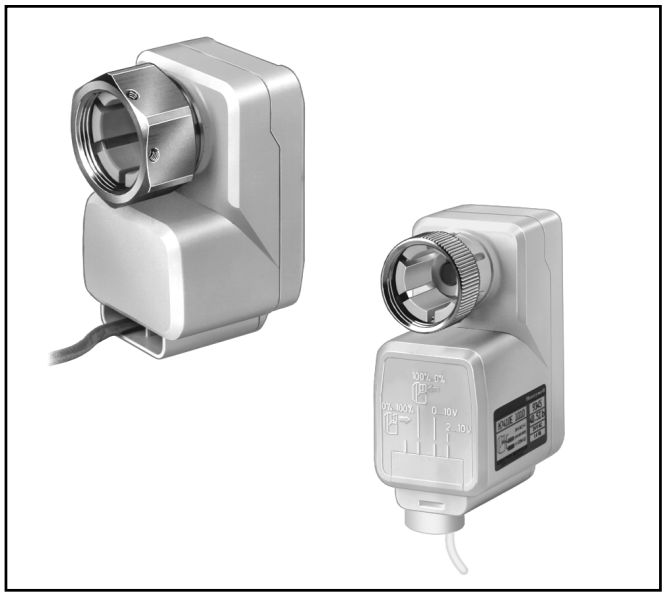
Honeywell

M6410A, M7410F Small Individual Room Controller (IRC) Electric Linear Valve Actuators

PRODUCT DATA



APPLICATION

M6410A and M7410F Small Individual Room Controller (IRC) Electric Linear Valve Actuators provide floating or modulating control of V5852A, V5853A, V5862A and V5863A Small Linear Valves. The actuators are used in electronic temperature control systems, which use hot and/or cold water as the controlled medium in fan-coil units, induction units, small reheaters and recoolers.

FEATURES

- **M6410A and M7410F Underwriters Laboratories Inc. rated for plenum use (UL94-5V).**
- **Especially suitable for Excel® Controller or Individual Room Controller (IRC) System.**
- **M6410A provides 3-position floating control without proportional feedback.**
- **M7410F receives 0 to 10 Vdc or 2 to 10 Vdc input signal, selectable at the site.**
- **M7410F has easy-to-operate direct/reverse acting switch.**
- **Magnetic coupling for torque limitation independent of voltage supply, and self-adjustment of closeoff port.**
- **Synchronous motor.**
- **Quiet operation.**
- **Low power consumption.**
- **Ready-to-wire connecting cable.**
- **Low-maintenance plastic housing.**
- **No mounting tools required.**
- **Small size allows installation in limited space.**
- **Internal valve position indicator.**
- **Conduit connector standard with M7410F.**
- **Conduit connector available for some M6410 Actuators.**

Contents

62-0100-4

SPECIFICATIONS

IMPORTANT

The specifications given in this publication do not include normal manufacturing tolerances. Therefore, an individual unit may not exactly match the listed specifications. Also, this product is tested and calibrated under closely controlled conditions and some minor differences in performance can be expected if those conditions are changed.

Models:

M6410A: Small IRC Electric Linear Valve Actuator. Provides floating control of the V5852A, V5853A, V5862A and V5863A Small Linear Valves.

M7410F: Small IRC Electric Linear Valve Actuator. Provides modulating control of V5852A, V5853A, V5862A and V5863A Small Linear Valves.

Electrical Ratings:

Input Power: 24 Vac, +10/-30 percent, 50/60 Hz.

Power Consumption:

M6410A: 0.7 VA.

M7410F: 1.4 VA.

Input Signal (M7410E): Modulating 0 to 10V, 2 to 10V (adjustable), 0.1 mA.

Input Impedance (M7410F): 100K ohms.

Control Modes:

M6410A: Floating.

M7410F: Modulating.

Stroke:

1/4 in. (6.4 mm).

Running Time:

150 seconds at 50 Hz.

125 seconds at 60 Hz.

Stem Force:

40.5 lb (180 N).

ValveClose-off Ratings:

See Table 1 for close-offs with V5852, V5862, V5853, and V5863 valves.

Table 1. Valve Close-off Ratings.

