

# TF120 (-S) US

On-off, Spring Return Fail-Safe, 100 to 240 VAC



Technical Data	TF120 (-S) US
Power supply (nominal)	100 to 240 VAC, 50/60 Hz
Power supply (tolerance)	85 to 265 VAC, 50/60 Hz
Power consumption	running: 2.5 W; holding: 1.3 W
Transformer sizing	5 VA (class 2 power source)
Electrical connection	3 ft, 18 GA appliance cable* (-S models have 2 cables) 1/2" conduit connector
Overload protection	electronic throughout 0 to 95° rotation
Electrical protection	actuators are double insulated
Angle of rotation	max 95°, adjust. with mechanical stop
Torque	min. 18 in-lb [2 Nm]
Direction of rotation	reversible with cw/ccw mounting
Position indication	visual indicator, 0° to 95° (0° spring return position)
Auxiliary switch (-S models)	1 x SPDT 3A (0.5A) @ 250 VAC, UL listed adjustable 0° to 95°
Running time (nominal)	motor: < 75 sec (0 to 18 in-lb) spring: < 25 sec @ -4°F to +122°F [-20°C to +50°C] < 60 sec @ -22°F [-30°C]
Humidity	5 to 95% RH non-condensing
Ambient temperature	-22°F to +122°F [-30°C to +50°C]
Storage temperature	-40°F to +176°F [-40°C to +80°C]
Housing	NEMA type 2 / IP42
Housing material	UL94 - 5VA
Agency listings	cULus listed acc. to UL 60730-1
Noise level	max: running < 50 db (A) spring return 62 dB (A)
Servicing	maintenance free
Quality standard	ISO 9001
Weight	TF120 1.4 lbs (0.6 kg) TF120-S 1.5 lbs (0.7 kg)

\*Cable lengths of 10 ft and 16 ft also available.

## Torque min. 18 in-lb, for control of air dampers

### Application

For on-off, fail-safe control of dampers in HVAC systems. Actuator sizing should be done in accordance with the damper manufacturer's specifications. Control is on-off from an auxiliary contact, or a manual switch.

The actuator is mounted directly to a damper shaft from 1/4" up to 1/2" in diameter by means of its universal clamp, 1/2" shaft centered at delivery. A crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.

### Operation

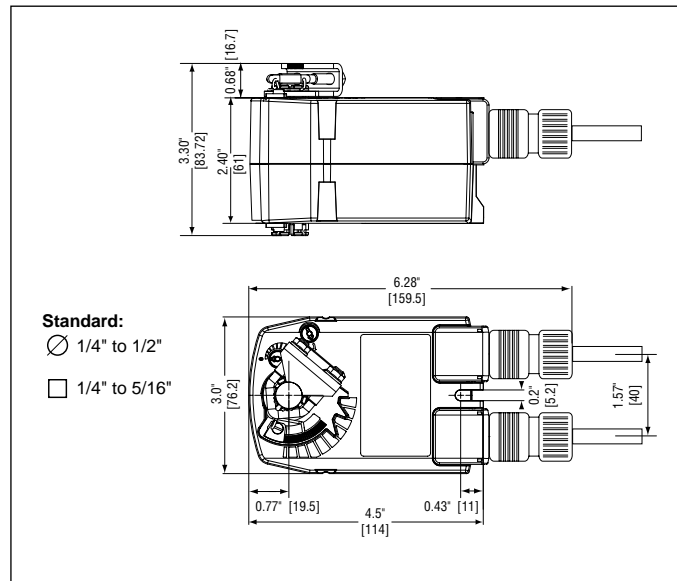
The TF series actuators provide true spring return operation for reliable fail-safe application and positive close off on air tight dampers. The spring return system provides consistent torque to the damper with, and without, power applied to the actuator. The TF series provides 95° of rotation and is provided with a graduated position indicator showing 0° to 90°. The actuator may be stalled anywhere in its normal rotation without the need of mechanical end switches. Power consumption is reduced in holding mode. The actuator is double insulated so an electrical ground connection is not necessary.

The TF120-S US versions are provided with 1 built-in auxiliary switch. This SPDT switch is provided for safety interfacing or signaling, for example, for fan start-up. The switching function is adjustable between 0° and 95°.

### Safety Note

Screw a conduit fitting into the actuator's bushing. Jacket the actuator's input and output wiring with suitable flexible conduit. Properly terminate the conduit in a suitable junction box.

