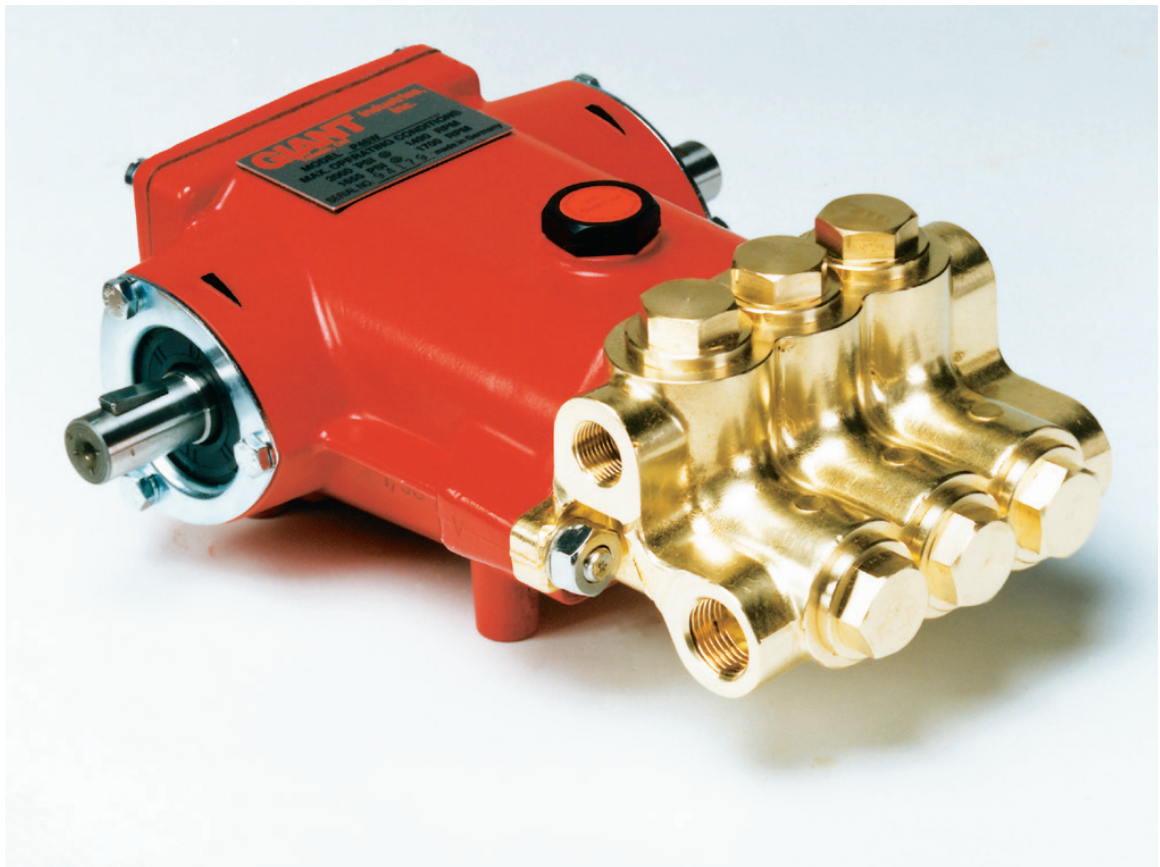


Model P47P

Triplex Ceramic
Plunger Pump
Operating Instructions/
Repair and Service Manual

Pentane Pump



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INSTALLATION INSTRUCTIONS - P47P Pump

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.**

Use Giant synthetic or SAE 90 Gear Oil

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 P47P PUMP

Volume	Up to 1.32 GPM
Discharge Pressure.....	3000 PSI
Inlet Pressure.....	-4.35 to 145 PSI
Maximum Crankshaft Rotation Speed.....	Up to 1420 RPM
Stroke.....	12.4mm
Crankcase Oil Capacity	8 fl. oz.
Temperature of Pumped Fluids.....	Up to 160°F
Plunger Diameter	12mm
Inlet Ports	(2) 1/2" BSP
Discharge Ports	(2) 3/8" BSP
Pulley Mounting.....	Either Side
Shaft Rotation	Top of pulley towards Head
Weight	16 lbs.
Crankshaft Diameter	18mm
Volumetric Efficiency @ 1420.....	0.96
Mechanical Efficiency @ 1420.....	0.80

¹Discharge Pressure is measured with water when inlet pressure is 29 PSI

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.

PULLEY INFORMATION

Pulley selection and pump speed are based on a 1725 RPM motor and "B" section belts. When selecting desired GPM, allow for a ±5% tolerance on pumps output due to variations in pulleys, belts and motors among manufacturers.

1. Select GPM required, then select appropriate motor and pump pulley from the same line.
2. The desired pressure is achieved by selecting the correct nozzle size that corresponds with the pump GPM.

