PCM

Des pompes au process

INSTRUCTION MANUAL

TO BE KEPT FOR FUTURE REFERENCE

PCM - PRECI-POMPE

Series **LAGOA-LG**
Type **LG2**
Serial N°
Year of manufacture

Document No:	***NIPPLG201A***	*Date cheked:*

Date issued: January 2000

PCM POMPES-17 RUE ERNEST LAVAL-BP 35-92173 VANVES CEDEX FRANCE
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DECLARATION OF INCORPORATION

We hereby state that the sub-assembly referred to in the technical specifications sheet cannot be put into service until the machine in which it is to be incorporated is declared compliant with the provisions of Council Directive 89/392/CEE of the Machine Directive 91/368/CEE modified 93/44/CEE and 93/68/CEE, and with the national legislation expressing it.

The sub-assembly is compliant with the EN 292 harmonised norms.

Vanves, 23/04/1996

For: Company name and position

Innovation Manager

B. LAFONT

Thank you for selecting a pump from the PCM range

6 PRODUCT LINES

PCM MOINEAU
The widest range of industrial progressive cavity pumps.

PCM PRECI-POMPE
Electro-mechanical diaphragm and plunger dosing pumps.

PCM MOINEAU OILFIELD
Progressive cavity pumps for oil extraction.

PCM DELASCO
The most complete range of peristaltic pumps.

PCM DOSYS
Precision pumpheads and continuous mixers.

PCM EQUIPMENT
Lobe pumps and circumferential piston pumps,
Pipeliner-grinders.

PCM markets its products throughout the world via a distribution network consisting mainly of subsidiaries and agents. All are approved by PCM, and are able to provide Service and Assistance.

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SECTION 3. MAINTENANCE

SECTION 4. APPENDICES

0. INTRODUCTION

0.1 General

The pump you have just acquired was manufactured and inspected with the utmost care.

The purpose of this instruction manual is to help you maintain the correct operating conditions for your pump.

Identification Plate

This plate, located on the side of each pump, gives the following information:

a) Serial Number,

b) Pump part number, which breaks down according to the following examples:

_ Most common Part Number, **LG2P10T**

LG2; specifies pump model and type
P; specifies pumphead version (see Paragraph 1.2.1)
10; specifies nominal capacity (l/h) at 50 Hz
T; specifies the type of drive

_ Other possible Part Number, **LG2P10T/x2**

LG2P10T; see details below
/; indicates presence of an option or specific feature on the pump
x2; specifies the number of pumpheads or type of pumphead, or the option, or specific feature present

Note: **The coding of equipment delivered is clearly set out in this form in the technical description in Section 4 - Appendices, or included in the order acknowledgement sent to your purchasing department in the case of stock pumps.**

c) Maximum pumphead capacity at maximum pressure

d) Maximum pressure allowed by the pumphead

e) Customer reference

This information is essential for all spare part orders (please contact our Customer Service Department).

Pump characteristics (capacity, pressure, speed of rotation, construction, etc.) must not be changed without the written agreement of our Customer Service Department.

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0.2 Limits of Guarantee

Before performing any maintenance operation on the pump, check that all necessary precautions have been taken: upstream and downstream valves closed, pipes cleaned and purged, electrical power supply disconnected, and all usual measures concerning the safety of personnel to be taken according to the instructions in force.

On receiving the pump, examine it immediately to check that no signs of damage are apparent. If the pump is visibly damaged, contact PCM or its agent, and indicate clearly on the carrier's documents that the merchandise was received damaged, with a brief description of the type of damage observed.

Storage and maintenance conditions are explained in Section 3, Paragraphs 3.2 and 3.3. To avoid all risk of damage or accidents (in particular when the products being conveyed are hazardous), it is essential that you do not use this equipment for an application other than the one provided for in our technical description (see Section 4 - Appendices), or included in the order acknowledgement sent to your purchasing department in the case of stock pumps.

To maintain the original properties of the pump, it is essential to use parts manufactured by PCM POMPES.

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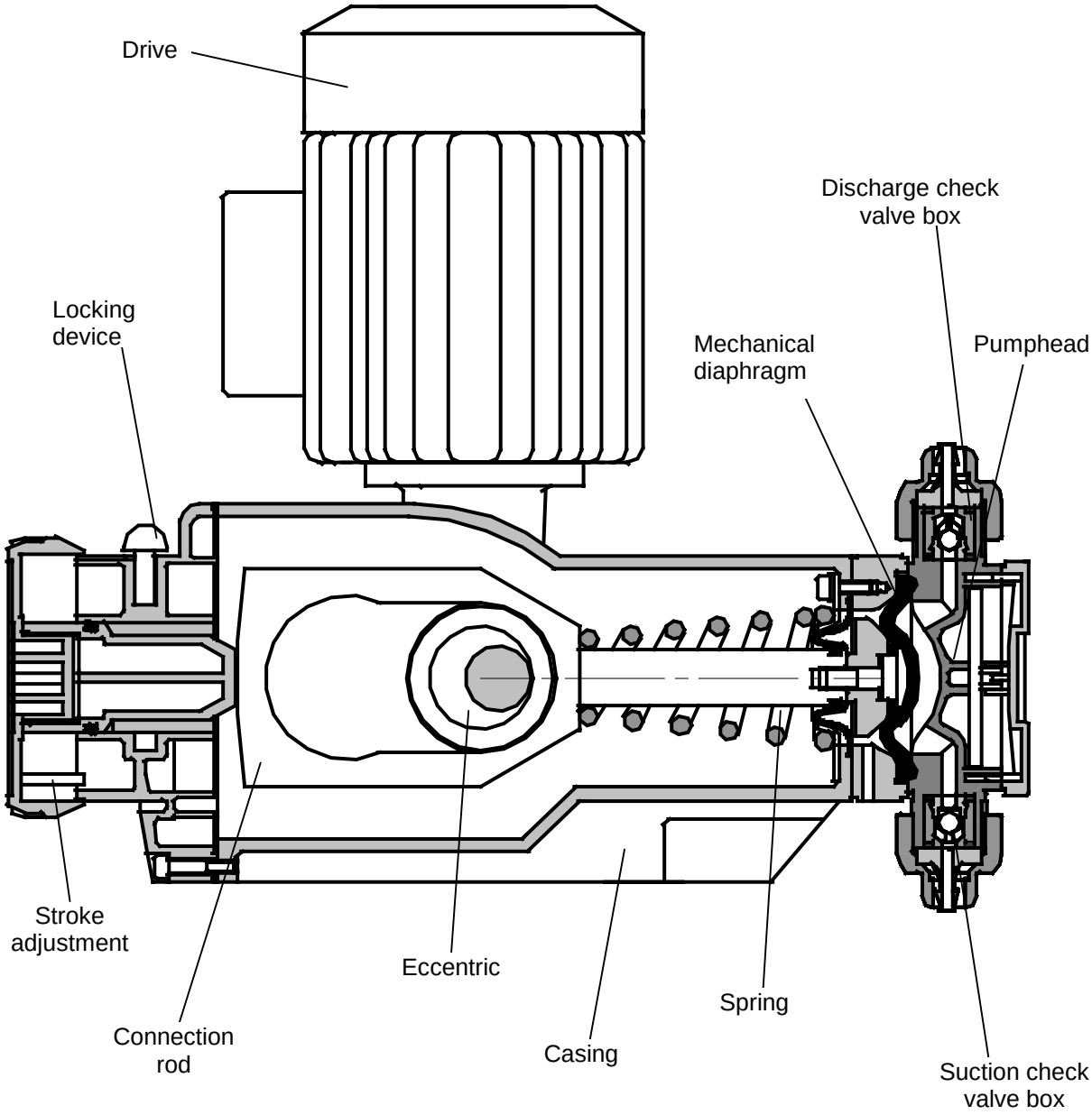
1. CHARACTERISTICS AND INSTALLATION

1.1 Operating Principle



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LAGOA LG range is designed with an interrupted stroke mechanism, and diaphragm pumphead. This technology has been chosen to suit fluid dosing applications.

An electric motor drives an eccentric through a reducing gear and worm, connected to connecting rod, linked to the diaphragm. A simple rotation of the eccentric, gives the diaphragm's motion, thus generating a capacity.

A mechanical device enables the capacity to be modified, and therefore the flow adjustment.

This device consists in a stroke interruption ; the stroke length can be adjusted thus modifying the connecting rod motion, while the eccentric freely rotates in the connecting rod.

Direction of Rotation

The direction of rotation is indicated by an arrow affixed to the drive.

1.2 Characteristics

1.2.1 Materials of Construction

Specified in the table below:

Version	Equipment						Notes
	Diaphragm	Pumphead	Valve Box				
			Body	Ball	Spring	Gasket	
P	P	PPH	PPH	Glass	-	FPM	PPH = Polypropylene
PF	T	PPH	PPH	PVDF	-	FEP	For fluorous liquid
PS	F	PPH	PPH	AISI 316L	-	EPDM	For liquid containing amines, soda and solvent
PC	E	PPH	AISI 316L	AISI 316L	-	FPM	For lightly loaded liquid
S	+	AISI 316L	AISI 316L	AISI 316L	AISI 316L	PTFE	Stainless steel
SA	E	AISI 316L	AISI 316L	AISI 316L	AISI 316L	PTFE	For food industry
SC	L	AISI 316L	AISI 420	AISI 440c	AISI 316L	PTFE	For loaded liquid
D	A	PVDF	PVDF	PVDF	-	FEP	PVDF
H	S	PVC	PVC	PVC	Hastelloy C	FPM	For H2SO4 and polyelectrolytes
HD	T.	PVC	PVC	PVDF	-	FPM	Same, but valves without springs

NOTE: Unless otherwise stated, our pumps are protected with a protective paint; the procedure and application instructions for which are defined in the PCM standard painting procedure specification sheet 1 (See Section 4, Appendices). For other types of coating or specific requirements, the relevant procedure should be requested when ordering the equipment or from our Customer Service Department.

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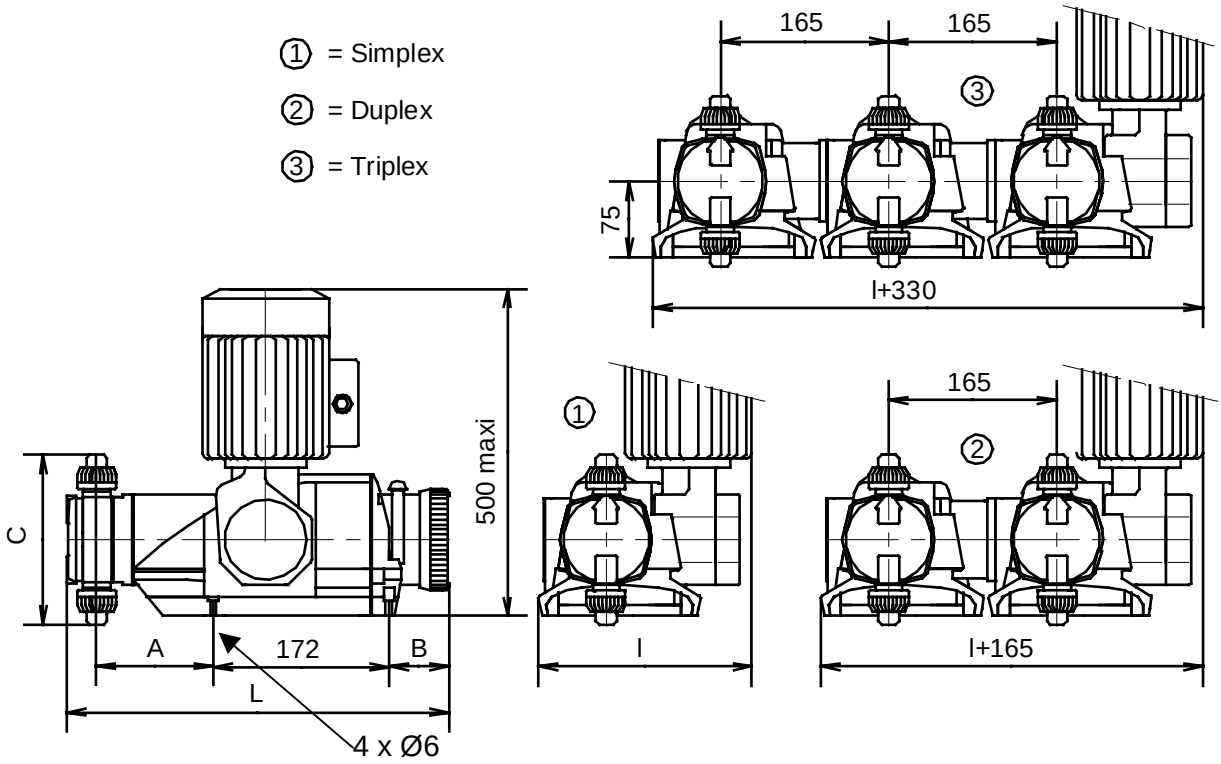
	PUMPHEAD VERSION					
	P-PF-PS	**PC**	**S-SC**	**SA**	**D**	**H-HD**
TYPE OF PUMP	**CONNECTORS**					
LG2-4 , LG2-10	T4-8 or Ø16 to glue	T6-12 or Ø16 to glue	R1/2"	DIN DN10	Rp1/4"	G1"A
LG2-9 , LG2-12 LG2-20 , LG2-25 LG2-35 , LG2-50	T6-12 or Ø16 to glue	T6-12 or Ø16 to glue	R1/2"	DIN DN10	Rp1/4"	G1"A
LG2-45 , LG2-70 LG2-100 , LG2-110 LG2-140 , LG2-170 LG2-260 , LG2-350	G1"A	Rp3/4"	Rp3/4"	SMS DN25	G1"A	G1"A

