Triplex Ceramic Plunger Pump Operating Instructions/ Manual

Model BP6150

GIANT

Contents:

INSTALLATION INSTRUCTIONS

Installation of the Giant Industries, Inc., pump is not a complicated procedure, but there are some basic steps common to all pumps. The following information is to be considered as a general outline for installation. If you have unique requirements, please contact Giant Industries, Inc. or your local distributor for assistance.

1. The pump should be installed flat on a base to a maximum of a 15 degree angle of inclination to ensure optimum lubrication.

2. The inlet to the pump should be sized for the flow rate of the pump with no unnecessary restrictions that can cause cavitation. Teflon tape should be used to seal all joints. If pumps are to be operated at temperatures in excess of 140^0 F, it is important to insure a positive head to the pump to prevent cavitation.

3. The discharge plumbing from the pump should be properly sized to the flow rate to prevent line pressure loss to the work area. It is essential to provide a safety bypass valve between the pump and the work area to protect the pump from pressure spikes in the event of a blockage or the use of a shut-off gun.

4. Use of a dampener is necessary to minimize pulsation at drive elements, plumbing, connections, and other system areas. The use of a dampener with Giant Industries, Inc. pumps is optional, although recommended by Giant Industries, Inc. to further reduce system pulsation. Dampeners can also reduce the severity of pressure spikes that occur in systems using a shut-off gun. A dampener must be positioned downstream from the unloader.

5. Crankshaft rotation on Giant Industries, Inc. pumps should be made in the direction designated by the arrows on the pump crankcase. Reverse rotation may be safely achieved by following a few guidelines available upon request from Giant Industries, Inc. Required horsepower for system operation can be obtained from the chart on page 3.

6. Before beginning operation of your pumping system, remember: Check that the crankcase and seal areas have been properly lubricated per recommended schedules. Do not run the pump dry for extended periods of time. Cavitation will result in severe damage. Always remember to check that all plumbing valves are open and that pumped media can flow freely to the inlet of the pump.

Finally, remember that high pressure operation in a pump system has many advantages. But, if it is used carelessly and without regard to its potential hazard, it can cause serious injury.

IMPORTANT OPERATING CONDITIONS

Failure to comply with any of these conditions invalidates the warranty.

1. Prior to initial operation, add oil to the crankcase so that oil level is between the two lines on the oil dipstick. DO NOT OVERFILL.

SAE 80 Industrial Gear oil may be used.

Crankcase oil should be changed after the first 50 hours of operation, then at regular intervals of 500 hours or less depending on operating conditions.

2. Pump operation must not exceed rated pressure, volume, or RPM. A pressure relief device must be installed in the discharge of the system.

3. Acids, alkalines, or abrasive fluids cannot be pumped unless approval in writing is obtained before operation from Giant Industries, Inc.

4. Run the pump dry approximately 10 seconds to drain the water before exposure to freezing temperatures.

5. Need to check torque on item (49) bi-weekly.

NOTE: Contact Giant Industries for Service School Information. Phone: (419)-531-4600

Specifications
Model BP6150

Volume	Up to 42.3 GPM
Discharge Pressure	Up to 1500 PSI
Speed	Up to 600 RPM
Inlet Pressure	-4.35* -150PSI
Power Consumption	43.8 HP
Plunger Diameter	50mm
Plunger Stroke	48mm
Crankshaft Diameter	45mm
Key Width	12mm
Crankshaft Mounting	Either side
Shaft Rotation	Top of pulley towards manifold
Temperature of Pumped Fluids	Up to 104 °F
Inlet Ports	(2) 2-1/2" NPT
Discharge Ports	(2) 1-1/4" NPT
Weight	275.5 lbs.
Crankcase Oil Capacity	1.1 Gal.
Fluid End Material	Cast Iron

Consult the factory for special requirements that must be met if the pump is to operate beyond one or more of the limits specified above.

