



**Applications:**



The ARA 600 series of motor actuators replaces the Series 60 of 24V motor actuators mounted to ESBE 3 way and 4 way rotary valves. Incorporated into the redesign of the ARA motor actuators are improvements in the mounting and operation of the motor actuator resulting in a simpler and quicker installation.

These redesigned direct mounted motor actuators are capable of mounting to the new VRG styles of 3 & 4-way rotary valves. In addition, the ARA 600 series are also backward compatible to the older MG and G series of valves.

The ARA 600 series is available in floating 3-point with or without an auxiliary switch and proportional, which cross over to the Series 60 actuators. However there are additional varieties of actuators to select from a 2-point actuator to different run time options. These variety of selections provide flexibility in application selecting.

**Features:**

- Fewer parts and tools required for installation
- Increased stabilization between actuator and valve
- Backward compatible with MG and G series of 3 & 4-way rotary valves
- Reduced profile and size of motor actuator
- Easier mounting procedure

**Ordering Information:**

**3-Point Floating Signal, 24VAC**

Code No.	Series	Signal	Run Time (90° @ 60Hz)	Replaces	
				Code No.	Series
193B1600	ARA663	Floating 3-point	96	082F8972	62E
193B1601	ARA644	Floating 3-point, w/ Aux. switch	24	-	-
193B1602	ARA654		48	-	-
193B1603	ARA664		96	082F8974	62EM

**Ordering Information**  
**(Cont.):**
**2-Point Signal, 24VAC**

Code No.	Series	Signal	Run Time (90° @ 60Hz)	Replaces	
				Code No.	Series
<b>193B1604</b>	ARA638	On/Off w/ Aux. switch	12	-	-
<b>193B1605</b>	ARA648		24	-	-