_ T4-8 or T6-12 represents a hose connector Ø4x8 or Ø6x12
_ Ø16 to glue represents an external diameter of the PVC tube to glue
_ R1/2" represents a gas male thread (according to NF E 03-004)
_ DIN DN10 represents a threaded male connector (according to DIN 11851)
_ Rp1/4" or Rp3/4" represents a gas female thread (according to NF E 03-004)
_ G1"A represents a cylindrical gas male thread (according to NF E 03-005)
_ SMS DN25 represents a threaded male connector (according to SMS 1145)

Overall Dimensions



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		PUMPHEAD VERSION					
		P-PF-PS	PC	S-SC	SA	D	H-HD
TYPE OF PUMP		DIMENSIONS (mm) AND MASS (kg)					
	A	114.5	114.5	116	116	116	120
	B max.	58.5	58.5	58.5	58.5	58.5	58.5
LG2-4	C	136	136	200	220	130	164
	L max.	294	294	296	296	295	302
	l max.	218	218	218	218	218	218
LG1-10	Sx Mass	13	13	14	14	13	13
	Dx Mass	21	21	23	23	21	21
	Tx Mass	29	29	32	32	29	29
	A	114.5	114.5	117.5	117.5	117.5	123
LG2-9 , LG2-12	B max.	58.5	58.5	58.5	58.5	58.5	58.5
	C	168	168	208	232	138	176
LG2-20 , LG2-25	L max.	302	302	298	298	295	312
	l max.	218	218	218	218	218	218
LG2-35 , LG2-50	Sx Mass	13	13	14	14	13	13
	Dx Mass	21	21	23	23	21	21
	Tx Mass	29	29	32	32	29	29
	A	159	159	159	159	159	159
LG2-45,LG2-70	B max.	58.5	58.5	58.5	58.5	58.5	58.5
	C	168	168	208	232	138	176
LG2-100,LG2-110	L max.	302	302	298	298	295	312
	l max.	232	232	232	232	232	232
LG2-140,LG2-170	Sx Mass	14	14	17	17	14	14
	Dx Mass	23	23	29	29	23	23
LG2-260,LG2-350	Tx Mass	32	32	41	41	32	32

Note: **Simplex or Sx represents a pump with one pumphead**
Duplex or Dx represents a pump with two pumpheads
Triplex or Tx represents a pump with three pumpheads

1.2.2 Operating Characteristics

Pump characteristics (capacity, pressure, speed of rotation, construction, etc.) must not be changed without the written agreement of our Customer Service Department.

They are recorded on the technical description of the equipment delivered.
The A-weighted equivalent acoustic pressure level of PCM pumps is below 70 dB(A).

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IMPORTANT

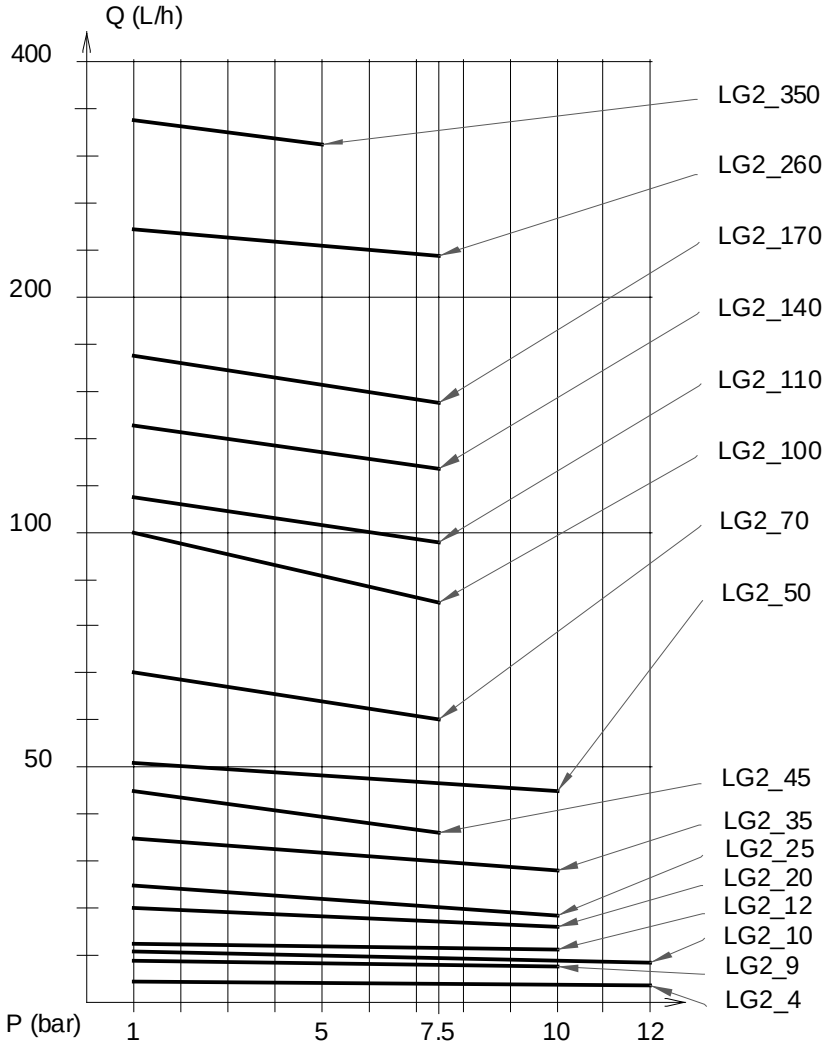
The temperature of the products being pumped may require the lowering of discharge pressures. Discharge pressure should be reduced as set out below:

Pumphead Version	Temperature (°C)	k x Pmax.
P-PF-PS-PC-H-HD	20°C	1 x Pmax.
	30°C	0.75 x Pmax.
	40°C	0.5 x Pmax.
S-SA-SC-D	20°C	1 x Pmax.
	40°C	0.75 x Pmax.
	60°C	0.5 x Pmax.
	80°C	0.25 x Pmax.
	90°C (*)	0.25 x Pmax.

(*) Maximum operating duration at this temperature is 30 minutes per day.

Capacity vs. Pressure Curves

Shown below, and applicable to each pumphead.



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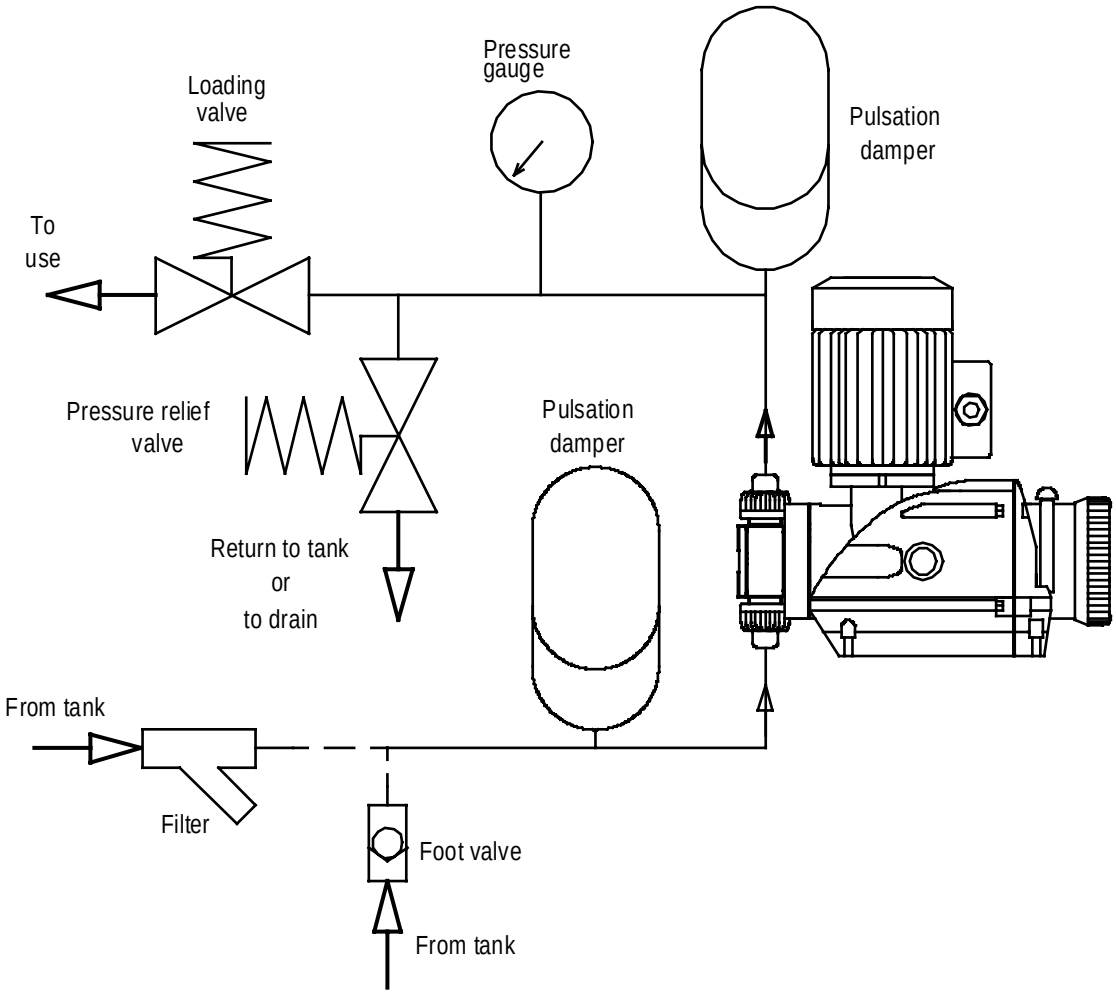
1.3 Installation of Equipment

1.3.1 Installation Precautions

The pump must be secured to a horizontal support via its mounting holes. It is important to leave enough space around the pump to allow access for maintenance and adjustment. Avoid installing the pump in areas where the ambient temperature might be below -5°C or above 60°C. For an outdoor installation, it is advisable to arrange a shelter above the equipment.
PCM can advise you or supply the accessories described below in kit or assembly form. Please consult our Customer Service Department.

Accessories Required



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Pressure Relief Valve

The pressure relief valve is a means of protecting the dosing pump as well as the installation. It is connected in parallel on the discharge circuit, as near as possible to the pump after the pulsation damper and before a loading or other valve, and allows tank return or drainage when accidental excess pressure occurs.

Pulsation Damper

Dosing pumps deliver pulsed outputs. Undesirable effects may therefore be observed during operation (hammer blows, large head losses, sensor measurement problems). To bring these pulsations down to an acceptable level, it might be necessary to place a pulsation damper at the pump discharge. This will damp the variations by about 95%. Because the spurious forces associated with pulsations are directly proportional to pipe length, and inversely proportional to pipe diameter, this accessory is essential for very long or complicated installations. Nonetheless, it is necessary to install a loading valve after the pulsation damper to linearise the flow rate in a low-head loss system. If placed at the suction lift end, it can also improve the pump suction lift capacity in the event of large head losses.