* Depends on viscosity of medium

HORSEPOWER RATINGS:

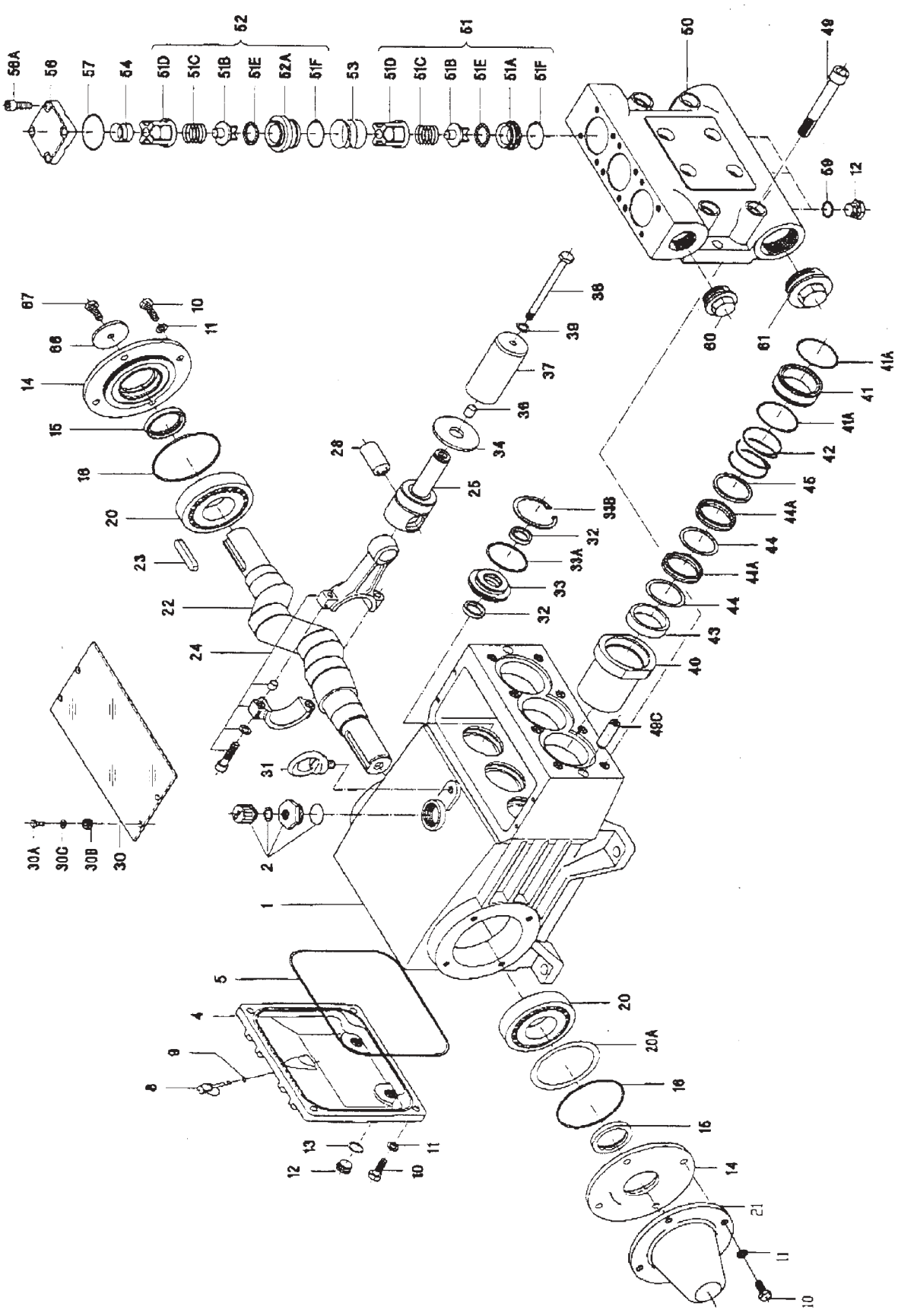
The rating shown are the power requirements for the pump. Gas engine power outputs must be approximately twice the pump power requirements shown above.

