

INSTRUCTIONS–PARTS LIST



307–904

Rev. A

This manual contains IMPORTANT
WARNINGS AND INSTRUCTIONS
READ AND RETAIN FOR REFERENCE

LSA–117 AGITATORS

For use with 80 gallon (300 liter) to 300 gallon (1100 liter) mix tanks

Electric drive models have 0.25 HP, 1.58 AMP @ 460V, 3 phase, Class I, Group D, Explosion Proof motors which drive a 15:1 ratio gear reducer at 1750 RPM input giving a 117 RPM shaft output.

Hydraulic drive models develop 0 to 150 RPM shaft output using 0.25 HP motor with 0 to 150 RPM input.

Air driven models (variable speed) develop 0.25 HP at 1800 RPM using 10 to 20 CFM. The 15:1 Ratio Reducer develops a shaft output of 0 – 200 RPM

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WARNINGS

HIGH PRESSURE SPRAY CAN CAUSE SERIOUS INJURY.

FOR PROFESSIONAL USE ONLY. OBSERVE ALL WARNINGS.

Read and understand all instruction manuals before operating equipment.

GENERAL SAFETY

To reduce the risk of serious bodily injury, including amputation of fingers by the agitator blades, injury from moving parts, splashing of fluid in the eyes or on the skin, and electric shock, always disconnect the agitator from its power source before raising, checking or repairing the agitator.

Do not connect the agitator to its power source until all components are properly assembled and hardware is tightened securely.

Keep clear of all moving parts when the agitator is in operation. Do not operate the agitator with the safety cover removed. Do not enter the mix tank while the agitator is connected to its power source.

EQUIPMENT MISUSE HAZARD

Never alter or modify any part of this equipment; doing so could cause it to malfunction.

Check the equipment regularly and repair or replace worn or damaged parts immediately.

Always read and follow the fluid and solvent manufacturer's recommendations regarding the use of protective clothing and equipment.

Do not operate the agitator at a pressure, temperature or speed higher than those specified on the nameplate.

Do not use the agitator for other than its intended purpose.

Ensure that all external connections (pneumatic, hydraulic and electrical) are completed according to the applicable local, state and national codes.

GROUNDING

To reduce the risk of static sparking, which can cause a fire or explosion and result in serious bodily injury and property damage, ground the agitator and all other equipment in your system, including the fluid tank and the object being sprayed. Check your local electrical code for detailed grounding instructions for your area and type of equipment.

HYDRAULIC-POWERED MODELS

Pressure Relief Procedure

To reduce the risk of serious bodily injury, including fluid injection, splashing in the eyes or on the skin, and injury from moving parts, always follow this procedure whenever you shut off the agitator, and before inspecting, removing, cleaning or repairing the agitator.

1. Shut off the main hydraulic power supply.
2. Close the needle valve on the motor.
3. Shut off the hydraulic return valve.
4. Disconnect the hydraulic lines to the agitator.

System Pressure

The MAXIMUM HYDRAULIC INPUT PRESSURE to the agitator 1000 psi (70 bar). NEVER exceed this pressure. Be sure that all equipment on the hydraulic supply and return lines is rated to withstand this maximum pressure.

MODEL MATRIX



GRACO

MODEL NO.

LSA-117

ASSY. NO.

DRIVE NO.

SHAFT NO.

IMPELLER NO.

MOTOR NO.

