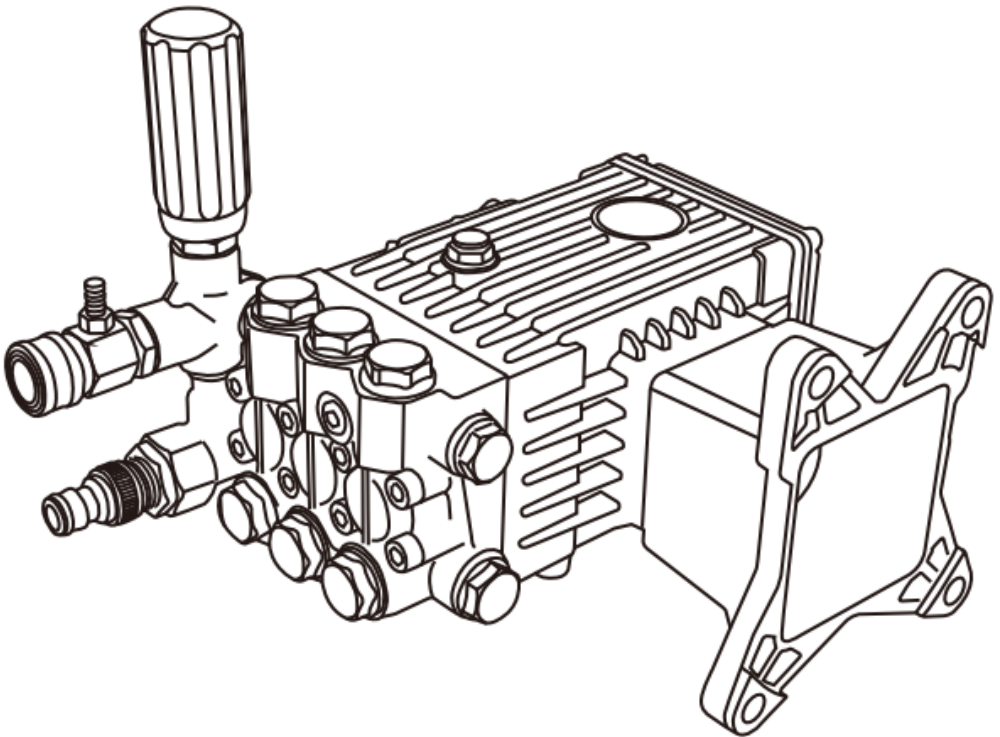


# Pressure Washer Pump Manual

Product ID. 70UBU



Scan for Support  
[support@garvee.com](mailto:support@garvee.com)



## GENERAL INFORMATION

### **After-Sales service procedures**

To request after-sales service (in the event of a pump malfunction or failure, etc.), contact your nearest service centre or the manufacturer. When requesting after-sales services, always state the pump's data plate data and the type of problem.

### **Disclaimer**

The manufacturer accepts no liability arising from:

- Incorrect installation;
- Improper use of the pump;
- Failure to service the pump;
- Unauthorized modifications and/or repairs;
- Use of non-original spare parts, or parts not specifically intended for the model.

### **Annexed documentation**

The following documentation is issued to the Customer together with this manual:

- Declaration of incorporation

### **Glossary**

**Purchaser:** Individual, organization or company which has purchased the pump and intends to use it for the intended purposes.

**Routine maintenance:** All operations required to keep the pump in good working order to ensure a longer working life and maintain compliance with safety requirements. The manufacturer describes the maintenance procedures and intervals in this "Use and Installation Manual".

**Repairs:** All operations performed to conserve the pump's efficiency and operating characteristics. These procedures, required in the event of an unexpected malfunction, must only be carried out by a skilled technician. The information for the use of skilled repair technicians only is provided in the "Repairs Manual".

**Operator:** An authorized person having the prerequisites, skills and information needed for the use of the pump or the machine or plant on which the pump is installed, and for routine maintenance procedures.

**Installer:** Authorized technician having the prerequisites and the specific skills required for the tasks involved in the installation of the pump and/or similar machinery and for the performance of the routine maintenance operations in conditions of safety, independently and without risk.

**Training:** A phase necessary to transfer to the operators the knowledge needed for the correct, risk-free performance of operations.

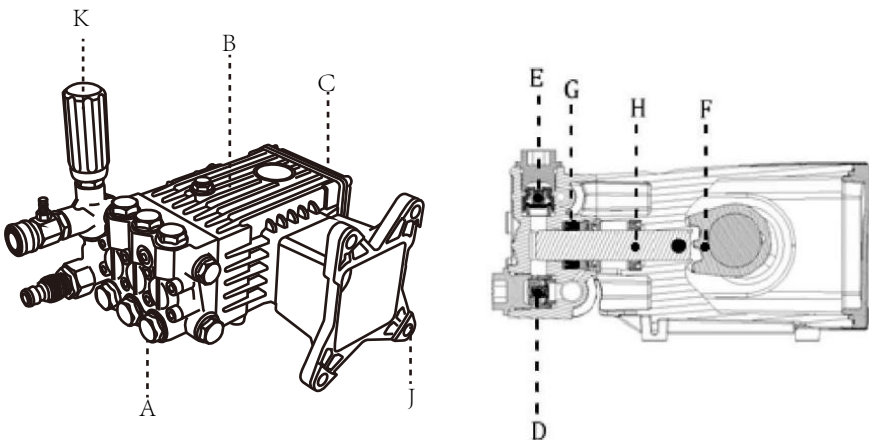
## TECHNICAL INFORMATION

### General description

The pump is designed and constructed to pump and compress liquids at high pressure in industrial applications. The pumping action is provided by a series of pistons connected to the drive shaft by connecting-rods.

