RETROFIT®

BELIMO®

Retrofit Solutions Technical Documentation

Effective October 2010

Belimo Project: Bank of America Building, San Francisco, CA

Why Retrofitting Makes Sense

Valves and actuators are responsible for ensuring reliable functioning hydronic and air control HVAC systems all over the world. With innovative technology, verified quality and easy handling during installations and operation, they boost the performance and efficiency of integrated building technology.

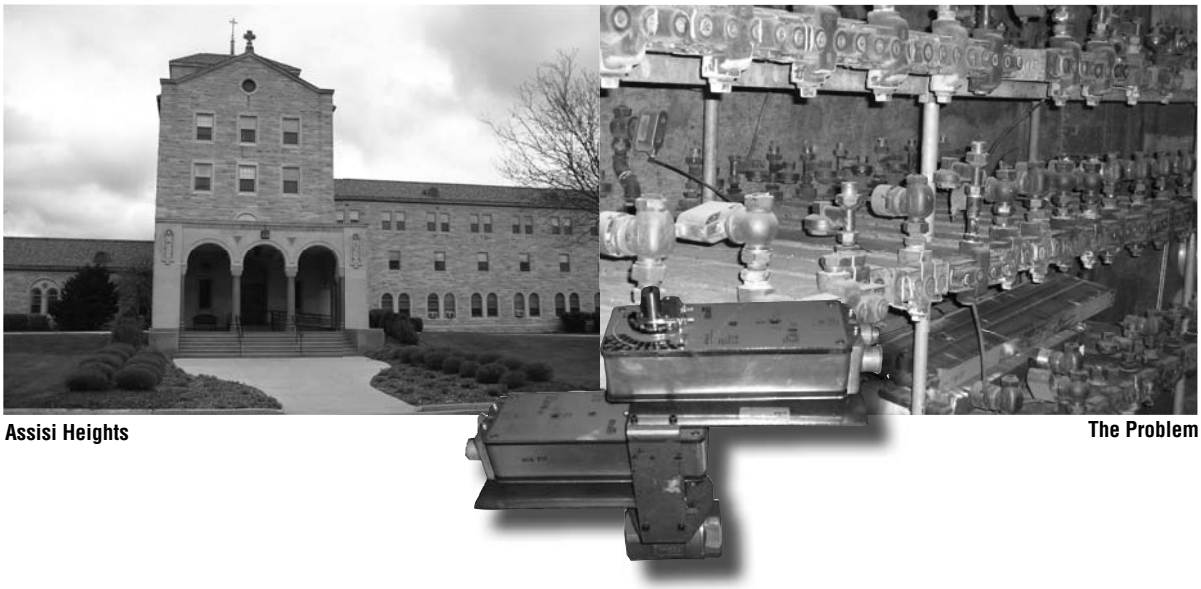
Are you in need of a solution for a broken linkage, leaky hydraulic actuator, non-functioning electric or pneumatic actuator? Do you have a need for replacing a non-functioning application within a day or so?

Belimo provides airside and waterside retrofit application solutions, with direct coupled or remote access linkages, and efficient actuators.

Damaged linkages and/or actuators resulting in non-functioning HVAC system applications, used to mean a loss of properly functioning systems leading to a degradation of energy efficiency, consumer comfort, time, and labor. Replacing a valve along with the actuator, or trying to determine how to fix an airside linkage, is not always a sensible solution. Taking a system off-line to replace various components is not only laborious, it's expensive. Facilities can lose thousands of dollars a day during maintenance shut-down. With retrofit solutions, this problem simply goes away. Valves and Damper applications can be quickly and conveniently restored without any interruption in service. In fact, entire systems can often be updated in a day. A poorly functioning or even non-functioning system can be transformed into a high functioning, more efficient system.

Belimo provides many retrofits that are compatible with all major control systems, so there is no need to replace other system controls. MFT Technology is also available and can be re-programmed to suit your controller needs with just one MFT model actuator.

In addition, Belimo's design team is ready and willing to customize a solution for non-standard retrofit solutions. As always, please call Belimo at 800-543-9038 for assistance in fulfilling your retrofit application requirements.



Assisi Heights

The Problem

The Solution

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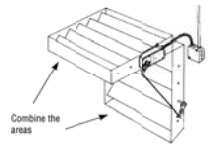
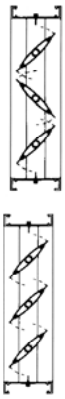
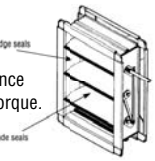
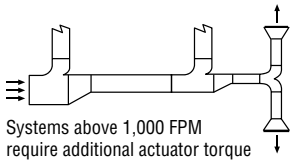
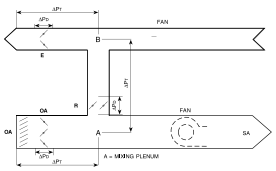
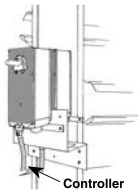
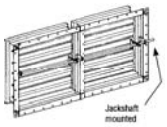
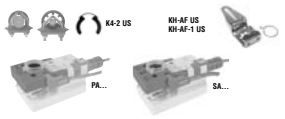
Retrofit and Replacement

How to Select an Actuator for damper retrofit

The "10 questions" method for sizing and selection shown below is recommended as the best method for your actuation requirements. Use the "Application Data" column in this chart as a worksheet to help in the selection process. This data, along with the "Actuator Product Range" charts in Sections 1 thru 3 allow for the best selection of a Belimo actuator.

APPLICATION INFO		APPLICATION DATA
1 What is the total area of the damper?		_____ sq.ft.
2 Opposed blade or Parallel blade control construction?	L" x W" = Total sq inches/144 = total sq feet **Opposed Blade w/o seals 3 in-lb/sq feet*** **Opposed Blade w/ seals 5 in-lb/sq feet** **Parallel Blade w/o seals 4 in-lb/sq feet** **Parallel Blade w/ seals 7 in-lb/sq feet** ***Less than 1,000 feet per minute** 	❑ Opposed Blade ❑ Parallel Blade
3 Are there blade and edge seals on the damper?	This will impact the proper selection as the seals add resistance requiring more torque. If unknown, use a worst case scenario, parallel blade with seals. 	❑ Yes ❑ No
4 For the damper in question, what does the manufacturer specify as the torque rating?	 If this information is not available refer to the "typical damper requirements and sizing" chart below.	_____ in-lb/sq.ft.
5 What is the air velocity, static pressure, or design CFM?	 Systems above 1,000 FPM require additional actuator torque	_____W.G. _____CFM _____FPM

ACTUATOR REQUIREMENTS		APPLICATION DATA
6 Is fail-safe actuation required?	 Consider the application. Is the actuator and/or damper exposed to outside air? If yes, use spring return.	❑ Yes ❑ No
7 What is the supply voltage to the actuator? • 24 VAC/DC • 120 VAC • 230 VAC single phase	Do you need a step down transformer?  If replacing an oil immersed gear train actuator, is the transformer in the defective actuator? You may need to purchase one.	❑ 24 VAC ❑ 120 VAC ❑ 230 VAC
8 What is the control signal to the actuator?	 • 2 position • Floating point • Modulating • Sequencing • "Non-standard" voltage signals This will be a critical component to the selection of an actuator. Consider the …MFT actuator product range and the flexibility of its application.	❑ On/Off ❑ Floating Point ❑ 2-10 VDC ❑ 0-10 VDC ❑ 4-20 mA ❑ PWM____ range ❑ Other (MFT)
9 Can you direct couple to a damper shaft?	 Direct-coupling has become the industry standard. Some retrofit applications do not allow direct coupling. Refer to the Belimo "Mounting & Methods Guide" for application details.	❑ Yes ❑ No, see accessories page
10 Are there additional accessories required?	 For example, some applications require the addition of an auxiliary switch for proof of position; a retrofit application may require an additional mounting bracket and linkage kit. We advise that you identify these needs prior to leaving the job site or ordering products.	❑ No ❑ Yes, see accessories section or actuator series for details

TYPICAL DAMPER REQUIREMENTS AND SIZING

Square Damper (with square shape): $ft^2 = h \times w / 144$; (h= height, w= width, in inches)

EXAMPLE: Damper Area (8 ft^2) x Rated Torque Loading of Damper (4 in-lb/ft^2) = Total in-lb Required (32 in-lb) **Belimo LF 35 in-lb/ LM 45 in-lb actuators**

		Torque Loading in-lb/ft^2		
	Damper Blade Type	**< 1000 FPM**	**1000-2500 FPM**	**2500-3500 FPM**
SQUARE	Parallel blade/edge seals	**7 (Typical)**	10.5	14
SQUARE	Opposed blade/edge seals	**5 (Typical)**	7.5	10
SQUARE	Parallel blade/no edge seals	4	6	8
SQUARE	Opposed blade/no edge seals	3	4.5	6
SQUARE	Round	10	14	20

TYPICAL DAMPER REQUIREMENTS AND SIZING EXAMPLE:

APPLICATION REQUIREMENTS	SQUARE DAMPER	ROUND DAMPER
Damper Length	24"	
Damper Width	12"	
Damper (Round)		12"
Blade Type	Opposed	Round
Edge Seals	Edge Seals	
Design CFM	1800 CFM	700 CFM
Fail Safe	Yes	Yes
Supply Voltage	24 Volt	24 Volt
Control Signal	2-10 VDC	2-10 VDC
CALCULATIONS		
Damper Area (sq inches)	24" x 12" = 288 in^2	πr^2 =113.04 in^2
Damper Area (sq feet)*	288 in^2 x 1ft/12 in x 1ft/12 in = 2 ft^2	113.04 in^2 / 1ft/12in x 1ft/12in=.785 ft^2
Velocity	1800 ft^3/min / 2 ft^2 = 900 ft/min	700 ft^3/min / .785 ft^2 = 892 ft/min
	See chart under <1000 FPM (ft/min)	See chart under <1000 FPM (ft/min)
Rated Torque Loading (in-lb/ft^2)**	Select 5 in-lbs/ft^2 for Opposed Blade/Edge Seals	Select 10 in-lbs/ft^2 for Round Damper
EXAMPLE EQUATION	***Damper Area (sq ft) x **Rated Torque Loading of Damper (in-lbs/ft^2) = Total in-lb Required**	
	2 ft^2 x 5 in-lbs/ft^2 = 10 in-lbs Belimo LF24-SR US @ 35 in-lbs	.785 ft^2 x 10 in-lbs/ft^2 = 7.85 in-lbs Belimo LF24-SR US @ 35 in-lbs

CONTROL SIGNAL OVERVIEW

Belimo actuators are compatible with many control inputs and all direct digital control (DDC) systems. There are many signals to select from with today's controllers.

What does 'on/off', 'open-close', '3-point', 'tri-state', 'floating point', 'proportional modulation', 'phase cut', 'PWM' or 'MFT' mean?

Belimo will help you understand more on this control signal jungle with a quick overview:

On/Off or Open-Close: The actuator is able to drive either to its full open position, or to its full closed position. The same indication is used for spring return type actuators. Where the actuator will drive to its full open position and spring return to its zero position. This can also be reversed.

3-point, Tri-State, Floating Point: The actuator has both clockwise (CW) and counter-clockwise (CCW) control inputs. One drives the actuator to its open, the other to its close position. If there is no signal (Null point) on either input the actuator simply stays in its last position.

Proportional Control: The actuator drives proportional to its control input and modulates throughout its angle of rotation. This control type is usually a variation of VDC. Common values are:

0-10 VDC 2-10 VDC

It is common to also have a 0-20/4-20 mA output from a controller. This can be very easily converted to 0-10 VDC or 2-10 VDC with a 500 Ω resistor.

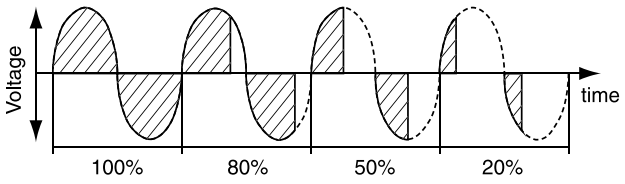
Pulse Width Modulation (PWM): The actuator drives to a specified position according to a pulse duration, the "length" of signal. The pulse can originate from a dry contact closure or a triac sink or source controller. An example of PWM control:

Time base: 0 to 10 seconds

Output pulse: 5 seconds

Actuator position: 50%

Phasecut: An actuator drives depending on the power result of a remaining wave. This signal type cuts the amplitude of the wave and the actuator recognizes this signal as a proportional movement.



Multi-Functional Technology (MFT): This technology was developed by Belimo for incorporation into our damper and valve actuator. MFT provides the ability to program characteristics of the actuator. Some of the key characteristics to change are:

CONTROL INPUT
selectable On/Off, VDC, PWM or Floating point

MOTION VALUES
selectable Running time adjustment

FEEDBACK
selectable feedback values

Replacement of Discontinued Belimo Products

When replacing an actuator, whether Belimo or other, be sure to consider the application parameters before selecting the replacement. The new product may not be the best fit for the application.

An example would be an existing SM24-SR US mounted to a valve linkage. The direct replacement of the actuator is the AMX24-MFT. However, the SM… and AM… are different lengths, the linkage would need to be replaced as well. When retrofitting or replacing actuators, it is always best to select the new product based on application parameters. This ensures the selected actuator is fit for the application.

SPRING RETURN

DISCONTINUED	CORRECT REPLACEMENT
LF24-SR-MP US	LF24-MFT-20 US
LF24-SR-S-MP US	LF24-MFT-S-20 US
NF230 US	NFBUP
NF230-S US	NFBUP-S
SF24 US	AF24 US
SF24-S US	AF24-S US
SF120 US	AF120 US
SF120-S US	AF120-S US
FM24 US	AF24 US
FM24-SR US	AF24-SR US
FM24-SR90 US	AFB24-MFT95
FM24-SR95 US	AFB24-MFT95
FS24	AF24 US
FS24-S	AF24-S US
AFR24 US	AF24 US
AFR24-S US	AF24-S US
AFR120 US	AF120 US
AFR120-S US	AF120-S US
AF24-3 US	AFB24-MFT + P-300…

DISCONTINUED	CORRECT REPLACEMENT
AFR24-3 US	AFB24-MFT + P-300…
AF24-3-S US	AFB24-MFT-S + P-300…
AFR24-3-S US	AFB24-MFT-S + P-300…
AFR24-SR US	AF24-SR US
AF24-SR-S US	AFB24-MFT-S + P-100…
AF24-SR95 US	AFB24-MFT95
AF24-PWM US	AFB24-MFT + P-200…
AF24-SR US*	AF24-PC US if phasecut is needed
AF24-MFT US	AFB24-MFT
AF24-MFT-S US	AFB24-MFT-S
AF24-MFT95 US	AFB24-MFT95
NF24 US	NFB24
NF24-S US	NFB24-S
NF24-S2 US	NFB24-S
NF120 US	NFBUP
NF120-S US	NFBUP-S
NF24-SR US	NFB24-SR
NF24-SR-S US	NFB24-SR-S
NF24-MFT US	NFB24-MFT

NON-SPRING RETURN

DISCONTINUED	CORRECT REPLACEMENT
LM24-SR US	LMB24-SR
LM24-SR.1 US	LMB24-SR.1
LM24-SR-2.0 US	LMB24-SR
LM24-SR-T US	LMB24-SR-T
LM24-SR-T.1 US	LMB24-SR-T.1
LM24-SR-T-2.0 US	LMB24-SR-T
LMC24-SR US	LMCB24-SR
LM24-MFT US	LMX24-MFT + # LM100 1C1 ❑ ❑ ❑
LM24-MFT.1 US	LMX24-MFT+ # LM100 1C1 ❑ ❑ ❑
NM24 US	NMB24-3
NM24-1 US	NMB24-3
NM24 EU	NMB24-3
NM24-1/200 US	NMX24-3 + # NM00 1C3 000
NM24-1/300 US	NMX24-3 + # NM00 1C3 000
NM24-SR US	NMB24-SR
NM24-SRS US	NMX24-MFT + # NM100 1C1 A ❑ ❑
NM24-PWM US	NMX24-MFT + # NM100 1C1 W ❑ ❑
NM24-MFT US	NMX24-MFT + # NM100 1C1 ❑ ❑ ❑
NM24-MFT.1 US	NMX24-MFT + # NM100 1C1 ❑ ❑ ❑
NMQ24-MFT US	NMQ24-MFT
NMV24-D US	NMV-D2M US, contact Belimo for support
NMV24-V US	NMV-D2M US, contact Belimo for support

DISCONTINUED	CORRECT REPLACEMENT
AM24 US	AMB24-3
AM24-S US	AMB24-3-S
AM24-SR US	AMB24-SR
AM24-PWM-A US	AMX24-MFT + # AM100 1C1 W02
AM24-PWM-B US	AMX24-MFT + # AM100 1C1 W03
AM24-PWM-C US	AMX24-MFT + # AM100 1C1 W01
AM24-SRS-A US	AMX24-MFT + # AM100 1C1 A04
AM24-SRS-B US	AMX24-MFT + # AM100 1C1 A05
AM24-SRS-C US	AMX24-MFT + # AM100 1C1 A06
AM24-PC US	AMX24-PC + # AM0N0 1C1 ❑ ❑ ❑
AM24-MFT US	AMX24-MFT + # AM100 1C1 ❑ ❑ ❑
AM24-MFT 95 US	AMX24-MFT95 + # AM0L0 1C1 R01
SM24 US	AMB24-3
SM24-S US	AMX24-MFT + # AM110 1C1 ❑ ❑ ❑ + S1A/S2A
SM24-SR US	AMB24-SR
SM24-SR US	AMX24-PC if phasecut is needed
SM24-SRS US	AMX24-MFT + # AM100 1C1 A ❑ ❑
SM24-SR94 US	AMX24-MFT95 + # AM0L0 1C1 R01
GM24 US	GMB24-3
GM24-SR US	GMB24-SR
GM24-SR US	GMX24-PC if phasecut is needed
GM24-MFT US	GMX24-MFT+ # GM110 1C1 ❑ ❑ ❑

† For correct reorder # please call Belimo customer service at 800-543-9038.
* Purchased before May 2003.
❑ Placeholder for custom options.

Replacement of Discontinued Belimo Valve Products

When replacing an actuator, whether Belimo or other, be sure to consider the application parameters before selecting the replacement.

The new product may not be the best fit for the application.

An example would be an existing MAR actuator mounted to a valve linkage. The direct replacement of the actuator would be the SY series actuator. However, the MAR and the SY have different linkage construction, and the linkage would need to be replaced as well. When retrofitting or replacing actuators, it is always best to select the new product based on application parameters. This ensures the selected actuator is fit for the application.

Please consult Belimo for assistance with valve actuator replacement.

SPRING RETURN	
DISCONTINUED MODEL #	**REPLACEMENT**
LF24-SR-MP US	LF24-MFT-20 US
LF24-SR-S-MP US	LF24-MFT-S-20 US
AF24-3 US	AFX24-MFT + P-300..
AF24-3-S US	AFX24-MFT-S + P-300..
AF24-SR-S US	AFX24-MFT-S + P-100..
AF24-SR95 US	AFB24-MFT95
AF24-PWM US	AFX24-MFT + P-200..

NON-SPRING RETURN	
DISCONTINUED MODEL #	**REPLACEMENT**
LV24 US	CCV with LR... or TR….
LV24/200 US	CCV with LR... or TR….
LV24/300 US	CCV with LR... or TR….
LV24-3 US	CCV with LR... or TR….
LV24-1 US	CCV with LR... or TR….
LV24-1/200 US	CCV with LR... or TR….
LV24-1/300 US	CCV with LR... or TR….
LV24-3-1 US	CCV with LR... or TR….
LV24-SR US	CCV with LR... or TR….
LV24-SR/200 US	CCV with LR... or TR….
LV24-SR/300 US	CCV with LR... or TR….
LV24-SR-1 US	CCV with LR... or TR….
LV24-SR-1/200 US	CCV with LR... or TR….
LV24-SR-1/300 US	CCV with LR... or TR….
LV24-SR-1-2.0 US	CCV with LR... or TR….
LV24-SR-1-2.0/200 US	CCV with LR... or TR….
LV24-SR-1-2.0/300 US	CCV with LR... or TR….
LR24 US	LRB24-3
LR24-MFT US	LRX24-MFT + # LR100 RC1 ❑ ❑ ❑
LR24/200 US	LRX24-3 + # LR000 RC3 002
LR24/300 US	LRX24-3 + # LR000 RC3 002
LR24-1 US	LRB24-3
LR24-1/200 US	LRX24-3 + # LR000 RC3 002
LR24-1/300 US	LRB24-3 + # LR000 RC3 002
LR24-3-1 US	LRB24-3
LR24-3-1/200 US	LRX24-3 + # LR000 RC3 002
LR24-3-1/300 US	LRX24-3 + # LR000 RC3 002
LR24-SR/200 US	LRX24-SR + # LR030 RC3 002
LR24-SR/300 US	LRX24-SR + # LR030 RC3 002
LR24-SR-1 US	LRB24-SR
LR24-SR-1/200 US	LRX24-SR + # LR030 RC3 002
LR24-SR-1/300 US	LRX24-SR + # LR030 RC3 002
LR24-SR-1-2.0 US	LRB24-SR
LR24-SR-1-2.0/200 US	LRX24-SR + # LR030 RC3 002
LR24-SR-1-2.0/300 US	LRX24-SR + # LR030 RC3 002
LR24-SR-2.0 US	LRB24-SR
LR24-SR-2.0/200 US	LRX24-SR + # LR030 RC3 002
LR24-SR-2.0/300 US	LRX24-SR + # LR030 RC3 002
LR24-MFT/200 US	LRX24-MFT + # LR100 RC3 ❑ ❑ ❑
LR24-MFT/300 US	LRX24-MFT + # LR100 RC3 ❑ ❑ ❑

❑ Placeholder for custom options.
*Consider ambient temperature for application.

NON-SPRING RETURN	
DISCONTINUED MODEL #	**REPLACEMENT**
NR24-3 US*	LRB24-3
NR24-SR US*	LRX24-MFT + # LR100 RC1 ❑ ❑ ❑
NM24 US	ARB24-3
NM24-SR US	ARX24-SR + # AR030 RC1 ❑ ❑ ❑
NM24-MFT US	ARX24-MFT + # AR100 RC1A ❑ ❑
NM24-SRS US	ARX24-MFT + # AR100 RC1W ❑ ❑
AM24 US	ARB24-3
AM24-S US	ARB24-S US
AM24-MFT US	ARX24-MFT + # AR100 RC1 ❑ ❑ ❑

NON-SPRING RETURN – 24 VAC		NON-SPRING RETURN – 24 VAC	
DISCONTINUED MODEL	**Torque**	**REPLACEMENT**	**Torque**
MAR100B-24V	1,500	SY4-24	3,560
MAR160-B-24V	2,000	SY4-24	3,560
MAR100BP-24V	1,800	SY4-24MFT	3,560
MAR160-BP-24V	2,500	SY4-24MFT	3,560
MAR250-60-24V	5,000	SY5-24	4,450
MAR250-60P-24V	5,000	SY5-24MFT	4,450

*Linkage may need to be changed also.

NON-SPRING RETURN – 110 VAC		NON-SPRING RETURN – 110 VAC	
DISCONTINUED MODEL	**Torque**	**REPLACEMENT**	**Torque**
MAR95-15B	1,000	SY3-110	1,335
MAR95-15BP	1,000	SY3-120MFT	1,335
MAR100B	1,500	SY4-110	3,559
MAR160B	2,000	SY4-110	3,560
MAR100BP	1,800	SY4-120MFT	3,560
MAR160-BP	2,500	SY4-120MFT	3,560
MAR250-30	5,000	SY5-110	4,450
MAR250-30P	5,000	SY5-120MFT	4,450
		SY6-110	6,450
		SY6-120MFT	6,450
MAR800-30	10,000	SY7-110	9,790
MAR800-30P	10,000	SY7-120MFT	9,790
		SY8-110	13,350
		SY8-120MFT	13,350
MAR1600-70	21,000	SY10-110	22,250
MAR1600-70P	21,000	SY10-120MFT	22,250
MAR4000-70	48,000	SY12-110	31,150
MAR4000-70P	48,000	SY12-120MFT	31,150

*Linkage may need to changed also.

SPRING RETURN – 110 VAC		NON-SPRING RETURN – 110 VAC	
DISCONTINUED MODEL	**Torque**	**REPLACEMENT**	**Torque & Battery System**
Sure49-30-CW	600	SY3-110	1,335 + NSV-SY-01
Sure100-30-CW	1,200	SY3-110	1,335 + NSV-SY-01
Sure49-30P-CW	600	SY3-120MFT	1,335 + NSV-SY-02
Sure100-30P-CW	1,200	SY3-120MFT	1,335 + NSV-SY-02

*Linkage may need to changed also.

Retrofit and Replacement

Discontinued Belimo Products

BELIMO

Zone Valves*							
Discontinued Model #	Size	C_V Rating	Close-off	**Replacement**	Size	C_V Rating	Close-off
Z214T+SEF24 NO	½"	2.3	43.5	ZONE215N-10+ZONE24NO ZONE215N-25+ZONE24NO	½"	1 2.5	75 50
Z215T+SEF24 NO	½"	3.7	30	ZONE215N-35+ZONE24NO	½"	3.5	30
Z220T+SEF24 NO	¾"	3.7	30	ZONE220N-35+ZONE24NO ZONE220N-50+ZONE24NO	¾"	3.5 5	30
Z214T+SEF120 NO	½"	2.3	43.5	ZONE215N-10+ZONE120NO ZONE215N-25+ZONE120NO	½"	1 2.5	75
Z215T+SEF120 NO	½"	3.7	30	ZONE215N-35+ZONE120NO	½"	3.5	30
Z220T+SEF120 NO	¾"	3.7	30	ZONE220N-35+ZONE120NO ZONE220N-50+ZONE120NO	¾"	3.5 5	30 25
Z214T+SEF24 NC	½"	2.3	43.5	ZONE215N-10+ZONE24NC ZONE215N-25+ZONE24NC	½"	1 2.5	75 50
Z215T+SEF24 NC	½"	3.7	30	ZONE215N-35+ZONE24NC	½"	3.5	30
Z220T+SEF24 NC	¾"	3.7	30	ZONE220N-35+ZONE24NC ZONE220N-50+ZONE24NC	¾"	3.5 5	30 25
Z214T+SEF120 NC	½"	2.3	43.5	ZONE215N-10+ZONE120NC ZONE215N-25+ZONE120NC	½"	1 2.5	75 50
Z215T+SEF120 NC	½"	3.7	30	ZONE215N-35+ZONE120NC	½"	3.5	30
Z220T+SEF120 NC	¾"	3.7	30	ZONE220N-35+ZONE120NC ZONE220N-50+ZONE120NC	¾"	3.5 5	30 25
Z214T+SEF24 NC	½"	2.3	43.5	ZONE215N-10+ZONE24NC ZONE215N-25+ZONE24NC	½"	1 2.5	75 50
Z215T+SEF24 NC	½"	3.7	30	ZONE215N-35+ZONE24NC	½"	3.5	30
Z220T+SEF24 NC	¾"	3.7	30	ZONE220N-35+ZONE24NC ZONE220N-50+ZONE24NC	¾"	3.5 5	30 25
Z214T+SEF120 NC	½"	2.3	43.5	ZONE215N-10+ZONE120NC ZONE215N-25+ZONE120NC	½"	1 2.5	75 50
Z215T+SEF120 NC	½"	3.7	30	ZONE215N-35+ZONE120NC	½"	3.5	30
Z220T+SEF120 NC	¾"	3.7	30	ZONE220N-35+ZONE120NC ZONE220N-50+ZONE120NC	¾"	3.5 5	30 25
Z315T+SEF24 NC	½"	5	30	ZONE315N-10+ZONE24NC ZONE315N-25+ZONE24NC ZONE315N-35+ZONE24NC	½"	1 2.5 3.5	75 50 30
Z315T+SEF120 NC	½"	5	30	ZONE315N-10+ZONE120NC ZONE315N-25+ZONE120NC ZONE315N-35+ZONE120NC	½"	1 2.5 3.5	75 50 30
Z320T+SEF24 NC	¾"	5.4	30	ZONE320N-35+ZONE24NC ZONE320N-50+ZONE24NC	¾"	3.5 5	30 25
Z320T+SEF120 NC	¾"	5.4	30	ZONE320N-35+ZONE120NC ZONE320N-50+ZONE120NC	¾"	3.5 5	30 25
Z814T+SEF24 NO	½"	2.3	43.5	ZONE215S-10+ZONE24NC ZONE215S-25+ZONE24NC	½"	1 2.5	75 50
Z815T+SEF24 NO	½"	3.7	30	ZONE215S-35+ZONE24NO	½"	3.5	30
Z820T+SEF24 NO	¾"	3.7	30	ZONE220S-35+ZONE24NO ZONE220S-50+ZONE24NO	¾"	3.5 5	30 25
Z814T+SEF120 NO	½"	2.3	43.5	ZONE215S-10+ZONE120NO ZONE215S-25+ZONE120NO	½"	1 2.5	75 50
Z815T+SEF120 NO	½"	3.7	30	ZONE215S-35+ZONE120NO	½"	3.5	30
Z820T+SEF120 NO	¾"	3.7	30	ZONE220S-35+ZONE120NO ZONE220S-50+ZONE120NO	¾"	3.5 5	30 25
Z814T+SEF24 NC	½"	2.3	43.5	ZONE215S-10+ZONE24NC ZONE215S-25+ZONE24NC	½"	1 2.5	75 50
Z815T+SEF24 NC	½"	3.7	30	ZONE215S-35+ZONE24NC	½"	3.5	30
Z820T+SEF24 NC	¾"	3.7	30	ZONE220S-35+ZONE24NC ZONE220S-50+ZONE24NC	¾"	3.5 5	30 25
Z814T+SEF120 NC	½"	2.3	43.5	ZONE215S-10+ZONE120NC ZONE215S-25+ZONE120NC	½"	1 2.5	75 50
Z815T+SEF120 NC	½"	3.7	30	ZONE215S-35+ZONE120NC	½"	3.5	30
Z820T+SEF120 NC	¾"	3.7	30	ZONE220S-35+ZONE120NC ZONE220S-50+ZONE120NC		3.5 5	30 25
Z915T+SEF24 NC	½"	5	30	ZONE315S-10+ZONE24NC ZONE315S-25+ZONE24NC ZONE315S-35+ZONE24NC	½"	1 2.5 3.5	75 50 30
Z915T+SEF120 NC	½"	5	30	ZONE315S-10+ZONE120NC ZONE315S-25+ZONE120NC ZONE315S-35+ZONE120NC	½"	1 2.5 3.5	75 50 30
Z920T+SEF24 NC	¾"	5.4	30	ZONE320S-35+ZONE24NC ZONE320S-50+ZONE24NC	¾"	3.5 5	30 25
Z920T+SEF120 NC	¾"	5.4	30	ZONE320S-35+ZONE120NC ZONE320S-50+ZONE120NC	¾"	3.5 5	30 25

***Please Note:** The recommended replacements must be considered depending on the C_V rating and Close-off requirement involving your application.

Replacement of Competitor Fire and Smoke Actuators

DISCLAIMER:

Each damper manufacturer tests the actuator and their damper individually and achieved different results.

One cannot simply match actuator to actuator without checking the application.

The rated ambient torque is not the deciding factor in selecting an actuator. The UL555S test is the correct selection criteria.

Different methods were employed by different manufacturers to achieve the fire spring closed function. For example, Pottorff with the MA220 used a single spring. To replace the MA220, no longer made, the fusible link must be removed and a themal sensor installed. Alternately, Ruskin used an external spring and a thermal sensor that is simple to remove and mount a Belimo.

Note that while repair of any fire and smoke damper is required by codes, a permit and retest may be required if the replacement is not an ordinary repair. Where any fire alarm wiring is touched or any structural changes are made, the fire department or building official must be consulted.

Go to *www.belimo.us/firesmoke* for detailed instructions for each damper manufacturer.

Legend	
COMPETITOR "WHITE"	**BELIMO**

	Model Numbers											
NOTES	**HONEYWELL**	**BELIMO**	**Spring Return**		**Control Signal**	**Power**		**Torque (in-lb)**		**Timing (seconds)**	**Timing Drive/Spring**
Use FSNF for dampers >4 sq.ft.	ML4105A1000	**FSLF120**	Yes	**Yes**	On/Off	120	**120**	30	**30**	14, 25, 75	**15**
All HW 50 in-lb passed UL555S same damper sizes as FSLF. Torque ratings were changed.	ML4105B1009	**FSLF120**	Yes	**Yes**	On/Off	120	**120**	30	**30**	14, 25, 75	**15**
	M4105C1008	**FSLF230**	Yes	**Yes**	On/Off	230	**230**	30	**30**	14, 25, 75	**15**
	ML4105D1007	**FSLF230**	Yes	**Yes**	On/Off	230	**230**	30	**30**	14, 25, 75	**15**
	ML4115A1009	**FSLF120**	Yes	**Yes**	On/Off	120	**120**	30	**30**	18	**15**
	ML4115B1008	**FSLF120**	Yes	**Yes**	On/Off	120	**120**	30	**30**	18	**15**
	ML4115C	**FSLF230**	Yes	**Yes**	On/Off	230	**230**	30	**30**	18	**15**
	ML4115D	**FSLF230**	Yes	**Yes**	On/Off	230	**230**	30	**30**	18	**15**
	ML4115H	**FSLF120**	Yes	**Yes**	On/Off	120	**120**	30	**30**	18	**15**
	ML4115J	**FSLF120**	Yes	**Yes**	On/Off	120	**120**	30	**30**	18	**15**
	ML4202	**FSLF120**	Yes	**Yes**	On/Off	120	**120**	20	**30**	25	**15**
	ML4302	**FSLF120**	Yes	**Yes**	On/Off	120	**120**	20	**30**	25	**15**
	ML4702	**FSLF230**	Yes	**Yes**	On/Off	230	**230**	20	**30**	25	**15**
	ML4802	**FSLF230**	Yes	**Yes**	On/Off	230	**230**	20	**30**	25	**15**
	ML8105A1006	**FSLF24**	Yes	**Yes**	On/Off	24	**24**	30	**30**	25	**15**
	ML8105B1005	**FSLF24**	Yes	**Yes**	On/Off	24	**24**	30	**30**	25	**15**
	ML8115A1005	**FSLF24**	Yes	**Yes**	On/Off	24	**24**	30	**30**	18	**15**
	ML8115B1004	**FSLF24**	Yes	**Yes**	On/Off	24	**24**	30	**30**	18	**15**
	ML8115H	**FSLF24**	Yes	**Yes**	On/Off	24	**24**	30	**30**	22	**15**
	ML8115J	**FSLF24**	Yes	**Yes**	On/Off	24	**24**	30	**30**	22	**15**
	ML8202	**FSLF24**	Yes	**Yes**	On/Off	24	**24**	20	**30**	25	**15**
	ML8302	**FSLF24**	Yes	**Yes**	On/Off	24	**24**	20	**30**	25	**15**
Single FSAF is limited to 12 sq.ft. & 250ºF. If fast speed needed, use FSNF.	MS4120F1006	**FSAF120**	Yes	**Yes**	On/Off	120	**120**	175	**133**	15	**<75/20**
	MS4120F1204	**FSAF120-S**	Yes	**Yes**	On/Off	120	**120**	175	**133**	15	**<75/20**
UL555S listing of FSNF is 8 sq.ft. 350ºF for Ruskin. 12 sq.ft. for others 350ºF.	MS4209F	**FSNF120**	Yes	**Yes**	On/Off	120	**120**	80	**70**	14, 25, 75	**15**
	MS4309F	**FSNF120**	Yes	**Yes**	On/Off	120	**120**	80	**70**	14, 25, 75	**15**
Single FSAF is limited to 12 sq.ft. & 250ºF. If fast speed needed, use FSNF.	MS4620F1005	**FSAF230**	Yes	**Yes**	On/Off	230	**230**	175	**133**	15	**<75/20**
	MS4620F1203	**FSAF230-S**	Yes	**Yes**	On/Off	230	**230**	175	**133**	15	**<75/20**
UL555S listing of FSNF is 8 sq.ft. 350ºF for Ruskin. 12 sq.ft. for others 350ºF.	MS4709F	**FSNF230**	Yes	**Yes**	On/Off	230	**230**	80	**70**	14, 25, 75	**15**
	MS4809F	**FSNF230**	Yes	**Yes**	On/Off	230	**230**	80	**70**	14, 25, 75	**15**
Single FSAF is limited to 12 sq.ft. & 250ºF. If fast speed needed, use FSNF.	MS8120F1002	**FSAF24**	Yes	**Yes**	On/Off	24	**24**	175	**133**	15	**<75/20**
	MS8120F1200	**FSAF24-S**	Yes	**Yes**	On/Off	24	**24**	175	**133**	15	**<75/20**
UL555S listing of FSNF is 8 sq.ft. 350ºF for Ruskin. 12 sq.ft. for others 350ºF.	MS8209F	**FSNF24**	Yes	**Yes**	On/Off	24	**24**	80	**70**	14, 25, 75	**15**
	MS8309F	**FSNF24**	Yes	**Yes**	On/Off	24	**24**	80	**70**	14, 25, 75	**15**
Auxiliary switch packages	32003532-002 Aux Switch Package	**Use Belimo -S models**	N/A	**N/A**	N/A	N/A	**N/A**	N/A	**N/A**	N/A	**N/A**

ECM	Some replacements are possible. Call Belimo.
Phillips T150	FSNF or FSAF. Instructions at www.belimo.us/bellib/Fire_and_Smoke_Actuators/Ruskin_Phillips_P150_to_Belimo_Instructions.pdf
Prefco	5800 EMB 2x and other models. If damper shaft is present, replacement is possible. Call Belimo.
Proportional	Various models of HW and other proportional can be replaced. FSAF24-SR and FSAF24-BAL data sheets are available.
Pneumatic	AHJ permission, permit, and inspection necessary. Call Belimo.

Model Numbers

NOTES	RUSKIN	BELIMO	Spring Return		Control Signal	Power		Torque (in-lb)		Timing (seconds)	Timing Drive/Spring
The Ruskin/HW motors vary irregularly in torque. Use damper size to select. >4 sq.ft. use FSNF.	H-2000A/3 Low	**FSLF120**	Yes	**Yes**	On/Off	120	**120**	20	**30**	25 nominal	**15**
	H-2000A/6 Medium	**FSNF120**	Yes	**Yes**	On/Off	120	**120**	42	**70**	25 nominal	**15**
	H-2000A/8 High	**FSNF120**	Yes	**Yes**	On/Off	120	**120**	56	**70**	25 nominal	**15**
	H-2000B/3 Low	**FSLF120**	Yes	**Yes**	On/Off	120	**120**	20	**30**	25 nominal	**15**
	H-2000B/6 Medium	**FSNF120**	Yes	**Yes**	On/Off	120	**120**	42	**30**	25 nominal	**15**
	H-2000B/8 High	**FSNF120**	Yes	**Yes**	On/Off	120	**120**	56	**30**	25 nominal	**15**
	H-2024A/3 Low	**FSLF24**	Yes	**Yes**	On/Off	24	**24**	20	**30**	25 nominal	**15**
	H-2024A/6 Medium	**FSNF24**	Yes	**Yes**	On/Off	24	**24**	42	**70**	25 nominal	**15**
	H-2024A/8 High	**FSNF24**	Yes	**Yes**	On/Off	24	**24**	56	**70**	25 nominal	**15**
	H-2024B/3 Low cw	**FSLF24**	Yes	**Yes**	On/Off	24	**24**	20	**30**	25 nominal	**15**
	H-2024B/6 Medium	**FSNF24**	Yes	**Yes**	On/Off	24	**24**	42	**70**	25 nominal	**15**
	H-2024B/8 High	**FSNF24**	Yes	**Yes**	On/Off	24	**24**	56	**70**	25 nominal	**15**
	H-2230A/3 Low	**FSLF230**	Yes	**Yes**	On/Off	230	**230**	20	**30**	25 nominal	**15**
	H-2230A/6 Medium	**FSNF230**	Yes	**Yes**	On/Off	230	**230**	42	**70**	25 nominal	**15**
	H-2230A/8 High	**FSNF230**	Yes	**Yes**	On/Off	230	**230**	56	**70**	25 nominal	**15**
	H-2230B/3 Low	**FSLF230**	Yes	**Yes**	On/Off	230	**230**	20	**30**	25 nominal	**15**
	H-2230B/6 Medium	**FSNF230**	Yes	**Yes**	On/Off	230	**230**	42	**70**	25 nominal	**15**
	H-2230B/8 High	**FSNF230**	Yes	**Yes**	On/Off	230	**230**	56	**70**	25 nominal	**15**

NOTES	MULTIPRODUCTS	BELIMO	Spring Return		Control Signal	Power		Torque (in-lb)		Timing (seconds)	Timing Drive/Spring
Call Belimo. Most can be replaced but investigation into fusible link and spring method is required. See Belimo Fire and Smoke Cross Reference and Installation Instructions at www.belimo.us/firesmoke											
Call Ruskin rep. MP is a Ruskin kit.	MP2781	**FSLF120/MP**	No	**Yes**	On/Off	115	**120**	10	**30**	No Data	**15**
See Greenheck Installation Instructions	MP2585, 2986	**FSLF120**	No	**Yes**	On/Off	120	**120**	30	**30**	30	**15**

NOTES	SIEMENS	BELIMO	Spring Return		Control Signal	Power		Torque (in-lb)		Timing (seconds)	Timing Drive/Spring
One FSAF is limited to 12 sq.ft. & 250ºF. May be paralleled. If fast speed is required, use FSNF. It is UL555S listed for 8 sq.ft. at 350ºF with Ruskin, 12 sq.ft. with others, and 16 sq.ft. at 250ºF.	GGD121.1U	**FSAF24 US**	Yes	**Yes**	On/Off	24	**24**	142	**133**	15	**<75/20**
	GGD121.3U	**FSAF24 US**	Yes	**Yes**	On/Off	24	**24**	142	**133**	15	**<75/20**
	GGD221.1U	**FSAF120 US**	Yes	**Yes**	On/Off	115	**120**	142	**133**	15	**<75/20**
	GGD221.3U	**FSAF120 US**	Yes	**Yes**	On/Off	115	**120**	142	**133**	15	**<75/20**
	GGD321.1U	**FSAF230 US**	Yes	**Yes**	On/Off	230	**230**	142	**133**	15	**<75/20**
	GND12x.1x	**FSLF24**	Yes	**Yes**	On/Off	24	**24**	50	**30**	15	**15**
	GND22x.1x	**FSLF120**	Yes	**Yes**	On/Off	120	**120**	50	**30**	15	**15**
	GND32x.1x	**FSLF230**	Yes	**Yes**	On/Off	230	**230**	50	**30**	15	**15**
This is a 165ºF thermal sensor. Call for information.	ASK79.165	**BAE165 US**									

NOTES	SIEBE	BELIMO	Spring Return		Control Signal	Power		Torque (in-lb)		Timing (seconds)	Timing Drive/Spring
See General Notes	MA220	**FSLF120**	No	**Yes**	On/Off	120	**120**	< 3 sq.ft	**30**	20	**15**
In all cases, disconnect external motor spring.	MA221	**FSLF230**	No	**Yes**	On/Off	240	**240**	< 3 sq.ft	**30**	20	**15**
	MA223	**FSLF24**	No	**Yes**	On/Off	24	**24**	< 3 sq.ft	**30**	20	**15**
	MA230	**FSNF120 US**	No	**Yes**	On/Off	120	**120**	up to 8 sq.ft.	**70**	15	**15**
	MA231	**FSNF230 US**	No	**Yes**	On/Off	240	**240**	up to 8 sq.ft.	**70**	15	**15**
	MA233	**FSNF24 US**	No	**Yes**	On/Off	24	**24**	up to 8 sq.ft.	**70**	30	**15**
Replace damper	MA240	**None**	No								
If damper is < 4 sq.ft. FSLF	MA250	**FSNF120 US**	No	**Yes**	On/Off	120	**120**		**70**	15	**15**
	MA251	**FSNF230 US**	No	**Yes**	On/Off	230	**230**		**70**	15	**15**
	MA253	**FSNF24 US**	No	**Yes**	On/Off	24	**24**		**70**	15	**15**
UL555S listing of FSNF is 8 sq.ft. 350ºF for Ruskin. 12 sq.ft. for others 350ºF.	MA-318	**FSNF24 US**	Yes	**Yes**	On/Off	24	**24**	60	**70**	20 (no load)	**15**
	MA-418	**FSNF120 US**	Yes	**Yes**	On/Off	120	**120**	60	**70**	20 (no load)	**15**
	MAxxx-500	**Use Belimo -S version**									

Auxiliary Switches

add S2A	2 auxiliary switches (add-on)
add S1A	1 auxiliary switch (add-on)
1	1 auxiliary switch (built-in)
2	2 auxiliary switches (built-in)

Legend	
HONEYWELL "WHITE"	**BELIMO**

✦ Belimo 24V actuators are AC/DC

Model Numbers

HONEYWELL	BELIMO	Spring Return	Control Signal		Power ✦		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
M4185A1001	**NFBUP**	Yes	On/Off	**On/Off**	120	**24-240**	60	**90**					30-60	**<75**
M4185B1009	**NFBUP-S**	Yes	On/Off	**On/Off**	120	**24-240**	60	**90**			1	**2**	30-60	**<75**
M4185B1058	**NFBUP-S**	Yes	On/Off	**On/Off**	100-230	**24-240**	60	**90**			1	**2**	30-60	**<75**
M4185C1007	**NFBUP-S**	Yes	On/Off	**On/Off**	120	**24-240**	60	**90**			2	**2**	30-60	**<75**
M6184A1015	**AMB24-3**	No	Floating	**On/Off, Floating**	24	**24**	150	**180**					30-60	**150**
M6184A1023	**NMX120-3**	No	Floating	**On/Off, Floating**	120	**120**	75	**90**					15-30	**45**
M6184D1001	**NMBC24-3**	No	Floating	**On/Off, Floating**	24	**24**	75	**90**					15-30	**45**
M6184D1035	**AMCX24-MFT**	No	Floating	**On/Off, Floating**	24	**24**	150	**180**		**2-10 VDC**			30-60	**35-adj**
M6184D1068	**AMX24-MFT**	No	Floating	**On/Off, Floating**	24	**24**	150	**180**		**2-10 VDC**			120-240	**150-adj**
M6184F1014	**AMCX24-MFT**	No	Floating	**On/Off, Floating**	24	**24**	150	**180**		**2-10 VDC**	2	**add S2A**	30-60	**35-adj**
M6194B1011	**GMB24-3**	No	Floating	**On/Off, Floating**	24	**24**	300	**360**			1	**add S1A**	60-120	**150**
M6194D1017	**GMB24-3**	No	Floating	**On/Off, Floating**	24	**24**	300	**360**					120-240	**150**
M6194E1006	**GMB24-3**	No	Floating	**On/Off, Floating**	24	**24**	300	**360**			1	**add S1A**	120-240	**150**
M6284A1055	**AMCX24-MFT***	No	Floating	**On/Off, Floating**	120	**24**	150	**180**		**2-10 VDC**			30-60	**35-adj**
M6284D1000	**AMCX24-MFT**	No	Floating	**On/Off, Floating**	24	**24**	150	**180**		**2-10 VDC**			30-60	**35-adj**
M6284F1013	**AMCX24-MFT**	No	Floating	**On/Off, Floating**	24	**24**	150	**180**		**2-10 VDC**	2	**add S2A**	30-60	**35-adj**
M6285A1005	**NFX24-MFT**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	60	**90**		**2-10 VDC**			30-60	**150-adj**
M6285C1001	**NFX24-MFT-S**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	60	**90**		**2-10 VDC**	2	**2**	30-60	**150-adj**
M6294D1008	**GMB24-3**	No	Floating	**On/Off, Floating**	24	**24**	300	**360**					120-240	**150**
M7164A1017	**LMCB24-SR**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	35	**35**		**2-10 VDC**			30-60	**35**
M7164G1030	**LMCB24-SR***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**24**	35	**35**		**2-10 VDC**			30-60	**35**
M7215A1008	**LF24-SR US**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	25	**35**	2-10 VDC	**2-10 VDC**			90	**95**
M7284A1004	**AMCX24-MFT***	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**24**	150	**180**		**2-10 VDC**			30-60	**35-adj**
M7284A1012	**AMCX24-MFT***	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**24**	150	**180**		**2-10 VDC**			30-60	**35-adj**
M7284A1038	**AMCX24-MFT***	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**120**	75	**180**		**2-10 VDC**			15-30	**35-adj**
M7284A1079	**AMCX24-MFT**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**180**		**2-10 VDC**			30-60	**35-adj**
M7284C1000	**AMCX24-MFT***	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**120**	150	**180**		**2-10 VDC**	2	**add S2A**	30-60	**35-adj**
M7284C1059	**AMCX24-MFT**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	150	**180**		**2-10 VDC**	2	**add S2A**	30	**35-adj**
M7284C1067	**AMCX24-MFT**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	150	**180**		**2-10 VDC**	2	**add S2A**	60	**35-adj**
M7284Q1009	**AMCX24-MFT***	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**120**	150	**180**		**2-10 VDC**	2	**add S2A**	30-60	**35-adj**
M7284Q1033	**AMCX24-MFT**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**180**		**2-10 VDC**	2	**add S2A**	30	**35-adj**
M7284Q1041	**AMCX24-MFT**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**180**		**2-10 VDC**	2	**add S2A**	60	**35-adj**
M7285A1003	**NFX24-MFT***	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**24**	50	**90**		**2-10 VDC**			30-60	**150-adj**
M7285A1045	**NFX24-MFT**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	50	**90**		**2-10 VDC**			30-60	**150-adj**
M7285C1009	**NFX24-MFT-S***	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**24**	50	**90**		**2-10 VDC**	2	**2**	30-60	**150-adj**
M7285Q1008	**NFX24-MFT-S***	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**24**	50	**90**		**2-10 VDC**	2	**2**	30-60	**150-adj**
M7286G1009	**NFX24-MFT**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	60	**90**		**2-10 VDC**			30-60	**150-adj**
M7294A1010	**GMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	300	**360**		**2-10 VDC**			60-120	**150**
M7294Q1007	**GMB24-SR***	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**24**	300	**360**		**2-10 VDC**	2	**add S2A**	60-120	**150**
M7415A1006	**LF24-ECON-R03 US**	Yes	Thermistor, 3000 ohm NTC	**Thermistor, 3000 ohm NTC**	24	**24**	25	**35**	2-10 VDC	**2-10 VDC**			90	**95**
M7415B1004	**LF24-ECON-R03 US**	Yes	Thermistor, 3000 ohm NTC	**Thermistor, 3000 ohm NTC**	24	**24**	25	**35**	2-10 VDC	**2-10 VDC**			90	**95**
M7685A1025	**NFX24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	60	**90**		**2-10 VDC**			30-60	**150-adj**
M8185D1006	**NFB24**	Yes	On/Off	**On/Off**	24	**24**	60	**90**					30-60	**<75**
M8405A1006	**LF24-SR-E US**	Yes	On/Off, Floating	**2-10 vdc, 4-20 ma**	24	**24**	25	**35**	2-10 VDC	**2-10 VDC**			90	**150-adj**
M9164A1005	**LMX24-MFT95***	No	0-135 ohm	**0-135 ohm**	120	**24**	35	**45**		**2-10 VDC**			30-60	**150-adj**
M9164A1013	**LMX24-MFT95***	No	0-135 ohm	**0-135 ohm**	100-230	**24**	35	**45**		**2-10 VDC**			30-60	**150-adj**
M9164A1013	**LMX24-MFT95***	No	0-135 ohm	**0-135 ohm**	100-230	**24**	35	**45**		**2-10 VDC**			30-60	**150-adj**
M9164A1070	**LMX24-MFT95**	No	0-135 ohm	**0-135 ohm**	24	**24**	35	**45**		**2-10 VDC**			30-60	**150-adj**
M9164C1001	**LMX24-MFT95**	No	0-135 ohm	**0-135 ohm**	24	**24**	35	**45**		**2-10 VDC**	2	**add S2A**	30-60	**150-adj**

Honeywell to Belimo

Actuator Replacement Cross Reference

BELIMO

HONEYWELL	BELIMO	Spring Return	Control Signal		Power ✦		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
M9164C1068	**LMX24-MFT95***	No	0-135 ohm	**0-135 ohm**	120	**120**	35	**45**		**2-10 VDC**	2	**add S2A**	30-60	**150-adj**
M9164D1009	**LMX24-MFT95**	No	0-135 ohm	**0-135 ohm**	24	**24**	35	**45**		**2-10 VDC**			30-60	**150-adj**
M9174B1027	**NMX24-MFT95***	No	0-135 ohm	**0-135 ohm**	120	**120**	75	**90**		**2-10 VDC**	1	**add S1A**	30-60	**150-adj**
M9174C1025	**NMX24-MFT95***	No	0-135 ohm	**0-135 ohm**	120	**120**	75	**90**		**2-10 VDC**	2	**add S2A**	30-60	**150-adj**
M9174C1033	**NMX24-MFT95***	No	0-135 ohm	**0-135 ohm**	120	**120**	75	**90**		**2-10 VDC**	2	**add S2A**	30-60	**150-adj**
M9174D1007	**NMX24-MFT95**	No	0-135 ohm	**0-135 ohm**	24	**24**	75	**90**		**2-10 VDC**			30-60	**150-adj**
M9184A1019	**AMX24-MFT95**	No	0-135 ohm	**0-135 ohm**	24	**24**	150	**180**		**2-10 VDC**			30-60	**150-adj**
M9184C1031	**AMX24-MFT95**	No	0-135 ohm	**0-135 ohm**	24	**24**	150	**180**		**2-10 VDC**	2	**add S2A**	30-60	**150-adj**
M9184D1005	**NMX24-MFT95**	No	0-135 ohm	**0-135 ohm**	24	**24**	75	**90**		**2-10 VDC**			15-30	**150-adj**
M9184D1021	**AMX24-MFT95**	No	0-135 ohm	**0-135 ohm**	24	**24**	150	**180**		**2-10 VDC**			30-60	**150-adj**
M9184F1034	**AMX24-MFT95**	No	0-135 ohm	**0-135 ohm**	24	**24**	150	**180**		**2-10 VDC**	2	**add S2A**	30-60	**150-adj**
M9185A1018	**AFB24-MFT95**	Yes	0-135 ohm	**0-135 ohm**	24	**24**	60	**180**		**2-10 VDC**			30-60	**150-adj**
M9185C1006	**AFB24-MFT95**	Yes	0-135 ohm	**0-135 ohm**	24	**24**	60	**180**		**2-10 VDC**	2		30-60	**150-adj**
M9185D1004	**AFB24-MFT95**	Yes	0-135 ohm	**0-135 ohm**	24	**24**	60	**180**		**2-10 VDC**			30-60	**150-adj**
M9185E1019	**AFB24-MFT95**	Yes	0-135 ohm	**0-135 ohm**	24	**24**	60	**180**		**2-10 VDC**	1		30-60	**150-adj**
M9186G1006	**AFB24-MFT95**	Yes	0-135 ohm	**0-135 ohm**	24	**24**	60	**180**		**2-10 VDC**			30-60	**150-adj**
M9194D1003	**GMX24-MFT95**	No	0-135 ohm	**0-135 ohm**	24	**24**	300	**360**		**2-10 VDC**			120-240	**150-adj**
M9194E1000	**GMX24-MFT95**	No	0-135 ohm	**0-135 ohm**	24	**24**	300	**360**		**2-10 VDC**	1	**add S1A**	120-240	**150-adj**
ML6131B2001	**LMQX24-MFT**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	6	**35**					15	**2.5-adj**
ML6161A2008	**LMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	35	**45**		**2-10 VDC**			90	**95**
ML6161A2009	**LMB24-3-P5-T**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	35	**45**	2k Ω	**5k Ω**			90	**95**
ML6161B2024	**LMB24-3-T**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	35	**45**					90	**95**
ML6161B2024	**LMB24-3-T**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	35	**45**					90	**95**
ML6174A2002	**NMB24-3**	No	Floating	**Floating**	24	**24**	70	**90**					90	**95**
ML6174A2010	**AMB24-3**	No	Floating	**Floating**	24	**24**	70	**180**					180	**95**
ML6174B2019	**NMB24-3**	No	Floating	**Floating**	24	**24**	70	**90**					90	**95**
ML6174B2019	**NMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	90	**90**					90	**95**
ML6174D2009	**NMB24-3**	No	Floating	**Floating**	24	**24**	70	**90**					90	**95**
ML6174E2008	**NMB24-3**	No	Floating	**Floating**	24	**24**	70	**90**					90	**95**
ML7161A2008	**LMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	35	**45**		**2-10 VDC**			90	**95**
ML7161A2008	**LMB24-SR-T**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	35	**45**		**2-10 VDC**			90	**95**
ML7174A2001	**NMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	70	**90**		**2-10 VDC**			90	**95**
ML7174A2019	**NMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	70	**90**	2-10 VDC	**2-10 VDC**			90	**95**
ML7174E2007	**NMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	70	**90**	2-10 VDC	**2-10 VDC**			90	**95**
MN6120A1002	**AMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	175	**180**					90	**95**
MN6120A1200	**AMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	175	**180**			2	**add S2A**	90	**95**
MN6134A1003	**GMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	300	**360**					90	**150**
MN6134A1003	**GMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	300	**360**					90	**150**
MN7220A2007	**AMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	175	**180**	2-10 VDC	**2-10 VDC**			90	**95**
MN7234A2008	**GMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	300	**360**	2-10 VDC	**2-10 VDC**			90	**150**
MS4105A1002	**LF230 US**	Yes	On/Off	**On/Off**	100-250	**230**	35	**35**					90	**40-75**
MS4105A1002	**LF120 US**	Yes	On/Off	**On/Off**	100-250	**120**	35	**35**					90	**40-75**
MS4110A1002	**NFBUP**	Yes	On/Off, Floating	**On/Off**	100-250	**24-240**	88	**90**					90	**<75**
MS4110A1002	**NFBUP**	Yes	On/Off, Floating	**On/Off**	100-250	**24-240**	88	**90**					90	**<75**
MS4110A1200	**LF120-S US**	Yes	On/Off	**On/Off**	100-250	**120**	35	**35**			2	**1**	90	**40-75**
MS4110A1200	**LF230-S US**	Yes	On/Off	**On/Off**	100-250	**230**	35	**35**			2	**1**	90	**40-75**
MS4120A1001	**AFBUP**	Yes	On/Off	**On/Off**	100-250	**24-240**	175	**180**					90	**<75**
MS4120A1209	**AFBUP-S**	Yes	On/Off	**On/Off**	100-250	**24-240**	175	**180**			2	**2**	90	**<75**
MS7150A2206	**LF24-SR-S**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	44	**35**	2-10 VDC	**2-10 VDC**	2	**1**	90	**150**
MS7505A2008	**LFC24-3-R US**	Yes	2-10 vdc, 4-20 ma, Floating, On/Off	**Floating**	24	**24**	44	**35**	2-10 VDC	**2-10 VDC**			90	**90**
MS7510A2008	**NFX24-MFT**	Yes	2-10 vdc, 4-20 ma, Floating, On/Off	**MFT, 2-10 vdc default**	24	**24**	88	**90**	2-10 VDC	**2-10 VDC**			90	**150-adj**
MS7510A2206	**LF24-MFT-S US**	Yes	2-10 vdc, 4-20 ma, Floating, On/Off	**MFT, 2-10 vdc default**	24	**24**	88	**35**	2-10 VDC	**2-10 VDC**	2	**1**	90	**150-adj**
MS7520A2007	**AFX24-MFT**	Yes	2-10 vdc, 4-20 ma, Floating, On/Off	**MFT, 2-10 vdc default**	24	**24**	175	**180**	2-10 VDC	**2-10 VDC**			90	**150-adj**

* Add 120/24 volt transformer.

** Belimo actuators are 90° max rotation.

HONEYWELL	BELIMO	Spring Return	Control Signal		Power ✦		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
MS7520A2205	**AFX24-MFT-S**	Yes	2-10 vdc, 4-20 ma, Floating, On/Off	**MFT, 2-10 vdc default**	24	**24**	175	**180**	2-10 VDC	**2-10 VDC**	2	**2**	90	**150-adj**
MS8105A1008	**LF24 US**	Yes	On/Off	**On/Off**	24	**24**	44	**35**					90	**40-75**
MS8110A1008	**NFB24**	Yes	On/Off, Floating	**On/Off**	24	**24**	88	**90**					90	**<75**
MS8110A1206	**NFB24-S**	Yes	On/Off, Floating	**On/Off**	24	**24**	88	**90**			2	**2**	90	**<75**
MS8120A1007	**AFB24**	Yes	On/Off	**On/Off**	24	**24**	175	**180**					90	**<75**
MS8120A1205	**AFB24-S**	Yes	On/Off	**On/Off**	24	**24**	175	**180**			2	**2**	90	**<75**
MS8309F1001	**FSNF24 US**	Yes	On/Off	**On/Off**	24	**24**	80	**70**					25	**<15**

** May require 2 Belimo actuators.

Invensys to Belimo

Actuator Replacement Cross Reference

BELIMO

Auxiliary Switches

add S2A	2 auxiliary switches (add-on)
add S1A	1 auxiliary switch (add-on)
1	1 auxiliary switch (built-in)
2	2 auxiliary switches (built-in)

Legend	
INVENSYS "WHITE"	**BELIMO**

✦ Belimo 24V actuators are AC/DC

Model Numbers

INVENSYS	BELIMO	Spring Return	Control Signal		Power ✦		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
MA-305	**TF24 US**	Yes	On/Off	**On/Off**	24	**24**	16	**18**						**75**
MA-305	**TF24-MFT US**	Yes	On/Off	**On/Off**	24	**24**	16	**18**		**2-10 VDC**				**150-adj**
MA-305-500	**TF24-S US**	Yes	On/Off	**On/Off**	24	**24**	16	**18**			1	**1**		**75**
MA-305-500	**TF24-MFT-S US**	Yes	On/Off	**On/Off**	24	**24**	16	**18**		**2-10 VDC**	1	**1**		**150-adj**
MA-318	**NFBUP**	Yes	On/Off	**On/Off**	120	**24-240**	60	**90**						**<75**
MA-318-500	**NFBUP-S**	Yes	On/Off	**On/Off**	230	**24-240**	60	**90**			1	**2**		**<75**
MA-405	**TF120 US**	Yes	On/Off	**On/Off**	120	**120**	16	**18**						**75**
MA-405	**TFC120-S US**	Yes	On/Off	**On/Off**	120	**120**	16	**18**				**1**		**<30**
MA-405-500	**TF120-S US**	Yes	On/Off	**On/Off**	120	**120**	16	**18**			1	**1**		**75**
MA-405-500	**TFC120-S US**	Yes	On/Off	**On/Off**	120	**120**	16	**18**			1	**1**		**<30**
MA40-7040	**LF120 US**	Yes	On/Off	**On/Off**	120	**120**	35	**35**					50	**40-75**
MA40-7040-501	**LF120-S US**	Yes	On/Off	**On/Off**	120	**120**	35	**35**			1	**1**	50	**40-75**
MA40-7041	**LF230 US**	Yes	On/Off	**On/Off**	230	**230**	35	**35**					50	**40-75**
MA40-7041-501	**LF230-S US**	Yes	On/Off	**On/Off**	230	**230**	35	**35**			1	**1**	50	**40-75**
MA40-7043	**LF24 US**	Yes	On/Off	**On/Off**	24	**24**	35	**35**					50	**40-75**
MA40-7043-501	**LF24-S US**	Yes	On/Off	**On/Off**	24	**24**	35	**35**			1	**1**	50	**40-75**
MA40-7151	**AFBUP**	Yes	On/Off	**On/Off**	230	**24-240**	133	**180**					190	**<75**
MA40-7070	**NFBUP**	Yes	On/Off	**On/Off**	120	**24-240**	60	**90**					80	**<75**
MA40-7070-502	**NFBUP-S**	Yes	On/Off	**On/Off**	120	**24-240**	60	**90**			2	**2**	80	**<75**
MA40-7071	**NFBUP**	Yes	On/Off	**On/Off**	230	**24-240**	60	**90**					80	**<75**
MA40-7071-502	**NFBUP-S**	Yes	On/Off	**On/Off**	230	**24-240**	60	**90**			2	**2**	80	**<75**
MA40-7073	**NFB24**	Yes	On/Off	**On/Off**	24	**24**	60	**90**					80	**<75**
MA40-7073-502	**NFB24-S**	Yes	On/Off	**On/Off**	24	**24**	60	**90**			2	**2**	80	**<75**
MA40-7150	**AFBUP**	Yes	On/Off	**On/Off**	120	**24-240**	133	**180**					190	**<75**
MA40-7150-502	**AFBUP-S**	Yes	On/Off	**On/Off**	120	**24-240**	133	**180**			2	**2**	190	**<75**
MA40-7153	**AFB24**	Yes	On/Off	**On/Off**	24	**24**	133	**180**					190	**<75**
MA40-7153-502	**AFB24-S**	Yes	On/Off	**On/Off**	24	**24**	133	**180**			2	**2**	190	**<75**
MA40-7170	**AFBUP**	Yes	On/Off	**On/Off**	120	**24-240**	150	**180**					145	**<75**
MA40-7171	**AFBUP**	Yes	On/Off	**On/Off**	230	**24-240**	150	**180**					145	**<75**
MA40-7173	**AFB24**	Yes	On/Off	**On/Off**	24	**24**	150	**180**					145	**<75**
MA-416	**NFBUP**	Yes	On/Off	**On/Off**	208	**24-240**	60	**90**					104	**<75**
MA-416-500	**NFBUP-S**	Yes	On/Off	**On/Off**	208	**24-240**	60	**90**			1	**2**	104	**<75**
MA41-7073	**NFB24**	Yes	On/Off	**On/Off**	24	**24**		**90**						**<75**
MA-418-500	**NFBUP-S**	Yes	On/Off	**On/Off**	120	**24-240**	60	**90**			1	**2**		**<75**
MA-419	**NFBUP**	Yes	On/Off	**On/Off**	240	**24-240**	60	**90**					120	**<75**
MA-419-500	**NFBUP-S**	Yes	On/Off	**On/Off**	240	**24-240**	60	**90**			1	**2**	120	**<75**
MA40-7151-502	**AFBUP-S**	Yes	On/Off	**On/Off**	230	**24-240**	133	**180**			2	**2**	190	**<75**
MA5-419	**NFBUP**	Yes	On/Off	**On/Off**	240	**24-240**	60	**90**					120	**<75**
MA5-419-500	**NFBUP-S**	Yes	On/Off	**On/Off**	240	**24-240**	60	**90**			1	**2**	120	**<75**
MC-351	**GMB24-3**	No	On/Off	**On/Off, Floating**	24	**24**	220	**360**					70	**95**
MC-421	**AMQX24-MFT**	No	On/Off	**MFT, 2-10 vdc default**	24	**24**	175	**140**		**2-10 VDC**			20	**7-adj**
MC-431	**GMB24-MFT**	No	On/Off	**MFT, 2-10 vdc default**	24	**24**	220	**360**		**2-10 VDC**			30	**150-adj**
MC-4311	**GMB24-MFT**	No	On/Off	**MFT, 2-10 vdc default**	24	**24**	220	**360**		**2-10 VDC**			30	**150-adj**
MC5-4311	**GMB24-MFT**	No	On/Off	**MFT, 2-10 vdc default**	24	**24**	220	**360**		**2-10 VDC**			36	**150-adj**
MF40-6043	**LMB24-3**	No	Floating	**Floating**	24	**24**	35	**45**					<90	**95**
MF40-6043-502	**LMB24-3**	No	Floating	**Floating**	24	**24**	35	**45**			2	**add S2A**	<90	**95**
MF40-6043-510	**LMB24-3**	No	Floating	**Floating**	24	**24**	35	**45**					<90	**95**
MF40-6083	**NMB24-3**	No	Floating	**Floating**	24	**24**	70	**90**					120	**95**
MF40-6153	**AMB24-3**	No	Floating	**Floating**	24	**24**	133	**180**					120	**95**
MF40-7043	**LF24-3 US**	Yes	Floating	**Floating**	24	**24**	35	**35**	2-10 VDC				130	**150**
MF40-7043-501	**LF24-3-S US**	Yes	Floating	**Floating**	24	**24**	35	**35**			1	**1**	195	**150**
MF40-7073	**NFX24-MFT**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	60	**90**		**2-10 VDC**			190	**150-adj**
MF40-7073-502	**NFX24-MFT-S**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	60	**90**		**2-10 VDC**	2	**2**	195	**150-adj**

* Belimo actuators are 90° max rotation.

INVENSYS	BELIMO	Spring Return	Control Signal		Power ✦		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
MF40-7153	**AFX24-MFT**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	133	**180**		**2-10 VDC**			190	**150-adj**
MF40-7153-502	**AFX24-MFT-S**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	133	**180**		**2-10 VDC**	2	**2**	190	**150-adj**
MF40-7173	**AFX24-MFT**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	150	**180**		**2-10 VDC**			145	**150-adj**
MF41-6043	**LMB24-3**	No	Floating	**Floating**	24	**24**	35	**45**					90	**95**
MF41-6043-502	**LMB24-3**	No	Floating	**Floating**	24	**24**	35	**45**			2	**add S2A**	90	**95**
MF41-6043-510	**LMB24-3-P10-T**	No	Floating	**Floating**	24	**24**	35	**45**	1k Ω	**10k Ω**			90	**95**
MF41-6083	**NMB24-3**	No	Floating	**Floating**	24	**24**	70	**90**					90	**95**
MF41-6083-502	**NMB24-3**	No	Floating	**Floating**	24	**24**	70	**90**			2	**add S2A**	90	**95**
MF41-6153	**AMB24-3**	No	Floating	**Floating**	24	**24**	133	**180**					90	**95**
MF41-6343	**GMB24-3**	No	Floating	**Floating**	24	**24**	300	**360**					90	**150**
MF41-7073	**NFX24-MFT**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	60	**90**		**2-10 VDC**			195	**150-adj**
MF41-7073-502	**NFX24-MFT-S**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	60	**90**		**2-10 VDC**	2	**2**	195	**150-adj**
MF41-7153	**AFX24-MFT**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	133	**180**		**2-10 VDC**			190	**150-adj**
MF41-7153-502	**AFX24-MFT-S**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	133	**180**		**2-10 VDC**	2	**2**	190	**150-adj**
MF-6343	**GMB24-3**	No	Floating	**Floating**	24	**24**	300	**360**					145	**150**
MM-400	**LMCB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**45**		**2-10 VDC**			50	**35**
MM-400-002	**LMCB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**45**		**2-10 VDC**	2	**add S2A**	50	**35**
MM-500	**NFX24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**		**2-10 VDC**			55	**150-adj**
MM-500-002	**NFX24-MFT-S**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**		**2-10 VDC**	2	**2**	55	**150-adj**
MMR-400	**LMCB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**45**		**2-10 VDC**			50	**35**
MMR-400-002	**LMCB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**45**		**2-10 VDC**	2	**add S2A**	50	**35**
MMR-500	**NFX24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**		**2-10 VDC**			55	**150-adj**
MMR-500-002	**NFX24-MFT-S**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**		**2-10 VDC**	2	**2**	55	**150-adj**
MP-361	**NFB24-SR-S**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	50	**90**		**2-10 VDC**	1	**2**	95	**95**
MP-361-600	**NFX24-MFT-S**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**		**2-10 VDC**	1	**2**	90	**150-adj**
MP-361-691	**NFX24-MFT-S**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**		**2-10 VDC**	1	**2**	90	**150-adj**
MP-371	**NFB24-SR-S**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	50	**90**		**2-10 VDC**	1	**2**	90	**95**
MP-371-600	**NFX24-MFT-S**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**		**2-10 VDC**	1	**2**	90	**150-adj**
MP-371-602	**NFX24-MFT-S**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**		**2-10 VDC**	1	**2**	90	**150-adj**
MP-381	**GMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	220	**360**		**2-10 VDC**	1	**add S1A**	130	**150**
MP-382	**GMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	220	**360**		**2-10 VDC**	1	**add S1A**	130	**150**
MP-421	**NMX24-MFT***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**24**	60	**90**		**2-10 VDC**	1	**add S1A**	25	**150-adj**
MP-422	**NMX24-MFT***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**24**	60	**90**		**2-10 VDC**	1	**add S1A**	25-250	**150-adj**
MP-424	**NMX24-MFT***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**24**	60	**90**		**2-10 VDC**	1	**add S1A**	13-130	**150-adj**
MP-451	**NMX24-MFT***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**24**	80	**90**		**2-10 VDC**	1	**add S1A**	80	**150-adj**
MP-453	**GMX24-MFT***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**24**	220	**360**		**2-10 VDC**	1	**add S1A**	40	**150-adj**
MP-465	**NFB24-SR-S***	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**24**	50	**90**		**2-10 VDC**	1	**2**	50	**95**
MP-475	**NFB24-SR-S***	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**24**	50	**90**		**2-10 VDC**	1	**2**	50	**95**
MP-481	**AMX24-MFT***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**24**	130	**180**		**2-10 VDC**	1	**add S1A**	130	**150-adj**
MP-483	**NMX24-MFT***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**24**	65	**90**		**2-10 VDC**	1	**add S1A**	65	**150-adj**
MP-485	**AMX24-MFT***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**24**	130	**180**		**2-10 VDC**	1	**add S1A**	130	**150-adj**
MP-495	**AMX24-MFT***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**24**	130	**180**		**2-10 VDC**	1	**add S1A**	130	**150-adj**
MP-483	**NMX24-MFT***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**120**	65	**90**		**2-10 VDC**	1	**add S1A**	65	**150-adj**

* Add 120/24 volt transformer.

Invensys to Belimo

Actuator Replacement Cross Reference

INVENSYS	BELIMO	Spring Return	Control Signal		Power ✦		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
MP-485	**AMX24-MFT***	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**120**	130	**180**		**2-10 VDC**	1	**add S1A**	130	**150-adj**
MP-5233	**TF24-MFT US**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	19	**18**		**2-10 VDC**			60	**150-adj**
MP-5433	**TF24-MFT US***	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	120	**24**	19	**18**		**2-10 VDC**			60	**150-adj**
MP-5613	**TF24-MFT US**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**		**18**		**2-10 VDC**			60	**150-adj**
MS-1233	**TF24-MFT US**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	20	**18**		**2-10 VDC**			225	**150-adj**
MS-1233-002	**TF24-MFT US**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	20	**18**		**2-10 VDC**			225	**150-adj**
MS-1233-100	**TF24-MFT US**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	20	**18**		**2-10 VDC**			225	**150-adj**
MS-1233-102	**TF24-MFT US**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	20	**17**		**2-10 VDC**			225	**150-adj**
MS40-7171	**AF24-SR US**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**133**	2-10 VDC	**2-10 VDC**			145	**150**
MS40-7171	**AFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**180**	2-10 VDC	**2-10 VDC**			145	**150-adj**
MS40-7043	**LF24-SR US**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	35	**35**	2-10 VDC	**2-10 VDC**			130	**150**
MS40-7043-501	**LF24-SR-S US**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	35	**35**	2-10 VDC	**2-10 VDC**	1	**1**	130	**150**
MS40-7073-502	**NFB24-SR-S**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	60	**90**	2-10 VDC	**2-10 VDC**	2	**2**	130	**95**
MS40-7153	**AF24-SR US**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	133	**133**	2-10 VDC	**2-10 VDC**			130	**150**
MS40-7153-502	**AFB24-MFT-S**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	133	**180**	2-10 VDC	**2-10 VDC**	2	**2**	195	**150-adj**
MS40-7170	**AF24-SR US***	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**24**	150	**133**	2-10 VDC	**2-10 VDC**			145	**150**
MS40-7170	**AFB24-MFT***	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**24**	150	**180**	2-10 VDC	**2-10 VDC**			145	**150-adj**
MS40-7173	**AF24-SR US**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**133**	2-10 VDC	**2-10 VDC**			145	**150**
MS40-7173	**AFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**180**	2-10 VDC	**2-10 VDC**			145	**150-adj**
MS41-6043	**LMCB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	35	**45**	2-10 VDC	**2-10 VDC**				**35**
MS41-6043-502	**LMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	35	**45**	2-10 VDC	**2-10 VDC**				**95**
MS41-6043-520	**LMB24-MFT**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	35	**45**	2-10 VDC	**2-10 VDC**				**150-adj**
MS41-6043-522	**LMB24-MFT**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	35	**45**	2-10 VDC	**2-10 VDC**				**150-adj**
MS41-6083	**NMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	70	**90**	2-10 VDC	**2-10 VDC**			150	**95**
MS41-6083-502	**NMB24-MFT**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	70	**90**	2-10 VDC	**2-10 VDC**			150	**150-adj**
MS41-6083-520	**NMB24-MFT**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	70	**90**	2-10 VDC	**2-10 VDC**			150	**150-adj**
MS41-6083-522	**NMB24-MFT**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	70	**90**	2-10 VDC	**2-10 VDC**			150	**150-adj**
MS41-6153	**AMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	133	**180**	2-10 VDC	**2-10 VDC**				**95**
MS41-6343	**GMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	300	**360**	2-10 VDC	**2-10 VDC**				**150**
MS41-7073	**NFB24-SR**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	60	**90**	2-10 VDC	**2-10 VDC**			195	**95**
MS41-7153	**AF24-SR US**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	133	**133**	2-10 VDC	**2-10 VDC**			190	**150**
MS50-E2001	**AFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	150	**180**		**2-10 VDC**			145	**150-adj**
MS50-E2101	**AFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	150	**180**		**2-10 VDC**			145	**150-adj**
MS50-E2301	**AFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	150	**180**		**2-10 VDC**			145	**150-adj**
MS50-H2001	**GMB24-MFT**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	300	**360**		**2-10 VDC**			145	**150-adj**
MS50-H2101	**GMB24-MFT**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	300	**360**		**2-10 VDC**			145	**150-adj**
MS50-H2301	**GMB24-MFT**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	300	**360**		**2-10 VDC**			145	**150-adj**

* Add 120/24 volt transformer.

