

FLOJET®

Model R3521 / 03521 Series High Flow Triplex Pump

INSTALLATION & SERVICE INFORMATION

FLOJET Triplex High Flow Series pumps are designed for a wide range of applications and are constructed from a selection of materials suitable for handling a broad range of chemicals. The Triplex High Flow pumps are self-priming and can run dry without harm. They are intended for intermittent duty cycles but can be run continuously for a short periods of time. The higher the duty cycle, the shorter the expected life of the pump. Typical uses include transfer, delivery, spraying, cooling, filtration, dispensing, and pressure boosting.

OPERATION

Allow pump to prime with discharge line (or spray valve) open, to avoid airlock. Built-in pressure switch will shut off pump automatically when discharge valve is closed and will restart pump when valve is opened. When pump runs out of liquid, it will continue to operate. Running dry will not damage the pump. Turn off manually.

DEMAND OPERATION (intermittent duty)

Pump models fitted with a pressure switch are known as demand pumps. The pressure switch is preset to shut off the pump motor automatically when a specific pressure is reached, such as in closed discharge conditions. The pressure switch turns the pump motor on automatically as the pressure drops, such as when the discharge is opened. Demand operation is considered an "intermittent duty" application. The maximum intermittent duty cycle is that which will cause the motor to reach its maximum thermal limits. Once the maximum thermal limit is reached, the motor must be allowed to settle to a lower (ideally ambient) temperature, before resuming operation. Running the pump at or near the maximum thermal limit for an extended period of time will shorten the life of the pump and may result in immediate pump failure. Demand pump models feature an integral pressure switch that automatically turns the pump off/on in response to open/closed discharge conditions.

BYPASS OPERATION (if equipped)

Models equipped with an external bypass system are designed to pump at high pressures while at low or high flow rates. Models equipped with bypass only must be turned off/on manually, or by an independent control device. Models equipped with a bypass only will continue to run until the power is manually turned off.

The Triplex High Pressure pumps are not recommended for continuous duty service due to limited motor brush life. Operation at lower pressures and temperatures, however, will extend overall pump service life.



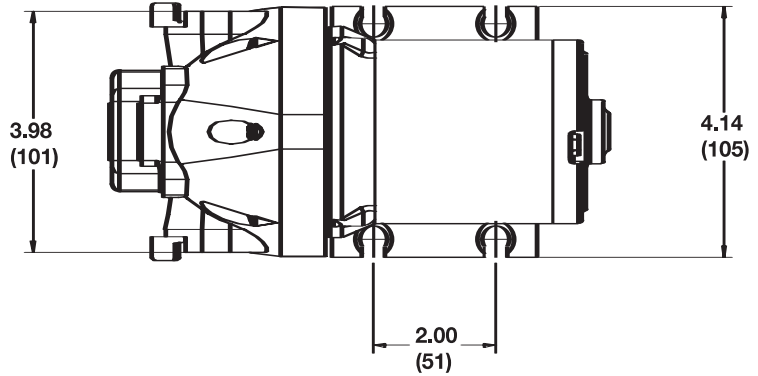
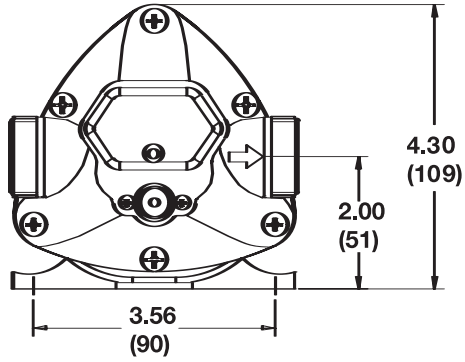
SPECIFICATIONS

