Models P46W, P46W-HK, P46HT, P49W, P49W-HK & P49HT

Triplex Ceramic Plunger Pump Operating Instructions/ Repair and Service Manual





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Updated 06/23

INSTALLATION INSTRUCTIONS -P46W, P46W-HK, P46HT, P49W, P49W-HK & P49HT

Operation and Maintenance

Check oil level prior to starting and ensure trouble-free water supply.

Important! If there is a danger of frost,

the water in the pump and in the pump fittings (particularly the unloader valve) must be emptied. The pump can be run "dry" for 1-2 minutes for this purpose.

Oil: Use only 8.8 ounces (0.26 litres) of Giant Oil (p/n 01154) or ISO VG 220 GL4 (e.g. Aral Degol BG220) or SAE 90 GL4 gear oil.

Initial change after 50 operating hours and then every 500 operating hours, after 6 months operation in any case.

Caution! When operating in damp places or with high temperature fluctuations. Should condensate (frothy oil) occur in the gear box, oil must be changed immediately.

Keep NPSH under control.

Max. input pressure 145 PSI (10 bar), maximum suction head -4.35 PSI (-0.3 bar).

▲ Safety Rules

Pump operation without safety valve as well as any excess in temperature or speed limits automatically voids the warranty. The safety valve must be regulated in accordance with the guidelines for liquid spraying units so that the admissible operating pressure can not be exceeded by more than 10%.

When the pump is in operation, the open shaft end must be covered up by shaft protector (17), the driven shaft side and coupling by a contact protector.

Pressure in discharge line and in pump must be at zero before any maintenance to the pump takes place. Close suction line. Disconnect fuses to ensure that the driving motor does not accidently switch on. Make sure that all parts on the pressure side of the unit are vented and refilled, with pressure at zero, before starting the pump. In order to prevent air, or an air/water-mixture being absorbed and to prevent cavitation occurring, the pump-NPSHR, positive suction head and water temperature must be kept under control.

Cavitation and/or compression of gases lead to uncontrollable pressurekicks which can ruin pump and unit parts and also be dangerous to the operator or anyone standing nearby.

Giant Plunger Pumps are suitable for pumping clean water and other nonagressive or abrasive media with a specific weight similar to water.

Before pumping other liquids, such as inflammable, explosive and toxic media, the pump manufacturer must under all circumstances be consulted with regard to the resistance of the pump material. It is the responsibility of the equipment manufacturer and/ or operator to ensure that all pertinent safety regulations are adhered to.

Additional Instructions for P46HT (high temperature) pumps

Please read operating instructons carefully before putting the pump into operation!

Important! Do **not** use grease when renewing the high pressure plunger seals (pos. 31/50).

Hot water causes grease to wash off the seal which in turn can jam valves! The new seals should only be oiled lightly before installation.

Specifications Model P46W/P46W-HK

	<u>U.S.</u>	<u>Metric</u>
Maximum Flow	. 3.9 GPM	14.7 L/min
Discharge Pressure	. 2200 PSI	150 bar
Inlet Pressure	4.35 to 145 PSI	-0.3 to 10 bar
Power Consumption	.6.0 BHP	4.5 kW
Maximum Crankshaft Rotation Speed		1420 RPM
Stroke	. 0.56"	14.1mm
Crankcase Oil Capacity	. 8.8 fl.oz	0.26 Liters
Temperature of Pumped Fluids (P46W)	. Up to 160 °F	70 °C
Temperature of Pumped Fluids (P46-HK)	. Up to 195 °F	90 °C
Plunger Diameter	. 0.71"	18mm
Inlet Ports		(2) 1/2" BSP
Discharge Ports		(2) 3/8" BSP
Pulley Mounting		Either Side
Shaft Rotation	. Top of pulley towards he	ad
Weight	. 13.9 lbs	6.3 kg
Crankshaft Diameter	. 0.71"	18mm
Volumetric Efficiency @ 1420RPM		0.96
Mechanical Efficiency @ 1420RPM		0.80
NPSHR (P46W)	. 17.4 Ft. head	5.3 mWs

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 \pm 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

The ratings shown in the chart reflect the horsepower requirements for electric motors. We recommend motors with a 1.15 service factor be specified.

