

Contents

How to Select the Butterfly Retrofit Solution pg 127
 Butterfly Valve Retrofit Actuators pg 128

Solutions for Specific Manufacturer and Part Number

Apollo pg 130
 Belimo pg 131
 Bray pg 133
 Centerline pg 135
 Challenger pg 138
 Chemtrol pg 139
 Dezurik pg 140
 Flowseal pg 141
 FNW pg 142
 Gruvlok pg 143
 Hammond pg 145
 Jamesbury pg 146
 Jenkins pg 147
 Johnson Controls pg 148
 Keystone pg 149
 Keystone K-LOK pg 149
 Metraflex pg 152
 Milwaukee pg 153
 Mueller pg 155
 Nibco pg 156
 PDC pg 157
 Quartermaster pg 158
 Victaulic pg 159
 Watts pg 161

Custom Butterfly Valve Retrofit Solutions, Instructions pg 162
 Custom Butterfly Valve Retrofit Solution Form pg 163
 Component Identification pg 164
 UFLK/UFSP Retrofit Solution (2-Way Valves) pg 167
 SY...Series Butterfly Retrofit Solution (2-Way Valves) pg 169
 UFLK/UFSP Retrofit Solution (3-Way Valves) pg 174
 SY...Series Butterfly Retrofit Solution (3-Way Valves) pg 177
 Valve Accessories pg 185
 Custom Ball Valve Retrofit Solution, Instructions pg 186
 Custom Ball Valve Retrofit Solution Form pg 187
 Custom Ball Valve Retrofit Solution, Dimensions pg 189
 Actuator/Valve Specification pg 199
 Terms and Conditions pg 203
 Platinum Distributors pg 205



Butterfly Valve:
UFLK Series **Linkage Solution**
 2-way Valves
 3-way Valves

Retrofit Solutions for Virtually any Valve

Manufacturers:

Butterfly: Bray, Centerline, Keystone, Flowseal and more

Control: On/Off, Floating, 2-10VDC
 Multi-Function Technology®
 Spring Return or
 Non-Spring Return

M40045 - 10/10 - SUBJECT TO CHANGE. © BELIMO AIRCONTROLS (USA), INC.

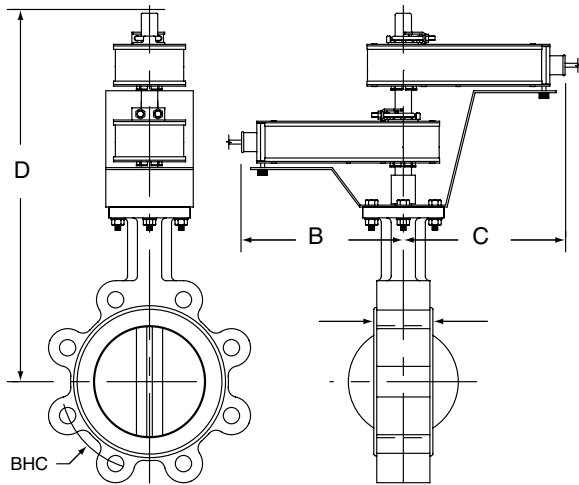


Butterfly Valve Retrofit

Tips for choosing a butterfly valve retrofit solution

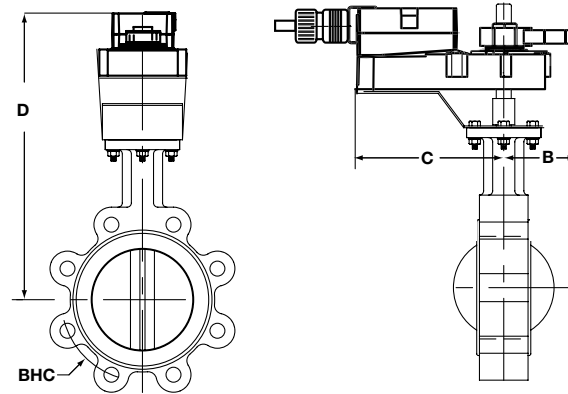


Dimensions with 2-Way Valve



BF2WUDIM

Dimensions with 2-Way Valve



AM_GM_LineRevised

Maximum Dimensions (Inches)