Pump Design:	3 chamber diaphragm
Motor Design:	Permanent magnet DC
Voltages:	12, 24 VDC
Pump Rating:	IP 54 (splash proof)
Amp Draw:	5 amps @ 10 psi for 12 VDC 3 amps @ 10 psi for 24 VDC 9 amps @ 10 psi for 12 VDC 6 amps @ 10 psi for 24 VDC 9 amps @ 40 psi for 12 VDC 6 amps @ 40 psi for 24 VDC
Pump Head:	Polypropylene
Elastomers:	
Diaphragm	Santoprene™
Check valves	Viton
Max. Flow Rate:	4 GPM (15.1 LPM)
Max. Pressure:	60 psi (4.1 bar) switch cutoff 50 psi (3.4 bar) max running pressure
Max. Liquid Temp:	40° F (4° C) Min* 140° F (60° C) Max*
Duty Cycle:	Intermittent**
Weight:	5.05 lbs (2.29 kg) max.
Wiring Options:	Standard 18 AWG leads
Port Size inlet / outlet:	3/4" (19 mm), 3/8" NPTF

* Consult factory for higher fluid temperature options

** Consult factory for continuous duty application

DIMENSIONAL DRAWINGS - inches (mm)



MOUNTING

FLOJET Triplex 3521 Series pumps are self-priming. They may be located several feet from the tank, above or below the liquid level (they are not submersible pumps).

PLUMBING

For best performance, flexible hose is recommended instead of rigid piping at the pump. Flojet Triplex 3521 Series ports are a push-in type retained by a "C" clip. To install the required ports move "C" clip forward to front of pump. Do not install pump such that plumbing causes excessive stress on either port.

It is essential that a 20 mesh (min.) strainer or filter be installed in the tank or in the pump inlet line to keep large foreign particles out of the system. The use of check valves in the plumbing system may interfere with the priming ability of the pump. Check valves, if used, must have cracking (opening) pressure of no more than 2 PSI.

WIRING

Suggested wiring information is given as a reference only.

STEP 1

Determine the distance from the power source to the pump and then double the measurement. Wire gauge installation is determined on the entire run length, to the pump and back.

STEP 2

Connect to power supply lead (red (+)) to the positive (+) terminal on the battery or through a properly installed fuse/circuit breaker panel. Then run the length of wire to the pump, connecting the red wire through a switch appropriately rated to the pump's current requirements.

STEP 3

Route the wire so as not to create hazards in operation of the engine, movement of steering components or human traffic.

STEP 4

Connect the red lead to the red/orange lead on the pump.

STEP 5

Connect the black lead from the pump to the ground or negative power side (-) of the vessel.

STEP 6

Turn the system off when not in use for extended periods of time or when the water supply tank is empty.

STEP 7

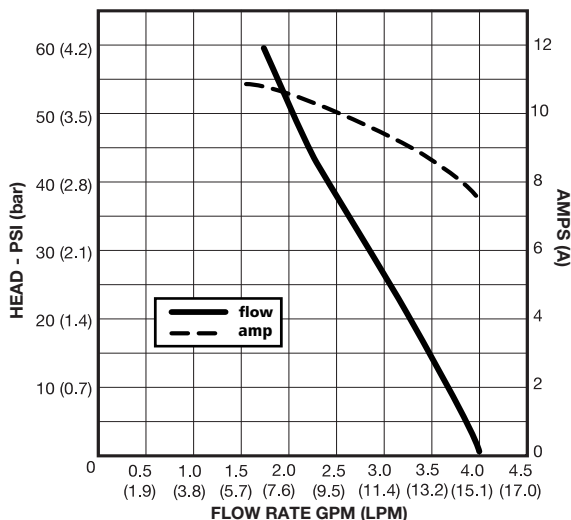
After installation, check voltage at the pump motor. Voltage should be checked when pump is operating. Full voltage must be available at the pump motor at all times for proper pump operation and pump motor life.

WARNING

Risk of an electrical shock!