We recommend a 1.15 service factor be specified when selecting an electric motor as the power source. To compute specific pump horsepower requirements, use the following formula:

HP = (GPM X PSI) / 1500

BP6150 HORSEPOWER					
RPM	GPM	250 PSI	500 PSI	750 PSI	1500 PSI
100	7.1	1.3	2.5	3.8	7.6
200	14.1	2.5	5.0	7.6	15.1
300	21.2	3.8	7.6	11.4	22.7
450	31.7	5.7	11.3	17.0	34.0
600	42.3	7.6	15.1	22.7	45.3

Exploded View - BP6150



BP6150 PARTS LIST

ITEM	PART	DESCRIPTION	QTY.
1	13200	Crankcase	1
2	06893	Oil Filler Plug Assembly	1
1	07427	Gasket 3/8”	1
4	13201	Crankcase Cover	1
5	13203	O-Ring, Crankcase Cover	1
8	06894	Oil Dip Stick	1
9	01009	O-Ring, Dip Stick	1
10	13133	Hexagon Screw	12
11	13134	Spring Washer	12
12	07109	Drain Plug	5
13	07182	Gasket, Drain Plug	2
14	13204	Bearing Cover	2
15	13205	Radial Shaft Seal	2
16	08055	O-Ring	2
20	13206	Taper Roller Bearing	2
20A	13207	Fitting Disc (Shim)	1-5
21	13208	Shaft Protector	1
22	06895	Crankshaft	1
23	08213	Key	1
24	06896	Connecting Rod Assy.	3
25	06897	Crosshead Assy.	3
28	06898	Crosshead Pin	3
30	13214	Cover Plate	1
30A	07225-0100	Hexagon Screw	4
30B	13136	Grommet	4
30C	07622	Washer	4
31	07623	Eye Bolt	1
32	06117	Radial Shaft Seal	3
33	06899	Seal Retainer	3
33A	07721	O-Ring	3
33B	13217	Circlip	3
34	13218	Flinger	3
36	06900	Plunger Connection	3

ITEM	PART	DESCRIPTION	QTY.
37	07793	Plunger Pipe	3
38	06901	Tensioning Screw	3
39	07665	Copper Ring	3
40	06902	Seal Sleeve	3
41	06903	Seal Case	3
41A	07721	O-Ring	6
42	07636	Grooved Ring	3
43	06827	Guide Ring	3
44	06828	Support Ring	3
44A	06826	Pressure Ring	3
45	06904	Support Ring	3
49	06905	Inner Hexagon Screw	8
49C	13162	Centering Stud	2
50	06906	Valve Casing	1
51	06907	Valve Assembly	3
51A	06832	Valve Seat	1
51B	06831	Valve Plate	1
51C	07732-0100	Valve Spring	1
51D	06830	Spring Tension Cap	1
51E	06829	Gasket	1
51F	12055	O-Ring	1
52	06908	Valve Assembly	3
52A	06833	Valve Seat	1
53	07173	Tension Spring	3
54	06078	Compression Screw	3
56	13316	Plug	3
56A	13317-0100	Inner Hexagon Screw	12
57	07740	O-Ring	3
59	07661	Copper Seal	3
60	06909	Plug 1/4”	1
61	06910	Plug	1
66	13362	Disc for Crankshaft	1
67	13358	Hexagon Screw	1

BP6150 REPAIR KITS

Plunger Packing Kit

 # 09561

Item#	Part #	Description	Qty.
41A	07721	O-Ring	6
43	06827	Guide Ring	3
44	06828	Support Ring	6
44A	06826	Spiral Ring	6

Valve Repair Kit

 # 09562

Item#	Part #	Description	Qty.
51A	06832	Valve Seat	3
51B	06831	Valve Plate	1
51C	07732-0100	Valve Spring	1
51D	06830	Spring Tension Cap	6
51E	06829	Gasket for Valve	1
51F	12055	O-Ring	6
52A	06833	Valve Seat	1
57	07740	O-Ring	3