When in operation, the pistons perform an axial stroke inside the head, where the intake and delivery ducts are fitted with valves that allow the liquid to pass in one direction only.

### Main components



A). Head	B). Pump body	C). Crankshaft	D). Intake valve
E). Delivery valve	F). Guide	G). Seal	H). Piston
J) Flange	K).Pressure valve		

## Intended uses

The pump is designed and built for incorporation in machinery and plants(machinery for washing raw materials,finished products,etc.).

The pump must be used in a manner appropriate to its technical data(see"Technical Data"),and must not be modified or improperly used.

## Misuses

**Do not** put the pump into service until the plant or machinery in which it is incorporated has been declared compliant with the relevant national and local legal requirements.

**Do not** use the pump in a potentially explosive atmosphere.

**Do not** use the pump for flammable,toxic or corrosive liquids,or those with unsuitable density.Do not take in liquids at temperatures higher than those specified in the technical data.

**Do not** use the pump for the supply of drinking water.

**Do not** use the pump on products for human consumption.

**Do not** use the pump on pharmaceutical products.

## Residual risks

Even if the safety regulations and information provided in the manual are complied with,the residual risk described below is still present during the use of the pump.

- **Thermal hazard:** Depending on the temperature of the liquid pumped,the pump may reach high temperatures when in operation.The designer of the installation must therefore bear this in mind and provide the appropriate measures and warning signs for staff.

## TECHNICAL INFORMATION

### Technical Data

The technical and performance data are stated on the cover.

The pump's intake circuit must include a filter having a capacity at least twice the pump's delivery rate, which must not cause restrictions or head losses. The recommended degree of filtration is 50-80 mesh. Maximum intake vacuum-0.25 bar, measured at the pump intake.

### Overall dimensions

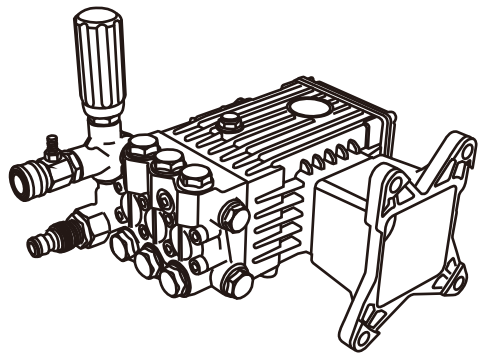
The illustrations showing the overall dimensions are provided in the annexes.

### Environmental operating limits

The pump operates correctly at an ambient temperature between 10 and 35°C, with a relative humidity of 80%.

Product Specifications and Packing List

Working Pressure	4400 PSI
Gun Closing Pressure	5200 PSI
Factory set pressure	3600 PSI
Matching Horsepower	13-15/HP
Maximum Flow	4.2 GPM
Adaptive Model	420~460cc



## SAFETY INFORMATION

### General safety rules

Most workplace accidents and injuries are caused by carelessness and failure to comply with common sense and safety rules.

In most cases, accidents can be avoided by predicting their possible causes and proceeding with the necessary care and attention.

A careful operator who follows the rules is the best guarantee against accidents.

Before installing and using the pump, the operators and other staff must read and understand the instructions in the manual provided and the details of the installation design.

Do not tamper with, disarm or bypass the safety devices as this may cause serious threats to health and safety. Do not release pollutants into the environment.

Dispose of waste in accordance with statutory requirements.

Before performing any procedure, adopt appropriate safety measures in accordance with the relevant statutory occupational safety requirements and comply with the safety regulations in the manual.

## INSTALLATION INSTRUCTIONS

### **Safety recommendations for installation**

Take all possible precautions to allow the pump to be installed in a safe, risk-free manner.

All installation phases must be taken into consideration when designing the machinery or plant in which the pump is to be installed.

The design must consider all mounting points, the means of transmission of the energy sources, and the protective and safety devices required by the relevant regulations to prevent the risk of injury.

### **Installation**

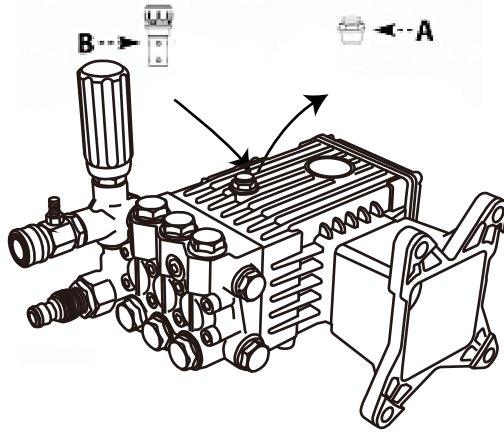
The mechanical connection between the pump and the motive power source may be made by means of a pulley and belt, or a flexible coupling, or through a direct flanged connection to the motive power source.

The crankshaft may turn in either direction.

