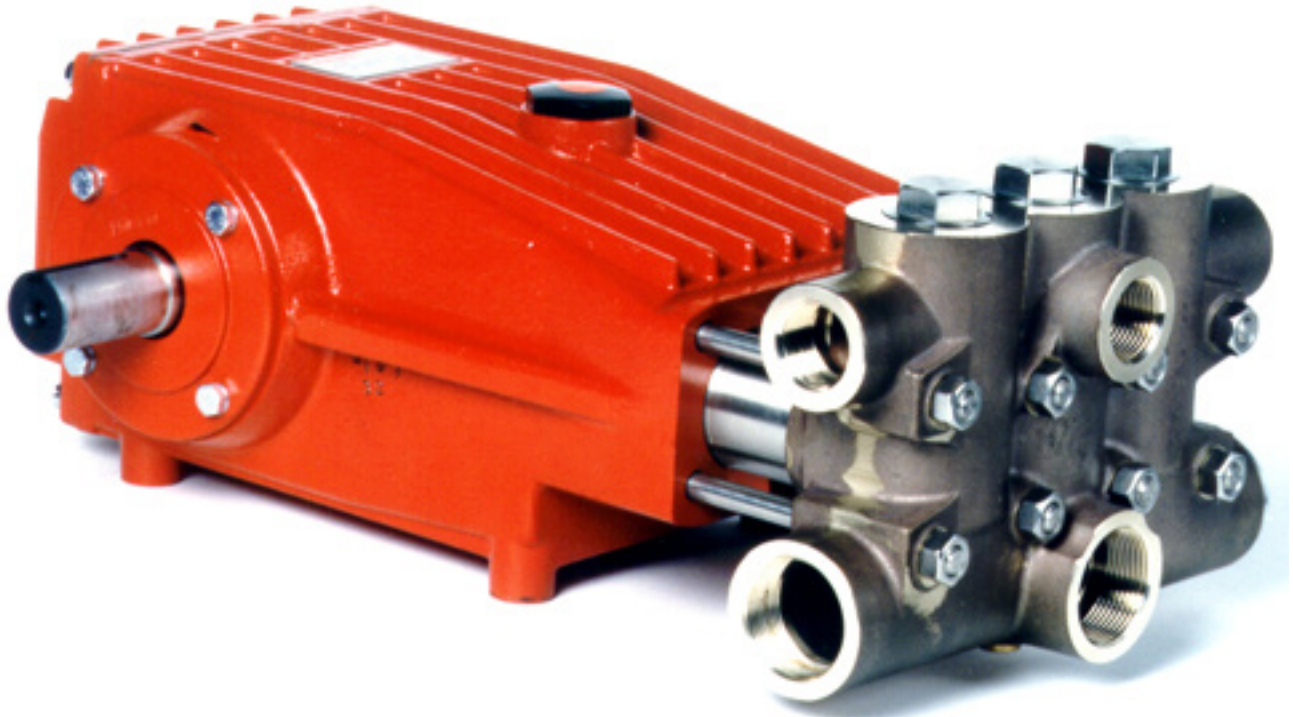


Models

CLP121A/CLP121A-4000 - CO₂ pumps



CLP121A Shown (without oil filler plug assembly)



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Updated 10/20

INSTALLATION INSTRUCTIONS

Operation

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

Important! The crankcase must be filled with synthetic motor oil of class SAE 0W 40 when pumping CO₂ under 0° C.

Initial oil change after 50 operating hours and then every 500 hours, after 1 year if used less. Caution when operating in damp places or with high temperature fluctuations. Oil must be changed immediately should condensate (frothy oil) occur in the gear box.

NPSH values must be observed.

Maximum input pressure is 508 PSI (35 bar). The maximum suction head is 14.5 PSI (1 bar). Make sure that suction pulsation is sufficiently dampened - water column resonance must be avoided.

Important! If the pump is not used for a long period of time, it is possible the seals (40) could become hard or brittle thus causing the pump to leak when put into operation. If this is the case, we recommend these seals be replaced every 4 years.

Safety Rules

A safety valve is to be installed in accordance with the guidelines for liquid spraying units so that the admissible operating pressure cannot be exceeded by more than 10%. Pump operation without a safety valve as well as any excess in temperature or speed limits automatically voids the warranty.

When the pump is in operation, the drive shaft end and the coupling must be enclosed by a protective cover or a coupling bell.