Oil Seal Kit

 # 09560

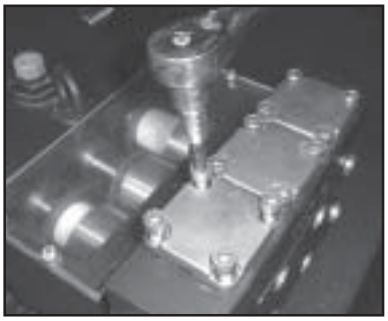
Item#	Part #	Description	Qty.
32	06117	Ring	6
33A	07721	O-Ring	3

BP6150 TORQUE SPECIFICATIONS

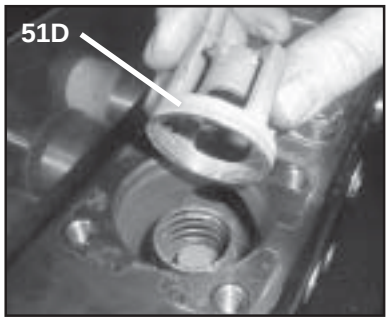
Position	Item#	Description	Torque Amount
49	06905	Inner Hexagon Screw	103 ft.-lbs.
38	06901	Tensioning Screw	30 in.-lbs.

NOTE: Always take time to lubricate all metal and non-metal parts with a light film of oil before reassembling. This step will help ensure proper fit, at the same time protecting the pump non-metal parts (elastomers) from cutting and scoring.

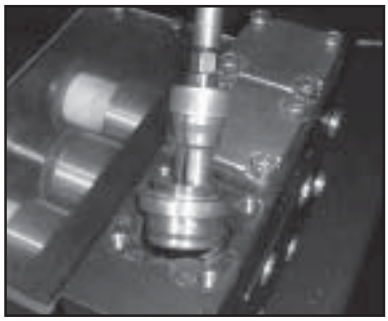
TO CHECK VALVES



1) Loosen and remove tension plugs (48) with a 36mm socket wrench.

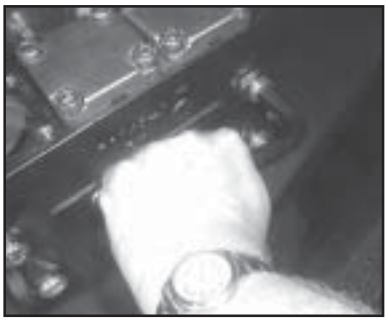


2) Using either a pin spanner or pliers, take out complete discharge valve (52), tension spring (53) and suction valve (51). **Dismantle valves: the spring tension cap (51D) is screwed together with valve seat (51A or**



3) Remove spring (51C) and valve plate (51B). The seal ring (51E) is snapped onto the valve plate. Check sealing surfaces and O-rings (51F/57). Replace worn seals.

TO CHECK SEALS AND PLUNGER PIPE

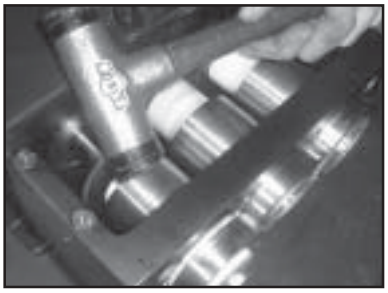


4) Unscrew inner hexagon screws (49).

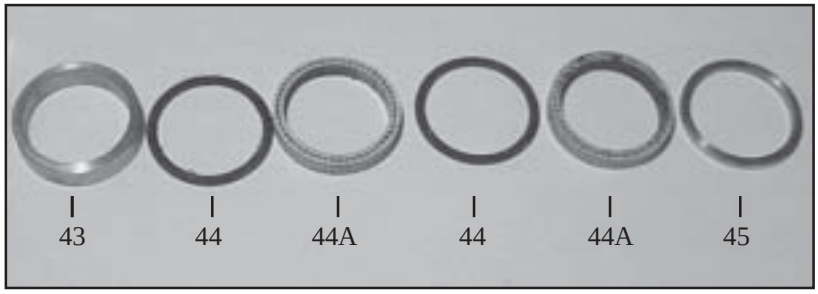
5) With a rubber mallet, tap the back of the pump head. And pull off.

