

Pneumatic valves and systems have been used for controls in the HVAC market for the past several decades. In the early days of building automation systems, before the advent of control networks, control systems consisted of pneumatic controls or wire bundles connected to relays, switches, potentiometers, and actuators.

Cabling was installed in a point-to-point fashion between electrical panels, the sensor inputs and actuator outputs. The functionality of these control systems are relatively rudimentary and inflexible. With the dawn of electronic actuation coupled with newly advanced building automation systems, it only follows that many pneumatically controlled valves are now being partially or completely replaced with electronic valve assemblies.

The advent of solid state technology offers a means of using logic circuits to replace wire and relays. Pneumatic controls and electrical panels have given way to direct digital controllers, which are programmed or configured.

Our Retrofit Kits make the transition from Pneumatic to DDC easier. In those instances when an existing globe and butterfly valve needs to be fitted with the proper electronic actuator, Bray has a quick, easy, and cost effective solution.



## Features and Benefits - Butterfly Retrofit

<b>Assembly</b>	<ul style="list-style-type: none"> <li>• Butterfly Valves up to 20", 2-Way or 3-Way</li> <li>• Electronic Actuation</li> <li>• On/Off, Floating, &amp; Modulating</li> <li>• Convenient Fax Forms</li> <li>• Easy Installation</li> </ul>
<b>Actuation</b>	<ul style="list-style-type: none"> <li>• Manual Override</li> <li>• 24VAC or 120VAC</li> <li>• 2-Position or Floating</li> <li>• Modulating 0(2)-10VDC or 0(4)-20mA</li> <li>• Spring Return</li> <li>• Positive Position Feedback</li> <li>• Weather Proof Enclosure Optional</li> <li>• Low Voltage</li> </ul>

## Features and Benefits - Globe Retrofit

<b>Assembly</b>	<ul style="list-style-type: none"> <li>• Globe Valves up to 6", 2-Way or 3-Way</li> <li>• Electronic Actuation</li> <li>• Convenient Fax Forms</li> <li>• Easy Installation - Stem connection takes place automatically after application of control voltage.</li> </ul>
<b>Actuation</b>	<ul style="list-style-type: none"> <li>• Manual Override</li> <li>• 24VAC</li> <li>• One model for On/Off, Floating or Modulating 0(2)-10VDC or 0(4)-20mA</li> <li>• Spring Return &amp; Non-Spring Return Models</li> <li>• Positive Position Feedback</li> <li>• NEMA 4 Equivalent</li> <li>• Easy flow curve configurability</li> </ul>

## Retrofit Kits - Globe Valves Selection Chart

### Retrofit Linkage Kits

Existing Valve Manufacturer	2 1/2"	3"	4"	5"	6"
Bray DG Series	GRK-BRA250		GRK-BRA400		
Siemens/Landis/Staefa 599 Series	GRK-BRA250		GRK-BRA400		
Honeywell V5011, 2W	GRK-HON-1		GRK-HON-2		
Honeywell V5013, 3W					
Johnson Controls VG2000	GRK-JCI				
Schneider/Barber Coleman/Siebe VB-8000	GRK-SCH-2				
Schneider/Barber Coleman/Siebe VB-92x3					

Consult factory for other makes and models

### Available Actuators

Non-Spring Return	
GA24-562	On/Off, Floating and Modulating
Spring Return	
GASRE24-450	On/Off, Floating and Modulating- Normally Retracted
GASEX24-450	On/Off, Floating and Modulating- Normally Extended

## Retrofit Kits - Globe Valves Close-Off Chart

### 2-Way Retrofit Kit Close-Off (PSI)

Existing Valve Manufacturer	2 1/2"		3"		4"		5"		6"	
	NSR	SR	NSR	SR	NSR	SR	NSR	SR	NSR	SR
Bray DG Series	85	68	56	44	34	27	22	18	15	12
Siemens 599 Series	85	68	56	44	34	27	22	18	15	12
Landis/Staefa 599 Series	85	68	56	44	34	27	22	18	15	12
Honeywell V5011, 2W	90	84	70	56	38	30	24	18	15	12
Johnson Controls VG2000	95	75	64	50	37	29	22	18	16	12
Schneider/Barber Coleman/Siebe	VB-8000	70	58	50	38	25	22	12	10	8
	VB-92x3	70	58	50	38	25	22	12	10	8

