LF24-ECON-R03 US - Damper Actuator

Modulating, Spring Return, 24 V, Economizer, $3k\Omega$ Mixed Air Sensor, Built-in Minimum Position Adjustment







Power Supply 24 VAC, ±20%, 50/60 Hz, 24 VDC, ±10% Power Consumption Running 2.5 W Power Consumption Holding 1 W Transformer Sizing 5 VA (class 2 power source) Shaft Diameter 3/8" to 1/2" round, centers on 1/2" Electrical Connection 3ft [1m], 18 GA plenum cable with 1/2" conduit connector Overload Protection electronic throughout 0° to 95° rotation Electrical Protection actuators are double insulated Operating Range Y 3 kΩ NTC, 3 kΩ @ 77°F (25°C) MA setpoint = 55°F Input Impedance 100 kΩ Feedback Output U DC 210 V, Max. 0.7 mA Angle of Rotation Max. 95°, adjustable with mechanical stop Torque motor 35 in-lbs [4 Nm] Direction of Rotation (Motor) reversible with CW/CCW mounting Position Indication visual indicator, 0° to 95° (0° is full spring return position) Running Time (Motor) 95 sec constant, independent of load Running Time (Motor) 95 sec constant, independent of load Running Time (Fail-Safe) <25 sec @ -4°F to 122°F [-20°C to 50°C], <60 sec @ -22°F [-30°C] Override Control Minimum, Open, Closed via spring Min- position adjusts on	Technical Data	
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Torque motor35 in-lbs [4 Nm]Direction of Rotation (Motor)reversible with built-in switchDirection of Rotation (Fail-Safe)reversible with CW/CCW mountingPosition Indicationvisual indicator, 0° to 95° (0° is full spring return position)Running Time (Motor)95 sec constant, independent of loadRunning Time (Motor)95 sec constant, independent of loadRunning Time (Fail-Safe)<25 sec @ -4°F to 122°F [-20°C to 50°C], < 60 sec @ -22°F [-30°C]	Feedback Output U	DC 210 V, Max. 0.7 mA
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Running Time (Fail-Safe)<25 sec @ -4°F to 122°F [-20°C to 50°C], <60 sec @ -22°F [-30°C]	Position Indication	
<60 sec @ -22°F [-30°C]Override ControlMinimum, Open, Closed via spring Min- position adjusts on actuator cover between 0 and 100% (scaled 0 to 1)Ambient Humiditymax. 95% RH non-condensingAmbient Temperature-22122 °F [-3050 °C]Storage Temperature-40176 °F [-4080 °C]Degree of ProtectionIP54, NEMA 2Housing Materialzinc coated steelAgency Listings†cULus acc. To UL 873 and CAN/CSA C22.2 No. 24-93Noise Level (Motor)<30 dB (A)	Running Time (Motor)	
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No. 24-93Noise Level (Motor)<30 dB (A)	Housing Material	zinc coated steel
Noise Level (Fail-Safe)<62 dB (A)Servicingmaintenance freeQuality StandardISO 9001	Agency Listings†	
Servicing maintenance free Quality Standard ISO 9001	Noise Level (Motor)	<30 dB (A)
Quality Standard ISO 9001	Noise Level (Fail-Safe)	<62 dB (A)
	Servicing	maintenance free
Weight 3.43 lb [1.56 kg]	Quality Standard	ISO 9001
	Weight	3.43 lb [1.56 kg]

†Rated Impulse Voltage 800V, Type of action 1.AA, Control Pollution Degree 3

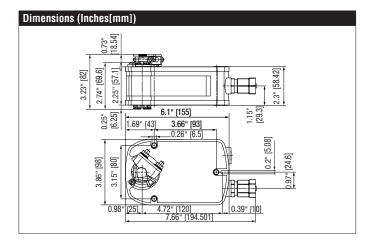
Torque min. 35 in-lb, for control of air dampers, Built-in adjustable min-position, Integrated mixed air PI-control.