HORSEPOWER INFORMATION

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

We recommend that a 1.1 service factor be specified when selecting an electric motor as the power source. To compute specific pump horsepower requirements, use the following formula:

$$(\text{GPH} \times \text{PSI}) / 1450 = \text{HP}$$

P47P PULLEY SELECTION & HORSEPOWER REQUIREMENTS						
PUMP PULLEY	RPM	GPM	1500 PSI	2000 PSI	2500 PSI	3000 PSI
7.75"	900	0.84	0.9	1.2	1.4	1.7
7.75"	1000	0.93	1.0	1.3	1.6	1.9
7.75"	1100	1.02	1.1	1.4	1.8	2.1
7.75"	1200	1.12	1.2	1.5	1.9	2.3
7.75"	1300	1.20	1.2	1.7	2.1	2.5
7.75"	1420	1.32	1.4	1.8	2.3	2.7

P47P 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	06837	Crankcase	1	35	06017-0100	Valve Spring	6
2	07181	Vent/Filler Plug with Seal	1	36	06016	Valve Plate	6
3	08004	Cover, Crankcase	1	37	06014	Valve Seat	6
4	08005	O-Ring	1	38	06015-0001	O-Ring, Viton	6
5	08008	Oil Dipstick	1	39	07233	Suction Valve Adaptor	3
6	01009	O-Ring	1	40	06840	O-Ring, Viton	3
9	07188	Cylinder Screw with Slot	4	41	06841	Plug	3
10	07223-0100	Spring Washer	4	42	06842	O-Ring, Manifold Plug (Inlet)	3
11	08012	Oil Drain Plug	1			Viton	3
11A	06709	Gasket, Oil Drain Plug	1	43	06843	Plug	3
12	07224	Bearing Cover	2	44	07035-0001	O-Ring for 43, Viton	3
14	08015	Radial Shaft Seal	2	45	06844	Stud, Manifold	2
15	08020	Ball Bearing	2	46	08040	Hex Nut, Manifold Stud	2
16	07225	Screw and Washer	6	47	08041	Spring Washer, Stud	2
17	07226	Shaft Protector	1	48	07212-0001	O-Ring, Viton	3
18	08050	Crankshaft	1	49	06845	Intermediate Casing	1
19	01024	Key	1	50	07238-0001	Form O-Ring, Viton	1
20	08024	Connecting Rod	3	51	06846	Seal Adaptor	3
22	07396	Crosshead Assy.	3	52	06847	Grooved Seal, Viton	3
23	01031	Crosshead Pin	3	53	06717	Grooved Seal, Viton	6
25	13403	Flinger	3	54	06848	Sleeve	3
26	08026	Radial Shaft Seal	3	55	06849	Support Ring	3
28	06838	Shim, Manifold Stud	2	56	06850	O-Ring, Viton	3
29	06839	Manifold	1	57	06851	Support Washer	3
33	07232	Pressure Spring	3	58	06852	Plug, 3/8" BSP	1
34	07325	Retainer, Spring	6	59	06853	Plug, 1/2" BSP	1

P47P REPAIR KITS

Plunger Packing Kit 09563

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
40	06840	O-Ring, Viton	3
42	06842	O-Ring, Viton	3
48	07212-0001	O-Ring, Viton	3
50	07238-0001	Form O-Ring, Viton	1
52	06847	Grooved Seal, Teflon	3
53	06717	Grooved Seal, Teflon	6
55	06849	Support Ring	3
56	06850	O-Ring	3