Size	B	C	D(Max)	Actuator
2"	9	9	19.5	AF
2"	7	7	15	AMB(X)
2"	4.25	4.25	15.5	SY1...
2"	8	13	20.25	SY2...
2½"	9	9	20	AF
2½"	9	9	20	2*AF
2½"	7	7	15.5	AMB(X)
2½"	4.25	4.25	16	SY1...
2½"	8	13	20.75	SY2...
3"	7	7	16	AMB(X)
3"	8	8	16	GMB(X)
3"	9	9	20.5	2*AF
3"	4.25	4.25	16.25	SY1...
3"	8	13	21	SY2...
4"	8	8	17	GMB(X)
4"	9	9	21	2*AF
4"	8	8	21	2*GMB(X)
4"	8	13	21.75	SY2...
5"	8	8	17.5	GMB(X)
5"	9	9	22	2*AF
5"	8	13	22.25	SY2...
6"	8	8	22.5	GMB(X)
6"	8	13	23	SY2...
6"	8	13	22.75	SY3...
8"	8	13	24.25	SY3...
8"	12	15	29	SY4...
10"	8	13	25.5	SY3...
10"	12	15	30	SY4...
12"	8	13	27.25	SY3...
12"	12	15	32	SY4...
14"	12	15	33	SY5...
16"	12	15	34.5	SY6...
18"	14	21	39.25	SY8...
20"	14	21	41.5	SY8...
24"	14	22	53.25	SY11...
30"	14	22	57.5	SY12...

Application Notes

1. Dimensions are approximate
2. Custom kits may be taller and varies by application needs
3. Dimension "D" allows for actuator removal without the need to remove the valve from the pipe.
4. Dual actuated valves have single actuators mounted on each valve shaft.

M40045 - 10/10 - SUBJECT TO CHANGE. © BELIMO AIRCONTROLS (USA), INC.

Butterfly Valve Retrofit Actuators

Actuator Selection Guide



SY Series Actuators

SERIES	MODEL	TORQUE	RUN TIME(S) 90°@60Hz	POWER SUPPLY	DUTY CYCLE	CONTROL			FEEDBACK
						PROPORTIONAL	3 POINT	ON/OFF	
SY9	SY9-110	2000 Nm / 17800 in-lb	58 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY9-220	2000 Nm / 17800 in-lb	58 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY9-120MFT	2000 Nm / 17800 in-lb	58 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY9-230MFT	2000 Nm / 17800 in-lb	58 seconds	230 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
SY10	SY10-110	2500 Nm / 22250 in-lb	58 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY10-220	2500 Nm / 22250 in-lb	58 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY10-120MFT	2500 Nm / 22250 in-lb	58 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY10-230MFT	2500 Nm / 22250 in-lb	58 seconds	230 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
SY11	SY11-110	3000 Nm / 26700 in-lb	58 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY11-220	3000 Nm / 26700 in-lb	58 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY11-120MFT	3000 Nm / 26700 in-lb	58 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY11-230MFT	3000 Nm / 26700 in-lb	58 seconds	230 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
SY12	SY12-110	3500 Nm / 31150 in-lb	58 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY12-220	3500 Nm / 31150 in-lb	58 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY12-120MFT	3500 Nm / 31150 in-lb	58 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY12-230MFT	3500 Nm / 31150 in-lb	58 seconds	230 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA

Proportional actuators will accept 0-10 VDC, 2-10 VDC, or 4-20 mA control signals as standard.

All SY actuators are non-spring return, but can be used with NSV-SY back up systems for fail-safe applications.

These products carry a two year warranty when sold as part of an assembly or with a UFLK retrofit kit.

