

GENERAL DESCRIPTION

The SM-1000 Series are multi-turn, rotary actuators, designed to meet the exacting requirements for closed-loop modulating positioning control. Designed for low to medium torque rotary applications, these actuators are capable of accepting analog current and voltage command signals. The brushless stepper motor design provides smooth, highly accurate positioning, with positive position-lock when not in motion and powered. The SM-1000 Series is ideally suited for regulators, pilot valves, small quarter-turn valves, choke valves and dampers.

All SM-1000 Series actuators come with a standard digital internal amplifier. These amplifiers are all full-featured devices designed to work seamlessly with the actuator for closed loop control.



FEATURES

- Permanently lubricated for any position mounting
- Amplifier supplies current to hold last position and prevent backdriving, up to torque rating under power
- AC or DC input power versions
- 4 to 20 mA position, loop-powered, feedback signal
- Field selectable adjustments for:
 - speed
 - deadband
 - zero and span
 - command signal type
 - standard or reverse acting
 - manual-auto operation
 - output shaft position on loss of signal
- Wide ambient temperature range
- Full one year warranty

BASE MODEL INCLUDES:

- Motor (stepper)
- Manual override
- Drive shaft
- Split range command input
- Amplifier
- Electronic torque limiting
- Cast aluminum NEMA 4 (IP65) & dust and hazardous gas ignition-proof enclosure
- Four adjustable position switches (40 mA at 40 Vdc)
- Internal spur gear train
- 4-20 mA transmitter for customer use

POPULAR OPTIONS *(See Pages 197-206)*

- Signal Conversion Module: Convert 40 mA, 40 Vdc low level to 5 Amp, 120/240 Vac current rated position limit switches
- Low current at null (24 Vdc only)
- Switching input powered ac or dc positioning for positioning actuator using ac or dc remote voltage control
- Process Variable Controller to control one process variable - 120/240 Vac only
- Custom mounting and interface hardware
- Local Auto/Manual and INC/OFF/DEC toggle switches (Close-coupled, NEMA 4)
- Various enclosure coatings
- Exd IIB (Hydrogen) enclosure (up to 85 in. lbs.)
- Battery backup to position actuator on loss of ac power
- ATEX Approval

SPECIFICATIONS

Torque:

SM-1015: Up to 45 in. lbs. (5 Nm)

SM-1020: Up to 85 in. lbs. (10 Nm)

SM-1020 with optional gearbox:

Up to 350 in. lbs. (40 Nm). Only available up to 4.25 turns rotation.

Speed: See selection chart on next page.

Input Voltage: See selection chart on next page.

Rotation: 10° to 20 turns standard; 90° to 4.25 turns with gearbox

Environmental Ratings: Explosion-proof for Class I, Division 1, Groups C and D; dust-ignition-proof for Class II, Division 1, Groups E, F, G. Also rated NEMA 4 (IP65) indoor/outdoor. (Optional Exd IIB enclosure)

Command Input:

Full Range: 4-20 mA into 200 ohms

Split Range: 4-12 and 12-20 mA into 200 ohms

Voltage: 0-5 Vdc or 0-10 Vdc into 100,000 ohms

Switch: Dry contact closures

Temperature Limits: -40°F to 150°F (-40°C to 65°C)

For greater temperature ranges, consult factory.

Field Wiring: Barrier terminal blocks

Torque Limiting: Current sensing PWM

Positioning Accuracy: 1.5% of full range

Feedback: 4-20 mA, customer supplied (loop power)

Loss of Signal: Lock-in-place or run to preset.

Loss of Power: Lock-in-place or run to preset with battery backup option.

Direction: CW or CCW

Modulation Rate: Unrestricted modulating duty

Backdrive: Self-locking up to torque rating

Approximate Weight:

SM-1015: 12 lbs. (5.4 kg)