Loading Valve

The loading valve is an installation accessory to be placed at the discharge. Its purpose is to compensate for the main problems encountered when incorporating a dosing pump in a process. In particular, it allows capacity overloads (related to the inertia of the column of liquid), siphoning (caused by a higher pressure head at the suction end than at the discharge), and underloads (when the minimum pressure head required for the installation to operate properly is not present) to be avoided, and allows discharge to be completely eliminated for a 0% setting, and linearisation of the flow rate with respect to the adjustment value. The ideal tare pressure is 3 bars.

Pressure Gauge

A pressure gauge may be installed on the discharge pipe near the pump, to allow visual monitoring of pressure in the installation.

Filter

A filter eliminates particles from the liquid being pumped which could be harmful to correct operation of the pump suction and discharge check valves.

Foot Valve

The foot valve maintains a column of liquid at the suction lift end of the pump, to prevent drainage of the pump during a halt.

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Advice to Ensure Correct Pump Operation

Fig.1 The pressure, whether manometric or artificial, at the discharge must under no circumstances be lower than the pressure at the suction end (minimum differential 1 bar, ideal differential 3 bars).

Fig.2 Increase the geometric height of the discharge, or install a loading valve downstream of the pump to create the required counter-pressure.

Fig.3 For long pipes, it is advisable also to insert a pulsation damper as near as possible to the pump.

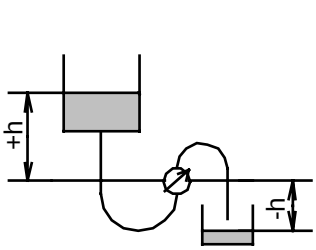

Fig 1

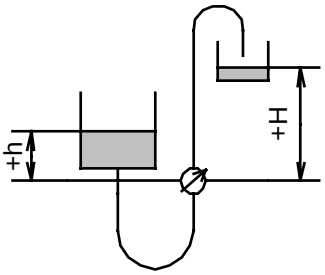

Fig 2

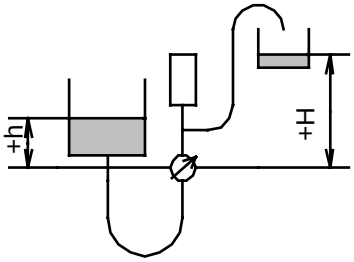

Fig 3

Fig.4 Swan-neck pipework does not increase the pressure at the discharge, but causes siphoning which is harmful to discharge rate accuracy.

Fig.5 If the configuration shown in Fig.1 cannot be avoided, install a loading valve at the pump discharge.

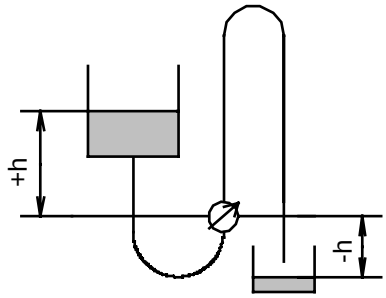

Fig 4

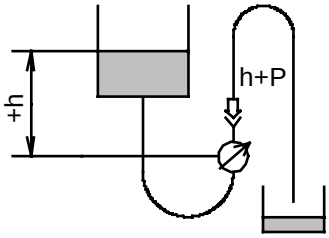

Fig 5

Fig.6 Any change in diameter at the suction should be applied vertically, according to the diagram below:

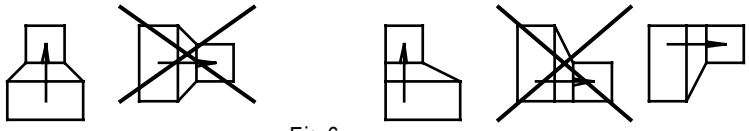

Fig 6

Sharp bends, excessively small pipe diameters, and complicated circuits may disturb hydraulic operation.

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Fig.7 Whenever possible, use large-radius bends and large-diameter pipes, especially upstream of the pulsation damper if one is to be installed.

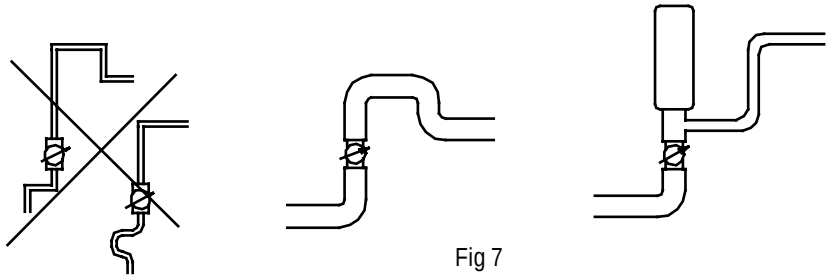

Fig 7

Several valves at the discharge, without any protection on the circuit, often cause errors leading to bursting of the pump or pipes.

Fig.8 Include a pressure relief valve to protect the pump or, even better, a pulsation damper and a pressure relief valve.

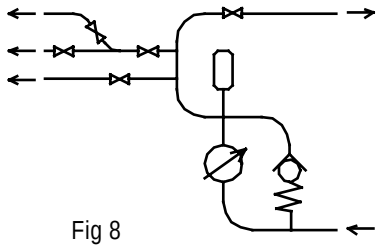

Fig 8

Fig.9 Supply by siphon changes pump capacity when the loading height varies, and creates a self-priming problem.

Fig.10 Connect to the bottom of the tank if possible. For substances prone to settling, connect 10 or 20 centimetres above the bottom of the tank.

Fig.11 For substances prone to degassing, install a short, rising pipe on the pump. If this is not possible, install a degassing pot.

Fig.12 Otherwise, insert an intermediate constant-level tank.

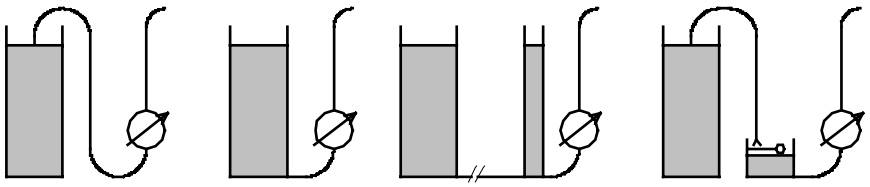

Fig 9 Fig 10 Fig 11 Fig 12

Welds, scales, or foreign bodies can jam the valves.
Rinse the pipes before connecting the pump, and install a filter at the pump suction.

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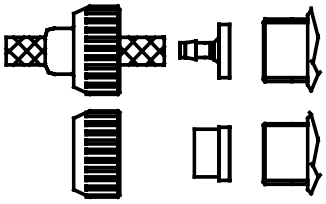
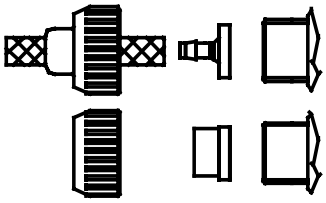
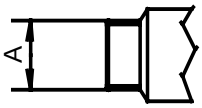
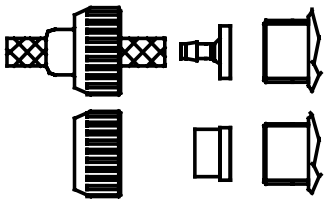
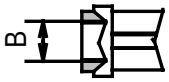
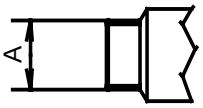
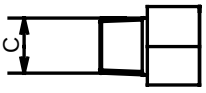
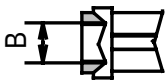
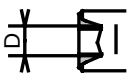
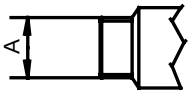
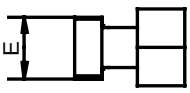
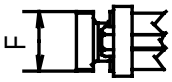
1.3.2 Connection of Pipes

The various connectors are listed in the following table according to pumphead version:

PUMPHEAD VERSION	NOMINAL CAPACITY OF PUMP		
	2 - 4 - 10 l/h	9 - 12 - 20 - 25 - 35 - 50 l/h	45-70-100-110-140-170-260-350 l/h
P-PF-PS	 Hose Ø4x8 or Ø16 to glue	 Hose Ø6x12 or Ø16 to glue	 Thread A=G1"A (NF E 03-005)
PC	 Hose Ø6x12 or Ø16 to glue		 Thread B=Rp3/4" (NF E 03-004)
H - HD	 Thread A=G1"A (NF E 03-005)		
S - SC	 Thread C=R1/2" (NF E 03-004)		 Thread B=Rp3/4" (NF E 03-004)
D	 Thread D=Rp1/4" (NF E 03-004)		 Thread A=G1"A (NF E 03-005)
SA	 For E=DIN DN10 (DIN 11851) connector		 For F=SMS DN25 (SMS 1145) connector

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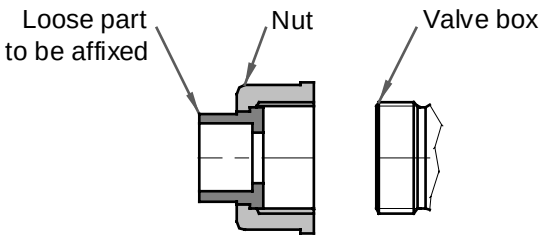
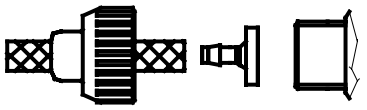
For small-sized plastic pumpheads, use a hose for suction as well as discharge whenever possible. If not, ensure that pipes are correctly aligned with the axis of the valve boxes so that there are no restrictions in the pipework to the pumphead.

TO PREVENT DAMAGE OR BREAKAGE, PLASTIC CONNECTORS MUST ONLY BE TIGHTENED BY HAND

a) **Caution!** For connection to plastic G1"A (NF E 03-005) pumpheads (See technical description Section 4 - Appendices) assemble the connection according to the following diagram:



b) **Caution!** For hose connections, use suitable hoses (external diameter tolerance +0.1 max. and +0 min.) with sufficient flexibility. Failure to comply with this rule can lead to bursting of the nipples from the first assembly.
Use hoses supplied by PCM, Part Numbers T4-8 and T6-12, whenever possible.



c) **Caution!** Check the gaskets of all suction connectors to prevent air intake in the event of pressure loss. This can lead to drainage or inaccurate flow rates.

1.3.3 Connection of the Motor

Caution! Electrical connections must only be carried out by a qualified person. Before performing any connection, ensure that the electrical power supply corresponds to the characteristics shown on the motor plate. A connection diagram is located in the motor terminal box.

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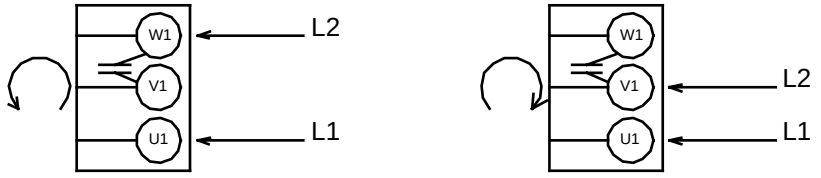
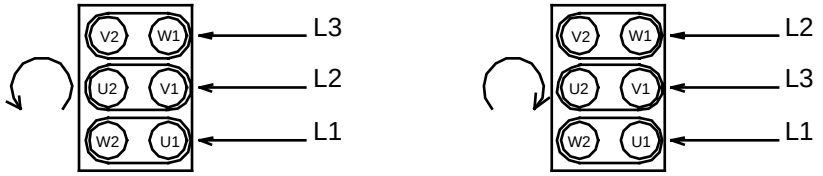
Single-Phase Motor

Standard pumps are equipped with a 220-V 50-Hz single-phase motor.

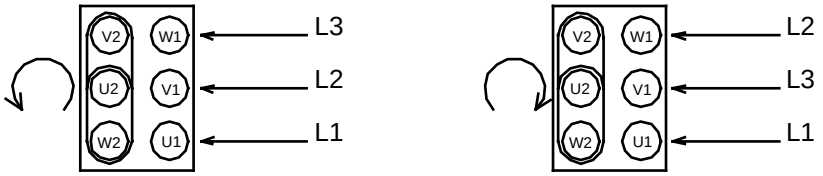


Three-Phase Motor

Connection from 220 V to 240 V in triangle position



Connection from 380 V to 460 V in star position



Caution! All our pumps are supplied with a star-type mounting. Remember to connect the pump to earth.

