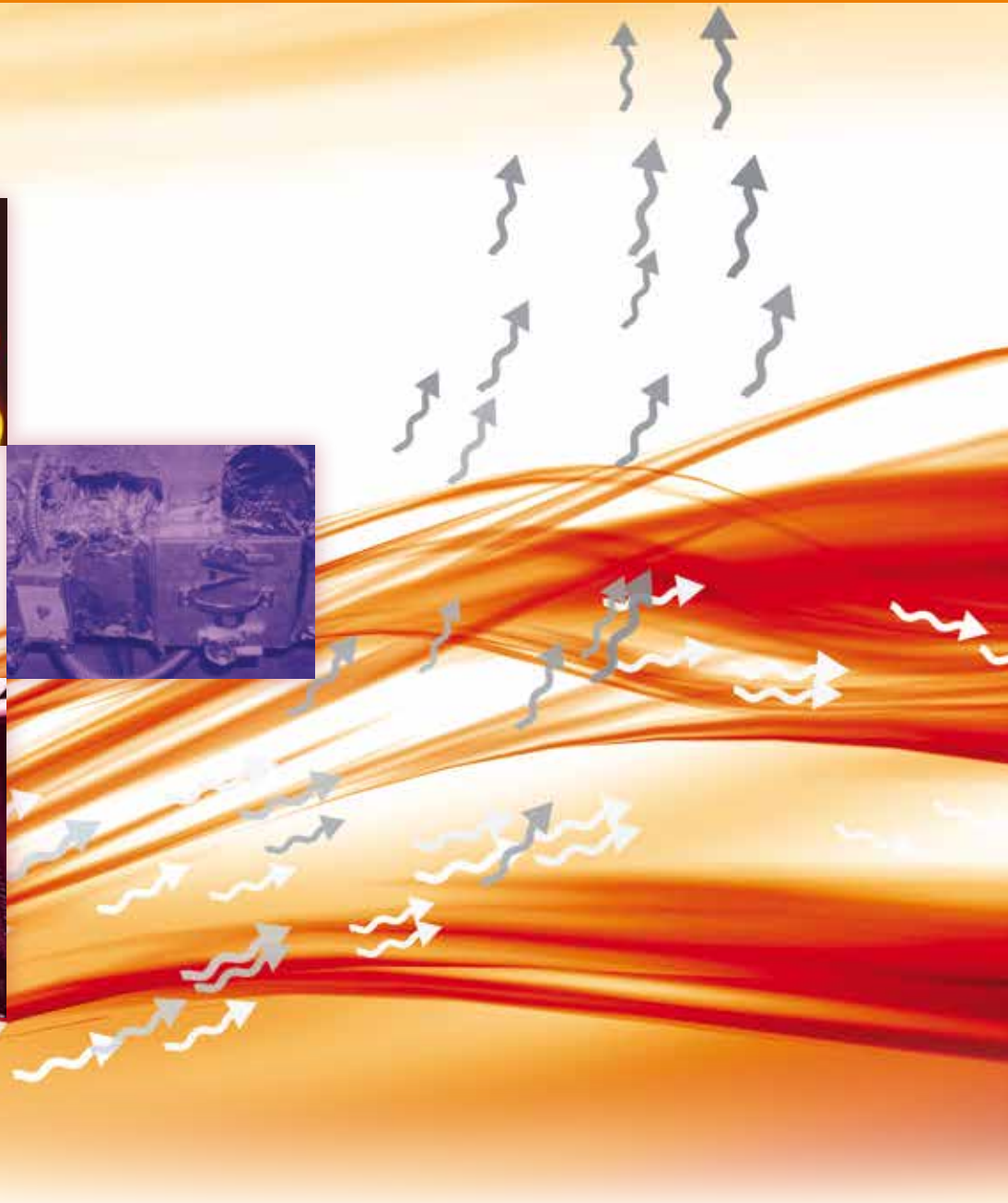


Fire & Smoke Actuators



Technical Databook

Version 3.7



Product Naming	B	F	G	24	-SR
Fire and Smoke Actuator (CE Certification)	B				
Spring Return	F				
• 18Nm/12Nm	FG				
• 11Nm/8.5Nm	FN				
• 9Nm/7Nm	LF				
• 6Nm/4Nm*	FL				
• 4Nm/3Nm					
Non-Spring Return	E				
• 40Nm	LE/R				
• 15Nm					
Angle Rotation max. 95° max. 180°	Blank G				
Power Supply					
• AC/DC 24V	24				
• AC/DC 24...48V	24...48 (only for BR..)				
• AC 230V	230				
Open/Close	Blank				
Modulating DC (0)2...10V control	-SR				
Thermal trip	-T				
SBS(E) system connection	-ST				

* Torque of BLF24-SR is 4Nm/4Nm.

Product Naming	FS	LF	24	-S
Fire and Smoke Actuator (UL555/UL555S)	FS			
Spring Return	AF			
• 20Nm	NF			
• 7.9Nm	LF			
• 3.5Nm	TF			
• 2.0Nm				
Power Supply				
• AC 24V / DC 24V*	24			
• AC 230V	230			
Open/Close	Blank			
Modulating DC (0)2...10V control	-SR			
Auxiliary switch	-S			

* DC 24V might not be listed under UL. Please refer to individual datasheet for detail.

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Note:

- The modification and mounting of the actuator to the fire damper is made by the manufacturer of the damper.
- For this reason, the Fire & Smoke Actuator is supplied directly to fire damper manufacturers. The manufacturer then bears over all responsibility for a proper function of the damper.
- The enclosure of the actuator equipment may only be opened by the manufacturer. It contains no components which the user can replace or repair.



EU Series

Fire and Smoke Spring Return Actuators	BFL	BFN	BFG	BF
Agency listing	CE Certification			
Torque - Motor	4Nm	9Nm	11Nm	18Nm
- Spring Return	3Nm	7Nm	8.5Nm	12Nm
Open/Close				
AC 24V 50/60Hz, DC 24V	BFL24	BFN24	BFG24	BF24
AC 24V 50/60Hz, DC 24V with thermal trip (72°C)	BFL24-T	BFN24-T		BF24-T
AC/DC 24V with plug connect to BKN230-24	BFL24-ST	BFN24-ST	BFG24-ST	BF24-ST
AC 24V 50/60Hz, DC 24V with thermal trip and plug connect to BKN230-24	BFL24-T-ST	BFN24-T-ST	BFG24-T-ST	BF24-T-ST
AC 230V 50/60Hz	BFL230	BFN230	BFG230	BF230
AC 230V 50/60Hz with thermal trip	BFL230-T	BFN230-T	BFG230-T	BF230-T
Modulating (AC 24V 50/60Hz, DC 24V)				
Control signal Y DC (0)2...10V	BFL24-SR(-T)	BFN24-SR(-T)		BF24-SR(-T)
Feedback signal U DC 2...10V	BFL24-SR(-T)	BFL24-SR(-T)		
Running time - Motor	<60s	<60s	120s	120s
- Spring Return	20s	20s	20s	16s
Built-in 2 SPDT auxiliary switch	Build-in			
Form-fit	12 x 12mm (with 10 x 10mm adaptor)		10 x 10mm	12 x 12mm (with 10 x 10mm adaptor)
Manual override function	YES			
Angle of rotation	Max.95°	Max.95°	Max.180°	Max.95°
Direction of rotation selectable by L/R mounting	YES			

Smoke Control Non-Spring Return Actuators	BLE..	BE..	BR..
Agency listing	CE Certification		
Torque	15Nm	40Nm	15Nm
Open/Close			
AC 24V 50/60Hz, DC 24V	BLE24	BE24	
AC/DC 24V with plug connect to BKN230-24	BLE24-ST	BE24-ST	
AC 24..48V compatible with control unit for pulse triggering BSIA24-48(-R)			BR24-48-F-ST
AC 230V 50/60Hz	BLE230	BE230	
Running time - Motor	30s	60s	30s
Built-in 2 SPDT auxiliary switch	YES		
Form-fit 12 x 12mm	YES	BE24-12 BE24-12-ST BE230-12	YES
Form-fit 14 x 14mm		YES	
Manual override function	YES		
Angle of rotation	Max.95°		Max.105°
Direction of rotation selectable by L/R mounting	YES		

US Series

Fire and Smoke Spring Return Actuators	FSTF..US	FSLF..US	FSNF..US	FSAF..A	FSAFB24-SR*
Agency listing	UL555 and UL555S				
Torque - Motor	2Nm	3.5Nm	7.9Nm	20Nm	20Nm
- Spring Return	2Nm	3.5Nm	7.9Nm	20Nm	20Nm
Accessories					
BAE72-S Thermoelectrical tripping device 72°C	Optional / Order Separately				
BAE165 US Thermoelectrical RE tripping device					
Modulating					
AC 24V 50/60Hz					FSAFB24-SR
Open/Close					
AC 24V 50/60Hz, DC 24V	FSTF24 US	FSLF24 US	FSNF24 US**	FSAF24A	FSAFB24-SR
AC120V 50/60Hz	FSTF120 US			FSAF120A	
AC 230V 50/60Hz	FSTF230 US	FSLF230 US	FSNF230 US	FSAF230A	
Built-in 2 SPDT auxiliary switch			FSNF24-S US FSNF230-S US	FSAF24A-S FSAF120A-S FSAF230A-S	FSAFB24-SR
Built-in 2 SPST auxiliary switch	FSTF24-S US FSTF120-S US FSTF230-S US	FSLF24-S US FSLF230-S US			
Running time - Motor	75s	15s	15s	25s	75s
- Spring Return	25s	15s	15s	15s	20s
Clamp	6...12mm	12.7...20mm	12.7...26mm	12.7...20mm (10...20mm optional)	12.7mm (19.05mm, 26.67mm field selectable)
Manual override function	NO			NO	YES
Angle of rotation	Max.95°				
Direction of rotation selectable by L/R mounting	YES				

* FSAFB24-SR could be control with open/close or modulating operations.

** DC 24V is not UL listed for FSNF24(-)S US.

Fire and Smoke Spring Return Actuator BFL24(-T)(-ST)



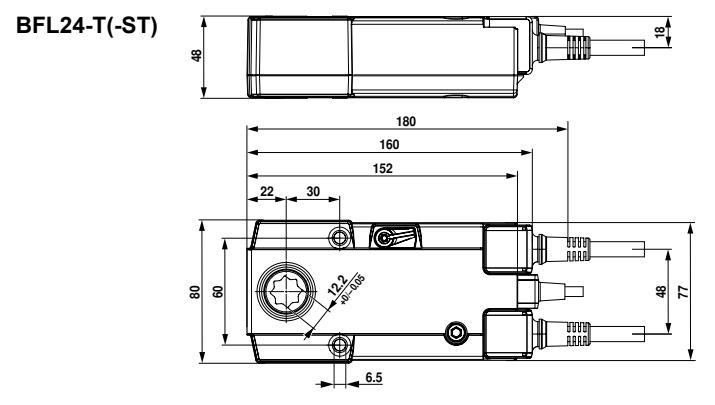
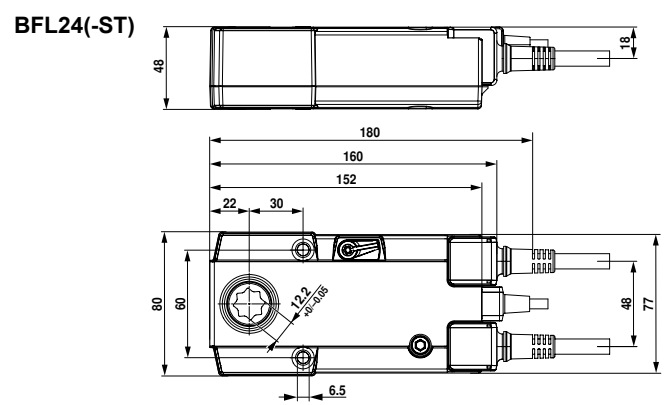
- For control of Fire and Smoke Dampers in HVAC systems
- Nominal torque: 4Nm/3Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close
- Manual override function
- Spindle driver Form fit 12x12mm, continuous hollow shaft
- A: Steel structure for endurance of high temperature
- B: Safety lock position



Technical data

Electrical data	Nominal voltage		AC/DC 24V	
	Nominal voltage frequency		50/60Hz	
	Nominal voltage range		AC 19.2V...28.8V / DC 21.6V...28.8V	
	Power consumption	BFL24(-T)	2.5W @ running / 0.7W @ holding	
		BFL24(-ST)	2.5W @ running / 0.8W @ holding	
	Power consumption for wire sizing		4VA (Imax 8.3A @ 5ms)	
	Auxiliary switch		2 x SPDT	
	Switching capacity auxiliary switch		1mA...3 (0.5) A, AC 250V (II Protective insulated)	
	Switching points auxiliary switch		5° / 80°	
	Connection supply		Cable 1m, 2 x 0.34mm ² (halogen-free)	
	Connection auxiliary switch		Cable 1m, 6 x 0.75mm ² (halogen-free)	
	Cable length thermoelectric tripping device	BFL24-T	0.5m	
		BFL24-T-ST		
	Functional data	Torque motor		Min. 4Nm
		Torque spring return		Min. 3Nm
Direction of rotation motor			Can be selected by mounting L/R	
Manual override			With position stop	
Angle of rotation			Max. 95° (incl. 5° initial spring tension)	
Angle of rotation note			(incl. 5° initial spring tension)	
Running time motor			<60s / 90°	
Running time spring return			20s @ -10...55°C / <60s @ -30...-10°C	
Sound power level motor max.			43dB(A)	
Sound power level spring return max.			62dB(A)	
Damper rotation			Form fit 12x12mm, continuous hollow shaft	
Position indication			Mechanically, with pointer	
Service life		>60,000 safety positions		
Safety	Response temperature thermal fuse	BFL24-T(-ST): BAT	Duct outside temperature 72°C Duct inside temperature 72°C	
	Protection class IEC/EN		III Safety extra-low voltage	
	Degree of protection IEC/EN		IP54 in all mounting positions	
	EMC		CE according to 2014/30/EU	
	Low-voltage directive		CE according to 2014/35/EU	
	Certification IEC/EN		IEC/EN 60730-1 and IEC/EN 60730-2-14	
	Mode of operation		Type 1.AA.B	
	Rated impulse voltage supply/control		0.8kV	
	Control pollution degree		3	
	Ambient temperature	-Normal Duty -Safety Duty	-30...55°C The safety position will be attained up to max. 75°C	
	Non-operating temperature		-40...55°C (-40...80°C without thermal trip)	
	Ambient humidity		95% r.h., non-condensing	
	Maintenance		Maintenance-free	
	Weight	Weight	BFL24(-ST) BFL24-T(-ST)	Approx. 1.1kg Approx. 1.2kg

Dimensions [mm]



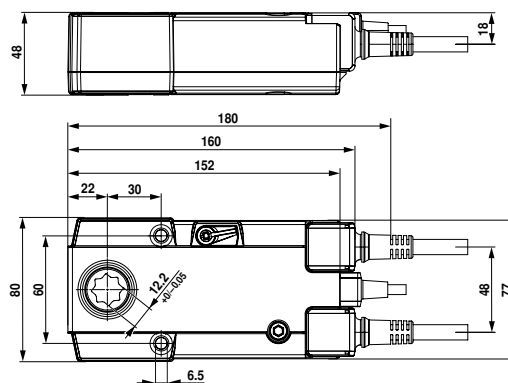
- For control of Fire and Smoke Dampers in HVAC systems
- Nominal torque: 4Nm/3Nm
- Nominal voltage: AC 230V
- Control: Open/Close
- Manual override function
- Spindle driver Form fit 12x12mm, continuous hollow shaft
- A: Steel structure for endurance of high temperature
- B: Safety lock position



Technical data

Electrical data	Nominal voltage		AC 230V	
	Nominal voltage frequency		50/60Hz	
	Nominal voltage range		AC 198...264V	
	Power consumption	BFL230	3W @ running / 0.9W @ holding	
		BFL230-T	4W @ running / 1.4W @ holding	
	Power consumption for wire sizing		6.5VA (I _{max} 4A @ 5ms)	
	Auxiliary switch		2 x SPDT	
	Switching capacity auxiliary switch		1mA...3 (0.5) A, AC 250V (II Protective insulated)	
	Switching points auxiliary switch		5° / 80°	
	Connection supply		Cable 1m, 2 x 0.34mm ² (halogen-free)	
	Connection auxiliary switch		Cable 1m, 6 x 0.75mm ² (halogen-free)	
	Cable length thermoelectric tripping device	BFL230-T	0.5m	
	Functional data	Torque motor		Min. 4Nm
		Torque spring return		Min. 3Nm
Direction of rotation motor			Can be selected by mounting L/R	
Manual override			With position stop	
Angle of rotation			Max. 95° (incl. 5° initial spring tension)	
Angle of rotation note			(incl. 5° initial spring tension)	
Running time motor			<60s / 90°	
Running time spring return			20s @ -10...55°C / <60s @ -30...-10°C	
Sound power level motor max.			43dB(A)	
Sound power level spring return max.			62dB(A)	
Damper rotation			Form fit 12x12mm, continuous hollow shaft	
Position indication			Mechanically, with pointer	
Service life			>60,000 safety positions	
Safety	Response temperature thermal fuse	BFL230-T: BAT	Duct outside temperature 72°C Duct inside temperature 72°C	
	Protection class IEC/EN		II Protective insulated	
	Degree of protection IEC/EN		IP54 in all mounting positions	
	EMC		CE according to 2014/30/EU	
	Low-voltage directive		CE according to 2014/35/EU	
	Certification IEC/EN		IEC/EN 60730-1 and IEC/EN 60730-2-14	
	Mode of operation		Type 1.AA.B	
	Rated impulse voltage supply/control		4kV	
	Control pollution degree		3	
	Ambient temperature	-Normal Duty -Safety Duty	-30...55°C The safety position will be attained up to max. 75°C when triggered by a thermal fuse	
	Non-operating temperature		-40...55°C (-40...80°C without thermal trip)	
	Ambient humidity		95% r.h., non-condensing	
	Maintenance		Maintenance-free	
	Weight	Weight	BFL230 BFL230-T	Approx. 1.1kg Approx. 1.2kg