Application

For fail-safe, modulating control of mixed air setpoint 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 k Ω thermistor, which allows the LF24-ECON... to retrofit or replace Honeywell® M7415 actuators. A 2 to 10 VDC feedback signal is provided for position indication.

Operation

The LF series actuators provide true spring return operation for reliable fail-safe application and positive close-off on air tight dampers. The spring return system provides constant torque to the damper with, and without, power applied to the actuator. The LF series provides 95° of rotation and is provided with a graduated position indicator showing 0 to 90°. The LF24-ECON-R03 US uses a brushless DC motor which is controlled by an Application Specific Integrated Circuit (ASIC) and a microprocessor. The microprocessor provides the intelligence to the ASIC to provide a constant rotation rate and to know the actuator's exact position. The ASIC monitors and controls the brushless DC motor's rotation and provides a digital rotation sensing function to prevent damage to the actuator in a stall condition. The actuator may be stalled anywhere in its normal rotation without the need of mechanical end switches. Power consumption is reduced in holding mode. See wiring diagrams for LF24-ECON-R03 US for more details on 3-position control.





According

LF24-ECON-R03 US - Damper Actuator

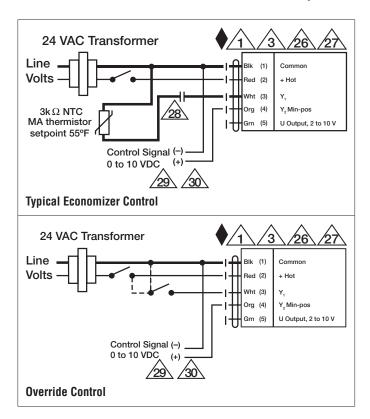
Modulating, Spring Return, 24 V, Economizer, 3k $\!\Omega$ Mixed Air Sensor,