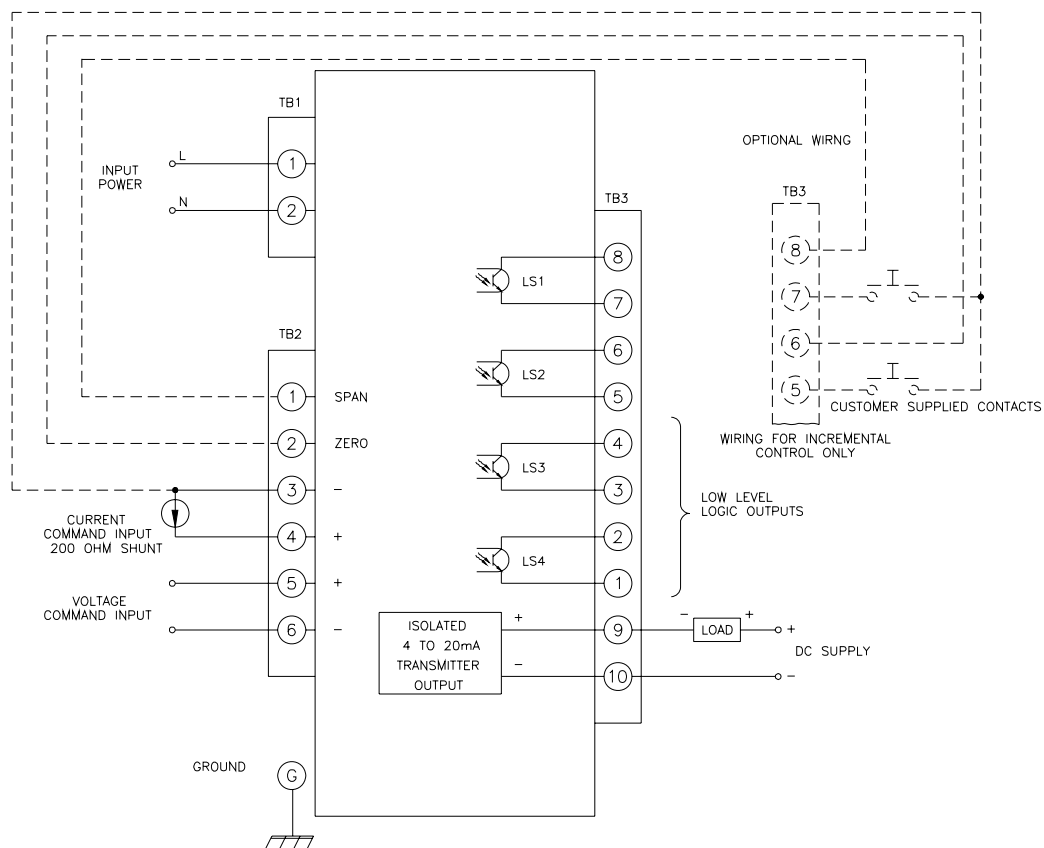
SM-1020: 16 lbs. (7.3 kg)

SM-1020 with gearbox: 19 lbs. (8.6 kg)

Approvals: See page 207

Position Switch Rating: 40 mA at 40 Vdc

TYPICAL WIRING DIAGRAM



These dimensions and specifications are subject to change without notice. Current drawings and specifications are available upon request.

SM-1000 SERIES SELECTION CHART

Selection

1	Basic Model	SM-1015-D	With built-in digital amplifier			
		SM-1020-D	With built-in digital amplifier			
2	Input Voltage	1: 115 Vac, 1 Phase, 50/60 Hz (All Models)				
		2: 230 Vac, 1 Phase, 50/60 Hz (All Models)				
		6: 24-36 Vdc (All Models)				
		12: 12-36 Vdc (SM-1020-D), maximum output torque is limited - consult factory				
		13: 24 Vac (All Models)				
3	Speed, RPM	SM-1015		SM-1020		
4	Torque, in. lbs. (Nm)	12.5/15 (1.7)	7/25 (2.8)	10/20 (2.3)	8/40 (4.5)	
		3/37 (4.2)	1/45 (5.1)	5.5/60 (6.7)	1/85 (9.6)	
				2.1/100 (11.2)	1.5/200 (22.6)	
				1/300 (33.9)	0.7/350 (39.5)	
5	Rotation	Select rotation between 10° to 20 turns (Up to 4.25 turns for units exceeding 85 in. lbs. torque)				

To convert RPM to sec./90°:

$$X = \text{RPM} \qquad \frac{1}{X} \times 15 = Y$$

$$Y = \text{Sec. for } 90^\circ$$

SM-1000 STANDARD OPTIONS

Code	Description	Selection
Toggles, Lights		
A008	Local Auto/Manual INC/OFF/DEC (Close Coupled Enclosure) NEMA 4	
A015	ON/OFF Toggle Power Switch (Close Coupled Enclosure) NEMA 4	
Enclosure		
E005	Group B enclosure for use in Hydrogen atmosphere (SM-1020, AC input only)	
Identification/Certifications/Warranties		
J001	CE Marking	
J002	Stainless Steel Tags	
J004	One year extended warranty	
J005	Two year extended warranty	
J006	ATEX Approval (Input voltages 1, 2 & 6) Consult factory for option compatibility.	
Painting/Coating		
W001	JCI Standard Polyurethane Blue	
W002	Two Part Epoxy	
W003	Food Grade Epoxy	
W004	Baked On Epoxy	
W005	Teflon	

Code	Description	Selection
Special Electrical Options		
X012	Signal conversion module, installed in a close-coupled, NEMA 4 enclosure (not available with X015)	
X013	2 wire incremental dc input	
X014	3 wire incremental 120/240 Vac input	
X015	Battery Backup, only for 120/240 Vac, installed in a close-coupled, NEMA 4 enclosure (not available with X012)	
X017	Process variable (SM-1020 only)	
X018	Low Current (24 Vdc only)	
Special Mechanical Options		
Y001	Increased rotation to 33 turns	
Y005	Metric mounting holes, 6mm	

For a full description of options, go to the Complete Listing of Options starting on page 197.