GRACO INC., MINNEAPOLIS, MN

AGITATOR IDENTIFICATION PLATE

1	MOTOR ONLY	MOTOR NO.
	ELECTRIC	515-200
	AIR	515-201
	HYDRAULIC	515-202

2	AGITATOR DRIVE ASSEMBLY WITH MOTOR	DRIVE NO.
	ELECTRIC	915-907
	AIR	915-908
	HYDRAULIC	915-909

3	AGITATOR DRIVE ASSEMBLY WITHOUT MOTOR	DRIVE NO.
	AIR/ELECTRIC	915-913

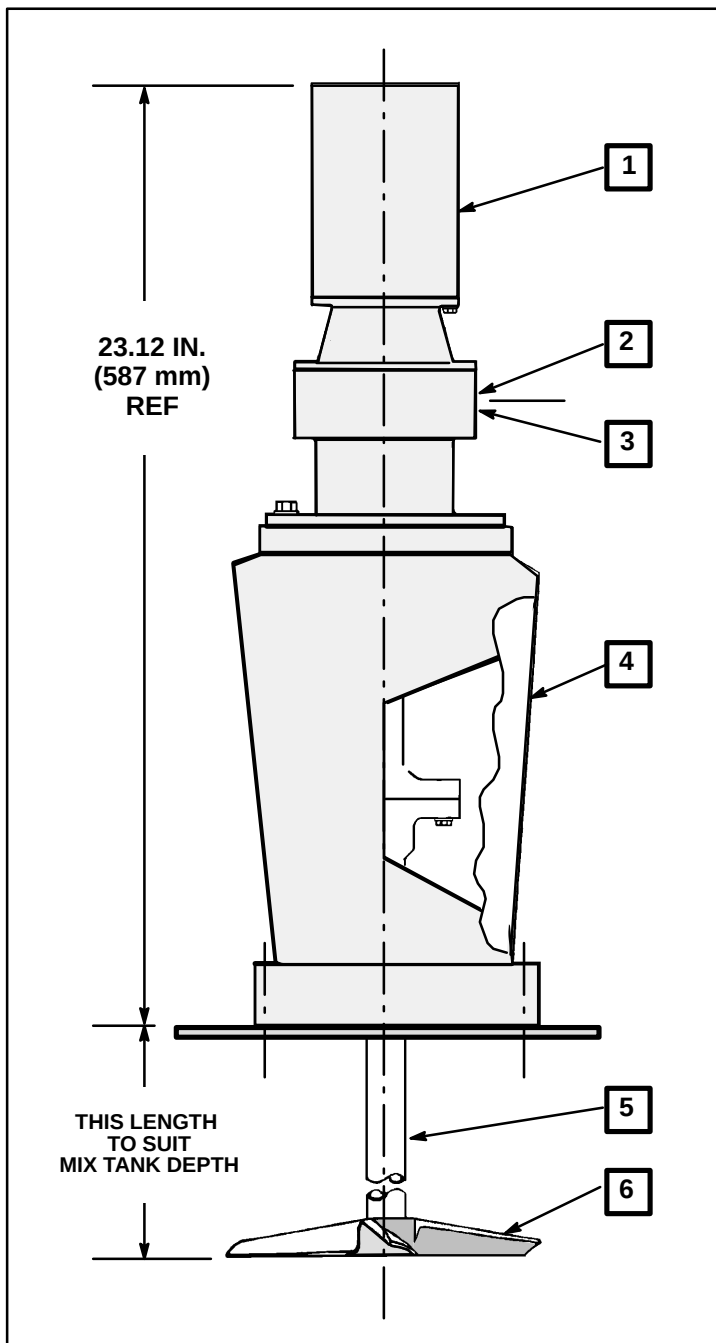
4	AGITATOR DRIVE WITHOUT MOTOR	DRIVE NO.
	HYDRAULIC	915-914

5	SHAFT LENGTH**	SHAFT NO.
	24 INCH (610 mm)	616-959
	30 INCH (762 mm)	616-960
	36 INCH (914 mm)	616-961
	42 INCH (1067 mm)	616-962

**Length is from mounting surface to bottom of impeller, for overall shaft length, add 6.25 in. (159 mm). Other sizes available for special applications.

6	IMPELLER DIA.		IMPELLER NO.	FLOW RATE*	
	INCH	mm		GPM	LPM
	7.6	193	515-186	124	470
	8.8	224	515-187	192	727
	10.0	254	515-188	282	1067
	11.2	285	515-189	397	1503
	11.8	300	515-190	465	1760
	12.8	325	515-191	592	2240
	13.6	345	515-192	710	2687
	15.1	384	515-193	972	3679
	15.6	396	515-194	1060	4012
	17.0	432	515-195	1381	5227
	18.0	457	515-196	1638	6200
	19.0	483	515-197	1931	7309

*Approximate, at 117 RPM



NOTE: Reference numbers in parentheses refer to the callouts in Fig 2.