Dimensions [mm]



Fire and Smoke Spring Return Actuator BFN24(-T)(-ST)



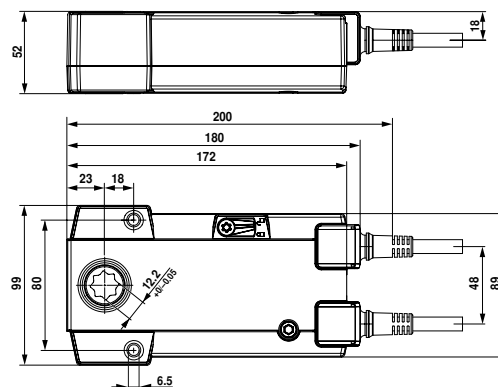
- For control of Fire and Smoke Dampers in HVAC systems
- Nominal torque: 9Nm/7Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close
- Manual override function
- Spindle driver Form fit 12x12mm, continuous hollow shaft
- A: Steel structure for endurance of high temperature
- B: Safety lock position



Technical data

Electrical data	Nominal voltage	AC/DC 24V
	Nominal voltage frequency	50/60Hz
	Nominal voltage range	AC 19.2V...28.8V / DC 21.6V...28.8V
	Power consumption	BFN24(-ST) 4W @ running / 1W @ holding
		BFN24-T(-ST) 4W @ running / 1.1W @ holding
	Power consumption for wire sizing	6VA (Imax 8.3A @ 5ms)
	Auxiliary switch	2 x SPDT
	Switching capacity auxiliary switch	1mA...3 (0.5) A, AC 250V (II Protective insulated)
	Switching points auxiliary switch	5° / 80°
	Connection supply	Cable 1m, 2 x 0.34mm ² (halogen-free)
	Connection auxiliary switch	Cable 1m, 6 x 0.75mm ² (halogen-free)
	Cable length	BFN24-T 0.5m
	thermoelectric tripping device	BFN24-T-ST
	Functional data	Torque motor
Torque spring return		Min. 7Nm
Direction of rotation motor		Can be selected by mounting L/R
Manual override		With position stop
Angle of rotation		Max. 95° (incl. 5° initial spring tension)
Angle of rotation note		(incl. 5° initial spring tension)
Running time motor		<60s / 90°
Running time spring return		20s @ -10...55°C / <60s @ -30...-10°C
Sound power level motor max.		55dB(A)
Sound power level spring return max.		70dB(A)
Damper rotation		Form fit 12x12mm, continuous hollow shaft
Position indication		Mechanically, with pointer
Service life	>60,000 safety positions	
Safety	Response temperature	BFN24-T(-ST): Duct outside temperature 72°C
	thermal fuse	BAT Duct inside temperature 72°C
	Protection class IEC/EN	III Safety extra-low voltage
	Degree of protection IEC/EN	IP54 in all mounting positions
	EMC	CE according to 2004/108/EC
	Low-voltage directive	CE according to 2006/95/EC
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Mode of operation	Type 1.AA.B
	Rated impulse voltage supply/control	0.8kV
	Control pollution degree	3
	Ambient temperature	-Normal Duty -30...55°C -Safety Duty The safety position will be attained up to max. 75°C
	Non-operating temperature	-40...55°C (-40...80°C without thermal trip)
Ambient humidity	95% r.h., non-condensing	
Maintenance	Maintenance-free	
Weight	Weight	BFN24(-ST)(-T-ST) Approx. 1.4kg BFN24-T Approx. 1.5kg

Dimensions [mm]



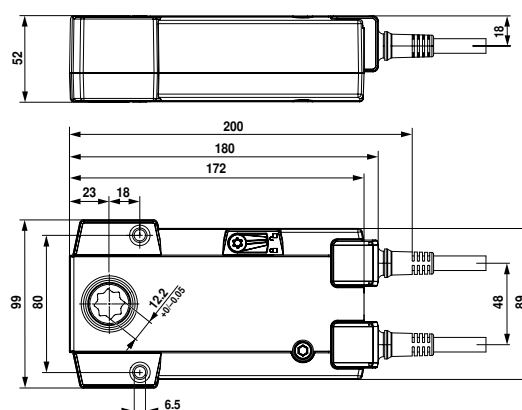
- For control of Fire and Smoke Dampers in HVAC systems
- Nominal torque: 9Nm/7Nm
- Nominal voltage: AC 230V
- Control: Open/Close
- Manual override function
- Spindle driver Form fit 12x12mm, continuous hollow shaft
- A: Steel structure for endurance of high temperature
- B: Safety lock position



Technical data

Electrical data	Nominal voltage		AC 230V	
	Nominal voltage frequency		50/60Hz	
	Nominal voltage range		AC 198...264V	
	Power consumption	BFN230	5W @ running / 1.5W @ holding	
		BFN230-T	5.5W @ running / 1.8W @ holding	
	Power consumption for wire sizing		10.5VA (Imax 4A @ 5ms)	
	Auxiliary switch		2 x SPDT	
	Switching capacity auxiliary switch		1mA...3 (0.5) A, AC 250V (II Protective insulated)	
	Switching points auxiliary switch		5° / 80°	
	Connection supply		Cable 1m, 2 x 0.34mm ² (halogen-free)	
	Connection auxiliary switch		Cable 1m, 6 x 0.75mm ² (halogen-free)	
	Cable length thermoelectric tripping device	BFN230-T	1m	
	Functional data	Torque motor		Min. 9Nm
		Torque spring return		Min. 7Nm
Direction of rotation motor			Can be selected by mounting L/R	
Manual override			With position stop	
Angle of rotation			Max. 95° (incl. 5° initial spring tension)	
Angle of rotation note			(incl. 5° initial spring tension)	
Running time motor			<60s / 90°	
Running time spring return			20s @ -10...55°C / <60s @ -30...-10°C	
Sound power level motor max.			55dB(A)	
Sound power level spring return max.			70dB(A)	
Damper rotation			Form fit 12x12mm, Continuous hollow shaft	
Position indication			Mechanically, with pointer	
Service life			>60,000 safety positions	
Safety	Response temperature thermal fuse	BFN230-T: BAT	Duct outside temperature 72°C Duct inside temperature 72°C	
	Protection class IEC/EN		II Protective insulated	
	Degree of protection IEC/EN		IP54 in all mounting positions	
	EMC		CE according to 2004/108/EC	
	Low-voltage directive		CE according to 2006/95/EC	
	Certification IEC/EN		IEC/EN 60730-1 and IEC/EN 60730-2-14	
	Mode of operation		Type 1.AA.B	
	Rated impulse voltage supply/control		4kV	
	Control pollution degree		3	
	Ambient temperature	-Normal Duty -Safety Duty	-30...55°C The safety position will be attained up to max. 75°C	
	Non-operating temperature		-40...55°C (-40...80°C without thermal trip)	
	Ambient humidity		95% r.h., non-condensing	
	Maintenance		Maintenance-free	
Weight	Weight	BFN230 BFN230-T	Approx. 1.4kg Approx. 1.5kg	

Dimensions [mm]



Fire and Smoke Spring Return Actuator BFG24(-ST)(-T-ST)

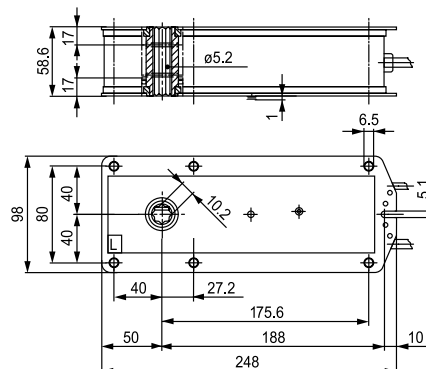
- For control of Fire and Smoke Dampers in HVAC systems
- Torque motor: 11Nm/8.5Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close
- Manual override function
- A: Steel structure for endurance of high temperature
- B: Safety lock position



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption	7.5W @ running / 2W @ holding
	For transformer sizing	10VA (Imax 8.3A @ 5ms)
	Auxiliary switch -Switching points	2 SPDT, 1mA...6(3)A, DC 5V...AC 250V □ 25°↙, 145°↙ (angles of rotation of damper: 5°↙, 80°↙)
Functional data	Connection	-Motor -Auxiliary Switch
		1m, 2 x 0.75mm ² (halogen-free) 1m, 6 x 0.75mm ² (halogen-free) (...ST with plug connectors, suitable for BKN230-24)
	Torque	-Motor -Spring Return
		11Nm @ nominal voltage 8.5Nm
	Thermal trip	BFG24-T: BAE72B-S
		Tf1: duct outside temperature 72°C Tf2/Tf3: duct inside temperature 72°C *(Art. Nr. ZBAE72)
	Direction of rotation	Selectable by L/R installation
	Angle of rotation	Max. 180°
	Running time	-Motor -Spring Return
		120s ~20s (@ tamb=20°C)
	Sound power level	Motor max. 45dB(A) / spring return 63dB(A)
	Position indication	Mechanical with pointer
Safety	Service life	>50,000 cycles
	Protection class	III (safety extra-low voltage)
	Degree of protection	IP54
	EMC	CE according to 2004/108/EC
	Mode of operation	Type 1.AA.B
	Ambient temperature	-Normal Duty -Safety Duty
		-30...+50°C Safe position will be attained up to max. 75°C when triggered by a thermal trip
	Storage temperature	-40...+50°C (-40...+80°C without thermal trip)
	Humidity test	95% RH, non-condensing
	Maintenance	Maintenance-free
Dimensions / weight	Dimensions (L x W x H)	248 x 98 x 58.6mm
	Shaft diameter	Form-fit 10 x 10mm
	Weight	BFG24 BFG24-T(-T-ST)
		Approx. 2.7kg Approx. 2.8kg

Dimensions [mm]



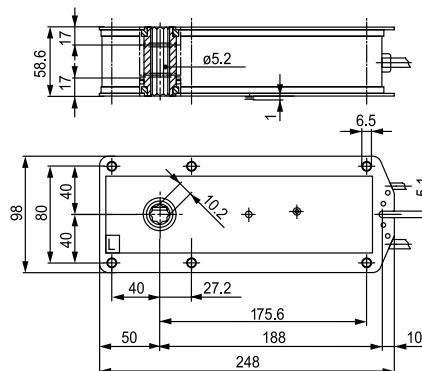
- For control of Fire and Smoke Dampers in HVAC systems
- Torque: 11Nm/8.5Nm
- Nominal voltage: AC 230V
- Control: Open/Close
- Manual override function
- A: Steel structure for endurance of high temperature



Technical data

Electrical data	Nominal voltage		AC 230V 50/60Hz	
	Nominal voltage range		AC 198...264V	
	Power consumption		9.5W @ running / 3.5W @ holding	
	For transformer sizing		711VA (Imax 0.5mA @ 5ms)	
	Auxiliary switch		2 SPDT, 1mA...6(3)A, DC 5V...AC 250V <input type="checkbox"/>	
	-Switching points		25°↔, 145°↔ (angles of rotation of damper: 5°↔, 80°↔)	
	Connection		-Motor: 1m, 2 x 0.75mm ² (halogen-free)	
			-Auxiliary Switch: 1m, 6 x 0.75mm ² (halogen-free)	
	Functional data	Torque		-Motor: 11Nm @ nominal voltage
				-Spring Return: 8.5Nm
Thermal trip		BFG230-T: Tf1: duct outside temperature 72°C		
		BAE72B-S: Tf2/Tf3: duct inside temperature 72°C *(Art. Nr. ZBAE72)		
Direction of rotation		Selectable by L/R installation		
Angle of rotation		Max. 180°		
Running time		-Motor: 120s		
		-Spring Return: ~20s (@ tamb=20°C)		
Sound power level		Motor max. 45dB(A) / spring return 63dB(A)		
Position indication		Mechanical with pointer		
Service life		>50,000 cycles		
Safety	Protection class		II (Totally insulated) <input type="checkbox"/>	
	Degree of protection		IP54	
	EMC		CE according to 2004/108/EC	
	Mode of operation		Type 1.AA.B	
	Ambient temperature		-Normal Duty: -30...+50°C	
			-Safety Duty: Safe position will be attained up to max. 75°C when triggered by a thermal trip	
	Storage temperature		-40...+50°C (-40...+80°C without thermal trip)	
	Humidity test		95% RH, non-condensing	
	Maintenance		Maintenance-free	
	Dimensions / weight	Dimensions (L x W x H)		248 x 98 x 58.6mm
Shaft diameter		Form-fit 10 x 10mm		
Weight		BFG230: Approx. 3.1kg		
		BFG230-T: Approx. 3.2kg		

Dimensions [mm]



Fire and Smoke Spring Return Actuator BF24(-T)(-ST)



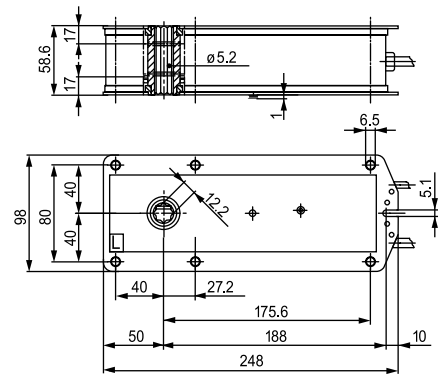
- For control of Fire and Smoke Dampers in HVAC systems
- Torque: 18Nm/12Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close
- Manual override function
- A: Steel structure for endurance of high temperature
- B: Safety lock position



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V	
	Power consumption	7W @ running / 2W @ holding	
	For transformer sizing	10VA (Imax 8.3mA @ 5ms)	
	Auxiliary switch	2 SPDT, 1mA...6(3)A, DC 5V...AC 250V <input type="checkbox"/>	
	-Switching points	fixed at 5°↙, 80°↘	
	Connection	-Motor: 1m, 2 x 0.75mm ² (halogen-free) -Auxiliary Switch: 1m, 6 x 0.75mm ² (halogen-free) (.-ST with plug connectors, suitable for BKN230-24)	
Functional data	Torque	-Motor: 18Nm @ nominal voltage -Spring Return: 12Nm	
	Thermal trip	BF24-T: Tf1: duct outside temperature 72°C BAE72B-S: Tf2/Tf3: duct inside temperature 72°C *(Art. Nr. ZBAE72)	
	Direction of rotation	Selectable by L/R installation	
	Angle of rotation	Max. 95°↙ (include 5°↙ spring pretensioning)	
	Running time	-Motor: 120s -Spring Return: ~16s (@ tamb=20°C)	
	Sound power level	Motor max. 45dB(A) / spring return 63dB(A)	
	Position indication	Mechanical with pointer	
	Service life	>60,000 cycles	
	Safety	Protection class	III (safety extra-low voltage)
		Degree of protection	IP54
EMC		CE according to 2004/108/EC	
Mode of operation		Type 1.AA.B	
Ambient temperature		-Normal Duty: -30...+50°C -Safety Duty: Safe position will be attained up to max. 75°C when triggered by a thermal trip	
Storage temperature		-40...+50°C (-40...+80°C without thermal trip)	
Humidity test		95% RH, non-condensing	
Maintenance		Maintenance-free	
Dimensions / weight		Dimensions (L x W x H)	248 x 98 x 58.6mm
		Shaft diameter	Form-fit 12 x 12mm (10mm adapter supplied)
	Weight	BF24: Approx. 2.7kg BF24-T: Approx. 2.8kg	

Dimensions [mm]



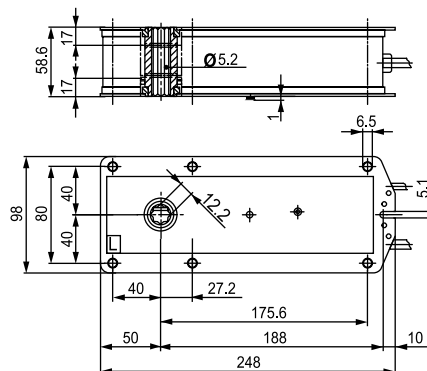
- For control of Fire and Smoke Dampers in HVAC systems
- Torque: 18Nm/12Nm
- Nominal voltage: AC/DC 24V
- Control signal: DC (0)2...10V
- Position feedback: DC 2...10V
- Manual override function
- A: Steel structure for endurance of high temperature
- B: Safety lock position