Regarding thermal protection: the setting value is the current indicated on the motor plate.

Connection of Brake Clutch and Overexcitation Board

Full details concerning this equipment are given in Section 4 - Appendices.

When all connections have been carried out (single-phase or three-phase), the pump can be started (pump setting at 0%), and the direction of rotation of the motor can be checked according to the arrow affixed to the motor.

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2. OPERATION

2.1 Initial Installation

2.1.1 Before Startup

Check the following:
_ Direction of rotation according to arrow affixed to the motor,
_ Product to be pumped is present in the tank,
_ All valves installed in pipes must be open,
_ Temperature of product to be pumped.

2.1.2 Startup

Switch the pump on.
During the first few minutes of operation, check the following:
_ The pumped liquid reaches the end of the discharge pipe,
_ No unusual noise,
_ Connectors are leaktight.
Check that the following parameters
_ Flow rate,
_ Pressure,
_ Viscosity of product,
_ Temperature
correspond to the parameters of the technical description (see Section 4 - Appendices or included in the order acknowledgement sent to your purchasing department in the case of stock pumps) for which the pump was manufactured. For values other than those indicated, PCM Customer Service must be consulted.

2.2 Normal Operating Procedure

2.2.1 Startup Procedure

Before each startup, check the following:
_ Product presence,
_ Open suction and discharge valves.
Start the pump, and set the vernier to the desired capacity percentage.

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2.2.2 General Operating Precautions

Ensure that:
_ The pump is constantly supplied with product,
_ Discharge pressure remains stable.

2.2.3 Shutdown Procedure

The shutdown procedure depends on the type of product being pumped. Refer to the specific characteristics in the technical description Section 4 - Appendices, or included in the order acknowledgement sent to your purchasing department in the case of stock pumps.
Shutdown procedure is therefore defined in the process operating diagram.
However, the minimum procedure is to stop the pump and close the suction and discharge valves.

Caution! In the case of a substance prone to settling, the pump must be cleaned to enable the pump to be restarted without damage.

2.3 Operating Procedure in the Event of an Incident

In the event of operating irregularities such as:
_ Pump does not start,
_ Pump does not prime itself,
_ Flow rate too low or irregular,
_ Insufficient discharge pressure,
_ Pump stops,
_ Pump does not discharge,
_ Pump abnormally noisy,
Proceed as follows:
_ Stop the pump according to the shutdown procedure described in Paragraph 2.2.3.
_ Hydraulically isolate the pump (suction, discharge),
_ Consult Paragraph 3.5 - Troubleshooting.

2.4 Automatic Control

The use of devices which allow or inhibit pump operation by automatic means is recommended.
For example, valves with open position electrical contacts, and above minimum level reading for the product.

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3. MAINTENANCE

3.1 List of Spare Parts

The grey-shaded areas in the tables below indicate the top-priority spare parts.

