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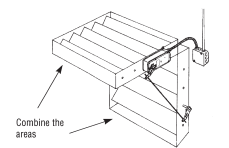
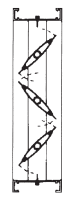
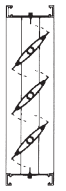
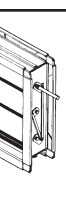

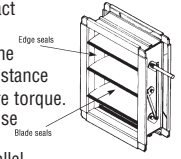
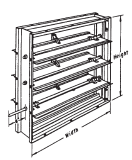
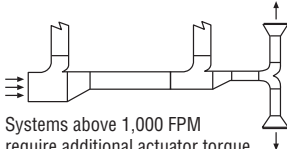
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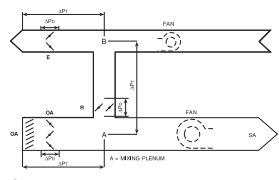
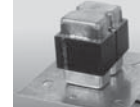
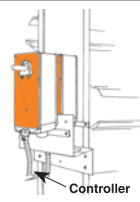
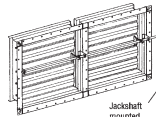
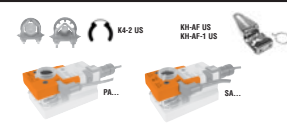


# Retrofit and Replacement

## How to Select an Actuator

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 on Section 1 and 2 allow for the best selection of a Belimo actuator.

Application Info		*Application Data
<b>1</b>	<b>What is the total area of the damper?</b> 	_____ sq. ft.
<b>2</b>	<b>Opposed blade or Parallel blade control construction?</b>  <b>Opposed Blade w/o seals 3 in-lb/sq feet</b>  <b>Opposed Blade w/ seals 5 in-lb/sq feet</b>  <b>Parallel Blade w/o seals 4 in-lb/sq feet</b>  <b>Parallel Blade w/ seals 7 in-lb/sq feet</b> 	<input type="checkbox"/> <b>Opposed Blade</b>   <input type="checkbox"/> <b>Parallel Blade</b>
<b>3</b>	<b>Are there blade and edge seals on the damper?</b>  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. 	<input type="checkbox"/> <b>Yes</b> <input type="checkbox"/> <b>No</b>
<b>4</b>	<b>For the damper in question, what does the manufacturer specify as the torque rating?</b>  If this information is not available refer to the "typical damper requirements and sizing" chart below.	_____ in-lb/sq. ft.
<b>5</b>	<b>What is the air velocity, static pressure, or design CFM?</b>  Systems above 1,000 FPM require additional actuator torque	_____ W.G. _____ CFM _____ FPM

Actuator Requirements	*Application Data
<b>6</b> <b>Is fail safe actuation required?</b>  Consider the application. Is the actuator and/or damper exposed to outside air? If yes, use spring return.	<input type="checkbox"/> <b>Yes</b> <input type="checkbox"/> <b>No</b>
<b>7</b> <b>What is the supply voltage to the actuator?</b> 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. 	<input type="checkbox"/> <b>24 VAC</b> <input type="checkbox"/> <b>120 VAC</b> <input type="checkbox"/> <b>230 VAC</b> • 24 VAC/DC • 120 VAC • 230 VAC single phase
<b>8</b> <b>What is the control signal to the actuator?</b>  Controller	• 2 position • Floating point • Modulating • Sequencing • "Non-standard" voltage signals <input type="checkbox"/> <b>On/Off</b> <input type="checkbox"/> <b>Floating Point</b> <input type="checkbox"/> <b>2-10 VDC</b> <input type="checkbox"/> <b>0-10 VDC</b> <input type="checkbox"/> <b>4-20 mA</b> <input type="checkbox"/> <b>PWM</b> _____ range <input type="checkbox"/> <b>Other (MFT)</b>
<b>9</b> <b>Can you direct couple to a damper shaft?</b>  Jackshaft mounted	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. <input type="checkbox"/> <b>Yes</b> <input type="checkbox"/> <b>No, see accessories page</b>
<b>10</b> <b>Are there additional accessories required?</b>  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.	<input type="checkbox"/> <b>No</b> <input type="checkbox"/> <b>Yes, see accessories section or actuator series for details</b>

### Typical Damper Requirements and Sizing

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

EXAMPLE: Damper Area ( $8 \text{ ft}^2$ )  $\times$  Rated Torque Loading of Damper ( $4 \text{ in-lb/ft}^2$ ) = Total in-lb Required ( $32 \text{ in-lb}$ ) **Belimo LF/LM 35 in-lb actuators**

Square	Damper Blade Type	Torque Loading in-lb/ft <sup>2</sup>		
		< 1000 FPM	1000-2500 FPM	2500-3500 FPM
		2 inch water column (WG)		
	Parallel blade/edge seals	<b>7 (Typical)</b>	10.5	14
	Opposed blade/edge seals	<b>5 (Typical)</b>	7.5	10
	Parallel blade/no edge seals	4	6	8
	Opposed blade/no edge seals	3	4.5	6
	Round	10	14	20

### 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:

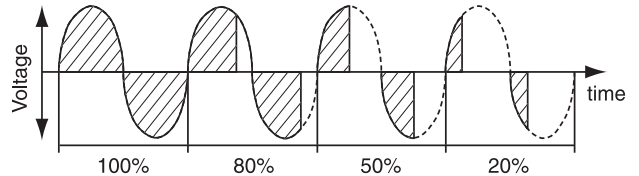
0-10 VDC    2-10 VDC

It is common to also have a 0-20 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 torque adjustment
- FEEDBACK**  
selectable feedback values

### Control Signal-Based Retrofit Solutions

#### Honeywell Series 90, 0-135 Ω, use:

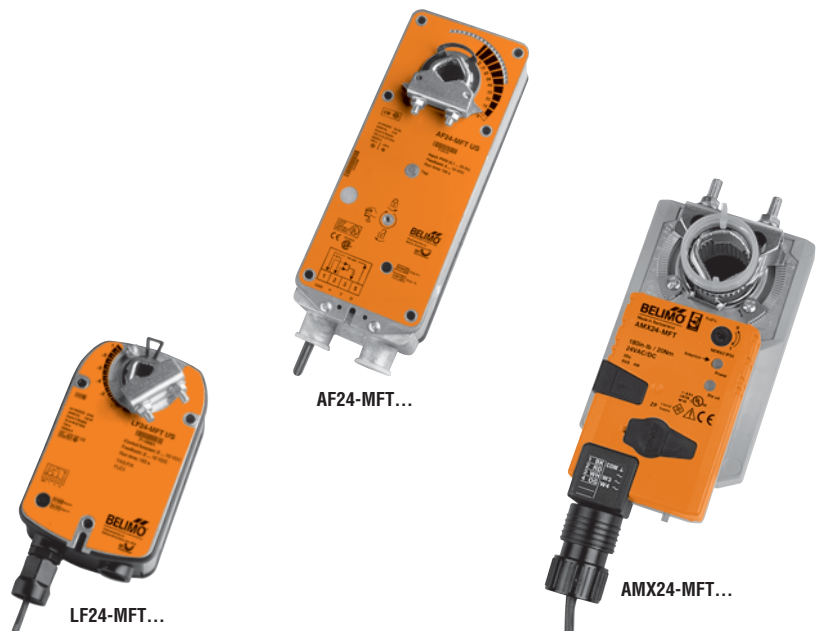
Model	Torque
AF24-MFT95 US	133 in-lb
LMX24-MFT95	45 in-lb
NMX24-MFT95	90 in-lb
AMX24-MFT95	180 in-lb
GMX24-MFT95	360 in-lb

#### 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 - 0-20 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



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### 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)

### Control Signal

1	On/Off
2	On/Off, Floating Pt.
3	Floating Pt.
4	2-10 VDC, 4-20 mA
5	2-10 VDC, 4-20 mA, Floating Pt., On/Off
6	MFT (multi-signal), 2-10 VDC default
7	0-135 Ω
8	2-10 VDC with adj. pick-up / span
9	4-20 mA
10	3-position
11	thermister, 3000 Ω NTC

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	NF120 US	•	1	1	120	120	60	60				30-60	<75	
M4185B1009	NF120-S US	•	1	1	120	120	60	60			1	1	30-60	<75
M4185B1058	NF230-S US	•	1	1	100-230	230	60	60			1	1	30-60	<75
M4185C1007	NF120-S US	•	1	1	120	120	60	60			2	1	30-60	<75
M6184A1015	AMB24-3		3	2	24	24	150	180					30-60	150
M6184A1023	NMCX120-3		3	2	120	120	75	90					15-30	45
M6184D1001	NMBC24-3		3	2	24	24	75	90					15-30	45
M6184D1035	AMCX24-MFT		3	2	24	24	150	180	2-10 VDC				30-60	35-adj
M6184D1068	AMX24-MFT		3	2	24	24	150	180	2-10 VDC				120-240	150-adj
M6184F1014	AMCX24-MFT		3	2	24	24	150	180	2-10 VDC	2	add S2A		30-60	35-adj
M6194B1011	GMB24-3		3	2	24	24	300	360		1	add S1A		60-120	150
M6194D1017	GMB24-3		3	2	24	24	300	360					120-240	150
M6194E1006	GMB24-3		3	2	24	24	300	360		1	add S1A		120-240	150
M6284A1055	AMCX24-MFT*		3	2	120	120	150	180	2-10 VDC				30-60	35-adj
M6284D1000	AMCX24-MFT		3	2	24	24	150	180	2-10 VDC				30-60	35-adj
M6284F1013	AMCX24-MFT		3	2	24	24	150	180	2-10 VDC	2	add S2A		30-60	35-adj
M6285A1005	NF24	•	3	2	24	24	60	60					30-60	<75
M6285C1001	NF24-S	•	3	2	24	24	60	60			2	1	30-60	<75
M6294D1008	GMB24-3		3	2	24	24	300	360					120-240	150
M7164A1017	LMCB24-SR		4	6	24	24	35	45					30-60	35
M7164G1030	LMCB120-SR		4	6	120	120	35	45					30-60	35
M7215A1008	LF24-SR US	•	4	4	24	24	25	35	2-10 VDC	2-10 VDC			90	95
M7284A1004	AMCX24-MFT		4	4	120	120	150	180		2-10 VDC			30-60	35-adj
M7284A1012	AMCX24-MFT		4	4	120	120	150	180		2-10 VDC			30-60	35-adj
M7284A1038	AMCX24-MFT		4	4	120	120	75	180		2-10 VDC			15-30	35-adj
M7284A1079	AMCX24-MFT		4	4	24	24	150	180		2-10 VDC			30-60	35-adj
M7284C1000	AMCX24-MFT		4	4	120	120	150	180		2-10 VDC	2	add S2A	30-60	35-adj
M7284C1059	AMCX24-MFT		2	2	24	24	150	180		2-10 VDC	2	add S2A	30	35-adj
M7284C1067	AMCX24-MFT		2	2	24	24	150	180		2-10 VDC	2	add S2A	60	35-adj
M7284Q1009	AMCX24-MFT		4	4	120	120	150	180		2-10 VDC	2	add S2A	30-60	35-adj
M7284Q1033	AMCX24-MFT		4	4	24	24	150	180		2-10 VDC	2	add S2A	30	35-adj
M7284Q1041	AMCX24-MFT		4	4	24	24	150	180		2-10 VDC	2	add S2A	60	35-adj
M7285A1003	NF24-MFT US*	•	4	4	120	120	50	60					30-60	<75
M7285A1045	NF24-MFT US	•	4	4	24	24	50	60					30-60	<75
M7285C1009	NF24-MFT-S US*	•	4	4	120	120	50	60			2	1	30-60	<75
M7285Q1008	NF24-MFT-S US*	•	4	4	120	120	50	60			2	1	30-60	<75
M7286G1009	NF24-MFT US	•	4	4	24	24	60	60					30-60	<75
M7294A1010	GMB24-SR		4	4	24	24	300	360	2-10 VDC				60-120	150
M7294Q1007	GMB24-SR		4	4	120	120	300	360	2-10 VDC	2	add S2A		60-120	150
M7415A1006	LF24-ECON-R03 US	•	11	11	24	24	25	35	2-10 VDC	2-10 VDC			90	95
M7415B1004	LF24-ECON-R03 US	•	11	11	24	24	25	35	2-10 VDC	2-10 VDC			90	150
M7685A1025	NF24-MFT US	•	4	6	24	24	60	60		2-10 VDC			30-60	150-adj
M8185D1006	AMCX24-MFT	•	1	1	24	24	60	180		2-10 VDC			30-60	35-adj
M8405A1006	LF24-SR-E US	•	2	4	24	24	25	35	2-10 VDC	2-10 VDC			90	150