### 3-Way Retrofit Kit Close-Off (PSI)

Existing Valve Manufacturer	2 1/2"		3"		4"		5"		6"	
	NSR	SR	NSR	SR	NSR	SR	NSR	SR	NSR	SR
Bray DG Series	85	68	56	44	34	27	22	18	15	12
Siemens 599 Series	85	68	56	44	34	27	22	18	15	12
Landis/Staefa 599 Series	85	68	56	44	34	27	22	18	15	12
Honeywell V5013	90	84	70	56	38	30	24	18	15	12
Johnson Controls VG2000	95	75	64	50	37	29	22	18	16	12
Schneider/Barber Coleman/Siebe	VB-8000	70	58	50	38	25	22	12	10	8
	VB-9313	70	58	50	38	25	22	12	10	8

# Retrofit Kits - Globe Valves Retrofit Form

This form is to be used if your existing valve is not listed in Retrofit Library. Make photocopies of this form, downloaded from our website, (or contact Bray for additional copies) and fax completed forms to Bray Controls to ensure proper linkage compatibility. A separate form should be used for each valve when information is different for valve size or manufacturer. Please fill out form completely. Draw your own diagram using the space in Figure 4 below if necessary.

*Please specify upon ordering if the valve stem is threaded or grooved.*

## EXISTING GLOBE VALVE BODY INFORMATION

Quantity \_\_\_\_\_

Figure No. (choose 1, 2, or 3 below) \_\_\_\_\_

Manufacturer (if known) \_\_\_\_\_

Model No. (if known) \_\_\_\_\_

Valve Size \_\_\_\_\_

☐ 2-Way or ☐ 3-Way

## ACTUATION (Check all that apply)

☐ On/Off ☐ Tri-State ☐ Modulating

☐ Spring Return

☐ 24VAC ☐ 120VAC

☐ Weather Proof Enclosure

Approximate Close-Off Required \_\_\_\_\_ (PSI)

## EXISTING GLOBE VALVE BODY DIMENSIONS

A = Height with stem down \_\_\_\_\_ (in.)

B = Length of the neck \_\_\_\_\_ (in.)

C = Stem diameter and threads/inch \_\_\_\_\_ (in.) \_\_\_\_\_ (th/in.)

D = Major diameter and threads/inch \_\_\_\_\_ (in.) \_\_\_\_\_ (th/in.)

E = Lift (Stroke Length) \_\_\_\_\_ (in.)

F = Neck Dimensions \_\_\_\_\_ (in.)

G = Neck Dimensions \_\_\_\_\_ (in.)

H = Neck Dimensions \_\_\_\_\_ (in.)

I = Neck Dimensions \_\_\_\_\_ (in.)