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V
	Power consumption	7W @ running / 2W @ holding
	For transformer sizing	10VA (I _{max} 8.3mA @ 5ms)
	Auxiliary switch -Switching points	2 SPDT, 1mA...6(3)A, DC 5V...AC 250V <input type="checkbox"/> fixed at 5°\swarrow, 80°\swarrow
	Connection	-Motor: 1m, 4 x 0.75mm ² (halogen-free) -Auxiliary Switch: 1m, 6 x 0.75mm ² (halogen-free) (...ST with plug connectors, suitable for BKN230-24)
Functional data	Torque	-Motor: 18Nm @ nominal voltage -Spring Return: 12Nm
	Thermal trip	BF24-SR-T: Tf1: duct outside temperature 72°C BAE72B-S: Tf2/Tf3: duct inside temperature 72°C *(Art. Nr. ZBAE72)
	Control signal Y	DC (0)2...10V @ (input impedance 100kΩ)
	Feedback signal U	DC 2...10V
	Direction of rotation	Selectable by L/R installation
	Angle of rotation	Max. 95°
	Running time	-Motor: 120s -Spring Return: ~16s (@ t _{amb} =20°C)
	Sound power level	Motor max. 45dB(A) / spring return 63dB(A)
	Position indication	Mechanical with pointer
	Service life	>60,000 cycles
	Safety	Protection class
Degree of protection		IP54
EMC		CE according to 2004/108/EC
Mode of operation		Type 1.AA.B
Ambient temperature		-Normal Duty: -30...+50°C -Safety Duty: -30...+75°C
Storage temperature		-40...+50°C
Humidity test		95% RH, non-condensing
Maintenance		Maintenance-free
Dimensions / weight	Dimensions (L x W x H)	248 x 98 x 58.6mm
	Shaft diameter	Form-fit 12 x 12mm (10mm adapter supplied)
	Weight	BF24-SR: Approx. 2.7kg BF24-SR-T: Approx. 2.8kg

Dimensions [mm]



Fire and Smoke Spring Return Actuator BF230(-T)



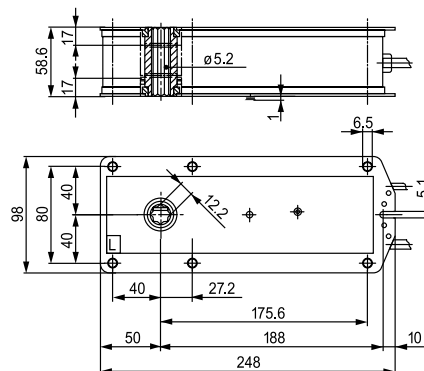
- For control of Fire and Smoke Dampers in HVAC systems
- Torque: 18Nm/12Nm
- Nominal voltage: AC 230V
- Control: Open/Close
- Manual override function
- A: Steel structure for endurance of high temperature
- B: Safety lock position



Technical data

Electrical data	Nominal voltage	AC 230V 50/60Hz		
	Nominal voltage range	AC 198...264V		
	Power consumption	8.5W @ running / 3W @ holding		
	For transformer sizing	11VA (Imax 0.5mA @ 5ms)		
	Auxiliary switch	2 SPDT, 1mA...6(3)A, DC 5V...AC 250V ☐		
	-Switching points	fixed at 5°↙, 80°↘		
Functional data	Connection	-Motor -Auxiliary Switch	1m, 2 x 0.75mm ² (halogen-free) 1m, 6 x 0.75mm ² (halogen-free)	
	Torque	-Motor -Spring Return	18Nm @ nominal voltage 12Nm	
	Thermal trip	BLF230-T: BAE72B-S	Tf1: duct outside temperature 72°C Tf2/Tf3: duct inside temperature 72°C *(Art. Nr. ZBAE72)	
	Direction of rotation		Selectable by L/R installation	
	Angle of rotation		Max. 95°↙ (include 5°↙ spring pretensioning)	
	Running time	-Motor -Spring Return	120s ~16s (@ tamb=20°C)	
	Sound power level		Motor max. 45dB(A) / spring return 63dB(A)	
	Position indication		Mechanical with pointer	
	Service life		>60,000 cycles	
	Safety	Protection class		II (Totally insulated) ☐
		Degree of protection		IP54
		EMC		CE according to 2004/108/EC CE according to 2006/95/EC
Mode of operation			Type 1.AA.B	
Ambient temperature		-Normal Duty -Safety Duty	-30...+50°C Safe position will be attained up to max. 75°C when triggered by a thermal trip	
Storage temperature			-40...+50°C (-40...+80°C without thermal trip)	
Humidity test			95% RH, non-condensing	
Maintenance			Maintenance-free	
Dimensions / weight		Dimensions (L x W x H)		248 x 98 x 58.6mm
		Shaft diameter		Form-fit 12 x 12mm (10mm adapter supplied)
	Weight	BLF230 BLF230-T	Approx. 3.1kg Approx. 3.2kg	

Dimensions [mm]



- Actuator for smoke control in HVAC systems
- Torque: 15Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close
- Manual override function
- A: Steel structure for endurance of high temperature

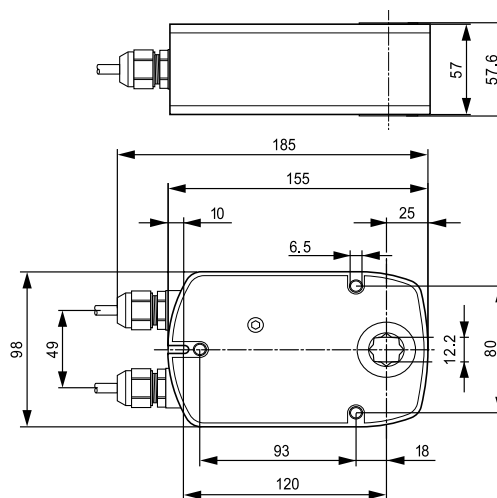


BFG24-ST

Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V		
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V		
	Power consumption	7.5W @ running / 0.5W @ holding		
	For transformer sizing	9VA (Imax 2.7mA @ 5ms)		
	Auxiliary switch	2 SPDT, 1mA...6(3)A, DC 5V...AC 250V <input type="checkbox"/>		
	-Switching points	3°\sphericalangle, 87°\sphericalangle (referred to 0...90°\sphericalangle)		
	Connection	-Motor -Auxiliary Switch	1m, 3 x 0.75mm ² (halogen-free) 1m, 6 x 0.75mm ² (halogen-free) (...ST with plug connectors, suitable for BKN230-24)	
	Functional data	Torque	15Nm @ nominal voltage	
		Blocking torque	-Dynamic -Steady-state	15Nm 20Nm
		Direction of rotation	Selectable by L/R installation	
Angle of rotation		Max. 105°\sphericalangle (incl. mechanical overrun on each side)		
Running time		30s/90°\sphericalangle		
Sound power level		Max. 62dB(A)		
Service life		>10,000 cycles		
Safety		Protection class	III (safety extra-low voltage)	
	Degree of protection	IP54		
	EMC	CE according to 2004/108/EC		
	Low-voltage directive	CE according to 2006/95/EC		
	Mode of operation	Type 1.B		
	Ambient temperature	-Normal Duty -Safety Duty	-30...+50°C See safety function on page 42	
	Storage temperature	-40...+80°C		
	Humidity test	95% RH, non-condensing		
	Maintenance	Maintenance-free		
	Dimensions / weight	Dimensions (L x W x H)	185 x 98 x 57.6mm	
Shaft diameter		Form-fit 12 x 12mm		
Weight		Approx. 1.68kg		

Dimensions [mm]



Non-Spring Return Smoke Control Actuator BLE230



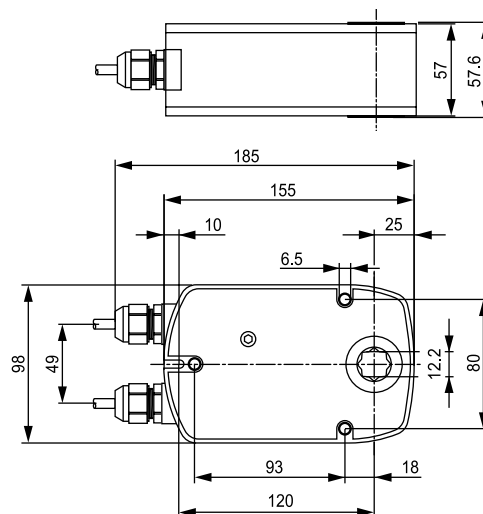
- Actuator for smoke control in HVAC systems
- Torque: 15Nm
- Nominal voltage: AC 230V
- Control: Open/Close
- Manual override function
- A: Steel structure for endurance of high temperature



Technical data

Electrical data	Nominal voltage	AC 230V 50/60Hz	
	Nominal voltage range	AC 198...264V	
	Power consumption	5W @ running / 1W @ holding	
	For transformer sizing	12VA (Imax 6mA @ 5ms)	
	Auxiliary switch	2 SPDT, 1mA...6(3)A, DC 5V...AC 250V <input type="checkbox"/>	
	-Switching points	3°↙, 87°↙ (referred to 0...90°↙)	
Functional data	Connection	-Motor 1m, 3 x 0.75mm ² (halogen-free) -Auxiliary Switch 1m, 6 x 0.75mm ² (halogen-free)	
	Torque	15Nm @ nominal voltage	
	Blocking torque	-Dynamic 15Nm -Steady-state 20Nm	
	Direction of rotation	Selectable by L/R installation	
	Angle of rotation	Max. 105°↙ (incl. mechanical overrun on each side)	
	Running time	30s/90°↙	
	Sound power level	Max. 62dB(A)	
	Position indication	Mechanical with pointer	
	Service life	>10,000 cycles	
	Safety	Protection class	II (totally insulated) <input type="checkbox"/>
		Degree of protection	IP54
		EMC	CE according to 2004/108/EC
Low-voltage directive		CE according to 2006/95/EC	
Mode of operation		Type 1.B	
Ambient temperature		-Normal Duty -30...+50°C -Safety Duty See safety function on page 42	
Storage temperature		-40...+80°C	
Humidity test		95% RH, non-condensing	
Maintenance	Maintenance-free		
Dimensions / weight	Dimensions (L x W x H)	185 x 98 x 57.6mm	
	Shaft diameter	Form-fit 12 x 12mm	
	Weight	Approx. 1.68kg	

Dimensions [mm]



- Actuator for smoke control in HVAC systems
- Torque: 40Nm
- Nominal voltage: AC/DC 24V
- Control: Open/Close
- Manual override function
- A: Steel structure for endurance of high temperature

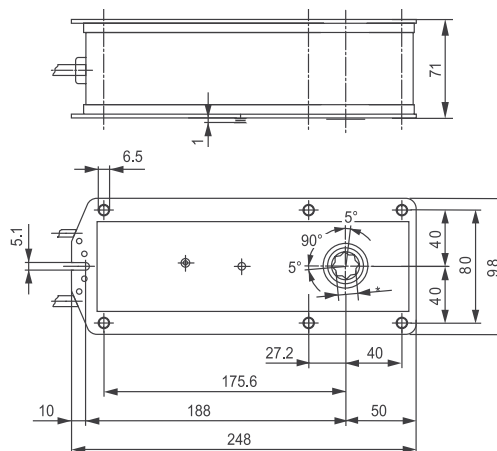


Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V	
	Nominal voltage range	AC 19.2...28.8V / DC 21.6...28.8V	
	Power consumption	12W @ running / 0.5W @ holding	
	For transformer sizing	18VA (I _{max} 8.2mA @ 5ms)	
	Auxiliary switch	2 SPDT, 1mA...6A, DC 5V...AC 250V <input type="checkbox"/>	
	-Switching points	3°\leq, 87°\leq (referred to 0...90°\leq)	
Functional data	Connection	-Motor 1m, 3 x 0.75mm ² (halogen-free)	
		-Auxiliary Switch 1m, 6 x 0.75mm ² (halogen-free) (...ST with plug connectors, suitable for BKN230-24)	
	Torque	40Nm @ nominal voltage	
	Blocking torque	-Dynamic 40Nm -Steady-state 50Nm	
	Direction of rotation	Selectable by L/R installation	
	Angle of rotation	100° (incl. 5° mechanical overrun at the ends)	
	Running time	<math><60</math>s for 90°	
	Sound power level	Max. 62dB(A)	
	Safety	Protection class	III (safety extra-low voltage)
		Degree of protection	IP54
EMC		CE according to 2004/108/EC	
Mode of operation		Type 1.B	
Ambient temperature		-Normal Duty -30...+50°C -Safety Duty See safety function on page 42	
Storage temperature		-40...+80°C	
Humidity test		5...95% RH, non-condensing	
Maintenance		Maintenance-free	
Dimensions / weight	Dimensions (L x W x H)	248 x 98 x 71mm	
	Shaft diameter	-BE24(-ST) Form-fit 14 x 14mm -BE24-12(-ST) Form-fit 12 x 12mm	
	Weight	Approx. 2.7kg	

Dimensions [mm]

* Type	Damper driver
BE24	Form-fit 14.2mm
BE24-12	Form-fit 12.2mm



- Actuator for smoke control in HVAC systems
- Torque: 40Nm
- Nominal voltage: AC 230V
- Control: Open/Close
- Manual override function
- A: Steel structure for endurance of high temperature

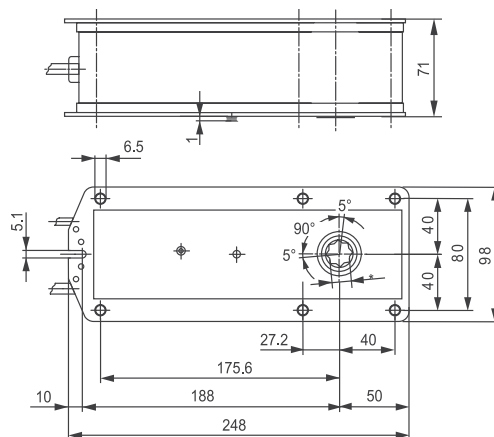


Technical data

Electrical data	Nominal voltage	AC 230V 50/60Hz
	Nominal voltage range	AC 198...264V
	Power consumption	8W @ running / 0.5W @ holding
	For transformer sizing	15VA (Imax 7.9mA @ 5ms)
	Auxiliary switch	2 SPDT, 1mA...6A, DC 5V...AC 250V <input type="checkbox"/>
	-Switching points	3°↙, 87°↙ (referred to 0...90°↙)
Functional data	Connection	-Motor 1m, 3 x 0.75mm ² (halogen-free) -Auxiliary Switch 1m, 6 x 0.75mm ² (halogen-free)
	Torque	40Nm @ nominal voltage
	Blocking torque	-Dynamic 40Nm -Steady-state 50Nm
	Direction of rotation	Selectable by L/R installation
	Angle of rotation	Max. 100° (incl. 5° mechanical overrun on each side)
	Running time	<60s for 90°
	Sound power level	Max. 62dB(A)
	Position indication	Mechanical with pointer
	Service life	>10,000 cycles
	Safety	Protection class
Degree of protection		IP54
EMC		CE according to 2004/108/EC
Low-voltage directive		CE according to 2006/95/EC
Mode of operation		Type 1.B
Ambient temperature		-Normal Duty -30...+50°C -Safety Duty See safety function on page 42
Storage temperature		-40...+80°C
Humidity test		95% RH, non-condensing
Maintenance		Maintenance-free
Dimensions / weight		Dimensions (L x W x H)
	Shaft diameter	-BE230 Form-fit 14 x 14mm -BE230-12 Form-fit 12 x 12mm
	Weight	Approx. 2.7kg

Dimensions [mm]

Type	Damper driver
BE230	Form-fit 14.2mm
BE230-12	Form-fit 12.2mm



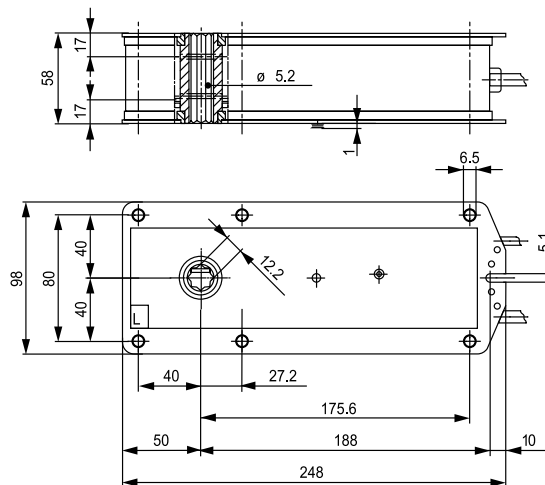
- Actuator for smoke control in HVAC systems
- Torque: 15Nm
- Nominal voltage: AC/DC 24...48V
- Control: Open/Close
- Manual override function
- Compatible with the control unit for pulse triggering BSIA24-48(-R)
- A: Steel structure for endurance of high temperature



Technical data

Electrical data	Nominal voltage	AC 24...48V 50/60Hz, DC 24...48V	
	Nominal voltage range	AC/DC 20.4...57.6V	
	Power consumption	12...24W @ running / 1.5...3W @ holding	
	For transformer sizing	15...30VA	
	Auxiliary switch	2 SPDT, 6(3)A, AC 250V <input type="checkbox"/>	
	-Switching points	5°<, 80°<	
Functional data	Connection	-Motor C2 cable 1m, 3 x 0.75mm ² (with 3-pole plug) -Auxiliary Switch C2 cable 1m, 6 x 0.75mm ² (with 3-pole plug)	
	Torque	15Nm @ nominal voltage	
	Blocking torque	-Dynamic 15Nm -Steady-state 30Nm	
	Direction of rotation	Selectable by L/R installation	
	Angle of rotation	Max. 95°	
	Running time	<30s	
	Sound power level	Max. 60dB(A)	
	Position indicator	Mechanical with pointer	
	Service life	>10,000 cycles	
	Safety	Protection class	III (safety extra-low voltage)
		Degree of protection	IP54
		EMC	CE according to 2004/108/EC
Ambient temperature		-Normal Duty -30...+50°C -Safety Duty -30...+70°C (24hr guaranteed safety)	
Storage temperature		-40...+80°C	
Humidity test		95% RH, non-condensing	
Dimensions / weight	Maintenance	Maintenance-free	
	Dimensions (L x W x H)	248 x 98 x 58mm	
	Shaft diameter	Form-fit 12 x 12mm	
	Weight	Approx. 2.2kg	

