

ADJUSTING THE BYPASS VALVE AND PRESSURE SWITCH

The **BYPASS VALVE** is an internal spring-loaded valve that 'recirculates' excess water through the diaphragm chamber to ensure smooth continuous operation. Without this valve, during situations where the water demand does not meet the actual flow rate of the pump, the pressure switch will engage and cause the pump to cycle on/off rapidly. This is known as 'cycling', and while it will not cause immediate damage to the pump, it will result in an irregular flow rate, cause premature wear of the pressure switch, and consume more energy.

All **KEDRON® Water Systems** diaphragm pumps include an **adjustable bypass valve** which is preconfigured at the factory to work with most applications. We do not recommend adjusting the bypass valve unless absolutely necessary.

The **PRESSURE SWITCH** is also preset from factory to accommodate most applications. The pressure switch is what directly controls the starting and stopping of the diaphragm pump motor.

ADJUSTING THE PUMP'S SHUT-OFF PRESSURE: (1)

- To raise the shut-off pressure, use a 2mm Allen wrench to turn the pressure switch screw clockwise to the desired pressure.
- To lower the shut-off pressure, use a 2mm Allen wrench to turn the pressure switch screw counter-clockwise to the desired pressure.

ADJUSTING THE BYPASS: (2)

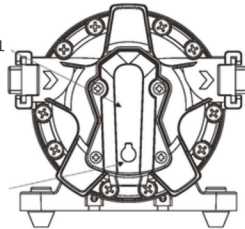
Slide a screwdriver in the removal slot and pry out bypass valve access hole cover.

Locate the bypass valve adjustment screw on the pump housing at the bottom of the access hole.

- To raise the pressure at which the bypass starts and raise the full bypass pressure, use a 2mm Allen wrench to turn the bypass screw clockwise to the desired pressure.
- To lower the pressure at which the bypass starts and lower the full bypass pressure, use a 2mm Allen wrench to turn the bypass screw counter-clockwise to the desired pressure.

1 Pressure switch 1

2 by-pass switch 2

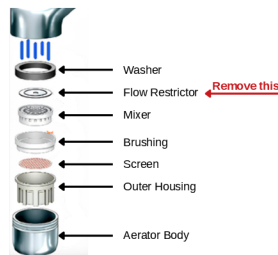


Picture 2

CAUTION: The pressure setting for full bypass must be at least 8psi higher than the shut-off pressure of the pump. If the switch and bypass is adjusted too closely, the bypass and switch shut-off can overlap and the pump will not shut off.

CAUTION

If your pump is cycling rapidly on/off during operation, for new installations users should first check their connections to ensure they have full unobstructed flow to the faucets connected, and especially water taps or shower heads to ensure water flow restrictors have been removed. These water restrictors are intended to be used for areas that have regulations in place for water conservation and inhibit the flow rate. These are unnecessary additions for off-grid applications. See the diagram to the right for an example of a flow restrictor commonly found in kitchen or bathroom taps. **Please follow the instructions provided in this manual. Failure to do so may result in damage that is not covered by warranty.**



WARRANTY

All **KEDRON® Water Systems** diaphragm pumps come with a 3-year limited warranty which covers parts replacement only. For warranty coverage, original proof of purchase and installation description/pictures will be required.



KEDRON® K12DC5VS Variable Speed Smart Pump Instruction Manual

The **KEDRON® Water Systems K12DC5DVS** is our most versatile & powerful 12-VDC automatic variable speed diaphragm pump, providing constant pressure across multiple outlets via the integrated variable speed controller which eliminates the need for external pressure tanks or switches. This 5-chamber design allows for on-demand water pressure resulting in lower power consumption, smoother operation, lower starting pressure, and increased heat dissipation to meet the most demanding requirements.

FEATURES

- Variable speed technology
- 5 chamber diaphragm pump
- Can supply up to 4 fixtures
- Quick-Connect fittings
- Low voltage protection
- Quiet operation
- Long service life
- Ignition protected
- Safety bypass
- Self priming up to 6FT / 1.8M
- Can run dry without damage

VARIABLE SPEED TECHNOLOGY

SPEED CONTROLLER: Factory set to approximately 10A @ 12V DC

THERMALLY PROTECTED: The pump will shut down when overheated, and will automatically restart

CAUTION: Exterior Surfaces (heat sink), May Exceed 150°F After Only 15 Minutes of Operation.

CONTROL: Variable Speed Electronic Controller and Dual Control Pressure Switch/Bypass.

APPLICATIONS

- Boat /RV/ or Cabin / Cottage pressurized water system
- Sprayer fixtures (vehicle-mounted sprayers, 12V electric sprayers)
- Solar water systems
- Most pressurized water systems

INSTALLATION

Materials Required

- 1 Your KEDRON® diaphragm pump & related accessories
- 4 Screws to fasten the pump to the mounting surface
- 2 (optional) pieces of 1/2" ID flexible, reinforced hose piping
- 1/2" (12mm) PEX pipe or rubber hose
- +Hose clamps & screws (Exact Qty & Type depends on installation)
- 1 electrical cutoff switch
- 1 fuse
- 1 screwdriver or drill
- 1 strong cutting implement for tubing (if needed). Teflon tape or sealant

