drives.

It would smooth the Purchase Order issuance process if we could have your written agreement to the waiver of lien exhibit A attached (which is Article 21 of GC3) the "no lien contract" and the establishment of an Agent to receive legal process in Hammond Indiana.

Since we are close to a decision we would appreciate you early agreement to the above.

Sincerely,


F.A. DRESCHER
Purchasing Agent -
Engineering

FAD/ch

cc: A. Mandelsberg -3477/19
G.G. Hyson -6580/E2D
D. Cotrupe -6547/E2D
K. Radhadkrishnan-6589/E2D



Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, New Jersey 07632
(201) 894-6000

0920P
March 2, 1988

Mr. Aldo Mazzone
G. MAZZONI
Viale Trentino 10/12
21052 Busto Arsizio
ITALY

Reference: HSSO Project H6579
Hammond, Indiana

Dear Mr. Mazzone:

In reviewing the requests for quotation and the subsequent bid quotation submitted by the various vendors, the Legal Staff at Lever Brothers has indicated certain requirements, which must be included in the final purchase order or contract between our two companies.

The first requirement is that we receive an affirmation from you that you will comply with the conditions of ~~Article 21 of 00-3~~ ~~General Conditions~~ Contract Work. This article addresses the subject of "Liens".

In addition to the above, the following terms and conditions must be included in the eventual agreement with the successful vendor in order to avoid the recordation of Mechanic's Liens.

"The terms of this Agreement shall be construed and interpreted under and all respective rights and duties of the parties shall be governed by the laws of the State of Indiana. Any action or proceeding against either party relating to this Agreement may be brought and enforced in the court of the State of Indiana or of the United States in the Northern District of Indiana, and each party irrevocably submits to the jurisdiction of such court in respect of any such action or proceeding".

As a result of this submission to the jurisdiction of the court of the State of Indiana, you will have to agree to designate, appoint and empower an Agent with an Indiana address to receive for it and on its' behalf service of process in respect to any sub action or proceeding.

Since Lever Brothers is very close to making a decision on the successful vendor, we would appreciate your early response, agreement, or comments to the above request.

Our very best regards to you.

Sincerely,


F.A. DRESCHER
Purchasing Agent -
Engineering

FAD/sd

cc: A. Mandelsberg -3477/19
G.G. Hyson -6580/E2D
D. Cotrupe -6547/E2D
K. Radhadkrishnan-6589/E2D

E X H I B I T "A"

1.0 LIENS:

- 1.1 Contractor on his own behalf and (insofar as he is able to contract in that particular) on behalf of all of his Subcontractors and suppliers of material and labor hereby expressly waives the benefits of the Mechanics Lien Laws of the State in which the equipment and machinery, being constructed, erected or repaired, is located. The Contractor hereby agrees to procure from each and every one of his Subcontractors and suppliers of material or labor a release of any claim to mechanics lien which they or any of them may have under the Mechanics Lien Laws of the State in which the equipment and machinery, being constructed, erected, or repaired, is located and in addition agrees to furnish the Owner with each and every other document, affidavit or assurance which, in the opinion of the Owner, is necessary or appropriate to insure the Owner immunity from mechanics liens on account of anything done by Contractor, or those acting under him or as his Subcontractors in carrying out the terms of the contract and any and all work orders for additions thereto, all as a condition of payments by the Owner on account of this contract, or on account of any of said work orders for additions thereto. Payments made by the Owner without requiring strict compliance with the terms of this paragraph shall not be construed as a waiver by the Owner of the right to insist upon such compliance as a condition of later payments.
- 1.2 If at any time there shall be evidence of the existence, whether or not same has been asserted, of any lien or claim arising out of or in connection with the performance or default in performance of the contract for which the Owner or representatives of the Owner or any property of either or any property installed on the premises might be or become liable, then the Owner shall have the right to retain out of any payment then due or thereafter to become due, in addition to the amounts set forth in the contract, an amount sufficient to discharge such lien or satisfy such claim and to reimburse the Owner and/or the representatives of the Owner for all costs and expenses in connection therewith, including reasonable attorney fees; and the Owner at its sole discretion, shall have the right to so apply any amounts so retained if the Contractor does not have said lien or claim discharged or satisfied within ten (10) days after notice.
- 1.3 Neither the final payment nor any part of the retained percentage shall become due until the Contractor shall deliver to the Owner a complete release of all liens arising out of the contract, or receipts in full in lieu thereof and an affidavit that, so far as he has knowledge or information, the releases and receipts cover all the labor and materials for which a lien could be filed. Contractor shall, if any Subcontractor refuses to furnish a release or receipt in full, furnish a bond satisfactory to the Owner to indemnify it against any and all liens or claims which may at any time be filed or asserted by such Subcontractor.
- 1.4 If the amounts retained by the Owner are sufficient for the aforesaid purposes, or if any such lien or claim remains undischarged or unsatisfied after all payments have been made to the Contractor, then the Contractor shall promptly refund to the Owner all moneys that may have been paid to discharge such lien or satisfy such claim, including all costs and expenses and reasonable attorney's fees in connection therewith.

LEVER BROTHERS COMPANY
NEW YORK, N. Y.



Lever Brothers Company (Incorporated)
818 Sylvan Avenue
Englewood Cliffs, New Jersey 07632
(201) 894-6000

09200
March 2, 1988

Mr. Aldo Mazzone
G. MAZZONI
Viale Trentino 10/12
21052 Busto Arsizio
ITALY

Reference: HSSO Project H6579
Hammond, Indiana

Dear Mr. Mazzone:

In reviewing the requests for quotation and the subsequent bid quotation submitted by the various vendors, the Legal Staff at Lever Brothers has indicated certain requirements, which must be included in the final purchase order or contract between our two companies.

The first requirement is that we receive an affirmation from you that you will comply with the conditions of ~~Article 21 of GO-3 - General Conditions - Contract Work~~. This article addresses the subject of "Liens".

In addition to the above, the following terms and conditions must be included in the eventual agreement with the successful vendor in order to avoid the recordation of Mechanic's Liens.


"The terms of this Agreement shall be construed and interpreted under and all respective rights and duties of the parties shall be governed by the laws of the State of Indiana. Any action or proceeding against either party relating to this Agreement may be brought and enforced in the court of the State of Indiana or of the United States in the Northern District of Indiana, and each party irrevocably submits to the jurisdiction of such court in respect of any such action or proceeding".

As a result of this submission to the jurisdiction of the court of the State of Indiana, you will have to agree to designate, appoint and empower an Agent with an Indiana address to receive for it and on its' behalf service of process in respect to any sub action or proceeding.

Since Lever Brothers is very close to making a decision on the successful vendor, we would appreciate your early response, agreement, or comments to the above request.

Our very best regards to you.

Sincerely,


F.A. DRESCHER
Purchasing Agent -
Engineering

FAD/sd

cc: A. Mandelsberg -3477/19
G.G. Hyson -6580/E2D
D. Cotrupe -6547/E2D
K. Radhadkrishnan-6589/E2D

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL-10262

THIS NUMBER AND CODE NO. BELOW MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO: **G. MAZZONI S.P.A.**
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO: **Mr. H. Welk**
ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		F.O.B. C.I.F. Hammond, Indiana

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				G. Mazzone S.P.A. will engineer, manufacture and deliver C.I.F. Lever Brothers Plant Hammond, Indiana U.S.A. Four (4) Pelletizing Refiners, Four (4) Duplex Pre Refiners, Four (4) Duplex Vacuum Plodders, and one (1) Rework Refiner all in accordance with Lever Brothers Specification 5919, 5958, 5900 and 5914 and the General Conditions listed in our request for quotation dated January 15, 1988, January 27, 1988, January 14, 1988, January 15, 1988 respectively and Lever Brothers letters of February 12, 1988 and March 7, 1988, and as more fully described below and in your proposals dated Feb. 18, Feb. 5, Jan. 26 and March 17, 1988 respectively, and your letters of 3/7, 3/16, 4/29 and 5/18/88.		

SECURITY OF INFORMATION
 IS GOOD BUSINESS
 FOR BOTH OF US
 WE DEPEND UPON YOU TO KEEP
 ALL INFORMATION CONFIDENTIAL

AS QUOTED BY: Page 1 of 16

Please invoice promptly, IN DUPLICATE. Address to:
 ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632
 This order is not binding until Acknowledgment Copy is received and a minimum of EIGHT DAYS
 WE RESERVE THE RIGHT TO EXTEND MATURITY FROM DATE INVOICE IS RECEIVED.

HSSO Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

APPROVED BY: *[Signature]*

AUTHORIZED SIGNATURE: *[Signature]*

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL

BY (AUTHORIZED SIGNATURE) <i>[Signature]</i>	FOR (FIRM NAME) G. MAZZONI S.P.A.	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
-------------------------------------------------	--------------------------------------	----------------	------------------------------------------------------------------------------------------------------------------------------

REWORK REFINER

1.0 GENERAL

1.1 This specification covers one (1) Simplex Refiner to be supplied for installation by others in Lever Brothers Company, Hammond, Indiana Plant.

The following Lever Brothers Company General Specifications shall be considered to be part of this specification:

16670 Electrical and Control Requirements
GC-1 Sale and Delivery of Mechanical Equipment
GC-4 Installation and Service Personnel
GC-18 Equipment Noise
GS-12 Machinery Guards
16645 DC Variable Speed Drive Controller
Clean Design
Lever Brothers Company Vendor Data Requirements
BCS-4 Vertical Ladders and Safety Cages
P-1-1925 Pneumatic Standards
0840p Supplemental Specifications

1.2 Any and all references to this equipment including but not limited to: shipping crates, invoices, certified prints, etc. must indicate Asset No., Reference No. and Chart of Account according to the following table.

<u>Item</u>	<u>Asset No.</u>	<u>Ref. No.</u>	<u>Chart of Acct.</u>
Rework Refiner	15-4-25955	4PF4-25955	180400RC

2.0 CAPACITY

The refiner shall be single screw plidders capable of refining 1500 kg/hr of bars at a speed of 10 rpm. Temperature of material entering refiner will range from 65 - 85°F. (15.5 - 29.4°F). The feed will be in the form of unwrapped soap bars or logs returned from process either immediately or after aging. The maximum temperature rise must not exceed 3°F across the entire unit.

3.0 DESCRIPTION

3.1 Refiner - The unit shall contain a single screw capable of delivering the required capacity through a 50 mesh screen and pelletizing head fitted with rotating knife. Pellet sizes will be approximately 10MM diameter x 15-20MM length. Opening and closing of pelletizing head along with screen removal shall be a quick and simple operation. Screw will be held in place with a spider.

The barrel of the refiner will be jacketed for the circulation of 40 - 50°F cooling water. Premounted supply and return piping complete with temperature indicators, solenoid valve and manual bypass valve shall be supplied and piped to a convenient location. Internal hose connections must be rated for 150 psi. Internal water connections shall be hard piped. The inlet of the refiner shall have a flange for mounting a feed hopper to be supplied by others.

The type of screw and the pressure plate recommended should be the ones which contribute the least temperature use. Experience has shown the standard design to have inadequate strength. Pressure plates must be stronger than the standard design. Also hinge assemblies must be reinforced. Pins have bent on existing units.

If any part or all of the jacketed section of the barrel or cooling water pipe is located within the cowl it shall be insulated with heavy density fiberglass or approved equal. Any insulation containing asbestos is not permitted.

Vendors must provide temperature and pressure indication on the discharged product. All instrumentation must be supplied in British Units. Every solenoid valve must be equipped with a manual bypass.