Auxiliary Switches

add S2A	2 auxiliary switches (add-on)
add S1A	1 auxiliary switch (add-on)
1	1 auxiliary switch (built-in)
2	2 auxiliary switches (built-in)

Legend	
JOHNSON CONTROLS "WHITE"	BELIMO

✦ Belimo 24V actuators are AC/DC

Model Numbers

JOHNSON CONTROLS	BELIMO	Spring Return	Control Signal		Power ✦		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
M110AAB-1	**LF120-S US**	Yes	On/Off, Floating	**On/Off**	120	**120**	25	**35**			1	**1**		**40-75**
M110AGA-1	**LF24-3 US**	Yes	On/Off, Floating	**On/Off, Floating**	24	**24**	25	**35**						**150**
M110AGB-1	**LF24-3-S US**	Yes	On/Off, Floating	**On/Off, Floating**	24	**24**	25	**35**			1	**1**		**150**
M110GGA-3	**LF24-MFT US**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	25	**35**	2-10 VDC	**2-10 VDC**				**150-adj**
M110JGA-1	**LF24-MFT US**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	25	**35**	2-10 VDC	**2-10 VDC**				**150-adj**
M110JGB-1	**LF24-MFT-S US**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	25	**35**	2-10 VDC	**2-10 VDC**	1	**1**		**150-adj**
M120AAA-1	**LMB120-3**	No	On/Off, Floating	**On/Off, Floating**	120	**120**	35	**45**						**95**
M120AAC-1	**LMB120-3**	No	On/Off, Floating	**On/Off, Floating**	120	**120**	35	**45**			2	**add S2A**		**95**
M120AGA-1	**LMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	35	**45**						**95**
M120GGA-3	**LMB24-MFT**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	35	**45**	2-10 VDC	**2-10 VDC**				**150-adj**
M120JAA-1	**LMX120-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**120**	35	**45**	2-10 VDC	**2-10 VDC**				**95**
M120JAC-1	**LMX120-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**120**	35	**45**	2-10 VDC	**2-10 VDC**	2	**add S2A**		**95**
M120JGA-1	**LMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	35	**45**	2-10 VDC	**2-10 VDC**				**95**
M120MGA-1	**LMX24-MFT95**	No	0-135 ohm	**MFT, 2-10 vdc default**	24	**24**	35	**45**						**150-adj**
M130AAA-1	**NFBUP**	Yes	On/Off, Floating	**On/Off**	120	**24-240**	50	**90**						**<75**
M130AAB-1	**NFBUP-S**	Yes	On/Off, Floating	**On/Off**	120	**24-240**	50	**90**			1	**2**		**<75**
M130AGA-1	**NFB24**	Yes	On/Off, Floating	**On/Off**	24	**24**	50	**90**						**<75**
M130AGB-1	**NFB24-S**	Yes	On/Off, Floating	**On/Off**	24	**24**	50	**90**			1	**2**		**<75**
M130GGA-3	**NFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**	2-10 VDC	**2-10 VDC**				**150-adj**
M130JGA-1	**NFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**	2-10 VDC	**2-10 VDC**				**150-adj**
M130JGB-1	**NFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**	2-10 VDC	**2-10 VDC**	1			**150-adj**
M130JGC-1	**NFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	50	**90**	2-10 VDC	**2-10 VDC**	2			**150-adj**
M130MGA-1	**AFB24-MFT95**	Yes	0-135 ohm	**0-135 ohm**	24	**24**	50	**180**	2-10 VDC	**2-10 VDC**				**150-adj**
M140AAA-1	**LMB120-3**	No	On/Off, Floating	**On/Off, Floating**	120	**120**	75	**45**						**95**
M140AGA-1	**LMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	75	**45**						**95**
M140GGA-3	**LMB24-MFT**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	75	**45**	2-10 VDC	**2-10 VDC**				**95**
M140JAA-1	**LMX120-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	120	**120**	75	**45**	2-10 VDC	**2-10 VDC**				**95**
M140JGA-1	**LMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	75	**45**	2-10 VDC	**2-10 VDC**				**95**
M150AAA-1	**AMB120-3**	No	On/Off, Floating	**On/Off, Floating**	120	**120**	150	**180**						**95**
M150AAB-1	**AMB120-3**	No	On/Off, Floating	**On/Off, Floating**	120	**120**	150	**180**			1	**add S1A**		**95**
M150AGA-1	**AMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	150	**180**						**95**
M150AGB-1	**AMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	150	**180**			1	**add S1A**		**95**
M150GGA-3	**AMB24-MFT**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	150	**180**	2-10 VDC	**2-10 VDC**				**150-adj**
M150JGA-1	**AMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**180**	2-10 VDC	**2-10 VDC**				**95**
M150JGB-1	**AMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**180**	2-10 VDC	**2-10 VDC**	1	**add S1A**		**95**
M150JGC-1	**AMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	150	**180**	2-10 VDC	**2-10 VDC**	2	**add S2A**		**95**
M150MGA-1	**AMB24-MFT**	No	0-135 ohm	**MFT, 2-10 vdc default**	24	**24**	150	**180**	2-10 VDC	**2-10 VDC**				**150-adj**
M9108-GGA-2	**NMCB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	70	**90**		**2-10 VDC**			60	**45**
M9101-AGA-2N	**LMB24-3-T**	No	Floating	**Floating**	24	**24**	10	**45**					15	**95**
M9104-AGA-2N	**LMB24-3-T**	No	On/Off, Floating	**Floating**	24	**24**	35	**45**					90	**95**
M9104-AGA-2N	**LMB24-3**	No	Floating	**Floating**	24	**24**	35	**45**					90	**95**
M9106-AGA-2	**LMB24-3**	No	Floating	**Floating**	24	**24**	53	**45**					60	**95**
M9106-AGA-2N01	**LMCB24-3**	No	On/Off, Floating	**Floating**	24	**24**	53	**45**					60	**35**
M9106-AGA-2N01	**LMCB24-3-T**	No	Floating	**Floating**	24	**24**	53	**45**					60	**35**
M9106-AGA-2N02	**LMB24-MFT**	No	On/Off, Floating	**MFT, 2-10 vdc default**	24	**24**	53	**45**		**2-10 VDC**			120	**150-adj**
M9106-AGA-2N02	**LMX24-MFT**	No	Floating	**MFT, 2-10 vdc default**	24	**24**	53	**45**		**2-10 VDC**			120	**150-adj**

Johnson Controls to Belimo

Actuator Replacement Cross Reference

BELIMO

JOHNSON CONTROLS	BELIMO	Spring Return	Control Signal		Power ✦		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
M9106-AGC-2	**LMB24-3**	No	Floating	**Floating**	24	**24**	53	**45**			2	**add S2A**	60	**95**
M9106-AGF-2	**LMB24-3-P10-T**	No	Floating	**Floating**	24	**24**	53	**45**		**10k Ω**			60	**95**
M9106-GGA-2	**LMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	53	**45**		**2-10 VDC**			60	**95**
M9106-IGA-2	**LMB24-MFT**	No	Floating	**Floating**	24	**24**	53	**45**		**2-10 VDC**			60	**150-adj**
M9108-AGA-2	**NMCB24-3**	No	Floating	**Floating**	24	**24**	70	**90**					25-50	**45**
M9108-AGC-2	**NMCB24-3**	No	Floating	**Floating**	24	**24**	70	**90**			2	**add S2A**	25-50	**45**
M9108-GGC-2	**NMCB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	70	**90**		**2-10 VDC**	2	**add S2A**	25-50	**45**
M9108-HGA-2	**NMB24-MFT**	No	2-10 vdc w/ adj. start and span	**MFT, 2-10 vdc default**	24	**24**	70	**90**		**2-10 VDC**			25-50	**150-adj**
M9108-HGC-2	**NMB24-MFT**	No	2-10 vdc w/ adj. start and span	**MFT, 2-10 vdc default**	24	**24**	70	**90**		**2-10 VDC**	2	**add S2A**	25-50	**150-adj**
M9109-AGA-2	**NMB24-3**	No	Floating	**Floating**	24	**24**	80	**90**					60	**95**
M9109-AGC-2	**NMB24-3**	No	Floating	**Floating**	24	**24**	80	**90**			2	**add S2A**	60	**95**
M9109-GGA-2	**NMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	80	**90**		**2-10 VDC**			60	**95**
M9109-GGC-2	**NMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	80	**90**		**2-10 VDC**	2	**add S2A**	60	**95**
M9116-AGA-2	**AMB24-3**	No	Floating	**On/Off, Floating**	24	**24**	140	**180**	0-10 VDC				70-115	**95**
M9116-AGA-2	**AMB24-3**	No	Floating	**Floating**	24	**24**	140	**180**					70-115	**95**
M9116-AGC-2	**AMB24-3-S**	No	Floating	**On/Off, Floating**	24	**24**	140	**180**	0-10 VDC		2	**add S2A**	70-115	**95**
M9116-AGC-2	**AMB24-3**	No	Floating	**Floating**	24	**24**	140	**180**			2	**add S2A**	70-115	**95**
M9116-AGD-2	**AMB24-3 + P140A**	No	Floating	**On/Off, Floating**	24	**24**	140	**180**	0-10 VDC	**0-140 W**			70-115	**95**
M9116-AGE-2	**AMB24-3 + P1000A**	No	Floating	**On/Off, Floating**	24	**24**	140	**180**	0-10 VDC	**0-1000 W**			70-115	**95**
M9116-AGE-2	**AMB24-3 + P1000A**	No	Floating	**Floating**	24	**24**	140	**180**		**0-1000 W**			70-115	**95**
M9116-GGA-2	**AMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	140	**180**	0-10 VDC	**2-10 VDC**			70-115	**95**
M9116-GGA-2	**AMB24-MFT**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	140	**180**	0-10 VDC	**2-10 VDC**			70-115	**150-adj**
M9116-GGC-2	**AMB24-SR-S**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	140	**180**	0-10 VDC	**2-10 VDC**	2	**add S2A**	70-115	**95**
M9116-GGC-2	**AMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	140	**180**		**2-10 VDC**	2	**add S2A**	70-115	**95**
M9116-HGA-2	**AMB24-MFT**	No	2-10 vdc w/ adj. start and span	**MFT, 2-10 vdc default**	24	**24**	140	**180**	0-10 VDC	**2-10 VDC**			70-115	**150-adj**
M9116-HGA-2	**AMB24-MFT**	No	2-10 vdc w/ adj. start and span	**MFT, 2-10 vdc default**	24	**24**	140	**180**		**2-10 VDC**			70-115	**150-adj**
M9116-HGC-2	**AMB24-MFT**	No	2-10 vdc w/ adj. start and span	**MFT, 2-10 vdc default**	24	**24**	140	**180**	0-10 VDC	**2-10 VDC**	2		70-115	**150-adj**
M9124-AGA-2	**GMB24-3**	No	Floating	**On/Off, Floating**	24	**24**	210	**360**					115-175	**150**
M9124-AGC-2	**GMB24-3**	No	Floating	**On/Off, Floating**	24	**24**	210	**360**			2	**add S2A**	70-130	**150**
M9124-AGD-2	**GMB24-3 + P140A**	No	Floating	**On/Off, Floating**	24	**24**	210	**360**		**0-140 W**			115-175	**150**
M9124-AGE-2	**GMB24-3 + P1000A**	No	Floating	**On/Off, Floating**	24	**24**	210	**360**		**0-1000 W**			70-130	**150**
M9124-GGA-2	**GMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	210	**360**		**2-10 VDC**			70-130	**150**
M9124-HGA-2	**GMB24-MFT**	No	2-10 vdc w/ adj. start and span	**MFT, 2-10 vdc default**	24	**24**	210	**360**		**2-10 VDC**			70-130	**150-adj**
M9124-HGC-2	**GMB24-MFT**	No	2-10 vdc w/ adj. start and span	**MFT, 2-10 vdc default**	24	**24**	210	**360**		**2-10 VDC**	2	**add S2A**	70-130	**150-adj**
M9132-AGA-2	**GMB24-3**	No	Floating	**On/Off, Floating**	24	**24**	280	**360**					115-205	**150**
M9132-AGC-2	**GMB24-3**	No	Floating	**On/Off, Floating**	24	**24**	280	**360**			2	**add S2A**	70-130	**150**
M9132-AGE-2	**GMB24-3 + P1000A**	No	Floating	**On/Off, Floating**	24	**24**	280	**360**		**0-1000 W**			115-205	**150**
M9132-GGA-2	**GMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	280	**360**		**2-10 VDC**			70-130	**150**
M9132-GGC-2	**GMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	280	**360**		**2-10 VDC**	2	**add S2A**	70-130	**150**
M9206-AGA-2	**NFX24-MFT**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	53	**90**		**2-10 VDC**			90	**150-adj**
M9206-AGC-2	**NFX24-MFT**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	53	**90**		**2-10 VDC**	2		90	**150-adj**
M9206-BAA-2S	**NFBUP**	Yes	On/Off	**On/Off**	120	**24-240**	53	**90**					90	**<75**
M9206-BAC-2S	**NFBUP-S**	Yes	On/Off	**On/Off**	120	**24-240**	53	**90**			2	**2**	90	**<75**
M9206-BGA-2S	**NFB24**	Yes	On/Off	**On/Off**	24	**24**	53	**90**					60	**<75**
M9206-BGB-2S	**NFB24-S**	Yes	On/Off	**On/Off**	24	**24**	53	**90**			1	**2**	60	**<75**
M9206-BGC-2	**NFB24-S**	Yes	On/Off	**On/Off**	24	**24**	53	**90**			2	**2**	60	**<75**
M9206-GGA-2	**NFB24-SR**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	53	**90**		**2-10 VDC**			60	**95**
M9206-GGA-2MP	**LF24-MFT-20 US**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	53	**35**		**2-10 VDC**			90	**150-adj**
M9206-GGC-2	**LF24-SR-S US**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	53	**35**		**2-10 VDC**	2	**1**	90	**40-75**
M9206-GGC-2MP	**LF24-MFT-S-20 US**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	53	**35**		**2-10 VDC**	2	**1**	90	**150-adj**
M9216-AGA-2	**AFX24-MFT**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	140	**180**		**2-10 VDC**			70-130	**150-adj**
M9216-AGC-2	**AFX24-MFT-S**	Yes	Floating	**MFT, 2-10 vdc default**	24	**24**	140	**180**		**2-10 VDC**	2	**2**	70-130	**150-adj**
M9216-BAA-2	**AFBUP**	Yes	On/Off	**On/Off**	120	**24-240**	140	**180**					70-130	**<75**
M9216-BAC-2	**AFBUP-S**	Yes	On/Off	**On/Off**	120	**24-240**	140	**180**			2	**2**	70-115	**<75**
M9216-BGA-2	**AFB24**	Yes	On/Off	**On/Off**	24	**24**	140	**180**					70-130	**<75**

JOHNSON CONTROLS	BELIMO	Spring Return	Control Signal		Power +		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
M9216-BGC-2	**AFB24-S**	Yes	On/Off	**On/Off**	24	**24**	140	**180**			2	**2**	70-130	**<75**
M9216-GGA-2	**AF24-SR US**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	140	**133**		**2-10 VDC**			70-130	**150**
M9216-GGC-2	**AFB24-MFT-S**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	140	**180**		**2-10 VDC**	2	**2**	70-130	**150-adj**
M9216-HGA-2	**AFB24-MFT**	Yes	2-10 vdc w/ adj. start and span	**MFT, 2-10 vdc default**	24	**24**	140	**180**		**2-10 VDC**			70-130	**150-adj**
M9216-HGC-2	**AFB24-MFT-S**	Yes	2-10 vdc w/ adj. start and span	**MFT, 2-10 vdc default**	24	**24**	140	**180**		**2-10 VDC**	2	**2**	70-130	**150-adj**
M9216-JGA-2	**AFX24-MFT**	Yes	Floating	**Floating**	24	**24**	140	**180**		**2-10 VDC**			70-130	**150-adj**
M9208-AGA-1	**NFX24-MFT**	Yes	On/Off, Floating	**On/Off, Floating**	24	**24**	70	**90**					150	**150-adj**
M9208-AGC-1	**NFX24-MFT-S**	Yes	On/Off, Floating	**On/Off, Floating**	24	**24**	70	**90**			2	**2**	150	**150-adj**
M9208-BGA-1	**NFB24**	Yes	On/Off	**On/Off**	24	**24**	70	**90**					55-71	**<75**
M9208-BGC-1	**NFB24-S**	Yes	On/Off	**On/Off**	24	**24**	70	**90**			2	**2**	55-71	**<75**
M9208-BDA-1	**NFBUP**	Yes	On/Off	**On/Off**	230	**24-240**	70	**90**					55-71	**<75**
M9208-BDC-1	**NFBUP-S**	Yes	On/Off	**On/Off**	230	**24-240**	70	**90**			2	**2**	55-71	**<75**
M9208-GGA-1	**NFB24-SR**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	70	**90**	2-10 VDC	**2-10 VDC**			150	**95**
M9208-GGC-1	**NFB24-SR-S**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	70	**90**	2-10 VDC	**2-10 VDC**	2	**2**	150	**95**

Siemens to Belimo

Actuator Replacement Cross Reference

BELIMO

Auxiliary Switches

add S2A	2 auxiliary switches (add-on)
add S1A	1 auxiliary switch (add-on)
1	1 auxiliary switch (built-in)
2	2 auxiliary switches (built-in)

Legend	
SIEMENS "WHITE"	**BELIMO**

✦ Belimo 24V actuators are AC/DC

Model Numbers

SIEMENS	BELIMO	Spring Return	Control Signal		Power ✦		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
GBB151.1U	**AMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	177	**180**		**2-10 VDC**			150	**95**
GBB156.1U	**AMB24-SR**	No	On/Off	**2-10 vdc, 4-20 ma**	24	**24**	177	**180**		**2-10 VDC**	2	**add S2A**	150	**95**
GBB161.1U	**AMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	177	**180**	2-10 VDC	**2-10 VDC**			150	**95**
GBB163.1U	**AMB24-MFT**	No	2-10 vdc w/ adj. start and span	**MFT, 2-10 vdc default**	24	**24**	177	**180**	2-10 VDC	**2-10 VDC**			150	**150-adj**
GBB164.1U	**AMB24-MFT**	No	2-10 vdc w/ adj. start and span	**MFT, 2-10 vdc default**	24	**24**	177	**180**	2-10 VDC	**2-10 VDC**		**add S2A**	150	**150-adj**
GBB166.1U	**AMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	177	**180**	2-10 VDC	**2-10 VDC**	2		150	**95**
GBB171.1U	**AMB24-3**	No	On/Off	**On/Off, Floating**	24	**24**	177	**180**					150	**95**
GBB175.1U	**AMB24-SR**	No	On/Off	**2-10 vdc, 4-20 ma**	24	**24**	177	**180**		**2-10 VDC**			150	**95**
GCA121.1U	**AFB24**	Yes	On/Off	**On/Off**	24	**24**	160	**180**					90	**<75**
GCA126.1U	**AFB24-S**	Yes	On/Off	**On/Off**	24	**24**	160	**180**			2	**2**	90	**<75**
GCA131.1P	**AFB24**	Yes	On/Off	**On/Off**	24	**24**	160	**180**					90	**<75**
GCA135.1U	**AFB24-S**	Yes	On/Off	**On/Off**	24	**24**	160	**180**			2	**2**	90	**<75**
GCA151.1U	**AFB24-MFT**	Yes	4-20 ma	**MFT, 2-10 vdc default**	24	**24**	160	**180**		**2-10 VDC**			90	**150-adj**
GCA156.1U	**AFB24-MFT-S**	Yes	4-20 ma	**MFT, 2-10 vdc default**	24	**24**	160	**180**		**2-10 VDC**	2	**2**	90	**150-adj**
GCA161.1U	**AFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	160	**180**	2-10 VDC	**2-10 VDC**			90	**150-adj**
GCA163.1U	**AFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	160	**180**	2-10 VDC	**2-10 VDC**			90	**150-adj**
GCA164.1U	**AFB24-MFT-S**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	160	**180**	2-10 VDC	**2-10 VDC**	2	**2**	90	**150-adj**
GCA166.1U	**AFB24-MFT-S**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	160	**180**	2-10 VDC	**2-10 VDC**	2	**2**	90	**150-adj**
GCA166.1U	**AFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	160	**180**	2-10 VDC	**2-10 VDC**	2	**2**	90	**150-adj**
GCA221.1U	**AFBUP**	Yes	On/Off	**On/Off**	120	**120**	160	**180**					90	**<75**
GCA226.1U	**AFBUP-S**	Yes	On/Off	**On/Off**	120	**120**	160	**180**			2	**2**	90	**<75**
GDE131.1P	**LMB24-SR**	No	3 position	**2-10 vdc, 4-20 ma**	24	**24**	44	**45**		**2-10 VDC**			90	**95**
GDE136.1P	**LMB24-3**	No	3 position	**On/Off, Floating**	24	**24**	44	**45**			2	**add S2A**	90	**95**
GDE161.1P	**LMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	44	**45**		**2-10 VDC**			90	**95**
GDE163.1P	**LMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	44	**45**		**2-10 VDC**			90	**95**
GDE164.1P	**LMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	44	**45**		**2-10 VDC**	2	**add S2A**	90	**95**
GDE166.1P	**LMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	44	**45**		**2-10 VDC**	2	**add S2A**	90	**95**
GEB131.1U	**LMB24-3**	No	3 position	**On/Off, Floating**	24	**24**	44	**45**					90	**95**
GIB151.1U	**GMB24-SR**	No	4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	310	**360**		**2-10 VDC**			150	**150**
GIB156.1U	**GMB24-SR**	No	4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	310	**360**		**2-10 VDC**	2	**add S2A**	150	**150**
GIB161.1U	**GMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	310	**360**	2-10 VDC	**2-10 VDC**			150	**150**
GIB163.1U	**GMB24-MFT**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	310	**360**	2-10 VDC	**2-10 VDC**			150	**150-adj**
GIB164.1U	**GMB24-MFT**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	310	**360**	2-10 VDC	**2-10 VDC**	2	**add S2A**	150	**150-adj**
GIB166.1U	**GMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	310	**360**	2-10 VDC	**2-10 VDC**	2	**add S2A**	150	**150**
GIB171.1U	**GMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	310	**360**					150	**150**
GIB171.1U	**GMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	310	**360**					150	**150**
GIB175.1U	**GMB24-3**	No	On/Off, Floating	**On/Off, Floating**	24	**24**	310	**360**			2	**add S2A**	150	**150**
GLB131.1P	**NMB24-3**	No	3 position	**On/Off, Floating**	24	**24**	88	**90**					150	**150**
GLB136.1P	**NMB24-3**	No	3 position	**On/Off, Floating**	24	**24**	88	**90**			2	**add S2A**	150	**150**
GLB161.1P	**NMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	88	**90**	2-10 VDC	**2-10 VDC**			150	**150**
GLB163.1P	**NMB24-MFT**	No	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	88	**90**	2-10 VDC	**2-10 VDC**			150	**150-adj**
GLB164.1P	**NMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	88	**90**	2-10 VDC	**2-10 VDC**	2	**add S2A**	150	**150**
GLB166.1P	**NMB24-SR**	No	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	88	**90**	2-10 VDC	**2-10 VDC**	2	**add S2A**	150	**150**
GMA121.1U	**NFB24**	Yes	On/Off	**On/Off**	24	**24**	62	**90**					90	**<75**
GMA126.1U	**NFB24-S**	Yes	On/Off	**On/Off**	24	**24**	62	**90**			2	**2**	90	**<75**
GMA131.1U	**NFX24-MFT**	Yes	3 position	**MFT, 2-10 vdc default**	24	**24**	62	**90**		**2-10 VDC**			90	**150-adj**
GMA136.1U	**NFX24-MFT-S**	Yes	3 position	**MFT, 2-10 vdc default**	24	**24**	62	**90**		**2-10 VDC**	2	**2**	90	**150-adj**

SIEMENS	BELIMO	Spring Return	Control Signal		Power ✦		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
GMA161.1U	**NFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	62	**90**	2-10 VDC	**2-10 VDC**			90	**150-adj**
GMA163.1U	**NFB24-MFT**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	62	**90**	2-10 VDC	**2-10 VDC**			90	**150-adj**
GMA166.1U	**NFB24-MFT-S**	Yes	2-10 vdc, 4-20 ma	**MFT, 2-10 vdc default**	24	**24**	62	**90**	2-10 VDC	**2-10 VDC**	2	**2**	90	**150-adj**
GMA221.1U	**NFBUP**	Yes	On/Off	**On/Off**	120	**24-240**	62	**90**					90	**<75**
GMA226.1U	**NFBUP-S**	Yes	On/Off	**On/Off**	120	**24-240**	62	**90**			2	**2**	90	**<75**
GQD121.1P	**TF24 US**	Yes	On/Off	**On/Off**	24	**24**	20	**18**					40-75	**<75**
GQD131.1P	**TF24-3 US**	Yes	Floating	**Floating**	24	**24**	20	**18**					40-75	**95**
GQD151.1P	**TF24-MFT US**	Yes	2-10 vdc, 4-20 ma	**2-10 vdc, 4-20 ma**	24	**24**	20	**18**	2-10 VDC	**2-10 VDC**			40-75	**150-adj**
GQD221.1U	**TFC120 US**	Yes	On/Off	**On/Off**	120	**120**	20	**18**					40-75	**30**

CONTROL SIGNAL-BASED RETROFIT SOLUTIONS

Honeywell Series 90, 0-135 Ω, use:

Model	Torque
AFB(X)24-MFT95	180 in-lb
LMX24-MFT95	45 in-lb
NMX24-MFT95	90 in-lb
AMX24-MFT95	180 in-lb
GMX24-MFT95	360 in-lb

Barber Colman - MP..., 6-9 V, use:

Model	Torque
LF24-MFT-20 US	35 in-lb
LF24-MFT-S-20 US	35 in-lb

Staefa Control - 0-10 V phasecut, use:

Model	Torque
AF24-PC US	133 in-lb
LMX24-PC	45 in-lb
NMX24-PC	90 in-lb
AMX24-PC	180 in-lb
GMX24-PC	360 in-lb

AFB24-MFT...

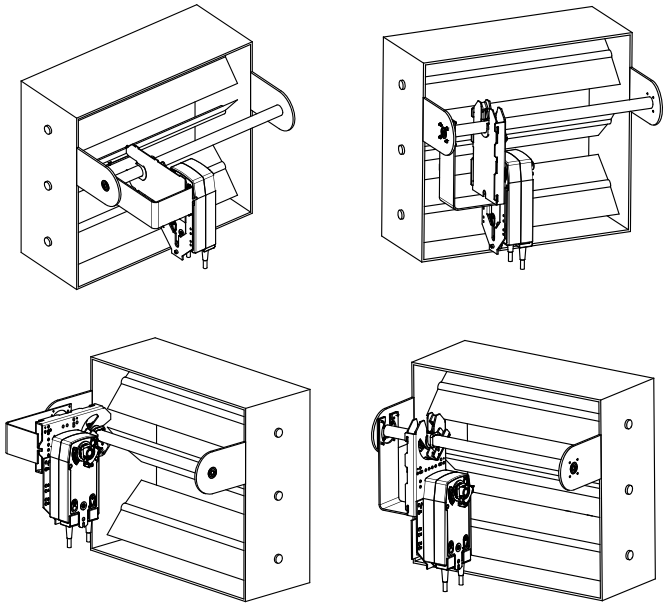
AMX24-MFT...

LF24-MFT...

5 YEAR WARRANTY

Technical Data	ZG-JSL, ZG-JSLA
Fits shaft diameter	½" to ¾" with insert, 1.05" without insert
Materials:	
Housing	galvanized steel
Bearings	GF Delrin
Shafts	steel
Max torque output	90% of rated actuator torque
Max actuator yield	see chart on right
Mech. angle of rotation	90° mountable
Ambient temperature	-22°F to 122°F [-33°C to 50°C]
Storage temperature	-40°F to 176°F [148.9°C to 80°C]
Weight	3.25 lbs [1.47 kg]

Mounting Configurations



Application

The ZG-JSL jackshaft linkage is designed to easily attach to any part of a jackshaft and allow easy installation of select Belimo actuators.

The unique open ended design and clamp insert allows the ZG-JSL to be used with any jackshaft from ½" to ¾" in diameter. Removal of the insert will allow the linkage to attach to a maximum shaft diameter of 1.05". Changing the anti-rotation plate will allow various actuators to be mounted.

Default/Configuration

The ZG-JSL linkage can also be configured by moving the anti-rotation plate 90° for space saving applications. See mounting configurations below. The ZG-JSLA will have a factory mounted actuator on the linkage in the vertical position only.

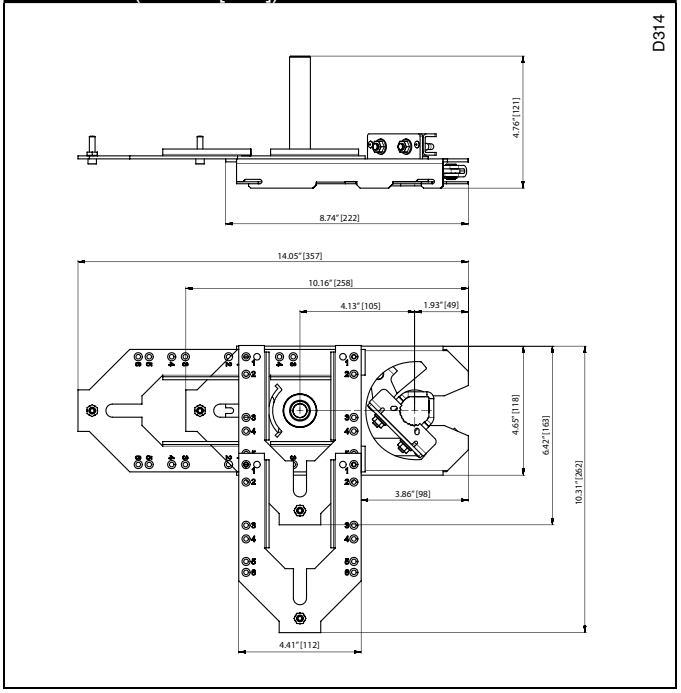
Operation

The ¾" diameter built-in steel shaft allows direct coupling to the Belimo series actuators in the chart below. There is a torque reduction when using the ZG-JSL linkage. Verify application requirements before use.

Actuator*	Torque Reduction
AF Series	123 in-lbs
AFX Series	166 in-lbs
NFX Series	87 in-lbs
LF Series	33 in-lbs
NMX Series	87 in-lbs
AMX Series	166 in-lbs

* GM/GK series pending approval.

Dimensions (Inches [mm])



The best replacement solution for non-direct products is to replace the existing product with a direct coupled solution. If direct coupling is not possible, Belimo offers specific retrofit solutions.

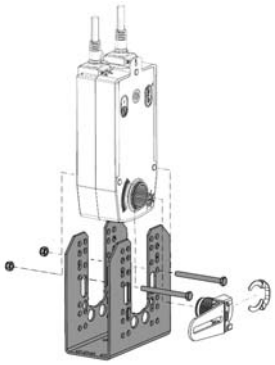
ZG-AFB118 — Crankarm Adaptor Kit

The ZG-AFB118 is provided with hole patterns to mount the NFB and AFB series actuators in either a horizontal or vertical position to meet space requirements.

The ZG-AFB118 Crankarm Adaptor Kit includes:

- ZG-118 Mounting Bracket
- KH-AFB Crankarm with Retaining Ring
- Mounting Hardware

Note: May require crankarm and ball joints.



The ZG-AFB118 Mounting Bracket is designed to mount the NF and AF series actuator in the same mounting locations as common foot mounted, crankarm style actuators. Hole patterns in the base match common Honeywell™, Siebe™ (Barber Colman™), and Johnson Controls™ actuators for easy retrofit.

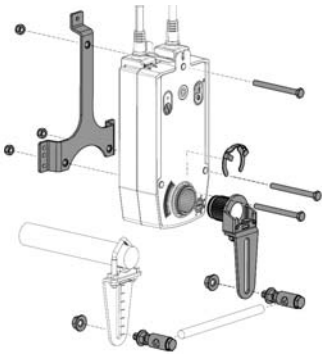
Use when replacing these actuators:

Honeywell	**M91…**	**M945…**
	M955…	**M965…**
	M975…	**M8…**
Johnson	**M110…**	**M140…**
	M120…	**M150…**
	M130…	
Barber Colman	**MA3…**	**MA4…**
	MA5…	

ZG-AFB — Crankarm Adaptor Kit

The ZG-AFB Crankarm Adaptor Kit includes:

- KH-AFB Crankarm
- Standoff Brackets and Mounting Feet
- Mounting Hardware
- KG8 Ball Joints



The following Universal Mounting Brackets are needed to fully convert to crankarm operation:

ZG-100	**ZG-101**

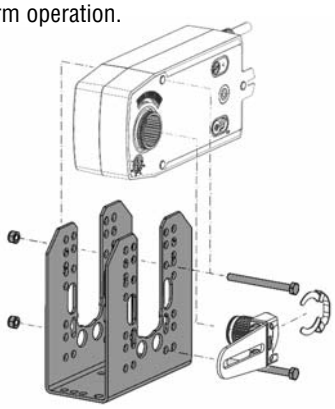
The ZG-100 and ZG-101 Universal Mounting Brackets are designed for applications where the actuator cannot be mounted directly to the shaft, and no proper mounting surface is available. It may be used for outside or inside the duct mounting, fastened to the ductwork or directly to the damper assembly. It may also be used to mount to other surfaces rather than the duct.

The ZG-100 and ZG-101 are provided with pre-punched hole patterns for the AM, GM, NFB, and AFB series actuators. The ZG-100 hole pattern layout allows mounting these actuators in three different, mounting orientations.

ZG-118 — Universal Mounting Brackets

The ZG-118 is provided with hole patterns to mount the NFB and AFB series actuators in either a horizontal or vertical position to meet space requirements.

The KH-AFB crankarm is required to fully convert the NFB and AFB for crankarm operation.



The ZG-118 is designed to mount the NFB and AFB series actuators in the same mounting locations as common foot mounted, crankarm style actuators. Hole patterns in the base match common Honeywell™, Siebe™ (Barber Colman™), and Johnson Controls™ actuators for easy retrofit.

The ZG-118 is designed to place the KH-AFB crankarm in the same relative position as the Honeywell™ Mod IV and Mod III actuators.

Use the ZG-118 when replacing these actuators:

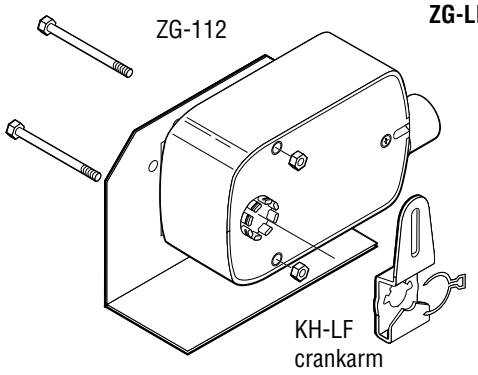
Honeywell	Mod III	
	Mod IV	
	M91…	M945…
	M955…	M965…
	M975…	M8…

ZG-LF112 and ZG-TF112 — Crankarm Adaptor Kit

The ZG-LF112 Crankarm Adaptor Kit includes:
- ZG-112 Mounting Bracket
- KH-LF Crankarm
- Mounting Hardware

Note: May require crankarm and ball joints.

ZG-LF112



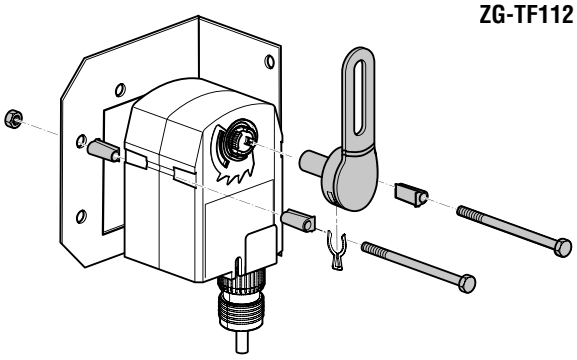
The ZG-112/113 is provided with hole patterns to mount the LF and TF series actuators in either a horizontal or vertical position to meet space requirements.

The ZG-112/113 Mounting Bracket is designed to mount the LF and TF series actuator in the same mounting locations as common foot mounted, crankarm style actuators. Hole patterns in the base match common Honeywell™, Siebe™ (Barber Colman™), and Johnson Controls™ actuators for easy retrofit.

The ZG-TF112 Crankarm Adaptor Kit includes:
- ZG-113 Mounting Bracket
- KH-TF Crankarm
- Mounting Hardware

Note: May require crankarm and ball joints.

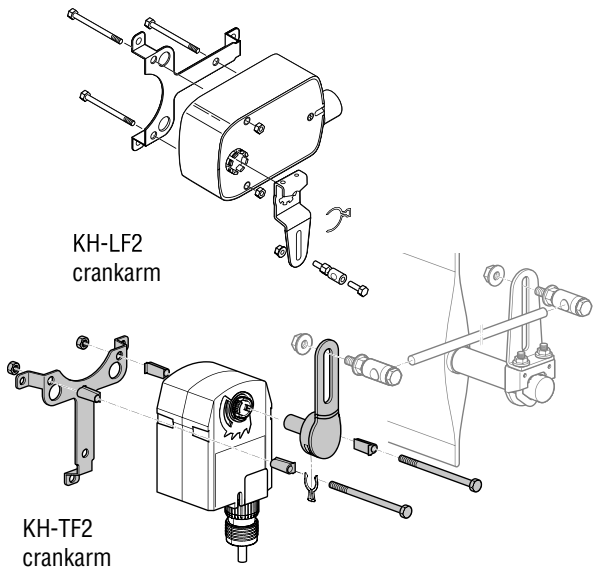
ZG-TF112



Use when replacing these actuators:

Honeywell M84…
M7…

ZG-LF2 and ZG-TF2 — Crankarm Adaptor Kit



The ZG-LF2 and ZG-TF2 Crankarm Adaptor Kits can be used to replace foot mounted, crankarm style actuators. The ZG-LF2 allows for easy retrofit of Honeywell™, Siebe™ (Barber Colman™), and Johnson Controls™ actuators.

The ZG-LF2 Crankarm Adaptor Kit includes:
- T Mounting Bracket
- KH-LF Crankarm
- Mounting Hardware

The ZG-TF2 Crankarm Adaptor Kit includes:
- T Mounting Bracket
- KH-TF Crankarm
- Mounting Hardware

Note: May require additional damper shaft crankarm and ball joints.

ZG-GMA GM Crankarm Adaptor Kit
ZG-NMA NM and AM Crankarm Adaptor Kit

The ZG-GMA and ZG-NMA Crankarm Adaptor Kit includes:

- Crankarm
- KG10 Ball Joints
- Front and Rear Fixing Attachment
- Mounting Hardware

The following Universal Mounting Brackets are needed to fully convert to crankarm operation:

ZG-100	**ZG-101**
ZG-103	**ZG-104**

The ZG-100, ZG-101, ZG-103, and ZG-104 Universal Mounting Brackets are designed for applications where the actuator cannot be mounted directly to the shaft, and no proper mounting surface is available. It may be used for outside or inside the duct mounting, fastened to the ductwork or directly to the damper assembly. It may also be used to mount to other surfaces rather than the duct.

The ZG-100, ZG-101, ZG-103, ZG-104 are provided with prepunched hole patterns for the NM, AM, GM, NF, and AF series actuators. The ZG-100 hole pattern layout allows mounting these actuators in three different, mounting orientations. The ZG-101, ZG-103, and ZG-104 hole pattern layout allows mounting these actuators in two different, mounting orientations.

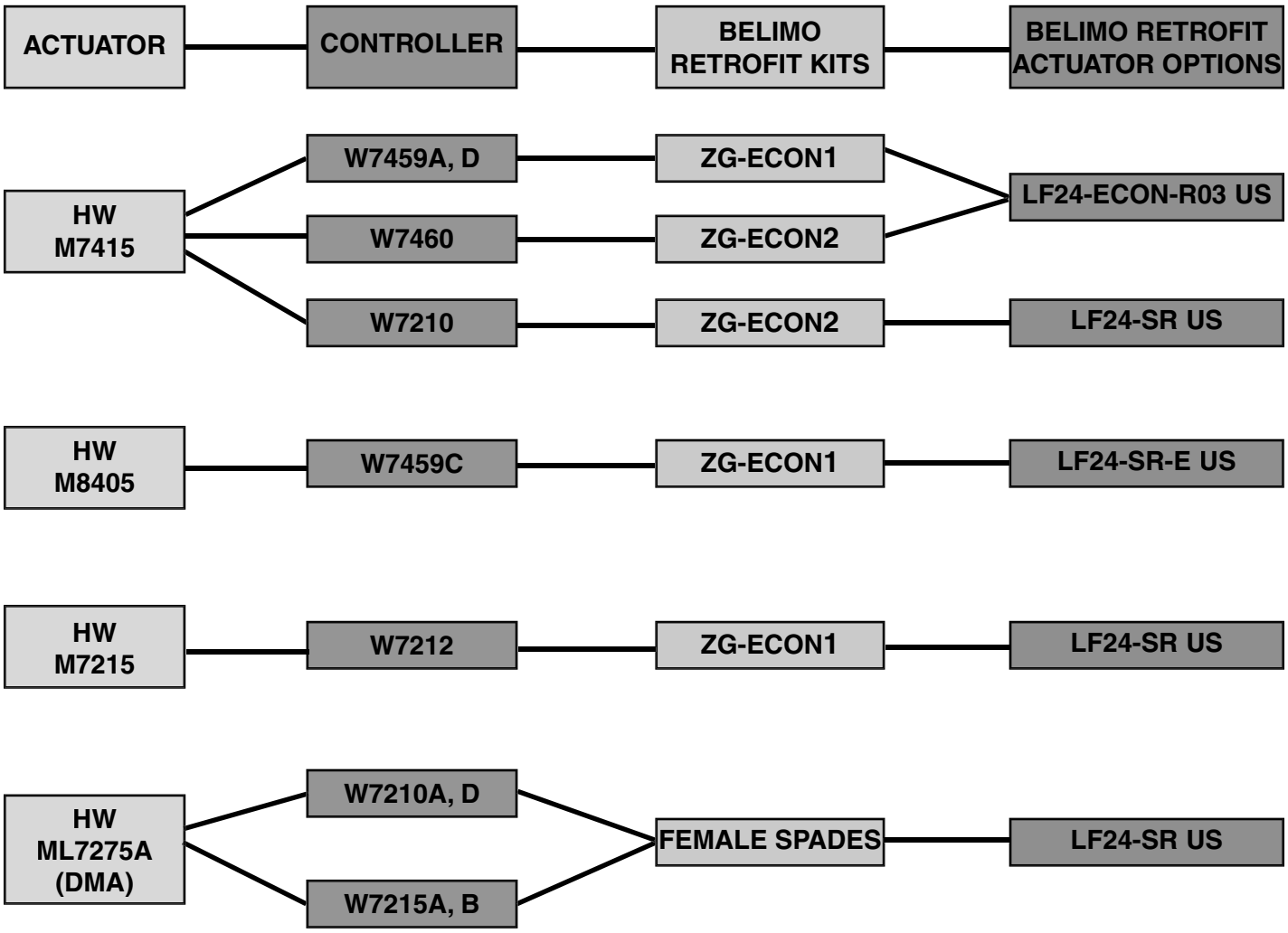
ZG-102 GM and AF Dual Mounting Bracket

The ZG-102 multiple actuator mounting bracket is designed for cases where it is necessary to mount two actuators to one shaft to provide extra torque.

The dual mounting bracket is typically used with both New Generation AF and GM series actuators. This is due to the fact that each of these series are the highest torque range available.

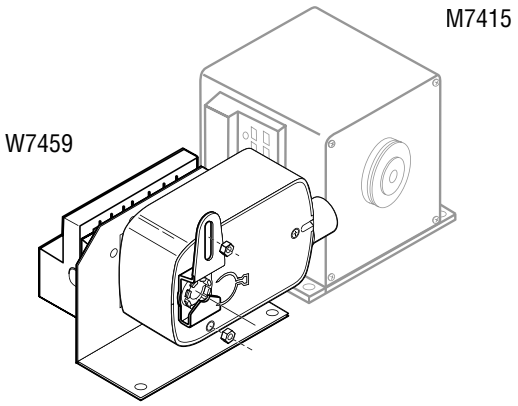
Honeywell to Belimo Economizer Solutions

When replacing an existing actuator in an economizer unit be sure to consider the application parameters before selecting the replacement. Use the chart below for reference. Belimo offers many direct coupled and non-direct replacement solutions. Start with your current model and controller type, and follow the diagram to the appropriate Belimo kit and actuator option. Detailed information on these kits is available in the following section.



Please contact Belimo Customer Service for more possible solutions.

M7415 Economizer Actuator Retrofit

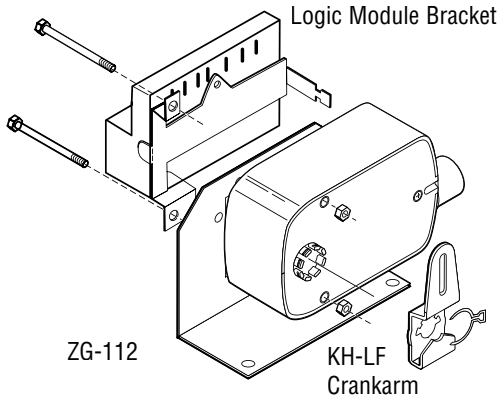


For proportional control of mixed air set point on economizer dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The actuator is mounted directly to a damper shaft from 3/8" up to ½" in diameter by means of its universal clamp, ½" shaft centered at delivery. For shafts up to ¾" use K6-1 accessory. A crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.

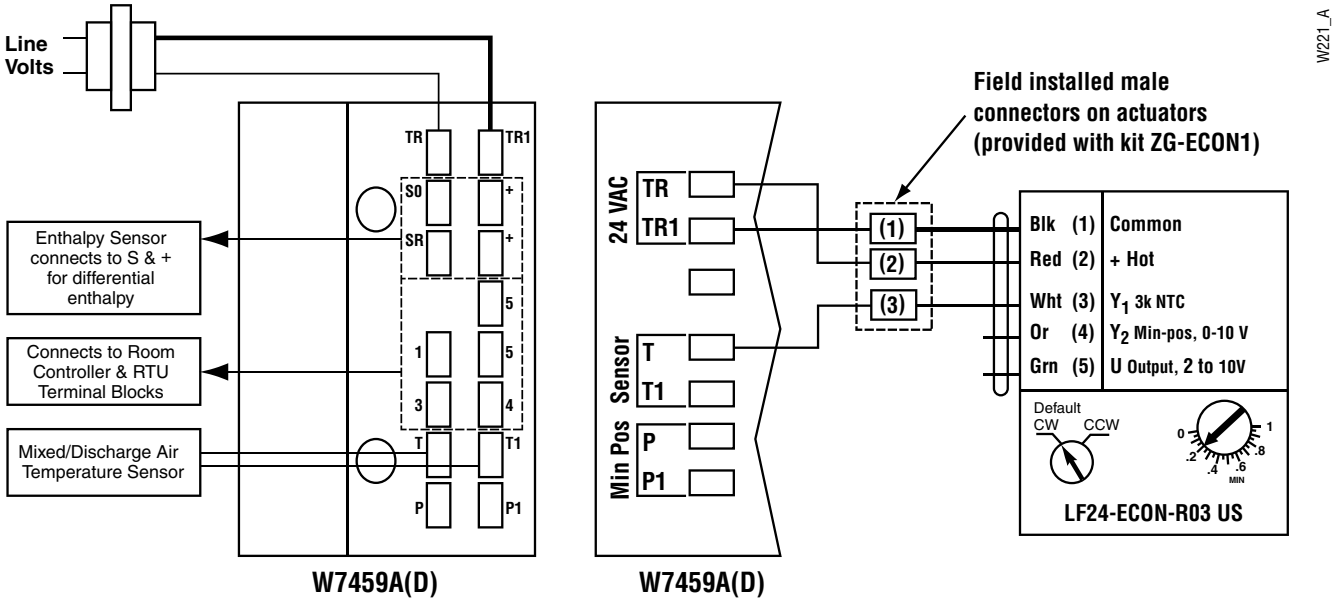
The actuator operates in response to 3 kΩ or 10 kΩ thermistor, which allows the LF24-ECON... to retrofit or replace Honeywell® M7415 actuators.

Mounting

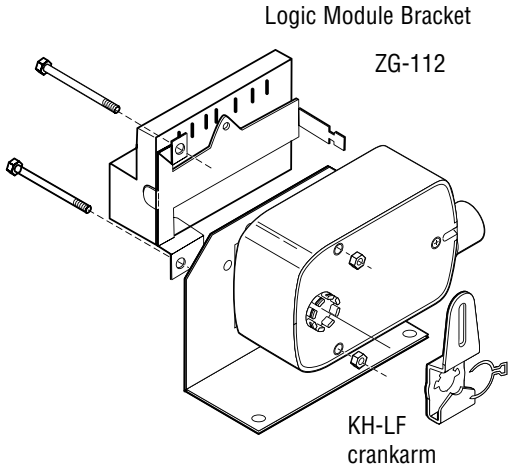


LF24-ECON-R03 US
ZG-ECON1 (Includes ZG-112, KH-LF and 20477-00001)
ZG-112
KH-LF
20477-00001

Wiring Diagrams



M8405 Economizer Actuator Retrofit



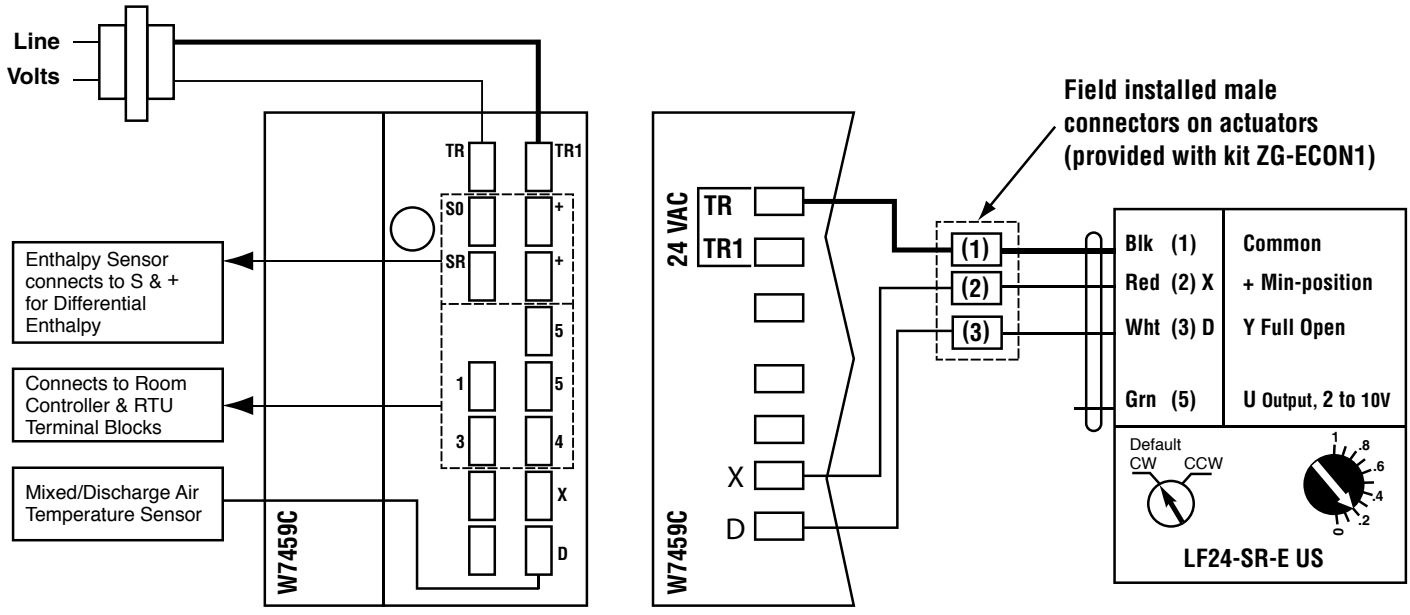
ZG-LF112 Crankarm adaptor kit
- Includes bracket and KH-LF crankarm.
- Bracket and crankarm for replacement of Honeywell M8405 actuators.

The three-position control functionality of the LF24-SR-E US allows direct replacement of a Honeywell M8405A foot mounted economizer actuator.

Mounting
For non-direct coupled applications use the logic module bracket (20477-00001) accessory kit, which includes the KH-LF crankarm, ZG-112 bracket, KG6 ball joint, and an accessory logic module mounting kit. The ZG-112 aligns the plane of the crankarm with that of the Honeywell M8405A. ZG-112 has at least two mounting holes that match the M8405A foot pattern. The logic module mounting kit allows for attachment to the end of the LF24-SR-E US actuator. It provides for installation flexibility to place the module where space is available.

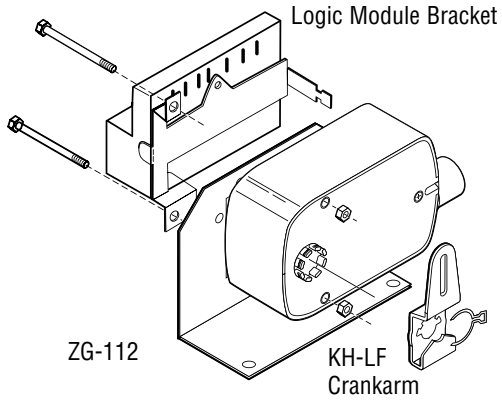
Wiring
For proper control logic wiring always refer to the controller manufactures documentation. See the Product Documentation Standard Actuation and Accessories for proper three position wiring diagram.

Wiring Diagrams



M7215 Economizer Actuator Retrofit

Mounting



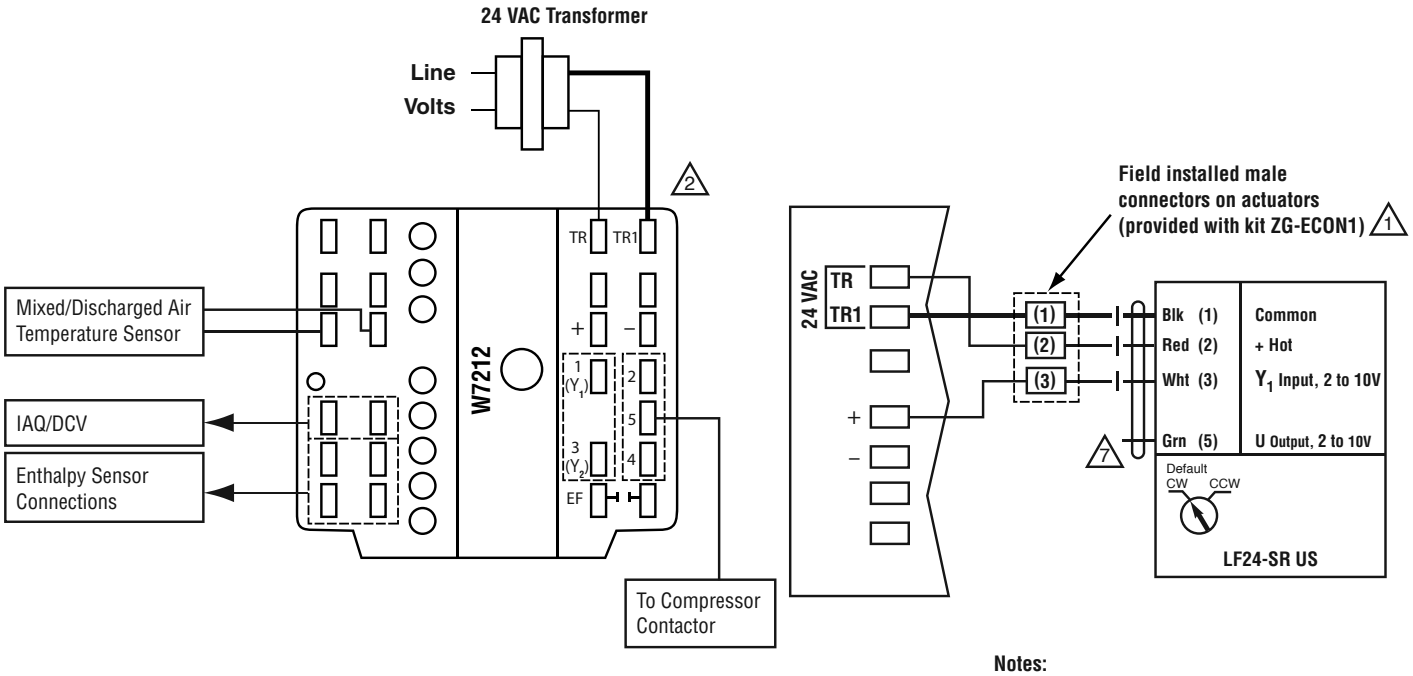
For proportional control of mixed air set point on economizer dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The actuator is mounted directly to a damper shaft from 3/8" up to ½" in diameter by means of its universal clamp, ½" shaft centered at delivery. For shafts up to ¾" use K6-1 accessory. A crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.

The actuator operates in response to 2-10VDC signal, which allows the LF24-SR US... to retrofit or replace Honeywell® M7212 actuators.

LF24-SR US
ZG-ECON1 **(Includes ZG-112, KH-LF and 20477-00001)**
ZG-112
KH-LF
20477-00001

Wiring Diagram

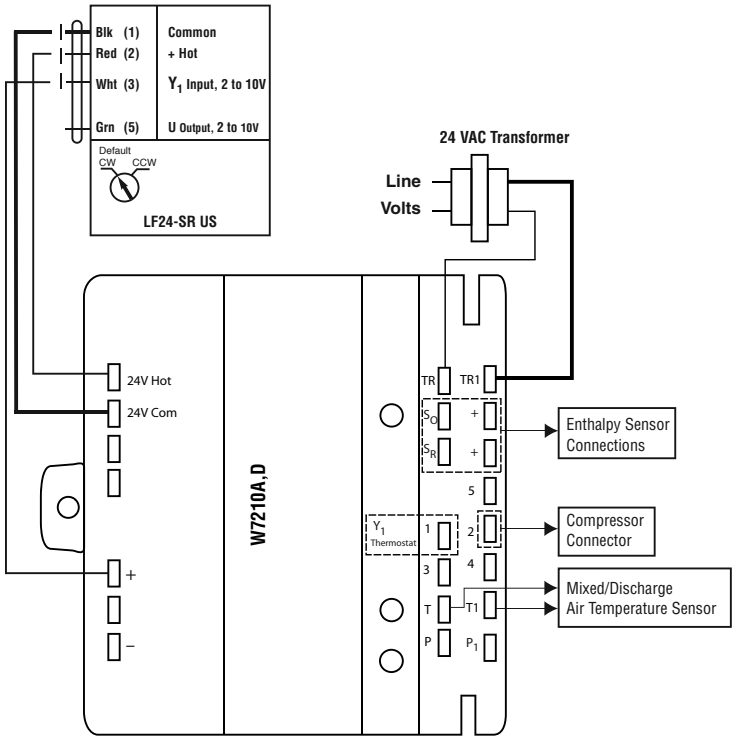


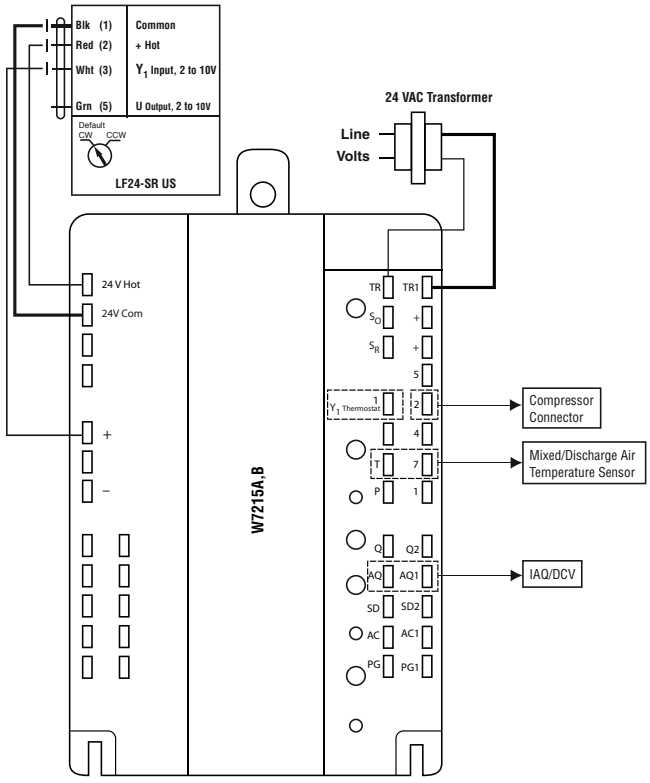
Notes:

1 If W7212 and M7215 are physically attached. Use ZG-ECON1 Kit and connect to bottom.

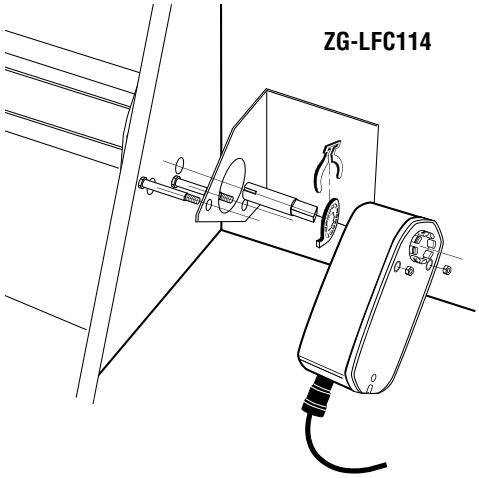
2 If Belimo actuator is to be direct coupled to economizer damper, connect to top of W7212 with field supplied 1/4" female spade connectors.

ML7275A Economizer Actuator Retrofit Wiring Diagrams





Installation - Based Solutions



Crankarm Adaptor Kit

The ZG-LFC114 Crankarm Adaptor Kit is designed for Trane Voyager economizer actuator retrofit.

The ZG-LFC114 Crankarm Adaptor Kit includes:

1 Mounting Bracket
1 Shaft Adaptor
2 Bolts with Nuts
4 Female Spade Connectors

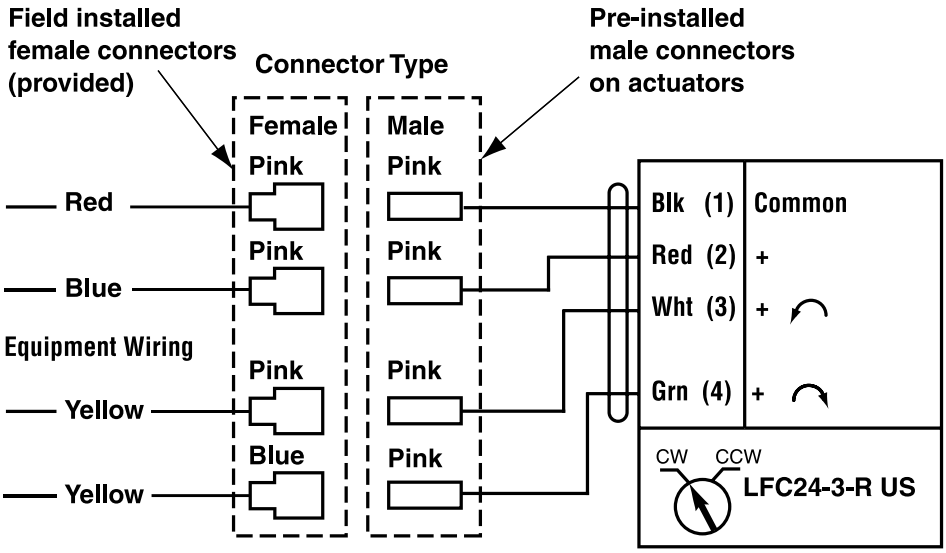
Note: May require crankarm and ball joints

Use when replacing these actuators:

Honeywell M84…
M7…
M6...

Wiring Diagram

W149_0



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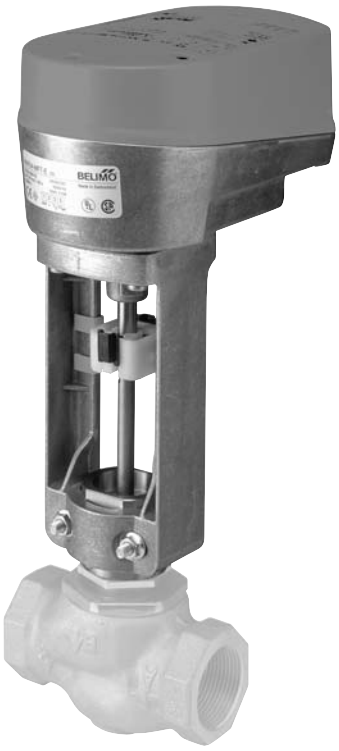


Globe Valves:

UNV Series Direct Coupled Actuator
2-way Valves
3-way Valves

UGLK Series Linkage Solution
2-way Valves
3-way Valves

Retrofit Solutions for Virtually any Valve

Manufacturers:

Globe: Siemens, Johnson
Honeywell, Invensys
and more

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

SELF ADAPTING STROKE

The NV Series actuators, which are used with the UNV retrofit kits (Figure 1), are stroke adapting actuators. In modulating applications, the actuator will recognize the stroke length requirement and automatically adjust the control signal for maximum resolution.

RATINGS FOR STEAM APPLICATION

The UNV-035 is rated for 50 psi inlet steam. All other UNV solutions are rated for 15 psi inlet steam.

All UGLK linkages can be used with Belimo actuators up to a maximum of 50 psi steam

For other applications between 50 psi and 100 psi inlet steam, please call Belimo Customer Service for assistance

Figure 1

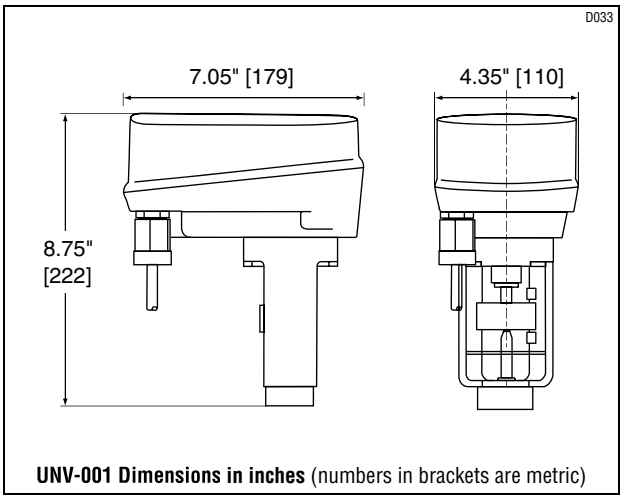
SPRING RETURN FUNCTION

When ordering a UNV kit with an NV Series spring return actuator, you must know the required spring return direction. The NVF24-MFT US springs to the UP position and the NVF24-MFT-E US springs to the DOWN position.

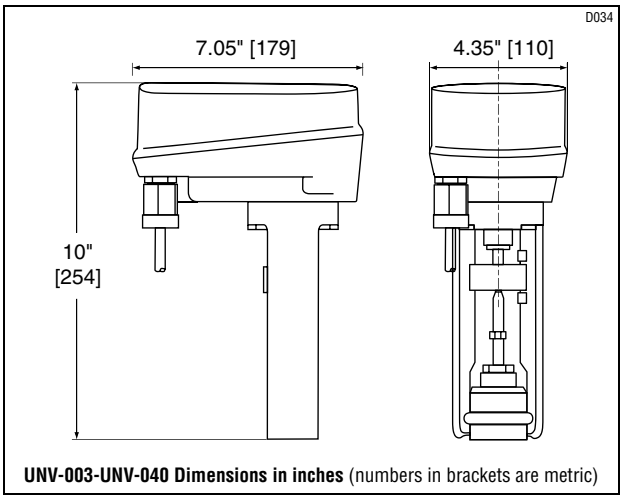
If the required spring return direction is not known, a UGLK linkage (Figure 2) and spring return actuator may be selected. The rotary actuators can be turned over on the linkage and produce a spring return function in either direction.

Figure 2

MAXIMUM DIMENSIONS – UNV with NV Series Actuators

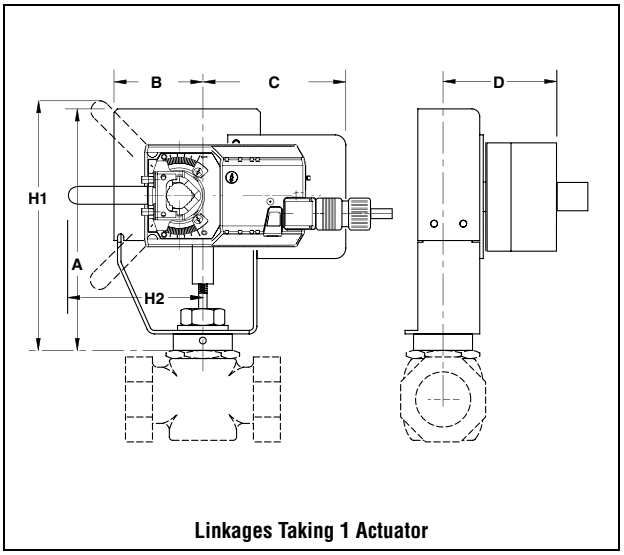


UNV-001 Dimensions in inches (numbers in brackets are metric)

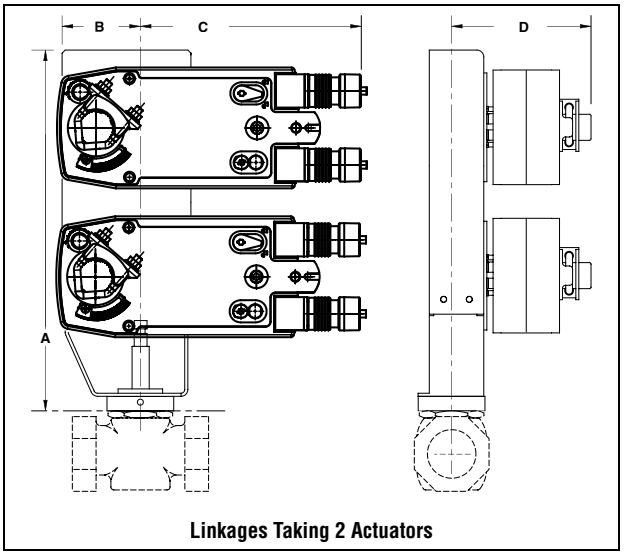


UNV-003-UNV-040 Dimensions in inches (numbers in brackets are metric)

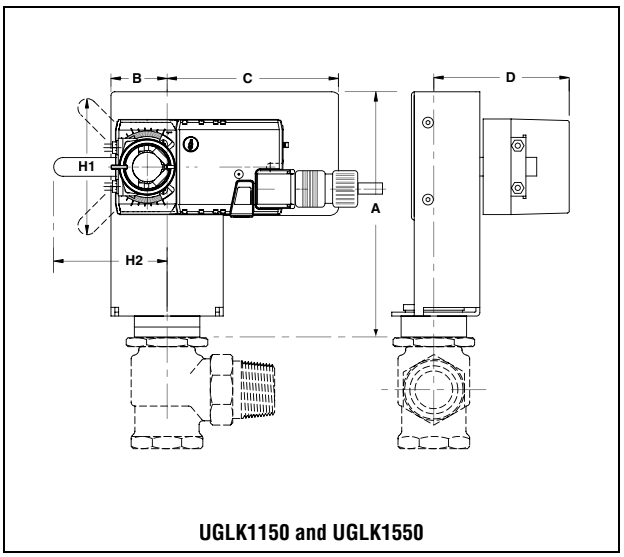
MAXIMUM DIMENSIONS – UGLK Linkages with Rotary Actuators



Linkages Taking 1 Actuator



Linkages Taking 2 Actuators



UGLK1150 and UGLK1550

MAXIMUM DIMENSIONS

Linkages Taking 1 Actuator			
A	7”-14” [356]	D	5” [127]
B	3” [76]	H1	9.5” [241]
C	9” [229]	H2	9.5”

Linkages Taking 2 Actuators			
A	19” [483]	D	5” [127]
B	3” [76]		
C	9” [229]		

UGLK1150 and UGLK1550			
A	6.5” [165]	D	4.0” [102]
B	1.5” [33]	H1	4.0” [102]
C	5.0” [127]	H2	3.5" [89]

How to select a Globe Valve Retrofit Solution

Follow the four steps listed below when ordering a globe valve retrofit kit.

Example: Siemens 658 series, **1¼"** valve, needing **90 psi** close-off pressure and **Spring Return** actuation.

1 Based on the **Valve Number, Configuration** and **Size**, select the proper linkage or linkages for your valve.

Some valves will have more than one linkage, use the actuator selection guide to determine the appropriate linkage for a given application. The 658 Series valve uses linkage **UGLK1350** or **UGLK1214.**

2 Use the actuator selection guide and your close-off pressure requirement to select the correct actuator series for your application. Looking at the **UGLK1350** there are no spring return actuators that will achieve 90 psi close-off for 1¼" valve. Looking at the **UGLK1214**, the **NF** Series actuator will provide **156 psi close-off** for the **1¼" valve**.

3 Use the actuator listings to make your final actuator selection. Decide between **NFB24** and **NFB24-MFT.**

4 HOW TO ORDER: **Item 1 1pc UGLK1214**
Item 2 1pc NFB24-MFT

5 YEAR WARRANTY

1 Select linkage solution based on the **Valve Number**, **Configuration**, and **Size**; select the proper **Linkage Solution** for your valve.

UGLK1214

Example: **Siemens Series #658, 2-Way, 1¼"** valve to be retrofitted.

Choose correct kit **UGLK1214**.

2 Verify close-off is suitable for application. Looking at the **UGLK1214**, the **NF** Series actuator will provide **156 psi close-off** for the **1¼" valve**.

3 Select actuator based on needed control type. Decide between **NFB24** and **NFB24-MFT**.

4 Complete Ordering Example:
Item 1: **UGLK1214**
Item 2: **NFB24-MFT**

EXAMPLE PAGE

Siemens\Landis\Powers

591, 599 and 658 Series Valves - NPT Bodies
Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
658 Series	2-way	1"	NPT	N/a	No	120	(blank)	LM	UGLK1350
						229	(blank)	NV	UNV-004
						244	(blank)	NM	UGLK1350
						250	(blank)	AM	UGLK1214
								NVG	UNV-004
					Yes	95	(blank)	LF	UGLK1350
						183	(blank)	NVF	UNV-004
						244	(blank)	NF	UGLK1214
						250	(blank)	AF	UGLK1214
		1¼"	NPT	N/a	No	78	(blank)	LM	UGLK1350
						147	(blank)	NV	UNV-004
						156	(blank)	NM	UGLK1350
						235	(blank)	NVG	UNV-004
						250	(blank)	AM	UGLK1214
					Yes	61	(blank)	LF	UGLK1350
						117	(blank)	NVF	UNV-004
						156	(blank)	NF	UGLK1214
						231	250	AF	UGLK1214
	3-way	½"	NPT	N/a	No	250	(blank)	LM	UGLK1350
								AM	UGLK1214
								NV	UNV-004
					Yes	250	(blank)	LF	UGLK1350
								NF	UGLK1214
								NVF	UNV-004

Model		Spring Return Actuators: Control Input	Feedback	Power Supply	Running Time(s): Ⓜ	Running Time(s): ♦♦	VA Rating	Auxiliary Switch	Cable Length
BASIC PRODUCTS									
NFB24		On/Off	-	24 VAC/DC	<75	20	8.5	-	3 ft.
NFB24-S		On/Off	-	24 VAC/DC	<75	20	8.5	Built-In	3 ft.
NFBUP		On/Off	-	24-240 VAC[u]	<75	20	9.5	-	3 ft.
NFBUP-S		On/Off	-	24-240 VAC[u]	<75	20	9.5	Built-In	3 ft.
NFB24-SR		2-10 VDC	2-10 VDC	24 VAC/DC	95	<20	6	-	3 ft.
NFB24-SR-S		2-10 VDC	2-10 VDC	24 VAC/DC	95	<20	6	Built-In	3 ft.
NFB24-MFT		2-10 VDC	2-10 VDC	24 VAC/DC	150	<20	9	-	3 ft.
NFB24-MFT-S		2-10 VDC	2-10 VDC	24 VAC/DC	150	<20	9	Built-In	3 ft.
CUSTOMIZE PRODUCTS	**REORDER #**								
NFX24	NF200 1A1 003**	On/Off	-	24 VAC/DC	<75	20	8.5	-	3 ft.
NFX24	NF200 1A3 003**	On/Off	-	24 VAC/DC	<75	20	8.5	-	10 ft.
NFX24-S	NF220 1A1 003**	On/Off	-	24 VAC/DC	<75	20	8.5	Built-In	3 ft.
NFX24-S	NF220 1A3 003**	On/Off	-	24 VAC/DC	<75	20	8.5	Built-In	10 ft.
NFXUP	NF000 1A1 003**	On/Off	-	24-240 VACu	<75	20	9.5	-	3 ft.
NFXUP	NF000 1A3 003**	On/Off	-	24-240 VACu	<75	20	9.5	-	10 ft.
NFXUP-S	NF000 1A1 003**	On/Off	-	24-240 VACu	<75	20	9.5	Built-In	3 ft.
NFXUP-S	NF000 1A3 003**	On/Off	-	24-240 VACu	<75	20	9.5	Built-In	10 ft.
NFX24-SR	NF400 1A1 H01**	2-10 VDC (4-20mA*)	2-10 VDC	24 VAC/DC	95	<20	6	-	3 ft.
NFX24-SR	NF400 1A3 H01**	2-10 VDC (4-20mA*)	2-10 VDC	24 VAC/DC	95	<20	6	-	10 ft.
NFX24-SR-S	NF400 1A1 H01**	2-10 VDC (4-20mA*)	2-10 VDC	24 VAC/DC	95	<20	6	Built-In	3 ft.

LINEAR ACTUATORS

SERIES	MODEL	Spring Return	Control Input	Feedback Position	Power Supply	Standard Running Time
NVF Series	NVF24-MFT US	spring UP	Variable with MFT (VDC, PWM, Floating Pt., On/Off)	variable VDC	24 VAC/DC	150 seconds
	NVF24-MFT-E US	spring DOWN	Variable with MFT (VDC, PWM, Floating Pt., On/Off)	variable VDC	24 VAC/DC	150 seconds
NV Series	NV24-3 US		Floating Pt., On/Off		24 VAC/DC	150 seconds
	NV24-MFT US		Variable with MFT (VDC, PWM, Floating Pt., On/Off)	variable VDC	24 VAC/DC	150 seconds
NVG Series	NVG24-MFT US		Variable with MFT (VDC, PWM, Floating Pt., On/Off)	variable VDC	24 VAC/DC	150 seconds

ROTARY ACTUATORS SUGGESTION

SERIES	MODEL	Spring Return	Electronic Fail Safe	Control Input	Feedback Position	Power Supply	Standard Running Time
LF Series*	LF24 US	•		24 VAC/DC		24 VAC/DC	Consult Specifications
	LF24-MFT US	•		Variable with MFT (VDC, PWM, Floating Pt., On/Off)	variable VDC	24 VAC/DC	
NF Series*	NFBUP-X1	•		24 VAC/DC		24 VAC/DC	
	NFX24-MFT-X1	•		Variable with MFT (VDC, PWM, Floating Pt., On/Off)	variable VDC	24 VAC/DC	
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	
LM Series*	LMB24-3-X1			Floating Pt., On/Off		24 VAC/DC	
	LMX24-MFT-X1			Variable with MFT (VDC, PWM, Floating Pt., On/Off)	variable VDC	24 VAC/DC	
NM Series*	NMB24-3-X1			24 VAC/DC		24 VAC/DC	
	NMX24-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

	P-CODE					Control Input	Running Time	Built-in Feedback
NV CODES	V-10001	N01	ROTARY ACTUATOR CODES	P-10001	A01	2-10 VDC	150 seconds	**2-10 VDC**
	V-10002	N02		P-10002	A02	0-10 VDC	150 seconds	**0-10 VDC**
	V-10028	N1E		P-10028	A28	0-10 VDC	150 seconds	**0-10 VDC**
	V-10063	N1K		P-10063	A63	0.5-4.5 VDC	150 seconds	**0.5-4.5 VDC**
	V-10064	N1L		P-10064	A64	5.5-10 VDC	150 seconds	**5.5-10 VDC**
	V-20002	N1U		P-20002	W02	0.02-5.00 seconds PWM	150 seconds	**2-10 VDC**
	V-20003	N1V		P-20003	W03	0.10-25.5 seconds PWM	150 seconds	**2-10 VDC**
	V-30001	N24		P-30001	F01	Floating Pt.	150 seconds	**2-10 VDC**
	V-40002	N29		P-40002	J02	On/Off	150 seconds	**2-10 VDC**

Note: V-codes used for NV…Series actuator. All other MFT actuators use P-codes.