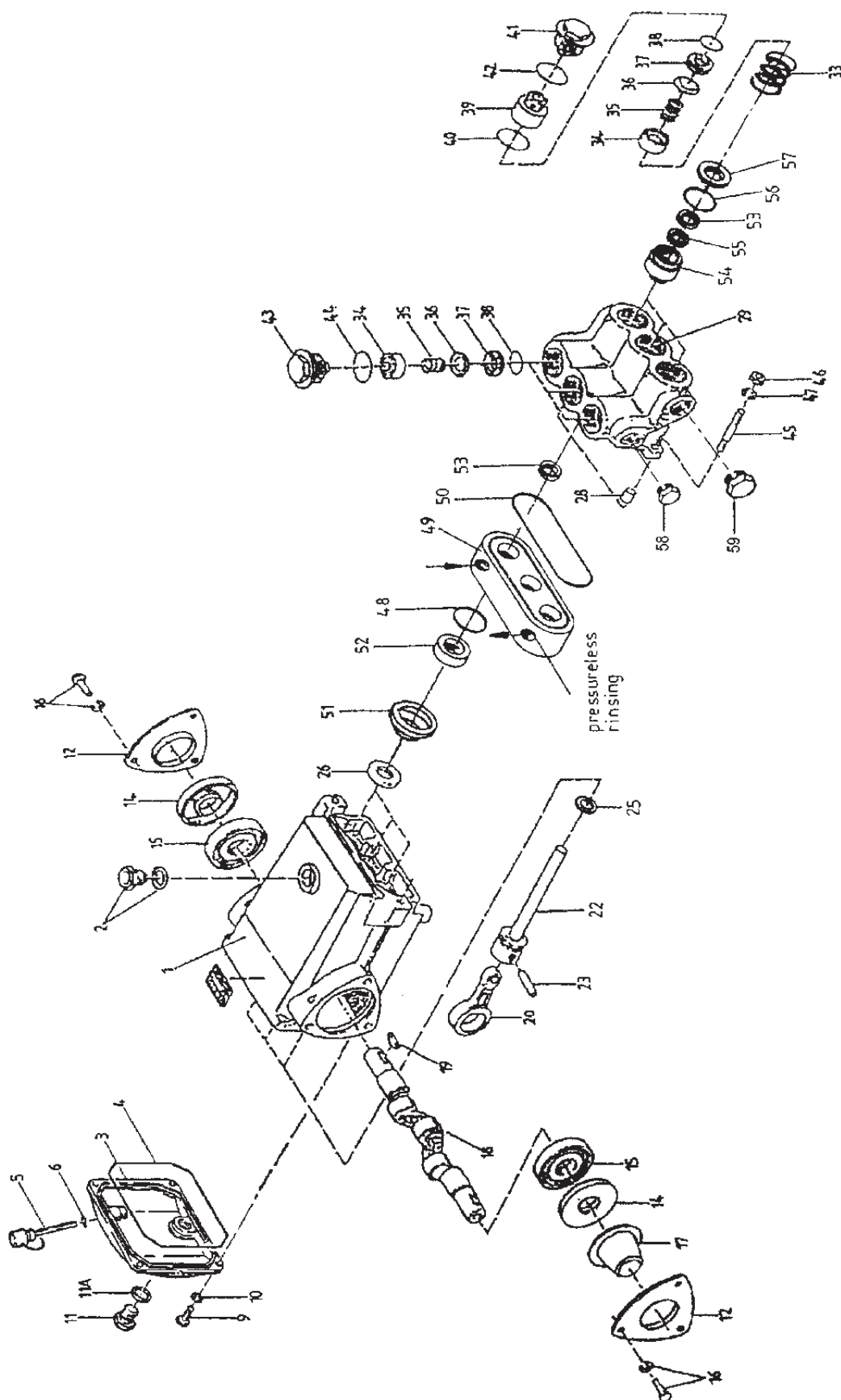
Valve Assembly Kit 09564

<u>Item</u>	<u>Part #</u>	<u>Description</u>	<u>Qty.</u>
34	07325	Spring Tension Cap	6
35	06017-0100	Valve Spring	6
36	06016	Valve Plate	6
37	06014	Valve Seat	6
38	06015-0001	O-Ring, Viton	6

P47P Pump Mounting Selection Guide

Bushings 01065 - 18 mm Tapered H Bushing	Rails 01034 - Steel Box Rails (L=9.25" x W=1.18" x H=1.62") 01075 - Plated Steel Channel Rails (L=9.00" x W=2.12" x H=2.50")
Pulley & Sheaves 01061 - 7.75" Cast Iron 1 gr. - AB Section 01062 - 7.75" Cast Iron - 2 gr. - AB Section 01066 - 18 mm - 8" Steel Pulley - 1 gr.	

Exploded View - P47, P47P



PUMP SYSTEM MALFUNCTION

MALFUNCTION	CAUSE	REMEDY
The Pressure and/or the Delivery Drops	Worn packing seals Broken valve spring Belt slippage Worn or Damaged nozzle Fouled discharge valve Fouled inlet strainer Worn or Damaged hose Worn or Plugged relief valve on pump Cavitation pump for restrictions Unloader	Replace packing seals Replace spring Tighten or Replace belt Replace nozzle Clean valve assembly Clean strainer Repair/Replace hose Clean, Reset, and Replace worn parts Check suction lines on inlet of Check for proper operation
Water in crankcase	High humidity Worn seals	Reduce oil change interval Replace seals
Noisy Operation	Worn bearings oil with Cavitation	Replace bearings, Refill crankcase recommended lubricant Check inlet lines for restrictions and/or proper sizing
Rough/Pulsating Operation with Pressure Drop	Worn packing Inlet restriction Accumulator pressure Unloader Cavitation	Replace packing Check system for stoppage, air leaks, correctly sized inlet plumbing to pump Recharge/Replace accumulator Check for proper operation Check inlet lines for restrictions and/or proper size
Pump Pressure as Rated, Pressure Drop at gun	Restricted discharge plumbing	Re-size discharge plumbing to flow rate of pump
Excessive Leakage	Worn plungers Worn packing/seals Excessive vacuum Cracked plungers Inlet pressure too high	Replace plungers Adjust or Replace packing seals Reduce suction vacuum Replace plungers Reduce inlet pressure
High Crankcase Temperature	Wrong Grade of oil Improper amount of oil in crankcase	Giant oil is recommended Adjust oil level to proper amount