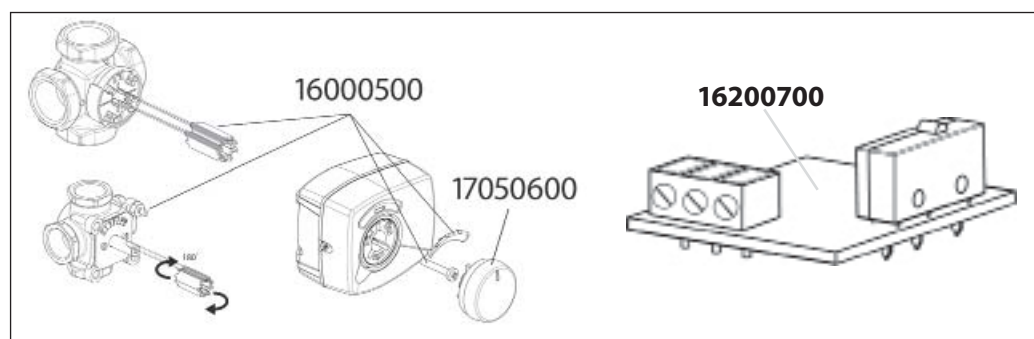
**Proportional Signal, 24V AC/DC**

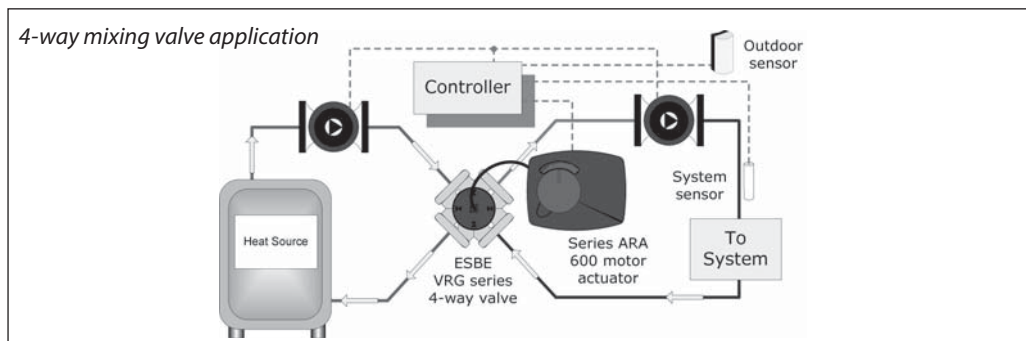
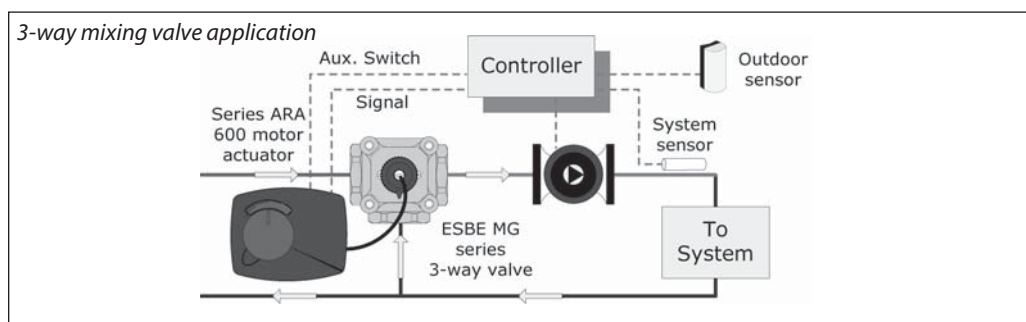
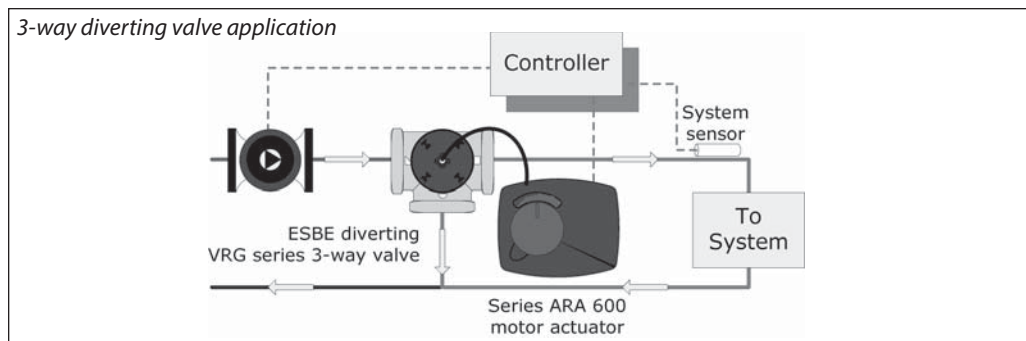
Code No.	Series	Signal	Run Time (90° @ 60Hz)	Replaces	
				Code No.	Series
<b>193B1606</b>	ARA639*	0-10VDC, 2-10VDC, 0-20mA, 4-20mA with feedback ability	15/30/60/120	-	-
<b>193B1607</b>	ARA659	0-10VDC, 2-10VDC, 0-20mA, 4-20mA	45/120	082F8973	62P

\*Wire lead not connected

**Accessories & Replacement Parts**

Code No.	Description
<b>16000500</b>	Assembly kit: drive sleeve, mounting stud scale and mounting screw
<b>17050600</b>	ARA motor actuator knob
<b>16200700</b>	Auxiliary end switch kit, includes end switch, cable and wiring plate cover



**Applications:**
*4-way mixing valve application*

*3-way mixing valve application*

*3-way diverting valve application*

**3 & 4 Way VRG Valves:**

3-Way Valve, Series 131		
Code No.	Connection	Cv <sup>1</sup>
<b>193B1500</b>	½" NPT	2.9
<b>193B1501</b>	¾" NPT	4.7
<b>193B1502</b>	¾" NPT	7.3
<b>193B1503</b>	1" NPT	7.3
<b>193B1504</b>	1" NPT	11.7
<b>193B1505</b>	1-¼" NPT	18.7
<b>193B1506</b>	1-½" NPT	29.3
<b>193B1507</b>	2" NPT	46.8