Dimensions [mm]



Fire and Smoke Spring Return Actuator FSTF24(-S) US



- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: 2Nm @ 121°C(250°F) for 30 minutes
- Running time: motor 75s, spring return 25s
- Control: Open/Close

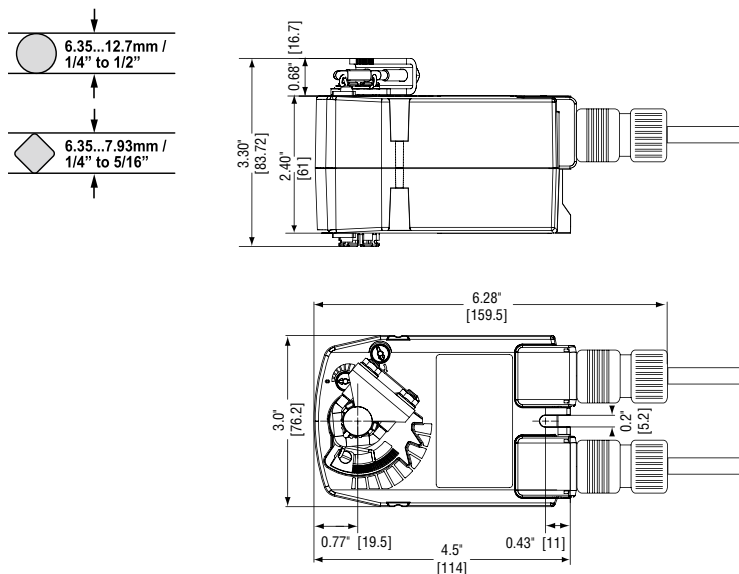


Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V*	
	Nominal voltage range	AC 19.2...28.8V, DC 21.6...36V*	
	Power consumption	2W, 3VA @ running / 1.5W, 2VA @ holding	
	For transformer sizing	5VA	
	Connection	-Motor -Auxiliary Switch	1m, 18ga, 2 colour coded leads 1m, 18ga, 4 appliance leads 1/2" conduit connector
Functional data	Torque	2Nm	
	Direction of rotation	Reversible with CW/CCW mounting	
	Angle of rotation	Max. 95°	
	Auxiliary switch	-FSTF24-S US	2 SPST, 3A resistive (0.5A inductive) @ 120VAC fixed at 5°↙, 80°↘
	Running time	-Motor -Spring Return	<75s at rated voltage and torque <25s @ 0°C - 50°C
	Position indicator		Visual indicator 0° to 95° (0° spring return position)
Safety	Protection class	Double insulated	
	Degree of protection	IP42 / NEMA type 2	
	Agency listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, Listed to UL 2043 - suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC	
Dimensions / weight	Ambient temperature	-Normal Duty -Safety Duty	0...+50°C Open/Close cycles after 1/2hr @121°C (250°F)
	Storage temperature		-40...+80°C
	Humidity test		5-95% RH, non-condensing
	Maintenance		Maintenance-free
	Dimensions (L x W x H)		See "Dimensions"
	Shaft diameter		∅ 6.35...12.7mm / 1/4" to 1/2" □ 6.35...7.93mm / 1/4" to 5/16"
	Weight	-FSTF24 US -FSTF24-S US	Approx. 0.57kg Approx. 0.68kg
Safety note		AC 24V: Connect via safety isolating transformer, class 2 supply	

* Filtered and regulated DC 24V power supplies is needed.

Dimensions [mm/inches]



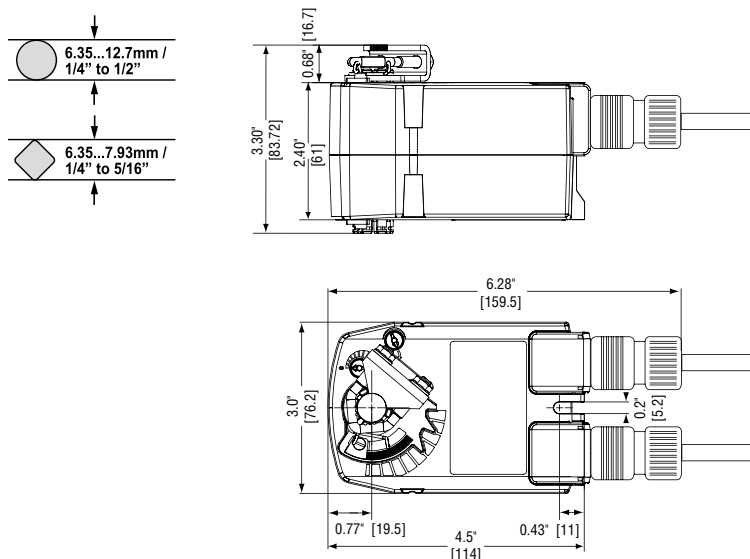
- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: 2Nm @ 121°C(250°F) for 30 minutes
- Running time: motor 75s, spring return 25s
- Control: Open/Close
- 1 wire control



Technical data

Electrical data	Nominal voltage	AC 120V 50/60Hz	
	Nominal voltage range	AC 108V...132V	
	Power consumption	2W, 3.5VA @ running / 1.5W, 2.5VA @ holding	
	Connection	-Motor 1m, 18ga, 2 colour coded leads -Auxiliary Switch 1m, 18ga, 4 appliance leads 1/2" conduit connector	
Functional data	Torque	2Nm	
	Direction of rotation	Reversible with CW/CCW mounting	
	Angle of rotation	Max. 95°	
	Auxiliary switch	-FSTF120-S US 2 SPST, 3A resistive (0.5A inductive) @ 120VAC fixed at 10°↙, 80°↘	
	Running time	-Motor <75s at rated voltage and torque -Spring Return <25s @ 0°C - 50°C	
	Position indicator	Visual indicator 0° to 95° (0° spring return position)	
Safety	Protection class	Double insulated	
	Degree of protection	IP42 / NEMA type 2	
	Agency listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, Listed to UL 2043 - suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC	
	Ambient temperature	-Normal Duty 0...+50°C -Safety Duty Open/Close cycles after 1/2hr @121°C (250°F)	
	Storage temperature	-40...+80°C	
	Humidity test	5-95% RH, non-condensing	
	Maintenance	Maintenance-free	
	Dimensions / weight	Dimensions (L x W x H)	See "Dimensions"
		Shaft diameter	∅ 6.35...12.7mm / 1/4" to 1/2" □ 6.35...7.93mm / 1/4" to 5/16"
		Weight	-FSTF120 US Approx. 0.57kg -FSTF120-S US Approx. 0.68kg

Dimensions [mm/inches]



Fire and Smoke Spring Return Actuator FSTF230(-S) US



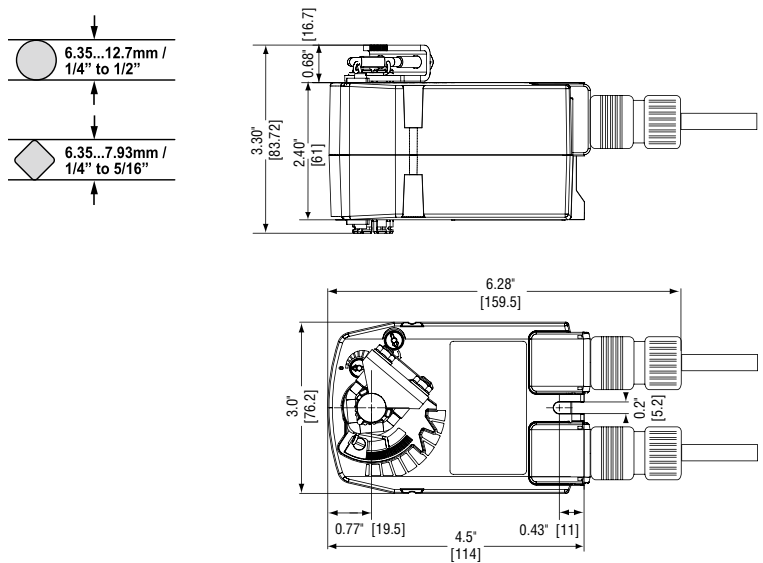
- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: 2Nm @ 121°C(250°F) for 30 minutes
- Running time: motor 75s, spring return 25s
- Control: Open/Close
- 1 wire control



Technical data

Electrical data	Nominal voltage	AC 230V 50/60Hz
	Nominal voltage range	AC 207V...253V
	Power consumption	5.5VA @ running / 4.5VA @ holding
	Connection	-Motor 1m, 18ga, 2 colour coded leads -Auxiliary Switch 1m, 18ga, 4 appliance leads 1/2" conduit connector
Functional data	Torque	2Nm
	Direction of rotation	Reversible with CW/CCW mounting
	Angle of rotation	Max. 95°
	Auxiliary switch	-FSTF230-S US 2 SPST, 3A resistive (0.5A inductive) @ 120VAC fixed at 10°↙, 80°↘
	Running time	-Motor <75s at rated voltage and torque -Spring Return <25s @ 0°C - 50°C
	Position indicator	Visual indicator 0° to 95° (0° spring return position)
Safety	Protection class	Double insulated
	Degree of protection	IP42 / NEMA type 2
	Agency listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, Listed to UL 2043 - suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Ambient temperature	-Normal Duty 0...+50°C -Safety Duty Open/Close cycles after 1/2hr @121°C (250°F)
	Storage temperature	-40...+80°C
	Humidity test	5-95% RH, non-condensing
	Maintenance	Maintenance-free
Dimensions / weight	Dimensions (L x W x H)	See "Dimensions"
	Shaft diameter	∅ 6.35...12.7mm / 1/4" to 1/2" □ 6.35...7.93mm / 1/4" to 5/16"
	Weight	-FSTF230 US Approx. 0.57kg -FSTF230-S US Approx. 0.68kg

Dimensions [mm/inches]



- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: 3.5Nm @ 177°C(350°F) for 30 minutes
- Running time: 15s
- Control: Open/Close
- A: Steel structure for endurance of high temperature



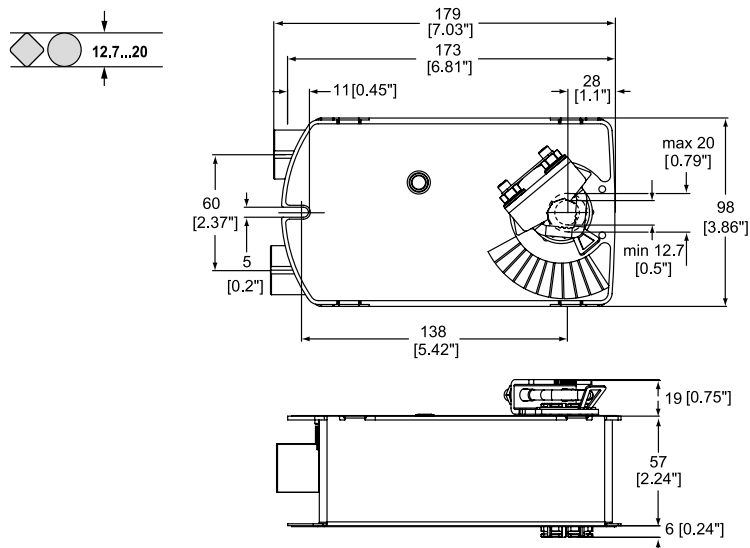
Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V*	
	Nominal voltage range	AC 19.2...26.4V, DC 24...36V*	
	Power consumption	15VA @ running / 3.5VA @ holding	
	For transformer sizing	25VA	
	Fusing	1A slow blow	
	Connection	-Motor -Auxiliary Switch	1m, 18ga, 2 colour coded leads 1m, 18ga, 4 appliance leads 1/2" conduit connector
Functional data	Torque	3.5Nm (0°C to 177°C) @ nominal voltage	
	Direction of rotation	Selectable by CW/CCW installation	
	Angle of rotation	Max. 95°	
	Auxiliary switch	-FSLF24-S	2 SPST, 1mA @ DC 5V, 3(0.5)A, 120/250V <input type="checkbox"/> fixed at 10°◀, 85°◀
	Running time	-Motor -Spring Return	<15s at rated voltage and torque <15s
	Position indicator		Mechanical
Safety	Protection class	Class 2 supply	
	Degree of protection	IP30 / NEMA type 1	
	Mode of operation	Type 1.AA.B	
	Ambient temperature	-Normal Duty -Safety Duty	0...+50°C 3 Open/Close cycles after 1/2hr @177°C
	Storage temperature		-40...+80°C
	Humidity test		95% RH, non-condensing
Dimensions / weight	Maintenance		Maintenance-free
	Dimensions (L x W x H)		179 x 98 x 82mm
	Shaft diameter		12.7...20mm**
	Weight	-FSLF24 -FSLF24-S	Approx. 1.6kg Approx. 1.7kg
	Safety note		AC 24V: Connect via safety isolating transformer, class 2 supply

* Filtered and regulated DC 24V power supplies is needed.

** For damper spindles ø16...20mm, use K6-1

Dimensions [mm/inches]



- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: 3.5Nm @ 177°C(350°F) for 30 minutes
- Running time: 15s
- Control: Open/Close
- 1 wire control
- A: Steel structure for endurance of high temperature

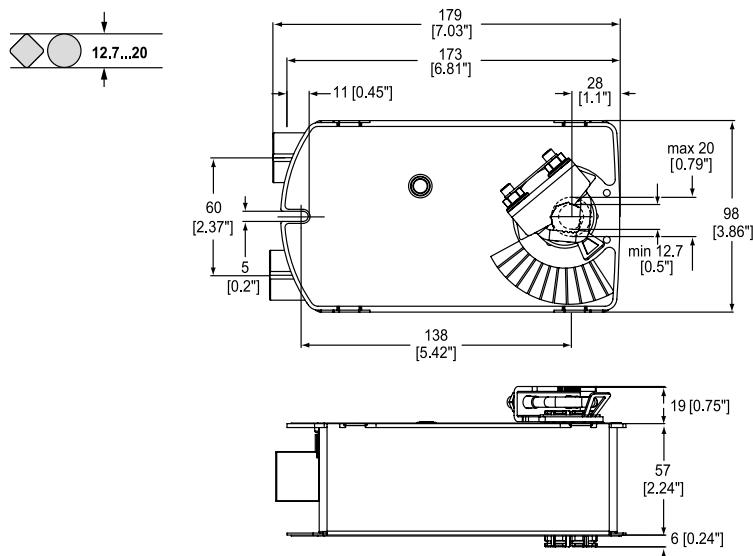


Technical data

Electrical data	Nominal voltage	AC 230V 50/60Hz
	Nominal voltage range	AC 207...253V
	Power consumption	17VA @ running / 6.5VA @ holding
	Fusing	0.125A slow blow
	Connection	-Motor 1m, 18ga, 3 colour coded leads -Auxiliary Switch 1m, 18ga, 4 appliance leads 1/2" conduit connector
Functional data	Torque	3.5Nm (0°C to 177°C) @ nominal voltage
	Direction of rotation	Selectable by CW/CCW installation
	Angle of rotation	Max. 95°
	Auxiliary switch	-FSLF230-S 2 SPST, 1mA @ DC 5V, 3(0.5)A, 120/250V □ fixed at 10°↙, 85°↘
	Running time	-Motor <15s at rated voltage and torque -Spring Return <15s
Safety	Position indicator	Mechanical
	Protection class	Grounded enclosure
	Degree of protection	IP30 / NEMA type 1
	Mode of operation	Type 1.AA.B
	Agency listed	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1, CSA C22.2 No. 24-93
	Ambient temperature	-Normal Duty 0...+50°C -Safety Duty 3 Open/Close cycles after 1/2hr @177°C
	Storage temperature	-40...+80°C
	Humidity test	5...95% RH, non-condensing
	Maintenance	Maintenance-free
	Dimensions / weight	Dimensions (L x W x H)
Shaft diameter		12.7...20mm*
Weight		-FSLF230 Approx. 1.8kg -FSLF230-S Approx. 1.95kg

* For damper spindles $\varnothing 16...20\text{mm}$, use K6-1

Dimensions [mm/inches]



- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: 7.9Nm @ 177°C(350°F) for 30 minutes
- Running time: 15s
- Control: Open/Close
- A: Steel structure for endurance of high temperature



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V*	
	Nominal voltage range	AC 19.2...28.8V, DC 24...36V*	
	Power consumption	24VA @ running / 6.5VA @ holding	
	For transformer sizing	40VA	
	Fusing	0.125A slow blow	
	Connection	-Motor -Auxiliary Switch	1m, 18ga, 2 colour coded leads 1m, 18ga, 6 appliance leads 1/2" conduit connector
Functional data	Torque	7.9Nm (0°C to 177°C) @ nominal voltage	
	Direction of rotation	Selectable by CW/CCW installation	
	Angle of rotation	Max. 95°	
	Auxiliary switch	-FSNF24-S	2 SPDT, 7(2.5)A @ AC 125/250V <input type="checkbox"/> fixed at 5°<, 85°<
	Running time	-Motor -Spring Return	<15s at rated voltage and torque <15s
	Position indicator		Mechanical
Safety	Protection class	Class 2 supply	
	Degree of protection	IP30 / NEMA type 1	
	Mode of operation	Type 1.AA.B	
	Agency listed	UL873 and CAN / CSA C22.2 No.24-93	
	Ambient temperature	-Normal Duty -Safety Duty	0...+50°C 3 Open/Close cycles after 1/2hr @177°C
	Storage temperature		-40...+80°C
Dimensions / weight	Humidity test		5...95% RH, non-condensing
	Maintenance		Maintenance-free
	Dimensions (L x W x H)		259 x 98 x 78mm
	Shaft diameter		12.7...20mm (10...20mm optional)
	Weight	-FSNF24 -FSNF24-S	Approx. 2.6kg Approx. 2.85kg
	Safety note		AC 24V: Connect via safety isolating transformer, class 2 supply

* DC 24V is not UL listed; filtered and regulated DC 24V power supplies is needed.