1. Working from the bottom of the motor and housing assembly, push the agitator shaft (5) up through the flange (58) and packing gland (57).
2. Position the coupling (62) on the top of the shaft (5) so it seats on the shaft shoulder.
3. Secure the coupling (62) to the shaft (5) with the washer (65) and capscrew (66).
4. With the keyway (63) in place, tighten the setscrew (64).
5. Connect the agitator shaft and coupling to the drive shaft (38) and secure with the washers (67) and capscrews (68).
6. Lift the agitator by the motor ring/handle only, and partially insert the agitator shaft into the tank.
7. Install the impeller (6) on the agitator shaft, taking note of the "top" and "bottom" markings on the impeller. Secure with the setscrew (45). Tighten to 22 ft-lb (30 N.m).

NOTE: The impeller (6) must always circulate fluid downward. The correct direction of rotation is shown by the arrow on the agitator nameplate. *See Fig 1.* For electric models, reverse any two leads to ensure proper rotation. *See Fig 4.*

8. Align the flange (58) over the mounting holes in the tank cover and firmly secure all bolts. *See Fig 5.*
9. *For air and hydraulic models,* connect all lines. Hydraulic models must have a shutoff valve in both the supply and return lines. *See Fig 3.*

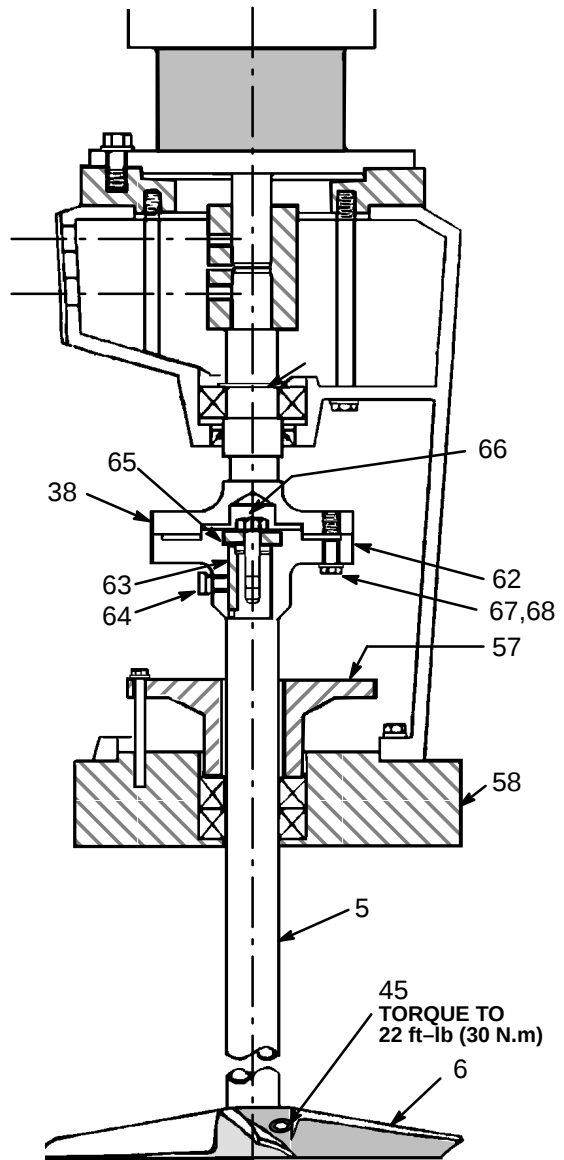


Fig 2

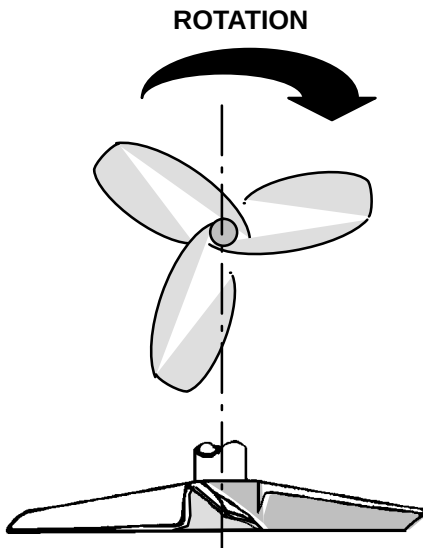


Fig 1

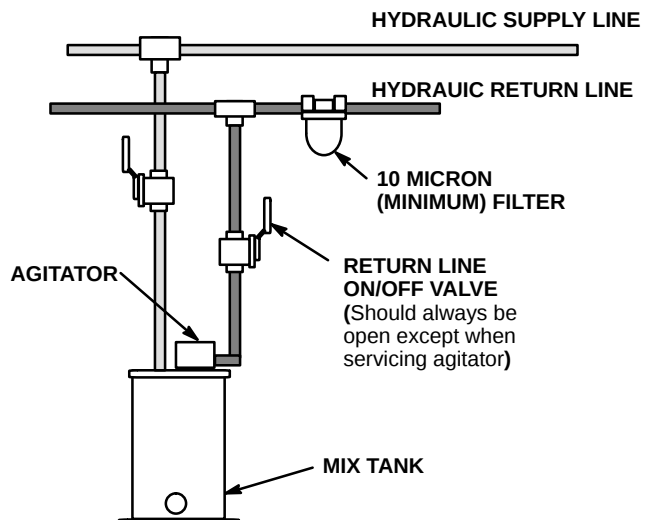


Fig 3

INSTALLATION

WARNING

To reduce the risk of overpressurizing the hydraulic system, never close the return line valve without first closing the supply line valve and the agitator needle valve.

For electrical models, connect all electrical leads.

WARNING

To reduce the risk of electrical shock, fire, or serious bodily injury, be sure that your installation of the electric agitator complies with National, State and Local codes for the installation of electrical equipment. Have a qualified electrician make all connections.

MOTOR WIRING

SINGLE VOLTAGE WITH THERMAL PROTECTOR	DUAL VOLTAGE WITH THERMAL PROTECTOR	LOW VOLTAGE	HIGH VOLTAGE
TO REVERSE ROTATION INTERCHANGE ANY TWO LINE LEADS			

Fig 4

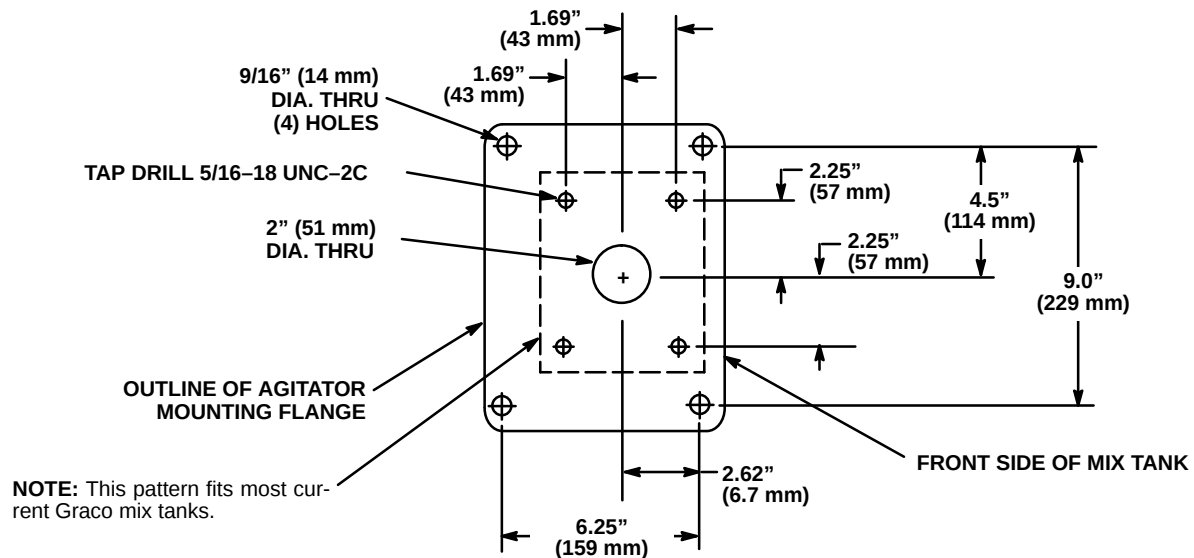


Fig 5

WARNING

Before operating the agitator, ensure that all of these items have been checked.

