

ITT FS4-3

ITT McDonnell & Miller FS4-3 Flow Switch Instruction Manual

Model: FS4-3 | Part Number: D541083

1. PRODUCT OVERVIEW

The ITT McDonnell & Miller FS4-3 Flow Switch is an industrial device designed to detect the presence or absence of flow in a pipeline. It is commonly used in heating, air conditioning, and industrial process applications to protect equipment or control processes based on fluid movement. This manual provides essential information for the safe and effective installation, operation, and maintenance of the FS4-3 flow switch.



Figure 1: Front view of the ITT FS4-3 Flow Switch, showing the paddle mechanism.

2. SAFETY INFORMATION

Read all instructions carefully before installing or operating this device. Failure to follow these instructions

may result in property damage, serious injury, or death.

- **Qualified Personnel:** Installation and servicing must be performed by qualified, experienced personnel only.
- **Electrical Hazard:** Disconnect all power to the system before installing or servicing the switch. Ensure proper grounding.
- **Pressure Hazard:** Ensure the system is depressurized before installation or removal.
- **Temperature Limits:** Do not exceed the maximum fluid temperature or ambient temperature ratings specified for the device.

3. INSTALLATION (SETUP)

Proper installation is critical for the accurate and reliable operation of the FS4-3 flow switch.

3.1 Mounting Location

- Install the switch in a section of pipe where flow is consistent and laminar, away from pumps, elbows, or valves that may cause turbulence.
- Ensure the paddle is fully immersed in the fluid and can move freely without obstruction.
- The switch can be mounted in horizontal or vertical pipes, provided the paddle is correctly oriented with the flow direction.



Figure 2: Top view of the flow switch, illustrating the paddle and threaded connection for pipe insertion.

3.2 Mechanical Installation

1. Depressurize and drain the system before beginning installation.
2. Thread the switch into the appropriate pipe fitting. Use thread sealant to ensure a leak-tight

connection.

3. Ensure the paddle is positioned correctly to detect flow. The paddle should be oriented to swing in the direction of flow.
4. Tighten the switch securely, but do not overtighten, which could damage the housing or threads.

3.3 Electrical Wiring

Refer to the product label for specific electrical ratings and wiring instructions. All wiring must comply with local electrical codes and standards.



Figure 3: Product label detailing electrical specifications and certifications.

- **Disconnect Power:** Ensure power is disconnected before making any electrical connections.
- **Voltage and Current:** Connect the switch according to the voltage and current ratings specified on the label (e.g., 115 V.A.C. or 230 V.A.C.).
- **Wire Type:** Use copper wire only, rated for at least 75°C if the fluid temperature is above 220°F.
- **Conduit:** Use appropriate electrical conduit and fittings to protect wiring and maintain environmental integrity.

4. OPERATING PRINCIPLES

The ITT FS4-3 Flow Switch operates on a simple paddle mechanism. When fluid flows through the pipe, it exerts pressure on the paddle, causing it to deflect. This deflection actuates a microswitch within the sealed housing, changing its electrical state (e.g., from normally open to closed, or vice versa). When flow ceases, the paddle returns to its original position, and the switch reverts to its original state.

- **No Flow:** The paddle is in its resting position, and the switch contacts are in their default state.
- **Flow Detected:** Fluid movement pushes the paddle, activating the internal switch contacts.
- The switch provides a signal to a control system, pump, or alarm, indicating the presence or absence of flow.

5. MAINTENANCE

Regular maintenance ensures the longevity and reliable performance of your flow switch.

- **Annual Inspection:** Inspect the switch annually for any signs of wear, corrosion, or damage to the paddle and housing.
- **Paddle Movement:** Periodically verify that the paddle moves freely and returns to its resting position without sticking.
- **Electrical Connections:** Check electrical connections for tightness and signs of corrosion.
- **Cleaning:** If the system fluid contains particulates, the paddle and internal mechanism may accumulate debris. Isolate and drain the system, then carefully remove the switch for cleaning. Use a soft brush to remove any buildup.
- **Replacement:** If the paddle is bent, cracked, or the switch mechanism is faulty, replace the entire unit.

