

Owner's Manual

- *Installation*
- *Use*
- *Maintenance*



MF7M5B - MF7M7B - MF7M5D - MF7M7D



INDEX

1.	INTRODUCTION	Page 4
2.	SYMBOL DESCRIPTIONS	Page 4
3.	SAFETY	Page 5
	3.1 General safety instructions	Page 5
	3.2 High pressure unit safety requirements	Page 5
	3.3 Safety during operation	Page 5
	3.4 General procedures for using nozzles	Page 5
	3.5 Safety during unit maintenance	Page 6
4.	PUMP IDENTIFICATION	Page 6
5.	TECHNICAL FEATURES	Page 7
6.	DIMENSIONS AND WEIGHT	Page 7
7.	INFORMATION REGARDING PUMP USE	Page 8
	7.1 Bentonite temperature	Page 8
	7.2 Maximum flow and pressure values	Page 8
	7.3 Lowest operating RPM	Page 8
	7.4 Recommended lubricant types and Manufacturers	Page 8
8.	PORTS AND CONNECTIONS	Page 10
9.	PUMP INSTALLATION	Page 11
	9.1 Installation	Page 11
	9.2 Direction of rotation	Page 12
	9.3 Version change and reducer positioning	Page 12
	9.4 Hydraulic connections	Page 13
	9.5 Pump feeding	Page 13
	9.6 Inlet line	Page 13
	9.7 Outlet line	Page 14
	9.8 Typical diagram	Page 14
	9.9 V-belt transmission	Page 15
	9.10 Transmission of Power from Second PTO	Page 15
10.	START UP AND OPERATION	Page 16
	10.1 Preliminary inspections	Page 16
	10.2 Starting up	Page 16
11.	PREVENTATIVE MAINTENANCE	Page 17
12.	STOPPING THE PUMP FOR LONG PERIODS	Page 17
	12.1 Filling the pump with anti-corrosion emulsion or anti-freeze	Page 17
	12.2 Hoses	Page 17

INDEX (continued)

- 13. PRECAUTIONS AGAINST FREEZING Page 18**
- 14. WARRANTY TERMS Page 18**
- 15. TROUBLESHOOTING Page 19**
- 16. EXPLODED VIEWS AND PARTS Page 20**
- 17. MAINTENANCE LOG Page 24**

1. INTRODUCTION

This manual describes the use and maintenance instructions of the MF7M pump, and should be carefully read and understood before using the pump.

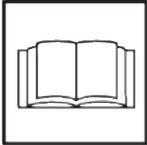
Correct use and adequate maintenance will guarantee the pumps trouble-free operation for a long time. General Pump declines any responsibility for damage caused by misuse or the non-observance of the instructions indicated in this manual.

Upon receiving the pump, check that it is complete and in perfect condition. Should anything be found out of order, please contact us before installing and starting the pump.

2. SYMBOL DESCRIPTIONS



Warning
Potential Danger



Read carefully and understand the manual before operating the pump



Danger
High Voltage



Danger
Wear protective mask



Danger
Wear goggles



Danger
Wear protective gloves



Danger
Wear protective boots

3. SAFETY

3.1 General Safety Indications

The misuse of pumps and high pressure units, and the non-observance of installation and maintenance instructions may cause severe injury to people and/or damage to property. Anyone requested to assemble or use high pressure units must possess the necessary competence to do so, should be aware of the characteristics of the components assembled/used, and must adopt all the necessary precautions in order to guarantee maximum safety in any operating condition. In the interest of safety, no precaution that is reasonably feasible must be neglected, both by the Manufacturer and the Operator.

3.2 High pressure unit safety requirements

1. The pressure line must always be equipped with a safety valve.
2. High pressure unit components, in particular for those units working outside, must be adequately protected against rain, frost and heat.
3. The units electrical parts must be adequately protected from water spray, and must comply with the specific norms in force.
4. High pressure hoses must be correctly sized for the unit's maximum operating pressure, and must only be used within the pressure range indicated by the hose manufacturer. The same conditions apply to all other unit accessories where high pressure is involved.
5. The extremities of high pressure hoses must be sheathed and fastened to a steady structure in order to avoid dangerous whiplashes should they burst or should their connections break.
6. Appropriate safety guards must be provided for the pump transmission systems (joints, pulleys and belts, auxiliary drives).

3.3 Safety During Operation



The working area of a high pressure system must be clearly signalled. Access must be prohibited to non-authorized personnel and, if possible, the area must be fenced in. The personnel authorized to access this area must be previously trained, and informed about the risks that may arise from failures or malfunctions of the high pressure unit.

Before starting the unit, the operator must check:

1. That the high pressure unit is correctly fed (see paragraph 9.5).
2. The pump inlet hose must be free from blockage of any origin. The use of a solid waste storage tank is highly recommended
3. That electrical parts are adequately protected and in perfect condition.
4. That high pressure hoses do not show apparent signs of abrasion, and that fittings are in perfect shape.
5. During operation the outer surfaces of pump may reach high temperatures. It is recommended to avoid contact with hot parts.

Any anomaly or reasonable doubt that may arise before or during operation must be promptly reported and verified by competent personnel. In these cases, pressure must be immediately released and the high pressure unit stopped.

3.4 General Procedures For Using Nozzles



1. The Operator must always place their own and other worker's safety before any other interest; their actions should always be governed by good sense and responsibility.
2. The Operator must always wear a helmet with a protective visor, waterproof clothing, and appropriate boots capable of guaranteeing grip on wet pavement.

Note: appropriate clothing will effectively protect against water spray, but it may not offer adequate protection against the direct impact of water jets or sprays from a close distance. Some circumstances may require further protection.

3. We advise to employ a team of at least two Operators, able to provide mutual and immediate assistance if needed, and to rotate their duties in case of long and heavy work.
4. Access to the work area that is within the water jets' range must be absolutely forbidden; the area must be free of objects that may be unintentionally hit by the pressurized jet, causing damage or dangerous situations.
5. The water jet must only and always be directed towards the work area, even during testing or preliminary inspections.
6. The Operator must always pay attention to the trajectory of the debris removed by the water jet. If necessary, adequate side guards must be provided by the Operator in order to protect anything that may be accidentally exposed.
7. For no reason must the Operator be distracted during operation. The personnel that needs to access the working area must wait for the Operator to suspend his work, and then immediately make his presence known.
8. For safety reasons, it is important that each member of the team is perfectly aware of the intentions and actions of other team members in order to avoid dangerous misunderstandings,
9. The high pressure unit must not be started and brought up to pressure unless each member of the team is in their designated position, and the Operator has already directed the nozzle towards the work area.

