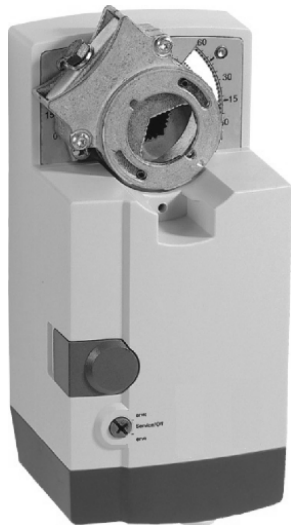


## N2024 / N20230 N3424 / N34230

### DAMPER ACTUATORS 20/34 Nm (177/300 lb-in) FOR FLOATING / 2-POSITION CONTROL

#### PRODUCT DATA



#### GENERAL

These direct-coupled damper actuators provide two-position and floating control for:

- air dampers,
- VAV units,
- air handlers,
- ventilation flaps,
- louvers, and
- reliable control for air damper applications with up to 4.6 m<sup>2</sup> (20 Nm) or 7.8 m<sup>2</sup> (34 Nm) (seal-less dampers; air friction-dependent).

#### FEATURES

- **New self-centering shaft adapter**
- **Access cover to facilitate connectivity**
- **Declutch for manual adjustment**
- **Mechanical end limits**
- **Field-installable auxiliary switches**
- **Rotation direction selectable by switch**
- **Mountable in any orientation (no IP54 if upside down)**
- **Mechanical position indicator**

#### SPECIFICATIONS

##### Supply voltage

|               |                        |
|---------------|------------------------|
| N2024 / N3424 | 24 Vac ±15%, 50/60 Hz  |
| N20230/N34230 | 230 Vac ±15%, 50/60 Hz |

##### Power consumption

see Table 1 on pg. 2

##### Ambient limits

|                          |                         |
|--------------------------|-------------------------|
| Ambient operating limits | -20...+60 °C            |
| Ambient storage limits   | -40...+80 °C            |
| Relative humidity        | 5...95%, non-condensing |

##### Safety

|                     |                      |
|---------------------|----------------------|
| Protection standard | IP54 as per EN 60529 |
| Protection class    | II as per EN 60730-1 |

##### Lifetime

|              |             |
|--------------|-------------|
| Full strokes | 60000       |
| Repositions  | 1.5 million |

##### Mounting

|                     |                       |
|---------------------|-----------------------|
| Round damper shaft  | 10...27 mm            |
| Square damper shaft | 10...18 mm; 45° steps |
| Shaft length        | min. 22 mm            |

##### End switches (when included)

|                   |                                   |
|-------------------|-----------------------------------|
| Rating            | 5 A (resistive) / 3 A (inductive) |
| Triggering points | 5° / 85°                          |

##### Torque rating

see Table 1 on pg. 2

##### Runtime

110 sec (50 Hz) / 95 sec (60 Hz)

##### Rotation stroke

95° ± 3°

##### Dimensions

see "Dimensions" on page 6

##### Weight (without cables)

1.45 kg

## MODELS

Table 1. Models

| order number         | supply voltage | end switches | feedback | power consumption | torque |
|----------------------|----------------|--------------|----------|-------------------|--------|
| N2024 / N2024-2POS   | 24 Vac         | --           | --       | 6 VA / 6 W        | 20 Nm  |
| N2024-SW2            | 24 Vac         | 2            | --       |                   |        |
| N2024-P10K           | 24 Vac         | --           | 10 kΩ    |                   |        |
| N20230 / N20230-2POS | 230 Vac        | --           | --       | 8 VA / 8 W        | 20 Nm  |
| N20230-SW2           | 230 Vac        | 2            | --       |                   |        |
| N20230-P10K          | 230 Vac        | --           | 10 kΩ    |                   |        |
| N3424                | 24 Vac         | --           | --       | 9 VA / 9 W        | 34 Nm  |
| N34230               | 230 Vac        | --           | --       | 13 VA / 10 W      |        |