3.2 Drive - Unit is to be driven by a variable speed constant torque motor with a maximum speed of 1,750 RPM and limited to a speed ratio of 4:1 or a minimum speed of 440 RPM. These motors will be supplied and installed by others at Lever Brothers Hammond Plant.

The supplier is to furnish a belt drive with both pulleys as well as necessary gear reducers. The maximum allowable screw speed is 16 RPM. The drive train shall include a Fawick type Airflex Element assembly clutch mounted on the motor output shaft. The clutch shall be sized to operate at an air pressure of 75 psi (5.25 kg/cm²).

The supplier is to specify the motor horsepower necessary to plod the quantities of Dove and HSSO indicated at proposed screw speed. The power train however shall be designed for a horsepower 50% greater than that required at maximum speed.

- o Modular drive components are required.
- o Extrusion screws are to be mounted separately from the gear box for ease of maintenance.

While specifying the drive and horsepower of the motor required, it should be kept in mind that Dove and HSSO has a tendency to harden at a low temperature requiring additional load to plod.

Each drive shall include a tachometer generator with an output signal of 4-20 ma to monitor the reducer input speed.

Drive replacement shall be easy and require a minimum of personnel. Manufacturer shall provide drawing and detail replacement procedure.

A graph of torque versus output must be included with the operating manual.

Each drive shall be capable of withstanding shock loadings - starts and stops - as often as three times per minute as the normal mode of operation, 24 hours per day, 7 days per week.

3.3 LUBRICATION REQUIREMENTS

- A. Grease Lubrication System -- The recommended grease lubrication system is from the Lincoln Company. It must be air driven, and controlled by the machine control system. Recommended components are:

- Injectors -- #83724, Series SL 32 stainless steel;
- Pump -- #83834, with #83898 end of line failure alarm for 1 to 35 injectors;
- Pump -- #83167 with #69630 pressure switch for 36 and more injectors;
- Lubricant filter -- #84004
- Low level resevoir cutoff -- #83671
- Control panel
 - Amber light -- System "On"
 - Red light -- Low level resevoir
 - Red light -- Low line pressure
 - Audible alarm -- low level resevoir and low line pressure

Contact the Lincoln Company for control requirements.

- B. Lubrication of enclosed gear drives must be in accordance with the American Gear Manufacturers Association Standard AGMA 350.03.

Note: If the seller feels there isn't enough lubrication points to warrant an auto system, the seller should list the number of lubrication points. These would need to be piped to a single central relubrication point.

3.4 Materials of Construction - All parts in contact with the product are to be made of type 304 stainless steel.

3.5 Options Required

- A. Wide platforms - 42"
- B. Epoxy paint.
- C. Refining stage will have temperature and pressure transmitters on the product side.
- D. By-passes around solenoid valves on the water system are required.

4.0 ELECTRICAL

4.1 Solenoid valves to be 110 volt, 1 phase, 60 cycle

4.2 All switches, pushbuttons etc., to be prewired to a common terminal strip.

5.0 ADDITIONAL INFORMATION REQUIRED -- To be supplied with quotation

- A. Diameter of tube _____ MM
- B. Outside diameter of screw _____ MM
- C. Root diameter of screw _____ MM
(If diameter varies gives minimum and maximum and where change occurs on screw).
- D. Length of screw - Total _____ MM
- E. Length of screw in hopper _____ MM
- F. Pitch of screw
(If pitch of screw varies give range of variation and where change occurs on screw).
- G. Drawing with section cut through screw flight.
- H. Pressure Plate Thickness _____ MM

NOTE: The inclusion in the quotation of a drawing(s) showing the above information is acceptable. However, the final operating manual must have this data tabulated.



6.0 STANDARDIZATION

- 6.1 All components shall conform to U.S. Standards. All parts such as gears, bearings, seats, etc. should be selected such that they are readily available within the U.S.A.
- 6.2 Vendor shall assure that all parts of the unit are standard. Parts manufactured unique for a single machine are not acceptable.

7.0 EQUIPMENT FINISH & COLOR

All equipment surfaces not considered as being "Corrosion Protected" are to be painted - with one primer coat and two finish coats in accordance with the Glidden Paint Company -

GLID-GUARD-4500 Series SYSTEM.

Primer: Glid-Guard No. 5251/5252 Chromate Primer

Finish: Glid-Guard Epoxy Chemical Resistant Finish No. 5250/5242 tinted w/1/1/8 oz. Yellow Oxide, 1/ 1/8 oz. Lemon Yellow & 3/4 oz. Neutral Toner per gallon.

Color: To match sample furnished by Lever Brothers Company.

8.0 VENDOR RESPONSIBILITY

- 8.1 Vendor shall follow the schedule outlined in Exhibit 1 - Vendor Data Requirements.
- 8.2 The items required by purchaser shall be delivered as a system which means the vendor shall supply all the necessary services and hardware to make the system function in accordance with the intents and purposes of this specification.
- 8.3 Upon receipt of purchase order, vendor shall furnish eight (8) sets of drawings along with one (1) set of reproducible prints. Drawings shall be reviewed and shall be approved by Lever prior to the start of construction. All drawings and data sheets shall be identified by the Lever Brothers Company project Number, Job Location, Buyer's Purchase Order Number, Equipment and Instrument Tag Number and Service. The following list of drawings and documents are required:
- a) Dimensioned arrangement and outline drawings to also show installation details.
 - b) Point-to-point connection during diagrams, schematic diagrams and construction details of all components.

3

8.4 Approval drawings will be reviewed by Lever Brothers Company and returned to vendor with one of the following statements:

- a) Approval as noted - Vendor will make corrections as noted and issue certified drawings.
- b) Approved - Vendor will issue certified drawings.
- c) Not approved - Vendor will make noted changes and reissue approval drawings.

8.5 In addition to the certified drawings and documents listed in 8.3 above. Vendor will submit the following items with his quotation.

- a) A recommended spare parts list with price list.
- b) Complete parts list with all principal parts identified.

8.6 Vendor shall submit with his bid complete design calculations for the gearboxes including the thrustwashers.



9.0 SHIPPING

9.1 All parts shall be crated and protected from the elements during shipping.

9.2 Each crate shall be clearly labeled on 4 sides with its contents.

9.3 Vendor shall supply with the quote, the estimated shipping costs from the manufacturing site to Hammond.

9.4 Vendor shall ascertain and be responsible for all permits etc., to obtain the route clearance requirements for overland shipping.

1. GENERAL

The following data constitute a part of the Inquiry and Purchase Order and are to be supplied as indicated

2. MAILING INSTRUCTIONS

Drawings and data per listing below are to be forwarded to:

Lever Brothers Company
818 Sylvan Avenue
Englewood Cliffs, NJ 07632
ATTN: HHPD Eng'g. Dept., F. Drescher

Project No. H6579

3. All data furnished to be certified and bear the following identification:

Facility: Hammond Facility
Location: Hammond, Indiana
Purchaser: Lever Brothers Company

P.O. No.: _____

Job No.: H-6579

Spec No.: _____

4. FORM OF DRAWINGS

"P" designates Manufacturer's standard print.
"R" designates a full size transparency from which legible prints may be made.
"M" designates a 105 mm microfilm.

5. TIME LIMITS

- a) Approval drawings, when required, must be submitted within 2 weeks from receipt of Purchase Order.
- b) LBC will review and return drawing
- c) Final drawings must be submitted within 2 weeks from receipt of approved drawings.

6. DRAWINGS

Vendor's drawings will be reviewed and approved only as to arrangement and conformance to the specifications and related drawings, and approval shall not be construed to relieve or mitigate the Vendor's responsibility for accuracy or adequacy and suitability of materials and/or equipment represented thereon.

- a) PROPOSAL DRAWINGS shall be Manufacturer's standard drawings in sufficient detail to layout equipment drives, and access for maintenance and operation and design of foundations and supports.
- b) DWGS FOR COMMENTS shall be transparencies complete with equipment number(s) and purchase order number. Initial drawings must show all information necessary for Purchaser's design of foundations and any connections to other equipment.
- c) FINAL DRAWINGS shall be transparencies complete with equipment number(s) and purchase order number, stamped "CERTIFIED FOR CONSTRUCTION" and signed by a person authorized to bind the partnership or corporation. Certification warrants delivered equipment shall conform to the final drawings. Should delivered equipment fail to conform, Vendor shall furnish all materials, labor, and equipment required to correct such failures to the satisfaction of the Owner.

I T E M	Description	Number and Form Required		
		With Each Proposal	Issue After Receipt of P.O.	Final
A	General Arrangement			
B	Outline Drawing and Foundation Requirement	1R	8P	1R+8P+2M
C	Detail Shop Drawings	1R	8P	1R+8P+2M
D	Welding Procedures	1R	8P	1R+8P+2M
E	Calculations			
F	Completed Data Sheets	1R	8P	8P
G	Curves	1R	8P	1R+8P+2M
H	Complete Parts List Including Vendor & Orig. Mfg. Parts List	1R	8P	1R+8P+2M
J	List of Recommended Spare Parts for 1 Year Operation /Prc.	1R	8P	1R+8P+2M
K	Instruction Manuals			8P
L	Certified Data Books			8P
M	Certified Performance Data			8P
O	Cross-Section With Parts Description			8P
R	Wiring Diagrams		8P	1R+8P+2M
S	Lubrication Schedule		8P	1R+8P+2M
U	Piping and Instrument Diagrams			8P
V	Code Certificates	1R	8P	1R+8P+2M
W	Instrumentation Bill of Materials			1R+8P+2M
X	Anchorage and Loading Diagrams		8P	1R+8P+2M
Y	Motor Specification Sheet		8P	1R+8P+2M
Z	List of Special Tools (For Erection and Maintenance)	1R	8P	1R+8P+2M
				Project No. H6579
Item:	Vendor Drawing and Data Requirements	Spec. No.		Rev.

HSSO PROJECT H-6579
SUPPLEMENTAL SPECIFICATIONS
FOR ALL GEAR DRIVEN EQUIPMENT

1. Power Gear Drives

- a. Gear drives must be sealed and lubricated unless otherwise agreed to by Lever Brothers Company.
- b. Gear drive manufacturers must certify that their drives are suitable for the machine operation as specified by the machine builder.
- c. Power gearing drives to be built to the American Gear Manufacturers Association Standard AGMA 390.03, minimum Quality Level of 8. Standard, AGMA 360.01, Manual for Machine Tool Gearing, should be followed in the design of power gearing drives.

2. Switches

- a. Use proximity switches where possible.
- b. Limit switches, where necessary, must be plug-in or plug-in head type.

3. Bearings

- a. Antifriction bearings are preferred to Journal bearings of either plastic or metal.
- b. Use only antifriction sizes conforming to the Antifriction Bearing Manufacturers Association Standards. All bearings must have at least two sources.
- c. Loads and speeds must be within the manufacturer's ratings.
- d. Bearing B-10 life is based on the Antifriction Bearings Manufacturers Association Standards and must be a minimum of 30,000 hours.
- e. Oscillating antifriction bearings must rotate more than one revolution revolution of their antifriction rolling elements.

4. Use a minimum safety factor of 3 based on the yield stress for steel and aluminum structural components and shafting.

5. Fasteners

- a. Socket head cap screws are preferred over hex head cap screws.
- b. Hex head cap screws, where used, must be class 5.

1.0 General

1.1 This specification covers four (4) duplex vacuum plodders to be installed in Lever Brothers Company, Hammond, Indiana.