Pipe Size in in. (mm)	C_V	V5852 and V5862 Two Way (psi)	V5853 and V5863 Three Way (psi)
1/2 (13)	.19	65	55
1/2 (13)	.29	65	55
1/2 (13)	.47	65	55
1/2 (13)	.74	65	55
1/2 (13)	1.2	65	22
1/2 (13)	1.9	65	22
3/4 (19)	2.9	45	26
3/4 (19)	4.9	45	26
3/4 (19)	2.9	45	26
3/4 (19)	4.9	45	26

Ambient Temperature Range:

32°F to 140°F (0°C to 60°C).

Mounting:

Actuator screws onto valve body.

Dimensions:

Actuator with Valves: See Fig. 1.

Actuator: See Fig. 2.

Connecting Cable:

4.9 ft (1.5m).

Weight:

M6410A: 5 oz (0.15 kg).

M7410F: 5.6 oz (0.16 kg).

Approval:

Underwriters Laboratories Inc. listed for plenum use (UL94-5V).

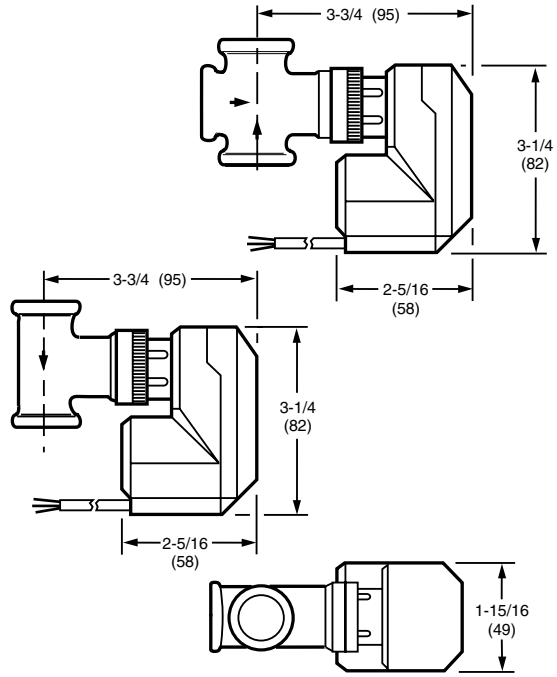
ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number.

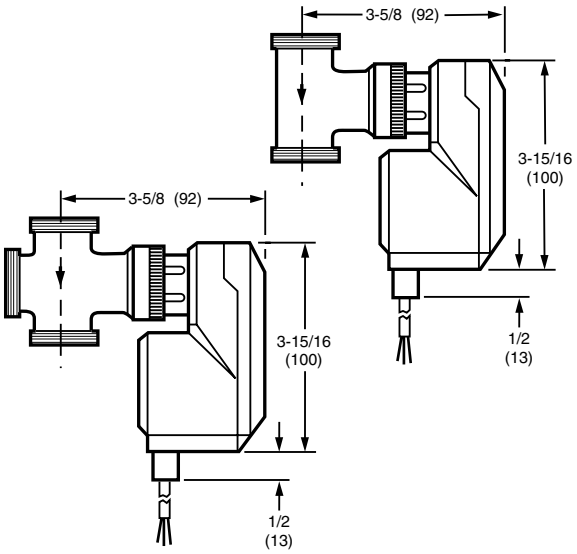
If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Home and Building Control Sales Office (check white pages of your phone directory).
2. Home and Building Control Customer Relations
   Honeywell, 1885 Douglas Drive North
   Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Scarborough, Ontario M1V 4Z9.
International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.



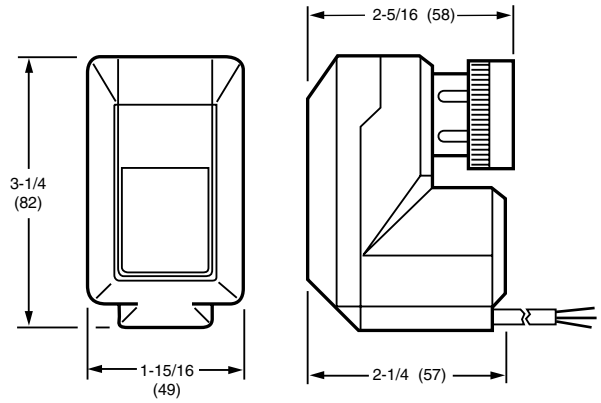
M6410A (WITHOUT CONDUIT CONNECTOR)