\* Add 120/24 volt transformer.

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HONEYWELL	BELIMO	Spring Return	Control Signal		Power +		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
M9164A1005	LMX24-MFT95*		7	7	120	120	35	45					30-60	150
M9164A1013	LMX24-MFT95*		7	7	100-230	230	35	45					30-60	150
M9164A1013	LMX24-MFT95*		7	7	100-230	120	35	45					30-60	150
M9164A1070	LMX24-MFT95		7	7	24	24	35	45					30-60	150
M9164C1001	LMX24-MFT95		7	7	24	24	35	45			2	add S2A	30-60	150
M9164C1068	LMX24-MFT95*		7	7	120	120	35	45			2	add S2A	30-60	150
M9164D1009	LMX24-MFT95		7	7	24	24	35	45					30-60	150
M9174B1027	NMX24-MFT95*		7	7	120	120	75	90			1	add S1A	30-60	150
M9174C1025	NMX24-MFT95*		7	7	120	120	75	90			2	add S2A	30-60	150
M9174C1033	NMX24-MFT95*		7	7	120	120	75	90			2	add S2A	30-60	150
M9174D1007	NMX24-MFT95		7	7	24	24	75	90					30-60	150
M9184A1019	AMX24-MFT95		7	7	24	24	150	180					30-60	150
M9184C1031	AMX24-MFT95		7	7	24	24	150	180			2	add S2A	30-60	150
M9184D1005	NMX24-MFT95		7	7	24	24	75	90					15-30	150
M9184D1021	AMX24-MFT95		7	7	24	24	150	180					30-60	150
M9184F1034	AMX24-MFT95 US		7	7	24	24	150	180			2	add S2A	30-60	150
M9185A1018	AF24-MFT95 US	•	7	7	24	24	60	133					30-60	150
M9185D1004	AF24-MFT95 US	•	7	7	24	24	60	133					30-60	150
M9186G1006	AF24-MFT95 US	•	7	7	24	24	60	133					30-60	150
M9194D1003	GMX24-MFT95		7	7	24	24	300	360					120-240	150
M9194E1000	GMX24-MFT95		7	7	24	24	300	360			1	add S1A	120-240	150
ML4105A1000	FSNF120 US	•	1	1	120	120	100	70					25	15
ML4105B1009	FSNF120 US	•	1	1	120	120	100	70					25	15
ML4105C1008	FSNF230 US	•	1	1	230	230	100	70					25	15
ML4105D1007	FSNF230 US	•	1	1	230	230	100	70					25	15
ML4125A1008	FSAF120 US	•	1	1	120	120	100	133					25	20
ML4125B1007	FSAF120 US	•	1	1	120	120	100	133					25	20
ML4125C1006	FSAF230 US	•	1	1	230	230	100	133					25	20
ML4125D1005	FSAF230 US	•	1	1	230	230	100	133					25	20
ML4135A1007	FSNF230 US	•	1	1	230	230	100	133					15	15
ML4135B1006	FSNF120 US	•	1	1	120	120	100	133					15	15
ML48125A1004	FSAF120 US	•	1	1	120	120	100	133					25	20
ML6131B2001	LMCB24-3-T		2	2	24	24	6	45					15	35
ML6161A2008	LMB24-SR		4	4	24	24	35	45		2-10 VDC			90	95
ML6161A2009	LMB24-3-P5-T		2	2	24	24	35	45	2k Ω	5k Ω			90	95
ML6161B2024	LMB24-3-T		2	2	24	24	35	45					90	95
ML6161B2024	LMB24-3-T		2	2	24	24	35	45					90	95
ML6174A2002	NMB24-3		3	3	24	24	70	90					90	95
ML6174A2010	AMB24-3		3	3	24	24	70	180					180	95
ML6174B2019	NMB24-3		3	3	24	24	70	90					90	95
ML6174B2019	NMB24-3		2	2	24	24	90	90		2-10 VDC			90	95
ML6174D2009	NMB24-3		3	3	24	24	70	90					90	95
ML6174E2008	NMB24-3		3	3	24	24	70	90					90	95
ML7161A2008	LMB24-SR		4	4	24	24	35	45		2-10 VDC			90	95
ML7161A2008	LMB-24-SR-T		4	4	24	24	35	45		2-10 VDC			90	95
ML7174A2001	NMB24-SR		4	4	24	24	70	90		2-10 VDC			90	95
ML7174A2019	NMB24-SR		4	4	24	24	70		2-10 VDC	2-10 VDC			90	95
ML7174E2007	NMB24-SR		4	4	24	24	70		2-10 VDC	2-10 VDC			90	95
ML8105A1006	FSAF24 US	•	1	1	24	24	100	133					25	20
ML8105B1005	FSNF120 US	•	1	1	120	120	60	70					50	15
ML8115A1005	FSLF120 US	•	1	1	120	120	30	30					15	15
ML8115B1004	FSLF120 US	•	1	1	120	120	30	30					15	15
ML8125B1003	FSAF24 US	•	1	1	24	24	100	133					25	20
ML8135A1003	FSNF24 US	•	1	1	24	24	100	133					15	15
ML8135B1002	FSNF24 US	•	1	1	24	24	100	133					15	15
ML8202	FSAF24 US	•	1	1	24	24	100	133					25	20
ML8302	FSAF24 US	•	1	1	24	24	100	133					25	20
MN6120A1002	AMB24-3		2	2	24	24	175	180					90	95
MN6120A1200	AMB24-3		2	2	24	24	175	180			2	add S2A	90	95
MN6134A1003	GMB24-3		2	2	24	24	300	360					90	150
MN6134A1003	GMB24-3		2	2	24	24	300	360					90	150
MN7220A2007	AMB24-SR		4	4	24	24	175	180	2-10 VDC	2-10 VDC			90	95
MN7234A2008	GMB24-SR		4	4	24	24	300	360	2-10 VDC	2-10 VDC			90	150
MS4105A1002	LF230 US	•	1	1	100-250	230	35	35					90	40-75
MS4105A1002	LF120 US	•	1	1	100-250	120	35	35					90	40-75
MS4110A1002	NF120 US	•	2	1	100-250	120	88	60					90	150
MS4110A1002	NF230 US	•	2	1	100-250	230	88	60					90	150
MS4110A1200	LF120-S US	•	1	1	100-250	120	35	35			2	1	90	40-75

\* Add 120/24 volt transformer.

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HONEYWELL	BELIMO	Spring Return	Control Signal		Power +		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
MS4110A1200	LF230-S US	•	1	1	100-250	230	35	35			2	1	90	40-75
MS4120A1001	AF230 US**	•	1	1	100-250	230	175	133					90	150
MS4120A1001	AF120 US**	•	1	1	100-250	120	175	133					90	150
MS4120A1209	AF120-S US**	•	1	1	100-250	120	175	133			2	1	90	150
MS4120A1209	AF230-S US**	•	1	1	100-250	230	175	133			2	1	90	150
MS4120F1006	FSAF120 US**	•	1	1	120	120	175	133					25	<75
MS4209F1007	FSNF120 US	•	1	1	120	120	80	70					25	<75
MS4309F1005	FSNF120 US	•	1	1	120	120	80	70					25	<75
MS4709F1014	FSNF230 US	•	1	1	230	230	80	70					25	<75
MS4620F1005	FSAF230 US**				230	230	175	133					25	<75
MS4809F1012	FSNF230 US	•	1	1	230	230	80	70					25	<75
MS7150A2206	LF24-SR-S	•	4	4	24	24	44	35	2-10 VDC	2-10 VDC	2	1	90	40-75
MS7505A2008	LFC24-3-R US	•	5	3	24	24	44	35	2-10 VDC	2-10 VDC			90	90
MS7510A2008	NF24-MFT US	•	5	6	24	24	88	60	2-10 VDC	2-10 VDC			90	150-adj
MS7510A2206	LF24-MFT-S US	•	5	6	24	24	88	35	2-10 VDC	2-10 VDC	2	1	90	150
MS7520A2007	AF24-MFT US	•	5	6	24	24	175	133	2-10 VDC	2-10 VDC			90	150-adj
MS7520A2205	AF24-MFT-S US	•	5	6	24	24	175	133	2-10 VDC	2-10 VDC	2	1	90	150-adj
MS8105A1008	LF24 US	•	6	2	24	24	44	35					90	40-75
MS8110A1008	NF24 US	•	2	1	24	24	88	60					90	150
MS8110A1206	NF24-S US	•	2	1	24	24	88	60			2	1	90	150
MS8120A1007	AF24 US	•	1	1	24	24	175	133					90	150
MS8120A1205	AF24-S US	•	1	1	24	24	175	133			2	1	90	150
MS8120F1200	FSAF24 US**	•	1	1	24	24	175	133					25	<75
MS8209F1003	FSNF24 US	•	1	1	24	24	80	70					25	<75
MS8309F1001	FSNF24 US		1	1	24	24	80	70					25	<75

\*\* May require 2 Belimo actuators.

