On receiving your Flojet diaphragm pump check that the pump and model number and motor volts/phase/Hz correspond to your purchase order. Notify your supplier immediately in the event of any error, or of damage to the pump on receipt. Delay may cause difficulty with warranty claims.

Installation. Locate the pump in a dry place above or below the liquid supply. The pump will self-prime when wetted to a height not exceeding 2 metres. The pump may be mounted in any attitude. If mounted vertically, the motor should be uppermost. The drain holes in the pump body should face downwards: if necessary, undo the 4 body screws and rotate the pump head through 90º or 180º. Attach the pump to a firm surface with fixing screws through the mounting feet.

Connections. Port adapters available are 13mm (½") hose barb and ½" NPT threaded. Use hose clips for hose connections and PTFE tape for threaded connections. Flexible hose is recommended. Inlet hose should be at least 13mm (½") bore, of the reinforced type that will not deform or collapse under suction conditions.

A 'Pumpguard' strainer is recommended to prevent solid debris from entering the pump. The strainer should be checked at intervals and cleaned when necessary. See Cleghorn Waring's data sheet for details of 'Pumpguard' strainers and port fittings.

Make sure that the inlet and discharge pipes and connections are airtight, to ensure prompt self-priming and no leaks.

Electrical connection. The unit is complete with a standard European single phase 3 wire lead. Check the motor plate for the correct electrical supply and full load current. Make sure that the motor (and adjustable pressure switch, if fitted) are earthed. A starter with thermal overload protection should be used to protect the motor. A COMPETENT ELECTRICIAN SHOULD DO THE WIRING.

Controlling the discharge pressure. The maximum recommended discharge pressure is 3.0 bar (45 p.s.i.). The pump is a positive displacement type that can be damaged by excessive back pressure.

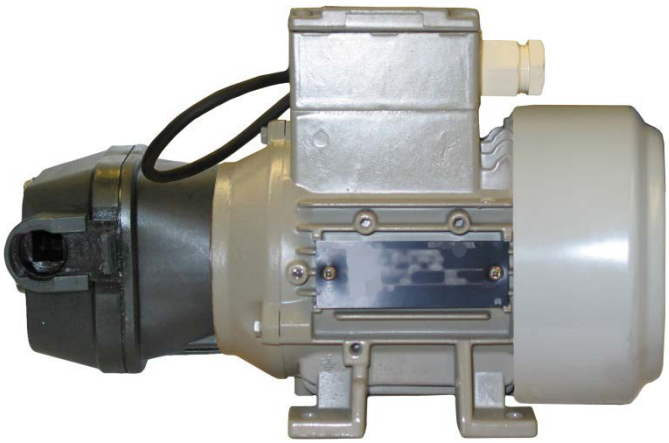
Installation, Operating, Maintenance and Safety

INSTRUCTIONS

for

CW474 - series

DIAPHRAGM PUMP with a.c. motor



CLEGHORN WARING

FLOJET

Xylem Water Solutions UK Ltd
Bingley Road
Hoddesdon
Hertfordshire • EN11 0BU • UK

Tel: +44 (0)1462 480380
Fax: +44 (0)1462 482422
mail@cleghorn.co.uk
www.jabscoshop.com

xylem
Let's Solve Water

Doc610/12

Operating temperature. The recommended liquid temperature range for this pump is - minimum 7ºC (45ºF), maximum 54ºC (129ºF).

Liquid viscosity. Check that the liquid viscosity (at pumping temperature) does not exceed 250 centipoise.

Duty cycle. Motor and pump are designed for continuous operation at a maximum ambient temperature of 40ºC (104ºF).

Starting the pump. Check the liquid level in the supply tank. Open all valves in the system. Switch the pump on. After a short period while air is displaced from the pipework, a steady flow of liquid will be established.

If the pump is fitted with a pressure switch, close the discharge valve progressively. The pump should stop as soon as the cut-out pressure is reached. The pump is now ready for automatic operation.

> **NOTE:** Factory fitted pressure switches are pre-adjusted. Check with your pump supplier, if necessary, before making adjustments.

If the pump is not in use for an extended period, flush it out with clean water, disconnect the electrical supply and open discharge outlets to release pressure.

Before **re-starting the pump** make sure that residual pressure in the discharge pipework is released, or the pump may have difficulty in re-priming itself. If necessary, fit a non-return valve in the base of the inlet pipe, to maintain the pump's prime when it is not running.

Dry running. Dry running will not damage this diaphragm pump.

> **IMPORTANT NOTE**
> Never restrict the inlet line to the pump. Low inlet pressure can cause the pump to cavitate, leading to noisy running, unreliable flow, accelerated wear and tear and premature failure.

SAFETY

1. Do not pump petrol/gasoline, solvents, thinners or other flammable liquids with flash points below 37ºC (99ºF). Motor is not flameproof, explosion and personal injury or death can occur.
2. Earthing (ground) connection must always be securely fitted.
3. You are strongly recommended to fit a 'Residual current circuit breaker' (RCCB) in the electric supply to the pump.
4. The pump is designed to handle clean water and other non-aggressive, free-flowing liquids. If in doubt, check with your pump supplier first.

SERVICE TIPS

Disassembly: Remove four pump head screws (4).Rotate bearing cover (9) so drain notch is aligned with cam/bearing assembly (10) grub screw (A). Loosen grub screw with 1/8" Allen key and slide pump head off shaft.