Honeywell

V5011 Series Valves - NPT Bodies

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V5011 Series	2-way	½"	NPT	-	No	250	-	NV	**UNV-006**
					Yes	250	-	NVF	**UNV-006**
		¾"	NPT	-	No	250	-	NV	**UNV-006**
					Yes	250	-	NVF	**UNV-006**
		1"	NPT	-	No	229	-	NV	**UNV-006**
						250	-	NVG	**UNV-006**
					Yes	183	-	NVF	**UNV-006**
		1¼"	NPT	-	No	147	-	NV	**UNV-006**
						235	-	NVG	**UNV-006**
					Yes	117	-	NVF	**UNV-006**
		1½"	NPT	-	No	102	-	NV	**UNV-006**
						160	-	NVG	**UNV-006**
					Yes	82	-	NVF	**UNV-006**
		2"	NPT	-	No	57	-	NV	**UNV-006**
						90	-	NVG	**UNV-006**
					Yes	46	-	NVF	**UNV-006**
		2½"	NPT	-	No	37	-	NV	**UNV-006**
						59	-	NVG	**UNV-006**
					Yes	29	-	NVF	**UNV-006**
		3"	NPT	-	No	25	-	NV	**UNV-006**
						41	-	NVG	**UNV-006**
					Yes	20	-	NVF	**UNV-006**
V5011N Series	2-way	½"	NPT	-	No	250	-	LM	**UGLK1806**
						250	-	NV	**UNV-006**
					Yes	250	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**
						250	-	NVF	**UNV-006**
		¾"	NPT	-	No	153	-	LM	**UGLK1806**
						250	-	NM	**UGLK1806**
						250	-	NV	**UNV-006**
					Yes	119	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**
						250	-	NVF	**UNV-006**
		1"	NPT	-	No	86	-	LM	**UGLK1806**
						173	-	NM	**UGLK1806**
						229	-	NV	**UNV-006**
						250	-	AM	**UGLK1800**
						250	-	NVG	**UNV-006**
					Yes	67	-	LF	**UGLK1806**
						173	-	NF	**UGLK1800**
						183	-	NVF	**UNV-006**
						250	250	AF	**UGLK1800**
		1¼"	NPT	-	No	55	-	LM	**UGLK1806**
						110	-	NM	**UGLK1806**
						147	-	NV	**UNV-006**
						221	-	AM	**UGLK1800**
						235	-	NVG	**UNV-006**
					Yes	43	-	LF	**UGLK1806**
						110	-	NF	**UGLK1800**
						117	-	NVF	**UNV-006**
						163	221	AF	**UGLK1800**
		1½"	NPT	-	No	38	-	LM	**UGLK1806**
						77	-	NM	**UGLK1806**
						102	-	NV	**UNV-006**
						153	-	AM	**UGLK1800**
						160	-	NVG	**UNV-006**
						250	-	GM	**UGLK1800**
					Yes	30	-	LF	**UGLK1806**
						77	-	NF	**UGLK1800**
						82	-	NVF	**UNV-006**
						113	153	AF	**UGLK1800**
						250	-	GK	**UGLK1800**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V5011N Series	2-way	2”	NPT	-	No	22	-	LM	**UGLK1806**
						43	-	NM	**UGLK1806**
						57	-	NV	**UNV-006**
						90	-	NVG	**UNV-006**
						86	-	AM	**UGLK1800**
						173	-	GM	**UGLK1800**
					Yes	17	-	LF	**UGLK1806**
						43	-	NF	**UGLK1800**
						64	86	AF	**UGLK1800**
						46	-	NVF	**UNV-006**
						173	-	GK	**UGLK1800**
V5013 Series	3-way	½”	NPT	-	No	250	-	NV	**UNV-006**
					Yes	250	-	NVF	**UNV-006**
		¾”	NPT	-	No	250	-	NV	**UNV-006**
					Yes	250	-	NVF	**UNV-006**
		1”	NPT	-	No	229	-	NV	**UNV-006**
						250	-	NVG	**UNV-006**
					Yes	183	-	NVF	**UNV-006**
		1¼”	NPT	-	No	147	-	NV	**UNV-006**
						235	-	NVG	**UNV-006**
					Yes	117	-	NVF	**UNV-006**
		1½”	NPT	-	No	102	-	NV	**UNV-006**
						160	-	NVG	**UNV-006**
					Yes	82	-	NVF	**UNV-006**
		2”	NPT	-	No	57	-	NV	**UNV-006**
						90	-	NVG	**UNV-006**
					Yes	46	-	NVF	**UNV-006**
		2½”	NPT	-	No	37	-	NV	**UNV-006**
						59	-	NVG	**UNV-006**
					Yes	29	-	NVF	**UNV-006**
		3”	NPT	-	No	25	-	NV	**UNV-006**
						41	-	NVG	**UNV-006**
					Yes	20	-	NVF	**UNV-006**

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

Honeywell

V5013 Series Valves - NPT Bodies

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V5013N Series	3-way	½"	NPT	-	No	250	-	LM	**UGLK1806**
						250	-	NV	**UNV-006**
					Yes	250	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**
						250	-	NVF	**UNV-006**
		¾"	NPT	-	No	153	-	LM	**UGLK1806**
						250	-	NM	**UGLK1806**
						250	-	NV	**UNV-006**
					Yes	119	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**
						250	-	NVF	**UNV-006**
		1"	NPT	-	No	86	-	LM	**UGLK1806**
						173	-	NM	**UGLK1806**
						229	-	NV	**UNV-006**
						250	-	AM	**UGLK1800**
						250	-	NVG	**UNV-006**
					Yes	67	-	LF	**UGLK1806**
						173	-	NF	**UGLK1800**
						183	-	NVF	**UNV-006**
						250	250	AF	**UGLK1800**
		1¼"	NPT	-	No	55	-	LM	**UGLK1806**
						110	-	NM	**UGLK1806**
						147	-	NV	**UNV-006**
						221	-	AM	**UGLK1800**
						235	-	NVG	**UNV-006**
					Yes	43	-	LF	**UGLK1806**
						110	-	NF	**UGLK1800**
						117	-	NVF	**UNV-006**
						163	221	AF	**UGLK1800**
		1½"	NPT	-	No	38	-	LM	**UGLK1806**
						77	-	NM	**UGLK1806**
						102	-	NV	**UNV-006**
						153	-	AM	**UGLK1800**
						160	-	NVG	**UNV-006**
						250	-	GM	**UGLK1800**
					Yes	30	-	LF	**UGLK1806**
						77	-	NF	**UGLK1800**
						82	-	NVF	**UNV-006**
						113	153	AF	**UGLK1800**
						250	-	GK	**UGLK1800**
		2"	NPT	-	No	22	-	LM	**UGLK1806**
						43	-	NM	**UGLK1806**
						57	-	NV	**UNV-006**
						90	-	NVG	**UNV-006**
						86	-	AM	**UGLK1800**
						173	-	GM	**UGLK1800**
					Yes	17	-	LF	**UGLK1806**
						43	-	NF	**UGLK1800**
						64	86	AF	**UGLK1800**
						46	-	NVF	**UNV-006**
						173	-	GK	**UGLK1800**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V5011 (F1063, F1154, H1028, G1194)	2-way	1"	NPT	-	No	86	-	LM	**UGLK1806**
						173	-	NM	**UGLK1806**
						250	-	AM	**UGLK1800**
					Yes	67	-	LF	**UGLK1806**
						173	-	NF	**UGLK1800**
						250	250	AF	**UGLK1800**
V5011 (F1089, F1178, G1228)	2-way	1½"	NPT	-	No	38	-	LM	**UGLK1806**
						77	-	NM	**UGLK1806**
						153	-	AM	**UGLK1800**
						250	-	GM	**UGLK1800**
					Yes	30	-	LF	**UGLK1806**
						77	-	NF	**UGLK1800**
						113	153	AF	**UGLK1800**
						250	-	GK	**UGLK1800**
V5011 (F1097, F1188, G1103)	2-way	2"	NPT	-	No	22	-	LM	**UGLK1806**
						43	-	NM	**UGLK1806**
						86	-	AM	**UGLK1800**
						173	-	GM	**UGLK1800**
					Yes	17	-	LF	**UGLK1800**
						43	-	NF	**UGLK1806**
						64	86	AF	**UGLK1800**
						173	-	GK	**UGLK1800**
V5011 (H1028, G1194, J1023)	2-way	¾"	NPT	-	No	153	-	LM	**UGLK1806**
						250	-	NM	**UGLK1806**
					Yes	119	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**
V5011 (H1044, G1210, J1049)	2-way	1¼"	NPT	-	No	55	-	LM	**UGLK1806**
						110	-	NM	**UGLK1806**
						221	-	AM	**UGLK1800**
					Yes	43	-	LF	**UGLK1806**
						110	-	NF	**UGLK1800**
						163	221	AF	**UGLK1800**
V5011F (1014, 1022, 1030, 1048, 1121, 1139)	2-way	½"	NPT	-	No	250	-	LM	**UGLK1806**
					Yes	250	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**
V5011F (1055, 1147)	2-way	¾"	NPT	-	No	153	-	LM	**UGLK1806**
						250	-	NM	**UGLK1806**
					Yes	119	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**
V5011F (1071, 1162)	2-way	1¼"	NPT	-	No	55	-	LM	**UGLK1806**
						110	-	NM	**UGLK1806**
						221	-	AM	**UGLK1800**
					Yes	43	-	LF	**UGLK1806**
						110	-	NF	**UGLK1800**
						163	221	AF	**UGLK1800**
V5011G (1137, 1145, 1152, 1160, 1178, 1186)	2-way	½"	NPT	-	No	250	-	LM	**UGLK1806**
					Yes	250	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**
V5011H (1002, 1010)	2-way	½"	NPT	-	No	250	-	LM	**UGLK1806**
					Yes	250	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**
V5011J (1012, 1079)	2-way	½"	NPT	-	No	250	-	LM	**UGLK1806**
					Yes	250	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**
V5013F (1004, 1012, 1079)	3-way	½"	NPT	-	No	250	-	LM	**UGLK1806**
					Yes	250	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**
V5013F (1020, 1087)	3-way	¾"	NPT	-	No	153	-	LM	**UGLK1806**
						250	-	NM	**UGLK1806**
					Yes	119	-	LF	**UGLK1806**
						250	-	NF	**UGLK1800**

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

Honeywell

V5013 and V5045 Series Valves - NPT Bodies

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V5013F (1038, 1095)	3-way	1"	NPT	-	No	86	-	LM	**UGLK1806**
						173	-	NM	**UGLK1806**
						250	-	AM	**UGLK1800**
					Yes	67	-	LF	**UGLK1806**
						173	-	NF	**UGLK1800**
						250	250	AF	**UGLK1800**
V5013F (1046, 1103)	3-way	1¼"	NPT	-	No	55	-	LM	**UGLK1806**
						110	-	NM	**UGLK1806**
						221	-	AM	**UGLK1800**
					Yes	43	-	LF	**UGLK1806**
						110	-	NF	**UGLK1800**
						163	221	AF	**UGLK1800**
V5013F (1053, 1111)	3-way	1½"	NPT	-	No	38	-	LM	**UGLK1806**
						77	-	NM	**UGLK1806**
						153	-	AM	**UGLK1800**
						250	-	GM	**UGLK1800**
					Yes	30	-	LF	**UGLK1806**
						77	-	NF	**UGLK1800**
						113	153	AF	**UGLK1800**
						250	-	GK	**UGLK1800**
V5013F (1061, 1129)	3-way	2"	NPT	-	No	22	-	LM	**UGLK1806**
						43	-	NM	**UGLK1806**
						86	-	AM	**UGLK1800**
						173	-	GM	**UGLK1800**
					Yes	17	-	LF	**UGLK1800**
						43	-	NF	**UGLK1806**
						64	86	AF	**UGLK1800**
						173	-	GK	**UGLK1800**
V5045	2-way	½"	NPT	-	No	250	-	AM	**UGLK1804**
					Yes	250	-	NF	**UGLK1804**
		¾"	NPT	-	Yes	250	-	NF	**UGLK1804**
		1"	NPT	-	No	250	-	AM	**UGLK1804**
					Yes	244	-	NF	**UGLK1804**
		1¼"	NPT	-	No	250	-	AM	**UGLK1804**
					Yes	156	-	NF	**UGLK1804**
		1½"	NPT	-	No	217	-	AM	**UGLK1804**
					Yes	161	217	AF	**UGLK1804**
		2"	NPT	-	No	122	-	AM	**UGLK1804**
					Yes	90	122	AF	**UGLK1804**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V3350 (A2009, A2017, B2007, C2013, D2003)	2-way	2½"	Flanged	-	No	55	-	AM	**UGLK1800**
						110	-	GM	**UGLK1800**
						196	-	2*GM	**UGLK1870**
					Yes	41	55	AF	**UGLK1800**
						82	110	2*AF	**UGLK1870**
						110	-	GK	**UGLK1800**
						196	-	2*GK	**UGLK1870**
V3350 (A3007, A3015, B3005, C3011, D3001)	2-way	3"	Flanged	-	No	38	-	AM	**UGLK1800**
						77	-	GM	**UGLK1800**
						136	-	2*GM	**UGLK1870**
					Yes	28	38	AF	**UGLK1800**
						57	77	2*AF	**UGLK1870**
						77	-	GK	**UGLK1800**
						136	-	2*GK	**UGLK1870**
V3350 (A4005, A4013, B4003, C4019, D4009)	2-way	4"	Flanged	-	No	11	-	AM	**UGLK1802**
						22	-	GM	**UGLK1802**
						40	-	2*GM	**UGLK1872**
					Yes	8	11	AF	**UGLK1802**
						16	22	2*AF	**UGLK1872**
						22	-	GK	**UGLK1802**
						40	-	2*GK	**UGLK1872**
V3350 (A5002, A5010, B5000, C5016, D5006)	2-way	5"	Flanged	-	No	14	-	GM	**UGLK1802**
						25	-	2*GM	**UGLK1872**
					Yes	5	7	AF	**UGLK1802**
						11	14	2*AF	**UGLK1872**
						14	-	GK	**UGLK1802**
						25	-	2*GK	**UGLK1872**
V3350 (A6000, A6008, A6018, C6014, D6004)	2-way	6"	Flanged	-	No	10	-	GM	**UGLK1802**
						18	-	2*GM	**UGLK1872**
					Yes	7	10	2*AF	**UGLK1872**
						10	-	GK	**UGLK1802**
						18	-	2*GK	**UGLK1872**
V3351 (A4004, C4000, C4001)	2-way	4"	Flanged	-	No	11	-	AM	**UGLK1802**
						22	-	GM	**UGLK1802**
						40	-	2*GM	**UGLK1872**
					Yes	8	11	AF	**UGLK1802**
						16	22	2*AF	**UGLK1872**
						22	-	GK	**UGLK1802**
						40	-	2*GK	**UGLK1872**
V3351 (A2008, C2005, D2002)	2-way	2½"	Flanged	-	No	55	-	AM	**UGLK1800**
						110	-	GM	**UGLK1800**
						196	-	2*GM	**UGLK1870**
					Yes	41	55	AF	**UGLK1800**
						82	110	2*AF	**UGLK1870**
						110	-	GK	**UGLK1800**
						196	-	2*GK	**UGLK1870**
V3351 (A3006, C3002, C3003)	2-way	3"	Flanged	-	No	38	-	AM	**UGLK1800**
						77	-	GM	**UGLK1800**
						136	-	2*GM	**UGLK1870**
					Yes	28	38	AF	**UGLK1800**
						57	77	2*AF	**UGLK1870**
						77	-	GK	**UGLK1800**
						136	-	2*GK	**UGLK1870**
V3351 (A5001, C5008, D5005)	2-way	5"	Flanged	-	No	14	-	GM	**UGLK1802**
						25	-	2*GM	**UGLK1872**
					Yes	5	7	AF	**UGLK1802**
						11	14	2*AF	**UGLK1872**
						14	-	GK	**UGLK1802**
						25	-	2*GK	**UGLK1872**
V3351 (A6009, C6005, C6006)	2-way	6"	Flanged	-	No	10	-	GM	**UGLK1802**
						18	-	2*GM	**UGLK1872**
					Yes	7	10	2*AF	**UGLK1872**
						10	-	GK	**UGLK1802**
						18	-	2*GK	**UGLK1872**

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

Honeywell

V3360, V3450 Series Valves

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V3360E2008, V3361E2007	3-way	2½"	Flanged	-	No	55	-	AM	**UGLK1800**
						110	-	GM	**UGLK1800**
						196	-	2*GM	**UGLK1870**
					Yes	41	55	AF	**UGLK1800**
						82	110	2*AF	**UGLK1870**
						110	-	GK	**UGLK1800**
						196	-	2*GK	**UGLK1870**
V3360E3006, V3361E3005	3-way	3"	Flanged	-	No	38	-	AM	**UGLK1800**
						77	-	GM	**UGLK1800**
						136	-	2*GM	**UGLK1870**
					Yes	28	38	AF	**UGLK1800**
						57	77	2*AF	**UGLK1870**
						77	-	GK	**UGLK1800**
						136	-	2*GK	**UGLK1870**
V3360E4004, V3361E4003	3-way	4"	Flanged	-	No	11	-	AM	**UGLK1802**
						22	-	GM	**UGLK1802**
						40	-	2*GM	**UGLK1872**
					Yes	8	11	AF	**UGLK1802**
						16	22	2*AF	**UGLK1872**
						22	-	GK	**UGLK1802**
						40	-	2*GK	**UGLK1872**
V3360E5001, V3361E5000	3-way	5"	Flanged	-	No	14	-	GM	**UGLK1802**
						25	-	2*GM	**UGLK1872**
					Yes	5	7	AF	**UGLK1802**
						11	14	2*AF	**UGLK1872**
						14	-	GK	**UGLK1802**
						25	-	2*GK	**UGLK1872**
V3360E6009, V3361E6008	3-way	6"	Flanged	-	No	10	-	GM	**UGLK1802**
						18	-	2*GM	**UGLK1872**
					Yes	7	10	2*AF	**UGLK1872**
						10	-	GK	**UGLK1802**
						18	-	2*GK	**UGLK1872**
V3450 (A2008, A2016, B2006, C2012, D2002)	2-way	2½"	Flanged	-	No	55	-	AM	**UGLK1800**
						110	-	GM	**UGLK1800**
						196	-	2*GM	**UGLK1870**
					Yes	41	55	AF	**UGLK1800**
						82	110	2*AF	**UGLK1870**
						110	-	GK	**UGLK1800**
						196	-	2*GK	**UGLK1870**
V3450 (A3006, A3014, B3004, C3010, D3000)	2-way	3"	Flanged	-	No	38	-	AM	**UGLK1800**
						77	-	GM	**UGLK1800**
						136	-	2*GM	**UGLK1870**
					Yes	28	38	AF	**UGLK1800**
						57	77	2*AF	**UGLK1870**
						77	-	GK	**UGLK1800**
						136	-	2*GK	**UGLK1870**
V3450 (A4004, A4012, B4002, C4018, D4008)	2-way	4"	Flanged	-	No	11	-	AM	**UGLK1802**
						22	-	GM	**UGLK1802**
						40	-	2*GM	**UGLK1872**
					Yes	8	11	AF	**UGLK1802**
						16	22	2*AF	**UGLK1872**
						22	-	GK	**UGLK1802**
						40	-	2*GK	**UGLK1872**
V3450 (A5001, A5019, B5009, C5015, D5005)	2-way	5"	Flanged	-	No	14	-	GM	**UGLK1802**
						25	-	2*GM	**UGLK1872**
					Yes	5	7	AF	**UGLK1802**
						11	14	2*AF	**UGLK1872**
						14	-	GK	**UGLK1802**
						25	-	2*GK	**UGLK1872**
V3450 (A6009, A6007, A6017, C6013, D6003)	2-way	6"	Flanged	-	No	10	-	GM	**UGLK1802**
						18	-	2*GM	**UGLK1872**
					Yes	7	10	2*AF	**UGLK1872**
						10	-	GK	**UGLK1802**
						18	-	2*GK	**UGLK1872**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V3451 (A2007, C2003, C2004)	2-way	2½"	Flanged	-	No	55	-	AM	**UGLK1800**
						110	-	GM	**UGLK1800**
						196	-	2*GM	**UGLK1870**
					Yes	41	55	AF	**UGLK1800**
						82	110	2*AF	**UGLK1870**
						110	-	GK	**UGLK1800**
						196	-	2*GK	**UGLK1870**
V3451 (A3005, C3001, C3002)	2-way	3"	Flanged	-	No	38	-	AM	**UGLK1800**
						77	-	GM	**UGLK1800**
						136	-	2*GM	**UGLK1870**
					Yes	28	38	AF	**UGLK1800**
						57	77	2*AF	**UGLK1870**
						77	-	GK	**UGLK1800**
						136	-	2*GK	**UGLK1870**
V3451 (A4003, C4000, C4009)	2-way	4"	Flanged	-	No	11	-	AM	**UGLK1802**
						22	-	GM	**UGLK1802**
						40	-	2*GM	**UGLK1872**
					Yes	8	11	AF	**UGLK1802**
						16	22	2*AF	**UGLK1872**
						22	-	GK	**UGLK1802**
						40	-	2*GK	**UGLK1872**
V3451 (A5000, C5006, C5007)	2-way	5"	Flanged	-	No	14	-	GM	**UGLK1802**
						25	-	2*GM	**UGLK1872**
					Yes	5	7	AF	**UGLK1802**
						11	14	2*AF	**UGLK1872**
						14	-	GK	**UGLK1802**
						25	-	2*GK	**UGLK1872**
V3451 (A6008, C6004, C6005)	2-way	6"	Flanged	-	No	10	-	GM	**UGLK1802**
						18	-	2*GM	**UGLK1872**
					Yes	7	10	2*AF	**UGLK1872**
						10	-	GK	**UGLK1802**
						18	-	2*GK	**UGLK1872**
V3460E2007, V3461E2006	3-way	2½"	Flanged	-	No	55	-	AM	**UGLK1800**
						110	-	GM	**UGLK1800**
						196	-	2*GM	**UGLK1870**
					Yes	41	55	AF	**UGLK1800**
						82	110	2*AF	**UGLK1870**
						110	-	GK	**UGLK1800**
						196	-	2*GK	**UGLK1870**
V3460E3005, V3461E3004	3-way	3"	Flanged	-	No	38	-	AM	**UGLK1800**
						77	-	GM	**UGLK1800**
						136	-	2*GM	**UGLK1870**
					Yes	28	38	AF	**UGLK1800**
						57	77	2*AF	**UGLK1870**
						77	-	GK	**UGLK1800**
						136	-	2*GK	**UGLK1870**
V3460E4003, V3461E4002	3-way	4"	Flanged	-	Yes	8	11	AF	**UGLK1802**
						22	-	GK	**UGLK1802**
						16	22	2*AF	**UGLK1872**
						40	-	2*GK	**UGLK1872**
					No	11	-	AM	**UGLK1802**
						22	-	GM	**UGLK1802**
						40	-	2*GM	**UGLK1872**
V3460E5000, V3461E5009	3-way	5"	Flanged	-	No	14	-	GM	**UGLK1802**
						25	-	2*GM	**UGLK1872**
					Yes	5	7	AF	**UGLK1802**
						11	14	2*AF	**UGLK1872**
						14	-	GK	**UGLK1802**
						25	-	2*GK	**UGLK1872**
V3460E6008, V3461E6007	3-way	6"	Flanged	-	No	10	-	GM	**UGLK1802**
						18	-	2*GM	**UGLK1872**
					Yes	7	10	2*AF	**UGLK1872**
						10	-	GK	**UGLK1802**
						18	-	2*GK	**UGLK1872**

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

Honeywell

V5011, V5013 Series Valves

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V5011 (A1734, F1105, F1196, G1111)	2-way	2½"	Flanged/NPT	-	No	55	-	AM	**UGLK1800**
						110	-	GM	**UGLK1800**
						196	-	2*GM	**UGLK1870**
					Yes	41	55	AF	**UGLK1800**
						82	110	2*AF	**UGLK1870**
						110	-	GK	**UGLK1800**
						196	-	2*GK	**UGLK1870**
V5011 (A1767, F1113, F1204, G1129)	2-way	3"	Flanged/NPT	-	No	38	-	AM	**UGLK1800**
						77	-	GM	**UGLK1800**
						136	-	2*GM	**UGLK1870**
					Yes	28	38	AF	**UGLK1800**
						57	77	2*AF	**UGLK1870**
						77	-	GK	**UGLK1800**
						136	-	2*GK	**UGLK1870**
V5011 (A1858, B1013)	2-way	4"	Flanged	-	No	11	-	AM	**UGLK1802**
						22	-	GM	**UGLK1802**
						40	-	2*GM	**UGLK1872**
					Yes	8	11	AF	**UGLK1802**
						16	22	2*AF	**UGLK1872**
						22	-	GK	**UGLK1802**
						40	-	2*GK	**UGLK1872**
V5011 (A1882, B1047)	2-way	5"	Flanged	-	No	14	-	GM	**UGLK1802**
						25	-	2*GM	**UGLK1872**
					Yes	5	7	AF	**UGLK1802**
						11	14	2*AF	**UGLK1872**
						14	-	GK	**UGLK1802**
						25	-	2*GK	**UGLK1872**
V5011 (A1916, B1078)	2-way	6"	Flanged	-	No	10	-	GM	**UGLK1802**
						18	-	2*GM	**UGLK1872**
					Yes	7	10	2*AF	**UGLK1872**
						10	-	GK	**UGLK1802**
						18	-	2*GK	**UGLK1872**
V5013 (B1003, C1001)	3-way	2½"	Flanged	-	No	55	-	AM	**UGLK1800**
						110	-	GM	**UGLK1800**
						196	-	2*GM	**UGLK1870**
					Yes	41	55	AF	**UGLK1800**
						82	110	2*AF	**UGLK1870**
						110	-	GK	**UGLK1800**
						196	-	2*GK	**UGLK1870**
V5013 (B1011, C1019)	2-way	3"	Flanged	-	No	38	-	AM	**UGLK1800**
						77	-	GM	**UGLK1800**
						136	-	2*GM	**UGLK1870**
					Yes	28	38	AF	**UGLK1800**
						57	77	2*AF	**UGLK1870**
						77	-	GK	**UGLK1800**
						136	-	2*GK	**UGLK1870**
V5013 (B1029, C1027)	3-way	4"	Flanged	-	No	11	-	AM	**UGLK1802**
						22	-	GM	**UGLK1802**
						40	-	2*GM	**UGLK1872**
					Yes	8	11	AF	**UGLK1802**
						16	22	2*AF	**UGLK1872**
						22	-	GK	**UGLK1802**
						40	-	2*GK	**UGLK1872**
V5013 (B1037, C1035)	3-way	5"	Flanged	-	No	14	-	GM	**UGLK1802**
						25	-	2*GM	**UGLK1872**
					Yes	5	7	AF	**UGLK1802**
						11	14	2*AF	**UGLK1872**
						14	-	GK	**UGLK1802**
						25	-	2*GK	**UGLK1872**
V5013 (B1045, C1043)	3-way	6"	Flanged	-	No	10	-	GM	**UGLK1802**
						18	-	2*GM	**UGLK1872**
					Yes	7	10	2*AF	**UGLK1872**
						10	-	GK	**UGLK1802**
						18	-	2*GK	**UGLK1872**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V-5252-12	2-way	3"	Flanged	PDTC	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
V-5252-13	2-way	3"	Flanged	PDTC	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
V-5252-14	2-way	4"	Flanged	PDTC	No	15	-	AM	**UGLK1410**
						29	-	GM	**UGLK1410**
						52	-	2*GM	**UGLK1476**
					Yes	11	15	AF	**UGLK1410**
						22	29	2*AF	**UGLK1476**
						29	-	GK	**UGLK1410**
						52	-	2*GK	**UGLK1476**
V-5252-17	2-way	5"	Flanged	PDTC	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
V-5252-18	2-way	5"	Flanged	PDTC	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
V-5252-19	2-way	6"	Flanged	PDTC	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**
V-5252-35	2-way	3"	Flanged	PDTC	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
V-5252-36	2-way	4"	Flanged	PDTC	No	15	-	AM	**UGLK1410**
						29	-	GM	**UGLK1410**
						52	-	2*GM	**UGLK1476**
					Yes	11	15	AF	**UGLK1410**
						22	29	2*AF	**UGLK1476**
						29	-	GK	**UGLK1410**
						52	-	2*GK	**UGLK1476**
V-5252-38	2-way	5"	Flanged	PDTC	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
V-5252-39	2-way	6"	Flanged	PDTC	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**

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

PDTO = Push down to open
PDTC = Push down to close

Johnson Controls

V-5462 Series

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V-5462-11	2-way	4"	Flanged	PDTO	No	15	-	AM	**UGLK1410**
						29	-	GM	**UGLK1410**
						52	-	2*GM	**UGLK1476**
					Yes	11	15	AF	**UGLK1410**
						22	29	2*AF	**UGLK1476**
						29	-	GK	**UGLK1410**
						52	-	2*GK	**UGLK1476**
V-5462-12	2-way	4"	Flanged	PDTO	No	15	-	AM	**UGLK1410**
						29	-	GM	**UGLK1410**
						52	-	2*GM	**UGLK1476**
					Yes	11	15	AF	**UGLK1410**
						22	29	2*AF	**UGLK1476**
						29	-	GK	**UGLK1410**
						52	-	2*GK	**UGLK1476**
V-5462-15	2-way	5"	Flanged	PDTO	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
V-5462-16	2-way	5"	Flanged	PDTO	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
V-5462-17	2-way	6"	Flanged	PDTO	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**
V-5462-18	2-way	6"	Flanged	PDTO	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**
V-5462-35	2-way	3"	Flanged	PDTO	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
V-5462-37	2-way	4"	Flanged	PDTO	No	15	-	AM	**UGLK1410**
						29	-	GM	**UGLK1410**
						52	-	2*GM	**UGLK1476**
					Yes	11	15	AF	**UGLK1410**
						22	29	2*AF	**UGLK1476**
						29	-	GK	**UGLK1410**
						52	-	2*GK	**UGLK1476**
V-5462-39	2-way	5"	Flanged	PDTO	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
V-5462-40	2-way	6"	Flanged	PDTO	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**

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

PDTO = Push down to open
PDTC = Push down to close

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V-5462-8	2-way	3"	Flanged	PDTO	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
V-5462-9	2-way	3"	Flanged	PDTO	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
V-5842-10	3-way	3"	Flanged	Mixing	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
V-5842-13	3-way	5"	Flanged	Mixing	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
V-5842-14	3-way	5"	Flanged	Mixing	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
V-5842-15	3-way	6"	Flanged	Mixing	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**
V-5842-16	3-way	6"	Flanged	Mixing	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**
V-5842-32	3-way	3"	Flanged	Mixing	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
V-5842-35	3-way	5"	Flanged	Mixing	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
V-5842-36	3-way	6"	Flanged	Mixing	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**

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PDTC = Push down to close

Johnson Controls

VB-3…, VB-4…, VB-5… Series

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V-5842-9	3-way	3”	Flanged	Mixing	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
VB-3752-22	2-way	3”	Flanged	PDTC	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
VB-3752-25	2-way	4”	Flanged	PDTC	No	15	-	AM	**UGLK1410**
						29	-	GM	**UGLK1410**
						52	-	2*GM	**UGLK1476**
					Yes	11	15	AF	**UGLK1410**
						22	29	2*AF	**UGLK1476**
						29	-	GK	**UGLK1410**
						52	-	2*GK	**UGLK1476**
VB-3752-28	2-way	5”	Flanged	PDTC	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
VB-3752-31	2-way	6”	Flanged	PDTC	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**
VB-3970-14	2-way	3”	Flanged	PDTO	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
VB-3970-17	2-way	4”	Flanged	PDTO	No	15	-	AM	**UGLK1410**
						29	-	GM	**UGLK1410**
						52	-	2*GM	**UGLK1476**
					Yes	11	15	AF	**UGLK1410**
						22	29	2*AF	**UGLK1476**
						29	-	GK	**UGLK1410**
						52	-	2*GK	**UGLK1476**
VB-3970-20	2-way	5”	Flanged	PDTO	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
VB-3970-23	2-way	6”	Flanged	PDTO	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**
VB-4322-11	3-way	3”	Flanged	Mixing	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**

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

PDTO = Push down to open
PDTC = Push down to close

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VB-4322-13	3-way	4"	Flanged	Mixing	No	15	-	AM	**UGLK1410**
						29	-	GM	**UGLK1410**
						52	-	2*GM	**UGLK1476**
					Yes	11	15	AF	**UGLK1410**
						22	29	2*AF	**UGLK1476**
						29	-	GK	**UGLK1410**
						52	-	2*GK	**UGLK1476**
VB-4322-18	3-way	6"	Flanged	Mixing	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**
VB-4322-19	3-way	5"	Flanged	Mixing	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
VG2231 UM	2-way	3"	Flanged	PDTC	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
VG2231 VM	2-way	4"	Flanged	PDTC	No	15	-	AM	**UGLK1410**
						29	-	GM	**UGLK1410**
						52	-	2*GM	**UGLK1476**
					Yes	11	15	AF	**UGLK1410**
						22	29	2*AF	**UGLK1476**
						29	-	GK	**UGLK1410**
						52	-	2*GK	**UGLK1476**
VG2231 WN	2-way	5"	Flanged	PDTC	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
VG2231 YN	2-way	6"	Flanged	PDTC	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**
VG2431 UM	2-way	3"	Flanged	PDTO	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
VG2431 VM	2-way	4"	Flanged	PDTO	No	15	-	AM	**UGLK1410**
						29	-	GM	**UGLK1410**
						52	-	2*GM	**UGLK1476**
					Yes	11	15	AF	**UGLK1410**
						22	29	2*AF	**UGLK1476**
						29	-	GK	**UGLK1410**
						52	-	2*GK	**UGLK1476**
VG2431 WN	2-way	5"	Flanged	PDTO	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**

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

PDTO = Push down to open
PDTC = Push down to close

Johnson Controls

VG2… Series

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VG2431 YN	2-way	6”	Flanged	PDTO	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**
VG2831 UM	3-way	3”	Flanged	Mixing	No	52	-	GM	**UGLK1410**
						26	-	AM	**UGLK1410**
						93	-	2*GM	**UGLK1476**
					Yes	19	26	AF	**UGLK1410**
						52	-	GK	**UGLK1410**
						39	52	2*AF	**UGLK1476**
						93	-	2*GK	**UGLK1476**
VG2831 VM	3-way	4”	Flanged	Mixing	No	15	-	AM	**UGLK1410**
						29	-	GM	**UGLK1410**
						52	-	2*GM	**UGLK1476**
					Yes	11	15	AF	**UGLK1410**
						22	29	2*AF	**UGLK1476**
						29	-	GK	**UGLK1410**
						52	-	2*GK	**UGLK1476**
VG2831 WN	3-way	5”	Flanged	Mixing	No	14	-	GM	**UGLK1414**
						25	-	2*GM	**UGLK1480**
					Yes	5	7	AF	**UGLK1414**
						11	14	2*AF	**UGLK1480**
						14	-	GK	**UGLK1414**
						25	-	2*GK	**UGLK1480**
VG2831 YN	3-way	6”	Flanged	Mixing	No	10	-	GM	**UGLK1414**
						18	-	2*GM	**UGLK1480**
					Yes	7	10	2*AF	**UGLK1480**
						10	-	GK	**UGLK1414**
						18	-	2*GK	**UGLK1480**

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

PDTO = Push down to open
PDTC = Push down to close

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V-5210-4595	2-way	2½"	Flanged	PDTC	No	38	-	AM	**UGLK1412**
						75	-	GM	**UGLK1412**
						134	-	2*GM	**UGLK1478**
					Yes	28	38	AF	**UGLK1412**
						55	75	2*AF	**UGLK1478**
						75	-	GK	**UGLK1412**
						134	-	2*GK	**UGLK1478**
V-5210-4596	2-way	3"	Flanged	PDTC	No	52	-	GM	**UGLK1412**
						26	-	AM	**UGLK1412**
						93	-	2*GM	**UGLK1478**
					Yes	19	26	AF	**UGLK1412**
						52	-	GK	**UGLK1412**
						39	52	2*AF	**UGLK1478**
						93	-	2*GK	**UGLK1478**
V-5210-4597	2-way	4"	Flanged	PDTC	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
V-5252-10	2-way	3"	Flanged	PDTC	No	38	-	AM	**UGLK1404**
						77	-	GM	**UGLK1404**
						136	-	2*GM	**UGLK1472**
					Yes	28	38	AF	**UGLK1404**
						57	77	2*AF	**UGLK1472**
						77	-	GK	**UGLK1404**
						136	-	2*GK	**UGLK1472**
V-5252-11	2-way	3"	Flanged	PDTC	No	38	-	AM	**UGLK1404**
						77	-	GM	**UGLK1404**
						136	-	2*GM	**UGLK1472**
					Yes	28	38	AF	**UGLK1404**
						57	77	2*AF	**UGLK1472**
						77	-	GK	**UGLK1404**
						136	-	2*GK	**UGLK1472**
V-5252-15	2-way	4"	Flanged	PDTC	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
V-5252-16	2-way	4"	Flanged	PDTC	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
V-5252-32	2-way	2½"	Flanged	PDTC	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
V-5252-33	2-way	2½"	Flanged	PDTC	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**

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

PDTO = Push down to open
PDTC = Push down to close

Johnson Controls

V-5252, V-5410 Series Flanged Valves

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V-5252-34	2-way	3"	Flanged	PDTC	No	38	-	AM	**UGLK1404**
						77	-	GM	**UGLK1404**
						136	-	2*GM	**UGLK1472**
					Yes	28	38	AF	**UGLK1404**
						57	77	2*AF	**UGLK1472**
						77	-	GK	**UGLK1404**
						136	-	2*GK	**UGLK1472**
V-5252-37	2-way	4"	Flanged	PDTC	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
V-5252-4	2-way	2½"	Flanged	PDTC	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
V-5252-5	2-way	2½"	Flanged	PDTC	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
V-5252-6	2-way	2½"	Flanged	PDTC	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
V-5252-7	2-way	2½"	Flanged	PDTC	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
V-5252-8	2-way	2½"	Flanged	PDTC	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
V-5252-9	2-way	3"	Flanged	PDTC	No	38	-	AM	**UGLK1404**
						77	-	GM	**UGLK1404**
						136	-	2*GM	**UGLK1472**
					Yes	28	38	AF	**UGLK1404**
						57	77	2*AF	**UGLK1472**
						77	-	GK	**UGLK1404**
						136	-	2*GK	**UGLK1472**
V-5410-4595	2-way	2½"	Flanged	PDTO	No	38	-	AM	**UGLK1412**
						75	-	GM	**UGLK1412**
						134	-	2*GM	**UGLK1478**
					Yes	28	38	AF	**UGLK1412**
						55	75	2*AF	**UGLK1478**
						75	-	GK	**UGLK1412**
						134	-	2*GK	**UGLK1478**

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

PDTO = Push down to open
PDTC = Push down to close

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V-5410-4596	2-way	3”	Flanged	PDTO	No	52	-	GM	**UGLK1412**
						26	-	AM	**UGLK1412**
						93	-	2*GM	**UGLK1478**
					Yes	19	26	AF	**UGLK1412**
						52	-	GK	**UGLK1412**
						39	52	2*AF	**UGLK1478**
						93	-	2*GK	**UGLK1478**
V-5410-4597	2-way	4”	Flanged	PDTO	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
V-5462-10	2-way	3”	Flanged	PDTC	No	52	-	GM	**UGLK1412**
						26	-	AM	**UGLK1412**
						93	-	2*GM	**UGLK1478**
					Yes	19	26	AF	**UGLK1412**
						52	-	GK	**UGLK1412**
						39	52	2*AF	**UGLK1478**
						93	-	2*GK	**UGLK1478**
V-5462-13	2-way	4”	Flanged	PDTO	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
V-5462-14	2-way	4”	Flanged	PDTO	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
V-5462-34	2-way	2½”	Flanged	PDTO	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
V-5462-36	2-way	3”	Flanged	PDTC	No	52	-	GM	**UGLK1412**
						26	-	AM	**UGLK1412**
						93	-	2*GM	**UGLK1478**
					Yes	19	26	AF	**UGLK1412**
						52	-	GK	**UGLK1412**
						39	52	2*AF	**UGLK1478**
						93	-	2*GK	**UGLK1478**
V-5462-38	2-way	4”	Flanged	PDTO	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
V-5462-6	2-way	2½”	Flanged	PDTO	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**

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

PDTO = Push down to open
PDTC = Push down to close

Johnson Controls

V-54… and V-58… Series Flanged Valves

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V-5462-7	2-way	2½"	Flanged	PDTO	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
V-5842-11	3-way	4"	Flanged	Mixing	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
V-5842-12	3-way	4"	Flanged	Mixing	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
V-5842-17	3-way	3"	Flanged	Mixing	No	52	-	GM	**UGLK1412**
						26	-	AM	**UGLK1412**
						93	-	2*GM	**UGLK1478**
					Yes	19	26	AF	**UGLK1412**
						52	-	GK	**UGLK1412**
						39	52	2*AF	**UGLK1478**
						93	-	2*GK	**UGLK1478**
V-5842-18	3-way	3"	Flanged	Mixing	No	52	-	GM	**UGLK1412**
						26	-	AM	**UGLK1412**
						93	-	2*GM	**UGLK1478**
					Yes	19	26	AF	**UGLK1412**
						52	-	GK	**UGLK1412**
						39	52	2*AF	**UGLK1478**
						93	-	2*GK	**UGLK1478**
V-5842-31	3-way	2½"	Flanged	Mixing	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
V-5842-33	3-way	3"	Flanged	Mixing	No	52	-	GM	**UGLK1412**
						26	-	AM	**UGLK1412**
						93	-	2*GM	**UGLK1478**
					Yes	19	26	AF	**UGLK1412**
						52	-	GK	**UGLK1412**
						39	52	2*AF	**UGLK1478**
						93	-	2*GK	**UGLK1478**
V-5842-34	3-way	4"	Flanged	Mixing	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
V-5842-7	3-way	2½"	Flanged	Mixing	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**

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

PDTO = Push down to open
PDTC = Push down to close

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V-5842-8	3-way	2½"	Flanged	Mixing	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
VB-3752-19	2-way	2½"	Flanged	PDTC	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
VB-3970-11	2-way	2½"	Flanged	PDTO	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
VB-4322-9	3-way	2½"	Flanged	Mixing	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
VG2231 TM	2-way	2½"	Flanged	PDTC	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
VG2231 UN	2-way	3"	Flanged	PDTC	No	52	-	GM	**UGLK1412**
						26	-	AM	**UGLK1412**
						93	-	2*GM	**UGLK1478**
					Yes	19	26	AF	**UGLK1412**
						52	-	GK	**UGLK1412**
						39	52	2*AF	**UGLK1478**
						93	-	2*GK	**UGLK1478**
VG2231 VN	2-way	4"	Flanged	PDTC	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
VG2431 TM	2-way	2½"	Flanged	PDTO	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
VG2431 UN	2-way	3"	Flanged	PDTO	No	52	-	GM	**UGLK1412**
						26	-	AM	**UGLK1412**
						93	-	2*GM	**UGLK1478**
					Yes	19	26	AF	**UGLK1412**
						52	-	GK	**UGLK1412**
						39	52	2*AF	**UGLK1478**
						93	-	2*GK	**UGLK1478**

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

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PDTC = Push down to close

Johnson Controls

VG-2… Series Flanged Valves

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VG2431 VN	2-way	4”	Flanged	PDTO	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**
VG2831 TM	3-way	2½”	Flanged	Mixing	No	55	-	AM	**UGLK1404**
						110	-	GM	**UGLK1404**
						196	-	2*GM	**UGLK1472**
					Yes	41	55	AF	**UGLK1404**
						82	110	2*AF	**UGLK1472**
						110	-	GK	**UGLK1404**
						196	-	2*GK	**UGLK1472**
VG2831 UN	3-way	3”	Flanged	Mixing	No	52	-	GM	**UGLK1412**
						26	-	AM	**UGLK1412**
						93	-	2*GM	**UGLK1478**
					Yes	19	26	AF	**UGLK1412**
						52	-	GK	**UGLK1412**
						39	52	2*AF	**UGLK1478**
						93	-	2*GK	**UGLK1478**
VG2831 VN	3-way	4”	Flanged	Mixing	No	15	-	AM	**UGLK1412**
						29	-	GM	**UGLK1412**
						52	-	2*GM	**UGLK1478**
					Yes	11	15	AF	**UGLK1412**
						22	29	2*AF	**UGLK1478**
						29	-	GK	**UGLK1412**
						52	-	2*GK	**UGLK1478**

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

PDTO = Push down to open
PDTC = Push down to close

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V(B)-3754 Series, Bronze Trim	2-way	¾"	NPT	-	No	250	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	250	-	NVF	**UNV-008**
		1"	NPT	-	No	229	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	183	-	NVF	**UNV-008**
		1¼"	NPT	-	No	147	-	NV	**UNV-008**
						235	-	NVG	**UNV-008**
					Yes	117	-	NVF	**UNV-008**
		1½"	NPT	-	No	102	-	NV	**UNV-008**
						160	-	NVG	**UNV-008**
					Yes	82	-	NVF	**UNV-008**
		2"	NPT	-	No	57	-	NV	**UNV-008**
						90	-	NVG	**UNV-008**
					Yes	46	-	NVF	**UNV-008**
V(B)-3974 Series, Bronze Trim	2-way	¾"	NPT	-	No	250	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	250	-	NVF	**UNV-008**
		1"	NPT	-	No	229	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	183	-	NVF	**UNV-008**
		1¼"	NPT	-	No	147	-	NV	**UNV-008**
						235	-	NVG	**UNV-008**
					Yes	117	-	NVF	**UNV-008**
		1½"	NPT	-	No	102	-	NV	**UNV-008**
						160	-	NVG	**UNV-008**
					Yes	82	-	NVF	**UNV-008**
		2"	NPT	-	No	57	-	NV	**UNV-008**
						90	-	NVG	**UNV-008**
					Yes	46	-	NVF	**UNV-008**
V(B)-4324 Series, Bronze Trim	3-way	¾"	NPT	-	No	250	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	250	-	NVF	**UNV-008**
		1"	NPT	-	No	229	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	183	-	NVF	**UNV-008**
		1¼"	NPT	-	No	147	-	NV	**UNV-008**
						235	-	NVG	**UNV-008**
					Yes	117	-	NVF	**UNV-008**
		1½"	NPT	-	No	102	-	NV	**UNV-008**
						160	-	NVG	**UNV-008**
					Yes	82	-	NVF	**UNV-008**
		2"	NPT	-	No	57	-	NV	**UNV-008**
						90	-	NVG	**UNV-008**
					Yes	46	-	NVF	**UNV-008**
V(B)-5844 Series	2-way	¾"	NPT	-	No	250	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	250	-	NVF	**UNV-008**
		1"	NPT	-	No	229	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	183	-	NVF	**UNV-008**
		1¼"	NPT	-	No	147	-	NV	**UNV-008**
						235	-	NVG	**UNV-008**
					Yes	117	-	NVF	**UNV-008**
		1½"	NPT	-	No	102	-	NV	**UNV-008**
						160	-	NVG	**UNV-008**
					Yes	82	-	NVF	**UNV-008**
		2"	NPT	-	No	57	-	NV	**UNV-008**
						90	-	NVG	**UNV-008**
					Yes	46	-	NVF	**UNV-008**

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

Johnson Controls

VG7000, V-4332, V(B)-5844 Series Valves

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V(B)-5844 Series	3-way	¾"	NPT	-	No	250	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	250	-	NVF	**UNV-008**
		1"	NPT	-	No	229	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	183	-	NVF	**UNV-008**
		1¼"	NPT	-	No	147	-	NV	**UNV-008**
						235	-	NVG	**UNV-008**
					Yes	117	-	NVF	**UNV-008**
		1½"	NPT	-	No	102	-	NV	**UNV-008**
						160	-	NVG	**UNV-008**
					Yes	82	-	NVF	**UNV-008**
		2"	NPT	-	No	57	-	NV	**UNV-008**
						90	-	NVG	**UNV-008**
					Yes	46	-	NVF	**UNV-008**
V-4332	3-way	¾"	NPT	-	No	250	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	250	-	NVF	**UNV-008**
		1"	NPT	-	No	229	-	NV	**UNV-008**
						250	-	NVG	**UNV-008**
					Yes	183	-	NVF	**UNV-008**
		1¼"	NPT	-	No	147	-	NV	**UNV-008**
						235	-	NVG	**UNV-008**
					Yes	117	-	NVF	**UNV-008**
		1½"	NPT	-	No	102	-	NV	**UNV-008**
						160	-	NVG	**UNV-008**
					Yes	82	-	NVF	**UNV-008**
		2"	NPT	-	No	57	-	NV	**UNV-008**
						90	-	NVG	**UNV-008**
					Yes	46	-	NVF	**UNV-008**
VG7000 Series	2-way	½"	NPT	-	No	250	-	NV	**UNV-009**
						250	-	NVG	**UNV-009**
					Yes	250	-	NVF	**UNV-009**
		¾"	NPT	-	No	250	-	NV	**UNV-009**
						250	-	NVG	**UNV-009**
					Yes	250	-	NVF	**UNV-009**
		1"	NPT	-	No	229	-	NV	**UNV-040**
						250	-	NVG	**UNV-040**
					Yes	183	-	NVF	**UNV-040**
		1¼"	NPT	-	No	147	-	NV	**UNV-040**
						235	-	NVG	**UNV-040**
					Yes	117	-	NVF	**UNV-040**
		1½"	NPT	-	No	102	-	NV	**UNV-040**
						160	-	NVG	**UNV-040**
					Yes	82	-	NVF	**UNV-040**
		2"	NPT	-	No	57	-	NV	**UNV-040**
						90	-	NVG	**UNV-040**
					Yes	46	-	NVF	**UNV-040**
	3-way	½"	NPT	-	No	250	-	NV	**UNV-009**
						250	-	NVG	**UNV-009**
					Yes	250	-	NVF	**UNV-009**
		¾"	NPT	-	No	250	-	NV	**UNV-009**
						250	-	NVG	**UNV-009**
					Yes	250	-	NVF	**UNV-009**
		1"	NPT	-	No	229	-	NV	**UNV-040**
						250	-	NVG	**UNV-040**
					Yes	183	-	NVF	**UNV-040**
		1¼"	NPT	-	No	147	-	NV	**UNV-040**
						235	-	NVG	**UNV-040**
					Yes	117	-	NVF	**UNV-040**
		1½"	NPT	-	No	102	-	NV	**UNV-040**
						160	-	NVG	**UNV-040**
					Yes	82	-	NVF	**UNV-040**
		2"	NPT	-	No	57	-	NV	**UNV-040**
						90	-	NVG	**UNV-040**
					Yes	46	-	NVF	**UNV-040**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V-3754-(4, 1008, 1022, 1026)	2-way	¾"	NPT	PDTC	No	215	-	LM	**UGLK1550**
						250	-	NM	**UGLK1550**
					Yes	215	-	LF	**UGLK1550**
						250	-	NF	**UGLK1400**
V-3754-(5, 1010, 1023, 1027)	2-way	1"	NPT	PDTC	No	250	-	AM	**UGLK1402**
					Yes	173	-	NF	**UGLK1402**
						250	250	AF	**UGLK1402**
V-3754-(6, 1028, 1029, 1030)	2-way	1½"	NPT	PDTC	No	153	-	AM	**UGLK1402**
						250	-	GM	**UGLK1402**
					Yes	77	-	NF	**UGLK1402**
						113	153	AF	**UGLK1402**
						154	209	2*AF	**UGLK1478**
						250	-	GK	**UGLK1402**
V-3754-7	2-way	2"	NPT	PDTC	No	86	-	AM	**UGLK1406**
						173	-	GM	**UGLK1406**
						250	-	2*GM	**UGLK1474**
					Yes	43	-	NF	**UGLK1406**
						64	86	AF	**UGLK1406**
						128	173	2*AF	**UGLK1474**
						173	-	GK	**UGLK1406**
						250	-	2*GK	**UGLK1474**
V-3754-8	2-way	1¼"	NPT	PDTC	No	221	-	AM	**UGLK1402**
					Yes	110	-	NF	**UGLK1402**
						163	221	AF	**UGLK1402**
V-3766	2-way	½"	FLARE	PDTC	No	250	-	LM	**UGLK1552**
					Yes	250	-	LF	**UGLK1552**
V-3854-5	2-way	½"	NPT	PDTC	No	250	-	LM	**UGLK1554**
					Yes	250	-	LF	**UGLK1554**
V-3966	2-way	½"	FLARE	PDTO	No	250	-	LM	**UGLK1552**
					Yes	250	-	LF	**UGLK1552**
V-3974-(4, 1004, 1010)	2-way	¾"	NPT	PDTO	No	215	-	LM	**UGLK1550**
						250	-	NM	**UGLK1550**
					Yes	215	-	LF	**UGLK1550**
						250	-	NF	**UGLK1400**
V-3974-(5, 1005, 1011)	2-way	1"	NPT	PDTO	No	250	-	AM	**UGLK1402**
					Yes	173	-	NF	**UGLK1402**
						250	250	AF	**UGLK1402**
V-3974-(6, 1012, 1013)	2-way	1½"	NPT	PDTO	No	153	-	AM	**UGLK1402**
						250	-	GM	**UGLK1402**
					Yes	77	-	NF	**UGLK1402**
						113	153	AF	**UGLK1402**
						154	209	2*AF	**UGLK1478**
						250	-	GK	**UGLK1402**
V-3974-7	2-way	2"	NPT	PDTO	No	86	-	AM	**UGLK1406**
						173	-	GM	**UGLK1406**
						250	-	2*GM	**UGLK1474**
					Yes	43	-	NF	**UGLK1406**
						64	86	AF	**UGLK1406**
						128	173	2*AF	**UGLK1474**
						173	-	GK	**UGLK1406**
						250	-	2*GK	**UGLK1474**
V-4324-(4, 1005, 1006, 1013)	3-way	¾"	NPT	Mixing	No	215	-	LM	**UGLK1550**
						250	-	NM	**UGLK1550**
					Yes	215	-	LF	**UGLK1550**
						250	-	NF	**UGLK1400**
V-4324-(5, 1007, 1008, 1014)	3-way	1"	NPT	Mixing	No	250	-	AM	**UGLK1402**
					Yes	173	-	NF	**UGLK1402**
						250	250	AF	**UGLK1402**

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

Johnson Controls

VG7800, V-4…, V-3…, V-5… Series Valves

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V-4324-(6,1015, 1016, 1017)	3-way	1½"	NPT	Mixing	No	153	-	AM	**UGLK1402**
						250	-	GM	**UGLK1402**
					Yes	77	-	NF	**UGLK1402**
						113	153	AF	**UGLK1402**
						154	209	2*AF	**UGLK1478**
						250	-	GK	**UGLK1402**
V-4324-7	3-way	2"	NPT	Mixing	No	86	-	AM	**UGLK1406**
						173	-	GM	**UGLK1406**
						250	-	2*GM	**UGLK1474**
					Yes	43	-	NF	**UGLK1406**
						64	86	AF	**UGLK1406**
						128	173	2*AF	**UGLK1474**
						173	-	GK	**UGLK1406**
						250	-	2*GK	**UGLK1474**
V-4324-8	3-way	1¼"	NPT	Mixing	No	221	-	AM	**UGLK1402**
					Yes	110	-	NF	**UGLK1402**
						163	221	AF	**UGLK1402**
V-4332	3-way	½"	FLARE	PDTC	No	250	-	LM	**UGLK1552**
					Yes	250	-	LF	**UGLK1552**
V-5254-(1, 2, 3, 11)	2-way	1½"	NPT	PDTC	No	153	-	AM	**UGLK1404**
						250	-	GM	**UGLK1404**
					Yes	77	-	NF	**UGLK1404**
						113	153	AF	**UGLK1404**
						227	250	2*AF	**UGLK1472**
						250	-	GK	**UGLK1404**
V-5254-(4, 5, 6, 12)	2-way	2"	NPT	PDTC	No	86	-	AM	**UGLK1406**
						173	-	GM	**UGLK1406**
						250	-	2*GM	**UGLK1474**
					Yes	43	-	NF	**UGLK1406**
						64	86	AF	**UGLK1406**
						128	173	2*AF	**UGLK1474**
						173	-	GK	**UGLK1406**
						250	-	2*GK	**UGLK1474**
V-5464-(1, 2, 11)	2-way	1½"	NPT	PDTO	No	153	-	AM	**UGLK1404**
						250	-	GM	**UGLK1404**
					Yes	77	-	NF	**UGLK1404**
						113	153	AF	**UGLK1404**
						227	250	2*AF	**UGLK1472**
						250	-	GK	**UGLK1404**
V-5464-(3, 4, 12)	2-way	2"	NPT	PDTO	No	86	-	AM	**UGLK1406**
						173	-	GM	**UGLK1406**
						250	-	2*GM	**UGLK1474**
					Yes	43	-	NF	**UGLK1406**
						64	86	AF	**UGLK1406**
						128	173	2*AF	**UGLK1474**
						173	-	GK	**UGLK1406**
						250	-	2*GK	**UGLK1474**
V-5844-(1, 2, 3, 11)	3-way	1½"	NPT	Mixing	No	153	-	AM	**UGLK1404**
						250	-	GM	**UGLK1404**
					Yes	77	-	NF	**UGLK1404**
						113	153	AF	**UGLK1404**
						227	250	2*AF	**UGLK1472**
						250	-	GK	**UGLK1404**
V-5844-(4, 5, 6, 12)	3-way	2"	NPT	Mixing	No	86	-	AM	**UGLK1406**
						173	-	GM	**UGLK1406**
						250	-	2*GM	**UGLK1474**
					Yes	43	-	NF	**UGLK1406**
						64	86	AF	**UGLK1406**
						128	173	2*AF	**UGLK1474**
						173	-	GK	**UGLK1406**
						250	-	2*GK	**UGLK1474**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VG7XXX-(C, E, GT)	2-way	½"	NPT	-	No	250	-	LM	**UGLK1416**
					Yes	250	-	LF	**UGLK1416**
	3-way	½"	NPT	-	No	250	-	LM	**UGLK1416**
					Yes	250	-	LF	**UGLK1416**
VG7XXX-LT	2-way	¾"	NPT	-	No	217	-	LM	**UGLK1416**
						250	-	NM	**UGLK1416**
					Yes	169	-	LF	**UGLK1416**
	3-way	¾"	NPT	-	No	217	-	LM	**UGLK1416**
						250	-	NM	**UGLK1416**
					Yes	169	-	LF	**UGLK1416**
VG7XXX-NT	2-way	1"	NPT	-	No	122	-	LM	**UGLK1418**
						244	-	NM	**UGLK1418**
					Yes	95	-	LF	**UGLK1418**
	3-way	1"	NPT	-	No	122	-	LM	**UGLK1418**
						244	-	NM	**UGLK1418**
					Yes	95	-	LF	**UGLK1418**
VG7XXX-PT	2-way	1¼"	NPT	-	No	78	-	LM	**UGLK1418**
						156	-	NM	**UGLK1418**
					Yes	61	-	LF	**UGLK1418**
	3-way	1¼"	NPT	-	No	78	-	LM	**UGLK1418**
						156	-	NM	**UGLK1418**
					Yes	61	-	LF	**UGLK1418**
VG7XXX-RT	2-way	1½"	NPT	-	No	38	-	LM	**UGLK1420**
						77	-	NM	**UGLK1420**
						153	-	AM	**UGLK1422**
						250	-	GM	**UGLK1422**
					Yes	30	-	LF	**UGLK1420**
						77	-	NF	**UGLK1422**
						113	153	AF	**UGLK1422**
						250	-	GK	**UGLK1422**
	3-way	1½"	NPT	-	No	38	-	LM	**UGLK1420**
						77	-	NM	**UGLK1420**
						153	-	AM	**UGLK1422**
						250	-	GM	**UGLK1422**
					Yes	30	-	LF	**UGLK1420**
						77	-	NF	**UGLK1422**
						113	153	AF	**UGLK1422**
						250	-	GK	**UGLK1422**
VG7XXX-ST	2-way	2"	NPT	-	No	22	-	LM	**UGLK1420**
						43	-	NM	**UGLK1420**
						86	-	AM	**UGLK1422**
						173	-	GM	**UGLK1422**
					Yes	17	-	LF	**UGLK1420**
						43	-	NF	**UGLK1422**
						64	86	AF	**UGLK1422**
						173	-	GK	**UGLK1422**
	3-way	2"	NPT	-	No	22	-	LM	**UGLK1420**
						43	-	NM	**UGLK1420**
						86	-	AM	**UGLK1422**
						173	-	GM	**UGLK1422**
					Yes	17	-	LF	**UGLK1420**
						43	-	NF	**UGLK1422**
						64	86	AF	**UGLK1422**
						173	-	GK	**UGLK1422**
VTM-TN-(007, 019, 047)*Threaded Stem Only	2-way	½"	FLARE	-	No	250	-	LM	**UGLK1550**
					Yes	250	-	LF	**UGLK1550**
	3-way	½"	NPT	-	No	250	-	LM	**UGLK1550**
					Yes	250	-	LF	**UGLK1550**

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

Robertshaw

V6600, V6700, V6800 Series Valves - NPT Bodies

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
V6700	2-way	½"	NPT	-	No	250	-	NV	**UNV-007**
					Yes	250	-	NVF	**UNV-007**
		¾"	NPT	-	No	250	-	NV	**UNV-007**
					Yes	250	-	NVF	**UNV-007**
		1"	NPT	-	No	229	-	NV	**UNV-007**
						250	-	NVG	**UNV-007**
					Yes	183	-	NVF	**UNV-007**
		1¼"	NPT	-	No	147	-	NV	**UNV-007**
						235	-	NVG	**UNV-007**
					Yes	117	-	NVF	**UNV-007**
		1½"	NPT	-	No	101	-	NV	**UNV-007**
						160	-	NVG	**UNV-007**
					Yes	82	-	NVF	**UNV-007**
		2"	NPT	-	No	57	-	NV	**UNV-007**
						90	-	NVG	**UNV-007**
					Yes	46	-	NVF	**UNV-007**
V6600	3-way	½"	NPT	-	No	250	-	NV	**UNV-007**
					Yes	250	-	NVF	**UNV-007**
		¾"	NPT	-	No	250	-	NV	**UNV-007**
					Yes	250	-	NVF	**UNV-007**
		1"	NPT	-	No	229	-	NV	**UNV-007**
						250	-	NVG	**UNV-007**
					Yes	183	-	NVF	**UNV-007**
		1¼"	NPT	-	No	147	-	NV	**UNV-007**
						235	-	NVG	**UNV-007**
					Yes	117	-	NVF	**UNV-007**
		1½"	NPT	-	No	102	-	NV	**UNV-007**
						160	-	NVG	**UNV-007**
					Yes	82	-	NVF	**UNV-007**
		2"	NPT	-	No	57	-	NV	**UNV-007**
						90	-	NVG	**UNV-007**
					Yes	46	-	NVF	**UNV-007**
V6800	2-way	¾"	NPT	-	No	250	-	NV	**UNV-007**
					Yes	250	-	NVF	**UNV-007**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Belimo USA G2 series	2-way	1"	NPT	-	No	250	-	AM	**UGLK1000**
					Yes	250	250	AF	**UGLK1000**
		1¼"	NPT	-	No	250	-	AM	**UGLK1000**
					Yes	231	250	AF	**UGLK1000**
		1½"	NPT	-	No	217	-	AM	**UGLK1000**
					Yes	161	217	AF	**UGLK1000**
		2"	NPT	-	No	122	-	AM	**UGLK1000**
					Yes	90	122	AF	**UGLK1000**
Belimo USA G3 series	3-way	1"	NPT	-	No	250	-	AM	**UGLK1000**
					Yes	250	250	AF	**UGLK1000**
		1¼"	NPT	-	No	250	-	AM	**UGLK1000**
					Yes	231	250	AF	**UGLK1000**
		1½"	NPT	-	No	217	-	AM	**UGLK1000**
					Yes	161	217	AF	**UGLK1000**
		2"	NPT	-	No	122	-	AM	**UGLK1000**
					Yes	90	122	AF	**UGLK1000**
Belimo USA G2 series	2-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
		¾"	NPT	-	No	215	-	LM	**UGLK1150**
						250	-	NM	**UGLK1150**
					Yes	215	-	LF	**UGLK1150**
		1"	NPT	-	No	120	-	LM	**UGLK1150**
						244	-	NM	**UGLK1150**
					Yes	95	-	LF	**UGLK1150**
		1¼"	NPT	-	No	78	-	LM	**UGLK1150**
						156	-	NM	**UGLK1150**
					Yes	61	-	LF	**UGLK1150**
Belimo USA G3 series	3-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
		¾"	NPT	-	No	215	-	LM	**UGLK1150**
						250	-	NM	**UGLK1150**
					Yes	215	-	LF	**UGLK1150**
		1"	NPT	-	No	120	-	LM	**UGLK1150**
						244	-	NM	**UGLK1150**
					Yes	95	-	LF	**UGLK1150**
		1¼"	NPT	-	No	78	-	LM	**UGLK1150**
						156	-	NM	**UGLK1150**
					Yes	61	-	LF	**UGLK1150**

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

Siebe\Invensys\Barber Colman

Belimo G2, G3 - NPT Bodies

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Belimo USA G2 series	2-way	½"	NPT	-	No	250	-	NV	**UNV-001**
					Yes	250	-	NVF	**UNV-001**
		¾"	NPT	-	No	250	-	NV	**UNV-001**
					Yes	250	-	NVF	**UNV-001**
		1"	NPT	-	No	229	-	NV	**UNV-001**
						250	-	NVG	**UNV-001**
					Yes	183	-	NVF	**UNV-001**
		1¼"	NPT	-	No	147	-	NV	**UNV-001**
						235	-	NVG	**UNV-001**
					Yes	117	-	NVF	**UNV-001**
		1½"	NPT	-	No	102	-	NV	**UNV-001**
						160	-	NVG	**UNV-001**
					Yes	82	-	NVF	**UNV-001**
		2"	NPT	-	No	57	-	NV	**UNV-001**
						90	-	NVG	**UNV-001**
					Yes	46	-	NVF	**UNV-001**
Belimo USA G2…S series	2-way	½"	NPT	-	No	250	-	NV	**UNV-035**
					Yes	250	-	NVF	**UNV-035**
		¾"	NPT	-	No	250	-	NV	**UNV-035**
					Yes	250	-	NVF	**UNV-035**
		1"	NPT	-	No	229	-	NV	**UNV-035**
						250	-	NVG	**UNV-035**
					Yes	183	-	NVF	**UNV-035**
		1¼"	NPT	-	No	147	-	NV	**UNV-035**
						235	-	NVG	**UNV-035**
					Yes	117	-	NVF	**UNV-035**
		1½"	NPT	-	No	102	-	NV	**UNV-035**
						160	-	NVG	**UNV-035**
					Yes	82	-	NVF	**UNV-035**
		2"	NPT	-	No	57	-	NV	**UNV-035**
						90	-	NVG	**UNV-035**
					Yes	46	-	NVF	**UNV-035**
Belimo USA G3 series	3-way	½"	NPT	-	No	250	-	NV	**UNV-001**
					Yes	250	-	NVF	**UNV-001**
		¾"	NPT	-	No	250	-	NV	**UNV-001**
					Yes	250	-	NVF	**UNV-001**
		1"	NPT	-	No	229	-	NV	**UNV-001**
						250	-	NVG	**UNV-001**
					Yes	183	-	NVF	**UNV-001**
		1¼"	NPT	-	No	147	-	NV	**UNV-001**
						235	-	NVG	**UNV-001**
					Yes	117	-	NVF	**UNV-001**
		1½"	NPT	-	No	102	-	NV	**UNV-001**
						160	-	NVG	**UNV-001**
					Yes	82	-	NVF	**UNV-001**
		2"	NPT	-	No	57	-	NV	**UNV-001**
						90	-	NVG	**UNV-001**
					Yes	46	-	NVF	**UNV-001**

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

Use UNV-035 for steam applications.

