

MAGIKIST
HX SERIES
TRIPLEX CERAMIC PLUNGER PUMPS

OPERATING MANUAL
MODEL HX60

IMPORTANT OPERATING CONDITIONS

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

Lubrication - Prior to initial operation ensure that the oil level is to the halfway mark of the oil gauge window. Do not overfill. Use only Magikist high pressure pump oil or equivalent ISO 220 turbine or circulating oil. Do **not** use automotive, transmission, or hydraulic oils, or brake fluid. Change crankcase oil after first 50 hours of operation, after which change oil at regular intervals of 500 hours or less depending on operating conditions. Each plunger has an foam oiler that is accessible through the oiler hole. Oil each foam oiler weekly.

RPM and Pressure - Pump operation must not exceed rated pressure, volume, or RPM. Magikist pumps are normally supplied with a pressure regulator valve which **must** remain installed in the discharge of the system and set not higher than the rated pump pressure. This or a similar pressure relief valve **must** remain installed in the discharge of the system.

Acids, Alkalies, or Abrasive Fluids - Consult factory before using pumps with any of these fluids.

Freezing Conditions - Pump must be protected from freezing conditions.

STANDARD CONFIGURATIONS

The HX series pumps are a positive displacement type of pump where the delivery is directly proportional to the rotational speed of the pump, regardless of the pressure. The table below shows the recommended standard configurations for the HX series pumps.

Pump RPM and output in gallons per minute (GPM) are based on a drive motor speed of 1725 RPM. Pump RPM and GPM output are approximate values due to variations in pulleys, belts and motors between manufacturers and a $\pm 5\%$ pump output tolerance.

Model Number	GPM	PSI	Pump RPM	Pump Pulley Diameter	Motor Pulley Diameter	Electrical Horsepower Required	Spray Tip Number
HX60	3.6	3000	915	8"	4.25"	7.5	--04
	5.0	2000	1280	8"	5.95"	7.5	--07

Consult factory for requirements other than those shown.

INSTALLATION INSTRUCTIONS

LUBRICATION

See section under *Important Operating Conditions*.

MOTOR SIZE & PULLEY SELECTION

Ensure that the motor meets or exceeds the horsepower required as stipulated in the table under *Standard Configurations*. The proper size pulley should also be installed on the motor as shown in the same table under *Standard Configurations*.

MOUNTING THE PUMP

The pump should be mounted on a rigid horizontal base. Ensure that pulleys are aligned and that the correct belts are used. Belts must be tight enough so that there is no belt slippage, but should not be excessively tight as this places unnecessary strain on the crankshaft bearings.

INLET PLUMBING

The inlet plumbing should be sized for the flow rate of the pump, at least the same diameter as the inlet to the manifold, although preferably one size larger. There should be no unnecessary restrictions in the inlet plumbing. Length should be kept to a minimum as should the number of elbows and joints. Restrictions in the inlet plumbing may cause cavitation, resulting in severe damage.

Inlet holding tanks must be of adequate size to accommodate the input requirements of the pump. Adequate baffling in the tank should be provided to eliminate air bubbles and turbulence.

An inlet strainer of twice the rated capacity of the pump should be installed in the inlet line. Inspect the inlet strainer frequently to ensure that there are no breaks in the screen and that it is free of particles which might restrict flow. Foreign material entering the pump can easily create problems with your pump or other components in the system.

There are two 1/2" FNPT inlet ports, one on each side of the top part of the manifold. Teflon tape should be used to seal all joints to ensure that they are airtight.

INLET PRESSURE

Excessive pressure on the inlet line places increased stress on inlet seals. **MAXIMUM INLET PRESSURE IS 30 PSI**. Installation of the appropriate pressure reducing valve in the inlet line is required to avoid excessive pressures. If desired a pressure gauge may be mounted as close to the pump inlet as possible in order to monitor inlet pressure. Use of excessive inlet pressure will void the warranty.