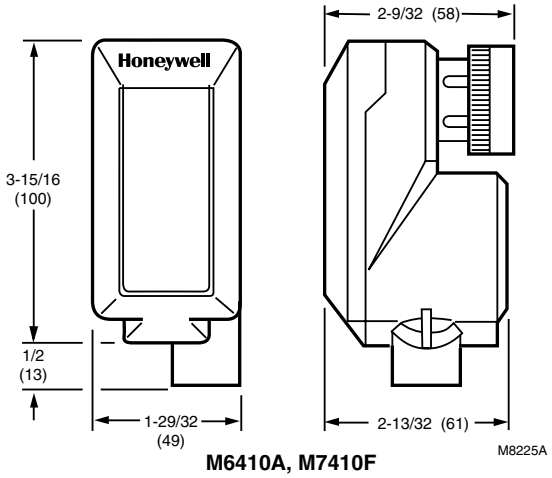
M6410A (WITH CONDUIT CONNECTOR) AND M7410F

M8224A

Fig. 1. Approximate dimensions of M6410A and M7410F Small IRC Electric Linear Actuators with V5852A, V5853A, V5862A, V5863A Small Linear Valves in in. (mm).



M6410A



M8225A

M6410A, M7410F

Fig. 2. Approximate dimensions of M6410A Small IRC Electric Linear Actuator without conduit connector and M6410A/M7410F Small IRC Electric Linear Actuator with conduit connector in in. (mm).

INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings and description given in this specification to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

⚠ CAUTION

Disconnect power supply before installation to prevent electrical shock or equipment damage.

Mounting

No tools are required to install the M6410A or M7410F on a valve because they are threaded onto the valve by hand. Do not overtighten by using a wrench on the connection, because this can damage the valve or actuator.

To mount the M6410A or M7410F Small IRC Electric Linear Valve Actuator, refer to Fig. 3A through 3C. Fig. 3B shows the valve position indicator.

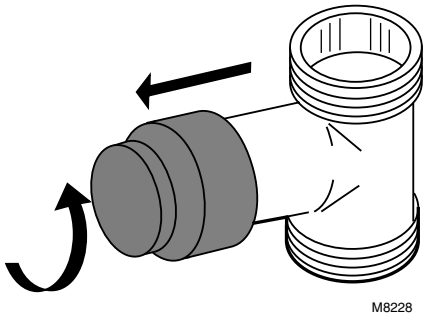


Fig. 3A. Removing protective cover from valve.

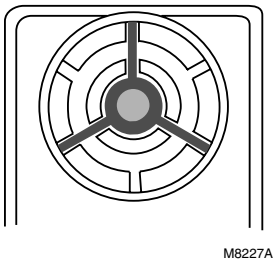


Fig. 3B. Valve position indicator.

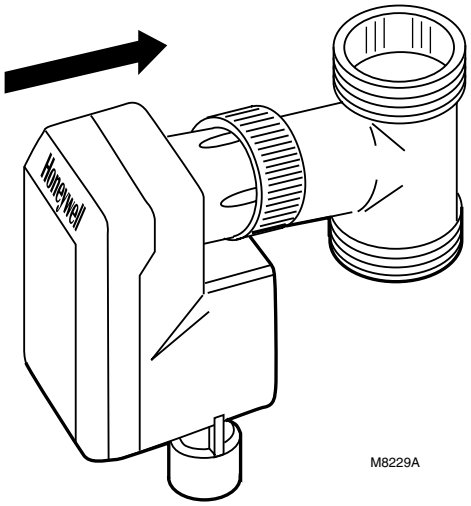


Fig. 3C. Screwing actuator on valve.

1. Remove the protective cover from the valve (Fig. 3A).
2. Make sure the actuator is in the (factory-supplied) OPEN position.
3. Screw the actuator connector onto the body of the valve (Fig. 3C).

Wiring

Connect the M6410A Small IRC Electric Linear Valve Actuator to the controller using the wiring diagram for the controller. See Fig. 4 and 5 for typical hookups to T87F The Round® Thermostat (not supplied).

Use the M7410F with Excel® 5000/500/100/80 Controllers, T775E (4 to 20 mA) and T775F (0 to 18 Vdc), W7600, and W7620 controllers. Use separate transformers for the controller and the actuator when you use the M7410F with the W7600 controller. Power the M7410F from the same transformer as the controller when using the Excel® Systems, W7620, T775E or T775F Controllers, when the common lines from the controller and the actuator are connected together and the hot side of the 24 Vac power connection on the transformer is used. See Fig. 6 through 11. Electrical installation must comply with the wiring diagram shown in Fig. 12.

