



**INSTALLATION & SERVICE INSTRUCTION MANUAL
W.A. KATES FLOW CONTROLLERS
MICRO-FLO MODELS FM12, FM121, & FM124**

IMPORTANT

1. W. A. Kates flow rate controllers are designed to accurately regulate flows and are precision built with exacting tolerances and finishes. To insure satisfactory performance, the regulated fluid must be clean and free of dirt and/or solids. The installation of a filter is recommended, just upstream of the controller.

MODEL	STRAINER	FILTER
FM12, FM121, FM124	1600 Mesh	14 Micron

2. Equally important: When disassembling, servicing, or cleaning the controller, the internal parts must be handled with care to prevent damaging the surface finish in any way.
3. Operation of W. A. Kates flow rate controller supplied by a positive displacement pump will be satisfactory only if a pressure-relieving valve is connected between the pump and the controller to bypass excess fluid back to the fluid source, or to the intake of the pump.

INSTALLATION

1. W. A. Kates flow rate controllers are shipped fully assembled, ready for operation, with all parts in place. It is completely self-contained, requires no outside source of power, no straight piping runs, and is as simple to install as an ordinary ball valve.
2. Upstream and downstream shutoff valves and a bypass valve should be installed so that the controller may be opened for inspection and cleaning without requiring complete system shutdown.(See figure 1)
3. Before installing the controller, be sure to flush out the piping system to remove any foreign material such as dirt, scale, chips, etc.
4. The controller should be installed at a point in the pipe where it will be completely filled with fluid under all conditions of operation. On threaded connections, apply pipe thread compound sparingly to male threads only, so that surplus will not get inside the controller.

START UP PROCEDURE

1. Place the controller “on stream” by opening upstream and downstream shutoff valves and slowly

closing the bypass valve around the controller. The controller will now regulate the flow rate at the set value.

2. When normal fluid temperature is above room temperature, especially with viscous fluid, there may be a “warming up” period until the controller reaches the same temperature as the fluid. During this warming up period, the controller may be somewhat sluggish in action. If desired, this warming up period may be eliminated by the use of a heating coil or jacket.

SERVICE INSTRUCTIONS

W. A. Kates flow rate controllers have only one moving element, and are designed so that there are no complex linkages, delicate bearings, or any failure-prone components. Therefore, occasional cleaning may be the only servicing the controller will require.

CAUTION: Make sure that the controller is relieved of pressure before attempting to service or clean.

TO CLEAN CONTROLLER:

1. It is necessary to remove the controller from the line to clean. If installation includes proper shutoff and bypass valves, operate these and take the controller out of line.
2. Arrange a clean area where internal trim parts can be placed and kept free of lint or grit.
3. Remove bonnet bolts using an Allen wrench, lift bonnet assembly straight up, remove body O-ring, and place all parts in the clean area.
4. Using a ¾” socket wrench, only loosen the orifice plug in the valve cylinder; do not remove.
5. Remove the valve cylinder assembly from the body using a 7/8” socket wrench.
6. **CAUTION!** Improper removal of the orifice plug from the valve cylinder assembly may result in injury and may damage the part. To remove, use a ¾” socket wrench and carefully remove. Do not use a standard wrench or some other tool. Place the orifice plug, spring, piston, and valve cylinder in the clean area.
7. Thoroughly clean all the parts which have been removed from the controller by immersing them in a suitable solvent. Thoroughly clean and flush inside of the controller body with solvent and drain. Because of the closely fitted parts, it is very important that all parts and surfaces, including valve ports, be completely clean. Any dirt, sediment coating, or gummy residue must be completely removed. Wipe all parts and surfaces dry with a clean, lint-free cloth. **CAUTION:** In all cleaning operations, be very careful not to scratch, nick, or mark any surfaces or edges.
8. The standard O-ring material for the W. A. Kates flow controller is PTFE, which has no elastic memory. It may be necessary to install new O-rings whenever the controller is disassembled.

9. Insert the piston, flat side down, into the valve cylinder. Insert the spring and using the orifice plug, carefully compress the spring to thread into the valve cylinder.
10. Using a 7/8" socket wrench, reinstall the valve cylinder in the body until tight. Use a 3/4" socket wrench to insure that the orifice plug is tight.
11. Replace the body O-ring, bonnet assembly, and bonnet bolts, and tighten to 3 ft-lbs for FM12 and FM121, and 6 ft-lbs for FM124. Put the controller back in service by following Steps 1 – 2 listed under the heading, "Start Up Procedure".