## Product Identification System

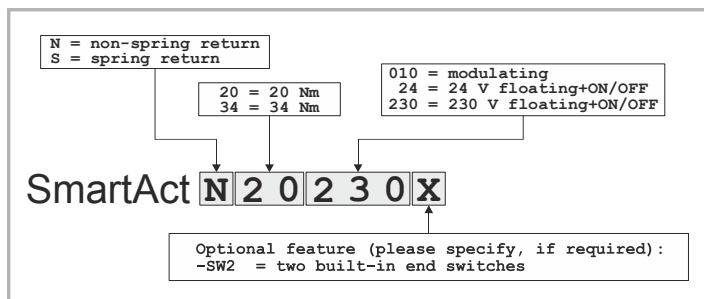


Fig. 1. Product Identification System

## OPERATION / FUNCTIONS

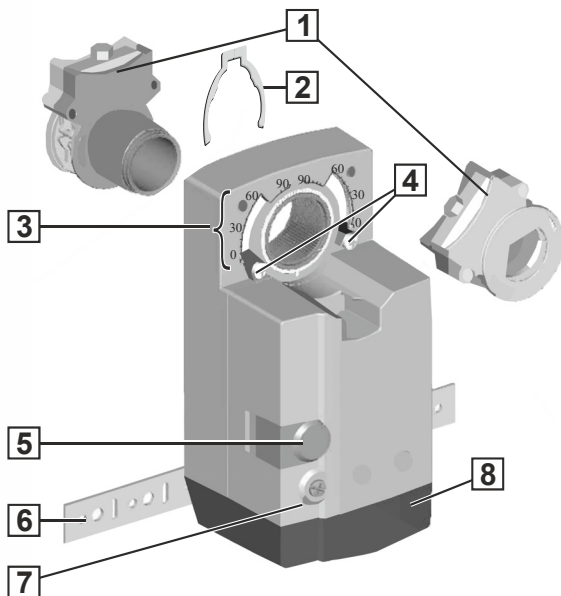


Fig. 2. Features

### Legend for Fig. 2:

- 1 Self-centering shaft adapter
- 2 Retainer clip
- 3 Rotational angle scales (0...90° / 90...0°)
- 4 Mechanical end limits (20 Nm models, only)
- 5 Declutch button
- 6 Anti-rotation bracket
- 7 Rotation direction switch
- 8 Access cover

## Contents of Package

The delivery package includes the actuator itself, parts 1 through 8 (see Fig. 2), the anti-rotation bracket, and bracket screws.

## Operation

The actuator is driven by a synchronous motor; the rotary motion is transmitted by a spur gear. This synchronous motor guarantees a time-proportional stroke. When the actuator reaches its mechanical end and is continuously powered, a magnetic clutch limits the torque to the specified value.

After a maximum time of 4 min. with power ON, internal electronics will stop the motor. It is possible to connect several actuators in parallel at one control output.

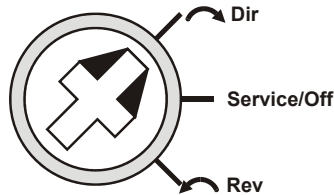
## Rotary Movement

The rotation direction (CW or CCW) can be selected using the rotation direction switch (see part 7 in Fig. 2), thus

eliminating the need to re-wire. To ensure tight closing of the dampers, the actuator has a total rotation stroke of 95°.

As soon as power is applied, the actuator may start to run. When power is removed, the actuator remains in position. For actuator-controller wiring instructions, see section "Wiring" on page 5.

