

VNSO MILL DUTY JOYSTICK CONTROLLER

Application:

The type **VNSO** Joystick controllers are characterized by their unmatched versatility and rugged construction. They are actively providing directional and speed control of AC/DC Drives, Electro-Hydraulics, or any other devices requiring a manually selectable proportional output. Some applications include: Cranes, Lifts, Hoists, Mobile Transporters, Mining Vehicles, Excavating and Logging Equipment.

Features:

- **Rugged Construction:** Nickel Chromium gimbal mechanism, case hardened bearings and operation shaft.
- **Mechanical Life:** 20 million cycles.
- **Design Flexibility:** Contact and potentiometer drive locations can be selected to accommodate available panel space. Tandem drive arrangement available for mounting at end or at base of controller.
- **Multi-Axis Control:** 1 and 2 axis controllers for separate or simultaneous operation. Both standard and custom switching patterns available.
- **Handles:** Variety of handle styles and handle operated deadman functions.
- **Precise Step Control:** Up to 7-0-7 individually detented steps in each axis.
- **Contacts:** (10) Snap in 16A 240VAC double pole field replaceable contacts. Type V3 form C, DC, and gold low voltage type contacts available.
- **Potentiometers:** 0.5 watt 5 million revolution conductive plastic potentiometers furnished standard, other types available upon request.
- **Electronics:**
 - ESS-420: 4-20 milli-amp 2 wire transmitter.
 - ESS0.10.10: 0-10 and $\pm 10V$ amplifiers.
 - Absolute Encoder: 8 Bit 24VDC gray code.
 - PFC and PFC/CR Proportional Feathering Control electronic amplifiers for operation of Electro-Hydraulic Proportional Valves.
- **Enclosures:** Variety of standard and custom steel and fiberglass enclosures available; NEMA 1, 3R, 12 and 13.



VNSO ORDERING INFORMATION

Basic Assembly:	5 1/2" long shaft, 2-piece handle, boot and plastic mounting plate supplied standard.
Contact Drive Arrangements:	See VNSO dimensions for selecting contact drive mounting arrangements.
Handle:	Reference handle section for handle options and custom grips.
Standard Shaft Length:	4 1/8, 5 1/2, 7 1/8 (measured from mounting surface to top of handle.)
Contacts:	Each contact block supplied with 2 SPST contacts.
Output Devices:	
Potentiometers:	0.5 watt 5 million revolutions furnished standard. Specify resistance and type required (Consult factory for custom requirements).
Electronics:	See Proportional Feathering Control (P.F.C.) and PFC/CR electronics for ordering information.
Encoder:	See OGR8G-M1 8 Bit gray code absolute encoder information sheet.
Transformer:	See DGO 1, 2 & 3 Rotary Inductive Differential Transformer information sheet.

VNSO TECHNICAL DATA

MECHANICAL:

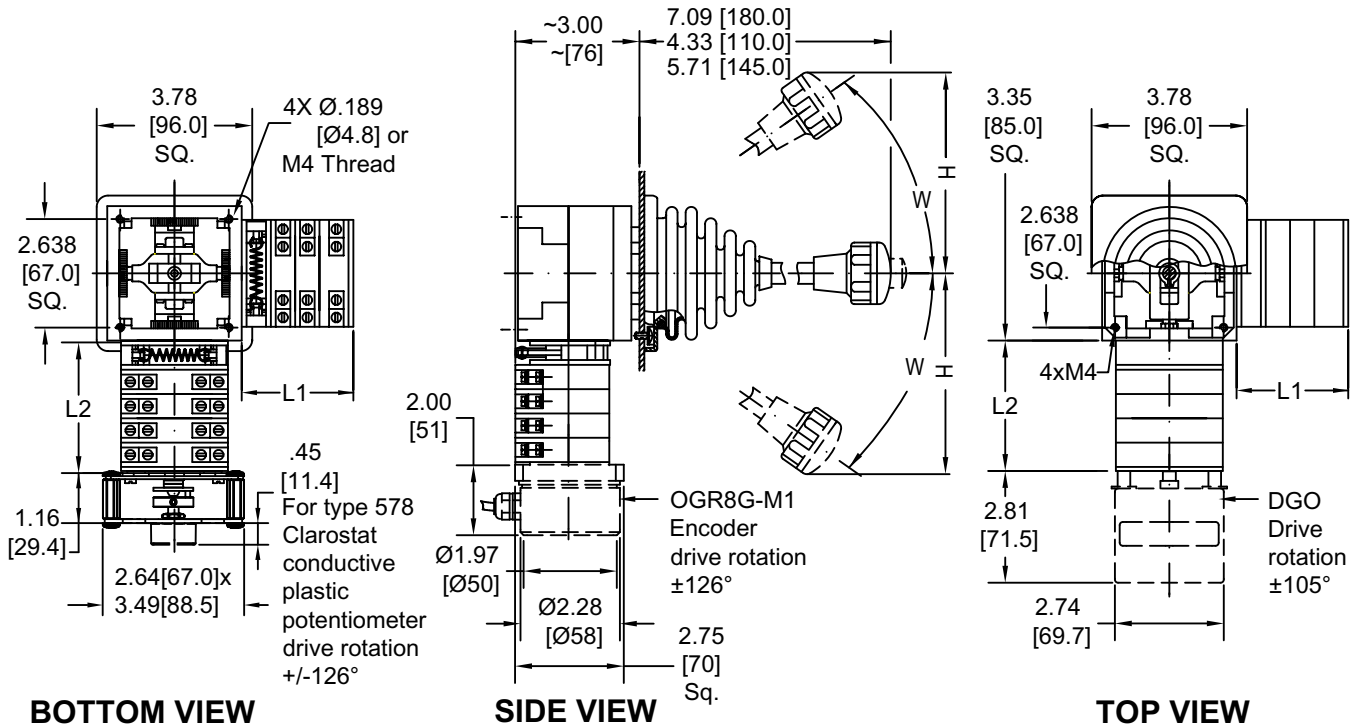
- **Operating Temperature:** -25^o-+70^oC
- **Detented Positions:** Up to 7-0-7 Steps
- **Gear Ratio:** 3.5:1
VNSO Handle deflection $\pm 36^{\circ}$, cams and potentiometers $\pm 126^{\circ}$
(Other angles available consult factory)
- **Mechanical Life:**
20 million plus operations

CONSULT FACTORY FOR: LOW VOLTAGE GOLD,
V3 FORM C, AND DC RATED CONTACTS)

ELECTRICAL:

- **Contacts:**
Up to 10 double pole snap in blocks
i.e. 20 circuits for each axis.
(Consult factory if additional circuits required).
- **Rating AC:**
 - a) AC continuous 16 amps @ 240V
 - b) AC resistive 8 amps @ 240V
 - c) AC inductive 6 amps @ 240V
 - d) 1 H.P. 120VAC 1 phase
 - e) 2 H.P. 240VAC 1 phase
- **Max. Switching Capacity:**
Making - 100 amps
Breaking - (0.7PF) 80 amps 240V
- **Electro-Mechanical Life:**
Breaking AC current
 - a) Resistive: 1 million operations @ 8 amps 240V
10 million operations @ 2 amps 240V
 - b) Inductive: 1 million operations @ 6 amps 240V
10 million operations @ 2 amps 240V
- **Approvals:**
CSA file number: 15040
UL Recognized file number: E106738 (M)