<sup>1</sup>Cv value based on flow per a 1 psi pressure drop through the valve

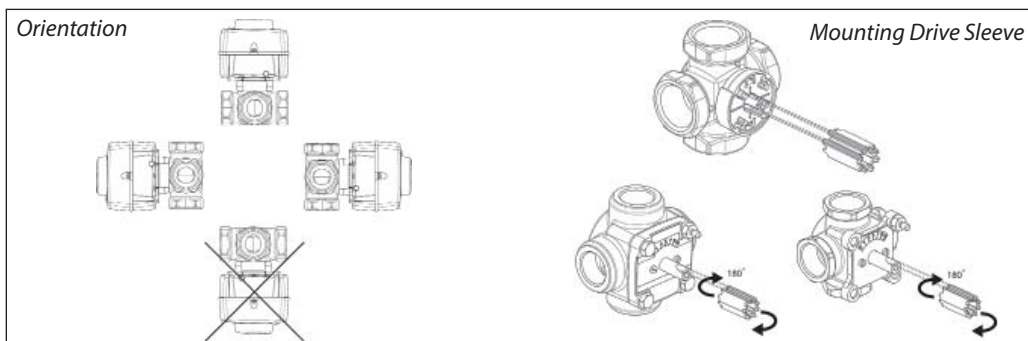
4-Way Valve, Series 141		
Code No.	Connection	Cv <sup>1</sup>
<b>193B1531</b>	¾" NPT	4.7
<b>193B1532</b>	¾" NPT	7.3
<b>193B1533</b>	1" NPT	11.7
<b>193B1534</b>	1-¼" NPT	18.7
<b>193B1535</b>	1-½" NPT	29.3
<b>193B1536</b>	2" NPT	46.8
<b>193B1537</b>	¾" Solder	2.9
<b>193B1538</b>	1" Solder	7.3
<b>193B1539</b>	1-¼" Solder	13.9

**Technical Specifications:**

	3- Point		2- Point		Proportional		
ARA Series	663 / 644 / 654 / 664		638 / 648		639 / 659		
Supply Voltage	24VAC +/- 10%, 50/60Hz		24VAC +/- 10%, 50/60Hz		24VAC/DC +/- 10%, 50/60Hz		
Power Consumption	2VA				639	659	
					AC	11VA	8VA
					DC	6VA	4VA
Rotation	90°						
Torque	53.1 lbf.in (6Nm)	638	26.6 lbf.in (3Nm)	53.1 lbf.in (6 Nm)			
		648	53.1 lbf.in (6Nm)				
Mountable Valve Size	1/2" to 2" ESBE rotary mixing valves, Series MG, G and VRG (for 638 mountable on sizes 1/2" to 1-1/4")						
Enclosure	NEMA 1, IP 41						
Ambient Temp. Range	23 to 131°F (-5 to 55°C)						
Weight	1 lb (0.4 kg)						
Run Time (sec)	663	96 sec	638	12 sec		@ 60 Hz	
	644	24 sec			639	15/30/60/120	
	654	48 sec	648	24 sec	659	45/120	
	664	96 sec					
Control Signal	-				0-10V, 2-10V, 0-20mA, 4-20mA/ 60, 60 or 120 sec.		
Output signal	-				Proportional analogue signal (only for ARA369)		
Auxiliary Switch	Max 2A, adjustable cam position (663 actuator does not have Aux. switch)				Optional		

**Mounting & Installation:**

The actuator should be mounted with the ESBE rotary valve stem in either a horizontal position or pointing upwards. The actuator should not be installed in a downward orientation to reduce the possible contact of water with the actuator. Included with the actuator is the mounting hardware necessary to mount the electric motor actuator to an ESBE rotary mixing valves; MG, G, and VRG series.