6. TROUBLESHOOTING

If the flow switch is not operating as expected, consider the following troubleshooting steps:

- **No Flow Indication (when flow is present):**
 - Check if the paddle is obstructed by debris or bent.
 - Verify that the flow rate is sufficient to actuate the switch.
 - Inspect wiring for loose connections or damage.
 - Test the switch contacts with a multimeter (after disconnecting power).
- **Constant Flow Indication (when no flow is present):**
 - Ensure the paddle is returning to its resting position. It may be stuck or bent.
 - Check for residual flow or turbulence in the pipe.
 - Verify switch contacts are not fused or damaged.
- **Electrical Malfunction:**
 - Confirm power supply to the control circuit.
 - Check for correct voltage and current as per specifications.
 - Inspect for short circuits or open circuits in the wiring.

7. SPECIFICATIONS

Parameter	Value
Model	FS4-3
Part Number	D541083
Manufacturer	ITT McDonnell & Miller
Switch Type	Flow Switch
Product Dimensions (L x W x H)	9.5 x 5.5 x 5 inches

Product Weight	1.85 Pounds
Electrical Rating (115 V.A.C.)	7.4 A.F.L., 44.4 A.L.R.
Electrical Rating (230 V.A.C.)	3.7 A.F.L., 22.2 A.L.R.
Pilot Duty Rating	A.C. 125 V.A. 115-230 V.
Max. Operating Pressure	150 P.S.I.
Max. Fluid Temperature	300°F
Wire Type Requirement	Use copper wire only. For fluid above 220°F, wire for at least 75°C.

8. WARRANTY INFORMATION

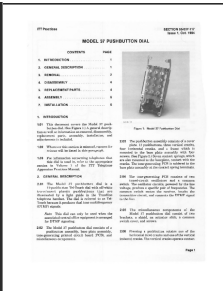

Warranty information for the ITT McDonnell & Miller FS4-3 Flow Switch is typically provided at the point of purchase or can be obtained directly from ITT or an authorized distributor. Please retain your purchase receipt for warranty claims. Specific terms and conditions, including warranty period and coverage, may vary.


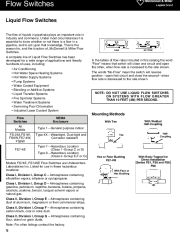
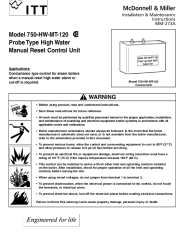
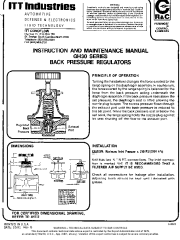
9. TECHNICAL SUPPORT

For technical assistance, replacement parts, or further information regarding the ITT McDonnell & Miller FS4-3 Flow Switch, please contact your authorized ITT distributor or the manufacturer directly. When contacting support, please have your model number (FS4-3) and part number (D541083) available.

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Related Documents - FS4-3

	<p>ITT Model 37 Pushbutton Dial: Technical Manual, Assembly, and Installation Guide</p> <p>Comprehensive technical manual for the ITT Model 37 Pushbutton Dial. Includes detailed information on general description, removal, disassembly, replacement parts, assembly procedures, and installation into Trendline telephones. Features DTMF signal generation.</p>
	<p>ITT 012-0217-019 Product Details and Specifications</p> <p>Detailed information for ITT part number 012-0217-019, including series, category, line, brand, and RoHS compliance. Information on checking stock availability and distributor information is provided.</p>

	<p>ITT 143-1174-001 Part Details and RoHS Compliance</p> <p>Detailed specifications for the ITT 143-1174-001 part, including series, category, line, brand, and RoHS compliance information. Information on checking stock availability and contacting distributors is also provided.</p>
	<p>McDonnell & Miller Liquid Flow Switches Catalog</p> <p>Explore the comprehensive range of McDonnell & Miller liquid flow switches. This catalog provides detailed specifications, selection guides, and application information for industrial and commercial systems. Ensure reliable flow monitoring with McDonnell & Miller's trusted solutions.</p>
	<p>McDonnell & Miller Model 750-HW-MT-120 High Water Control Unit Installation and Maintenance Instructions</p> <p>Detailed installation, maintenance, and troubleshooting guide for the McDonnell & Miller Model 750-HW-MT-120 Probe Type High Water Manual Reset Control Unit, designed for steam boilers. Covers specifications, wiring, testing, and maintenance procedures.</p>
	<p>ITT Conoflow GH30 Series Back Pressure Regulators: Instruction and Maintenance Manual</p> <p>Instruction and maintenance manual for ITT Conoflow GH30 Series Back Pressure Regulators, detailing principle of operation, installation, maintenance procedures, and a comprehensive parts list.</p>