To compute specific pump horsepower requirements, use the following formula:

P46W / P46W-HK Horsepower Requirements						
RPM	GPM	1000 PSI	1500 PSI	1700 PSI	2200 PSI	
745	2.0	1.4	2.1	2.3	3.0	
910	2.5	1.7	2.6	2.9	3.8	
1140	3.1	2.1	3.2	3.6	4.7	
1305	3.6	2.5	3.7	4.2	5.5	
1420	3.9	2.7	4.0	4.5	5.9	

Model P46HT Specifications

<u>U.S.</u>	<u>Metric</u>
.2.5 GPM	.9.3 L/M
.870 PSI	.60 bar
4.35 to 145 PSI	0.3 to 10 bar
	.900 RPM
.0.94 BHP	.0.7 kW
. 0.56"	.14.1mm
.0.71"	.18mm
.8.8 fl. oz	.0.26 Liters
. Up to 221°F	.105° C
•	.(2) 1/2" BSP
	.(2) 3/8" BSP
	.Èither Side
Тор о	f pulley towards head
. 13.9 lbs	.6.3kg
.0.71"	.18mm
. 14.8 fthead	.4.5 mWs
	U.S. 2.5 GPM. 870 PSI -4.35 to 145 PSI 0.94 BHP. 0.56" 0.71" 8.8 fl. oz. Up to 221°F



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

HORSEPOWER 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.

The desired pressure is achieved by selecting the 2. correct nozzle size that corresponds with the pump GPM.

The ratings shown in the chart reflect the horsepower requirements for electric motors. We recommend motors with a 1.15 service factor be specified.

To compute specific pump horsepower requirements, use the following formula:

P46HT Horsepower Requirements							
RPM	GPM	GPH	200 PSI	400 PSI	600 PSI	870 PSI	
385	1.05	62.9	0.14	0.29	0.43	0.63	
676	1.8	110.6	0.25	0.50	0.74	1.08	
900	2.5	147.3	0.34	0.69	1.03	1.50	

Specifications Model P49W/P49W-HK

	<u>U.S.</u>	<u>Metric</u>
Maximum Flow	. 2.7 GPM	10.2 L/M
Discharge Pressure	. 2200 PSI	150 bar
Inlet Pressure	4.35 to 145 PSI	-0.3 to 10 bar
Maximum Crankshaft Rotation Speed		1420 RPM
Stroke	. 0.41"	.10.0 mm
Crankcase Oil Capacity	. 8.8 fl.oz	0.26 Liters
Temperature of Pumped Fluids (P49W)	. Up to 160 °F	.70 °C
Temperature of Pumped Fluids (P49W-HK)	. Up to 195 °F	.90 °C
Plunger Diameter	. 0.71"	.18mm
Inlet Ports		.(2) 1/2" BSP
Discharge Ports		.(2) 3/8" BSP
Pulley Mounting		Either Side
Shaft Rotation	Top of pull	ey towards head
Weight	. 13.9 lbs	.6.3 kg
Crankshaft Diameter	. 0.71"	.18mm
Volumetric Efficiency @ 1420RPM		.0.96
Mechanical Efficiency @ 1420RPM		.0.80
NPSHR	. 19.0 fthead	5.8 mWs

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 \pm 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

The ratings shown in the chart reflect the horsepower requirements for electric motors. We recommend motors with a 1.15 service factor be specified.