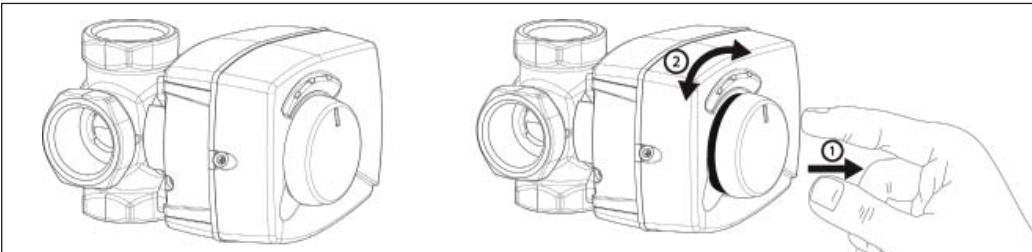


With the white drive sleeve the ARA actuator can be installed on older MG and G series of valves and also current VRG valves. The orientation of the drive sleeve determines the style of valve the actuator will mount to.



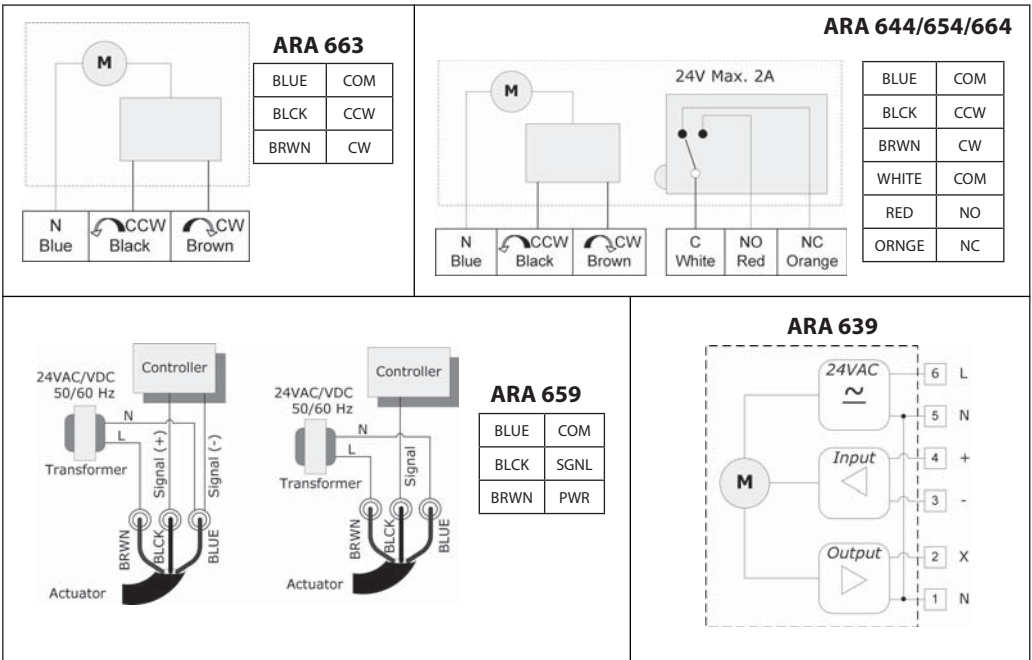
Manual Operation:

When placing the actuator in manual operation power should be turned off to the actuator. In the event the actuator is powered and is left in a manual position, the result could lead to the internal damage of the actuator.



To manually operate the ARA Series actuator, slightly pull out on the large indicator knob. With it pulled out, rotate the knob to the left or right to manually operate the valve. To return the actuator to automatic operation, rotate the knob to the position prior to manual operation and push the knob into the actuator.

Electrical Wiring  
ARA600 Series Actuators:





Proportional Settings:

**Dip switch setting for ARA639**

**Dip switch setting for ARA659**

**Switch descriptions**  
1&2) Rotation time  
3&4) Proportional signal  
5) N/A  
6) Motor actuator rotation  
7) Activated filter (ON) reduces signal interferences reducing actuator hunting  
8) During power outage, ARA639 remembers last position and does not require calibration cycle

Internal Components:

1.	Mount sleeve to valve
2.	Slide actuator onto valve
3.	Secure actuator with mounting screw
4.	Apply indicator, based on rotation
5.	Push knob onto actuator

Dimensions:  
in (mm)

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