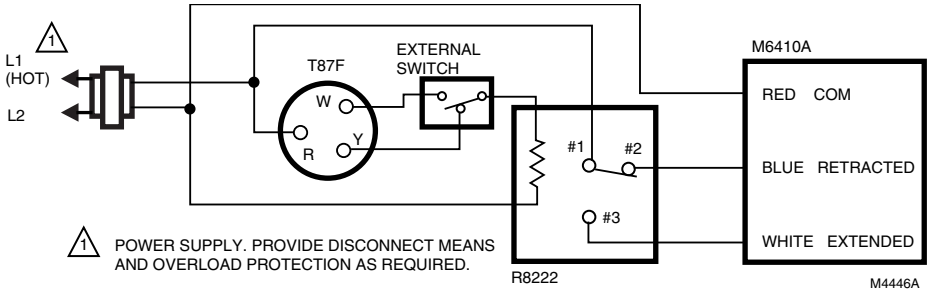


Fig. 4. M6410A used with T87F, without Q539 Subbase, in heating or cooling application.

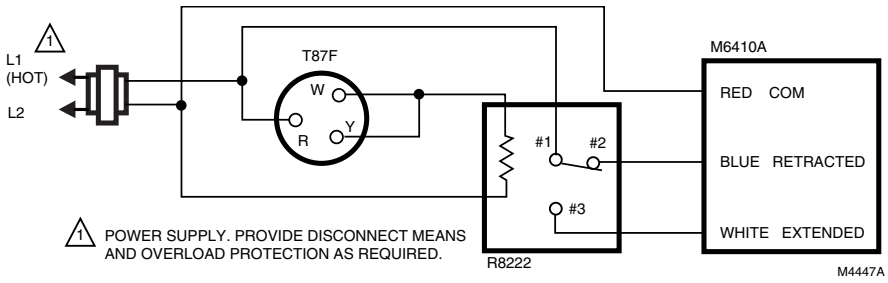


Fig. 5. M6410A used with T87F, with Q539 Subbase, in heating and cooling application.

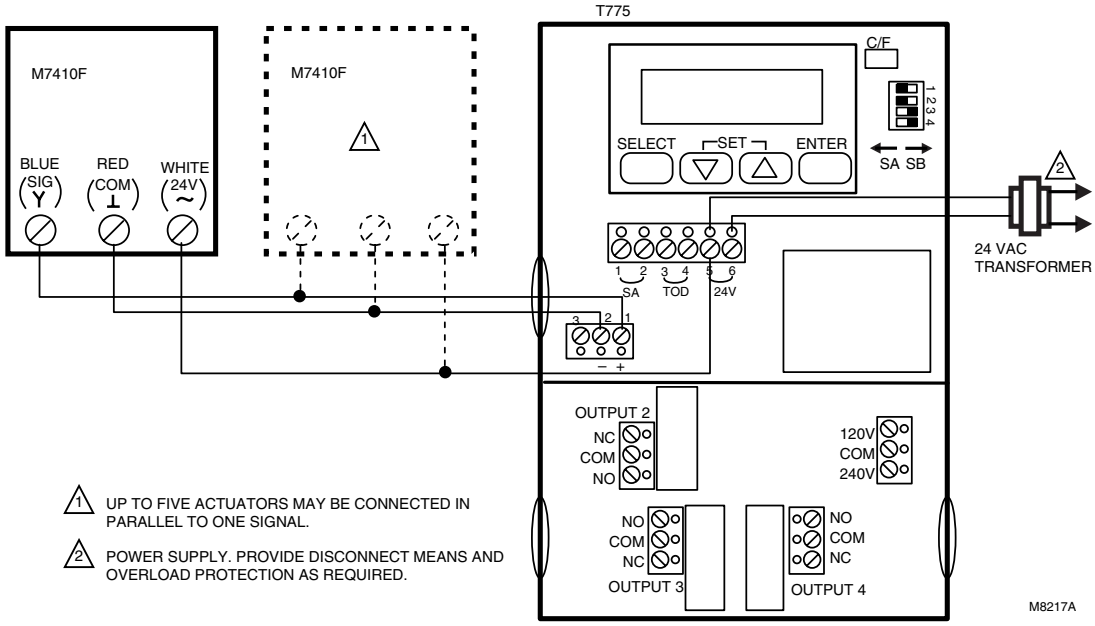


Fig. 6. M7410F Actuator wired with T775E or T775F Controller with voltage control input and common transformer.