**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)

**Control Signal**

1	On/Off
2	On/Off, Floating Pt.
3	Floating Pt.
4	2-10 VDC, 4-20 mA
5	2-10 VDC, 4-20 mA, Floating Pt., On/Off
6	MFT (multi-signal), 2-10 VDC default
7	0-135 Ω
8	2-10 VDC with adj. pick-up / span
9	4-20 mA
10	3-position
11	thermister, 3000 Ω NTC

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-220	FSNF120 US	•	1	1	120	120	70							15
MA-305	TF24 US	•	1	1	24	24	16	18						75
MA-305	TF24-MFT US	•	1	1	24	24	16	18		2-10 VDC				150-adj
MA-305-500	TF24-S US	•	1	1	24	24	16	18			1	1		75
MA-305-500	TF24-MFT-S US	•	1	1	24	24	16	18		2-10 VDC	1	1		150-adj
MA-318	FSNF24 US	•	1	1	24	24		70						15
MA-318	NF24 US	•	1	1	120	120	60	60						75
MA-318-500	NF24-S US	•	1	1	230	230	60	60			1	1		75
MA-405	TF120 US	•	1	1	120	120	16	18						75
MA-405	TFC120-S US	•	1	1	120	120	16	18				1		<30
MA-405-500	TF120-S US	•	1	1	120	120	16	18			1	1		75
MA-405-500	TF120-S US	•	1	1	120	120	16	18			1	1		<30
MA40-7040	LF120 US	•	1	1	120	120	35	35					50	40-75
MA40-7040-501	LF120-S US	•	1	1	120	120	35	35			1	1	50	40-75
MA40-7041	LF230 US	•	1	1	230	230	35	35					50	40-75
MA40-7041-501	LF230-S US	•	1	1	230	230	35	35			1	1	50	40-75
MA40-7043	LF24 US	•	1	1	24	24	35	35					50	40-75
MA40-7043-501	LF24-S US	•	1	1	24	24	35	35			1	1	50	40-75
MA40-7151	AF230 US	•	1	1	230	230	133	133					190	150
MA40-7070	NF120 US	•	1	1	120	120	60	60					80	75
MA40-7070-502	NF120-S US	•	1	1	120	120	60	60			2	1	80	75
MA40-7071	AF230 US	•	1	1	230	230	60	133					80	150
MA40-7071-502	AF230-S US	•	1	1	230	230	60	133			2	2	80	150
MA40-7073	NF24 US	•	1	1	24	24	60	60					80	75
MA40-7073-502	NF24-S US	•	1	1	24	24	60	60			2	1	80	75
MA40-7150	AF120 US	•	1	1	120	120	133	133					190	150
MA40-7150-502	AF120-S US	•	1	1	120	120	133	133			2	2	190	150
MA40-7153	AF24 US	•	1	1	24	24	133	133					190	150
MA40-7153-502	AF24-S US	•	1	1	24	24	133	133			2	2	190	150
MA40-7170	AF120 US	•	1	1	120	120	150	133					145	150
MA40-7171	AF230 US	•	1	1	230	230	150	133					145	150
MA40-7173	AF24 US	•	1	1	24	24	150	133					145	150
MA-416	NF120 US	•	1	1	208	120	60	60					104	75
MA-416-500	NF120-S US	•	1	1	208	120	60	60			1	1	104	75
MA41-7073	NF24 US	•	1	1	24	24		60						<75
MA-418	NF120 US	•	1	1	120	120	60	60					108	75
MA-418-500	NF120-S US	•	1	1	120	120	60	60			1	1	108	75
MA-419	NF230 US	•	1	1	240	230	60	60					120	75
MA-419-500	NF230-S US	•	1	1	240	230	60	60			1	1	120	75
MA40-7151-502	AF230-S US	•	1	1	230	230	133	133			2	2	190	150
MA5-419	NF120 US	•	1	1	240	120	60	60					120	75
MA5-419-500	NF120-S US	•	1	1	240	120	60	60			1	1	120	75
MC-351	GMB24-3		1	2	24	24	220	180					70	95
MC-421	GMB24-MFT		1	6	24	24	175	360					20	150-adj
MC-431	GMB24-MFT		1	6	24	24	220	360					30	150-adj
MC-4311	GMB24-MFT		1	6	24	24	220	360					30	150-adj

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INVENSYS	BELIMO	Spring Return	Control Signal		Power +		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
MC5-4311	GMB24-MFT		1	6	24	24	220	360					36	150-adj
MF40-6043	LMB24-3				24	24	35	45					<90	95
MF40-6043-502	LMB24-3				24	24	35	45			2	add S2A	<90	95
MF40-6043-510	LMB24-3				24	24	35	45					<90	95
MF40-6083	NMB24-3		3	3	24	24	70	90					120	95
MF40-6153	AMB24-3		3	3	24	24	133	180					120	95
MF40-7043	LF24-3 US	•	3	3	24	24	35	35	2-10 VDC				130	150
MF40-7043-501	LF24-3-S US	•	3	3	24	24	35	35			1	1	195	150
MF40-7073	NF24-MFT US	•	3	6	24	24	60	60					190	150-adj
MF40-7073-502	NF24-MFT-S US	•	3	6	24	24	60	60			2	1	195	150-adj
MF40-7153	AF24-MFT US	•	3	6	24	24	133	133					190	150-adj
MF40-7153-502	AF24-MFT-S US	•	3	6	24	24	133	133			2	2	190	150-adj
MF40-7173	AF24-MFT US	•	3	6	24	24	150	133					145	150-adj
MF41-6043	LMB24-3		3	3	24	24	35	45					90	95
MF41-6043-502	LMB24-3		3	3	24	24	35	45			2	add S2A	90	95
MF41-6043-510	LMB24-3-P10-T		3	3	24	24	35	45	1k Ω	5k v			90	95
MF41-6083	NMB24-3		3	3	24	24	70	90					90	95
MF41-6083-502	NMB24-3		3	3	24	24	70	90			2	add S2A	90	95
MF41-6153	AMB24-3		3	3	24	24	133	180					90	95
MF41-6343	GMB24-3		3	3	24	24	300	360					90	95
MF41-7073	NF24-MFT US	•	3	6	24	24	60	60					195	150-adj
MF41-7073-502	NF24-MFT-S US	•	3	6	24	24	60	60			2	1	195	150-adj
MF41-7153	AF24-MFT US	•	3	6	24	24	133	133					190	150-adj
MF41-7153-502	AF24-MFT-S US	•	3	6	24	24	133	133			2	2	190	150-adj
MF-6343	GMB24-3		3	3	24	24	300	360					145	150
MM-400	LMCB24-SR		4	4	24	24	150	45					50	35
MM-400-002	LMCB24-SR		4	4	24	24	150	45			2	add S2A	50	35
MM-500	NF24-MFT US	•	4	6	24	24	50	60					55	150-adj
MM-500-002	NF24-MFT-S US	•	4	6	24	24	50	60			2	1	55	150-adj
MMR-400	LMCB-SR		4	4	24	24	150	45					50	35
MMR-400-002	LMCB-SR		4	4	24	24	150	45			2	add S2A	50	35
MMR-500	NF24-MFT US	•	4	6	24	24	50	60					55	150-adj
MMR-500-002	NF24-MFT-S US	•	4	6	24	24	50	60			2	1	55	150-adj
MP-361	NF24-SR-S US	•	4	4	24	24	50	60			1	1	90	150
MP-361-600	NF24-MFT-S US	•	4	6	24	24	50	60	2-10 VDC	1	1	1	90	150-adj
MP-361-691	NF24-MFT-S US	•	4	6	24	24	50	60	2-10 VDC	1	1	1	90	150-adj
MP-371	NF24-SR-S US	•	4	4	24	24	50	60			1	1	90	150
MP-371-600	NF24-MFT-S US	•	4	6	24	24	50	60	2-10 VDC	1	1	1	90	150-adj
MP-371-602	NF24-MFT-S US	•	4	6	24	24	50	60	2-10 VDC	1	1	1	90	150-adj
MP-381	GMB24-SR		4	4	24	24	220	360	2-10 VDC	1	add S1A	130	150	
MP-382	GMB24-SR		4	4	24	24	220	360	2-10 VDC	1	add S1A	130	150	
MP-421	NMX24-MFT*		4	6	120	120	60	90	2-10 VDC	1	add S1A	25	150-adj	
MP-422	NMX24-MFT*		4	6	120	120	60	90	2-10 VDC	1	add S1A	25-250	150-adj	
MP-424	NMX24-MFT*		4	6	120	120	60	90	2-10 VDC	1	add S1A	13-130	150-adj	
MP-451	NMX24-MFT*		4	6	120	120	80	90	2-10 VDC	1	add S1A	80	150-adj	
MP-453	GMX24-MFT*		4	6	120	120	220	360	2-10 VDC	1	add S1A	40	150-adj	
MP-465	NF24-SR-S US	•	4	4	120	24	50	60	2-10 VDC	1	1	50	150-adj	
MP-475	NF24-SR-S US	•	4	4	120	24	50	60	2-10 VDC	1	1	50	150-adj	
MP-481	AMX24-MFT*		4	6	120	120	130	180	2-10 VDC	1	add S1A	130	150-adj	
MP-483	NMX24-MFT*		4	6	120	120	65	90	2-10 VDC	1	add S1A	65	150-adj	
MP-485	AMX24-MFT*		4	6	120	120	130	180	2-10 VDC	1	add S1A	130	150-adj	
MP-495	AMX24-MFT*		4	6	120	120	130	180	2-10 VDC	1	add S1A	130	150-adj	
MP-5233	TF24-MFT US	•	4	6	24	24	19	18	2-10 VDC				60	150-adj
MP-5433	TF24-MFT US	•	4	6	120	24	19	18	2-10 VDC				60	150-adj
MP-5613	TF24-MFT US	•	4	6	24	24		18	2-10 VDC				60	150-adj
MS-1233	TF24-MFT US		4	6	24	24	20	18	2-10 VDC				225	150-adj
MS-1233-002	TF24-MFT US		4	6	24	24	20	18	2-10 VDC				225	150-adj
MS-1233-100	TF24-MFT US		4	6	24	24	20	18	2-10 VDC				225	150-adj
MS-1233-102	TF24-MFT US		4	6	24	24	20	17	2-10 VDC				225	150-adj
MS40-7171	AF24-SR US	•	4	4	24	24	150	133	2-10 VDC	2-10 VDC			145	150
MS40-7043	LF24-SR US	•	4	4	24	24	35	35	2-10 VDC	2-10 VDC			130	150
MS40-7043-501	LF24-SR-S US	•	4	4	24	24	35	35	2-10 VDC	2-10 VDC	1	1	130	150
MS40-7073-502	NF24-SR-S US	•	4	4	24	24	60	60	2-10 VDC	2-10 VDC	2	1	130	150
MS40-7153	AF24-SR US	•	4	4	24	24	133	133	2-10 VDC	2-10 VDC			130	150
MS40-7153-502	AF24-MFT-S US	•	4	6	24	24	133	133	2-10 VDC	2-10 VDC	2	2	195	150-adj

\* Add 120/24 volt transformer.



