

# Model CP420

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Triplex Ceramic  
Plunger Pump  
Operating Instructions/  
Repair and Service  
Manual



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## 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 160° 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.**

**For CO<sub>2</sub> temperatures in excess of 32 °F (0 °C), use Giant Oil (p/n 01153) or its equivalent (SAE 20W-50) . For CO<sub>2</sub> temperatures in less than 32 ° F (0 °C), use SAE 0W-40.**

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.

# Specifications

## Model CP420

	U.S. ....	Metric
Volume .....	6.42 GPM .....	24.2 LPM
Discharge Pressure .....	1740 PSI .....	120 Bar
Inlet Pressure .....	14-500 PSI .....	1-35 Bar
Stroke .....	0.98" .....	24mm
Speed .....		Up to 750 RPM
Plunger Diameter .....	1.02" .....	25mm
Temperature of Pumped Fluids .....	-40 °F to 160 °F .....	-40 °C to 70 °F
Inlet Ports .....		(2) x 1" BSP
Discharge Ports .....		(2) x 3/4" BSP
Shaft Rotation .....		Top of pulley towards fluid end
Crankshaft Diameter .....	1.10" .....	28mm
Key Width .....	0.31" .....	8mm
Shaft Mounting .....	Either side <sup>1</sup>	
Weight .....	36.6 lbs. ....	16.6 KG
Crankcase Capacity .....	30fl.oz. ....	1 liter

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.

**NOTES:**

**In order to drive the pump from the side opposite the present shaft extension, simply remove the valve casing from the crankcase and rotate the pumps 180 degrees to the desired position. Be certain to rotate the seal case (item #20) as well, so that the weep holes are down at the six o'clock position. Exchange the oil fill and the oil drain plugs, also. Refer to the repair instructions as necessary for the proper assembly sequence.**

<b>CP420 HORSEPOWER REQUIREMENTS</b>					
RPM	GPM	500 PSI	1000 PSI	1500 PSI	1740 PSI
350	3.00	1.0	2.1	3.1	3.6
450	3.85	1.3	2.7	4.0	4.6
550	4.71	1.6	3.2	4.9	5.6
650	5.56	1.9	3.8	5.8	6.7
750	6.42	2.2	4.4	6.6	7.7