## ADDITIONAL

## COMMENTS

## Possible Existing Globe Valve Types

Figure No.1

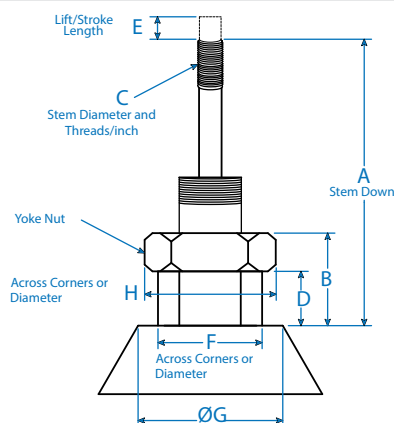


Figure No.2

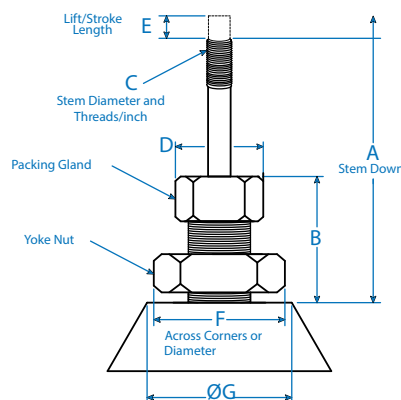


Figure No.3

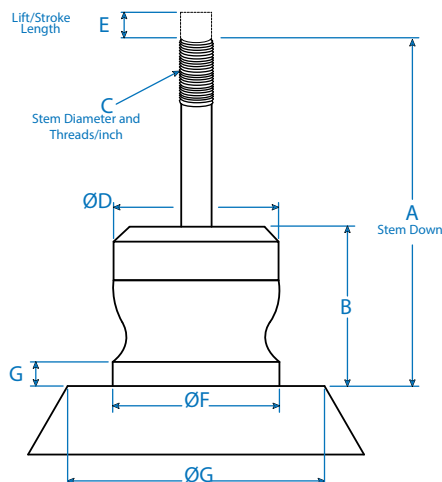


Figure No.4

If Fig. 1, 2, 3, do not match valve, please sketch below.)

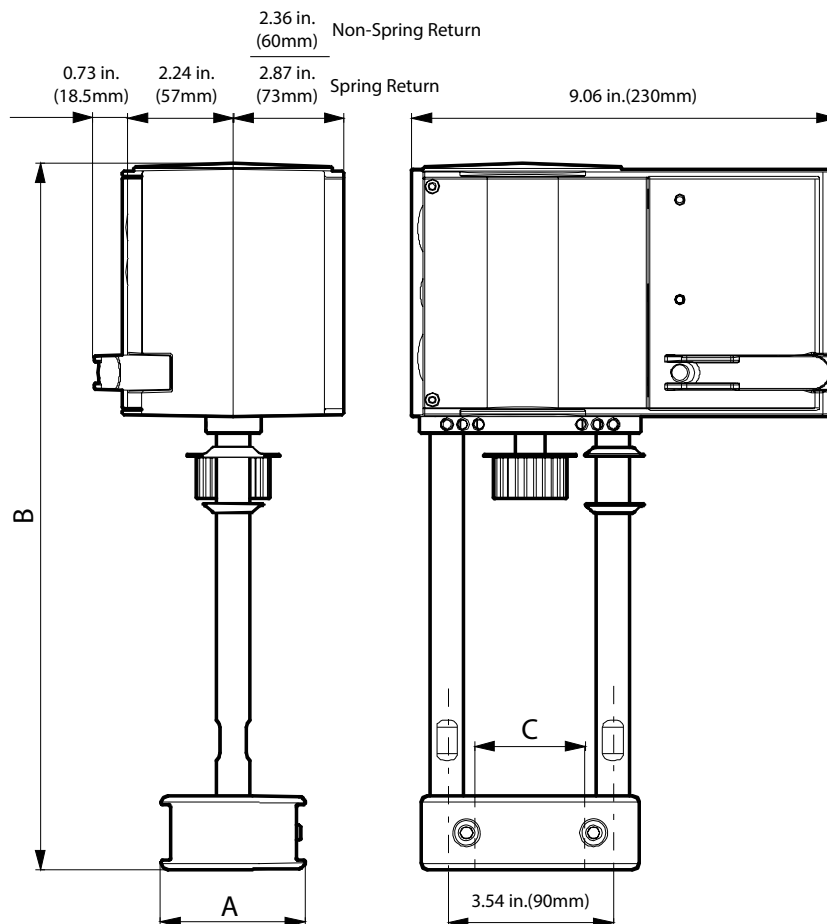
When please send photo reference in order to aid with proper fabrication.

# Retrofit Kits - Globe Valve Linkage Application

## Application

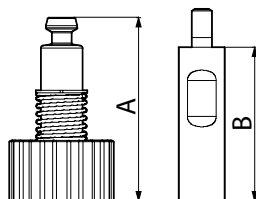
The GRK Series Retrofit Linkage is available for many types of globe valves ranging in sizes from 1/2" to 6". The valve linkage is constructed of sturdy extruded aluminum which prevents twisting and distorting. This linkage assembly may be used to control many types of fluids including steam applications.