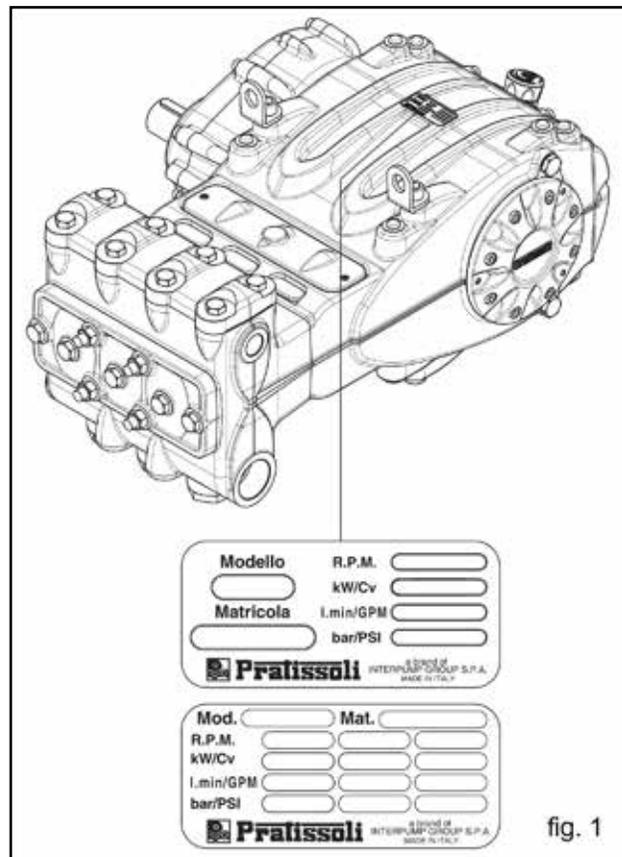
3.5 Safety During Unit Maintenance

1. The maintenance of the high pressure unit must be done within the time intervals indicated by the Manufacturer, who is responsible for the entire unit's compliance with the norms in force.
2. Maintenance must always be carried out by specialized and authorized personnel.
3. Assembly and disassembly of the pump and its various components must be performed exclusively by authorized personnel, using appropriate tools in order to avoid damage to components and connections.
4. To guarantee total reliability and safety, always use original spare parts.

4. PUMP IDENTIFICATION

Each pump (fig. 1) is equipped with a rating plate that indicates:

- Pump model and version
- Serial Number
- Maximum RPM
- Power absorbed Hp-kW
- Flow Rate l/mn - GPM
- Pressure bar/PSI



Pump model, version and serial number must always be specified when ordering spare parts.

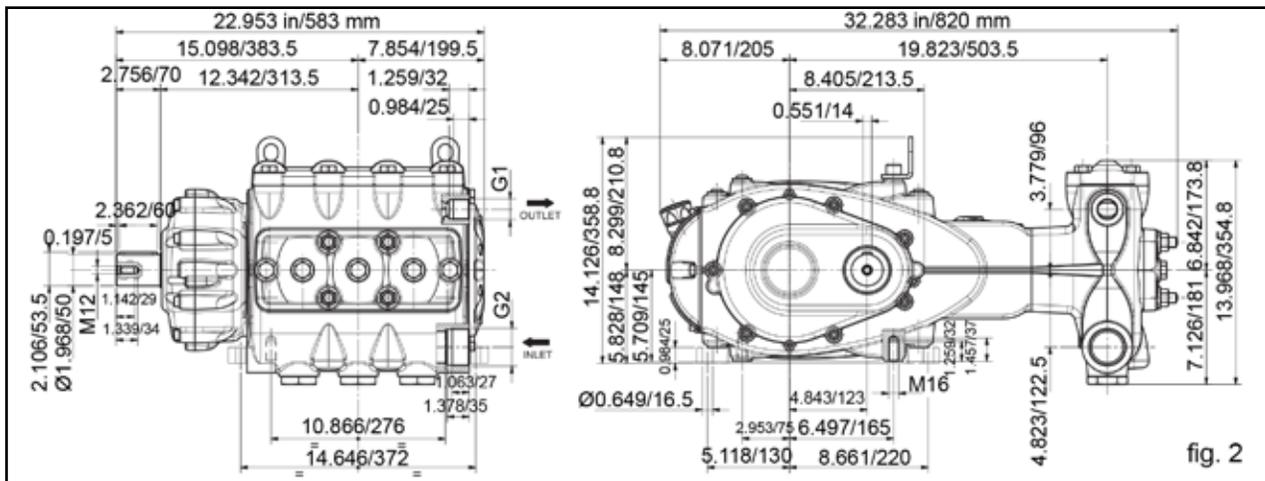
Ref 310089 Rev. B
02-20

5. TECHNICAL FEATURES

Input speed	rpm		400	490	600	700	500	600	740	880		
Reduction ratio	i		1.875	2.238	2.722	3.211	1.875	2.238	2.722	3.211		
Shaft speed	rpm		213	219	220	218	267	268	272	274		
Model	Valves	Cylinders	Pressure Bar PSI	Flow rate/ Power	Theoretical folw rate with 100% volumetric efficiency							
					flow rate				Power			
MF7M5B	Ball	Ceramic	50 725	GPM HP	198 18.9	203 19.4	204 19.5	202 19.3	-	-	-	-
MF7M5D	Plate	Ceramic	50 725	GPM HP	198 18.9	203 19.4	204 19.5	202 19.3	247 23.6	249 23.8	252 24.1	254 24.3
MF7M7B	Ball	Steel	75 1088	GPM HP	198 28.4	203 29.1	204 29.2	202 28.9	-	-	-	-
MF7M7D	Plate	Steel	80 1088	GPM HP	198 28.4	203 29.1	204 29.2	202 28.9	247 35.4	249 35.7	252 36.1	254 36.4

6. DIMENSIONS AND WEIGHT

For standard version pump dimension and weight, please refer to fig. 2.



Dry Weight: 584.22 Lbs./265 Kg.

7. INFORMATION ABOUT PUMP USE

The MF7M pump has been designed and developed to operate in environments with atmospheres that are not potentially explosive and with fluids with a high percentage of bentonite, maximum density is equal to ~45 sec. marsh cone and at a maximum temperature of 104°F (40°C).

Other liquids can be used only with approval by **Customer Service Department**.

**7.1 Bentonite Temperature**

The maximum bentonite temperature is 86°F (30°C). The pump can be used with bentonite up to a temperature of 104°F (40°C), but only for a short period of time. In this case, it is best to consult with the **Customer Service Department**.

7.2 Max Flow Rate and Pressure Values

The performance values indicated in the catalog refer to the maximum performance of the pump. Regardless of the power used, pressure and maximum RPM values indicated on the plate may not be exceeded unless expressly authorized by the **Customer Service Department**.

7.3 Lowest RPM

The minimum speed for these types of pumps is 100 RPM at the crankshaft.