All units will be purchased for immediate fabrication and delivery.

The following Lever Brothers Company General Specification shall be considered to be part of this specification.

GC - 1 Scale and Delivery of Mechanical Equipment
GC - 4 Installation and Service Personnel
GC - 18 Equipment Noise
Lever Brothers Company Vendor Data Requirements
Clean Design
GS - 12 Mechanical Guards
16645 DC Variable Speed Drive Controller
16670 Electrical and Control Requirements
BCS 4 Vertical Ladders and Safety Cages
0840p Supplemental Specifications
P-1-1975 Pneumatic Standards

1.2 Any and all references to this equipment including but not limited to; shipping crates, invoices, certified prints, etc. must indicate Equipment Index, Reference No. and Chart of Account according to the following table.

<u>Item</u>	<u>Equipment Index</u>	<u>Reference No.</u>	<u>Chart of Account</u>
Plodder #4	15-1 26049	4PF1 26049	180300 RC
Plodder #5	15-1 26134	4PF1 26134	180300 RC
Plodder #6	15-1 26216	4PF1 26216	180300 RC
Plodder #7	15-1 26290	4PF1 26290	180300 RC

2.0 Capacity

The duplex vacuum plodders shall be capable of plodding 10000 #/hr (4500 g/hr) of soap product at 10 rpm. The temperature of the plodded log will be maximum 100°F (38°C).

The maximum temperature rise must not exceed 3°F across the entire unit.

NOTE: The unit must be capable of withstanding repeated starts and stops, as many as 5 per minute, and must be capable of handling material of 80° F.

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL -10262

THIS NUMBER AND CODE NO. BELOW MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO: **G. MAZZONI S.P.A.**
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO: **Mr. H. Welk**
ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		F.O.B. C.I.F. Hammond, Indiana

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
	Four			SIMPLEX PELLETIZING REFINERS FOR 8,000 LB/HR CAPACITY Twin Worm Simplex Pelletizing Refiner, model 'B-300/4000', having the following main characteristics: -capacity: 4,000 kg/h of HSSO pellets using refining screens up to 50 U.S. mesh -driven by a 45 kW varidrive motor (LBC Supply) -equipped with two constant pitch worms made in AISI 304 stainless steel - dia. of the worms 300 mm -the plodder will be fitted with an R-400/3I/P reducer with service factor 2.6 at 12.6 worm rpm. -L/D Ratio 5 screens to be 8,20,30, 40 mesh ea. set. Widened, platform with handrails on left hand side of plodder Epoxy Paint	ITALIAN LIRE 102,500,000/Ea. Less Discount 7%+4%+3% x 4 units 355,060,000	
					1,690,000/Ea. Less Discount 7%+4%+3% x 4 units	5,854,160
					830,000/Ea Less Discount 7%+4%+3% x 4 units	2,875,120

SECURITY OF INFORMATION
 IS GOOD BUSINESS
 FOR BOTH OF US
 WE DEPEND UPON YOU TO
 ALL INFORMATION CONFIDENTIAL

Page 2 of 16

Please invoice promptly, IN DUPLICATE. Address to:
 ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632.
 This order is not binding until Acknowledgment Copy is executed and returned to us.

WE RESERVE THE RIGHT TO EXTEND MATURITY TO 90 DAYS FROM DATE INVOICE IS RECEIVED.

HSSO Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

APPROVED BY: *[Signature]*
 AUTHORIZED SIGNATURE: *[Signature]*

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL.

BY (AUTHORIZED SIGNATURE) <i>[Signature]</i>	FOR (FIRM NAME) G. MAZZONI S.P.A. <i>[Signature]</i>	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
-------------------------------------------------	------------------------------------------------------------	----------------	------------------------------------------------------------------------------------------------------------------------------

3.0 Description

3.1 Refining Stage - The two plodders are to be arranged in series connected by a vacuum chamber. The preliminary plodder or (refining section) shall contain screw(s), refining screen with pelletizing plate, and rotating knife. Capacity of 4000 Kg/hr shall be achieved while using a standard 50 mesh screen in the refining section and pelletizing plate with 12 mm dia holes and approximated 50% free area. Screen replacement shall be a quick and simple operation. The rotating knife shall have a maximum of 24 blades. The blade shall be sufficiently reinforced to cut the pellets (even when cold) without becoming deformed.

The type of screw and the pressure plate recommended should be the ones which contribute the least temperature rise. Experience has shown the standard designs to have inadequate strength. Pressure plates stronger than standard design are required. Also hinge assemblies must be reinforced. Pins have bent on existing units.

The inlet of the refining section shall have a flange for mounting a feed hopper to be supplied by others. The barrel of this section will be jacketed for the circulation of cooling water available at 40 to 50°F. Supply and return piping complete with temperature indications shall be supplied and piped to a convenient location. If any part or all of the jacketed section of the barrel is located within the cowl it shall be insulated with heavy density fiberglass or approved equal. Any insulation containing asbestos is not permitted.

All instrumentation must be supplied in British units. Every solenoid valve must have a manual bypass. Internal hose connections must be rated for 150 psi.

3.2 Vacuum Chamber - The vacuum chamber which receives the soap pellets from the refining section also serves as a feed hopper for the final plodder. This hopper shall be jacketed to prevent sweating and should have at least the following connections:

1. Three sight glasses. One on each side and one on front end.
2. Easy opening door for access to discharge end of preliminary plodder for removal and replacement of screens.
3. Three connections for level control, one low, one high and one for high high.
4. Connections for vacuum pump.
5. Vacuum gage, minimum 6" diameter to read inches of mercury.

6. System with controls to eliminate condensation in the vacuum chamber.
7. Two 1" NPT connection for pressure switches.
8. Shall be capable of maintaining 26" vacuum.

3.3 Final Plodder - The final plodder shall contain screw(s) terminating at a support plate. The barrel of this section shall be jacketed for the circulation of cooling water with piping and temperature indicators similar to that supplied with refinery section.

Beyond the screw will be an extrusion cone complete with a heating section. This heater will be a thermostatically controlled immersion electric heater for an oil filled jacket around the end of the cone. Electric characteristics are 120 volt, 1 phase, 60 cycle.

The extrusion cone shall be mounted on extra strong casters (current casters are too weak). The connection between the cone and the main barrel shall be designed for simple and quick operation. The end of the cone shall be threaded to receive a soap log die holder to be designed and supplied by Lever Brothers. Die plate will provide for twin log discharge.

The extrusion cone will be complete with a pressure gage calibrated in Kg/cm² and PSI suitably installed to read the internal pressure in the cone. Range 0-30 Kg/cm². Temperature indication for the product in the nose cone is required.

As indicated in Section 3.1 above if any portion or all of the jacketed section is inside the cowl that portion shall be insulated.

3.4 Materials of Construction - All parts in contact with the product shall be made of type 304SS stainless steel including the screw(s).

3.5 Plodder/Refiner Drives - Both screws are to be driven by variable speed constant torque SCR motors with a maximum speed of 1750 RPM and limited to a speed ration of 4:1 or a minimum speed of 440 RPM. These motors will be supplied and installed by others at Lever Brothers Hammond Plant.

The supplier is to furnish a belt drive, with both pulleys, as well as the necessary gear reducers. The maximum allowable plodder screw speed is 13 RPM. Each drive train shall include a Fawick type Airflex Element assembly clutch mounted on the motor input shaft. The clutch shall be sized to operate at an air pressure of 75 PSI (5.25 Kg/cm²).

The supplier is to specify the motor horsepower necessary to plod the quantities of Dove and HSSO indicated at proposed screw speed. The power train however shall be designed for a horsepower 50% greater than that required at maximum speed.

- o Modular drive components are required.
- o Extrusion screws are to be mounted separately from the gear box for ease of maintenance.

While specifying the drive and horsepower of the motor required, it should be kept in mind that Dove and HSSO has a tendency to harden at a low temperature requiring additional load to plod.

Each drive unit shall include a tachometer generator with an output signal of 4-20 ma to monitor the reducer input speed.

Drive replacement shall be easy and require minimum of personnel. Manufacturer shall provide drawing and detail replacement procedure.

A graph of torque versus output must be supplied in the manual.

Each drive shall be capable of withstanding shock loadings - starts and stops - as often as five times per minute as the normal mode of operation, 24 hours per day, 7 days per week.

3.6 Equipment shall include separate external cooling water supply connections, one for the upper barrel and one for the lower barrel. Water connections shall be piped with schedule 80 galvanized pipe, hose connection shall be rated for 150 psi.

3.7 A jog button at discharge end of upper screw and lower screw must be provided.

3.8 Unit shall be complete with connection for water solenoid valves, jog buttons, air solenoids valves with manual bypasses; etc., prewired to a common terminal strip. Terminal strip to be housed in a NEMA - 4 enclosure, location to be determined later.

3.9 Options Required - The equipment must include at least the following extra features.

- a) 42" wide platforms with premounted hand rails (no ladders are permitted). Platforms shall be to OSHA Standards conforming to BCS-4.
- b) Epoxy paint.
- c) Twin extrusion cone.
- d) Refining stage will have temperature and pressure transmitters on the products side.
- e) Bypasses around solenoid valves on the water system are required.

5.0 Equipment Finish & Color

All equipment surfaces not considered as being "Corrosion Protected" are to be painted - with one primer coat and two finish coats in accordance with the Glidden Paint Company -

GLID-GUARD-4500 Series SYSTEM.

Primer: Glid-Guard No. 5251/5252 Chromate Primer

Finish: Glid-Guard Epoxy Chemical Resistant Finish No. 5250/5242 tinted w/1/1/8 oz. Yellow Oxide, 1/1/8 oz. Lemon Yellow & 3/4 oz. Neutral Toner per gallon.

Color: To match sample furnished by Lever Brothers Company.

6.0 Lubrication Requirements

A. Grease Lubrication System - The recommended grease lubrication system is from the Lincoln Company. It must be air driven, and controlled by the machine control system.

Recommended components are:

Injectors - #83724, Series SL 32 stainless steel;

Pump - #83834, with #83898 end of line failure alarm for 1 to 35 injectors;

6.0 Lubrication Requirements cont'd

Pump - #83167 with #69630 pressure switch for 36 and more injectors;

Lubricant filter - #84004;

Low level reservoir cutoff - #83671

Control Panel

Amber light - System "On"

Red light - Low level reservoir;

Red light - low line pressure

Audible alarm - low level reservoir requirements.

- B. Lubrication of enclosed gear drives must be in accordance with the American Gear Manufacturers Association Standard AGMA 350.03.

Note: If the seller feels there isn't enough lubrication pints to warrant an auto system, the seller should list the number of lubrication points. These would need to be piped to a single central relubrication point.

7.0 Additional Information Required - To be supplied with vendor prints.

	<u>Preliminary</u>	<u>Final</u>
A. <u>Plodders</u> -		
1. Diameter of Tube	_____ mm	_____ mm
2. Outside Diameter of Screw	_____ mm	_____ mm
3. Root Diameter of Screw	_____ mm	_____ mm
4. Length of Screw - Total	_____ mm	_____ mm
5. Length of Screw in Hopper	_____ mm	_____ mm
6. Pitch of Screw	_____ mm	_____ mm
7. Pressure Plate Thickness	_____ mm	_____ mm

B. Preliminary Plodder

- | | | |
|------------------------------------|----------|----------|
| 1. Size and Mesh of Screen | _____ mm | _____ mm |
| 2. Number of holes in Plate | _____ mm | _____ mm |
| 3. Size and type of holes in Plate | _____ mm | _____ mm |
| 4. Percent open area in the plate. | _____ mm | _____ mm |
| 5. Pressure Plate Thickness | _____ mm | _____ mm |

C. Final Plodder Cone

- | | |
|--------------------------|----------|
| 1. Length | _____ mm |
| 2. Diameter of Large End | _____ mm |
| 3. Diameter of Small End | _____ mm |

D. Drawing with section out through screw flight.

NOTE: The inclusion in the quotation of a drawing(s) showing the information is acceptable, however, the final operating manual shall contain this data tabulated.