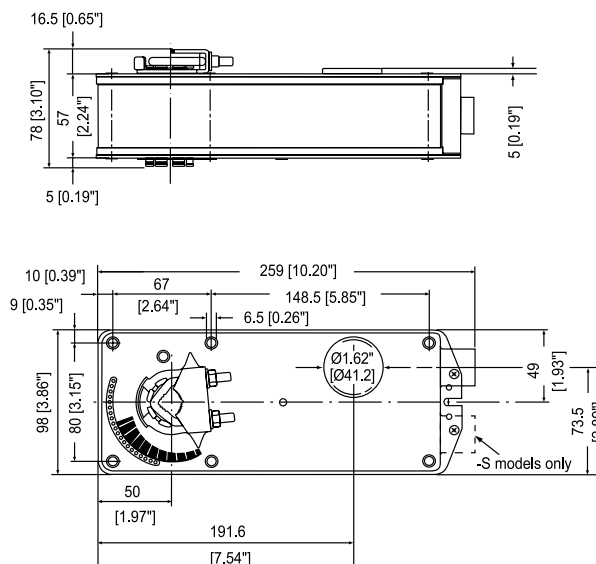
Dimensions [mm/inches]

Shaft Size

Standard:
12.7 to 26mm
[1/2" to 1.05"]

Optional*
10 to 20mm
[3/8" to 3/4"]

*with K4 US clamp



Fire and Smoke Spring Return Actuator FSNF230(-S) US



- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: 7.9Nm @ 177°C(350°F) for 30 minutes
- Running time: 15s
- Control: Open/Close
- A: Steel structure for endurance of high temperature



Technical data

Electrical data	Nominal voltage	AC 230V 50/60Hz	
	Nominal voltage range	AC 207...253V	
	Power consumption	23VA @ running / 9VA @ holding	
	For transformer sizing	0.25VA	
	Connection	-Motor -Auxiliary Switch	1m, 18ga, 3 colour coded leads 1m, 18ga, 6 appliance leads 1/2" conduit connector
Functional data	Torque	7.9Nm (0°C to 177°C) @ nominal voltage	
	Direction of rotation	Selectable by CW/CCW installation	
	Angle of rotation	Max. 95°	
	Auxiliary switch	-FSNF230-S	2 SPDT, 7(2.5)A @ AC 125/250V □ fixed at 5°↙, 85°↘
	Running time	-Motor -Spring Return	<15s at rated voltage and torque <15s
Safety	Position indicator	Mechanical	
	Protection class	Grounded enclosure	
	Degree of protection	IP30 / NEMA type 1	
	Mode of operation	Type 1.AA.B	
	Agency listed	UL873 and CAN / CSA C22.2 No.24-93	
	Ambient temperature	-Normal Duty -Safety Duty	0...+50°C 3 Open/Close cycles after 1/2hr @177°C
	Storage temperature	-40...+80°C	
	Humidity test	5...95% RH, non-condensing	
	Maintenance	Maintenance-free	
	Dimensions / weight	Dimensions (L x W x H)	259 x 98 x 78mm
	Shaft diameter	12.7...20mm (10...20mm optional)	
	Weight	-FSNF230 -FSNF230-S	Approx. 3kg Approx. 3.25kg

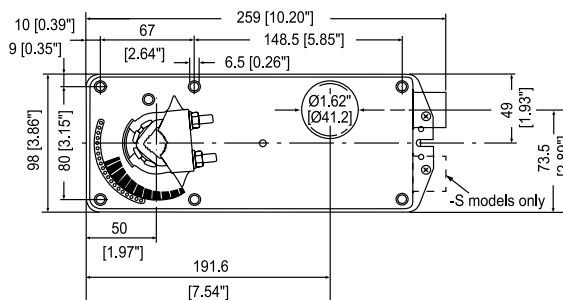
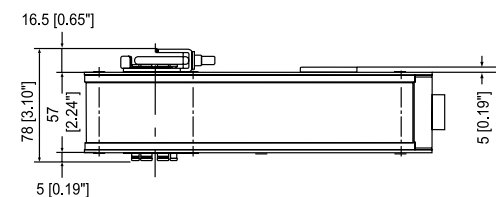
Dimensions [mm/inches]

Shaft Size

Standard:
12.7 to 26mm
[1/2" to 1.05"]

Optional*
10 to 20mm
[3/8" to 3/4"]

*with K4 US clamp



- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: 20Nm @ 177°C(350°F) for 30 minutes
- Running time: motor 25s, spring return 15s
- Control: Open/Close
- A: Steel structure for endurance of high temperature



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V*	
	Nominal voltage range	AC 21.6...26.4V, DC 24...36V*	
	Power consumption	23W, 32VA @ running / 6.5W, 11VA @ holding	
	For transformer sizing	50VA	
	Connection	-Motor: 1m, 18ga, 2 colour coded leads -Auxiliary Switch: 1m, 18ga, 4 appliance leads FSAF24A-S: 1/2" conduit connector	
Functional data	Torque	20Nm (0°C to 177°C) minimum @ nominal voltage	
	Direction of rotation	Selectable by CW/CCW installation	
	Angle of rotation	Max. 95°	
	Auxiliary switch	-FSAF24A-S: 2 SPDT, 7(2.5)A @ AC 120/250V <input type="checkbox"/> at 5°↙ and 85°↘	
	Running time	-Motor: 25s at rated voltage and torque -Spring Return: <15s	
	Sound power level	Motor max. 45dB(A) / spring return 62dB(A)	
	Position indicator	Mechanical	
Safety	Protection class	Class 2 supply	
	Degree of protection	IP40 / NEMA type 1 with conduit connection	
	Agency listed	cULus listed to UL60730-1A:02; UL 60730-2-14:02 and CAN/CSA-E60730-1:02; Listed to UL 2043 - suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC	
	Ambient temperature	-Normal Duty: 0...+50°C -Safety Duty: 3 Open/Close cycles after 1/2hr @177°C	
	Storage temperature	-40...+80°C	
	Humidity test	5...95% RH, non-condensing (EN 60730-1)	
	Maintenance	Maintenance-free	
	Dimensions / weight	Dimensions (L x W x H)	259.45 x 98 x 87.25mm
		Shaft diameter	12.7...20mm (10...20mm optional)
		Weight	-FSAF24A: Approx. 2.5kg -FSAF24A-S: Approx. 2.7kg
Safety note		AC 24V: Connect via safety isolating transformer, class 2 supply	

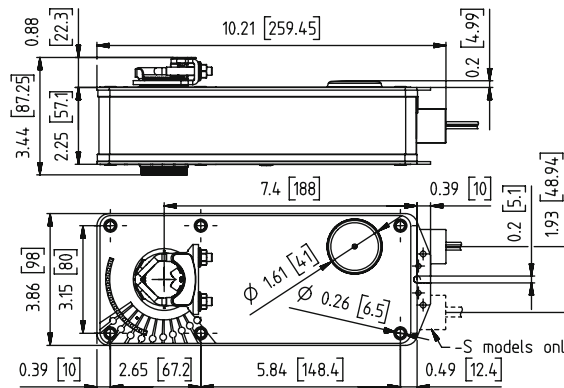
* Filtered and regulated DC 24V power supplies is needed.

Dimensions [mm/inches]

Standard:
Ø 1/2" to 1.05"

Optional*
Ø 3/8" to 3/4"
□ 3/8" to 5/8"

*with K4 US clamp



Fire and Smoke Spring Return Actuator FSAF120A(-S)



- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: 20Nm @ 177°C(350°F) for 30 minutes
- Running time: motor 25s, spring return 15s
- Control: Open/Close
- A: Steel structure for endurance of high temperature



Technical data

Electrical data	Nominal voltage	AC 120V 50/60Hz
	Nominal voltage range	AC 108...132V
	Power consumption	28W,38VA @ running / 10W,24 VA @ holding
	Connection	-Motor 1m, 18ga, 2 colour coded leads -Auxiliary Switch 1m, 18ga, 4 appliance leads 1/2" conduit connector
Functional data	Torque	20Nm (0°C to 177°C) @ nominal voltage
	Direction of rotation	Selectable by CW/CCW installation
	Angle of rotation	Max. 95°
	Auxiliary switch	-FSAF120A-S 2 SPDT, 7(2.5)A @ AC 120/250V \square at 5° ∇ and 85° ∇
	Running time	-Motor 25s at rated voltage and torque -Spring Return <15s
	Sound power level	Motor max. 45dB(A) / spring return 62dB(A)
	Position indicator	Mechanical
Safety	Protection class	Double insulated \square
	Degree of protection	IP40 / NEMA type 1 with conduit connection
	Agency listed	cULus listed to UL60730-1A:02; UL 60730-2-14:02 and CAN/CSA-E60730-1:02; Listed to UL 2043 - suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Ambient temperature	-Normal Duty 0...+50°C -Safety Duty 3 Open/Close cycles after 1/2hr @177°C
	Storage temperature	-40...+80°C
	Humidity test	5...95% RH, non-condensing
	Maintenance	Maintenance-free
	Dimensions / weight	Dimensions (L x W x H)
	Shaft diameter	12.7...20mm (10...20mm optional)
	Weight	-FSAF120A Approx. 2.95kg -FSAF120A-S Approx. 3.15kg

Dimensions [mm/inches]

Standard:

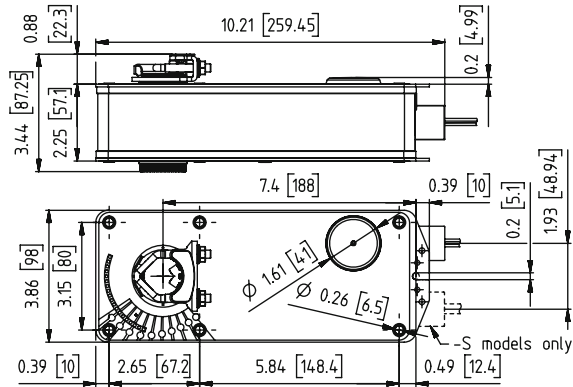
Ø 1/2" to 1.05"

Optional*

Ø 3/8" to 3/4"

□ 3/8" to 5/8"

*with K4 US clamp



- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: **20Nm @ 177°C(350°F) for 30 minutes**
- Running time: **motor 25s, spring return 15s**
- Control: **Open/Close**
- A: **Steel structure for endurance of high temperature**



Technical data

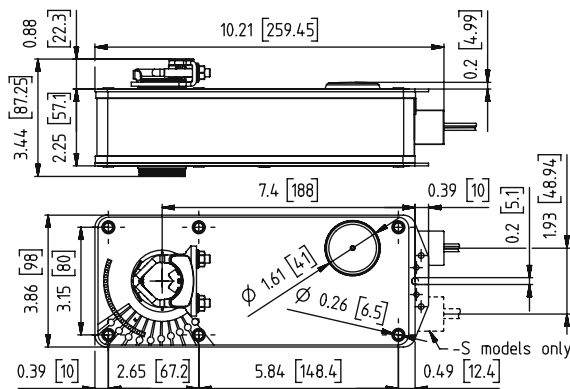
Electrical data	Nominal voltage	AC 230V 50/60Hz
	Nominal voltage range	AC 207...253V
	Power consumption	29W,37VA @ running / 10W,19VA @ holding
	Connection	-Motor 1m, 18ga, 2 colour coded leads -Auxiliary Switch 1m, 18ga, 4 appliance leads 1/2" conduit connector
Functional data	Torque	20Nm (0°C to 177°C) @ nominal voltage
	Direction of rotation	Selectable by CW/CCW installation
	Angle of rotation	Max. 95°
	Auxiliary switch	-FSAF230A-S 2 SPDT, 7(2.5)A @ AC 120/250V <input type="checkbox"/> at 5°↙ and 85°↘
	Running time	-Motor 25s at rated voltage and torque -Spring Return <15s
	Sound power level	Motor max. 45dB(A) / spring return 62dB(A)
	Position indicator	Mechanical
Safety	Protection class	Double insulated <input type="checkbox"/>
	Degree of protection	IP40 / NEMA type 1 with conduit connection
	Agency listed	cULus listed to UL60730-1A:02; UL 60730-2-14:02 and CAN/CSA-E60730-1:02; Listed to UL 2043 - suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC
	Ambient temperature	-Normal Duty 0...+50°C -Safety Duty 3 Open/Close cycles after 1/2hr @177°C
	Storage temperature	-40...+80°C
	Humidity test	5...95% RH, non-condensing
	Maintenance	Maintenance-free
Dimensions / weight	Dimensions (L x W x H)	259.45 x 98 x 87.25mm
	Shaft diameter	12.7...20mm (10...20mm optional)
	Weight	-FSAF230A Approx. 2.95kg -FSAF230A-S Approx. 3.15kg

Dimensions [mm/inches]

Standard:
 \varnothing 1/2" to 1.05"

Optional*
 \varnothing 3/8" to 3/4"
 3/8" to 5/8"

*with K4 US clamp



Fire and Smoke Spring Return Actuator FSAFB24-SR(-S)(-SC)



- Meet requirement of UL555(S) when tested as an assembly with suitable dampers
- Torque: 20Nm @ 121°C(250°F) for 30 minutes
- Nominal voltage AC/DC 24V, DC (0)2...10V, DC 2...10V
- Running time: motor 75s, spring return 20s
- Control: Open/Close / Modulating
- Manual override function
- A: Steel structure for endurance of high temperature



Technical data

Electrical data	Nominal voltage	AC 24V 50/60Hz, DC 24V*
	Nominal voltage range	AC 19.2...28.8V, DC 21.6...28.8V*
	Power consumption	6W, 8.5VA @ running / 3W, 5VA @ holding
	Connection	-Motor 1m, 18ga, 1/2" conduit connector -Auxiliary Switch(-S) 1m, 18ga, 1/2" conduit connector -Auxiliary Switch(-SC) 8", 18ga, 1/2" conduit connector
Functional data	Torque	20Nm (0°C to 121°C) @ nominal voltage
	Direction of rotation	Selectable by CW/CCW installation
	Angle of rotation	Max. 95°
	Auxiliary switch	-FSAFB24-SR-S 2 SPDT, 3(0.5)A @ AC 120/250V <input type="checkbox"/> at 10°↙ and 10° to 90° adjustable
	Running time	-Motor <75s at rated voltage and torque -Spring Return <20s at (-20°C to 50°C)
	Sound power level	Motor max. ≤40dB(A) / spring return ≤62dB(A)
	Position indicator	Visual indicator
Safety	Protection class	Class 2 supply
	Degree of protection	IP54 / NEMA type 2
	Agency listed	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, CE acc. to 2004/108/EC & 2006/95/EC
	Ambient temperature	-Normal Duty -30...+50°C -Safety Duty 3 Open/Close cycles after 1/2hr @121°C
Dimensions / weight	Storage temperature	-40...+80°C
	Humidity test	5...95% RH, non-condensing
	Maintenance	Maintenance-free
	Dimensions (L x W x H)	246.1 x 98 x 86.98mm
	Shaft diameter	12.7...26.67mm (9.525...19.05mm)
	Weight	-FSAFB24-SR(-SC) Approx. 2.1kg -FSAFB24-SR-S(-SC) Approx. 2.25kg

* Filtered and regulated DC 24V power supplies is needed.

