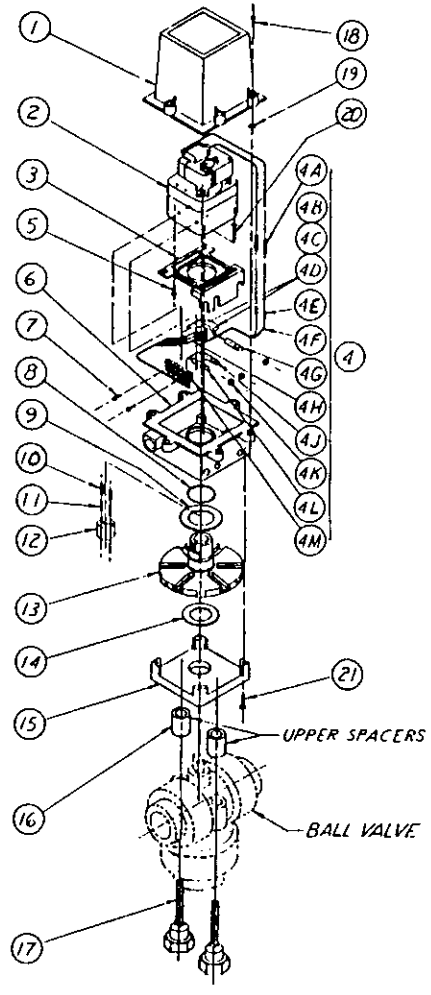
PARTS LIST
ELECTRIC ACTUATOR
MODEL NO. TEBV-65
MODEL NO. TEBV-104

ITEM	QTY	DESCRIPTION
1	1	COVER ASSEMBLY
2	1	MOTOR
3	1	SWITCH PLATE
4	1	HARNESS & LIGHT ASSEMBLY
4A	2	HEAT SHRINK TUBING
4B	2	ROLLER SWITCH
4C	2	ROUND HEAD SCREW #4-40 x 5/8" LONG
4D	2	ROUND HEAD SCREW #4-40 x 1" LONG
4E	2	WIRE SPLICE
4F	1	HARNESS
4G	1	AMBER LIGHT
4H	1	ROLLER SWITCH
4J	1	RED LIGHT
4K	3	"O" RING FOR LIGHTS
4L	1	GREEN LIGHT
4M	1	TERMINAL STRIP
5	4	FLAT HEAD SCREW #10-32
6	1	BASE
7	2	FILISTER HEAD SCREW #4-40 x 3/8" LONG
8	1	"O" RING FOR OVERRIDE WHEEL
9	1	UPPER THRUST WASHER
10	2	DOWEL PIN
11	2	SPRING
12	1	HEX INSERT
13	1	OVERRIDE WHEEL
14	1	LOWER THRUST WASHER
15	1	MOUNT
16	2/4	SPACER
17	2	MOUNTING SCREW
18	6/8	FLAT HEAD SCREW
19	6/8	"O" RING FOR COVER
20	2	FLAT HEAD SCREW #6-32 x 1-1/4" LONG
21	4	FLAT HEAD SCREW #10-ST



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ASSEMBLY, INSTALLATION & OPERATING INSTRUCTIONS FOR TRUE-BLUE™ ELECTRIC ACTUATOR MODELS TEBV-65 & TEBV-104

A. Mounting of Electric Actuator to Three-Way Ball Valve

1. Turn the Ball Valve handle so it is positioned "across" the pipeline. Tighten the union nuts. Turn the handle so that one of the ports is fully open. Remove the handle.
2. Actuators will normally be supplied in the "Flow to Right" position. Position the valve so the fully open port agrees with the direction of flow indicated by the arrow on the flow label.
3. Test-fit the actuator on the valve, aligning the mounting lug holes on the valve with the threaded holes on the bottom of the actuator.
4. Select the proper mounting hardware bag(s) to mount the valve size being used (1/2", 3/4", 1" or 1-1/4", 1-1/2" & 2"). See Parts Drawing.
   NOTE: To avoid loosening due to vibration or continued cycling, apply an appropriate thread adhesive on the bolt threads. Make sure the adhesive is compatible with the materials it will come in contact with.
   Thread the two threaded studs into the bottom of the actuator (the inner pair for the 1/2" valves, the outer pair for 3/4" & 1" valves).Tighten 1/4 turn past hand tight grasping the center portion of the stud with pliers. Damage to the threads in this section is permissible because they are never used. Slide the two spacers from the hardware bag over the threaded studs (one each).
5. Mount the valve to the actuator by sliding the threaded studs through the mounting holes on the valve and the valve shaft into the recess on the bottom of the actuator.
6. Thread the hex nuts onto the mounting studs as shown in the Parts Drawing.
   NOTE: To avoid loosening due to vibration or continued cycling, apply an appropriate thread adhesive on the bolt threads. Make sure the adhesive is compatible with the materials it will come in contact with.
   The valve and actuator may have to be separated slightly to start threading. Tighten 1/4 turn past hand tight. Use extreme caution to prevent stripping out plastic threads.

