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Keeping the World Flowing
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# Noah SA Range

Compact part-turn electric actuators

**Highly compact part-turn electric actuators designed to provide reliable valve control in limited space industrial applications.**




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## Rotork Group

Rotork is a market-leading global provider of mission-critical flow control and instrumentation solutions for the industrial actuation and flow control markets. These include oil and gas, water and wastewater, power, chemical, process and industrial applications.

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- Product range with solutions to suit every application
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- We have innovative research and development centers throughout the world

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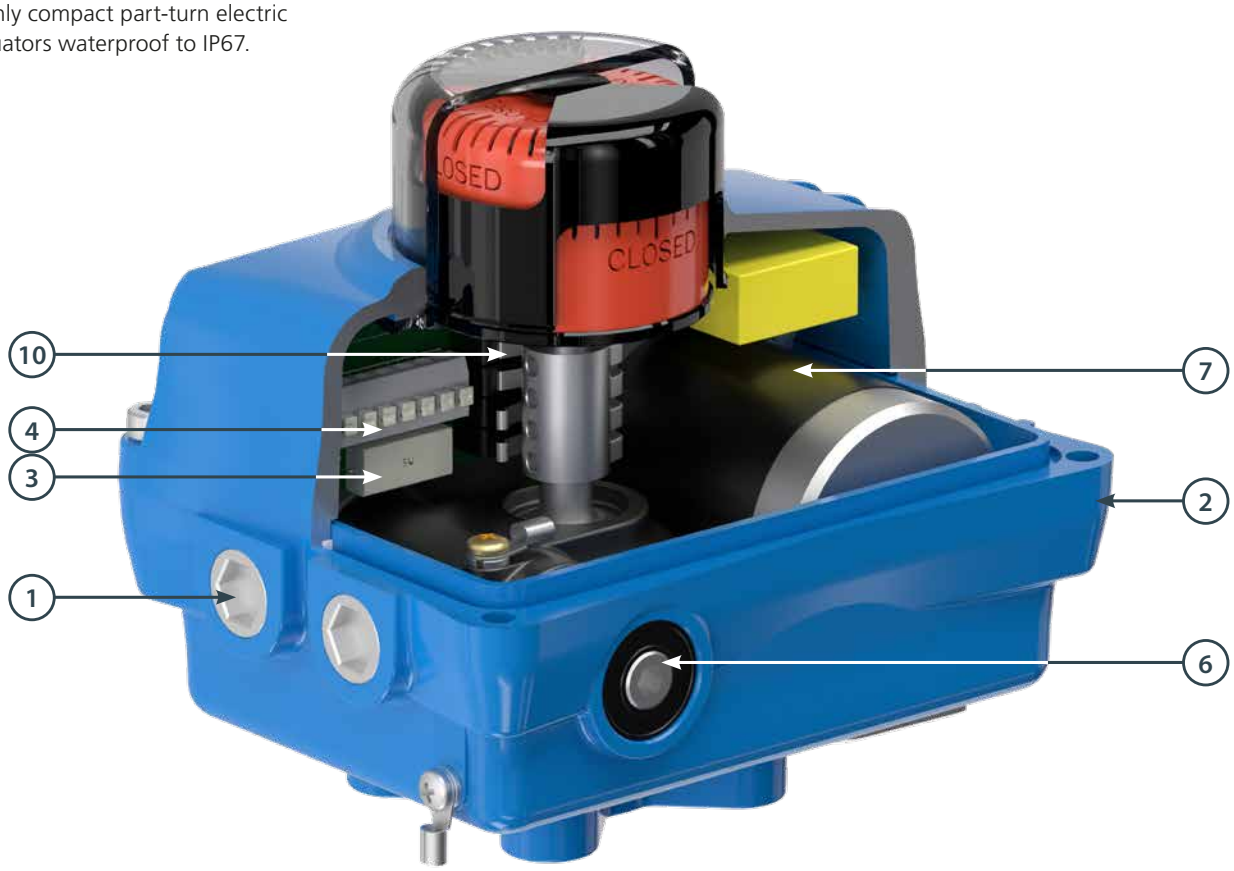
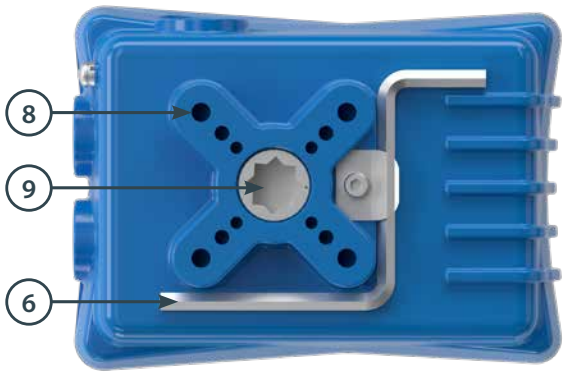
## Contents

## Noah SA

Highly compact part-turn electric actuators waterproof to IP67.




