

# Installation, Operation and Maintenance Manual

## Series LFEMVII-6400SS

Sizes: ¼" - 2" Lead Free Electric Motor Valves

### ⚠ WARNING



**Read this Manual BEFORE using this equipment.**  
**Failure to read and follow all safety and use information can result in death, serious personal injury, property damage, or damage to the equipment.**  
**Keep this Manual for future reference.**



### ⚠ WARNING

**You are required to consult the local building and plumbing codes prior to installation. If the information in this manual is not consistent with local building or plumbing codes, the local codes should be followed. Inquire with governing authorities for additional local requirements.**

### ⚠ WARNING

**Need for Periodic Inspection/Maintenance:** This product must be tested periodically in compliance with local codes, but at least once per year or more as service conditions warrant. All products must be retested once maintenance has been performed. Corrosive water conditions, inlet temperatures over 200°F, and/or unauthorized adjustments or repair could render the product ineffective for the service intended. Regular checking and cleaning of the product's internal components helps assure maximum life and proper product function.

### ⚠ WARNING

The installation and maintenance of Electric Motorized Valves should be performed by a qualified, licensed technician. Failure to do so may result in a malfunctioning assembly.

### Description:

The Watts LFEMVII-6400SS motor valve is an electrically actuated, standard port, bronze ball valve, with 316 stainless steel ball and stem.

The actuator is a bidirectional type with a NEMA 4X enclosure, featuring a motor with a 50% duty cycle rating, and an extended male output shaft and clutch for manual override once the position indicator has been removed (see detail instructions).

The installation section of this manual is broken into two parts 1-valve and 2-electrical.

Prior to installation it is important to familiarize yourself with both sections so that the unit is properly installed.

### Valve Installation Guidelines

- A.** All Watts LFEMVII-6400SS's utilize bidirectional valves and as such, can be installed to shut off flow in either direction.
- B.** When piping up the valve, be sure that the threads on the mating pipe are free of excessive grit, dirt or burrs. Take care to assure that any pipe sealants used are not so excessively applied to the pipe threads that the valve cavity becomes fouled.
- C.** The unit can be installed with the actuator portion in either the vertical upright or horizontal plane, however for steam or high temperature applications see Section E.
- D.** For installations for steam or other high temperature services your Watts LFEMVII-6400SS features an electric actuator with a maximum ambient temperature rating of 150°F. (65.6°C) Higher temperatures will result in a significant reduction of the duty cycle rating and/or damage to electrical components.
- E.** Some steam or other high temperature applications may require that the actuator be installed horizontal to the pipe (on horizontal piping) to protect the unit from radiant heat. All piping in which units are installed and any adjacent piping must be insulated to further reduce the effects of piping radiant heat.

## Electrical Installation

### NOTICE

Prior to making wiring connections, be sure that all external wiring and electrical components have been properly selected to suit the power consumption levels of your particular unit.

**Table 1 - Power Consumption**

| SPECIFICATION TABLE |                        |                   |
|---------------------|------------------------|-------------------|
| VALVE SIZE (IN.)    | VOLTAGE AND CYCLE TIME | MAX AMPERAGE DRAW |
| ¼ - 2               | 115 VAC - 67 Seconds   | 0.52              |
| ¼ - 2               | 24 VAC/DC - 68 Seconds | 2.50              |
| ¼ - 2               | 115 VAC - 10 Seconds   | 0.52              |
| ¼ - 2               | 24 VAC/DC - 10 Seconds | 2.50              |

### NOTICE

Not all voltage/cycle time combinations are available for every valve size. For specific model combinations consult your Watts distributor or representative.

### Sizes: ¼" - 2"

- Your Watts LFEMVII-6400SS comes provided with two external plug-in connectors. There is no need to remove the cover of the actuator to connect the wiring. The connector labeled POWER (on the left) is used to connect the power leads that drive the motor to the open and closed position. The connector labeled ECD-1A (on the right) is used to connect to the auxiliary switches which provide normally closed contacts in the open and closed positions.
- Confirm power connections are made with the POWER connector wired (by customer) by testing that the valve opens and closes prior to connecting the auxiliary switches (ECD-1A connector).

### ⚠ WARNING

## Commissioning instructions

- Connect the POWER connector with terminals 1, 2, & 3.
- With power to terminals 1 (ground) & 2 the valve should open.
- With power to terminals 1 (ground) & 3 the valve should close.
- Connect the ECD-1A connector to verify the auxiliary switches are functioning with an ohm meter.
- With the valve in the opened position there should be continuity between terminals 3 & 1.
- With the valve in the closed position there should be continuity in between terminals 2 & 3.

## Actuator Maintenance

The actuator is greased for life and is provided with 2 connectors. There is no need to open the cover for wiring purposes as actuators are pre-wired from factory. No further greasing is needed.