ROTARY ACTUATORS

SERIES	MODEL	Spring Return	Electronic Fail Safe	Control Input	Feedback Position	Power Supply
AF Series*	AF24 US, AFB24	•		24 VAC/DC		24 VAC/DC
	AFX24-MFT-X1	•		Variable with MFT (VDC, PWM, Floating Pt., On/Off)	variable VDC	24 VAC/DC
AM Series*	AMB24-3-X1			24 VAC/DC		24 VAC/DC
	AMX24-MFT-X1			Variable with MFT (VDC, PWM, Floating Pt., On/Off)	variable VDC	24 VAC/DC
GM Series*	GMB24-3-X1			24 VAC/DC		24 VAC/DC
	GMX24-MFT-X1			Variable with MFT (VDC, PWM, Floating Pt., On/Off)	variable VDC	24 VAC/DC
GK Series*	GKB24-3-X1		•	24 VAC/DC		24 VAC/DC
	GKX24-MFT-X1		•	Variable with MFT (VDC, PWM, Floating Pt., On/Off)	variable VDC	24 VAC/DC

*Please consult the Damper sections for a full list of product offerings. Standard run times should be considered in the selection. All air side products are applicable for retrofit kits.

Select "X1" actuators come with a handle.

MULTI-FUNCTION TECHNOLOGY

ROTARY ACTUATOR CODES	P-CODE		Control Input	Running Time	Built-in Feedback
	P-10001	A01	2-10 VDC	150 seconds	2-10 VDC
	P-10002	A02	0-10 VDC	150 seconds	0-10 VDC
	P-10028	A28	0-10 VDC	150 seconds	0-10 VDC
	P-10063	A63	0.5-4.5 VDC	150 seconds	0.5-4.5 VDC
	P-10064	A64	5.5-10 VDC	150 seconds	5.5-10 VDC
	P-20002	W02	0.02-5.00 seconds PWM	150 seconds	2-10 VDC
	P-20003	W03	0.10-25.5 seconds PWM	150 seconds	2-10 VDC
	P-30001	F01	Floating Pt.	150 seconds	2-10 VDC
	P-40002	J02	On/Off	150 seconds	2-10 VDC

SY MULTI-FUNCTION TECHNOLOGY

Description	MFT-CODE	Control Input	Built-in Feedback	Loss of Signal	Running Time
MFT	ACE	2...10V	2...10V	stop	actuator(s) constant
MFT	ACF	0.5...10V	0.5...10V	stop	actuator(s) constant
MFT	ACG	4...20mA	4...20mA	stop	actuator(s) constant
MFT	ACH	4...20mA	2...10V	stop	actuator(s) constant
MFT	ACJ	2...10V	2...10V	open	actuator(s) constant
MFT	ACK	0.5...10V	0.5...10V	open	actuator(s) constant
MFT	ACL	4...20mA	4...20mA	open	actuator(s) constant
MFT	ACM	4...20mA	2...10V	open	actuator(s) constant
MFT	ACN	2...10V	2...10V	close	actuator(s) constant
MFT	ACP	0.5...10V	0.5...10V	close	actuator(s) constant
MFT	ACR	4...20mA	4...20mA	close	actuator(s) constant
MFT	ACS	4...20mA	2...10V	close	actuator(s) constant

All other configurations carry a \$34.00 list price.

Standard delivery may vary, please consult your customer service representative for the latest lead time(s).