8.0 Standardization

- 8.1 All parts such as gears, bearings, seals etc. (see also spare parts attached). which must be replaced must be selected such that they are readily available within the U.S.A.
- 8.2 Vendor shall assure that all parts of the refiner-plodder are interchangeable between the refiner-plodder, parts manufactured unique for a single machine are not acceptable.

9.0 Vendor Responsibility

- 9.1 Vendor shall follow the schedule outlined in Exhibit 1 - Vendor Data Requirements.
- 9.2 The items required by purchaser shall be quoted as a system which means the vendor shall supply all the necessary services and hardware to make the system function in accordance with the intents and purposes of this specification.

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P.O. No.: _____

Job No.: H-6579

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D	Welding Procedures	1R	8P	1R+8P+2M
E	Calculations			
F	Completed Data Sheets	1R	8P	8P
G	Curves	1R	8P	1R+8P+2M
H	Complete Parts List Including Vendor & Orig. Mfg. Parts List			
J	List of Recommended Spare Parts for 1 Year Operation /Prc.	1R	8P	1R+8P+2M
K	Instruction Manuals	1R	8P	1R+8P+2M
L	Certified Data Books			8P
N	Certified Performance Data			8P
O	Cross-Section With Parts Description			8P
R	Wiring Diagrams		8P	1R+8P+2M
S	Lubrication Schedule		8P	1R+8P+2M
U	Piping and Instrument Diagrams			8P
V	Code Certificates	1R	8P	1R+8P+2M
W	Instrumentation Bill of Materials			1R+8P+2M
X	Anchorage and Loading Diagrams		8P	1R+8P+2M
Y	Motor Specification Sheet		8P	1R+8P+2M
Z	List of Special Tools (For Erection and Maintenance)	1R	8P	1R+8P+2M
				Project No. H6579
Item:	Vendor Drawing and Data Requirements		Spec. No.	Rev.

HSSO PROJECT H-6579
SUPPLEMENTAL SPECIFICATIONS
FOR ALL GEAR DRIVEN EQUIPMENT

1. Power Gear Drives
 - a. Gear drives must be sealed and lubricated unless otherwise agreed to by Lever Brothers Company.
 - b. Gear drive manufacturers must certify that their drives are suitable for the machine operation as specified by the machine builder.
 - c. Power gearing drives to be built to the American Gear Manufacturers Association Standard AGMA 390.03, minimum Quality Level of 8. Standard, AGMA 360.01, Manual for Machine Tool Gearing, should be followed in the design of power gearing drives.
2. Switches
 - a. Use proximity switches where possible.
 - b. Limit switches, where necessary, must be plug-in or plug-in head type.
3. Bearings
 - a. Antifriction bearings are preferred to Journal bearings of either plastic or metal.
 - b. Use only antifriction sizes confirming to the Antifriction Bearing Manufacturers Association Standards. All bearings must have at least two sources.
 - c. Loads and speeds must be within the manufacturer's ratings.
 - d. Bearing B-10 life is based on the Antifriction Bearings Manufacturers Association Standards and must be a minimum of 30,000 hours.
 - e. Oscillating antifriction bearings must rotate more than one revolution of their antifriction rolling elements.
4. Use a minimum safety factor of 3 based on the yield stress for steel and aluminum structural components and shafting.
5. Fasteners
 - a. Socket head cap screws are preferred over hex head cap screws.
 - b. Hex head cap screws, where used, must be class 5.



COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE

0331 - 684.064
FAX: 0331 - 684511
TELEX 330570 GMAZZI
P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. F.A. Drescher
LEVER BROTHERS COMPANY
818 Sylan Avenue
Englewood Cliffs, NJ 07632
U.S.A.

D/ccc

BUSTO ARSIZIO, May 31, 1988

Dear Mr. Drescher,

We agree with the contents of your fax dated May 27, 1988.

In order to save time, please send via fax an official order number and the machines orders, so that we can proceed immediately.

The official purchase order can follow later. Thank you very much for your cooperation, and this important order.

Sincerely yours,

Aldo Mazzone
Aldo Mazzone

cc: G. Mazzone U.S.A., Inc.
A, SR, SAP

C.C.I.A.A. 318157 Milano - C.C.I.A.A. 47295 Varese - Tribunale di Busto Arsizio Reg. Soc. N. 5578 - Codice Fiscale e Partita IVA: 018163728

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL-10262

THIS NUMBER, AND CODE NO. BELOW, MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO: G. MAZZONI S.P.A.
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO:

Mr. H. Welk
ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		F.O.B. C.I.F. Hammond, Indiana

ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
				Thermoresistance and digital Indicator For -soap inlet and discharge temperature -cooling water inlet and discharge temperature	520,000/Ea Less Discount 7%+4%+3%	x4 Units 1,801,280
				<u>EXTRUSION PRESSURE INDICATORS</u>		
				The pressure is measured by a "DYNISCO" transducer, fitted in the worm support. Pressure is indicated by a "DYNISCO" analog pressure indicator with double set point alarm and voltage output signal.	1,810,000/Ea. Less Discount 7%+4%+3%	x 4units 6,269,840
				Drive Couplings	2,900,000/Ea. Less Discount 7%+4%+3%	x 4units 10,045,600
				SUB TOTAL PELLETIZING UNITS		381,906,000

SECURITY OF INFORMATION
IS GOOD BUSINESS
FOR BOTH OF US
WE DEPEND UPON YOU TO KEEP
ALL INFORMATION CONFIDENTIAL

Page 3 of 16

Please invoice promptly, IN DUPLICATE. Address to:
ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632
This order is not binding until Acknowledgment Copy is executed and returned to us.
WE RESERVE THE RIGHT TO EXTEND MATURITY OF PAYMENT TO EIGHT DAYS
FROM DATE INVOICE IS RECEIVED.

HSSO Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

PURCHASED BY:
[Signature]
AUTHORIZED SIGNATURE
[Signature]

THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL

BY (AUTHORIZED SIGNATURE) <i>[Signature]</i>	FOR (FIRM NAME) G. MAZZONI	DATE 8/2/88	THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.
-------------------------------------------------	-------------------------------	----------------	------------------------------------------------------------------------------------------------------------------------------

May 27, 1988

Via Facsimile: 011-39-331-684-511

Mr. Aldo Mazzone
G. MAZZONI, SpA
Viale Trentino 10/12
21052 Busto Arsizio
ITALY

Reference: Your Fax. dated May 27, 1988

Dear Mr. Mazzone:

1. We thank you for the opportunity to be able to review drawings on Mazzone's premises. We assume Lever representatives would include our consultants as discussed with you on the telephone on May 25, 1988.
2. We can understand your concern about an open ended warranty and after a review of our commissioning and start-up schedule and in an effort to cooperate with your wishes, we can agree to a warranty with a cut off period after shipment similar to the following:

Mazzone will repair or replace C.I.F. - Lever Brothers Plant in Hammond Indiana, any equipment which becomes defective twelve (12) months after start-up, but in no event later than twenty four (24) months after shipment, (twenty four (24) months after start-up, but in no event later than thirty six (36) months after shipment for Drives).

3. Kindly confirm the above so that we can process the purchase order.

Sincerely,



F.A. Drescher
Purchasing Agent -
Engineering

cc: K. Radhakrishnan -6589/E2D
D. Cotrupe -6547/E2D
G. Hyson -6580/E2D
P. Krishnappa -Hammond Plant (Via Fax)

1063p



FAX COVER SHEET

Date MAY 27, 1988
Number F 1489

From: G. MAZZONI S.p.A.
Aldo Spadoni

To: LEVER BROTHERS COMPANY
Attn: MR. F.A. DEJONER

Fax Numbers

331-684511

001-201-894-6182

Total pages including this cover sheet: 3





Special instructions: _____

CCI _____



G. MAZZONI S.p.A. VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

CONSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE

 0331 884084
 FAX 0331 - 684511
 TELEX 330576 GMAZZ I
 P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. F. A. Drescher
LEVER BROTHERS COMPANY
 818 Sylvan Avenue
 Englewood Cliffs, NJ 07632
 U.S.A.

D/ccc

BUSTO ARSIZIO, May 27, 1988

Re: Your fax of May 24 and our telephone conversation of May 25

Dear Mr. Drescher,

In response to the requests you made to us this week, we would like to confirm the following:

- a) As I told you on the phone, Mazzoni's policy is not to give out manufacturing drawings to any of its customers, whatever the case may be, for obvious confidential reasons. Your request to receive these drawings and specifications seems a bit incomprehensible to us since Mazzoni guarantees these components.
 However, in this special case and to once again illustrate Mazzoni's willingness to collaborate with Lever, we are willing to make available - on Mazzoni premises - these drawings for Lever engineers to analyze. Any of Lever's representatives are welcome to our engineering offices in Busto Arsizio to go over these design details.
- b) All Mazzoni machinery, and eventual replacement of parts under warranty, will be delivered C.I.P. Hammond, as already stated in our telex dated Feb. 5, 1988.
- c) For that which regards exactly when our warranty goes into effect, we are still perplexed since we do not know when the machinery will be started up. I have spoken to my brother Guido, and we remain firm that it is impossible to accept an "open" warranty, i.e. not specifying a time limit for the actual start-up of the machinery, for various, obvious reasons which are recognized by everyone in the world of industry. You will find these conditions to be firm from any supplier of machinery.

The actual start-up of the machines for a normal and continuous production could possibly take place after months of repeatable, intermittent, ~~dis~~ continuous start-ups of the machines for your own various reasons. These discontinuous start-ups, if not done properly by the user, could present grave



abuse on the machines.

For this reason, the definition of "start-up" needs to be clarified.

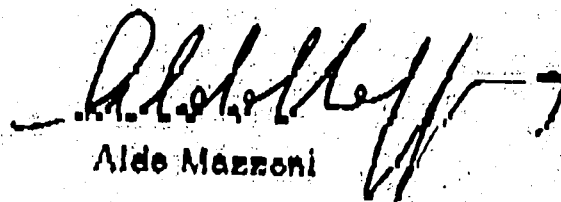
- d) Mazzoni will accept responsibility for repair and/or replacement of parts showing excessive stress and/or wear after 12 months of continuous operation, as long as the inspection is carried out by a specialized laboratory which is acceptable to both Lever and Mazzoni, with the presence of a Mazzoni technician on site. Therefore, Mazzoni requests that prior to the time for inspection Lever proposes a third-party candidate for carrying out the inspection and a specific date.
- e) We reconfirm that the delivery time remains to be nine and twelve months, for the first and second lots respectively, from the date of a faxed letter establishing the order. This is the same delivery time established during our meeting in Hammond on May 4, 1988. As I told you by phone this week, Mr. Drescher, we will do our utmost to shorten those times by one month, i.e. eight and eleven months, but I cannot make this delivery time official.
- f) With reference to paragraph c) above, Mazzoni would accept the extension of the warranty if we also receive orders for the cutters and mixers, and we hereby state to be open to collaborating with Lever for the design and construction of a new mixing system which is more adaptable to your product.