Pressure in the discharge line and pump must be at zero before any maintenance to the pump takes place. Shut off suction line. Disconnect fuses to ensure that the driving motor does not get switched on accidentally. Make sure that all parts on the pressure side of the unit are vented before starting the pump. In order to prevent air, or an air-water mixture being absorbed and to prevent cavitation occurring, the pump NPSHR (=suction head) and water temperature must be respected.

Cavitation and/or compression of gases lead to uncontrollable pressure-kicks 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 non-aggressive or non-abrasive media with a specific weight similar to water.

Before pumping other liquids • especially Inflammable, explosive and toxic media - the pump manufacturer must be consulted with regard to the resistance of the pump material. It is the responsibility of the equipment manufacture and/or operator to ensure that all pertinent safety regulations are adhered to.

Specifications

Model CLP121A/CLP121A-4000

	U.S	Metric
Volume	15.9 GPM	60 L/min
Discharge Pressure	1740 PSI	120 BAR
Inlet Pressure	870 PSI	60 BAR
Speed	Up to 500 RPM	
Plunger Diameter	1.42"	36mm
Stroke	1.65"	42mm
Crankcase Oil Capacity	101 fl.oz.....	3.0 L
Inlet Port	(3) x 1-1/2" BSP	
Discharge Port	(3) x 1" BSP	
Crankshaft Mounting	Either Side	
Shaft Rotation	Top of Pulley Towards Fluid End	
Weight	119 lbs.	54 kg
Crankshaft Diameter	1.38"	35mm
Manifold Material (CLP121A).....	Bronze	
Manifold Material (CLP121A-4000)	303 Stainless Steel	

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

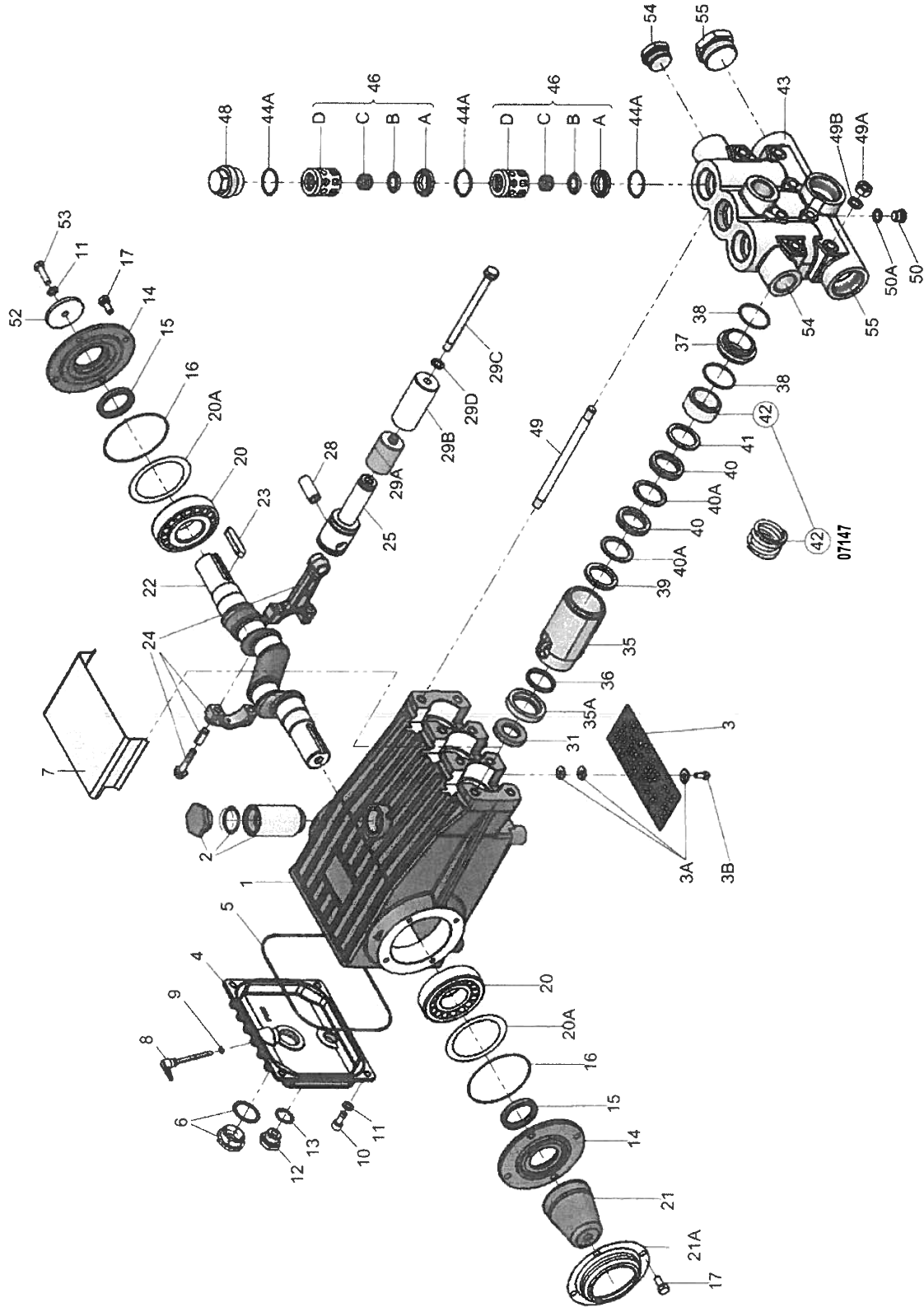
We recommend that a 1.15 service factor be specified when selecting an electric motor as the power source. To compute specific pump horsepower requirements, use the following formula:

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

CLP121A Horsepower Requirements					
RPM	GPM	500 PSI	1000 PSI	1500 PSI	1740 PSI
200	6.36	2.2	4.4	6.6	7.6
300	9.54	3.3	6.6	9.9	11.5
400	12.7	4.4	8.8	13.1	15.2
500	15.9	5.5	11.0	16.5	19.1

CLP121A/CLP121A-4000 Exploded View

Important: The pressure of the CO₂ on the input side causes plunger seals position 40 and 40A to press against the pistons 29B. If there is high CO₂ leakage after putting the pump into operation, remove the pump head, take spacer pipe position 42 out of each seal sleeve, replacing each spacer pipe with the herewith attached seal tension springs (07147).



CLP121A/CLP121A-4000 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	CP05198	Crankcase	1	29D	CP07755	Copper Ring (CLP121A)	3
2	CP05199	Oil filler Plug Assy.	1	29D	CP07161A-0100	Seal Ring (CLP121A-4000)	3
3	CP04802	Cover Plate	1	31	CP07133	Oil Seal	3
3A	CP04803	Spring Ring	2	35	CP05203	Seal Sleeve (CLP121A)	3
3B	CP04804	Hexagon Screw	2	35	CP05203-0100	Seal Sleeve (CLP121A-4000)	3
4	CP06085	Crankcase Cover	1	35A	CP05204	Retainer (CLP121A)	3
5	CP07104	O-ring, Crankcase Cover	1	35A	CP05203-0100	Pressure Ring (CLP121A-4000)	3
6	CP05943	Oil Sight Glass Assembly	1	36	CP13291-0020	Grooved Seal	3
7	CP04805	Cover Plate	1	37	CP07139	Seal Case	3
8	CP06086	Oil Dipstick Assy	1	38	CP07140-0003*	O-Ring	3
9	CP01009	O-Ring, Dipstick Assy.	1	39	CP05941	Pressure Ring	3
10	CP01010	Cylinder Screw (CLP121A)	4	40	CP06917	V-Sleeve	9
10	CP01010-0100	Cylinder Screw (CLP121A-4000)	5	40A	CP06916	V-Sleeve, Teflon	6
11	CP01011-0400	Spring Ring	5	41	CP06918	Support Ring	3
12	CP07109	Plug (CLP121A)	1	42	CP05942	Spacer Pipe	3
12	CP07109-0400	Plug (CLP121A-4000)	1	43	CP13029	Valve Casing (CLP121A)	1
13	CP06015	O-Ring	1	43	CP13018-0400	Valve Casing (CLP121A-4000)	1
14	CP07111	Bearing Cover	2	44A	CP07150-0003*	O-Ring	9
15	CP07112	Radial Shaft Seal	2	46	CP05205	Valve Assembly	6
16	CP07113	O-Ring	2	46A	CP07064	Valve Seat	6
17	CP07114	Hexagon Screw (CLP121A)	8	46B	CP07063	Valve Plate	6
17	CP07114-0100	Hexagon Screw (CLP121A-4000)	8	46C	CP07062-0100	Valve Spring	6
20	CP07116	Taper Roller Bearing	2	46D	CP07066	Spacer Pipe	6
20A	CP07117	Fitting Disc	1-3	48	CP07156	Plug	3
20B	CP13001	Fitting Disc	1-3	49	CP05206	Stud bolt	8
21	CP05376	Shaft Protector	1	49A	CP07158	Hexagon Nut	8
21A	CP05377	Shaft Guard Holder	1	49B	CP07159	Disc	8
22	CP13242	Crankshaft	1	50	CP07423	Plug (CLP121A)	1
23	CP13243	Fitting Key	1	50	CP07423-0100	Plug (CLP121A-4000)	1
24	CP13340	Connecting Rod Assy.	3	50A	CP07161	Copper Ring (CLP121A)	1
24A	CP13227	Hex Screw	3	50A	CP07755-0100	Steel Seal Ring (CLP121A-4000)	1
24B	CP13278	Spring Washer	3	52	CP13020	Disc for Crankshaft	1
25	CP13341	Crosshead / Plunger Assy.	3	53	CP04561	Hexagon Screw	1
28	CP13232	Crosshead Pin	3	54	CP13044	Plug, 1" BSP	1
29A	CP05200	Spacer Pipe	3	55	CP13322-0100	Plug 1-1/2" BSP	1
29B	CP07130	Plunger Pipe	3				
29C	CP05201	Tension Screw	3				