800-543-9038 USA

866-805-7089 CANADA

203-791-8396 LATIN AMERICA

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage	
360/362 Series Butterfly Valves, K-LOK	2-way	2½"	No	285	GM	UFLK2400	
					SY1	UFLK2440	
					SY2	UFLK2442	
		Yes	285	2*AF	UFLK2402		
				GK	UFLK2400		
				2*GM	UFLK2408		
		3"	No	285	2*GM	UFLK2408	
					SY2	UFLK2444	
		Yes	285	2*GK	UFLK2408		
				2*GM	UFLK2414		
		4"	No	285	2*GM	UFLK2414	
					SY2	UFLK2446	
		Yes	285	2*GK	UFLK2414		
		5"	No	285	SY2	UFLK2446	
		6"	No	285	SY3	UFLK2448	
	8"	No	285	SY3	UFLK2450		
	10"	No	285	SY4	UFLK2452		
	12"	No	285	SY4	UFLK2454		
	14"	No	285	SY6	UFLK2456		
	16"	No	285	SY6	UFLK2458		
	18"	No	285	SY7	UFLK2460		
	20"	No	285	SY9	UFLK2462		
	24"	No	285	SY9	UFLK2464		
	3-way	2½"	No	285	GM	UFLK5400	
						SY2	UFLK5440
						2*AF	UFLK5402
		Yes	285	GK	UFLK5400		
				2*GM	UFLK5408		
				SY2	UFLK5442		
		3"	No	285	2*GM	UFLK5408	
					SY2	UFLK5442	
Yes		285	2*GK	UFLK5408			
			2*GM	UFLK5414			
4"		No	285	2*GM	UFLK5414		
				SY2	UFLK5444		
Yes		285	2*GK	UFLK5414			
5"		No	285	SY3	UFLK5444		
6"		No	285	SY4	UFLK5446		
8"	No	285	SY4	UFLK5448			
10"	No	285	SY4	UFLK5450			
12"	No	285	SY6	UFLK5452			
14"	No	285	SY7	UFLK5454			
16"	No	285	SY8	UFLK5456			
18"	No	285	SY9	UFLK5458			
20"	No	285	SY11	UFLK5460			
24"	No	285	SY12	UFLK5462			
370/372 Series Butterfly Valves, K-LOK	2-way	2½"	No	600	SY3	UFLK2526	
		3"	No	600	SY3	UFLK2528	
		4"	No	600	SY4	UFLK2530	
		5"	No	600	SY4	UFLK2530	
		6"	No	600	SY4	UFLK2532	
		8"	No	600	SY7	UFLK2534	
		10"	No	600	SY7	UFLK2536	
		12"	No	600	SY9	UFLK2538	
		14"	No	600	SY9	UFLK2540	
		3-way	2½"	No	600	SY4	UFLK5526
	3"		No	600	SY4	UFLK5528	
	4"		No	600	SY4	UFLK5530	
	5"		No	600	SY4	UFLK5530	
	6"		No	600	SY4	UFLK5532	
	8"		No	600	SY8	UFLK5534	
	10"	No	600	SY8	UFLK5536		
12"	No	600	SY12	UFLK5538			
14"	No	600	SY12	UFLK5540			

All close-off pressures listed are approximate and based on valve condition and application.

M40045 - 10/10 - Subject to change. © Belimo Aircontrols (USA), Inc.



Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage	
AR1/AR2 Series Butterfly Valves	2-way	2"	No	175	GM	UFLK2300	
						SY1	UFLK2334
						SY2	UFLK2336
		Yes	175	2*AF	UFLK2302		
					GK	UFLK2300	
		2½"	No	175	GM	UFLK2300	
						SY1	UFLK2334
						SY2	UFLK2336
		Yes	175	2*AF	UFLK2302		
					GK	UFLK2300	
		3"	No	175	GM	UFLK2300	
						SY1	UFLK2334
						SY2	UFLK2336
		Yes	175	2*AF	UFLK2302		
					GK	UFLK2300	
		4"	No	175	2*GM	UFLK2308	
						SY2	UFLK2338
			Yes	175	2*GK	UFLK2308	
		5"	No	175	SY3	UFLK2340	
		6"	No	175	SY4	UFLK2356	
		8"	No	175	SY4	UFLK2342	
		10"	No	175	SY5	UFLK2344	
		12"	No	175	SY7	UFLK2346	
		14"	No	150	SY7	UFLK2348	
	16"	No	150	SY9	UFLK2350		
	18"	No	150	SY10	UFLK2352		
	20"	No	150	SY11	UFLK2352		
	24"	No	150	SY12	UFLK2354		
	3-way	2"	No	175	GM	UFLK5300	
						SY1	UFLK5332
						SY2	UFLK5334
		Yes	175	2*AF	UFLK5302		
					GK	UFLK5300	
		2½"	No	175	GM	UFLK5300	
						SY2	UFLK5334
Yes					175	2*AF	UFLK5302
				GK	UFLK5300		
3"		No	175	2*GM	UFLK5302		
					SY2	UFLK5334	
				Yes	175	2*GK	UFLK5302
4"		No	175	SY3	UFLK5336		
5"		No	175	SY4	UFLK5338		
6"		No	175	SY4	UFLK5338		
8"		No	175	SY5	UFLK5340		
10"		No	175	SY7	UFLK5342		
12"		No	175	SY8	UFLK5344		
14"		No	150	SY9	UFLK5346		
16"		No	150	SY10	UFLK5348		
18"		No	150	SY12	UFLK5350		