### Dimensions [All numbers in brackets are in millimeters.]



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### Accessories

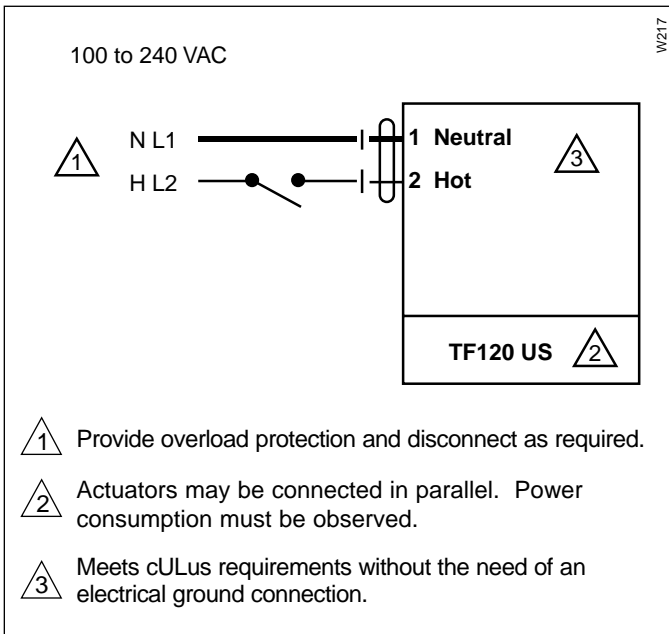
Tool-06	8mm and 10 mm wrench
KH-TF	Crankarm for up to 1/2" round shaft
ZG-TF2	Crankarm adaptor kit for TF
ZG-TF112	Mounting bracket, kit for TF
ZS-100	Weather shield (metal)
ZS-150	Weather shield (polycarbonate)

**Note:** When using TF120 US and TF120-S US actuators, only use accessories listed on this page.

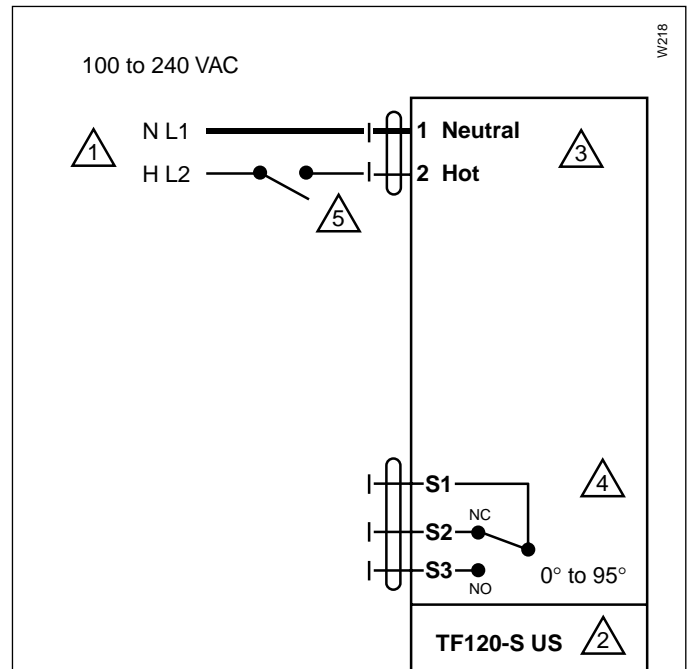
### TF120 (-S) US Typical Specification

On-off spring return damper actuators shall be direct coupled type which require no crankarm and linkage and be capable of direct mounting to a shaft up to a 1/2" diameter and center a 1/2" shaft. The actuators must be designed so that they may be used for either clockwise or counterclockwise fail-safe operation. Actuators shall be protected from overload at all angles of rotation. If required, 1 SPDT auxiliary switch shall be provided having the capability of being adjustable. Actuators must be constructed to meet the requirements for Double Insulation so an electrical ground is not required to meet agency listings. Actuators shall be cULus listed and have a 5 year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

### Wiring diagrams



**On-off wiring for TF120 US**



- 1 Provide overload protection and disconnect as required.
- 2 Actuators may be connected in parallel. Power consumption must be observed.
- 3 Meets cULus requirements without the need of an electrical ground connection.
- 4 For end position indication, interlock control, fan start-up, etc., TF120-S US incorporate one built-in auxiliary switch: 1 x SPDT, 3A (0.5A) @250 VAC, UL listed, adjustable 0° to 95°.

**On-off wiring for TF120-S US**

**For Actuator Wiring Information and Diagrams, Please See Belimo Wiring Guide (pg 317).**