Diagram of a Simplex Pump

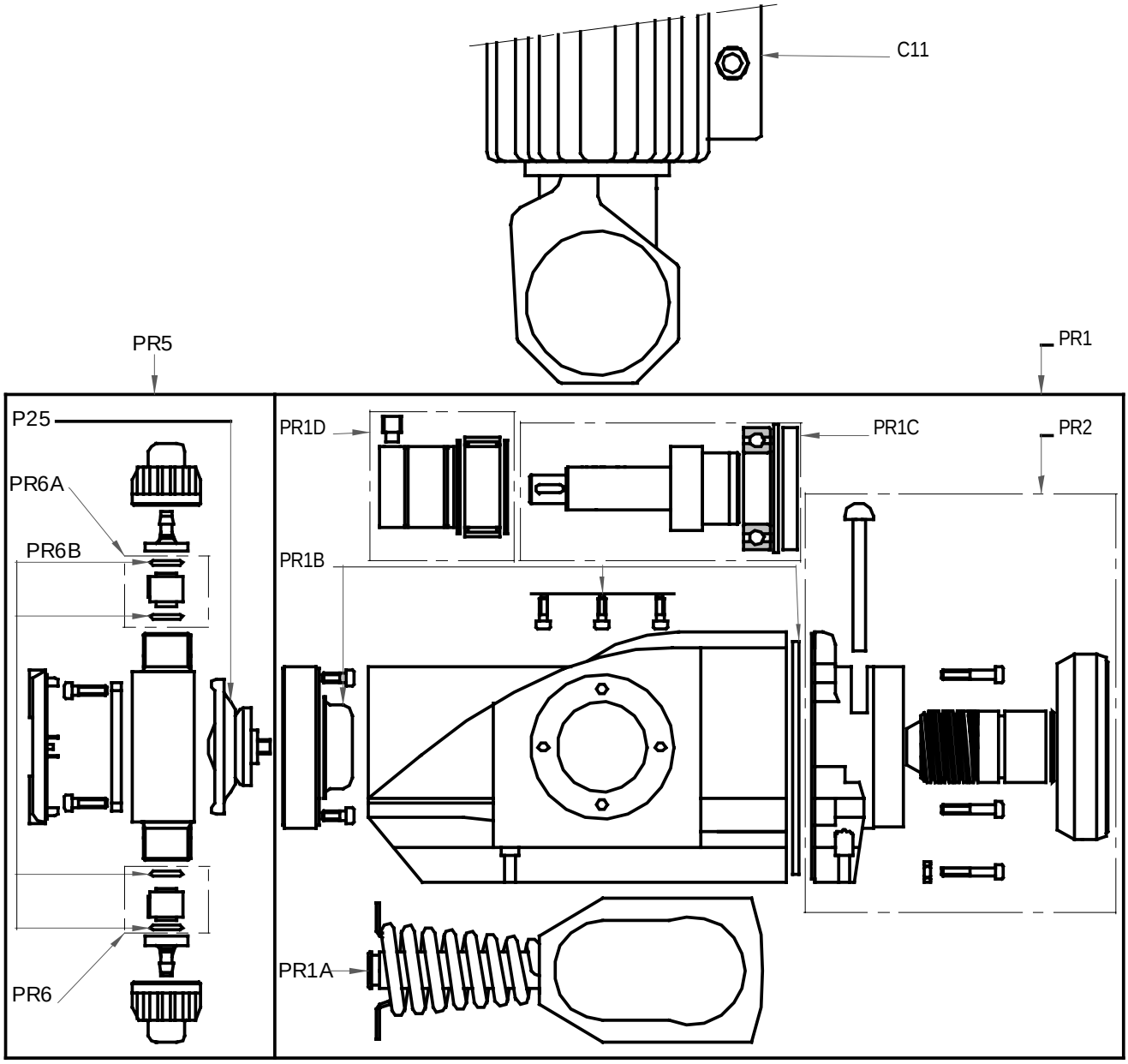

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Diagram of a Multiplex Pump

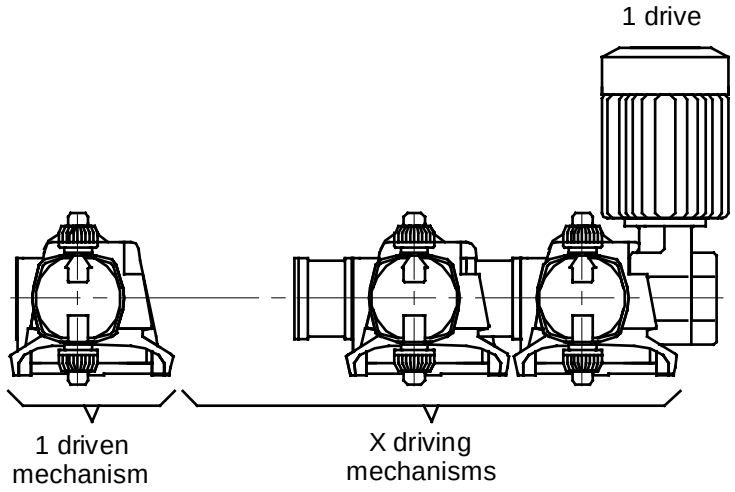

Diagram of a Driven Mechanism

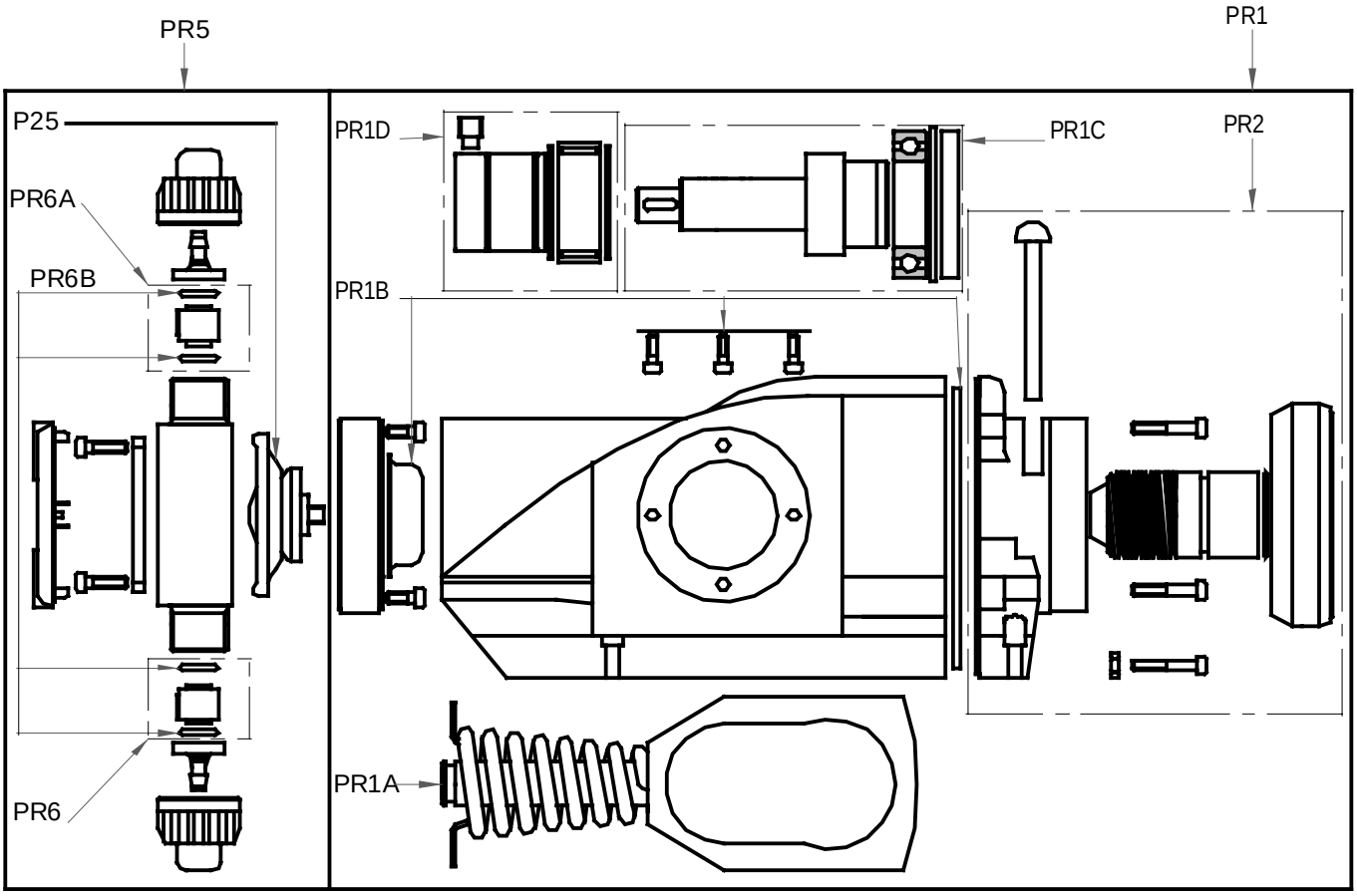

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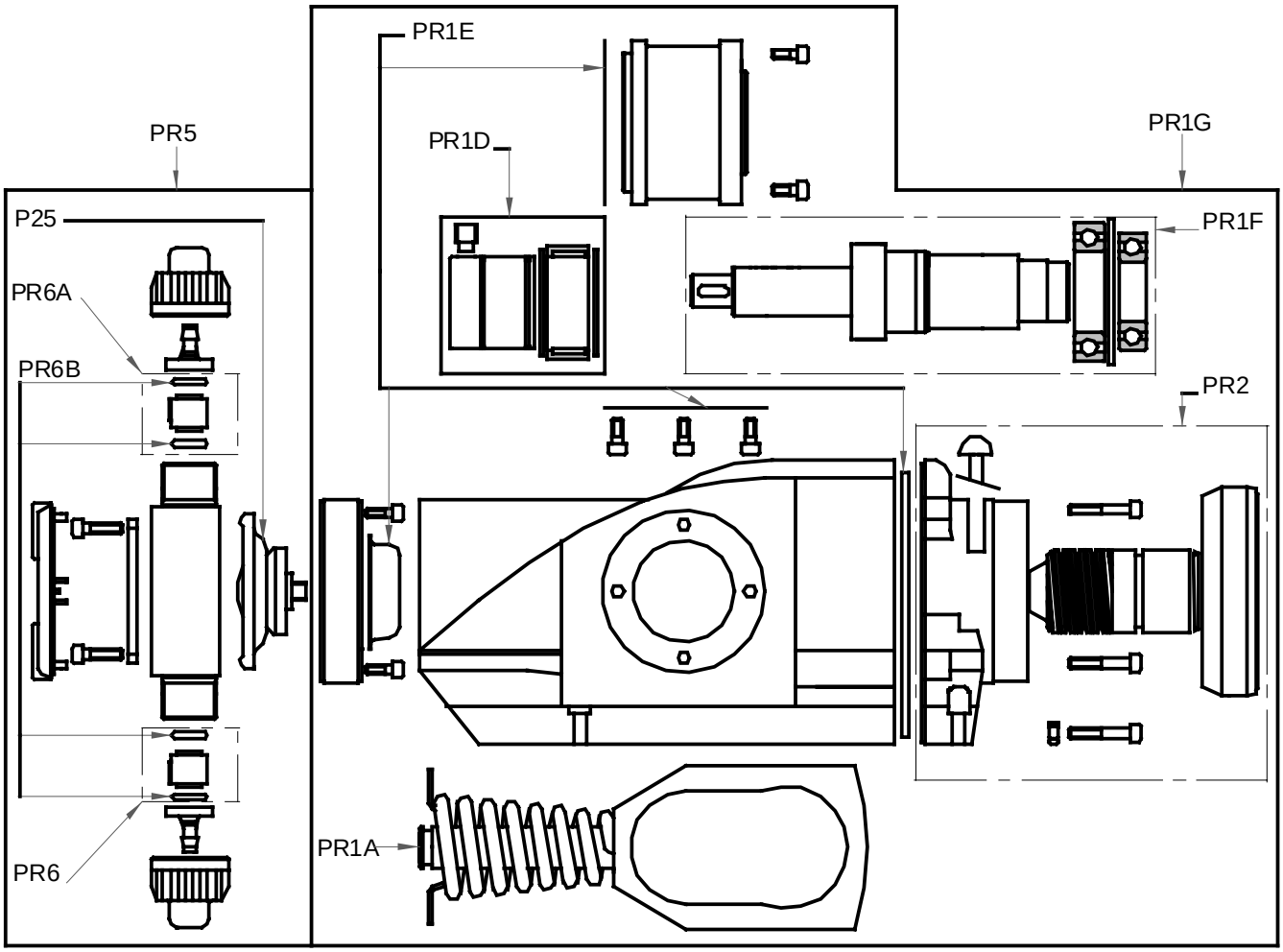
Diagram of a Driving Mechanism



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Drive Item C11

Drive Code	Pump Capacity	Drive Part No.	Motor Speed of Rotation	Motor Power	Diameter of Motor Shaft
T (Three-phase)	4-9-12-20-45 70-100-140 l/h	Gearmotor: C11004A000	1500 rpm	0.12 kW	63
T (Three-phase)	10-25-35-50-110 170-260-350 l/h	Gearmotor: C11002A000	3000 rpm	0.25 kW	63
M (Single-phase)	4-9-12-20-45 70-100-140 l/h	Motor: C11011C000 Reducing gear: C11007A000	1500 rpm	0.12 kW	63
M (Single-phase)	10-25-35-50-110 170-260-350 l/h	Motor: C11010C000 Reducing gear: C11006A000	3000 rpm	0.25 kW	71
A (Three-phase ADF)	4-9-12-20-45 70-100-140 l/h	Motor: C11011B000 Reducing gear: C11007A000	1500 rpm	0.12 kW	63
A (Three-phase ADF)	10-25-35-50-110 170-260-350 l/h	Motor: C11010B000 Reducing gear: C11006A000	3000 rpm	0.25 kW	63
F (Brake clutch)	4-9-12-20-45 70-100-140 l/h	Motor: 92102 000 Brake clutch: C05005A000 Reducing gear: C11007A000 Plate: 95417 000	1500 rpm	0.25 kW	63
F (Brake clutch)	10-25-35-50-110 170-260-350 l/h	Motor: C11010A000 Brake clutch: C05005A000 Reducing gear: C11006A000 Plate: 95417 000	3000 rpm	0.25 kW	63
W (Reducing gear only)	4-9-12-20-45 70-100-140 l/h	Reducing gear: C11007A000	1500 rpm	0.12 kW	63 or 71
W (Reducing gear only)	10-25-35-50-110 170-260-350 l/h	Reducing gear: C11006A000	3000 rpm	0.25 kW	63 or 71

Simplex Mechanism or Driven Mechanism

Pump Type	Pumphead Version	Connecting Rod Assembly Item PR1A	Pack of Gaskets Item PR1B	Drive Shaft Assembly Item PR1C	Eccentric Assembly Item PR1D	Adjustment Assembly Item PR2	Mechanical Assembly Item PR1
LG2-4 ; LG2-10	P-PF-PS-PC	PR1028B000	PR1004B000	PR1006A000	PR1007A000	PR2000E000	PR1029A000
LG2-4 ; LG2-10	D-S-SC-SA-H-HD	PR1028B000	PR1004B000	PR1006A000	PR1007A000	PR2000E000	PR1029V000
LG2-9 ; LG2-25	All versions	PR1028B000	PR1004B000	PR1006A000	PR1007A000	PR2000E000	PR1029B000
LG2-12 ; LG2-35	All versions	PR1028B000	PR1004B000	PR1006A000	PR1007B000	PR2000F000	PR1029C000
LG2-20 ; LG2-50	All versions	PR1028B000	PR1004B000	PR1006A000	PR1007C000	PR2000G000	PR1029D000
LG2-45 ; LG2-110	All versions	PR1028B000	PR1004B000	PR1006A000	PR1007B000	PR2000F000	PR1029E000
LG2-70 ; LG2-170	All versions	PR1028B000	PR1004B000	PR1006A000	PR1007C000	PR2000G000	PR1029F000
LG2-100 ; LG2-260	All versions	PR1028B000	PR1004B000	PR1006A000	PR1007D000	PR2000H000	PR1029G000
LG2-140 ; LG2-350	All versions	PR1028B000	PR1004B000	PR1006A000	PR1007E000	PR2000J000	PR1029H000

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Driving Mechanism

Pump Type	Pumphead Version	Connecting Rod Assembly Item PR1A	Pack of Gaskets Item PR1E	Drive Shaft Assembly Item PR1F	Eccentric Assembly Item PR1D	Adjustment Assembly Item PR2	Mechanical Assembly Item PR1G
LG2-4 ; LG2-10	P-PF-PS-PC	PR1028B000	PR1004C000	PR1006B000	PR1007A000	PR2000E000	PR1029K000
LG2-4 ; LG2-10	D-S-SC-SA-H-HD	PR1028B000	PR1004C000	PR1006B000	PR1007A000	PR2000E000	PR1029U000
LG2-9 ; LG2-25	All versions	PR1028B000	PR1004C000	PR1006B000	PR1007A000	PR2000E000	PR1029L000
LG2-12 ; LG2-35	All versions	PR1028B000	PR1004C000	PR1006B000	PR1007B000	PR2000F000	PR1029M000
LG2-20 ; LG2-50	All versions	PR1028B000	PR1004C000	PR1006B000	PR1007C000	PR2000G000	PR1029N000
LG2-45 ; LG2-110	All versions	PR1028B000	PR1004C000	PR1006B000	PR1007B000	PR2000F000	PR1029P000
LG2-70 ; LG2-170	All versions	PR1028B000	PR1004C000	PR1006B000	PR1007C000	PR2000G000	PR1029R000
LG2-100 ; LG2-260	All versions	PR1028B000	PR1004C000	PR1006B000	PR1007D000	PR2000H000	PR1029S000
LG2-140 ; LG2-350	All versions	PR1028B000	PR1004C000	PR1006B000	PR1007E000	PR2000J000	PR1029T000

Pumphead

Pump Type	Pumphead Version	Diaphragm Assembly Item P25	Pack of Gaskets Item .PR6B	Suction Check Valve Box Item PR6	Discharge Check Valve Box Item PR6A	Pumphead Assembly Item PR5
LG2-2 LG2-4 LG2-10	P	P25002 095	PR6006A186	PR6022A000	PR6022B000	PR5004A000
	PS	P25002 095	PR6006A185	PR6022C000	PR6022C000	PR5008C000
	PF	P25002 095	PR6006A095	PR6022B000	PR6022B000	PR5004D000
	PC	P25002 095	PR6006A186	PR6022E000	PR6022E000	PR5004G000
	S	P25002 095	PR6006C095	PR6005A000	PR6005B000	PR5004Y000
	SC	P25002 095	PR6006C095	PR6005D000	PR6005E000	PR5004I000
	SA	P25002 095	PR6006C095	PR6005A000	PR6005B000	PR5004U000
	D	P25002 095	PR6006A095	PR6004G000	PR6004H000	PR5004V000
	H	P25002 095	PR6006E186	PR6009A000	PR6009B000	PR5010B000
	HD	P25002 095	PR6006F186	PR6009E000	PR6009F000	PR5010D000
LG2-9 LG2-12 LG2-20 LG2-25 LG2-35 LG2-50	P	PR5005A000	PR6006A186	PR6022A000	PR6022A000	PR5004B000
	PS	PR5005A000	PR6006A185	PR6022C000	PR6022C000	PR5008B000
	PF	PR5005A000	PR6006A095	PR6022B000	PR6022B000	PR5004E000
	PC	PR5005A000	PR6006A186	PR6022E000	PR6022E000	PR5004H000
	S	PR5005A000	PR6006C095	PR6005A000	PR6005B000	PR5004L000
	SC	PR5005A000	PR6006C095	PR6005D000	PR6005E000	PR5004S000
	SA	PR5005A000	PR6006C095	PR6005A000	PR6005B000	PR5004K000
	D	PR5005A000	PR6006A095	PR6004G000	PR6004H000	PR5004W000
	H	PR5005A000	PR6006E186	PR6009A000	PR6009B000	PR5010A000
	HD	PR5005A000	PR6006F186	PR6009E000	PR6009F000	PR5010E000
LG2-45 LG2-70 LG2-100 LG2-110 LG2-140 LG2-170 LG2-260 LG2-350	P	PR5005B000	PR6006B186	PR6004N000	PR6004P000	PR5004C000
	PS	PR5005B000	PR6006B185	PR6004X000	PR6004Y000	PR5004O000
	PF	PR5005B000	PR6006B095	PR6004Q000	PR6004R000	PR5004F000
	PC	PR5005B000	PR6006G186	PR6004S000	PR6004T000	PR5004J000
	S	PR5005B000	PR6006D095	PR6005F000	PR6005G000	PR5004M000
	SC	PR5005B000	PR6006D095	PR6005J000	PR6005K000	PR5004T000
	SA	PR5005B000	PR6006D095	PR6005F000	PR6005G000	PR5004Q000
	D	PR5005B000	PR6006B095	PR6004V000	PR6004W000	PR5004X000
	H	PR5005B000	PR6006B186	PR6009C000	PR6009D000	PR5010C000
	HD	PR5005B000	PR6006B186	PR6009G000	PR6009H000	PR5010F000

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3.2 Handling Means and Procedure

The low mass of the pump requires no special handling procedure.

3.3 Storage Conditions

A) In standard PCM packaging
Pumps and pump parts must be stored in their original packaging, in a stable position, protected from impact, and in a dry location.

B) After unwrapping
. Protect the equipment from impact,
. Protect the equipment from dust using plastic film,
. Reseal the cover.