### Rotation Direction Switch



**Fig. 3. Rotation Direction Switch**

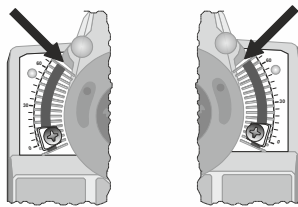
- **Dir** ("→"): is the default shipping position. When the rotation direction switch is set to this position, the actuator internally switches the rotation direction control signals as shown in section "Wiring" on page 5.
- **"Service/Off"**: When the rotation direction switch is set to this position, all actuator rotary movement is cancelled and all control signals are ignored, thus enabling the actuator to be manually operated (see section "Manual Adjustment"). The user can then perform maintenance / commissioning without having to remove power from the actuator. To return to the control mode, simply move the rotation direction switch to its former setting.
- **Rev** ("←"): When the rotation direction switch is set to this position, the actuator's default behavior is reversed.

### Two-Position or Floating Control

The actuator is capable of being operated by either a two-position (open/close) or (unless explicitly identified as a 2-POS model) a floating (three-wire) controller. Refer to "Wiring" on page 5 for correct connection.

### Position Indication

When the shaft adapter is inserted in front of the actuator plate (see Fig. 4), its left/right edges indicate its position with respect to the rotational angle scales (0...90° / 90...0°).



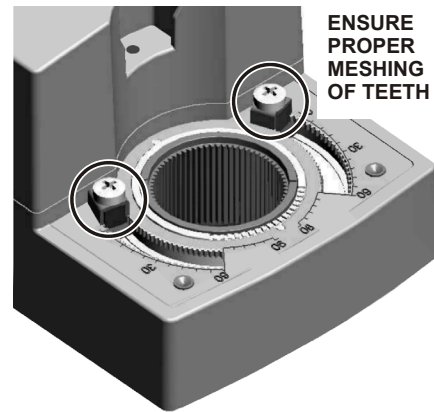
**Fig. 4. Position indication**

### Manual Adjustment

The gear train can be disengaged using the declutch button, permitting the actuator shaft to be manually rotated to any position.

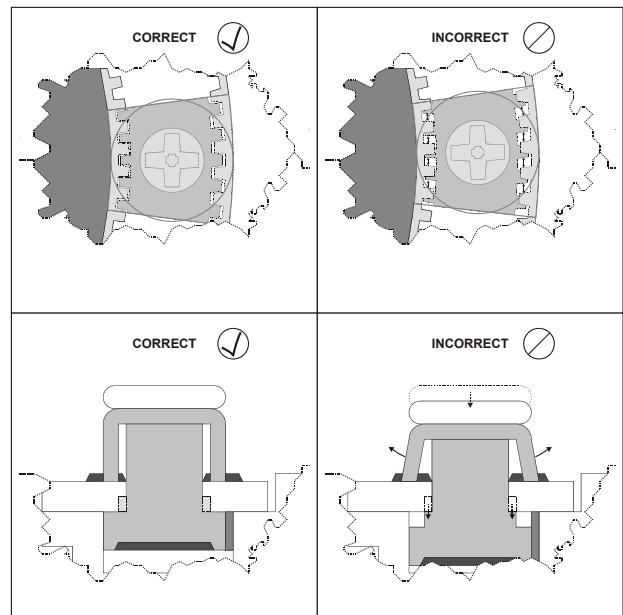
### Limitation of Rotation Stroke

Two adjustable mechanical end limits (20 Nm models, only) are provided to limit the angle of rotation as desired (see Fig. 5).



**Fig. 5. Mechanical end limits**

The mechanical end limits must be securely fastened in place as shown in Fig. 6. Specifically, it is important that they properly mesh with the rotational angle scales when the screws are tightened.



**Fig. 6. Correct / incorrect tightening of end limits**

### Internal End Switches

**NOTE:** Only those actuators for which "-SW2" has been specified when ordering (e.g.: "N2024-SW2") feature internal end switches.

The internal end switches are set to switch from "common" to "normally open" at angles of 5° and 85°, respectively, from the totally counterclockwise position.