If pumps are operated at temperatures in excess of 140°F, it is important to insure a positive head to the pump to prevent cavitation.

DISCHARGE PLUMBING

The discharge plumbing from the pump should be properly sized to the flow rate to prevent line pressure loss.

There are two 3/8" FNPT pressure outlets, one on each side of the bottom part of the manifold. As with inlet plumbing, teflon tape should be used on all joints for proper sealing. High pressure connections to the pump should be made with high pressure hose and not rigid pipe so as to prevent vibrations from damaging the pump and piping.

Magikist HX series pumps are normally supplied with both a pressure gauge and a pressure regulator valve. The pressure regulator valve **must** remain in the discharge line and set not higher than the rated pressure in order to prevent over-pressure in the event the discharge or downstream plumbing becomes plugged or is turned off. This or a similar pressure relief valve **must** remain installed in the discharge of the system otherwise personal injury or damage to the pump system may result.

HELPFUL INFORMATION

LOW OR HIGH PRESSURE READINGS

Pressure readings that differ from that rated for your pump do **not** necessarily indicate a pump problem! Before servicing the pump carefully check the following: inlet plumbing size is adequate, restrictions and/or air leaks, restricted or worn orifice, operation of unloader valve (if installed in the system), operation of pressure gauge. Ensure that all shut off valves in your system are fully open. Most problems are **not** pump problems but problems with other components in the system!

USING SOAP

If soap is being run through the pump it is good practice to run water only through the pump for approximately two minutes at the end of the day's washing. This helps to remove any soap from the pump which might otherwise deposit on the valve seats.

PRESSURE REGULATOR VALVE

HX series pumps normally come equipped with a pressure regulator valve. This valve, normally located on the left side of the manifold when facing the front of the pump, can be used to regulate the pump outlet pressure if there is no unloader valve on the pump. In systems with an unloader valve installed, this valve acts as a safety pressure relief valve in case of unloader malfunction.

If plumbing the bypass of the pressure regulator valve back to the inlet of the pump, it is recommended that the bypass be directed to a baffled reservoir tank, with at least one baffle between the bypass line and the inlet of the pump.

Although not recommended, bypass fluid may be returned from the pressure regulator valve back to the inlet of the pump if the system is properly designed to protect your pump. When using this method a pressure reducing valve should be installed between the bypass connection and the inlet of the pump to avoid excessive pressure to the inlet of the pump. It is also recommended that a temperature sensing valve be used in the bypass line to prevent excessive heat build-up. Pressure in the bypass line should be checked initially and periodically to avoid over-pressurizing the inlet.

PUMP PACKINGS

The HX series pumps are packed with a series of durable packings and adapters. If excessive pressure drop is experienced and other sources of potential pressure drop have been ruled out, the packings may require replacement. When replacing the packings, note the correct order of replacement, as shown in the exploded view diagram on the next page.

SPECIFICATIONS

	HX 60
Plunger Diameter	18 mm
Stroke	16 mm
GPM output per 100 RPM	0.4
Inlet Port (2)	1/2" FNPT
Discharge Port (2)	3/8" FNPT
Manifold Material	Bronze
Plunger Material	Stainless Steel & Ceramic
Connecting Rod Material	Aluminum Alloy
Valve Material	304 Stainless Steel
Crankshaft Ball Bearing	Tapered Roller
Crankshaft Material	Chrome Molybdenum
Crankshaft Diameter	24 mm
Crankcase Material	Die-cast Aluminum Alloy
Pulley Mounting	Either Side
Crankcase Capacity	0.9 Litres
Weight	23 lbs

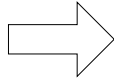
MAGIKIST **HX SERIES**

TRIPLEX CERAMIC PLUNGER PUMP

PARTS LIST

MODEL HX60

HOW TO
SPECIFY A
PART NUMBER



A complete part number consists of the pump model number (HX60) followed by one of the item numbers below. For example HX601 refers to the crankcase for the HX60 pump, HX6037 refers to the valve for the HX60 pump, etc. Depending on what options were ordered with your pump some parts shown may not be included with your pump. Parts not applicable to a pump model have a dash in the quantity column.