Preventative Maintenance Check-List & Recommended Spare Parts List

Check	Daily	Weekly	50hrs	Every 500 hrs	Every 1500 hrs	Every 3000 hrs
Oil Level/Quality	X					
Oil Leaks	X					
Water Leaks	X					
Belts, Pulley		X				
Plumbing		X				
Recommended Spare Parts						
Oil Change (1 Gallon) p/n 1154			X	X		
Plunger Packing Kits (1 kit/pump) (See page 5 for kit list)					X	
Valve Assembly Kit (1 kit/pump) (See page 5 for kit list)					X	

REPAIR INSTRUCTIONS - P47, P47P

To Check Plunger and Gear

1. If oil leaks from the outlet of the plunger (22), the radial shaft seal (26) together with the worn plunger and its crosshead must be replaced. Remove oil drain plug (11), drain oil.
2. Remove crankcase cover (3), valve casing (29) and intermediate casing (49).
3. To dismantle the crankshaft (18), remove bearing cover (12) and shaft protector (17) on the same side, then while turning slightly, tap out the crankshaft using a rubber hammer - or press it out. Do not force the crankshaft roughly when pulling through the connecting rods. Do not bend the connecting rods. Replace worn plunger and crosshead. When reassembling, thread the crankshaft through the connecting rods firstly and then mount the radial shaft seal and bearing cover.

To Check Seals

4. Unscrew nuts (46) and remove valve casing (29) from crankcase (1) by pulling it away from the plungers (22). Remove plugs (41) and take out inlet valve with inlet valve adaptor (39) and pressure spring (33).
5. Remove support ring (57), O-ring (56) and sleeve (54) from valve casing (29). Take out grooved seal (53) and support ring (55) from sleeve (54). Check grooved seal (53) and O-ring (56) and replace as necessary.
6. Check plunger pipe surfaces.
7. Grease new seals before fitting.
8. Tighten plugs (41) to 51.58 ft. lbs.
9. To secure valve casing, tighten nuts (46) evenly to 35 ft.-lbs..

Weep Return / Rinsing

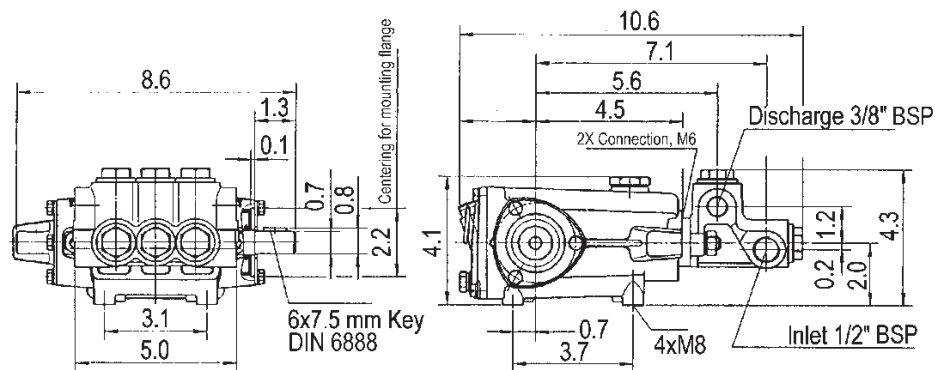
10. After removing the valve casing (29) and the intermediate casing (49), the grooved seal (52) in the seal adaptor (51), the grooved seal (53) in the intermediate casing (49) and the O-rings (48, 50) can be taken out and examined.

To Check Valves

11. Remove plugs (41, 43) using a socket wrench. Remove and check the pressure/suction valve (in suction valve retainer 39). Note sequence of installation.
12. Tighten plugs (41, 43) to 51.6 ft.-lbs.

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

P47P DIMENSIONS



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. Five (5) years from the date of shipment for all pumps used in portable pressure washers with NON-SALINE, clean water applications.
2. Two (2) years from the date of shipment for Giant pumps used in car wash applications.
3. One (1) year from the date of shipment for all other Giant industrial and consumer pumps.
4. Six (6) months from the date of shipment for all rebuilt pumps
5. 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.



WARNING: This product might contain a chemical known to the State of California to cause cancer, and birth defects or other reproductive harm.
For more information go to www.P65Warnings.ca.gov



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