Built-in Minimum Position Adjustment

AV6-206.7" shaft extension for 1/4" to 3/4" diameter shafts.K6 USStandard LF clamp (3/8" to 1/2").K6-1LF clamp (1/2" to 3/4").KG10ABall joint for 3/8" diameter rod, zinc plated.K68Ball joint for 5/16" diameter rod, 90°, galvanized steel.KH8Univ. crankarm, slot 21/64" w, for 3/8" to 11/16" dia. shaftKH-LFLF crankarm (with 1/2" diameter shaft pass through).KH+LFVV-bolt Kit for KH-LF.LF-PAnti-rotation bracket LF.SH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameterTOOL-068 mm and 10 mm wrench.ZB-LFAngle of rotation Limiter for LF.ZF8-LF8x8 mm form fit adaptor for LF.ZG-109Right angle bracket for ZS-260.ZG-112LF right angle bracket for ZS-260.ZG-LF12LF crankarm adaptor kit (includes ZG-112).ZG-DC2Damper clip for damper blade, 6" width.ZG-LF2LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-102Explosion proof housing.ZS-300-5NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-61" shaft adaptor for ZS-300(-5).ZS-300-71" shaft adaptor for ZS-300(-5).ZS-300-7NEMA 4X, 316L stainless steel enclosure.ZS-300-5NEMA 4X, 304 stai	Accessories	
K6 USStandard LF clamp (3/8" to 1/2").K6-1LF clamp (1/2" to 3/4").KG10ABall joint for 3/8" diameter rod, zinc plated.KG8Ball joint for 5/16" diameter rod, 90°, galvanized steel.KH8Univ. crankarm, slot 21/64" w,for 3/8" to 11/16" dia. shaftKH-LFLF crankarm (with 1/2" diameter shaft pass through).KH-LFLF crankarm (with 1/2" diameter shaft pass through).KH-LFVV-bolt Kit for KH-LF.LF-PAnti-rotation bracket LF.SH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameterTOOL-068 mm and 10 mm wrench.ZDB-LFAngle of rotation Limiter for LF.ZF8-LF8x8 mm form fit adaptor for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-112LF right angle bracket (a +1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF112LF crankarm adaptor kit (T bracket included).ZG-LMSA-1/2-5Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-102Explosion proof housing.ZS-300-C3NEMA 4X, 316L stainless steel enclosure.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-C31/2" shaft adaptor for ZS-300(-5).ZS-300-C31'2" shaft adaptor for ZS-300(-5)		Honeywell logic module bracket.
K6-1LF clamp (1/2" to 3/4").KG10ABall joint for 3/8" diameter rod, zinc plated.KG8Ball joint for 5/16" diameter rod, 90°, galvanized steel.KH8Univ. crankarm, slot 21/64" w, for 3/8" to 11/16" dia. shaftKH-LFLF crankarm (with 1/2" diameter shaft pass through).KH-LFLF crankarm (with 1/2" diameter shaft pass through).KH-LFV-bolt Kit for KH-LF.LF-PAnti-rotation bracket LF.SH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameterTOOL-068 mm and 10 mm wrench.ZDB-LFAngle of rotation Limiter for LF.ZF8-LF8x8 mm form fit adaptor for LF.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3." width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF112LF crankarm adaptor kit (Includes ZG-112).ZG-LF2LF crankarm adaptor kit (Includes ZG-112).ZG-LS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-102Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 304 stainless steel enclosure.ZS-300-C11/2" shaft adaptor for ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" sh	AV6-20	
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KH8Univ. crankarm,slot 21/64" w,for 3/8" to 11/16" dia. shaftKH-LFLF crankarm (with 1/2" diameter shaft pass through).KH-LFVV-bolt Kit for KH-LF.LF-PAnti-rotation bracket LF.SH10Push rod for KG6 & KG8 ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameterTOOL-068 mm and 10 mm wrench.ZDB-LFAngle of rotation Limiter for LF.ZF8-LF8x8 mm form fit adaptor for LF.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF12LF crankarm adaptor kit (Ir bracket included).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-1030NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-623/4" shaft adaptor for ZS-300(-5).ZS-300-631" shaft adaptor for ZS-300(-5).ZS-300-63 <td< td=""><td>KG10A</td><td>Ball joint for 3/8" diameter rod, zinc plated.</td></td<>	KG10A	Ball joint for 3/8" diameter rod, zinc plated.
KH-LFLF crankarm (with 1/2" diameter shaft pass through).KH-LFVV-bolt Kit for KH-LF.LF-PAnti-rotation bracket LF.SH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameteTOOL-068 mm and 10 mm wrench.ZDB-LFAngle of rotation Limiter for LF.ZF8-LF8x8 mm form fit adaptor for LF.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF2LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (includes ZG-112).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-12-5Shaft extension for 1/2" diameter shafts (4" L).ZG-LMSA-12-5Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-100Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" 1ZS-260Explosion proof housing.ZS-300-5NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-623/4" shaft adaptor for ZS-300(-5).ZS-300-723/4" shaft adaptor for ZS-300(-5).ZS-300-731" shaft adaptor for ZS-300(-5).ZS-300-74Next adaptor for ZS-300(-5).ZS-300-75NEMA 4X, 316L stainless steel enclosure.ZS-300-723/4" shaft adaptor for ZS-300(-5).	KG8	Ball joint for 5/16" diameter rod, 90°, galvanized steel.
KH-LFVV-bolt Kit for KH-LF.LF-PAnti-rotation bracket LF.SH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameterTOOL-068 mm and 10 mm wrench.ZDB-LFAngle of rotation Limiter for LF.ZF8-LF8x8 mm form fit adaptor for LF.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF112LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-12-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300NEMA 4X, 316L stainless steel enclosure.ZS-300-C11/2" shaft adaptor for ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).RM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475Shaft mount, non-Mercury aux. switch for 1/2" di	KH8	Univ. crankarm,slot 21/64" w,for 3/8" to 11/16" dia. shafts.