The supplied actuator is mounted to the linkage body with a single screw. The rotary motion of the actuator is transmitted through a shaft, running in bronze bearings, impregnated with oil for long life, to a self-adjusting, floating rack and pinion, to the valve operating rod. A specially designed spring mechanism, built into the valve operating rod, maintains constant force on the valve seat without power to the actuator. This feature ensures tight shut-off of the valve even with temperature variations. All mounting hardware and the selected actuator is supplied with the GRK series linkage kit for such manufacturers as SIEBE, Siemens, Honeywell, Landis & Staefa, Schneider and Johnson. For odd valves please fill in the information on Fax Form on page RK-3 to ensure a proper fit.



Description	A	B	C
GA(S) Series	2.52 in. (64mm)	11.38 in. (289mm)	1.73 in. (44mm)

Adaptor for media temperatures between  
266°F (130°C) and 464°F (240°C)



Part Number	A	B
0372336 240	4.31 in. (109.4mm)	3.94 in. (100mm)

**Bray** COMMERCIAL

www.braycommercialdivision.com

# Retrofit Kits - Butterfly Valve Retrofit Library 1" to 12"

## Butterfly Valve Retrofit Library 1" to 4"

Existing Valve Manufacturer	Existing Valve Model #	Existing Valve Size					
		1"	1-1/2"	2"	2-1/2"	3"	4"
Centerline	Series 200 (A/LT, WA, WL, AF)	---	---	...CE1	...CE1	...CE1	...CE2
	Series 205 (NAT, NLT)	---	---	...CE1	...CE1	...CE1	...CE2
	Series 225 (B-285)	---	---	...CE1	...CE1	...CE1	...CE2
	Series 400 (ADV)	---	---	...CE1	...CE1	...CE1	...CE2
Challenger	CVM	---	---	...CR1	...CR1	...CR1	...CR2
Keystone	AR1 / AR2	---	---	...KE1	...KE1	...KE1	...KE2
	221 / 222	---	---	...KE1	...KE1	...KE1	...KE2
	F310 / F312	---	---	...KE6	...KE7	...KE7	...KE7
Nibco	LD / WD 2000 Series	---	---	...NO1	...NO2	...NO2	...NO3
	LD / WD 3000 Series	---	---	...NO1	...NO2	...NO2	...NO3
Watts	BF-03 / BF-04	---	---	...WS1	...WS1	...WS1	...WS2

## Butterfly Valve Retrofit Library 5" to 12"

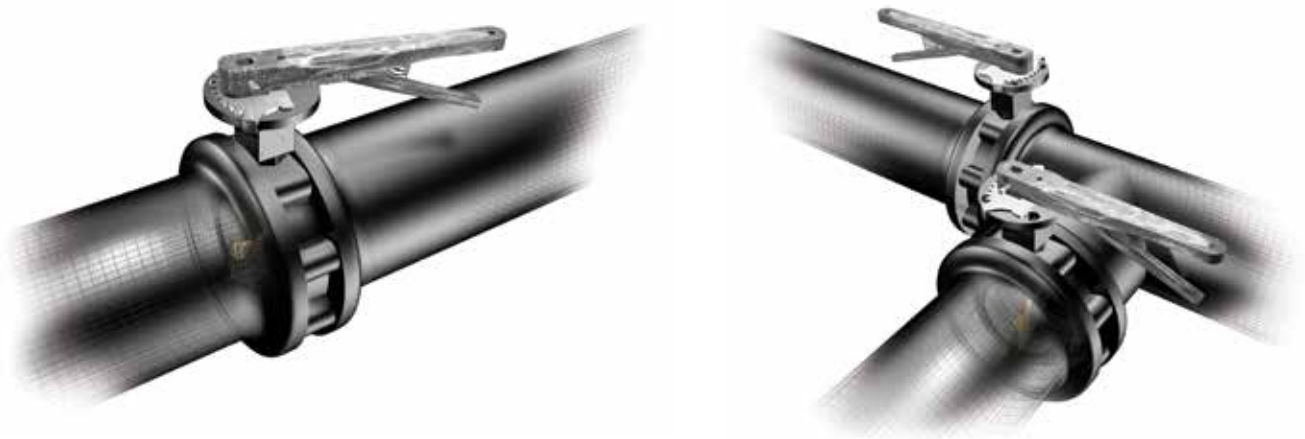
Existing Valve Manufacturer	Existing Valve Model #	Existing Valve Size				
		5"	6"	8"	10"	12"
Centerline	Series 200 (A/LT, WA, WL, AF)	...CE3	...CE3	...CE4	...CE5	...CE6
	Series 205 (NAT, NLT)	...CE3	...CE3	...CE4	...CE5	...CE6
	Series 225 (B-285)	...CE3	...CE3	...CE4	...CE5	...CE6
	Series 400 (ADV)	...CE3	...CE3	...CE4	...CE5	...CE6
Challenger	CVM	...CR2	...CR3	...CR4	...CR5	...CR5
Keystone	AR1 / AR2	...KE3	...KE3	...KE4	...KE5	...KE5
	221 / 222	...KE3	...KE3	...KE4	...KE5	...KE5
	F310 / F312	...KE8	...KE8	...KE9	...KE10	...KE10
Nibco	LD / WD 2000 Series	...NO4	...NO4	...NO5	...NO6	...NO7
	LD / WD 3000 Series	...NO4	...NO4	...NO5	...NO6	...NO7
Watts	BF-03 / BF-04	...WS2	...WS2	...WS3	...WS4	...WS5