To compute specific pump horsepower requirements, use the following formula:

P49W/P49W-HK Horsepower Requirements						
RPM	GPM	1000 PSI	1500 PSI	1700 PSI	2200 PSI	
745	1.4	0.97	1.5	1.6	2.1	
910	1.7	1.2	1.8	2.0	2.6	
1140	2.2	1.5	2.3	2.6	3.3	
1305	2.5	1.7	2.6	2.9	3.8	
1420	2.7	1.9	2.8	3.2	4.1	

Exploded View and Parts List -P46W, P46W-HK, P46HT, P49W, P49W-HK & P49HT

	11 11 11 11 11 11 10 10 10 10				16 16 16 16 16 16 16 10 10 10 10 10 10 10 10 10 10	43 44 34 35 40 39 42 37 38 34 35 36 37 42 36 37 36 37 42 37 38 34 35 36 37 42 42 36 37 42 42 42 42 42 42 42 42 42 42	41 38 3 K/ Only
ITEM 1 2	PART 07222 07181	DESCRIPTION Crankcase Vent/Filler Plug with Sea	QTY. 1 al 1	<u>ITEM</u> 30 31	PART 07230 07241	DESCRIPTION Pressure Ring V-Sleeve (P46W/P49W)	QTY. 3 3
3 4	08004 08005	Cover, Crankcase O-Ring	1 1	31	11511	V-Sleeve, High Temp. (P46W-HK/P46HT/P49W-HK/P49HT)	3
5 6 0	08008 01009 07188	OII Dipstick Assembly O-Ring Cylinder Scrow with Slot	1 1 + 1	32 33 34	07231 07232 07325	Support Ring Pressure Spring Petainer, Spring	3
9 10 11	07223-0100	Spring Washer	4	34	05593	(P46W, P46W-HK, P49W-HK) Retainer Spring	0
11A 12	06709	Gasket, Oil Drain Plug Bearing Cover	1	35	06017-0100	(P46HT/P49HT) Valve Spring	6 6
14 15	08015	Radial Shaft Seal	22	36 37	06016 06014	Valve Plate Valve Seat	6 6
16	07225	Screw and Washer	6	38	06015	O-Ring Sustion Valvo Adaptor	6
18	07227	Crankshaft (P46)	1	40	07234	O-Ring, Adapter	3
18 19	04293 03385	Crankshaft (P49) Fitting Key	1 1	41 42	07235 12004	Plug, Manifold (Inlet) O-Ring, for Item 41	3 3
20	08024	Connecting Rod	3	43 44	07792 07035	Plug, Manifold (Discharge)	3
23	01031	Crosshead Pin	3	45	07215	Stud, Manifold	2
24A 24B	07021 08456	Plunger Pipe Tension Screw	3 3	46 47	08040 08041	Spring Washer, Stud	2
24C 25	07676 06648	Copper Ring Flinger	3 3	48 49	07237 07238	Housing, Rear V-Sleeve O-Ring, Rear V-Sleeve	1
26	07206	Radial Shaft Seal	3	50	07230	Housing Rear V Sleeve	1
28	07207	Shim, Manifold Stud	2	50	11510	(P46W/P49W)	3
29 29A	11502	Stud Bolt	1	50	07040	(P46W-HK/P46HT/P49W-HK/P49HT)	6
		(P46H1/P49H1 only)	2	51	07240	Support King	3

