

# 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 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.

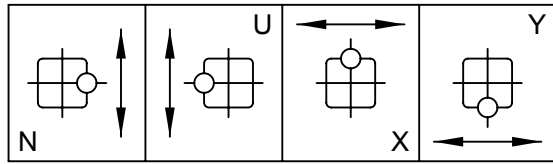
### Electrical:

- **Contacts:**  
Up to 10 double pole snap-in blocks (20 circuits) furnished standard  
Consult factory if additional circuits are required
- **Terminals:**  
Captive saddle clamps
- **Wire size:** 12 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)

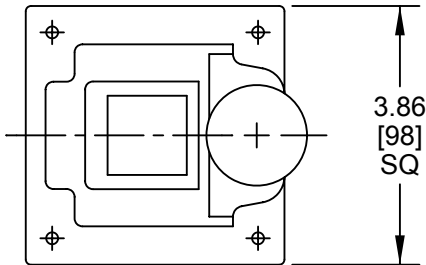
### Electrical Options:

- **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

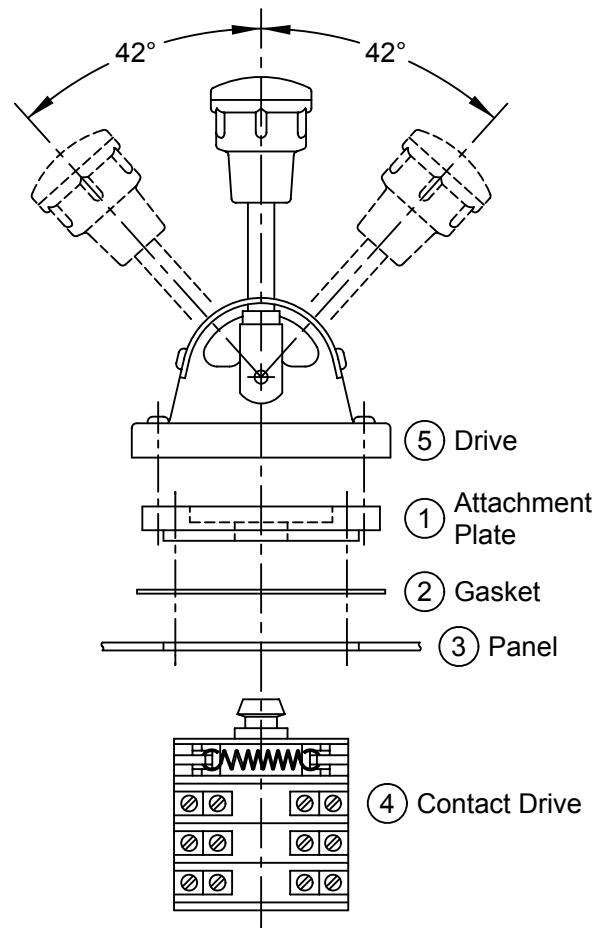
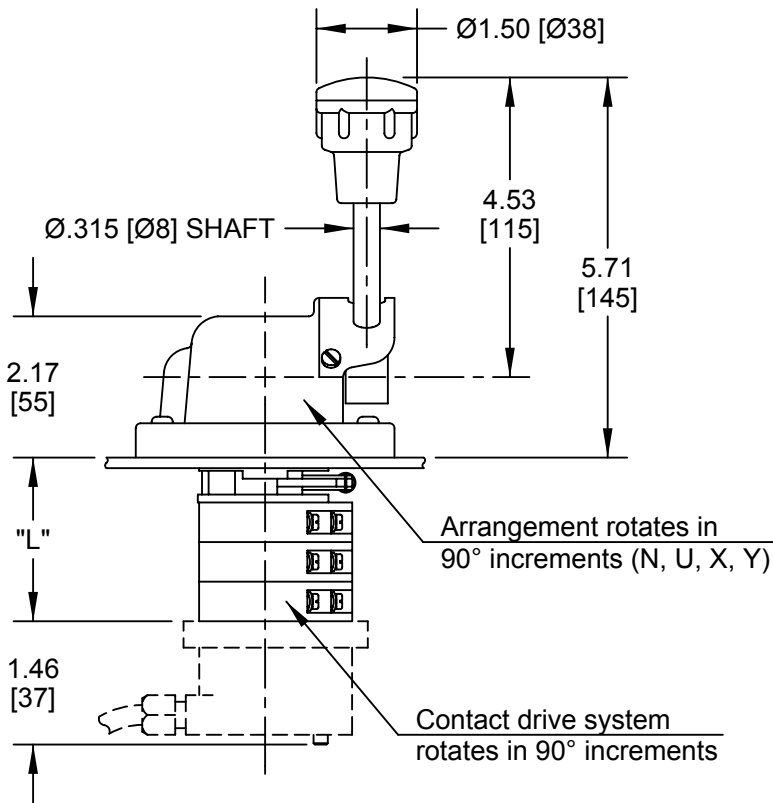
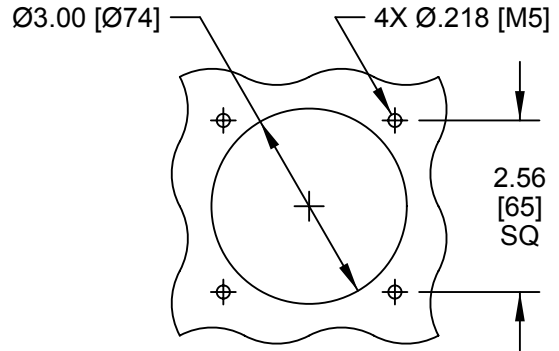
# NSO-SFA DIMENSIONS



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 [40]	2.17 [55]	2.76 [70]	3.35 [85]	3.93 [100]	4.52 [115]	5.12 [130]	5.71 [145]	6.30 [160]	6.89 [175]

### Handle wiring:

Two wires max. (one push button)