# Inside the Noah SA Actuator

### 1. Cable entry

Standard Specification: 2-PF ½"

Optional: M20 x Pitch 1.5, NPT ½"

### 2. Outer case

The aluminum alloy casting is oxide film treated then powder coated (Polyester, TGIC-Free) to provide the best corrosion protection performance in any environment.

Optional - Explosionproof: Exd IIB T4 (except SA003 model)

### 3. Internal heater

The built-in internal heater prevents condensation and moisture forming inside the actuator to protect the internal components.

### 4. Terminal block

The terminal block is WAGO-structured allowing for simple wiring and is highly resistant to vibration and corrosion.

### 5. Position indicator

An LED lamp within the indicator illuminates the cover when Full Open and Full Close operations are completed. The standard SA features a domed position indicator cover while the explosionproof version uses a highly robust flat design suitable for explosionproof certification.

### 6. Manual operation

The SA range allows manual drive operation by inserting the included handle (attached on the base of the actuator) into the side of the actuator as shown below and rotating clockwise or anti-clockwise to manually operate the actuator.

### 7. Motor

Supply voltages for customer selection include 1-phase (110/220 VAC) and 24 VDC. Noah SA range actuators include a built-in thermal protector to protect the motor in case of motor overload.

### 8. Base

Mounting dimensions to ISO5211 standard, facilitating direct assembly to valves and dampers

Standard specifications - F03, F05, F07

### 9. Output shaft / valve stem connection

The SA range includes a standard valve stem connection with 14x14, with optional 11x11 and 9x9 inserts available.

Note: SA003 : 11x11, 9x9 only

### 10. Limit switch

A built-in mechanical cam-type limit switch is included which accurately controls the position of valves and rotating devices. The simple design and structure allows for easy adjustment.

## Standard specifications

| | |
|---|---|
| **Waterproof rating** | Waterproof ingress protection IP67 |
| **Operating temperature range** | Tamb -20 to 70 °C (-4 to +158 °F) |
| **Power supply** | 110 / 220 VAC 50/60 Hz / AC/DC 24 V |
| **Indicator** | Dome type (built-in LED) |
| **Limit switch** | 2ea Open/Close + 2ea Open/Close (250 VAC) Non-voltage contacts |
| **Travel angle** | 0~90° |
| **Manual override** | Using a hex wrench (6 mm hex) |
| **Cable entries** | 2-PF ½" (Options: 2-M20 x Pitch 1.5, 2-NPT ½") |
| **Heater** | 2×3 W |
| **Case material** | Aluminium |
| **Lubricant** | Shell Gadus S2 V220 2 |
| **Surface treatment** | Anodising |
| **Standard paint finish** | Polyester powder coating (TGIC-free) |

## Performance data

| Model | Options | Torque | | Operating time (90°/sec) | | Motor rating (W) | Rated current (A) 60 Hz | | | | Duty cycle | Number of handle turns | Weight | | Valve application range (10K) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1-phase (AC) | | | DC | | | | | |
| | | Nm | lbf.ft | 50 Hz | 60 Hz | DC motor | 24 V | 110 V | 220 V | 24 V | S2 (min) | | kg | lbs | |
| SA003 | ON-OFF | 30 | 22 | 17 | 15 | 25 | 1 | 0.4 | 0.16 | 1.4 | 15 | 7.5 | 1.7 | 3.7 | 2way Screw Ball Valve : ~25A 3way Screw Ball Valve: ~ 20A |
| | | 20 | 15 | 9 | - | 25 | 1 | 0.4 | 0.16 | 1.4 | 15 | 7.5 | 1.7 | 3.7 | 2way Screw Ball Valve : ~20A 3way Screw Ball Valve: ~15A |