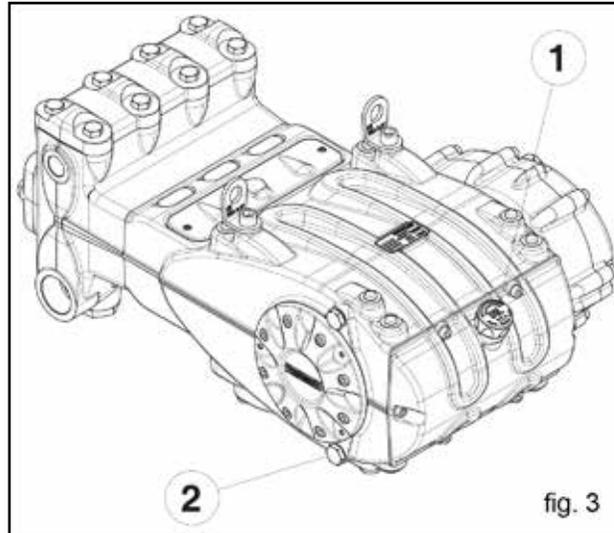
Any RPM value different from what is indicated in the performance table (see chapter 5) must be expressly authorized by the **Customer Service Department**.

7.4 Recommended Lubricant Oil Types & Manufacturers

The pump is delivered with lubricant oil compliant with room temperatures ranging between 32° and 89.6° F (0° and 30°C). Some recommended lubricant types are indicated in the table below; these lubricants are treated with additives in order to increase corrosion protection and resistance to fatigue. As an alternative, Automotive SAE 85W-90 gearing lubricants may also be used.

BRAND	TYPE
GENERAL PUMP	SERIES 220
ARAL	Aral Degol BG220
BP	ENERGOL HLP 220
CASTROL	Hyspin VG 220, Magna 220
ELF	POLYTELIS 220
ESSO	NUTO 220
FINA	Cirkan 220
FUCHS	RENOLIN 220
MOBIL	DTE OIL BB
SHELL	TELLUS C 220
TEXACO	RANDO HD 220
TOTAL	CORTIS 220

Check the oil level by using the oil level dipstick with minimum and maximum value notches (1), fig. 3. Refill if needed from the oil cap (1, fig. 3). Correct oil level inspection is done with the pump at room temperature; oil is changed with the pump at working temperature, by removing the rear plug (2, fig. 3). Checking and changing oil is to be carried out as indicated in Chapter 11. The amount required for pumps with reduction unit is ~287.42 oz (8.5 Litres) and pumps without reduction unit ~253.61 oz (7.5 litres).

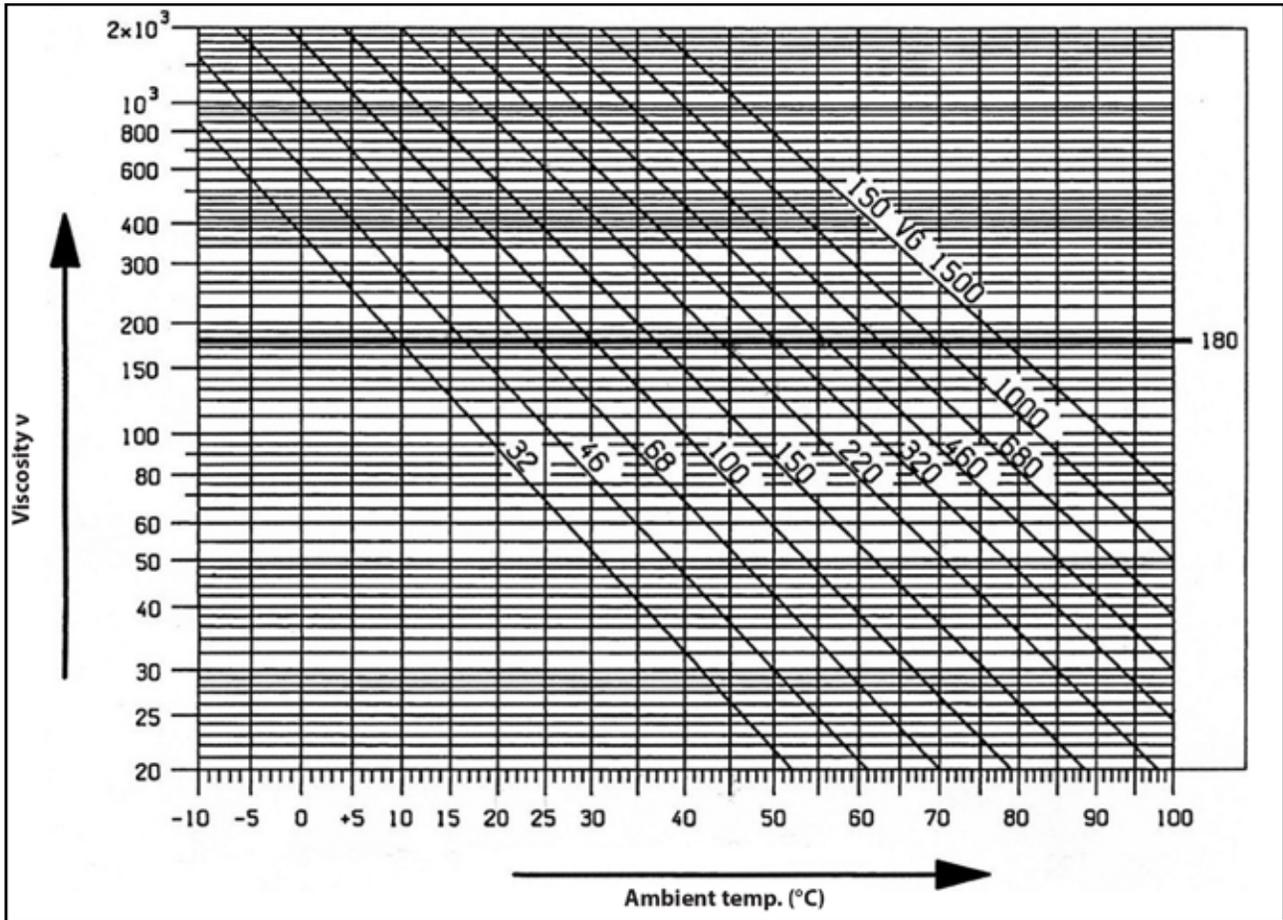


In any case, oil must be changed at least once a year since it may deteriorate by oxidation.

For room temperatures that differ from that mentioned earlier, follow the indications contained in the diagram below, keeping in mind that the oil must have a minimum viscosity of 180 cSt.