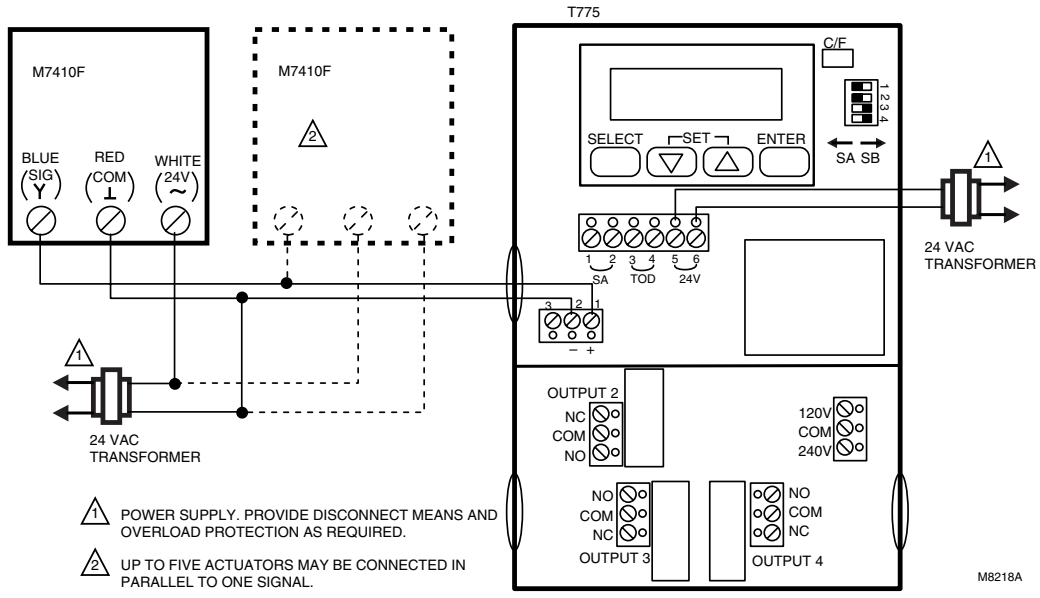


Fig. 7. M7410FActuator wired with T775E or T775F Controller with voltage control input and separate transformer.