CLP121A Pump Repair Kits

Plunger Packing Kit - #09716

<u>Item</u>	<u>Part#</u>	<u>Description</u>	<u>Qty.</u>
36	CP13291-0020	Leakage Seal	3
38	CP07140-0003*	O-Ring	3
40	CP06917	V-Sleeve	9
40A	CP06916	V-Sleeve, Teflon	6

Valve Assembly Kit- #09608

<u>Item</u>	<u>Part#</u>	<u>Description</u>	<u>Qty.</u>
44A	CP07150-0003*	O-Ring	9
46A	CP07064	Valve Seat	6
46B	CP07063	Valve Plate	6
46C	CP07062-0100	Valve Spring	6
46D	CP07066	Spacer Pipe	6

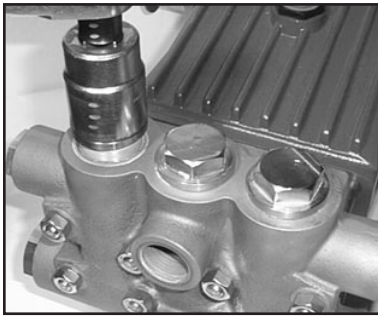
Oil Seal Kit- #09577

<u>Item</u>	<u>Part#</u>	<u>Description</u>	<u>Qty.</u>
31	CP07133	Oil Seal	3

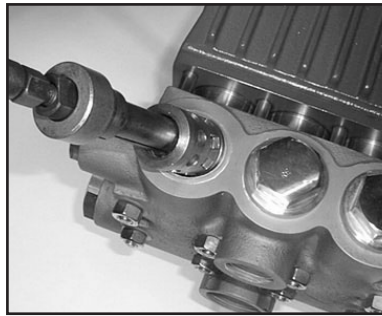
*NOTE: It is extremely important that these EPDM O-Rings do not come into contact with mineral oil or mineral grease. Use Silicone grease only.

CLP121A Repair Instructions

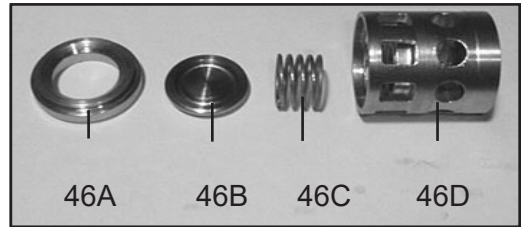
Note: Do not use mineral oil on seals and o-rings. Use silicone grease only.



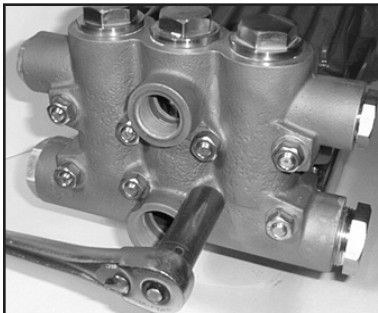
1. With a 30mm wrench, remove the (3) plugs (48).