--- Indicates that we don't currently have dimensional information to retrofit this valve.

Please fill out the Butterfly Valve Retrofit form (Form BFV-01).

When ordering please use the following model numbering system:

DR (Valve Size) B (2 or 3-way) - Kit Number from Above / Actuator, ex. Nibco 6" 2-way LD/WD 2000 = DR6B2-NO4/Actuator



# Retrofit Kits - Butterfly Valves Retrofit Form

Please fill in the following dimensions. A model number will be assigned by Bray after receiving this fax form.  
Dimensions should be measured to closest 0.001 inch. All dimensions should be measured in inches.

## SECTION - 1

Quantity \_\_\_\_\_  
Nominal Valve Size \_\_\_\_\_  
Valve Manufacturer (if known) \_\_\_\_\_  
Model No. (if known) \_\_\_\_\_  
Valve Style: \_\_\_\_\_  
☐ 2-Way or ☐ 3-Way

## ACTUATION: (Check all that apply)

☐ On/Off ☐ Tri-State ☐ Modulating  
☐ Spring Return  
☐ 24VAC ☐ 120VAC  
☐ Weather Proof Enclosure  
Approximate Torque Required \_\_\_\_\_ (in-lbs.)

## SECTION - 2

Mounting Style (A2, B2, or C2 below)  
Dimensions: A = \_\_\_\_\_ (in.)  
B = \_\_\_\_\_ (in.)  
C = \_\_\_\_\_ (in.)  
Are Mounting Holes Drilled and Tapped:  
☐ No, Hole Diameter \_\_\_\_\_  
☐ Yes, Bolt Size \_\_\_\_\_ Threads/inch

## SECTION - 3

Shaft Style (A3, B3, C3, or E3 below):  
Dimensions: D = \_\_\_\_\_ (in.)  
E = \_\_\_\_\_ (in.)  
F = \_\_\_\_\_ (in.)  
G = \_\_\_\_\_ (in.)  
H = \_\_\_\_\_ (in.)

Note: Dimension F (for keywayed, flattened, or pinned) is it ☐ perpendicular or ☐ parallel to disc.