I hope the above answers meet Lever's needs, and on those points which it is impossible for Mazzoni to change general policy, I hope you understand our reasoning.

Again, I would like to reiterate my belief that it would be opportune for Lever to purchase not only the plodders and refiners complete with drives, but also the mixers and cutters from Mazzoni. Total supply of all these components from one sole manufacturer is deemed by us to be only advantageous to Lever.

We hope to hear of your final decision very soon, and if in the meantime you need any further assistance, please don't hesitate to ask.

Sincerely yours,


Aldo Mazzoni

cc: A, SAP, S. Rogora, G. Mazzoni U.S.A., Inc.

May 24, 1988

Via Facsimile: 011-39-331-684-511

Mr. Aldo Mazzoni
G. MAZZONI, SpA
Viale Trentino 10/12
21052 Busto Arsizio
ITALY

Dear Mr. Mazzoni:

We have just received detailed drawings and calculations you promised in fax transmission of May 18, 1988. We trust the review and approval of these documents will not create a loss of schedule. Please also submit a detailed delivery schedule.

It is critical we receive details of shaft design, surface finish etc. which will determine actual ratings of the component.

The warranty that has been agreed upon is twelve months from start up (24 months for drives from start up) C.I.F. Hammond, Indiana. Please confirm in writing.

Lever Brother will inspect the drives after 12 months of operation for signs of excessive stress and/or wear using established non-destructive inspection techniques and if signs of stress or wear are observed, Mazzoni should accept responsibility for repair and/or replacement, as appropriate. We trust that with the use of Mazzoni drives the deliveries promised (for the first two units February 7, 1989 and May 1, 1989 for units 3 and 4) would now be considerably improved. Please let us have the revised dates.

Your quick response to the above will be greatly appreciated.

Sincerely,


F.A. Drescher
Purchasing Agent -
Engineering

cc: K. Radhakrishnan -6589/E2D
D. Cotrupe -6547/E2D
G. Hyson -6580/E2D
P. Krishnappa -Hammond Plant (Via Fax)

1063p

LEVER BROTHERS COMPANY

To:	°Name R. V. CACIULA G. G. HYSON	°Location 6584/E2D 6580/E2D	°From P. V. KRISHNAYYA	°Location 427
			°Date May 20, 1988	°Typed by jk
cc:	D. P. COTRUPE F. A. DRESHER U. OESCH K. P. RADHAKRISHNAN	6547/E2D 6561/E2D 6586/E2D 6589/E2D		4543n F11.5.18
			Via: FAX	

MAZZONI PLODDERS AND REFINERS

(Refer Mazzone's letter dated May 18 to Mr. F. A. Dresher)

Although Mazzone have generally responded favorably to the several specific points raised by us, there are certain critical items on which their response is vague or unacceptable. These need to be clarified, as follows:

1. Mazzone were asked to agree to submit detailed drawings and calculations for our review and approval, with no loss of schedule. In Mazzone's response they have not confirmed that they are indeed willing to do so. I am assuming that they are willing to do so. We should have them confirm this together with a schedule for submittal and review by us.

This is critical because it is the details of such matters as shaft design, surface finish, etc. which will determine the actual ratings of the component. This type of detailing is critical, therefore we need to review and approve such details.

Mazzone have said that they have produced four gear boxes of the R-400 series and none, to date, of the secondary thrust units. I assume, therefore, that they have the necessary detailed drawings for the R-400 units with them and these could be submitted within say a week of any placement of an order. The thrust unit has not been designed and would probably follow within a few weeks thereafter. From our end, we will need one to two weeks, per set, for review and approval.

2. We requested Mazzone to assume full liability for the total cost associated with any failure of the drives. They have, however, limited their liability to replacement or repair of the part that proves defective FOB Hammond excluding duties. This falls far short of their statements to us as to how confident they were with regard to their drives and equipment!

2. (Continued)

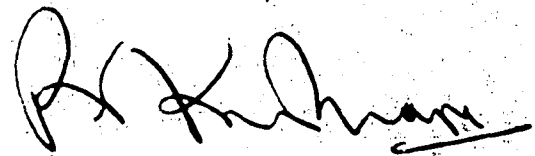
If they should insist on not extending their warranty further toward our request of them, I would insist that we insert a requirement on any order that we will inspect the drives after 12 months of operation for signs of excessive stress and/or wear using established non-destructive inspection techniques and if signs of stress or wear are observed, Mazzoni should accept responsibility for repair and/or replacement, as appropriate. This will partially protect us in the absence of having Mazzoni assume any consequential liabilities.

3. Mazzoni's warranty period falls short of what they said they were covering in our meeting on May 5 at Hammond and to others. Our expectation is 12 months (24 months for drives) from start up at Hammond. Their closed-end limitations from shipment date will leave us exposed with insufficient time because our start up is planned nominally for 9 - 12 months from shipment date and typically design faults take about 12 months to develop to the point of precipitate failure.

Would you please convey the above as expeditiously as possible to Mazzoni and seek their written acceptance by fax.

Although Mazzoni have not confirmed any change in their deliveries, I am assuming they are still holding fast to their prior commitments in this area. This also needs confirmation.

On the basis of the above, we can finalize our decision.



P. V. Krishnayya

**G. MAZZONI** s.p.a.

VIALE TRENTO 10/12 - 21052 BUSTO ARSIZIO - ITALIA

COSTRUZIONE MACCHINE E IMPIANTI PER INDUSTRIE CHIMICHE



0331 - 684.064



FAX 0331 - 684511



TELEX 330576-GMAZZI



P.O. BOX 421 - 21052 BUSTO ARSIZIO

Mr. F.A. Drescher

Lever Brothers Company

818, Sylvan Avenue

Englewood Cliffs, NJ 07632

U.S.A.

SAP/LM/lr

Fax Message F-1087

BUSTO ARSIZIO,

May 18, 1988

Re: Mazzone Drives for Project "HSSO"

Dear Mr. Drescher:

Reference is made to your 5/12/1988 fax message - ref. FAD/sd.

We confirm that all the requested modifications to the primary reducers and the secondary dual output thrust units supplied by Mazzone and to be fitted to the "B-300/4000" Duplex Refiners having barrel L/D = 5 and to "B-350/5000" Duplex Vacuum Plidders having barrel L/D = 3, will be carried out except for the thrust plates' spherical surface lubrication as per paragraph 6.

All the requested modifications have already been discussed during the meeting held with Mr. L. Spitz, Mr. A. Negri and Mr. D. Baggini at Hammond on March 30, 1988.

We comment on your requests, step by step:

1) Shaft failures

The extensive failures of the shafts of the R3 primary reducer now fitted to the "B-350" vacuum plidders operating at Hammond are due to:

- 1.1. Presence of sharp edge grooves which are now superseded by the ones in accordance with UNI 4386/75 Standards (Mazzone Standard NI-50:01 is attached).
- 1.2. Overload of reducers, which are now operating with 75 HP motor at 15 r.p.m. with 1.40 service factor which is lower than the minimum required according to the attached AGMA 420.04 Standards, Dec. 1975

- page 6.



The enclosed booklet includes a two-sheet "Calculation Summary" which sums up the Shaft Stress values for the R3 reducer (the existing one) and R-400/3I/P reducer (the new one for "B-300/4000"); please note that the Shaft Stress values of the R-400 reducer are considerably lower than the ones of the R3 reducer.

- 2) The attached assembly drawing 500290038B of the "R-400/3I/P" shows that a proper band area is foreseen when gears are located against a shaft shoulder and that the corners are treated with adequate radii.
- 3) The severe pitting experienced on the existing R3 primary reducer gears can be justified in the light of the overload which the reducer is submitted to, as already shown in point 1); in any case, the material of new reducer gears has been replaced with Carburized & Case Hardened Steel (60 HRC for pinions and 55 HRC for gears), the material of R3 reducer gears is Induction Hardened Steel (460 HB): this information is also shown in the R3 and R-400 reducer calculations attached to our fax message F-623 of March 9, 1988.
- 4) The mechanical coupling between the Mazzoni reducer and secondary unit can be fitted without any problems.

The extra-price including coupling cost and new machine design is:

- | | |
|---------------------------------------------|---------------------------|
| 4.1.) For each "B-300/4000" (two couplings) | Italian Lire 5,800,000.-- |
| 4.2.) For each "B-350/5000" (two couplings) | Italian Lire 6,900,000.-- |

However, in our opinion, the mechanical coupling insertion is not necessary since we have been using the solution without it for a long time without any problems on the plidders equipped with R1 and R2 reducers (M-300, M-350, M-400, B-250 and B-300); the solution without the mechanical coupling allows the perfect alignment too (suitable coupling surfaces are processed in order to align reducer-support-barrel by joining them in one single piece) and an easy disassembly of both the primary reducer and secondary unit (also separately, i.e. the complete primary reducer extraction from plidder is not necessary to remove the secondary unit).

Mounting by means of hollow shaft is a very recommendable solution from a mechanical point of view, and is proposed by all the European reducer manufacturers. Therefore, we are surprised that it is not foreseen in the Falk catalogue.

We enclose our assembly drawing 600020008A, showing the suggested solution without mechanical coupling.

- 5) Your request is already foreseen with the new reducers (see point 4).
- 6) The thrust plate between worm and support shaft, in the case of the plidders now operating at Hammond, consists of two conical surfaces (with different taper and consequently, laying on a line); the new thrust plate is spherical, as per your request, with a wide contact surface.



However, its lubrication cannot be foreseen, since under the vacuum effect the lubricant, in spite of seals (difficult to be installed), might be sucked up and pollute the products. Please pay attention to the fact (already discussed at Hammond) that our supports are equipped with a safety chamber, so that any oil leaking through seals comes out without polluting the product. We enclose assembly drawing 500070077A of twin-worm plodder support.

- 7) The new gears are not welded; they are obtained from a bar or forging.
- 8) As requested by Mr. Radhakrishnan on the phone on 5/16/1988, we confirm that the new plodders can bear the whole motor speed range without any service factor reductions; provided that the motor supplies a constant torque; in other words, the drive pulley sizing must be carried out at maximum motor speed; then, lower speeds (and outputs) will be obtained by reducing the motor revolutions. The attached specifications LM/SV-001 and LM/SV-008 show all the technical data relevant to the "B-300/4000" and "B-350/5000" plodder sizing.
- 9) As already advised, we confirm that our equipment is guaranteed against defects arising from faulty design, materials or workmanship within a period of twelve calendar months (24 months for gear reducers) after testing but not later than eighteen months (30 months for gear reducers) from shipment date. We will accept liability to repair or replace any part that proves defective under normal use and service within the specified period (F.O.B. Hammond, import duties excluded). We will not be liable for improper handling on your part or due to causes not attributable to us.

Moreover, we undertake to keep at your disposal some spare parts for the whole agreed guarantee period in order to allow a quick "response time" in case of need.

- 10) We append the F. O. B. prices for one set of spare drives:

10.1) For "B-300/4000" Simplex and Duplex Refiners

- | | |
|------------------------------------------------------|----------------------------|
| 1 Complete primary gear reducer,
type R-400/3 I/P | Italian Lire 20,970,000.-- |
| 1 Complete secondary dual output
thrust unit | Italian Lire 12,300,000.-- |

10.2) For "B-350/5000" Duplex Vacuum Plodder:

- | | |
|-------------------------------------------------------|----------------------------|
| 1 Complete primary gear reducer,
type "R-450/3I/P" | Italian Lire 24,230,000.-- |
| 1 Complete secondary dual output
thrust unit | Italian Lire 15,650,000.-- |

LEVER BROTHERS COMPANY

(INCORPORATED)

818 SYLVAN AVENUE ENGLEWOOD CLIFFS, N.J. 07632 TELEPHONE: 201-894-6000

PURCHASE ORDER NO. PL -10262

THIS NUMBER, AND CODE NO. BELOW, MUST APPEAR ON ALL INVOICES, SHIPPING NOTICES, PACKAGES AND CORRESPONDENCE.