All close-off pressures listed are approximate and based on valve condition and application.

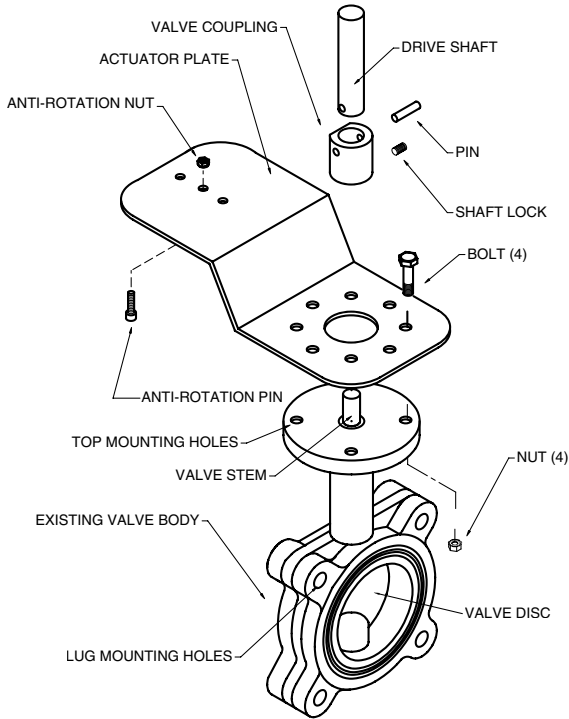
M40045 - 10/10 - Subject to change. © Belimo Aircontrols (USA), Inc.

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Figure 222 Series Butterfly Valves	2-way	2"	No	200	GM	UFLK2200
					SY1	UFLK2224
					SY2	UFLK2226
		2"	Yes	200	2*AF	UFLK2202
					GK	UFLK2200
					GM	UFLK2200
		2½"	No	200	SY1	UFLK2224
					SY2	UFLK2226
					2*AF	UFLK2202
		2½"	Yes	200	GK	UFLK2200
					GM	UFLK2200
					SY1	UFLK2224
		3"	No	200	SY2	UFLK2226
					2*AF	UFLK2202
					GK	UFLK2200
		3"	Yes	200	GM	UFLK2200
					SY1	UFLK2224
					SY2	UFLK2226
	4"	No	200	2*GM	UFLK2208	
				SY2	UFLK2228	
				2*GK	UFLK2208	
	4"	Yes	200	SY3	UFLK2230	
				SY4	UFLK2232	
				SY4	UFLK2234	
	5"	No	200	SY5	UFLK2236	
				SY7	UFLK2238	
	6"	No	200	GM	UFLK5200	
				SY2	UFLK5224	
	2"	Yes	200	2*AF	UFLK5202	
				GK	UFLK5200	
2½"	No	200	GM	UFLK5200		
			SY2	UFLK5224		
2½"	Yes	200	2*AF	UFLK5202		
			GK	UFLK5200		
3"	No	200	2*GM	UFLK5202		
			SY2	UFLK5224		
3"	Yes	200	2*GK	UFLK5202		
			SY3	UFLK5226		
4"	No	200	SY4	UFLK5228		
			SY4	UFLK5228		
5"	No	200	SY5	UFLK5230		
			SY7	UFLK5232		
6"	No	200	SY8	UFLK5234		
			SY8	UFLK5234		
3-way	3-way	2"	No	200	GM	UFLK5200
					SY2	UFLK5224
		2"	Yes	200	2*AF	UFLK5202
					GK	UFLK5200
		2½"	No	200	GM	UFLK5200
					SY2	UFLK5224
		2½"	Yes	200	2*AF	UFLK5202
					GK	UFLK5200
		3"	No	200	2*GM	UFLK5202
					SY2	UFLK5224
		3"	Yes	200	2*GK	UFLK5202
					SY3	UFLK5226
4"	No	200	SY4	UFLK5228		
			SY4	UFLK5228		
5"	No	200	SY5	UFLK5230		
			SY7	UFLK5232		
6"	No	200	SY8	UFLK5234		
			SY8	UFLK5234		