2. Remove the complete valve assembly (46) with valve pullers.



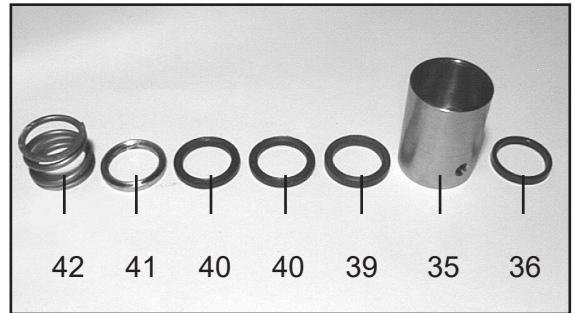
3. Loosen valve seats (46A) from spacer pipe (46D) by lightly hitting the valve plate (46B) with a plastic stick. Check sealing surface and replace worn parts. Reassemble with new o-rings (44A) and oil them before installing. Tighten up tension plugs (48) to 107 ft.-lbs. (145 Nm).



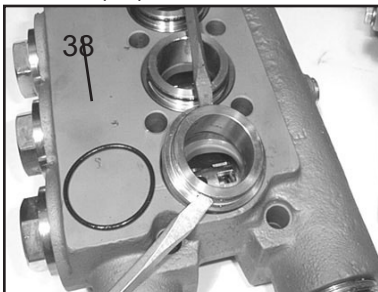
4. Loosen the 8 nuts (49A) with a 19mm wrench. Tap the back of the manifold (43) with a rubber mallet to dislodge and slide off the studs (49).



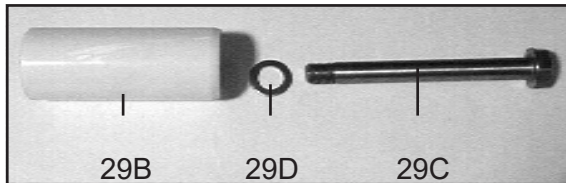
5. Pull seal sleeves (35) out of guides in crankcase (1).



6. Remove the tension spring (42), support ring (41), v-sleeves (40), pressure ring (39), from the seal sleeve (35). Examine seals (36) carefully and replace if worn. Clean all parts.



7. Remove seal case (37) from valve casing (43) and inspect o-ring (38).



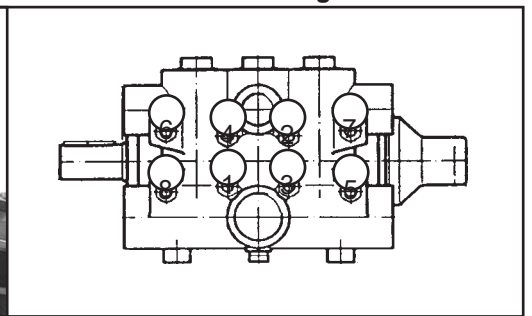
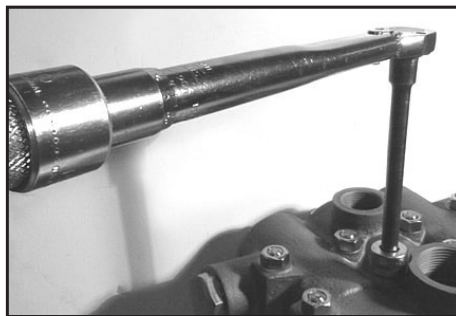
8. Check plunger surface (29B). If plunger pipe is worn, loosen tension screws (29C) and pull off plunger pipe to the front. Clean front surface of plunger (25) thoroughly. Apply a thin coat of Loctite to the tension screw threads (29C). **Note: Care must be taken that no glue gets between the plunger pipe (29B) and the centering sleeve (29A).** Add new copper ring (29D).



9. Place new plunger pipe (29B) carefully through the oiled seals and push seal sleeve (35) with plunger pipe into the crankcase guide. **Note: Make sure weep hole is facing down.**



10. Tighten the tension screws (29C) to 26.5 ft.-lbs. (35 Nm). The plunger pipe (29B) should not be strained by over tightening of the tension screw (29C) or through damage to the front surface of the plunger; otherwise, it will probably break.



11. Place valve casing (43) over studs and push firmly until seated against the crankcase (1). Tighten the hexagon nuts (49A) in a crosswise pattern (shown above) to 59 ft.-lbs. (80 Nm).