## Optional extras

| | |
|---|---|
| **AC24V** | Control board for 24 VAC power supply |

## Standard specifications

| | |
|---|---|
| **Waterproof rating** | Waterproof ingress protection IP67 |
| **Operating temperature range** | Tamb -20 to 70 °C (-4 to +158 °F) |
| **Power supply** | 110 / 220 VAC 50/60 Hz / AC/DC 24 V |
| **Indicator** | Dome type (built-in LED) |
| **Limit switch** | 2ea Open/Close+ 2ea Open/Close (250 VAC) |
| **Travel angle** | 90° ±5° (up to 270° when extended) |
| **Self-locking** | Prevention of reverse rotation by two-stage worm gear |
| **Manual override** | Using an L-shaped wrench (6 mm hex) |
| **Cable entries** | 2-PF ½" (Options: 2-M20 x Pitch 1.5, 2-NPT ½") |
| **Heater** | 5 W |
| **Case material** | Aluminium |
| **Lubricant** | Shell Gadus S2 V220 2 |
| **Surface treatment** | Anodising |
| **Standard paint finish** | Polyester powder coating (TGIC-free) |

## Performance data

| Model | Options | Torque | | Operating time (90°/sec) | | Motor rating (W) | Rated current (A) 60Hz | | | | Duty cycle | Number of handle turns | Weight | | Valve application range (10K) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1-phase (AC) | | | DC | | | | | |
| | | Nm | lbf.ft | 50 Hz | 60 Hz | DC motor | 24 V | 110 V | 220 V | 24 V | S2 (min) | | kg | lbs | |
| **SA005** | ON-OFF | 50 | 37 | 17 | 14 | 6 | 1.8 | 0.35 | 0.23 | 1.8 | 15 | 6 | 2.8 | 6.2 | BFV: ~65A Ball Valve : ~ 32A |
| **SA009** | ON-OFF | 90 | 66 | 32 | 26 | 6 | 2.1 | 0.35 | 0.25 | 2.1 | 15 | 4.5 | 2.8 | 6.2 | BFV: ~100A Ball Valve : ~50A |

## Optional extras

| | |
|---|---|
| **AC24V** | Control board for 24 VAC power supply |

## Standard specifications

| | |
|---|---|
| **Waterproof rating** | Waterproof ingress protection IP67 |
| **Operating temperature range** | Tamb -20 to +70 °C (-4 to +158 °F) |
| **Power supply** | 110 / 220 VAC 50/60 Hz / AC/DC 24 V |
| **Indicator** | Dome type (built-in LED) |
| **Limit switch** | 2ea Open/Close + 2ea Open/Close (250 VAC) non-voltage contacts |
| **Travel angle** | 90° ±5° (up to 270° when extended) |
| **Self-locking** | Prevention of reverse rotation by two-stage worm gear |
| **Manual override** | Using an L-shaped wrench (6 mm hex) |
| **Cable entries** | 2-PF ½" (Options: 2-M20 x Pitch 1.5, 2-NPT ½") |
| **Heater** | 5 W |
| **Case material** | Aluminium |
| **Lubricant** | Shell Gadus S2 V220 2 |
| **Standard paint finish** | Anodising |

## Performance data

| Model | Options | Torque | | Operating time (90°/sec) | | Motor rating (W) | Rated current (A) 60Hz | | | | Duty cycle | Number of handle turns | Weight | | Valve application range (10K) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1-phase (AC) | | | DC | | | | | |
| | | Nm | lbf.ft | 50 Hz | 60 Hz | DC motor | 24 V | 110 V | 220 V | 24 V | S2 (min) | | kg | lbs | |
| SA005L | PCU | 50 | 37 | 17 | 14 | 25 | 1.8 | 0.35 | 0.23 | 1.8 | 15 | 6 | 3.2 | 7.1 | BFV: ~65A BV: ~32A |
| | SCP | 50 | 37 | 8 | 8 | 25 | - | 0.8 | 0.51 | 2.25 | | 6 | 4.3 | 9.5 | |
| SA009L | PCU | 90 | 66 | 32 | 26 | 25 | 2.1 | 0.35 | 0.25 | 2.1 | 15 | 4.5 | 3.2 | 7.1 | BFV: ~100A BV: ~50A |
| | SCP | 90 | 66 | 13 | 15 | 25 | - | 0.8 | 0.51 | 2.25 | | 4.5 | 4.3 | 9.5 | |

## Optional extras

| | |
|---|---|
| **AC24V** | Control board for 24 VAC power supply |
| **Potentiometer Unit (PIU)** | Outputs actuator position as a 0-1 kΩ signal |
| **Proportional Control Unit (PCU)** | Used to control the actuator so that the opening/closing degree of the valve is proportional to the input signal. |
| **Current Position Transmitter (CPT)** | Used when changing the resistance value of a potentio meter directly connected to the actuator to a current value and using the position of the actuator as the current value. |
| **Super Capacitor (SCP)** | A super capacitor device is built into the actuator so that when power is cut off, it operates in the open/closed/stop position set by the user. |