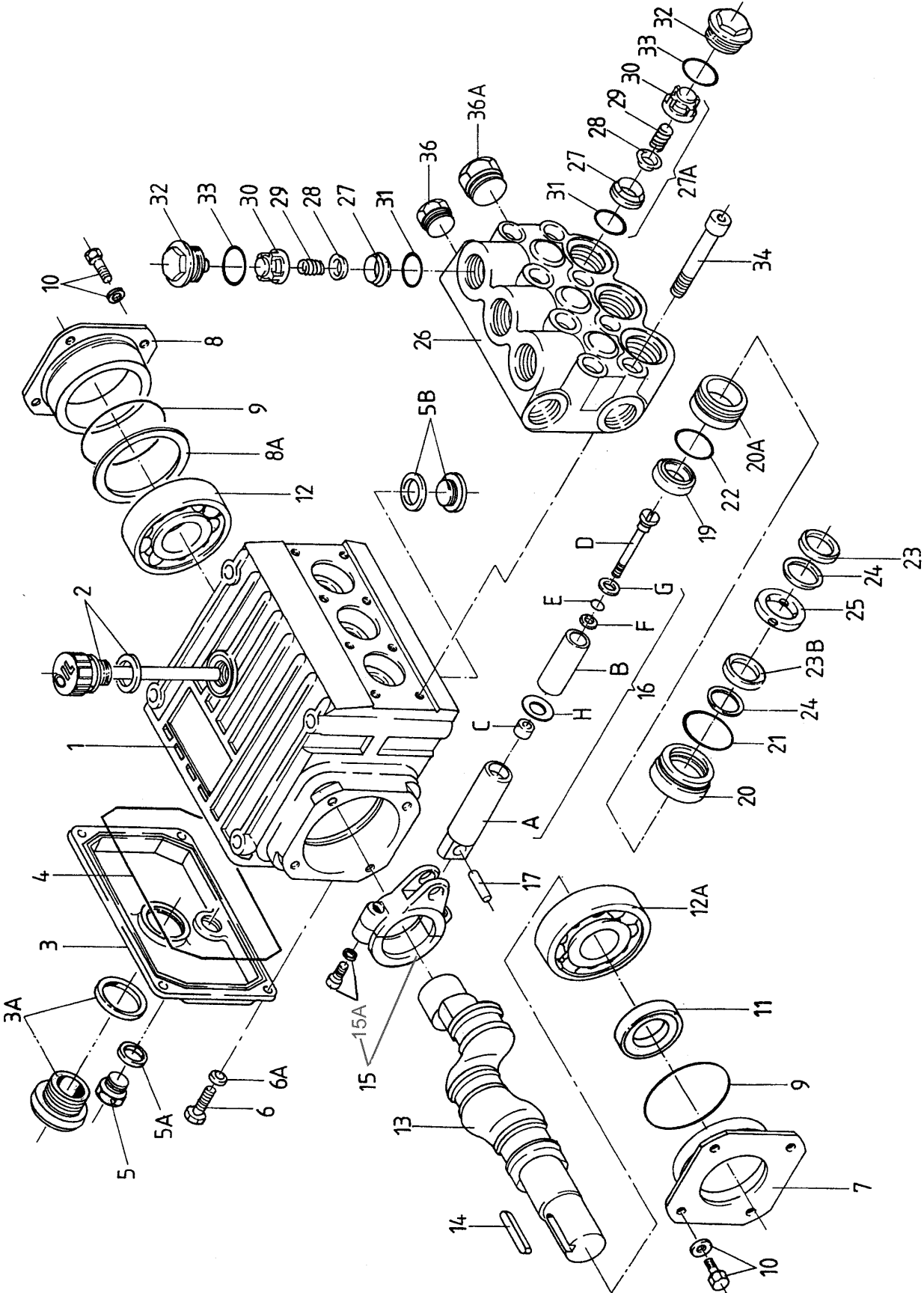
**HORSEPOWER RATINGS:**

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 horse power requirements, use the following formula:

$$HP = (GPM \times PSI) / 1450$$

# Exploded View - CP420 Pump



## CP420 PUMP PARTS LIST

<u>ITEM</u>	<u>PART</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>ITEM</u>	<u>PART</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
1	08377	Crankcase	1	16C	07256	Centering Sleeve	3
2	08378	Oil Fill Plug with Gasket	1	16D	08399	Tension Screw	3
3	06479	Crankcase cover	1	16E	07023	O-Ring	3
3A	07186	Oil Sight Glass w/ Gasket	1	16F	07203	Backup Ring	3
4	08380	O-Ring	1	16G	07258	Copper Washer	3
5	07109	Oil Drain Plug	1	16H	06431	Oil Scraper	3
5A	07182	Gasket for Oil Drain Plug	1	17	06790	Crosshead Pin	3
5B	08092	Plug with Gasket	1	19	08366	Oil Seal	3
6	01010	Screw	4	20	06771	Seal Case	3
6A	01010-0400	Spring Washer	4	20A	06772	Gear Seal Adapter	3
7	08471	Bearing Cover Open	1	21	07266-0003	O-Ring, EPDM	3
8	08472	Bearing Cover Closed	1	22	08059	O-Ring	3
8A	06245	Shim	1	23	06144	Grooved Seal, Brown	3
8B	06330	Shim (May not be present)	1	23B	12255-0020	Grooved Seal, Teflon	3
9	06925	O-Ring	2	24	08376	Pressure Ring	6
10	07114	Screw with Washer	8	25	08394	Weep Return Ring	3
11	07459	Radial Shaft Seal	1	26	06999	Manifold, Brass	1
12	08473	Bearing	1	27	08370	Valve Seat	6
12A	08474	Bearing	1	28	06791-0100	Valve Plate, 316 S.S.	6
13	08475	Crankshaft	1	29	06377-0100	Valve Spring, 316 S.S.	6
14	08091	Fitting Key	1	30	08372	Spring Tension Cap	6
15	08390	Connecting Rod Assembly	3	31	07212-0003	O-Ring, EPDM	6
15A	07311	Screw with Washer	6	32	08373	Plug	6
16	08391	Plunger Assy., 25mm, For items 16A-16G	3	33	07214-0003	O-Ring, EPDM	6
16A	08384	Plunger Base	3	34	08396	Cap Screw	8
16B	08398	Plunger Pipe, 25mm	3	36	07703	Plug, 3/4" BSP	1
				36A	12249	Plug, 1" BSP	1