CLP121A Repair Instructions

To Dismantle Gear End

After removing valve casing (43) and plunger pipe (29B), drain oil. Remove gear cover (4) and bearing cover (14). Loosen connecting rod screws (24A) and push the front of the connecting rod (24) forward as far as possible into the crosshead guide.

IMPORTANT! Connecting rods (24) are marked for identification. Do not twist connecting rod halves. Connecting rod is to be reinstalled in the same position on shaft journals.

Turning the crankshaft (22) slightly, hit it out carefully to the side with a rubber hammer.

IMPORTANT! Do not bend the connecting rod (24) shanks. Check crankshaft (22) and connecting rod (24) surfaces, radial shaft seals (15) and taper roller bearings (20).

To Reassemble

Using a soft tool, press in the outer bearing ring until the outer edge lines up with the outer edge of the bearing hole. Remove bearing cover (14) together with radial shaft seal (15) and o-ring (16). Fit crankshaft (22) through bearing hole on the opposite side. Press in outer bearing and tighten it inwards with the bearing cover, keeping the crankshaft in vertical position and turning slowly so that the taper rollers of the bearings touch the edge of the outer bearing ring. Adjust axial bearing clearance to at least 0.1mm and maximum 0.15mm by placing fitting discs (20A and 20B) under the bearing cover.

IMPORTANT! After assembly has been completed, the crankshaft should turn easily with very little clearance. Tighten connecting rod screws (24A) to 22 ft.-lbs. (30 Nm).

CLP121A Torque Specifications

<u>Position</u>	<u>Item#</u>	<u>Description</u>	<u>Torque Amount</u>
6	05943	Oil Sight Glass	29 ft.-lbs. (40 Nm)
10	01010/01010-0400	Cylinder Screw	221 in.-lbs. (25 Nm)
12	07109/07109-0400	Plug	29 ft.-lbs. (40 Nm)
17	07114/07114-0100	Hexagon Screw	221 in.-lbs. (25 Nm)
24	13340	Inner Hex Screw, Connecting Rod	22 ft.-lbs. (30 Nm)
29C	05201	Tension Screw, Plunger	26.5 ft.-lbs. (35 Nm)
48	07156	Plug, Discharge	107 ft.-lbs. (145 Nm)
49A	07158	Hexagon Nut, Stud Bolts	59 ft.-lbs. (80 Nm)

Pump Mounting Selection Guide

Bushings

06496 - 35mm H Bushing

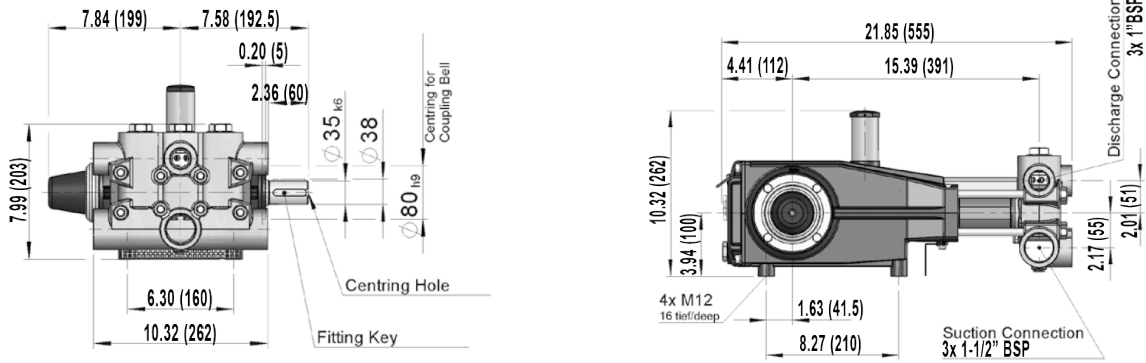
Pulley & Sheaves

07165 - 12.75" Cast Iron - 4 gr. - AB Section

Rails

07357 - Plated Steel Channel Rails
(L=11.75"xW1.88"xH=3.00")

CLP121A Dimensions - mm(in)



LIMITED WARRANTY

Eco₂Blast 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 Eco₂Blast 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 Eco₂Blast 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 Eco₂Blast.
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 Eco₂Blast.

Liability under this warranty is on all non-wear parts and limited to the replacement or repair of those products returned freight prepaid to Eco₂Blast 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 Eco₂Blast of all products under warranty consideration. Call (260)728-4433 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



SOLD EXCLUSIVELY THROUGH AQUA BLAST

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