## Standard specifications

| | |
|---|---|
| **Waterproof, explosion-proof rating** | Waterproof ingress protection IP67<br>Explosionproof Ex d IIB T6 |
| **Operating temperature range** | Tamb -20 to +55 °C (-4 to +131 °F) |
| **Power supply** | 110 / 220 VAC 50/60 Hz / AC/DC 24 V |
| **Indicator** | Flat type |
| **Limit switch** | 2ea Open/Close + 2ea Open/Close (250 VAC) non-voltage contacts |
| **Travel angle** | 90° ±5° (up to 270° when extended) |
| **Self-locking** | Prevention of reverse rotation by two-stage worm gear |
| **Manual override** | Using an L-shaped wrench (6 mm hex) |
| **Cable entries** | 2-PF ½" (Options: 2-M20 x Pitch 1.5, 2-NPT ½") |
| **Heater** | 5 W |
| **Case material** | Aluminium |
| **Lubricant** | Shell Gadus S2 V220 2 |
| **Surface treatment** | Anodising |
| **Standard paint finish** | Polyester powder coating (TGIC-free) |

## Performance data

| Model | Options | Torque | | Operating time (90°/sec) | | Motor rating (W) | Rated current (A) 60Hz | | | | Duty cycle | Number of handle turns | Weight | | Valve application range (10K) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1-phase (AC) | | | DC | | | | | |
| | | Nm | lbf.ft | 50 Hz | 60 Hz | DC motor | 24 V | 110 V | 220 V | 24 V | S2 (min) | | kg | lbs | |
| **SA05X** | EXP | 50 | 37 | 17 | 14 | 6 | 1.8 | 0.35 | 0.23 | 1.8 | 15 | 6 | 5 | 11.0 | BFV: ~65A<br>BV: ~32A |
| **SA09X** | EXP | 90 | 66 | 32 | 26 | 6 | 2.1 | 0.35 | 0.25 | 2.1 | 15 | 4.5 | 5 | 11.0 | BFV: ~100A<br>BV: ~50A |

## Optional extras

| | |
|---|---|
| **AC24V** | Control board for 24 VAC power supply |
| **Potentiometer Unit (PIU)** | Outputs actuator position as a 0-1 kΩ signal |
| **Proportional Control Unit (PCU)** | Used to control the actuator so that the opening/closing degree of the valve is proportional to the input signal. |
| **Current Position Transmitter (CPT)** | Used when changing the resistance value of a potentio meter directly connected to the drive shaft into a current value and using the position of the actuator as the current value. |
| **Super Capacitor (SCP)** | A super capacitor device is built into the actuator so that when power is cut off, it operates in the open/closed/stop position set by the user. |

## Standard specifications

| | |
|---|---|
| **Input power** | 90~230 VAC ≤ 10%, 50/60 Hz 24 VDC/ 24 VAC<br>Input power must match motor ratings |
| **Command signal** | 4-20 mA DC (Default), 0-5 VDC, 0-10 VDC, 1-5 VDC, 2-10 VDC |
| **Deadband** | 1~7.5% (1 scale 0.5%) |
| **Output signal** | 4-20 mA DC |
| **Load resistance** | 7,500 Ω |
| **Terminal block** | YW 396 2P(3EA), 3P, 5P terminal block |
| **Status display method** | Power (blue), Fault (yellow), Open (red). Close (Green) LED lamp |
| **Manual override** | Using an L-shaped wrench (6 mm hex) |
| **Output terminal** | 2-PF ½" (Options: 2-M20 x Pitch 1.5, 2-NPT ½") |
| **Heater** | 5 W |
| **Parameters** | Deadband: 0.2 mA<br>Modulating starting time: 1 sec |
| **Resolution** | At least 1/1000" |
| **Operating temperature range** | Tamb -14 to +60 °C (+6.8 to +140 °F) |
| **Maximum ambient humidity** | 90% RH max. (non-condensing) |
| **Insulation strength** | 1,500 VAC 1 min. |
| **Insulation resistance** | 500 VDC 30M2 min. |

### Proportional Control Unit (PCU) Actuator

The PCU is used to control the opening of a valve according to the user's input signal. It can be used to control pressure, flow rate, temperature, and water level in pipes.

Noah SA PCU actuators can use a variety of input power supplies which can be selected from: 4-20 mA, 0-5 VDC, 0-10 VDC, 1-5 VDC, 2-10 VDC. Output value is 4-20 mA.