VNSO DIMENSIONS

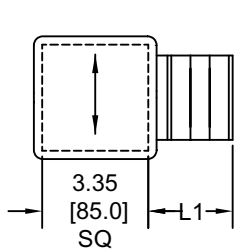


BOTTOM VIEW

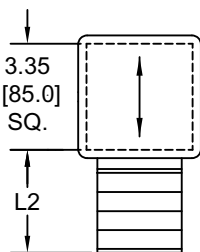
SIDE VIEW

TOP VIEW

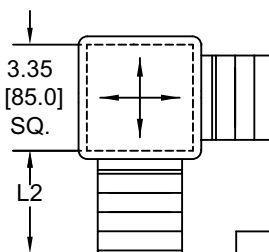
VNSO-E



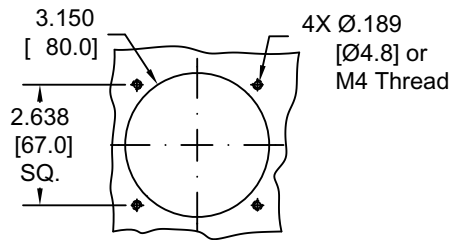
VNSO-G



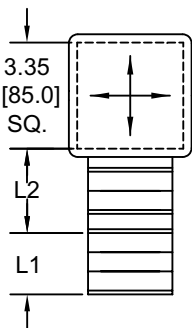
VNSO-V



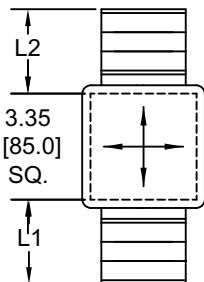
MOUNTING DETAIL



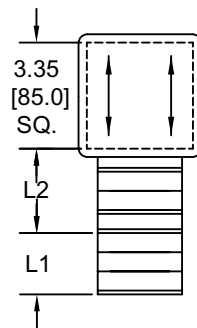
VNSO-H



VNSO-M



VNSO-GG



Detent	W	Handle angle and deflection shown with standard handle H		
		in 4.125 mm [110]	5.5 [145]	7.125 [180]
1-0-1	13°	1.67 [42]	1.98 [50]	2.29 [58]
2-0-2	21°	2.21 [56]	2.70 [69]	3.20 [81]
3-0-3	30°	2.76 [70]	3.45 [88]	4.14 [105]
4-0-4	29°	2.70 [69]	3.37 [86]	4.04 [103]
5-0-5	35°	3.04 [77]	3.83 [97]	4.62 [117]
6-0-6	36°	3.09 [79]	3.90 [99]	4.71 [120]
7-0-7	38°	3.20 [81]	4.05 [103]	4.90 [124]

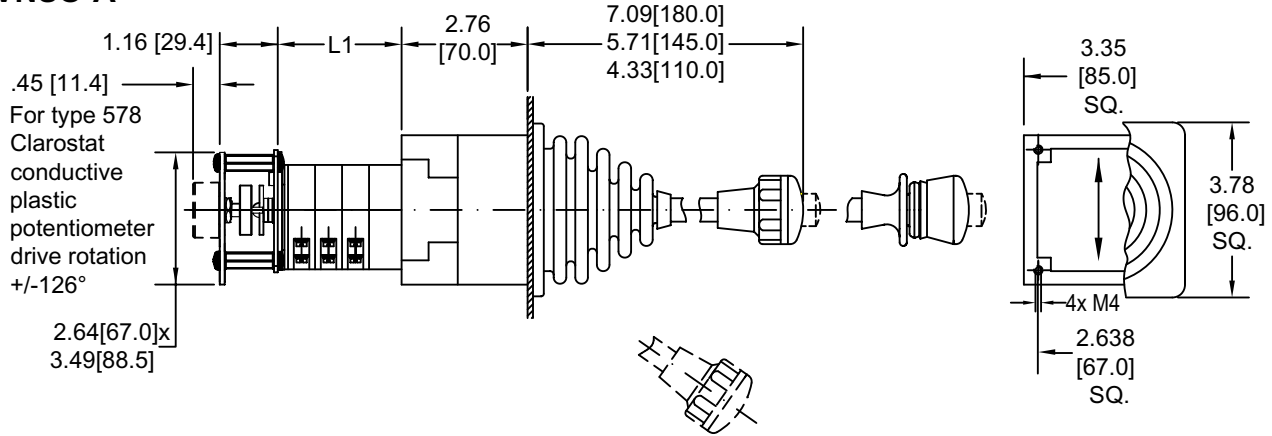
(in)	1.38	1.97	2.56	3.15	3.74	4.34	4.92	5.51	6.10	6.69
Dimension L1 or L2 (mm)	[35]	[50]	[65]	[80]	[95]	[110]	[125]	[140]	[155]	[170]
Double Pole Contacts Blocks	1	2	3	4	5	6	7	8	9	10

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CONTROLS, INC.