VISCOSITY/ROOM TEMPERATURE DIAGRAM

mm²/S = cSt

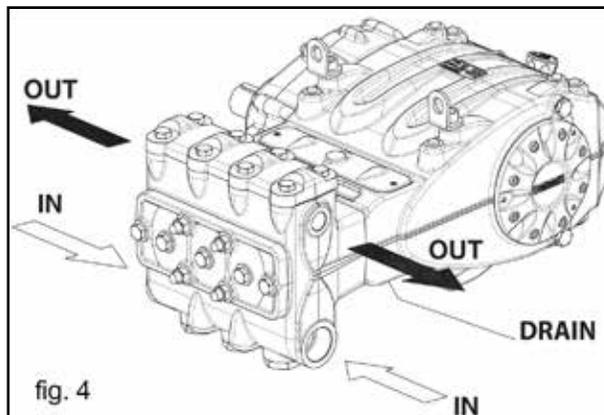


Exhausted oil must be collected in an appropriate recipient and disposed of in appropriate locations. In absolutely no case may it be dispersed into the environment.

8. PORTS AND CONNECTIONS

The MF7M series pumps (see fig. 4) are equipped with:

1. 2 "IN" inlet ports G 2"
Line connection to any of the two ports is indifferent for proper pump functioning. the unused ports must be hermetically sealed.
2. 2 "OUT" outlet ports G 1"



9. PUMP INSTALLATION

9.1 Installation

The pump must be installed in a horizontal position using the N16 threaded support feet. Then tighten the screws with a torque wrench to 147.51 Lbs (200 Nm). The base must be perfectly flat and sufficiently rigid in order to avoid bending and misalignments on the pump/transmission coupling axis due to the torque applied during operation.

The pump is equipped with two lifting eyebolts to facilitate installation, as shown in the following figure.



The eyebolts are sized for lifting the pump only. They must never be used for any additional loads.



Replace the oil plug (red) positioned on the rear crankcase. Check the correct oil level with the oil dipstick.

The oil dipstick must always be reachable, even with the unit is assembled.



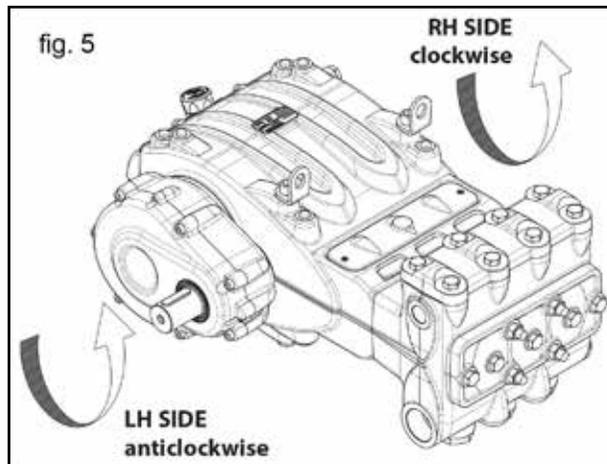
The pump's shaft (PTO) must not be rigidly connected to the motor unit.

The following transmission types are suggested:

- Flexible joint
- Universal joint (comply with the maximum working angles indicated by the manufacturer)
- Belts; for correct application, please contact the **Customer Service Department**.

9.2 Direction of rotation

An arrow situated on the crankcase near the shaft indicates the correct direction of rotation. Standing in front of the pump head, the direction of rotation must be as shown in fig. 5.



9.3 Version Change and Reducer Positioning

A right version pump is defined when: observing the pump from the head side, the PTO shank of the pump shaft is on the right side.

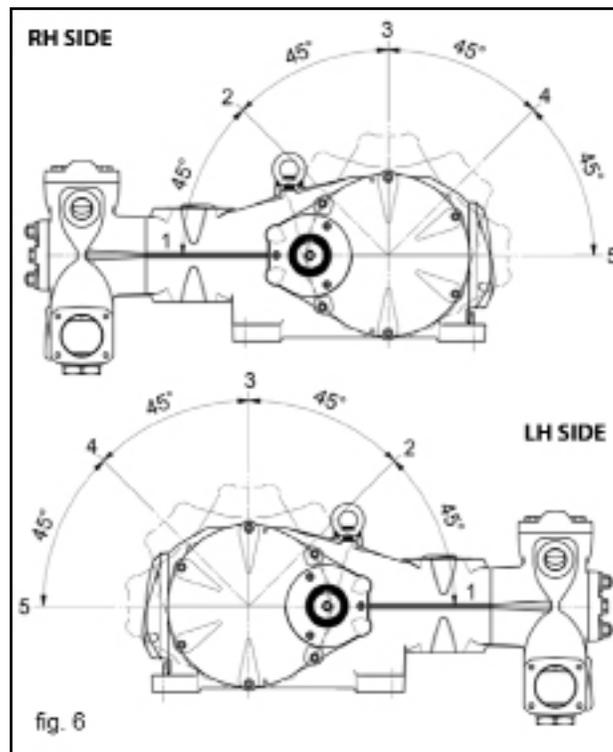
A left version pump is defined when: observing the pump from the head side, the PTO shank is on the left side. See fig. 5.



The version may be changed only by specialized and authorized personnel by carefully following the instructions below:

1. Separate the hydraulic part from the mechanical part as indicated in chapter 2 in par. 2.2.1 and 2.2.3 in the **Repair Manual**.
2. Turn the mechanical part 180° and reposition the rear crankcase cover so that the oil dipstick is turned upward. Reposition the lifting brackets and relative hole closing plugs in the upper part of the crankcase. Reverse the two inspection covers making sure that the open one is positioned at the bottom. Finally, properly reposition the specification label in its housing on the crankcase.
3. Unite the hydraulic part to the mechanical part as indicated in chapter 2 in par. 2.2.2 and 2.2.4 of the **Repair Manual**.

In Addition, the reduction unit can be set in 5 different positions as shown in fig. 6.



The position of the reducer unit can only be changed by authorized specialized personnel following the instructions in the repair manual.

9.4 Hydraulic Connections

In order to isolate the system from the vibrations produced by the pump, we advise to build the first section of the duct near the pump (both for intake and delivery) with flexible hose. The consistency of the intake section must allow to avoid deformation caused by the depressurization produced by the pump.

9.5 Pump Feeding

A positive head of at least 0.66 ft (0.20 meters) is recommended for the best volumetric efficiency, to be increased with increasing fluid density.



For the priming conditions see the chart in par. 9.8.

9.6 Inlet Line

For the pump's correct operation, the inlet line must have the following characteristics:

1. Minimum internal diameter for hoses of length less than 26.25 ft. (8 meters) is \varnothing 2.36 in. (60 mm).

The hose must be rigid enough to avoid self-constriction caused by the pressure drop.



Along the duct, avoid localized diameter reductions that may cause pressure drops with subsequent cavitation. Absolutely avoid 90° elbows, connections with other hoses, bottlenecks, counter-slopes, upside down "U" shaped curves, "T" connections.