## Performance data

| Model | Options | Torque | | Operating time (90°/sec) | | Motor rating (W) | Rated current (A) 60Hz | | | | Number of handle turns | Weight | | Valve application range (10K) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1-phase (AC) | | | DC | | | | |
| | | Nm | lbf.ft | 50 Hz | 60 Hz | DC motor | 24 V | 110 V | 220 V | 24 V | | kg | lbs | |
| **SA005L** | PCU | 50 | 37 | 17 | 14 | 1.8 | 1.8 | 0.35 | 0.23 | 1.8 | 6 | 3.2 | 7.1 | BFV: ~65A<br>BV: ~32A |
| **SA005L** | PCU | 90 | 66 | 32 | 26 | 2.0 | - | 0.8 | 0.51 | 2.25 | 6 | 4.3 | 9.5 | BFV: ~100A<br>BV: ~50A |

## Optional extras

| | |
|---|---|
| **AC24V** | Control board for 24 VAC power supply |
| **EXP** | Output the actuator position signal as a resistance value 1 kg |

### PCU board

The Proportional Control Unit (PCU) operates until the current open and close status becomes the same as the value set by the external control system. It provides the function of outputting and transmitting a 4-20 mA signal in proportion to the current position status (0-100%).

### Deadband

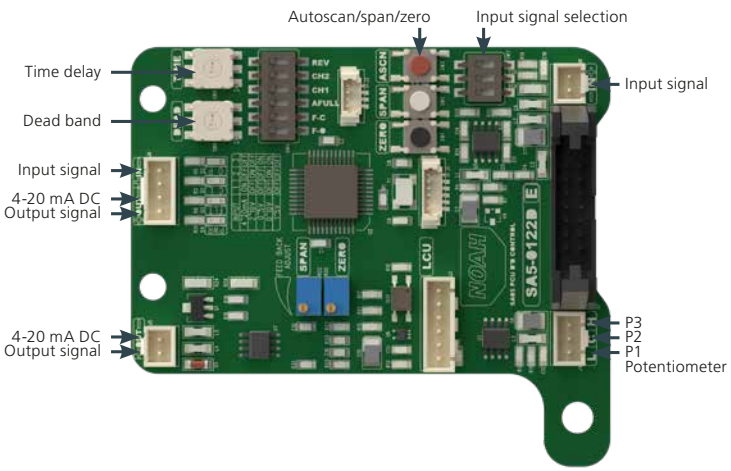
The actuator tries to stop at the exact position based on the set value, but to prevent hunting, a range of dead zones is set which allow the actuator to repeatedly open and close while trying to reach the exact position due to the mechanical inertia of the motor or valve. (±0.3 mA)

### Delay time

The input signal may be affected by momentary noise or external frequencies. The delay time is set (min 0.5 sec) to prevent hunting phenomenon caused by operating with the same signal input for a certain period of time.

### Auto scan

The auto scan function automatically operates from the fully closed position to the fully open position with a 2-second press, and saves each position.




### Power board

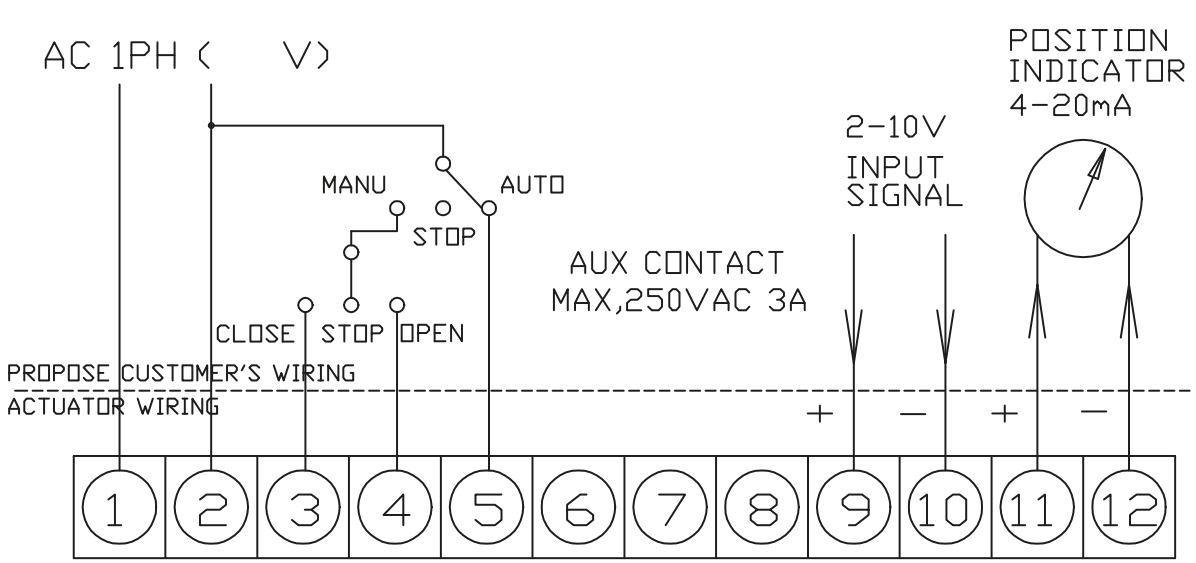
This board converts power from an external source for use by the actuator to operate the PCU board.