B. Installation of Actuator & Ball Valve Assembly into Piping System

1. Mounting Position:
   Always mount the actuator in the "upright" position.
2. Flow Direction:
   The inlet port of the ball valve is at the bottom. "Right" and "left" outlet ports are determined by facing the cover label and indicator lights.

C. Connecting Actuator to Electrical System

Follow all local wiring codes when wiring this actuator. Check the power requirement label (located on the cover directly above the conduit fitting) to be sure it matches the power source. The switch

shown in the customer wiring section must remain in each position (open or closed) for a minimum of 15 sec. The switch may be left in either position for an infinite amount of time. If the control of this switch is independent of time (example - liquid level switch), the minimum amount of time that the switch could remain in each position should be determined.

NOTE: Momentary signals or signals lasting less than 15 sec. may be used, however a time delay relay is required.

1. Remove the screws which fasten the cover to the base. (make sure the actuator is in the upright position).
2. Remove the cover and refer to the wiring diagram inside.
3. Install a suitable watertight conduit fitting into the 1/2" NPT threaded conduit boss.
4. Feed all wiring through the threaded conduit boss, then attach them to the top half of the terminal block as per the diagram. Do not remove the motor and switch plate assembly from the base.

D. Duty Cycle:

Duty cycle is defined as the percentage of motor on time to the motor off plus motor on time. The TEBV-65 has a duty cycle of 50% with a motor run time of 12 seconds at 60 Hz A.C., thereby requiring an off time of 12 seconds. The duty cycle for the TEBV-104 is 20%, and with the motor run time of 10 seconds at 60 Hz A.C. the required off time is 40 seconds. These duty cycles are at an ambient temperature of 70°F (21°C). For voltages at 50 Hz A.C. the motor run time is 14 seconds. Increases in ambient temperature will result in reduced duty cycle. The maximum recommended ambient temperature for the actuator is 120°F (49°C), but the duty cycle is derated by half at this temperature.

E. Thermal Overload:

True Blue TEBV actuators are supplied with an integral overload protector to guard against motor overheating. The electrical circuit to the motor will open when the coil temperature reaches 220°F (105°C) and automatically closes when the temperature drops to an acceptable level. The maximum recommended ambient temperature for the actuator is 120°F (49°C), but keep in mind that the duty cycle is diminished considerably at this temperature.

Model Numbers & Electrical Requirements

Model Number	Valve Size (Inches)	Voltage AC*	Amps.
TEBV-65 Actuator Only	1/2, 3/4, & 1	24 120 220 240	3.0 0.6 0.3 0.3
TEBV-104 Actuator Only	1 1/4, 1 1/2, & 2	24 120 220 240	10.0 2.0 1.1 1.0

*A.C. Voltage and cycles (50 or 60 Hz) must be specified with order. Consult factory for D.C. applications.

F. Testing the Actuator

1. Apply power to the actuator using extreme caution to avoid contact with open electrical connections.
2. Position the switch (in the customer wiring section) so that the amber light turns on. The rotor should spin.
3. Due to the possibility of abnormally rough handling during shipment, the sleeve bearings in the motor may become misaligned, and cause sticking. This problem can easily be handled during installation as follows: grasp the rotor, lift slightly then spin by hand counterclockwise several times until the rotor spins freely.
4. Cycle the actuator from position to position (flow to right, flow to left) to check for proper wiring and operation.
5. Replace the cover and mounting screws. Do not over-tighten the cover mounting screws.

G. Manual Override Operation

In the event of a power failure, the valve position may be changed by rotating the override wheel. Rotate the wheel to the left (←—) (with actuator vertical) using a lever - such as a screwdriver - until the desired position is reached. CAUTION: do not attempt to override the actuator while power is still supplied since rotation of the override wheel will cause the motor to turn on. This could cause a jamming of the lever being used and possible damage to the actuator. Always remove the lever from the override wheel. Be sure to plan a safe start-up procedure in case of a power failure.

TEBV WIRING DIAGRAM