08394059 Monitor
Installation, Operation, & Maintenance Instructions
FOR ATEX APPLICATIONS
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PRODUCT SAFETY INFORMATION

- All personnel who may be expected to operate this equipment must be thoroughly trained in its safe and proper use.

- Before flowing water from this device, check that all personnel (fire service and civilian) are clear of the stream path. Also confirm stream direction will not cause avoidable property damage.

- Become thoroughly familiar with the hydraulic characteristics of this equipment, as well as the pumping system used to supply it.

- Whenever possible, this equipment should be operated from remote location to avoid exposing personnel to dangerous fire conditions.

- Always open and close valves slowly to avoid water hammer.

- After each use, and on a scheduled basis, inspect equipment per instructions in the maintenance section.

- Keep fingers and hands clear of moving parts.

- Disconnect power before servicing and electric valve or electric valve controller.

- Any modifications to the electrical will destroy the IP-66 rating and void warranty coverage of the enclosure and all components within.

- All equipment must be installed in accordance with ATEX requirements (EN/IEC 60079-14) as appropriate and in areas where equipment classification is suitable.

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**Important:** Before installing and operating this equipment, read this manual thoroughly. Proper installation is essential to safe operation.

**Warning:** Do not attempt to disconnect or work on any electrical equipment in this system unless power is removed or the area is known to be non-hazardous.

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MONITOR INFORMATION:

SERIAL NUMBERS:____________________________________________________________

DETAILS:

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________
Figure 1: Monitor Callout Drawing

- Pressure Gauge
- Manual Override
- Double Race Bearings
- Constant Torque / Constant Current Motors
- Junction Box
- 4”-150# ANSI Flange
OVERVIEW

Spit-Fire® Monitor Features:

- **Construction:** All brass with vaned 4” waterway
- **Mounting Flange:** 4” 150# flat-face ANSI flange raised face flange available as option
- **Discharge:** 3½” NHT male outlet
- **Stream Shaper:** #284-B brass shaper included
- **Flow:**
  - 2000 GPM max flow @ 200 PSI max working pressure
  - 7600 LPM @ 14 BAR
- **Motors:** 120 VAC NEMA 4 rated synchronous motors (non-arcing)
  - Constant torque and current output in start, running, and stall
  - ATEX Certified to Ex nA II T4
  - Will not cause damage or increase in current when motor is stalled
  - Instantaneous start, stop, and reverse
  - Residual (Power Off) torque is always present
  - Long life and exceptional reliability
  - 120 VAC, 50/60 Hz., 1 Phase, 0.80 Amp current per motor
- **Junction Box:** NEMA #4X (IP-66) water tight, corrosion resistant ATEX certified (Ex nA II T4), enclosure with terminals for hazardous locations. Stainless Steel motor cable junction box with bracket to attach to monitor, flange base included.
- **Range of Motion:** Monitor stops are factory set at 346° horizontal (+173° to -173° from front center), and 135° vertical (+90° to -45°)
- **Rate of Horizontal Motion:** 0.139 Sec/°
- **Manual Override:** Hand wheels provided for vertical and horizontal movements. Hand wheel will not rotate when monitor is operated electrically.
- **CE ATEX Certified (Group II, Category 3)**

**Warning:** DO NOT TAKE COVER OFF OR DISASSEMBLE MONITOR MOTORS. If cover is/has been removed, the warranty is void and the service life of the motor is significantly reduced.
Monitor Installation

1. Attach companion flange to water supply pipe so that the bolt pattern will allow the monitor to be installed with the “straight ahead/neutral” position (see Dimensional Drawing section) properly aligned. Alignment is correct when the “straight ahead/neutral” direction is centered between adjacent flange bolt holes.

2. Install the monitor assembly on the water supply flange so that it matches up to a 4”-150# flat faced ANSI flange on the inlet of the monitor, with a flange gasket between the flanges. Install motor cable junction box by aligning the two-holed bracket with the flange mounting holes on the rear of the monitor. Secure the inlet flange with eight (8) 5/8”-11 UNC Grade 5 hex head bolts. Torque bolts to 60-70 ft-lbs.