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VB304X-0-1-10	3-way	1½"	NPT	Mixing	No	38	-	LM	**UGLK1002**
						77	-	NM	**UGLK1002**
						153	-	AM	**UGLK1004**
						250	-	GM	**UGLK1004**
					Yes	30	-	LF	**UGLK1002**
						113	153	AF	**UGLK1004**
						250	-	GK	**UGLK1004**
VB304X-0-1-11	3-way	2"	NPT	Mixing	No	22	-	LM	**UGLK1002**
						43	-	NM	**UGLK1002**
						86	-	AM	**UGLK1004**
						173	-	GM	**UGLK1004**
					Yes	17	-	LF	**UGLK1002**
						64	86	AF	**UGLK1004**
						173	-	GK	**UGLK1004**
VB304X-0-1-4	3-way	½"	NPT	Mixing	No	250	-	LM	**UGLK1002**
						250	-	NM	**UGLK1002**
					Yes	250	250	AF	**UGLK1004**
						250	-	LF	**UGLK1002**
VB304X-0-1-7	3-way	¾"	NPT	Mixing	No	153	-	LM	**UGLK1002**
						250	-	NM	**UGLK1002**
					Yes	119	-	LF	**UGLK1002**
VB304X-0-1-8	3-way	1"	NPT	Mixing	No	86	-	LM	**UGLK1002**
						173	-	NM	**UGLK1002**
						250	-	AM	**UGLK1004**
					Yes	67	-	LF	**UGLK1002**
						250	250	AF	**UGLK1004**
VB304X-0-1-9	3-way	1¼"	NPT	Mixing	No	55	-	LM	**UGLK1002**
						110	-	NM	**UGLK1002**
						221	-	AM	**UGLK1004**
					Yes	43	-	LF	**UGLK1002**
						163	221	AF	**UGLK1004**
VB7XXX-0-4-1	2-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
	3-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
VB7XXX-0-4-10	2-way	1½"	NPT	-	No	217	-	AM	**UGLK1000**
					Yes	161	217	AF	**UGLK1000**
	3-way	1½"	NPT	-	No	217	-	AM	**UGLK1000**
					Yes	161	217	AF	**UGLK1000**
VB7XXX-0-4-11	2-way	2"	NPT	-	No	122	-	AM	**UGLK1000**
					Yes	90	122	AF	**UGLK1000**
	3-way	2"	NPT	-	No	122	-	AM	**UGLK1000**
					Yes	90	122	AF	**UGLK1000**
VB7XXX-0-4-2	2-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
	3-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
VB7XXX-0-4-3	2-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
	3-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
VB7XXX-0-4-4	2-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
	3-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
VB7XXX-0-4-5	2-way	¾"	NPT	-	No	215	-	LM	**UGLK1150**
						250	-	NM	**UGLK1150**
					Yes	215	-	LF	**UGLK1150**
	3-way	¾"	NPT	-	No	215	-	LM	**UGLK1150**
						250	-	NM	**UGLK1150**
					Yes	215	-	LF	**UGLK1150**

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

Siebe\Invensys\Barber Colman

VB7000, VB804X Series Valves - NPT Bodies

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VB7XXX-0-4-6	2-way	¾"	NPT	-	No	215	-	LM	**UGLK1150**
						250	-	NM	**UGLK1150**
					Yes	215	-	LF	**UGLK1150**
	3-way	¾"	NPT	-	No	215	-	LM	**UGLK1150**
						250	-	NM	**UGLK1150**
					Yes	215	-	LF	**UGLK1150**
VB7XXX-0-4-7	2-way	1"	NPT	-	No	120	-	LM	**UGLK1150**
						244	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	95	-	LF	**UGLK1150**
						250	250	AF	**UGLK1000**
	3-way	1"	NPT	-	No	120	-	LM	**UGLK1150**
						244	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	95	-	LF	**UGLK1150**
						250	250	AF	**UGLK1000**
VB7XXX-0-4-8	2-way	1"	NPT	-	No	120	-	LM	**UGLK1150**
						244	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	95	-	LF	**UGLK1150**
						250	250	AF	**UGLK1000**
	3-way	1"	NPT	-	No	120	-	LM	**UGLK1150**
						244	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	95	-	LF	**UGLK1150**
						250	250	AF	**UGLK1000**
VB7XXX-0-4-9	2-way	1¼"	NPT	-	No	78	-	LM	**UGLK1150**
						156	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	61	-	LF	**UGLK1150**
						231	250	AF	**UGLK1000**
	3-way	1¼"	NPT	-	No	78	-	LM	**UGLK1150**
						156	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	61	-	LF	**UGLK1150**
						231	250	AF	**UGLK1000**
VB804X-0-1-10	3-way	1½"	NPT	Mixing	No	38	-	LM	**UGLK1002**
						77	-	NM	**UGLK1002**
						153	-	AM	**UGLK1004**
						250	-	GM	**UGLK1004**
					Yes	30	-	LF	**UGLK1002**
						113	153	AF	**UGLK1004**
						250	-	GK	**UGLK1004**
VB804X-0-1-11	3-way	2"	NPT	Mixing	No	22	-	LM	**UGLK1002**
						43	-	NM	**UGLK1002**
						86	-	AM	**UGLK1004**
						173	-	GM	**UGLK1004**
					Yes	17	-	LF	**UGLK1002**
						64	86	AF	**UGLK1004**
						173	-	GK	**UGLK1004**
VB804X-0-1-4	3-way	½"	NPT	Mixing	No	250	-	LM	**UGLK1002**
						250	-	NM	**UGLK1002**
					Yes	250	250	AF	**UGLK1004**
						250	-	LF	**UGLK1002**
VB804X-0-1-7	3-way	¾"	NPT	Mixing	No	153	-	LM	**UGLK1002**
						250	-	NM	**UGLK1002**
					Yes	119	-	LF	**UGLK1002**
VB804X-0-1-8	3-way	1"	NPT	Mixing	No	86	-	LM	**UGLK1002**
						173	-	NM	**UGLK1002**
						250	-	AM	**UGLK1004**
					Yes	67	-	LF	**UGLK1002**
						250	250	AF	**UGLK1004**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VB804X-0-1-9	3-way	1¼"	NPT	Mixing	No	55	-	LM	**UGLK1002**
						110	-	NM	**UGLK1002**
						221	-	AM	**UGLK1004**
					Yes	43	-	LF	**UGLK1002**
						163	221	AF	**UGLK1004**
VB9XXX-0-4-1	2-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
	3-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
VB9XXX-0-4-10 (Post '94)	2-way	1½"	NPT	-	No	79	-	AM	**UGLK1016**
						158	-	GM	**UGLK1016**
						250	-	2*GM	**UGLK1066**
					Yes	58	79	AF	**UGLK1016**
						154	209	2*AF	**UGLK1066**
						158	-	GK	**UGLK1016**
						250	-	2*GK	**UGLK1066**
	3-way	1½"	NPT	-	No	79	-	AM	**UGLK1016**
						158	-	GM	**UGLK1016**
						250	-	2*GM	**UGLK1066**
					Yes	58	79	AF	**UGLK1016**
						154	209	2*AF	**UGLK1066**
						158	-	GK	**UGLK1016**
						250	-	2*GK	**UGLK1066**
VB9XXX-0-4-10 (Pre '94)	2-way	1½"	NPT	-	No	104	-	AM	**UGLK1008**
						250	-	2*GM	**UGLK1064**
						209	-	GM	**UGLK1008**
					Yes	77	104	AF	**UGLK1008**
						154	209	2*AF	**UGLK1064**
						250	-	2*GK	**UGLK1064**
						209	-	GK	**UGLK1008**
	3-way	1½"	NPT	-	No	104	-	AM	**UGLK1008**
						250	-	2*GM	**UGLK1064**
						209	-	GM	**UGLK1008**
					Yes	77	104	AF	**UGLK1008**
						154	209	2*AF	**UGLK1064**
						250	-	2*GK	**UGLK1064**
						209	-	GK	**UGLK1008**
VB9XXX-0-4-11 (Post '94)	2-way	2"	NPT	-	No	44	-	AM	**UGLK1016**
						89	-	GM	**UGLK1016**
						209	-	2*GM	**UGLK1066**
					Yes	33	44	AF	**UGLK1016**
						87	117	2*AF	**UGLK1066**
						89	-	GK	**UGLK1016**
						209	-	2*GK	**UGLK1066**
	3-way	2"	NPT	-	No	44	-	AM	**UGLK1016**
						89	-	GM	**UGLK1016**
						209	-	2*GM	**UGLK1066**
					Yes	33	44	AF	**UGLK1016**
						87	117	2*AF	**UGLK1066**
						89	-	GK	**UGLK1016**
						209	-	2*GK	**UGLK1066**
VB9XXX-0-4-11 (Pre '94)	2-way	2"	NPT	-	No	59	-	AM	**UGLK1008**
						117	-	GM	**UGLK1008**
						209	-	2*GM	**UGLK1064**
					Yes	43	59	AF	**UGLK1008**
						87	117	2*AF	**UGLK1064**
						117	-	GK	**UGLK1008**
						209	-	2*GK	**UGLK1064**
	3-way	2"	NPT	-	No	59	-	AM	**UGLK1008**
						117	-	GM	**UGLK1008**
						209	-	2*GM	**UGLK1064**
					Yes	43	59	AF	**UGLK1008**
						87	117	2*AF	**UGLK1064**
						117	-	GK	**UGLK1008**
						209	-	2*GK	**UGLK1064**

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

Siebe\Invensys\Barber Colman

VB9000 Series Valves - NPT Bodies

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VB9XXX-0-4-12 (Post '94)	2-way	2½"	NPT	-	No	78	-	AM	**UGLK1000**
						196	-	2*GM	**UGLK1068**
					Yes	58	78	AF	**UGLK1000**
						82	110	2*AF	**UGLK1068**
						196	-	2*GK	**UGLK1068**
	3-way	2½"	NPT	-	No	78	-	AM	**UGLK1000**
						196	-	2*GM	**UGLK1068**
					Yes	58	78	AF	**UGLK1000**
						82	110	2*AF	**UGLK1068**
						196	-	2*GK	**UGLK1068**
VB9XXX-0-4-12 (Pre '94)	2-way	2½"	NPT	-	No	38	-	AM	**UGLK1010**
						75	-	GM	**UGLK1010**
						134	-	2*GM	**UGLK1070**
					Yes	28	38	AF	**UGLK1010**
						55	75	2*AF	**UGLK1070**
						75	-	GK	**UGLK1010**
						134	-	2*GK	**UGLK1070**
	3-way	2½"	NPT	-	No	38	-	AM	**UGLK1010**
						75	-	GM	**UGLK1010**
						134	-	2*GM	**UGLK1070**
					Yes	28	38	AF	**UGLK1010**
						55	75	2*AF	**UGLK1070**
						75	-	GK	**UGLK1010**
						134	-	2*GK	**UGLK1070**
VB9XXX-0-4-13 (Post '94)	2-way	3"	NPT	-	No	54	-	AM	**UGLK1000**
						136	-	2*GM	**UGLK1068**
					Yes	40	54	AF	**UGLK1000**
						57	77	2*AF	**UGLK1068**
						136	-	2*GK	**UGLK1068**
	3-way	3"	NPT	-	No	54	-	AM	**UGLK1000**
						136	-	2*GM	**UGLK1068**
					Yes	40	54	AF	**UGLK1000**
						57	77	2*AF	**UGLK1068**
						136	-	2*GK	**UGLK1068**
VB9XXX-0-4-13 (Pre '94)	2-way	3"	NPT	-	No	52	-	GM	**UGLK1010**
						26	-	AM	**UGLK1010**
						93	-	2*GM	**UGLK1070**
					Yes	19	26	AF	**UGLK1010**
						52	-	GK	**UGLK1010**
						93	-	2*GK	**UGLK1070**
						38	52	2*AF	**UGLK1070**
	3-way	3"	NPT	-	No	52	-	GM	**UGLK1010**
						26	-	AM	**UGLK1010**
						93	-	2*GM	**UGLK1070**
					Yes	19	26	AF	**UGLK1010**
						52	-	GK	**UGLK1010**
						93	-	2*GK	**UGLK1070**
						38	52	2*AF	**UGLK1070**
VB9XXX-0-4-2	2-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
	3-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
VB9XXX-0-4-3	2-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
	3-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
VB9XXX-0-4-4	2-way	½"	NPT	-	No	250	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**
	3-way	½"	NPT	-	No	130	-	LM	**UGLK1150**
					Yes	250	-	LF	**UGLK1150**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VB9XXX-0-4-5	2-way	¾"	NPT	-	No	215	-	LM	**UGLK1150**
						250	-	NM	**UGLK1150**
					Yes	215	-	LF	**UGLK1150**
	3-way	¾"	NPT	-	No	215	-	LM	**UGLK1150**
						250	-	NM	**UGLK1150**
					Yes	215	-	LF	**UGLK1150**
VB9XXX-0-4-6	2-way	¾"	NPT	-	No	215	-	LM	**UGLK1150**
						250	-	NM	**UGLK1150**
					Yes	215	-	LF	**UGLK1150**
	3-way	¾"	NPT	-	No	215	-	LM	**UGLK1150**
						250	-	NM	**UGLK1150**
					Yes	215	-	LF	**UGLK1150**
VB9XXX-0-4-7	2-way	1"	NPT	-	No	120	-	LM	**UGLK1150**
						244	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	95	-	LF	**UGLK1150**
						250	250	AF	**UGLK1000**
	3-way	1"	NPT	-	No	120	-	LM	**UGLK1150**
						244	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	95	-	LF	**UGLK1150**
						250	250	AF	**UGLK1000**
VB9XXX-0-4-8	2-way	1"	NPT	-	No	120	-	LM	**UGLK1150**
						244	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	250	250	AF	**UGLK1000**
	3-way	1"	NPT	-	No	120	-	LM	**UGLK1150**
						244	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	95	-	LF	**UGLK1150**
						250	250	AF	**UGLK1000**
VB9XXX-0-4-9	2-way	1¼"	NPT	-	No	78	-	LM	**UGLK1150**
						156	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	61	-	LF	**UGLK1150**
						231	250	AF	**UGLK1000**
	3-way	1¼"	NPT	-	No	78	-	LM	**UGLK1150**
						156	-	NM	**UGLK1150**
						250	-	AM	**UGLK1000**
					Yes	61	-	LF	**UGLK1150**
						231	250	AF	**UGLK1000**

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

Siebe\Invensys\Barber Colman

VB804X and VB304X Series Valves - Flanged Bodies

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VB304X-0-2-12	3-way	2½"	Flanged	Mixing	No	38	-	AM	**UGLK1006**
						75	-	GM	**UGLK1006**
						134	-	2*GM	**UGLK1072**
					Yes	28	38	AF	**UGLK1006**
						55	75	2*AF	**UGLK1072**
						75	-	GK	**UGLK1006**
						134	-	2*GK	**UGLK1072**
VB304X-0-2-13	3-way	3"	Flanged	Mixing	No	52	-	GM	**UGLK1006**
						26	-	AM	**UGLK1006**
						93	-	2*GM	**UGLK1072**
					Yes	19	26	AF	**UGLK1006**
						52	-	GK	**UGLK1006**
						39	52	2*AF	**UGLK1072**
						93	-	2*GK	**UGLK1072**
VB304X-0-2-14	3-way	4"	Flanged	Mixing	No	15	-	AM	**UGLK1006**
						29	-	GM	**UGLK1006**
						52	-	2*GM	**UGLK1072**
					Yes	11	15	AF	**UGLK1006**
						22	29	2*AF	**UGLK1072**
						29	-	GK	**UGLK1006**
						52	-	2*GK	**UGLK1072**
VB304X-0-2-15	3-way	5"	Flanged	Mixing	No	7	-	AM	**UGLK1014**
						14	-	GM	**UGLK1014**
						25	-	2*GM	**UGLK1076**
					Yes	5	7	AF	**UGLK1014**
						11	14	2*AF	**UGLK1076**
						14	-	GK	**UGLK1014**
						25	-	2*GK	**UGLK1076**
VB304X-0-2-16	3-way	6"	Flanged	Mixing	No	5	-	AM	**UGLK1014**
						10	-	GM	**UGLK1014**
						18	-	2*GM	**UGLK1076**
					Yes	4	5	AF	**UGLK1014**
						7	10	2*AF	**UGLK1076**
						10	-	GK	**UGLK1014**
						18	-	2*GK	**UGLK1076**
VB804X-0-2-12	3-way	2½"	Flanged	Mixing	No	38	-	AM	**UGLK1006**
						75	-	GM	**UGLK1006**
						134	-	2*GM	**UGLK1072**
					Yes	28	38	AF	**UGLK1006**
						55	75	2*AF	**UGLK1072**
						75	-	GK	**UGLK1006**
						134	-	2*GK	**UGLK1072**
VB804X-0-2-13	3-way	3"	Flanged	Mixing	No	52	-	GM	**UGLK1006**
						26	-	AM	**UGLK1006**
						93	-	2*GM	**UGLK1072**
					Yes	19	26	AF	**UGLK1006**
						52	-	GK	**UGLK1006**
						39	52	2*AF	**UGLK1072**
						93	-	2*GK	**UGLK1072**
VB804X-0-2-14	3-way	4"	Flanged	Mixing	No	15	-	AM	**UGLK1006**
						29	-	GM	**UGLK1006**
						52	-	2*GM	**UGLK1072**
					Yes	11	15	AF	**UGLK1006**
						22	29	2*AF	**UGLK1072**
						29	-	GK	**UGLK1006**
						52	-	2*GK	**UGLK1072**
VB804X-0-2-15	3-way	5"	Flanged	Mixing	No	7	-	AM	**UGLK1014**
						14	-	GM	**UGLK1014**
						25	-	2*GM	**UGLK1076**
					Yes	5	7	AF	**UGLK1014**
						11	14	2*AF	**UGLK1076**
						14	-	GK	**UGLK1014**
						25	-	2*GK	**UGLK1076**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VB804X-0-2-16	3-way	6”	Flanged	Mixing	No	5	-	AM	**UGLK1014**
						10	-	GM	**UGLK1014**
						18	-	2*GM	**UGLK1076**
					Yes	4	5	AF	**UGLK1014**
						7	10	2*AF	**UGLK1076**
						10	-	GK	**UGLK1014**
						18	-	2*GK	**UGLK1076**
VB9XXX-0-5-12	2-way	2½”	Flanged	-	No	38	-	AM	**UGLK1010**
						75	-	GM	**UGLK1010**
						134	-	2*GM	**UGLK1070**
					Yes	28	38	AF	**UGLK1010**
						55	75	2*AF	**UGLK1070**
						75	-	GK	**UGLK1010**
						134	-	2*GK	**UGLK1070**
	3-way	2½”	Flanged	-	No	38	-	AM	**UGLK1010**
						75	-	GM	**UGLK1010**
						134	-	2*GM	**UGLK1070**
					Yes	28	38	AF	**UGLK1010**
						55	75	2*AF	**UGLK1070**
						75	-	GK	**UGLK1010**
						134	-	2*GK	**UGLK1070**
VB9XXX-0-5-13	2-way	3”	Flanged	-	No	52	-	GM	**UGLK1010**
						26	-	AM	**UGLK1010**
						93	-	2*GM	**UGLK1070**
					Yes	19	26	AF	**UGLK1010**
						52	-	GK	**UGLK1010**
						93	-	2*GK	**UGLK1070**
						38	52	2*AF	**UGLK1070**
	3-way	3”	Flanged	-	No	52	-	GM	**UGLK1010**
						26	-	AM	**UGLK1010**
						93	-	2*GM	**UGLK1070**
					Yes	19	26	AF	**UGLK1010**
						52	-	GK	**UGLK1010**
						93	-	2*GK	**UGLK1070**
						38	52	2*AF	**UGLK1070**
VB9XXX-0-5-14	2-way	4”	Flanged	-	No	11	-	AM	**UGLK1012**
						22	-	GM	**UGLK1012**
						40	-	2*GM	**UGLK1074**
					Yes	8	11	AF	**UGLK1012**
						16	22	2*AF	**UGLK1074**
						22	-	GK	**UGLK1012**
						40	-	2*GK	**UGLK1074**
	3-way	4”	Flanged	-	No	11	-	AM	**UGLK1012**
						22	-	GM	**UGLK1012**
						40	-	2*GM	**UGLK1074**
					Yes	8	11	AF	**UGLK1012**
						16	22	2*AF	**UGLK1074**
						22	-	GK	**UGLK1012**
						40	-	2*GK	**UGLK1074**

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

Siebe\Invensys\Barber Colman

VB9000 Series Valves - NPT Bodies

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VB9000 series	2-way	½"	NPT	-	No	250	-	NV	**UNV-001**
									UNV-035
					Yes	250	-	NVF	**UNV-001**
									UNV-035
		¾"	NPT	-	No	250	-	NV	**UNV-001**
									UNV-035
					Yes	250	-	NVF	**UNV-001**
									UNV-035
		1"	NPT	-	No	229	-	NV	**UNV-001**
									UNV-035
						250	-	NVG	**UNV-001**
									UNV-035
					Yes	183	-	NVF	**UNV-001**
									UNV-035
		1¼"	NPT	-	No	147	-	NV	**UNV-001**
									UNV-035
						235	-	NVG	**UNV-001**
									UNV-035
					Yes	117	-	NVF	**UNV-001**
									UNV-035
	3-way	½"	NPT	-	No	250	-	NV	**UNV-001**
									UNV-035
					Yes	250	-	NVF	**UNV-001**
									UNV-035
		¾"	NPT	-	No	250	-	NV	**UNV-001**
									UNV-035
					Yes	250	-	NVF	**UNV-001**
									UNV-035
		1"	NPT	-	No	229	-	NV	**UNV-001**
									UNV-035
						250	-	NVG	**UNV-001**
									UNV-035
					Yes	183	-	NVF	**UNV-001**
									UNV-035
		1¼"	NPT	-	No	147	-	NV	**UNV-001**
									UNV-035
						235	-	NVG	**UNV-001**
									UNV-035
					Yes	117	-	NVF	**UNV-001**
									UNV-035

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VB7800 series	2-way	½"	NPT	-	No	250	-	NV	**UNV-001**
									UNV-035
					Yes	250	-	NVF	**UNV-001**
									UNV-035
		¾"	NPT	-	No	250	-	NV	**UNV-001**
									UNV-035
					Yes	250	-	NVF	**UNV-001**
									UNV-035
		1"	NPT	-	No	229	-	NV	**UNV-001**
									UNV-035
						250	-	NVG	**UNV-001**
									UNV-035
					Yes	183	-	NVF	**UNV-001**
									UNV-035
		1¼"	NPT	-	No	147	-	NV	**UNV-001**
									UNV-035
						235	-	NVG	**UNV-001**
									UNV-035
					Yes	117	-	NVF	**UNV-001**
									UNV-035
		1½"	NPT	-	No	102	-	NV	**UNV-001**
									UNV-035
						160	-	NVG	**UNV-001**
									UNV-035
					Yes	82	-	NVF	**UNV-001**
									UNV-035
		2"	NPT	-	No	57	-	NV	**UNV-001**
									UNV-035
						90	-	NVG	**UNV-001**
									UNV-035
					Yes	46	-	NVF	**UNV-001**
									UNV-035
	3-way	½"	NPT	-	No	250	-	NV	**UNV-001**
									UNV-035
					Yes	250	-	NVF	**UNV-001**
									UNV-035
		¾"	NPT	-	No	250	-	NV	**UNV-001**
									UNV-035
					Yes	250	-	NVF	**UNV-001**
									UNV-035
		1"	NPT	-	No	229	-	NV	**UNV-001**
									UNV-035
						250	-	NVG	**UNV-001**
									UNV-035
					Yes	183	-	NVF	**UNV-001**
									UNV-035
		1¼"	NPT	-	No	147	-	NV	**UNV-001**
									UNV-035
						235	-	NVG	**UNV-001**
									UNV-035
					Yes	117	-	NVF	**UNV-001**
									UNV-035
		1½"	NPT	-	No	102	-	NV	**UNV-001**
									UNV-035
						160	-	NVG	**UNV-001**
									UNV-035
					Yes	82	-	NVF	**UNV-001**
									UNV-035
		2"	NPT	-	No	57	-	NV	**UNV-001**
									UNV-035
						90	-	NVG	**UNV-001**
									UNV-035
					Yes	46	-	NVF	**UNV-001**
									UNV-035

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

Siemens\Landis\Powers

591 Series Valves - Flanged Bodies

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
591 Series	2-way	2½"	Flanged	-	No	55	-	AM	**UGLK1204**
						110	-	GM	**UGLK1204**
						196	-	2*GM	**UGLK1270**
						196	-	2*GM	**UGLK1270**
					Yes	41	55	AF	**UGLK1204**
						82	110	2*AF	**UGLK1270**
						110	-	GK	**UGLK1204**
						82	110	2*AF	**UGLK1270**
						196	-	2*GK	**UGLK1270**
						196	-	2*GK	**UGLK1270**
		3"	Flanged	-	No	38	-	AM	**UGLK1204**
						77	-	GM	**UGLK1204**
						136	-	2*GM	**UGLK1270**
						136	-	2*GM	**UGLK1270**
					Yes	28	38	AF	**UGLK1204**
						57	77	2*AF	**UGLK1270**
						77	-	GK	**UGLK1204**
						57	77	2*AF	**UGLK1270**
						136	-	2*GK	**UGLK1270**
						136	-	2*GK	**UGLK1270**
		4"	Flanged	-	No	11	-	AM	**UGLK1206**
						22	-	GM	**UGLK1206**
						40	-	2*GM	**UGLK1274**
					Yes	8	11	AF	**UGLK1206**
						16	22	2*AF	**UGLK1274**
						22	-	GK	**UGLK1206**
						40	-	2*GK	**UGLK1274**
		5"	Flanged	-	No	14	-	GM	**UGLK1206**
						25	-	2*GM	**UGLK1274**
					Yes	11	14	2*AF	**UGLK1274**
						14	-	GK	**UGLK1206**
						25	-	2*GK	**UGLK1274**
		6"	Flanged	-	No	18	-	2*GM	**UGLK1274**
					Yes	7	10	2*AF	**UGLK1274**
						18	-	2*GK	**UGLK1274**
	3-way	2½"	Flanged	-	No	55	-	AM	**UGLK1204**
						110	-	GM	**UGLK1204**
						196	-	2*GM	**UGLK1270**
						196	-	2*GM	**UGLK1270**
					Yes	41	55	AF	**UGLK1204**
						82	110	2*AF	**UGLK1270**
						110	-	GK	**UGLK1204**
						82	110	2*AF	**UGLK1270**
						196	-	2*GK	**UGLK1270**
						196	-	2*GK	**UGLK1270**
		3"	Flanged	-	No	38	-	AM	**UGLK1204**
						77	-	GM	**UGLK1204**
						136	-	2*GM	**UGLK1270**
						136	-	2*GM	**UGLK1270**
					Yes	28	38	AF	**UGLK1204**
						57	77	2*AF	**UGLK1270**
						77	-	GK	**UGLK1204**
						57	77	2*AF	**UGLK1270**
						136	-	2*GK	**UGLK1270**
						136	-	2*GK	**UGLK1270**
		4"	Flanged	-	No	11	-	AM	**UGLK1206**
						22	-	GM	**UGLK1206**
						40	-	2*GM	**UGLK1274**
					Yes	8	11	AF	**UGLK1206**
						16	22	2*AF	**UGLK1274**
						22	-	GK	**UGLK1206**
						40	-	2*GK	**UGLK1274**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
591 Series	3-way	5”	Flanged	-	No	14	-	GM	**UGLK1206**
						25	-	2*GM	**UGLK1274**
					Yes	11	14	2*AF	**UGLK1274**
						14	-	GK	**UGLK1206**
						25	-	2*GK	**UGLK1274**
		6”	Flanged	-	No	18	-	2*GM	**UGLK1274**
					Yes	7	10	2*AF	**UGLK1274**
						18	-	2*GK	**UGLK1274**
599 Flowrite	2-way	2½”	Flanged	-	No	55	-	AM	**UGLK1210**
						110	-	GM	**UGLK1210**
						196	-	2*GM	**UGLK1272**
					Yes	41	55	AF	**UGLK1210**
						82	110	2*AF	**UGLK1272**
						110	-	GK	**UGLK1210**
						196	-	2*GK	**UGLK1272**
		3”	Flanged	-	No	38	-	AM	**UGLK1210**
						77	-	GM	**UGLK1210**
						136	-	2*GM	**UGLK1272**
					Yes	28	38	AF	**UGLK1210**
						57	77	2*AF	**UGLK1272**
						77	-	GK	**UGLK1210**
						136	-	2*GK	**UGLK1272**
		4”	Flanged	-	No	11	-	AM	**UGLK1212**
						22	-	GM	**UGLK1212**
						40	-	2*GM	**UGLK1276**
					Yes	8	11	AF	**UGLK1212**
						16	22	2*AF	**UGLK1276**
						22	-	GK	**UGLK1212**
						40	-	2*GK	**UGLK1276**
		5”	Flanged	-	No	14	-	GM	**UGLK1212**
						25	-	2*GM	**UGLK1276**
					Yes	11	14	2*AF	**UGLK1276**
						14	-	GK	**UGLK1212**
						25	-	2*GK	**UGLK1276**
	3-way	2½”	Flanged	-	No	55	-	AM	**UGLK1210**
						110	-	GM	**UGLK1210**
						196	-	2*GM	**UGLK1272**
					Yes	41	55	AF	**UGLK1210**
						82	110	2*AF	**UGLK1272**
						110	-	GK	**UGLK1210**
						196	-	2*GK	**UGLK1272**
		3”	Flanged	-	No	38	-	AM	**UGLK1210**
						77	-	GM	**UGLK1210**
						136	-	2*GM	**UGLK1272**
					Yes	28	38	AF	**UGLK1210**
						57	77	2*AF	**UGLK1272**
						77	-	GK	**UGLK1210**
						136	-	2*GK	**UGLK1272**
		4”	Flanged	-	No	11	-	AM	**UGLK1212**
						22	-	GM	**UGLK1212**
						40	-	2*GM	**UGLK1276**
					Yes	8	11	AF	**UGLK1212**
						16	22	2*AF	**UGLK1276**
						22	-	GK	**UGLK1212**
						40	-	2*GK	**UGLK1276**
		5”	Flanged	-	No	14	-	GM	**UGLK1212**
						25	-	2*GM	**UGLK1276**
					Yes	11	14	2*AF	**UGLK1276**
						14	-	GK	**UGLK1212**
						25	-	2*GK	**UGLK1276**

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

Siemens\Landis\Powers

591 Series Valves - NPT Bodies

Linkage/Actuator Selection Guide

BELIMO

5 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
591 Series	2-way	½"	NPT	-	No	250	-	AM	**UGLK1200**
						250	-	NV	**UNV-005**
					Yes	250	-	NF	**UGLK1200**
						250	-	NVF	**UNV-005**
		¾"	NPT	-	No	250	-	NV	**UNV-005**
					Yes	250	-	NF	**UGLK1200**
						250	-	NVF	**UNV-005**
		1"	NPT	-	No	229	-	NV	**UNV-005**
						250	-	AM	**UGLK1200**
						250	-	NVG	**UNV-005**
					Yes	183	-	NVF	**UNV-005**
						244	-	NF	**UGLK1200**
						250	250	AF	**UGLK1200**
		1¼"	NPT	-	No	147	-	NV	**UNV-005**
						250	-	AM	**UGLK1200**
						235	-	NVG	**UNV-005**
					Yes	117	-	NVF	**UNV-005**
						156	-	NF	**UGLK1200**
						231	250	AF	**UGLK1200**
		1½"	NPT	-	No	104	-	AM	**UGLK1202**
						209	-	GM	**UGLK1202**
					Yes	52	-	NF	**UGLK1202**
						77	104	AF	**UGLK1202**
						209	-	GK	**UGLK1202**
		2"	NPT	-	No	59	-	AM	**UGLK1202**
						117	-	GM	**UGLK1202**
					Yes	29	-	NF	**UGLK1202**
						43	59	AF	**UGLK1202**
						117	-	GK	**UGLK1202**
	3-way	½"	NPT	-	No	250	-	AM	**UGLK1200**
						250	-	NV	**UNV-005**
					Yes	250	-	NF	**UGLK1200**
						250	-	NVF	**UNV-005**
		¾"	NPT	-	No	250	-	NV	**UNV-005**
					Yes	250	-	NF	**UGLK1200**
						250	-	NVF	**UNV-005**
		1"	NPT	-	No	229	-	NV	**UNV-005**
						250	-	AM	**UGLK1200**
						250	-	NVG	**UNV-005**
					Yes	183	-	NVF	**UNV-005**
						244	-	NF	**UGLK1200**
						250	250	AF	**UGLK1200**
		1¼"	NPT	-	No	147	-	NV	**UNV-005**
						250	-	AM	**UGLK1200**
						235	-	NVG	**UNV-005**
					Yes	117	-	NVF	**UNV-005**
						156	-	NF	**UGLK1200**
						231	250	AF	**UGLK1200**
		1½"	NPT	-	No	217	-	AM	**UGLK1200**
						250	-	GM	**UGLK1200**
					Yes	109	-	NF	**UGLK1200**
						161	217	AF	**UGLK1200**
						250	-	GK	**UGLK1200**
		2"	NPT	-	No	57	-	NV	**UNV-005**
						90	-	NVG	**UNV-005**
						122	-	AM	**UGLK1200**
						244	-	GM	**UGLK1200**
					Yes	61	-	NF	**UGLK1200**
						46	-	NVF	**UNV-005**
						90	122	AF	**UGLK1200**
						244	-	GK	**UGLK1200**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
599 Flowrite	2-way	½"	NPT	-	No	250	-	AM	**UGLK1208**
					Yes	250	-	NF	**UGLK1208**
		¾"	NPT	-	No	250	-	AM	**UGLK1208**
					Yes	250	-	NF	**UGLK1208**
		1"	NPT	-	No	250	-	AM	**UGLK1208**
					Yes	173	-	NF	**UGLK1208**
						250	250	AF	**UGLK1208**
		1¼"	NPT	-	No	221	-	AM	**UGLK1208**
					Yes	110	-	NF	**UGLK1208**
						163	221	AF	**UGLK1208**
		1½"	NPT	-	No	153	-	AM	**UGLK1208**
						250	-	GM	**UGLK1208**
					Yes	77	-	NF	**UGLK1208**
						113	153	AF	**UGLK1208**
						250	-	GK	**UGLK1208**
		2"	NPT	-	No	86	-	AM	**UGLK1208**
						173	-	GM	**UGLK1208**
					Yes	43	-	NF	**UGLK1208**
						64	86	AF	**UGLK1208**
						173	-	GK	**UGLK1208**
	3-way	½"	NPT	-	No	250	-	AM	**UGLK1208**
					Yes	250	-	NF	**UGLK1208**
		¾"	NPT	-	No	250	-	AM	**UGLK1208**
					Yes	250	-	NF	**UGLK1208**
		1"	NPT	-	No	250	-	AM	**UGLK1208**
					Yes	173	-	NF	**UGLK1208**
						250	250	AF	**UGLK1208**
		1¼"	NPT	-	No	221	-	AM	**UGLK1208**
					Yes	110	-	NF	**UGLK1208**
						163	221	AF	**UGLK1208**
		1½"	NPT	-	No	153	-	AM	**UGLK1208**
						250	-	GM	**UGLK1208**
					Yes	77	-	NF	**UGLK1208**
						113	153	AF	**UGLK1208**
						250	-	GK	**UGLK1208**
		2"	NPT	-	No	86	-	AM	**UGLK1208**
						173	-	GM	**UGLK1208**
					Yes	43	-	NF	**UGLK1208**
						64	86	AF	**UGLK1208**
						173	-	GK	**UGLK1208**
599 Series	2-way	½"	NPT	-	No	250	-	NV	**UNV-003**
					Yes	250	-	NVF	**UNV-003**
		¾"	NPT	-	No	250	-	NV	**UNV-003**
					Yes	250	-	NVF	**UNV-003**
		1"	NPT	-	No	229	-	NV	**UNV-003**
						250	-	NVG	**UNV-003**
					Yes	183	-	NVF	**UNV-003**
		1¼"	NPT	-	No	147	-	NV	**UNV-003**
						235	-	NVG	**UNV-003**
					Yes	117	-	NVF	**UNV-003**
		2"	NPT	-	No	57	-	NV	**UNV-003**
						90	-	NVG	**UNV-003**
					Yes	46	-	NVF	**UNV-003**
	3-way	½"	NPT	-	No	250	-	NV	**UNV-003**
					Yes	250	-	NVF	**UNV-003**
		¾"	NPT	-	No	250	-	NV	**UNV-003**
					Yes	250	-	NVF	**UNV-003**
		1"	NPT	-	No	229	-	NV	**UNV-003**
						250	-	NVG	**UNV-003**
					Yes	183	-	NVF	**UNV-003**
		1¼"	NPT	-	No	147	-	NV	**UNV-003**
						235	-	NVG	**UNV-003**
					Yes	117	-	NVF	**UNV-003**
		2"	NPT	-	No	57	-	NV	**UNV-003**
						90	-	NVG	**UNV-003**
					Yes	46	-	NVF	**UNV-003**

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

Siemens\Landis\Powers

656 and 658 Series Valves - NPT Bodies

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
656* (verify 1/4-28 Stem Thread)	2-way	½"	NPT	-	No	250	-	AM	**UGLK1214**
						250	-	LM	**UGLK1350**
					Yes	250	-	LF	**UGLK1350**
						250	-	NF	**UGLK1214**
		¾"	NPT	-	No	215	-	LM	**UGLK1350**
						250	-	NM	**UGLK1350**
					Yes	215	-	LF	**UGLK1350**
						250	-	NF	**UGLK1214**
	3-way	½"	NPT	-	No	250	-	AM	**UGLK1214**
						250	-	LM	**UGLK1350**
					Yes	250	-	LF	**UGLK1350**
						250	-	NF	**UGLK1214**
		¾"	NPT	-	No	215	-	LM	**UGLK1350**
						250	-	NM	**UGLK1350**
					Yes	215	-	LF	**UGLK1350**
						250	-	NF	**UGLK1214**
658 Series	2-way	½"	NPT	-	No	250	-	AM	**UGLK1214**
						250	-	LM	**UGLK1350**
						250	-	NV	**UNV-004**
					Yes	250	-	LF	**UGLK1350**
						250	-	NF	**UGLK1214**
						250	-	NVF	**UNV-004**
		¾"	NPT	-	No	215	-	LM	**UGLK1350**
						250	-	NM	**UGLK1350**
						250	-	NV	**UNV-004**
					Yes	215	-	LF	**UGLK1350**
						250	-	NF	**UGLK1214**
						250	-	NVF	**UNV-004**
		1"	NPT	-	No	120	-	LM	**UGLK1350**
						229	-	NV	**UNV-004**
						244	-	NM	**UGLK1350**
						250	-	AM	**UGLK1214**
						250	-	NVG	**UNV-004**
					Yes	95	-	LF	**UGLK1350**
						183	-	NVF	**UNV-004**
						244	-	NF	**UGLK1214**
						250	250	AF	**UGLK1214**
		1¼"	NPT	-	No	78	-	LM	**UGLK1350**
						156	-	NM	**UGLK1350**
						147	-	NV	**UNV-004**
						250	-	AM	**UGLK1214**
						235	-	NVG	**UNV-004**
					Yes	61	-	LF	**UGLK1350**
						117	-	NVF	**UNV-004**
						156	-	NF	**UGLK1214**
						231	250	AF	**UGLK1214**

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

* Notch type available upon request. Please contact Belimo technical support for details.

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
658 Series	3-way	½"	NPT	-	No	250	-	AM	**UGLK1214**
						250	-	LM	**UGLK1350**
						250	-	NV	**UNV-004**
					Yes	250	-	LF	**UGLK1350**
						250	-	NF	**UGLK1214**
						250	-	NVF	**UNV-004**
		¾"	NPT	-	No	215	-	LM	**UGLK1350**
						250	-	NM	**UGLK1350**
						250	-	NV	**UNV-004**
					Yes	215	-	LF	**UGLK1350**
						250	-	NF	**UGLK1214**
						250	-	NVF	**UNV-004**
		1"	NPT	-	No	120	-	LM	**UGLK1350**
						229	-	NV	**UNV-004**
						244	-	NM	**UGLK1350**
						250	-	AM	**UGLK1214**
						250	-	NVG	**UNV-004**
					Yes	95	-	LF	**UGLK1350**
						183	-	NVF	**UNV-004**
						244	-	NF	**UGLK1214**
						250	250	AF	**UGLK1214**
		1¼"	NPT	-	No	78	-	LM	**UGLK1350**
						156	-	NM	**UGLK1350**
						147	-	NV	**UNV-004**
						250	-	AM	**UGLK1214**
						235	-	NVG	**UNV-004**
					Yes	61	-	LF	**UGLK1350**
						117	-	NVF	**UNV-004**
						156	-	NF	**UGLK1214**
						231	250	AF	**UGLK1214**

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

Warren Controls

Type 100 Sgl Seat

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
100 SGL SEAT	2-way	2½"	Flanged	-	No	28	-	AM	**UGLK2202**
						57	-	GM	**UGLK2202**
						101	-	2*GM	**UGLK2272**
					Yes	14	-	NF	**UGLK2202**
						21	28	AF	**UGLK2202**
						42	57	2*AF	**UGLK2272**
						57	-	GK	**UGLK2202**
						101	-	2*GK	**UGLK2272**
		3"	Flanged	-	No	20	-	AM	**UGLK2202**
						40	-	GM	**UGLK2202**
						70	-	2*GM	**UGLK2272**
					Yes	10	-	NF	**UGLK2202**
						15	20	AF	**UGLK2202**
						29	40	2*AF	**UGLK2272**
						40	-	GK	**UGLK2202**
						70	-	2*GK	**UGLK2272**
		4"	Flanged	-	No	11	-	AM	**UGLK2202**
						22	-	GM	**UGLK2202**
						40	-	2*GM	**UGLK2272**
					Yes	8	11	AF	**UGLK2202**
						16	22	2*AF	**UGLK2272**
						22	-	GK	**UGLK2202**
						40	-	2*GK	**UGLK2272**
		5"	Flanged	-	No	14	-	GM	**UGLK2202**
						25	-	2*GM	**UGLK2272**
					Yes	5	7	AF	**UGLK2202**
						11	14	2*AF	**UGLK2272**
						14	-	GK	**UGLK2202**
						25	-	2*GK	**UGLK2272**
		6"	Flanged	-	No	10	-	GM	**UGLK2202**
						18	-	2*GM	**UGLK2272**
					Yes	4	5	AF	**UGLK2202**
						7	10	2*AF	**UGLK2272**
						10	-	GK	**UGLK2202**
						18	-	2*GK	**UGLK2272**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
1800 3W DIV	3-way	2½"	Flanged	Diverting	No	28	-	AM	**UGLK2202**
						57	-	GM	**UGLK2202**
						101	-	2*GM	**UGLK2272**
					Yes	14	-	NF	**UGLK2202**
						21	28	AF	**UGLK2202**
						42	57	2*AF	**UGLK2272**
						57	-	GK	**UGLK2202**
						101	-	2*GK	**UGLK2272**
		3"	Flanged	Diverting	No	20	-	AM	**UGLK2202**
						40	-	GM	**UGLK2202**
						70	-	2*GM	**UGLK2272**
					Yes	10	-	NF	**UGLK2202**
						15	20	AF	**UGLK2202**
						29	40	2*AF	**UGLK2272**
						40	-	GK	**UGLK2202**
						70	-	2*GK	**UGLK2272**
		4"	Flanged	Diverting	No	11	-	AM	**UGLK2202**
						22	-	GM	**UGLK2202**
						40	-	2*GM	**UGLK2272**
					Yes	8	11	AF	**UGLK2202**
						16	22	2*AF	**UGLK2272**
						22	-	GK	**UGLK2202**
						40	-	2*GK	**UGLK2272**
		5"	Flanged	Diverting	No	14	-	GM	**UGLK2202**
						25	-	2*GM	**UGLK2272**
					Yes	5	7	AF	**UGLK2202**
						11	14	2*AF	**UGLK2272**
						14	-	GK	**UGLK2202**
						25	-	2*GK	**UGLK2272**
		6"	Flanged	Diverting	No	10	-	GM	**UGLK2202**
						18	-	2*GM	**UGLK2272**
					Yes	4	5	AF	**UGLK2202**
						7	10	2*AF	**UGLK2272**
						10	-	GK	**UGLK2202**
						18	-	2*GK	**UGLK2272**

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

Warren Controls

Type 1800

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
1800 3W MIX	3-way	2½"	Flanged	Mixing	No	28	-	AM	**UGLK2202**
						57	-	GM	**UGLK2202**
						101	-	2*GM	**UGLK2272**
					Yes	14	-	NF	**UGLK2202**
						21	28	AF	**UGLK2202**
						42	57	2*AF	**UGLK2272**
						57	-	GK	**UGLK2202**
						101	-	2*GK	**UGLK2272**
		3"	Flanged	Mixing	No	20	-	AM	**UGLK2202**
						40	-	GM	**UGLK2202**
						70	-	2*GM	**UGLK2272**
					Yes	10	-	NF	**UGLK2202**
						15	20	AF	**UGLK2202**
						29	40	2*AF	**UGLK2272**
						40	-	GK	**UGLK2202**
						70	-	2*GK	**UGLK2272**
		4"	Flanged	Mixing	No	11	-	AM	**UGLK2202**
						22	-	GM	**UGLK2202**
						40	-	2*GM	**UGLK2272**
					Yes	8	11	AF	**UGLK2202**
						16	22	2*AF	**UGLK2272**
						22	-	GK	**UGLK2202**
						40	-	2*GK	**UGLK2272**
		5"	Flanged	Mixing	No	14	-	GM	**UGLK2202**
						25	-	2*GM	**UGLK2272**
					Yes	5	7	AF	**UGLK2202**
						11	14	2*AF	**UGLK2272**
						14	-	GK	**UGLK2202**
						25	-	2*GK	**UGLK2272**
		6"	Flanged	Mixing	No	10	-	GM	**UGLK2202**
						18	-	2*GM	**UGLK2272**
					Yes	4	5	AF	**UGLK2202**
						7	10	2*AF	**UGLK2272**
						10	-	GK	**UGLK2202**
						18	-	2*GK	**UGLK2272**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
1800 BAL	2-way	2½"	Flanged	-	No	28	-	AM	**UGLK2202**
						57	-	GM	**UGLK2202**
						101	-	2*GM	**UGLK2272**
					Yes	14	-	NF	**UGLK2202**
						21	28	AF	**UGLK2202**
						42	57	2*AF	**UGLK2272**
						57	-	GK	**UGLK2202**
						101	-	2*GK	**UGLK2272**
		3"	Flanged	-	No	20	-	AM	**UGLK2202**
						40	-	GM	**UGLK2202**
						70	-	2*GM	**UGLK2272**
					Yes	10	-	NF	**UGLK2202**
						15	20	AF	**UGLK2202**
						29	40	2*AF	**UGLK2272**
						40	-	GK	**UGLK2202**
						70	-	2*GK	**UGLK2272**
		4"	Flanged	-	No	11	-	AM	**UGLK2202**
						22	-	GM	**UGLK2202**
						40	-	2*GM	**UGLK2272**
					Yes	8	11	AF	**UGLK2202**
						16	22	2*AF	**UGLK2272**
						22	-	GK	**UGLK2202**
						40	-	2*GK	**UGLK2272**
		5"	Flanged	-	No	14	-	GM	**UGLK2202**
						25	-	2*GM	**UGLK2272**
					Yes	5	7	AF	**UGLK2202**
						11	14	2*AF	**UGLK2272**
						14	-	GK	**UGLK2202**
						25	-	2*GK	**UGLK2272**
		6"	Flanged	-	No	10	-	GM	**UGLK2202**
						18	-	2*GM	**UGLK2272**
					Yes	4	5	AF	**UGLK2202**
						7	10	2*AF	**UGLK2272**
						10	-	GK	**UGLK2202**
						18	-	2*GK	**UGLK2272**

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

Warren Controls

Type 20

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Type 20	2-way	2½"	Flanged	-	No	55	-	AM	**UGLK2200**
						69	-	NVG	**UNV-051**
						110	-	GM	**UGLK2200**
						196	-	2*GM	**UGLK2270**
						196	-	2*GM	**UGLK2270**
					Yes	28	-	NF	**UGLK2200**
						41	55	AF	**UGLK2200**
						82	110	2*AF	**UGLK2270**
						110	-	GK	**UGLK2200**
						82	110	2*AF	**UGLK2270**
						196	-	2*GK	**UGLK2270**
						196	-	2*GK	**UGLK2270**
		3"	Flanged	-	No	38	-	AM	**UGLK2200**
						48	-	NVG	**UNV-051**
						77	-	GM	**UGLK2200**
						136	-	2*GM	**UGLK2270**
						136	-	2*GM	**UGLK2270**
					Yes	19	-	NF	**UGLK2200**
						28	38	AF	**UGLK2200**
						57	77	2*AF	**UGLK2270**
						77	-	GK	**UGLK2200**
						57	77	2*AF	**UGLK2270**
						136	-	2*GK	**UGLK2270**
						136	-	2*GK	**UGLK2270**
		4"	Flanged	-	No	11	-	AM	**UGLK2202**
						22	-	GM	**UGLK2202**
						40	-	2*GM	**UGLK2272**
					Yes	8	11	AF	**UGLK2202**
						16	22	2*AF	**UGLK2272**
						22	-	GK	**UGLK2202**
						40	-	2*GK	**UGLK2272**
		5"	Flanged	-	No	14	-	GM	**UGLK2202**
						25	-	2*GM	**UGLK2272**
					Yes	5	7	AF	**UGLK2202**
						11	14	2*AF	**UGLK2272**
						14	-	GK	**UGLK2202**
						25	-	2*GK	**UGLK2272**
		6"	Flanged	-	No	10	-	GM	**UGLK2202**
						18	-	2*GM	**UGLK2272**
					Yes	4	5	AF	**UGLK2202**
						7	10	2*AF	**UGLK2272**
						10	-	GK	**UGLK2202**
						18	-	2*GK	**UGLK2272**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Type 22	2-way	2½"	Flanged	-	No	55	-	AM	**UGLK2200**
						69	-	NVG	**UNV-051**
						110	-	GM	**UGLK2200**
						196	-	2*GM	**UGLK2270**
						196	-	2*GM	**UGLK2270**
					Yes	28	-	NF	**UGLK2200**
						41	55	AF	**UGLK2200**
						82	110	2*AF	**UGLK2270**
						110	-	GK	**UGLK2200**
						82	110	2*AF	**UGLK2270**
						196	-	2*GK	**UGLK2270**
						196	-	2*GK	**UGLK2270**
		3"	Flanged	-	No	38	-	AM	**UGLK2200**
						48	-	NVG	**UNV-051**
						77	-	GM	**UGLK2200**
						136	-	2*GM	**UGLK2270**
						136	-	2*GM	**UGLK2270**
					Yes	19	-	NF	**UGLK2200**
						28	38	AF	**UGLK2200**
						57	77	2*AF	**UGLK2270**
						77	-	GK	**UGLK2200**
						57	77	2*AF	**UGLK2270**
						136	-	2*GK	**UGLK2270**
						136	-	2*GK	**UGLK2270**
		4"	Flanged	-	No	22	-	AM	**UGLK2200**
						77	-	2*GM	**UGLK2270**
						43	-	GM	**UGLK2200**
						77	-	2*GM	**UGLK2270**
					Yes	11	-	NF	**UGLK2200**
						16	22	AF	**UGLK2200**
						32	43	2*AF	**UGLK2270**
						77	-	2*GK	**UGLK2270**
						43	-	GK	**UGLK2200**
						77	-	2*GK	**UGLK2270**
						32	43	2*AF	**UGLK2270**
		5"	Flanged	-	No	14	-	GM	**UGLK2202**
						25	-	2*GM	**UGLK2272**
					Yes	5	7	AF	**UGLK2202**
						11	14	2*AF	**UGLK2272**
						14	-	GK	**UGLK2202**
						25	-	2*GK	**UGLK2272**
		6"	Flanged	-	No	10	-	GM	**UGLK2202**
						18	-	2*GM	**UGLK2272**
					Yes	4	5	AF	**UGLK2202**
						7	10	2*AF	**UGLK2272**
						10	-	GK	**UGLK2202**
						18	-	2*GK	**UGLK2272**

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

Warren Controls

Type 30

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Type 30	3-way	2½"	Flanged	-	No	55	-	AM	**UGLK2200**
						100	-	NVG	**UNV-051**
						110	-	GM	**UGLK2200**
						196	-	2*GM	**UGLK2270**
						196	-	2*GM	**UGLK2270**
					Yes	28	-	NF	**UGLK2200**
						41	55	AF	**UGLK2200**
						82	110	2*AF	**UGLK2270**
						110	-	GK	**UGLK2200**
						82	110	2*AF	**UGLK2270**
						196	-	2*GK	**UGLK2270**
						196	-	2*GK	**UGLK2270**
		3"	Flanged	-	No	38	-	AM	**UGLK2200**
						77	-	GM	**UGLK2200**
						100	-	NVG	**UNV-051**
						136	-	2*GM	**UGLK2270**
						136	-	2*GM	**UGLK2270**
					Yes	19	-	NF	**UGLK2200**
						28	38	AF	**UGLK2200**
						57	77	2*AF	**UGLK2270**
						77	-	GK	**UGLK2200**
						57	77	2*AF	**UGLK2270**
						136	-	2*GK	**UGLK2270**
						136	-	2*GK	**UGLK2270**
		4"	Flanged	-	No	11	-	AM	**UGLK2202**
						22	-	GM	**UGLK2202**
						40	-	2*GM	**UGLK2272**
					Yes	8	11	AF	**UGLK2202**
						16	22	2*AF	**UGLK2272**
						22	-	GK	**UGLK2202**
						40	-	2*GK	**UGLK2272**
		5"	Flanged	-	No	14	-	GM	**UGLK2202**
						25	-	2*GM	**UGLK2272**
					Yes	5	7	AF	**UGLK2202**
						11	14	2*AF	**UGLK2272**
						14	-	GK	**UGLK2202**
						25	-	2*GK	**UGLK2272**
		6"	Flanged	-	No	10	-	GM	**UGLK2202**
						18	-	2*GM	**UGLK2272**
					Yes	4	5	AF	**UGLK2202**
						7	10	2*AF	**UGLK2272**
						10	-	GK	**UGLK2202**
						18	-	2*GK	**UGLK2272**

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

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Type 32	3-way	2½"	Flanged	-	No	55	-	AM	**UGLK2200**
						100	-	NVG	**UNV-051**
						110	-	GM	**UGLK2200**
						196	-	2*GM	**UGLK2270**
					Yes	28	-	NF	**UGLK2200**
						41	55	AF	**UGLK2200**
						110	-	GK	**UGLK2200**
						82	110	2*AF	**UGLK2270**
						196	-	2*GK	**UGLK2270**
						196	-	2*GK	**UGLK2270**
		3"	Flanged	-	No	38	-	AM	**UGLK2200**
						77	-	GM	**UGLK2200**
						100	-	NVG	**UNV-051**
						136	-	2*GM	**UGLK2270**
					Yes	19	-	NF	**UGLK2200**
						28	38	AF	**UGLK2200**
						77	-	GK	**UGLK2200**
						57	77	2*AF	**UGLK2270**
						136	-	2*GK	**UGLK2270**
						136	-	2*GK	**UGLK2270**
		4"	Flanged	-	No	11	-	AM	**UGLK2202**
						22	-	GM	**UGLK2202**
						40	-	2*GM	**UGLK2272**
					Yes	8	11	AF	**UGLK2202**
						16	22	2*AF	**UGLK2272**
						22	-	GK	**UGLK2202**
						40	-	2*GK	**UGLK2272**
		5"	Flanged	-	No	14	-	GM	**UGLK2202**
						25	-	2*GM	**UGLK2272**
					Yes	5	7	AF	**UGLK2202**
						11	14	2*AF	**UGLK2272**
						14	-	GK	**UGLK2202**
						25	-	2*GK	**UGLK2272**
		6"	Flanged	-	No	10	-	GM	**UGLK2202**
						18	-	2*GM	**UGLK2272**
					Yes	4	5	AF	**UGLK2202**
						7	10	2*AF	**UGLK2272**
						10	-	GK	**UGLK2202**
						18	-	2*GK	**UGLK2272**

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

Warren Controls

Type 20, Type 30

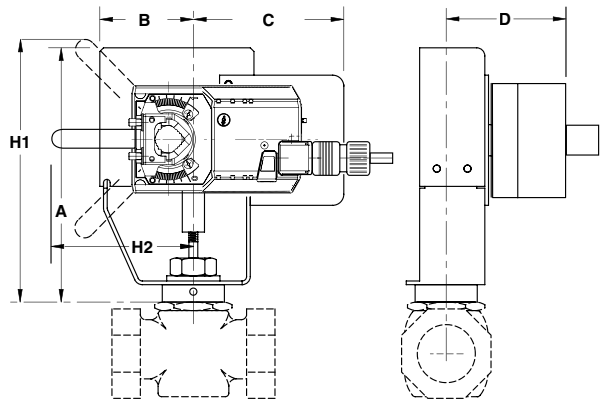
Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Body Type	Flow	Failsafe	Close-Off psi	Close-Off psi (AFX Series)	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Type 20	2-way	½"	NPT	-	No	250	-	AM	**UGLK2200**
					Yes	250	-	NF	**UGLK2200**
		¾"	NPT	-	No	250	-	AM	**UGLK2200**
					Yes	250	-	NF	**UGLK2200**
		1"	NPT	-	No	250	-	AM	**UGLK2200**
					Yes	173	-	NF	**UGLK2200**
						250	250	AF	**UGLK2200**
		1¼"	NPT	-	No	221	-	AM	**UGLK2200**
					Yes	110	-	NF	**UGLK2200**
						163	221	AF	**UGLK2200**
		1½"	NPT	-	No	153	-	AM	**UGLK2200**
						250	-	GM	**UGLK2200**
					Yes	77	-	NF	**UGLK2200**
						113	153	AF	**UGLK2200**
						250	-	GK	**UGLK2200**
		2"	NPT	-	No	86	-	AM	**UGLK2200**
						173	-	GM	**UGLK2200**
					Yes	43	-	NF	**UGLK2200**
						64	86	AF	**UGLK2200**
						173	-	GK	**UGLK2200**
Type 30	3-way	½"	NPT	-	No	250	-	AM	**UGLK2200**
					Yes	250	-	NF	**UGLK2200**
		¾"	NPT	-	No	250	-	AM	**UGLK2200**
					Yes	250	-	NF	**UGLK2200**
		1"	NPT	-	No	250	-	AM	**UGLK2200**
					Yes	173	-	NF	**UGLK2200**
						250	250	AF	**UGLK2200**
		1¼"	NPT	-	No	221	-	AM	**UGLK2200**
					Yes	110	-	NF	**UGLK2200**
						163	221	AF	**UGLK2200**
		1½"	NPT	-	No	153	-	AM	**UGLK2200**
						250	-	GM	**UGLK2200**
					Yes	77	-	NF	**UGLK2200**
						113	153	AF	**UGLK2200**
						250	-	GK	**UGLK2200**
		2"	NPT	-	No	86	-	AM	**UGLK2200**
						173	-	GM	**UGLK2200**
					Yes	43	-	NF	**UGLK2200**
						64	86	AF	**UGLK2200**
						173	-	GK	**UGLK2200**

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

Where globe valves which cannot be matched to one of the Belimo UGLK part numbers, for quotation only, please use p/n UGSP0000 for valves requiring single actuation, and UGSP0002 for valves requiring dual actuation. These part numbers have no Bill of Materials (BOM) associated with them, and therefore cannot be produced and shipped. When these two part numbers are quoted, sold and orders processed, the "Globe Valve Retrofit" form must be completed and will accompany the order. Our engineering department will then determine the correct UGSP linkage number for production. Please keep in mind that UGSP0000 and UGSP0002 will **NOT** show up on final paperwork and will be replaced with the correct UGSP part number once such has been determined.

UGSP0000

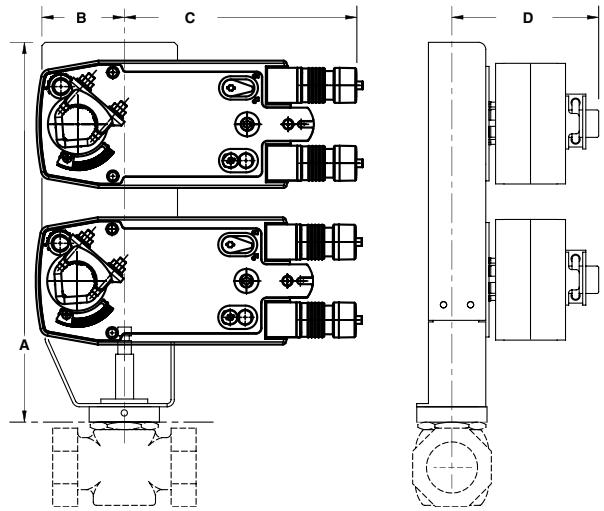


The single actuated globe retrofit linkage (shown left) depicts the MINIMUM and MAXIMUM dimensional data for use in determining the space required to mount the linkage. These dimensions do NOT include VALVE dimensions which will affect combined height requirements.

Dims H1 & **H2** are used only when override handles are utilized on the linkage system, and are not required for proper operation of the linkage system.

Dim A	7.5" [190] min to 14" [356] max	**Dim H1**	9.5" [242]
Dim B	3" [76]	**Dim H2**	9.5" [242]
Dim C	9" [229]		
Dim D	5" [127]		

UGSP0002



The dual MINIMUM and MAXIMUM actuated globe retrofit linkage shown left depicts the MAXIMUM dimensional data for use in determining the space required to mount the linkage. These dimensions do NOT include VALVE dimensions which will affect combined height requirements.

Dim A	9.5" [241] min. to 19" [483] max.
Dim B	3" [76]
Dim C	9" [229]
Dim D	5" [127]

5 YEAR WARRANTY

Custom kits are designed to your unique specification and are not returnable.

BELIMO

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Instructions for completing this form

Dimensions A, B & C relate to the existing valve stem. **Dim A** is the stem diameter where it is NOT threaded (Style A), or grooved (Style B). **Dim B** refers to the length of the threaded region on the valve stem or top region of the grooved stem. **Dim C** is the actual thread specification for the threaded style stem (1/4-28, 5/16-24, 3/8-24, 7/16-20 & 1/2-20 are typical). Dim C for the grooved style is the measurement of the stem groove height. This information is used to design a stem adapter which will connect the valve stem to the new linkage drive rack. It is important to specify the correct thread pattern, as incorrect data will prevent the stem adapter from attaching to your valve. If you cannot determine the correct thread spec, you can send a nut from the valve stem and we will match the correct specification. In some cases where older valves are concerned, some valve stems must be trimmed in the field to allow attachment of the linkage system. In these cases, a stem adapter is designed to "bite" into the smooth surface of the valve stem itself.

Dimensions D1, D2 & D3 are used to determine the height of the linkage assembly required to clear the valves' full stroke. A minimum of **two** dimensions are required to manufacture the correct linkage system for your valve. These dimensions also provide the information necessary to determine valve stroke. The **maximum stroke** from Belimo globe valve retrofit systems is 1.500".

Dimension E refers to the valve bonnet diameter (regardless if threads are present or not). Over time, impurities will react to the bonnet threads and corrode them to the point where they no longer meet the original thread specification. Because of this, we manufacture **slip fit** collars designed to **slide over** the bonnet threads, and locking setscrews are provided which "bite" into the original threads. All retrofit systems are designed to work with the raw valve body and do not account for previous actuation components which **must** be removed from the valve body before attaching the new linkage system.

Dimension F refers to the thread specification on threaded bonnets, and refers to the minor diameter on slip on bonnets (Landis type). This information helps us determine the length of the locking devices required to hold the collar onto the bonnet.

Dimensions G & H are used to determine working height of the bonnet region of your globe valve, while **Dim I** is used in calculating the minimum ID of the collar that will fit over the packing nut. Additionally, information about the environment and process in which this linkage system will be utilized should be provided.

All the requested information contained on this form is required to guarantee the complete, perfect fit of your retrofit system. Keep in mind that retrofit kits are designed with close-tolerance components which afford the most efficient linkage systems. Measurements rounded to the nearest 1/8 or 1/16 inch will not perform as well as a kit designed around careful measurements using proper equipment. Our designs are typically +.005" tolerance.

Required Tools - calipers, thread gauge and retrofit form

DISCLAIMER:

While we will do our best to provide a linkage system designed around your specifications and measurements, we cannot be held responsible for linkages which do not fit as a result of incorrect data given to Belimo. We will be happy to re-work components which do not fit properly for a nominal fee.

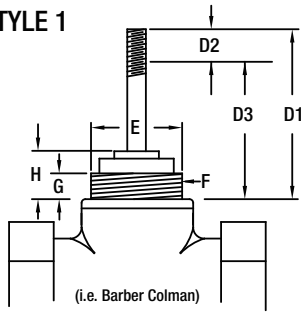
To reduce the possibility of incorrect linkage solutions, we respectfully request that you fill out the retrofit form completely and forward that information with your order. This will serve as a double check between your valve and the actuator/linkage package designed for your application.

Actuation, weather shields and linkages cannot be pre-assembled at the Belimo factory prior to your receipt. The linkages are designed to be attached onto the valve body first, then optional weather shields, and finally actuation products.

Close-off pressures are calculated using actuator torque, valve stroke, and valve area. Other factors may affect the rated close-off pressures, including flow rates, system maintenance schedules, chemicals used in the shot feeder process, vicinity to pumps, condition of valve stem seals, and assembly of linkage material in the field.

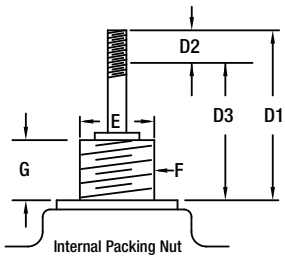
Valves that are being considered for retrofit of actuation should be analyzed for their life expectancy before the retrofit has taken place. Valves that leak through stem seals or casings will continue to leak with the new linkage system in place, maybe even more so. Rebuilding the packing on these valves may be more costly than replacing the valves themselves. In some instances, older valve stem heights will require field modifications to the valve in order to utilize the retrofit kit. Belimo takes no responsibility for the operation of these valves after they have been modified.

VALVE STYLE 1

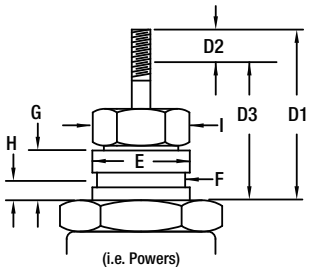


NOTE:
Nut "F" rotates on
valve bonnet!!

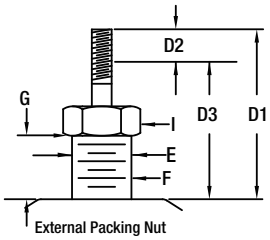
VALVE STYLE 2



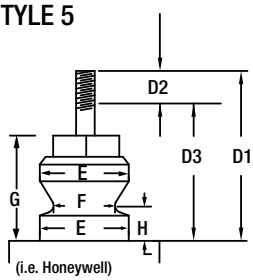
VALVE STYLE 3



VALVE STYLE 4



VALVE STYLE 5

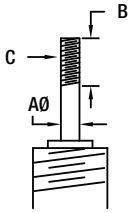


VALVE STYLE DIMENSIONS

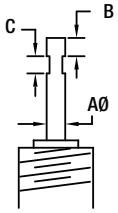
VALVE STYLE:		
DIM D1*: Stem up, length to base mount surface		
DIM D2: Stem stroke, stem up vs. stem down (D1-D3)		max. 1.500"
DIM D3: Stem down, length to base mount surface		
DIM E: Bonnet major diameter		
DIM F: Thread spec or bonnet minor diameter		
DIM G: Bonnet mount height		
DIM H: Bonnet minor diameter height		
DIM I: External packaging nut, across points		

*MAXIMUM LENGTH LINKAGE FRAME WILL ACCOMODATE UP TO 6.500" D1 MEASUREMENT VALVE STEMS LONGER THAN THIS NEED TO BE CUT.

STEM STYLE A



STEM STYLE B



STEM STYLE A or B: ☐

STEM DIAMETER DIM A: ☐

THREAD LENGTH DIM B: ☐

TO STEM GROOVE DIM B: ☐

THREADS PER INCH DIM C: ☐

STEM GROOVE HEIGHT DIM C: ☐

ACTUATOR

EXISTING ACTUATOR MODEL: _____ CONTROL TYPE: ☐ ON/OFF ☐ FLOATING POINT ☐ VDC Range:_____ ☐ PWM Range:_____

FAIL SAFE: ☐ YES ☐ NO

FAIL POSITION: ☐ NO ☐ NC ☐ INDOOR ☐ OUTDOOR

VOLTAGE _____

COMPANY: _____ VALVE MANUFACTURE: _____ 2 WAY/3 WAY: _____

JOB NAME: _____ VALVE SERIES: _____ VALVE SIZE: _____

PO#: _____ VALVE MODEL: _____ MEDIA TEMP: _____

PHONE: _____ VALVE TAG/LOCATION: _____ MEDIA TYPE: _____

EMAIL: _____ QUANTITY: _____ SYSTEM PRESSURE: _____

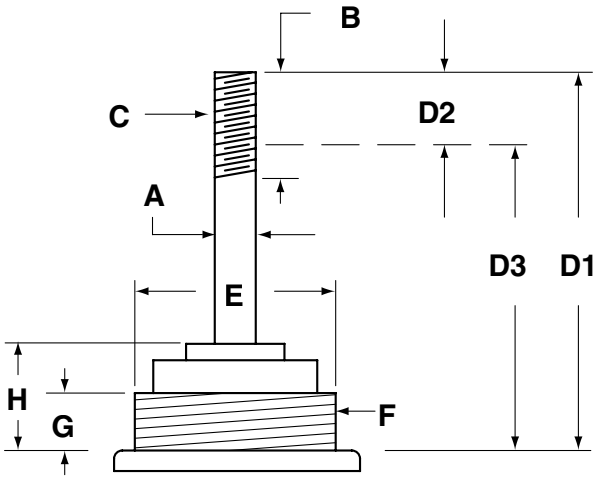
NOTE: THIS INFORMATION WILL BE UTILIZED IN THE FABRICATION OF A CUSTOM LINKAGE SYSTEM FOR YOUR VALVE REQUIREMENT; THEREFORE, IT IS ESSENTIAL THAT THE ABOVE DIMENSIONS BE FURNISHED WITH READINGS TAKEN TO THE NEAREST .001". ANY ERRONEOUS DIMENSIONS FURNISHED WHICH RESULT IN IMPROPER FIT OF THIS LINKAGE SYSTEM ARE NOT THE RESPONSIBILITY OF BELIMO AIRCONTROLS. ANY REWORK REQUIRED WILL RESULT IN AN EXTRA CHARGE.

CUSTOM KITS ARE DESIGNED TO YOUR UNIQUE SPECIFICATIONS AND ARE **NOT RETURNABLE.**

COMPANY CONTACT/DIMENSIONS PROVIDED BY: _____ DATE: _____

Identification & Measurement of Existing Valves

The valve should be stripped down to its basic form, as shown. Remove all other linkage components in order to obtain correct dimensional data for the retrofit kit. Note that the bonnet nut is permanently attached to the valve body, and that it also spins freely.



Follow these important steps to properly measure STYLE 1 type globe valves for a retrofit linkage. Reference the photos and line drawing to help guide you through the data collection process.

STEP 1) Dimension A on the retrofit form is measured as shown, with the end of the calipers laying PERPENDICULAR to the center line of the valve stem. Record this reading to three decimal places.

STEP 3) Using the WIDE area of the calipers, measure the MAJOR Diameter of the stem threads. Record this information for Dimension **C** on the retrofit form. Also count how many threads per inch. Typical thread specs are 1/4-28, 3/8-24 & 1/2-20. If available, you should use a thread gage to determine the correct thread spec. Alternatively, you may send a valve stem nut to Belimo and we will determine the correct thread spec for you. Correct thread identification is important as this is the point of highest mechanical stress after the retrofitting has been completed.

STEP 2) Measure the LENGTH of the threaded area of the valve stem, and record this information for Dimension **B** on the retrofit Form.

Identification & Measurement of Existing Valves

STEP 4) Dimension **D1** on the retrofit form is measured as shown, with the depth gage used to measure the STEM UP distance to the bonnet base.

STEP 5) Dimension **D3** on the retrofit form is measured as shown, with the depth gage used to measure the STEM DN distance to the bonnet base.

STEP 6) Dimension **D2** on the retrofit form is the measured distance between the STEM UP and STEM DN heights, which gives the full travel of the valve. Only **TWO** of the three dimensions **D1, D2 & D3** are needed.

STEP 7) Dimension **E** is measured across the MAJOR diameter of the bonnet threads. Use the calipers as shown to determine the correct dimension and record accordingly on the retrofit form.

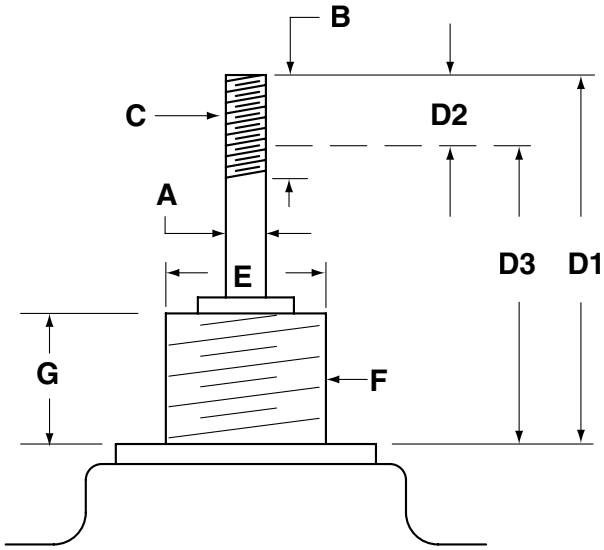
STEP 8) Dimension **F** is measured using a thread gage or by counting the number of threads per inch.

STEP 9) Measure Dimension **G** using the caliper depth gage, and record on the retrofit form.

STEP 10) Dimension **H** is measured as the distance between the bonnet mounting base height and the TOP of the stem packing retainer.

Identification & Measurement of Existing Valves

The valve should be stripped down to its basic form, as shown. Remove all other linkage components in order to obtain correct dimensional data for the retrofit kit. Note that the packing nut is inside the bonnet, and does NOT interfere with the bonnet threads.



Follow these important steps to properly measure STYLE 2 type globe valves for a retrofit linkage. Reference the photos and line drawing to help guide you through the data collection process.

STEP 1) Dimension **A** on the retrofit form is measured as shown, with the end of the calipers laying PERPENDICULAR to the center line of the valve stem. Record this reading to three decimal places.

STEP 2) Measure the LENGTH of the threaded area of the valve stem, and record this information for Dimension **B** on the retrofit Form.

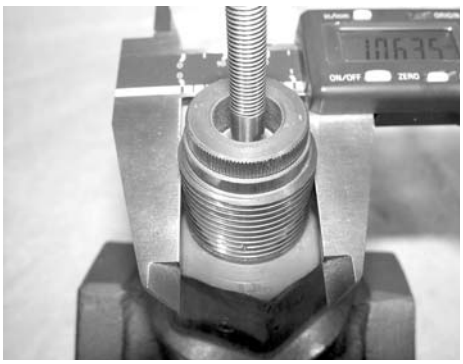
STEP 3) Using the WIDE area of the calipers, measure the MAJOR Diameter of the stem threads. Record this information for Dimension **C** on the retrofit form. Also count how many threads per inch. Typical thread specs are 1/4-28, 3/8-24 & 1/2-20. If available, you should use a thread gage to determine the correct thread spec. Alternatively, you may send a valve stem nut to Belimo and we will determine the correct thread spec for you. Correct thread identification is important as this is the point of highest mechanical stress after the retrofitting has been completed.

Identification & Measurement of Existing Valves

STEP 4) Dimension **D1** on the retrofit form is measured as shown, with the depth gage used to measure the STEM UP distance to the bonnet base.

STEP 5) Dimension **D3** on the retrofit form is measured as shown, with the depth gage used to measure the STEM DN distance to the bonnet base.

STEP 6) Dimension **D2** on the retrofit form is the measured distance between the STEM UP and STEM DN heights, which gives the full travel of the valve. Only **TWO** of the three dimensions **D1, D2 & D3** are needed.



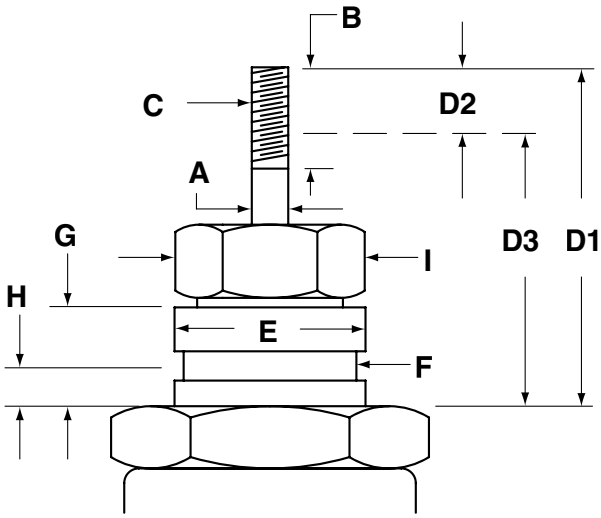
STEP 7) Dimension **E** is measured across the MAJOR diameter of the bonnet threads. Use the calipers as shown to determine the correct dimension and record accordingly on the retrofit form.

STEP 8) DImension **F** is measured using a thread gage or by counting the number of threads per inch.

STEP 9) Measure Dimension **G** using the caliper depth gage, and record on the retrofit form.

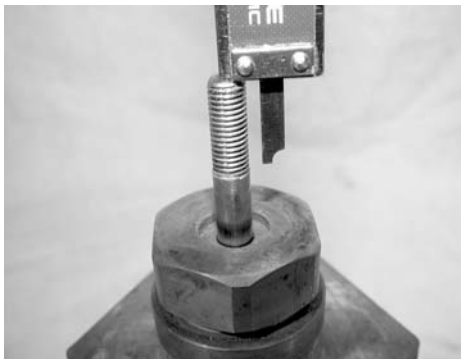
Identification & Measurement of Existing Valves

The valve should be stripped down to its basic form, as shown. Remove all other linkage components in order to obtain correct dimensional data for the retrofit kit. Note that there are no threads on the bonnet. The packing nut is smaller that the diameter of the bonnet. There is a groove in the bonnet used to secure the retrofit collar to the valve.



Follow these important steps to properly measure STYLE 3 type globe valves for a retrofit linkage. Reference the photos and line drawing to help guide you through the data collection process.

STEP 1) Dimension **A** on the retrofit form is measured as shown, with the end of the calipers laying PERPENDICULAR to the center line of the valve stem. Record this reading to three decimal places.



STEP 2) Measure the LENGTH of the threaded area of the valve stem, and record this information for Dimension **B** on the retrofit Form.

STEP 3) Using the WIDE area of the calipers, measure the MAJOR Diameter of the stem threads. Record this information for Dimension **C** on the retrofit form. Also count how many threads per inch. Typical thread specs are 1/4-28, 3/8-24 & 1/2-20. If available, you should use a thread gage to determine the correct thread spec. Alternatively, you may send a valve stem nut to Belimo and we will determine the correct thread spec for you. Correct thread identification is important as this is the point of highest mechanical stress after the retrofitting has been completed.

UGSP Series Globe Valve Retrofit Solution

Retrofitting STYLE 3 Globe Valves Typical for Powers 599 Series and Other Non-Threaded, Non-Tapered Bonnet Valves

BELIMO

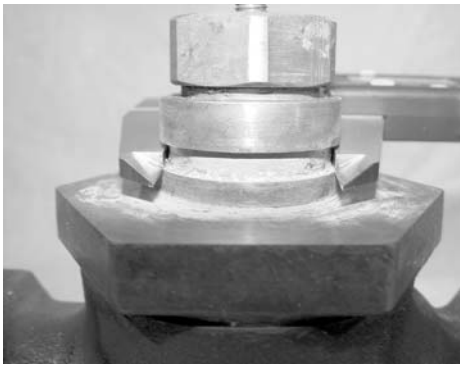
Identification & Measurement of Existing Valves

STEP 4) Dimension **D1** on the retrofit form is measured as shown, with the depth gage used to measure the STEM UP distance to the bonnet base.

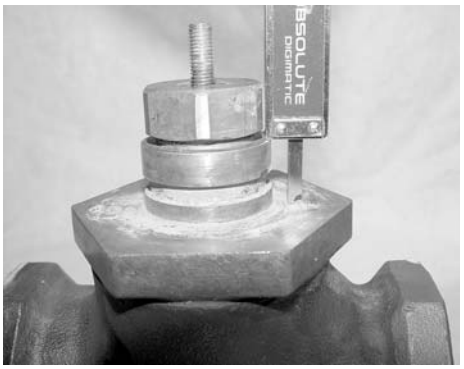
STEP 5) Dimension **D3** on the retrofit form is measured as shown, with the depth gage used to measure the STEM DN distance to the bonnet base.

STEP 6) Dimension **D2** on the retrofit form is the measured distance between the STEM UP and STEM DN heights, which gives the full travel of the valve. Only **TWO** of the three dimensions **D1, D2 & D3** are needed.

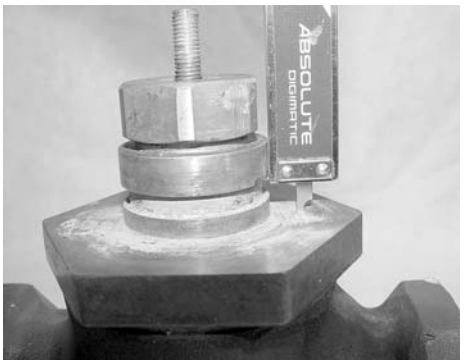
STEP 7) Dimension **E** is measured across the MAJOR diameter of the bonnet. Use the calipers as shown to determine the correct dimension and record accordingly on the retrofit form. This dimension should be checked both above and below the locking groove.



STEP 8) DImension **F** is measured using calipers across the MINOR diameter of the bonnet. This may be a square or a round groove. Measure the **SMALLEST** dimension of this groove.



STEP 9) Measure Dimension **G** using the caliper depth gage, and record on the retrofit form.

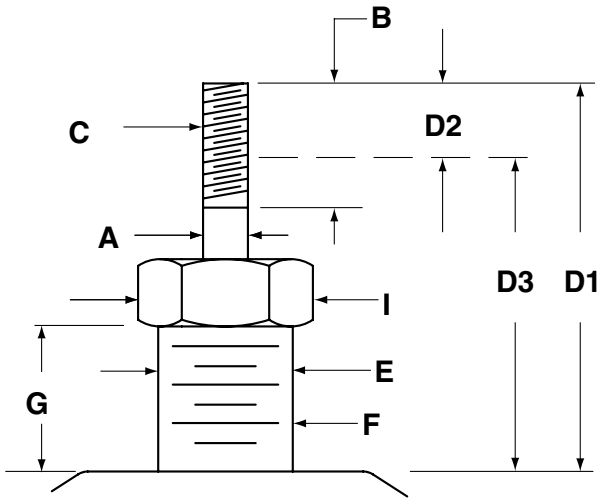


STEP 10) Measure Dimension **H** using the caliper depth gage, and record on the retrofit form.

STEP 11) Dimension **I** is measured on the outside diameter of the external packing nut.

Identification & Measurement of Existing Valves

The valve should be stripped down to its basic form, as shown. Remove all other linkage components in order to obtain correct dimensional data for the retrofit kit. Note that many pneumatically operated valves have hardware that must be removed from the threaded bonnet area before measurements can be taken.



Follow these important steps to properly measure STYLE 4 type globe valves for a retrofit linkage. Reference the photos and line drawing to help guide you through the data collection process.

STEP 1) Dimension **A** on the retrofit form is measured as shown, with the end of the calipers laying PERPENDICULAR to the center line of the valve stem. Record this reading to three decimal places.

STEP 2) Measure the LENGTH of the threaded area of the valve stem, and record this information for Dimension **B** on the retrofit Form.

STEP 3) Using the WIDE area of the calipers, measure the MAJOR Diameter of the stem threads. Record this information for Dimension **C** on the retrofit form. Also count how many threads per inch. Typical thread specs are 1/4-28, 3/8-24 & 1/2-20. If available, you should use a thread gage to determine the correct thread spec. Alternatively, you may send a valve stem nut to Belimo and we will determine the correct thread spec for you. Correct thread identification is important as this is the point of highest mechanical stress after the retrofitting has been completed.

Identification & Measurement of Existing Valves

STEP 4) Dimension **D1** on the retrofit form is measured as shown, with the depth gage used to measure the STEM UP distance to the bonnet base.

STEP 5) Dimension **D3** on the retrofit form is measured as shown, with the depth gage used to measure the STEM DN distance to the bonnet base.

STEP 6) Dimension **D2** on the retrofit form is the measured distance between the STEM UP and STEM DN heights, which gives the full travel of the valve. Only **TWO** of the three dimensions **D1, D2 & D3** are needed.

STEP 7) Dimension **E** is measured across the MAJOR diameter of the bonnet. Use the calipers as shown to determine the correct dimension and record accordingly on the retrofit form. Do **NOT** measure the diameter of the packing nut for this dimension.

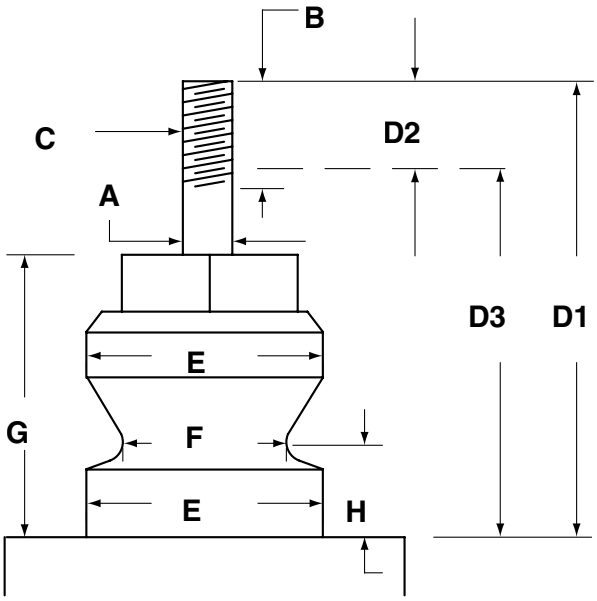
STEP 8) DImension **F** is measured using a thread gage or by counting the number of threads per inch. It is easier to use a thread gage with the external packing nut removed.

STEP 9) Measure Dimension **G** using the caliper depth gage to measure the distance between the bottom on the packing nut and the valve collar seating surface.

STEP 10) Dimension **I** is measured on the outside diameter or point of the external packing nut.

Identification & Measurement of Existing Valves

The valve should be stripped down to its basic form, as shown. Remove all other linkage components in order to obtain correct dimensional data for the retrofit kit. Note that there are no threads on the bonnet. The packing nut is smaller that the diameter of the bonnet. There is a groove in the bonnet used to secure the retrofit collar to the valve.



Follow these important steps to properly measure STYLE 5 type globe valves for a retrofit linkage. Reference the photos and line drawing to help guide you through the data collection process.

STEP 1) Dimension **A** on the retrofit form is measured as shown, with the end of the calipers laying PERPENDICULAR to the center line of the valve stem. Record this reading to three decimal places.

STEP 2) Measure the LENGTH of the threaded area of the valve stem, and record this information for Dimension **B** on the retrofit Form.

STEP 3) Using the WIDE area of the calipers, measure the MAJOR Diameter of the stem threads. Record this information for Dimension **C** on the retrofit form. Also count how many threads per inch. Typical thread specs are 1/4-28, 3/8-24 & 1/2-20. If available, you should use a thread gage to determine the correct thread spec. Alternatively, you may send a valve stem nut to Belimo and we will determine the correct thread spec for you. Correct thread identification is important as this is the point of highest mechanical stress after the retrofitting has been completed.