## Valve Maintenance

The stem seals on your EMVII-6400SS valve may require periodic adjustment during its normal service life, therefore installations that prevent access to the valve for maintenance must be avoided. Further, it is important to understand that valves' stem seals will not function indefinitely. Eventually stem seals will require adjustments. At this point the external leakage would start off as a slight seepage and if left unattended could become significant.

### NOTICE

To adjust stem seals, simply tighten the stem gland nut. **Do Not Over Tighten**, as in doing so you may over-compress stem seals which could result in excessive stem seal loading and reduction of seal life.

## Travel Limits Settings

End positions of the actuator is pre-set from factory. No further setting is needed.

## Operational Characteristics and Ratings

- Valve type: Quarter turn ball valve, bronze body, 316SS ball and stem, reinforced Teflon® seats, standard port.
- Valve Ratings: ¼"-1½" 600psi WOG (41.9 bar); 100psi (6.9 bar) WSP
- Valve end connections: All sizes NPTF.
- Maximum actuator ambient temperature rating: 131°F (+55°C)
- Maximum amperage rating of aux.switch : 5 AMPS @ 115V

**Table 2**

| VALVE SIZE<br>in. | Cv   |
|-------------------|------|
| ¼ - ¾             | 6.3  |
| ½                 | 9.0  |
| ¾                 | 24.5 |
| 1                 | 33.5 |
| 1¼                | 45.5 |
| 1½                | 73.0 |

**Table 3 - Steam Flow (#hr) - Full Open Valve**

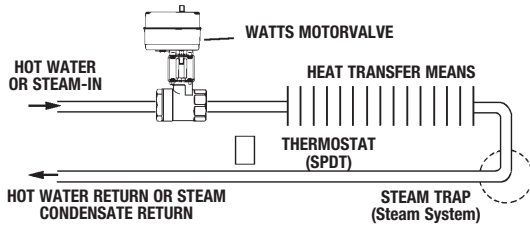
| VALVE SIZE<br>in. | 10 psi INITIAL |             | 15 psi INITIAL |             | 25 psi INITIAL |             |
|-------------------|----------------|-------------|----------------|-------------|----------------|-------------|
|                   | 1psi<br>ΔP     | 10psi<br>ΔP | 1psi<br>ΔP     | 15psi<br>ΔP | 1psi<br>ΔP     | 25psi<br>ΔP |
| ¼ - ¾             | 92             | 197         | 142            | 218         | 255            | 349         |
| ½                 | 131            | 282         | 203            | 311         | 365            | 498         |
| ¾                 | 358            | 767         | 551            | 848         | 992            | 1355        |
| 1                 | 358            | 767         | 754            | 1159        | 1357           | 1853        |
| 1¼                | 358            | 767         | 1024           | 1574        | 1843           | 2516        |
| 1½                | 358            | 767         | 1643           | 2526        | 2957           | 4037        |

## Terminal Function

| TERMINAL FUNCTION                             |   |
|---|---|
| VALVES PART NO.                               | FUNCTION                                |
| Power Operating Connector Terminal #1         | Common                                  |
| Power Operating Connector Terminal #2         | When Power Is Applied, Valve Will Open  |
| Power Operating Connector Terminal #3         | When Power Is Applied, Valve Will Close |
| ECD-1A Auxiliary Switch Connector Terminal #1 | Makes When Valve Opens                  |
| ECD-1A Auxiliary Switch Connector Terminal #2 | Makes When Valve Closes                 |
| ECD-1A Auxiliary Switch Connector Terminal #3 | Common                                  |

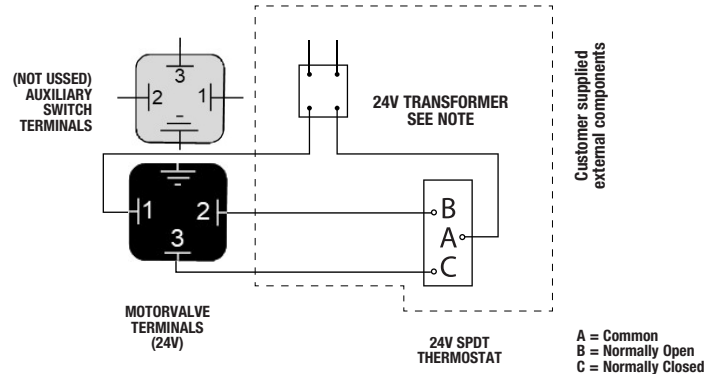
## Sample Installation #1

Use of Watts Electric Motorvalve as a zone control for hot water or steam space heating. Valve opens upon temperature drop. Closes when demand for heat is satisfied.