All close-off pressures listed are approximate and based on valve condition and application.

2-way Single Actuator

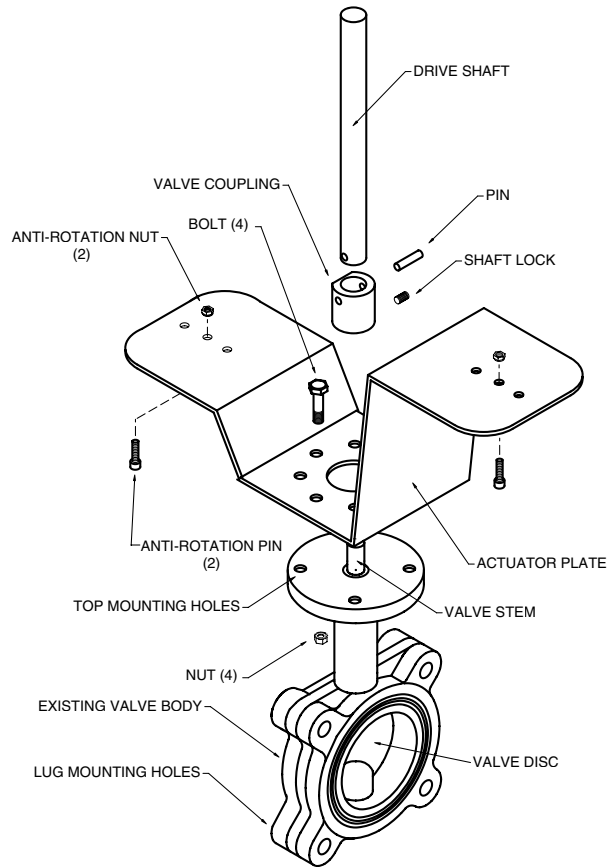
Generic – Must complete BFV Retrofit Form



UFSP0000

2-way Dual Actuator

Generic – Must complete BFV Retrofit Form



UFSP0008

M40045 - 10/10 - SUBJECT TO CHANGE. © BELIMO AIRCONTROLS (USA), INC.