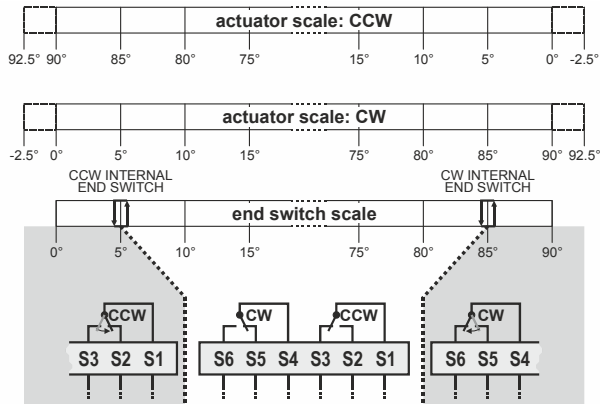


Fig. 7. Internal end switch triggering points

## INSTALLATION

These actuators are designed for single-point mounting.

### Mounting Instructions

All information and steps are included in the Installation Instructions supplied with the actuator.

### Mounting Position

The actuators can be mounted in any position (no IP54 if mounted upside down; see Fig. 8). Choose a mounting position permitting easy access to the actuator's cables and controls.

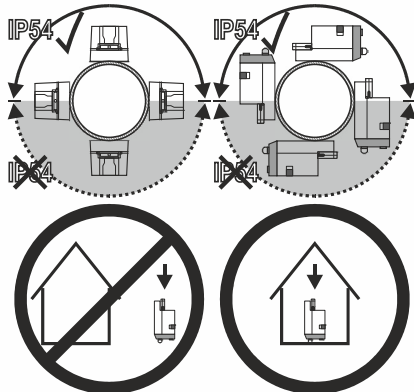


Fig. 8. Mounting for IP54

### Mounting Bracket and Screws

If the actuator is to be mounted directly on a damper shaft, use the mounting bracket and screws included in the delivery package.

### Self-Centering Shaft Adapter

The self-centering shaft adapter can be used for shafts having various diameters (10...27 mm) and shapes (square or round).

In the case of short shafts, the shaft adapter may be reversed and mounted on the duct side.

### Stroke Limitation with Mechanical End Limits

The mechanical end limits (20 Nm models, only) enable the stroke to be limited from 0...90° in increments of 3°.

### Connecting to the Power Supply

In order to comply with protection class II, the power source of 24 V actuators must be reliably separated from the network power supply circuits as per DIN VDE 0106, part 101.

### Access Cover

To facilitate wiring the actuator to the controller, the access cover can be detached from the actuator.

## IMPORTANT

Remove power before detaching the access cover. Once the access cover has been removed, please take care to avoid damaging any of the parts now accessible.

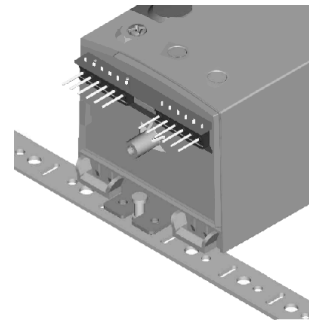


Fig. 9. N2024-SW2 with access cover removed

Depending upon the model, the access cover may have one or two terminal strips, including a layout with a description for each of the terminals.