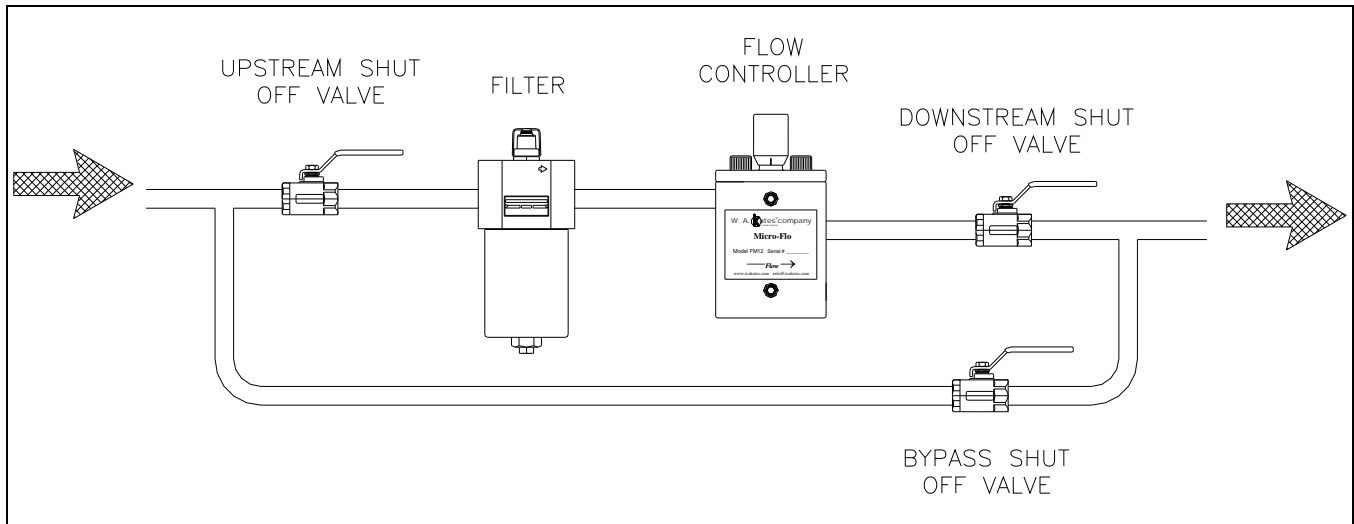


Figure 1

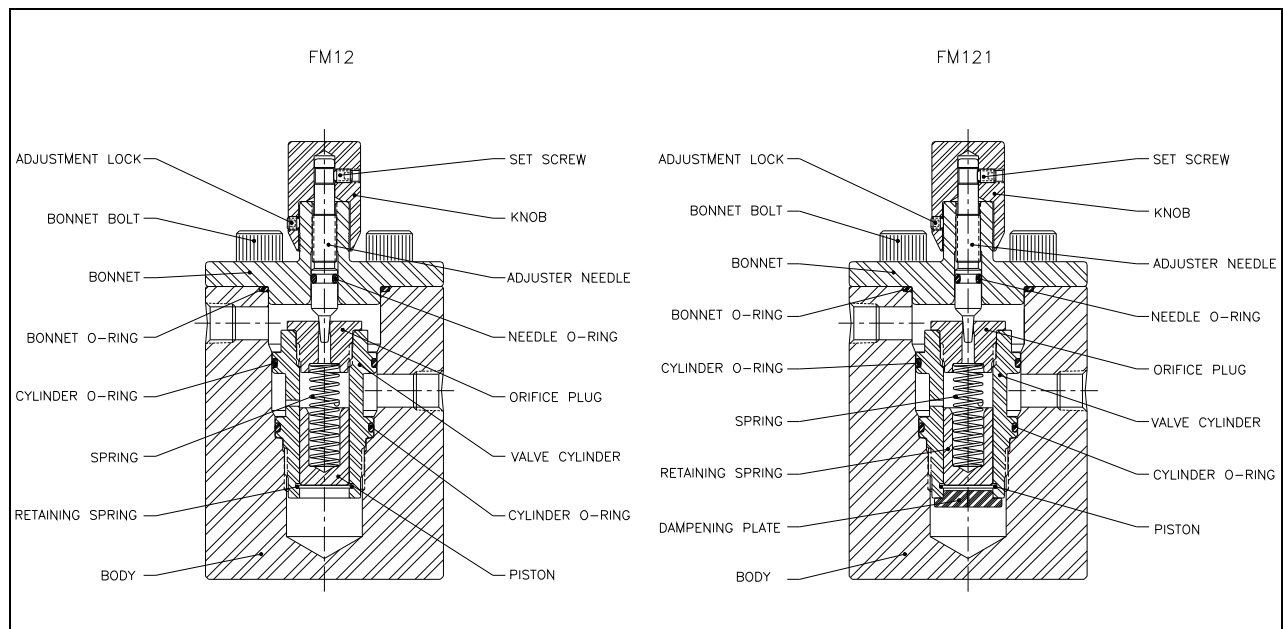


Figure 2

LIMITED PRODUCT WARRANTY

Custom Valve Concepts guarantees every product manufactured to be inspected and free from defects in workmanship or material when shipped from its factory. No warranty of corrosion resistance of any parts or assembly is expressed or implied.

This guarantee is valid for one year from the date of shipment from its plant. Within that time, Custom Valve Concepts will replace free of charge any product returned with shipping charges prepaid, found to have been defective at the time of shipment.

This warranty does not apply to; a) damage resulting from misuse or improper handling; or b) damage resulting from continued use after defect is apparent; or c) any other damage, loss or liability; or d) any product that has been changed or modified or altered in any way after it leaves the factory; or e) damage resulting from inadequate filtration or particle contamination; or f) damage resulting from corrosion due to improperly specified materials (i.e.; corrosion resistance).

The liability of Custom Valve Concepts shall be limited to the replacement, F.O.B. our factory, of any product found to have been defective at the time of shipment with duplicate or similar product of equal performance rating, but such liability shall in no event exceed the contract price for said product.

John D. Taube
President/Owner
Custom Valve Concepts

31651 Research Park Drive; Madison Heights, MI 48071
Ph. 248-597-8999 Fx. 248-597-8998 info@customvalveconcepts.com www.customvalveconcepts.com