

# NSO-SFA

## RUGGED CAST DESIGN

### SINGLE AXIS CONTROLLER

#### Construction:

The **TYPE NSO-SFA** single axis vertical mill masterswitch controllers are characterized by their unmatched versatility and rugged construction.

Space saving design, cast aluminum construction, IP56 housing, heavy-duty torsion spring and marine epoxy paint make this controller resistant to abuse and ideally suited for high-duty cycle mill applications and environmentally challenging marine applications.

Your specific control requirements can be accommodated by a variety of standard and custom engineered configurations including directional and speed control of AC/DC drives, electro-hydraulic valves or any other control applications requiring discrete, stepped and digital or analog proportional outputs.

This single axis controller is available with a variety of standard and custom handles and grips with push buttons and levers.

#### Application:

For use on shipboard applications, dredgers and offshore rigs for both above and below deck controlling of cranes, windlasses, engine governors and bow thrusters. The NSO-SFA is also popular on cranes and other material handling equipment in steel mills, foundries and process lines as well as mining vehicles, excavating and logging equipment.

#### Features:

- Compact, versatile design
- Rugged, IP56, cast construction
- Space saving design
- 10 million cycle mechanical operating life
- Rugged 8mm diameter stainless steel handle shaft
- Corrosion resistant components
- Double pole field replaceable contacts
- Direct drive proportional output system

#### Options:

- Maintained or friction held handle
- Large variety of optional handle configurations including: push button, mechanical interlock and rocker switch handles
- Stepped detents up to 7-0-7
- Large selection of proportional outputs including potentiometer, Rotary Differential Transformer (DGO), encoder, 4-20ma, 10V amplifier and CAN bus
- Variety of steel enclosures and pedestals



**NSO-SFA with Mechanical Interlock and PW70 Potentiometer**

# NSO-SFA ORDERING INFORMATION

|                           |  |
|---------------------------|--|
| <b>Drive Arrangement:</b> | Single axis cast housing   |
| <b>Basic Assembly:</b>    | 5.7 [145] handle height off panel, housing and mounting gasket supplied standard                 |
| <b>Handle:</b>            | 2 Piece (standard)   |
| <b>Handle Action:</b>     | Spring return (standard)   |
| <b>Output:</b>            | Proportional, discrete   |
| <b>Output Devices:</b>    | Potentiometer, Rotary Differential Transformer (DGO), encoder, 4-20mA, 10V amplifier and CAN bus |

## NSO-SFA Technical Data

### Mechanical:

- **Mechanical Life:**  
10 million cycles for maintained action
- **Gear Ratio:** 3.3:1
- **Detented Positions:**  
0° neutral & 1-0-1 to 7-0-7
- **Handle Travel:** ±42° max.
- **Potentiometer Rotation:**  
±140° (other angles available – consult factory)

### Environmental:

- **Operating Temperature:** -25 to +60° C
- **Storage temperature:** -40 to +60° C
- **Protection above the panel:** IP56 (above the panel)

### Mechanical Options:

- **Handle:**  
See handle section for a selection of handle options
- **Shaft Length:**  
Consult factory for special shaft length requirements
- **Handle Action:**  
Maintained, Friction Brake
- **Gates:**  
Consult factory for special gate requirements

Please consult factory for other available options not listed.

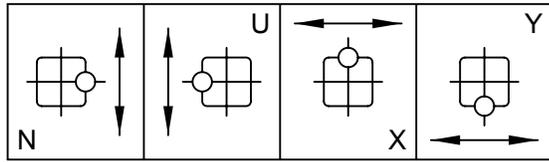
### Electrical:

- **Contacts:**  
Up to 10 double pole snap-in blocks (20 circuits) furnished standard  
Consult factory if additional circuits are required
- **Terminals:**  
M3.5x0.5 machine screws with saddle clamps
- **Wire size:** No. 16 AWG maximum
- **AC Rating:** AC continuous: 16 amps @ 240 volts  
AC resistive: 6 amps @ 240 volts  
AC inductive: 6 amps @ 240 volts  
DC resistive: 1.7 amps @ 42 volts max  
DC inductive: 1.1 amps @ 42 volts max
- **Electro Mechanical Life:**  
Resistive: 1 million operations @ 8 amps 240V  
10 million operations @ 2 amps 240V  
Inductive: 1 million operations @ 6 amps 240V  
10 million operations @ 2 amps 240V
- **Approvals:** CSA file number: 15040  
UL recognized File number: E106738(M)

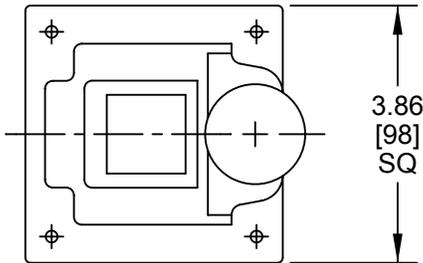
### Electrical Options:

- **Potentiometers:** 0.5 watt 5K 3-wire or 10K 4-wire center tap, 5 million revolutions  
  
Connections: 6 position terminal block with #6 screw terminal  
Please consult factory for special potentiometer requirements
- **Rotary Differential Transformers:**  
115/50 VAC (DGO-1)  
220/50 VAC (DGO-2)  
115/30/30 VAC (DGO-3)
- **Electronics:** Encoders, 4-20mA, pot amplifiers, CAN bus and motor control  
Connections: Varies with product