## ADDITIONAL COMMENTS

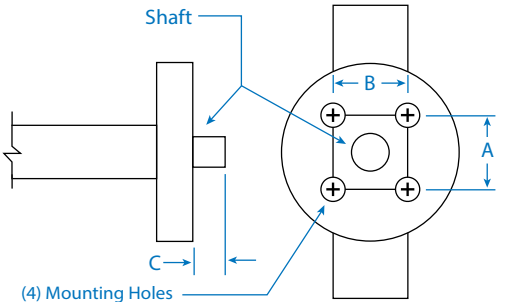
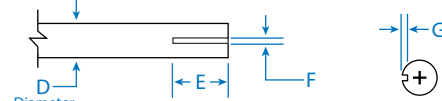
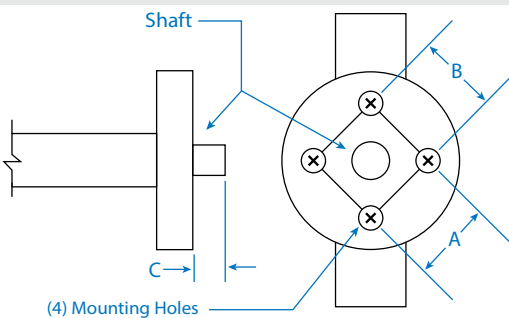
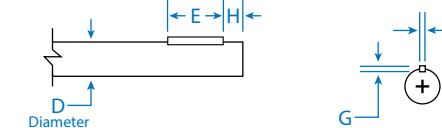
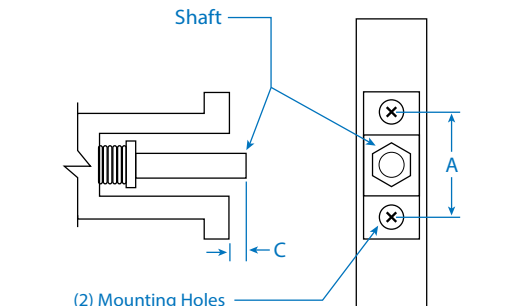
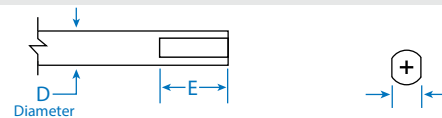
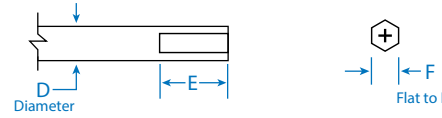
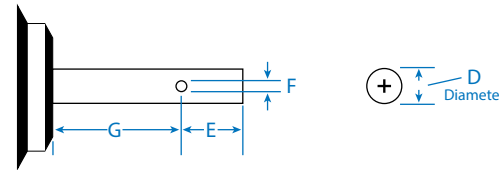
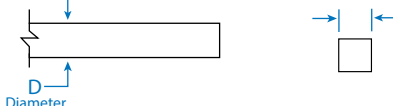
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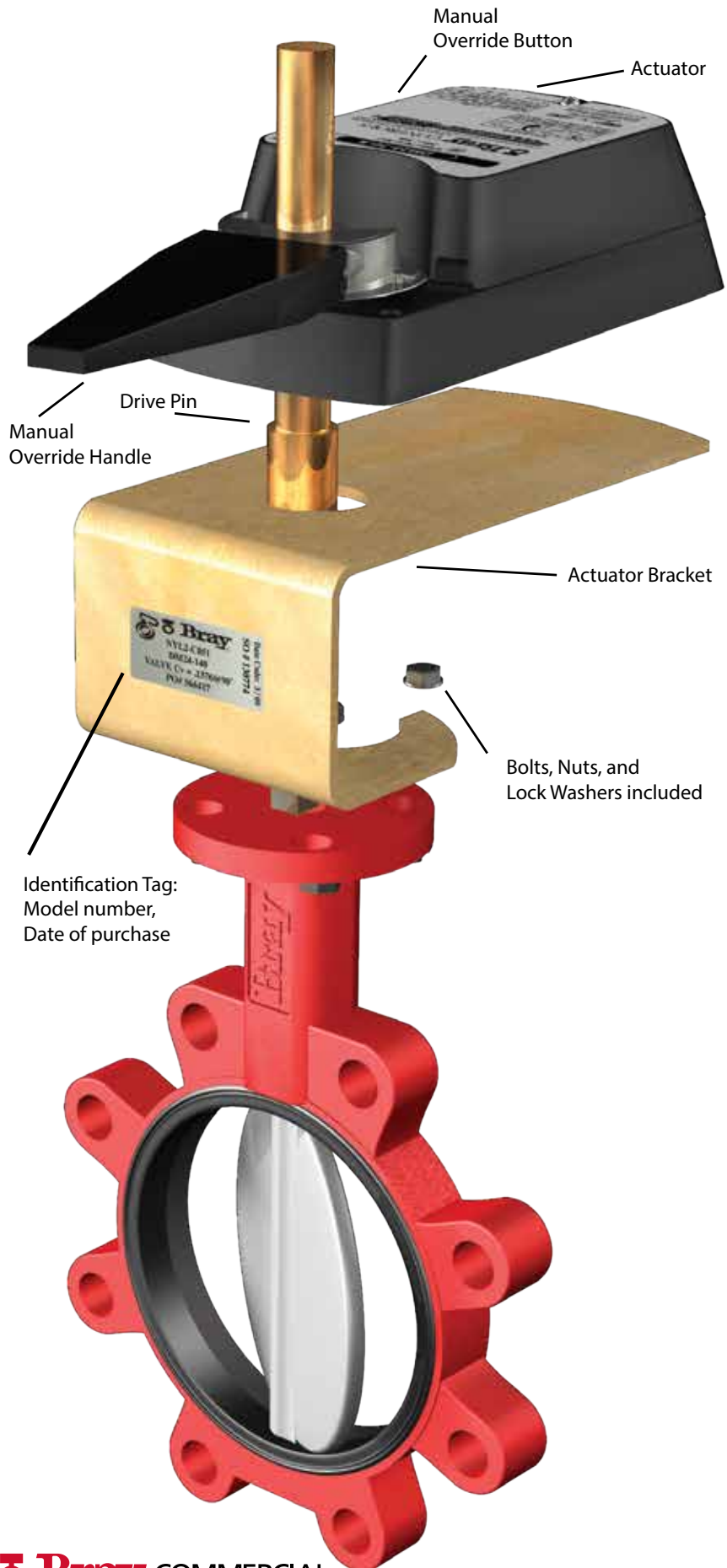
## Mounting and Shaft Styles