Dimensions [mm/inches]

Standard:

∅ 1/2" to 1.05"

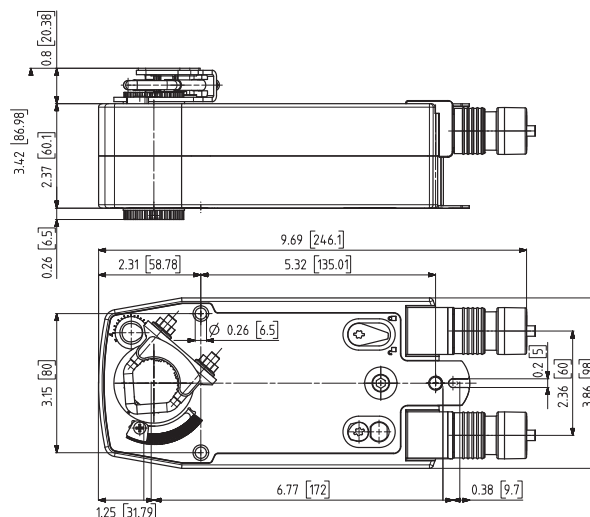
Optional*

∅ 3/8" to 3/4"

3/8" to 5/8"

*with K4 US clamp

K7-2 (supplied)
∅ 1/2" Centered (Default) 3/4" Centered (Field Selectable) 1.05" Centered (Field Selectable)



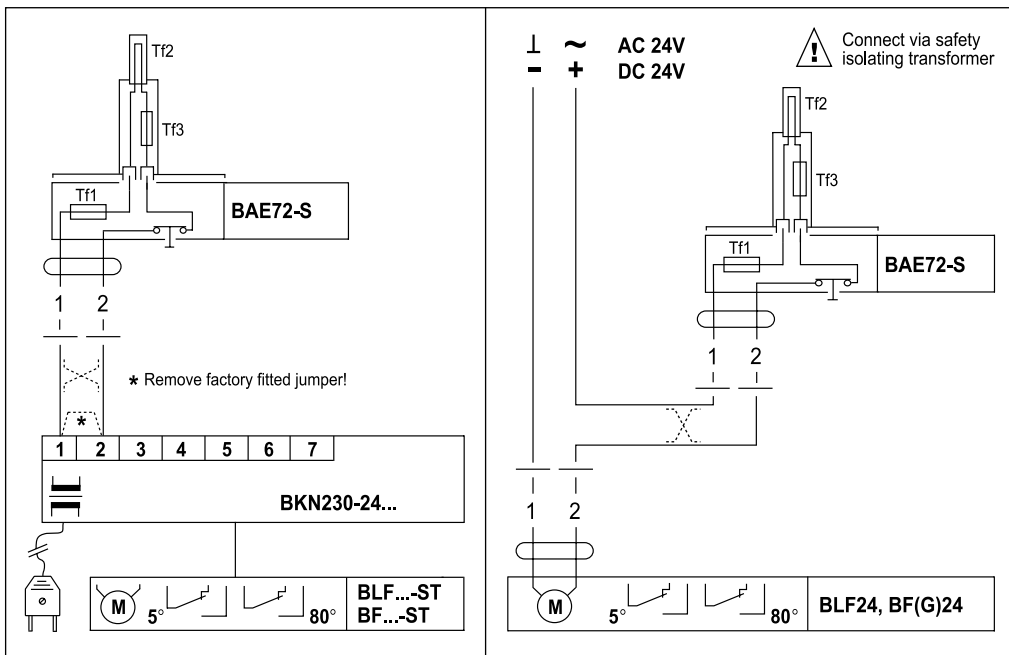
- Thermoelectric tripping device
- BAE72-S, without LED (order separately)
- BAE72B-S, with LED (not available for order separately, only integrated with actuator)



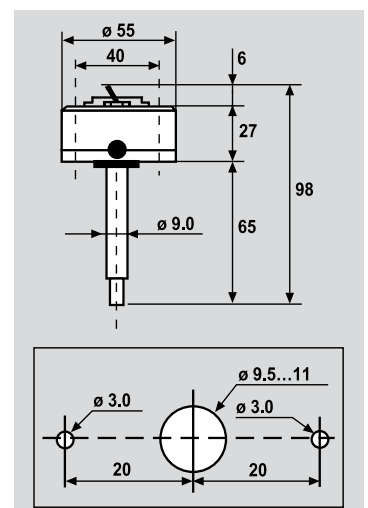
Technical data

Electrical data	Rated voltage	AC/DC 24V
	Rated current	Max. 3A
	Through resistance	<1Ω
	Connection	Cable 1.2m, 2x0.5mm ² , BETA flam 145 (interchangeable wires)
Functional data	Operating temperature thermal trips	Tf1: duct outside temperature 72°C Tf2, Tf3: duct inside temperature 72°C (replaceable)
	BAE72-S with test button	For function check
	LED only for BAE72B(-S)	Lighten when - there is a supply voltage - the temperature fuses are ok - the test switch is noproressed
	Testing	-Vds -CNPP
Safety	Protection class	III (safety extra-low voltage)
	Degree of protection	IP54
	Ambient temperature range	-30...+50°C
	Storage temperature	-40...+50°C
	Humidity test	To EN60730-1
	EMC	E according to 89/336/EEC
	Maintenance	Maintenance-free
Dimensions / weight	Dimensions (L x W x H)	See "Dimensions"
	Weight	Approx. 0.085kg

Wiring diagrams



Dimensions [mm]



Spare parts:

Thermal trip Tf2/Tf3 **ZBAE72**
Thermal trip Tf2/95°C **ZBAE95**

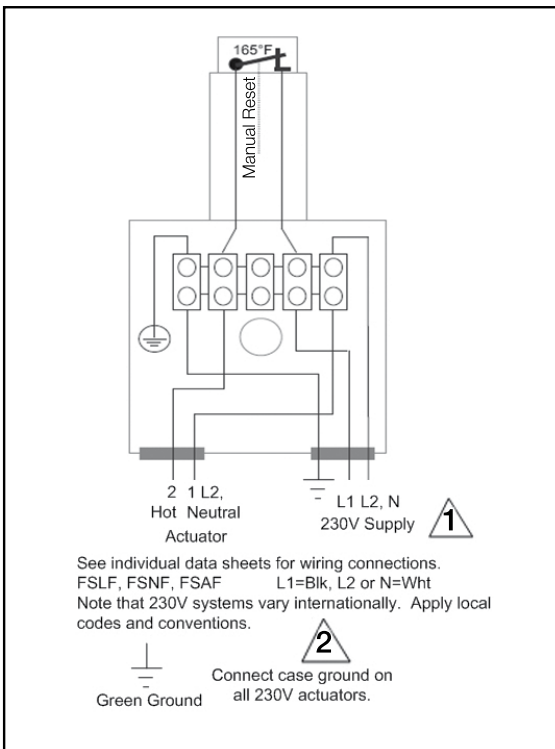
- Thermoelectric resettable tripping device



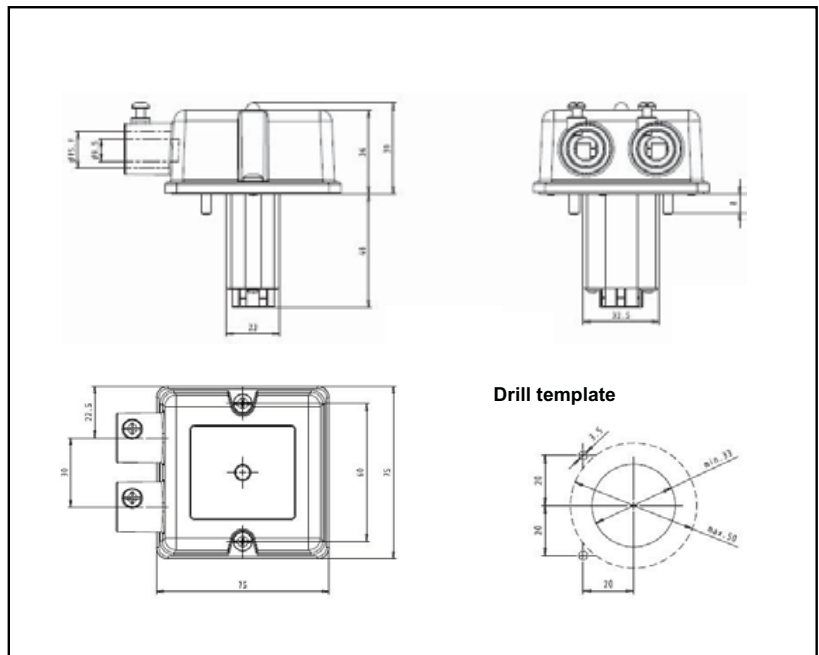
Technical data

Electrical data	Rated voltage	AC/DC 24...240V
	Rated current	1A
	Through resistance	<1Ω
	Connection	Terminal strip
Functional data	Operating temperature thermal trips	Tf: duct outside temperature 74°C
	Agency listing	cULus listed according to: UL 873 and CSA C22.2 NO. 24-93
	Safety	
	Protection class	Grounded enclosure
	Degree of protection	IP20 / NEMA 1, enclosure type 1
	Ambient temperature range	-30...+50°C
	Storage temperature	-40...+50°C
	Maintenance	Maintenance-free
Dimensions / weight	Dimensions (L x W x H)	See "Dimensions"
	Weight	Approx. 0.04kg

Wiring diagrams



Dimensions [mm]



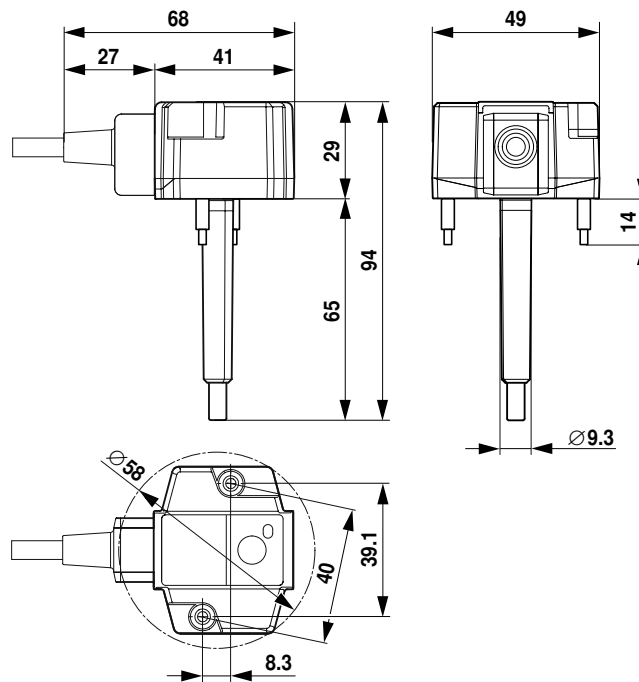
- Spring return actuator, combined with thermoelectric tripping device BAT (72°C)
- For fire and smoke dampers 90° in ventilation and air-conditioning systems, with connection plugs for simple integration in control and monitoring systems or bus networks via communication and power supply units

















Technical data

	Description	Type
Electrical accessories	Auxiliary switch 2 x SPDT	SN2-C7
	Blanking cover for BAT.. (without thermal fuse for duct inside temperature)	ZBAT0
	Spare thermoelectric tripping device for BAT.., duct inside temperature = 72°C, sensor length = 65mm	ZBAT72
	Spare thermoelectric tripping device for BAT.., duct inside temperature = 72°C, sensor length = 90mm	ZBAT72/9
	Spare thermoelectric tripping device for BAT.., duct inside temperature = 95°C, sensor length = 65mm	ZBAT95
	Spare thermoelectric tripping device for BAT.., duct inside temperature = 95°C, sensor length = 65mm	ZBAT95.1
	Spare thermoelectric tripping device for BAT.., duct inside temperature = 95°C, sensor length = 90mm	ZBAT95/9
	Spare thermoelectric tripping device for BAT.., duct inside temperature = 120°C, sensor length = 65mm	ZBAT120
	Description	Type
Mechanical accessories	Bracket for auxiliary switch (SN2-C7) for BFL, BFN	ZSN-B

Dimensions [mm]

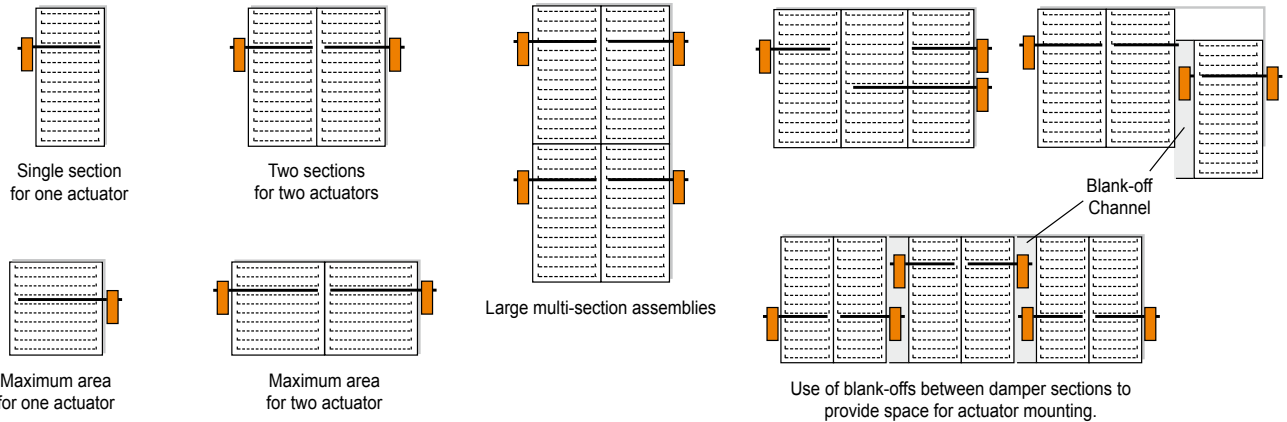


		Actuators												
		BFL	BFN	BFG	BF	BLE	BE	BR	FSTF ..US	FSLF ..US	FSNF ..US	FSAF ..US	FSAF ..A/B	
	ZA11-BF Insert square shaft 12mm/11mm spindles ø20mm	•	•		•									
	ZA18-BF Adapter insert from form-fit to round				•									
	ZA8-BF Insert square shaft 12mm/8mm	•	•		•									
	ZK-BF Shaft adapter	•	•		•									
	BAE72(-S) Thermoelectrical tripping device 72°C	•	•	•	•				•	•	•	•	•	
	BAE165 US Thermoelectrical RE tripping device	•	•	•	•				•	•	•	•	•	
	ZBAE 95/72 Thermoelectrical tripping device 95°C/72°C - parts for BAE72(-S)			•	•				•	•	•	•	•	
	ZBAT 0/72/ 95/120 Thermoelectrical tripping device 72°C/ 95°C/ 120°C - parts for BAT	•	•											
	K6-1 Spindles clamp for LF.. For damper spindles ø16...20mm									•				
	ZG-AF Crankarm adapter kit										•	•	ZG-AFB	
	IND-AF2 Damper position indicator										•	•		
	K4 US Universal clamp for 3/8" to 3/4" shafts										•	•		
	K4-1 US Universal clamp for up to 1.05" dia.jackshaft										•	•		
	ZDB-AF2 Angle of rotation limiter										•	•		

Multi-section damper assemblies - typical applications

The typical US Fire and Smoke Damper requires 5-15 in-lb torque per square ft. [6-17 Nm per square meter] at 171°C under dynamic load (2400 fpm [12 m/s] velocity).

Some of multiple actuators application are shown below.



Product features

- Mode of operation** The actuator moves the damper to its normal working position while tensions the return spring at the same time. If the power supply is interrupted, the energy stored in the spring moves the damper back to its safe position.
- High function reliability** The actuator is overload-proof, needs no limit switches and halts automatically at the end stops.
- Mounting**
 - FS.. series: Direct mounting on the damper spindle by a cold-weld clamp. Teeth in the clamp and V-bolt dig into the metal of both solid and hollow shafts maintaining a perfect connection. The special designed clamp will not crush hollow shafts. An anti-rotation device is supplied.
 - B..F.. series: Square shaft mounting - mounting the actuator on the damper spindle through a square shaft adaptor. The square shaft adaptor maintains a perfect connection. An anti-rotation device has to be installed by the fire damper manufacturer, or order an anti-rotation strip device separately.
- Manual override function** B..F.. & FSAF..A series: Damper can be operated manually and fixed in any required position. Release of the locking mechanism can be achieved manually or automatically by applying the supply voltage.
- Internal aux. switch** B..F.. & FS..-S US series: Actuator has two internal auxiliary switches.
- Thermal tripping device BAE72B-S** B..F..-T series: Thermal trip Tf1 operates if the ambient temperature exceeds 72°C. Replaceable thermal trip Tf2/Tf3 operates if the temperature inside the duct exceeds 72°C. Both trips cause the power supply to be interrupted permanently, so that it cannot be uncanceled.
- Connection to SBS-Control** B..F..-ST series: Available with plug connectors fitted to their connecting leads. This allows the actuator to be incorporated into the SBS-Control damper monitoring system via the type BKN230-24 communication and power supply unit.

Safety notes



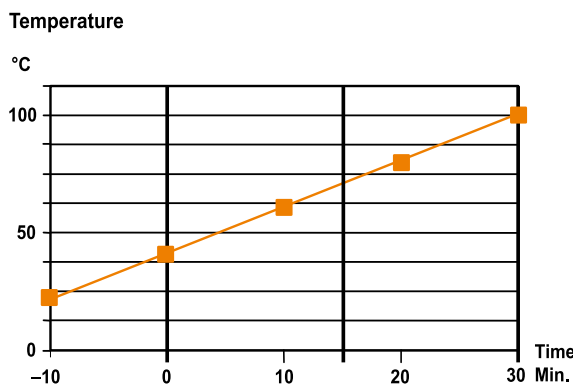
- The actuator is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.
- The actuator is adapted and mounted to the fire and smoke damper by the damper manufacturer. For this reason, the actuator is supplied directly to safety damper manufacturers. The manufacturer then bears full responsibility for the proper functioning of the damper.
- Since very high values of torque are exerted on the damper spindle, it is advisable to use steel of at least grade St50.
- The device may only be opened at the manufacturer's site. It does not contain any parts which can be replaced or repaired by the user.
- The device contains electronic and electrical components and may not be disposed with the household waste. Observe local regulations and valid laws.

Product features

- Mode of operation** Open/Close control is effected by means of a 2-wire system. The actuator is overload-proof and therefore remain energised while stationary at the end stops.
- Signalling** Two microswitches with fixed settings are installed in the actuator for indicating the damper end positions. The position of the damper blade can be read off on a mechanical position indicator.
- Manual operation** The crank handle supplied with the actuator allows it to be operated manually. It also allows a functional test of the damper to be performed very easily.

- Standards and specifications** The design of the actuator is based on the following standards and specifications:
 - Draft DIN 18232, Part 6, Sept. 1992
 - Fire protection in industrial buildings
 - Smoke and heat extraction systems
 - Preliminary standard ÖNORM H 6029, May 1997
 - Ventilation systems
 - Fire smoke extraction systems
 - Extracts from:
 - CEN/TC191, 1996
 - pr EN12101-8 (Smoke and heat control systems-specifications for smoke control dampers)

Safety function The safety function is guaranteed within the temperature range shown in the diagram below which is based on standard ÖNORM H 6029 and DIN 18232.