6) Take tension spring (42) out of seal sleeve (40).

TO CHECK SEALS



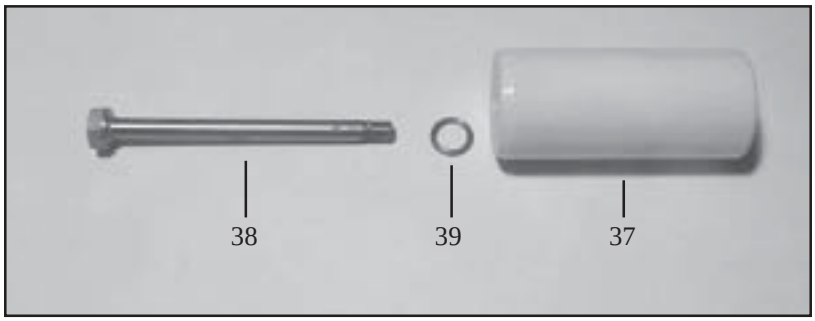
7) Remove seal sleeves (40) from the fittings in the crankcase, by tapping seal sleeve (40) out of the crancase with a rubber mallet



8) Remove seal unit (43, 44, 44A, 45) from seal sleeve. Examine packing rings (44A) and guide ring (43). Remove seal case (41) from valve casing and check O-rings (41A). Replace worn part, apply silicon grease on seals and O-rings before installing.

IMPORTANT: The seal unit (43, 44, 44A, 45) is tensioned by a spring (42). To achieve a long seal life, the unit is tensioned in such a way that a small amount of leakage can occur. This helps to lubricate and cool the seal. A seal change is only then necessary when leakage increases considerably, in turn causing flow and pressure to fall.

TO CHECK PLUNGER PIPE



IMPORTANT: If plunger pipe (37) is worn, tap the tension screw (38) lightly with a plastic hammer beforehand to loosen the glue on the threads of the tension screw. Then screw out tension screw and remove the plunger pipe from centering sleeve (36). Using the tension screw put the new plunger pipe and a new copper ring (39) onto the centering sleeve. Cover the threads of the tension screw lightly with loctite and tighten to 30 ft-lbs.

IMPORTANT: Care must be taken that no glue gets between the plunger pipe (37) and the centering sleeve (36). The plunger pipe should not be strained by eccentric tightening of the tension screw or through damage to front surface of plunger, otherwise it will probably break.

MOUNTING VALVE CASING

9) Check O-rings on seal case (41). Clean mounting surfaces of the seal cases as well as sealing surfaces in valve casing. Put seal cases in the centering holes of the valve casing, then push valve casing carefully onto centering studs (49C) Tighten inner hexagon screw (49) at 103 ft-lbs.

IMPORTANT: Need to check torque on item (49) bi-weekly.

TO DISASSEMBLE GEAR

10) Take out plungers and seal sleeves as described on page 7. Drain oil. After removing the circlip ring (33B), lever out seal retainer (33) with a screwdriver. Check seals (32, 33A) and surface of crossheads.
11) Remove crankcase cover (4). Remove inner hexagon screw of connecting rod (24).

IMPORTANT: Connecting rods are marked for identification. Do not twist con rod halves. Con rods to be reinstalled in the original position on shaft journals.