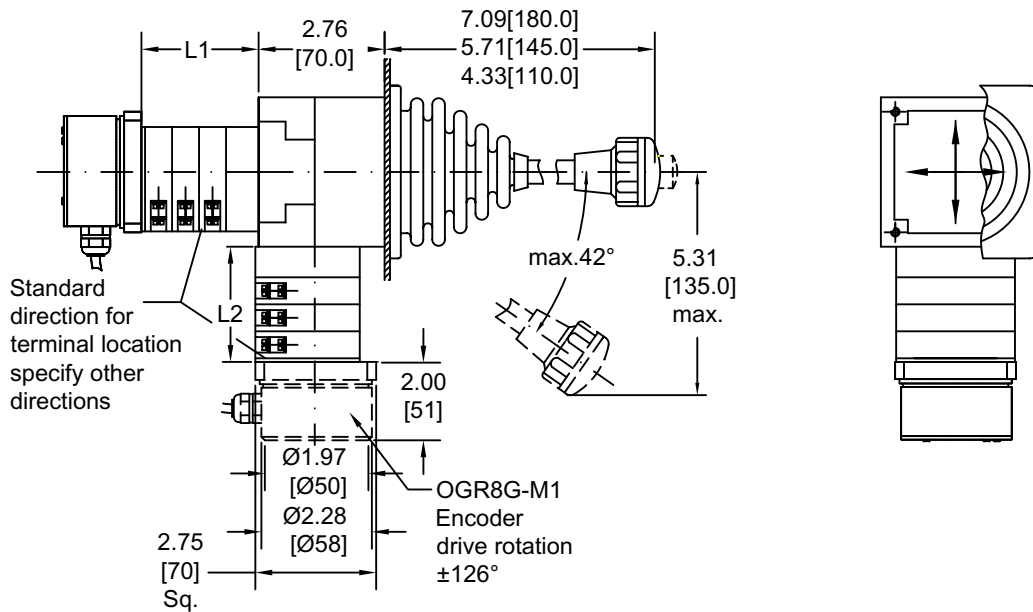
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VNSO-A, -EA, -AA, DIMENSIONS