LF-PAnti-rotation bracket LF.SH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameteTOOL-068 mm and 10 mm wrench.ZDB-LFAngle of rotation Limiter for LF.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-02Damper clip for damper blade, 3.5" width.ZG-02Damper clip for damper blade, 3.5" width.ZG-02Damper clip for damper blade, 6" width.ZG-LF12LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" 1ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-611/2" shaft adaptor for ZS-300(-5).ZS-300-623/4" shaft adaptor for ZS-300(-5).ZS-300-631" shaft adaptor for ZS-300(-5).ZS-300-64<	KH-LF	LF crankarm (with 1/2" diameter shaft pass through).
SH10Push rod for KG10A ball joint (36" L, 3/8" diameter).SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameterTOOL-068 mm and 10 mm wrench.ZDB-LFAngle of rotation Limiter for LF.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-1112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-0C1Damper clip for damper blade, 3.5" width.ZG-0C2Damper clip for damper blade, 6" width.ZG-LF2LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-623/4" shaft adaptor for ZS-300(-5).ZS-300-723/4" shaft adaptor for ZS-300(-5).ZS-300-731" shaft adaptor for ZS-300(-5).RM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475-1Shaft mount, non-Mercury aux.	KH-LFV	V-bolt Kit for KH-LF.
SH8Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameteTOOL-068 mm and 10 mm wrench.ZDB-LFAngle of rotation Limiter for LF.ZF8-LF8x8 mm form fit adaptor for LF.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF112LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-12-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-100Keather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" I)ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-C11/2" shaft adaptor for ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475-1Shaft mount, non-Mercury aux. switch for 1/2" dia. sh	LF-P	Anti-rotation bracket LF.
TOOL-068 mm and 10 mm wrench.ZDB-LFAngle of rotation Limiter for LF.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3.5" width.ZG-LF12LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-12-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" I)ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C49/4" shaft adaptor for ZS-300(-5).ZS-300-C5NEMA 4X, 316L stainless steel enclosure.ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C4Positioners suitable for use with the modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	SH10	Push rod for KG10A ball joint (36" L, 3/8" diameter).
ZDB-LFAngle of rotation Limiter for LF.ZF8-LF8x8 mm form fit adaptor for LF.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF112LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" IZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	SH8	Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).
ZF8-LF8x8 mm form fit adaptor for LF.ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF112LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (includes ZG-112).ZG-LKSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" IZS-260Explosion proof housing.ZS-300-5NEMA 4X, 304 stainless steel enclosure.ZS-300-611/2" shaft adaptor for ZS-300(-5).ZS-300-723/4" shaft adaptor for ZS-300(-5).ZS-300-731" shaft adaptor for ZS-300(-5).ZS-300-731" shaft adaptor for ZS-300(-5).RM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	T00L-06	8 mm and 10 mm wrench.
ZG-109Right angle bracket for ZS-260.ZG-110Stand-off bracket for ZS-260.ZG-112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF112LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-105Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" IZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-C11/2" shaft adaptor for ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZDB-LF	Angle of rotation Limiter for LF.
ZG-110Stand-off bracket for ZS-260.ZG-112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF112LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" 1ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-623/4" shaft adaptor for ZS-300(-5).ZS-300-631" shaft adaptor for ZS-300(-5).ZS-300-631" shaft adaptor for ZS-300(-5).ZS-300-631" shaft adaptor for ZS-300(-5).ZS-300-64Positioners suitable for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.P5-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZF8-LF	8x8 mm form fit adaptor for LF.
ZG-112LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF112LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" IZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C49/4" shaft adaptor for ZS-300(-5).ZS-300-C51/2" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C42.4" shaft adaptor for ZS-300(-5).ZS-300-C53.4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-	ZG-109	Right angle bracket for ZS-260.
ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF12LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" IZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C41/2" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C49/4" shaft adaptor for ZS-300(-5).ZS-300-C51.1Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P5-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZG-110	Stand-off bracket for ZS-260.
ZG-DC1Damper clip for damper blade, 3.5" width.ZG-DC2Damper clip for damper blade, 6" width.ZG-LF12LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" IZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C41/2" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C49/4" shaft adaptor for ZS-300(-5).ZS-300-C51.1Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P5-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZG-112	LF right angle bracket (4-1/2" H x 5-1/2" W x 2-1/2" D).