UGSP Series Globe Valve Retrofit Solution

Retrofitting STYLE 5 Globe Valves Typical for Honeywell and Other Non-Threaded, Tapered Bonnet Valves

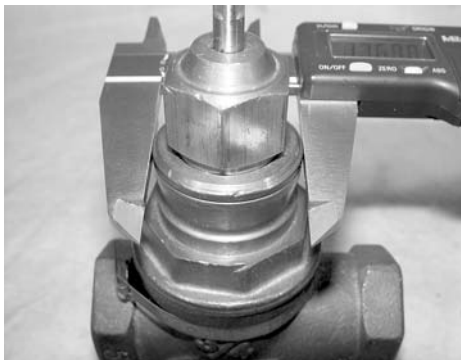
BELIMO

Identification & Measurement of Existing Valves

STEP 4) Dimension **D1** on the retrofit form is measured as shown, with the depth gage used to measure the STEM UP distance to the bonnet base.

STEP 5) Dimension **D3** on the retrofit form is measured as shown, with the depth gage used to measure the STEM DN distance to the bonnet base.

STEP 6) Dimension **D2** on the retrofit form is the measured distance between the STEM UP and STEM DN heights, which gives the full travel of the valve. Only **TWO** of the three dimensions **D1, D2 & D3** are needed.

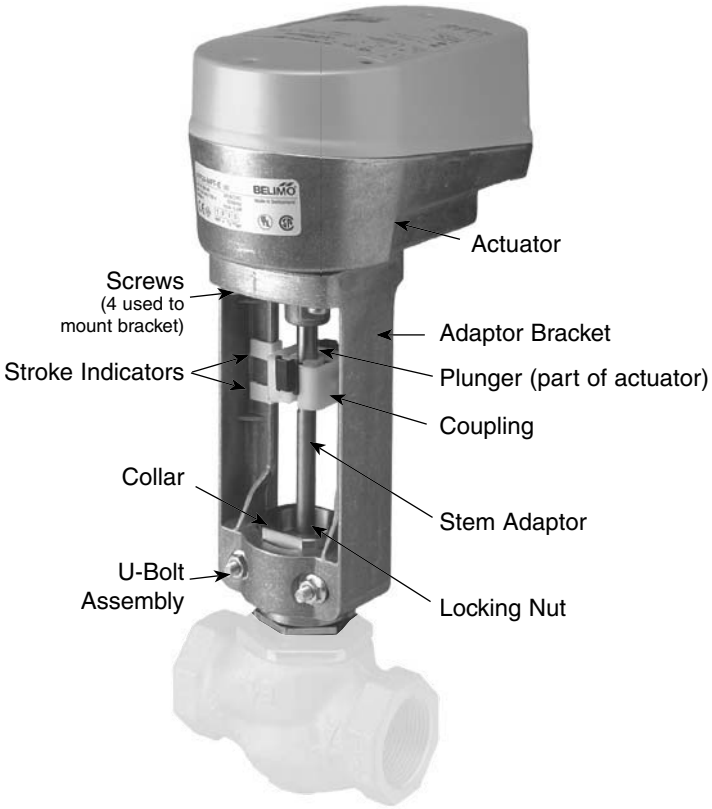


STEP 7) Dimension **E** is measured across the MAJOR diameter of the bonnet. Use the calipers as shown to determine the correct dimension and record accordingly on the retrofit form. This dimension should be checked both above and below the locking groove.

STEP 8) DImension **F** is measured using calipers across the MINOR diameter of the bonnet. This may be a square or a round groove. Measure the **SMALLEST** dimension of this groove.

STEP 9) Measure Dimension **G** using the caliper depth gage, and record on the retrofit form.

STEP 10) Measure Dimension **H** using the caliper depth gage, and record on the retrofit form.



UNV-Box-Kit

Multi Box Starter Kit for UNV

Refillable with below items.

UNV Multi-box Kit Components

Part No.	Description	Part No.	Description
UNV-BKT-001	SIEBE bracket (UNV-001)	UNV-STEM-006	Stem Adaptor-006
UNV-BKT-002	Universal bracket (UNV-003 through UNV-035)	UNV-STEM-007	Stem Adaptor-007
UNV-COL-004	Collar-004 and set screws	UNV-STEM-035	Stem Adaptor-035
UNV-COL-005	Collar-005	UNV-STEM-040	Stem Adaptor-040
UNV-COL-006	Collar-006 and set screws	UNV-NUT-001	1/4"-28 Locking Nut (UNV-001, 004, 005, 006, 008, 009, 035)
UNV-COL-007	Collar-007	UNV-NUT-007	1/4"-32 Locking Nut (UNV-007)
UNV-COL-008	Collar-008	UNV-BOLT	Kit of U-bolt, Nuts for U-bolt
UNV-COL-009	Collar-009	UNV-SCREW	Kit of Screws
UNV-COL-035	Collar-035	UNV-STROKE IND	Kit of Stroke indicators
UNV-COL-040	Collar-040	UNV-CPL	Coupling
UNV-STEM-001-SET	Stem Adaptor-001,005	UNV-CPL-10	Coupling-10 pc set
UNV-STEM-003	Stem Adaptor-003	UNV-Override	NV Manual Override
UNV-STEM-004-SET	Stem Adaptor-004,008,009		

UNV Dimensional Details

Dimensional Data	UNV-001	UNV-003	UNV-004	UNV-005	UNV-006	UNV-007	UNV-008	UNV-009	UNV-035	UNV-040	UNV-051
Length of Stem Adaptor	1 7/16"	2"	2 1/8"	1 7/16"	1 1/8"	2 1/8"	2 1/8"	2 1/8"	3 7/16"	2 1/8"	1-1/4"
Stem Adaptor Diameter	1/4"	3/8"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"	3/8"
Stem Adaptor-Threads Per In.	28	N/A	28	28	28	32	28	28	28	28	24
Locking Nut	1/4"-28	N/A	1/4"-28	1/4"-28	1/4"-28	1/4"-32	1/4"-28	1/4"-28	1/4"-28	1/4"-28	3/8"-24
Collar	Molded into Bracket	N/A	YES 1/4"-20 set screws	YES	YES 1/4"-20 set screws	YES	YES	YES	YES-303 SS	YES	YES
U-Bolt	N/A	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Adaptor Bracket	UNV-BKT-001	UNV-BKT-002	UNV-BKT-002	UNV-BKT-002	UNV-BKT-002	UNV-BKT-002	UNV-BKT-002	UNV-BKT-002	UNV-BKT-002	UNV-BKT-002	UNV-BKT-002

BELIMO

Operation/Installation UNV-001 Series

Installation Instructions for Siebe VB7000 and VB9000 Series Valves

Preparing the Valve

1. Remove all existing linkage and push stem to down position.
2. Screw lock nut (L) and stem adaptor (I) onto valve stem.
3. With stem pushed down completely adjust stem adaptor (I) height for corresponding valve. Tighten lock nut (L). (See Figure 1).

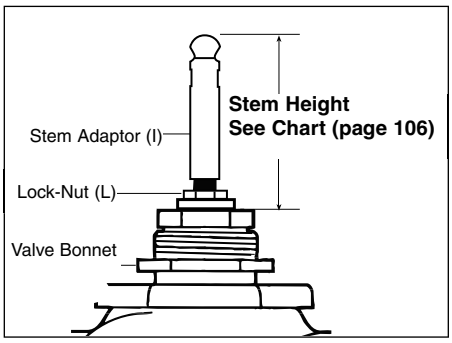


Fig. 1

Preparing the Actuator and Mounting the Valve

1. Slide the black coupling lock (C) up into the unlocked position. (See Figure 3).
2. Attach it to the end of the actuator plunger (K). This is done by pushing the bottom of the coupling apart with your thumbs while pressing it onto the actuator plunger. (See Figure 5).
3. Attach bracket (E) onto bottom of NV actuator (A) with 4 provided screws (B).
4. Attach stroke indicators (G) above and below the valve coupling.
5. Screw NV actuator (A) onto valve, and tighten valve bonnet nut (J).
6. Lower plunger (K) using manual override until stem adaptor (I) meets valve coupling. When connected, the valve stem adaptor will be captured by the valve coupling.
7. Slide the coupling lock (C) down in to its locked position.
8. Move sliding stroke indicators (G) to sit above and below lip on valve coupling (H). Stroke indicators are automatically repositioned to the maximum stroke when power is applied to actuator.
9. Set actuator switches S3.1, S3.2 to desired settings (See attached data).

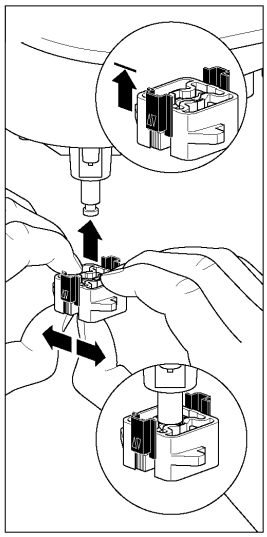


Fig. 5

When disassembling, move the coupling lock (C) up to the unlocked position and squeeze the sides of the coupling while pulling the valve away from the coupling.

Recommended Installation Location

It is permissible to install the NV actuator upright or horizontally. However, it is not recommended that the valve stem be installed facing downward. Allow 12 inches of clearance for removal of actuator and 6 inches for removal of actuator cover.

Initial Start-up

The unit must not be started up until the valve and actuator have been assembled according to instructions. Adaptation (initialization) will only occur the first time the actuator is powered. To reset, remove housing cover and press adaptation button S2. (See attached set-up information).

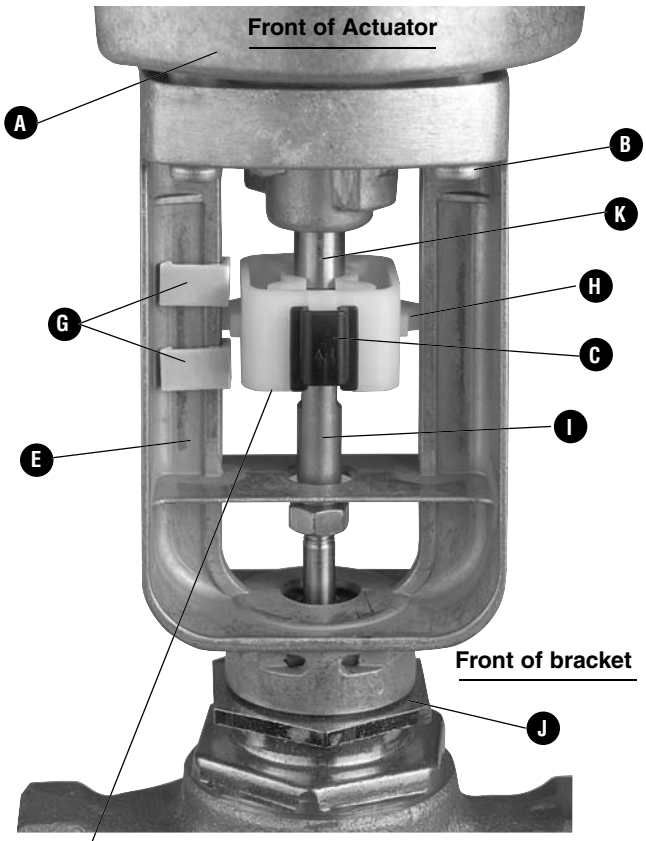


Fig. 2

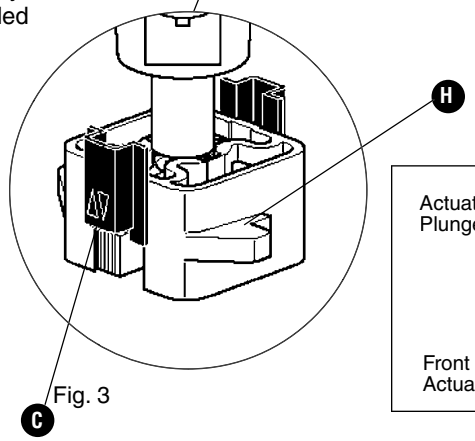


Fig. 3

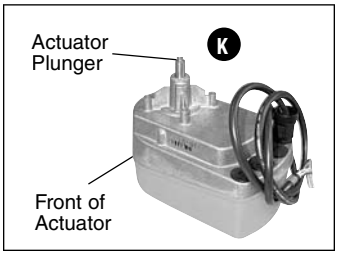


Fig. 4

Operation/Installation UNV-003 to UNV-051 Series

Preparing The Valve

Kits with Threaded Collars (Fig. 1)
UNV-005, UNV-007, UNV-008 UNV-009, UNV-035, UNV-040, UNV-051

1. Remove all existing linkage from the valve.
2. Push stem into the fully down position.
3. Screw the Collar onto the valve neck and tighten. *Flats should be on the top for UNV-008 UNV-009, UNV-035, UNV-040 and UNV-051.
   Flats should be on the bottom for UNV-005 and UNV-007.
4. Screw the Lock Nut and the Stem Adapter onto the valve stem. Use chart to determine the correct height of the stem adapter. (Height is measure from the top of the valve collar to the top of the stem adapter, when the stem is in the fully down position.)
5. Tighten the Lock Nut against the Stem Adapter.

Kits with Set Screw Collars
UNV-004 and UNV-006 (Fig. 1)

1. Remove all existing linkage from the valve.
2. Push stem into the fully down position.
3. Slide the Collar down over the valve neck and secure in place by installing and tightening the Setscrews. (The threaded Setscrew holes in the collar should be towards the bottom.)
4. Screw the Lock Nut and the Stem Adapter onto the valve stem. Use chart to determine the correct height of the stem adapter. (Height is measure from the top of the valve collar to the top of the stem adapter, when the stem is in the fully down position.)
5. Tighten the Lock Nut against the Stem Adapter.

Kit UNV-003, UNV-013 (Fig. 2)

1. Remove all existing linkage from the valve including collar.
2. Place brass washer over bonnet until flush
3. Re-install collar on valve so it sits on the washer.
4. Pull the existing slotted stem adaptor into the fully up position.
5. Place Stem Nut (2) over Stem Adaptor (1).
6. Slide Threaded Stopper (3) over existing slotted stem adaptor.
7. Insert Retaining Clip (4) onto existing slotted stem adaptor.
8. Screw and tighten assembly (1,2,3) to existing slotted stem adaptor.

Stem Adjustment	
UNV Number	Height inches [mm]
UNV-001	1.77 [45]
UNV-003	N/A
UNV-004	2.36 [60]
UNV-005	2.56 [65]
UNV-006	2.56 [65]
UNV-007*	2.36 [60]
UNV-008	2.36 [60]
UNV-009	2.56 [65]
UNV-035	2.64 [67]
UNV-040	2.87 [73]
UNV-051	2.56 [65]

*When retrofitting a V6800 series valve, the stem adjustment is 64 mm.

Fig. 1

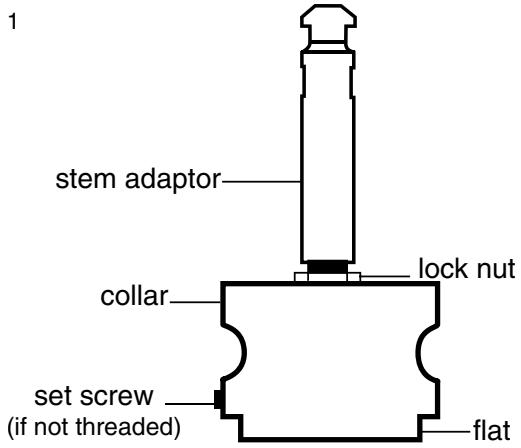
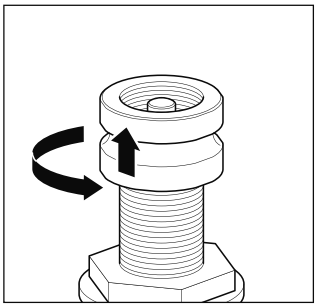
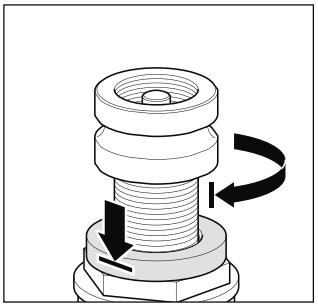
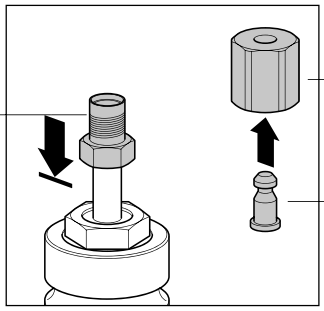
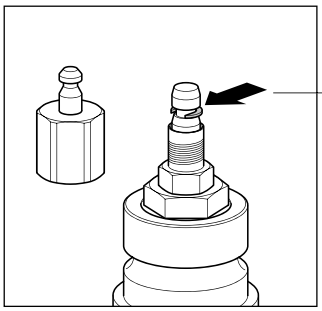


Fig. 2









Operation/Installation UNV-003 to UNV-051 Series

Preparing the Actuator and Mounting the Valve
All UNV Kits excluding UNV-001

1. Slide the black coupling lock (C) up into the unlocked position. (See Figure 3).
2. Attach Valve Coupling (D) to Actuator Plunger (H). This is done by pushing the bottom of the coupling apart with your thumbs while pressing it on to the actuator plunger. (See Figure 1).
3. Slide the Bracket (E) over the Valve Coupling and the 4 standoffs on the actuator base.
4. Attach the Bracket to the Actuator (A) using 4 Screws (B).
5. Attach Stroke Indicators (G) above and below the valve coupling.
6. Push the valve stem in to the fully down position
7. Use the U-bolt (F) and secure the valve into the bracket, tighten using a 10 mm wrench. (U-bolt will fit into the groove in the collar, or the valve neck in the case of UNV-003).
8. Lower plunger (H) using manual override until stem adaptor (I) meets valve coupling. When connected, the valve stem adaptor with be captured by the valve coupling.
9. Slide the coupling lock (C) down in to its locked position.
10. Move Stroke Indicators (G) so that they are directly above and below the valve coupling. They will be automatically repositioned to the maximum stroke when power is applied to the actuator.
11. Set Actuator switches S3.1 and S3.2 to desired setting.

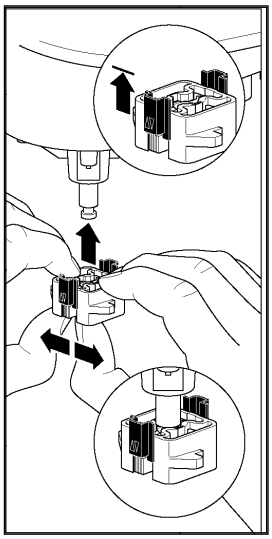


Fig. 1

When disassembling, move the coupling lock (C) up to the unlocked position and squeeze the sides of the coupling while pulling the valve away from the coupling.

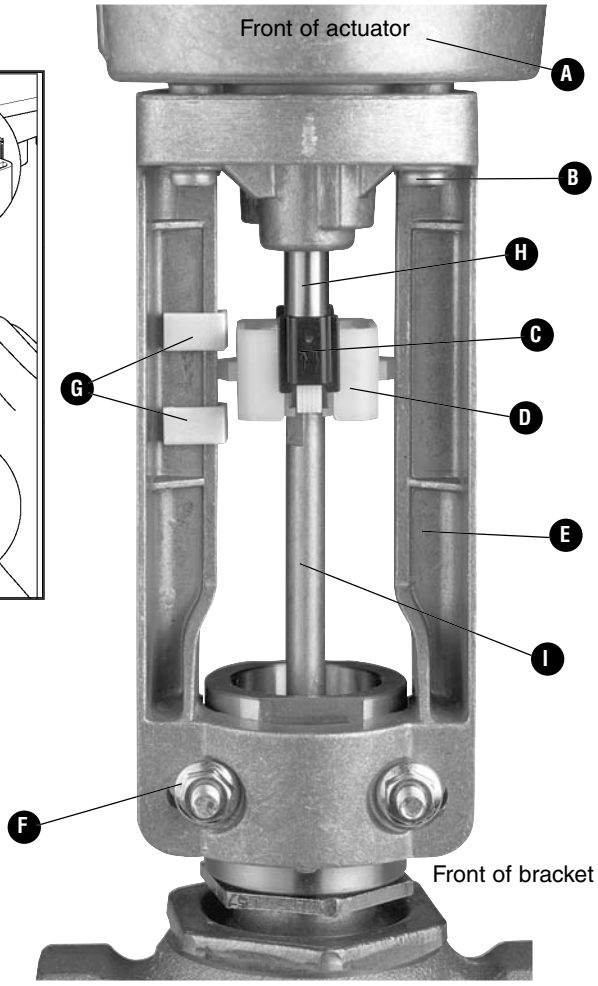


Fig. 2

Recommended installation location
It is permissible to install the NV actuator upright or horizontally. However, it is not recommended that the valve stem be installed facing downward. Allow 12 inches of clearance for removal of actuator and 6 inches for removal of actuator cover.

Initial start-up
The unit must not be started up until the valve and actuator have been assembled according to instructions. Adaptation (initialization) will only occur the first time the actuator is powered. To reset, remove housing cover and press adaptation button S2. (See attached set-up information).

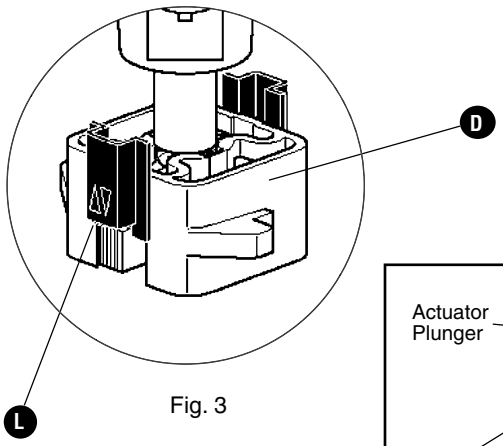


Fig. 3

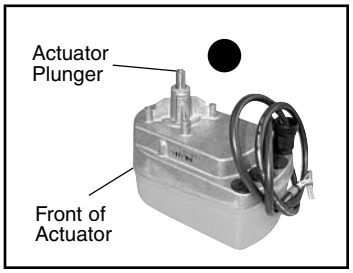


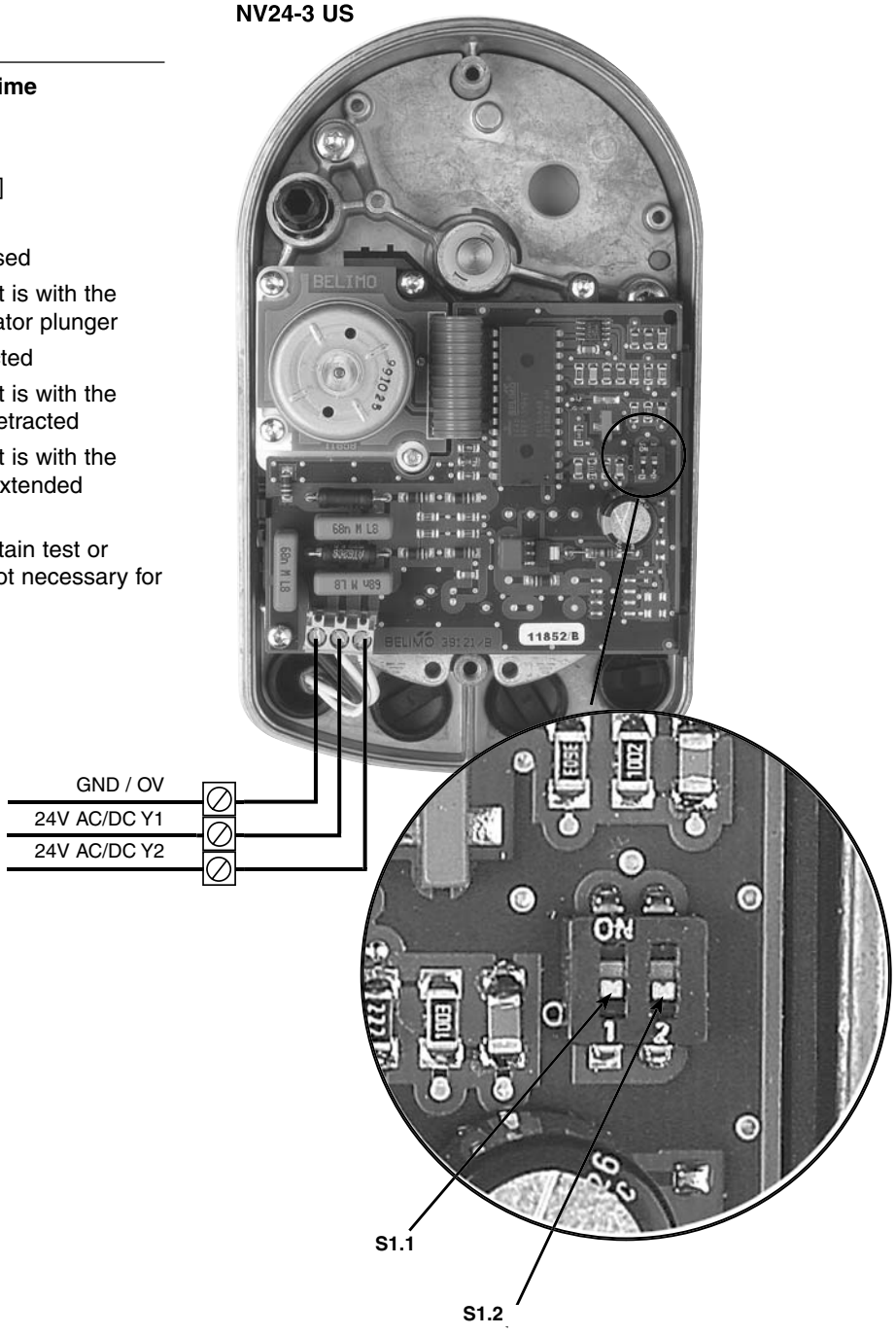
Fig. 4

Operation/Installation

Set-Up of NV24-3 US Actuators during Installation

General
Beneath the cover of the actuator are the terminals for the cable connection and the S1 switch.
The floating point signal is processed in the microprocessor and conveyed to the motor.

NV24-3 US



Functional Description

Use Switches S1.1 and S1.2 to set the run time and select the valve closing point

S1.1	Actuating time	
	Off position (Default)	50s/.25" [7.5s/mm]
	On position	Deactivated not used
S1.2	Selecting the closing point	Valve closing point is with the closing point actuator plunger extended or retracted
	Off position	Valve closing point is with the actuator plunger retracted
	On position	Valve closing point is with the actuator plunger extended

Note: NV24-3 US and NVD24-3 US do not contain test or adaptation functional switches. Adaptation is not necessary for the NV24-3 US and NVD24-3 US actuators.

Operation/Installation

Set-Up of NV Series MFT Actuators during Installation

General
Beneath the cover of the actuator are the terminals for the cable connection, the S1 and S2 buttons, S3 switch, and the LED status display H1.
The setting signal is processed in the microprocessor, and conveyed to the motor via drivers. By setting the slide switch S3 or pressing the buttons S1 and S2, the actuator can easily be configured on site to the requirements, if there are changes from the factory settings.

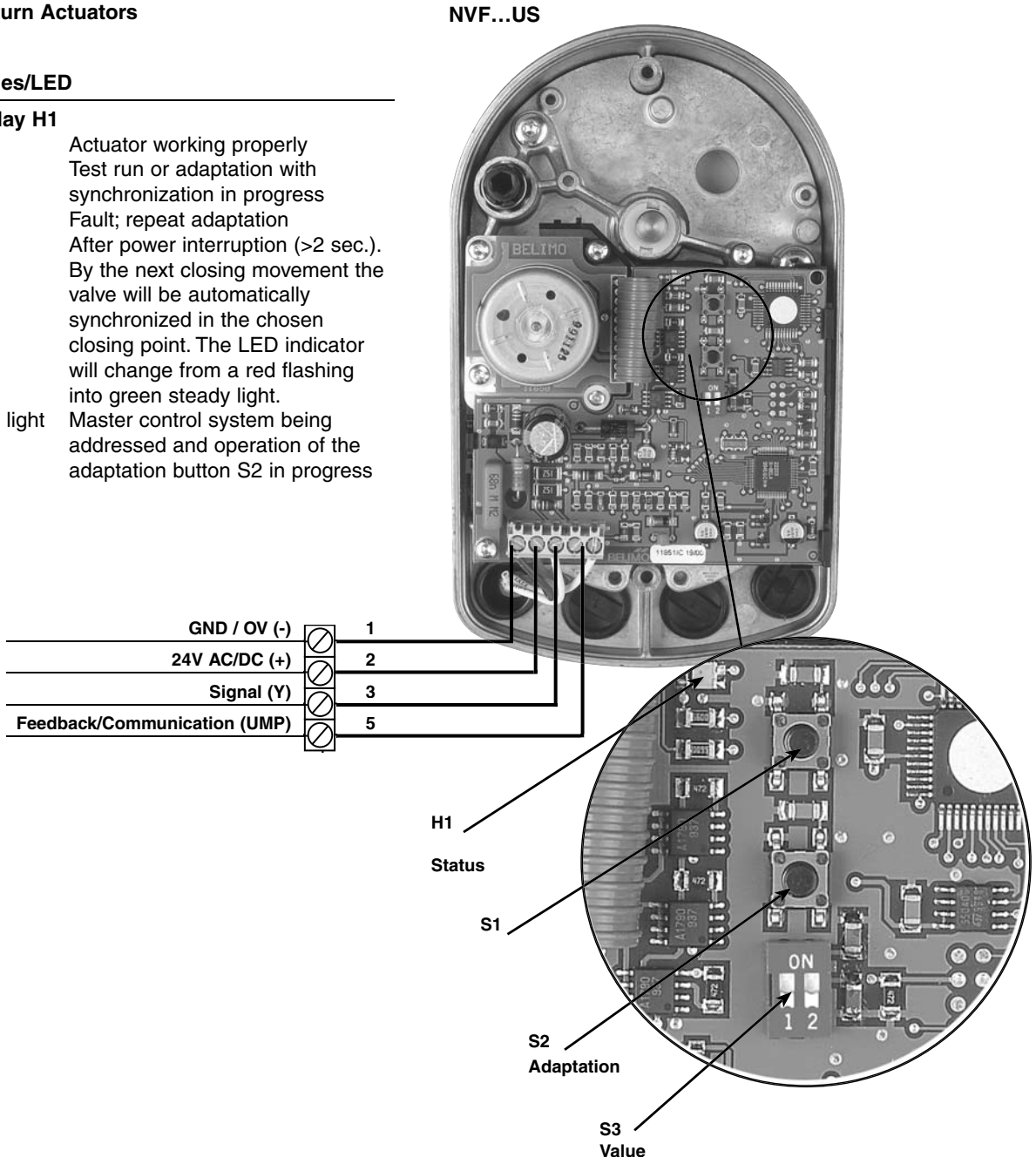
MFT and Spring Return Actuators

The NV and NVF actuators are maintenance-free. The two-color LED display is located beneath the cover of the actuator. This display allows immediate recognition of the functional state of the actuator. In addition, it permits simple set-up if the factory settings need to be changed.

Operation of Switches/LED

LED operating display H1	
Green steady light	Actuator working properly
Green flashing light	Test run or adaptation with synchronization in progress
Red steady light	Fault; repeat adaptation
Red flashing light	After power interruption (>2 sec.). By the next closing movement the valve will be automatically synchronized in the chosen closing point. The LED indicator will change from a red flashing into green steady light.
Alternating red/green light	Master control system being addressed and operation of the adaptation button S2 in progress

NV…MFT US
NVF…MFT US
NVF…US



Operation/Installation

Manual Override NV…US Non-Spring Return

The valve coupling can be adjusted by inserting a 3/16" or 5 mm hex in the housing cover. (Fig. 3).

If the hex is turned clockwise, the coupling moves down; counterclockwise turning moves it up. The manual override is protected against overload. The coupling remains in the manual position as long as the actuator is not connected to the nominal voltage. With the nominal voltage applied to the actuator, the coupling follows the positioning signal.

Turn manual override counter-clockwise: Actuator plunger retracts.

Turn manual override clockwise: Actuator plunger extends.

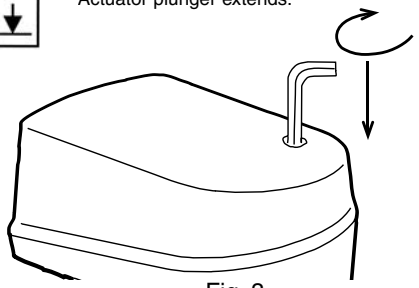


Fig. 3

Over-torquing manual override will not damage actuator.

Manual Override NVF…US Spring Return

The valve coupling can be adjusted by inserting a 3/16" or 5 mm hex in the housing cover. (Fig. 3).
The spring return function in the actuator is pre-tensioned when delivered.
The manual operating mechanism is overload-proof. The plunger will remain at the manual setting until the power supply to the actuator is turned on or, the next time the power supply is interrupted, it moves to whichever end position has been selected.

NOTE:

1. Do not override the NVF while power is applied to the actuator.
2. If the actuator is overridden while power is applied, remove cover and perform manual adaptation function by pressing S2 button.
3. **When overriding the actuator turn the hex 3/4 turn and then press down to lock after the desired position is found. This prevents the gear from over-tightening into an end-position which would prevent the override mechanism from unlocking automatically during power up. If the manual override does not unlock automatically during power-up you must unlock the actuator manually with the hex.**
4. Use the NV… MFT US in only closed control loops.

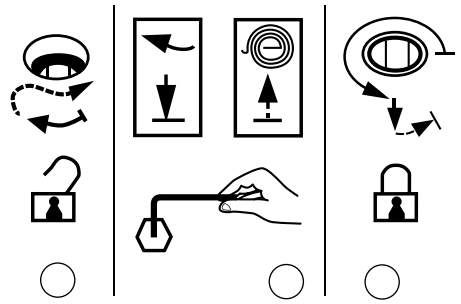
NVF…US Retracting, Spring Up

① Disengaging manual operation
Turn the hex clockwise 45° until resistance is encountered. Then lift the key approx. 1/4" [7 mm] until the black socket for the key is level with the top of the housing cover. The spring mechanism will now rotate the key counter-clockwise and the plunger will retract.

② Manual operation
Turning the hex clockwise causes the plunger to extend to the required position.

③ Locking manual operation
Turn the hex 3/4 turn counter-clockwise and then press it down into the cover of the housing (the black socket will move inwards approx. 1/4" [7 mm]). Slight counter-clockwise rotation of the key will then lock the manual operating mechanism in position.

Note: Do not trigger the spring mechanism and turn the manual operating mechanism clockwise to the "spring-up" end position at the same time.

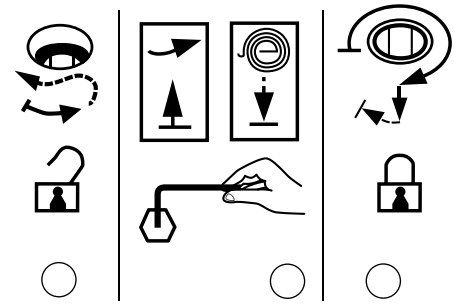


NVF…-E US Extending, Spring Down

① Disengaging manual operation
Turn the hex counter-clockwise 45° until resistance is encountered. Then lift the key approx. 1/4" [7 mm] until the black socket for the key is level with the top of the housing cover. The spring mechanism will now rotate the key clockwise, the plunger will extend.

② Manual operation
Turning the hex counter-clockwise causes the plunger to retract to the required position.

③ Locking manual operation
Turn the hex back clockwise 3/4 turn and then press it down into the cover of the housing (the black socket will move inwards approx. 1/4" [7 mm]). Slight clockwise rotation of the key will then lock the manual operating mechanism in position.



BELIMO

Operation/Installation

Functional description NV24-MFT US, NVF… US

The S1 button makes it simple to check the wiring and overall functioning of the actuator. The first time voltage is applied, the stroke is adapted automatically. Independently of this, an adaptation can be repeated as necessary by pressing button S2. Actuator will not do an adaptation after each power loss.

S1	Test	The valve performs full stroke at minimum running time and checks the adapted stroke.
S2	Adaptation	The stroke effected (between the two mechanical end-stops of the valve) is acquired as 100% stroke and stored in the microprocessor. The control signal and running time are then matched to this 100% stroke.

Set-Up of S3 switches

Note: It is very important to set Switches S3.1 and S3.2 to ensure proper valve operation.

1. Determine if the valve body is STEM UP CLOSED or STEM UP OPEN. In other words, when is the valve closed from Ports A to AB– when the stem is up or down?

If the valve is STEM UP OPEN – set Switch S3.2 to the ON position

If the valve is STEM UP CLOSED – set Switch S3.2 to the OFF position

By setting this switch, the actuator will be able to recognize its closing point during the ADAPTATION process.

2. Determine if you would like to valve to be Reverse or Direct Acting.

Direct Acting: if the valve should be CLOSED at minimum control signal – set Switch 3.1 to the OFF position.

Using this setting, the valve will be CLOSED at minimum control signal and will OPEN as the control signal increases. EX: Closed at 0 Volt signal and Open at 10 Volt signal.

Reverse Acting: if the valve should be OPEN at 2 Volts (or minimum control signal) – set Switch 3.1 to the ON position.

Using this setting, the valve will be OPEN at minimum control signal and will CLOSE as the control signal increases. EX: Closed at 10 Volt signal and Open at 2 Volt signal.

NOTE: The Feedback signal (Wire 5) of the NV Series actuator will follow the closing point of the valve- not the input control signal. In other words, the feedback will always read 2 Volts when the valve is closed regardless if the input control signal is set for Reverse or Direct Acting.

S3 Setting the direction of stroke and selecting the closing point

The stroke direction can be adjusted to be reverse or direct acting. Under the factory setting, the stroke increases as the setting signal increases. Depending upon the type of valve (NO/NC), the closing point (stroke = 0%) can be chosen with the valve stem retracted or extended.

S3.1	Direction of stroke	The direction of stroke is inverted in relation to the control signal
	Off position	Control signal = 0% corresponding to 0% stroke
	On position	Control signal = 100% corresponding to 0% stroke
S3.2	Selecting the closing point	This is the closing point of the valve. This is dependent on the valve body-not the actuator. This setting must be correct for proper operation of the actuator.
	Off position	Valve is stem up closed. (Flow from A to AB).
	On position	Valve is stem down closed. (Flow from A to AB).

EXAMPLES

S3.1 OFF — At 2 Volts, the valve is closed
S3.2 OFF — The valve closing point is STEM UP CLOSED.

Result of Input Signal and Feedback Signal: The valve will be closed at 2 Volts and will open as the actuator drives down. The control signal will read 2 Volts at the closed point and 10 Volts at the fully open point. The feedback will read 2 Volts at the closed point and 10 Volts at the fully open point.

S3.1 ON — At 2 Volts, the valve is open.
S3.2 OFF — The valve closing point is STEM UP CLOSED.

Result of Input Signal and Feedback Signal: The valve will be fully open at 2 Volts and will close as the actuator retracts. The control signal will read 10 Volts at the closed point and 2 Volts at the fully open point. The feedback will read 2 Volts at the closed point and 10 Volts at the fully open point.

S3.1 OFF — At 2 Volts, the valve is closed
S3.2 ON — The valve closing point is STEM DOWN CLOSED.

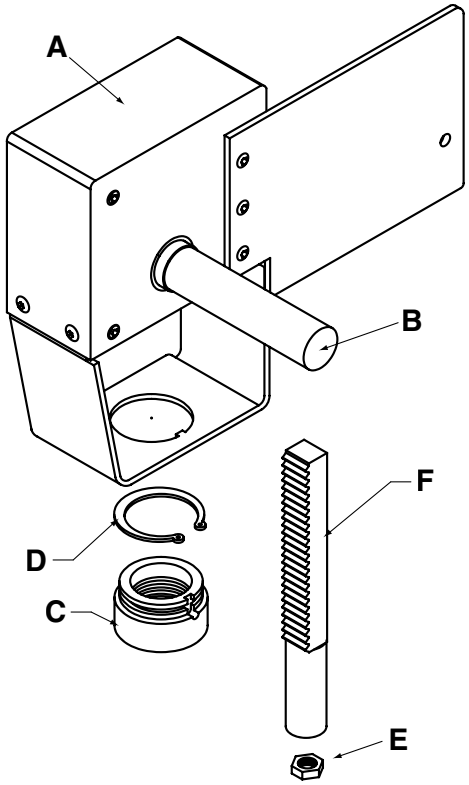
Result of Input Signal and Feedback Signal: The valve will be closed at 2 Volts and will open as the actuator retracts. The control signal will read 2 Volts at the closed point and 10 Volts at the fully open point. The feedback will read 2 Volts at the closed point and 10 Volts at the fully open point.

S3.1 ON — At 2 Volts, the valve is open.
S3.2 ON — The valve closing point is STEM DOWN CLOSED.

Result of Input Signal and Feedback Signal: The valve will be open at 2 Volts and will close as the actuator drives down. The control signal will read 10 Volts at the closed point and 2 Volts at the fully open point. The feedback will read 2 Volts at the closed point and 10 Volts at the fully open point.

Assembly Sequence for Existing Valves

The valve should be stripped down to its basic form, as shown. The linkage components have been designed to attach to the valve in this state, rather than to any existing hardware. Note that this style valve has a permanently attached bonnet nut which rotates freely, but does not come off the valve itself.

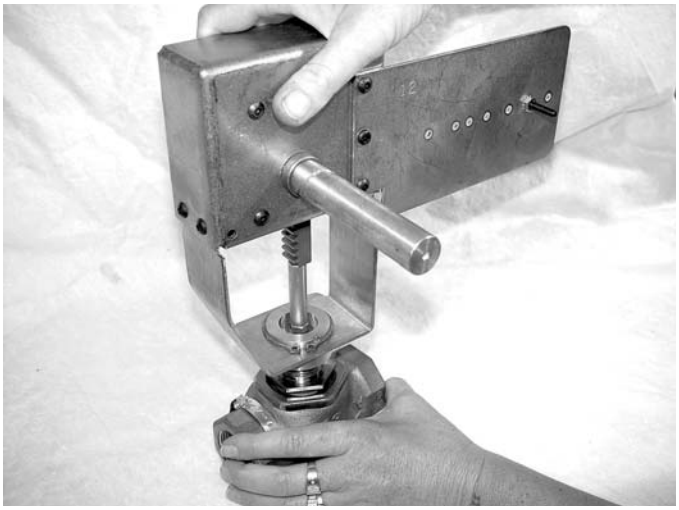


Follow these steps to properly assemble STYLE 1 type globe valves to the retrofit linkage. Reference the step-by-step photos to help guide you through the assembly process.

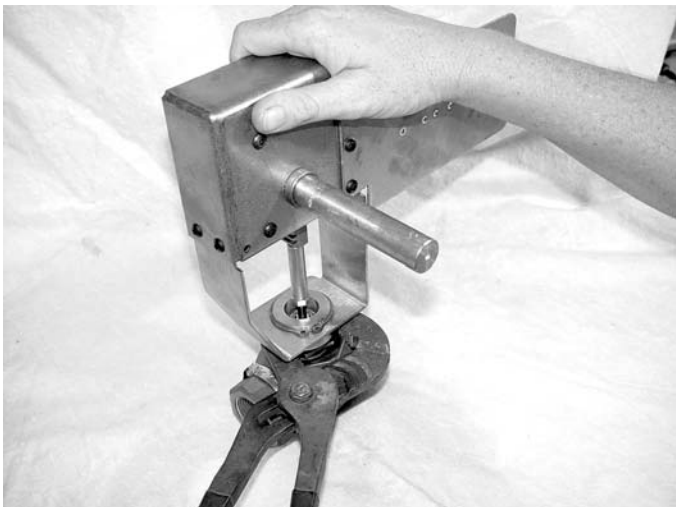
STEP 1) Assemble the supplied stem nut **(E)** to the valve stem, and thread at least 10 - 12 turns down onto the stem.

STEP 2) Attach the rack assembly **(F)**, which may or may not include an extension or adapter, onto the valve stem. Thread the assembly as far down onto the valve stem as possible, until you contact the previously attached valve stem nut.

STEP 3) Use a 1/2" open end wrench, and an additional open end wrench sized to match the valve stem nut **(E)**, to tighten the rack assembly **(F)** to the valve stem. Use the 1/2" open end wrench to attach to the smooth back side of the rack, opposite the teeth. This will prevent damage to the rack teeth during the tightening sequence.



STEP 4) Slide the gearbox **(A)** assembly over the rack and down onto the valve bonnet nut. Note the the rack teeth must point TOWARDS the linkage drive shaft **(B)**, and that the rack enters a small square hole in the bottom of the gearbox when aligned properly.



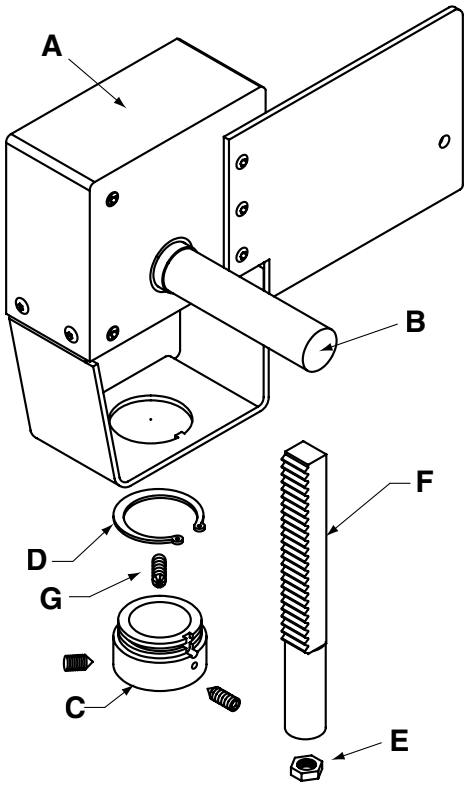
STEP 5) Use slip joint pliers to tighten the valve bonnet nut against the brass bonnet adapter **(C)** on the bottom of the linkage. Hold the linkage from turning while you are tightening the bonnet nut.

STEP 6) Check for full stem travel by turning the linkage drive shaft **(B)** fully clockwise (CW) and counter clockwise (CCW) until you feel the valve seat or hit travel limit stops in both directions. The shaft should turn freely without binding.

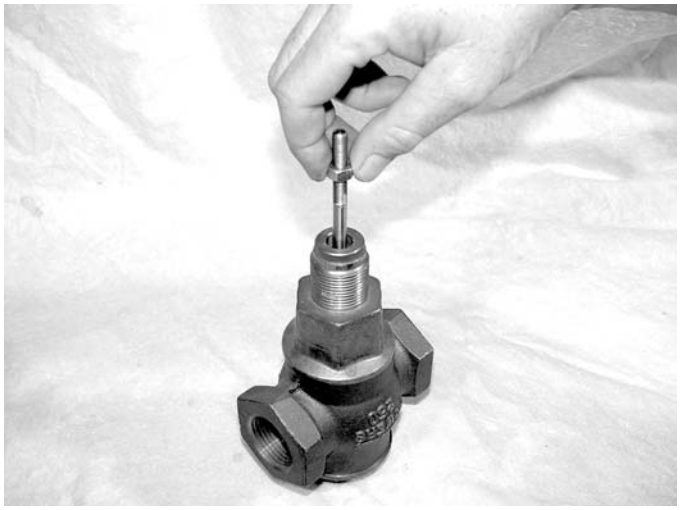
STEP 7) Turn the linkage drive shaft fully CW, and attach the actuator. This will position the linkage in the stem down position. Lightly snug up on the actuator's shaft clamp nuts. Turn the actuator CCW until you feel resistance due to the valve reaching end of travel. Notice the distance between the actuator's current position and the actuator's end of travel @ fully CCW. Loosen the actuator shaft clamp nuts, and rotate the actuator ONE-HALF the distance to its full CCW travel. Tighten the actuator's shaft clamp nuts securely. This procedure balances the valve travel limits within the range of motion of the actuator, thereby assuring unimpeded valve stem travel. When using an AF or NF actuator, a 5° offset may be necessary to ensure proper close off.

Assembly Sequence for Existing Valves

The valve should be stripped down to its basic form, as shown. The linkage components have been designed to attach to the valve in this state, rather than to any existing hardware. Note that this style valve has an internal packing nut, which does NOT interfere with the bonnet threads.



Follow these steps to properly assemble STYLE 2 type globe valves to the retrofit linkage. Reference the step-by-step photos to help guide you through the assembly process.

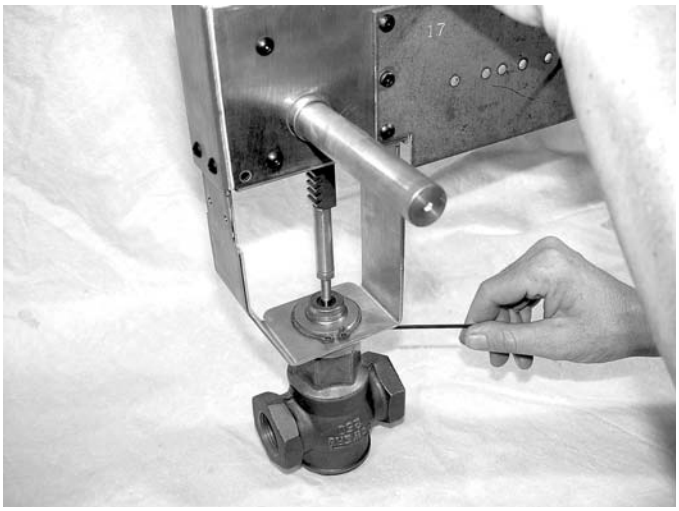


STEP 1) Assemble the supplied stem nut **(E)** to the valve stem, and thread at least 10 - 12 turns down onto the stem.

STEP 2) Attach the rack assembly **(F)**, which may or may not include an extension or adapter, onto the valve stem. Thread the assembly as far down onto the valve stem as possible, until you contact the previously attached valve stem nut.

STEP 3) Use a 1/2” open end wrench, and an additional open end wrench sized to match the valve stem nut **(E)**, to tighten the rack assembly **(F)** to the valve stem. Use the 1/2” open end wrench to attach to the smooth back side of the rack, opposite the teeth. This will prevent damage to the rack teeth during the tightening sequence.

STEP 4) Slide the gearbox **(A)** assembly over the rack and down onto the valve bonnet nut. Note the rack teeth must point TOWARDS the linkage drive shaft **(B)**, and that the rack enters a small square hole in the bottom of the gearbox when aligned properly.



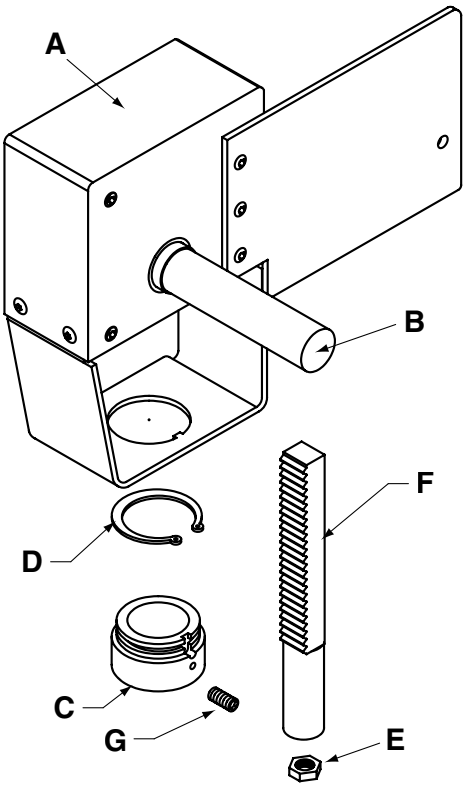
STEP 5) Once the linkage is fully seated on the valve bonnet, tighten setscrew **(G)** in the collar to affix the linkage onto the valve.

STEP 6) Check for full stem travel by turning the linkage drive shaft **(B)** fully clockwise (CW) and counter clockwise (CCW) until you feel the valve seat or hit travel limit stops in both directions. The shaft should turn freely without binding.

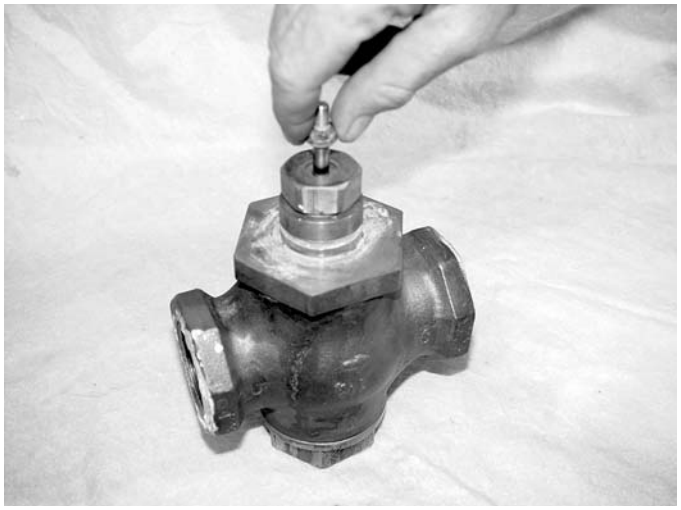
STEP 7) Turn the linkage drive shaft fully CW, and attach the actuator. This will position the linkage in the stem down position. Lightly snug up on the actuator’s shaft clamp nuts. Turn the actuator CCW until you feel resistance due to the valve reaching end of travel. Notice the distance between the actuator’s current position and the actuator’s end of travel @ fully CCW. Loosen the actuator shaft clamp nuts, and rotate the actuator ONE-HALF the distance to its full CCW travel. Tighten the actuator’s shaft clamp nuts securely. This procedure balances the valve travel limits within the range of motion of the actuator, thereby assuring unimpeded valve stem travel. When using an AF or NF actuator, a 5° offset may be necessary to ensure proper close off.

Assembly Sequence for Existing Valves

The valve should be stripped down to its basic form, as shown. The linkage components have been designed to attach to the valve in this state, rather than to any existing hardware. Note that there are no threads on the bonnet. The packing nut is smaller that the diameter of the bonnet. There is a groove in the bonnet used to secure the retrofit collar to the valve.



Follow these steps to properly assemble STYLE 3 type globe valves to the retrofit linkage. Reference the step-by-step photos to help guide you through the assembly process.

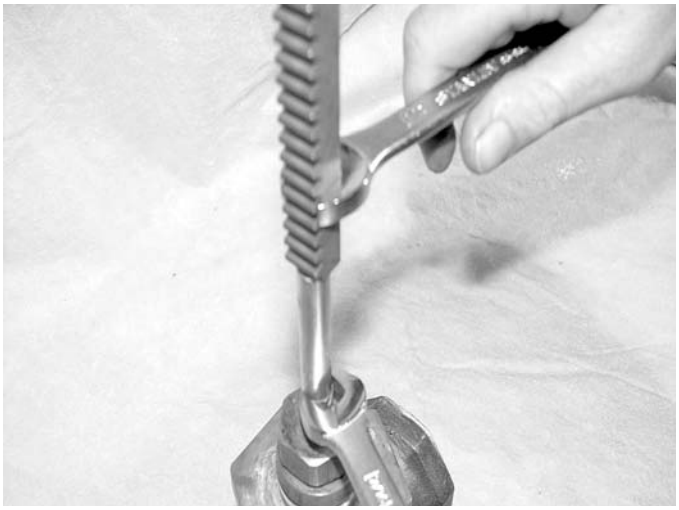


STEP 1) Assemble the supplied stem nut **(E)** to the valve stem, and thread at least 10 - 12 turns down onto the stem.

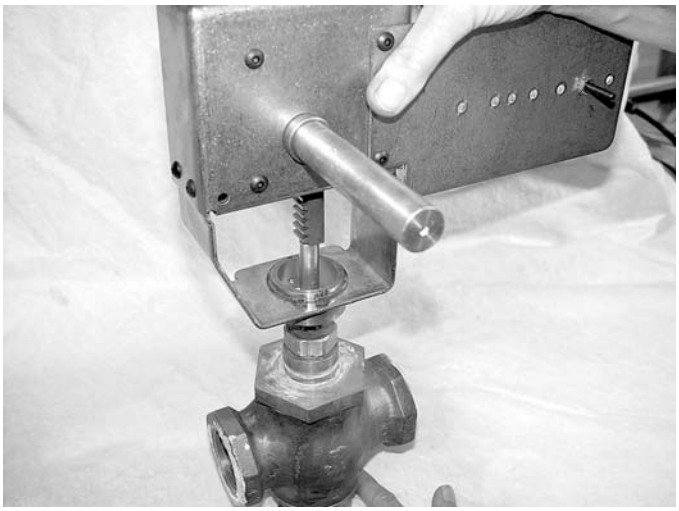
STEP 2) Attach the rack assembly **(F)**, which may or may not include an extension or adapter, onto the valve stem. Thread the assembly as far down onto the valve stem as possible, until you contact the previously attached valve stem nut.

UGLK/UGSP Series Globe Valve Retrofit Solution

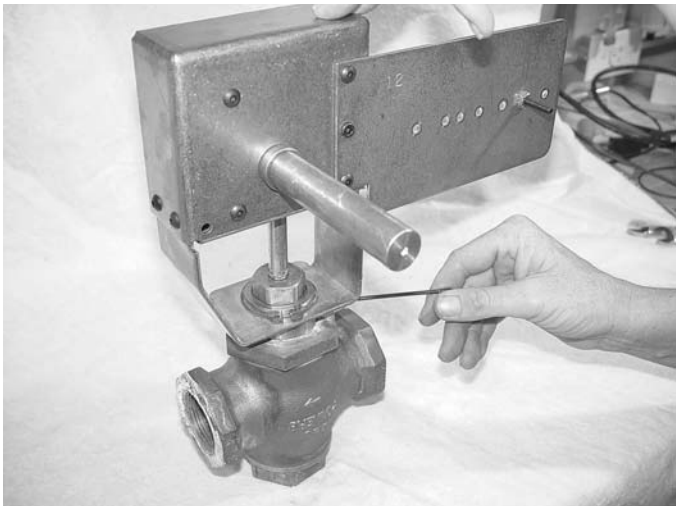
Retrofitting STYLE 3 Globe Valves Typical for Powers 599 Series and Other Non-Threaded, Non-Tapered Bonnet Valves



STEP 3) Use a 1/2" open end wrench, and an additional open end wrench sized to match the valve stem nut **(E)**, to tighten the rack assembly **(F)** to the valve stem. Use the 1/2" open end wrench to attach to the smooth back side of the rack, opposite the teeth. This will prevent damage to the rack teeth during the tightening sequence.



STEP 4) Slide the gearbox **(A)** assembly over the rack and down onto the valve bonnet nut. Note that the rack teeth must point TOWARDS the linkage drive shaft **(B)**, and that the rack enters a small square hole in the bottom of the gearbox when aligned properly. It may be necessary to loosen the setscrew **(G)** in the linkage collar **(C)** before it will seat fully onto the valve bonnet.



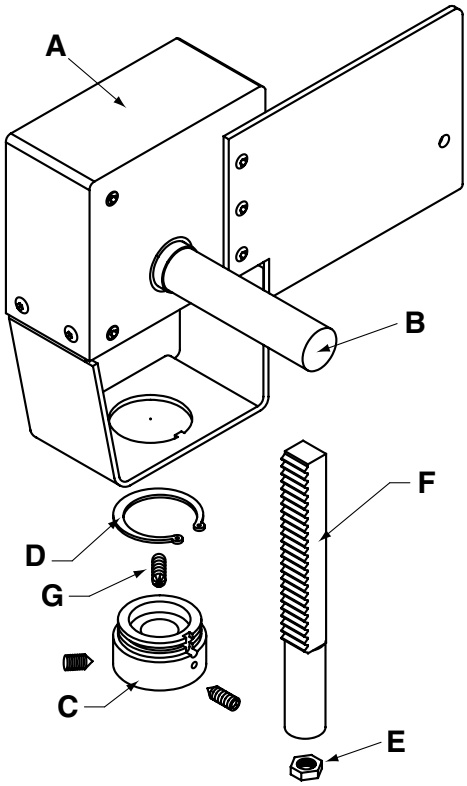
STEP 5) Once the linkage is fully seated on the valve bonnet, tighten setscrew **(G)** in the collar to affix the linkage onto the valve.

STEP 6) Check for full stem travel by turning the linkage drive shaft **(B)** fully clockwise (CW) and counter clockwise (CCW) until you feel the valve seat or hit travel limit stops in both directions. The shaft should turn freely without binding.

STEP 7) Turn the linkage drive shaft fully CW, and attach the actuator. This will position the linkage in the stem down position. Lightly snug up on the actuator's shaft clamp nuts. Turn the actuator CCW until you feel resistance due to the valve reaching end of travel. Notice the distance between the actuator's current position and the actuator's end of travel @ fully CCW. Loosen the actuator shaft clamp nuts, and rotate the actuator ONE-HALF the distance to its full CCW travel. Tighten the actuator's shaft clamp nuts securely. This procedure balances the valve travel limits within the range of motion of the actuator, thereby assuring unimpeded valve stem travel. When using an AF or NF actuator, a 5° offset may be necessary to ensure proper close off.

Assembly Sequence for Existing Valves

The valve should be stripped down to its basic form, as shown. Note that many pneumatically operated valves have hardware that must be removed from the threaded bonnet area before measurements can be taken.



Follow these steps to properly assemble STYLE 4 type globe valves to the retrofit linkage. Reference the step-by-step photos to help guide you through the assembly process.

STEP 1) Remove system pressure from the valve. Remove the external packing nut.

STEP 2) Be sure to retain all packing components which may come loose from the valve during the retrofit process.

STEP 3) Be sure to remove all existing linkage components. *JCI models may have an additional collar as shown.

STEP 4) Locate and identify the bonnet collar **(C)** and collar retaining ring **(D).**

STEP 5) Assemble the supplied collar **(C)** to the valve bonnet. It may be necessary to loosen the three retaining setscrews **(G).**

STEP 6) Reattach the packing nut removed in step 1. Be sure to replace all packing materials that may have come loose during the retrofit process.

STEP 7) Assemble the supplied stem nut **(E)** to the valve stem, and thread at least 10 - 12 turns down onto the stem.

STEP 8) Attach the rack assembly **(F)**, which may or may not include an extension or adapter, onto the valve stem. Thread the assembly as far down onto the valve stem as possible, until you contact the previously attached valve stem nut.

STEP 9) Use a 1/2" open end wrench, and an additional open end wrench sized to match the valve stem nut (E), to tighten the rack assembly (F) to the valve stem. Use the 1/2" open end wrench to attach to the smooth back side of the rack, opposite the teeth. This will prevent damage to the rack teeth during the tightening sequence.

STEP 11) After the linkage has been seated on the collar, turn the linkage until the key in the collar **(C)**, lines up with and engages the key in the base of the linkage.

STEP 12) Attach the collar retaining ring **(D)** onto the collar, and press securely in place into the machined groove in the collar. You should hear a "snap" when the ring is fully seated.

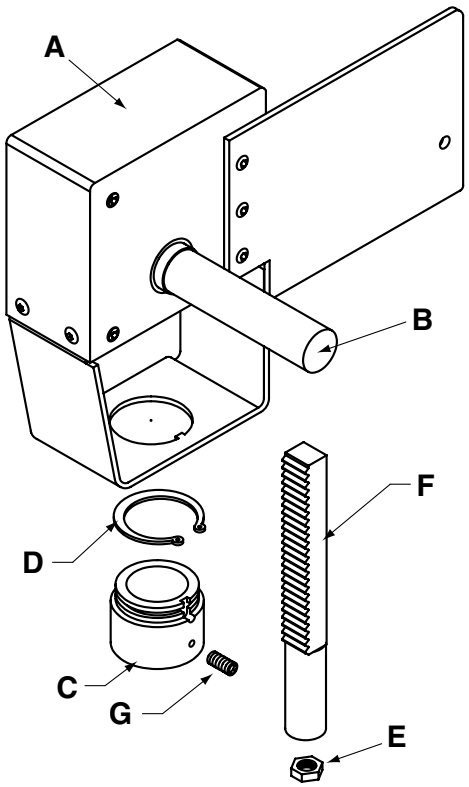
STEP 13) Once the linkage is fully seated on the valve bonnet, tighten three setscrews **(G)** in the collar to affix the linkage onto the valve.

STEP 14) Check for full stem travel by turning the linkage drive shaft **(B)** fully clockwise (CW) and counter clockwise (CCW) until you feel the valve seat or hit travel limit stops in both directions. The shaft should turn freely without binding.

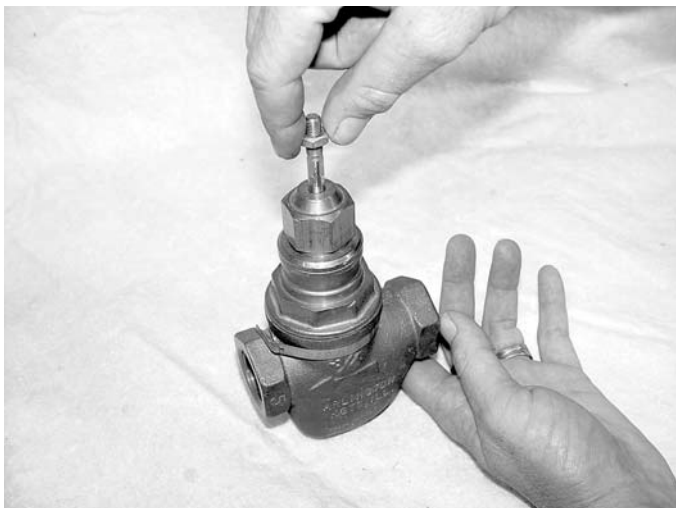
STEP 15) Turn the linkage drive shaft fully CW, and attach the actuator. This will position the linkage in the stem down position. Lightly snug up on the actuator's shaft clamp nuts. Turn the actuator CCW until you feel resistance due to the valve reaching end of travel. Notice the distance between the actuator's current position and the actuator's end of travel @ fully CCW. Loosen the actuator shaft clamp nuts, and rotate the actuator ONE-HALF the distance to its full CCW travel. Tighten the actuator's shaft clamp nuts securely. This procedure balances the valve travel limits within the range of motion of the actuator, thereby assuring unimpeded valve stem travel. When using an AF or NF actuator, a 5° offset may be necessary to ensure proper close off.

Assembly Sequence for Existing Valves

The valve should be stripped down to its basic form, as shown. Note that there are no threads on the bonnet. The packing nut is smaller that the diameter of the bonnet. There is a groove in the bonnet used to secure the retrofit collar to the valve.

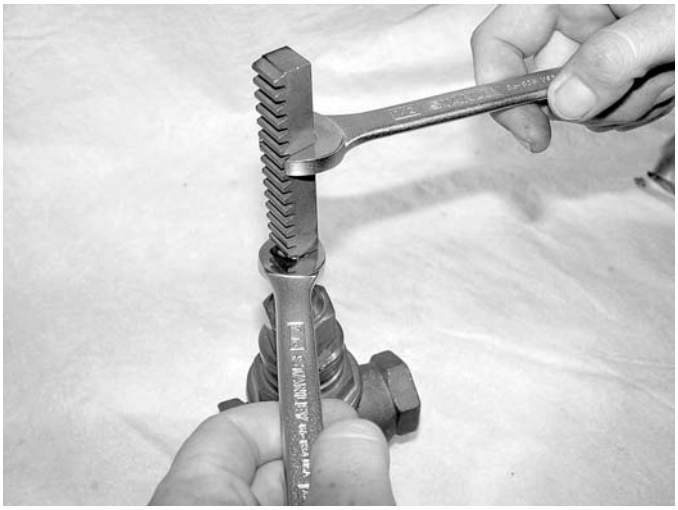


Follow these steps to properly assemble STYLE 5 type globe valves to the retrofit linkage. Reference the step-by-step photos to help guide you through the assembly process.



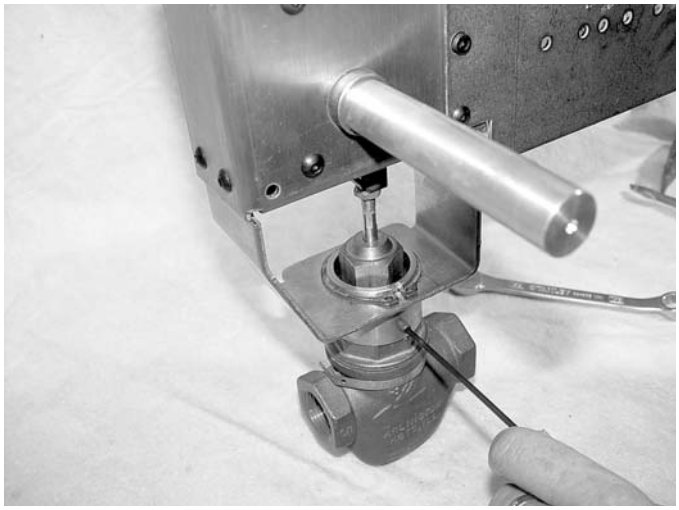
STEP 1) Assemble the supplied stem nut **(E)** to the valve stem, and thread at least 10 - 12 turns down onto the stem.

STEP 2) Attach the rack assembly **(F)**, which may or may not include an extension or adapter, onto the valve stem. Thread the assembly as far down onto the valve stem as possible, until you contact the previously attached valve stem nut.



STEP 3) Use a 1/2" open end wrench, and an additional open end wrench sized to match the valve stem nut **(E)**, to tighten the rack assembly **(F)** to the valve stem. Use the 1/2" open end wrench to attach to the smooth back side of the rack, opposite the teeth. This will prevent damage to the rack teeth during the tightening sequence.

STEP 4) Slide the gearbox **(A)** assembly over the rack and down onto the valve bonnet nut. Note that the rack teeth must point TOWARDS the linkage drive shaft **(B)**, and that the rack enters a small square hole in the bottom of the gearbox when aligned properly. It may be necessary to loosen the setscrew **(G)** in the linkage collar **(C)** before it will seat fully onto the valve bonnet.



STEP 5) Once the linkage is fully seated on the valve bonnet, tighten setscrew **(G)** in the collar to affix the linkage onto the valve.

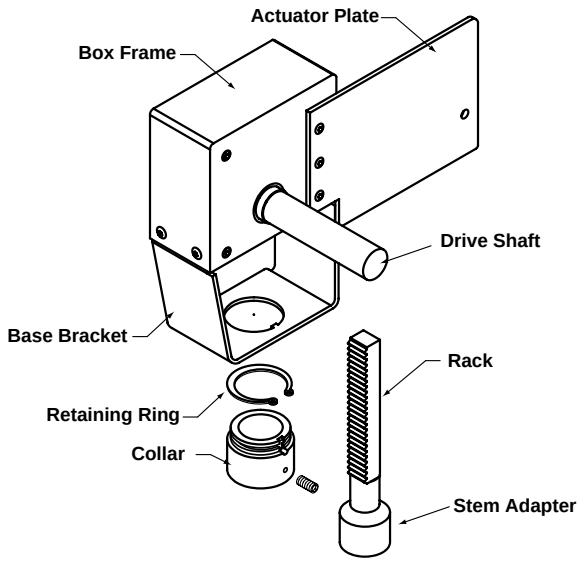
STEP 6) Check for full stem travel by turning the linkage drive shaft **(B)** fully clockwise (CW) and counter clockwise (CCW) until you feel the valve seat or hit travel limit stops in both directions. The shaft should turn freely without binding.

STEP 7) Turn the linkage drive shaft fully CW, and attach the actuator. This will position the linkage in the stem down position. Lightly snug up on the actuator's shaft clamp nuts. Turn the actuator CCW until you feel resistance due to the valve reaching end of travel. Notice the distance between the actuator's current position and the actuator's end of travel @ fully CCW. Loosen the actuator shaft clamp nuts, and rotate the actuator ONE-HALF the distance to its full CCW travel. Tighten the actuator's shaft clamp nuts securely. This procedure balances the valve travel limits within the range of motion of the actuator, thereby assuring unimpeded valve stem travel. When using an AF or NF actuator, a 5° offset may be necessary to ensure proper close off.

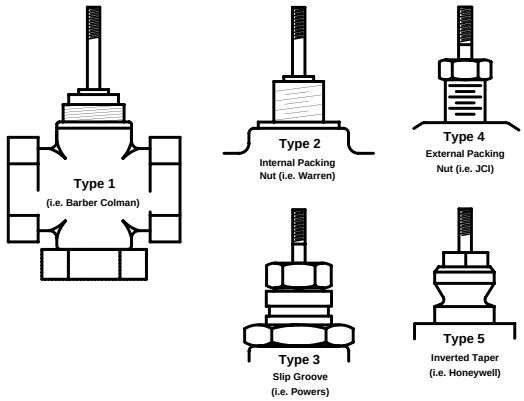
UGLK Collars			Most Commonly Used Valve Type				
Part Number	Inside Diameter	Description	Type 1	Type 2	Type 3	Type 4	Type 5
UGLK-COL-1005	1.000”	3 setscrews, for frame type		•			
UGLK-COL-1063	1.063”	3 setscrews, for frame type		•			
UGLK-COL-1100	1.100”	3 setscrews, for frame type, counterbored top				•	
UGLK-COL-1255	1.250”	3 setscrews, for frame type		•			
UGLK-COL-1315	1.315”	3 setscrews, for frame type, can be used with VB7 with shim			•		
UGLK-COL-1375	1.375”	3 setscrews, for frame type		•			
UGLK-COL-BC10	1.250”- 16 Thd.	Fits Siebe VB7/VB9. Use on frame type only	•				
UGLK-COL-HY02	1.375”	1 setscrew, for frame type					•
UGLK-COL-LG02	1.740”	1 setscrew, for frame type			•		
UGLK-COL-LG04	1.740”	1 setscrew, for frame type			•		
UGLK-COL-JC05	1.070”	3 setscrews, for frame type		•			
UGLK-COL-JC06	1.562- 14 Thd.	Threaded, brass		•			
UGLK-COL-JC08	0.760”	3 setscrews, for frame type, counterbored top				•	
UGLK-COL-JC15	1.070”	Ring, no setscrews		•			
UGLK-COL-0880	0.880”	3 setscrews, for frame type, counterbored top				•	
UGLK-COL-WNUT	1.375”- 20 Thd.	Replacement Warren nut. Will not go over damaged threads		•			
UGLK-COL-AD01	1.250”- 16 Thd.	Fits Siebe VB7/VB9. For VB7 frame only	•				
UGLK-COL-UNIV	Custom	3 setscrews, for frame type. Must be machined		•	•	•	•

UGLK Stem Adapters			Most Commonly Used Valve Type				
Part Number	Inside Diameter	Description	Type 1	Type 2	Type 3	Type 4	Type 5
UGLK-STM-1800	1/4”- 28 Stem Thd.		•	•	•	•	•
UGLK-STM-1801	3/8”- 24 Stem Thd.		•	•	•	•	•
UGLK-STM-1802	1/2”- 20 Stem Thd.		•			•	•
UGLK-STM-1803	7/16”- 20 Stem Thd.						•
UGLK-STM-1501	3/8”- 24 Stem Thd.	For Warren FLG valves with UGLK		•			
UGLK-STM-1805	3/8” OD Grooved	Landis 2.5-3” -599 Series			•		
UGLK-STM-2305	1/2” OD Grooved	Landis 4-6” -599 Series			•		
UGLK-STM-UNIV	Custom	Must be machined	•	•	•	•	•

UGLK Stem Adapters



UGLK Collars



Auxiliary Switches & Potentiometers		Non-Spring Return					Spring Return		
		NV	LMB LMX	NMB NMX	AMB AMX	GMB GMX	LF	NF	AF
	S1A Auxiliary switch - 1x SPDT, 3A (0.5A Inductive) @ 250 VAC		•	•	•	•			
	S2A Auxiliary switch - 1x SPDT, 3A (0.5A Inductive) @ 250 VAC		•	•	•	•			
	P140A Feedback potentiometer 140		•	•	•	•			
	P500A Feedback potentiometer 500		•	•	•	•			
	P1000A Feedback potentiometer 1000		•	•	•	•			
	P2800A Feedback potentiometer 2800		•	•	•	•			
	P5000A Feedback potentiometer 5000		•	•	•	•			
	P10000A Feedback potentiometer 10000		•	•	•	•			
Battery Backup									
	NSV24 US Battery backup module		•	•	•	•			
	**NSV-BAT US** 12VDC 1.2 AH battery (2 required)		•	•	•	•			

Note: Each NSV-24 US requires 2 NSV-BAT.