### Potentiometer

Responsible for the resolution of the actuator by using 0-1 kΩ and plays a role in recognising the current position value. (Optional 135 Ω)

## Standard wiring diagram

**PCU type standard wiring diagram**



## Standard specifications

| | |
|---|---|
| **Indicator** | Dome type (no LED) |
| **Waterproof rating** | Waterproof ingress protection IP67 |
| **Operating temperature range** | Tamb -20 to +70 °C (-4 to +158 °F) |
| **Power supply** | 110 VAC / 220 VAC 50/60 Hz / AC/DC 24V |
| **Limit switch** | 2ea Open/Close + 2ea Open/Close (250 VAC) Non-voltage contacts |
| **Travel angle** | 90° ±5° |
| **Self locking** | Prevention of reverse rotation by two-stage worm gear |
| **Manual override** | Using an L-shaped wrench (6 mm hex) |
| **Cable entries** | Cable line provided |
| **Heater** | 5 W |
| **Case material** | Aluminium |
| **Lubricant** | Shell Gadus S2 V220 2 |
| **Surface treatment** | Anodising |
| **Standard stamp** | Polyester powder coating (TGIC-free) |

### Super Capacitor (SCP) actuator

The SCP model can be driven to a position set by the user using the built-in super capacitor when the power is turned off. Only one of the driving directions is possible among OPEN/CLOSE/STOP, and the user can set it to the desired position.

When the charging LED lamp blinks, the super capacitor must be charged, and when charging is complete, the charging LED lamp blinks.

## Performance data

| Model | Torque | | Operating time (90°/sec) | Rated current (A) 60Hz | | | | Motor rating (W) | Number of handle turns | Weight | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-Phase (AC) | | | DC | | | | |
| | Nm | lbf.ft | 50 Hz | 24 V | 110 V | 220 V | 24 V | DC motor | | kg | lbs |
| SA005L | 50 | 37 | 8 | 2.25 | 1.2 | 0.8 | 0.51 | 15 | 6 | 4.3 | 9.5 |
| SA005L | 90 | 66 | 13 | 2.25 | 1.2 | 0.8 | 0.51 | 15 | 4.5 | 4.3 | 9.5 |