P46W, P46W-HK, P46HT, P49W, P49W-HK & P49HT REPAIR KITS

Complete Plunger Packing Kit P46W & P49W #09081				Valve Assembly Kit P46W, P46W-HK, P49W & P46W-HK #09039			
<u>Item</u>	<u>Part #</u>	Description	<u>Qty.</u>	Item	Part #	<u>Description</u>	<u>Qty</u>
31	07241	V-Sleeve	3	34	07325	Spring Retainer	6
40	07234	O-Ring	3	35	06017-0100	Valve Spring	6
50	07239	Rear V-Sleeve	3	36	06016	Valve Plate	6
51	07240	Support Ring	3	37	06014	Valve Seat	6
				38	06015	O-Ring, Valve Seat	6
				40	07234	O-Ring, Adapter	3
Plunger	Packing Ki	t		42	12004	O-Ring, Inlet Plug	3
P46W-H	K, P46HT, P	49W-HK & P49HT		44	07035	O-Ring, Discharge Plug	3
#09514							
<u>Item</u>	<u>Part #</u>	Description	<u>Qty.</u>	Valv	e Assembly H	Kit, P46HT & P49HT	
31	11511	Sleeve	3	#094	197		
40	07234	O-Ring, Adapter	3	Item	<u>Part #</u>	Description	Qty.
42	12004	O-Ring, Plug	3	34	05593	Spring Retainer	6
49	07238	O-Ring, Rear V-Sleeve	1	35	06017-0100	Valve Spring	6
50	44 = 40		•	00	00017-0100	valve opring	-
	11512	High Temp. Rear Seal	6	36	06016	Valve Plate	6
51	11512 07240	High Temp. Rear Seal Support Ring	6 3	36 37	06016 06014	Valve Plate Valve Seat	6 6
51	11512 07240	High Temp. Rear Seal Support Ring	6 3	36 37 38	06016 06014 06015	Valve Plate Valve Seat O-Ring	6 6 6
51	11512 07240	High Temp. Rear Seal Support Ring	6 3	36 37 38 40	06016 06014 06015 07234	Valve Plate Valve Seat O-Ring O-Ring, Adaptor	6 6 6 3
51 Oil Seal	11512 07240 Kit	High Temp. Rear Seal Support Ring	6 3	36 37 38 40 42	06016 06014 06015 07234 12004	Valve Plate Valve Seat O-Ring O-Ring, Adaptor O-Ring, Inlet Plug	6 6 6 3 3
51 Oil Seal #09202	11512 07240 Kit	High Temp. Rear Seal Support Ring	6 3	36 37 38 40 42 44	06016 06014 06015 07234 12004 07035	Valve Plate Valve Seat O-Ring O-Ring, Adaptor O-Ring, Inlet Plug O-Ring, Discharge Plug	6 6 6 3 3 3
51 Oil Seal #09202 Item	11512 07240 Kit	High Temp. Rear Seal Support Ring <u>Description</u>	6 3 <u>Qty.</u>	36 37 38 40 42 44	06016 06014 06015 07234 12004 07035	Valve Plate Valve Seat O-Ring O-Ring, Adaptor O-Ring, Inlet Plug O-Ring, Discharge Plug	6 6 3 3 3

P46W, P46W-HK, P46HT, P49W, P49W-HK & P49HT TORQUE SPECIFICATIONS

Position	Item#	Description	Lubrication Info	Torque Amount
9	07188	Cylinder Screw with Slot		88 inlbs. (10 Nm)
11	08012	Oil Drain Plug with Seal		132 inlbs. (15 Nm)
16	07225	Screw and Washer		88 inlbs. (10 Nm)
24B	08456	Tension Screw, Plunger	Loctite 243	200 inlbs. (22.5 Nm)
24C	07676	Copper Ring	Loctite 243	
41	07235	Plug, Manifold (Inlet)		51 ftlbs. (70 Nm)
43	07034	Plug, Manifold (Outlet)	Loctite 243	51 ftlbs. (70 Nm)
46	08040	Hexagon Nut, Manifold Stud		35 ftlbs. (47.5 Nm)

Pump Mounting Selection Guide

Bushings 01065 - 18 mm Tapered H Bushing	Rails 01034 - Steel Box Rails (1 = 9.25" x W=1.18" x H=1.62")
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.	(L=9.25 ° X W=1.16 ° X H=1.62) 01075 - Plated Steel Channel Rails (L=9.00" x W=2.12" x H=2.50")

Model P49HT Specifications

	<u>U.S.</u>	<u>Metric</u>
Maximum Flow	.1.7 GPM	6.5 L/M
Discharge Pressure	.870 PSI	60 bar
Inlet Pressure	4.35 to 145 PSI	0.3 to 10 bar
Maximum Crankshaft Rotation Speed		900 RPM
Power Consumption	.0.94 BHP	0.7 kW
Stroke	.0.39"	10 mm
Plunger Diameter	.0.71"	18 mm
Crankcase Capacity	.8.8 fl. oz	0.26 Liters
Temperature	. Up to 221°F	105° C
Inlet Ports		(2) 1/2" BSP
Discharge Ports		(2) 3/8" BSP
Pulley Mounting		.Either Side
Shaft Rotation	Тор о	f pulley towards head
Weight	.13.9 lbs.	6.3kg
Crankshaft Diameter	.0.71"	18mm
NPSHR	.14.8 fthead	4.5 mWs

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 \pm 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

The ratings shown in the chart reflect the horsepower requirements for electric motors. We recommend motors with a 1.15 service factor be specified.