INVENSYS	BELIMO	Spring Return		Control Signal		Power +		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
		•													
MS40-7170	AF24-SR US	•		4	4	120	24	150	133	2-10 VDC	2-10 VDC			145	150
MS40-7173	AF24-SR US	•		4	4	24	24	150	133	2-10 VDC	2-10 VDC			145	150
MS41-6043	LMB24-SR			4	4	24	24	35	45	2-10 VDC	2-10 VDC				35
MS41-6043-502	LMB24-SR			4	4	24	24	35	45	2-10 VDC	2-10 VDC				150-adj
MS41-6043-520	LMB24-MFT			4	4	24	24	35	45	2-10 VDC	2-10 VDC				150-adj
MS41-6043-522	LMB24-MFT			4	4	24	24	35	45	2-10 VDC	2-10 VDC				150-adj
MS41-6083	NMB24-SR			4	4	24	24	70	90	2-10 VDC	2-10 VDC			150	95
MS41-6083-502	NMB24-MFT			4	4	24	24	70	90	2-10 VDC	2-10 VDC			150	150-adj
MS41-6083-520	NMB24-MFT			4	4	24	24	70	90	2-10 VDC	2-10 VDC			150	150-adj
MS41-6083-522	NMB24-MFT			4	4	24	24	70	90	2-10 VDC	2-10 VDC			150	150-adj
MS41-6153	AMB24-SR			4	4	24	24	133	180	2-10 VDC	2-10 VDC				95
MS41-6343	GMB24-SR			4	4	24	24	300	360	2-10 VDC	2-10 VDC				150
MS41-7073	NF24-SR US	•		4	4	24	24	60	60	2-10 VDC	2-10 VDC			195	150
MS41-7153	AF24-SR US	•		4	4	24	24	133	133	2-10 VDC	2-10 VDC			190	150
MS4709F	FSNF230 US	•		1	1	230	230		70					90	15
MS4809F	FSNF230 US	•		1	1	230	230		70					90	15
MS50-E2001	AF24-MFT US	•		4	6	24	24	150	133		2-10 VDC			145	150-adj
MS50-E2101	AF24-MFT US	•		4	6	24	24	150	133		2-10 VDC			145	150-adj
MS50-E2301	AF24-MFT US	•		4	6	24	24	150	133		2-10 VDC			145	150-adj
MS50-H2001	GMB24-MFT			4	6	24	24	300	360		2-10 VDC			145	150-adj
MS50-H2101	GMB24-MFT			4	6	24	24	300	360		2-10 VDC			145	150-adj
MS50-H2301	GMB24-MFT			4	6	24	24	300	360		2-10 VDC			145	150-adj
MS8209F	FSNF120 US	•		1	1	120	120		70						15
MS8309F	FSNF24 US	•		1	1	24	24		70						15

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### 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)

### Control Signal

1	On/Off
2	On/Off, Floating Pt.
3	Floating Pt.
4	2-10 VDC, 4-20 mA
5	2-10 VDC, 4-20 mA, Floating Pt., On/Off
6	MFT (multi-signal), 2-10 VDC default
7	0-135 Ω
8	2-10 VDC with adj. pick-up / span
9	4-20 mA
10	3-position
11	thermister, 3000 Ω NTC

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	•	2	1	120	120	25	35			1	1		40-75
M110AGA-1	LF24-3 US	•	2	2	24	24	25	35						150
M110AGB-1	LF24-3-S US	•	2	2	24	24	25	35			1	1		150
M110GGA-3	LF24-MFT US	•	4	6	24	24	25	35	2-10 VDC	2-10 VDC				150-adj
M110JGA-1	LF24-MFT US	•	4	6	24	24	25	35	2-10 VDC	2-10 VDC				150-adj
M110JGB-1	LF24-MFT-S US	•	4	6	24	24	25	35	2-10 VDC	2-10 VDC	1	1		150-adj
M120AAA-1	LMB120-3		2	2	120	120	35	45						95
M120AAC-1	LMB120-3		2	2	120	120	35	45			2	add S2A		150-adj
M120AGA-1	LMB24-3		2	2	24	24	35	45						95
M120GGA-3	LMB24-MFT		4	6	24	24	35	45	2-10 VDC	2-10 VDC				150-adj
M120JAA-1	LMB120-SR		4	4	120	120	35	45	2-10 VDC	2-10 VDC				95
M120JAC-1	LMB120-SR		4	4	120	120	35	45	2-10 VDC	2-10 VDC	2	add S2A		95
M120JGA-1	LMB24-SR		4	4	24	24	35	45	2-10 VDC	2-10 VDC				95
M120MGA-1	LMX24-MFT95		7	6	24	24	35	45						95
M130AAA-1	NF120 US	•	2	1	120	120	50	60						<75
M130AAB-1	NF120-S US	•	2	1	120	120	50	60			1	1		<75
M130AGA-1	NF24 US	•	2	1	24	24	50	60						<75
M130AGB-1	NF24-S US	•	2	1	24	24	50	60			1	1		<75
M130GGA-3	NF24-MFT US	•	4	6	24	24	50	60	2-10 VDC	2-10 VDC				150-adj
M130JGA-1	NF24-MFT US	•	4	6	24	24	50	60	2-10 VDC	2-10 VDC				150-adj
M130JGB-1	NF24-MFT US	•	4	6	24	24	50	60	2-10 VDC	2-10 VDC	1			150-adj
M130JGC-1	NF24-MFT US	•	4	6	24	24	50	60	2-10 VDC	2-10 VDC	2			150-adj
M130MGA-1	AF24-MFT95 US	•	7	7	24	24	50	133	2-10 VDC	2-10 VDC				150-adj
M140AAA-1	LMB120-3		2	2	120	120	75	90						95
M140AGA-1	LMB24-3		2	2	24	24	75	90						95
M140GGA-3	LMB24-MFT		4	6	24	24	75	90	2-10 VDC	2-10 VDC				95
M140JAA-1	LMB120-SR		4	4	120	120	75	90	2-10 VDC	2-10 VDC				95
M140JGA-1	LMB24-SR		4	4	24	24	75	90	2-10 VDC	2-10 VDC				150-adj
M150AAA-1	AMB120-3		2	2	120	120	150	180						95
M150AAB-1	AMB120-3		2	2	120	120	150	180			1	add S1A		95
M150AGA-1	AMB24-3		2	2	24	24	150	180						95
M150AGB-1	AMB24-3		2	2	24	24	150	180			1	add S1A		95
M150GGA-3	AMB24-MFT		4	6	24	24	150	180	2-10 VDC	2-10 VDC				150-adj
M150JGA-1	AMB24-SR		4	4	24	24	150	180	2-10 VDC	2-10 VDC				95
M150JGB-1	AMB24-SR		4	4	24	24	150	180	2-10 VDC	2-10 VDC	1	add S1A		95
M150JGC-1	AMB24-SR		4	4	24	24	150	180	2-10 VDC	2-10 VDC	2	add S2A		95
M150MGA-1	AMB24-MFT		7	6	24	24	150	180	2-10 VDC	2-10 VDC				150-adj
M9108-GGA-2	NMCB24-SR		4	4	24	24	70	60		2-10 VDC			60	45
M9101-AGA-2N	LMB24-3-T		3	3	24	24	10	45					15	95
M9104-AGA-2N	LMB24-3-T		2	3	24	24	35	45					90	95
M9104-AGA-2N	LMB24-3		3	3	24	24	35	45					90	95
M9106-AGA-2	LMB24-3		3	3	24	24	53	45					60	95
M9106-AGA-2N01	LMCB24-3		2	3	24	24	53	45					60	35
M9106-AGA-2N01	LMCB24-3-T		3	3	24	24	53	45					60	35
M9106-AGA-2N02	LMB24-MFT		2	6	24	24	53	45		2-10 VDC			120	150-adj
M9106-AGA-2N02	LMX24-MFT		3	6	24	24	53	45		2-10 VDC			120	150-adj