Ship material, or perform services, as described below, according to terms and conditions printed on face and reverse side hereof.

TO: **G. MAZZONI S.P.A.**
Viale Trentino 10/12
21052 Busto Arsizio
ITALIA

DELIVER TO: **Mr. H. Welk**
ORIGINAL
LEVER BROTHERS COMPANY INC.
1155 Indianapolis Blvd.
Hammond, Indiana 46320

DATE OF ORDER 8/2/88	DELIVERY REQUIRED See Below	TERMS See Below
SHIP VIA		F.O.B. C.I.F. Hammond, Indiana


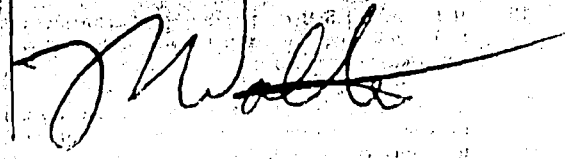
ITEM	QUANTITY	UNIT	CODE NO.	DESCRIPTION	UNIT PRICE	AMOUNT
	Four			DUPLEX PRE-REFINERS FOR 8,000 LB/HR CAPACITY Twin-Worm Duplex Pre-Refiner, model 'B-300/4000', having the following main characteristics: -capacity 4,000 kg/h of HSSO pellets using refining screens up to 50 U.S. mesh -driven by two 45 kW varidrive motors (LBC Supply) -each stage equipped with two constant pitch worms of 300 mm dia. made in AISI 304 stainless steel -each stage will be fitted with an R-400/3I/P reducer with service factor 2.6 at 12.6 worm rpm plodder specifications: As per attached sheet IM/SV-004. -L/D Ratio 5 screens to be 8,20,30,40 mesh ea set. Widened Platforms with handrails on Lefthand side of Plodder Epoxy Paint	207,200,000/Ea Less Discount 7%+4%+3% x 4 units	717,740,800
					2,570,000/Ea. Less Discount 7%+4%+3% x 4 units	8,902,480
					1,670,000/Ea. Less Discount 7%+4%+3% x 4 units	5,784,880

SECURITY OF INFORMATION
 IS GOOD BUSINESS
 FOR BOTH OF US
 WE DEPEND UPON YOU TO KEEP
 ALL INFORMATION CONFIDENTIAL

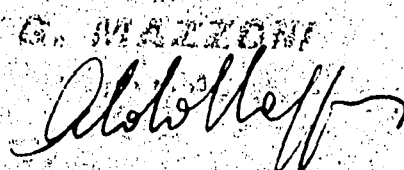
Page 4 of 16

Please invoice promptly, IN DUPLICATE. Address to:
 ACCOUNTS PAYABLE, Lever Brothers Co., 818 Sylvan Avenue, Englewood Cliffs, N.J. 07632
 This order is not binding until Acknowledgment Copy is executed and returned to us.
 WE RESERVE THE RIGHT TO EXTEND MATURITY DATE 15 DAYS FROM DATE INVOICE IS RECEIVED.

HSSO Project Accountant
1200 CALUMET AVENUE
HAMMOND, INDIANA 46320

PURCHASED BY

 AUTHORIZED SIGNATURE


THIS ORDER IS ACCEPTED IN ACCORDANCE WITH ALL THE TERMS AND CONDITIONS CONTAINED ON THE FACE AND REVERSE SIDE OF ORIGINAL.

BY (AUTHORIZED SIGNATURE)

 FOR (FIRM NAME)
G. MAZZONI
 DATE
 8/2/88

THIS ORDER IS NOT BINDING UNTIL ACKNOWLEDGMENT IS EXECUTED AND RETURNED TO THE BUYER WITH WHOM THIS PURCHASE WAS NEGOTIATED.



Please note that the above prices are exactly the same as the ones already advised and have not been increased as usual when the spare part supply is foreseen.

We hope you will appreciate our gesture. I would like to express my conviction of the three enormous advantages that Lever will have by purchasing all primary and secondary reducer units from Mazzoni for both refiners and vacuum plodders:

- 1) one sole manufacturer/supplier
- 2) no warranty problems
- 3) elimination of the complete \$50,000 engineering costs required for assembly of the non-Mazzoni components
- 4) considerable price reduction.

Yours sincerely,

G. MAZZONI S.p.A.

Aldo Mazzoni

P.S. All the drawings which are out-of-format for fax transmission are being sent by courier service.

Encls.:

- NI-50.01 Standard
- Booklet handed over to people who attended 3/30/1988 meeting at Hammond
- Assembly drawing 500290038B of "R-400/31/P" reducer
- Assembly drawing 600020008A of the "B-300" Duplex Refiner
- Assembly drawing 500070077B of the twin-worm plodder support
- LM/SV-001 specification
- LM/SV-008 specification

cc: G. Mazzoni U.S.A., Inc.
Mr. S. Rogora
A - SAP

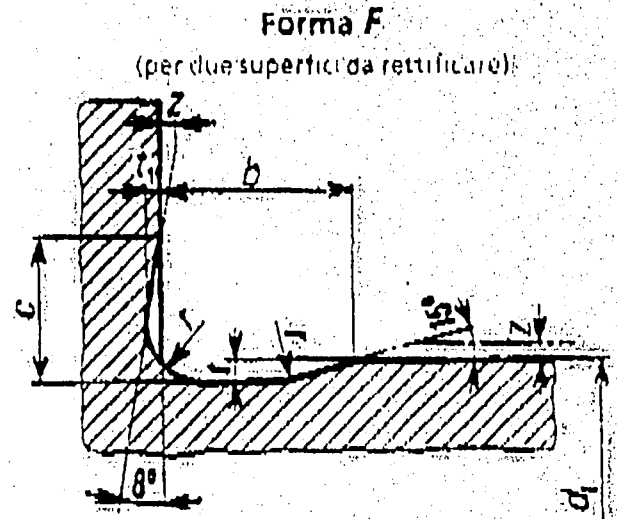
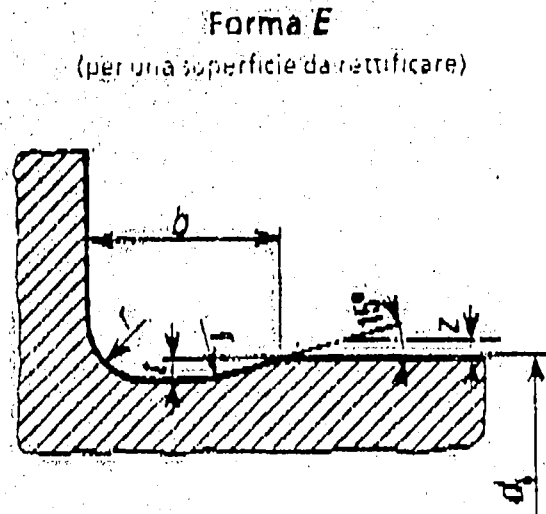
G. MAZZONI S.p.A.	GOLE DI SCARICO PER PARTI		NI-50.01	Fg. 1/1
	DA RETTIFICARE		Data: 22.10.86	Rev: 0
			Comp: SBelluschi	I/COD 6085

REV.	DESCRIZIONE	DATA	REV.	DESCRIZIONE	DATA
------	-------------	------	------	-------------	------

Norma interna ricavata da UNI 4386/75

Dimensioni in mm

1. La presente norma stabilisce le gole di scarico di superficie di parti da rettificare per impieghi generali per parti soggette a sollecitazioni alterne
2. Le dimensioni sono valide per pezzi finiti



z = sovrammetallo di rettifica

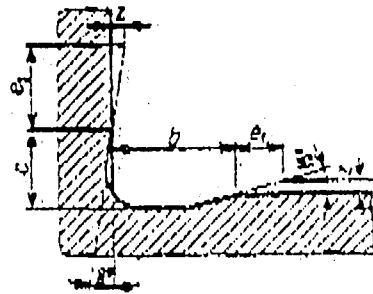
d₁ = diametro finale di lavorazione

3. Le gole della presente norma devono avere, di regola, rugosità R_a di 3,2 micron. Nel caso di rugosità diversa, la stessa deve essere precisata nella designazione.

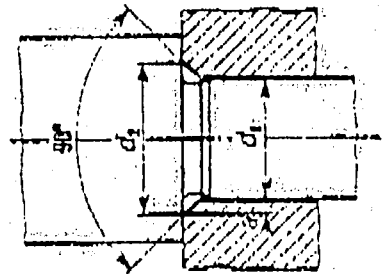
Diametro d ₁	Indicazione per la designazione	Forma	r +0,1 0	t	b	c	t ₁ +0,05 0
fino a 18	E 0,6 x 0,2	E	0,6	0,2	2	-	-
oltre 18 fino a 50	E 1 x 0,2	E	1	0,2	2,5	-	-
oltre 50 fino a 80	E 1,6 x 0,3	E	1,6	0,3	4	-	-
oltre 80	E 2,5 x 0,4	E	2,5	0,4	5	-	-
fino a 18	F 0,6 x 0,2	F	0,6	0,2	2	1,4	0,1
oltre 18 fino a 50	F 1 x 0,2	F	1	0,2	2,5	1,8	0,1
oltre 50 fino a 80	F 1,6 x 0,3	F	1,6	0,3	4	3,1	0,2
oltre 80	F 2,5 x 0,4	F	2,5	0,4	5	4,8	0,3

INFLUENZA DEL SOVRAMMETALLO

La presenza del sovrammetallo Z comporta l'aumento di b e c rispettivamente delle grandezze e₁ ed e₂ riportate nel prospetto seguente



$$d_2 = d_1 + 2a$$



z	e ₁	e ₂	z	e ₁	e ₂
0,1	0,37	0,71	0,5	1,87	3,55
0,15	0,55	1,07	0,6	2,24	4,27
0,2	0,75	1,42	0,7	2,61	4,98
0,25	0,93	1,78	0,8	2,99	5,69
0,3	1,12	2,14	0,9	3,36	6,4
0,4	1,49	2,85	1	3,73	7,12

Gola	Za min	Gola	Za min
E 0,6 x 0,2	0,8	F 0,6 x 0,2	0,2
E 1 x 0,2	1,6	F 1 x 0,2	0,8
E 1,6 x 0,3	2,6	F 1,6 x 0,3	1,1
E 2,5 x 0,4	4,2	F 2,5 x 0,4	1,9

1 JOB PROJECT 279 (5) PLANT HAMMOND-INDIAN DWG. No. LM/SV-001
 2 CUSTOMER LEVER BROTHERS ITEM DUPLIX VACUUM PLODDERS (6) SHEET No. 1 OF 1

PLODDER SPECIFICATION SHEET

6 Module used for: design, inquiry, order issue, operating manual,

8 PLODDER
 9 Model DUPLIX VACUUM PLODDER B-300/4000
 10 Plodder PRELIMINARY FINAL
 11
 12 Worm type CONSTANT →
 13 Worm material AISI 204 →
 14 Worm revolutions rpm 11.8 10.8
 15 Extrusion type LTC-B3 TC
 16 Refining screen B. 45 mesh →
 17 Supporting screen →
 18 Drilled plate:
 19 hole (No) x diam. (mm) 504 x 12 mm →
 20 Cross-sectional area % 40 →
 21 Bar extrusion TWIN SLUG
 22 Production rate kg/h 4000 →