C) Packaged according to S.E.I. 4c
Every six months,
. Open the cover and replace the moisture absorbent sachets.
. Check the machined surfaces, and grease if necessary.
. Reseal the cover.

3.4 Preventive Maintenance

All maintenance must be carried out by trained, qualified personnel in accordance with the instructions given in this manual.
Any failure to comply with this rule releases PCM from all responsibility.

Before performing any maintenance operation on the pump, check that all precautions have been taken: upstream and downstream valves closed, pipes cleaned and purged, electrical power supply disconnected, and all usual measures concerning the safety of personnel to be taken according to the instructions in force.

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3.4.1 Periodic Inspection (for eight-hour day use, five days per week)

_ Tightness of pumphead mounting screws (torque), once a month (see Paragraph 3.4.4)
_ Temperature of casing, once a month (must never exceed 80°C during operation)
_ Dirt accumulation in filter at suction, once a week
_ Check valves for cleanliness and signs of leakage (annual replacement irrespective of condition)
_ Diaphragm wear (annual replacement irrespective of condition)
_ Possible leakage of grease or pumped liquid, once a week.

3.4.2 Cleaning

External Cleaning

Remove any soiling from the equipment which could damage the paintwork or corrode the pump.

Internal Cleaning

Cleaning procedures and frequency depend on the specific use of the pump and the product being pumped. Nonetheless, the minimum procedure is described below.
With the pump in operation introduce to the suction side a suitable cleaning product which is compatible with the product being pumped and the constituent materials of the pump.
Cleaning duration is defined by the pump operating process. At the end of this time, stop the pump according to Paragraph 2.2.3.

3.4.3 Lubrication

The pump is designed to be greased for life. Nonetheless, when performing any operation on its mechanism, you are advised to replace the lubricant (0.9 kg).
Use two cartridges, Part No. C01001A000, supplied by PCM.
If the lubricant supplied by PCM is not available, please consult the table of equivalent lubricants given on Page 24.

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Product Name	Manufacturer	NLGI Grade
ELF ROLEXA 2	ELF	2
MULTI EP2	IGOL	2
UNAX EP2	LABO	2
RENOLIT BFX	FUCHS	2
GREASE EP/R2	UNIL	2

3.4.4 Torque

Mounting hardware torques are given in the tables below.

Pumphead Mounting Hardware Torque

Pumphead Version	Torque for 4-9-10-12-20-25 35-50 l/h	Torque for 45-70-100-110-140-170-260 350 l/h
P-PS-PF-PC-D-H-HD	10 Nm	20 Nm
S-SA-SC	10 Nm	20 Nm

Mechanism Mounting Hardware Torque

Pumphead Version	Torque for 4-9-10-12-20-25 35-50 l/h	Torque for 45-70-100-110-140-170-260 350 l/h
P-PS-PF-PC-D-H-HD	10 Nm	10 Nm
S-SA-SC	10 Nm	10 Nm

3.5 Corrective Maintenance

3.5.1 Troubleshooting

Refer to the troubleshooting table.

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Symptom	Cause	Solution
Pump does not turn	a) Fuses melted b) Thermal relay was overloaded and tripped c) Voltage too low d) Discharge pipe blocked e) Liquid has solidified in the pump f) Discharge pressure too high	a) Replace fuses b) Rearm thermal relay c) Determine the cause (cable cross-section might be too small) d) Remove blockage e) Clean pumphead f) Review the installation
Pump does not discharge the expected capacity	a) Insufficient suction lift b) Suction pipes not sealed c) Suction height too great d) Poor calibration of pump e) Pump operating at incorrect speed f) Valve seats dirty or worn g) Diaphragm damaged	a) Replace suction pipe by pipe with larger cross-section or place pump under load b) Seal or replace suction pipes c) Rearrange installation to reduce the height d) Calibrate pump e) Check power supply voltage and frequency available. Compare to frequency indicated on motor plate. f) Clean or replace. g) Replace diaphragm.
Pump output is random	a) Pipes poorly sealed	a) Repair or replace suction pipes
Motor overheating	a) Characteristics of electrical power supply do not correspond to motor characteristics. b) Inadequate quantity of grease in casing c) Pump operating outside its intended characteristics	a) Change the motor b) Check contents of casing. According to level of lubricant, top up the grease. c) Check actual operating conditions, and compare to conditions indicated on plate. Return the conditions to a normal level; review the installation.

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Symptom	Cause	Solution
Pump is noisy during operation: **1) In pumphead** **2) In casing**	a) Valve noises b) Worn drive	a) Valves should normally make noise in the pumphead because of their movement. This is sometimes amplified by natural pipe resonance, confirming normal valve operation. b) Change wheel/screw
Knocking at pumping frequency	a) Very light knocking is normal. However, significant impacts can be caused by hammer blows	a) Place a pulsation damper at the discharge
Pump output is too high	a) Siphoning b) Capacity overload caused by large tube lengths	a) Place a loading valve at the discharge b) Place a pulsation damper at the suction and/or discharge
Pump is discharging at 0%	a) Pressure differential between suction and discharge is too small	a) Place a loading valve set at between 2 and 3 bars at the discharge
Output not linear with respect to setting	a) Pressure differential between suction and discharge is too small	a) Place a loading valve set at between 2 and 3 bars at the discharge

3.5.2 Disassembly

Before performing any maintenance operation on the pump, check that all precautions have been taken: upstream and downstream valves closed, pipes cleaned and purged, electrical power supply disconnected, and all usual measures concerning the safety of personnel to be taken according to the instructions in force.
A tool kit is available, reference PR9001D000, and can be obtained from our Customer Service Department.

Refer to the exploded views on the following pages.

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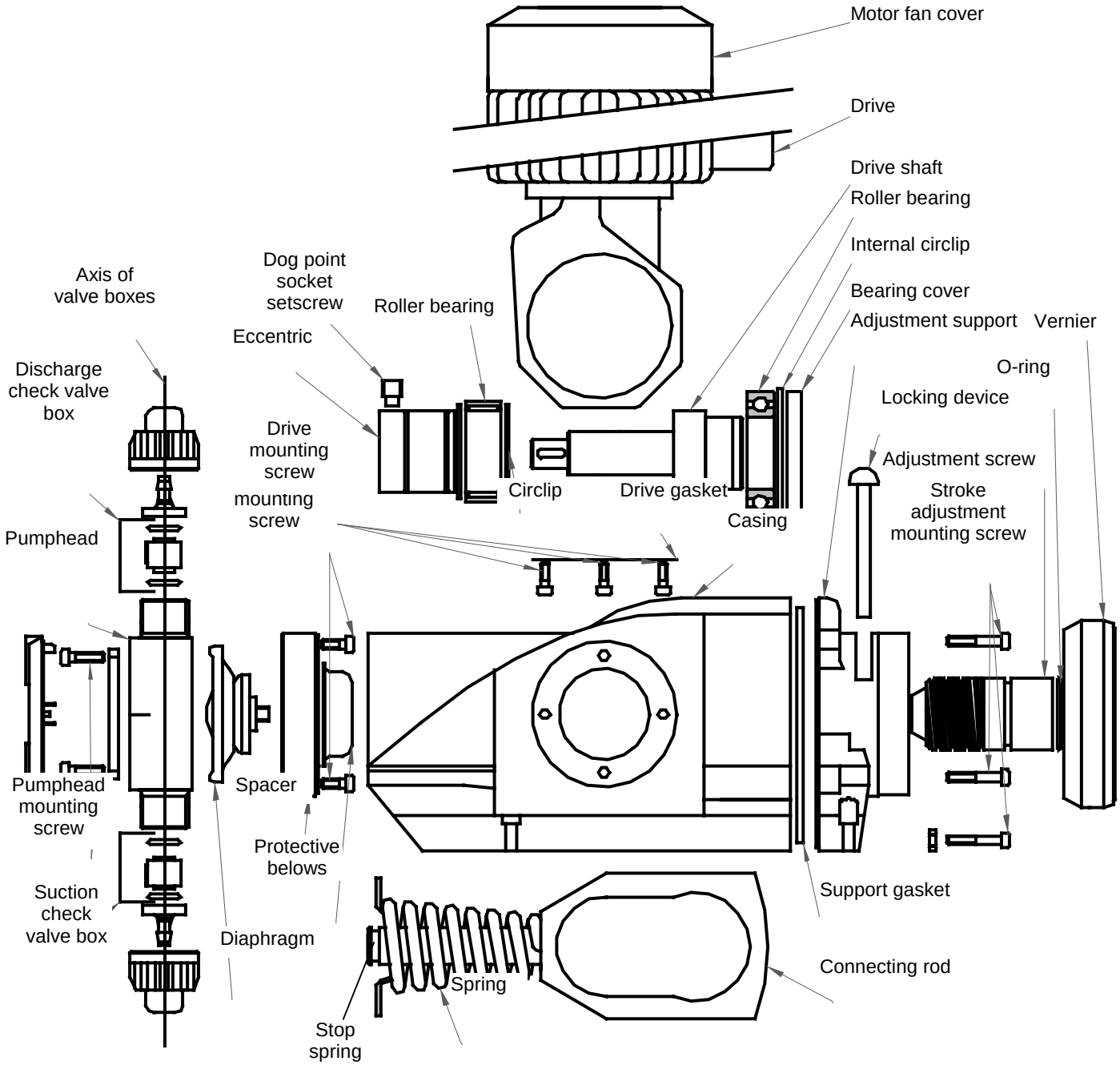
Exploded View of a Simplex Pump



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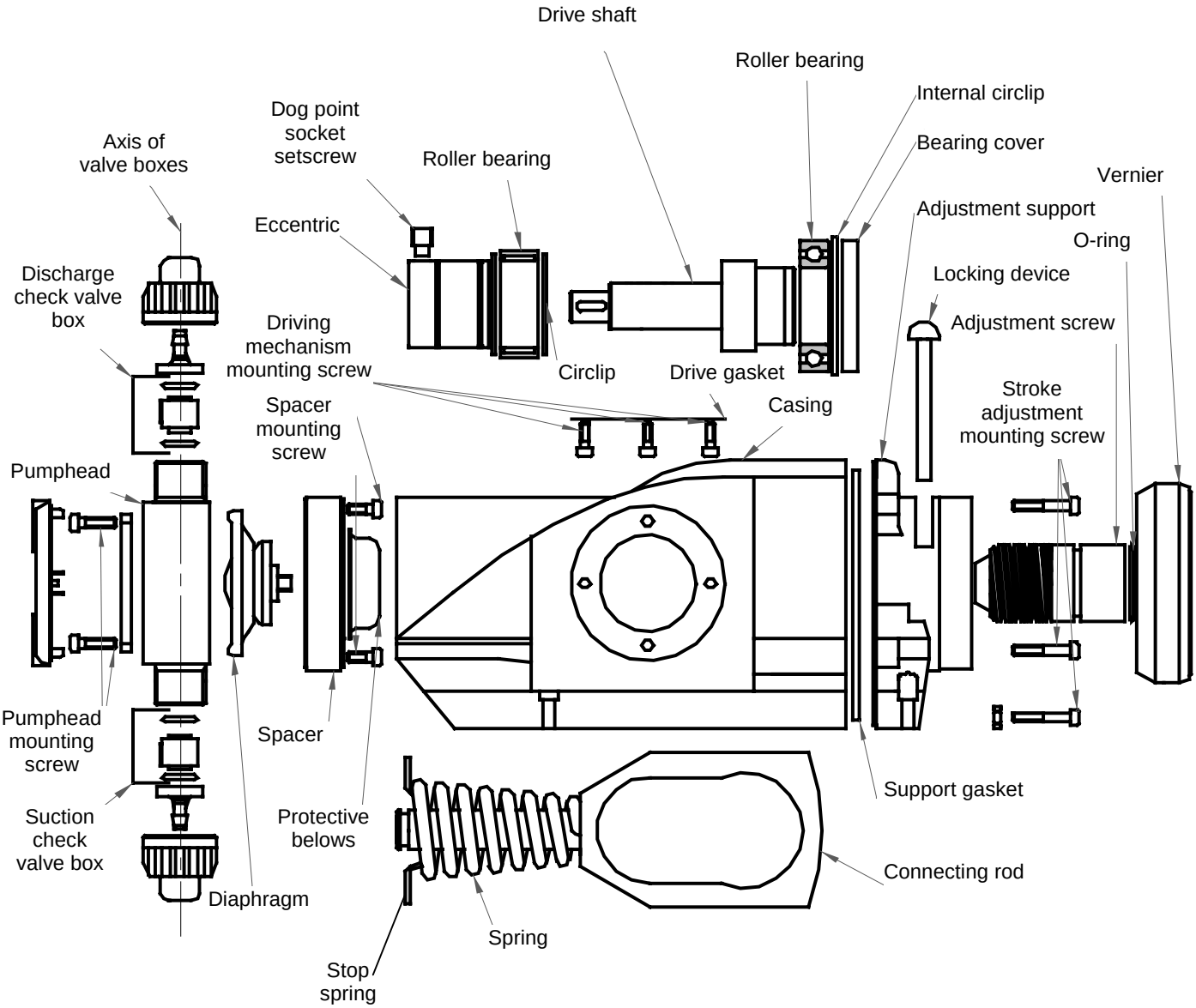
Exploded View of a Multiplex Pump