- ✓ The unit is grounded.
- ✓ All protective guards are properly installed.
- ✓ All capscrews and setscrews are securely tightened.
- ✓ The speed reducer input shaft rotates freely by hand.
- ✓ All external connections have been completed according to all applicable codes.

NOTE: The recommended speed of the agitator shaft and impeller is 117 RPM. This speed ensures properly mixing without foaming.

With Air-powered Agitator:

To start the agitator, turn on the air supply and connect the air line coupler. Use the needle valve to adjust the agitator speed. Always use moderate agitation speeds; excessive agitator speed may cause vibration, foaming of fluid and increased wear on parts. Always agitate fluid thoroughly before supplying it to the dispensing equipment. Continue agitating fluid while the dispensing equipment is being supplied.

To stop the agitator, disconnect the air line coupler. Disconnect the air line coupler before checking or servicing the agitator.

NOTE: The air-powered agitator requires a lubricated air supply. The motor will not operate properly on dry air. The air motor exhaust can be piped away from tank lids to eliminate paint contamination.

With Electric Agitator:

To start the agitator, turn on the electric power to the motor. Always agitate fluid thoroughly before supplying it to the dispensing equipment. Continue agitating fluid while the dispensing equipment is being supplied.

To stop the agitator, turn off the electrical power to the motor. Disconnect the electrical power before checking or servicing the agitator.

With Hydraulic Agitator:

To start the agitator, open the needle valve to the motor until the proper rotation speed is achieved. Always use moderate agitation speeds; excessive agitator speed may cause vibration, foaming of fluid and increased wear on parts. Always agitate fluid thoroughly before supplying it to the dispensing equipment. Continue agitating fluid while the dispensing equipment is being supplied.

To stop the agitator, close the needle valve to the motor. Disconnect the power supply before servicing the unit.

WARNING

To reduce the risk of serious bodily injury from moving parts, including amputation of fingers by the agitator blades, splashing of fluid in the eyes or on the skin, and electric power before raising, checking or repairing the agitator. On hydraulic models, close the supply line, the needle valve and then the return line valve. Disconnect the hydraulic lines from the motor.

Lubrication

The gear reducer is lubricated with Shell Alvania #2 lubricant, suitable for 20,000 hours of operation at normal load. For replacement, use only Graco oil, part no. 204-559.

Disassembly (Refer to Fig 6)

To remove the motor and reducer from the housing:

1. Remove the agitator shaft (5) from the coupling (62).
2. Remove the housing screws (7,8) and washers (20).
3. Remove the housing nameplate (105) to reveal the access holes in the housing.
4. Use a 3/16 in. hex wrench to loosen the shaft coupling (103).
5. To remove the motor (1) from the reducer (101), first remove the safety cover. Use a 1/8 in. hex wrench to loosen the coupling (102) on the motor shaft. Remove the capscrews and washers. Lift the motor off the reducer (101).

To remove the drive shaft, bearing and oil seal.

1. Follow the motor removal procedure described in the preceding section.
2. Remove the reducer (101).
6. The motor coupling fit is very snug, so use care in removal. use a mallet to tap evenly around the upper edge of the housing (36), or tap the top of the impeller hub to drive out the shaft.
3. Use a retaining ring pliers (Truarc #4) to remove the retaining ring (23).
4. Mount the housing in a press with the large end up. Carefully press the shaft (38) through the lower housing opening.
5. Turn the housing large end down and press the bearing (27) and oil seal (24) out of the housing.

To remove the packings:

1. Remove the nuts (48) from the studs (56) and remove the gland (57).
2. Remove the packings (53) from the flange (58).

Reassembly

Reassemble the agitator in the reverse order of disassembly.