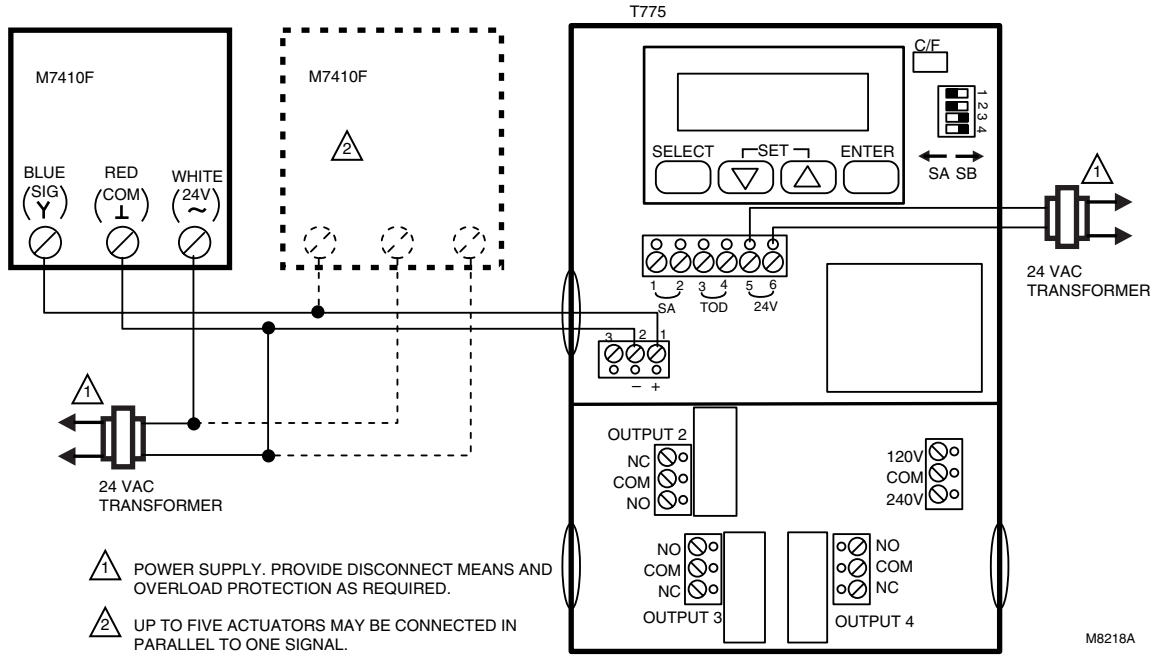


Fig. 8. M7410E Actuator wired with T775E or T775F Controller with milliampere control input and common transformer.

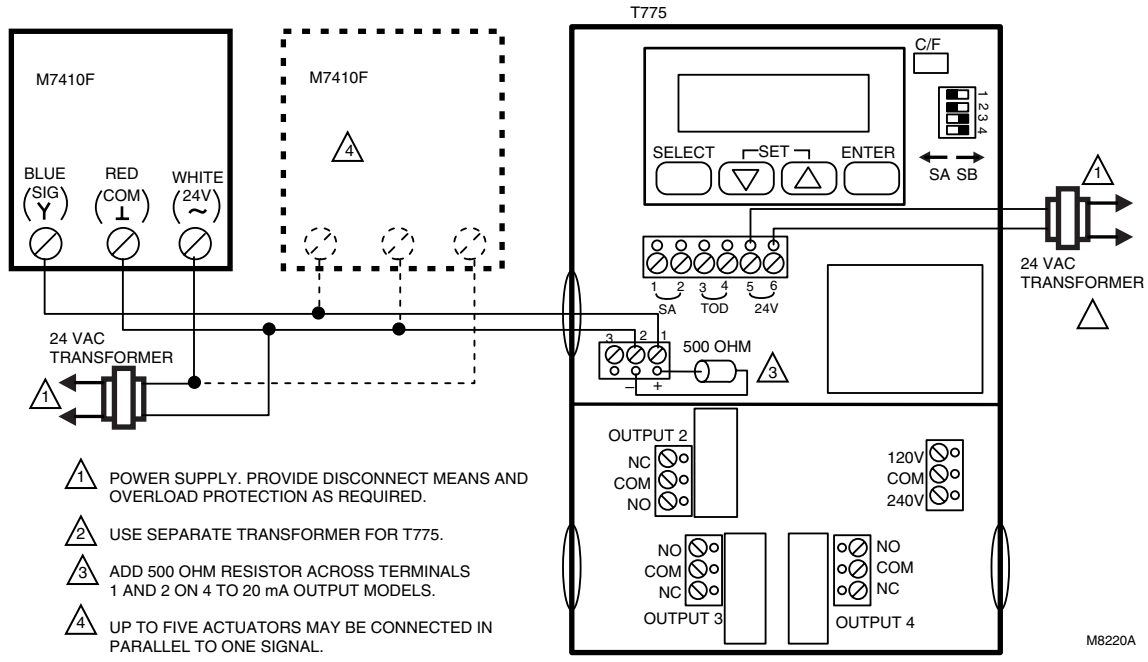


Fig. 9. M7410F Actuator wired with T775E or T775F Controller with milliampere control input and separate transformer.

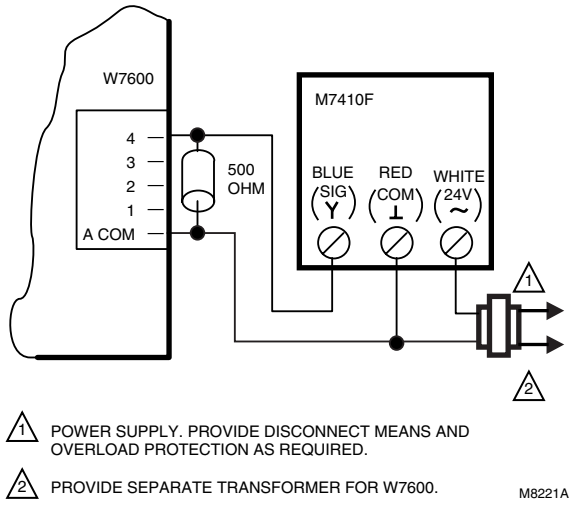


Fig. 10. M7410F Actuator wired with W7600 Controller.