The water supply connection can be made equally well to the intakes on the right or left of the pump(see diagram). Only connect the pump to filtered, clean water sources.

Unscrew the plugs fitted on the various ports in the factory by the manufacturer, and screw the plugs onto the ports not used, depending on connection requirements.

Replace the oil plug (A), used for shipment with the breather plug (B)supplied.



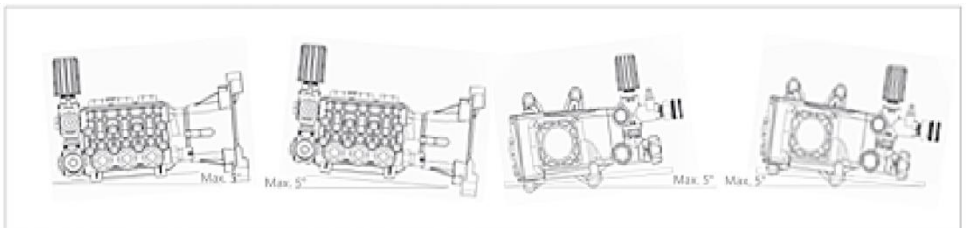
A) Temporary oil plug    B) Oil plug with breather

### Mounting the pump

The pump must be installed on a horizontal surface with no flexible components between it and the mounting surface.

The illustration shows the maximum permitted pump installation angle beyond which proper lubrication of the crank mechanism is not ensured.

Secure the pump with screws of suitable diameter and length, fixing them through the holes provided in the pump body.



## INSTALLATION INSTRUCTIONS

### General guidelines on water supply connection

The pump's water supply connection can be made in one of the ways listed below.

Connection to the mains water supply.

Connection to a tank(gravity-feed).

Connection to an external pump(force-feed).

The following requirements must be met for all types of connection.

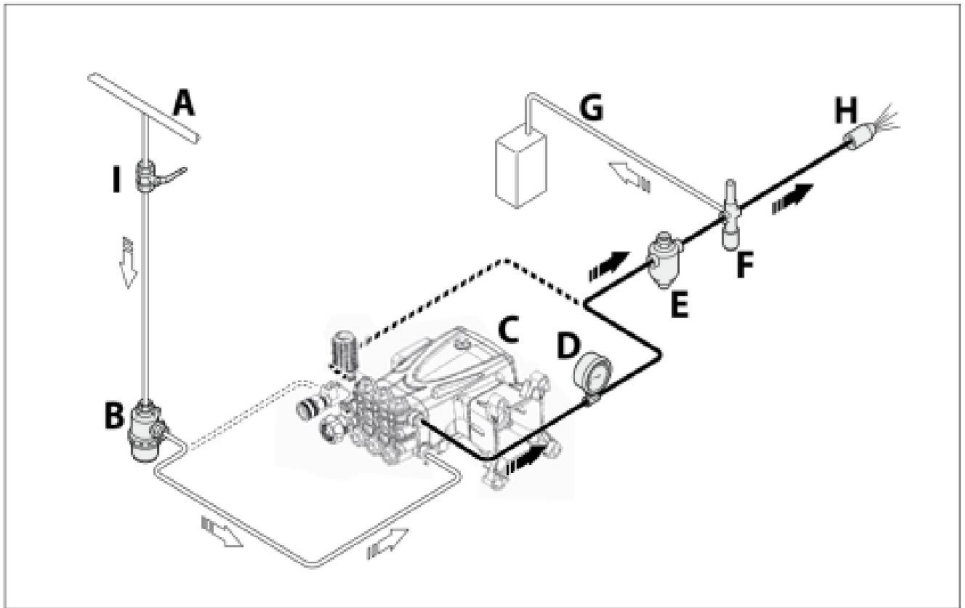
- 1) The pump must be supplied by means of a crush-proof hose of suitable diameter for the pump's intake connection(see "Technical Data").
- 2) There must be no restrictions or kinks in the hose.
- 3) A suitable filter must be installed at the pump intake(see "Technical Data").
- 4) All connections between the unions and the intake line must be sealed to prevent the pump from sucking in the air.
- 5) The connections and pipes must be suitable for the operating pressure and the pump delivery rate, and must comply with the relevant regulations.
- 6) To ensure operating safety install a relief valve(by-pass valve) suitable for the pump's technical data and with a suitable setting downstream of the pump.
- 7) The relief valve dump line must never be connected to the pump intake line.
- 8) Install a pressure damper downstream of the pump to minimize the water hammer effect in the delivery pipeline.

## Connection to the mains water supply

The connection must comply with the recommendations provided.

- 1) The mains water system must have a flow rate twice the pump's rated delivery rate and a pressure of 2-3 bar.
- 2) Adopt all the precautions described in the "General Guidelines on Water Connections" section.

The following is a simplified illustration of the layout for connection of the pump to the mains water supply.