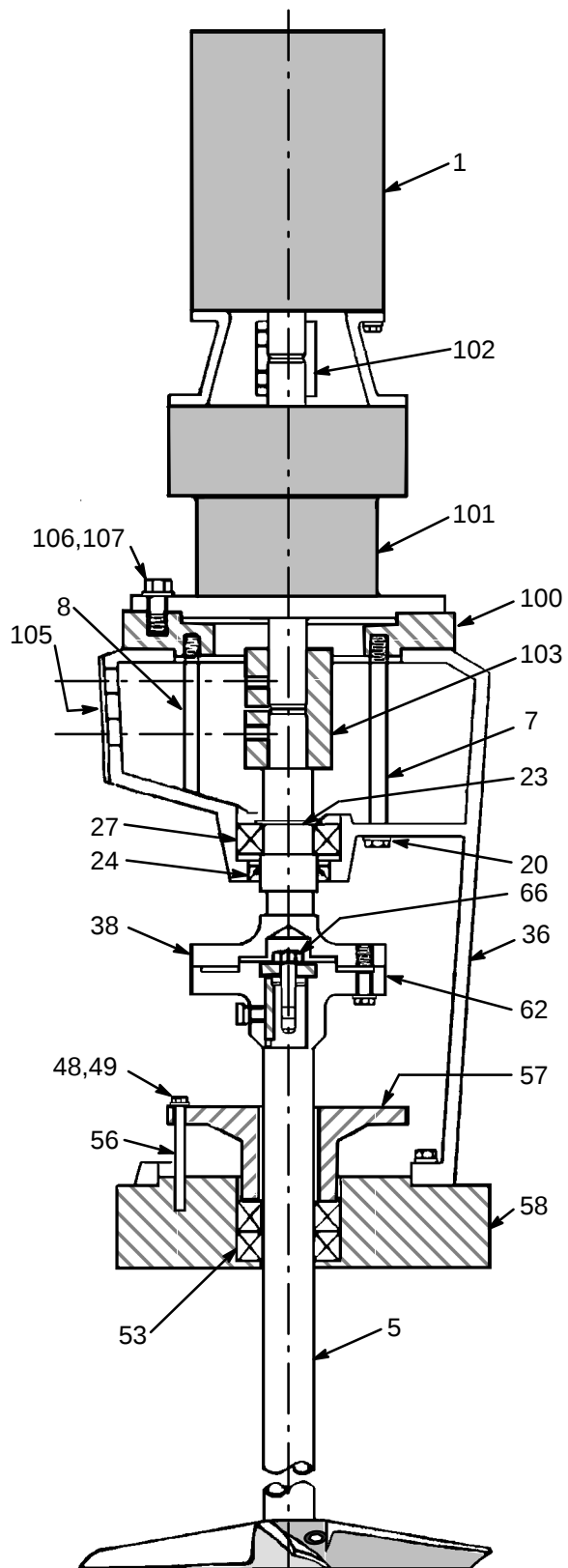
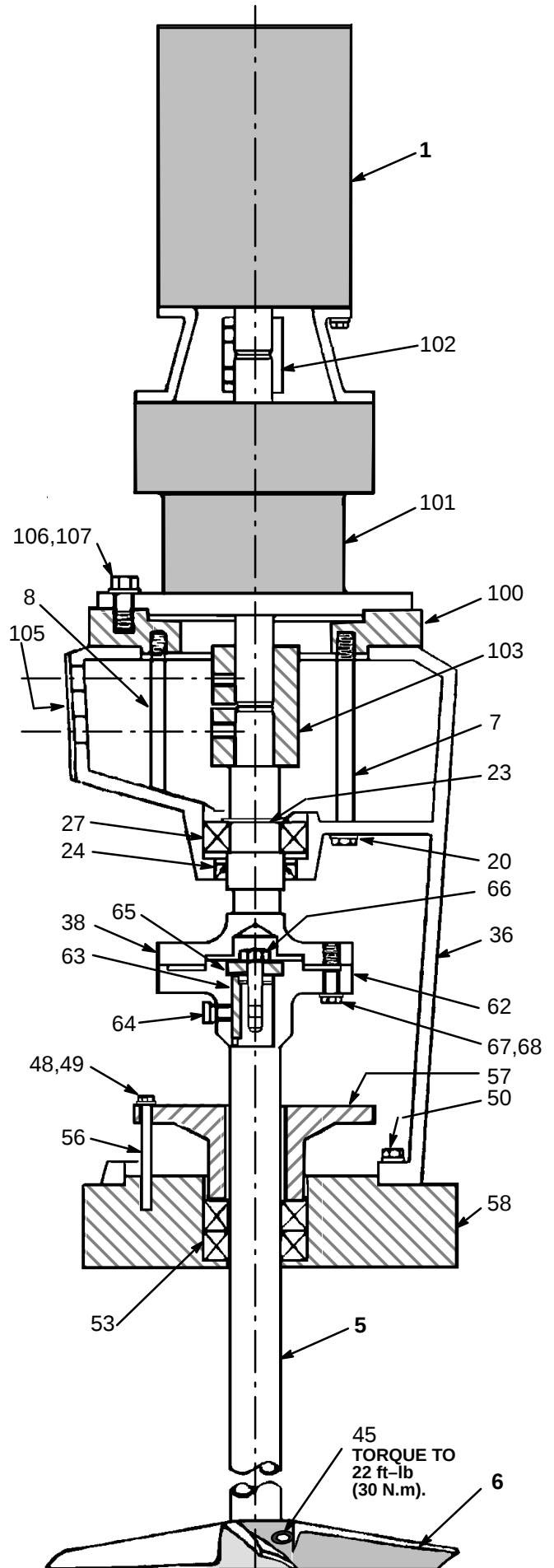