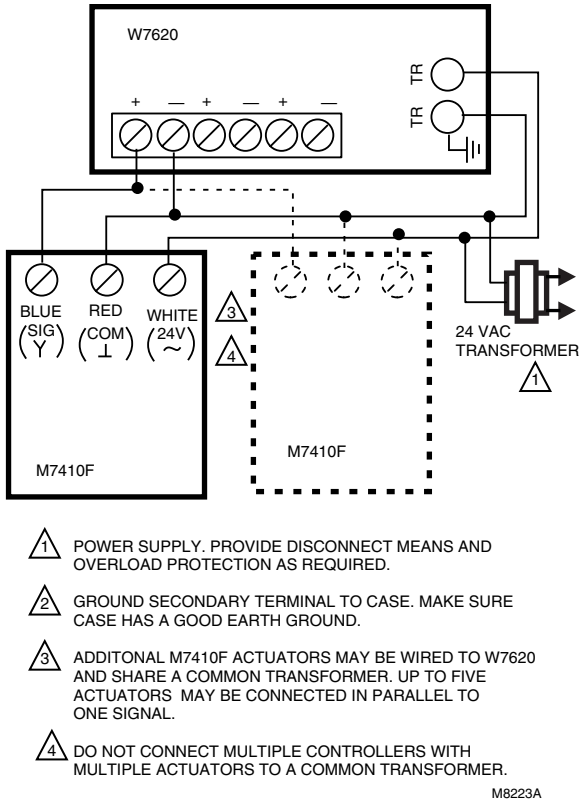


Fig. 11. M7410F Actuator wired with W7620 Controller.

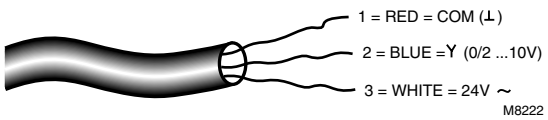


Fig. 12. Electrical Installation showing wire colors and definitions.

Input Signal Override (M7410F)

To override the controller output signal, connect the input signal wire with COM (0%) or 24V (100%), see Fig. 13, using an external relay.

If the temperature falls below a certain point; for example, 32°F (0°C), a relay can switch the 24 Vac to the Y connection (0 to 10V, 2 to 10V). This opens or closes the valve.

Switch Selection (M7410F)

The two built-in selector switches must be set according to the valve type (two-way or three-way) and the controller output signal (0 to 10V or 2 to 10V). See Fig. 14.

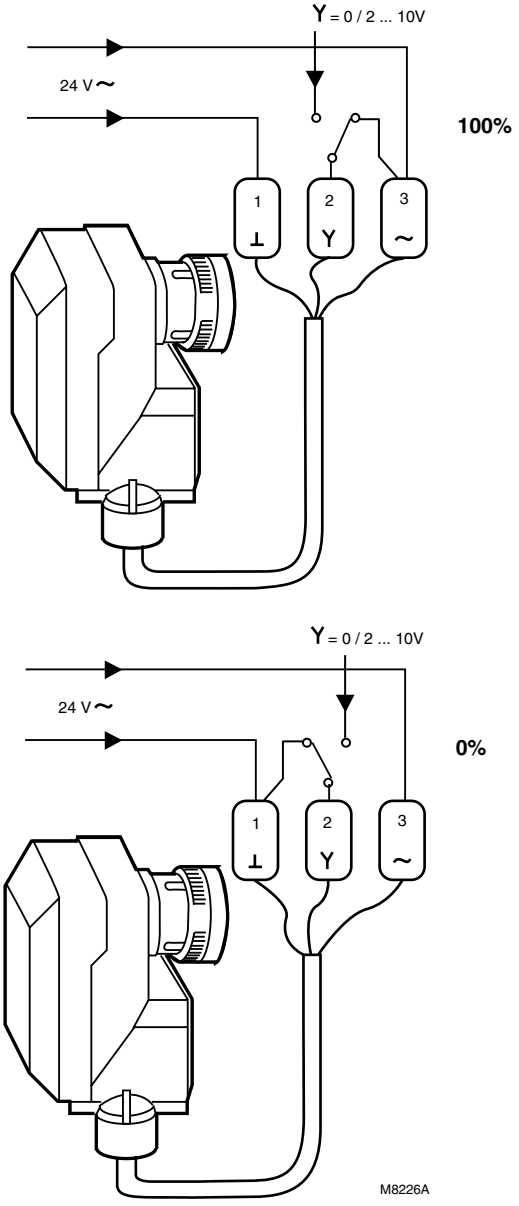


Fig. 13. Input signal override for frost protection.