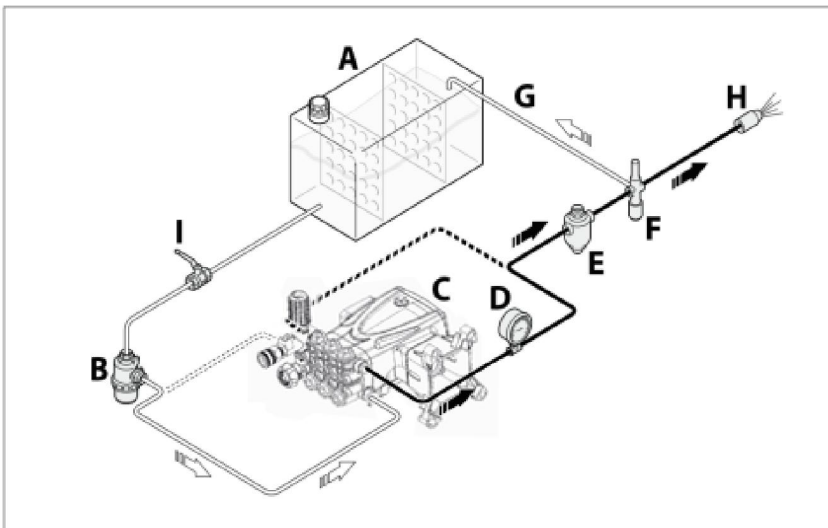
- |                       |                                 |
|-----------------------|---------------------------------|
| A) Mains water supply | F) Relief valve (by-pass valve) |
| B) Intake filter      | G) Dump pipeline                |
| C) High pressure pump | H) Nozzle                       |
| D) Pressure gauge     | I) Shut-off valve               |
| E) Pressure damper    |                                 |

## INSTALLATION INSTRUCTIONS

### Connection to a tank(gravity-feed)

The connection must comply with the recommendations provided.

- 1) The pump must be installed in a position below the tank intake (with a positive head).
- 2) The tank must have baffles to prevent water splashes and its capacity must be at least 10 times greater than the pump's rated displacement.
- 3) The vacuum measured directly at the pump intake port must not exceed 0.1 bar and the water temperature must not be above 30°C .
- 4) Adopt all the precautions described in the "General Guidelines on Water Connections" section. The following is a simplified illustration of the layout for the connection of the pump to a tank.



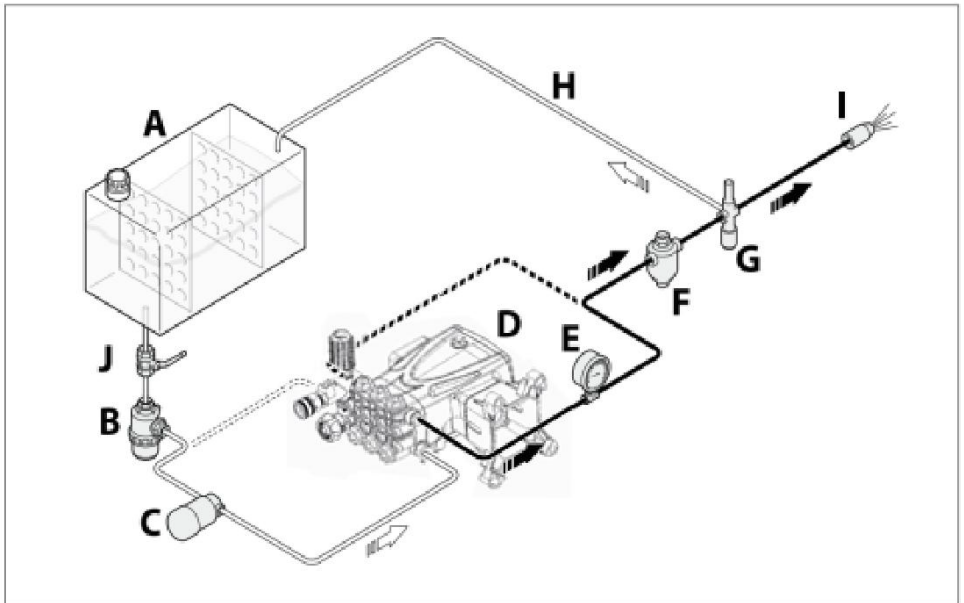
- |                       |                                |
|-----------------------|--------------------------------|
| A) Tank               | F) Relief valve(by-pass valve) |
| B) Intake filter      | G) Dump pipeline               |
| C) High pressure pump | H) Nozzle                      |
| D) Pressure gauge     | I) Shut-off valve              |
| E) Pressure damper    |                                |

## Connection to an auxiliary pump (force-feed)

The connection must comply with the recommendations provided.

- 1) The auxiliary pump must have a flow rate twice the high pressure pump's rated delivery rate and an operating pressure of 2-3 bar.
- 2) Adopt all the precautions described in the "General Guidelines on Water Connections" section.

The following is a simplified illustration of the layout for connection of the pump to an auxiliary pump.



- |                       |                                 |
|-----------------------|---------------------------------|
| A) Tank               | F) Pressure damper              |
| B) Intake filter      | G) Relief valve (by-pass valve) |
| C) Auxiliary pump     | H) Dump pipeline                |
| D) High pressure pump | I) Nozzle                       |
| E) Pressure gauge     | J) Shut-off valve               |