## Optional extras

| | |
|---|---|
| **EXP** | Explosion proof specification / Exd IB T6 |

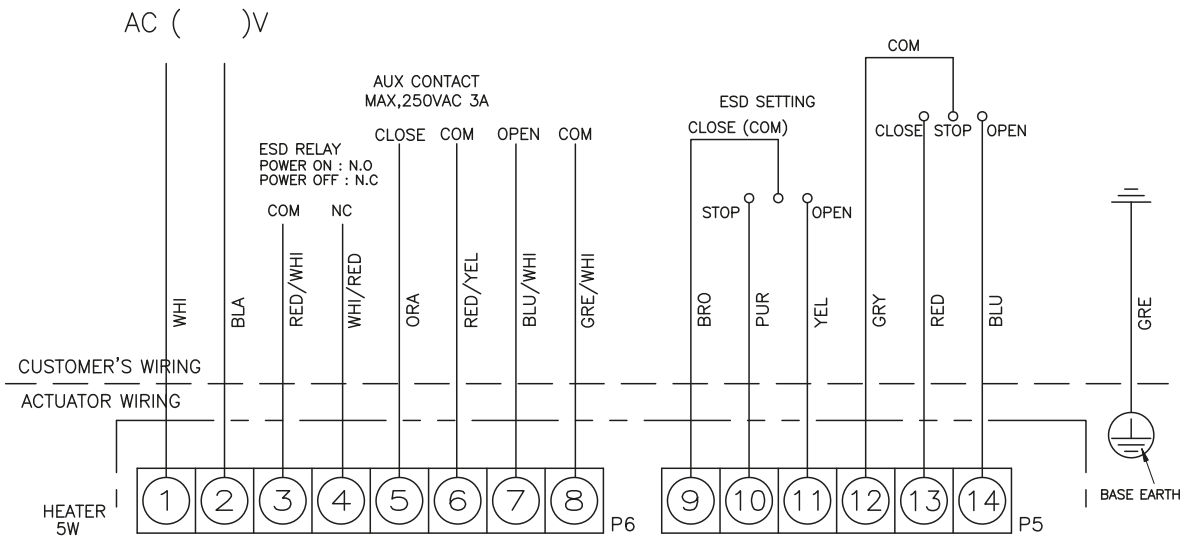
## Internal capacitor specifications

| | | |
|---|---|---|
| **Number of emergency drives** | 18÷ (Open to Close / Close to Open) | |
| **Charging voltage** | 26.5 V | |
| **Charging time** | 24/48 VDC: 2 minutes 15 seconds, 110/220 V: 4 minutes 30 seconds | |
| **Current when charging** | 24 VDC | 2.4 A |
| | 48 VDC | 1.3 A |
| | 110 V | 1 A |
| | 220 V | 0.6 A |