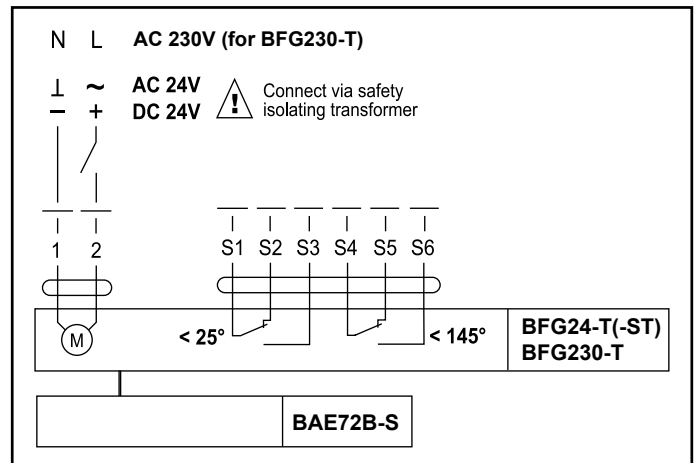
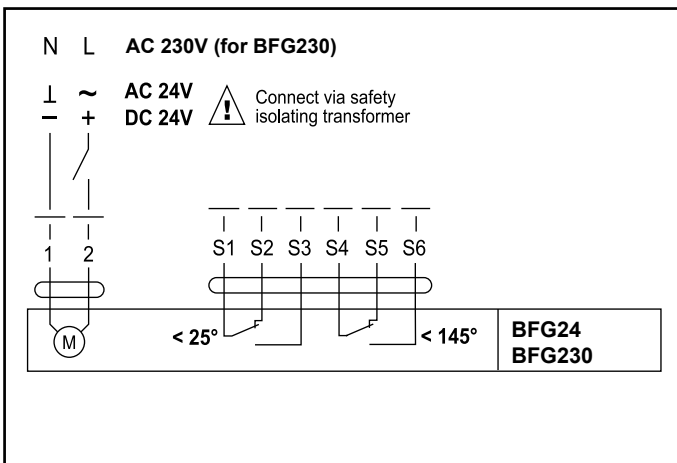
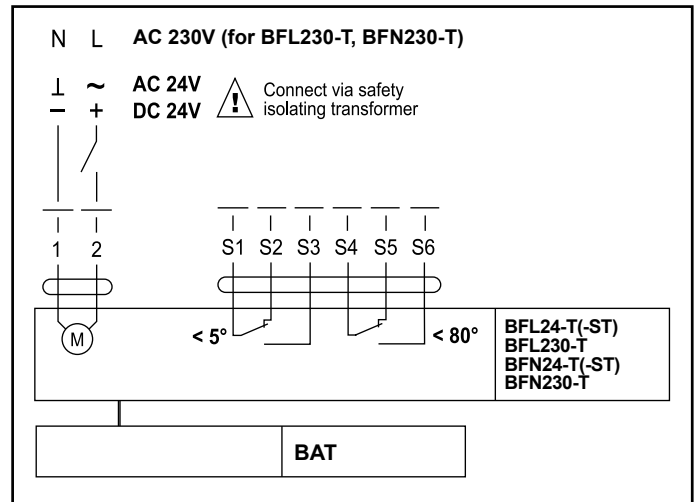
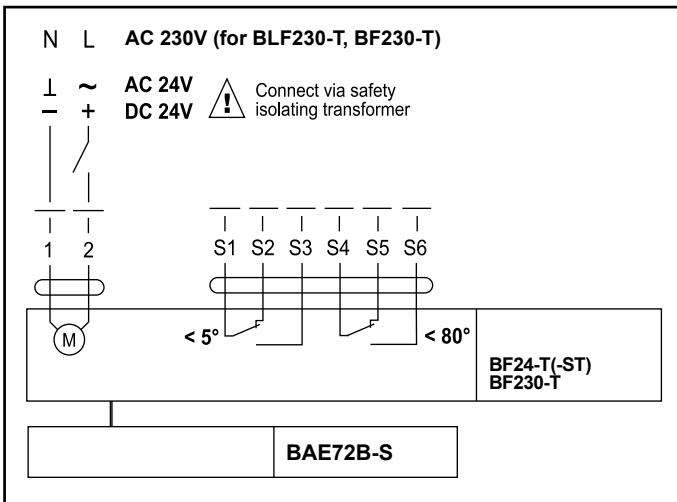
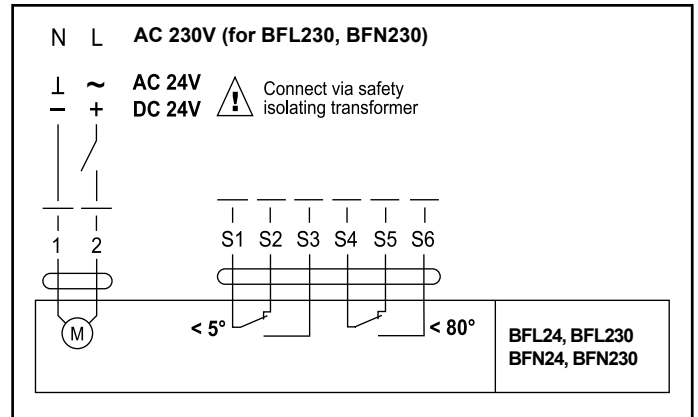
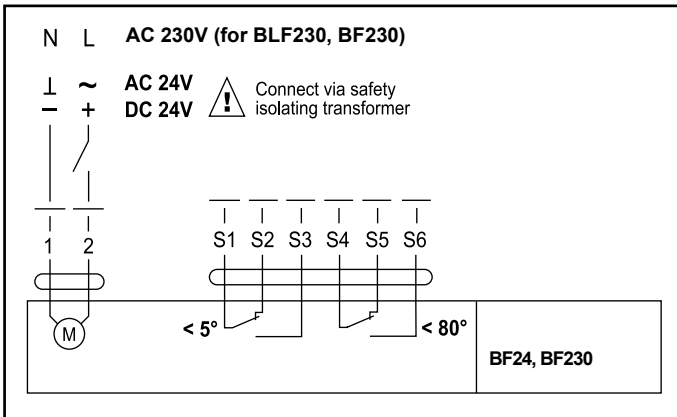


—■— Test temperature acc. to standard temperature-time curve
 Temperature on the BE24-ST actuator (protected by thermic isolating)

Wiring diagram: B..F.. series Fail-Safe Open/Close Actuators

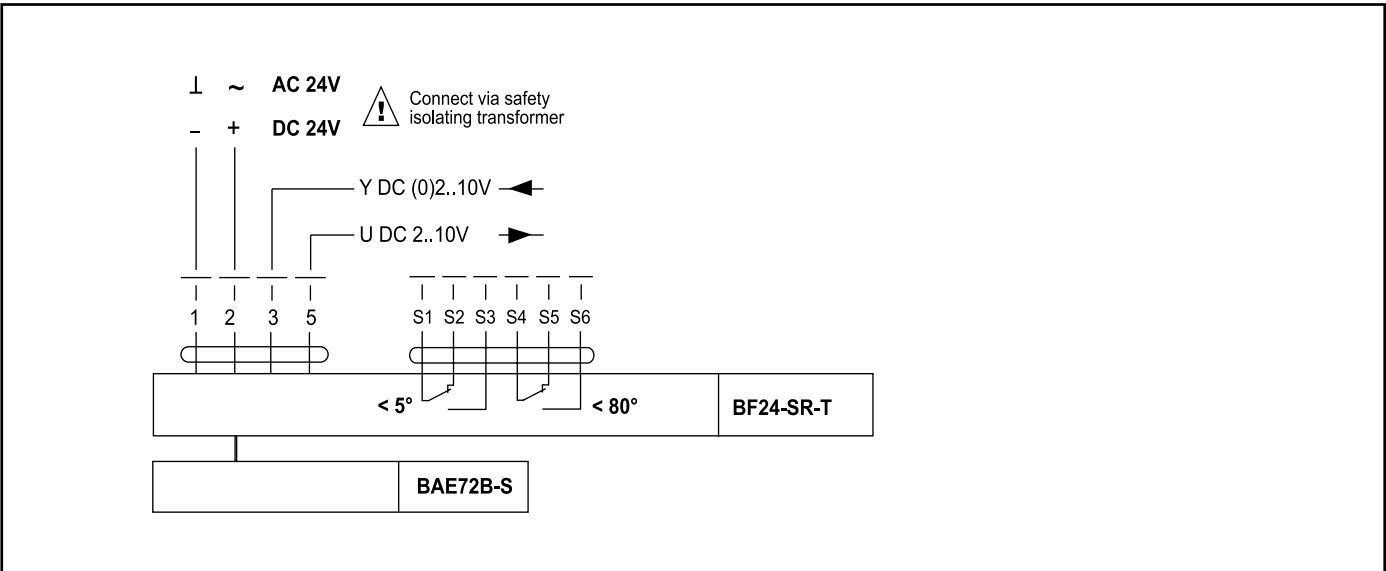
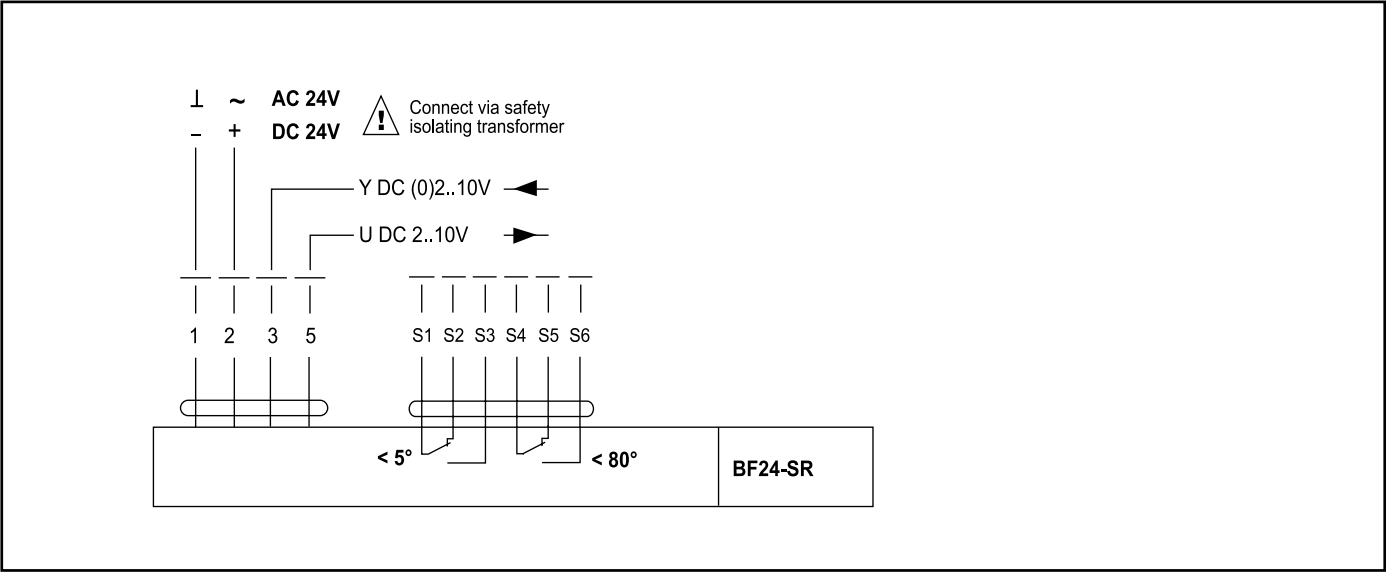
Notes:

- Parallel connection of several actuators is possible.
- Power consumption must be observed.



Wiring diagram: B..F.. series Fail-Safe Modulating(-SR) Actuators

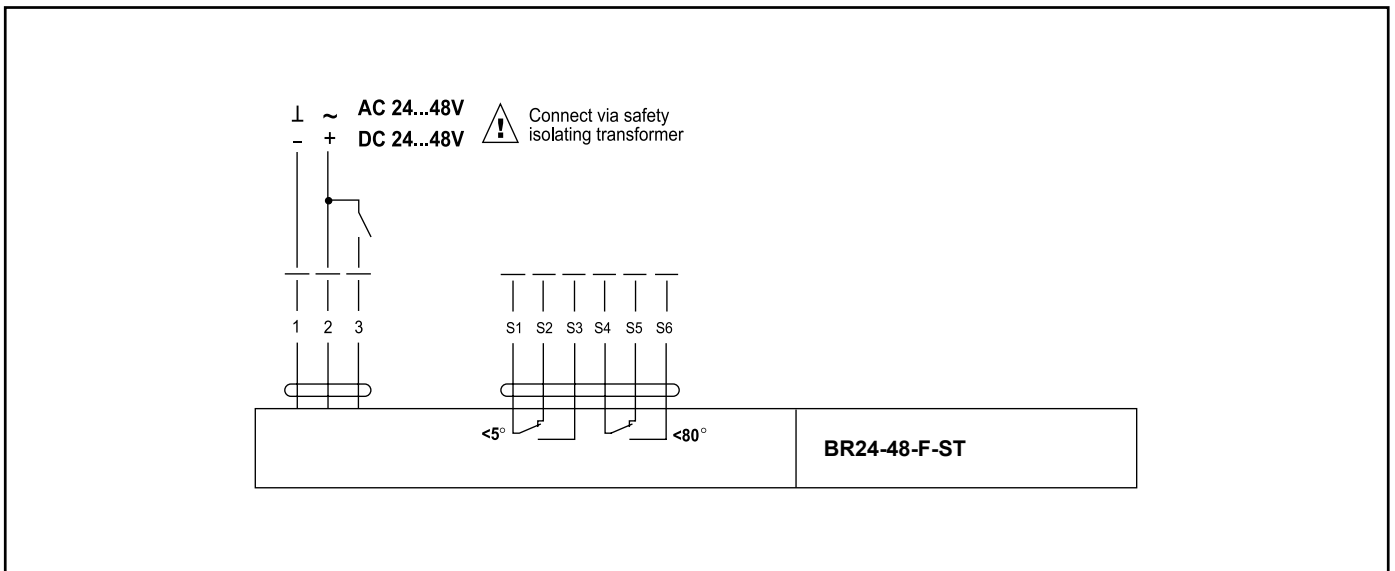
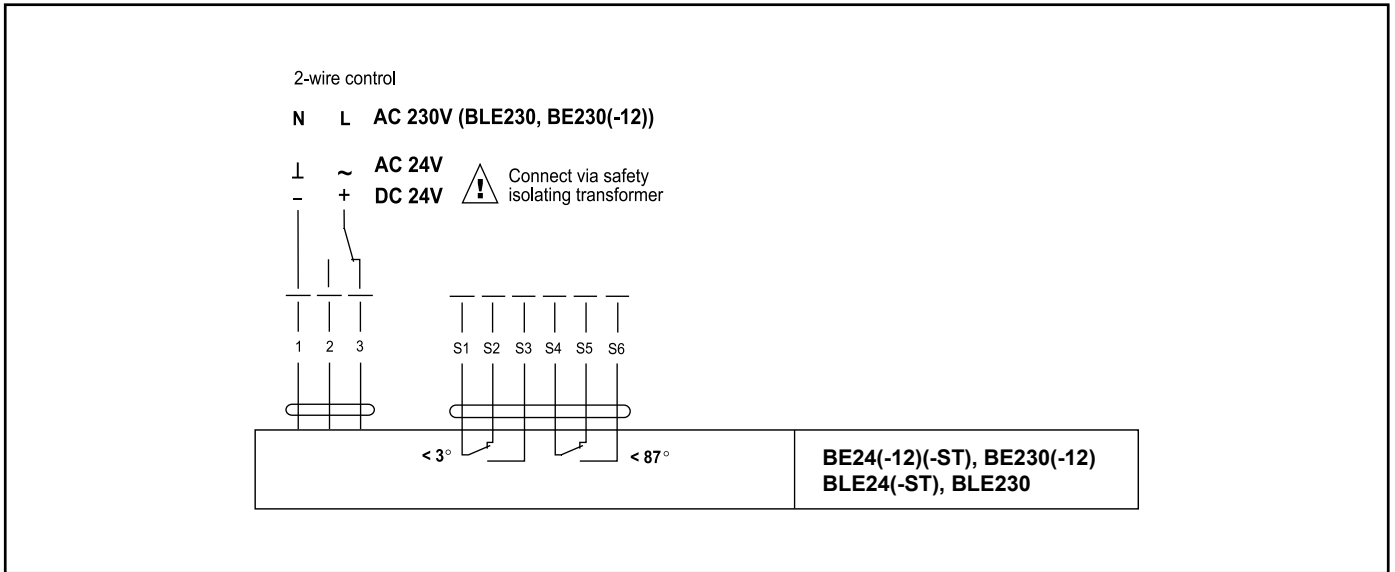
- Notes:**
- Parallel connection of several actuators is possible.
 - Power consumption must be observed.