UFLK/UFSP Series Butterfly Valve Retrofit Solution

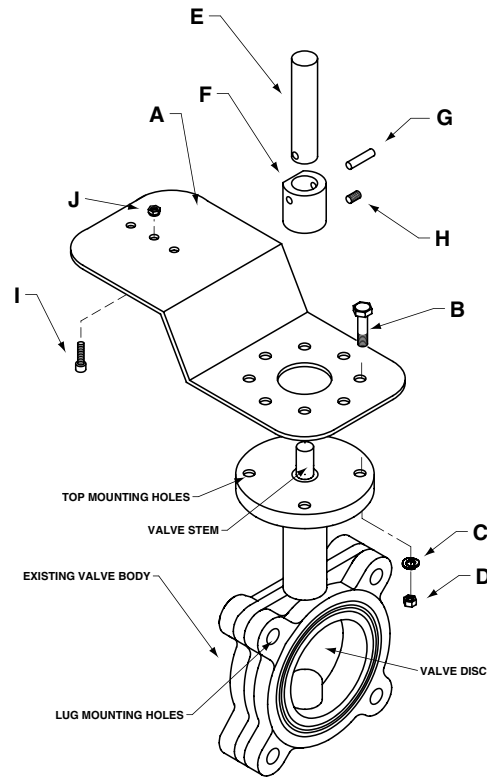
Retrofitting 2-way Valves with Belimo Direct Coupled Actuator(s)



Assembly Sequence for Existing Valves



The valve should be stripped down to its basic form, as shown. Remove all other linkage components before starting the assembly sequence below. The linkage components have been designed to attach to the valve in this state, rather than to any existing hardware.



Please refer to the above exploded view above when following the assembly procedure, to better identify which parts are being addressed in each step.



Step 1) Assemble the actuator mounting bracket (A) to the top of the valve actuator mounting pad using the supplied bolts (B), lock washers (C) and nuts (D). The bracket does NOT need to be oriented on the valve body in any particular position, however, the bracket should not come into contact with pipes, conduit or walls.

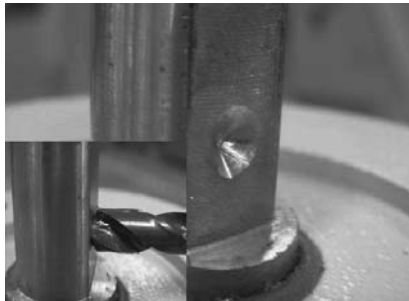


Step 2) Once all four bolts, lock washers and nuts have been assembled onto the valve body, tighten securely.

M40045 - 10/10 - SUBJECT TO CHANGE. © BELIMO AIRCONTROLS (USA), INC.



Step 3) Determine the position of the valve disc. Most manufacturers mark the TOP of the valve stem with a slot which indicates the disc angle. Slide the drive pin assembly, consisting of the drive shaft (E), the valve shaft coupling (F), the mating pin (G), and the setscrew (H), over the valve shaft. It may be necessary to back out the set screw (H) a few turns to make sure there is clearance in the coupling pocket (bottom of (F) for the valve shaft. You will notice there is a flat on the outside diameter of (F). This flat should be parallel to the disc position when assembled correctly.



Note: Belimo recommends drilling a pilot hole into the shaft. This will ensure the set screw (H) sits flat. Failure to do this may result in the coupler (F) slipping over time.



Step 4) Once the drive pin assembly has been seated onto the valve stem, tighten setscrew (H) to lock the assembly onto the valve shaft. The drive shaft (E) should be concentric and parallel with the valve shaft so there is no binding.

Any angular alignment MUST be corrected before moving on to the next step.



Step 5) Mark the TOP of the drive shaft to indicate the valve disc position. At this time, you should rotate the valve disc so that it is in the closed position. This will help facilitate proper attachment of the actuator.



Step 6) Assemble the actuator to the linkage by sliding the actuator shaft clamp over the kit drive shaft (E). The actuator anti-rotation pin (I) should already be positioned in the correct hole for the actuator, but it can be moved to

accommodate AM, GM or AF series actuators. Make sure the anti-rotation pin nut (J) is tight.



Step 7) Make sure the bottom of the actuator is PARALLEL to the mounting plate (A) when tightening the actuator clamp nuts. If this is not checked, it is possible that binding could cause erratic movement of the valve

disc due to reduced torque transmission to the valve shaft.



Step 8) For AF series actuators, release the pre-load on the spring before tightening the clamp nuts, as the valve disc has already been positioned at the fully closed position. For fail open requirements, pre-wind the AF spring to full open position before

tightening the clamp nuts. When released, the spring will then OPEN the valve disc.