## INSTRUCTIONS FOR USE

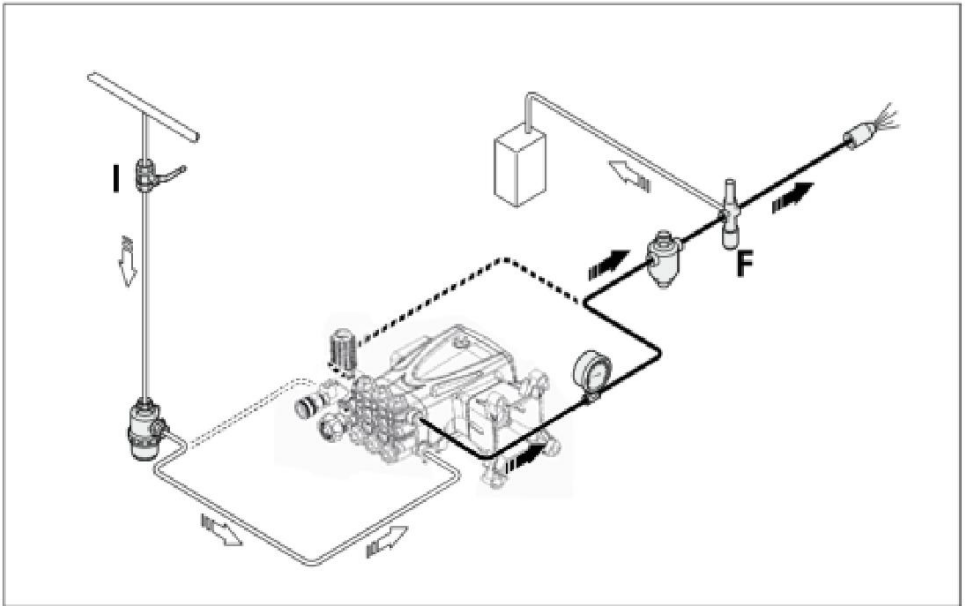
### Safety recommendations for use

Before start-up, the operator must perform the necessary safety checks.

In the event of leaks from the pressurized pipes, stop the pump at once and remove the cause of the leak. Do not operate the pump above the limits set by the manufacturer to increase its performance.

If the system is to be shut down with ambient temperatures close to 0°C, run the pump without water for 10 seconds with the end of the delivery pipeline open to empty the system and pump of water and prevent ice from forming.

### Starting and stopping the pump when supplied by the mains water system



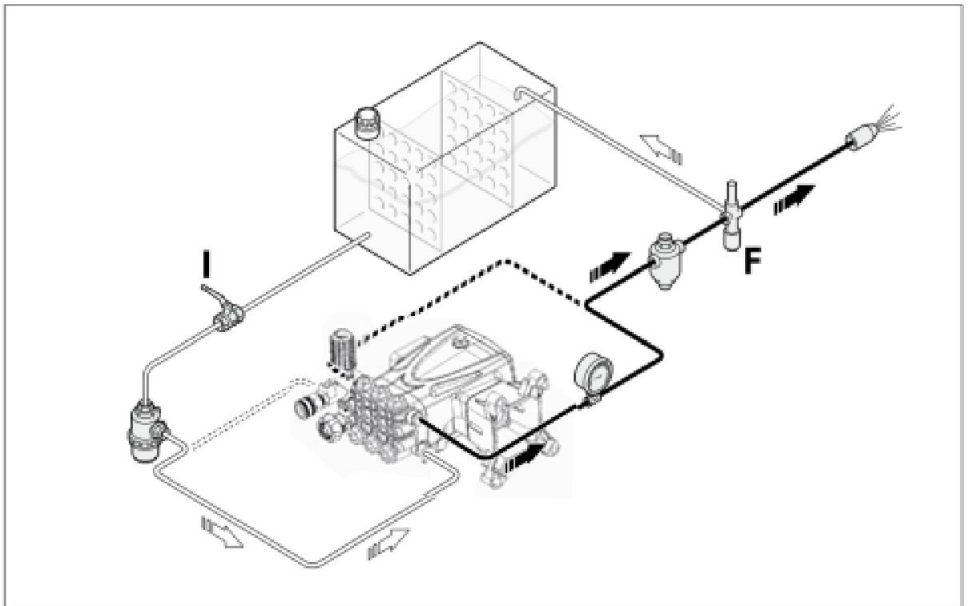
To start the pump, proceed as described below.

- 1)Open the shut-off valve (I) .
- 2)Open the by-pass valve (F) to depressurize the delivery pipeline.
- 3)Start the pump and run it for a few minutes with no pressure.
- 4)Adjust the by-pass valve (F) to obtain the pump's operating pressure.

To stop the pump, proceed as described below.

- 1)Open the by-pass valve (F) to discharge the pressure.
- 2)Stop the pump.
- 3)Close the shut-off valve (I) .

### Starting and stopping the pump when supplied by gravity-feed



To start the pump, proceed as described below.