2. The selected lay-out must allow to avoid cavitation.
3. It should be perfectly airtight, and built in a way that guarantees perfect sealing over time.
4. Avoid pump emptying when stopping (even partial emptying).
5. Do not use hydraulic-type fittings, 3 or 4 way fittings, adapters, etc., since they may hinder the pump's performance.
6. Avoid use of base valves or other types of unidirectional valves.
7. Do not recirculate the by-pass valve drain directly to the inlet line.
8. Provide proper guards inside the tank to prevent the bentonite flow from the bypass and the tank supply line can create vortexes or turbulence near the pump supply pipe port.
9. Make sure the suction line thoroughly clean inside before connectin it to the pump.

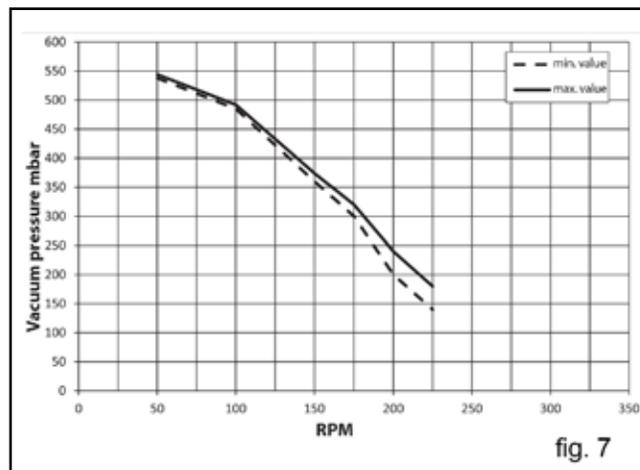
9.7 Outlet Line

For the pump's correct operation, the outlet line must have the following characteristics:

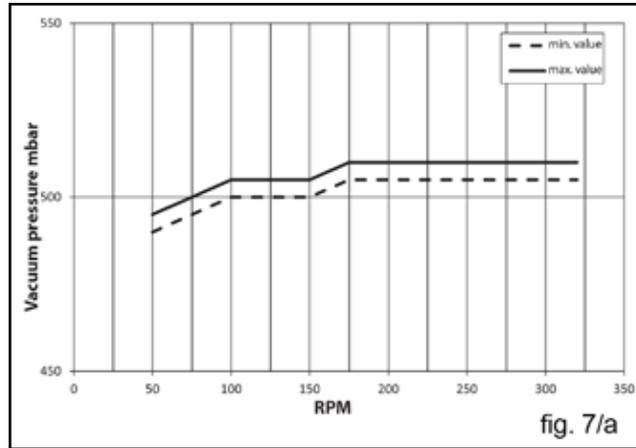
1. The internal diameter of the pipe must be sufficient to ensure correct fluid velocity.
2. The first section of the hose connected to the pump outlet must be a flexible hose, in order to isolate the vibrations produced by the pump of the rest of the system.
3. Use high pressure hoses and fittings to ensure high safety margins in all operatin conditions.
4. Use pressure guages suitable to withstand pulsating loads typical the plunger pumps.
5. During the design stage, keep in mind the line load losses which result in a drop in pressure during use with respect to the pressure measured on the pump.
6. For applications where pulses produced by the pump on the outlet line may prove harmful or unwanted, install a pulsation dampener of sufficient size.

9.8 Typical Diagram

For MF7M5B and MF7M7B pumps refer to fig. 7.



For MF7M5D and MF7M7D pumps refer to fig. 7/a.



9.9 V-belt Transmission

As indicated in paragraph 9.1, only in exceptional cases may the pump be driven by a v-belt system. For correct lay-out sizing, please contact our **Customer Service Department**.

9.10 Transmission of Power from the Second PTO

Upon request, MF series pumps can be supplied with an auxiliary PTO on the opposite side to the drive.

Transmission can be carried out:

- By means of V-belts
- By means of the joint

By means of V-belts, withdrawable Max Torque is: 110.6 Ft Lbs (150 Nm) corresponding to 17 HP (12.5 kW) at 800 rpms.

By means of the joint, withdrawable Max Torque is: 162.3 Ft Lbs (200 Nm) corresponding to 25 HP (18.4 kW) at 800 rpms.



With transmission by means of the joint, pay particular attention to perfect alignment so that no transverse forces are generated on the pump shaft.

For application differing from those specified above, contact the **Customer Service Department**.

10. START-UP AND OPERATION

10.1 Preliminary Inspections

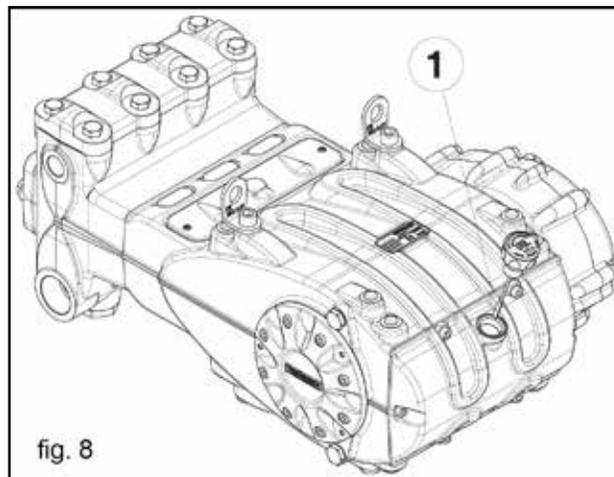
Before Start-up Be sure that:



The inlet line is connected and pressurized (see par 9.4 - 9.5 - 9.6) and the graphs in par. 9.8.

The suction line is connected and up to pressure (see Chapter 9) the pump must never run dry.

1. The suction line must be hermetic seal over time
2. All the On-Off valves between the pump and the feeding source are completely open. The delivery line must discharge freely in order to allow the air in the pump to be expelled easily, thus facilitating pump priming.
3. All suction/delivery connections and fittings must be correctly tightened.
4. Coupling tolerances on the pump/transmission axis (half-joint misalignment, Cardan joint tilt, belt tightening, etc.) must remain within the limits indicated by the transmission Manufacturer.
5. The pump's oil level must be verified using the correct dipsticks (position 1, fig 8).



In case of prolonged storage or long-term inactivity, check proper functioning of the suction and outlet valves.

10.2 Start-up

1. When starting the pump for the first time, check for the correct direction of rotation
2. The pump must be started off-load.
3. Verify correct feeding pressure.
4. During operation, check that the rotating speed does not exceed the rated value.
5. Before putting the pump under pressure let it run for at least 3 minutes.
6. Before each pump stop, reset pressure by means of the control value or with any relieving devices and reduce to a minimum rpm (activation with combustion motors).

11. PREVENTIVE MAINTENANCE

For pump reliability and efficiency, comply with maintenance intervals as shown in the table of fig. 9. Many applications will require changes at the frequency shown in the table due to severe and unusual operating conditions.