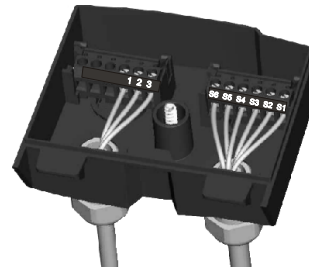
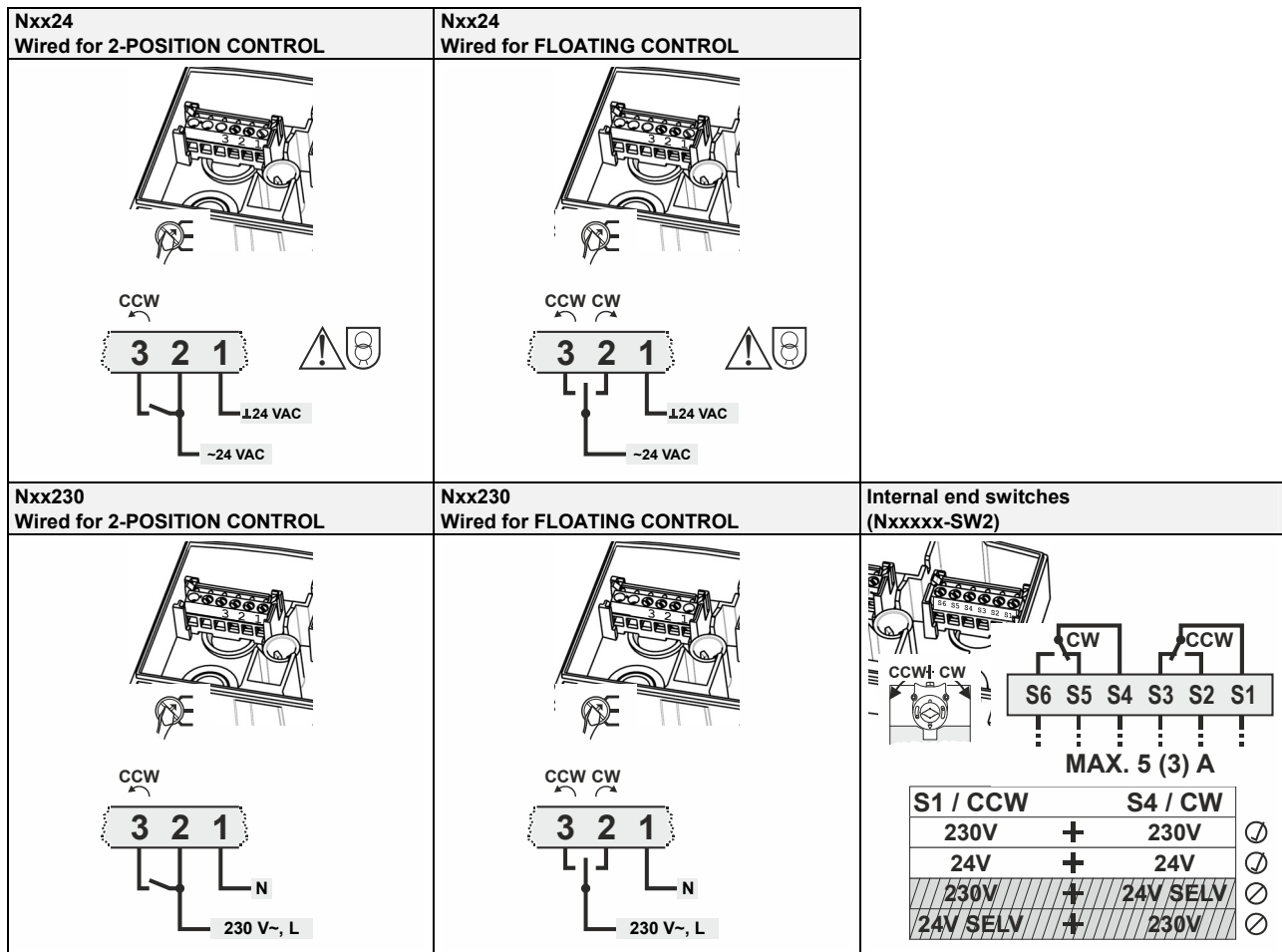


Fig. 10. Access cover (N2024-SW2)

## WIRING

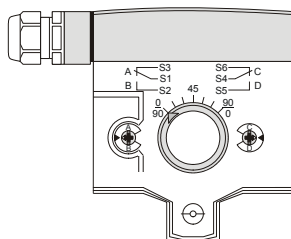


## OPTIONAL ACCESSORIES

The following optional accessory can be ordered separately.