Setup

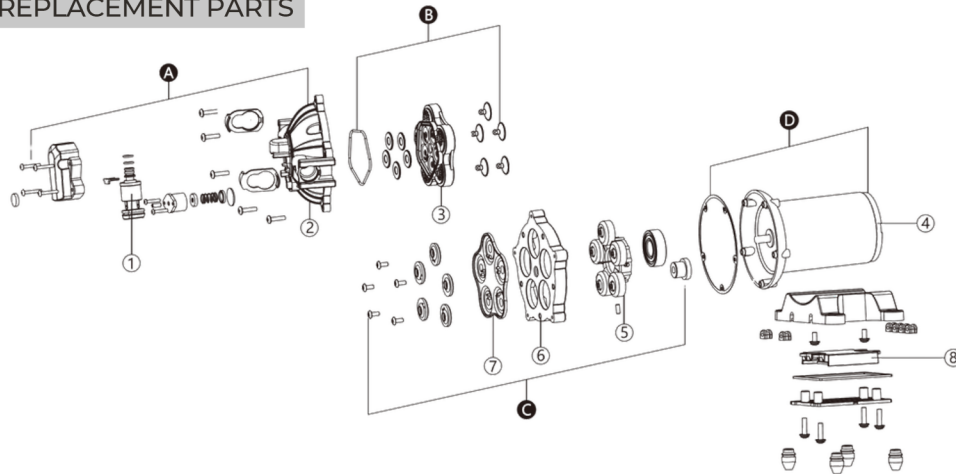
1. The pump can be mounted in any position. **If mounted vertically, the pump head should be in the down position to avoid leakage into the motor casing in the event of a malfunction.**
2. Secure the rubber feet, but **do not compress them**. Over tightening the mounting screws may reduce their ability to dissipate noise and vibration.
3. The intake hose must be **minimum 1/2" (13 mm) ID**. The main distribution line from pump outlet should also be 1/2" (13 mm) ID with branch and individual supply lines to outlets no smaller than 3/8" (10 mm).
4. High pressure, braided, flexible tubing or PEX is recommended to minimize vibration / noise.
5. Do not apply inlet pressure exceeding 30 psi. In general, try to avoid pressurized inlet pressure completely.
6. Avoid any kinks or fittings which could cause excessive restrictions.
7. Strainer should be attached to the inlet side.
8. The fittings must be secured to avoid leakage.
9. Use clamps at both ends of hose to prevent air leaks into the water line.
10. If a check valve is installed in the plumbing, it must have a cracking pressure of no more than 2 psi

11. If applying a sealer or plumbing tape, **be careful to not overtighten**, as they may be sucked into pump.
12. This pump should be wired on its own dedicated circuit. Connect the positive lead (red) to the positive terminal of your battery and the negative wire (black) to the negative terminal of your battery.
13. In an easily accessible location, install a disconnect switch. Turn the pump off when not used for extended periods of time.
14. The electrical circuit should be protected with an over-current protection device (fuse) on the positive lead. This pump requires a 15A@12V Fuse.
15. The pump circuit should not include any other electrical loads.
16. Reference the wire chart under the electrical information. Be sure to have the correct wire sizing for the length of wire you are using. **Undersizing the wire can result in overheating and risk of fire!**
17. After installation, check all connection and the 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.

NOTES

1. Flexible potable water hose or PEX tubing is recommended instead of rigid piping at the pump. If you choose to use rigid piping, provide a short length of rubber braided hose between pipe and the pump to avoid noise and excess vibration.
2. Metal fittings are not recommended. When possible, use the provided plastic fittings.
3. Do not adjust the bypass or pressure switch unless absolutely necessary. Consult a professional if needed.
4. Lack maintenance is the main cause of poor performance or failure of the pump. Please perform maintenance and winterize the pump at appropriate times, especially before and after a period of storage.

REPLACEMENT PARTS



KEY	DESCRIPTION	QUANTITY	KEY	DESCRIPTION	QUANTITY
A	Pump Head Assembly	1	3	Valve Seat	1
B	Valve Assembly	1	4	Motor	1
C	Diaphragm Assembly	1	5	Swing Bracket	1
D	Motor Assembly	1	6	Diaphragm Pump	1
1	Pressure Switch	1	7	Diaphragm	1
2	Pump Head	1	8	Circuit Board Assembly	1

ELECTRICAL INFORMATION

Wire Size FT (M)	0-20 (0-6)	20-30 (6-9)	30-50 (9-15)	50-65 (15-19)
AWG	14 AWG	12 AWG	10 AWG	8 AWG

TROUBLESHOOTING

PULSATING FLOW-PUMP CYCLES ON AND OFF

- Plumbing lines or fittings may be too small.
- Check lines for kinks.
- Check fitting tightness for air leaks.
- Clean faucets and filters. Remove restrictors

FAILURE TO PRIME BUT MOTOR OPERATES -NO PUMP DISCHARGE

- Restricted intake or discharge line.
- Air leak in intake line.
- Punctured pump diaphragm.
- Debris clogged in the valves.
- Initial amp supply is not enough to sufficiently start the motor.
- Crack in pump housing.

MOTOR FAILS TO TURN ON

- Loose or improper wiring.
- Faulty pressure switch.
- Pump circuit has no power.
- Blown fuse.

PUMP FAILS TO TURN OFF AFTER ALL FIXTURES ARE CLOSED

- Punctured diaphragm.
- Insufficient voltage.
- Discharge line leak.
- Clogged valves in pump head.
- Faulty pressure switch.

LOW FLOW AND PRESSURE

- Air leak at pump intake.
- Accumulation of debris inside pump or plumbing.
- Punctured diaphragm.
- Worn pump bearing (possibly accompanied by loud noise).
- Defective motor.

EXCESS VIBRATION OR NOISE DURING OPERATION

- Check if the mounting feet are compressed too tightly.
- Is the mounting surface flexible? If so, it may be adding noise.
- Check for loose head/screws.
- If the pump is plumbed with rigid pipe, then it may transmit noise more easily.

TYPICAL INSTALLATION SCENARIO