## Wiring Diagram #1 (1/4" - 2")

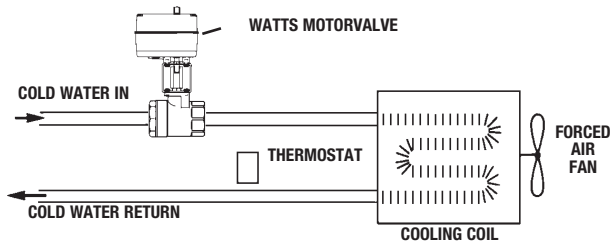
Electrical diagram with 24V control circuit, SPDT thermostat.



NOTE: 1/4" - 2" EMVII-6400SS-24-40 will operate with a 40 VA transformer. Thermostat must be capable of handling amp rating at stall.

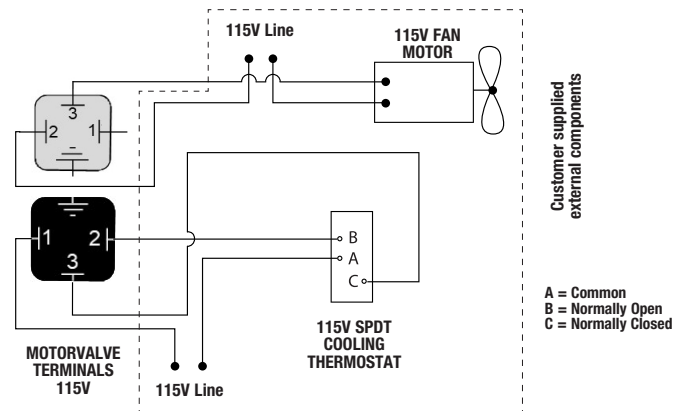
## Sample Installation #2

Cooling with refrigerated water and operating forced air fan with auxiliary switch. Motorvalve opens and starts blower upon temperature rise. Shuts off blower and closes when temperature drops to thermostat setting.



## Wiring Diagram #2 (1/4" - 2")

Electrical diagram with 115V control circuit, 115V Motorvalve, line voltage SPDT cooling thermostat, 115V blower.



## POWER CONNECTOR (LABELED "POWER")

Earth: Not used for 24V

- 1 Com
- 2 Open
- 3 Close

## AUXILIARY SWITCHES CONNECTOR (LABELED "ECD-1A")

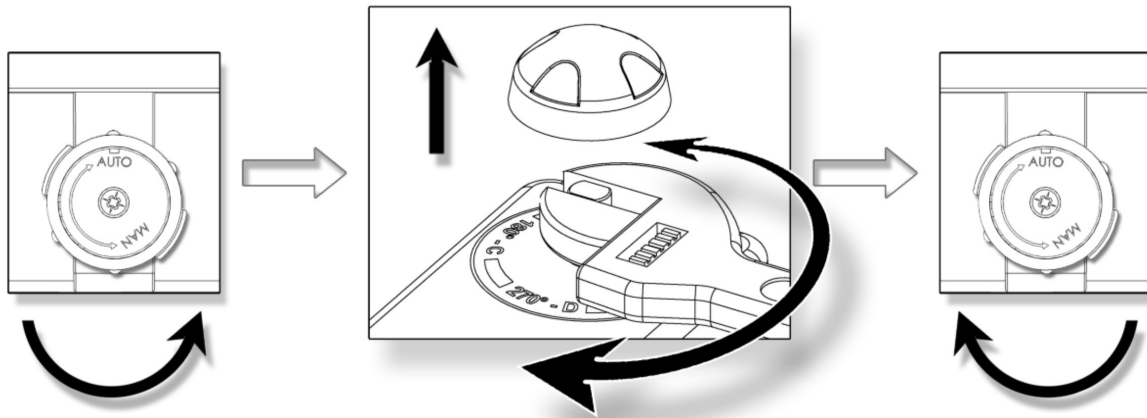
Earth: Not Used

- 1 NO - Makes when valve opens
- 2 NO - Makes when valve closes
- 3 Com

## Emergency manual override



The priority functioning mode of this actuator is electric. Be sure that the power supply is switched off before using the manual override



1. Turn the knob to position MAN (counter-clockwise) and hold it in position.
2. Turn the outgoing drive shaft of the actuator with the help of an adjusting spanner.
3. In order to re-engage the reduction, release the knob (spring return).

Limited Warranty: Watts (the "Company") warrants each product to be free from defects in material and workmanship under normal usage for a period of one year from the date of original shipment. In the event of such defects within the warranty period, the Company will, at its option, replace or recondition the product without charge.

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The remedy described in the first paragraph of this warranty shall constitute the sole and exclusive remedy for breach of warranty, and the Company shall not be responsible for any incidental, special or consequential damages, including without limitation, lost profits or the cost of repairing or replacing other property which is damaged if this product does not work properly, other costs resulting from labor charges, delays, vandalism, negligence, fouling caused by foreign material, damage from adverse water conditions, chemical, or any other circumstances over which the Company has no control. This warranty shall be invalidated by any abuse, misuse, misapplication, improper installation or improper maintenance or alteration of the product.

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