ZG-DC2Damper clip for damper blade, 6" width.ZG-LF112LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" IZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C41/2" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C49/4" shaft adaptor for ZS-300(-5).ZS-300-C51." shaft adaptor for ZS-300(-5).ZS-300-C49/4" shaft adaptor for ZS-300(-5).ZS-300-C51." shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C49/4" shaft adaptor for ZS-300(-5).ZS-300-C51." shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C49/4" shaft adaptor for ZS-300(-5).ZS-300-C51." shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C49/5" shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1." dia.	ZG-DC1	
ZG-LF112LF crankarm adaptor kit (includes ZG-112).ZG-LF2LF crankarm adaptor kit (T bracket included).ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" IZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C11/2" shaft adaptor, standard wtih ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZG-DC2	
ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" I)ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C11/2" shaft adaptor, standard wtih ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).RM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Actuator power supply and control simulator.SGA24 <td>ZG-LF112</td> <td></td>	ZG-LF112	
ZG-LMSA-1Shaft extension for 3/8" diameter shafts (4" L).ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" I)ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C11/2" shaft adaptor, standard wtih ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).RM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Actuator power supply and control simulator.SGA24 <td>ZG-LF2</td> <td>LF crankarm adaptor kit (T bracket included).</td>	ZG-LF2	LF crankarm adaptor kit (T bracket included).
ZG-LMSA-1/2-5Shaft extension for 1/2" diameter shafts (5" L).ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" IZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C11/2" shaft adaptor, standard wtih ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZG-LMSA-1	
ZS-100Weather shield - galvaneal (13" L x 8" W x 6" D).ZS-101Base plate for ZS-100.ZS-150Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" IZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C11/2" shaft adaptor, standard wtih ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZG-LMSA-1/2-5	
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ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C11/2" shaft adaptor, standard wtih ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZS-101	Base plate for ZS-100.
ZS-260Explosion proof housing.ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-C11/2" shaft adaptor, standard wtih ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZS-150	Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D).
ZS-300NEMA 4X, 304 stainless steel enclosure.ZS-300-5NEMA 4X, 316L stainless steel enclosure.ZS-300-611/2" shaft adaptor, standard wtih ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZS-260	
ZS-300-C11/2" shaft adaptor, standard wtih ZS-300(-5).ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.P475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZS-300	
ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZS-300-5	NEMA 4X, 316L stainless steel enclosure.
ZS-300-C23/4" shaft adaptor for ZS-300(-5).ZS-300-C31" shaft adaptor for ZS-300(-5).IRM-100Input rescaling module for modulating actuators.P475Shaft mount, non-Mercury aux. switch for 1/2" dia. shaftsP475-1Shaft mount, non-Mercury aux. switch for 1" dia. shafts.PS-100Actuator power supply and control simulator.SGA24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRSGF24Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SRZG-SGFMounting plate for SGF.	ZS-300-C1	1/2" shaft adaptor, standard wtih ZS-300(-5).
ZS-300-C3 1" shaft adaptor for ZS-300(-5). IRM-100 Input rescaling module for modulating actuators. P475 Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts P475-1 Shaft mount, non-Mercury aux. switch for 1" dia. shafts. PS-100 Actuator power supply and control simulator. SGA24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR SGF24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR ZG-SGF Mounting plate for SGF.	ZS-300-C2	3/4" shaft adaptor for ZS-300(-5).
IRM-100 Input rescaling module for modulating actuators. P475 Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts P475-1 Shaft mount, non-Mercury aux. switch for 1" dia. shafts. PS-100 Actuator power supply and control simulator. SGA24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR SGF24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR ZG-SGF Mounting plate for SGF.	ZS-300-C3	1" shaft adaptor for ZS-300(-5).
P475 Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts P475-1 Shaft mount, non-Mercury aux. switch for 1" dia. shafts. PS-100 Actuator power supply and control simulator. SGA24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR SGF24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR ZG-SGF Mounting plate for SGF.	IRM-100	Input rescaling module for modulating actuators.
P475-1 Shaft mount, non-Mercury aux. switch for 1" dia. shafts. PS-100 Actuator power supply and control simulator. SGA24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR SGF24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR ZG-SGF Mounting plate for SGF.	P475	Shaft mount, non-Mercury aux. switch for 1/2" dia. shafts.
PS-100 Actuator power supply and control simulator. SGA24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR SGF24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR ZG-SGF Mounting plate for SGF.	P475-1	
SGA24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR SGF24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR ZG-SGF Mounting plate for SGF.	PS-100	
SGF24 Positioners suitable for use with the modulating damper actuators LMA-SR, NMA-SR, SMA-SR and GMA-SR ZG-SGF Mounting plate for SGF.	SGA24	Positioners suitable for use with the modulating damper
ZG-SGF Mounting plate for SGF.	SGF24	
	ZG-SGF	
26-X40 120 to 24 VAU, 40 VA transformer.	ZG-X40	120 to 24 VAC, 40 VA transformer.
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Typical Specification