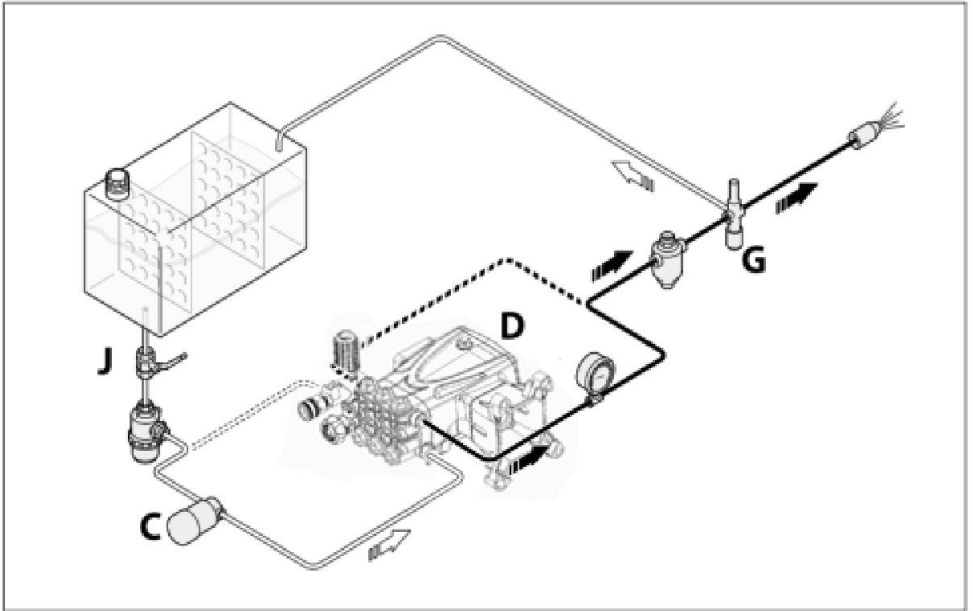
- 1)Open the shut-off valve (I) .
- 2)Open the by-pass valve (F) to depressurise the delivery pipeline.
- 3)Start the pump and run it for a few minutes with no pressure.
- 4)Adjust the by-pass valve (F) to obtain the pump's operating pressure.

To stop the pump, proceed as described below.

- 1) Open the by-pass valve (F) to discharge the pressure.
- 2) Stop the pump.
- 3) Close the shut-off valve (I) .

## INSTRUCTIONS FOR USE

### Starting and stopping the pump when supplied by an auxiliary pump



To start the pump, proceed as described below.

- 1) Open the shut-off valve (J) .
- 2) Open the by-pass valve (G) to depressurize the delivery pipeline.
- 3) Start the auxiliary pump (C) .
- 4) Start the pump (D) and run it for a few minutes with no pressure.
- 5) Adjust the by-pass valve (G) to obtain the pump's operating pressure.

To stop the pump, proceed as described below.

- 1)Open the by-pass valve (G) to discharge the pressure.
- 2)Stop the pump (D) .
- 3)Stop the auxiliary pump (C) .
- 4)Close the shut-off valve (J) .

## **MAINTENANCE INSTRUCTIONS**

### **Safety recommendations for maintenance**

**Before doing any maintenance work, depressurize the water system and isolate the pump from all energy sources.**

**When the jobs are done, before restarting the pump, check that no tools, rags or other materials have been left close to moving parts or in hazardous zones.**

**Replace any excessively worn components with original parts and use the lubricants recommended by the manufacturer.**

**Dispose of the worn-out components and lubricants in accordance with the relevant statutory requirements.**

**Carry out the routine maintenance procedures specified by the manufacturer to keep the pump safe and performing well.**

## Scheduled Service Table

<b>Every working day</b>	Filter	Inspect filter cartridge	See "Inspecting the filter"
	Pump	Oil level check	See "Checking the oil level"
<b>Every 50 working hours</b>	Connection of pump to power source (pulley,belt,coupling)	Inspection	
	Pump	Inspect mounting	See "Inspecting the pump mounting"
	Pipes and connections	Inspection	See "Inspecting the connections and pipes"
	Pump	Oil change(1)	See "Changing the oil"
	Pump	Oil change	See "Changing the oil"
<b>Every 500 working hours or every year</b>	Pump gaskets	Replacement	Contact an authorized service centre
<b>Every 1000 working hours</b>	Valves	Replacement	Contact an authorized service centre
	Filter	Inspect filter cartridge	See "Inspecting the filter"

(1) This interval refers to the first oil change only

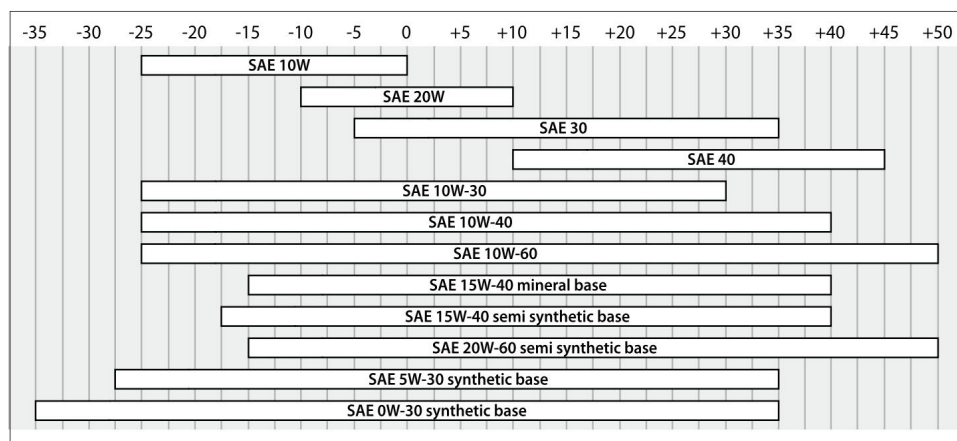
## MAINTENANCE INSTRUCTIONS

### Table of lubricants

The pump is delivered complete with oil, with the characteristics stated on the data plate.