### Auxiliary Switch Kit

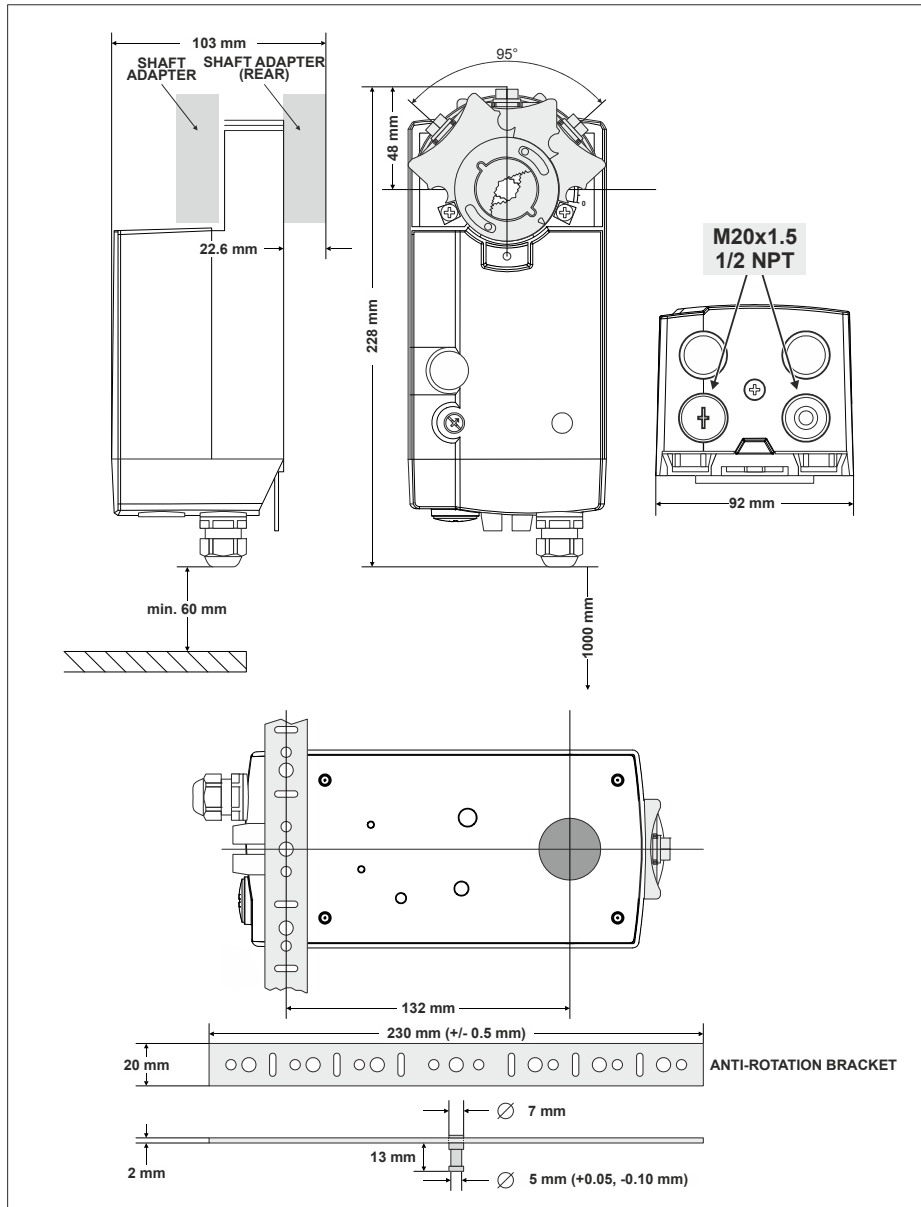
The auxiliary switches are field-installable parts providing two SPDT freely-adjustable switches.  
Order no.: SW2



## SPARE PARTS

There are no spare parts available.

## DIMENSIONS



**Honeywell**

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