PREVENTIVE MAINTENANCE	
EVERY 100 HOURS	EVERY 300 - 500 HOURS
Check oil level	Change oil
	Check / Replace: <ul style="list-style-type: none"> • Balls • Valve seats For MF7M5B and MF7M7B
	Check / Replace: <ul style="list-style-type: none"> • Valves • Valve seats • Valve springs • Valve guides for MF7M5D and MF7M7D
Fig. 9	Check / Replace: <ul style="list-style-type: none"> • H.P. seal • Wiper ring



If the pump is temporarily not going to be used, in order to prevent stiffening or corrosion caused by the fluids being pumped, it is strongly recommended to flush all the components inside the head

To increase the component life of hydraulic parts, wash the parts with fresh water at the end of the working day.

12. PUMP STORAGE



12.1 Long term inactivity

If the pump is started for the first time after a long period from the date of shipment, before operation check the oil level, inspect the valves as specified in chapter 10, then follow described start-up procedures.

12.2 Filling the Pump With An Anti-Corrosion Emulsion or Anit-freeze

- a) Make sure the connecting hose is clean
- b) Fix the suction hose to the diaphragm pump, open the pump suction connection and attach the pipe between it and the diaphragm pump
- c) Fill the container with the solution / emulsion.
- d) Insert the free ends of the suction hose and the high pressure exhaust pipe inside the container.

12.2 Filling the Pump With An Anti-Corrosion Emulsion or Anit-freeze (continued)

- e) Switch on the diaphragm pump.
- f) Pump the emulsion until it comes out of the high pressure hose,
- g) Continue pumping for at least another minute; if needed, the emulsion can be reinforced by adding, for example, Shell Donax.
- h) Stop the pump, remove the hose from the suction connection and close it with a plug.
- i) Remove the hose from the high pressure outlet port. Clean, grease and plug both connections and the hoses.

13. PRECAUTIONS AGAINST FREEZING

In areas and periods of the year where there is risk of freezing, follow the instructions indicated in Chapter 12 (see paragraph 12.2).



In the presence of ice, in no case must the pump be started until the entire circuit has been completely thawed out; not complying with this indication may cause serious damage to the pump.

14. WARRANTY TERMS

The guarantee period and conditions are contained in the purchase agreement.

The warranty is void if:

- a) The pump has been used for purposes that differ from that agreed.
- b) The pump has been fit with an electric or diesel engine with performance greater than that indicated in the table.
- c) The required safety devices were un-adjusted or disconnected.
- d) The pump was used with accessories or spare parts not supplied by General Pump.
- e) Damage was caused by:
 - 1) improper use
 - 2) the non-observance of maintenance instructions
 - 3) use not compliant with operating instructions
 - 4) insufficient flow rate
 - 5) faulty installation
 - 6) incorrect positioning or sizing of the hoses
 - 7) non-authorized design changes
 - 8) cavitation

15. TROUBLESHOOTING**The pump does not produce any noise at start-up:**

- The pump is not primed and is running dry
- There is no water in the inlet line
- The valves are blocked
- The delivery line is closed and does not allow the air in the pump to be discharged

**The pump pulses irregularly (knocking):**

- Air suction
- Insufficient feeding
- Bends, elbows, fittings along the suction line obstruct the fluid's passage
- The inlet filter is dirty or too small
- The booster pump, where provided, supplies insufficient pressure or flow rate
- The pump is not primed due to insufficient head or the delivery line is closed during priming
- The pump is not primed due to valve seizing
- Worn valves
- Worn pressure packings
- Incorrect operation of the pressure adjustment valve
- Transmission problems

**The pump does not deliver the rated flow / is noisy:**

- Insufficient feeding (see the causes listed above)
- RPM are less than the rated value
- Excessive amount of water by-passed by the pressure adjustment valve
- Worn valves



- Leakage from the pressure packings
- Cavitation due to:
 - 1) Wrong sizing of the suction hose/undersized diameters
 - 2) Insufficient flow rate
 - 3) High water temperature

**Insufficient pump pressure:**

- The nozzle (or has become) too large
- Insufficient RPM
- Leakage from the pressure packings
- Incorrect operation of the pressure adjustment valve
- Worn valve