Exploded View of a Driven Mechanism



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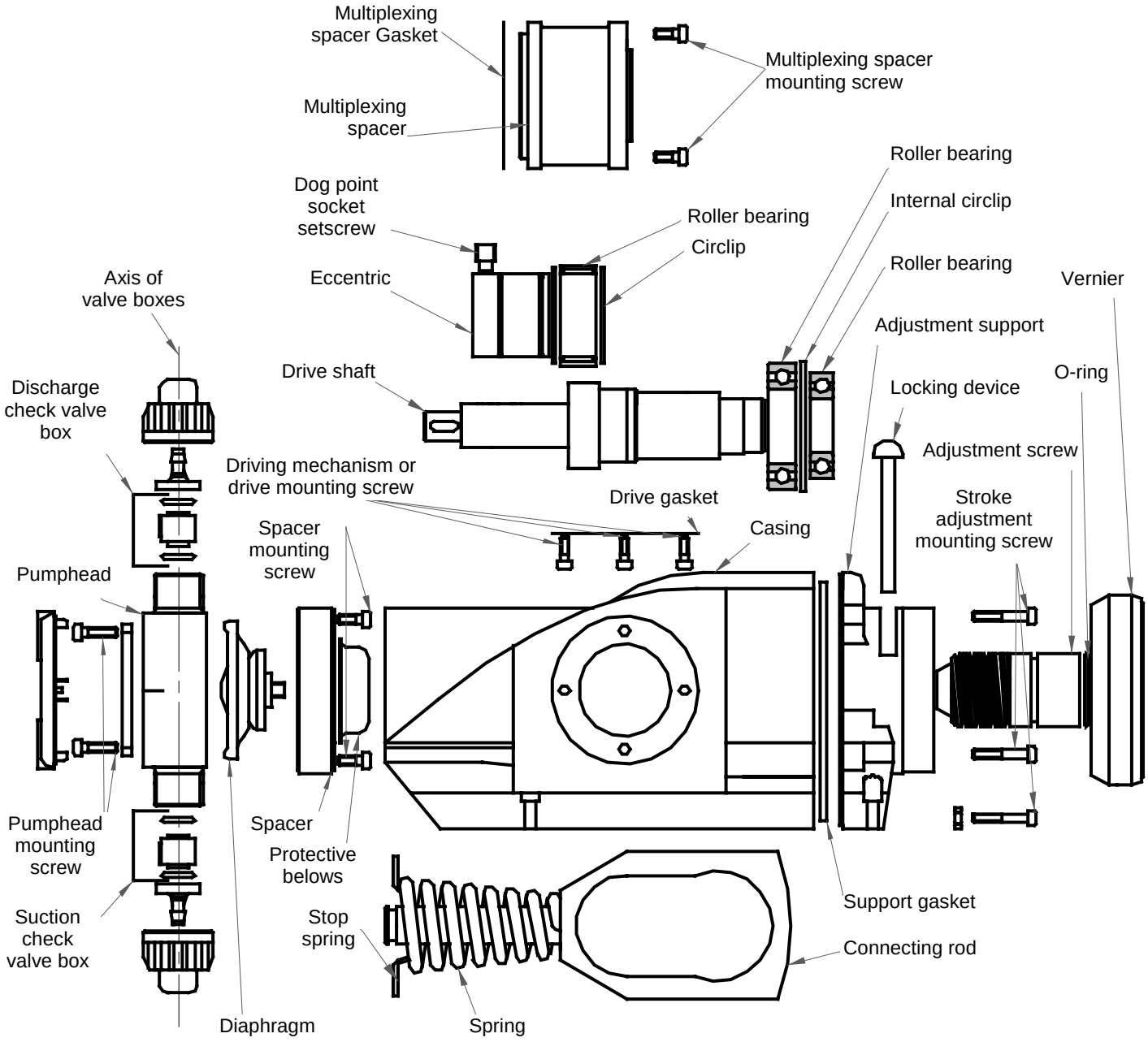
Exploded View of a Driving Mechanism



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3.5.2.1 Removal of Pumphead

_ Position the stroke adjustment at 0.
_ Disconnect the suction and discharge pipes from the corresponding valve boxes.
_ Loosen and remove the pumphead mounting screws.
_ Remove the diaphragm by turning anticlockwise.
_ Remove the suction check valve box (at the bottom) and discharge check valve box (at the top), and mark them.

3.5.2.2 Removal of Stroke adjustment

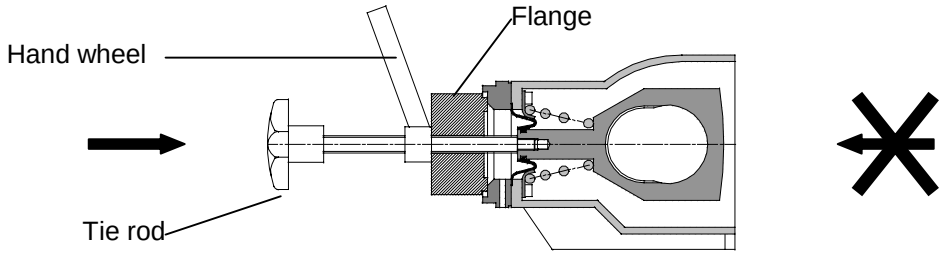
_ Loosen the stroke adjustment mounting screws and remove.
_ Set vernier to 100%
_ Pull on the vernier to remove adjustment assembly.
_ Pull on the locking device.

3.5.2.3 Disassembly of Simplex Mechanism

See exploded view of simplex pump.

_ Remove the pumphead (see Paragraph 3.5.2.1).
_ Loosen the stroke adjustment mounting screws and remove.

Note: **At this disassembly stage, remove remaining grease from inside the casing, to allow continued disassembly without nuisance.**
And IMPORTANT, make sure to install the tool ref.PR9001A000 or equivalent on the connecting rod head as appropriate, to avoid any difficulty. See below for detail :



NEVER STAND ON THE REAR OF THE PUMP WHILE DISMANTLING THE CONNECTING ROD.

_ Once the tool is installed as described on the top picture, turn the hand wheel, while holding the tie rod (previously screwed on the connecting rod),to restain the spring and keep the connecting rod in place while removing the drive shaft.
_ Remove the motor fan cover.
_ Turn the drive shaft using the motor fan to gain access to the head of the dog point setscrew via the rear of the casing.
_ Loosen the dog point setscrew located on the eccentric, and remove.

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- Remove the bearing cover from the side of the casing by tapping on one side to make it rock.
- Remove the internal circlip.
- Pull on the drive shaft using the tapped hole intended for this purpose.

Note: **Special tools can be supplied by PCM. Please contact our Customer Service Department.**

Turn the hand wheel anticlockwise, while holding the tie rod securely, to avoid the tie rod to come out of the connecting rod. This could eject the connecting rod and the spring out of the casing, and cause severe injury.

- After fully relieving the spring, unscrew the tie rod from the connecting rod, and remove the mechanism from the casing.
- Remove the roller bearing from the drive shaft.
- Separate the eccentric assembly from the connecting rod and loosen the spring from the casing.
- Loosen the front spacer mounting screws, and remove the spacer, protective bellows and the stop spring from the casing.
- Remove the two circlips from the eccentric assembly, and remove the roller bearing.
- Loosen the drive mounting screws, and remove the drive.

3.5.2.4 Disassembly of Multiplex Mechanism

See diagram of multiplex pump.

- Remove the pumpheads (see 3.5.2.1).
- Loosen the stroke adjustment screws, and remove the stroke adjusters.

Note: **At this stage of disassembly, remove any remaining grease from inside the casings, to continue disassembling the mechanism without nuisances.**

On this multiplex pump, it is important to distinguish between the two types of mechanism on each pumphead.

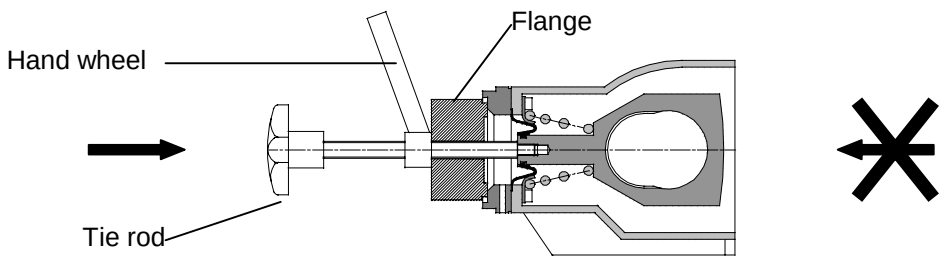
They are distinguished as follows, when looking at the pump facing the pumphead:

- The head on the far left is controlled by a **driven** mechanism.
- The other heads, located between the driven mechanism and the drive, are controlled by **driving** mechanisms.

Important: **Isolate the parts of each mechanism separately.**

Disassembly of the Driven Mechanism

Note: **At this stage of disassembly, remove remaining grease from inside the casing, to allow continued disassembly without nuisance.**
And IMPORTANT, make sure to install the tool ref.PR9001A000 or equivalent on the connecting rod head as appropriate, to avoid any difficulty. See below for detail :



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Never stand on the rear of the pump while fitting the connecting rod.

_ Once the tool is installed as described on the top picture, turn the hand wheel, while holding the tie rod (previously screwed on the connecting rod),to restain the spring and keep the connecting rod in place while removing the drive shaft.
_ Remove the motor fan cover.
_ Turn the drive shaft using the motor fan to gain access to the head of the dog point setscrew via the rear of the casing.
_ Loosen the dog point setscrew located on the eccentric, and remove.
_ Remove the bearing cover from the side of the casing by tapping on one side to make it rock.
_ Remove the internal circlip.
_ Pull on the drive shaft using the tapped hole intended for this purpose.

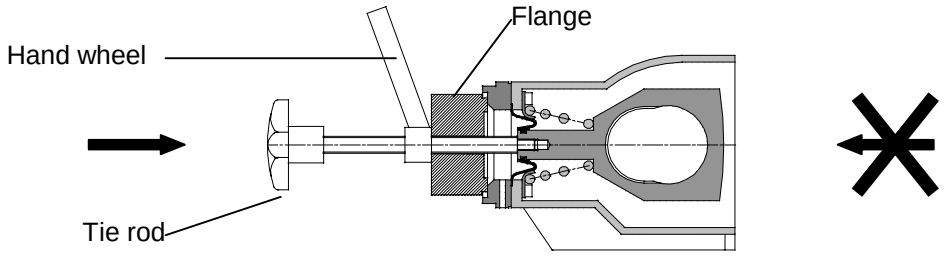
Note: **Special tools can be supplied by PCM. Please contact our Customer Service Department.**

Turn the hand wheel anticlockwise, while holding the tie rod securely, to avoid the tie rod to come out of the connecting rod. This could eject the connecting rod and the spring out of the casing, and cause severe injury.

_ After fully relieving the spring, unscrew the tie rod from the connecting rod, and remove the mechanism from the casing.
_ Remove the roller bearing from the drive shaft.
_ Separate the eccentric assembly from the connecting rod and loosen the spring from the casing.
_ Loosen the front spacer mounting screws, and remove the spacer, protective bellows and the stop spring from the casing.
_ Remove the two circlips from the eccentric assembly, and remove the roller bearing.
_ Loosen the mounting screws of the next mechanism, and remove the casing.