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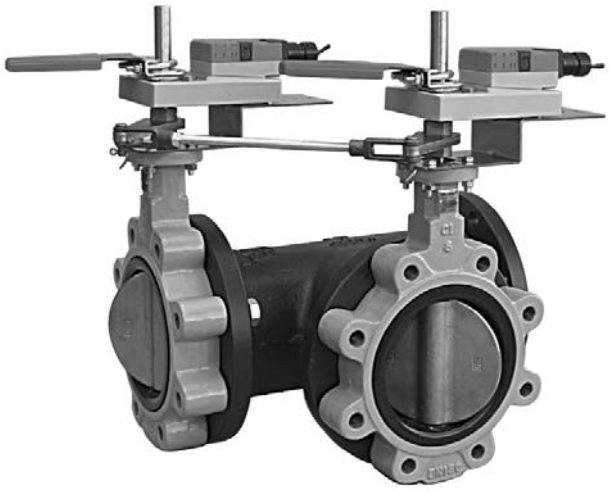


Butterfly Valve:
UFLK Series **Linkage Solution**
2-way Valves
3-way Valves

Retrofit Solutions for Virtually any Valve

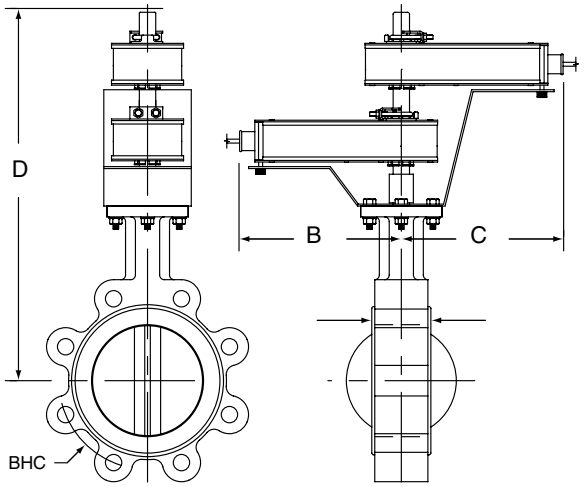
Manufacturers:

Butterfly: **Bray, Centerline, Keystone, Flowseal and more**

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

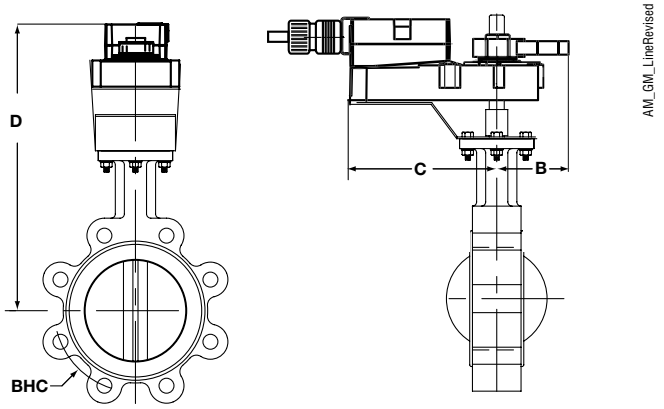
2 YEAR WARRANTY

Dimensions with 2-Way Valve



BF2WUDIM

Dimensions with 2-Way Valve



AM_GM_LineRevised

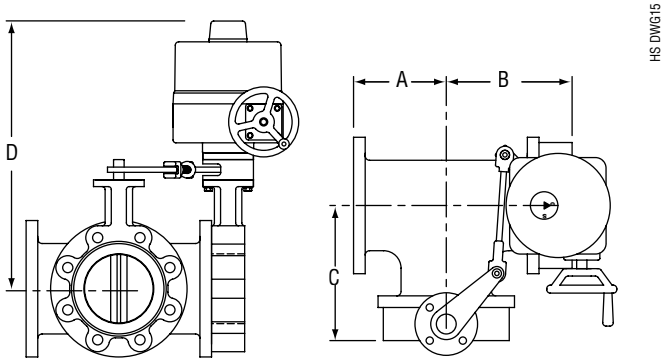
Maximum Dimensions (Inches)

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…

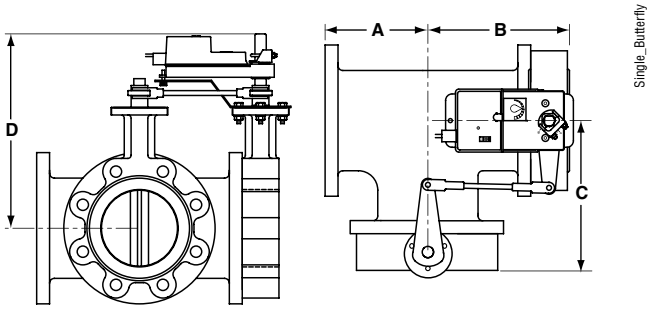
Application Notes

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.

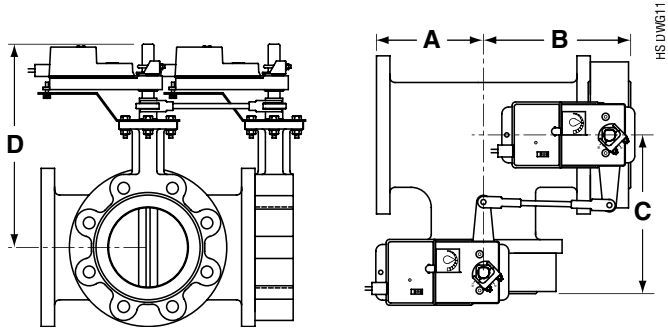
Dimensions with 3-Way Valve



Dimensions with 3-Way Valve



Dimensions with 3-Way Valve



Maximum Dimensions (Inches)

Size	B	C	D(Max)	Actuator
2”	6.15	6.15	20.25	AF
2”	6.15	6.15	15.5	SY1…
2”	6.15	6.15	20.25	SY2…
2½”	6.76	6.76	20.75	2*AF
2½”	6.76	6.76	16	SY1…
2½”	6.76	6.76	20.75	SY2…
3”	7.28	7.28	16.25	2*AF
3”	7.28	7.28	21	SY2…
4”	8.55	8.55	21.75	SY2…
5”	9.64	9.64	22.25	SY2…
5”	9.64	9.64	22.25	SY3…
6”	10.19	10.19	22.75	SY2…
6”	10.19	10.19	22.75	SY3…
8”	11.37	11.37	24.25	SY3…
8”	11.37	11.37	29	SY4…
10”	13.58	13.58	30	SY4…
12”	15.01	15.01	32	SY4…
12”	15.01	15.01	32	SY5…
14”	17.02	17.02	33	SY6…
16”	18.39	18.39	38.5	SY7…
18”	20.63	20.63	39.5	SY9…
20”	23	23	41.5	SY9…
24”	27.9	27.9	53.25	SY12…

Application Notes

1. Kits 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.

BELIMO

How to select a Butterfly Valve Retrofit Solution

Follow the four steps listed below when ordering a butterfly valve retrofit kit.

Example: Centerline C200 Series, **2½"** valve, using a **Non-Spring Return** Belimo actuator.

1. Identify the **Valve Manufacturer, Valve Series** and **Valve Size.**

2. Determine the type of actuator you require: Belimo Spring Return, Non-Spring or SY Series Industrial. Belimo Spring and Non-Spring actuators are typically only available on smaller sizes.

   Look at the solution using the Non-Spring Return Belimo Actuator. Looking at the **UFLK3500,** the **GM** Series actuator will provide a **200 psi close-off** for the **2½" valve** with **Non-Spring Return** actuation.

3. Use the actuator listings to make your final actuator selection. Decide between **GMX24-3-X1** and **GMX24-MFT-X1.**

   ACTUATOR NOT INCLUDED IN THE LIST PRICE OF THE LINKAGE.

4. HOW TO ORDER: **Item 1 1pc UFLK3500**
   Item 2 1pc GMX24-MFT-X1

2 YEAR WARRANTY

1. Select linkage solution based on the **Valve Number**, **Configuration**, and **Size**; select the proper **Linkage Solution** for your valve.

EXAMPLE PAGE

Centerline

C200 Round Top Series Butterfly Valves

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
C200 Round Top Series Butterfly Valves	2-way	2"	No	200	AM	UFLK3500
					SY1	UFLK3538
					SY2	UFLK3540
			Yes	200	AF	UFLK3500
		2½"	No	200	GM	UFLK3500
					SY1	UFLK3538
					SY2	UFLK3540
			Yes	200	2*AF	UFLK3502
		3"	No	200	GM	UFLK3500
					SY1	UFLK3538
					SY2	UFLK3540

UFLK1300
Example: **Centerline C200 Series, 2½"** valve using a **non-spring return** Belimo actuation.

Choose correct linkage **UFLK3500**.

2. Verify close-off is suitable for application. Looking at the **UFLK3500**, the **GM** Series actuator will provide **200 psi close-off** for the **2½" valve**.

3. Select actuator based on needed control type. Decide between **GMB24-3-X1** and **GMX24-MFT-X1**.

MODEL	Non-Spring Return Actuators					
	Control Input	Feedback	Power Supply	Running Time(s) [Default]	VA Rating	Aux. Switch
BASIC PRODUCTS						
GMB24-3-X1	On/Off, Floating Point	Add-on	24 VAC/DC	150 seconds	6	Add-on
GMB24-SR	2-10 VDC (4-20mA*)	2-10 VDC	24 VAC/DC	150 seconds	6.5	Add-on
CUSTOMIZE IT						
GMX24-3	On/Off, Floating Point	Add on	24 VAC/DC	150 seconds	7	Add-on
GMX24-SR	2-10 VDC (4-20mA*)	2-10 VDC	24 VAC/DC	150 seconds	6.5	Add-on
GMX24-PC	0-20 V Phasecut	2-10 VDC	24 VAC/DC	150 seconds	7	Add-on
GMX24-MFT-X1	Various	Various	24 VAC/DC	Various	7	Add-on
GMX24-MFT95-X1	0 to 135 Ω	2-10 VDC	24 VAC/DC	150 seconds	7	Add-on
GMX120-3	On/Off, Floating Point	Add on	100-240 VAC	150 seconds	9	Add-on

‡ For applications that require more torque the GMB Series can be dual mounted. A maximum of 2 GMB/X... Series actuators can be mechanically connected to one damper or valve shaft. The torque is 640 in-lb.
*With the 500 Ω resistor added.

4. Complete Ordering Example:
   Item 1: **UFLK3500**
   Item 2: **GMX24-MFT-X1**

SY Series Actuators

SERIES	MODEL	TORQUE	RUN TIME(S) 90°@60Hz	POWER SUPPLY	DUTY CYCLE	CONTROL			FEEDBACK
						PROPORTIONAL	3 POINT	ON/OFF	
SY1	SY1-110	35 Nm / 310 in-lb	12 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY1-24	35 Nm / 310 in-lb	12 seconds	24 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY1-220	35 Nm / 310 in-lb	12 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY1-110P	35 Nm / 310 in-lb	12 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY1-24P	35 Nm / 310 in-lb	12 seconds	24 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY1-220P	35 Nm / 310 in-lb	12 seconds	230 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
SY2	SY2-110	90 Nm / 801 in-lb	15 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY2-24	90 Nm / 801 in-lb	15 seconds	24 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY2-220	90 Nm / 801 in-lb	15 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY2-120MFT	90 Nm / 801 in-lb	15 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY2-24MFT	90 Nm / 801 in-lb	15 seconds	24 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY2-230MFT	90 Nm / 801 in-lb	15 seconds	230 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
SY3	SY3-110	150 Nm / 1335 in-lb	22 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY3-24	150 Nm / 1335 in-lb	22 seconds	24 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY3-220	150 Nm / 1335 in-lb	22 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY3-24MFT	150 Nm / 1335 in-lb	22 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY3-120MFT	150 Nm / 1335 in-lb	22 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY3-230MFT	150 Nm / 1335 in-lb	22 seconds	230 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
SY4	SY4-110	400 Nm / 3560 in-lb	16 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY4-24	400 Nm / 3560 in-lb	16 seconds	24 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY4-220	400 Nm / 3560 in-lb	16 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY4-24MFT	400 Nm / 3560 in-lb	16 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY4-120MFT	400 Nm / 3560 in-lb	16 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY4-230MFT	400 Nm / 3560 in-lb	16 seconds	230 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
SY5	SY5-110	500 Nm / 4450 in-lb	22 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY5-24	500 Nm / 4450 in-lb	22 seconds	24 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY5-220	500 Nm / 4450 in-lb	22 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY5-24MFT	500 Nm / 4450 in-lb	22 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY5-120MFT	500 Nm / 4450 in-lb	22 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY5-230MFT	500 Nm / 4450 in-lb	22 seconds	230 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
SY6	SY6-110	650 Nm / 5785 in-lb	28 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY6-220	650 Nm / 5785 in-lb	28 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY6-120MFT	650 Nm / 5785 in-lb	28 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY6-230MFT	650 Nm / 5785 in-lb	28 seconds	230 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
SY7	SY7-110	1000 Nm / 8900 in-lb	46 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY7-220	1000 Nm / 8900 in-lb	46 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY7-120MFT	1000 Nm / 8900 in-lb	46 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY7-230MFT	1000 Nm / 8900 in-lb	46 seconds	230 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
SY8	SY8-110	1500 Nm / 13350 in-lb	46 seconds	120 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY8-220	1500 Nm / 13350 in-lb	46 seconds	230 VAC ±10%, 50/60 Hz	30%		•	•	none, opt 1k
	SY8-120MFT	1500 Nm / 13350 in-lb	46 seconds	120 VAC ±10%, 50/60 Hz	75%	•			2-10 VDC/4-20 mA
	SY8-230MFT	1500 Nm / 13350 in-lb	46 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.

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

	P-CODE		Control Input	Running Time	Built-in Feedback
ROTARY ACTUATOR CODES	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).

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
141/143 Series Butterfly Valves	2-way	2”	No	150	GM	**UFLK1000**
					SY1	**UFLK1036**
					SY2	**UFLK1038**
			Yes	150	2*AF	**UFLK1002**
					GK	**UFLK1000**
		2½”	No	150	2*GM	**UFLK1002**
					SY2	**UFLK1038**
			Yes	150	2*GK	**UFLK1002**
		3”	No	150	2*GM	**UFLK1002**
					SY2	**UFLK1038**
			Yes	150	2*GK	**UFLK1002**
		4”	No	150	SY2	**UFLK1040**
		5”	No	150	SY3	**UFLK1042**
		6”	No	150	SY3	**UFLK1042**
		8”	No	150	SY4	**UFLK1044**
		10”	No	150	SY4	**UFLK1046**
		12”	No	150	SY6	**UFLK1048**
		14”	No	150	SY7	**UFLK1050**
		16”	No	150	SY8	**UFLK1052**
		18”	No	150	SY9	**UFLK1054**
		20”	No	150	SY10	**UFLK1056**
		24”	No	150	SY11	**UFLK1058**
	3-way	2”	No	150	2*GM	**UFLK4002**
					SY2	**UFLK4036**
			Yes	150	2*GK	**UFLK4002**
		2½”	No	150	2*GM	**UFLK4002**
					SY2	**UFLK4036**
			Yes	150	2*GK	**UFLK4002**
		3”	No	150	2*GM	**UFLK4002**
					SY2	**UFLK4036**
			Yes	150	2*GK	**UFLK4002**
		4”	No	150	SY3	**UFLK4038**
		5”	No	150	SY4	**UFLK4040**
		6”	No	150	SY4	**UFLK4040**
		8”	No	150	SY5	**UFLK4042**
		10”	No	150	SY6	**UFLK4044**
		12”	No	150	SY7	**UFLK4046**
		14”	No	150	SY8	**UFLK4048**
		16”	No	150	SY9	**UFLK4050**
		18”	No	150	SY11	**UFLK4052**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
HS Series Butterfly Valves	2-way	2”	No	200	AM	**UFLK3900**
					SY2	**UFLK3918**
			Yes	200	AF	**UFLK3930**
		2½”	No	200	AM	**UFLK3900**
					SY2	**UFLK3918**
			Yes	200	2*AF	**UFLK3936**
		3”	No	200	GM	**UFLK3900**
					SY2	**UFLK3918**
			Yes	200	2*AF	**UFLK3936**
					GK	**UFLK3900**
		4”	No	200	2*GM	**UFLK3908**
					SY2	**UFLK3920**
			Yes	200	2*GK	**UFLK3908**
		5”	No	200	SY2	**UFLK3922**
		6”	No	200	SY3	**UFLK3922**
		8”	No	200	SY4	**UFLK3970**
		10”	No	200	SY4	**UFLK3970**
		12”	No	200	SY4	**UFLK3928**
		14”	No	150	SY5	**UFLK3928**
		16”	No	150	SY6	**UFLK3976**
		18”	No	150	SY8	**UFLK3978**
		20”	No	150	SY8	**UFLK3980**
		24”	No	150	SY11	**UFLK3982**
	3-way	2”	No	200	AM	**UFLK6900**
					SY2	**UFLK6910**
			Yes	200	AF	**UFLK6950**
		2½”	No	200	2*GM	**UFLK6902**
					SY2	**UFLK6910**
			Yes	200	2*AF	**UFLK6952**
		3”	No	200	2*GM	**UFLK6902**
					SY2	**UFLK6910**
			Yes	200	2*GK	**UFLK6902**
		4”	No	200	SY2	**UFLK6912**
		5”	No	200	SY3	**UFLK6914**
		6”	No	200	SY3	**UFLK6914**
		8”	No	200	SY4	**UFLK6920**
		10”	No	200	SY4	**UFLK6920**
		12”	No	200	SY5	**UFLK6922**
		14”	No	150	SY6	**UFLK7018**
		16”	No	150	SY7	**UFLK7020**
		18”	No	150	SY8	**UFLK7022**
		20”	No	150	SY9	**UFLK7024**
		24”	No	150	SY12	**UFLK7026**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
HSU Series Butterfly Valves	2-way	2”	No	50	AM	**UFLK3900**
					SY1	**UFLK3912**
					SY2	**UFLK3918**
			Yes	50	AF	**UFLK3930**
		2½”	No	50	AM	**UFLK3900**
					SY1	**UFLK3912**
					SY2	**UFLK3918**
			Yes	50	AF	**UFLK3930**
		3”	No	50	AM	**UFLK3900**
					SY1	**UFLK3912**
					SY2	**UFLK3918**
			Yes	50	2*AF	**UFLK3936**
		4”	No	50	GM	**UFLK3904**
					SY2	**UFLK3920**
			Yes	50	2*AF	**UFLK3938**
					GK	**UFLK3904**
		5”	No	50	GM	**UFLK3905**
					SY2	**UFLK3922**
			Yes	50	GK	**UFLK3905**
		6”	No	50	2*GM	**UFLK3910**
					SY2	**UFLK3922**
			Yes	50	2*GK	**UFLK3910**
		8”	No	50	SY3	**UFLK3924**
		10”	No	50	SY3	**UFLK3926**
		12”	No	50	SY4	**UFLK3928**
	3-way	2”	No	50	GM	**UFLK6900**
					SY1	**UFLK6908**
					SY2	**UFLK6910**
			Yes	50	AF	**UFLK6950**
					GK	**UFLK6900**
		2½”	No	50	GM	**UFLK6900**
					SY1	**UFLK6908**
					SY2	**UFLK6910**
			Yes	50	2*AF	**UFLK6952**
					GK	**UFLK6900**
		3”	No	50	GM	**UFLK6900**
					SY2	**UFLK6910**
			Yes	50	2*AF	**UFLK6952**
					GK	**UFLK6900**
		4”	No	50	2*GM	**UFLK6904**
					SY2	**UFLK6912**
			Yes	50	2*GK	**UFLK6904**
		5”	No	50	2*GM	**UFLK6906**
					SY2	**UFLK6914**
			Yes	50	2*GK	**UFLK6906**
		6”	No	50	2*GM	**UFLK6906**
					SY2	**UFLK6914**
			Yes	50	2*GK	**UFLK6906**
		8”	No	50	SY3	**UFLK6919**
		10”	No	50	SY4	**UFLK6920**
		12”	No	50	SY4	**UFLK6922**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
30/31 Series Butterfly Valves	2-way	2”	No	175	AM	**UFLK1100**
					SY1	**UFLK1130**
					SY2	**UFLK1132**
			Yes	175	2*AF	**UFLK1102**
		2½”	No	175	GM	**UFLK1100**
					SY1	**UFLK1130**
					SY2	**UFLK1132**
			Yes	175	2*AF	**UFLK1102**
					GK	**UFLK1100**
		3”	No	175	2*GM	**UFLK1102**
					SY2	**UFLK1132**
			Yes	175	2*GK	**UFLK1102**
		4”	No	175	2*GM	**UFLK1108**
					SY2	**UFLK1134**
			Yes	175	2*GK	**UFLK1108**
		5”	No	175	SY3	**UFLK1136**
		6”	No	175	SY3	**UFLK1136**
		8”	No	175	SY4	**UFLK1138**
		10”	No	175	SY4	**UFLK1140**
		12”	No	175	SY6	**UFLK1142**
		14”	No	175	SY7	**UFLK1144**
		16”	No	175	SY8	**UFLK1144**
		18”	No	175	SY9	**UFLK1146**
		20”	No	175	SY10	**UFLK1146**
	3-way	2”	No	200	SY1	**UFLK4130**
					SY2	**UFLK4132**
			Yes	200	2*AF	**UFLK4102**
		2½”	No	200	2*GM	**UFLK4102**
					SY2	**UFLK4132**
			Yes	200	2*GK	**UFLK4102**
		3”	No	200	2*GM	**UFLK4102**
					SY2	**UFLK4132**
			Yes	200	2*GK	**UFLK4102**
		4”	No	200	SY3	**UFLK4134**
		5”	No	200	SY4	**UFLK4136**
		6”	No	200	SY4	**UFLK4136**
		8”	No	200	SY5	**UFLK4138**
		10”	No	200	SY6	**UFLK4140**
		12”	No	200	SY7	**UFLK4142**
		14”	No	150	SY8	**UFLK4144**
		16”	No	150	SY9	**UFLK4146**
		18”	No	150	SY11	**UFLK4148**
		20”	No	150	SY12	**UFLK4148**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
40/41 Series Butterfly Valves	2-way	2½"	No	285	2*GM	**UFLK1200**
					SY2	**UFLK1224**
			Yes	285	2*GK	**UFLK1200**
		3"	No	285	2*GM	**UFLK1200**
					SY2	**UFLK1224**
			Yes	285	2*GK	**UFLK1200**
		4"	No	285	2*GM	**UFLK1200**
					SY2	**UFLK1224**
			Yes	285	2*GK	**UFLK1200**
		5"	No	285	SY3	**UFLK1226**
		6"	No	285	SY4	**UFLK1228**
		8"	No	285	SY4	**UFLK1230**
		10"	No	285	SY6	**UFLK1232**
		12"	No	285	SY7	**UFLK1234**
		14"	No	285	SY8	**UFLK1236**
		16"	No	285	SY9	**UFLK1238**
		18"	No	285	SY11	**UFLK1240**
		20"	No	285	SY12	**UFLK1242**
	3-way	2½"	No	285	2*GM	**UFLK4200**
					SY2	**UFLK4222**
			Yes	285	2*GK	**UFLK4200**
		3"	No	285	2*GM	**UFLK4200**
					SY2	**UFLK4222**
			Yes	285	2*GK	**UFLK4200**
		4"	No	285	SY3	**UFLK4222**
		5"	No	285	SY4	**UFLK4224**
		6"	No	285	SY4	**UFLK4224**
		8"	No	285	SY5	**UFLK4226**
		10"	No	285	SY7	**UFLK4228**
		12"	No	285	SY8	**UFLK4230**
		14"	No	285	SY10	**UFLK4232**
		16"	No	285	SY12	**UFLK4234**

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

Centerline

C200 Round Top Series Butterfly Valves

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
C200 Round Top Series Butterfly Valves	2-way	2”	No	200	AM	**UFLK3500**
					SY1	**UFLK3538**
					SY2	**UFLK3540**
			Yes	200	AF	**UFLK3500**
		2½”	No	200	GM	**UFLK3500**
					SY1	**UFLK3538**
					SY2	**UFLK3540**
			Yes	200	2*AF	**UFLK3502**
					GK	**UFLK3500**
		3”	No	200	GM	**UFLK3500**
					SY1	**UFLK3538**
					SY2	**UFLK3540**
			Yes	200	2*AF	**UFLK3502**
					GK	**UFLK3500**
		4”	No	200	2*GM	**UFLK3508**
					SY2	**UFLK3542**
			Yes	200	2*GK	**UFLK3508**
		5”	No	200	SY2	**UFLK3544**
		6”	No	200	SY3	**UFLK3544**
		8”	No	200	SY4	**UFLK3546**
		10”	No	200	SY4	**UFLK3548**
		12”	No	200	SY5	**UFLK3550**
		14”	No	150	SY5	**UFLK3550**
		16”	No	150	SY7	**UFLK3552**
		18”	No	150	SY8	**UFLK3554**
		20”	No	150	SY8	**UFLK3556**
		24”	No	150	SY10	**UFLK3558**
	3-way	2”	No	200	AM	**UFLK6500**
					SY1	**UFLK6536**
					SY2	**UFLK6538**
			Yes	200	2*AF	**UFLK6502**
		2½”	No	200	GM	**UFLK6500**
					SY1	**UFLK6536**
					SY2	**UFLK6538**
			Yes	200	2*AF	**UFLK6502**
					GK	**UFLK6500**
		3”	No	200	2*GM	**UFLK6502**
					SY1	**UFLK6536**
					SY2	**UFLK6538**
			Yes	200	2*GK	**UFLK6502**
		4”	No	200	2*GM	**UFLK6508**
					SY2	**UFLK6540**
			Yes	200	2*GK	**UFLK6508**
		5”	No	200	SY3	**UFLK6542**
		6”	No	200	SY4	**UFLK6544**
		8”	No	200	SY4	**UFLK6546**
		10”	No	200	SY5	**UFLK6548**
		12”	No	200	SY7	**UFLK6550**
		14”	No	150	SY7	**UFLK6550**
		16”	No	150	SY8	**UFLK6552**
		18”	No	150	SY9	**UFLK6554**
		20”	No	150	SY10	**UFLK6556**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
C200 Square Top Series Butterfly Valves	2-way	2”	No	200	AM	**UFLK1300**
					SY1	**UFLK1338**
					SY2	**UFLK1340**
			Yes	200	AF	**UFLK1300**
		2½”	No	200	GM	**UFLK1300**
					SY1	**UFLK1338**
					SY2	**UFLK1340**
			Yes	200	2*AF	**UFLK1302**
					GK	**UFLK1300**
		3”	No	200	GM	**UFLK1300**
					SY1	**UFLK1338**
					SY2	**UFLK1340**
			Yes	200	2*AF	**UFLK1302**
					GK	**UFLK1300**
		4”	No	200	2*GM	**UFLK1308**
					SY2	**UFLK1342**
			Yes	200	2*GK	**UFLK1308**
		5”	No	200	SY2	**UFLK1344**
		6”	No	200	SY3	**UFLK1344**
		8”	No	200	SY4	**UFLK1346**
		10”	No	200	SY4	**UFLK1348**
		12”	No	200	SY5	**UFLK1350**
		14”	No	150	SY5	**UFLK1350**
		16”	No	150	SY7	**UFLK1352**
		18”	No	150	SY8	**UFLK1354**
		20”	No	150	SY8	**UFLK1356**
		24”	No	150	SY10	**UFLK1358**
	3-way	2”	No	200	AM	**UFLK4300**
					SY1	**UFLK4338**
					SY2	**UFLK4340**
			Yes	200	2*AF	**UFLK4302**
		2½”	No	200	GM	**UFLK4300**
					SY2	**UFLK4340**
			Yes	200	2*AF	**UFLK4302**
					GK	**UFLK4300**
		3”	No	200	2*GM	**UFLK4302**
					SY2	**UFLK4340**
			Yes	200	2*GK	**UFLK4302**
		4”	No	200	2*GM	**UFLK4308**
					SY2	**UFLK4342**
			Yes	200	2*GK	**UFLK4308**
		5”	No	200	SY3	**UFLK4344**
		6”	No	200	SY4	**UFLK4346**
		8”	No	200	SY4	**UFLK4348**
		10”	No	200	SY5	**UFLK4350**
		12”	No	200	SY7	**UFLK4352**
		14”	No	150	SY7	**UFLK4352**
		16”	No	150	SY8	**UFLK4354**
		18”	No	150	SY9	**UFLK4356**
		20”	No	150	SY10	**UFLK4358**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
C225 Square Top Series Butterfly Valves	2-way	2”	No	285	GM	**UFLK1400**
					SY1	**UFLK1436**
					SY2	**UFLK1438**
			Yes	285	2*AF	**UFLK1402**
					GK	**UFLK1400**
		2½”	No	285	GM	**UFLK1400**
					SY1	**UFLK1436**
					SY2	**UFLK1438**
			Yes	285	2*AF	**UFLK1402**
					GK	**UFLK1400**
		3”	No	285	GM	**UFLK1400**
					SY1	**UFLK1436**
					SY2	**UFLK1438**
			Yes	285	2*AF	**UFLK1402**
					GK	**UFLK1400**
		4”	No	285	2*GM	**UFLK1408**
					SY2	**UFLK1440**
			Yes	285	2*GK	**UFLK1408**
		5”	No	285	SY2	**UFLK1442**
		6”	No	285	SY4	**UFLK1444**
		8”	No	285	SY4	**UFLK1446**
		10”	No	285	SY5	**UFLK1448**
		12”	No	285	SY6	**UFLK1450**
		14”	No	285	SY7	**UFLK1452**
		16”	No	285	SY9	**UFLK1454**
		18”	No	285	SY10	**UFLK1456**
		20”	No	285	SY10	**UFLK1458**
	3-way	2”	No	285	GM	**UFLK4400**
					SY1	**UFLK4436**
					SY2	**UFLK4438**
			Yes	285	GK	**UFLK4400**
		2½”	No	285	GM	**UFLK4400**
					SY2	**UFLK4438**
			Yes	285	GK	**UFLK4400**
		3”	No	285	2*GM	**UFLK4402**
					SY2	**UFLK4438**
			Yes	285	2*GK	**UFLK4402**
		4”	No	285	SY3	**UFLK4440**
		5”	No	285	SY3	**UFLK4442**
		6”	No	285	SY4	**UFLK4444**
		8”	No	285	SY5	**UFLK4446**
		10”	No	285	SY7	**UFLK4448**
		12”	No	285	SY8	**UFLK4450**
		14”	No	285	SY8	**UFLK4452**
		16”	No	285	SY12	**UFLK4454**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
CH100 Series Butterfly Valves	2-way	2”	No	200	AM	**UFLK3600**
					SY1	**UFLK3622**
					SY2	**UFLK3624**
			Yes	200	2*AF	**UFLK3602**
		2½”	No	200	GM	**UFLK3600**
					SY1	**UFLK3622**
					SY2	**UFLK3624**
			Yes	200	2*AF	**UFLK3602**
					GK	**UFLK3600**
		3”	No	200	GM	**UFLK3600**
					SY1	**UFLK3622**
					SY2	**UFLK3624**
			Yes	200	2*AF	**UFLK3602**
					GK	**UFLK3600**
		4”	No	200	2*GM	**UFLK3608**
					SY2	**UFLK3626**
			Yes	200	2*GK	**UFLK3608**
		5”	No	200	SY2	**UFLK3626**
		6”	No	200	SY3	**UFLK3628**
		8”	No	200	SY4	**UFLK3630**
		10”	No	200	SY4	**UFLK3632**
		12”	No	200	SY5	**UFLK3634**
	3-way	2”	No	200	GM	**UFLK6600**
					SY1	**UFLK6624**
					SY2	**UFLK6626**
			Yes	200	2*AF	**UFLK6602**
					GK	**UFLK6600**
		2½”	No	200	GM	**UFLK6600**
					SY2	**UFLK6626**
			Yes	200	2*AF	**UFLK6602**
					GK	**UFLK6600**
		3”	No	200	2*GM	**UFLK6602**
					SY2	**UFLK6626**
			Yes	200	2*GK	**UFLK6602**
		4”	No	200	SY2	**UFLK6628**
		5”	No	200	SY3	**UFLK6628**
		6”	No	200	SY4	**UFLK6630**
		8”	No	200	SY4	**UFLK6632**
		10”	No	200	SY5	**UFLK6634**
		12”	No	200	SY7	**UFLK6636**

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

Chemtrol

PVC Model C Series Butterfly Valves

Linkage/Actuator Selection Guide

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
PVC Model C Series Butterfly Valves	2-way	2”	No	150	GM	**UFLK1500**
					SY1	**UFLK1532**
					SY2	**UFLK1534**
			Yes	150	2*AF	**UFLK1502**
					GK	**UFLK1500**
		2½”	No	150	2*GM	**UFLK1508**
					SY2	**UFLK1536**
			Yes	150	2*GK	**UFLK1508**
		3”	No	150	2*GM	**UFLK1514**
					SY2	**UFLK1538**
			Yes	150	2*GK	**UFLK1514**
		4”	No	150	2*GM	**UFLK1520**
					SY2	**UFLK1540**
			Yes	150	2*GK	**UFLK1520**
		6”	No	150	SY4	**UFLK1542**
		8”	No	150	SY4	**UFLK1544**
		10”	No	150	SY4	**UFLK1546**
	3-way	2”	No	150	2*GM	**UFLK4502**
					SY2	**UFLK4532**
			Yes	150	2*GK	**UFLK4502**
		2½”	No	150	2*GM	**UFLK4508**
					SY2	**UFLK4534**
			Yes	150	2*GK	**UFLK4508**
		3”	No	150	2*GM	**UFLK4514**
					SY2	**UFLK4536**
			Yes	150	2*GK	**UFLK4514**
		4”	No	150	2*GM	**UFLK4520**
					SY3	**UFLK4538**
			Yes	150	2*GK	**UFLK4520**
		6”	No	150	SY4	**UFLK4540**
		8”	No	150	SY5	**UFLK4542**
		10”	No	150	SY6	**UFLK4544**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
BRS Series Butterfly Valves	2-way	2”	No	175	GM	**UFLK1600**
					SY1	**UFLK1634**
					SY2	**UFLK1636**
			Yes	175	2*AF	**UFLK1602**
					GK	**UFLK1600**
		2½”	No	175	GM	**UFLK1600**
					SY1	**UFLK1634**
					SY2	**UFLK1636**
			Yes	175	2*AF	**UFLK1602**
					GK	**UFLK1600**
		3”	No	175	2*GM	**UFLK1602**
					SY2	**UFLK1636**
			Yes	175	2*GK	**UFLK1602**
		4”	No	175	2*GM	**UFLK1608**
					SY2	**UFLK1638**
			Yes	175	2*GK	**UFLK1608**
		5”	No	175	SY3	**UFLK1640**
		6”	No	175	SY4	**UFLK1642**
		8”	No	175	SY4	**UFLK1644**
		10”	No	175	SY5	**UFLK1646**
		12”	No	175	SY7	**UFLK1648**
		14”	No	175	SY7	**UFLK1650**
		16”	No	175	SY9	**UFLK1652**
		18”	No	175	SY10	**UFLK1654**
		20”	No	175	SY10	**UFLK1656**
	3-way	2”	No	175	GM	**UFLK4600**
					SY2	**UFLK4634**
			Yes	175	2*AF	**UFLK4602**
					GK	**UFLK4600**
		2½”	No	175	GM	**UFLK4600**
					SY2	**UFLK4634**
			Yes	175	2*AF	**UFLK4602**
					GK	**UFLK4600**
		3”	No	175	2*GM	**UFLK4602**
					SY2	**UFLK4634**
			Yes	175	2*GK	**UFLK4602**
		4”	No	175	SY3	**UFLK4636**
		5”	No	175	SY4	**UFLK4638**
		6”	No	175	SY4	**UFLK4638**
		8”	No	175	SY5	**UFLK4640**
		10”	No	175	SY7	**UFLK4642**
		12”	No	175	SY8	**UFLK4644**
		14”	No	175	SY9	**UFLK4646**
		16”	No	175	SY12	**UFLK4648**

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

Flowseal

1L/W and 3 L/W Series Butterfly Valves

Linkage/Actuator Selection Guide

BELIMO

2 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
1L/W Series Butterfly Valves	2-way	2”	No	285	GM	**UFLK1700**
					SY1	**UFLK1734**
					SY2	**UFLK1736**
			Yes	285	2*AF	**UFLK1702**
					GK	**UFLK1700**
		2½”	No	285	2*GM	**UFLK1702**
					SY2	**UFLK1736**
			Yes	285	2*GK	**UFLK1702**
		3”	No	285	2*GM	**UFLK1708**
					SY2	**UFLK1738**
			Yes	285	2*GK	**UFLK1708**
		4”	No	285	2*GM	**UFLK1708**
					SY2	**UFLK1738**
			Yes	285	2*GK	**UFLK1708**
		5”	No	285	SY3	**UFLK1740**
		6”	No	285	SY3	**UFLK1740**
		8”	No	285	SY4	**UFLK1742**
		10”	No	285	SY4	**UFLK1744**
		12”	No	285	SY6	**UFLK1744**
		14”	No	285	SY6	**UFLK1746**
		16”	No	285	SY7	**UFLK1748**
		18”	No	285	SY9	**UFLK1750**
		20”	No	285	SY9	**UFLK1752**
	3-way	2”	No	285	GM	**UFLK4700**
					SY2	**UFLK4734**
			Yes	285	2*AF	**UFLK4702**
					GK	**UFLK4700**
		2½”	No	285	2*GM	**UFLK4702**
					SY2	**UFLK4734**
			Yes	285	2*GK	**UFLK4702**
		3”	No	285	2*GM	**UFLK4708**
					SY2	**UFLK4736**
			Yes	285	2*GK	**UFLK4708**
		4”	No	285	SY3	**UFLK4736**
		5”	No	285	SY4	**UFLK4738**
		6”	No	285	SY4	**UFLK4738**
		8”	No	285	SY4	**UFLK4740**
		10”	No	285	SY6	**UFLK4742**
		12”	No	285	SY7	**UFLK4744**
		14”	No	285	SY8	**UFLK4744**
		16”	No	285	SY9	**UFLK4746**
		18”	No	285	SY11	**UFLK4748**
		20”	No	285	SY12	**UFLK4750**
3L/W Series Butterfly Valves	2-way	2”	No	780	SY3	**UFLK1828**
		2½”	No	780	SY3	**UFLK1828**
		3”	No	780	SY3	**UFLK1830**
		4”	No	780	SY4	**UFLK1832**
		5”	No	780	SY4	**UFLK1834**
		6”	No	780	SY4	**UFLK1836**
		8”	No	780	SY7	**UFLK1838**
		10”	No	780	SY7	**UFLK1840**
		12”	No	780	SY9	**UFLK1842**
		14”	No	780	SY9	**UFLK1844**
	3-way	2”	No	780	SY3	**UFLK4828**
		2½”	No	780	SY3	**UFLK4828**
		3”	No	780	SY3	**UFLK4844**
		4”	No	780	SY4	**UFLK4830**
		5”	No	780	SY4	**UFLK4832**
		6”	No	780	SY4	**UFLK4834**
		8”	No	780	SY8	**UFLK4836**
		10”	No	780	SY8	**UFLK4838**
		12”	No	780	SY12	**UFLK4840**
		14”	No	780	SY12	**UFLK4842**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Figure 1000/2000 Series Butterfly Valves	2-way	2”	No	150	GM	**UFLK1900**
					SY1	**UFLK1936**
					SY2	**UFLK1938**
			Yes	150	2*AF	**UFLK1902**
					GK	**UFLK1900**
		2½”	No	150	GM	**UFLK1900**
					SY1	**UFLK1936**
					SY2	**UFLK1938**
			Yes	150	2*AF	**UFLK1902**
					GK	**UFLK1900**
		3”	No	150	GM	**UFLK1900**
					SY1	**UFLK1936**
					SY2	**UFLK1938**
			Yes	150	2*AF	**UFLK1902**
					GK	**UFLK1900**
		4”	No	150	2*GM	**UFLK1908**
					SY2	**UFLK1940**
			Yes	150	2*GK	**UFLK1908**
		5”	No	150	SY3	**UFLK1942**
		6”	No	150	SY4	**UFLK1956**
		8”	No	150	SY4	**UFLK1944**
		10”	No	150	SY5	**UFLK1946**
		12”	No	150	SY7	**UFLK1948**
		14”	No	150	SY7	**UFLK1948**
		16”	No	150	SY9	**UFLK1950**
		18”	No	150	SY10	**UFLK1952**
		20”	No	150	SY10	**UFLK1954**
	3-way	2”	No	150	GM	**UFLK4900**
					SY2	**UFLK4936**
			Yes	150	2*AF	**UFLK4902**
					GK	**UFLK4900**
		2½”	No	150	GM	**UFLK4900**
					SY2	**UFLK4936**
			Yes	150	2*AF	**UFLK4902**
					GK	**UFLK4900**
		3”	No	150	2*GM	**UFLK4902**
					SY2	**UFLK4936**
			Yes	150	2*GK	**UFLK4902**
		4”	No	150	SY3	**UFLK4938**
		5”	No	150	SY4	**UFLK4940**
		6”	No	150	SY4	**UFLK4940**
		8”	No	150	SY5	**UFLK4942**
		10”	No	150	SY7	**UFLK4944**
		12”	No	150	SY8	**UFLK4946**
		14”	No	150	SY9	**UFLK4948**
		16”	No	150	SY11	**UFLK4950**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Figure 7700 (Double D Shaft 2003 and Newer) Series Butterfly Valves	2-way	2”	No	300	GM	**UFLK3740**
					SY1	**UFLK3744**
					SY2	**UFLK3746**
			Yes	300	2*AF	**UFLK3742**
					GK	**UFLK3740**
		2½”	No	300	2*GM	**UFLK3742**
					SY1	**UFLK3744**
					SY2	**UFLK3746**
			Yes	300	2*GK	**UFLK3742**
		3”	No	300	2*GM	**UFLK3742**
					SY2	**UFLK3746**
			Yes	300	2*GK	**UFLK3742**
		4”	No	300	2*GM	**UFLK3742**
					SY2	**UFLK3746**
			Yes	300	2*GK	**UFLK3742**
		5”	No	300	SY3	**UFLK3748**
		6”	No	300	SY4	**UFLK3750**
		8”	No	300	SY4	**UFLK3752**
		10”	No	300	SY5	**UFLK3754**
		12”	No	300	SY7	**UFLK3756**
	3-way	2”	No	300	2*GM	**UFLK6740**
					SY2	**UFLK6742**
			Yes	300	2*GK	**UFLK6740**
		2½”	No	300	SY2	**UFLK6742**
		3”	No	300	SY2	**UFLK6742**
		4”	No	300	SY3	**UFLK6742**
		5”	No	300	SY4	**UFLK6744**
		6”	No	300	SY4	**UFLK6744**
		8”	No	300	SY5	**UFLK6746**
		10”	No	300	SY7	**UFLK6748**
		12”	No	300	SY9	**UFLK6750**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Figure 7700 (Sheared Pin Shaft Pre 2003) Series Butterfly Valves	2-way	2”	No	200	GM	**UFLK3700**
					SY1	**UFLK3726**
					SY2	**UFLK3728**
			Yes	200	2*AF	**UFLK3702**
					GK	**UFLK3700**
		2½”	No	200	GM	**UFLK3700**
					SY1	**UFLK3726**
					SY2	**UFLK3728**
			Yes	200	2*AF	**UFLK3702**
					GK	**UFLK3700**
		3”	No	200	2*GM	**UFLK3702**
					SY1	**UFLK3726**
					SY2	**UFLK3728**
			Yes	200	2*GK	**UFLK3702**
		4”	No	200	2*GM	**UFLK3708**
					SY2	**UFLK3730**
			Yes	200	2*GK	**UFLK3708**
		5”	No	200	SY3	**UFLK3732**
		6”	No	200	SY4	**UFLK3734**
		8”	No	200	SY4	**UFLK3736**
		10”	No	200	SY5	**UFLK3736**
		12”	No	200	SY7	**UFLK3738**
	3-way	2”	No	200	GM	**UFLK6700**
					SY2	**UFLK6726**
			Yes	200	2*AF	**UFLK6702**
					GK	**UFLK6700**
		2½”	No	200	GM	**UFLK6700**
					SY2	**UFLK6726**
			Yes	200	2*AF	**UFLK6702**
					GK	**UFLK6700**
		3”	No	200	2*GM	**UFLK6702**
					SY2	**UFLK6726**
			Yes	200	2*GK	**UFLK6702**
		4”	No	200	SY3	**UFLK6728**
		5”	No	200	SY4	**UFLK6730**
		6”	No	200	SY4	**UFLK6732**
		8”	No	200	SY5	**UFLK6734**
		10”	No	200	SY7	**UFLK6736**
		12”	No	200	SY8	**UFLK6738**

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

Hammond

61/62 Series Butterfly Valves

Linkage/Actuator Selection Guide

BELIMO

2 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
61/62 Series Butterfly Valves	2-way	2”	No	200	AM	**UFLK2000**
					SY1	**UFLK2022**
					SY2	**UFLK2024**
			Yes	200	2*AF	**UFLK2002**
		2½”	No	200	GM	**UFLK2000**
					SY1	**UFLK2022**
					SY2	**UFLK2024**
			Yes	200	2*AF	**UFLK2002**
					GK	**UFLK2000**
		3”	No	200	GM	**UFLK2000**
					SY2	**UFLK2024**
			Yes	200	2*AF	**UFLK2002**
					GK	**UFLK2000**
		4”	No	200	2*GM	**UFLK2008**
					SY2	**UFLK2026**
			Yes	200	2*GK	**UFLK2008**
		5”	No	200	SY3	**UFLK2026**
		6”	No	200	SY4	**UFLK2028**
		8”	No	200	SY4	**UFLK2030**
		10”	No	200	SY6	**UFLK2032**
		12”	No	200	SY7	**UFLK2034**
	3-way	2”	No	200	GM	**UFLK5000**
					SY1	**UFLK5022**
					SY2	**UFLK5024**
			Yes	200	2*AF	**UFLK5002**
					GK	**UFLK5000**
		2½”	No	200	GM	**UFLK5000**
					SY2	**UFLK5024**
			Yes	200	2*AF	**UFLK5002**
					GK	**UFLK5000**
		3”	No	200	2*GM	**UFLK5002**
					SY2	**UFLK5024**
			Yes	200	2*GK	**UFLK5002**
		4”	No	200	SY3	**UFLK5026**
		5”	No	200	SY4	**UFLK5028**
		6”	No	200	SY4	**UFLK5030**
		8”	No	200	SY6	**UFLK5032**
		10”	No	200	SY7	**UFLK5034**
		12”	No	200	SY8	**UFLK5036**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
815 L/W Series Butterfly Valves	2-way	2½"	No	285	2*GM	**UFLK8060**
					SY2	**UFLK8064**
			Yes	285	2*GK	**UFLK8060**
		3"	No	285	2*GM	**UFLK8062**
					SY2	**UFLK8066**
			Yes	285	2*GK	**UFLK8062**
		4"	No	285	SY2	**UFLK8068**
		5"	No	285	SY3	**UFLK8070**
		6"	No	285	SY3	**UFLK8072**
		8"	No	285	SY4	**UFLK8074**
		10"	No	285	SY4	**UFLK8076**
		12"	No	285	SY6	**UFLK8078**
		14"	No	285	SY7	**UFLK8080**
		16"	No	285	SY8	**UFLK8082**
		18"	No	285	SY9	**UFLK8084**
		20"	No	285	SY10	**UFLK8086**
		24"	No	285	SY12	**UFLK8088**
	3-way	2½"	No	285	SY2	**UFLK7124**
		3"	No	285	SY2	**UFLK7126**
		4"	No	285	SY3	**UFLK7128**
		5"	No	285	SY4	**UFLK7130**
		6"	No	285	SY4	**UFLK7132**
		8"	No	285	SY5	**UFLK7134**
		10"	No	285	SY6	**UFLK7136**
		12"	No	285	SY7	**UFLK7138**
		14"	No	285	SY9	**UFLK7140**
		16"	No	285	SY10	**UFLK7142**
		18"	No	285	SY11	**UFLK7144**
830 L/W Series Butterfly Valves	2-way	2½"	No	740	2*GM	**UFLK8124**
					SY2	**UFLK8126**
			Yes	740	2*GK	**UFLK8124**
		3"	No	740	SY2	**UFLK8128**
		4"	No	740	SY3	**UFLK8130**
		5"	No	740	SY4	**UFLK8132**
		6"	No	740	SY4	**UFLK8134**
		8"	No	740	SY6	**UFLK8136**
		10"	No	740	SY8	**UFLK8138**
		12"	No	740	SY8	**UFLK8140**
		14"	No	740	SY11	**UFLK8142**
		16"	No	740	SY12	**UFLK8144**
	3-way	2½"	No	740	SY3	**UFLK7248**
		3"	No	740	SY3	**UFLK7250**
		4"	No	740	SY4	**UFLK7252**
		5"	No	740	SY4	**UFLK7254**
		6"	No	740	SY6	**UFLK7256**
		8"	No	740	SY8	**UFLK7258**
		10"	No	740	SY9	**UFLK7260**
		12"	No	740	SY10	**UFLK7262**

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

Jenkins

22XXEXJ Series Butterfly Valves

Linkage/Actuator Selection Guide

BELIMO

2 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
22XXEXJ Series Butterfly Valves	2-way	2”	No	175	GM	**UFLK8400**
					SY1	**UFLK8436**
					SY2	**UFLK8438**
			Yes	175	2*AF	**UFLK8402**
					GK	**UFLK8400**
		2½”	No	175	GM	**UFLK8400**
					SY1	**UFLK8436**
					SY2	**UFLK8438**
			Yes	175	2*AF	**UFLK8402**
					GK	**UFLK8400**
		3”	No	175	2*GM	**UFLK8402**
					SY1	**UFLK8436**
					SY2	**UFLK8438**
			Yes	175	2*GK	**UFLK8402**
		4”	No	175	2*GM	**UFLK8408**
					SY2	**UFLK8440**
			Yes	175	2*GK	**UFLK8408**
		5”	No	175	SY2	**UFLK8442**
		6”	No	175	SY3	**UFLK8444**
		8”	No	175	SY4	**UFLK8446**
		10”	No	175	SY4	**UFLK8448**
		12”	No	175	SY5	**UFLK8450**
		14”	No	150	SY5	**UFLK8450**
		16”	No	150	SY7	**UFLK8452**
		18”	No	150	SY8	**UFLK8454**
		20”	No	150	SY8	**UFLK8456**
		24”	No	150	SY10	**UFLK8458**
	3-way	2”	No	175	GM	**UFLK7338**
					SY1	**UFLK7342**
					SY2	**UFLK7344**
			Yes	175	2*AF	**UFLK7340**
					GK	**UFLK7338**
		2½”	No	175	2*GM	**UFLK7340**
					SY2	**UFLK7344**
			Yes	175	2*GK	**UFLK7340**
		3”	No	175	2*GM	**UFLK7340**
					SY2	**UFLK7344**
			Yes	175	2*GK	**UFLK7340**
		4”	No	175	SY2	**UFLK7346**
		5”	No	175	SY3	**UFLK7348**
		6”	No	175	SY4	**UFLK7350**
		8”	No	175	SY4	**UFLK7352**
		10”	No	175	SY5	**UFLK7354**
		12”	No	175	SY7	**UFLK7356**
		14”	No	150	SY7	**UFLK7358**
		16”	No	150	SY8	**UFLK7360**
		18”	No	150	SY9	**UFLK7362**
		20”	No	150	SY10	**UFLK7364**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
VF.. (H) Series Butterfly Valves	2-way	2”	No	175	GM	**UFLK2100**
					SY1	**UFLK2136**
					SY2	**UFLK2138**
			Yes	175	2*AF	**UFLK2102**
					GK	**UFLK2100**
		2½”	No	175	GM	**UFLK2100**
					SY1	**UFLK2136**
					SY2	**UFLK2138**
			Yes	175	2*AF	**UFLK2102**
					GK	**UFLK2100**
		3”	No	175	GM	**UFLK2100**
					SY1	**UFLK2136**
					SY2	**UFLK2138**
			Yes	175	2*AF	**UFLK2102**
					GK	**UFLK2100**
		4”	No	175	2*GM	**UFLK2108**
					SY2	**UFLK2140**
			Yes	175	2*GK	**UFLK2108**
		5”	No	175	SY3	**UFLK2142**
		6”	No	175	SY4	**UFLK2144**
		8”	No	175	SY4	**UFLK2158**
		10”	No	175	SY5	**UFLK2146**
		12”	No	175	SY7	**UFLK2148**
		14”	No	150	SY7	**UFLK2156**
		16”	No	150	SY9	**UFLK2150**
		18”	No	150	SY10	**UFLK2152**
		20”	No	150	SY10	**UFLK2154**
	3-way	2”	No	175	GM	**UFLK5100**
					SY1	**UFLK5130**
					SY2	**UFLK5132**
			Yes	175	2*AF	**UFLK5102**
					GK	**UFLK5100**
		2½”	No	175	2*GM	**UFLK5102**
					SY2	**UFLK5132**
			Yes	175	2*GK	**UFLK5102**
		3”	No	175	2*GM	**UFLK5102**
					SY2	**UFLK5132**
			Yes	175	2*GK	**UFLK5102**
		4”	No	175	SY3	**UFLK5134**
		5”	No	175	SY4	**UFLK5136**
		6”	No	175	SY4	**UFLK5136**
		8”	No	175	SY5	**UFLK5138**
		10”	No	175	SY6	**UFLK5140**
		12”	No	175	SY7	**UFLK5142**
		14”	No	150	SY8	**UFLK5144**
		16”	No	150	SY9	**UFLK5146**
		18”	No	150	SY11	**UFLK5148**
		20”	No	150	SY12	**UFLK5150**

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

Keystone

360/362 and 370/372 Series Butterfly Valves, K-LOK

Linkage/Actuator Selection Guide

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**
		3"	No	285	2*GM	**UFLK2408**
					SY2	**UFLK2444**
			Yes	285	2*GK	**UFLK2408**
		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**
			Yes	285	2*AF	**UFLK5402**
					GK	**UFLK5400**
		3"	No	285	2*GM	**UFLK5408**
					SY2	**UFLK5442**
			Yes	285	2*GK	**UFLK5408**
		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.

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.

Keystone

Figure 222/221 Series Butterfly Valves

Linkage/Actuator Selection Guide

BELIMO

2 YEAR WARRANTY

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**
			Yes	200	2*AF	**UFLK2202**
					GK	**UFLK2200**
		2½”	No	200	GM	**UFLK2200**
					SY1	**UFLK2224**
					SY2	**UFLK2226**
			Yes	200	2*AF	**UFLK2202**
					GK	**UFLK2200**
		3”	No	200	GM	**UFLK2200**
					SY1	**UFLK2224**
					SY2	**UFLK2226**
			Yes	200	2*AF	**UFLK2202**
					GK	**UFLK2200**
		4”	No	200	2*GM	**UFLK2208**
					SY2	**UFLK2228**
			Yes	200	2*GK	**UFLK2208**
		5”	No	200	SY3	**UFLK2230**
		6”	No	200	SY4	**UFLK2232**
		8”	No	200	SY4	**UFLK2234**
		10”	No	200	SY5	**UFLK2236**
		12”	No	200	SY7	**UFLK2238**
	3-way	2”	No	200	GM	**UFLK5200**
					SY2	**UFLK5224**
			Yes	200	2*AF	**UFLK5202**
					GK	**UFLK5200**
		2½”	No	200	GM	**UFLK5200**
					SY2	**UFLK5224**
			Yes	200	2*AF	**UFLK5202**
					GK	**UFLK5200**
		3”	No	200	2*GM	**UFLK5202**
					SY2	**UFLK5224**
			Yes	200	2*GK	**UFLK5202**
		4”	No	200	SY3	**UFLK5226**
		5”	No	200	SY4	**UFLK5228**
		6”	No	200	SY4	**UFLK5228**
		8”	No	200	SY5	**UFLK5230**
		10”	No	200	SY7	**UFLK5232**
		12”	No	200	SY8	**UFLK5234**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
200 WOG Series Butterfly Valves	2-way	2”	No	200	AM	**UFLK3800**
					SY1	**UFLK3824**
					SY2	**UFLK3826**
			Yes	200	AF	**UFLK3800**
		2½”	No	200	AM	**UFLK3800**
					SY1	**UFLK3824**
					SY2	**UFLK3826**
			Yes	200	2*AF	**UFLK3802**
		3”	No	200	GM	**UFLK3800**
					SY1	**UFLK3824**
					SY2	**UFLK3826**
			Yes	200	2*AF	**UFLK3802**
					GK	**UFLK3800**
		4”	No	200	2*GM	**UFLK3808**
					SY2	**UFLK3828**
			Yes	200	2*GK	**UFLK3808**
		5”	No	200	2*GM	**UFLK3814**
					SY2	**UFLK3830**
			Yes	200	2*GK	**UFLK3814**
		6”	No	200	SY4	**UFLK3832**
		8”	No	200	SY4	**UFLK3834**
		10”	No	200	SY4	**UFLK3836**
		12”	No	200	SY6	**UFLK3838**
	3-way	2”	No	200	AM	**UFLK6800**
					SY1	**UFLK6824**
					SY2	**UFLK6826**
			Yes	200	2*AF	**UFLK6802**
		2½”	No	200	GM	**UFLK6800**
					SY2	**UFLK6826**
			Yes	200	GK	**UFLK6800**
		3”	No	200	GM	**UFLK6800**
					SY2	**UFLK6826**
			Yes	200	GK	**UFLK6800**
		4”	No	200	2*GM	**UFLK6808**
					SY3	**UFLK6828**
			Yes	200	2*GK	**UFLK6808**
		5”	No	200	SY3	**UFLK6830**
		6”	No	200	SY4	**UFLK6832**
		8”	No	200	SY4	**UFLK6834**
		10”	No	200	SY6	**UFLK6836**
		12”	No	200	SY7	**UFLK6838**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
CL Series Butterfly Valves	2-way	2”	No	150	AM	**UFLK2600**
					SY1	**UFLK2624**
					SY2	**UFLK2628**
			Yes	150	AF	**UFLK2600**
		2½”	No	150	AM	**UFLK2600**
					SY1	**UFLK2624**
					SY2	**UFLK2628**
			Yes	150	AF	**UFLK2600**
		3”	No	150	GM	**UFLK2600**
					SY1	**UFLK2624**
					SY2	**UFLK2628**
			Yes	150	2*AF	**UFLK2602**
					GK	**UFLK2600**
		4”	No	150	2*GM	**UFLK2608**
					SY2	**UFLK2630**
			Yes	150	2*GK	**UFLK2608**
		5”	No	150	2*GM	**UFLK2608**
					SY2	**UFLK2630**
			Yes	150	2*GK	**UFLK2608**
		6”	No	150	SY3	**UFLK2632**
		8”	No	150	SY4	**UFLK2634**
		10”	No	150	SY4	**UFLK2636**
		12”	No	150	SY5	**UFLK2636**
	3-way	2”	No	150	AM	**UFLK5600**
					SY1	**UFLK5622**
					SY2	**UFLK5624**
			Yes	150	2*AF	**UFLK5602**
		2½”	No	150	GM	**UFLK5600**
					SY1	**UFLK5622**
					SY2	**UFLK5624**
			Yes	150	2*AF	**UFLK5602**
					GK	**UFLK5600**
		3”	No	150	GM	**UFLK5600**
					SY2	**UFLK5624**
			Yes	150	2*AF	**UFLK5602**
					GK	**UFLK5600**
		4”	No	150	2*GM	**UFLK5608**
					SY2	**UFLK5626**
			Yes	150	2*GK	**UFLK5608**
		5”	No	150	SY3	**UFLK5626**
		6”	No	150	SY4	**UFLK5628**
		8”	No	150	SY4	**UFLK5630**
		10”	No	150	SY6	**UFLK5632**
		12”	No	150	SY7	**UFLK5634**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
ML Series Butterfly Valves	2-way	2”	No	150	AM	**UFLK2700**
					SY1	**UFLK2732**
					SY2	**UFLK2734**
			Yes	150	AF	**UFLK2700**
		2½”	No	150	AM	**UFLK2700**
					SY1	**UFLK2732**
					SY2	**UFLK2734**
			Yes	150	AF	**UFLK2700**
		3”	No	150	GM	**UFLK2700**
					SY1	**UFLK2732**
					SY2	**UFLK2734**
			Yes	150	2*AF	**UFLK2702**
					GK	**UFLK2700**
		4”	No	150	2*GM	**UFLK2708**
					SY2	**UFLK2736**
			Yes	150	2*GK	**UFLK2708**
		5”	No	150	2*GM	**UFLK2708**
					SY2	**UFLK2736**
			Yes	150	2*GK	**UFLK2708**
		6”	No	150	SY3	**UFLK2738**
		8”	No	150	SY4	**UFLK2740**
		10”	No	150	SY4	**UFLK2742**
		12”	No	150	SY5	**UFLK2742**
		14”	No	150	SY7	**UFLK2744**
		16”	No	150	SY7	**UFLK2744**
		18”	No	150	SY8	**UFLK2746**
		20”	No	150	SY9	**UFLK2748**
		24”	No	150	SY10	**UFLK2750**
	3-way	2”	No	150	AM	**UFLK5700**
					SY1	**UFLK5732**
					SY2	**UFLK5734**
			Yes	150	2*AF	**UFLK5702**
		2½”	No	150	AM	**UFLK5700**
					SY1	**UFLK5732**
					SY2	**UFLK5734**
			Yes	150	2*AF	**UFLK5702**
		3”	No	150	GM	**UFLK5700**
					SY2	**UFLK5734**
			Yes	150	2*AF	**UFLK5702**
					GK	**UFLK5700**
		4”	No	150	2*GM	**UFLK5708**
					SY2	**UFLK5736**
			Yes	150	2*GK	**UFLK5708**
		5”	No	150	SY3	**UFLK5736**
		6”	No	150	SY4	**UFLK5738**
		8”	No	150	SY4	**UFLK5740**
		10”	No	150	SY6	**UFLK5742**
		12”	No	150	SY7	**UFLK5744**
		14”	No	150	SY8	**UFLK5746**
		16”	No	150	SY9	**UFLK5748**
		18”	No	150	SY10	**UFLK5750**
		20”	No	150	SY11	**UFLK5750**

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

Mueller

65/66 Series Butterfly Valves

Linkage/Actuator Selection Guide

BELIMO

2 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
65/66 Series Butterfly Valves	2-way	2”	No	150	GM	**UFLK2800**
					SY1	**UFLK2834**
					SY2	**UFLK2836**
			Yes	150	2*AF	**UFLK2802**
					GK	**UFLK2800**
		2½”	No	150	GM	**UFLK2800**
					SY1	**UFLK2834**
					SY2	**UFLK2836**
			Yes	150	GK	**UFLK2800**
		3”	No	150	2*GM	**UFLK2802**
					SY2	**UFLK2836**
			Yes	150	2*GK	**UFLK2802**
		4”	No	150	2*GM	**UFLK2808**
					SY2	**UFLK2838**
			Yes	150	2*GK	**UFLK2808**
		5”	No	150	SY3	**UFLK2840**
		6”	No	150	SY4	**UFLK2842**
		8”	No	150	SY4	**UFLK2844**
		10”	No	150	SY5	**UFLK2846**
		12”	No	150	SY7	**UFLK2848**
		14”	No	150	SY7	**UFLK2850**
		24”	No	150	SY12	**UFLK2856**
	3-way	2”	No	150	2*GM	**UFLK5800**
					SY2	**UFLK5834**
			Yes	150	2*AF	**UFLK5802**
		2½”	No	150	GM	**UFLK5800**
					SY2	**UFLK5834**
			Yes	150	GK	**UFLK5800**
		3”	No	150	2*GM	**UFLK5802**
					SY2	**UFLK5834**
			Yes	150	2*GK	**UFLK5802**
		4”	No	150	SY3	**UFLK5836**
		5”	No	150	SY4	**UFLK5838**
		6”	No	150	SY4	**UFLK5838**
		8”	No	150	SY5	**UFLK5840**
		10”	No	150	SY7	**UFLK5842**
		12”	No	150	SY8	**UFLK5844**
		14”	No	150	SY9	**UFLK5846**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
LD1/WD1 Series Butterfly Valves	2-way	14"	No	150	SY7	**UFLK2960**
		16"	No	150	SY8	**UFLK2968**
		18"	No	150	SY8	**UFLK2962**
		20"	No	150	SY9	**UFLK2964**
		24"	No	150	SY11	**UFLK2966**
	3-way	14"	No	150	SY8	**UFLK5956**
		16"	No	150	SY9	**UFLK5958**
		18"	No	150	SY10	**UFLK5960**
		20"	No	150	SY12	**UFLK5962**
LD2/WD2, LD3 Series Butterfly Valves	2-way	2"	No	150	GM	**UFLK2900**
					SY1	**UFLK2942**
					SY2	**UFLK2946**
			Yes	150	2*AF	**UFLK2902**
					GK	**UFLK2900**
		2½"	No	150	GM	**UFLK2908**
					SY1	**UFLK2944**
					SY2	**UFLK2948**
			Yes	150	2*AF	**UFLK2910**
					GK	**UFLK2908**
		3"	No	150	2*GM	**UFLK2910**
					SY2	**UFLK2948**
			Yes	150	2*GK	**UFLK2910**
		4"	No	150	2*GM	**UFLK2916**
					SY2	**UFLK2950**
			Yes	150	2*GK	**UFLK2916**
		5"	No	150	SY3	**UFLK2952**
		6"	No	150	SY3	**UFLK2952**
		8"	No	150	SY4	**UFLK2954**
		10"	No	150	SY4	**UFLK2956**
		12"	No	150	SY6	**UFLK2958**
	3-way	2"	No	150	GM	**UFLK5900**
					SY2	**UFLK5942**
			Yes	150	2*AF	**UFLK5902**
					GK	**UFLK5900**
		2½"	No	150	2*GM	**UFLK5910**
					SY2	**UFLK5944**
			Yes	150	2*GK	**UFLK5910**
		3"	No	150	2*GM	**UFLK5910**
					SY2	**UFLK5944**
			Yes	150	2*GK	**UFLK5910**
		4"	No	150	SY3	**UFLK5946**
		5"	No	150	SY4	**UFLK5948**
		6"	No	150	SY4	**UFLK5948**
		8"	No	150	SY6	**UFLK5950**
		10"	No	150	SY6	**UFLK5952**
		12"	No	150	SY8	**UFLK5954**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
27 Series Butterfly Valves (Pinned Shaft Type)	2-way	2”	No	150	GM	**UFLK3100**
					SY1	**UFLK3122**
					SY2	**UFLK3124**
			Yes	150	2*AF	**UFLK3102**
					GK	**UFLK3100**
		2½”	No	150	2*GM	**UFLK3102**
					SY2	**UFLK3124**
			Yes	150	2*GK	**UFLK3102**
		3”	No	150	2*GM	**UFLK3102**
					SY2	**UFLK3124**
			Yes	150	2*GK	**UFLK3102**
		4”	No	150	2*GM	**UFLK3108**
					SY2	**UFLK3126**
			Yes	150	2*GK	**UFLK3108**
		5”	No	150	SY3	**UFLK3128**
		6”	No	150	SY3	**UFLK3130**
		8”	No	150	SY4	**UFLK3132**
		10”	No	150	SY4	**UFLK3132**
		12”	No	150	SY6	**UFLK3132**
	3-way	2”	No	150	GM	**UFLK6100**
					SY2	**UFLK6122**
			Yes	150	2*AF	**UFLK6102**
					GK	**UFLK6100**
		2½”	No	150	2*GM	**UFLK6102**
					SY2	**UFLK6122**
			Yes	150	2*GK	**UFLK6102**
		3”	No	150	2*GM	**UFLK6102**
					SY2	**UFLK6122**
			Yes	150	2*GK	**UFLK6102**
		4”	No	150	SY3	**UFLK6124**
		5”	No	150	SY4	**UFLK6126**
		6”	No	150	SY4	**UFLK6128**
		8”	No	150	SY4	**UFLK6130**
		10”	No	150	SY6	**UFLK6132**
		12”	No	150	SY7	**UFLK6134**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
42/44 Series Butterfly Valves	2-way	2”	No	150	AM	**UFLK3200**
					SY1	**UFLK3246**
					SY2	**UFLK3248**
			Yes	150	2*AF	**UFLK3202**
		2½”	No	150	GM	**UFLK3200**
					SY1	**UFLK3246**
					SY2	**UFLK3248**
			Yes	150	2*AF	**UFLK3202**
					GK	**UFLK3200**
		3”	No	150	GM	**UFLK3208**
					SY2	**UFLK3250**
			Yes	150	2*AF	**UFLK3210**
					GK	**UFLK3208**
		4”	No	150	2*GM	**UFLK3216**
					SY2	**UFLK3252**
			Yes	150	2*GK	**UFLK3216**
		5”	No	150	SY3	**UFLK3254**
		6”	No	150	SY4	**UFLK3256**
		8”	No	150	SY4	**UFLK3258**
		10”	No	150	SY6	**UFLK3260**
		12”	No	150	SY7	**UFLK3262**
		14”	No	150	SY7	**UFLK3264**
		16”	No	150	SY8	**UFLK3266**
		18”	No	150	SY9	**UFLK3268**
		20”	No	150	SY10	**UFLK3270**
	3-way	2”	No	150	GM	**UFLK6200**
					SY1	**UFLK6246**
					SY2	**UFLK6248**
			Yes	150	2*AF	**UFLK6202**
					GK	**UFLK6200**
		2½”	No	150	GM	**UFLK6200**
					SY2	**UFLK6248**
			Yes	150	2*AF	**UFLK6202**
					GK	**UFLK6200**
		3”	No	150	2*GM	**UFLK6210**
					SY2	**UFLK6250**
			Yes	150	2*GK	**UFLK6210**
		4”	No	150	SY3	**UFLK6252**
		5”	No	150	SY4	**UFLK6254**
		6”	No	150	SY4	**UFLK6256**
		8”	No	150	SY6	**UFLK6258**
		10”	No	150	SY7	**UFLK6260**
		12”	No	150	SY9	**UFLK6262**
		14”	No	150	SY9	**UFLK6264**
		16”	No	150	SY10	**UFLK6266**
		18”	No	150	SY12	**UFLK6268**

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

Victaulic

Masterseal (New Style, Extended Neck) Series Butterfly Valves

Linkage/Actuator Selection Guide

BELIMO

2 YEAR WARRANTY

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Masterseal (New Style) Series Butterfly Valves	2-way	2”	No	200	AM	**UFLK8172**
					SY1	**UFLK8178**
					SY2	**UFLK8180**
			Yes	200	2*AF	**UFLK8174**
		2½”	No	200	GM	**UFLK8172**
					SY1	**UFLK8178**
					SY2	**UFLK8180**
			Yes	200	2*AF	**UFLK8174**
					GK	**UFLK8172**
		3”	No	200	GM	**UFLK8172**
					SY2	**UFLK8180**
			Yes	200	GK	**UFLK8172**
		4”	No	200	2*GM	**UFLK8176**
					SY2	**UFLK8182**
			Yes	200	2*GK	**UFLK8176**
		5”	No	200	SY3	**UFLK8184**
		6”	No	200	SY3	**UFLK8184**
		8”	No	200	SY4	**UFLK8188**
		10”	No	200	SY5	**UFLK8190**
		12”	No	200	SY6	**UFLK8190**
	3-way	2”	No	200	GM	**UFLK7400**
					SY1	**UFLK7404**
					SY2	**UFLK7406**
			Yes	200	2*AF	**UFLK7402**
					GK	**UFLK7400**
		2½”	No	200	2*GM	**UFLK7402**
					SY2	**UFLK7406**
			Yes	200	2*GK	**UFLK7402**
		3”	No	200	SY2	**UFLK7406**
		4”	No	200	SY2	**UFLK7408**
		5”	No	200	SY3	**UFLK7410**
		8”	No	200	SY4	**UFLK7414**
		12”	No	200	SY7	**UFLK7418**

All close-off pressures listed are approximate and based on valve condition and application.
*50 psi close-off kits available by request. Contact Belimo technical support for more information.

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
Vic300 (Old Style) Series Butterfly Valves	2-way	2”	No	300	AM	**UFLK3300**
					SY1	**UFLK3338**
					SY2	**UFLK3342**
			Yes	300	AF	**UFLK3300**
		2½”	No	300	AM	**UFLK3308**
					SY1	**UFLK3340**
					SY2	**UFLK3344**
			Yes	300	AF	**UFLK3308**
		3”	No	300	GM	**UFLK3308**
					SY1	**UFLK3340**
					SY2	**UFLK3344**
			Yes	300	2*AF	**UFLK3310**
					GK	**UFLK3308**
		4”	No	300	2*GM	**UFLK3316**
					SY2	**UFLK3346**
			Yes	300	2*GK	**UFLK3316**
		5”	No	300	SY2	**UFLK3348**
		6”	No	300	SY3	**UFLK3350**
		8”	No	300	SY4	**UFLK3352**
		10”	No	300	SY4	**UFLK3354**
		12”	No	300	SY4	**UFLK3356**
	3-way	2”	No	300	GM	**UFLK6300**
					SY1	**UFLK6336**
					SY2	**UFLK6340**
			Yes	300	AF	**UFLK6300**
					GK	**UFLK6300**
		2½”	No	300	GM	**UFLK6308**
					SY1	**UFLK6338**
					SY2	**UFLK6342**
			Yes	300	2*AF	**UFLK6310**
					GK	**UFLK6308**
		3”	No	300	SY2	**UFLK6342**
		4”	No	300	SY3	**UFLK6344**
		5”	No	300	SY3	**UFLK6346**
		6”	No	300	SY4	**UFLK6348**
		8”	No	300	SY4	**UFLK6350**
		10”	No	300	SY5	**UFLK6352**
		12”	No	300	SY6	**UFLK6354**

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

Valve Body Model	Valve Configuration	Size	Failsafe	Close-Off psi	Belimo Actuator Series (Sold Separately)	Belimo Linkage
DBF Series Butterfly Valves	2-way	2”	No	150	AM	**UFLK3400**
					SY1	**UFLK3426**
					SY2	**UFLK3428**
			Yes	150	2*AF	**UFLK3402**
		2½”	No	150	AM	**UFLK3400**
					SY1	**UFLK3426**
					SY2	**UFLK3428**
			Yes	150	2*AF	**UFLK3402**
		3”	No	150	GM	**UFLK3400**
					SY1	**UFLK3426**
					SY2	**UFLK3428**
			Yes	150	2*AF	**UFLK3402**
					GK	**UFLK3400**
		4”	No	150	2*GM	**UFLK3408**
					SY2	**UFLK3430**
			Yes	150	2*GK	**UFLK3408**
		5”	No	150	SY2	**UFLK3432**
		6”	No	150	SY3	**UFLK3432**
		8”	No	150	SY4	**UFLK3434**
		10”	No	150	SY4	**UFLK3436**
		14”	No	150	SY6	**UFLK3438**
	3-way	2”	No	150	GM	**UFLK6400**
					SY1	**UFLK6426**
					SY2	**UFLK6428**
			Yes	150	2*AF	**UFLK6402**
					GK	**UFLK6400**
		2½”	No	150	GM	**UFLK6400**
					SY1	**UFLK6426**
					SY2	**UFLK6428**
			Yes	150	2*AF	**UFLK6402**
					GK	**UFLK6400**
		3”	No	150	GM	**UFLK6400**
					SY2	**UFLK6428**
			Yes	150	2*AF	**UFLK6402**
					GK	**UFLK6400**
		4”	No	150	2*GM	**UFLK6408**
					SY2	**UFLK6430**
			Yes	150	2*GK	**UFLK6408**
		5”	No	150	SY3	**UFLK6432**
		6”	No	150	SY4	**UFLK6434**
		8”	No	150	SY4	**UFLK6436**
		10”	No	150	SY6	**UFLK6438**
		12”	No	150	SY7	**UFLK6440**
		14”	No	150	SY8	**UFLK6442**

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

Instructions for Completing this Form

Please keep in mind that all dimensions should be taken with ALL original actuation and hardware components removed from the valve body.

Examples of dimensions A & B **(Dim A and Dim B)** relate to the TOP mounting holes on the butterfly valve body. These holes are usually arranged on the body in either an "X" pattern (**MOUNT STYLE 1**), or a cross pattern (**MOUNT STYLE 2**). This information is entered on the UFSP Series Butterfly Valve Retrofit Form in the **MOUNT STYLE** section. The length of the valve stem sticking out of the top of the valve body is recorded under **Dim C**. The TOP mounting holes are usually drilled through the top flange, but sometimes are threaded. Enter this information on the form next to the mount style information previously recorded.

Next is the valve stem data. The five styles of valve stems cover 98% of the butterfly valves ever produced. Examine the valve being retrofitted to establish which shaft style matches the diagrams above. Use caution when recording these dimensions. Careless use of calipers will result in a sloppy and possibly dysfunctional linkage system. **Dim D** refers to the valve stem diameter and should be measured at several points up and down as well as around the stem itself. **Dim E** refers to the length of the drive surface available, whether it be a key, flatted surface, or the distance a drive hole is from the top of the stem. There are two types of keys (Keyway-Shaft Style 4 and Woodruff Key-Shaft Style 5). Please select the key size as noted in the column "For Shaft Style 4 & 5". **Dim F** refers to the width of the drive surface. This is the most critical dimension for correct linkage operation. Please measure accordingly.

In addition, we require information about the environment and process in which this linkage system will be utilized.

The form must be completed in its entirety to guarantee the complete, perfect fit of your retrofit system. Keep in mind that retrofit kits are designed with close-tolerance components which afford the most efficient linkage system for the facility. Measurements rounded to the nearest ⅛ or 1/16 inch will not perform as well (sometimes not at all) as a kit designed around careful measurements using proper equipment. Our designs are typically +.005" tolerance.

Required Tools - calipers and retrofit form.

Disclaimer

While we will do our best to provide a linkage system designed around your specifications and measurements, we cannot be held responsible for linkages which do not fit as a result of incorrect data supplied to Belimo. We will be happy to re-work components which do not fit properly for a nominal fee.

Actuation, weather shields and linkages cannot be pre-assembled at the Belimo factory. The linkages are designed to be attached onto the valve body first, then optional weather shields, and finally actuation products in the field.

Close-off pressures are calculated using actuator torque, valve stroke, and valve area. Other factors may affect the rated Close-off pressures, including flow rates, system maintenance schedules, chemicals used in the shot feeder process, vicinity to pumps, condition of valve stem seals, and assembly of linkage material in the field.

Valves that are being considered for retrofit of actuation should be analyzed for their life expectancy before the retrofit has taken place. Valves that leak through stem seals or casings will continue to leak with the new linkage system in place, maybe even more so. Rebuilding the packing on these valves may be more costly than replacing the valves themselves. In some cases, modifications may be necessary for proper operation of the linkage system. Belimo assumes NO responsibility for these modifications and are at the discretion of the user as to whether the modifications can be made.

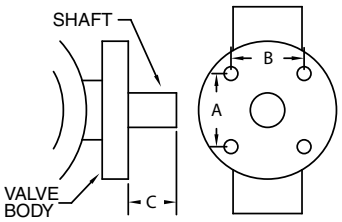
NOTE: Although it is possible that the valve being retrofitted has a Close-off pressure rating considerably higher than the actual system pressure, actuation products have been selected to meet the full rating of the valve body. This will assure operation of the valve when considering long term exposure to pumping systems. Belimo does not manufacture or document retrofit packages utilizing actuation products designed around anything less than the full rating of the valve body.

Custom Butterfly Valve Retrofit Solution Form

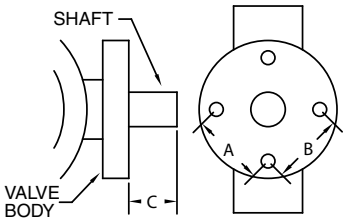
UFSP Series

BELIMO

MOUNT STYLE 1



MOUNT STYLE 2



MOUNT STYLE DIMENSIONS

MOUNT STYLE ☐

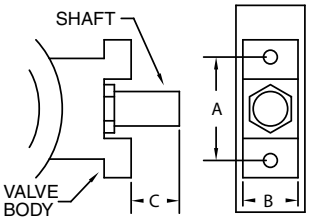
DIM A: ☐

DIM B: ☐

DIM C: ☐

DIM. A & B MEASURED FROM CENTER OF HOLE

MOUNT STYLE 3



MOUNT STYLE 4

SKETCH YOUR MOUNT STYLE
USING MOUNT STYLE EXAMPLES.