Spring return control damper actuators shall be direct coupled type which require no crank arm and linkage and be capable of direct mounting to a shaft up to a 3/4" diameter and center on a 1/2" shaft (default). Actuator shall deliver a minimum output torque of 35 in-lbs. The actuator must provide modulating damper control in response to a 3 k Ω NTC thermistor, 55°F setpoint. Actuator must have a built-in minimum position potentiometer. Actuator must have a built-in moverride via 0 to 10 VDC on wire 4. Actuators shall use a brushless DC motor controlled by a microprocessor and be protected from overload at all angles of rotation. Run time shall be independent of torque load. A 2 to 10 VDC feedback signal shall be provided for position feedback. The actuator must be designed so that they may be used for either clockwise or counter clockwise fail safe operation. Actuators shall be cULus listed, have a 5 year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.



 $\label{eq:linear} \begin{array}{l} \textbf{LF24-ECON-R03 US - Damper Actuator} \\ \textbf{Modulating, Spring Return, 24 V, Economizer, 3k} \\ \textbf{Mixed Air Sensor, Built-in Minimum Position Adjustment} \end{array}$



Dunt	-in Minimum Fosition Aujustinent
Wirin	g Diagrams
\wedge	WARNING! LIVE ELECTRICAL COMPONENTS!
<u> </u>	During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.
	Meets cULus requirements without the need of an electrical ground connection.
Λ	Provide overload protection and disconnect as required.
$\underline{\land}$	Actuators may also be powered by 24 VDC.
26	Min-position is adjustable from 0 to 100% with a potentiometer on the actuator cover.
27	A relay or switch can spring return the actuator when the RTU fan de- energizes, or if low ambient temperature is sensed.
28	A standard relay can be used to close the sensor circuit to engage economizer mode, e.g. outside air changeover device like a dry bulb or enthalpy limit switch. Honeywell® logic module W7459A and enthalpy sensor C7400 also provide terminals for this switching.
29	A remote CO2 sensor or DDC controller can change the standard relay opening or closing the sensor circuit. This device can be a relay or a dry bulb/enthalpy limit switch.



Override control for Y2 only accepts 0 to 10 VDC override control.