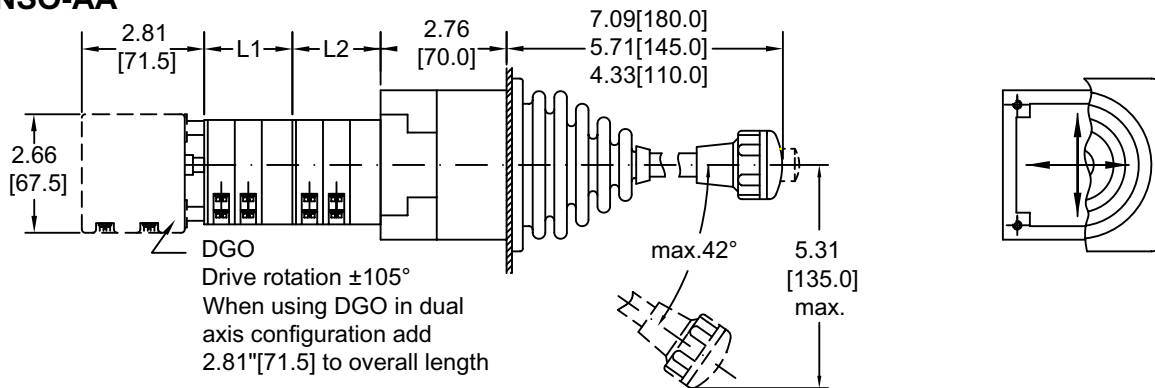
VNSO-A



VNSO-EA



VNSO-AA



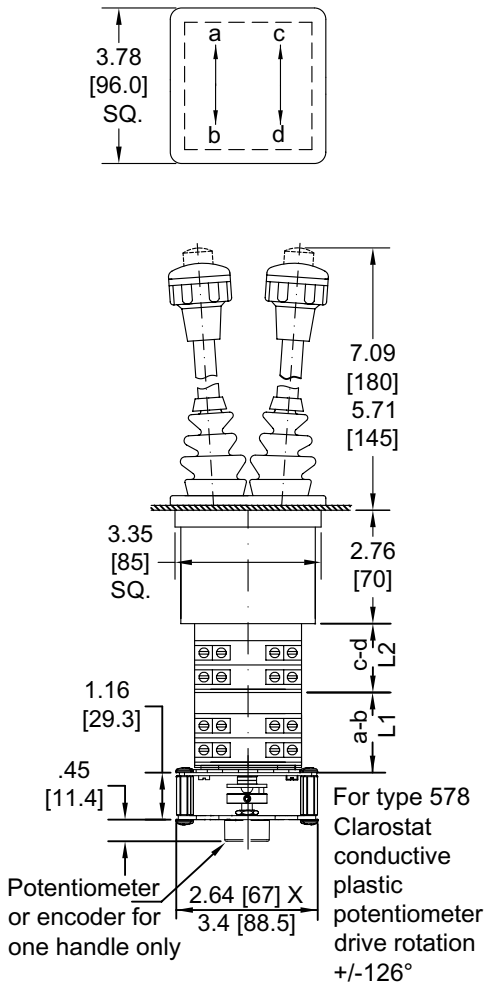
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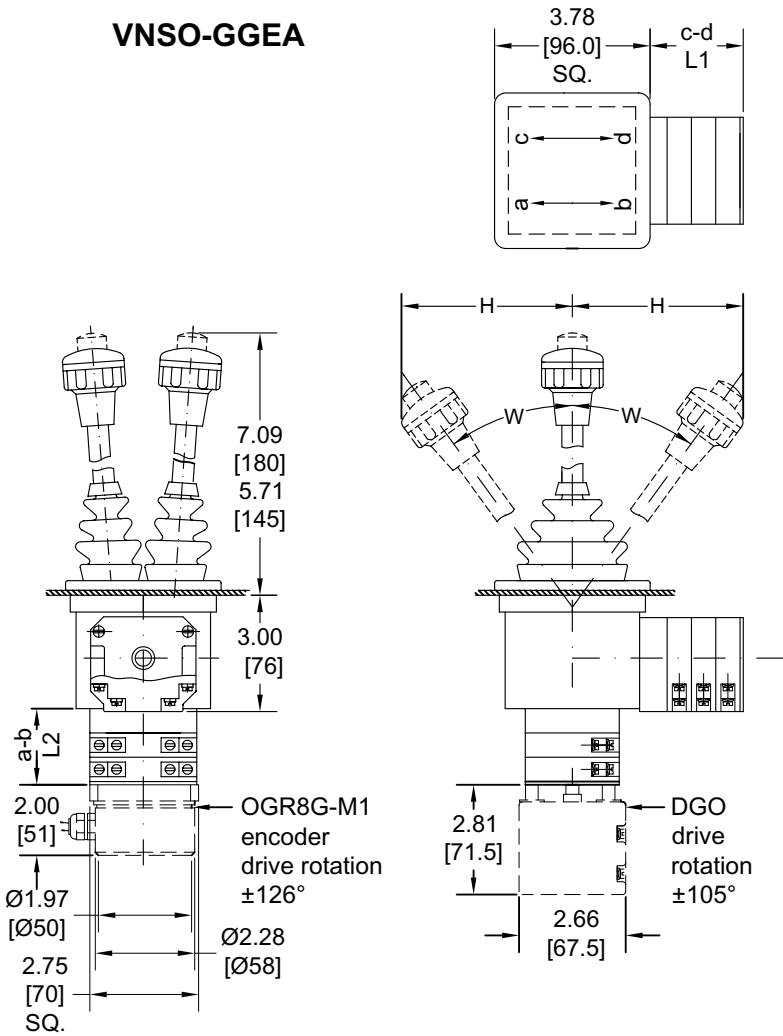
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VNSO-GGAA, -GGEA DIMENSIONS

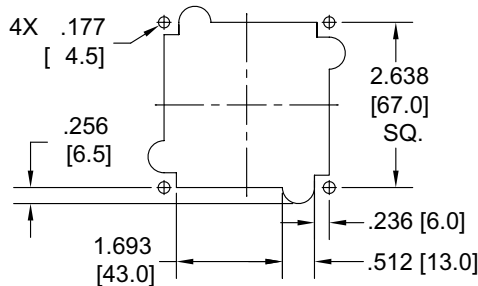
VNSO-GGAA



VNSO-GGEA



MOUNTING DETAIL



Handle angle and deflection shown are for 7.125" (180mm) with standard handle

Detent	W	H ~ in mm
1-0-1	17°	2.76 [70]
2-0-2	35°	4.53 [115]
3-0-3	30°	4.13 [105]
4-0-4	38°	4.92 [125]
5-0-5	35°	4.53 [115]
6-0-6	42°	5.31 [135]
7-0-7	42°	5.31 [135]

(in)	1.38	1.97	2.56	3.15	3.74	4.34	4.92	5.51	6.10	6.69
Dimension L1 or L2 (mm)	[35]	[50]	[65]	[80]	[95]	[110]	[125]	[140]	[155]	[170]
Double pole contacts blocks	1	2	3	4	5	6	7	8	9	10

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