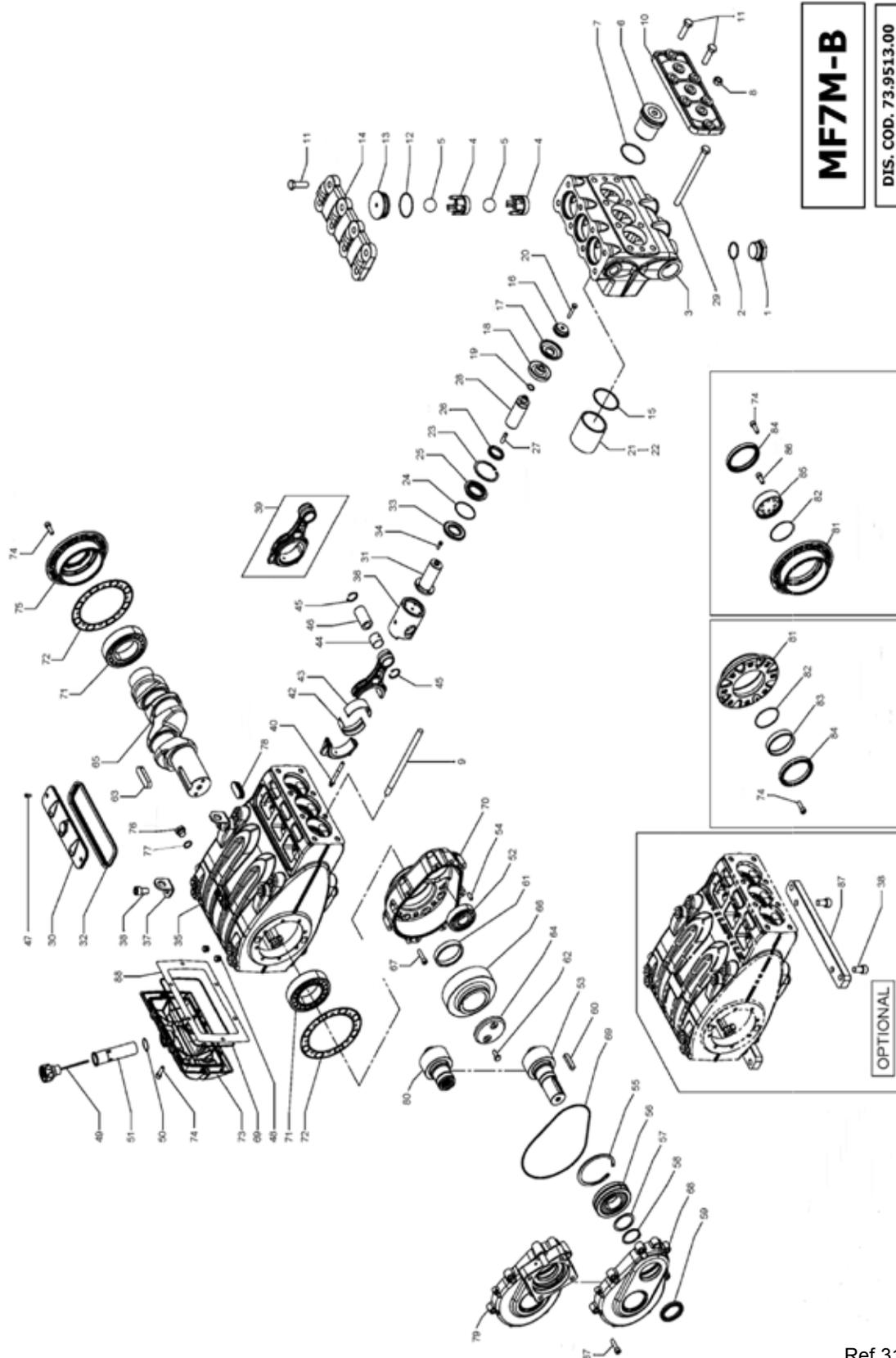
**Overheated pump:**

- The pump is overloaded (pressure or RPM exceed the rated values)
- Oil level is too low, or the oil is not of a suitable type, indicated in Chapter 7 (see paragraph 7.4)
 - Incorrect alignment of the joint or pulleys
 - Excessive inclination of the pump during operation

**Pump vibrations or knocking:**

- Air suction
- Incorrect operation of the pressure adjustment valve
- Valve malfunction
- Irregular drive transmission motion

16. EXPLODED VIEW AND PARTS LIST



MF7M5B and MF7M7B Pumps

Item	Part #	Description	QTY.
1	F98244100	Plug G 1-1/2"x20	3
2	F90407500	OR Ø 42.86x3.53	3
3	F73121315	Manifold	1
4	F36214856	Valve seat	6
5	F97491500	Ball Ø 1-1/2" (28.100)	6
6	F73223862	Front cap	3
7	F90413400	OR Ø 75.08x3.53	3
8	F92255300	Nut M16x13	4
9	F95848000	Captive screw M16x234	4
10	F73223215	Front cover	1
11	F99514800	Screw M16x55	13
12	F90391100	OR Ø 66.35x2.62	3
13	F73223962	Valve plug	3
14	F73223315	Valve cover	1
15	F93201000	Seal Ø 79.0x86.9x1.5	3
16	F73223766	Plunger mounting seal bushing	3
17	F93201500	Plunger seal Ø 75	3
18	F73223670	Plunger support seal	3
19	F90384500	OR Ø 18.72x2.62	3
20	F99312720	Screw M8x45	3
21	F73060291	Sleeve Ø 75x86.5 MF7M7	3
22	F73030302	Sleeve Ø 75x86.5 MF7M5	3
23	F90092500	Stop ring	3
24	F90390900	OR Ø 64.77x2.62	3
25	F73223570	Scraper support	3
26	F90283100	Scraper ring Ø 40x53x5.5	3
27	F95828000	Stud M10x25	3
28	F73223456	Plunger spacer	3
29	F99522700	Screw M16x220	4
30	F73150022	Upper cover	1
31	F73050636	Plunger stem guide	3
32	F73224047	Inspection cover seal	1
33	F90168500	Ring Ø 40.0x72.0x7.0	3
34	F99188400	Screw M6x20	12
35	F73010313	Pump Housing	1
36	F79050443	Plunger guide	3
37	F73210674	Lifting bracket	2
38	F99513000	Screw M16x30	2
39	F73030301	Connecting rod assembly	3
40	F99378800	Connecting rod screw	6
42	F90928000 F90928100 F90928200	Semi-bushing lower Semi-bushing +0.25 Semi-bushing +0.50	3
43	F90928900 F90928400 F90928500	Semi-bushing upper Semi-bushing +0.25 Semi-bushing +0.50	3
44	F90917300	Connecting rod bushing	3
45	F90069700	Stop ring	6
46	F97745000	Plunger pin	3
47	99183700	Screw M6x14	2
48	98206000	Hole plug Ø 15	6
49	F98233500	Oil plug G1"	1

Item	Part #	Description	QTY.
50	90361600	O-ring Ø 34.65x1.78	1
51	F73210295	Dipstick tube G1"	1
52	F91854000	Roller bearing	1
53	F10076735 F10076835 F10073935 F10082235	Pinion Z24 R. 1.875 Pinion Z21 R. 2.238 Pinion Z18 R. 2.722 Pinion Z19 R. 3.211	1
54	F97623000	Plug Ø 10x24	2
55	F90101000	Stop ring	1
56	F91859900	Roller bearing	1
57	F73210455	Bearing support ring	1
58	F90081000	Stop ring	1
59	F90172400	Ring Ø 55.0x75.0x8.0	1
60	F91500500	Key 14x09x60	1
61	F73210589	Supporting ring gear	1
62	F99366700	Support ring M10x25	2
63	F91511000	Key 22x14x80	1
64	F74213255	Gear stop	1
65	F73020035	Crankshaft	1
66	F10077035 F10077135 F10077235 F10082355	Gear Z45 R. 1.875 Gear Z47 R. 2.238 Gear Z49 R. 2.722 Gear Z61 R. 3.211	1
67	F99371000	Vite M10x40	15
68	F73210113	Reduction gear cover	1
69	F90415000	O-ring Ø 253.60x3.53	2
70	F73210013	Reduction gear box	1
71	F94881000	Roller bearing	2
72	F73210384	Side seal	2
73	F73160022	Housing cover	1
74	F99368600	Screw M10x30	30
75	F73150222	Bearing cover	1
76	F98218700	Plug G1/2"x10	2
77	96751400	Washer 21.5x27.0x1.5	2
78	F98244300	Oval Plug 57x22x13	3
79	F73215513	Reduction gear cover	1
80	F10077355 F10077455 F10079455	Pinion Z24 R. 1.875 Pinion Z21 R. 2.238 Pinion Z18 R. 2.722	1
81	F73150322	Open bearing cover	1
82	F90391450	O-ring Ø75.87x2.62	1
83	F73215654	Direct drive ring	1
84	F90195000	Ring Ø 90.0x110.0x12.0	1
85	F73215754	Auxiliary force socket	1
86	99367100	Screw M10x25	6
87	F73200064	Pump foot	2
88	F73224184	Rear cover seal	1

REPAIR KITS

KIT NUMBER	F2365 (MF7M5B and MF7M7B) Plunger Packing Kit	F2366 (MF7M5B and MF7M7B) Valve Kit	F2367 (MF7M5B) Plunger Rebuild Kit	F2368 (MF7M7B) Plunger Rebuild Kit	F2369 (MF7M5B and MF7M7B) Complete Seals Kit	F2150 Con-rod Kit	F2151 (+0.25) Con-rod Kit	F2153 (+0.50) Con-rod Kit	F2152 Feet mounting kit
Positions included	7, 17, 19	2, 4, 5, 7, 12	7, 15, 17, 19, 21, 22, 26	7, 15, 17, 19, 21, 22, 26	2, 7, 12, 15, 19, 24, 26, 32, 33, 50, 59, 69, 72, 88	42, 43	42, 43	42, 43	38, 87