When changing the oil, use an oil suitable for the conditions in the operating environment (see recommendations provided in the annexes and see "Environmental operating limits").

The correct lubricating oil viscosity depends on the external temperature. Use the graph to select the degree of viscosity best suited to the temperatures of use.



## MAINTENANCE INSTRUCTIONS

### **Inspecting the pump mounting**

Check that the pump's fixing screws have not become loose.

If necessary, tighten them with the driving torque stated in the installation design.

### **Inspecting the connections and pipes**

#### **- Inspect the connections for leaks.**

Leaks can normally be dealt with by tightening the connections properly.

If leaks from the intake pipeline connections are noticed, the seals must be repaired.

#### **- Inspect the hoses.**

If the pipes show signs of aging, breakage, swelling, rubbing, etc., they must be replaced.

### **Inspecting the Filter**

#### **- Inspect the filter cartridge.**

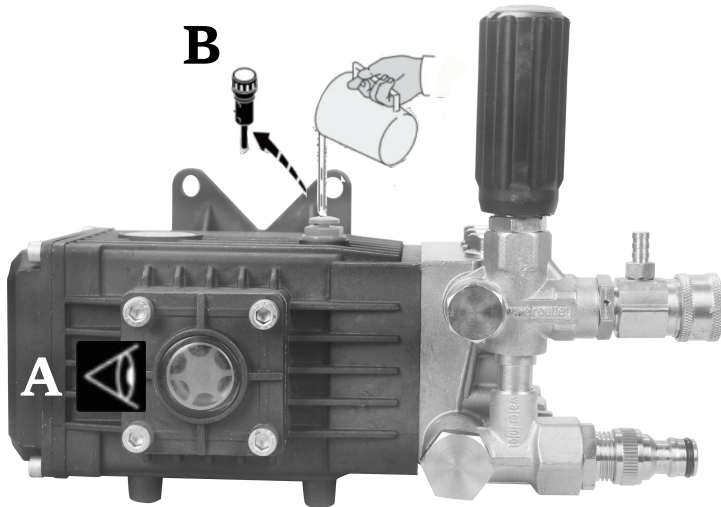
If the filter cartridge is fouled or damaged, refer to the filter manufacturer's instructions for details on how to restore the filter cartridge to its original filtering condition.

### **Checking the oil level**

- Check the oil with the pump level and cold.
- Check the amount of oil through the level gauge (A).
- If necessary, top up with oil with the characteristics specified in the "Lubricants table".

To top up with oil proceed as described below.

- 1) Unscrew the plug(B) and pour oil in until it is halfway up the level gauge (A).
- 2) Screw on the plug (B).



## Changing the oil

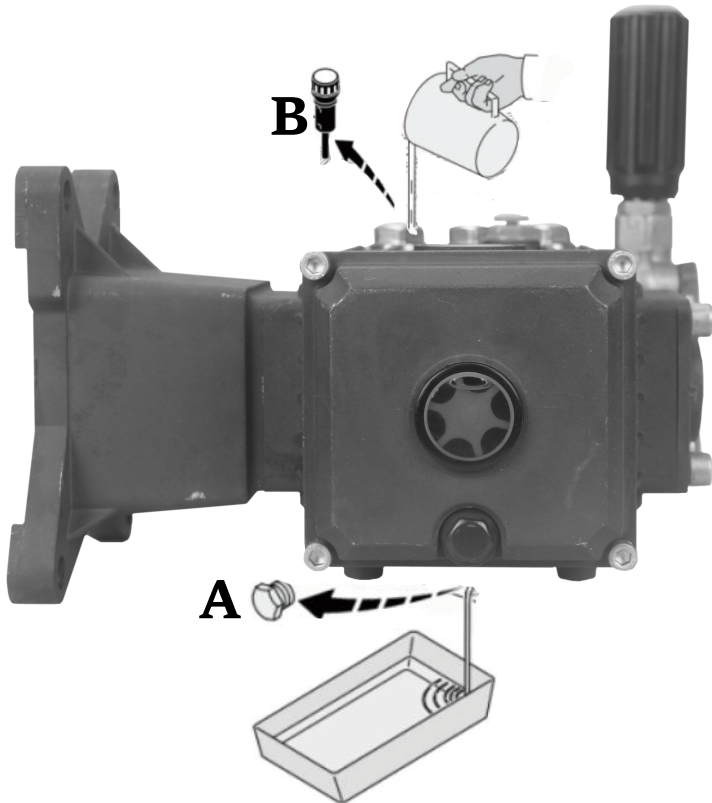
**Position the machine in which the pump is incorporated perfectly level, with the pump slightly warm.**

**Do not release oil into the environment.**

**Dispose of spent oil in accordance with statutory requirements.**

To change the oil, proceed as described below.

- 1) Position a receptacle of suitable capacity to collect the spent oil.
- 2) Unscrew the drain plug (A) and allow all the oil to flow out.
- 3) Screw on the drain plug (A).
- 4) Unscrew the filler plug (B).
- 5) Pour in the fresh oil through the filler hole until the correct level is reached (see "Checking the oil level").
- 6) Screw on the filler plug (B).



## MAINTENANCE INSTRUCTIONS

### Lengthy pump lay-offs

If the pump is to be unused for a long time, proceed as described below.

