

AF24 (-S) US, AFR24 (-S) US

On-off, spring return safety, 24 V



| Technical Data | AF24 (-S) US |
|-----------------------|--|
| Power supply | 24 VAC \pm 20% 50/60 Hz 24 VDC \pm 10% |
| Power consumption | running: 5 W holding: 1.5 W |
| Transformer sizing | 10 VA (class 2 power source) |
| Electrical connection | 3 ft, 18 GA appliance cable 1/2" conduit connector |
| Electrical protection | auxiliary switches are double insulated |
| Overload protection | electronic throughout -5° to 90° rotation |
| Angle of rotation | 95°, adjustable 30 to 90° w/ ZDB-AF2 |
| Torque | 133 in-lb [15 Nm] constant |
| Direction of rotation | spring return can be selected by CW/CCW mounting |
| Position indication | visual indicator, -5° to 90° (-5° is spring return position) |
| Manual override | 3mm hex crank (shipped w/actuator) |
| Auxiliary switches | 2 x SPDT 7A (2.5A) @ 250 VAC, UL listed one set at +5°, one adjustable 25° to 85° |
| Running time | 150 sec. constant, independent of load, spring return < 20 sec |
| 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 / IP54 |
| Housing material | zinc coated steel |
| Agency listings | UL 873 listed, CSA C22.2 No. 24 certified |
| Noise level | max. 45 dB (A) |
| Servicing | maintenance free |
| Quality standard | ISO 9001 |
| Weight | 6.0 lbs (2.7 kg.) |
| | AFR24 (-S) US (same as above except) |
| Position indication | -5° to 90° position indication |
| Manual override | Not available |
| Auxiliary switches | 1 x SPDT 7A (2.5A) @ 250 VAC, UL listed adjustable 5° to 85° |

Torque min. 133 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 up to 1.05" in diameter by means of its universal clamp. A crankarm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.

Operation

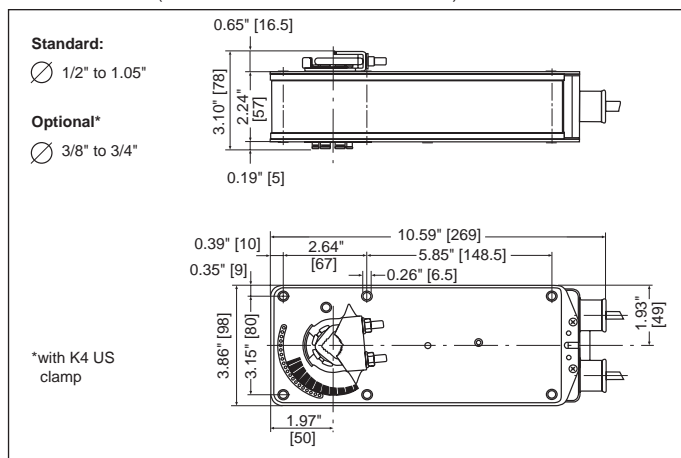
The AF series actuators provide true spring return operation for reliable fail-safe application and positive close off on air tight dampers. The spring return system provides consistent torque to the damper with, and without, power applied to the actuator.

The AF and AFR series provide 95° of rotation and are provided with a graduated position indicator showing -5° to 90°. The AF has a unique manual positioning mechanism which allows the setting of any damper position within its 95° of rotation. The AF and AFR series actuators are shipped in the zero position (5° from full fail-safe) to provide automatic compression against damper gaskets for tight shut-off. When power is applied to the AF series, the manual mechanism is released. When power is applied to the AFR series its "one time use" mechanism is released. The actuators will now try to close against the -5° position during its normal control operations. The manual override can also be released physically by the use of a crank supplied with the actuator (AF series).

The AF uses a brushless DC motor which is controlled by an Application Specific Integrated Circuit (ASIC). The ASIC monitors and controls the actuator'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.

The AF24-S US version is provided with 2 built in auxiliary switches. These SPDT switches are provided for safety interfacing or signaling, for example, for fan start-up. The switching function at the fail-safe position is fixed at +5°, the other switch function is adjustable between +25° to +85°. The AFR... series actuators are provided with 1 SPDT switch, adjustable between 5° to 85°.

Dimensions (All numbers in brackets are metric.)



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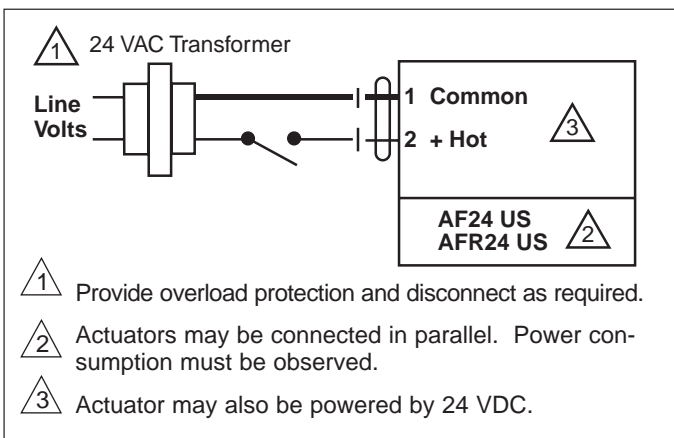
Accessories