Fig 6

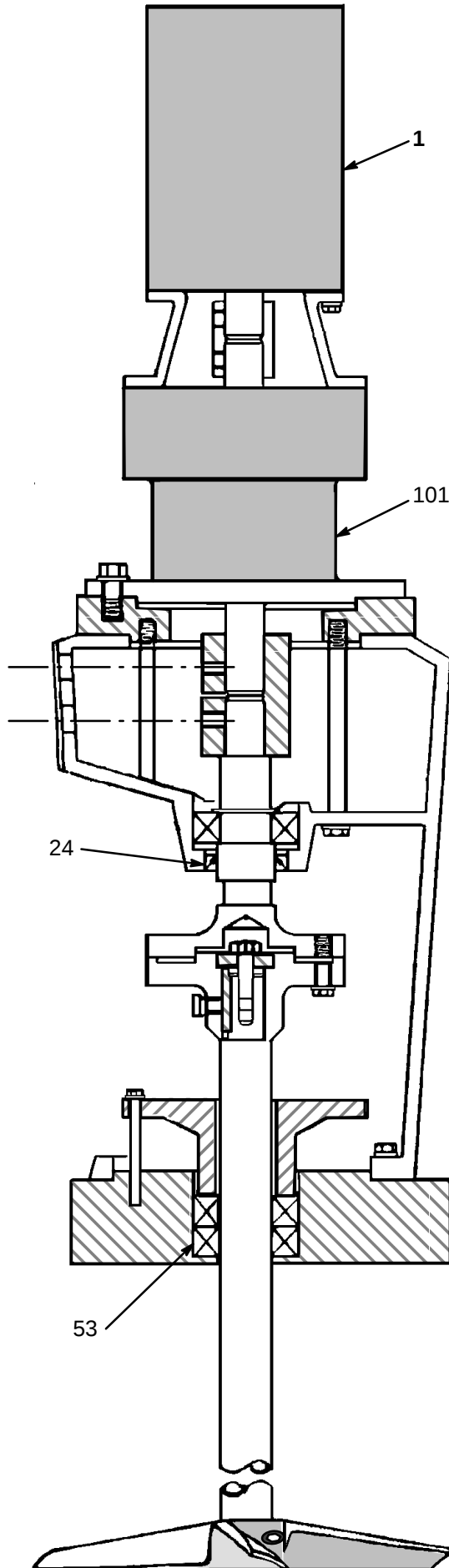
PARTS LIST & DRAWING

REF NO.	PART NO.	DESCRIPTION	QTY
1	SEE PAGE 3	MOTOR, ELECTRIC	1
		MOTOR, AIR	1
		MOTOR, HYDRAULIC	1
5	SEE PAGE 3	MIXER SHAFT	1
6	SEE PAGE 3	IMPELLER	1
7	515-228	CAPSCREW, hex hd; 3/8-16 X 4-1/4"	2
8	515-227	CAPSCREW, hex hd; 3/8-16 X 3-3/4"	2
23	515-229	RETAINING RING	1
24	515-230	OIL SEAL	1
27	515-231	BEARING	1
36	515-232	HOUSING	1
38	515-233	DRIVE SHAFT	1
48	100-340	HEX NUT, JAM, 3/8-16	2
49	515-234	GLAND CLAMP	2
50	100-101	CAPSCREW, hex hd; 3/8-16 X 1"	16
53	515-235	PACKING	2
56	515-237	GLAND STUD	2
57	515-236	PACKING GLAND	1
58	515-238	HUB & FLANGE	1
62	515-239	REMOVABLE COUPLING	1
63	515-240	KEY	1
64	515-241	SETSCREW, sq. hd cup pt; 1/4-20 x 1/2"	1
65	515-247	WASHER	1
66	515-242	CAPSCREW, hex hd; 5/16-18 x 7/8"; nylok	1
67	100-133	LOCKWASHER, 3/8"	20
100	515-243	HOUSING ADAPTER	1
101	515-244	REDUCER (15:1 ratio)	1
103	515-245	LOW SPEED COUPLING	1
105	515-246	SAFETY COVER	1

NOTE: See the **MODEL MATRIX** on page 3 for specific motor, drive shaft and impeller part numbers.



PARTS LIST & DRAWING



REPLACEMENT ITEMS

NOTE: See the **MODEL MATRIX** on page 3 for specific motor, drive shaft and impeller part numbers.

REF NO.	PART NO.	DESCRIPTION	QTY
1	SEE PAGE 3	MOTOR, ELECTRIC	1
	SEE PAGE 3	MOTOR, AIR	1
	SEE PAGE 3	MOTOR, HYDRAULIC	1
5	SEE PAGE 3	SHAFT	1
6	SEE PAGE 3	IMPELLER	1
24	515-230	OIL SEAL	1
53	515-235	PACKING	2
101	515-244	DRIVE	1

HOW TO ORDER PARTS

1. To be sure you receive the correct replacement parts, kit or accessories, always give all of the information requested in the chart below.
2. Check the parts list to identify the correct part number; **do not use the ref. no. when ordering.**
3. Order all parts from your nearest Graco distributor.

6 digit PART NUMBER	QTY	PART DESCRIPTION

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TECHNICAL DATA

Motor horsepower rating – <i>ALL MODELS</i>	0.25
Maximum working pressure – <i>AIR MODELS</i>	100 psi (7 bar)