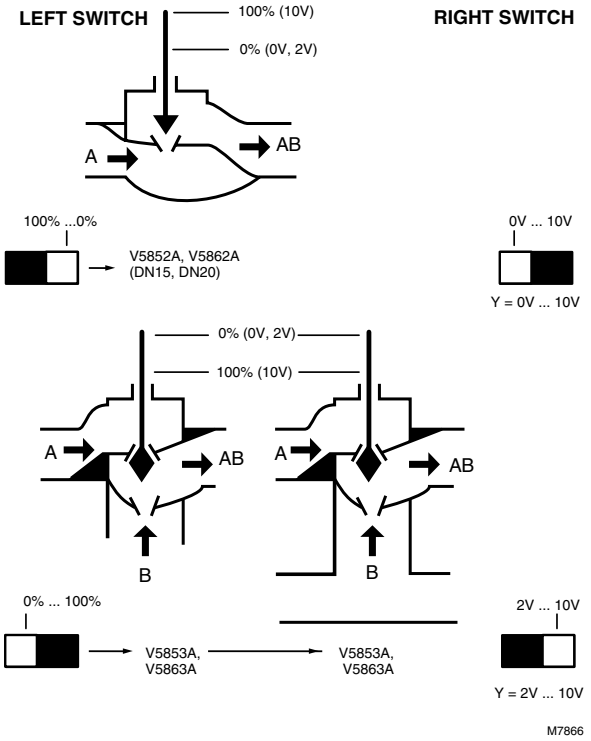


Fig. 14. Switch selection according to controller output signal and valve type (two-way or three-way).

CHECKOUT AND OPERATION

Checkout

Perform a functional checkout of the M6410A Small IRC Electric Linear Valve Actuator as follows:

1. Change the room temperature setpoint by at least 10°F (6°C).
2. Make sure the actuator either opens or closes the valve, depending on the direction of the temperature change. See Fig. 15.
3. If the actuator stem moves in the wrong direction, reverse the connections for the blue and white actuator wires.
4. If step 3 does not resolve the problem, replace the actuator.

Perform a functional checkout of the M7410F Small IRC Electric Actuator as follows:

1. Change the Y input signal. The movement of the actuator stem (Fig. 15) indicates if the valve is opening or closing.
2. If the direction of the valve stem travel is not correct, reset the direct/reverse switch.

Operation

Apply power to the actuator to drive the synchronous motor to turn a screw spindle that opens or closes the valve. The actuator is attached to the valve by a hand-tightened coupling ring and a magnetic coupling that limit the gear assembly torque and the actuator driving force.

A microprocessor within the actuator maintains accurate control/positioning by recommissioning itself every 24 hours or whenever power is applied or interrupted. When power is applied, the actuator drives to 0 and then to its starting position according to the starting/input signal. The initial commissioning or 24-hour recommissioning takes between 2.5 and 5 minutes, depending on the position of the actuator.

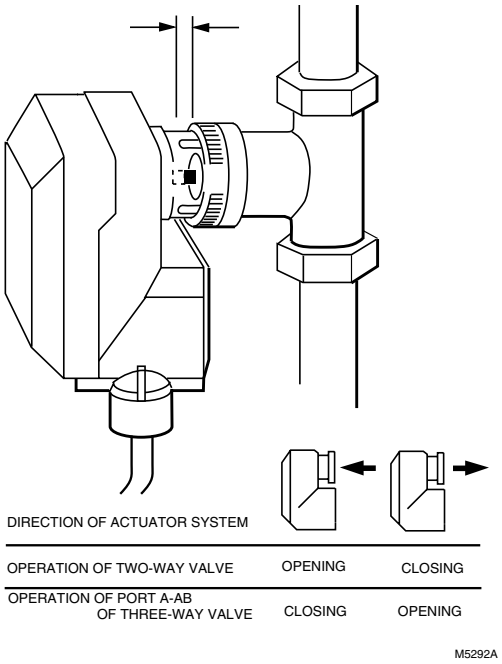


Fig. 15. Direction of M6410A/7410F Small IRC Electric Linear Valve Actuator stem during operation.

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