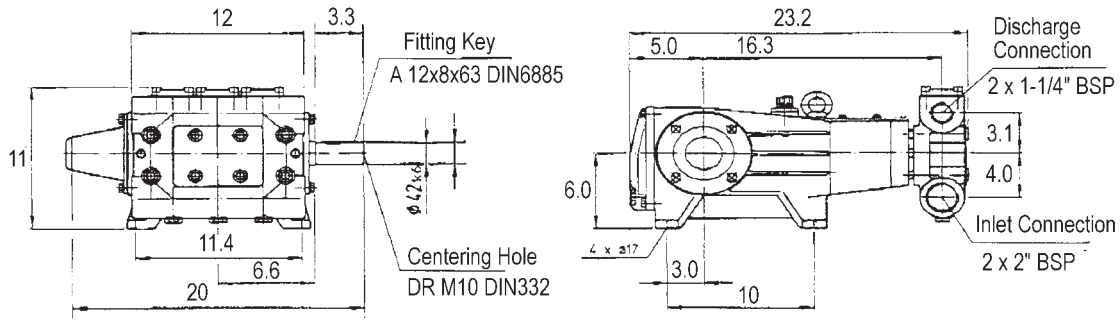
12) Check surfaces of connecting rod (24) and crankshaft (22).
13) Push in conrod halves with crosshead as far as possible into crosshead guide. Unscrew hexagon screws (10) on both sides.
14) Remove bearing cover (14) and press out crankshaft. In doing so, pay careful attention not to bend conrods.

IMPORTANT: Seal (32) must always be installed so that the seal-lip on the inside diameter faces the oil.

15) Reassemble in reverse order. Regulate axial bearing clearance - minimum 0.1mm, maximum 0.15mm - by means of fitting discs (20A). Shaft should turn easily with little clearance. Tighten inner hexagon screws at 29.5 ft-lbs..

IMPORTANT: Connecting rod must be able to be slightly moved sidewise on the stroke journals.

BP6150 DIMENSIONS (inches)



GIANT INDUSTRIES LIMITED WARRANTY

Giant Industries, Inc. pumps and accessories are warranted by the manufacturer to be free from defects in workmanship and material as follows:

1. For portable pressure washers and car wash applications, the discharge manifolds will never fail, period. If they ever fail, we will replace them free of charge. Our other pump parts, used in portable pressure washers and in car wash applications, are warranted for five years from the date of shipment for all pumps used in NON-SALINE, clean water applications.
2. One (1) year from the date of shipment for all other Giant industrial and consumer pumps.
3. Six (6) months from the date of shipment for all rebuilt pumps.
4. Ninety (90) days from the date of shipment for all Giant accessories.

This warranty is limited to repair or replacement of pumps and accessories of which the manufacturer's evaluation shows were defective at the time of shipment by the manufacturer. The following items are NOT covered or will void the warranty:

1. Defects caused by negligence or fault of the buyer or third party.
2. Normal wear and tear to standard wear parts.
3. Use of repair parts other than those manufactured or authorized by Giant.
4. Improper use of the product as a component part.
5. Changes or modifications made by the customer or third party.
6. The operation of pumps and or accessories exceeding the specifications set forth in the Operations Manuals provided by Giant Industries, Inc.

Liability under this warranty is on all non-wear parts and limited to the replacement or repair of those products returned freight prepaid to Giant Industries which are deemed to be defective due to workmanship or failure of material. A Returned Goods Authorization (R.G.A.) number and completed warranty evaluation form is required prior to the return to Giant Industries of all products under warranty consideration. Call (419)-531-4600 or fax (419)-531-6836 to obtain an R.G.A. number.

Repair or replacement of defective products as provided is the sole and exclusive remedy provided hereunder and the MANUFACTURER SHALL NOT BE LIABLE FOR FURTHER LOSS, DAMAGES, OR EXPENSES, INCLUDING INCIDENTAL AND CONSEQUENTIAL DAMAGES DIRECTLY OR INDIRECTLY ARISING FROM THE SALE OR USE OF THIS PRODUCT.

THE LIMITED WARRANTY SET FORTH HEREIN IS IN LIEU OF ALL OTHER WARRANTIES OR REPRESENTATION, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND ALL SUCH WARRANTIES ARE HEREBY DISCLAIMED AND EXCLUDED BY THE MANUFACTURER.

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