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JOHNSON CONTROLS	BELIMO	Spring Return		Control Signal		Power +		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
		Spring Return	Control Signal	Power +	Torque (in-lb)	Feedback	Auxiliary Switches	Timing (seconds)							
M9106-AGC-2	LMB24-3		3	3	24	24	53	45			2	add S2A	60	95	
M9106-AGF-2	LMB24-3-P10-T		3	3	24	24	53	45					60	95	
M9106-GGA-2	LMB24-SR		4	4	24	24	53	45		2-10 VDC			60	95	
M9106-IGA-2	LMB24-MFT		3	3	24	24	53	45		2-10 VDC			60	150-adj	
M9108-AGA-2	NMCB24-3		3	3	24	24	70	90					25-50	45	
M9108-AGC-2	NMCB24-3		3	3	24	24	70	60			2	add S2A	25-50	45	
M9108-GGC-2	NMCB24-SR		4	4	24	24	70	60			2	add S2A	25-50	45	
M9108-HGA-2	NMB24-MFT		8	6	24	24	70	60		2-10 VDC			25-50	150-adj	
M9108-HGC-2	NMB24-MFT		8	6	24	24	70	60		2-10 VDC	2	add S2A	25-50	150-adj	
M9109-AGA-2	NMB24-3		3	3	24	24	80	90					60	95	
M9109-AGC-2	NMB24-3		3	3	24	24	80	60			2	add S2A	60	95	
M9109-GGA-2	NMB24-SR		4	4	24	24	80	60		2-10 VDC			60	95	
M9109-GGC-2	NMB24-SR		4	4	24	24	80	60			2	add S2A	60	95	
M9116-AGA-2	AMB24-3		3	2	24	24	140	180	0-10 VDC				70-115	95	
M9116-AGA-2	AMB24-3		3	3	24	24	140	180					70-115	95	
M9116-AGC-2	AMB24-3-S		3	2	24	24	140	133	0-10 VDC		2	add S2A	70-115	95	
M9116-AGC-2	AMB24-3		3	3	24	24	140	180			2	add S2A	70-115	95	
M9116-AGD-2	AMB24-3 + P140A		3	2	24	24	140	133	0-10 VDC	0-135 Ω			70-115	95	
M9116-AGE-2	AMB24-3 + P1000A		3	2	24	24	140	133	0-10 VDC	0-1000 Ω			70-115	95	
M9116-AGE-2	AMB24-3 + P1000A		3	3	24	24	140	180					70-115	95	
M9116-GGA-2	AMB24-SR		4	4	24	24	140	133	0-10 VDC	2-10 VDC			70-115	95	
M9116-GGA-2	AMB24-MFT		4	4	24	24	140	180	0-10 VDC	2-10 VDC			70-115	95	
M9116-GGC-2	AMB24-SR-S		4	4	24	24	140	133	0-10 VDC	2-10 VDC	2	add S2A	70-115	95	
M9116-GGC-2	AMB24-SR		4	4	24	24	140	180		2-10 VDC	2	add S2A	70-115	95	
M9116-HGA-2	AMB24-MFT		8	6	24	24	140	133	0-10 VDC	2-10 VDC			70-115	150-adj	
M9116-HGA-2	AMB24-MFT		8	6	24	24	140	180		2-10 VDC			70-115	95	
M9116-HGC-2	AMB24-MFT		8	6	24	24	140	133	0-10 VDC	2-10 VDC	2		70-115	150-adj	
M9124-AGA-2	GMB24-3		3	2	24	24	210	360					115-175	150	
M9124-AGC-2	GMB24-3		3	2	24	24	210	360			2	add S2A	70-130	150	
M9124-AGD-2	GMB24-3 + P140A		3	2	24	24	210	360					115-175	150	
M9124-AGE-2	GMB24-3 + P1000A		3	2	24	24	210	360					70-130	150	
M9124-GGA-2	GMB24-SR		4	4	24	24	210	360		2-10 VDC			70-130	150	
M9124-HGA-2	GMB24-MFT		8	6	24	24	210	360		2-10 VDC			70-130	150-adj	
M9124-HGC-2	GMB24-MFT		8	6	24	24	210	360		2-10 VDC	2	add S2A	70-130	150-adj	
M9132-AGA-2	GMB24-3		3	2	24	24	280	360					115-205	150	
M9132-AGC-2	GMB24-3		3	2	24	24	280	360			2	add S2A	70-130	150	
M9132-AGE-2	GMB24-3 + P1000A		3	2	24	24	280	360					115-205	150	
M9132-GGA-2	GMB24-SR		4	4	24	24	280	360		2-10 VDC			70-130	150	
M9132-GGC-2	GMB24-SR		4	4	24	24	280	360		2-10 VDC	2	add S2A	70-130	150	
M9206-AGA-2	NF24-MFT US	•	3	6	24	24	53	60		2-10 VDC			90	150-adj	
M9206-AGC-2	NF24-MFT US	•	3	6	24	24	53	60		2-10 VDC	2		90	150-adj	
M9206-BAA-2S	NF24 US	•	1	1	120	120	53	60					90	<75	
M9206-BAA-2S	NF120 US	•	1	1	120	120	53	60					90	<75	
M9206-BAC-2S	NF24-S2 US	•	1	1	120	24	53	60			2	2	90	<75	
M9206-BAC-2S	NF120-S US	•	1	1	120	120	53	60			2	1	90	<75	
M9206-BGA-2S	NF24 US	•	1	1	24	24	53	60					60	<75	
M9206-BGB-2S	NF24-S US	•	1	1	24	24	53	60			1	1	60	<75	
M9206-BGC-2	NF24-S2 US	•	1	1	24	24	53	60			2	2	60	<75	
M9206-GGA-2	NF24-SR US	•	4	4	24	24	53	60		2-10 VDC			60	150	
M9206-GGA-2MP	LF24-MFT-20 US	•	4	6	24	24	53	35		2-10 VDC			90	150-adj	
M9206-GGC-2	LF24-SR-S US	•	4	4	24	24	53	35		2-10 VDC	2	1	90	40-75	
M9206-GGC-2MP	LF24-MFT-S-20 US	•	4	6	24	24	53	35		2-10 VDC	2	1	90	150-adj	
M9216-AGA-2	AF24-MFT US	•	3	6	24	24	140	133		2-10 VDC			70-130	150-adj	
M9216-AGC-2	AF24-MFT-S US	•	3	6	24	24	140	133		2-10 VDC	2	1	70-130	150-adj	
M9216-BAA-2	AF24 US	•	1	1	120	24	140	133					70-130	150	
M9216-BAA-2	AF120 US	•	1	1	120	120	140	133					70-130	150	
M9216-BAC-2	AF24-S US	•	1	1	120	24	140	133			2	2	70-115	150	
M9216-BAC-2	AF120-S US	•	1	1	120	120	140	133			2	2	70-115	150	
M9216-BGA-2	AF24 US	•	1	1	24	24	140	133					70-130	150	
M9216-BGC-2	AF24-S US	•	1	1	24	24	140	133			2	2	70-130	150	
M9216-GGA-2	AF24-SR US	•	4	4	24	24	140	133		2-10 VDC			70-130	150	
M9216-GGC-2	AF24-MFT-S US	•	4	6	24	24	140	133		2-10 VDC	2	2	70-130	150-adj	
M9216-HGA-2	AF24-MFT US	•	8	6	24	24	140	133		2-10 VDC			70-130	150-adj	
M9216-HGC-2	AF24-MFT-S US	•	8	6	24	24	140	133		2-10 VDC	2	2	70-130	150-adj	
M9216-JGA-2	AF24-MFT95 US	•	3	7	24	24	140	133		2-10 VDC			70-130	150-adj	

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**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)

**Control Signal**

1	On/Off
2	On/Off, Floating Pt.
3	Floating Pt.
4	2-10 VDC, 4-20 mA
5	2-10 VDC, 4-20 mA, Floating Pt., On/Off
6	MFT (multi-signal), 2-10 VDC default
7	0-135 Ω
8	2-10 VDC with adj. pick-up / span
9	4-20 mA
10	3-position
11	thermister, 3000 Ω NTC

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		4	4	24	24	177	180		2-10 VDC			150	95
GBB156.1U	AMB24-SR		1	4	24	24	177	180		2-10 VDC	2	add S2A	150	95
GBB161.1U	AMB24-SR		4	4	24	24	177	180	2-10 VDC	2-10 VDC			150	95
GBB163.1U	AMB24-MFT		8	6	24	24	177	180	2-10 VDC	2-10 VDC			150	95
GBB164.1U	AMB24-MFT		8	6	24	24	177	180	2-10 VDC	2-10 VDC		add S2A	150	95
GBB166.1U	AMB24-SR		4	4	24	24	177	180	2-10 VDC	2-10 VDC	2		150	95
GBB171.1U	AMB24-3		1	2	24	24	177	180		2-10 VDC			150	95
GBB175.1U	AMB24-SR		1	4	24	24	177	180		2-10 VDC			150	95
GCA121.1U	AF24 US	•	1	1	24	24	142	133					90	150
GCA126.1U	AF24-S US	•	1	1	24	24	142	133			2	2	90	150
GCA131.1P	AF24-MFT US	•	10	6	24	24	142	133		2-10 VDC			90	150-adj
GCA135.1U	AF24-MFT-S US	•	10	6	24	24	142	133		2-10 VDC	2	2	90	150-adj
GCA151.1U	AF24-SR US	•	9	4	24	24	142	133		2-10 VDC			90	150
GCA156.1U	AF24-MFT-S US	•	9	6	24	24	142	133		2-10 VDC	2	2	90	150-adj
GCA161.1U	AF24-MFT US	•	4	6	24	24	142	133	2-10 VDC	2-10 VDC			90	150-adj
GCA163.1U	AF24-MFT US	•	4	6	24	24	142	133	2-10 VDC	2-10 VDC			90	150-adj
GCA164.1U	AF24-MFT-S US	•	4	6	24	24	142	133	2-10 VDC	2-10 VDC	2	2	90	150-adj
GCA166.1U	AF24-MFT-S US	•	4	6	24	24	142	133	2-10 VDC	2-10 VDC	2	2	90	150-adj
GCA166.1U	AF24-SR-S US	•	4	4	24	24	142	133	2-10 VDC	2-10 VDC	2	2	90	150
GCA221.1U	AF120 US	•	1	1	120	120	142	133					90	150
GCA226.1U	AF120-S US	•	1	1	120	120	142	133			2	2	90	150
GDE131.1P	LMB24-SR		10	4	24	24	44	45		2-10 VDC			90	95
GDE136.1P	LMB24-3		10	2	24	24	44	45			2	add S2A	90	95
GDE161.1P	LMB24-SR		4	4	24	24	44	45		2-10 VDC			90	95
GDE163.1P	LMB24-SR		4	4	24	24	44	45		2-10 VDC			90	95
GDE164.1P	LMB24-SR		4	4	24	24	44	45		2-10 VDC	2	add S2A	90	95
GDE166.1P	LMB24-SR		4	4	24	24	44	45		2-10 VDC	2	add S2A	90	95
GEB131.1U	LMB24-3		10	2	24	24	44	45					90	95
GGD121.1U	FSAF24 US	•	1	1	24	24	142	133					15	<75
GGD121.3U	FSAF24 US	•	1	1	24	24	142	133					15	<75
GGD221.1U	FSAF120 US	•	1	1	115	120	142	133					15	<75
GGD221.3U	FSAF120 US	•	1	1	115	120	142	133					15	<75
GGD321.1U	FSAF230 US	•	1	1	230	230	142	133					15	<75
GIB151.1U	GMB-SR		9	4	24	24	310	360		2-10 VDC			150	150
GIB156.1U	GMB-SR		9	4	24	24	310	360		2-10 VDC	2	add S2A	150	150
GIB161.1U	GMB24-SR		4	4	24	24	310	360	2-10 VDC	2-10 VDC			150	150
GIB163.1U	GMB24-MFT		4	6	24	24	310	360	2-10 VDC	2-10 VDC			150	150
GIB164.1U	GMB-MFT		4	6	24	24	310	360	2-10 VDC	2-10 VDC	2	add S2A	150	150
GIB166.1U	GMB-SR		4	4	24	24	310	360	2-10 VDC	2-10 VDC	2	add S2A	150	150
GIB171.1U	GMB24-3		2	2	24	24	310	360					150	150
GIB171.1U	GMB24-3		2	2	24	24	310	360					150	150
GIB175.1U	GMB24-3		2	2	24	24	310	360			2	add S2A	150	150
GLB131.1P	GMB24-3		10	2	24	24	88	90					150	150
GLB136.1P	GMB24-3		10	2	24	24	88	90			2	add S2A	150	150
GLB161.1P	GMB24-SR		4	4	24	24	88	90	2-10 VDC	2-10 VDC			150	150
GLB163.1P	NMB24-MFT		4	6	24	24	88	90	2-10 VDC	2-10 VDC			150	150

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SIEMENS	BELIMO	Spring Return	Control Signal		Power +		Torque (in-lb)		Feedback		Auxiliary Switches		Timing (seconds)	
GLB164.1P	GMB24-SR		4	4	24	24	88	90	2-10 VDC	2-10 VDC	2	add S2A	150	159
GLB166.1P	GMB24-SR		4	4	24	24	88	90	2-10 VDC	2-10 VDC	2	add S2A	150	150
GMA121.1U	NF24-S	•	1	1	24	24	62	60					90	75
GMA126.1U	NF24-S2 US	•	1	1	24	24	62	60			2	2	90	75
GMA131.1U	NF24-MFT US	•	10	6	24	24	62	60		2-10 VDC			90	150-adj
GMA136.1U	NF24-MFT-S US	•	10	6	24	24	62	60		2-10 VDC	2	1	90	150-adj
GMA161.1U	NF24-MFT US	•	4	6	24	24	62	60	2-10 VDC	2-10 VDC			90	150-adj
GMA163.1U	NF24-MFT US	•	4	6	24	24	62	60	2-10 VDC	2-10 VDC			90	150-adj
GMA166.1U	NF24-MFT-S US	•	4	6	24	24	62	60	2-10 VDC	2-10 VDC	2	1	90	150-adj
GMA221.1U	NF120 US	•	1	1	120	120	62	60					90	75
GMA226.1U	NF120-S US	•	1	1	120	120	62	60			2	1	90	75

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# Retrofit Solutions, Non-Direct Coupled

## Crankarm Adaptor Kits and Universal Mounting



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.

