

AF120(-S) US, AF230(-S) US

On/Off, Spring Return, 120 or 230 VAC



| Technical Data | | AF120... US, AF230... US |
|---------------------------|---------|--|
| Power supply | | |
| AF120(-S) US | | 120 VAC ± 10% 50/60 Hz |
| AF230(-S) US | | 230 VAC ± 15% 50/60 Hz |
| Power consumption | | |
| AF120(-S) US | running | 8 W |
| | holding | 3 W |
| AF230(-S) US | running | 8.5 W |
| | holding | 3 W |
| Transformer sizing | | |
| AF120(-S) US | | 11 VA |
| AF230(-S) US | | 11 VA |
| Electrical connection | | 3 ft, 18 GA appliance cable |
| (-S models have 2 cables) | | 1/2" conduit connector |
| Electrical protection | | actuators are double insulated |
| Overload protection | | electronic throughout 0° to 95° rotation |
| Angle of rotation | | 95°, adjustable 35 to 95° w/ZDB-AF2 US |
| Torque | | 133 in-lb [15 Nm] constant |
| Direction of rotation | | reversible with CW/CCW mounting |
| Position indication | | visual indicator, 0° to 95° (0° is spring return position) |
| Manual override | | 3mm hex crank (shipped w/actuator) |
| Auxiliary switches | | 2 x SPDT 7A (2.5A) @ 250 VAC, UL approved one set at +5°, one adjustable 25° to 85° |
| Running time | | 150 seconds constant, independent of load, spring return < 20 seconds |
| 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 | | cULus acc. to UL 873 and CAN/CSA C22.2 No. 24-93 |
| Noise level | | max. 45 dB (A) |
| Servicing | | maintenance free |
| Quality standard | | ISO 9001 |
| Weight | | 6.9 lbs (3.1 kg) |

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 crank arm and several mounting brackets are available for applications where the actuator cannot be direct coupled to the damper shaft.

Operation

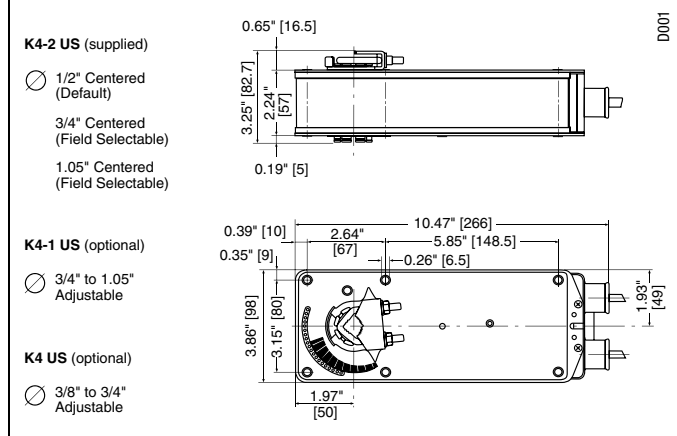
The AF series actuators provide true spring return operation for reliable fail-safe application and positive close off on air tight dampers. The spring return system provides consistent torque to the damper with, and without, power applied to the actuator.

The AF series provide 95° of rotation and are provided with a graduated position indicator showing 0° to 95°. The AF has a unique manual positioning mechanism which allows the setting of any damper position within its 95° of rotation. The AF series actuators are shipped at +5° (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. The actuators will now try to close against the 0° position during its normal control operations. The manual override can also be released physically by the use of a crank supplied with the actuator.

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 actuators are Double Insulated so a ground connection is not required.

The AF120/230-S US version is provided with two 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°.