Disassembly of the Driving Mechanism

Note: **At this stage of disassembly, remove remaining grease from inside the casing, to allow continued disassembly without nuisance.**
And IMPORTANT, make sure to install the tool ref.PR9001A000 or equivalent on the connecting rod head as appropriate, to avoid any difficulty. See below for detail :



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Never stand on the rear of the pump while fitting the connecting rod.

- _ Once the tool is installed as described on the top picture, turn the hand wheel, while holding the tie rod (previously screwed on the connecting rod),to restain the spring and keep the connecting rod in place while removing the drive shaft.
- _ Remove the motor fan cover.
- _ Turn the drive shaft using the motor fan to gain access to the head of the dog point setscrew via the rear of the casing.
- _ Loosen the dog point setscrew located on the eccentric, and remove.
- _ Loosen the multiplexing spacer screws, and remove the spacer.
- _ Remove the internal circlip.
- _ Pull on the drive shaft using the tapped hole intended for this purpose.

Note: **Special tools can be supplied by PCM. Please contact our Customer Service Department.**

Turn the hand wheel anticlockwise, while holding the tie rod securely, to avoid the tie rod to come out of the connecting rod. This could eject the connecting rod and the spring out of the casing, and cause severe injury.

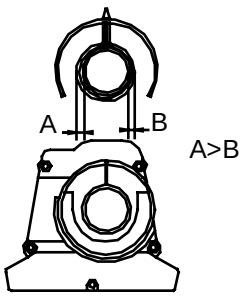
- _ After fully relieving the spring, unscrew the tie rod from the connecting rod, and remove the mechanism from the casing.
- _ Remove the roller bearing from the drive shaft.
- _ Separate the eccentric assembly from the connecting rod and loosen the spring from the casing.
- _ Loosen the front spacer mounting screws, and remove the spacer, protective bellows and the stop spring from the casing.
- _ Remove the two circlips from the eccentric assembly, and remove the roller bearing.
- _ Loosen the mounting screws of the next mechanism or a drive, and remove the casing.

3.5.3 Reassembly

Refer to exploded view in Paragraph 3.5.2

3.5.3.1 Reinstallation of Stroke Adjustment

- _ Place the locking device in the location provided in the adjustment support according to the diagram below.



- _ Position the adjustment screw and gasket, insert and tighten in the adjustment support.
- _ Place the vernier temporarily on the adjustment screw.
- _ Reinstall the gasket on the adjustment support.
- _ Reinstall the assembly on the casing, and secure using the mounting hardware (see torque in Paragraph 3.4.4).
- _ Perform the Zero-Point adjustment (see Paragraph 3.5.3.4).

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3.5.3.2 Reassembly of Simplex Mechanism

After cleaning the parts and checking their condition, reassemble by performing the following steps:

_ Fit the stop spring in the casing, the protective below, the spacer and screw it on the casing (see the tightening torque on Paragraph 3.4.4). **Check for correct fitting of the protective below**.

_ Place the drive and gasket on the casing, and secure using the mounting hardware (see torque in Paragraph 3.4.4).

_ Fit the roller bearing on the eccentric, and reinstall the circlips.

_ Fit the eccentric assembly in the connecting rod , and put the mechanism on the bench.

_ Install the spring on the spring stop, then put the mechanism {connecting rod, eccentric} in the casing.

_ Use the mounting tool (see diagram on Paragraph 3.5.2.3) and put the flange on the spacer, crossed by the tie rod, screwed on the connecting rod.

Never stand on the rear of the pump while fitting the connecting rod.

_ Screw the hand wheel up to block the system. **Check the spring's position on the stop spring, before continuing to screw the hand wheel**.

_ Screw on the hand wheel to allow the drive shaft fitting in the casing and the eccentric assembly.

_ Push the roller bearing on the drive shaft until it stops against the shoulder.

_ Insert the drive shaft in the eccentric assembly, and position it in the drive by indexing using its key until it stops.

_ Reinsert the internal circlip.

_ Reinstall the bearing cover on the side of the casing.

_ Unscrew the hand wheel while holding the tie rod. After loosing the flange, unscrew the tie rod from the connecting rod.

_ Fit the protective below boot in its housing on the connecting rod.

_ Place the dog point setscrew on the eccentric, and if necessary turn the eccentric using the motor fan to locate correct position.

_ Index the eccentric, and lock in position on the drive shaft using the dog point setscrew.

_ Add grease (see Paragraph 3.4.3), and reinstall the motor fan cover.

_ Reinstall the stroke adjustment (see Paragraph 3.5.3.1).

_ Zero-Point Adjustment (see Paragraph 3.5.3.3).

_ Reinstall the pumphead (see Paragraph 3.5.3.4).

3.5.3.3 Reassembly of the Multiplex Mechanism

After cleaning the parts and checking that they are in good condition, reassemble in the following order.

On this multiplex pump, it is important to distinguish between the two types of mechanism on each pumphead.

They are distinguished as follows, when looking at the pump facing the pumphead:

_The head on the far left is controlled by a **driven** mechanism.

_The other heads, located between the driven mechanism and the drive, are controlled by **driving** mechanisms.

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Reassembly of Driving Mechanism

_ Fit the stop spring in the casing, the protective below, the spacer and screw it on the casing (see the tightening torque on Paragraph 3.4.4). **Check for correct fitting of the protective below**.

_ Place the drive or the previous mechanism and gasket on the casing, and secure using the mounting hardware (see torque in Paragraph 3.4.4).

_ Fit the roller bearing on the eccentric, and reinstall the circlips.

_ Fit the eccentric assembly in the connecting rod , and put the mechanism on the bench.

_ Install the spring on the spring stop, then put the mechanism {connecting rod, eccentric} in the casing.

_ Use the mounting tool (see diagram on Paragraph 3.5.2.3) and put the flange on the spacer, crossed by the tie rod, screwed on the connecting rod.

Never stand on the rear of the pump while fitting the connecting rod.

_ Screw the hand wheel up to block the system. **Check the spring's position on the stop spring, before continuing to screw the hand wheel**.

_ Screw on the hand wheel to allow the drive shaft fitting in the casing and the eccentric assembly.

_ Push the roller bearing on the drive shaft until it stops against the shoulder.

_ Insert the drive shaft in the eccentric assembly, and position it in the drive by indexing using its key until it stops.

_ Reinsert the internal circlip.

_ Unscrew the hand wheel while holding the tie rod. After loosing the flange, unscrew the tie rod from the connecting rod.

_ Fit the protective below boot in its housing on the connecting rod.

_ Place the dog point setscrew on the eccentric, and if necessary turn the eccentric using the motor fan to locate correct position.

_ Index the eccentric, and lock in position on the drive shaft using the dog point setscrew.

_ Add grease (see Paragraph 3.4.3), and reinstall the motor fan cover.

_ Reinstall the stroke adjustment (see Paragraph 3.5.3.1).

_ Zero-Point Adjustment (see Paragraph 3.5.3.3).

_ Reinstall the pumphead (see Paragraph 3.5.3.4).

Note: **The phase shift of each mechanism within itself is defined as follows:**

_ **Pump with two pumpheads: in phase, or 180° phase shift.**

_ **Pump with three pumpheads: in phase, or 120° phase shift.**

Phase shift is the angular position of the key of a drive shaft with respect to the key of the preceding drive shaft after coupling of the two drive shafts.

Reassembly of Driven Mechanism

_ Fit the stop spring in the casing, the protective below, the spacer and screw it on the casing (see the tightening torque on Paragraph 3.4.4). **Check for correct fitting of the protective below**.

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_ Place the previous mechanism and gasket on the casing, and secure using the mounting hardware (see torque in Paragraph 3.4.4).
_ Fit the roller bearing on the eccentric, and reinstall the circlips.
_ Fit the eccentric assembly in the connecting rod , and put the mechanism on the bench.
_ Install the spring on the spring stop, then put the mechanism {connecting rod, eccentric} in the casing.
_ Use the mounting tool (see diagram on Paragraph 3.5.2.3) and put the flange on the spacer, crossed by the tie rod, screwed on the connecting rod.

⚠ **Never stand on the rear of the pump while fitting the connecting rod.**

_ Screw the hand wheel up to block the system. **Check the spring's position on the stop spring, before continuing to screw the hand wheel**.
_ Screw on the hand wheel to allow the drive shaft fitting in the casing and the eccentric assembly.
_ Push the roller bearing on the drive shaft until it stops against the shoulder.
_ Insert the drive shaft in the eccentric assembly, and position it in the previous mechanism by indexing using its key until it stops.
_ Reinsert the internal circlip.
_ Reinstall the bearing cover on the side of the casing.
_ Unscrew the hand wheel while holding the tie rod. After loosing the flange, unscrew the tie rod from the connecting rod.
_ Fit the protective below boot in its housing on the connecting rod.
_ Place the dog point setscrew on the eccentric, and if necessary turn the eccentric using the motor fan to locate correct position.
_ Index the eccentric, and lock in position on the drive shaft using the dog point setscrew.
_ Add grease (see Paragraph 3.4.3), and reinstall the motor fan cover.
_ Reinstall the stroke adjustment (see Paragraph 3.5.3.1).
_ Zero-Point Adjustment (see Paragraph 3.5.3.3).
_ Reinstall the pumphead (see Paragraph 3.5.3.4).

3.5.3.4 Zero-Point Adjustment

_ Remove the pumphead (see Paragraph 3.5.2.1).
_ Remove the vernier from the adjustment.
_ Loosen the adjustment screw until the O-ring is visible.
_ Remove the motor fan cover.
_ Turn the fan to bring the diaphragm to full forward position.
_ Tighten the adjustment screw until it makes contact with the connecting rod plate.
_ Lock the setting using the locking device.
_ Reinstall the vernier on the adjustment, and position it on 0.
_ Reinstall the pumphead (see Paragraph 3.5.3.5).
_ Perform a test of the pump using water to ensure that there is no discharge at 0% and under 0-bar pressure at the discharge (see Paragraph 1.3.1).

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3.5.3.5 Reinstallation of Pumphead

_ Install a new diaphragm.
_ Set the stroke adjustment to 100, and turn the drive manually to position the diaphragm as far as possible to the rear.
_ Reinstall the pumphead with the valve boxes in a vertical position.
_ Tighten the pumphead mounting hardware (see torque in Paragraph 3.4.4).
_ Reposition the suction check valve box at the bottom, and the discharge check valve box at the top, with new gaskets.
_ Tighten the pumphead mounting hardware, but do not lock into position.
_ Lock the pumphead mounting screws in position (see torque in Paragraph 3.4.4).

3.6 Conservation of Equipment when Idle

Proceed as follows:
_ Release suction and discharge pressures.
_ Empty pipes and pump.
_ Clean pipes and pump using a product which is compatible with the product being pumped and the constituent materials of the pump.
_ Run the pump to ensure better cleaning.
_ Stop the pump.
_ Isolate the pump from the rest of the circuit.

3.7 Accessories

See specific instructions in Section 4 - Appendices.

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4. APPENDICES

- ❏ PCM standard painting procedure (See next page)
- ❏ Technical Description
- ❏ Accessories (optional)
- ❏ Automatic Control (optional)

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PCM	PAINTING SPECIFICATION	I121F/d *(21/03/96)*

Established on : **05/01/2000** By : **FAVREAU** Sheet : **1/1**

PROCESS : ***Standard 1 (a)***

Application field : **Standard specification used to protect the pumps.**

SURFACE PREPARATION :

SAND BLASTING and DEGREASING.

1 COAT : **PRIMARY (for protected parts before the storage like castings, base plates, stators, …).**

COLOR : **grey** RAL : THICKNESS : **20 microns**

REMARKS : **PRODUCT USED : Mono-componante Vinyl : Wash primer** **ref. PCM : 42911 902G.**

1 COAT : **PRIMARY (to protect no-coated parts after assembly).**

COLOR : **grey** RAL : THICKNESS : **20 microns**

REMARKS : **PRODUCT USED : Mono-componante Vinyl : Wash primer** **ref. PCM : 42911 902G.**

2 COAT : **TOP.**

COLOR : **Specification on internal order** RAL : **5019 or 9010** THICKNESS : **35 microns**

REMARKS : **PRODUCT USED : Bi-componante Acrylic Vinyl Polyester** **ref PCM : 42930 5019 or 9010.**
7 parts of HY for 1 part of HYA340 **Minimum drying time at 23°C : 5h**

TOTAL THICKNESS APPLIED : 55 microns.

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NOTES

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