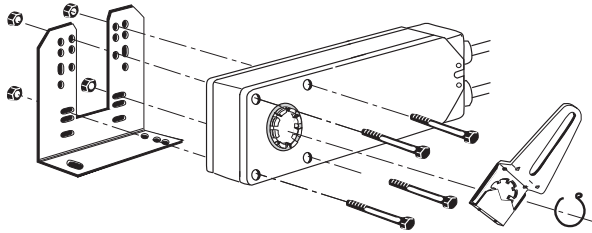
### ZG-AF108

### Crankarm Adaptor Kit

The ZG-108 is provided with hole patterns to mount the NF and AF series actuators in either a horizontal or vertical position to meet space requirements.

The ZG-AF108 Crankarm Adaptor Kit includes:  
 ZG-108 Mounting Bracket  
 KH-AF Crankarm with Retaining Ring  
 Mounting Hardware

**Note:** May require crankarm and ball joints.



The ZG-108 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.

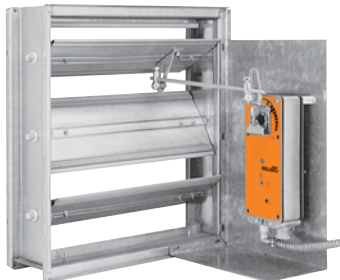
Use when replacing these actuators:

<b>Honeywell</b>	<b>M91...</b>	<b>M945...</b>
	<b>M955...</b>	<b>M965...</b>
	<b>M975...</b>	<b>M8...</b>
<b>Johnson</b>	<b>M110...</b>	<b>M140...</b>
	<b>M120...</b>	<b>M150...</b>
	<b>M130...</b>	
<b>Barber Colman</b>	<b>MA3...</b>	<b>MA4...</b>
	<b>MA5...</b>	

### ZG-AF US

### Crankarm Adaptor Kit

The ZG-AF US Crankarm Adaptor Kit includes:  
 KH-AF 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, SM, GM, NF, and AF series actuators. The ZG-100 hole pattern layout allows mounting these actuators in three different, mounting orientations.

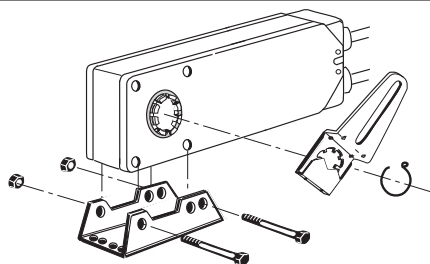
### ZG-106 and ZG-107

### Universal Mounting Brackets

The ZG-106 and ZG-107 is provided with hole patterns to mount the NF and AF series actuators in either a horizontal or vertical position to meet space requirements.

The KH-AF crankarm is required to fully convert the NF and AF for crankarm operation.

#### KH-AF



The ZG-106 and ZG-107 are designed to mount the NF and AF 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-106 is designed to place the KH-AF crankarm in the same relative position as the Honeywell™ Mod IV actuators. The ZG-107 is designed to place the crankarm in the same relative position as the Honeywell™ Mod III actuators.

Use the ZG-106 when replacing these actuators:

<b>Honeywell</b>	<b>Mod IV</b>	
	<b>M91...</b>	<b>M945...</b>
	<b>M955...</b>	<b>M965...</b>
	<b>M975...</b>	<b>M8...</b>

Use the ZG-107 when replacing these actuators:

<b>Honeywell</b>	<b>Mod III</b>
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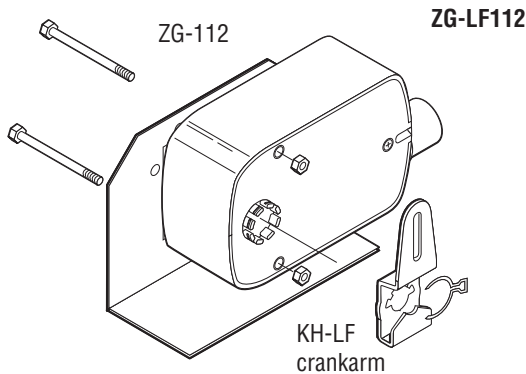
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**ZG-LF112 and ZG-TF112**

**Crankarm Adaptor Kit**

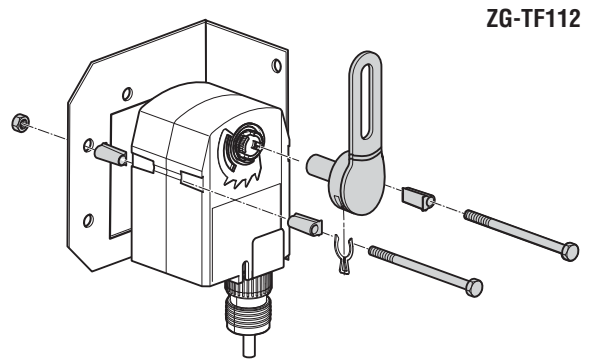
The ZG-LF112 Crankarm Adaptor Kit includes:  
ZG-112 Mounting Bracket  
KH-LF Crankarm  
Mounting Hardware

**Note:** May require crankarm and ball joints.



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

**Note:** May require crankarm and ball joints.



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.

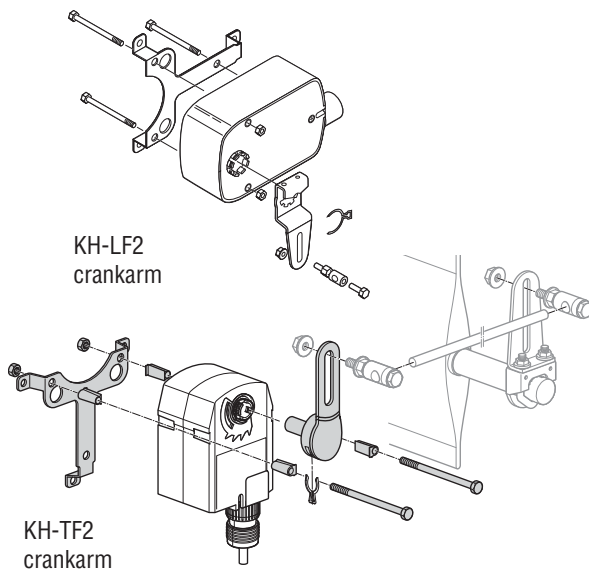
The ZG-112/113 Mounting Bracket is designed to mount the LF and TF series actuator in the same mounting locations as common foot mounted, crankarm style actuators. Hole patterns in the base match common Honeywell™, Siebe™ (Barber Colman™), and Johnson Controls™ actuators for easy retrofit.

Use when replacing these actuators:

<b>Honeywell</b>	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.

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# Retrofit Solutions, Non-Direct Coupled

Crankarm Adaptor Kits and Universal Mounting



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 pre-punched 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.

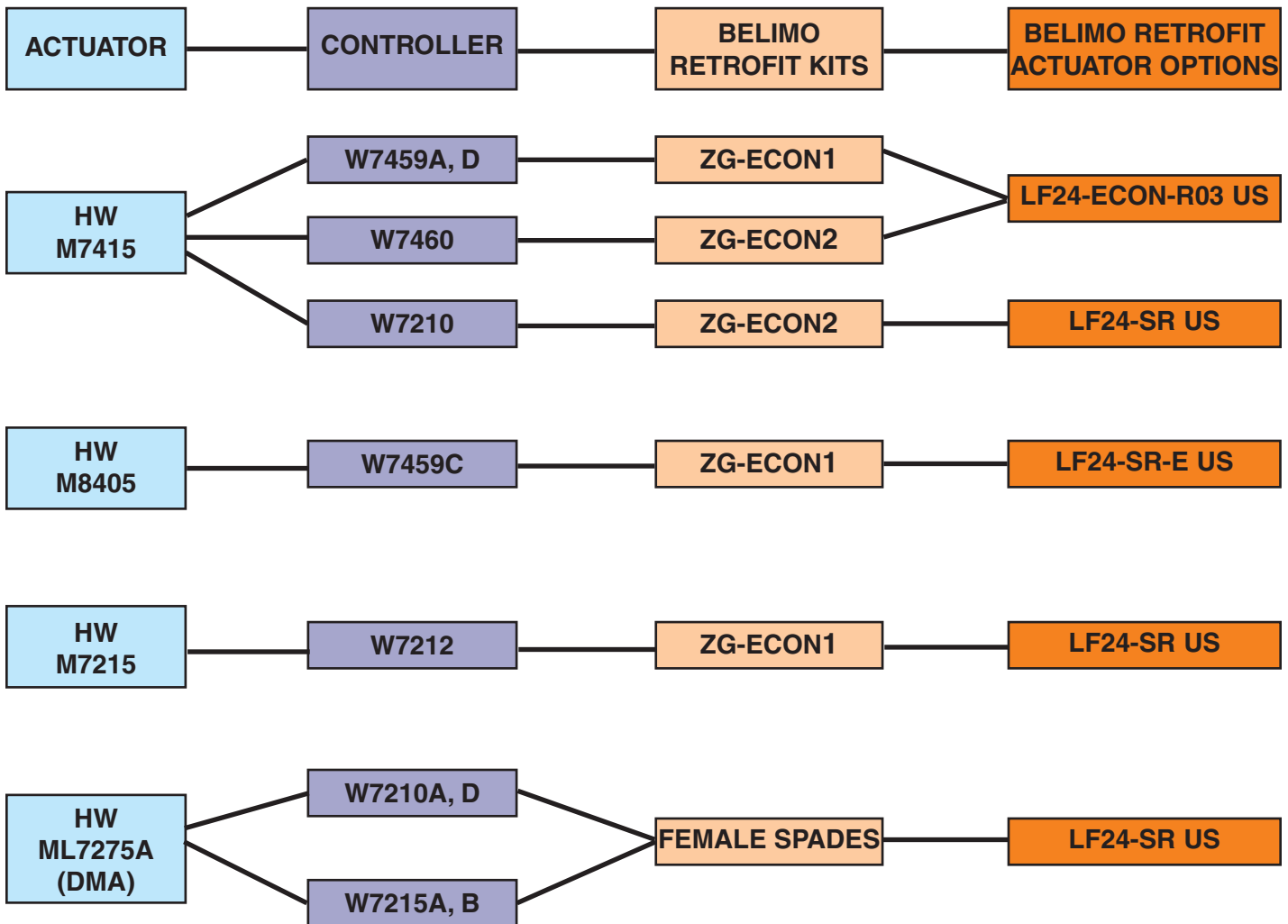
The dual mounting bracket is typically used with the AF and GM series actuators. This is due to the fact that each of these series are the highest torque range available.

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# Honeywell to Belimo Economizer Solutions

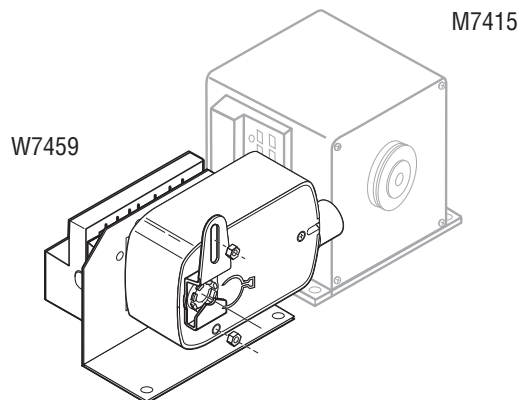
When replacing an existing actuator in an economizer unit be sure to consider the application parameters before selecting the replacement. Use the chart below for reference. Belimo offers many direct coupled and non-direct replacement solutions. Start with your current model and controller type, and 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.