HEAD-FLOW CURVE (12 & 24 VDC)



IF YOU ARE NOT FAMILIAR WITH APPLICABLE ELECTRICAL STANDARDS, HAVE THE UNIT INSTALLED BY A QUALIFIED ELECTRICIAN

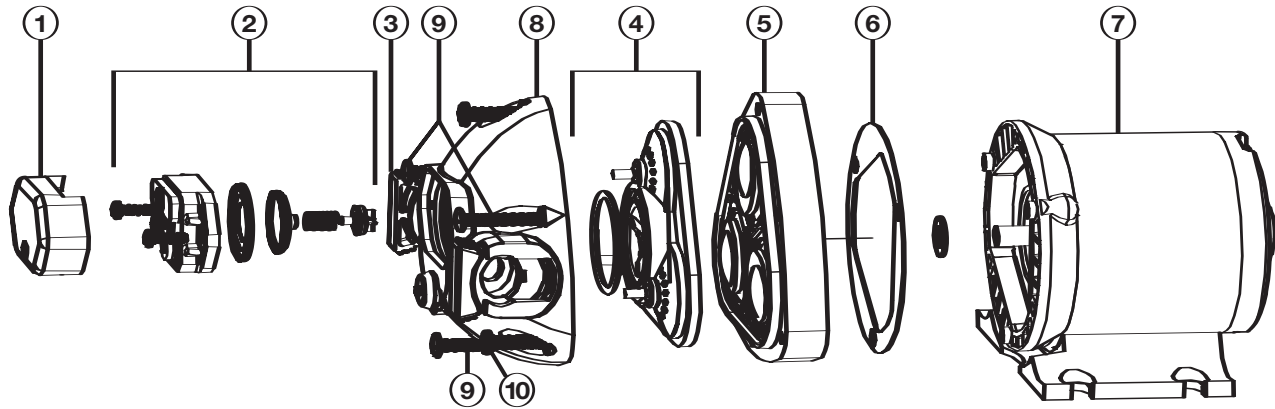


DO NOT USE TO PUMP FLAMMABLE FLUIDS, GASOLINE, KEROSENE, OR ANY FUEL OIL



DO NOT USE PUMP IN AN EXPLOSIVE ENVIRONMENT

EXPLODED VIEW DRAWING



ITEM	DESCRIPTION	QUANTITY	PART NUMBER
1	Pressure Switch	1	02091060
2	Port Clips	1	21000407A
3	Valve Chamber Subassembly	1	20419015
4	Lower Housing Subassembly	1	20407021
5	??	1	??
6	??	1	??
7	long screws	1	??
8	short screws	1	??
9	??	1	??

DISASSEMBLE

Pump Housing

(For numbers, refer to exploded view)

1. Disconnect power to the pump motor (5).
2. Remove the pressure switch cover (1) and remove the two wire leads from the switch spade connectors.
3. Remove the six screws from the upper housing (7,8).
4. Remove the upper housing (6) from the check valve and diaphragm/lower housing assemblies (3,4).

Check Valve Assembly

(To replace check valve only follow steps 1 through 6)

5. The check valve chamber and o-ring are located on the diaphragm/lower housing assembly (3,4).
6. Remove the check valve chamber subassembly (3) from the diaphragm/lower housing subassembly (pull the valve chamber from the diaphragm) (3,4).

Diaphragm/Cam/Lower Housing Assembly

7. Remove the diaphragm/lower housing assembly (3,4) from the motor front end bell adapter.

Motor Replacement

8. To replace the motor only, follow steps 1 and 2, then disconnect 3 screws (7), and pull the pump head out. Replace the motor with washer and gasket (9).

REASSEMBLE

Pressure Switch Assembly

1. Install the switch diaphragm into upper housing (6).
Note: Check the old diaphragm for the material mark located in the center of the new diaphragms. V is for VITON, and E is for EPDM. Select the correct material for the installation.
2. Install the switch body over the diaphragm, align the screw holes and install the two mounting screws.
3. Reinstall the two wires onto the spade connectors, then install the switch cover and screw.

Check Valve Assembly

4. Install the o-ring into the o-ring groove located on the discharge side of the check valve chamber assembly (3).
5. Install the check valve chamber assembly into the diaphragm, thus aligning the check valve chamber with the diaphragm seal walls (push in to secure to the diaphragm).