Dimensions (Inches [mm])



M40024 - 05/10 - Subject to change. © Belimo Aircontrols (USA), Inc.

| 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 |
| KH-AF | Crank arm for up to 3/4" round shaft (Series 2) |
| KH-AF-1 | Crank arm for up to 1.05" jackshaft (Series 2) |
| KH-AFV | V-bolt kit for KH-AF and KH-AF-1 |
| Tool-06 | 8mm and 10 mm wrench |
| ZG-HTR | Thermostat/Heater Kit |
| ZDB-AF2 US | Angle of rotation limiter |
| ZG-100 | Universal mounting bracket |
| ZG-101 | Universal mounting bracket |
| ZG-102 | Multiple actuator mounting bracket |
| ZG-106 | Mounting bracket for Honeywell® Mod IV replacement or new crank arm type installations |
| ZG-107 | Mounting bracket for Honeywell® Mod III or Johnson® Series 100 replacement or new crank arm type installations |
| ZG-108 | Mounting bracket for Barber Colman® MA 3..4.., Honeywell® Mod III or IV or Johnson® Series 100 replacement or new crank arm type installations |
| ZG-AF US | Crank arm adaptor kit for AF/NF |
| ZG-AF108 | Crank arm 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 |

NOTE: When using AF120/230 US and AF120/230-S US actuators, only use accessories listed on this page. For actuator wiring information and diagrams, refer to Belimo Wiring Guide.

Typical Specification

On/Off spring return damper actuators shall be direct coupled type which require no crank arm 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. 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, two SPDT auxiliary switches shall be provided with one switch having the capability of being adjustable. Actuators 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 cULus listed, have a 5 year warranty, and be manufactured under ISO 9001 International Quality Control Standards. Actuators shall be as manufactured by Belimo.

Wiring Diagrams

✂️ INSTALLATION NOTES

- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment Damage!**
Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- 3 No ground connection is required.

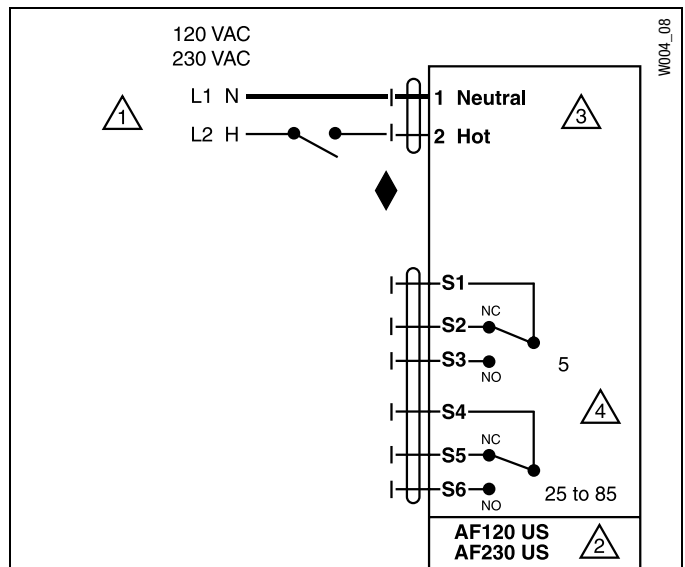
4 For end position indication, interlock control, fan startup, etc., AF120/240-S US incorporates two built-in auxiliary switches: 2 x SPDT, 7A (2.5A) @250 VAC, UL Approved, one switch is fixed at +5°, one is adjustable 25° to 85°.

📄 APPLICATION NOTES

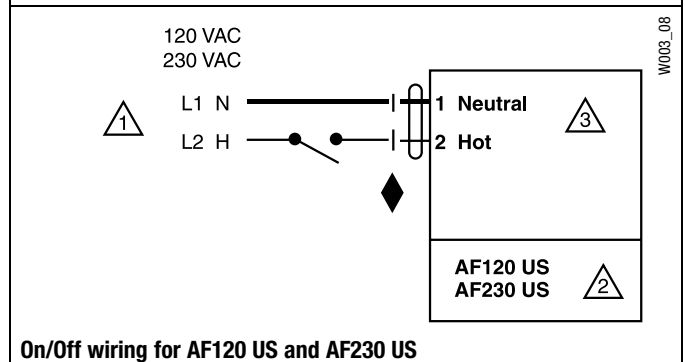
◆ Meets cULus requirements without the need of an electrical ground connection.

⚠️ WARNING Live Electrical Components!

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.



On/Off wiring for AF120-S US and AF230-S US



On/Off wiring for AF120 US and AF230 US