MF7M5B and MF7M7B Pumps

Item	Part #	Description	QTY.
1	F98244100	Plug G 1-1/2"x20	3
2	F90407500	OR Ø 42.86x3.53	3
3	F73121315	Manifold	1
4	F36214956	Intlet valve seat	3
5	F36208801	Complete spherical valve	6
6	F36209051	Internal valve guide	6
8	F94760000	Spring Ø 28.3x30.7	3
9	F36206105	Intake valve guide	6
10	F36725101	Inlet valve group	3
11	F73223862	Front cover	3
12	F90413400	OR Ø 75.80x3.53	3
13	F92255300	Nut M16x13	4
14	F95848000	Captive screw M16x234	4
15	F73223215	Front cover	1
16	F99514800	Screw M16x55	13
17	F36215056	Delivery valve	3
18	F94760500	Spring Ø 28.5x32.0	3
19	F36725201	Outlet valve group	3
20	F90391100	OR Ø 66.35x2.62	3
21	F74211070	Valve plug	3
22	F73223315	Valve cover	1
23	F93201000	Seal Ø 79.0x86.9x1.5	3
24	F73223766	Plunger mounting seal bushing	3
25	F93201500	Plunger seal Ø 75	3
26	F73223670	Plunger support seal	3
27	F90384500	OR Ø 18.72x2.62	3
28	F99312720	Screw M8x45	3
29	F73060291	Sleeve Ø 75x86.5 MF7M7	3
30	F73060302	Sleeve Ø 75x86.5 MF7M5	3
31	F90092500	Seeger ring	3
32	F90390900	OR Ø 64.77x2.62	3
33	F73223570	Scraper support	3
34	F90283100	Scraper ring Ø 40.0x53.0x5.5	3
35	F95828000	Stud M10x25	3
36	F73223456	Plunger spacer	3
37	F99522700	Screw M16x220	4
38	F73150022	Upper cover	1
39	F73050636	Plunger stem guide	3
40	F73224047	Upper cover seal	1
41	F90168500	Ring Ø 40.0x72.0x7.0/8.5	3
42	F99188400	Screw M6x20	12
43	F73010313	Pump housing	1
44	F79050443	Plunger guide	3
45	F73210674	Lifting bracket	2
46	F99513000	Screw M16x30	2
47	F73030301	Complete rod	3
48	F99378800	Con-rod clamping screw M10x1.5x80	6
50	F90928000 F90928100 F90928200	Semi-bushing lower Semi-bushing +0.25 Semi-bushing +0.50	3
51	F90928300 F90928400 F90928500	Semi-bushing upper Semi-bushing +0.25 upper Semi-bushing +0.50 upper	3

Item	Part #	Description	QTY.
52	F90917300	Con-rod bushing	3
53	F90069700	Stop ring	6
54	F97745000	Plunger pin	3
55	F99183700	Screw M6x14	2
56	F98206000	Hole plug Ø 15	6
57	F98233500	Oil plug G1"	1
58	F90361600	OR Ø 34.65x1.78	1
59	F73210295	Dipstick tube G1"	1
60	F91854000	Roller bearing	1
61	F10076735 F10076835 F10073935 F10082235	Pinion Z24 R1.875 Pinion Z21 R2.238 Pinion Z18 R2.722 Pinion Z19 R3.211	1
62	F97623000	Plug Ø 10x24	2
63	F90101000	Stop ring	1
64	F91859900	Roller bearing	1
65	F73210455	Bearing support ring	1
66	F90081000	Stop ring	1
67	F90172400	Ring Ø 55.0x75.0x8.0	1
68	F91500500	Key 14x09x60	1
69	F73210589	Support ring gear	1
70	F99366700	Screw M10x25	2
71	F91511000	Key 22x14x80	1
72	F74213255	Gear stop	1
73	F73020035	Crankshaft	1
74	F10077035 F10077135 F10072235 F10082355	Gear Z45 R1.875 Gear Z47 R2.238 Gear Z49 R2.722 Gear Z61 R3.211	1
75	F99371000	Screw M10x40	15
76	F73210113	Reduction gear cover	1
77	F90415000	OR Ø 253.60x3.53	2
78	F73210013	Gearbox housing	1
79	F91550000	Roller bearing	2
80	F73210384	Side gasket	2
81	F73160022	Crankcase cover	1
82	F99368600	Screw M10x30	30
83	F73150222	Bearing cover	1
84	F98218700	Plug G1/2"	2
85	F96751400	Washer 21.5x27.0x1.5	2
86	F98244300	Oval plug 57x22x13	3
87	F73215513	Reduction gear cover	1
88	F10077355 F10077455 F10079455	Pinion Z24 R1.875 Pinion Z21 R2.238 Pinion Z18 R2.722	1
89	F73150322	Bearing cover	1
90	F90391450	OR Ø 75.87x2.62	1
91	F73215654	Direct drive ring	1
92	F90195000	Ring Ø 90.0x110.0x12.0	1
93	F73215754	Auxiliary force socket	1
94	F99367100	Screw M10x25	6
95	F73200064	Pump foot	2
96	F73224184	Rear seal cover	1

REPAIR KITS

KIT NUMBER	F2365 (MF7M5D and MF7M7D) Plunger Packing Kit	F2370 (MF7M5D and MF7M7D) Valve Kit	F2367 (MF7M5D) Plunger Rebuild Kit	F2368 (MF7M7D) Plunger Rebuild Kit	F2369 (MF7M5D and MF7M7D) Complete Seals Kit	F2150 Con-rod Kit	F2151 (+0.25) Con-rod Kit	F2153 (+0.50) Con-rod Kit	F2152 Feet mounting kit
Positions included	12, 25, 27	2, 10, 12, 19, 20	12, 23, 25, 27, 29, 30, 34	12, 23, 25, 27, 29, 30, 34	2, 12, 20, 23, 27, 32, 34, 40, 41, 58, 67, 77, 80, 96	50, 51	50, 51	50, 51	46, 95

17. MAINTENANCE LOG

HOURS & DATE

OIL CHANGE							
GREASE							
PACKING REPLACEMENT							
PLUNGER REPLACEMENT							
VALVE REPLACEMENT							



GP Companies, Inc.
1174 Northland Drive
Mendota Heights, MN 55120
Phone: 651.686.2199 Fax: 800.535.1745
www.generalpump.com email: sales@gpcompanies.com

Ref 310089 Rev. B
02-20