PRODUCT
 Type NORMAL TOILET SOAP (7)
 Trade-name
 Shape Fed Extruded
 PELETS CONTINUOUS SLUG
 Density kg/m³ 610 1035
 Temperature °C 32 ± 35 35 ± 38

WORM THRUST BEARING SUPPORT (3)
 Max. extrusion pressure bar 40
 Life hours ≥ 150'000

COOLING LINE
 Plodder Preliminary Final
 Min. inlet press. bar 3 3
 Inlet temperatur. °C 5 ± 7 →
 Outlet temperatur. °C 11 ± 13 10 ± 12
 Flow rate m³/h 1.7 1.7
 Transferred heat kcal/h 11'000 10'000

27 REDUCER (3) (B)
 28 Model P-400/31/P →
 29 Reduction ratio 1:64 →
 30 Pulley pitch diam. mm 600 →
 31 Races: No x type 6 x 5V →
 32 High-speed shaft rpm 816 ± 204 →
 33 Low-speed shaft rpm 12.6 ± 3.2 →
 34 Service factor (2) 2.6 3.2
 35 ACCORDING TO AGMA STANDARDS
 36 SEE NOTE (B)

HEATING LINE (4) HOT WATER PROVIDED BY CUST.
 Temperature °C 30 ± 35 →
 Flow rate m³/h 0.6 →

40 MOTOR SUPPLIED AND INSTALLED BY OTHERS
 AT LEVER BROTHERS HAMMOND PLANT.
 41 Make
 42 Model DC →
 43 Power kW 45 ± 11.3 37 ± 9.3
 44 Fixed or variable speed VARIABLE SPEED →
 45 Revolutions rpm 1750 ± 440 →
 46 Variation ratio 4 ± 1 →
 47 Pulley pitch diam. mm 280 →

- NOTES
 (1) Defined as ratio between the torque rating and the driving torque available with the shown pulleys.
 (2) The service factor varies with the transmission ratio, and therefore with the driving pulley diameter, varies.
 (3) Load capacity of the reducer gears and support reversing gear (twin-worm plidders) is in compliance with AGMA, DIN and ISO standards.
 (4) Envisaged to send hot water to the barrels during long shutdowns; Duplex plidders have separate lines.
 (5) CUSTOMER'S REFERENCE
 (6) #1 DP460, #2 DP560, #3 DP660, #4 DP760
 (7) DESIGN DATA WILL BE OBTAINED ALSO FOR "HSSD" PRODUCT AFTER TESTING AT OUR TEST ROOM.
 (8) THE REDUCER, THE WORM THRUST BEARING SUPPORT AND THE STEEL MECHANICAL PARTS GUARANTEED 3 START UPS / MINUTE, 24 HOURS / DAY, 5 DAYS / WEEK.

53 PNEUMATIC CLUTCH
 54 Make FAWICK AIRFLEX →
 55 Model 12 CB 360 →
 56 Torque rating dN·m 150.5 →
 57 % 275 (1) 334 (1)
 58 Compr. air press. bar 5.25 5.25

R	D				
e	C				
v	B				
A	Issue. Comp.	MB	Date 20/1/88	Appr.	Date
				Compiler	Date
				Approval	Date

1 JOB PROJECT 579 (5) PLANT HAMMOND-INDIAN DWG. No. AM/SY-008
 2 CUSTOMER LEVER BROTHERS ITEM DUPLX. VACUUM PLODDERS (6) SHEET No. 1 OF 1

PLODDER SPECIFICATION SHEET

6 Module used for: design, ~~inquiry~~, ~~order issue~~, ~~operating manual~~

8 PLODDER
 9 Model DUPLX VACUUM PLODDER B-350/5000
 10 Plodder PRELIMINARY FINAL
 11
 12 Worm type CONSTANT
 13 Worm material AISI 304
 14 Worm revolutions rpm 9 8.2
 15 Extrusion type LTC-B3 TC
 16 Refining screen 50 US mesh WITHOUT SCREEN
 17 Supporting screen
 18 Drilled plate:
 19 hole (No) x diam. (mm) 1260 x 8
 20 Cross-sectional area % 33%
 21 Bar extrusion TWIN SLUG
 22 Production rate kg/h 4536 (10000 lb)

PRODUCT
 Type NORMAL TOILET SOAP (7)
 Trade-name
 Shape PELLETS CONTINUOUS SLUG
 Density kg/m³ 610 1035
 Temperature °C 32 ± 35 35 ± 38

WORM THRUST BEARING SUPPORT (3)
 Max. extrusion pressure bar 40
 Life hours > 150'000

27 REDUCER (3) (B)
 28 Model P-450/21/P
 29 Reduction ratio 1:80
 30 Pulley pitch diam. mm 600
 31 Races: No x type 8 x 5V
 32 High-speed shaft rpm 919 ÷ 230
 33 Low-speed shaft rpm 11.5 ÷ 2.9
 34 Service factor (2) 2.7 3.3
 35 ACCORDING TO AGMA STANDARDS
 36 SEE NOTE (B)

COOLING LINE
 Plodder Preliminary Final
 Min. inlet press. bar 3 3
 Inlet temperat. °C 5 ± 7 →
 Outlet temperat. °C 12 ± 14 10 ± 12
 Flow rate m³/h 2.1 →
 Transferred heat kcal/h 15'000 10'000

HEATING LINE (4) HOT WATER PROVIDED BY C.V.S.T.
 Temperature °C 30 ± 35 →
 Flow rate m³/h 0.7 →

40 MOTOR SUPPLIED AND INSTALLED BY OTHERS
 AT LEVER BROTHERS HAMMOND PLANT.
 41 Make
 42 Model DC
 43 Power kW 55 ± 13.8 45 ± 11.3
 44 Fixed or variable speed VARIABLE SPEED
 45 Revolutions rpm 1750 ÷ 440
 46 Variation ratio 4 ÷ 1
 47 Pulley pitch diam. mm 315

- NOTES
 (1) Defined as ratio between the torque rating and the driving torque available with the shown pulleys.
 (2) The service factor varies with the transmission ratio, and therefore with the driving pulley diameter, varies.
 (3) Load capacity of the reducer gears and support reversing gear (twin-worm plidders) is in compliance with AGMA, DIN and ISO standards.
 (4) Envisaged to send hot water to the barrels during long shutdowns; Duplex plidders have separate lines.
 (5) CUSTOMER'S REFERENCE
 (6) #1 DP460, #2 DP560, #3 DP660, #4 DP760
 (7) DESIGN DATA WILL BE CONSIDERED ALSO FOR "HSSO" PRODUCT AFTER TESTING AT OUR TEST ROOM.
 (8) THE REDUCER, THE WORM THRUST BEARING SUPPORT AND THE OTHER MECHANICAL PARTS GUARANTEED 3 START-UPS/MINUTE, 24 HOURS/DAY, 7 DAYS/WEEK.

53 PNEUMATIC CLUTCH
 54 Make FAWICK AIRFLEX
 55 Model 14CB400
 56 Torque rating dN·m 222
 57 % 370 (1) 450 (1)
 58 Compr. air press. bar 5.25 5.25

62	R	D					
63	e	C					
64	v	B					
65	A	Issue Comp.	Date	11/1/88	Appr.	Date	
66					Compiler	Date	Approval Date



BOOKLET
HANDED OVER TO PEOPLE
WHO ATTENDED 3/30/1988 MEETING AT HAMMOND

March 29, 1988

REDUCER OBSERVATIONS

1. MAZZONI R3 REDUCER IS FUNCTIONAL WITH 60 HP (45 kW) @ 15 RPM AND 1.75 SERVICE FACTOR (SEE CUSTOMER REFERENCE LIST)
2. LEVER HAMMOND APPLICATION REQUIRES 2.0 SERVICE FACTOR (AGMA REFERENCE 420.04 PAGE 6 - ELECTRIC MOTORS OVER 10 HOURS PER DAY WITH HEAVY SHOCK)
3. THE HAMMOND R3 REDUCERS WITH 75 HP DRIVES @ 15 RPM HAVE A SERVICE FACTOR REDUCED TO 1.4
4. UNDER THE ABOVE LISTED CONDITIONS THE R3 WILL BRAKE DUE 43% OVERLOAD OVER THE MAXIMUM (2.0 : 1.4 = 42.8%)
5. R3 WILL BRAKE EVEN WITHOUT ANY PRODUCT IF USED WITH 3 TO 4 STARTS AND STOPS PER MINUTE

PLODDER SPECIFICATION SHEET

Module used for: design, ~~inquiry~~, ~~order issue~~, ~~operating manual~~

PLODDER
 Model: DUPLEX VACUUM PLODDER B-300/4000
 Preliminary: ~~PRELIMINARY~~ FINAL
 Worm gear: CONSTANT
 Worm material: AISI 204
 Worm speed: rpm 11.9 10.8
 Extrusion: LTC-B3 TC
 Reversing: B. vs. mark
 Supporting gear: /
 Drilled plate: /
 hole (No): diam. (mm) 504 x 12 mm
 Cross-section: area % 40
 Bar extrusion: / TWIN SLUG
 Production rate: kg/h 4000
 Reducer (3) (B): R-400/35/P
 Ratio: 11.66
 Pulley pitch diam. mm: 600
 Rack: No. x ty: 6 x 5V
 High-speed shaft: rpm 816 ÷ 204
 Low-speed shaft: rpm 12.6 ÷ 3.2
 Service factor: (2.6) (3.2)
 ACCORDING TO AGMA STANDARDS
 SEE NOTE (B)

PRODUCT
 Type: NORMAL TOILET SOAP (Y)
 Trade-name: /
 Shape: Fed Extruded
PELLETS CONTINUOUS SLUG
 Density: kg/m³ 610 1035
 Temperature: °C 32 ÷ 35 35 ÷ 38

WORM THRUST BEARING SUPPORT (3)
 Max. extrusion pressure: bar 40
 Life: hours > 150'000

COOLING LINE

Plodder	Preliminary	Final
Min. inlet press. bar	<u>3</u>	<u>3</u>
Inlet temperature °C	<u>5 ÷ 7</u>	<u>/</u>
Outlet temperature °C	<u>11 ÷ 13</u>	<u>10 ÷ 12</u>
Flow rate m ³ /h	<u>1.7</u>	<u>1.7</u>
Transferred heat kcal/h	<u>11'000</u>	<u>10'000</u>

HEATING LINE (4) HOT WATER PROVIDED BY CUST.
 Temperature °C 30 ÷ 35
 Flow rate m³/h 0.6

MOTOR SUPPLIED AND INSTALLED BY OTHERS
 AT LEVER: ROTIFLEX HAMMOND PLANT
 Make: DC
 Model: /
 Power kW: 5 ÷ 11.3 37 ÷ 9.3
 Fixed or variable speed: VARIABLE SPEED
 Revolutions rpm: 1 150 ÷ 440
 Variation ratio: 4 ÷ 1
 Pulley pitch diam. mm: 280

- NOTES**
- Defined as ratio between the torque rating and the driving torque available with the shown pulleys.
 - The service factor varies with the transmission ratio, and therefore with the driving pulley diameter, varies.
 - Load capacity of the reducer gears and support reversing gear (twin-worm plidders) is in compliance with AGMA, DIN and ISO standards.
 - Envisaged to send hot water to the barrels during long shutdowns; Duplex plidders have separate lines.
 - CUSTOMER'S REFERENCE
 - #1 DP460, #2 DP560, #3 DP660, #4 DP760
 - DESIGN DATA WILL BE OBTAINED AND FOR "HSSO" PRODUCT AFTER TESTING AT OUR TEST ROOM.
 - THE REDUCER, THE WORM THRUST BEARING SUPPORT AND THE OTHER MECHANICAL PARTS GUARANTEE ... 3 START UPS / MINUTE, 24 HOURS / DAY, 5 DAYS / WEEK.