<b>Mounting Style - A2</b>  <p>(4) Mounting Holes</p>	<b>Shaft Style - A3 / Keywayed</b> 
<b>Mounting Style - B2</b>  <p>(4) Mounting Holes</p>	<b>Shaft Style - B3 / Woodruff Key</b> 
<b>Mounting Style - C2</b>  <p>(2) Mounting Holes</p>	<b>Shaft Style - C3 / Double D</b> 
	<b>Shaft Style - D3 / Hexed</b> 
	<b>Shaft Style - E3 / Pinned</b> 
	<b>Shaft Style - Square</b> 

# Retrofit Kits - Butterfly Valve Exploded View

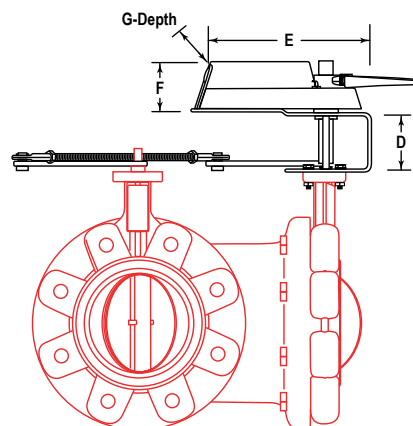
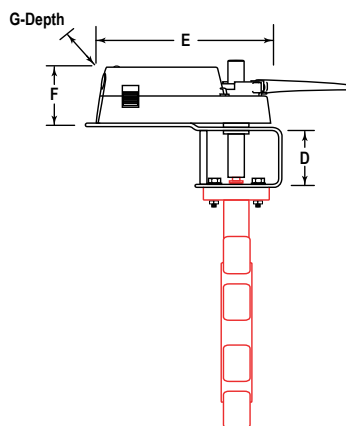
## Features of the Bray Retrofit Butterfly Valve Linkage:

- May be used in high-stress applications
- May be used in high-temperature applications
- Makes pneumatic to electronic conversion simple
- A wide range of control systems can be used
- High close-off pressures available for most applications
- May use tandem actuators for higher close-off pressures
- Easy retrofit on non-standard valves
- Available actuators include:  
D-140/210/280, DC-310, DS-180 Series and Bray's Industrial Series Actuator where applicable.