## CP420 PUMP REPAIR KITS

### Plunger Packing Kit - # 09595

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty</u>
21	07266-0003	O-Ring, EPDM	3
22	08059	O-Ring	3
23	06144	Grooved Seal, Brown	3
23B	12255-0020	Grooved Seal, Teflon	3
24	08376	Pressure Ring	6

### Valve Assembly Kit - # 09596

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
27	08370	Valve Seat	6
28	06791-0100	Valve Plate, 316 S.S.	6
29	06377-0100	Valve Spring, 316 S.S.	6
30	08372	Spring Tension Cap	6
31	07212-0003	O-Ring, EPDM	6
33	07214-0003	O-Ring, EPDM	6

### Oil Seal Kit - # 09306

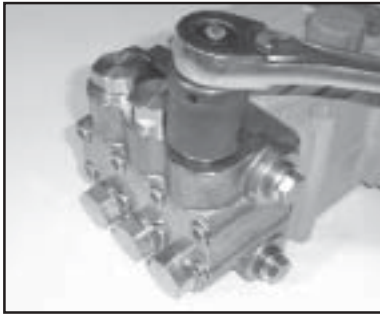
<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty</u>
19	08366	Oil Seal	3

## CP420 PUMP TORQUE SPECIFICATIONS

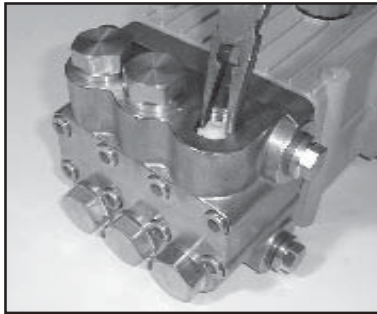
<u>Position</u>	<u>Item#</u>	<u>Description</u>	<u>Torque Amount</u>
15A	07311	Screw with Washer	216 in.-lbs.
16D	08399	Tension Screw	240 in.-lbs.
32	08373	Plug	125 ft.-lbs.
34	08396	Cap Screw	35 ft.-lbs.

## REPAIR INSTRUCTIONS - CP420 PUMP

*Note: Always take time to lubricate all metal and nonmetal parts with a light film of oil before reassembly. This step will ensure proper fit, at the same time protecting the pump nonmetal parts (i.e., the elastomers) from cutting and scoring.*



- 1) With a socket wrench, remove the three discharge valve plugs and three inlet valve plugs (32). Inspect the o-ring (33) for wear and replace if damaged.



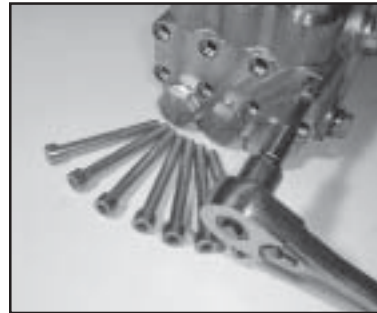
- 2) Using needle nose pliers, remove the inlet and discharge valve assemblies (27-33). Note: It may become necessary to remove the valve seat (27) from the valve casing using a slide hammer.



- 3) By inserting a small screw driver between the valve seat (27) and the valve spring retainer (30), the valve assembly can be separated.



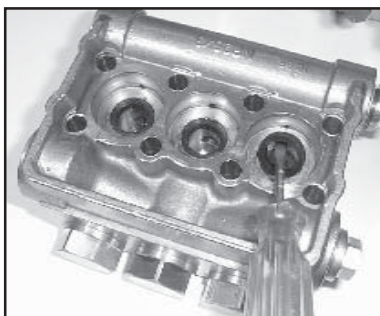
- 4) Remove the o-ring (31). Inspect all parts for wear and replace as necessary. Apply one drop of loctite 243 to the valve plugs (32) and tighten to 125 ft. lbs.



- 5) Use a 8mm allen wrench to remove the 8 socket head cap screws (34). Carefully slide the valve casing (26) out over the plungers.



- 6) Remove seal case (20) and weep return rings (25) from the valve casing.