To compute specific pump horsepower requirements, use the following formula:

P49HT Horsepower Requirements						
RPM	GPM	GPH	200 PSI	400 PSI	600 PSI	870 PSI
385	0.73	43.8	0.10	0.20	0.30	0.44
676	1.3	78.0	0.18	0.36	0.54	0.78
900	1.7	102.0	0.24	0.47	0.70	1.02

REPAIR INSTRUCTIONS - P46W, P46W-HK, P46HT, P49W, P49W-HK & P49HT



 With a 22mm socket, remove the three discharge (43) and three inlet (41) manifold plugs. Check o-rings (42 & 44) for wear and replace as necessary.



2. Remove the discharge spring retainer (34), valve spring (35), and valve plate (36).



 Use a small slide hammer to remove valve seats (37) from manifold (29). Inspect valve plates (36) and valve seats (37) for wear. If excessive pitting is seen, replace the worn parts. Check valve seat o-ring (38) for wear and replace as necessary.



4. Drain the oil from the pump. Turn the pump over to remove the two manifold stud nuts (46) with a 17mm wrench.



5. Tap the back of the manifold (29) with a rubber mallet to dislodge, and slide off the pump.



6. From the front inlet valve ports, remove the inlet valve assembly (34-40).



 Inspect and clean the valve assembly parts. If pitted or worn, replace inlet valve seats (37), valve plates (36), spring (35) and spring retainers (34). Reinsert items 34-38 into valve adapter (39).

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

REPAIR INSTRUCTIONS - P46W, P46W-HK, P46HT, P49W, P49W-HK & P49HT



8. The pressure rings (item 30) can now be removed by pulling straight out. Inspect and clean manifold (29) and pressure ring. Replace if necessary. From the front of the pump reinstall pressure rings into manifold (29) with grooved side towards front of manifold. Install new v-sleeves (31), with grooved sides towards front of pump. For P46W-HK, P46HT & P49W-HK pumps, install high temperature seal (50) before v-sleeve (31) with grooved sides towards front of pump. Replace the support rings (32) and pressure springs (33) into manifold (29). Install valve assembly (34-40) into manifold (29). Reinstall manifold plugs (43) and torque plugs to 51 ft.-lbs. (70 Nm).



9. The rear V-sleeve housing (48) may be removed by prying evenly outward with a flat screwdriver. After slipping housing over plunger, inspect rear v-sleeves (50), support rings (51) and O-ring (49) and replace as necessary.



10.Inspect ceramic plunger (24A) tips for wear. If necessarv. replacement of the ceramic plungers may be accomplished by removing the plunger bolt assemblies (24B and 24C) with a 13mm wrench. Ceramic plungers should now slide off the stainless steel plunger base (22). Excessive resistance to plunger removal may be overcome by heating the stainless steel plunger base. This will melt any excess loc-tite beneath the ceramic plunger allowing easy removal.



- 11.Replace copper ring (24C) onto plunger bolt (24B). Slide plunger bolt assembly into ceramic plunger (24A). Apply a light film of loc-tite to plunger bolt threads and place plunger assembly onto stainless steel plunger base (22) and tighten to 200 in.-lbs. (22.5 Nm).
- 12. To replace plunger oil seals (26), proceed to "Gear End Disassembly" section below. Otherwise, continue as described below.



13.Before replacing pump manifold (29), first rotate crankshaft (18) until two outside plungers (24A) extend evenly forward. Next lubricate rear v-sleeves (50) and support ring (51) in the rear v-sleeve housing (48) and slide housing over plungers. Lubricate ceramic plungers with a light film of oil. Carefully and evenly slide manifold over plungers and press manifold firmly against crankcase (1). Replace manifold stud bolts (45), washers (47) and nut (46) and tighten to 35 ft.-lbs. (47.5 Nm).