# Retrofit Kits - Butterfly Linkage Dimensions



## DIMENSIONS - 2" - 6" with D/DC Series Actuators

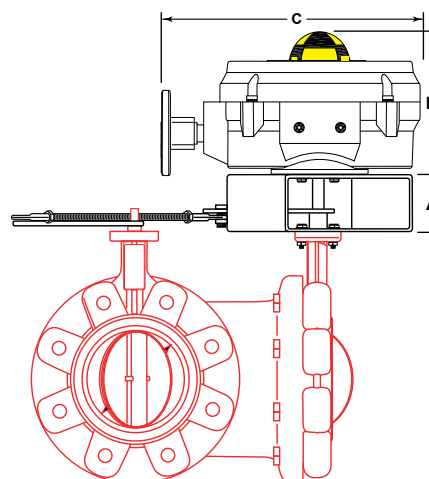
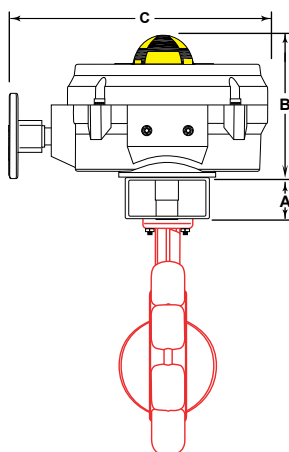
Butterfly Valve Retrofit Linkage Model # Prefix	Connection		Please reference illustration above							
			D		E		F		G	
	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm
DR2B(2 or 3)...	2	50	3.3	84	9.8	249	3.5	89	4.6	117
DR250B(2 or 3)...	2.5	65	3.3	84	9.8	249	3.5	89	4.6	117
DR3B(2 or 3)...	3	80	3.3	84	11.0	279	3.5	89	4.6	117
DR4B(2 or 3)...	4	100	3.3	84	11.0	279	3.5	89	4.6	117
DR5B(2 or 3)...	5	125	3.3	84	11.0	279	7.1**	180**	4.6**	117**
DR6B(2 or 3)...	6	150	3.3	84	11.0	279	5.9**	150**	4.0	102

\*\* Indicates tandem mounted actuators.

--- Indicates valve/actuator combination is not recommended.

Dimensions listed are approximate. In some cases custom brackets and pins are required.

Largest actuator(s) dimension shown



## 2-Way

### DIMENSIONS, 2" - 16" with Industrial Series Actuators

Butterfly Valve Retrofit Linkage Model # Prefix	Connection		Please reference illustration above					
			A		B		C	
	in.	mm	in.	mm	in.	mm	in.	mm
DR2B...	2	50	4.0	102	6.96	177	9.29	236
DR250B...	2.5	65	4.0	102	6.96	177	9.29	236
DR3B...	3	80	4.0	102	6.96	177	9.29	236
DR4B...	4	100	4.0	102	6.96	177	9.29	236
DR5B...	5	125	4.0	102	6.96	177	9.29	236
DR6B...	6	150	4.0	102	6.96	177	9.29	236
DR8B...	8	200	4.0	102	7.96	202	12.12	308
DR10B...	10	250	4.0	102	8.56	217	13.09	333
DR12B...	12	300	4.0	102	8.56	217	13.09	333
DR14B...	14	350	4.0	102	8.56	217	13.09	333
DR16B...	16	400	4.0	102	8.56	217	13.09	333

## 3-Way

### DIMENSIONS, 2" - 16" with Industrial Series Actuators

Butterfly Valve Retrofit Linkage Model # Prefix	Connection		Please reference illustration above					
			A		B		C	
	in.	mm	in.	mm	in.	mm	in.	mm
DR2B...	2	50	4.0	102	6.96	177	9.29	236
DR250B...	2.5	65	4.0	102	6.96	177	9.29	236
DR3B...	3	80	4.0	102	6.96	177	9.29	236
DR4B...	4	100	4.0	102	6.96	177	9.29	236
DR5B...	5	125	4.0	102	6.96	177	9.29	236
DR6B...	6	150	4.0	102	7.96	202	12.12	308
DR8B...	8	200	4.0	102	7.96	202	12.12	308
DR10B...	10	250	4.0	102	7.96	202	12.12	308
DR12B...	12	300	4.0	102	8.56	217	13.09	333
DR14B...	14	350	4.0	102	8.56	217	13.09	333
DR16B...	16	400	4.0	102	8.56	217	13.09	333

Dimensions listed are approximate. In some cases custom brackets and pins are required.  
Largest actuator(s) dimension shown