Wiring diagram: B..E../BR.. series Non-Spring Return Open/Close Actuators

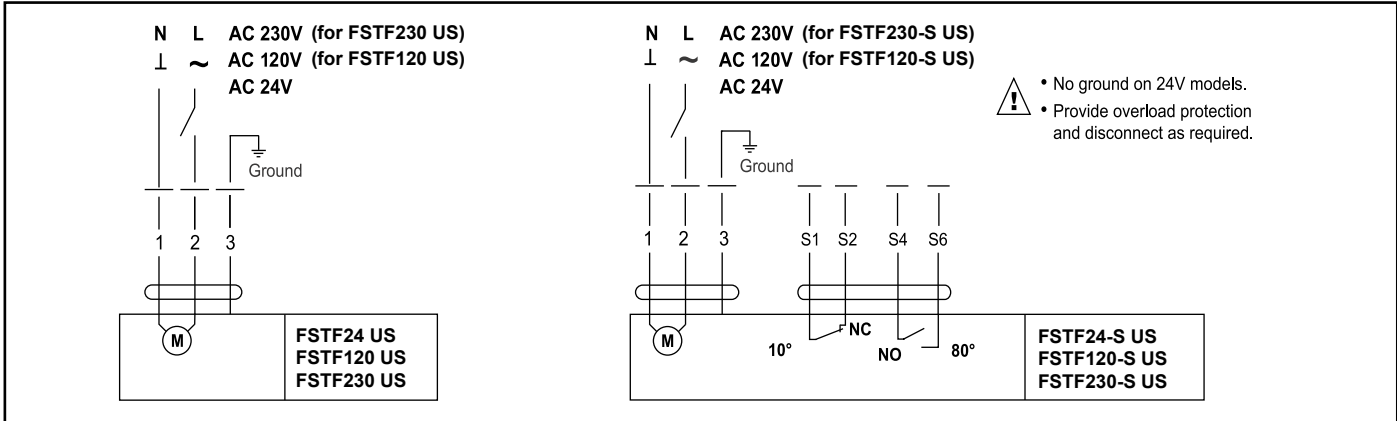
Notes:

- Parallel connection of several actuators is possible.
- Power consumption and switching thresholds must be observed.

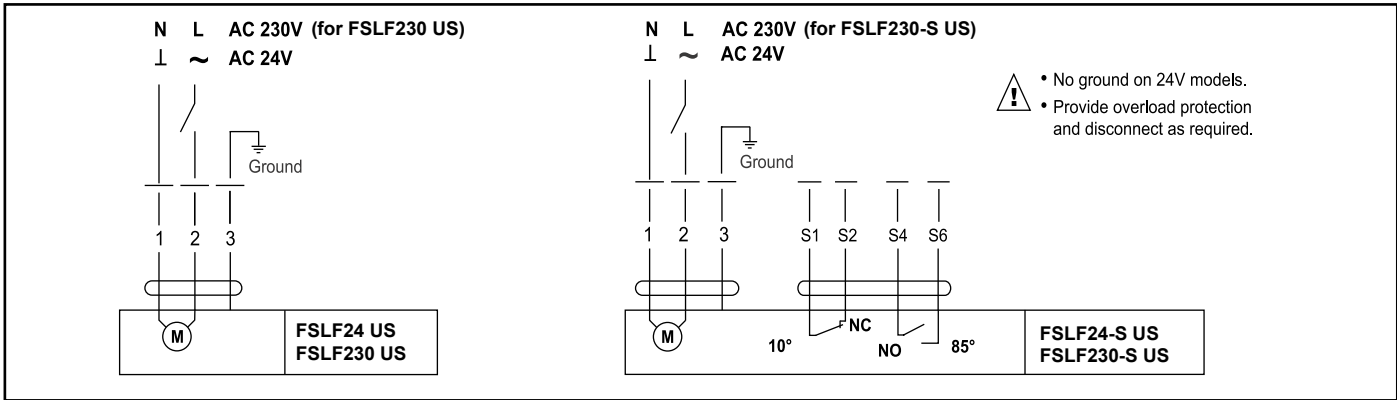


Wiring diagram: FS.. Series Fail-Safe Open/Close Actuators

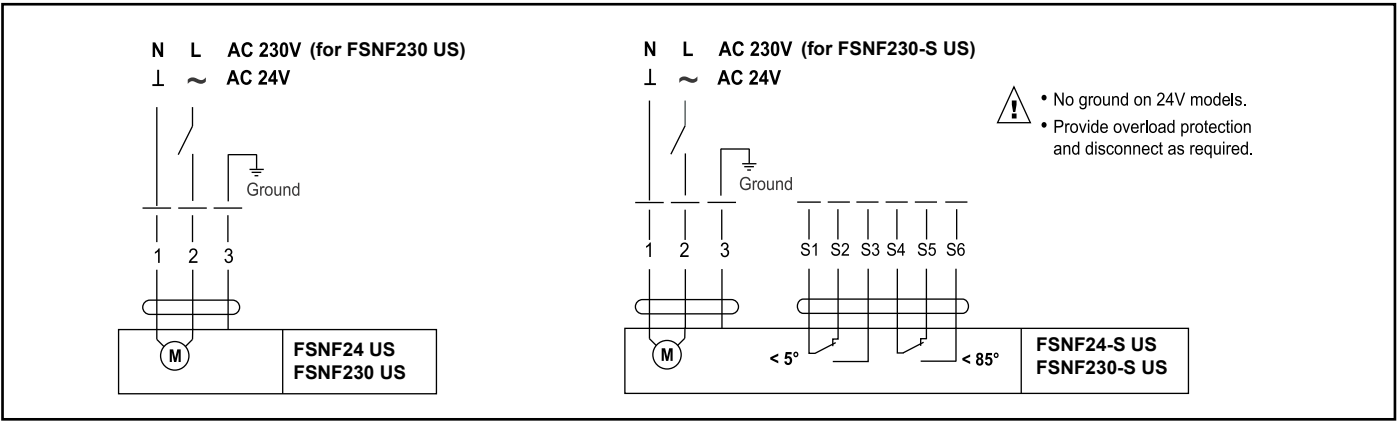
- Notes:**
- Parallel connection of several actuators is possible.
 - Power consumption must be observed.



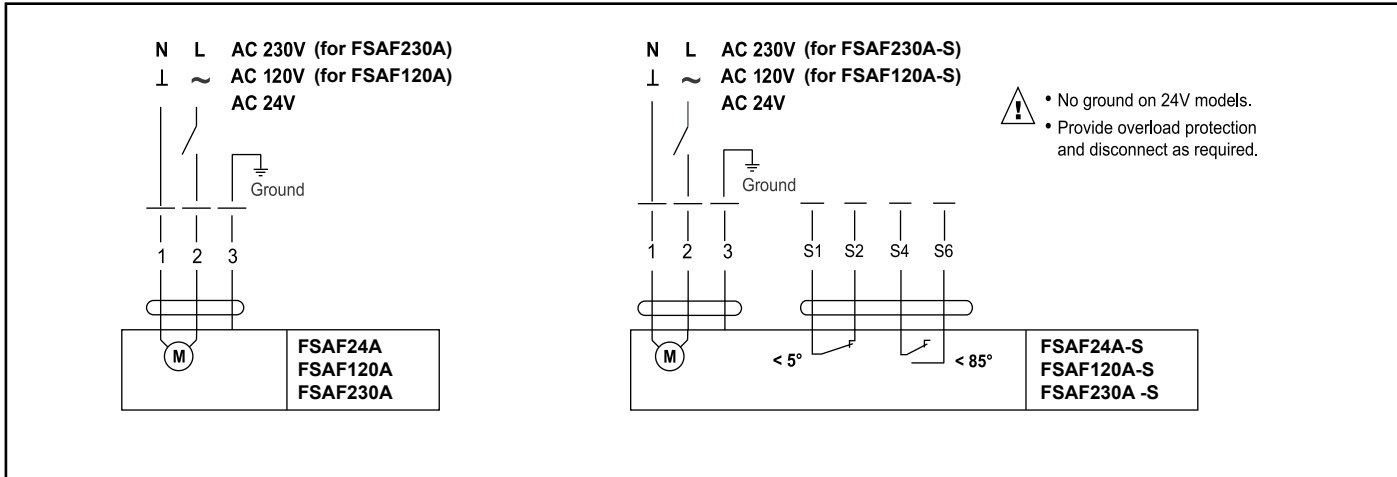
- ⚠
- No ground on 24V models.
 - Provide overload protection and disconnect as required.



- ⚠
- No ground on 24V models.
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- No ground on 24V models.
 - Provide overload protection and disconnect as required.

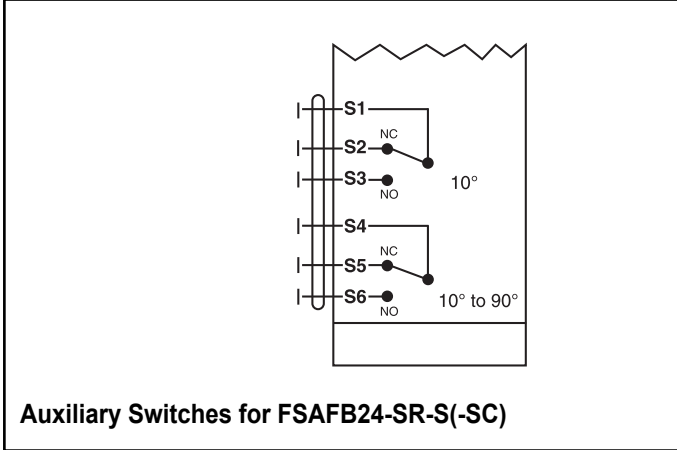
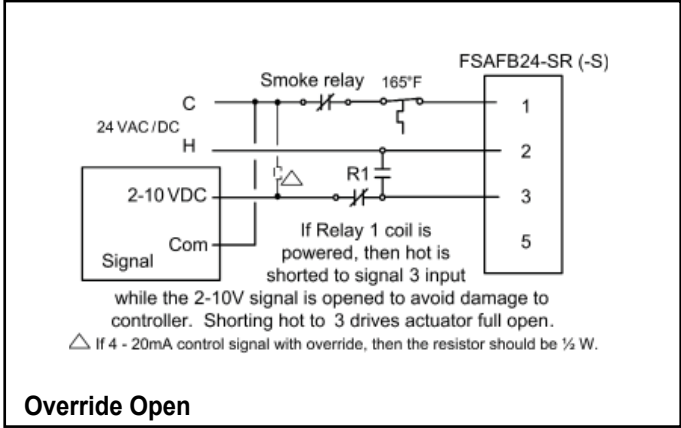
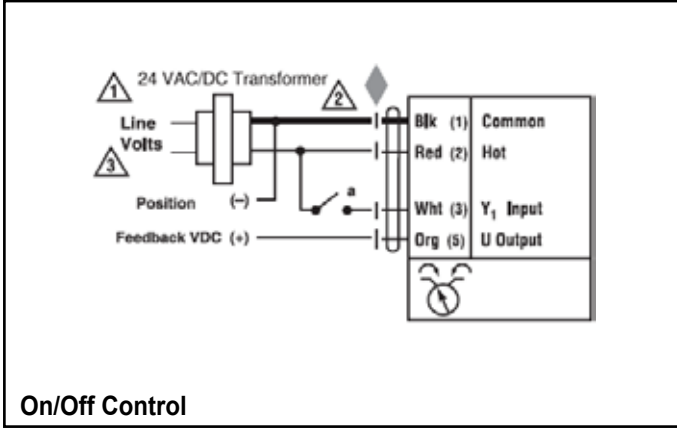
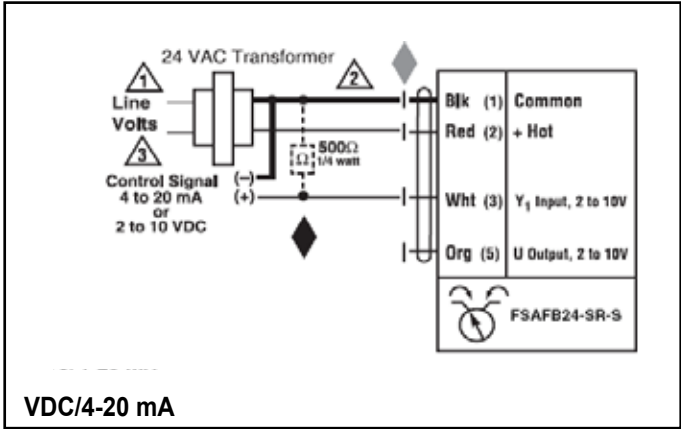
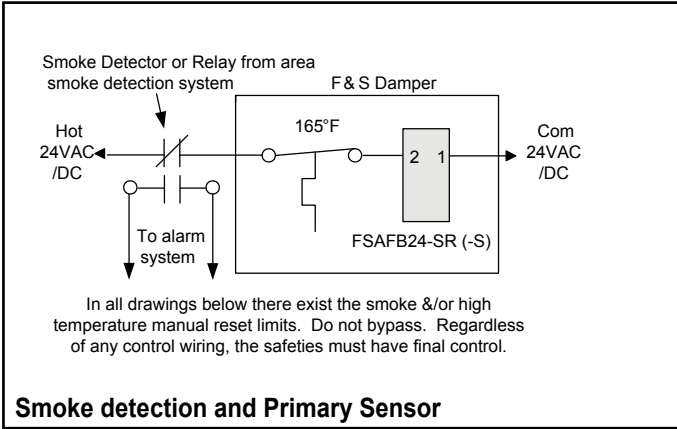


- ⚠
- No ground on 24V models.
 - Provide overload protection and disconnect as required.

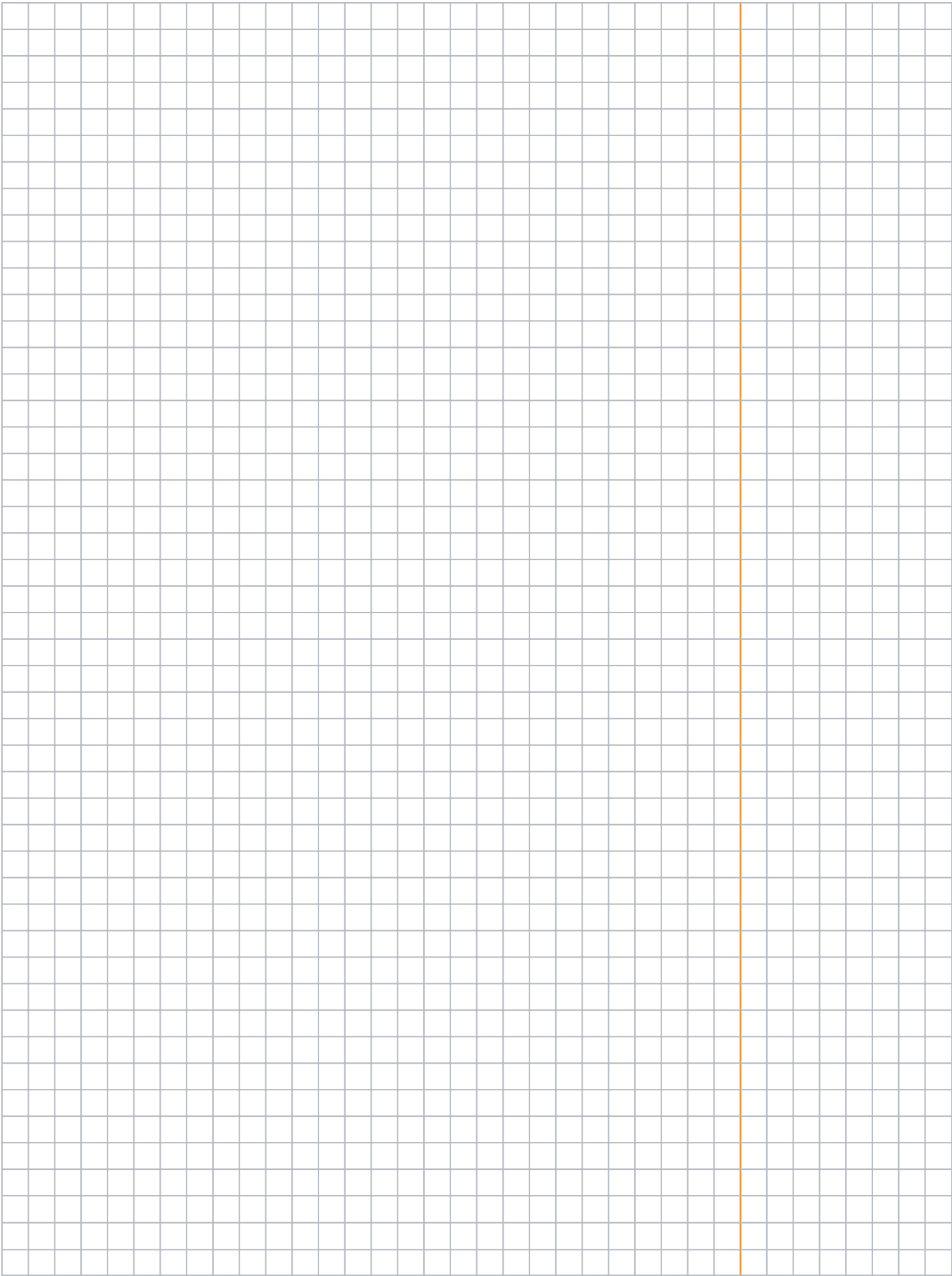
Wiring diagram: FSAFB24.. Series Fail-Safe Modulating(-SR) Actuators

Notes:

- Parallel connection of several actuators is possible.
- Power consumption must be observed.



- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment Damage!** Actuators may be connected in parallel if not mechanically mounted to the same shaft. Power consumption and input impedance must be observed.
- 3 Actuator may also be powered by DC 24V.
- ◆ Meets UL requirements without the need of an electrical ground connection.
- ◆ The 500Ω(ZG-R01) resistor may be used.



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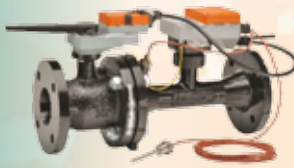
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