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## M7415 Economizer Actuator Retrofit

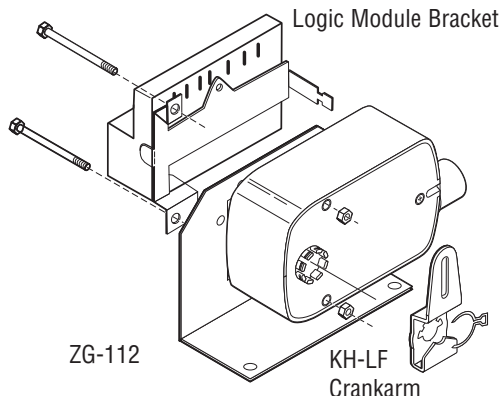


For proportional control of mixed air set point on economizer dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The actuator is mounted directly to a damper shaft from 3/8" up to 1/2" in diameter by means of its universal clamp, 1/2" shaft centered at delivery. For shafts up to 3/4" 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

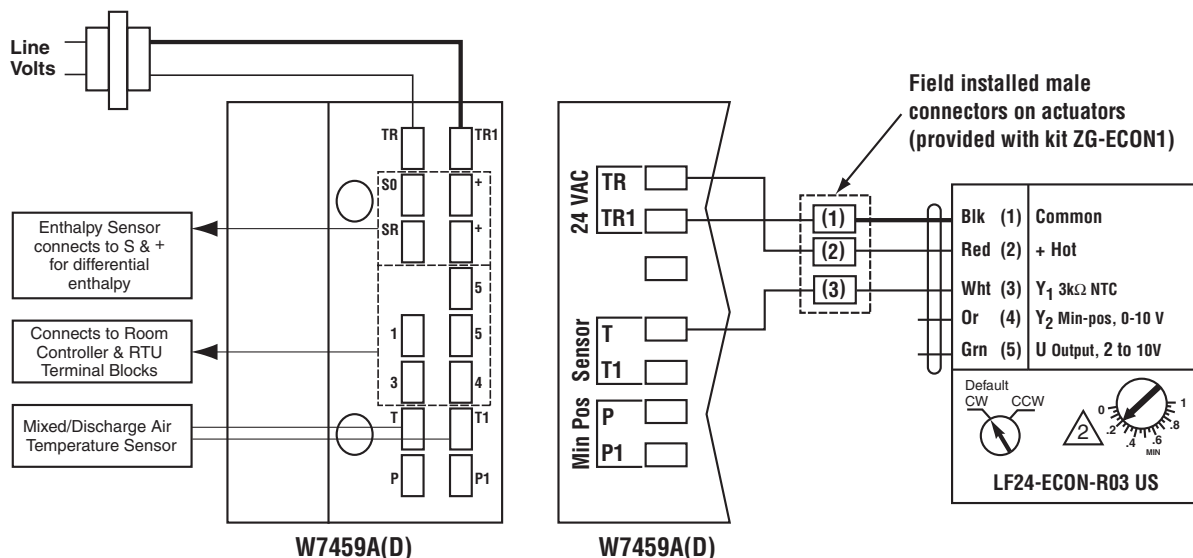
(Includes ZG-112, KH-LF and 20477-00001)

ZG-112

KH-LF

20477-00001

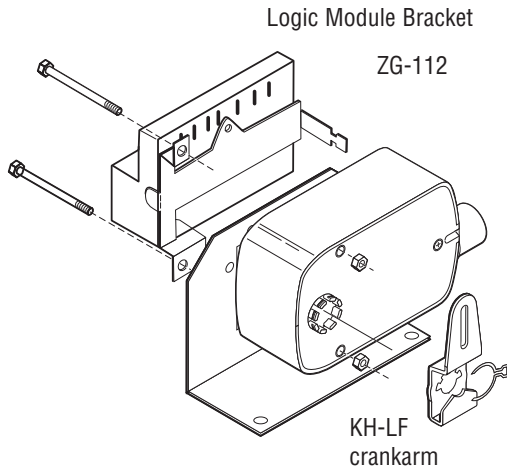
### Wiring Diagrams



W221

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## 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.

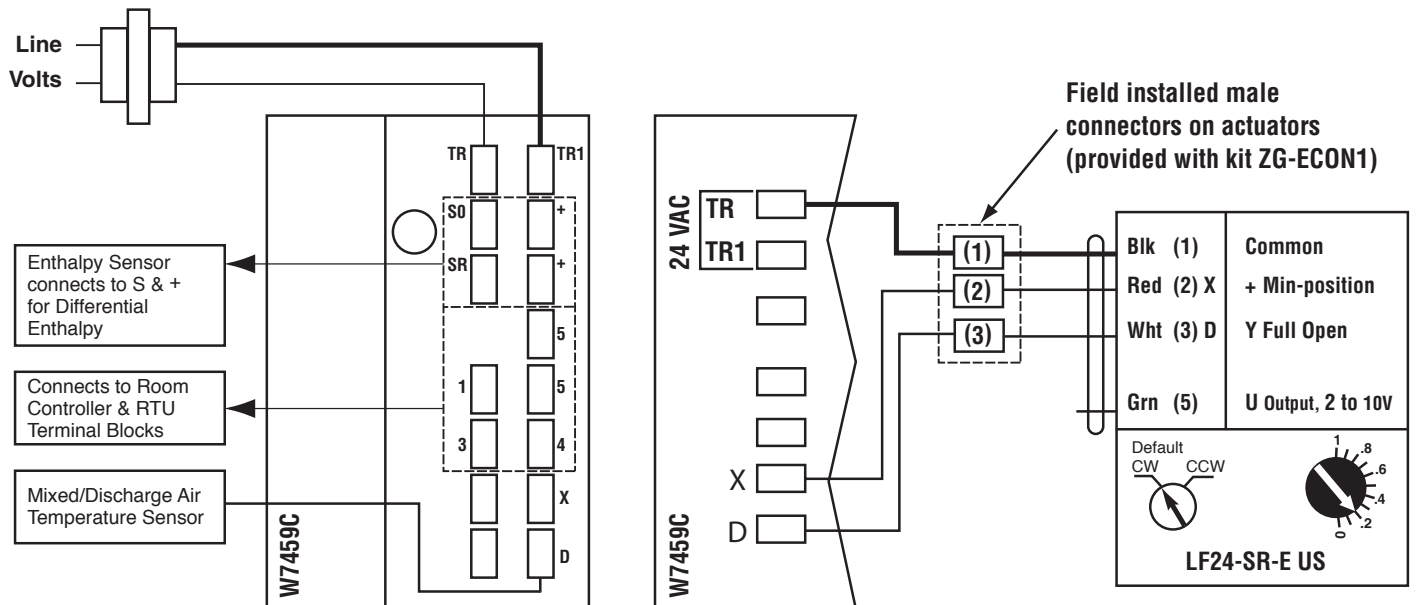
### Mounting

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.

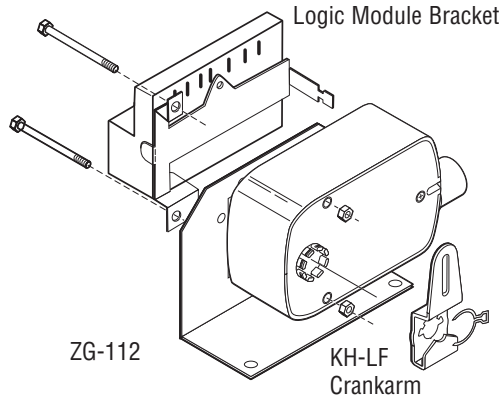
## Wiring Diagrams



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## 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 1/2" in diameter by means of its universal clamp, 1/2" shaft centered at delivery. For shafts up to 3/4" 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**

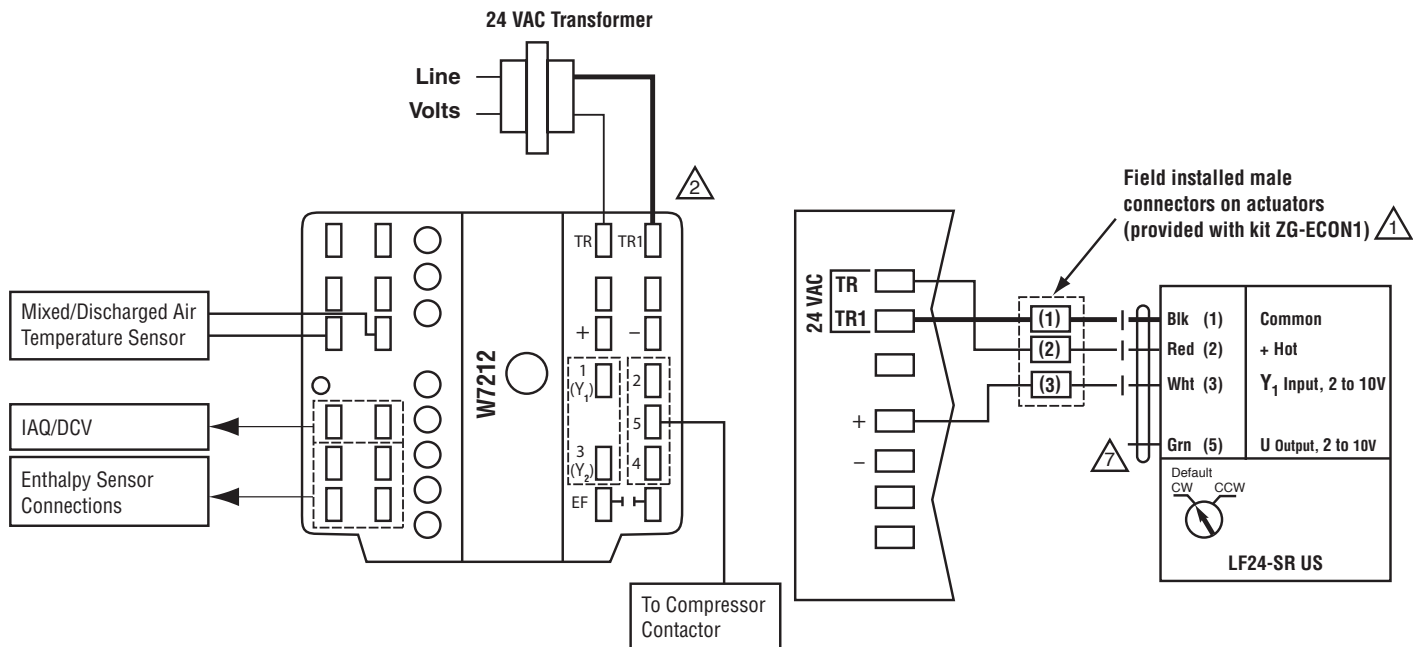
(Includes ZG-112, KH-LF and 20477-00001)