Maximum working pressure – <i>HYDRAULIC MODELS</i>	1000 psi (70 bar)
Recommended shaft output speed	117 RPM
Gear reducer ratio – <i>AIR AND HYDRAULIC MODELS</i>	15:1
Wetted parts – <i>ALL MODELS</i>	Stainless Steel

THE GRACO WARRANTY AND DISCLAIMERS

WARRANTY

Graco warrants all equipment manufactured by it and bearing its name to be free from defects in material and workmanship on the date of sale by an authorized Graco distributor to the original purchaser for use. As purchaser's sole remedy for breach of this warranty, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment proven defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for, any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility with Graco equipment of structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claim. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor and transportation.

DISCLAIMERS AND LIMITATIONS

THE TERMS OF THIS WARRANTY CONSTITUTE PURCHASER'S SOLE AND EXCLUSIVE REMEDY AND ARE IN LIEU OF ANY OTHER WARRANTIES (EXPRESS OR IMPLIED), INCLUDING WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY NON-CONTRACTUAL LIABILITIES, INCLUDING PRODUCT LIABILITIES, BASED ON NEGLIGENCE OR STRICT LIABILITY. EVERY FORM OF LIABILITY FOR DIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES OR LOSS IS EXPRESSLY EXCLUDED AND DENIED. IN NO CASE SHALL GRACO'S LIABILITY EXCEED THE AMOUNT OF THE PURCHASE PRICE. ANY ACTION FOR BREACH OF WARRANTY MUST BE BROUGHT WITHIN TWO (2) YEARS OF THE DATE OF SALE.

EQUIPMENT NOT COVERED BY GRACO WARRANTY

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO ACCESSORIES, EQUIPMENT, MATERIALS, OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motor, switches, hose, etc.) are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

Factory Branches: Atlanta, Dallas, Detroit, Los Angeles, West Caldwell (N.J.)

Subsidiary and Affiliate Companies: Canada; England; Switzerland; France; Germany; Hong Kong; Japan

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