MOUNTING HOLES:

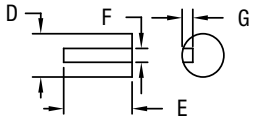
DRILLED

DIA Ø: ☐

THREAD TAPPED

SPEC. ☐

SHAFT STYLE 4



KEYWAY

KEY SIZE

.125" ☐

.1875" ☐

.250" ☐

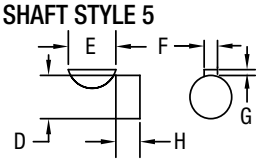
.3125" ☐

.375" ☐

.4375" ☐

.500" ☐

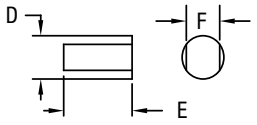
SHAFT STYLE 5



WOODRUFF KEY

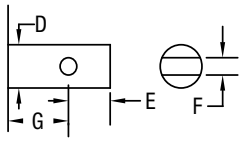
CHECK ONE

SHAFT STYLE 6



DOUBLE D

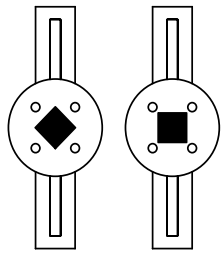
SHAFT STYLE 8



PINNED

SHAFT STYLE 9

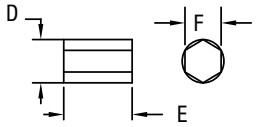
VALVE CLOSED



☐ ☐

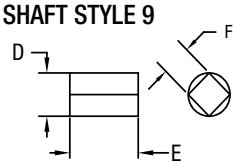
CHECK ONE

SHAFT STYLE 7



HEX

SHAFT STYLE 9



SQUARE

SHAFT STYLE ☐ DIM D: ☐ DIM E: ☐ DIM F: ☐ DIM G: ☐ DIM H: ☐

ACTUATOR

EXISTING ACTUATOR MODEL: _____ CONTROL TYPE: ☐ ON/OFF ☐ FLOATING POINT ☐ VDC Range:_____ ☐ PWM Range:_____

FAIL SAFE: ☐ YES ☐ NO

FAIL POSITION: ☐ NO ☐ NC ☐ INDOOR ☐ OUTDOOR

VOLTAGE_____

COMPANY: _____ VALVE MANUFACTURE: _____ 2 WAY/3 WAY: _____

JOB NAME: _____ VALVE SERIES: _____ VALVE SIZE: _____

PO#: _____ VALVE MODEL: _____ MEDIA TEMP: _____

PHONE: _____ VALVE TAG/LOCATION: _____ MEDIA TYPE: _____

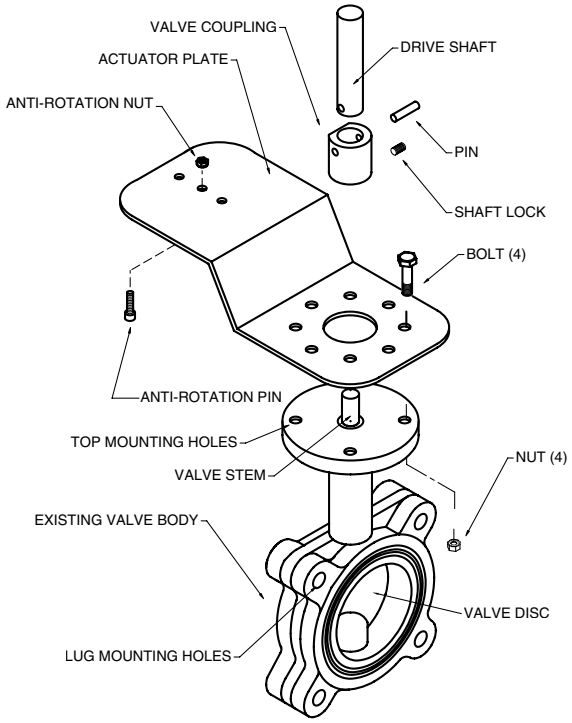
EMAIL: _____ QUANTITY: _____ SYSTEM PRESSURE: _____

NOTE: THIS INFORMATION WILL BE UTILIZED IN THE FABRICATION OF A CUSTOM LINKAGE SYSTEM FOR YOUR VALVE REQUIREMENT; THEREFORE, IT IS ESSENTIAL THAT THE ABOVE DIMENSIONS BE FURNISHED WITH READINGS TAKEN TO THE NEAREST .001". ANY ERRONEOUS DIMENSIONS FURNISHED WHICH RESULT IN IMPROPER FIT OF THIS LINKAGE SYSTEM ARE NOT THE RESPONSIBILITY OF BELIMO AIRCONTROLS. ANY REWORK REQUIRED WILL RESULT IN AN EXTRA CHARGE.

CUSTOM KITS ARE DESIGNED TO YOUR UNIQUE SPECIFICATIONS AND ARE NOT RETURNABLE.

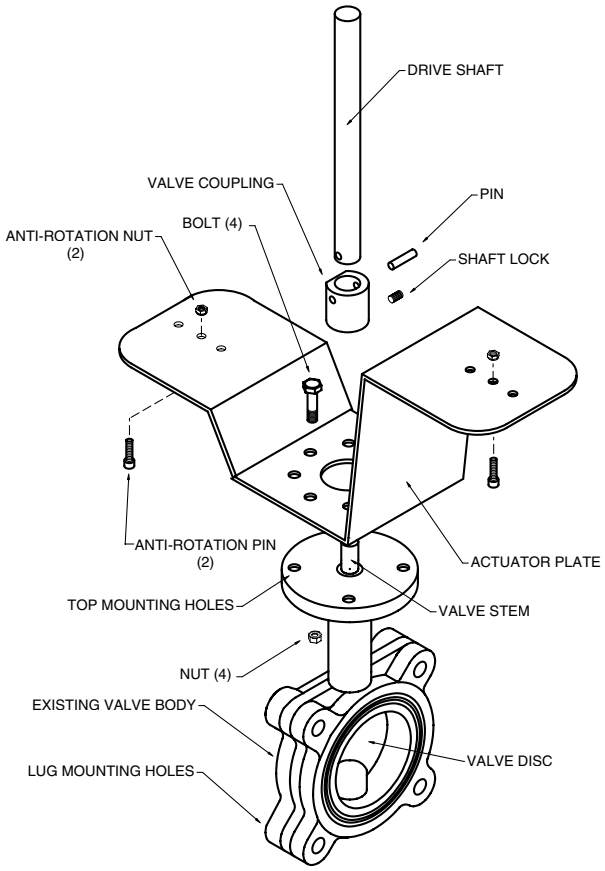
COMPANY CONTACT/DIMENSIONS PROVIDED BY: _____ DATE: _____

2-way Single Actuator
Generic – Must complete BFV Retrofit Form



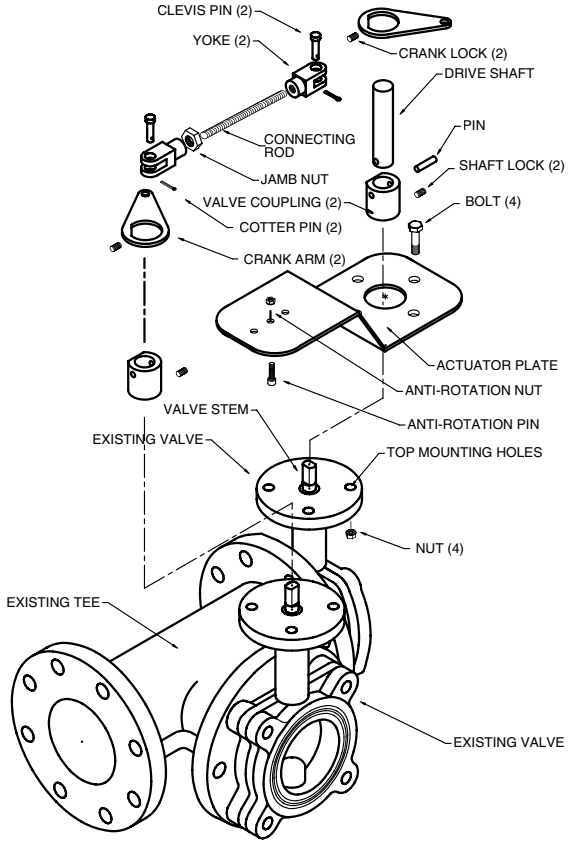
UFSP0000

2-way Dual Actuator
Generic – Must complete BFV Retrofit Form



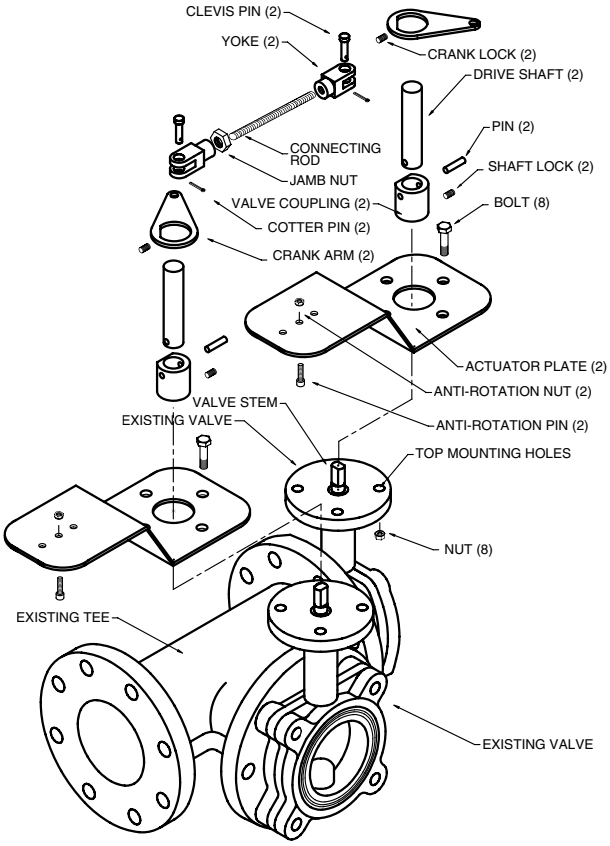
UFSP0008

3-way Single Actuator
Generic – Must complete BFV Retrofit Form



UFSP0002

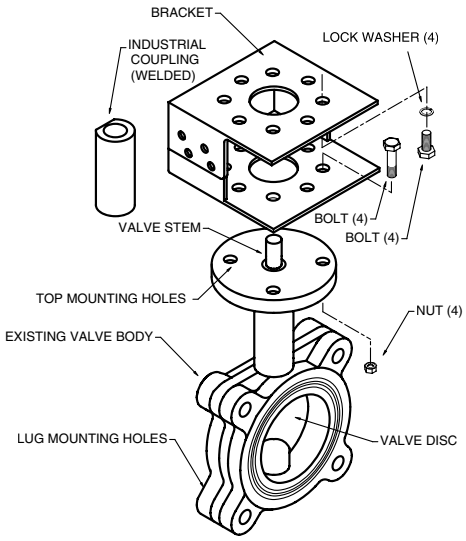
3-way Dual Actuator
Generic – Must complete BFV Retrofit Form



UFSP0010

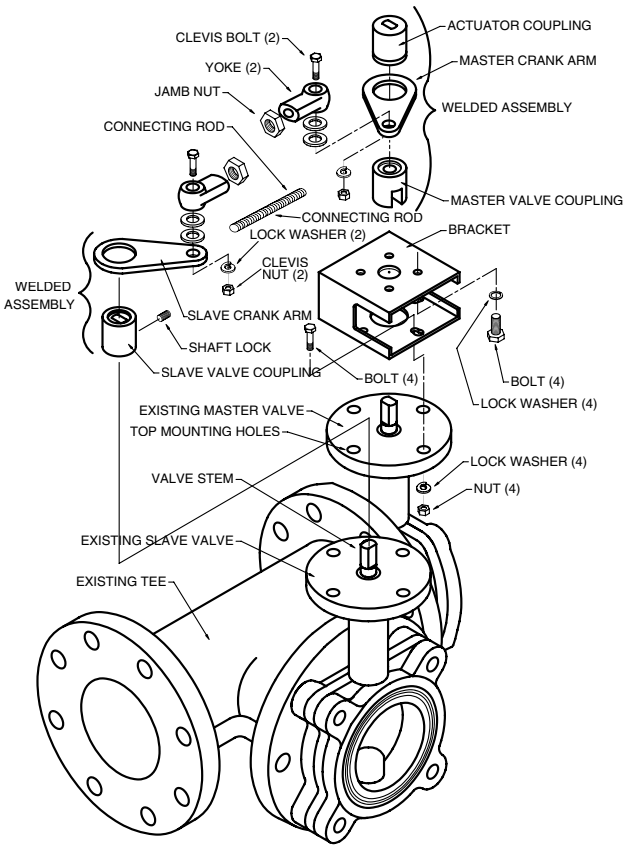
NOTE: 3-way bracket configuration shown is only one of many possible arrangements.

Industrial Electric 2-way
Generic – Must complete BFV Retrofit Form



UFSP0020	**SY1 - SY8**
UFSP0022	**SY9 - SY12**

Industrial Electric 3-way
Generic – Must complete BFV Retrofit Form

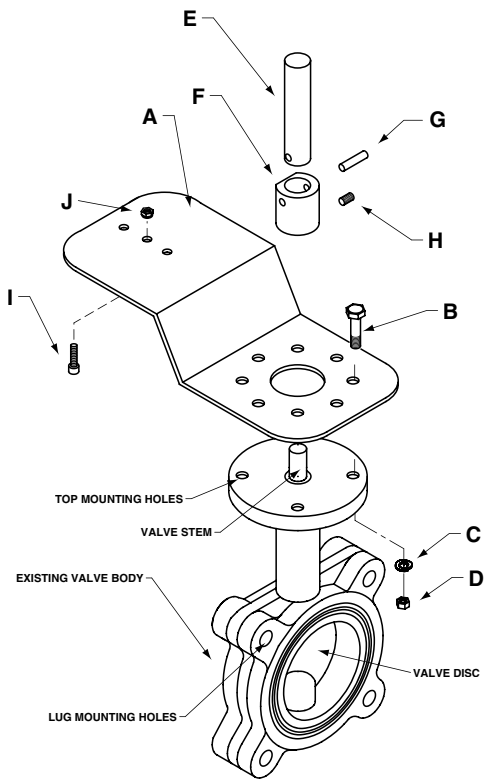


UFSP0024	**SY1 - SY8**
UFSP0026	**SY9 - SY12**

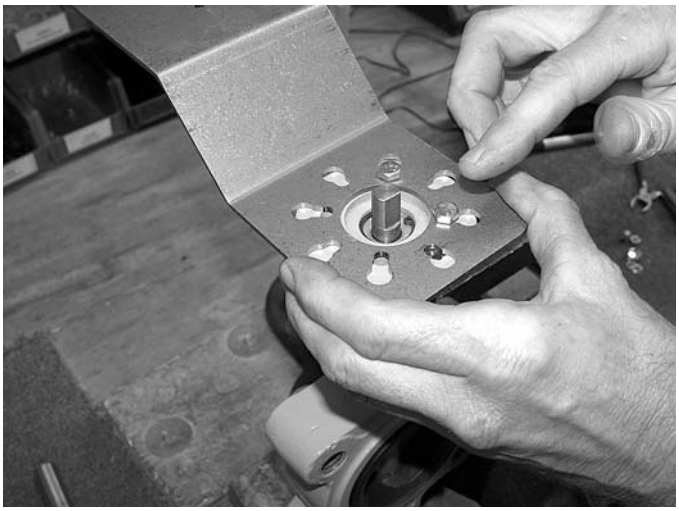
NOTE: 3-way bracket configuration shown is only one of many possible arrangements.

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.



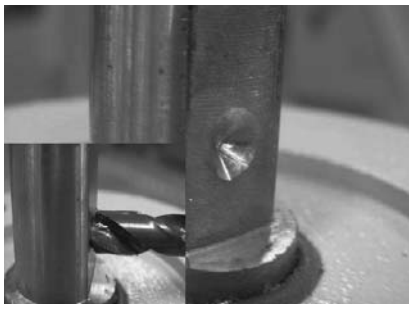
Please refer to the above exploded view above when following the assembly procedure, to better identify which parts are being addressed in each step.



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.

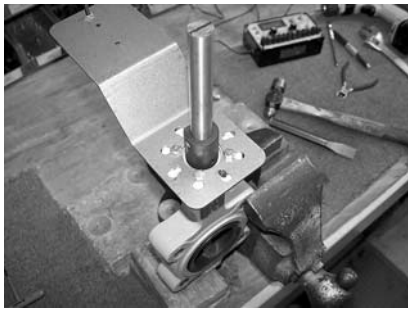
Step 2) Once all four bolts, lock washers and nuts have been assembled onto the valve body, tighten securely.

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.



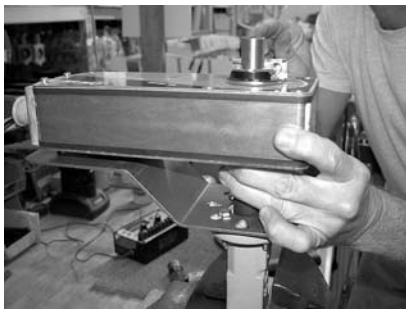
Note: Belimo recommends drilling a pilot hole into the shaft. This will ensure the set screw **(H)** sits flat. Failure to do this may result in the coupler **(F)** slipping over time.

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.



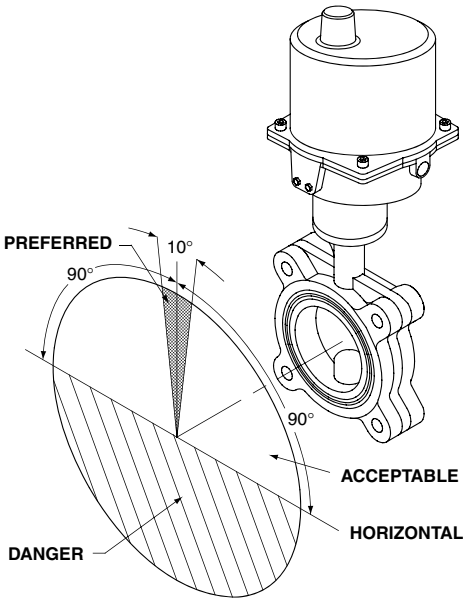
Step 7) Make sure the bottom of the actuator is PARALLEL to the mounting plate **(A)** when tightening the actuator clamp nuts. If this is not checked, it is possible that binding could cause erratic movement of the valve disc due to reduced torque transmission to the valve shaft.

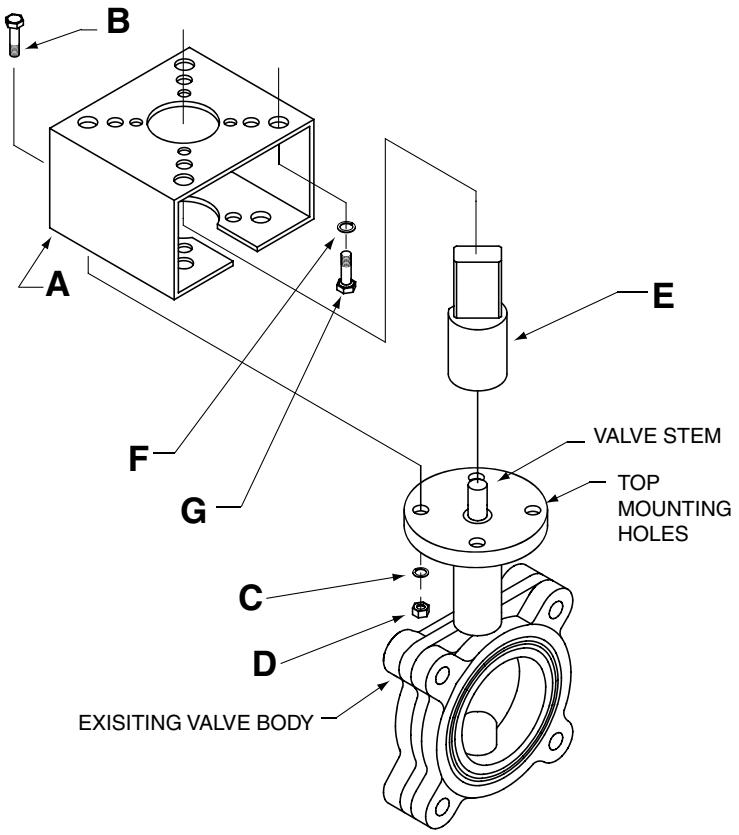
Step 8) For AF series actuators, release the pre-load on the spring before tightening the clamp nuts, as the valve disc has already been positioned at the fully closed position. For fail open requirements, pre-wind the AF spring to full open position before tightening the clamp nuts. When released, the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

Assembly Procedure for SY…Retrofit Solution

Retrofit Requirement:

The initial step is to determine if your application can accept a retrofit solution. As shown below (Fig. 1), the valve stem must not be located below the horizontal plane. If this condition exists, the SY actuator could not be used in this situation. A Belimo technical support person is available to help determine what solution best fits your application. A typical solution is shown in Fig. 2.

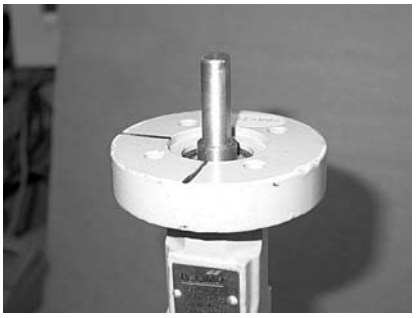




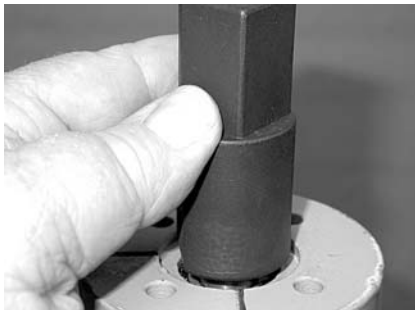
Assembly Procedure (Mechanical)

Step 1) The valve must be stripped down to its basic form. Remove all other linkage components before starting the assembly sequence below. The linkage components have been designed to attach to the existing valve flange rather than to any existing hardware.

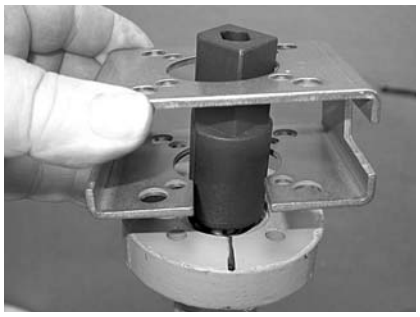
Step 2) The valve has either flats, a key slot, holes or a mark indicating the position of the disc with respect to the shaft. Usually, the flats, keys, holes and marks are PARALLEL to the valve disc. The photo at left shows the flatted shaft in the CLOSED position.



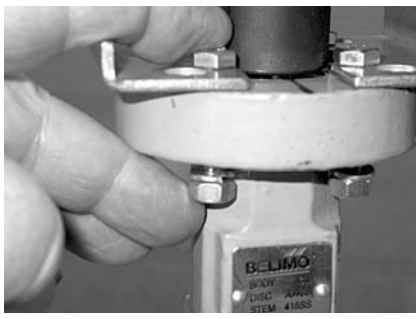
Step 3) The valve MUST be in the OPEN position before starting the retrofit process. The photo at the left shows the shaft flats are PARALLEL to the piping, but the disc is PARALLEL to the flats, thereby indicating the valve disc is in the fully OPEN position. You MUST verify the disc is fully OPEN before proceeding.



Step 4) Place the coupling (E) over the valve stem. It can be assembled in two different positions 180 degrees apart, but either position is OK. It would be helpful at this time to make a mark on the coupling and on the valve body so you can easily reference the position of the valve after the actuator is attached.



Step 5) Install the actuator mounting bracket (A) onto the valve top works flange as shown.

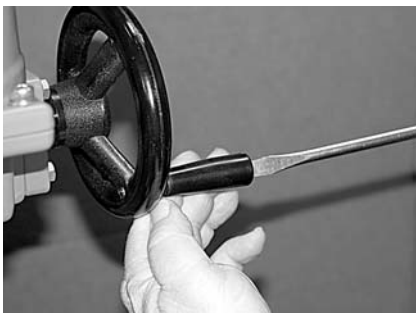


Step 6) Insert the four mounting bolts (B), lockwashers (C), and the hex nuts (D). Do NOT tighten at this time.

Step 7) The SY actuator is shipped in the OPEN position. Make sure the actuator is in the OPEN position before attaching to the valve/ coupling assembly. The SY actuator turns counter clockwise (CCW) to the OPEN position, when viewed from ABOVE the actuator.

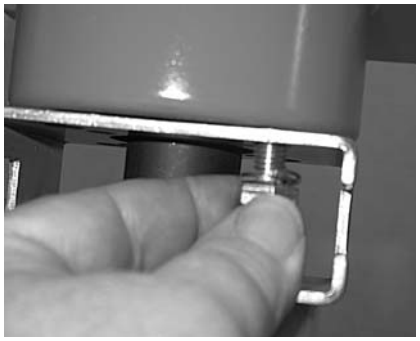
Step 8) Verify that the SY actuator is in the OPEN position also by looking at the bottom of the actuator. There is a dimple mark punched in the output shaft which will align with the "1" mark when the actuator is in the OPEN position.

Step 9) Stand with the valve face (where the piping flange connects to the valve body) towards you. Hold the SY actuator with the handwheel on the RIGHT, and the EMT connectors to your LEFT. Align the square drive or keyway in the SY actuator with the square drive or keys in the coupling (C). The SY actuator will slide completely over the drive square and will rest ON the mounting bracket (A).

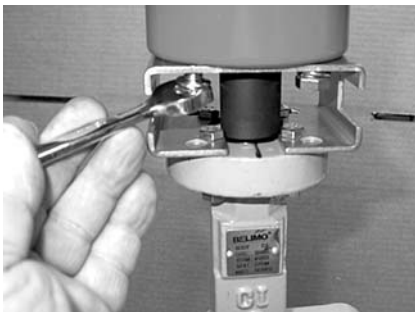


Step 10) Attach the hand knob to the hand wheel as shown below (if not already completed).

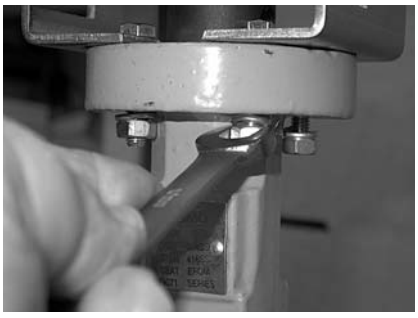
Step 11) Tighten the jam nut to prevent the hand knob from becoming loose.



Step 12) Insert the four hex bolts (G) and lock washers (F) through the bracket and into the bottom of the SY actuator as shown. Do NOT tighten until all four sets have been installed. Slight twisting of the entire SY actuator will facilitate alignment of the bolts.



Step 13) After all four have been inserted, tighten accordingly.

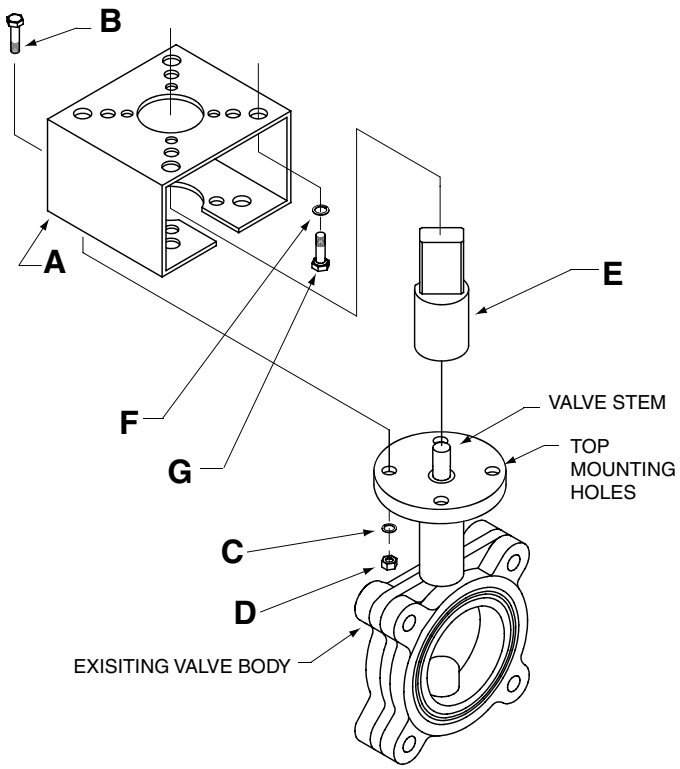


Step 14) Now tighten the four bracket bolts (B, C, D) assembled previously in step 6 .

Step 15) When mechanical assembly is complete, the SY actuator and valve body should be oriented as shown below. The actuator is in the OPEN position, and the valve disc is fully OPEN. All bolts are tight, and electrical checkout is now possible.

Application Note:

The hand wheel on the SY actuator is engaged at all times but does not rotate when the actuator is running. It is possible at anytime to turn the hand wheel by simply rotating it CW or CCW. The hand wheel does NOT need to be pulled or pushed into the actuator to make it operational. However, it should be noted that if a control signal and power is present at the actuator when the hand wheel is turned, the actuator will return to its controlled position. If it is desired to have the actuator maintain its position after turning the hand wheel, it will be necessary to remove power from the actuator, either at the source or by use of an optional SY-HOA local switch.



Assembly Procedure (Electrical), On/Off Models

WARNING

Hazard identification warnings appear at appropriate sections throughout this manual. Read these carefully.

Step 1) Remove the four hex bolts securing the cover to the base casting.

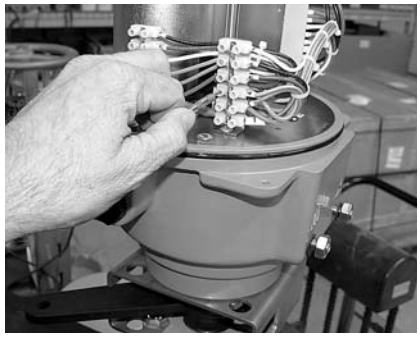
Step 2) Remove cover from the SY actuator. A flat blade screwdriver inserted carefully into the provided slot (as shown) will facilitate removal of the cover.

Step 3) Conduit entries into the SY actuator must be selected for their operating location (indoors protected, indoors wash down, outdoors, etc). Be sure to follow standard NEC guidelines when selecting conduit and connector types.

Step 4) Follow the wire sizing chart in the Installation Operation Manual (IOM) (Belimo p/n 71150-00001.C page 10) to make sure you use the correctly size wire when connecting the SY to your power source. Failure to follow the recommendations in the table could cause actuator failure or nuisance tripping.

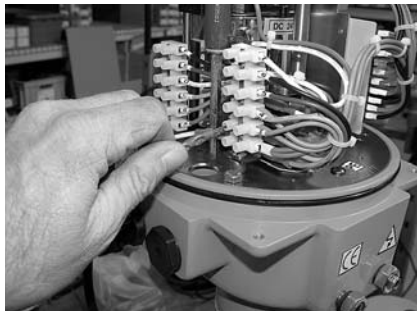
Step 5) Follow the wiring diagrams in the IOM pages 18 (single) & 23 (multiple) for proper power and control wiring to the SY actuator. Make note of the following:

a. Do NOT connect multiple actuators in parallel without isolation relays.
b. Be sure "Hot" is connected to terminal #7 to enable the heater circuit, and "Neutral" is connected to terminal #1.



Step 6) Apply proper voltage to terminals 1 (Neutral) & 7 (Hot). Apply proper actuator voltage to terminals 1 (Neutral) & 4 (Hot) to drive the actuator CLOSED until the end-of-travel cam STOPS the actuator movement.

7. Visually check the position of the valve to make sure it reaches its full CLOSED position.



Step 8) Apply proper voltage to terminals 1 (Neutral) & 7 (Hot). Apply proper actuator voltage to terminals 1 (Neutral) & 3 (Hot) to drive the actuator OPEN until the end-of-travel cam STOPS the actuator movement.

Step 9) Visually check the position of the valve disc to make sure it reaches its full OPEN position.

Step 10) If the valve functions properly, mechanical assembly and electrical checkout are complete.

WARNING

FACTORY NOTE:

The SY actuators have been calibrated at the factory before shipping to you for use in this retrofit kit. The SY actuator calibration will suffice 99% of the time for your application. Improper calibration to the actuator may void your warranty. If you have any questions, please contact a Belimo technical support representative at 800-543-9038 for assistance.

Assembly Procedure (Electrical), Proportional Models

⚠ *Hazard Identification*

Warnings appear at appropriate sections throughout this manual. Read these carefully.

Step 1) Remove the four hex bolts securing the cover to the base casting.

Step 2) Remove cover from the SY actuator. A flat blade screwdriver inserted carefully into the provided slot (as shown) will facilitate removal of the cover.

Step 3) Conduit entries into the SY actuator must be selected for their operating location (indoors protected, indoors wash down, outdoors, etc). Be sure to follow standard NEC guidelines when selecting conduit and connector types.

Step 4) Follow the wire sizing chart in the Installation Operation manual (IOM) (Belimo p/n 70103-00001D page 17) to make sure you use the correct size wire when connecting the SY to your power source. Failure to follow the recommendations in the table could cause actuator failure or nuisance tripping.

Step 5) Follow the wiring diagrams in the IOM pages 14 through 37 for proper power and control wiring to the SY actuator.

Note: All SY1-P and SY2..12-MFT actuators are factory pre-set with the proper customer requested control programming.

Step 6) Connect the proper electrical power and control wiring per the wiring diagrams located on pages 14-37.

Step 7) Check the operation of the actuator by commanding the control system to generate control signals matching the needs of the job to run the valve from fully CLOSED to fully OPEN, as well as a MID-POINT position. The indicator on the top of the SY actuator will be an indicator as to the position of the actuator, and therefore, the valve position.

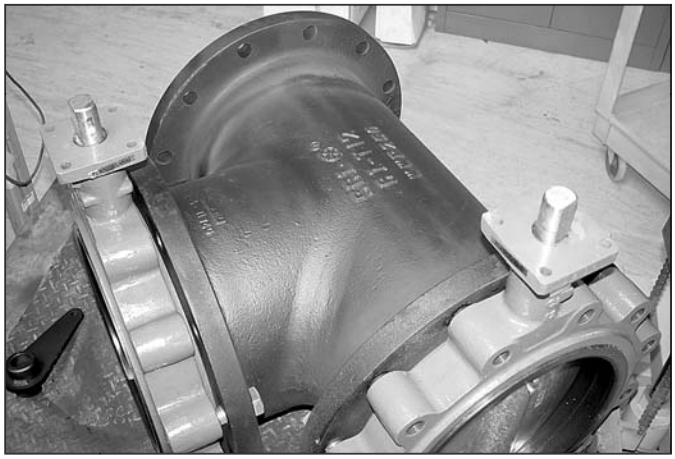
Step 8) If the valve functions properly, mechanical assembly and electrical checkout are complete.

⚠ *WARNING*

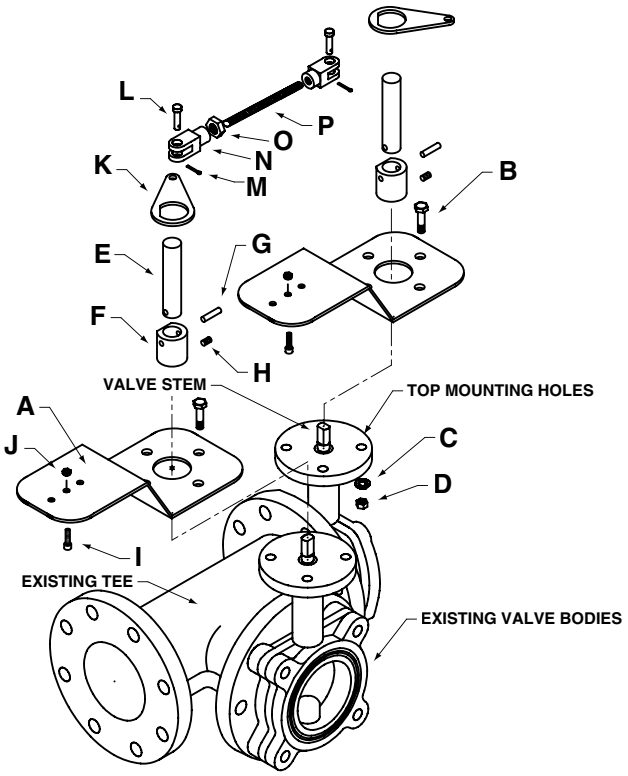
FACTORY NOTE:

The SY actuators have been calibrated at the factory before shipping to you for use in this retrofit kit. The SY actuator calibration will suffice 99% of the time for your application. Improper calibration to the actuator may void your warranty. If you have any questions, please contact a Belimo technical support representative at 800-543-9038 for assistance.

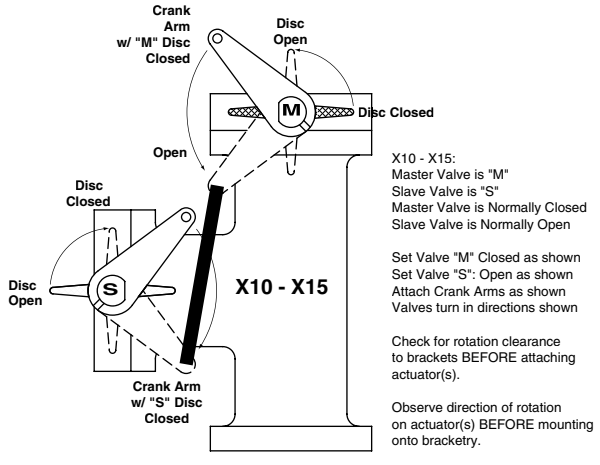
Assembly Sequence for Existing Valves



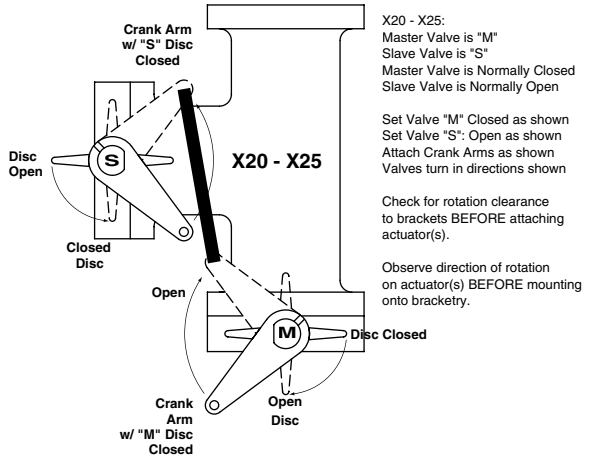
The valves should be stripped down to their basic form, as shown. Remove all other linkage components before starting the assembly sequence below. The linkage components have been designed to attach to the valve in this state, rather than to any existing hardware.



Please refer to the above exploded view above when following the assembly procedure, to better identify which parts are being addressed in each step. Additionally, you need to determine the configuration of the valve you are trying to retrofit, using one of the three diagrams below:

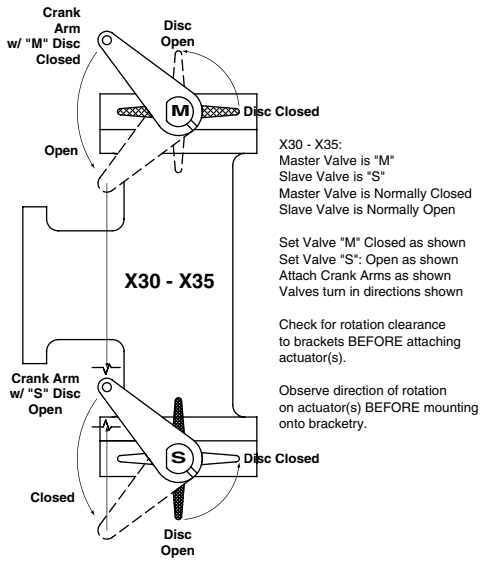


Depending on the orientation of the tee assembly, if the valves are mounted on the TOP and BRANCH positions (tee mounted vertically), or on the LEFT and BRANCH positions (tee mounted horizontally) you will refer to configuration codes X10-X15.

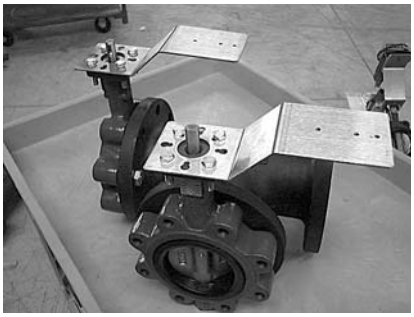


If the valves are mounted on the BOTTOM and BRANCH positions (tee mounted vertically), or on the RIGHT and BRANCH positions (tee mounted horizontally) you will refer to configuration codes X20-X25.

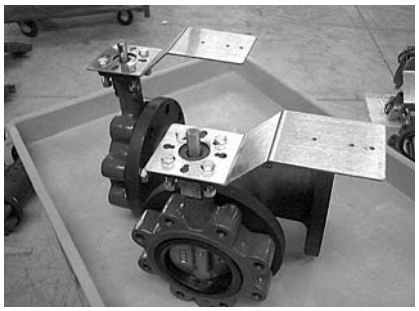
Assembly Sequence for Existing Valves



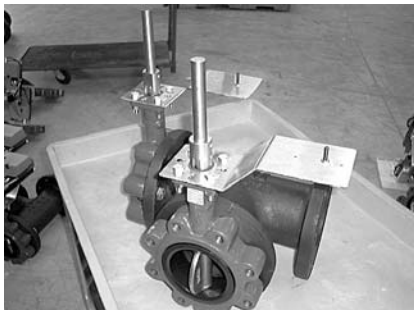
If the valves are mounted on the TOP and BOTTOM positions (tee mounted vertically), or on the LEFT and RIGHT positions (tee mounted horizontally) you will refer to configuration codes X30-X35



Step 1) Assemble the actuator mounting bracket(s) **(A)** to the top of the valve actuator mounting pad(s) using the supplied bolts **(B)**, lock washers **(C)** and nuts **(D)**. The bracket(s) need to be oriented so that they are parallel to the RUN of the tee, unless you have configuration codes X30-35, in which case the bracket(s) must be mounted parallel to the BRANCH of the tee.

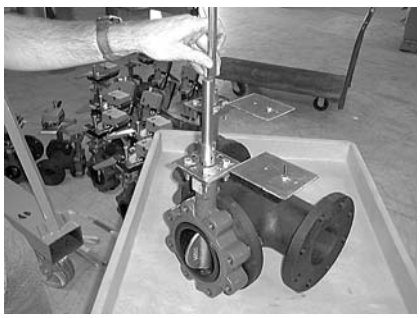


Step 2) Refer to the three configuration drawing types on page 9 of the Butterfly Valve O & M (71150-00001) and position the valve discs as instructed. For example, if you have a Configuration Type A tee assembly, you will OPEN the master valve **(A)**, and CLOSE the slave valve **(B)**. During the assembly procedure, CLOSED and OPEN means 0 degrees and 90 degrees respectively. Failure to position the discs into their quadrants will result in improper operation and performance of the retrofit kit. Most manufacturers mark the TOP of the valve stem with a slot which indicates the disc angle.



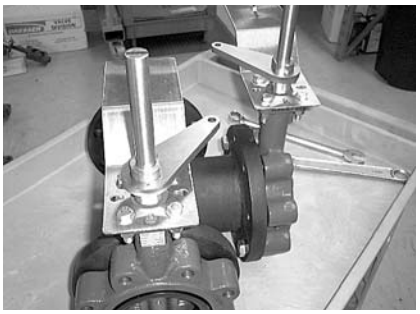
Step 3) Slide the drive pin assembly, consisting of the drive shaft(s) **(E)**, the valve shaft couplings **(F)**, the mating pins **(G)**, and the setscrews **(H)**, over the valve shafts. It may be necessary to back out the set screws **(H)** a few turns to make sure there is clearance in the coupling pockets (bottom of **(F)** for the valve shafts. Drive shafts **(E)** should be concentric and parallel with the valve shafts so there is no binding. Any angular alignment MUST be corrected before moving on to the next step.

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.

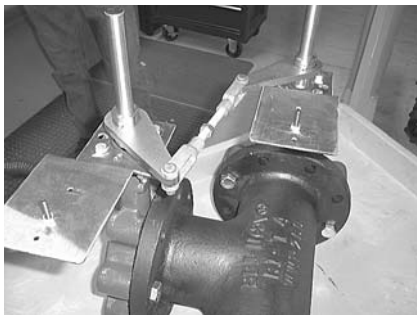


Step 4) Mark the top of each drive shaft **(E)** to indicate the disc position. Typically, this is done using a chisel to punch a line PARALLEL to the valve disc to make it easier to identify the disc position during the assembly process.

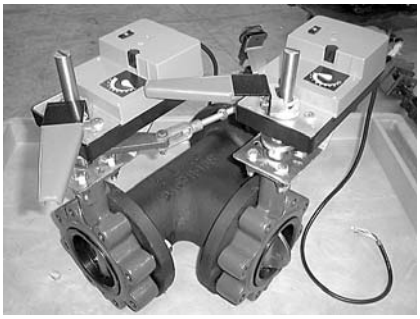
Step 5) Refer to the three configuration drawing types and position the crank arms **(K)** as instructed. Slide the crank arms over valve couplings **(F)**, and position just below the top edge of the couplings. Tighten set screws **(H)** to affix the crank arms **(K)** to the couplings **(F)**.
* On larger units it may be necessary to spot weld the crankarm to the coupler.



Step 6) Once the crank arms (K) are attached to the assembly, again refer to the drawings to make sure the entire assembly matches the corresponding configuration type.



Step 7) The connecting rod **(P)** is supplied long enough to meet all configuration types, and will have to be modified in the field to properly fit your assembly. Connecting rod **(P)** is furnished with jamb nut **(O)**, yoke **(N)**, clevis pin **(L)** and cotter key **(M)** attached to one end, and the second yoke assembly attached to the opposite end. Remove the yoke assembly from the end without the jamb nut **(O)**. Remove the cotter pins **(M)** and clevis pins **(L)** from both yokes **(N)**. With the valve discs and crank arms **(K)** properly positioned, attach the end of the connecting rod **(P)** with the still attached yoke **(N)**, to one of the crank arms **(K)**, and reinstall clevis pin **(L)** to retain its position. Attach the free yoke **(N)** to the second crank arm **(K)** and again use the clevis pin **(L)** to retain its position. Point the connecting rod **(P)** towards the second yoke and align the yoke **(N)** with the connecting rod **(P)**. You will now have an idea of where to CUT the connecting rod **(P)** for a proper fit. The correct length is attained when the ENDS of the connection rod **(P)** are even with the INSIDE ends of the threads on the yokes **(N)**. Be sure to tighten the jamb nut **(O)** after the proper length has been attained. Reinstall the cotter pins **(M)** in both clevis pins **(L)** and bend to retain.

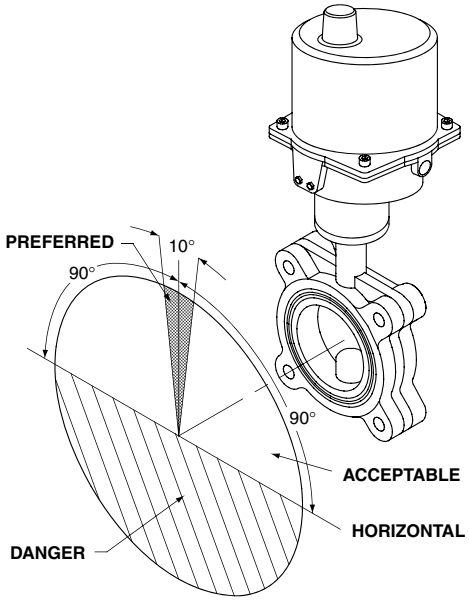


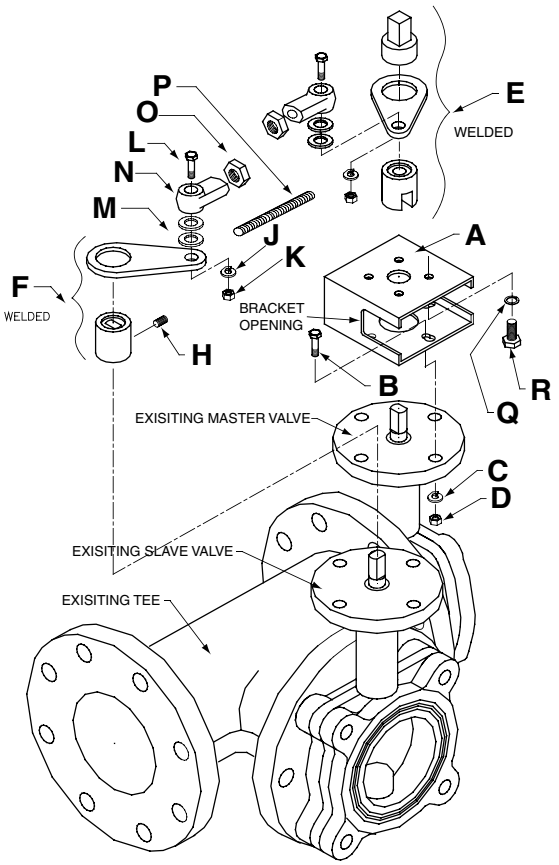
Step 8) Assemble the actuator(s) to the linkage by sliding the actuator shaft clamp over the kit drive shaft(s) **(E)**. The actuator anti-rotation pin(s) (I) should already be positioned in the correct hole for the actuator, but they can be moved to accommodate AM, GM or AF series actuators. Make sure the anti-rotation pin nut(s) **(J)** is tight. Make sure the bottom of the actuator(s) 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(s). For AF series actuators, release the pre-load on the spring before tightening the clamp nuts, as the valve discs have already been positioned at their full travel stops in step 2 above.

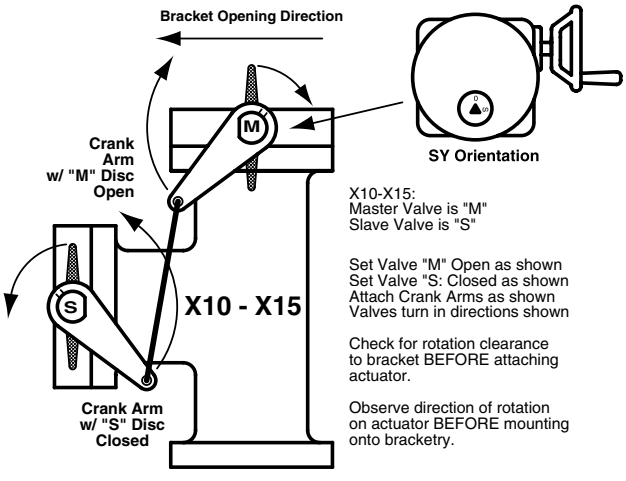
Step 9) Keep in mind that for dual actuator retrofits, the actuators turn in OPPOSITE directions. AF series actuators have to be mounted with opposite sides UP, and GM series actuators will need to have their 0/1 acting switches changed so one is opposite the other.

Assembly Procedure for SY…Retrofit Solution

Retrofit Requirement: The initial step is to determine if your application can accept a retrofit solution. As shown below (Fig. 1), the valve stem must not be located below the horizontal plane. If this condition exists, the SY actuator could not be used in this situation. A Belimo technical support person is available to help determine what solution best fits your application. A typical solution is shown in Fig. 2.





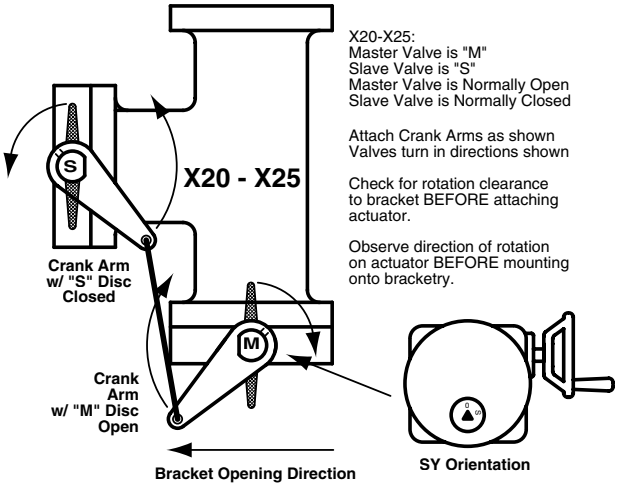


X10-X15:
Master Valve is "M"
Slave Valve is "S"

Set Valve "M" Open as shown
Set Valve "S: Closed as shown
Attach Crank Arms as shown
Valves turn in directions shown

Check for rotation clearance to bracket BEFORE attaching actuator.

Observe direction of rotation on actuator BEFORE mounting onto bracketry.



X20-X25:
Master Valve is "M"
Slave Valve is "S"
Master Valve is Normally Open
Slave Valve is Normally Closed

Attach Crank Arms as shown
Valves turn in directions shown

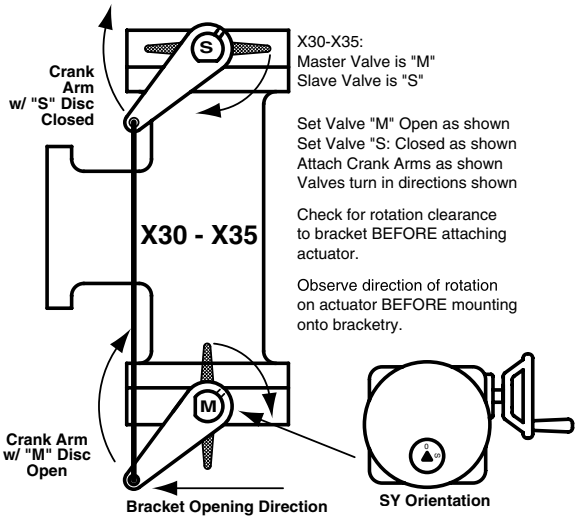
Check for rotation clearance to bracket BEFORE attaching actuator.

Observe direction of rotation on actuator BEFORE mounting onto bracketry.

Depending on the orientation of the tee assembly, if the valves are mounted on the TOP and BRANCH positions (tee mounted vertically), or on the LEFT and BRANCH positions (tee mounted horizontally) you will refer to configuration codes X10-X15.

If the valves are mounted on the BOTTOM and BRANCH positions (tee mounted vertically), or on the RIGHT and BRANCH positions (tee mounted horizontally) you will refer to configuration codes X20-X25.

Assembly Procedure (Mechanical)



If the valves are mounted on the TOP and BOTTOM positions (tee mounted vertically), or on the LEFT and RIGHT positions (tee mounted horizontally) you will refer to configuration codes X30-X35.

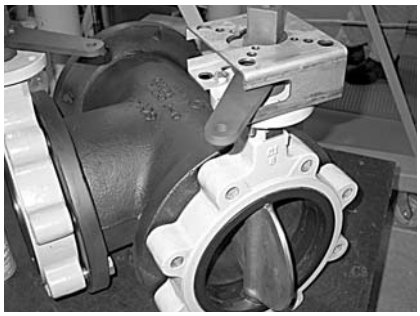
Note: For purposes of clarity, this procedure utilizes configuration codes X20-X25.

Step 1) Both valves must be stripped down to their basic form. Remove all other linkage components before starting the assembly sequence below. The linkage components have been designed to attach to the valves in their basic form state rather than to any existing hardware.

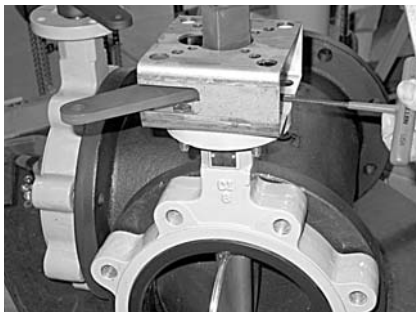
Step 2) Referring to the three configuration types on page 3 of the SY IOM, position the master and slave valve discs as instructed. For example, if you have a configuration code X20 tee assembly, you will OPEN the Master valve (M) and CLOSE the Slave valve (S).

During the assembly procedure, CLOSED and OPEN means 0 degrees and 90 degrees respectively. Failure to position the discs into their proper quadrants will result in improper operation and performance of the retrofit kit. Most manufacturers mark the TOP of the valve stem with a slot or other mark which indicates the disc angle. **Note:** Regardless of configuration code, the Master valve should always be OPEN and the Slave valve should always be CLOSED before starting the assembly process.

Note: Steps 3 thru 6 may be combined into a single step if the retrofit kit is received with actuator, bracket and crank arm already assembled. The actuator will be in the OPEN position for assembly.

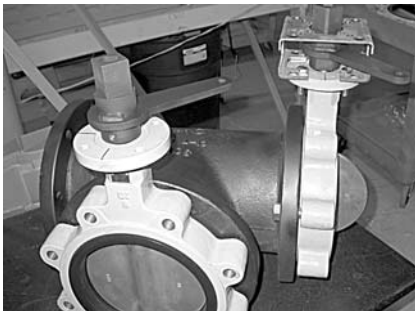


Step 3) Install the MASTER valve crank arm onto the MASTER valve in the correct orientation, as shown. Install the SLAVE valve crank arm onto the SLAVE valve in the correct orientation, as shown.



Step 4) Tighten the MASTER and SLAVE crank arm assemblies using the appropriate hex key wrench. Make sure the drive couplings are fully seated onto the valve stems BEFORE tightening the set screws.

Step 5) Shown here is the SLAVE crank arm assembly being secured to the valve stem. Notice the markings on the valve top works indicating OPEN and CLOSED positions of the stem for later reference. Once set, crankarms may require spot welding to the coupling on SY7-12 units.



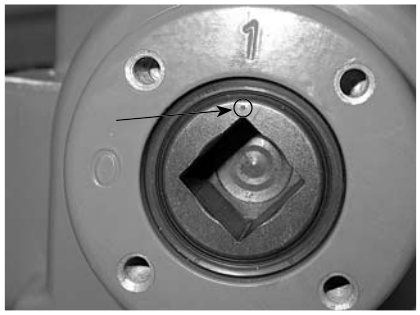
Step 6) There are no other possible orientations of this bracket. The Master crank arm will rotate 90 degrees clockwise, and there are reliefs in the sides of the bracket to accommodate this angular rotation.

Step 7) Insert the four bolts and mount the bracket to the valve mounting flange. Attach the lock washers and nuts, but do NOT tighten at this time.

Step 8) To facilitate the insertion of the mounting bolts, it may be necessary to move the valve disc, and therefore the crank arm, to gain access to the mounting holes.

Step 9) Remove the SY actuator from its protective cartons.

Step 10) Although the SY actuator ships from the factory IN the OPEN position, make sure the actuator is in the OPEN position before attaching to the valve/ coupling assembly. The SY actuator turns counter clockwise (CCW) to the OPEN position when viewed from ABOVE the actuator.

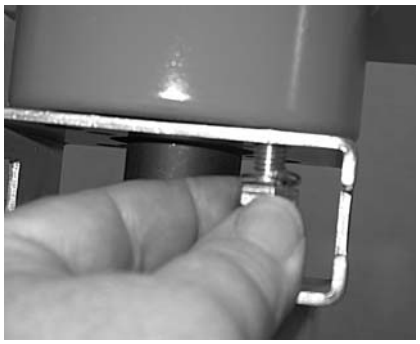


Step 11) Verify that the SY actuator is in the OPEN position also by looking at the bottom of the actuator. There is a dimple mark punched in the output shaft which will align with the "1" mark when the actuator is in the OPEN position.

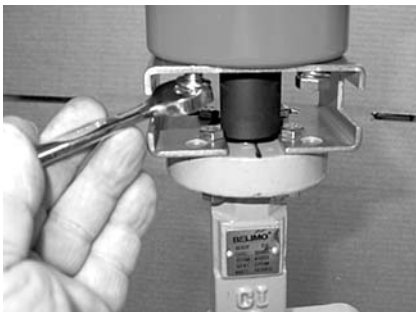
Step 12) Attach the hand knob to the hand wheel as shown below (if not already completed).

Step 13) Tighten the jam nut to prevent the hand knob from coming loose.

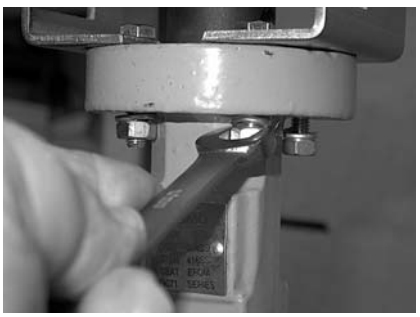
Step 14) Stand with the opening in the actuator bracket facing towards your LEFT. Hold the SY actuator with the handwheel on the RIGHT, and the EMT connectors to your LEFT. Align the square drive or keyway in the SY actuator with the square drive or keys in the coupling **(C)**. The SY actuator will slide completely over the drive square and will rest ON the mounting bracket **(A)**.



Step 15) Insert the four hex bolts **(G)** and lock washers **(F)** through the bracket and into the bottom of the SY actuator as shown. Do NOT tighten until all four sets have been installed. Slight twisting of the entire SY actuator will facilitate alignment of the bolts.

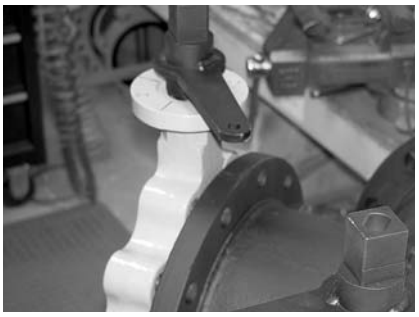


Step 16) After all four bolts have been inserted, tighten accordingly.



Step 17) Now tighten the four bracket bolts **(B, C, D)** assembled in step 6 above.

Step 18) When mechanical assembly is complete, the SY actuator and MASTER valve should be oriented as shown below. The actuator is in the OPEN position, and the valve disc is fully OPEN, and all bolts are tight.



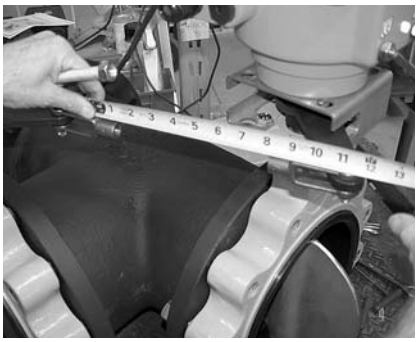
Step 19) The SLAVE valve is fully CLOSED with the crank arm oriented as shown.

Note:
The assembly now must be tested electrically ***before*** mechanical connection is made between the MASTER and SLAVE valve crank arms. Continue with electrical assembly on page 18 for On/Off models or page 20 of the SY IOM for proportional models.

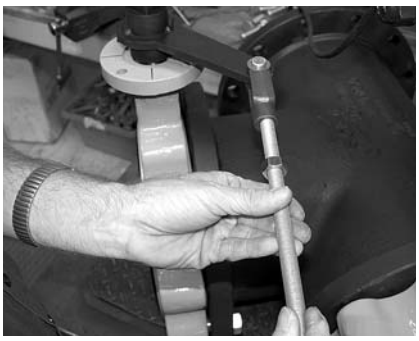
Application Note:

The hand wheel on the SY actuator is engaged at all times but does not rotate when the actuator is running. It is possible at anytime to turn the hand wheel by simply rotating it CW or CCW. The hand wheel does NOT need to be pulled or pushed into the actuator to make it operational. However, it should be noted that if a control signal and power is present at the actuator when the hand wheel is turned, the actuator will return to its controlled position. If it is desired to have the actuator maintain its position after turning the hand wheel, it will be necessary to remove power from the actuator, either at the source or by use of an optional SY-HOA local switch.

Step 20) With the MASTER valve in its fully OPEN position and the SLAVE valve in its fully CLOSED position, assemble the yoke and clevis pins onto the crank arms, pointing towards each other as shown.



Step 21) Measure the distance between the inboard end of the yokes to determine the proper length of the connecting rod. It is important to make sure the MASTER and SLAVE valves are in their proper positions (OPEN and CLOSED, respectively) before taking this measurement. Otherwise, the connecting rod could be too short for proper calibration of the SLAVE valve.



Step 22) After the connecting rod is cut to the correct length, screw it into SLAVE valve yoke end until the threads pass through the yoke and just start to protrude into the inboard end of the yoke. The rod lock nut should be closest to the SLAVE valve yoke end.

Step 23) Remove the MASTER valve yoke end and thread it onto the connecting rod. Adjust the distance between the yoke centers to match the hole in the MASTER valve crank arm.

Step 24) Insert the clevis pin into the master crank arm.

Step 25) Using the correct control signal (On/Off or Proportional) drive the MASTER valve 25% CLOSED, then drive the MASTER valve fully OPEN. The SLAVE valve should now be fully CLOSED. The SLAVE valve should now be fully CLOSED. If the SLAVE valve needs to be adjusted, it is accomplished by turning one of the yoke ends in (to shorten) or out (to lengthen) and rechecking the rotation angle using terminals #3 and #4 on the SY actuator. Always be sure to let the electrical travel cams stop the SY actuator before making any adjustments in the yoke ends of the connecting rod.

Step 26) Once the SLAVE valve has been determined to be in the correct position, lock the jam nut against one of the yoke ends to prevent any changes in the adjustments just completed.

Step 27) Insert two cotter keys into the two clevis pins.

Step 28) Replace the cover on the SY actuator and secure the four cover screws. One final check to make sure all bolts, screws, nuts & setscrews are tight.

Step 29) The mechanical and electrical installation of your retrofit system is now complete.

END PROCEDURE

Assembly Procedure (Electrical), On/Off Models

Step 1) Remove the four hex bolts securing the cover to the base casting.

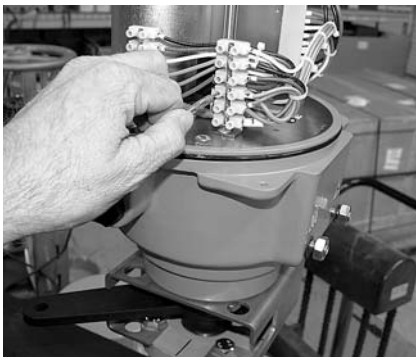
Step 2) Remove cover from the SY actuator. A flat blade screwdriver inserted carefully into the provided slot (as shown) will facilitate removal of the cover.

Step 3) Conduit entries into the SY actuator must be selected for their operating location (indoors protected, indoors wash down, outdoors, etc). Be sure to follow standard NEC guidelines when selecting conduit and connector types.

Step 4) Follow the wire sizing chart in the Installation Operation Manual (IOM) (Belimo p/n 71150-00001.C page 10) to make sure you use the correctly size wire when connecting the SY to your power source. Failure to follow the recommendations in the table could cause actuator failure or nuisance tripping.

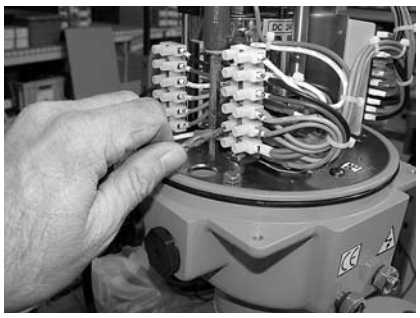
Step 5) Follow the wiring diagrams in the IOM (pages 18 [single] and 23 [multiple]) for proper power and control wiring to the SY actuator. Make note of the following:

a. Do NOT connect multiple actuators in parallel without isolation relays.
b. Be sure "Hot" is connected to terminal #7 to enable the heater circuit, and "Neutral" is connected to terminal #1.



Step 6) Apply proper voltage to terminals #1 (Neutral) and #7 (Hot). Apply proper actuator voltage to terminals #1 (Neutral) and #4 (Hot) to drive the actuator CLOSED until the end-of-travel cam STOPS the actuator movement. (Note that there is no terminal #2).

Step 7) Visually check the position of the valve to make sure it reaches its full CLOSED position.



Step 8) Apply proper actuator voltage to terminals #1 (Neutral) and #3 (Hot) to drive the actuator OPEN until the end-of-travel cam STOPS the actuator movement.

Step 9) Visually check the position of the valve disc to make sure it reaches its full OPEN position.

Step 10) If the MASTER valve functions properly, mechanical assembly and electrical checkout are complete.

⚠ *WARNING*

FACTORY NOTE:

The SY actuators have been calibrated at the factory before shipping to you for use in this retrofit kit. The SY actuator calibration will suffice 99% of the time for your application. Improper calibration to the actuator may void your warranty. If you have any questions, please contact a Belimo technical support representative at 800-543-9038 for assistance.

Assembly Procedure (Electrical), Proportional Models

Step 1) Remove the four hex bolts securing the cover to the base casting.

Step 2) Remove cover from the SY actuator. A flat blade screwdriver inserted carefully into the provided slot (as shown) will facilitate removal of the cover.

Step 3) Conduit entries into the SY actuator must be selected for their operating location (indoors protected, indoors wash down, outdoors, etc). Be sure to follow standard NEC guidelines when selecting conduit and connector types.

Step 4) Follow the wire sizing chart in the Installation Operation Manual (IOM) (Belimo p/n 71150-00001.C page 10) to make sure you use the correct size wire when connecting the SY to your power source. Failure to follow the recommendations in the table could cause actuator failure or nuisance tripping.

Step 5) Follow the wiring diagrams in the IOM (pages 14-37) for proper power and control wiring to the SY actuator.

Note: All SY1-P and SY2..12-MFT actuators are factory pre-set with the proper customer requested control programming.

Step 6) Connect the proper electrical power and control wiring per the wiring diagrams located in the IOM (pages 14-37).

Step 7) Check the operation of the actuator by commanding the control system to generate control signals matching the needs of the job to run the valve from fully CLOSED to fully OPEN, as well as a MID-POINT position. The indicator on the top of the SY actuator will be an indicator as to the position of the actuator, and therefore, the valve position.

When operating the MASTER valve between fully OPEN and CLOSED, check the clearance between the crank arm and the actuator bracket. The crank arm should NEVER come into contact with the actuator mounting bracket. If it does, immediately remove power form the actuator and call Belimo technical support for recalibration instructions.

Step 8) If the valve functions properly, mechanical assembly and electrical checkout are complete.

⚠ ***WARNING***

FACTORY NOTE:

The SY actuators have been calibrated at the factory before shipping to you for use in this retrofit kit. The SY actuator calibration will suffice 99% of the time for your application. Improper calibration to the actuator may void your warranty. If you have any questions, please contact a Belimo technical support representative at 800-543-9038 for assistance.

2 YEAR WARRANTY

SY-HOA…
Local Electric Disconnect

NSV-SY…Battery Backup System

SY…Handwheel

SY-HOA-110	Local Electric Disconnect SY2-SY12 110V 2 Position
SY-HOA-110P	Local Electric Disconnect SY2-SY12 110V Proportional
SY-HOA-24	Local Electric Disconnect SY2-SY12 24V 2 Position
SY-HOA-24P	Local Electric Disconnect SY2-SY12 24V Proportional
SY-1000-FB01	1000 Ω Feedback Potentiometer SY2-12 2 Position
SY-1000-FB02	1000 Ω Feedback Potentiometer SY2-12 Proportional
NSV-SY-01	Battery Backup System for SY1-SY6 2 Position - 110 VAC
NSV-SY-02	Battery Backup System for SY1-SY6 Proportional - 110 VAC
NSV-SY-03	Battery Backup System for SY7 2 Position - 110 VAC
NSV-SY-04	Battery Backup System for SY7 Proportional - 110 VAC
NSV-SY-05	Battery Backup System for SY8-SY12 2 Position - 110 VAC
NSV-SY-06	Battery Backup System for SY8-SY12 Proportional - 110 VAC
NSV-SY-11	Battery Backup System for SY1-SY5 2 Position - 24 VAC
NSV-SY-12	Battery Backup System for SY1-SY5 Proportional - 24 VAC
NSV-SY-21	Battery Backup System for SY1-SY6 2 Position - 220 VAC
NSV-SY-22	Battery Backup System for SY1-SY6 Proportional - 220 VAC
NSV-SY-23	Battery Backup System for SY7-SY9 2 Position - 220 VAC
NSV-SY-24	Battery Backup System for SY7-SY9 Proportional - 220 VAC
NSV-SY-25	Battery Backup System for SY10-SY12 2 Position - 220 VAC
NSV-SY-26	Battery Backup System for SY10-SY12 Proportional - 220 VAC
ZG-SY23	SY2-3 Handwheel (replacement only)
ZG-SY46	SY4-6 Handwheel (replacement only)
ZG-SY78	SY7-8 Handwheel (replacement only)
ZG-SY912	SY9-12 Handwheel (replacement only)

Instructions for Completing this Form

Ball valves with-out a mounting flange are typically not designed for installing actuation, therefore the valve design may not support modulation outside of manual usage. Belimo does not recommend retrofitting these types of ball valves.

All dimensions should be taken with ALL original actuation and hardware components removed from the valve body.

An example using **Mounting Style 3:** Dimensions A & B (**Dim A and Dim B**) relate to the TOP mounting holes on the ball valve body. These holes are usually arranged on the body in a "X" pattern (**MOUNT STYLE 3**). This information is entered on the UBSP Series Ball Valve Retrofit Form in the **MOUNT STYLE** section. The length of the valve stem sticking out of the top of the valve body is recorded under **Dim D and E**. The TOP mounting holes are usually drilled through the top flange, but sometimes are threaded. Enter this information on the form next to the mount style information previously recorded.

MOUNT STYLE 3: Dimensions A & B (**Dim A and Dim B**) relate to the TOP mounting holes on the ball valve body. These holes are usually arranged on the body in a "X" pattern (**MOUNT STYLE 3**). This information is entered on the UBSP Series Ball Valve Retrofit Form in the **MOUNT STYLE** section. The length of the valve stem sticking out of the top of the valve body is recorded under **Dim D and E**. The TOP mounting holes are usually drilled through the top flange, but sometimes are threaded. Enter this information on the form next to the mount style information previously recorded.

STEM STYLE: Examine the valve being retrofitted to establish which stem style matches the diagrams above. Use caution when recording these dimensions. **Dim H** refers to the valve stem diameter and should be measured at several points up and down as well as around the stem itself. **Dim E** refers to the length of the drive surface available, whether it is a key or flatted surface. **Dim F** refers to the width of the drive surface or the distance across the flats. This is the most critical dimension for correct linkage operation. Please measure accordingly. Lastly please specify the desired actuator orientation in reference to the valve body using the ports as reference, i.e. over the "A" port etc. We have also includes an ISO-5211 standard dimension chart for reference. If the valve is labeled please specify its "F" number so that we may confirm the dimensions per the ISO spec.

In addition, we require information about the environment and process in which this linkage system will be utilized. As well as the frequency of use the current actuator runs. This will help to ensure the longevity of the new linkage and actuator. Having the prior actuator spec and model will help.

The form must be completed in its entirety to guarantee the complete, perfect fit of your retrofit system. Keep in mind that retrofit kits are designed with close-tolerance components which afford the most efficient linkage systems. Measurements rounded to the nearest 1/8 or 1/16 inch will not perform as well (sometimes not at all) as a kit designed around careful measurements using proper equipment. Our designs are typically +.005" tolerance.

Required Tools - calipers and retrofit form.

Disclaimer

While we will do our best to provide a linkage system designed around your specifications and measurements, we cannot be held responsible for linkages which do not fit as a result of incorrect data supplied to Belimo. We will be happy to re-work components which do not fit properly for a nominal fee.

Actuation, weather shields and linkages cannot be pre-assembled at the Belimo factory. The linkages are designed to be attached onto the valve body first, then optional weather shields, and finally actuation products in the field.

Close-off pressures are calculated using actuator torque, valve stroke, and valve area. Other factors may affect the rated Close-off pressures, including flow rates, system maintenance schedules, chemicals used in the shot feeder process, vicinity to pumps, condition of valve stem seals, and assembly of linkage material in the field.

Valves that are being considered for retrofit of actuation should be analyzed for their life expectancy before the retrofit has taken place. Valves that leak through stem seals or casings will continue to leak with the new linkage system in place, maybe even more so. Rebuilding the packing on these valves may be more costly than replacing the valves themselves. In some cases, modifications may be necessary for proper operation of the linkage system. Belimo assumes NO responsibility for these modifications and are at the discretion of the user as to whether the modifications can be made.

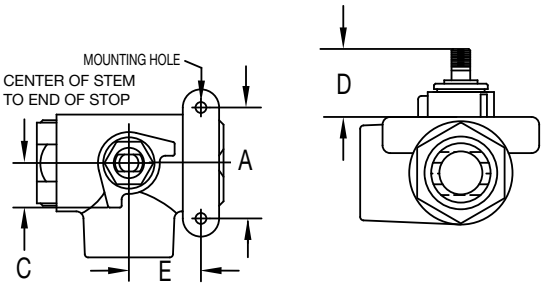
NOTE: Although it is possible that the valve being retrofitted has a Close-off pressure rating considerably higher than the actual system pressure, actuation products have been selected to meet the full rating of the valve body. This will assure operation of the valve when considering long term exposure to pumping systems. Belimo does not manufacture or document retrofit packages utilizing actuation products designed around anything less than the full rating of the valve body.