**ZG-112**

**KH-LF**

**20477-00001**

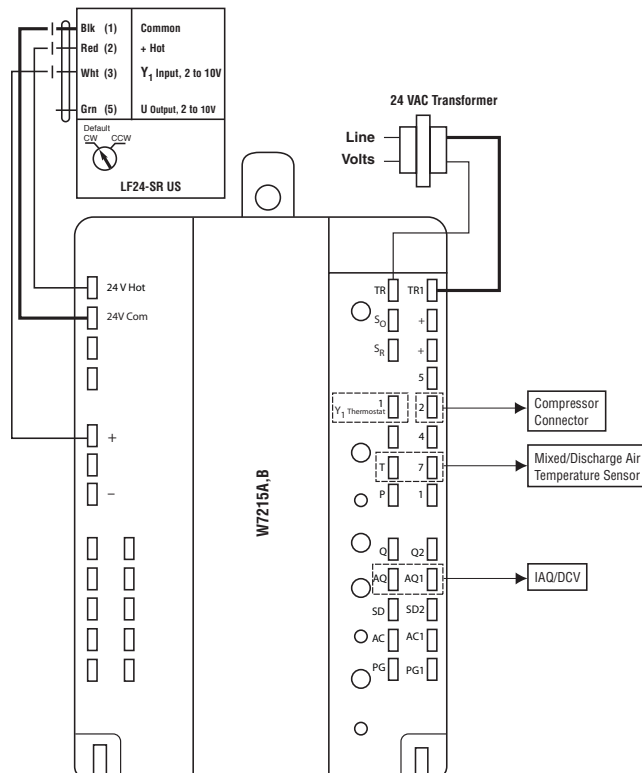
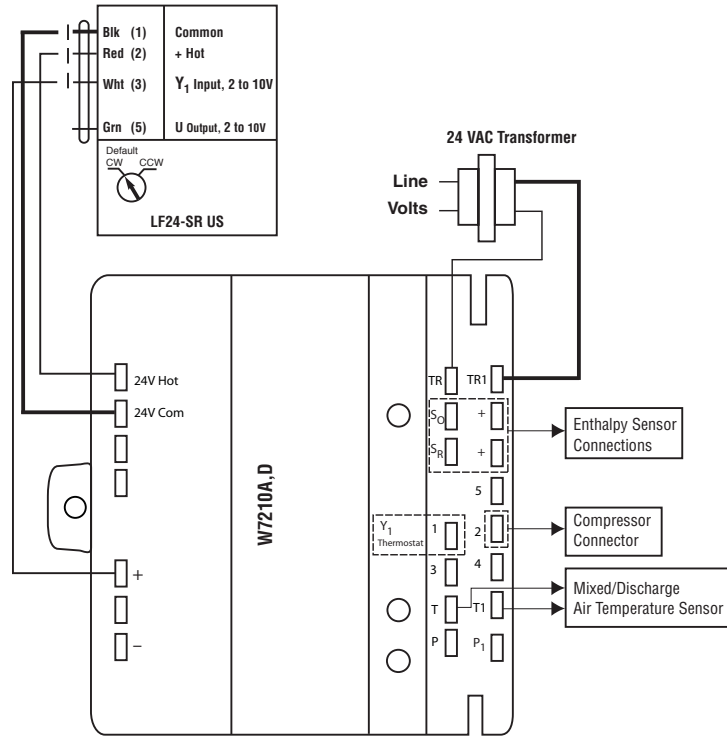
### Wiring Diagram



#### Notes:

- ⚠️ If W7212 and M7215 are physically attached. Use ZG-ECON1 Kit and connect to bottom.
- ⚠️ If Belimo actuator is to be direct coupled to economizer damper, connect to top of W7212 with field supplied 1/4" female spade connectors.

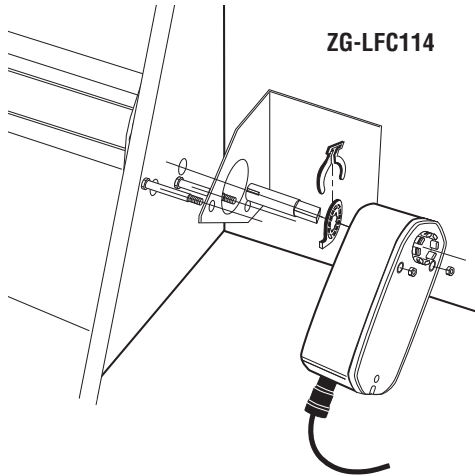
ML7275A Economizer Actuator Retrofit Wiring Diagrams



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## 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:

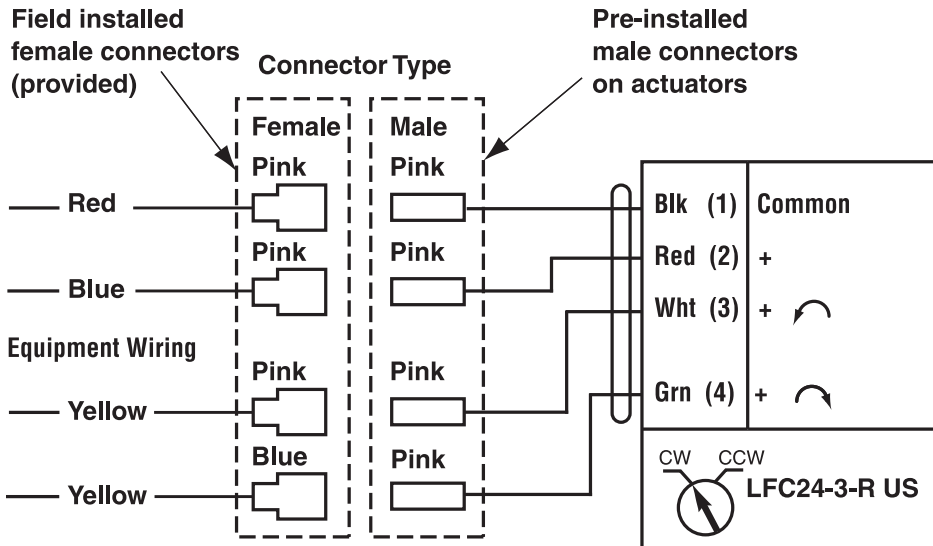
- 1 Mounting Bracket
- 1 Shaft Adaptor
- 2 Bolts with Nuts
- 4 Female Spade Connectors

**Note:** May require crankarm and ball joints

Use when replacing these actuators:

<b>Honeywell</b>	M84...
	M7...
	M6...

## Wiring Diagram



W149\_09

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# 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 Model #	Replacement
LF24-SR-MP US	LF24-MFT-20 US
LF24-SR-S-MP US	LF24-MFT-S-20 US
NF230 US	AF230 US
NF230-S US	AF230-S US
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	AF24-MFT95 US
FM24-SR95 US	AF24-MFT95 US
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	AF24-MFT US + P-300...
AFR24-3 US	AF24-MFT US + P-300...
AF24-3-S US	AF24-MFT-S US + P-300...
AFR24-3-S US	AF24-MFT-S US + P-300...
AFR24-SR US	AF24-SR US
AF24-SR-S US	AF24-MFT-S US + P-100...
AF24-SR95 US	AF24-MFT95 US
AF24-PWM US	AF24-MFT US + P-200...
AF24-SR US*	AF24-PC US if phasecut is needed

Non-Spring Return	
Discontinued Model #	Replacement
KM24	LMB24-3
KM24-3	LMB24-3
KM24-SL	LMB24-SR
KM24-SR	LMB24-SR
LMC24 US	LMCB24-3
LM24 US	LMB24-3
LM24-S US	LMB24-3-S
LM24-10P US	LMB24-3-P10-T
LM24-3 US	LMB24-3
LM24-3.1 US	LMB24-3.1
LM24-3-T US	LMB24-3-T
LM24-3-T.1 US	LMB24-3-T.1
LM24-3-5P0-T US	LMB24-3-P5-T
LM24-3-5P0-T.1 US	LMB24-3-P5-T.1

†For correct reorder # please call Belimo customer service at 800-543-9038.

\*Purchased before May 2003.

□ Placeholder for custom options.

Non-Spring Return	
Discontinued Model #	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
NM24-½00 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	NMQB24-MFT
NMV24-D US	NMV-D2M US, contact Belimo for support
NMV24-V US	NMV-D2M US, contact Belimo for support
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	AMQB24-1 + 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 A □ □

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# 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	AF24-MFT US + P-300..
AF24-3-S US	AF24-MFT-S US + P-300..
AF24-SR-S US	AF24-MFT-S US + P-100..
AF24-SR95 US	AF24-MFT95 US
AF24-PWM US	AF24-MFT US + 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	SY4-24P	3,560
MAR160-BP-24V	2,500	SY4-24P	3,560
MAR250-60-24V	5,000	SY5-24	4,450
MAR250-60P-24V	5,000	SY5-24P	4,450

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	SY3-110P	1,335
MAR100B	1,500	SY4-110	3,559
MAR160B	2,000	SY4-110	3,560
MAR100BP	1,800	SY4-110P	3,560
MAR160-BP	2,500	SY4-110P	3,560
MAR250-30	5,000	SY5-110	4,450
MAR250-30P	5,000	SY5-110P	4,450
		SY6-110	6,450
		SY6-110P	6,450
MAR800-30	10,000	SY7-110	9,790
MAR800-30P	10,000	SY7-110P	9,790
		SY8-110	13,350
		SY8-110P	13,350
MAR1600-70	21,000	SY10-110	22,250
MAR1600-70P	21,000	SY10-110P	22,250
MAR4000-70	48,000	SY12-110	31,150
MAR4000-70P	48,000	SY12-110P	31,150

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	SY3-110P	1,335 + NSV-SY-02
Sure100-30P-CW	1,200	SY3-110P	1,335 + NSV-SY-02

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Zone Valves*								
Discontinued Model #	Size	C <sub>v</sub> Rating	Close-off	Replacement	Size	C <sub>v</sub> 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	¾"	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<sub>v</sub> rating and Close-off requirement involving your application.

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  
**With a branch in Houston, TX**

**Applied Automation**  
A Wilson Mohr Company  
3186 South Washington Street, #230  
Salt Lake City, UT 84115  
Phone: 801-486-6454

**Boston Aircontrols, Inc.**  
8 Blanchard Road  
Burlington, MA 01803  
Phone: 781-272-5800

**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**

**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**

**First Source Distributors, LLC**  
710 Peninsula Lane, Suite E  
Charlotte, NC 28273  
Phone: 800-670-5977

**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**

CANADA

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in Canada, please visit our  
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or call toll free: 866-805-7089

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Tel. 800-543-9038, Fax 800-228-8283, [marketing@us.belimo.com](mailto:marketing@us.belimo.com)

1675 East Prater Way, Suite 101, Sparks, NV 89434  
Tel. 800 987-9042, Fax 800-987-8875, [marketing@us.belimo.com](mailto:marketing@us.belimo.com)

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