PNEUMATIC CLUTCH
 Make: AIRFLEX
 Model: 12 CE 350
 Torque rating: dN·m 150 5
 %: 27 (1) 334 (1)
 Compr. air press. bar 5.2 5.25

R	D				
e	C				
v	B				
A	Issue Comp.	Date: <u>20/8/88 Ap.</u>	Date:	Compiler	Date
				Approval	Date

88/03/08

MAZZONI REDUCER, MODEL R3

Calculation Summary

Rating 45 kW at 15 rpm at Service Factor SF = 1.75

A) Maximum power transmitted by each gear at 15 rpm of the low speed shaft at service factor SF = 1.75:

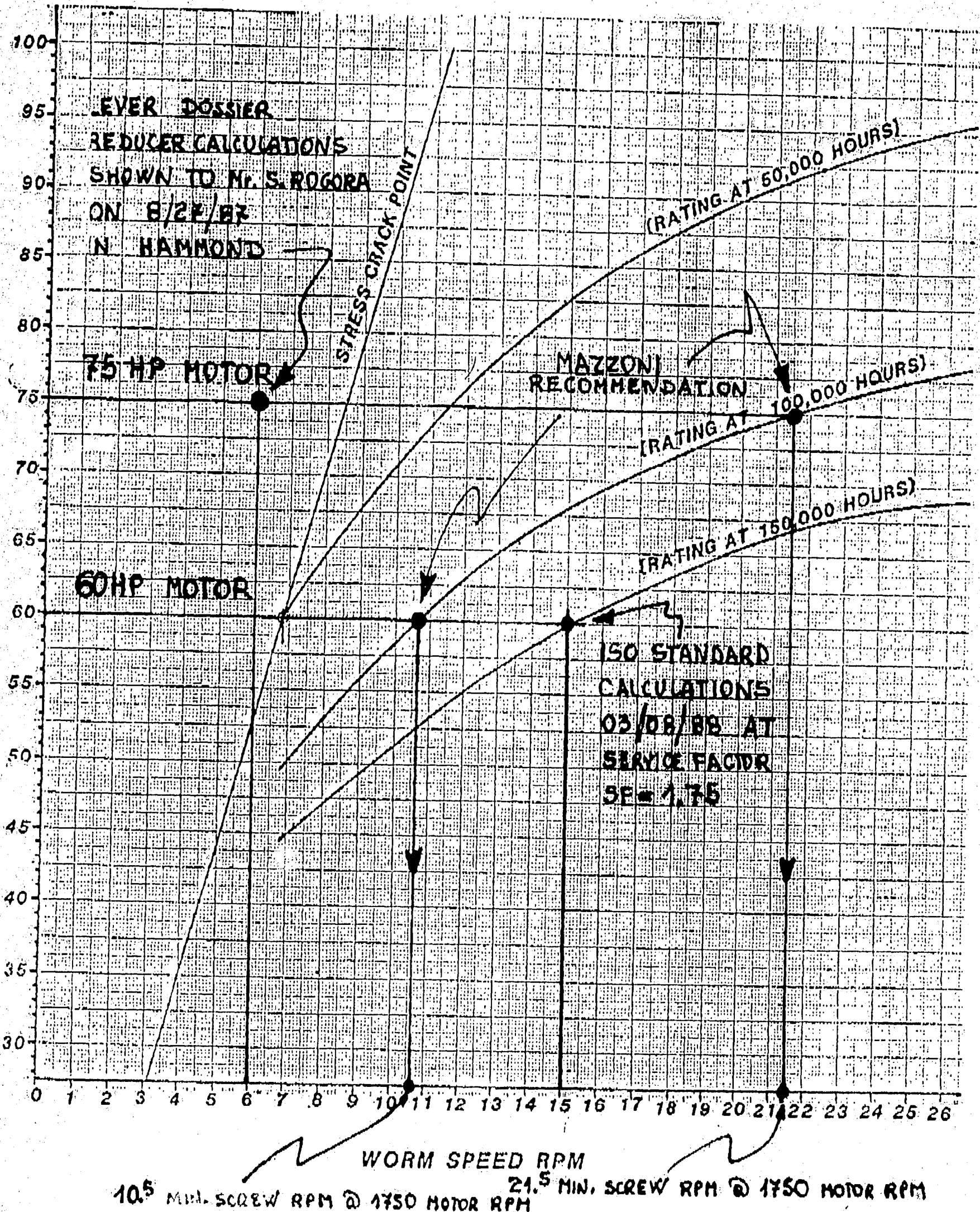
Coupling	Fast		Low		
	Pinion	Gear	Pinion	Gear	
Gear					
ISO STANDARDS:					
Bending Strength Power	kW	66	76	52	58
Pitting Resistance Power	kW	94	136	60	76
AGMA STANDARDS:					
Bending Strength Power	kW	--	--	--	--
Pitting Resistance Power	kW	--	--	--	--

B) Shaft Stress at service factor SF = 1.75 with 45 kW at 15 rpm of the low speed shaft (see drawing No. 0995/1):

Shaft	I (Fast)		II	III	IV	V (Low)		
	Old shaft	Revised shaft						
Rpm	545	→	61	54	15	15		
Diameter	mm	59	67	74	83	109	109	
Bending : moment	m . kg	193.14	→	168.3	480.5	636.7	945	
stress	kg/mm ²	9.5	→	6.5	4.2	8.5	5	7.4
Torsion : moment	m . kg	78.8	→	704.4	398	1432	→	
stress	kg/mm ²	1.8	→	1.33	8.8	3.5	5.6	→

Steel shaft allowable stress from AGMA 420.04 and for 39NiCrMo3 UNI 7845 steel with 90 kg/mm² (128,000 psi) of Tensile Strength and over 100,000 to 1 million cycles is: bending 13 kg/mm² (19,000 psi), torsion 8 kg/mm² (11,500 psi).

TWIN SCREW B-350 (HAMMOND)



Progetto: LEVER HAMMOND

Argomento:

Revisione

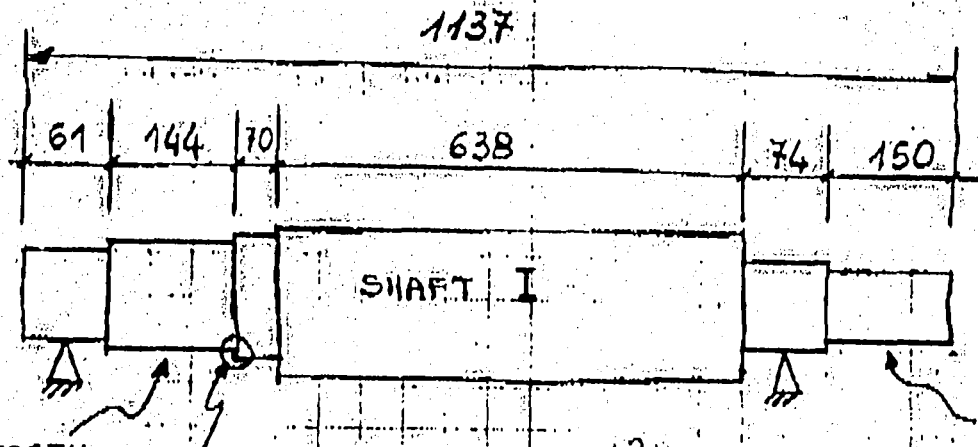
Impianto: PLODDER B-350

Data: 28/3/88

Apparecchio: R3 REDUCER

Aut. Dis. N.:

Foglio N. 1 di 1



PINION 18 TEETH

BROKEN SECTION

SHAFT I

CLUTCH

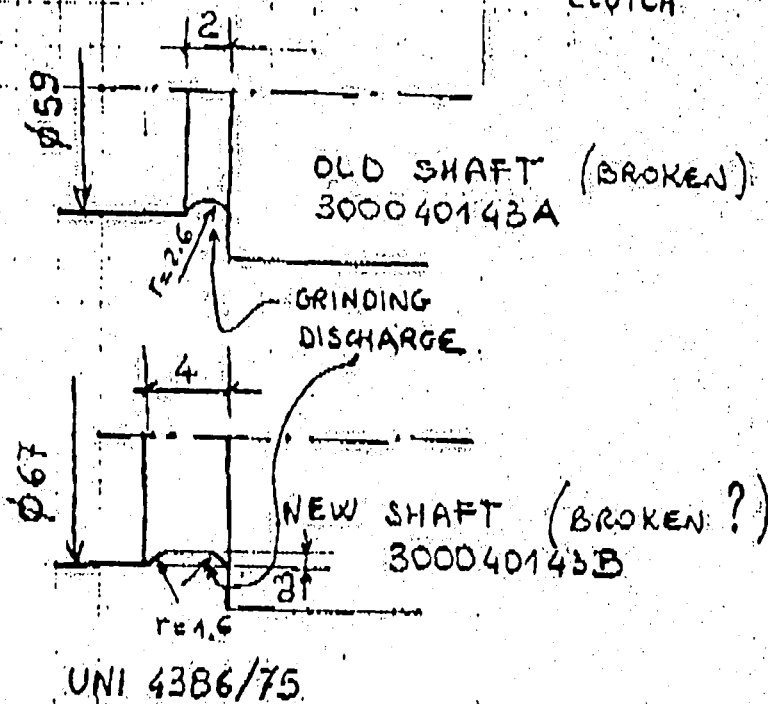
STRESS CONCENTRATION FACTOR K_t
FROM MARKS P. 5-6

OLD SHAFT FIG. 12

$h/r = 1$
 $h/d = 0.044$
 $K_t = 1.9$ (TORSION)

NEW SHAFT FIG. 13

$h/r = 0.3/1.6 = 0.19$
 $h/d = 0.3/67 = 0.0044$
 $K_t = 1.3$ (TORSION)



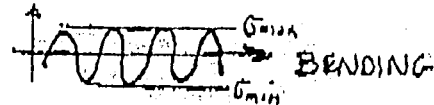
UNI 4386/75

RATING 60 HP @ 15 rpm WITH SERVICE FACTOR SF = 1.75

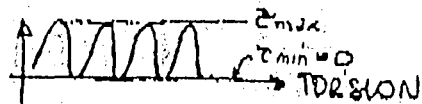
RATIO 1:36.3

SHAFT I LOAD

1) ALTERNATE BENDING FATIGUE DUE TO MATING GEARS: BETWEEN EQUAL POSITIVE AND NEGATIVE VALUES:



2) ALTERNATE TORSIONAL FATIGUE DUE TO START/STOP WITH THE CLUTCH (3 TO 4 TIME PER MINUTE): FROM ZERO TO MAXIMUM POSITIVE VALUES:



THE SECOND LOAD IS NOT PERMITTED IN R3 REDUCER AT SF = 1.75

TO ALLOW THE SECOND LOAD IS NECESSARY SF = 2 OR MORE

WITH 75HP @ 15 rpm R3 REDUCER HAS A SF = 1.4