Upper Housing Assembly

6. With the check valve chamber sub assembly (3,4) installed on the diaphragm, place the upper housing assembly (6) onto the pre-assembled lower housing sub assembly (3,4).
7. Align the cam with the motor "D" shaft and motor list, then slide the cam onto the motor shaft (lube the motor shaft with a small amount of light grease).
8. Check the discharge location (see arrow on front of port) for correct port orientation (discharge right is the standard position).
9. Install the six pump head screws (7,8) through the upper housing (6), 3 screws (8) will engage to lower housing (4). The other 3 screws (7) will go through the lower housing (5) into the front end bell assembly aligning the three pins on the front end bell with the 3 holes on the lower housing and tighten securely.

Motor Assembly

10. Install the pump head by following steps 6 through 9.

PUMP TROUBLESHOOTING CHART

Failure to prime - motor operates, but no pump discharge

- Restricted intake or discharge line. Open all line valves, check for "jammed" check valves, and clean clogged lines.
- Air leak in intake line.
- Punctured pump diaphragm.
- Defective pump check valves.
- Crack in pump housing.
- Debris in check valves.
- Missing or damaged o-ring of control valve chamber.
- Pinched/kinked hose.
- Damaged inlet or outlet check valve.

Motor fails to turn on

- Pump or equipment not plugged in electrically.
- Loose wiring connection.
- Pressure switch failure.
- Defective motor or rectifier.
- Frozen cam/bearing.

Pump fails to turn off after discharge valves are closed

- Depletion of available liquid supply.
- Punctured pump diaphragm.
- Discharge line leak.
- Defective pressure switch.
- Insufficient voltage to pump.
- Debris in check valves.

Low flow and pressure

- Defective check valves (most cases).
- Air leak at pump intake.
- Accumulation of debris inside pump and plumbing.
- Worn pump bearing (excessive noise).
- Punctured pump diaphragm.
- Defective rectifier or motor.
- Insufficient voltage to pump.

Pulsating flow - pump cycling on and off

- Restricted pump delivery. Check discharge lines, fittings, valves and spray nozzles for clogging or undersizing.

AVAILABLE MODELS

Visit www.flojet.com for a complete list model numbers.

PREVENTATIVE MAINTENANCE TIPS

If pumping a liquid other than water, the pump should be flushed with water (if applicable) after each use. Sealers and Teflon tape acting as a lubricant can cause cracked housings or stripped threads due to over-tightening. Care should be used when applying sealers; the tape may enter the pump, thus inhibiting valve action and causing no prime or no shut-off conditions. Failures due to foreign debris are not covered under warranty.

Before freezing conditions occur, the pump must be liquid free or winterized with proper anti-freezing chemicals. If mounting the pump in an outdoor environment, the pump should be shielded from water, dust, sunlight, and washdown spray. Do not assume chemical compatibility. If the fluid is improperly matched to the pump's elastomers, the pump may fail to prime, have low pressures, or the pressure switch may not shut off. Contact your supplier for advice.

PRODUCT WARRANTY

FLOJET warrants this product to be free of defects in material and/or workmanship for a period of one year after purchase by the customer from **FLOJET**. During this one year warranty period, **FLOJET** will, at its option and at no charge to the customer, repair or replace this product if found defective. No product will be accepted for return without a return material authorization number. All return goods must be shipped with transportation charges prepaid. This is only a summary of our Limited Warranty. For a copy of our complete warranty, please request Form No. 100-101.

SERVICE KITS

Kits are readily available to repair standard Triplex High Pressure Series pumps. To insure that the correct kits are received, the model number and all name plate data must be included with the order. Contact a **FLOJET** distributor to order the necessary repair kits.

RETURN PROCEDURE

Prior to returning any product to **FLOJET**, call customer service for an authorization number. This number must be written on the outside of the shipping package. Place a note inside the package with an explanation for return as well as the authorization number. Include your name, address and phone number. MSDS required.



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