Custom Ball Valve Retrofit Solutions

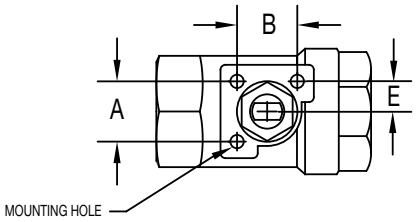
UBSP Series

BELIMO

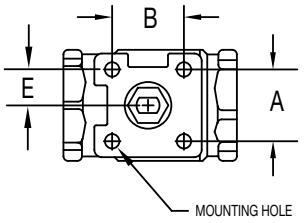
MOUNT STYLE 1



MOUNT STYLE 2



MOUNT STYLE 3



MOUNT STYLE 4

SKETCH YOUR MOUNT STYLE USING EXAMPLES ABOVE

MOUNT STYLE DIMENSIONS

MOUNT STYLE ☐

DIM A: _____

DIM B: _____

DIM C: _____

DIM D: _____

DIM E: _____

MOUNTING HOLES:

DRILLED

DIA Ø: _____

TAPPED

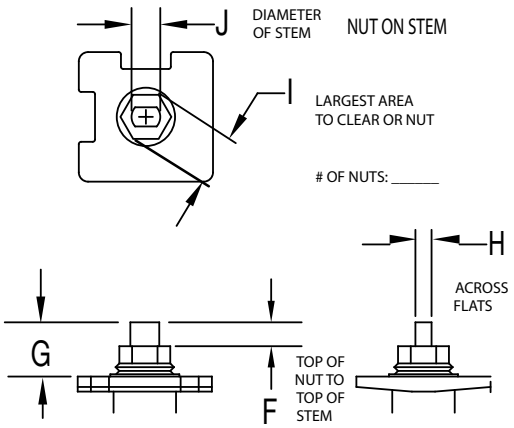
THREAD SPEC. _____

DIM. A & B MEASURED FROM CENTER OF HOLE

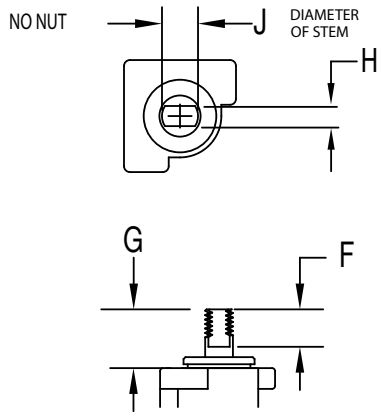
ISO STANDARD

ISO	BOLT SQUARE	BOLT SIZE Ø	CHECK ONE
F03	1.002	M5	
F04	1.169	M5	
F05	1.392	M6	
F07	1.949	M8	
F10	2.840	M10	
F12	3.480	M12	
F14	3.879	M16	
F16	4.593	M20	
F25	7.071	M16	

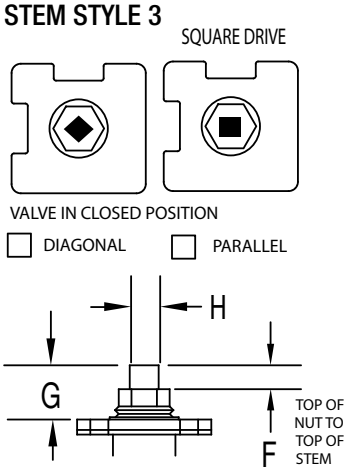
STEM STYLE 1



STEM STYLE 2



STEM STYLE 3



STEM STYLE ☐ DIM F: _____ DIM G: _____ DIM H: _____ DIM I: _____ DIM J: _____

ACTUATOR

EXISTING ACTUATOR MODEL: _____ CONTROL TYPE: ☐ ON/OFF ☐ FLOATING POINT ☐ VDC ☐ PWM

FAIL SAFE: ☐ YES ☐ NO Range:_____ Range:_____

FAIL POSITION: ☐ NO ☐ NC ☐ INDOOR ☐ OUTDOOR

FREQUENCY OF OPERATION (*specify how often*): DAILY_____ WEEKLY_____ MONTHLY_____

VOLTAGE: _____

ACTUATOR ORIENTATION:

COMPANY: _____

JOB NAME: _____

PO#: _____

PHONE: _____

EMAIL: _____

VALVE MANUFACTURE: _____

VALVE SERIES: _____

VALVE MODEL: _____

VALVE TAG/LOCATION: _____

QUANTITY: _____

2 WAY/3 WAY: _____

VALVE SIZE: _____

MEDIA TEMP: _____

MEDIA TYPE: _____

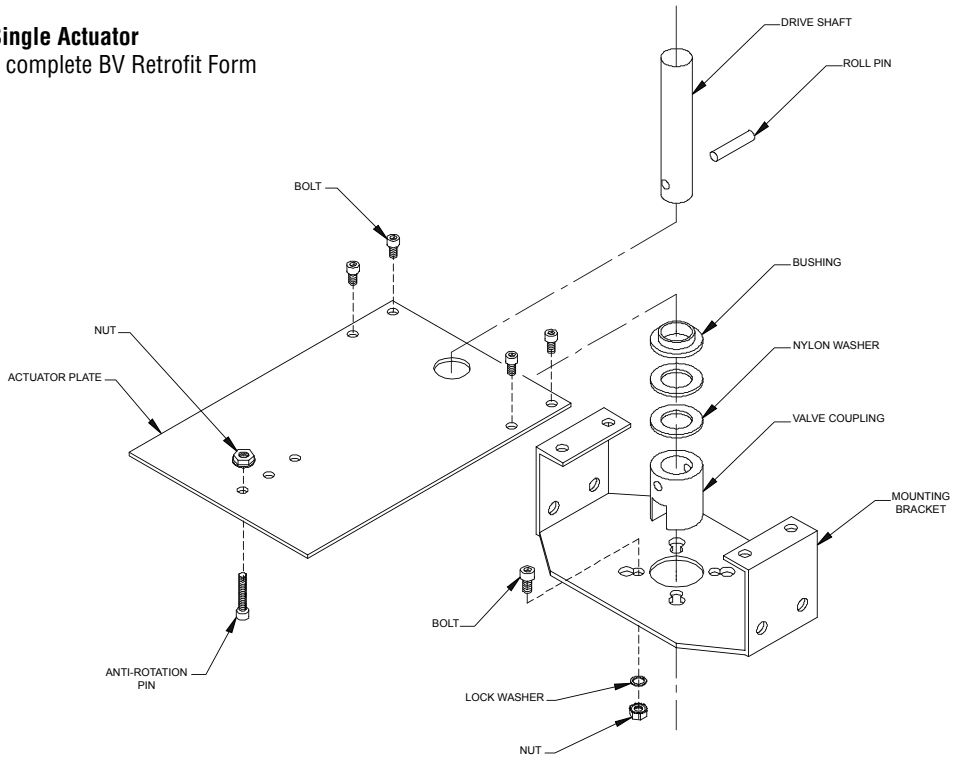
SYSTEM PRESSURE: _____

NOTE: THIS INFORMATION WILL BE UTILIZED IN THE FABRICATION OF A CUSTOM LINKAGE SYSTEM FOR YOUR VALVE REQUIREMENT; THEREFORE, IT IS ESSENTIAL THAT THE ABOVE DIMENSIONS BE FURNISHED WITH READINGS TAKEN TO THE NEAREST .001". ANY ERRONEOUS DIMENSIONS FURNISHED WHICH RESULT IN IMPROPER FIT OF THIS LINKAGE SYSTEM ARE NOT THE RESPONSIBILITY OF BELIMO AIRCONTROLS. ANY REWORK REQUIRED WILL RESULT IN AN EXTRA CHARGE.

CUSTOM KITS ARE DESIGNED TO YOUR UNIQUE SPECIFICATIONS AND ARE **NOT RETURNABLE.**

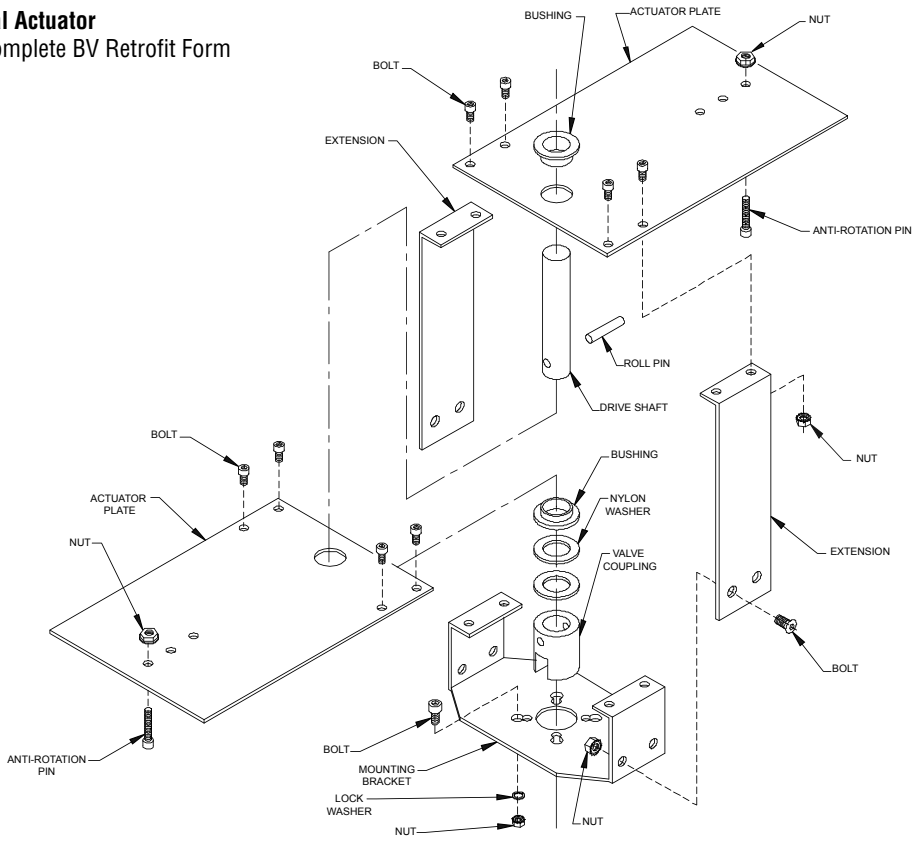
COMPANY CONTACT/DIMENSIONS PROVIDED BY: _____ DATE: _____

2-Way/3-Way Single Actuator
Generic – Must complete BV Retrofit Form



UBSP0004

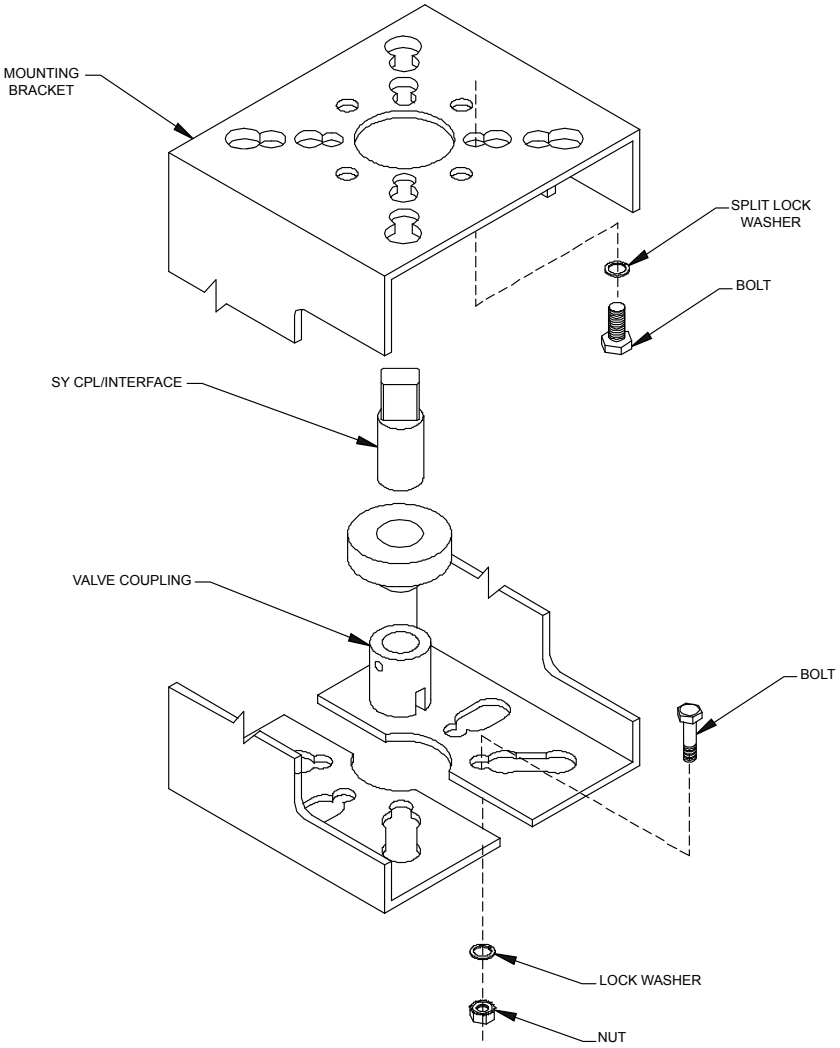
2-Way/3-Way Dual Actuator
Generic – Must complete BV Retrofit Form



UBSP0006

2 YEAR WARRANTY

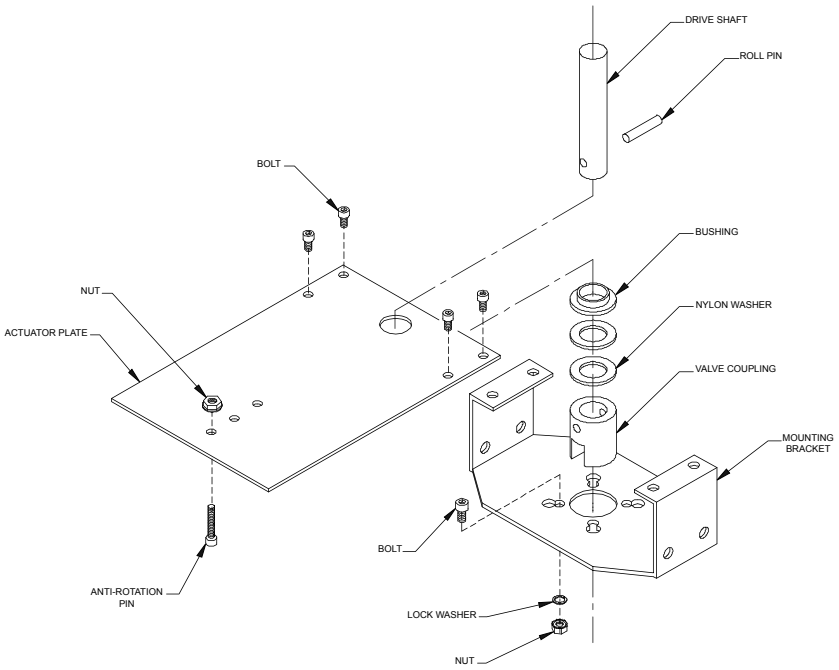
Industrial Electric 2-way/3-way
Generic – Must complete BV Retrofit Form



UBSP0008	**SY1-SY6**
UBSP0012	**SY7-SY9**

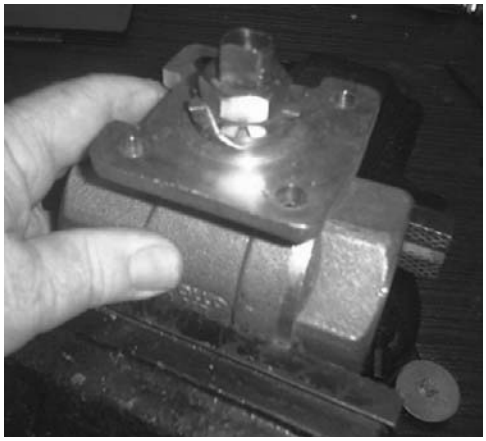
Assembly Sequence for Existing Valves

The valve should be stripped down to its basic form, as shown. The linkage components have been designed to attach to the valve in this state, rather than to any existing hardware.



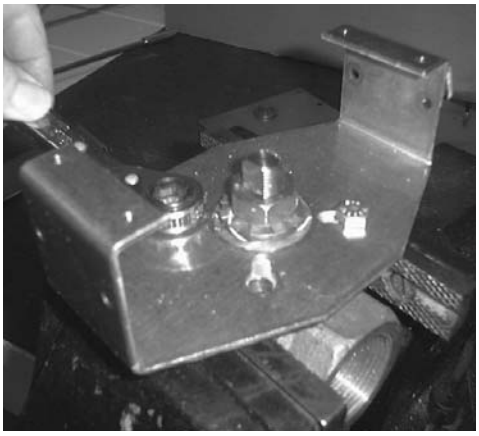
UBSP0004

Follow these steps to properly assemble ball valves to the retrofit linkage. Reference the step-by-step photos to help guide you through the assembly process.



Step 1) Install bracket using the corresponding parts (listed below and to the right) for the exact ball valve being built. These may vary from valve to valve.

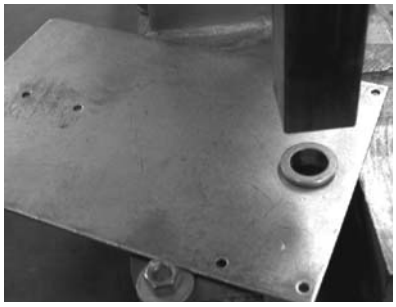
For 2 inch to 3 inch ball valves use:
- Four 5/16-18x3/4 HHB (P/N 43377)
- Four split washers (P/N 44084)
- Four 5/16-18 kep nuts (P/N 44094).



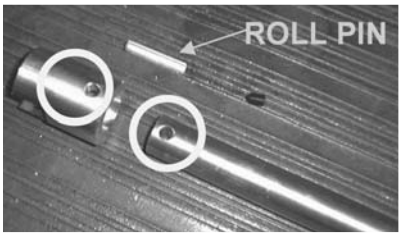
For 1¼ inch to 1½ inch ball valves use:
- Four ¼-20x1/2 BHCS (P/N 43263)
- Four split washers (P/N 44084)
- Four ¼-20 kep nuts (P/N 44028).

For ¾ inch to 1 inch ball valves use:
- Four ¼-20x3/4 BHCS (P/N 43157-00010)
- Four split washers (P/N 44084)
- Four ¼-20 kep nuts (P/N 44028).

Hand tighten until fully seated.

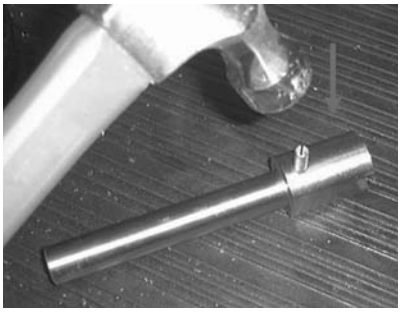


Step 2) Using an arbor press, press the oilite bearing through the flat plate from the smooth side of plate (burr side is down).



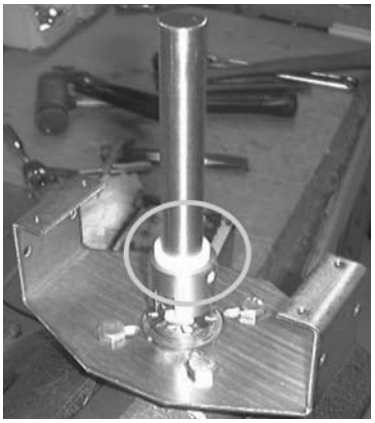
Step 3) Use the supplied single shaft and coupling for the ball valve that is being built.

Push the shaft into the coupling so the two holes (circled in yellow) are exactly centered over each other making an insertion path for the roll pin.

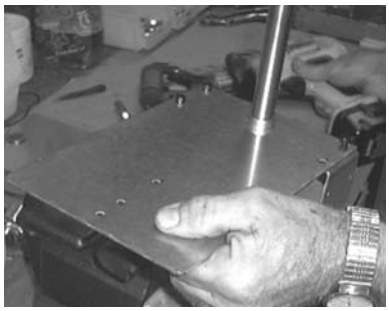


Use the supplied roll pin 1/4 “x 1.25” (P/N 45010)

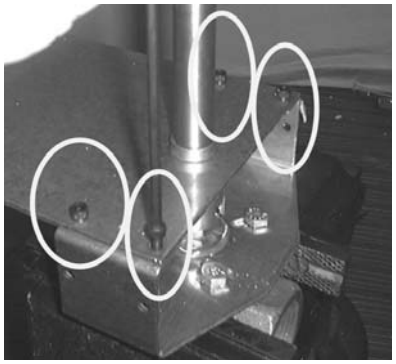
Drive the roll pin through the holes to secure the shaft to coupling.



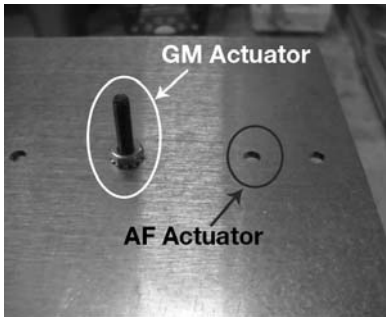
Step 4) Place the coupling shaft assembly onto the valve stem.
Tap in place until coupling is fully seated on the valve stem.
Put two or three (as needed) ¾ inch nylon washers (P/N 44092) (circled in white) onto the shaft to make a snug fit.



Step 5) Install flat plate over the bearing assembly with the oilite bearing extended portion up.



Step 6) Fasten the plate to the bracket using four 10-32 x 3/8 SHCS (P/N 43278).

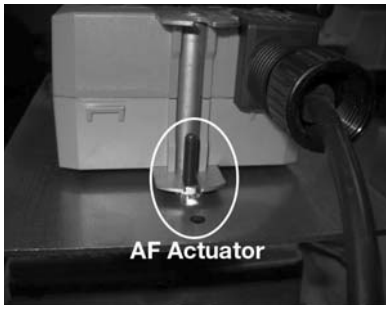


Step 7) Install tail pin 10-32x1 SHCS (from the under-side) in the appropriate hole in the bracket.

GM actuator uses the hole to the left

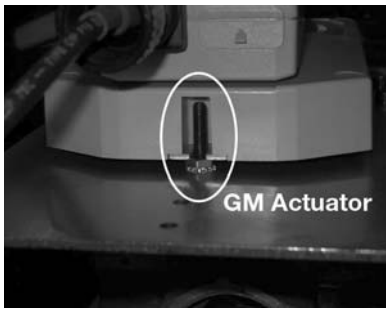
AF actuator uses the center hole as shown

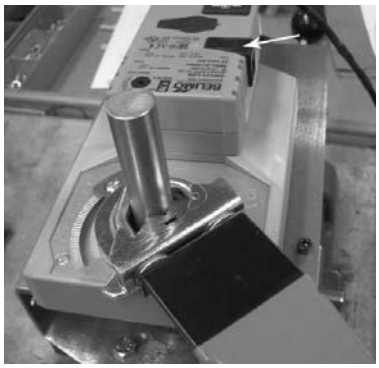
Fasten tight with 10-32 kep nut



Step 8) Slide actuator down over the shaft and onto the tail pin.

Make sure actuator is level with the bracket and perpendicular to the shaft.





Step 9) GM actuators:

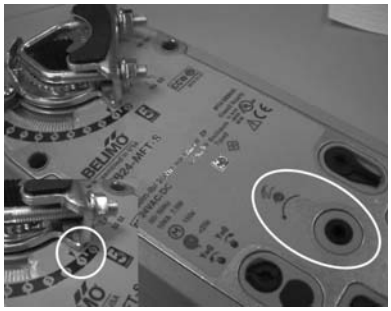
- Remove the two nuts from the end of the U Bolt.
- Install handle onto the two ends of the U Bolt (which extends from the clamp on the actuator)

NOTE: Only the top actuator receives a handle.

- Hand tighten nuts.

Press actuator release (arrow) and rotate actuator to 1 position (open).

Tighten the actuator clamp making sure the ball valve is in the open position (perfectly lined up) and the actuator is set to the 1 position.



Step 10) AF actuators:

- Using the actuator crank provided. Wind each actuator in direction of arrow (either CW or CCW) one revolution.
- Stop and allow actuator to spring return to the end.

Actuators are received positioned at 0 degrees. After allowing actuator to spring return to end, it will be positioned at 5 degrees.

Note: Not all spring return actuators may have this feature.

- If actuator is to be a fail open, operate the actuator and release before tightening down the clamp.
- If actuator is to be a fail closed, operate the actuator to the full end and then tighten the clamp down with the valve in the full open position.

To insure correct calibration of the assembly run the valve to both ends.

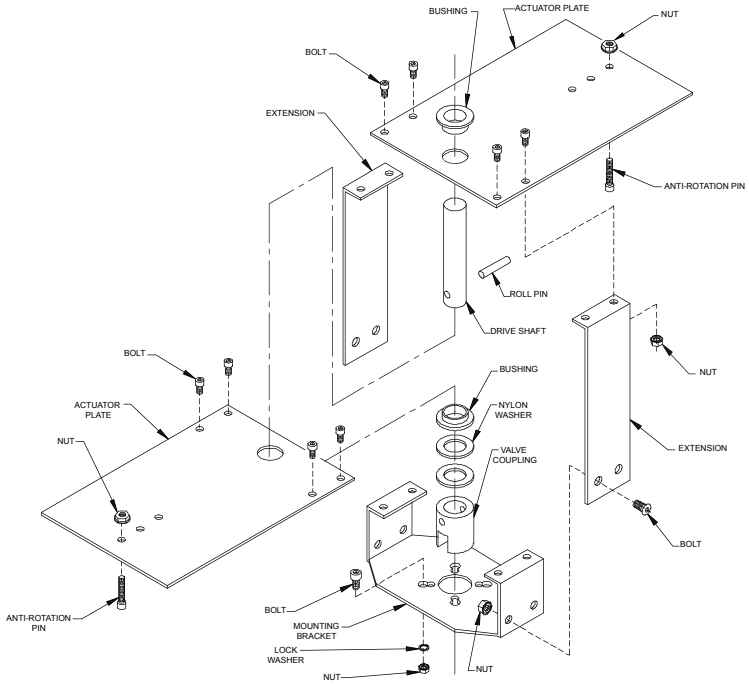
If there is slack in the assembly, readjust the ball valves.

Step 11) For 3-way ball valves:
The 3-way ball valve assembly is completed the same way with AF, GM, single, actuators.

Note: If using a spring return actuator please verify what part should be open and closed.

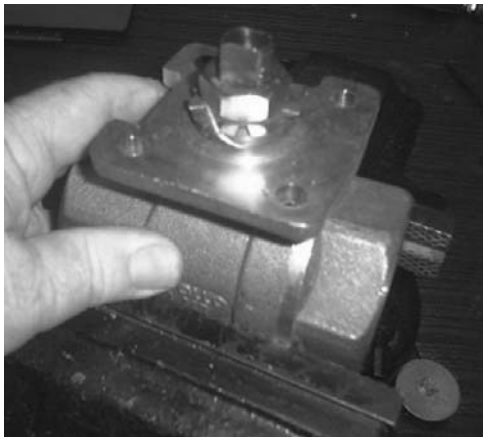
Assembly Sequence for Existing Valves

The valve should be stripped down to its basic form, as shown. The linkage components have been designed to attach to the valve in this state, rather than to any existing hardware.



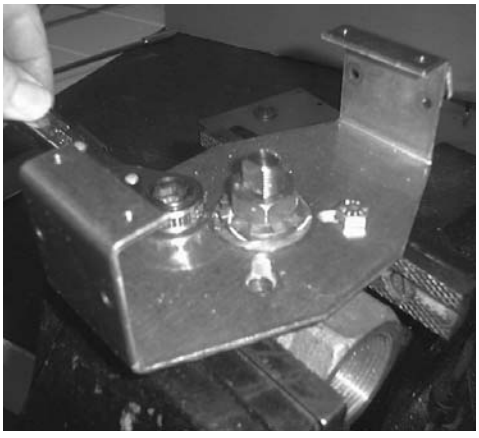
UBSP0006

Follow these steps to properly assemble ball valves to the retrofit linkage.
Reference the step-by-step photos to help guide you through the assembly process.



Step 1) Install bracket using the corresponding parts (listed below and to the right) for the exact ball valve being built. These parts may vary from valve to valve.

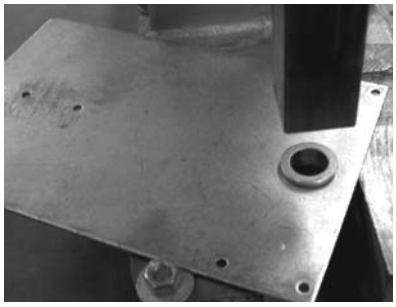
For 2 inch to 3 inch ball valves use:
- Four 5/16-18x3/4 HHB (P/N 43377)
- Four split washers (P/N 44084)
- Four 5/16-18 kep nuts (P/N 44094).



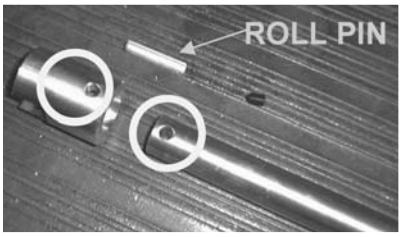
For 1¼ inch to 1½ inch ball valves use:
- Four ¼-20x1/2 BHCS (P/N 43263)
- Four split washers (P/N 44084)
- Four ¼-20 kep nuts (P/N 44028).

For ¾ inch to 1 inch ball valves use:
- Four ¼-20x3/4 BHCS (P/N 43157-00010)
- Four split washers (P/N 44084)
- Four ¼-20 kep nuts (P/N 44028).

Hand tighten until fully seated.

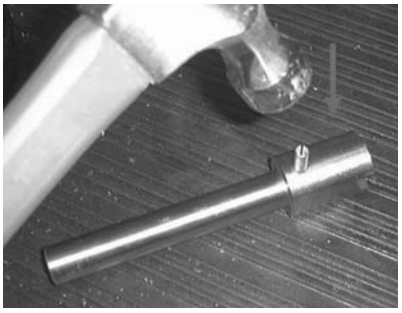


Step 2) Using an arbor press, press the oilite bearing through the flat plate from the smooth side of plate (burr side is down).



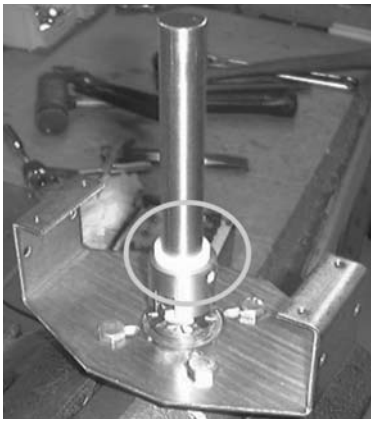
Step 3) Use the supplied single shaft and coupling for the ball valve that is being built.

Push the shaft into the coupling so the two holes (circled in yellow) are exactly centered over each other making an insertion path for the roll pin.

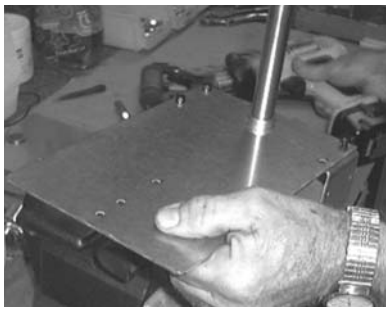


Use the supplied roll pin 1/4" x 1.25" (P/N 45010)

Drive the roll pin through the holes to secure the shaft to coupling.

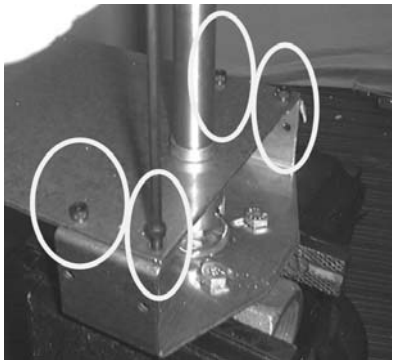


Step 4) Place the coupling shaft assembly onto the valve stem.
Tap in place until coupling is fully seated on the valve stem.
Put two or three (as needed) ¾ inch nylon washers (P/N 44092) (circled in white) onto the shaft to make a snug fit.

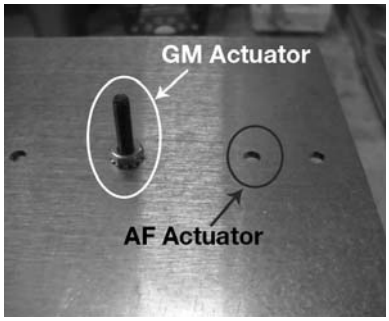


Step 5) Install flat plate over the bearing assembly with the oilite bearing extended portion up.

Note: The plate may need to be fitted to the bracket several times in order to get the correct number of nylon washers needed to make the plate fit flush with both the washers and the bracket.



Fasten the plate to the bracket using four 10-32 x 3/8 SHCS (P/N 43278).

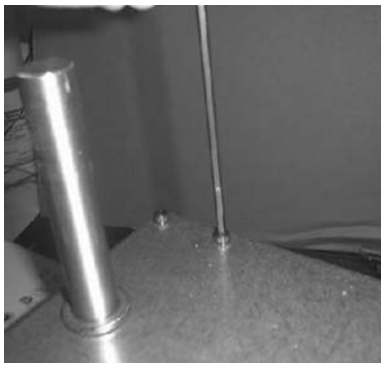


Step 6) Install tail pin 10-32 x 1 SHCS (from the under-side) in the appropriate hole in the bracket.

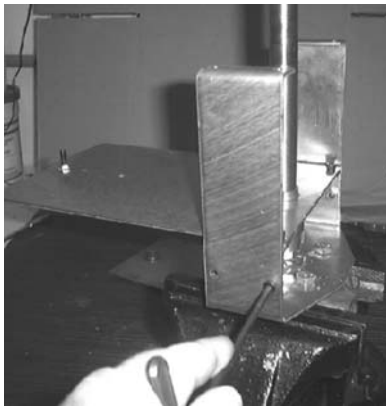
GM actuator uses the hole to the left

AF actuator uses the center hole as shown

Fasten tight with 10-32 kep nut

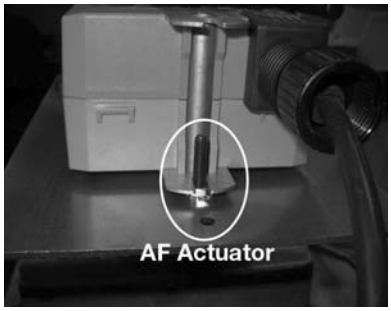


Step 9) Fasten the plate to the dual extensions using four 10-32x1/2 SHCS (P/N 43093) and four 10-32 kep nuts (P/N 44032).



Step 7) Install two dual extension plates (P/N 20069) onto the sides of the bracket using four 10-32 x1/2 SHCS (P/N 43273).

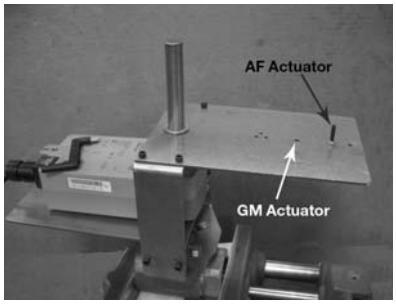
Place four 10-32 kep nuts (P/N 44032) on the inside and tighten.



Step 10) Slide actuator down over the shaft and onto the tail pin.

Make sure actuator is level with the bracket and perpendicular to the shaft.

Step 8) Install the top flat plate down over the shaft with the oilite bearing extended portion facing down.



Step 11) Install tail pin 10-32 x 1 SHCS (P/N 43093) in the second flat plate (from the under-side) in the appropriate hole in the bracket for the actuator being used.

GM actuator uses the hole to the left.

AF actuator uses the center hole.

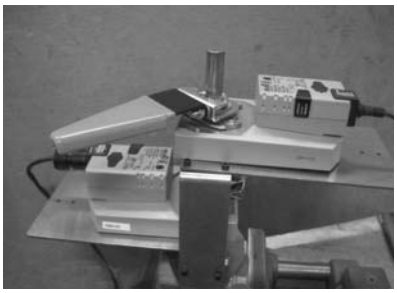
Fasten tight with 10-32 kep nut (P/N 44032).

Slide the second actuator down over the shaft and onto the tail pin.

Note: If using AF actuators make sure the same side of each actuator is up.

GM actuators, press actuator release and rotate actuator to 1 position (open).

Tighten the actuator clamp making sure the ball valve is in the open position (perfectly lined up) and the actuator is set to the 1 position.



Step 12) GM actuators:
- Remove the two nuts from the end of the U bolt.
- Install handle (P/N ZG-H2) onto the two ends of the U bolt (which extends from the clamp on the actuator)

Note: Only the top actuator receives a handle.

- Hand tighten nuts.

Step 13) AF actuators:
- Using the actuator crank provided. Wind each actuator in direction of arrow (either CW or CCW) one revolution.
- Stop and allow actuator to spring return to the end.

Actuators are received positioned at 0 degrees. After allowing actuator to spring return to end, it will be positioned at 5 degrees.

Note: Not all spring return actuators may have this feature.

- If actuator is to be a fail open, operate the actuator and release before tightening down the clamp.
- If actuator is to be a fail closed, operate the actuator to the full end and then tighten the clamp down with the valve in the full open position.

To insure correct calibration of the assembly run the valve to both ends.

If there is slack in the assembly, readjust the ball valves.

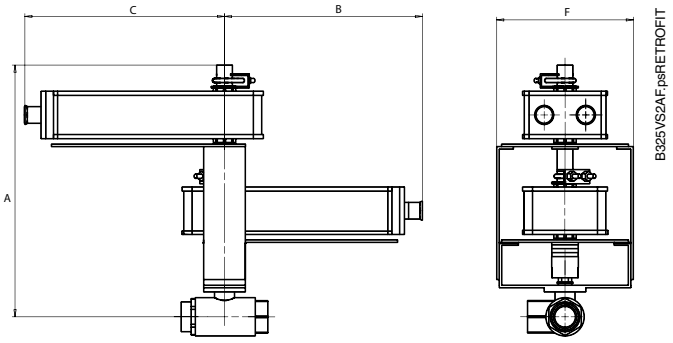
Step 14) 3-way ball valves: (FIG.BV-13) The 3-way ball valve assembly is completed the same way with dual actuators.

Maximum Dimensions (Inches)					
Size	**A**	**B**	**C**	**F**	**Actuator**
1/2"	6.75	1	8	4.75	LF
1/2"	7.25	1	8	4.75	AF
1/2"	6.75	1	8	4.75	LM
1/2"	7.25	1	8	4.75	NM
1/2"	9.5	4.8	-	4.75	SY1
3/4"	7.5	2	8	6.5	NF
3/4"	7.3	2	8	4	NM
3/4"	9.8	4.8	-	-	SY1
1"	8	2	8	6	NF
1"	15	2	8	4	2*AF
1"	8	2	8	6	AM
1"	10	4.8	-	-	SY1
1 1/4"	7	2	8	6	AF
1 1/4"	15	8	8	4	2*AF
1 1/4"	8	2	8	6	AM
1 1/4"	8.6	2	8	6	GM
1 1/4"	10	4.8	-	-	SY1
1 1/2"	8	2	8	6	AF
1 1/2"	13	8	8	4	2*AF
1 1/2"	8.6	2	8	6	GM
1 1/2"	10.5	4.8	-	-	SY1
2"	8	2	8	6	AF
2"	15	8	8	4	2*AF
2"	8.6	2	8	6	GM
2"	15	8	8	6	2*GM
2"	10.7	4.8	-	-	SY1
2½"	8.7	2	8	6	GM
2½"	15	8	8	6	2*GM
2½"	15.5	7.5	12.75	-	SY2
3	8.7	2	8	6	GM
3	15	8	8	6	2*GM
3	15.5	7.5	12.75	-	SY2
4	16.5	12	15	-	SY4
6	16.5	12	15	-	SY5
8	20	14	21	-	SY8
10	20	14	21	-	SY8

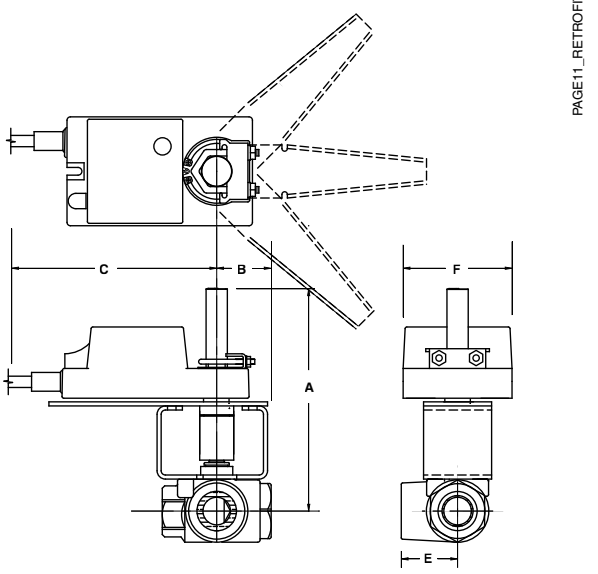
Application Notes

1. Kits dimensions are approximate
2. Custom kits may be taller and varies by application needs

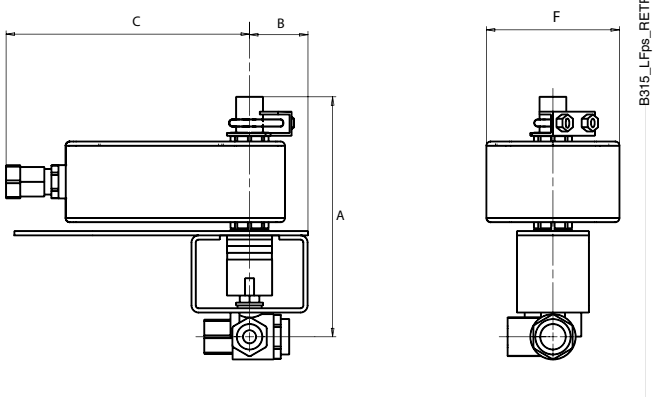
Dimensions with 2-Way or 3-Way Valve



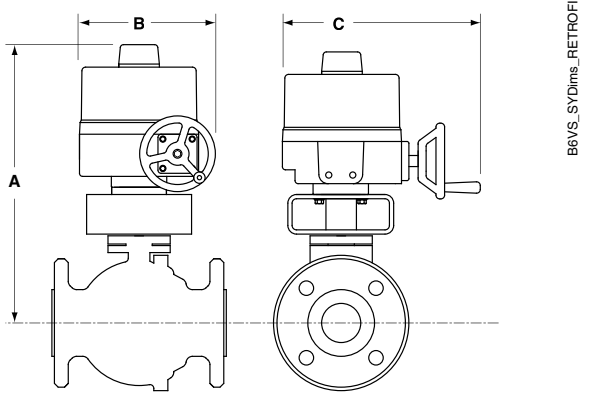
Dimensions with 2-Way or 3-Way Valve



Dimensions with 2-Way or 3-Way Valve



Dimensions with SY



Section 230900 – INSTRUMENTATION AND CONTROL FOR HVAC

PART 1 – GENERAL

The following addition should be made to 1.2.B.

1.2 SUMMARY

B. Related Sections include the following:
   3. Division 23 Section "Hydronic Piping" for requirements for piping packages for control valves.

The following replaces the noted specification sections, except as noted.

2.15 ACTUATORS

A. Electronic Damper Actuators:
   1. Manufactured, brand labeled or distributed by BELIMO.
   2. Size for torque required for damper seal at load conditions.
   3. Coupling: V-bolt dual nut clamp with a V-shaped, toothed cradle.
   4. Mounting: Actuators shall be capable of being mechanically and electrically paralleled to increase torque if required.
   5. Overload Protection: Electronic overload or digital rotation-sensing circuitry without the use of end switches to prevent any damage to the actuator during a stall condition.
   6. Fail-Safe Operation: Mechanical, spring-return mechanism. **[Electronic fail safe shall incorporate a visual indication of the fail safe status on the face of the actuator. The power fail position shall be field adjustable between 0 to 100% in 10° increments. The electronic fail safe shall have a 2 sec [0-10 sec] <Insert Timing between 0-10 sec> operational delay.]**
   7. Power Requirements (Spring Return): 24 [120] [230] V ac, maximum 10 VA at 24-V ac or 8 W at 24-V dc.
   8. Proportional Actuators shall be fully programmable. Control input, position feedback and running time shall be factory or field programmable by use of external computer software Diagnostic feedback shall provide indications of hunting or oscillation, mechanical overload and mechanical travel. Programming shall be through an EEPROM without the use of actuator mounted switches.
   9. Temperature Rating: -22 to +122ºF **-30 to +50ºC [-58 to +122ºF -50 to +50ºC]**
   10. Housing: Minimum requirement NEMA type 2 (4/4X) / IP54 (IP67) mounted in any orientation.
   11. Agency Listing: ISO 9001, cULus, and CSA C22.2 No. 24-93.
   12. The manufacturer shall warrant all components for a period of 5 years from the date of production, with the first two years unconditional.

B. Electronic Valve Actuators:
   1. Manufactured, brand labeled or distributed by BELIMO.
   2. Size for torque required for valve close off at 150 percent of total system (head) pressure for two-way valves; and 100 percent of pressure differential across the valve or 100 percent of total system (pump) head differential pressure for three-way valves.
   3. Coupling: Directly couple end mount to stem, shaft, or ISO-style direct-coupled mounting pad.
   4. Mounting: Actuators shall be capable of being mechanically and electrically paralleled to increase torque if required.
   5. Overload Protection: Electronic overload or digital rotation-sensing circuitry without the use of end switches to deactivate the actuator at the end of rotation.
   6. Fail-Safe Operation: Mechanical, spring-return mechanism. **[Electronic fail safe shall incorporate a visual indication of the fail safe status on the face of the actuator. The power fail position shall be field adjustable between 0 to 100% in 10° increments. The electronic fail safe shall have a 2 sec [0-10 sec] <Insert Timing between 0-10 sec> operational delay.]**
   7. Power Requirements: Maximum 10 VA at 24-V ac or 8 W at 24-V dc.
   8. Maximum 1 VA at 24-V ac or 1 W at 24-V dc.
   9. Temperature Rating: -22 to +122ºF **-30 to +50ºC [-58 to +122ºF -50 to +50ºC]**.
   10. Housing: Minimum requirement NEMA type 2 / IP54 mounted in any orientation.
   11. Agency Listing: ISO 9001, cULus, and CSA C22.2 No. 24-93.
   12. The manufacturer shall warrant all components for a period of 5 years from the date of production, with the first two years unconditional.

C. Terminal Unit Actuators:
   1. Manufactured, brand labeled or distributed by BELIMO.
   2. Close-Off (Differential) Pressure Rating: 200 psi.
   3. Coupling: V-bolt dual nut clamp with a V-shaped, toothed cradle or an ISO-style direct-coupled mounting pad.
   4. Power Requirements: 24V-ac/dc.
   5. Temperature Rating: -22 to +122ºF **-30 to +50ºC**.
   6. Housing Rating: Minimum UL94-5V(B) flammability.
   7. Agency Listing: CE, UL 60730-1A/-2-14, CAN/CSA E60730-1, CSA C22.2 No. 24-93, CE according to 89/336/EEC.
   8. The manufacturer shall warrant all components for a period of 5 years from the date of production, with the first two years unconditional.

D. Industrial Actuators *(ONLY TO BE USED WITH 2.16.I Butterfly Valves – Resilient Seat and 2.16.J Butterfly Valves – High Performance.)*
   1. Manufactured, brand labeled or distributed by BELIMO.
   2. The combination of valve and actuator shall meet the close-off requirements as specified in Section 2.16.H – Butterfly Valves.
   3. Coupling: ISO 5211 mounting standards.
   4. Overload Protection: A self resetting thermal switch embedded in the motor.
   5. Manual Override: Actuator shall be equipped with a hand wheel or shaft for manual override to permit operation of the actuator in the event of an electrical power failure
   6. Power Requirements: 24VAC [120VAC] [230VAC] 1 pH.
   7. Auxiliary Switches: 2 SPDT rated 3A at 250 VAC.
   8. Temperature Rating: -22 to +150ºF **-30 to +65ºC.**
   9. Housing: Minimum requirement NEMA type 4X/ IP67 with an industrial quality coating. Actuator shall have an internal heater to prevent condensation within the housing. A visual indication beacon shall indicate position status of the device.
   10. Agency Listing: ISO, CE, CSA
   11. The manufacturer shall warrant for 2 years from the date of production.

2.16 CONTROL VALVES

A. Manufacturer:
   1. Manufactured, brand labeled or distributed by BELIMO.
B. Control Valves: Factory fabricated of type, body material, and pressure class based on maximum pressure and temperature rating of piping system, unless otherwise indicated.
C. The manufacturer shall warrant all components for a period of 5 years from the date of production, with the first two years unconditional (except as noted).
D. Pressure Independent Control Valves
   1. NPS 2 and Smaller: Forged brass body rated at no less than 400 PSI, chrome plated brass ball and stem, female NPT union ends, dual EPDM lubricated O-rings and TEFZEL characterizing disc.
   2. NPS 2-1/2 through 6: GG25 cast iron body according to ANSI Class 125, standard class B, stainless steel ball and blowout proof stem, flange to match ANSI 125 with a dual EPDM O-ring packing design, PTFE seats, and a stainless steel flow characterizing disc.
   3. Accuracy: The control valves shall accurately control the flow from 0 to 100% full rated flow with an operating pressure differential range of 5 to 50 PSID across the valve.
   4. Flow Characteristics: Equal percentage characteristics.
   5. Close-Off Pressure Rating: NPS 2 and Smaller, 200psi. NPS 2-1/2 and up, 100psi.
   6. All actuators shall be electronically programmed by use of external computer software for the adjustment of flow. Programming using

actuator mounted switches or multi-turn actuators are not acceptable. **[Actuators for 3-wire floating (tri-state) on ½" – 1" pressure independent control valves shall fail in place and have a mechanical device inserted between the valve and the actuator for the adjustment of flow.] [Actuators for two-position ½'-1" pressure independent control valves shall fail in place and have a mechanical device inserted between the valve and the actuator for the adjustment of flow.] [Actuators shall be provided with an auxiliary switch to prove valve position.]**

7. The manufacturer shall provide a published commissioning procedure that follows the guidelines of the National Environmental Balancing Bureau (NEBB) and the Testing Adjusting Balancing Bureau (TABB)
8. The pressure independent control valve shall be provided and delivered from a single manufacturer as a complete assembly. The actuator shall be integrally mounted to the valve at the factory with a single screw on a direct coupled DIN mounting-base.
9. The control valve shall require no maintenance and shall not include replaceable cartridges.
10. The manufacturer shall warrant all components for a period of 5 years from the date of production, with the first two years unconditional.
11. The use of pressure independent valves piped in parallel to achieve the rated coil flow shall be permitted. Actuators shall be electronically programmed to permit sequencing the flow with a single control output point. The use of external devices to permit sequencing is not acceptable.
12. NPS 2" and smaller pressure independent control valves for individual coil control shall be provided as part of a pipe package supplied by the valve manufacturer. The supply side of the coil shall contain an integrated isolation ball valve/manual air vent [strainer/shut-off valve/drain] with a P/T port. The return side shall contain a union fitting with a P/T port, pressure independent control valve, an integrated isolation ball valve/manual air vent with a P/T port. Shut-off valves as an integrated part of the pressure independent control valve are prohibited. **[A [12"] [24"] flexible hose set shall be provided for each coil supply and return connection for all pipe packages.]**

SPECIFYING PRESSURE INDEPENDENT CONTROL VALVES REQUIRE THE FOLLOWING ADDITIONS TO SECTIONS 232113 AND 230593.

To be inserted into Section 232113 – HYDRONIC PIPING

2.6 CONTROL VALVES

K. Calibrated Balancing Valves and Automatic Flow-Control Valves shall not be required on devices where pressure independent control valves are installed.

To be inserted into Section 230593 – TESTING, ADJUSTING, AND BALANCING FOR HVAC

3.11 PROCEDURE FOR HYDRONIC SYSTEMS

H. Systems installed with pressure independent control valves shall not require hydronic system balancing. **[Flow shall be verified and adjusted for the pressure independent valve assembly (valve and actuator combination) for field conditions using the pressure independent control valve manufacturer's documented procedure following the guidelines of the National Environmental Balancing Bureau (NEBB) and the Testing Adjusting Balancing Bureau (TABB) for [10%] [20%] [25%] <Insert Percentage> of the total installed product. Exact locations of tested product to be coordinated with the design engineer.]**

E. Characterized Control Valves:
1. NPS 2 and Smaller: Nickel-plated forged brass body rated at no less than 400 psi, stainless steel ball and blowout proof stem, female NPT end fittings, with a dual EPDM O-ring packing design, fiberglass reinforced Teflon seats, and a TEFZEL flow characterizing disc. **[NPS ¾" and Smaller for Terminal Units: Nickel plated forged brass body rated at no less than 600 psi, chrome plated brass ball and blowout proof stem, female NPT end fittings, with a dual EPDM O-Ring packing design, fiberglass reinforced Teflon seats, and a TEFZEL flow characterizing disc.]**
2. NPS 2-1/2 and 3: GG25 cast iron body according to ANSI Class 125, standard class B, stainless steel ball and blowout proof stem, flange to match ANSI 125 with a dual EPDM O-ring packing design, PTFE seats, and a stainless steel flow characterizing disc.
3. Sizing:
   a. Two-Position: Line size or size using a pressure differential of 1psi.
   b. Two-Way Modulating: [3 psig] 5 psig or twice the load pressure drop, whichever is more.
   c. Three-Way Modulating: Twice the load pressure drop, but not more than [3 psig] 5 psig.
4. Close-Off Pressure Rating: 100 PSI. [NPS ¾" and Smaller for Terminal Units: 200 PSI.]
5. The actuator shall be the same manufacturer as the valve, integrally mounted to the valve at the factory with a single screw on a four-way DIN mounting-base.
6. NPS 2" and smaller characterized control valves for individual coil control shall be provided as part of a pipe package supplied by the valve manufacturer. The supply side of the coil shall contain a strainer/shut-off ball valve/drain [an integrated isolation ball valve/manual air vent] with a P/T port. The return side of the coil shall contain a union fitting with a P/T port, characterized control valve, an integrated manual balancing valve/union/isolation ball valve/manual air vent with P/T port. Shut-off valves as an integrated part of the characterized control valve are prohibited. **[For 3-way installations, supply an integrated 100% port isolation valve/manual air vent with a P/T port for field installation in the bypass of the circuit.] [A [12"] [24"] flexible hose set shall be provided for each coil supply and return connection for all pipe packages.]**

F. Steam system characterized control valves shall have the following characteristics:
1. NPS 1 and Smaller: Nickel-plated forged brass body rated at no less than 600 psi, stainless steel ball and blowout proof stem, female NPT end fittings, with a dual EPDM O-ring packing design, fiberglass reinforced PTFE Teflon seats, and a PTFE Teflon flow characterizing disc.
2. Sizing: 15PSIG or less inlet steam pressure.
   a. Two-Position: Line size or sized using 10% of inlet gauge pressure.
   b. Modulating: Pressure drop shall be 80% of inlet gauge pressure.
3. Close-Off Pressure Rating: 200 PSI.
4. The actuator shall be the same manufacturer as the valve, integrally mounted to the valve at the factory with a single screw on a four-way DIN mounting-base.
5. Flow Characteristics: Equal percentage characteristics.

G. Hydronic system globe valves shall have the following characteristics:
1. NPS 2 and Smaller: ANSI Class 250 bronze body, stainless steel stem, brass plug, bronze seat, and a TFE packing.
2. NPS 2-1/2 and Larger: ANSI Class 125 [250] cast iron body, stainless steel stem, bronze plug, bronze seat, and a TFE V-ring packing.
3. Sizing:
   a. Two-Position: Line size or size using a pressure differential of 1 psi.
   b. Two-Way Modulating: [3 psig] 5 psig or twice the load pressure drop, whichever is more.
   c. Three-Way Modulating: Twice the load pressure drop, but not more than [3 psig] 5 psig.
4. Flow Characteristics: Two-way valves shall have equal percentage characteristics; three-way valves shall have linear characteristics.
5. Close-Off Pressure Rating: Combination of actuator and trim shall provide minimum close-off pressure rating of 150 percent of total system head pressure for two-way valves and 150 percent of the design pressure differential across the three-way valves.

6. Two- and three-way globe valves shall be used only if characterized control valves do not fit the sizing criteria or application.

H. Steam system globe valves shall have the following characteristics:
   1. NPS 2 and Smaller: ANSI Class 250 bronze body; stainless steel seat, stem and plug; and a TFE packing.
   2. NPS 2-1/2 and Larger: ANSI Class 125 [250] cast iron body; stainless steel seat, stem and plug; and a TFE V-ring packing.
   3. Sizing:
      a. Two-Position: Line size or sized using 10% of inlet gauge pressure.
      b. Modulating: 15 PSIG or less inlet steam pressure, the pressure drop shall be 80% of inlet gauge pressure. Higher than 15 PSIG inlet steam pressure the pressure drop shall be 42% of the inlet absolute pressure.
   4. Flow Characteristics: Linear or equal percentage characteristics.
   5. Close-Off Pressure Rating: Combination of actuator and trim shall provide minimum close-off pressure rating of 150 percent of operating (inlet) pressure.

I. Butterfly Valves – Resilient Seat:
   1. NPS 2 to 12: Valve body shall be full lugged cast iron 200 psig body with a 304 stainless steel disc, EPDM seat, extended neck and shall meet ANSI Class 125/150 flange standards. Disc-to-stem connection shall utilize an internal spline. The shaft shall be supported at four locations by RPTFE bushings.
   2. NPS 14 and Larger: Valve body shall be full lugged cast iron 150 psig body with a 304 stainless steel disc, EPDM seat, extended neck and shall meet ANSI Class 125/150 flange standards. Disc-to-stem connection shall utilize a dual-pin method to prevent the disc from settling onto the liner. The shaft shall be supported at four locations by RPTFE bushings.
   3. Sizing:
      a. Two-Position: Line size or size using a pressure differential of 1 psi.
      b. Modulating: [3 psig] 5 psig or twice the load pressure drop, whichever is more. Size for the design flow with the disc in a 60-degree-open-position with the design velocity less than 12 feet per second.
   4. Close-Off Pressure Rating: NPS 2-12" 200 psi bubble tight shut-off. NPS 14 and larger, 150 psi bubble tight shut-off.

J. Butterfly Valves – High Performance:
   1. Valve body shall be full lugged carbon steel ANSI Class 150 [300] body with a 316 stainless steel disc without a nylon coating, RTFE seat, and be ANSI Class 150300 flange standards. Blowout-proof shaft shall be 17-4ph stainless steel and shall be supported at four locations by glass-backed TFE bushings. Valve packing shall be Chevron TFE and shall include fully adjustable packing flange and separable packing gland. Valve body shall have long stem design to allow for 2" insulation (minimum). Valve face-to-face dimensions shall comply with API 609 and MSS-SP-68. Valve assembly shall be completely assembled and tested, ready for installation.
   2. Sizing:
      a. Two-Position: Line size or size using a pressure differential of 1 psi.
      b. Modulating: [3 psig] 5 psig or twice the load pressure drop, whichever is more. Size for the design flow with the disc in a 60-degree-open-position with the design velocity less than 32 feet per second.
   3. Flow Characteristics: Modified equal percentage, unidirectional.
   4. Close-Off Pressure Rating: 150 [285] psi bubble tight shut-off.
   5. Media Temperature Range: ANSI Class 150 [300] limitations.
   6. Max Differential Pressure: 285 psi @ 100 deg F for ANSI 150 (725 psi @ 100 deg F for ANSI 300).

K. Zone Valves (On/Off Two-Position Applications):
   1. NPS 1 and Smaller: Forged brass body rated at no less than 300 psi, stainless steel stem, female, NPT union or sweat with a stainless steel stem and EPDM seals.
   2. Sizing:
      a. Two-Position: Line size or size using a pressure differential of 1 psi.
   3. Close-Off Pressure Rating: Combination of actuator and trim shall provide minimum close-off pressure rating of 150 percent of total system head pressure for two-way valves and 125 percent of the design pressure differential across the three-way valves.
   4. The actuator shall be the same manufacturer as the valve, integrally mounted to the valve at the factory.
   5. The manufacturer shall warrant all components for a period of 2 years from the date of production.
   6. All zone valves for individual coil control shall be provided as part of a pipe package supplied by the valve manufacturer. The supply side of the coil shall contain a strainer/shut-off ball valve/drain [an integrated 100% port isolation valve/manual air vent] with a P/T port. The return side of the coil shall contain a union fitting with a P/T port, zone valve, an integrated manual balancing valve/union/isolation ball valve/manual air vent with P/T port. Shut-off valves as an integrated part of the zone valve are prohibited. **[A [12"] [24"] flexible hose set shall be provided for each coil supply and return connection for all pipe packages.]**

To be inserted into Section 233300 – AIR DUCT ACCESSORIES

2.8 SMOKE DAMPERS

Replace with the following:

I. Damper Motors:
   1. Manufactured, brand labeled or distributed by BELIMO.
   2. Size for torque required for damper seal at load conditions with one actuator per damper section. Mechanically paralleled or 'piggybacked' actuators are not permitted.
   3. Coupling: V-bolt dual nut clamp with a V-shaped toothed cradle. Aluminum clamps or set screws are not acceptable.
   4. Overload Protection: Microprocessor or an electronic based motor controller providing burnout protection if stalled before full rotation is reached. The actuator shall be electronically cut off at full open to eliminate noise generation with the holding noise level to be inaudible.
   5. Power Requirements: 0.23A (running) and 0.09A (holding) at 24V-ac or 27 VA (running) and 10 VA (holding) at 120V-ac.
   6. Actuator timing shall be 15 sec [75 sec] [local codes].
   7. Temperature Rating: Actuator shall have a UL555S listing by the damper manufacturer for 350ºF [250ºF].
   8. **[Proportional Smoke Damper Actuators shall meet all requirements specified above and shall modulate 0-100% open in response to a 2-10vdc or 4-20mA control signal. A 2-10vdc feedback output shall provide a 2-10vdc signal for position indication.**
      a. Power Requirements (Proportional): Maximum (running) 12 VA at 24-V ac or 8 W at 24-V dc. Maximum (holding) 5VA at 24-V ac or 3 W at 24-V dc.
      b. A manual override winder and locking mechanism shall be provided for override operation of the actuator on a loss of power.]
   9. **[Balancing Smoke Damper Actuators shall meet all requirements specified above and shall include an integral adjustable maximum opening potentiometer for airflow adjustment.**
      a. Power Requirements (Balancing): Maximum (running) 9.5 VA at 24-V ac or 6 W at 24-V dc. Maximum (holding) 5VA at 24-V ac or 3 W at 24-V dc.
      b. A manual override winder and locking mechanism shall be provided for override operation of the actuator on a loss of power to the actuator.]

The following replaces item 2.8.K.1

1. Auxiliary switches for [**signaling**] [**fan control**] [**or**] [**position indication**].

2.9 COMBINATION FIRE AND SMOKE DAMPERS

O. Damper Motors:

1. Manufactured, brand labeled or distributed by BELIMO.
2. Size for torque required for damper seal at load conditions.
3. Coupling: V-bolt dual nut clamp with a V-shaped toothed cradle. Aluminum clamps or set screws are not acceptable.
4. Overload Protection: Microprocessor or an electronic based motor controller providing burnout protection if stalled before full rotation is reached. The actuator shall be electronically cut off at full open to eliminate noise generation with the holding noise level to be inaudible.
5. Power Requirements: 0.23A (running) and 0.09A (holding) at 24V-ac or 27 VA (running) and 10 VA (holding) at 120V-ac.
6. Actuator timing shall be 15 sec [75 sec] [local codes].
7. Temperature Rating: Actuator shall have a UL555S and UL555S listing by the damper manufacturer for 350ºF [250ºF].
8. **[Proportional Combination Fire and Smoke Damper Actuators shall meet all requirements specified above and shall modulate 0-100% open in response to a 2-10vdc or 4-20mA control signal. A 2-10vdc feedback output shall provide a 2-10vdc signal for position indication.**
   a. **Power Requirements (Proportional): Maximum (running) 12 VA at 24-V ac or 8 W at 24-V dc. Maximum (holding) 5VA at 24-V ac or 3 W at 24-V dc.**
   b. **A manual override winder and locking mechanism shall be provided for override operation of the actuator on a loss of power.]**
9. **[Balancing Combination Fire and Smoke Damper Actuators shall meet all requirements specified above and shall include an integral adjustable maximum opening potentiometer for airflow adjustment.**
   a. **Power Requirements (Balancing): Maximum (running) 9.5 VA at 24-V ac or 6 W at 24-V dc. Maximum (holding) 5VA at 24-V ac or 3 W at 24-V dc.**
   b. **A manual override winder and locking mechanism shall be provided for override operation of the actuator on a loss of power to the actuator.]**

The following replaces item 2.9.Q.1

1. Auxiliary switches for [**signaling**] [**fan control**] [**or**] [**position indication**].
2. Housing: Steel housing, aluminum is unacceptable.
3. Agency Listing: ISO 9001, UL873, or UL60730.
4. The manufacturer shall warrant all components for a period of 5 years from the date of production, with the first two years unconditional.

NOTE TO SPECIFIER

Any (or all) of the following manufacturers are listed per UL555S with Belimo actuators: Air Balance, Arlan, E.H. Price, Greenheck, Leader, Lloyd Industries, Nailor, Pottorff, Prefco, Ruskin and Safe-Air.

Terms and Conditions

General

1.1. The following Terms and Conditions of Sale ("Terms") apply to the sale of products described in this Product Guide ("Products"). As used herein, "Seller" or "Belimo" refers to Belimo Aircontrols (USA) Inc. or Belimo Aircontrols (CAN) Inc., as applicable, and "Client" refers to the individual or business entity that purchases the Products from Seller. These Terms shall apply unless the parties mutually agree to different terms and memorialize such agreement in a writing signed by both Client and Seller.

II. Price

2.1. The Seller's price for Products (the "Price") is net, F.O.B. Point of Origin, and is calculated in US currency for sales made by Belimo Aircontrols (USA), Inc. and calculated in Canadian currency for sales made by Belimo Aircontrols (CAN) Inc.

2.2. The Price, unless otherwise agreed upon, does not include freight and packaging (wooden crates, pallets, etc), the costs of which will be charged to Client at cost for each shipment and shall be payable with payment of the Price.

2.3. Orders for Products with a net value of less than US$300 (CAN$450) will be subject to a US$20 (CAN$35) handling fee (the "Handling Fee"). The Handling Fee will not be charged for orders of Products with a net value equal to or greater than US$300 (CAN$450) or for Products ordered through Seller's internet ordering system at: www.belimo.com.

2.4. Seller reserves the right to make partial deliveries of orders of Products, each of which deliveries may be invoiced separately by Seller.

2.5. The Price does not include charges for wiring diagrams, installation, and commissioning, which will be charged to Client separately and will be payable on demand.

III. Payment

3.1. Invoices are payable in US currency for sales made by Belimo Aircontrols (USA), Inc. and in Canadian currency for sales made by Belimo Aircontrols (CAN) Inc. and are due no later than 30 days from the date of invoice, without any deductions.

3.2. If Client fails to pay the entire invoice balance within 60 days from the date of the invoice, Client will be subject to an interest charge of 2% per month (or the maximum rate permitted by law, whichever is less) on the outstanding unpaid balance due to Seller.

3.3. Clients who maintain outstanding balances for 45 days or more after the date of invoice may be subject to restricted shipments of Products or may be required to pay for all future deliveries of Products on a cash-on-delivery basis.

IV. Title and Risk

4.1. Title to all Products shall remain with Seller and shall not pass to Client until Seller has received full payment for the Products.

V. Damage or Loss in Transit

5.1. Seller assumes no liability for damage or loss of shipment of Products, which risk shall at all times remain with the carrier. All shipments must be unpacked and examined by Client immediately upon receipt. Any external evidence of loss or damage must be noted on the freight bill accompanying the shipment of Products or carrier's receipt and signed by the carrier's agent at the time of delivery. Failure to do so will result in the carrier's refusal to honor any claim relating to damage of Products. Client must also notify Seller of such damage by providing Seller with a copy of the freight bill or damage report so that Seller can file a claim for loss or damage in transit with the carrier. If the damage does not become apparent until the shipment is unpacked, Client must make a request for inspection by the carrier's agent and file with the carrier within 15 days after receipt of product and notify Seller of the same. Seller is not liable for consequential damage to Client's property or a third-party's property resulting from the installation of damaged Products.

VI. Delivery

6.1. Seller undertakes to make every attempt to adhere to its stated delivery parameters and to make a timely delivery of the Products but does not guarantee any delivery specifications. Each contract entered into for the purchase of Products is not cancelable nor is Seller liable for any direct or indirect losses that may arise, for any reason whatsoever, due to Seller's failure to meet any stated or assumed delivery schedules.

VII. Return of Goods

7.1. Products received by Client cannot be returned unless: (i) Client alerts Seller that it intends to return such Products, (ii) Seller agrees to accept the return of such Products, (iii) Client obtains a Return Material Authorization ("RMA") number from Seller for the return of such Products, and (iv) Client follows all return instructions provided by the Seller. The RMA number must be clearly written on the outside of all packaging for any returned Products. Only Products returned to the proper location as instructed by Seller and identified with an RMA number will be considered for credit.

7.2. Only Products that are returned in original packaging may be accepted for return. All returned Products must be shipped to Seller at Client's cost. Such returned Products must be received in as-new condition, adequate for resale as new Products to qualify for credit. Client will be responsible for payment of a restocking charge for all returned Products in an amount no less than 20% of the invoice value of the Products ("Restocking Charges"). Product received damaged or showing evidence of having been installed will be refused or assessed a higher restocking charge. Custom kits designed to a Client's unique specifications are not returnable. If Client requests product to be returned to them, the Client will be responsible for return shipping charges. See specific product literature for exclusions or exceptions.

7.3. Returns that result from Seller errors will be credited in full and will not be subject to Restocking Charges.

VIII. Warranty

VIII.A 5-year Warranty

8.1. Products that are listed in this Product Guide as carrying a 5-year warranty to a location in the United States or Canada shall carry a 5-year warranty. The 5-year warranty is unconditional for the first two years from the date of production of the Products. After the first two years from the date of Production, the warranty shall be conditional and the warranty coverage shall not apply to damage to Products caused by ordinary wear and tear, negligence or improper use by Client, or other causes beyond the control of the Seller. Product specific terms of warranty with regard to warranty period or conditions of warranty may apply to certain specified Products as stated in the documentation for those Products.

VIII.B 2-year Conditional warranty

8.2. Products that are listed in this Product Guide as carrying a 2-year to a location in the United States or Canada shall carry a 2-year warranty. The 2-year warranty is conditional and the warranty coverage shall not apply to damage to Products caused by ordinary wear and tear, negligence or improper use by Client, or other causes beyond the control of the Seller. Product specific terms of warranty with regard to warranty period or conditions of warranty may apply to certain specified Products as stated in the documentation for those Products.

VIII.C General Warranty Terms

8.3. Seller's warranty may be null and void in the event of any: (a) modification or unauthorized repairs of Products by Client, (b) unauthorized incorporation or integration of Products into or with Client's equipment, (c) use of Products in an unauthorized manner, or (d) damage to Products not caused by Seller.

8.4. Client must promptly notify Seller of Products' alleged defect and provide Seller with other evidence and documentation reasonably requested by Seller. Before removing Products from service, Client should contact a Seller-authorized support technician by calling Belimo customer service. The contact information for Belimo customer service is listed on the back page of Belimo's Product Guide and Price List ("PGPL") or may be found at www.belimo.com. Belimo customer service will work with field technicians to troubleshoot problems. Many problems can be resolved over the phone.

8.5. If a problem cannot be resolved over the phone, an RMA number will be issued by Seller for return of the Products. Prior to returning any Products under a warranty, Client must obtain an RMA number from Seller, along with shipping instructions for the return. The RMA number must be clearly written on the outside of the box containing the returned Products. Only Products returned to the proper location and identified with an RMA number will be accepted by the Seller.

8.6. All returned Products should be packaged appropriately to prevent further damage. Seller reserves the right to refuse any returned material if improperly packaged or labeled (without an RMA number). Products returned without proper RMA documentation will void Seller's warranty.

8.7. Products found to be defective for which a warranty is applicable will either be replaced or repaired at the Seller's discretion. Seller is not responsible for charges that Client may incur as a result of the removal or replacement of Products.

8.8. Repaired or replacement Products are shipped from Seller via ground shipment. Other shipping methods are available at the sole expense of the Client.

8.9. Repaired, replaced or exchanged Products will carry a warranty for a period of time equal to the greater of: (i) the remainder of the original 5-year warranty or 2-year warranty that was applicable to the repaired, replaced or exchanged Products, or (ii) six months, effective from the date the repaired, exchanged or replaced Products are shipped by Seller (the "Replacement Warranty Period").

8.10. Advanced replacement Products for Products covered under warranty may be obtained from Seller after the Belimo customer service troubleshooting process has been completed. For industrial products (such as butterfly valves), a purchase order is required. The purchase order will be credited upon the receipt and verification by Seller of the returned defective Products. For non-industrial products, an invoice will be issued and shall be due and payable if the returned Products are not received by Seller within 60 days from the date of that the replacement Products are shipped. Additional charges may apply if the nature of the problem has been misrepresented by Client.

8.11. Both the conditional and unconditional warranties cover the Products only, and do NOT cover labor associated with the troubleshooting, removal or replacement of such Products.

8.12. New Products ordered in an attempt to circumvent the warranty process may NOT be reimbursed if, upon receipt of returned Products, it is determined that the defect in the returned Products is actually field related, or the Products have been returned for cosmetic reasons only.

8.13. Advanced replacement Products for butterfly valve actuators may not be new, but have been verified by the Seller for electrical and mechanical operation. Such Products carry the full warranty for the entire Replacement Warranty Period.

IX. No Warranty for Non-HVAC Application

9.1. All Seller warranties shall extend only to HVAC use of the Products. If Products are used in non-HVAC application (e.g., aircraft, industrial processes, etc.), Seller's warranties shall not cover such Products. Client will be solely responsible for any damage to or malfunction of Products or for any damage resulting from such use of Products.

X. Liability Disclaimer

10.1. These Terms constitute the entire understanding and agreement between Seller and Client regarding the warranties that cover Products and supersedes all previous understandings, agreements, communications and representations. Seller shall not be responsible for and Client does not have any right to make any claim for, damage that occurs to any property other than Products. Seller shall in no way be responsible for any costs incurred by Client in the determination of the causes of damage to any of Client's property, for expert opinions, or for any punitive or special, incidental or consequential damages of any kind whatsoever.

10.2. Seller shall not be liable for any damage resulting from or contributed by Client or third parties acting within the scope of responsibility of Client or such third party when:

1. Products are used for non-HVAC applications, such as in aircrafts, industrial processes, etc.;
2. Client uses the Products without complying with applicable law or institutional regulations or Belimo data and installation sheets or Client uses the Products without following good industry practice;
3. Products are used by personnel who have not received suitable instruction; or
4. Products are modified or repaired without the written approval of Seller.

When requested to do so, Client shall immediately release Seller in full from any possible third party claims resulting in connection with the circumstances listed above. This also applies to claims in connection with product liability.

10.3. If Client becomes aware that any third party has made or appears likely to make any claim regarding Products (including, without limitation, regarding Product defects or rights infringed by Products), then Client shall immediately inform Seller and afford to Seller all assistance that Seller may require to enforce its rights and defend such claim.

XI. Proper Law and Jurisdiction

11.1. All sales of Products under these Terms and the warranties described herein shall be governed by the laws of the State of Connecticut, and the parties agree to submit to the exclusive jurisdiction of the Federal and state courts located in the State of Connecticut with respect to any dispute arising from the subject matter hereof. The parties hereby waive all rights to a jury trial in connection with any claims relating to the subject matter hereof.

Belimo Platinum Distributors

USA

ACR Supply Company Inc.
2719 Hillsborough Road
Durham, NC 27705
Phone: 919-286-2228
With branches in NC

Aireco Supply
9120 Washington Boulevard
Savage, MD 20763-0414
Phone: 301-953-8800
With branches in MD, VA

Amcon Controls, Inc.
11906 Warfield Street
San Antonio,TX 78216
Phone: 210-349-6161
Houston, TX branch 713-464-7002

Applied Automation- Wilson Mohr
3186 South Washington Street, #230
Salt Lake City, UT 84115
Phone: 801-486-6454

Boston Aircontrols, Inc.
8 Blanchard Road
Burlington, MA 01803
Phone: 888-423-2525

Charles D. Jones Co.
445 Bryant Street, Unit #1
Denver, CO 80204-4800
Phone: 800-777-0910
With branches in CO, MO, KS

Climatic Control Div/ICD
5061 W. State Street
Milwaukee, WI 53208
Phone: 800-242-1656
With branches in WI

Cochrane Supply and Engineering, Inc.
30303 Stephenson Highway
Madison Heights, MI 48071-1633
Phone: 800-482-4894
With branches in MI and Maumee, OH

Columbus Temperature Control
1053 E. 5th Avenue
Columbus, OH 43201
Phone: 800-837-1837

Controlco
5600 Imhoff Drive, Suite G
Concord, CA 94520
Phone: 925-602-7728
With branches in CA, NV

Control Products
9101 Jameel, Suite 130
Houston, TX 77447
Phone: 713-690-6300

Edward C. Smyers & Co.
223 Fort Pitt Boulevard
Pittsburgh, PA 15222-1505
Phone: 412-471-3222

Engineered Control Systems
4805 N.W. 79th Avenue
Suite 11
Miami, FL 33166
Phone: 305-418-8901
With branches in FL

G & O Thermal Supply
5435 N. Northwest Highway
Chicago, IL 60630
Phone: 773-763-1300
With branches in IL

Industrial Controls Distributors LLC
1776 Bloomsbury Avenue
Wanamassa, NJ 07712
Phone: 800-631-2112
With branches in
GA, KY, IN, MA, ME, NC, NY, OH, PA, TN

Interstate HVAC Controls
30 Vineland Street
Brighton, MA 02135
Phone: 617-782-9000

Jackson Controls
1708 E. 10th Street
Indianapolis, IN 46201
Phone: 317-231-2200

M & M Controls
9E West Aylesbury Road
Timonium, MD 21093
Phone: 410-252-1221
With a branch in Alexandria, VA

MICONTROLS, Inc.
6516 5th Place South
Seattle, WA 98124
Phone: 800-877-8026
With branches in WA, OR

Meier Supply
123 Brown Street
Johnson City, NY 13790
Phone: 607-797-7700
With branches in NY, PA

Minvalco, Inc.
3340 Gorham Avenue
Minneapolis, MN 55426-4267
Phone: 952-920-0131
With branches in MN

RSD/Refrigeration Supply Distribution
26021 Atlantic Ocean Drive
Lake Forest, CA 92630
Phone: 949-380-7878
With branches in
CA, NV, OR, AK, AZ, ID, UT, WA, MT

Saint Louis Boiler Supply, Co.
617 Hanley Industrial Court
St. Louis, MO 63144
Phone: 314-962-9242

South Side Control Supply, Co.
488 N. Milwaukee Avenue
Chicago, IL 60610-3923
Phone: 312-226-4900
With branches in IL, IN

Stromquist and Company
4620 Atlanta Road
Smyrna, GA 30080
Phone: 404-794-3440
With a branch in Orlando, FL

Temperature Control Systems
10315 Brockwood Road
Dallas, TX 75238
Phone: 214-343-1444
With branches in OK, TX

Tower Equipment Co., Inc.
1320 West Broad Street
Stratford, CT 06615
Phone: 800-346-4647

Twinco Supply Corporation
55 Craven Street
Huntington Station, NY 11746-2143
Phone: 800-794-3188
With branches in NY

Wilson-Mohr, Inc.
12610 West Airport Blvd, Suite 100
Sugarland, TX 77478
Phone: 281-295-8850

CANADA

For a complete list of distributors in Canada, please visit our website: *www.belimo.ca* or call toll free: 866-805-7089

RETROFIT®

Belimo worldwide: www.belimo.com

BELIMO Americas
USA Locations, 43 Old Ridgebury Road, Danbury, CT 06810
Tel. 800-543-9038, Fax 800-228-8283, marketing@us.belimo.com

1049 Fortunato Loop, Sparks, NV 89436
Tel. 800-987-9042, Fax 800-987-8875, marketing@us.belimo.com

Canada Locations, 14/16 – 5716 Coopers Avenue, Mississauga, Ontario L4Z 2E8
Tel. 866-805-7089, Fax 905-712-3124, marketing@us.belimo.com

Latin America and The Caribbean Customer Service
Tel. 203-791-8396, Fax 203-791-9139, marketing@us.belimo.com

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