- 1) Run the pump with clean water for a few minutes.
- 2) Operate the pump without water for 10 seconds with the end of the delivery pipeline open to empty the pump and the delivery circuit and prevent scaling.

- 3) Flush the pump with water and solvents authorized by the relevant laws.
- 4) Dry the pump with a pressurized air jet.
- 5) Protect the pump from the weather.

### **Putting the pump back into service**

Before putting the pump back into service after a long period out of use, check the oil level and the tightness of the mounting screws.

### **Scrapping the pump**

The pump must be scrapped by skilled staff, in compliance with the statutory requirements on occupational safety.

The dismantled components must be sorted by the type of materials from which they are made. Do not dump pollutants such as seals and lubricants into the environment.

Dispose of them in accordance with statutory requirements with regard to waste disposal and recycling.

## **TRQUBLE SHQOTING**

The information provided is intended to provide guidance on how to deal with malfunctions that may occur during use.

Some of these procedures may be carried out by skilled staff, while others have to be performed at specialized service centres since they require the use of specific equipment as well as detailed knowledge of repair operations.

<b>Problem</b>	<b>Cause</b>	<b>Remedy</b>
<b>Pump does not reach the specified pressures</b>	Pump sucking air	Restore the tightness of the intake line
	Intake flow rate insufficient	Increase the size of the intake pipelines
		Remove any kinks from the pipes
		Increase the filter capacity or clean the filter cartridge
		Increase the rpm to the rated speed
	Worn intake and delivery valves	Replace the valves (1)
	By-pass valve seat worn	Replace the valve
	Worn gaskets	Replace the gaskets(1)
Unsuitable, worn nozzle	Replace nozzle	
<b>Irregular variations in pressure</b>	Worn intake and delivery valves	Replace the valves (1)
	Valves blocked by dirt	Clean the valves(1)
	Air being sucked into system	Restore the tightness of the intake pipeline connections
	Worn gaskets	Replace the gaskets(1)
<b>Vibrations on pipes</b>	Valves jammed	Replace the valves(1)
	By-pass valve malfunction	Replace the by-pass valve
	By-pass valve dump line too small	Increase size of by-pass valve dump line
	Pressure damper flat	Restore pressure damper to correct inflation pressure
	Pump sucking air	Restore the tightness of the intake line
<b>Pressure drop</b>	Nozzle worn	Replace nozzle
	Worn intake and/or delivery valves	Replace the valves(1)
	Valves blocked by dirt	Clean the valves(1)
	By-pass valve seat worn	Replace the valve
	Worn gaskets	Replace the gaskets (1)

(1) Operations that must be carried out at an authorized service centre

## TROUBLE SHOOTING

Problem	Cause	Remedy
Pump noisy	Air being sucked into system	Restore the tightness of the intake pipeline connections
	Intake and/or delivery valve springs broken or collapsed	Replace the valves(1)
	Valves blocked by dirt	Clean the valves(1)
	Worn bearings	Replace the bearings(1)
	Intake liquid temperature too high	Reduce liquid temperature
Pump overheating	High pump operating pressure	Reduce the pressure to the rated values
	Drive belts too taut	Restore correct belt tension
	Pulley or drive coupling alignment poor	Restore the correct alignment
Water in oil	Guide piston gaskets worn	Replace the gaskets(1)
	High humidity percentage in air	Change the oil twice as often (than stated in "Routine Maintenance" table)
	Worn gaskets	Replace the gaskets(1)
Oil leaks from dump lines underneath the pump	Worn gaskets	Replace the gaskets(1)
	Worn pistons	Replace the pistons(1)
Oil leaks from dump lines underneath the pump	Guide piston gaskets worn	Replace the gaskets(1)

(1) Operations that must be carried out at an authorized service centre

\*There are any minor changes to the numbers included in the user manual without prior notice.

## Limited Liability & Warning

**No Unauthorized Modifications/Repairs:** Do not modify or attempt to repair this product unless you are an authorized technician. Unauthorized actions may create hazards and void all warranties

**Misuse & Non-Compliance:** We are not liable for any injury, damage, or loss resulting from:

- (a) misuse, abuse, neglect, or improper installation;
- (b) failure to follow instructions or safety precautions;
- (c) use of unauthorized parts/accessories;
- (d) unauthorized modifications/repairs;
- (e) accidents, natural disasters, or external causes.

If you doubt any step of installation or operation, stop using the product and contact authorized service or the customer support.

## LIMITACIÓN DE RESPONSABILIDAD Y ADVERTENCIA

**Modificaciones o Reparaciones No Autorizadas:** NO modifique ni intente reparar este producto a menos que sea un técnico autorizado. Las acciones no autorizadas pueden generar riesgos y anularán todas las garantías.

**Uso Indebido e Incumplimiento:** No asumimos responsabilidad alguna por lesiones, daños o pérdidas que resulten de:

- (a) uso indebido, abuso, negligencia o instalación incorrecta;
- (b) incumplimiento de las instrucciones o precauciones de seguridad;
- (c) uso de piezas o accesorios no autorizados;
- (d) modificaciones o reparaciones no autorizadas;
- (e) accidentes, desastres naturales o causas externas.

Si tiene dudas sobre algún paso de la instalación o el funcionamiento, deje de usar el producto y póngase en contacto con el servicio técnico autorizado o con atención al cliente.

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