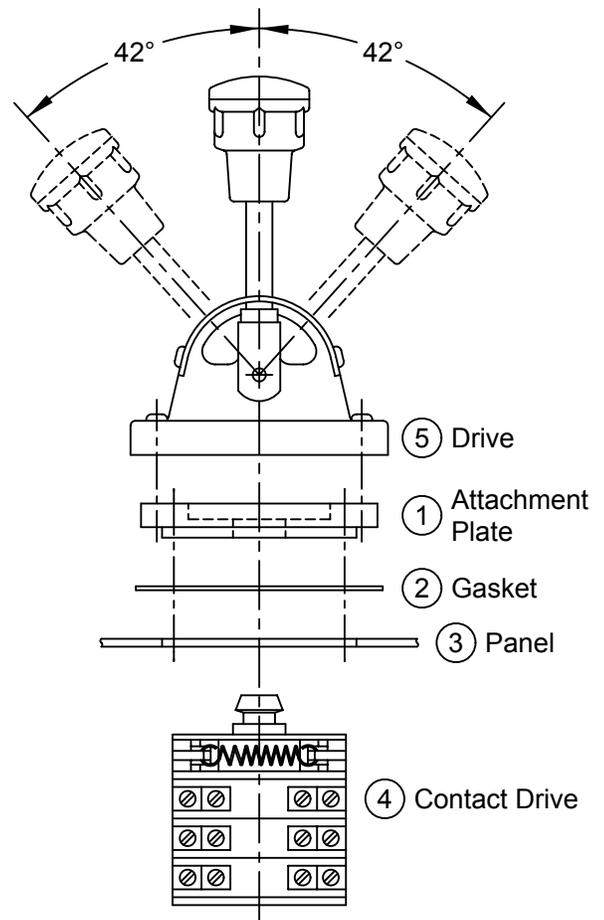
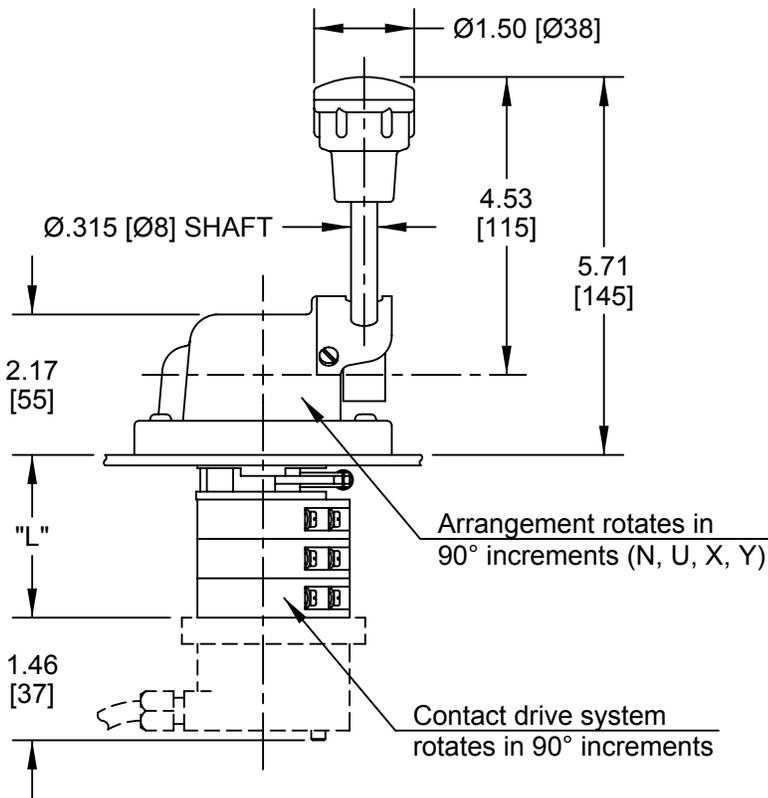
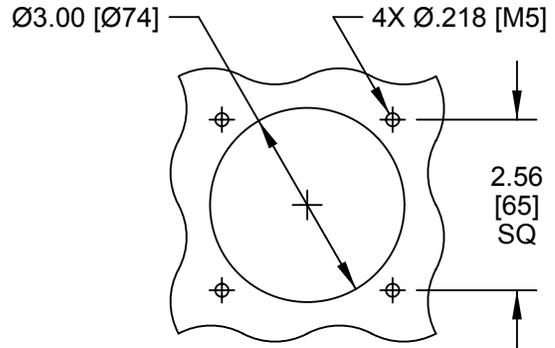
# NSO-SFA DIMENSIONS



Arrangement: Important if contact sequence is not symmetrical.



## PANEL MOUNTING:



### Mounting:

Mount attachment plate (1) and gasket (2) with (4) 10-32 screws to the panel (3). Mount the contact drive system (4) with (4) screws onto the attachment plate. Mount the drive (5) with (4) screws onto the attachment plate.

| Contact Blocks: | 1            | 2            | 3            | 4            | 5             | 6             | 7             | 8             | 9             | 10            |
|-----------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Length "L":     | 1.57<br>[40] | 2.17<br>[55] | 2.76<br>[70] | 3.35<br>[85] | 3.93<br>[100] | 4.52<br>[115] | 5.12<br>[130] | 5.71<br>[145] | 6.30<br>[160] | 6.89<br>[175] |

### Handle wiring:

Two wires max. (one push button)

**J.R. MERRITT**   
**CONTROLS, INC.**

Stratford, CT • 1-800-333-5762 • [www.jrmerritt.com](http://www.jrmerritt.com)