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

REPAIR INSTRUCTIONS - P46W, P46W-HK, P46HT, P49W, P49W-HK & P49HT

Gear End Disassembly

- 14. Remove the crankcase cover bolts (9). Inspect the crankcase cover O-ring (4) for wear. Replace if necessary.
- 15. Inspect the dip stick (5) vent hole for signs of clogging. Clean if necessary.
- 16. To remove the crankshaft (18), first remove the bearing cover plates (12) Remove the key (19).
- 17. Hold the pump rear assembly with a wooden fixture, or other suitable device, in order to secure it while removing the crankshaft (18). Using a plastic mallet, tap the crankshaft (18) from one side while turning it from the other side. The turning insures that during this sequence the crankshaft does not become wedged against the connecting rods (20). The far side bearing (15) will remain in the crankcase (1). When free, the crankshaft (18) can be removed by hand.
- 18. The crankshaft bearing (15) remains on the crankshaft (18) as it is removed. The near side crankshaft seal (14) will be removed by this procedure.
- 19. If necessary, use a bearing puller to remove crankshaft bearing (15).
- 20. Remove the connecting rod (20) and plunger rod/crosshead assembly (22) from the rear of the pump by pulling straight out of the crosshead guides.
- 21. To remove the crankcase oil seal (26), tap oil seal out from the rear of the crankcase using a dowel and rubber mallet. The area onto which the oil seal rests should be clean and dry. Put a small drop of loc-tite on the oil seals and place into crankcase with clips facing the rear of the pump.
- 22. To remove the crosshead pin (23) from the crosshead (22), the assembly should be positioned on a wooden fixture to avoid damage to crosshead. Drive out pin (23) on opposite side of mark on the crosshead. On those pumps without mark on crosshead, drive out pin by tapping on tapered side of pin.
- 23. To remove the bearing remaining in the crankcase, insert small end of Giant Bearing tool and tap with a rubber mallet untill bearing and seal are completely removed. The bearing can only be removed from the inside by inserting the Giant Bearing Tool through the opposite side of the crankcase (1) and should be inspected for possible damage.

Gear End Reassembly

- 24. To reassemble, place the far bearing in the crankcase bearing housing and with the Giant Bearing tool as a driver, tap into the crankcase (1) using a rubber mallet.
- 25. Insert the far side crankshaft oil seal (14) with the Giant Bearing Tool making sure it is firmly seated and well oiled. Always make sure that the crankshaft seal (14) lip does not show signs of wear. Replace the bearing cover (12) and tighten securely.
- 26. Replace the connecting rod (20) and plunger rod/crosshead assembly (22) by press-fitting the crosshead pin (23). Make sure to insert the beveled edge of the crosshead pin into crosshead. If the crosshead has a mark, install pin from marked side. The crosshead pin (23) should not extend beyond either side of the crosshead in order to prevent damage to the crosshead bore of the crankcase.
- 27. Place each crosshead/plunger assembly (22) into the pump making sure that all of the parts are well oiled before insertion into the crankcase.
- 28. Replace near side bearing on crankshaft (18) and use mallet to tap into place.
- 29. Take the crankshaft (18) end with the bearing and insert the other end through the bearing housing carefully threading the lobes of the crankshaft through the well lubricated connecting rods (20). Turning the crankshaft while tapping it through the connecting rods will help prevent binding and possible damage to the connecting rods. Continue tapping the crankshaft through the connecting rods (20) until it is firmly seated into far side bearing.
- 30. Insert the near side crankshaft oil seal (14), making sure it is firmly seated and well oiled. Replace the bearing cover (12) and tighten securely.
- 31. See instructions (13 above) for re-installing fluid end onto gear end.
- 32. Clean the back edge of crankcase and replace the crankcase cover. Be careful not to pinch the crankcase cover O-ring.
- 33. Fill the pump crankcase with 8.8 oz. (0.26L) of Giant oil. and check the oil level with the dipstick. Proper level is center of two lines Reinstall the pump into your system.

P46W, P46W-HK, P46HT, P49W, P49W-HK & P49HT 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. 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.

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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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