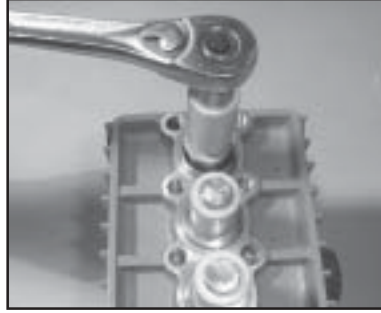
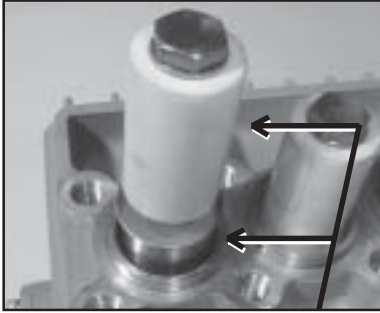
- 7) Remove the pressure rings (24) and grooved seals (23) from the valve casing (26).



- 8) Remove the weep grooved seal (23B) together with pressure ring (24) out of the seal case (20). Check O-rings (21).

**IMPORTANT!** The grooved seal (23) on the high-pressure side is to be fitted carefully into the valve casing (26) using a screwdriver. Under no circumstances must the seal surface in the valve casing or the seal lip be damaged.

## REASSEMBLY INSTRUCTIONS - CP420 PUMP



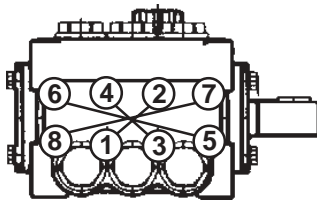
**IMPORTANT!** Care must be taken that glue does not get between the plunger pipe (16B) and centering sleeve (16C). The plunger pipe should not be strained by eccentric tightening of the tension screw or through damage to front surface of plunger, otherwise it is liable to fracture.

- 9) Check surfaces of plunger (16). Damaged surfaces cause accelerated seal wear. Deposits of all kinds must be removed from the plungers.

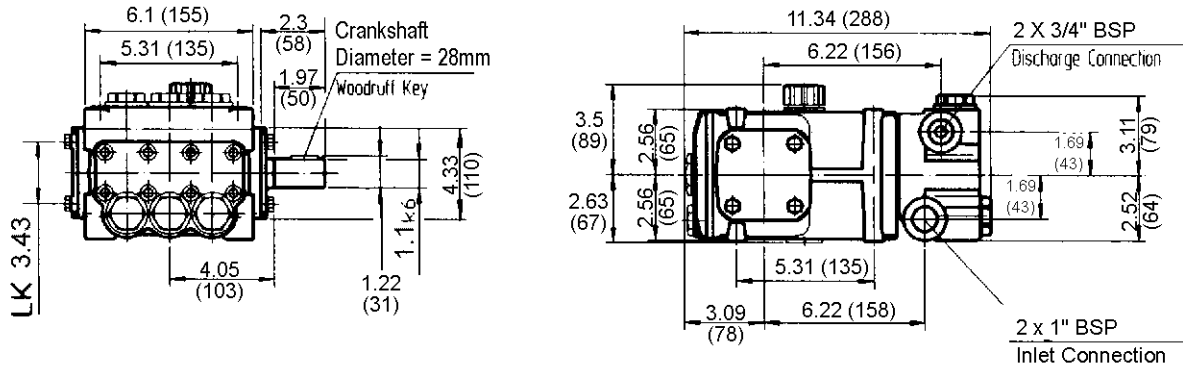
**IMPORTANT!** Plunger surfaces are not to be damaged. If there are lime deposits in the pump, care must be taken that the drip-return bore in parts (25) and (26) ensure trouble-free drip-return.

- 10) If the plunger pipe (16B), or oil seal (19) is worn, remove tension screw (16D) and remove along with plunger pipe (16B). Check and clean plunger surface (16A), check oil scraper (16H). Remove the gear seal adapter (20A) and, if necessary, replace oil seals with seal lips facing crankcase (1). If the gear seal adapter is removed, replace the o-ring (22). Cover thread of tension screw (16D) with a thin film of Loctite and tighten carefully to 26 ft.-lbs. (35NM).

- 11) After installation of the high pressure seals (23), place seal case (20) with weep seals & pressure ring installed, weep return ring (25) and high pressure weep return ring (24) over plungers. Slide valve casing over plungers and seat firmly. Replace the 8 socket head cap screws (34) and tighten to 35 ft.-lbs. in a crossing pattern (as shown below).



## CP400A PUMP DIMENSIONS - INCHES (mm)



### 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 self-service 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.