Item Number	Description	Quantity HX60
1	Crankcase	1
2	Ball Bearing	2
3	Bearing Cover	2
3A	Bearing Cover Gasket	2
3B	Bearing Cover O-ring	2
4	Crankcase Seal	2
5	Oil Filler Cap	1
7	Oil Hole Fitting	1
8	Back Cover	1
9	Back Cover Gasket	1
10	Back Cover Screw	6
11	Oil Gauge Window	1
12	Bearing Cover Screw	6
13	Pulley Key	1
14	Pulley (A section)	1
15	Pulley Set Screw	1
16	Rail	2
17	Rail Bolt & Washer	4
19	Crankshaft	1
20	Connecting Rod	3
23	Plunger Pin	3
23A	Plunger Pin Clip	3
24	Plunger	3
24A	SS Plunger Body	3
24B	Ceramic Plunger Sleeve	3
24C	Plunger Bolt	3
24D	Plunger Gasket Set	3
25	Plunger Wiper	3
25A	Oiler	3
26	Oil Drain Plug	1

Item Number	Description	Quantity HX60
29	Plunger Seal	3
30	Gland Nut	3
31	Gland Nut O-ring	3
35	Manifold	1
37	Valve	6
37AN	Valve O-ring	6
37B	Valve Cover	6
37C	Valve Spring Retainer	6
37D	Valve Spring	6
37E	Valve Disc	6
37F	Valve Seat	6
37G	Valve Cover O-ring	6
41	Pressure Gauge	1
44	Bolt/Washer	8
55	Valve Cap	6
55A	Valve Cap O-ring	6
55B	Valve Cap Backing Ring	6
58	Water Seal	3
58W	Washer	1
59	Leakage Adapter	3
59N	Leakage Adapter	3
60D	Packing	3
60E	V-Packing	3
60G	Bottom Adapter	3
81	Oil Drain Cock	1
82	Adapter	1
83	Adapter O-ring	1
85	Oil Drain Hose	1
100	Crankshaft Protector	1

NOTES

- 59N and 60D is the current packing arrangement for all pumps manufactured after Sept/2001. 59, 60E and 60G was the packing arrangement used for pumps prior to Sept/2001. It is recommended that when ordering replacements for these parts, substitute 59N and 60D.

WARRANTY

Magikist HX-Series pumps are warranted by the manufacturer to be free from defects in material and workmanship for one year from date of manufacturer's shipment, provided the equipment is installed and operated in accordance with factory recommendations and instructions. This warranty is limited to repairing or replacing products which manufacturer's investigation shows were defective at the time of shipment by the manufacturer. This warranty does not cover normal wear, nor does it cover damage caused by neglect, misuse, accident, faulty installation or tampering in a manner to impair its normal operation. All products subject to this warranty shall be returned **freight prepaid** to Magikist Ltd., Winnipeg, Canada for examination, repair, or replacement.

The express warranty set forth herein is in lieu of all other warranties, 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. Repair or replacement of defective products as provided is the sole and exclusive remedy provided hereunder and the manufacturer shall not be liable for any further loss, damages or expenses, including incidental and consequential damages, directly or indirectly arising from the sale or use of this product.

This warranty is subject to the installation and operating conditions as described in this manual. This warranty does not apply to optional equipment which may have been supplied with your pump. Refer to the warranty supplied with the optional equipment for information on that equipment's warranty.

Parts originally manufactured by Magikist Ltd. must be used or this limited warranty will be voided. Magikist Ltd. will be absolved of any liability if parts other than Magikist Ltd. manufactured parts are used.

There are no warranties which extend beyond the description of the face thereof.