Assembly: Install single piece outer piston (B) into bearing cover (9) with piston tops pointing away from motor (See picture on parts list). Slightly bend outer piston (B) along pre-moulded crease to aid assembly. Place diaphragm in Bearing cover (9) with the moulded o-ring seals facing away from the motor. Insert each inner piston through the diaphragm into the outer piston. Turn each piston unit fully seated. Align cam/bearing kit (10) with outer piston (B). Secure with cam/piston screws using 2Nm of torque.

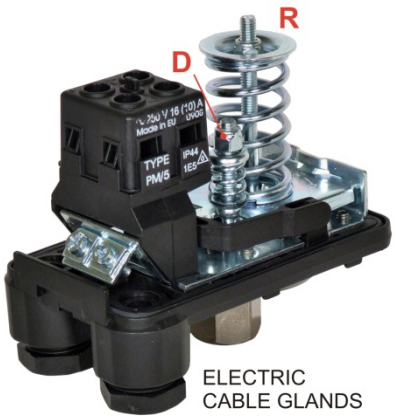
Assemble lower housing (8, 9 &10) to motor. Set screw MUST be positioned over shaft indentation and securely tightened.

Reassemble pump upper housing (4, 5 & 7). Check that rubber ferrules are installed in the upper housing and the O-ring is properly seated before inserting the valve assembly (7) into the upper housing assembly (5). Align pump assembly to motor and tighten pump head screws evenly to 3Nm torque.

PRESSURE SWITCH CONTROL.

This may be used to create an automatic pressure system and must be used in conjunction with an accumulator tank to avoid rapid on-off cycling of the pump. This type of control may be used to avoid over-pressurisation of the pump on other applications. A pressure relief by-pass version is also available as a pump safety feature.

Setting the Large Adjustable Pressure Switch (if fitted).



(D) Adjusting screw - differential

(R) Adjusting screw - range

This procedure should be carried out with care by a competent technician. Disconnect the electrical supply, remove the switch cover and check that there are no exposed electrical connectors before re-connecting the supply.

NOTE: Factory fitted pressure switches are pre-adjusted. Check with your pump supplier, if necessary, before making adjustments.

1. Loosen the differential nut (D) completely
2. Adjust the range nut (R) to the required **cut-in** pressure, using a suitable pressure gauge in the discharge pipework close to the pump.
3. Tighten the differential nut (D) to give the required **cut-out** pressure.

Fixed Setting Pressure Switches

These are not adjustable. These switches are **not** IP55 and require protection from liquids and mechanical damage. The complete unit should be fitted in an enclosure. Note: Enclosure should allow heat to dissipate and keep the motor pump ambient temperature below 40^{o}C.

TROUBLE SHOOTING

Problem	Possible cause	Solution
Pulsating flow – pump cycles on & off (this applies to pumps fitted with pressure switches)	Restricted discharge line	Check for blockages and restrictions including undersized valves & fittings. Replace with larger bore fittings if necessary
	Leak in discharge line	Check outlets for leaks. Fit an accumulator tank (pressure buffer) in the discharge line if necessary. Contact your pump supplier for advice
Motor does not run	Electric supply failure	Check electric supply
Motor runs but no flow from pump	Air leak in suction line is preventing self-priming	Check inlet line for air leaks
	Punctured diaphragm	Check diaphragm and replace if necessary
	Debris under valves	Clean valves
	Cracked pump casing	Check casing for damage and replace if necessary
Pump runs, but flow and/or pressure are low	Air leak in inlet line	Check for air leaks
	Debris in pump or pipework	Check pump, pipework and inlet strainer
	Air trapped in pump and/or discharge pipework	Open discharge valve fully to purge system. Follow the recommended re-start procedure
Pump is noisy	Punctured diaphragm	Check diaphragms, replace if necessary
	Worn pump bearing	Replace bearing
	Low inlet pressure	Check inlet line and strainer for blockage
	Under-sized inlet pipework and/or fittings	Use larger bore pipe and fittings
Motor runs abnormally hot, cuts out	Excessive discharge pressure	Reduce discharge pressure
	Defective motor	Check motor, replace if necessary

PARTS LIST

Key	Description	Qty	Part No.
1	Adjustable Pressure Switch	1	CW4-A
2	Adjustable Pressure Switch adapter	1	CW3
3	Adjustable Pressure Switch Threaded switch cover	1	Z/20244-020
4	**Fixed Pressure Switches** 1 bar (15psi) Cut-out 2 bar (30psi) Cut-out 3 bar (45psi) Cut-out	 1 1 1	 2090-108 2090-117 2090-103
5	**Upper Housing Assy.** For Pump that uses EPDM valve kit For Pump that uses Nitrile valve kit For Pump that uses Viton valve kit	 1 1 1	 20404-004 20404-005 20404-019
6	**Port Kit**	1	Refer to separate leaflet.
7	**Valve Kit** EPDM Nitrile Viton	1	 20407-030 20407-010 20407-020
8	**Diaphragm Kit** Santoprene Geolast	1	 20403-040 20403-050
9	Bearing Cover	1	20401-000
10	**Cam/Bearing Kit** Low Flow High Flow	1	 20400-002 20400-003
11	**Motor** 230v/1/50Hz 2 Pole IP55		 MFB12-120