3. Standpipe must be structurally strong enough to withstand reaction forces of the nozzle when discharging a straight stream at 90° of the standpipe tower. The formula for calculating nozzle reaction is: \[\text{REACTION FORCE} = 0.0505 \times \text{GPM} \times \sqrt{\text{PSI}}\]

4. The inlet pressure at the base of the monitor must be high enough to allow for pressure loss through the monitor. To accomplish this, use the pressure loss for GPM flowing and add to nozzle pressure. See Monitor Hydraulic Data section for pressure loss chart.

**Warning:** When installing the monitor on a raised face companion flange or wafer type valve, it is critical that the bolts be tightened uniformly to prevent misalignment of the monitor relative to the flange or valve. If the monitor becomes misaligned, the base flange will fracture and fail when the bolts on the “high” side are tightened.
Monitor Cable Routing

1. Route cables as shown in Figure 2 below, so they will follow the vertical and horizontal movement of the monitor. Make sure that the wire loops for horizontal and vertical movement is great enough to eliminate any stretching of cables throughout the full movement of the monitor.

2. Wire tie cables together as shown in Figure 2 below. This will eliminate the cables from tangling.

3. Wire tie the nozzle cable to pressure gauge, allowing a long enough loop so vertical movement of monitor will go to the full down position without stretching the cable.

Figure 2: Monitor Cable Routing
**Monitor Safety Boot and Clamp Installation**

All Motor Cable Connections are provided with clamped safety boots. These boots must not be removed when monitor motor control panel is energized and area is hazardous.

1. Install corrugated black plastic boot on cable connector as shown so split lines up with cable.
2. Install clamp around top of boot and connector swivel.
3. Tighten clamp down around swivel and boot.

![Figure 3a: Monitor Motor Boots](image1)

![Figure 3b: Nozzle Motor Boots](image2)
OPERATING INSTRUCTIONS

One Monitor Control
This operator control panel has one set of switches and pilot lights to operate one monitor.

- **Monitor Functions** – UP, DOWN, LEFT, & RIGHT are operated with spring return joysticks. This is accomplished by using the proper selector/pushbutton joystick to move the monitor the direction desired. When joystick is released, it will return to original (off) position, and monitor movement will stop.

Monitor Manual Control

- **Vertical Manual Override** – Push hand wheel inward to engage override. While holding the hand wheel in, rotating it clockwise will raise the nozzle, and rotating it counter-clockwise will lower the nozzle.
- **Horizontal Manual Override** – Push hand wheel inward to engage override. While holding hand wheel in, rotating it clockwise will move the monitor right, and rotating it counter-clockwise will move the monitor left.

When monitor operation is completed, move vertical movement to full down position to allow water to drain from nozzle. When water is drained from nozzle, move monitor to park position.

MAINTENANCE

Monthly Inspection & Maintenance

- Cycle all monitor functions (LEFT, RIGHT, UP, DOWN) to insure the complete system is fully functional.

Six-Month Inspection & Maintenance

- Grease monitor ball races through grease fittings located at each swivel joint. Recommended grease for Industrial Spit-Fire® monitors is MOBILITH SHC – 100, High Performance Synthetic Grease. Temperature range: -40°F (-26°C) to 400°F (250°C) or equal. Greasing procedures are as follows:
  - Apply approx. 5-7 pumps of grease in the lower grease fitting, and 2-3 pumps in the upper grease fitting
- Check motor control cables for water and connectors for damage.
- Check motor cables for binding through full movement of monitor.
- Check all painted surfaces for chips or scratches, and repaint as required.
- Visually check all electrical equipment.

**Warning**: Do not attempt to disconnect or work on any electrical equipment in this system unless power is removed or the area is known to be non-hazardous.
**SPECIFICATIONS**

*General Specs*
- Input Power 120/240 VAC (50/60Hz.) 1 Phase
- Electrical Load 2 AMPS Per Monitor / 0.80 AMPS Per Motor
- Monitor Dimensions 23” dia. x 52” h
- Monitor Weight Approx. 300 lbs.
- Operating Temperature Range -40°C to +85°C

*ATEX Product Marking*
- Ex II 3 G c T3

**MONITOR HYDRAULIC DATA**

*Figure 4: Monitor Friction Loss Chart*
Figure 5: Monitor Dimensional Drawing
Figure 6: Monitor Cable Wiring to Junction Box Terminals