***Recommended for use after buffering. If the buffer is not there, the emergency drive may not work.**

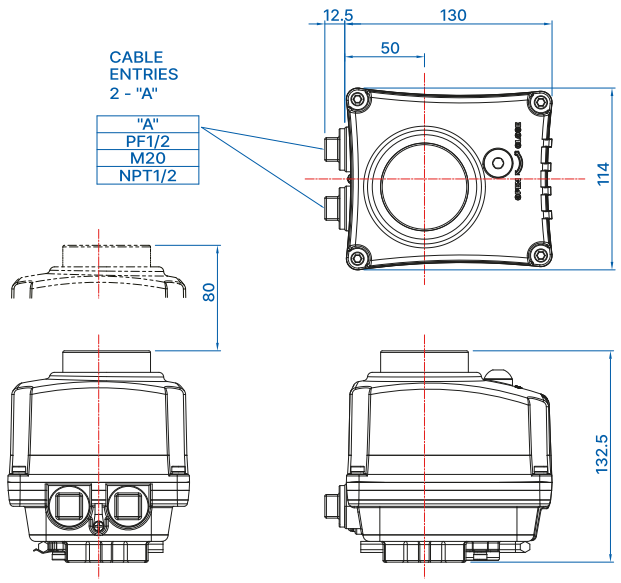
## Standard wiring diagram

**SCP type standard wiring diagram**

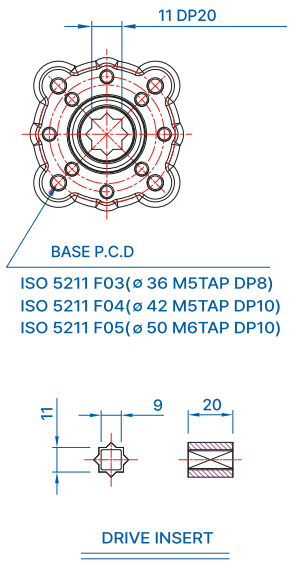


# Dimensional Data

## Noah SA003

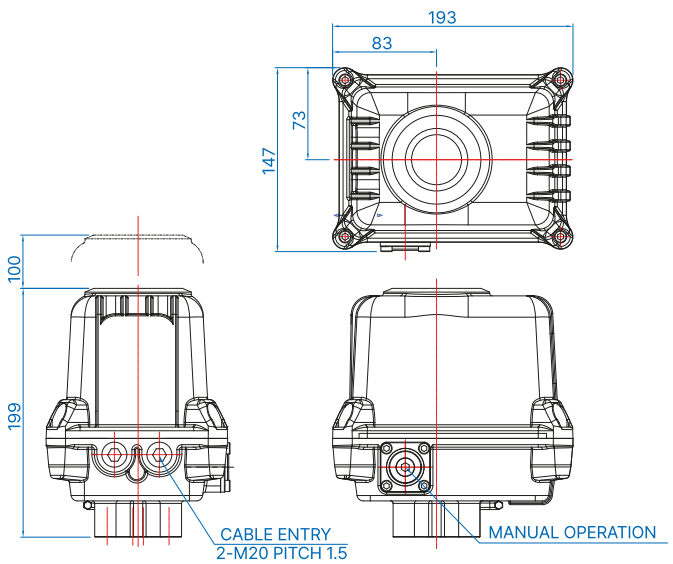



## Base




All dimensions in millimetres

## Noah SA05X, SA09X

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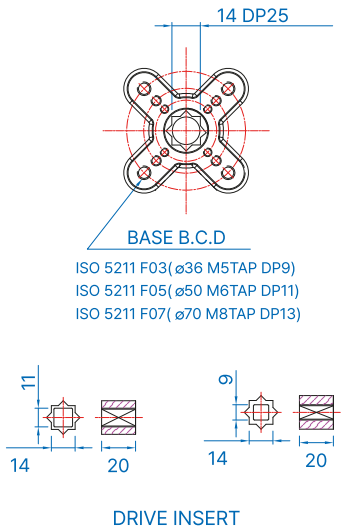
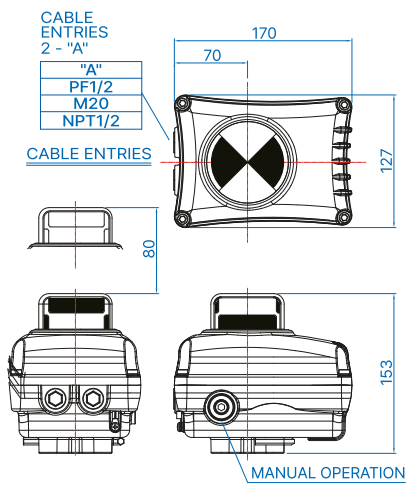


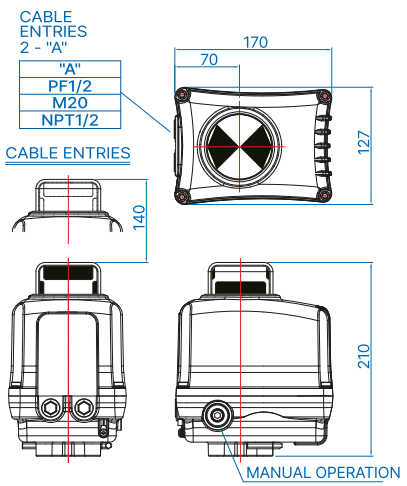

All dimensions in millimetres

# Dimensional Data

## Noah SA005, SA009




## Noah SA005L, SA009L

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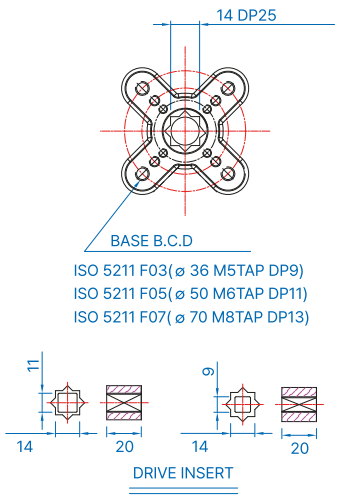
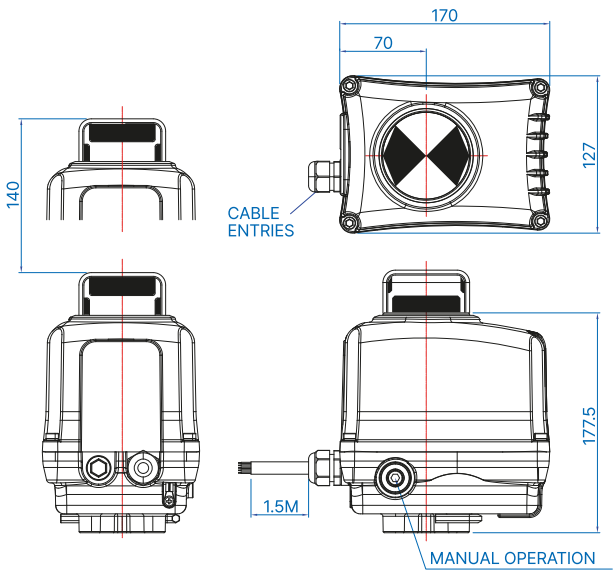



All dimensions in millimetres

## Noah SCP

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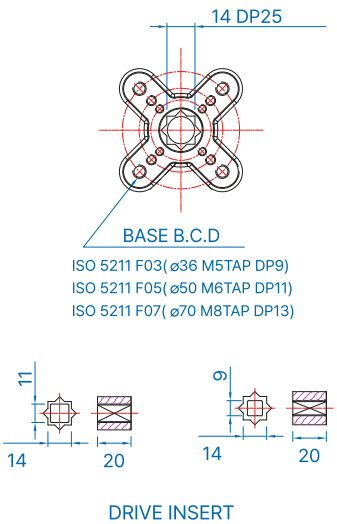


All dimensions in millimetres

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