| | |
|----------|--|
| AV 10-18 | Shaft extension |
| 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 jackshafts |
| K4-H | Universal clamp for hexshafts 3/8" to 5/8" |
| KH-AF | Crankarm for up to 3/4" round shaft (Series 2) |
| KH-AF-1 | Crankarm for up to 1.05" jackshaft (Series 2) |
| KH-AFV | V-bolt kit for KH-AF and KH-AF-1 |
| Tool-01 | 10 mm wrench |
| ZDB-AF2 | Angle of rotation limiter |
| ZG-100 | Universal mounting bracket |
| ZG-101 | Universal mounting bracket |
| ZG-102 | Multiple actuator mounting bracket |
| ZG-103 | Universal mounting bracket |
| ZG-104 | Universal mounting bracket |
| ZG-106 | Mounting bracket for Honeywell® Mod IV replacement or new crankarm type installations |
| ZG-107 | Mounting bracket for Honeywell® Mod III or Johnson® Series 100 replacement or new crankarm type installations |
| ZG-108 | Mounting bracket for Barber Colman® MA 3../4.., Honeywell® Mod III or IV or Johnson® Series 100 replacement or new crankarm type installations |
| ZG-AF | Crankarm adaptor kit for AF/NF |
| ZG-AF108 | Crankarm adaptor kit for AF/NF |
| ZS-100 | Weather shield (metal) |
| ZS-150 | Weather shield (polycarbonate) |
| ZS-260 | Explosion-proof housing |
| ZS-300 | NEMA 4X housing |

For an overview of how to apply the accessories see pages 16 - 19. More detailed specifications can be found in our Mechanical Accessories section, page 132. Refer to our Mounting Methods Guide for application details.

Note: When using AF24 US and AF24-S US actuators, only use accessories listed on this page.

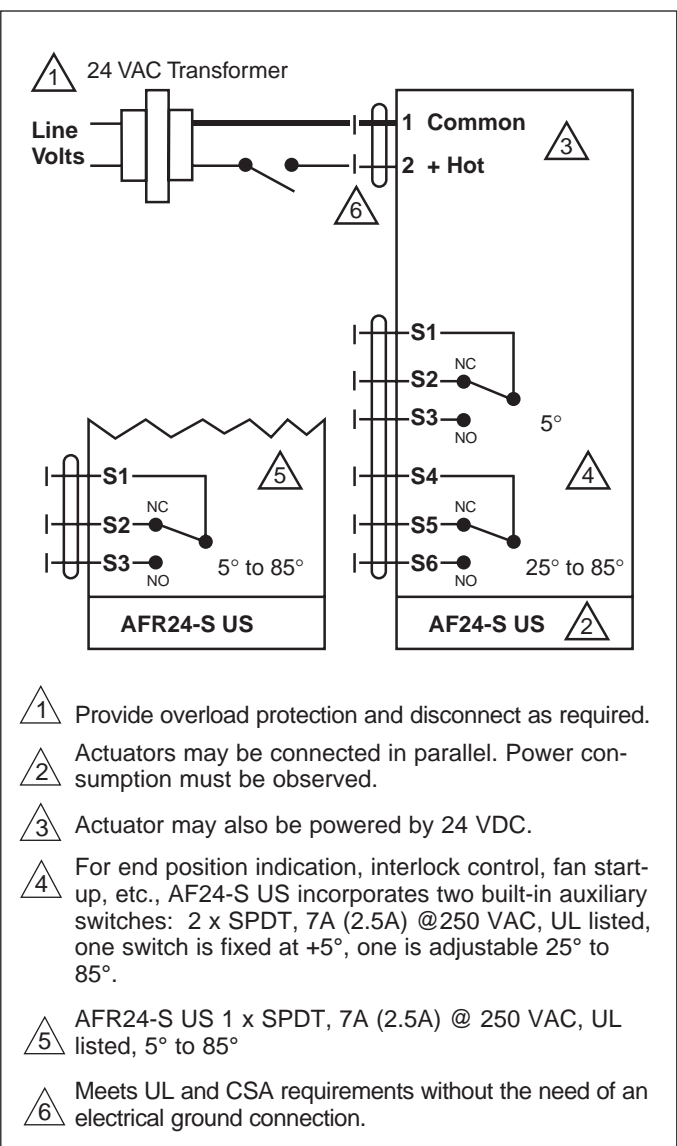
Wiring diagrams



On-off wiring for AF24 US, AFR24 US

AF24 (-S) US, AFR24 (-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 jackshaft up to a 1.05" diameter. The actuators must be designed so that they may be used for either clockwise or counterclockwise fail-safe operation. Actuators shall have a manual positioning mechanism accessible on its cover. AFR... will not. Actuators shall use a brushless DC motor and be protected from overload at all angles of rotation. Run time shall be constant and independent of torque. If required, 2 SPDT auxiliary switches shall be provided with one switch having the capability of being adjustable, AFR... 1 adjustable SPDT. Actuators with switches must be constructed to meet the requirement for Double Insulation so an electrical ground connection is not required to meet agency listings. Actuators shall be UL listed and CSA certified, have a 5 year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.



On-off wiring for AF24-S US, AFR24-S US