PROCESS VARIABLE OPTION

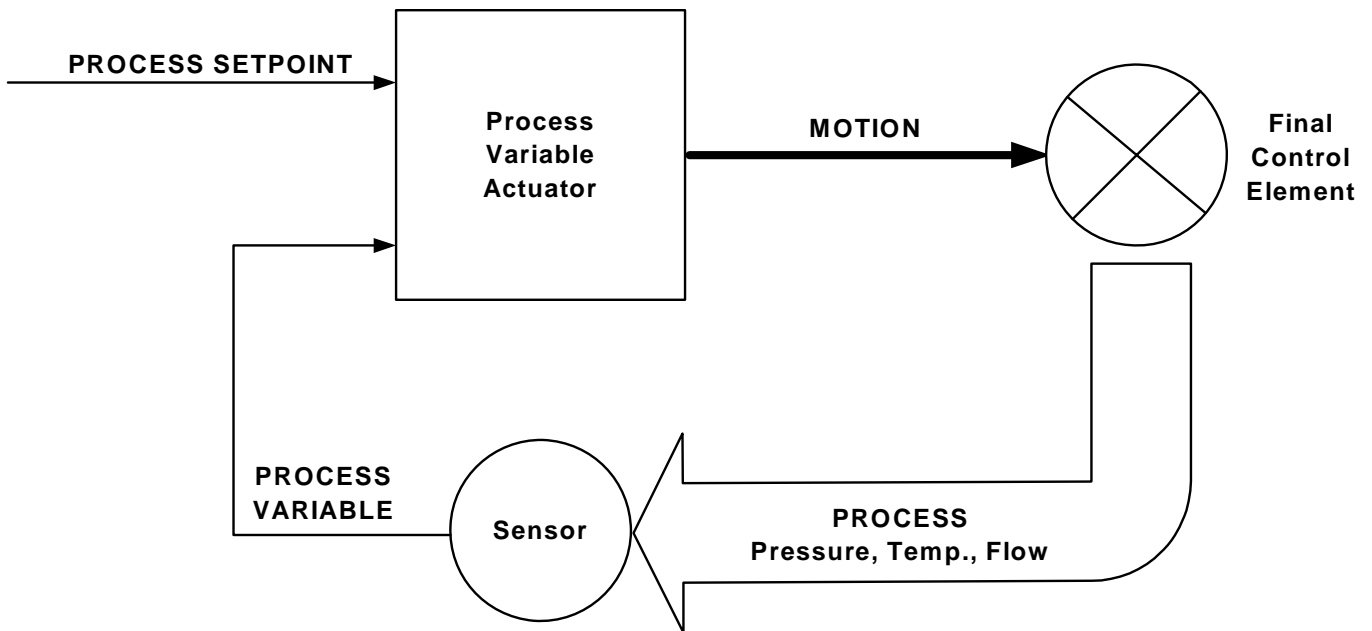
(Option X017)

The Process Variable option (X017) combines an SM-1015 or SM-1020 and a proportional loop controller into one package.

With this option, the SM-1000 series actuator can function as a self-contained process controller for many applications. By eliminating an external process

controller and by simplifying control wiring, actuators with the Process Variable option allow users to include control in the final element.

This rugged actuator/process controller unit may be mounted in any position and will withstand the most adverse environmental conditions.



LOW CURRENT AT NULL OPTION

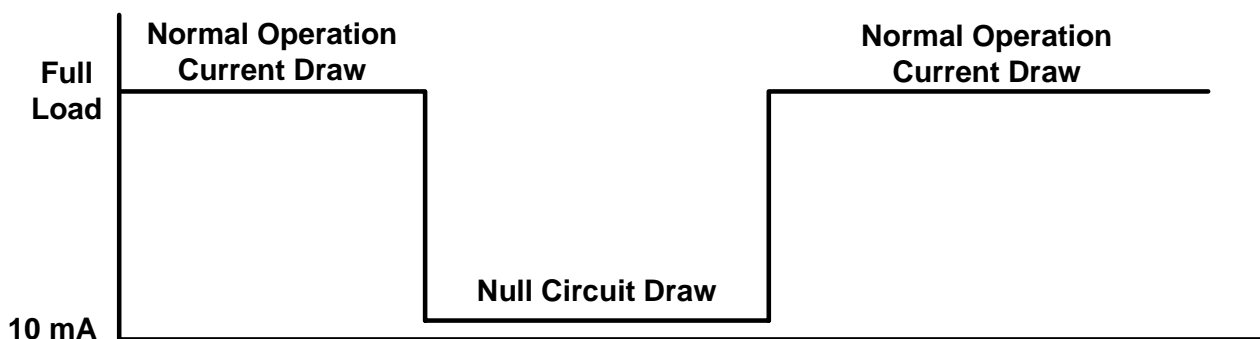
(Option X018)

Jordan Controls has developed a Low Current at Null Circuit (Sleeper Circuit) for the 1000 Series (24 Vdc power input).

The specially-designed circuit allows for very low power consumption while at null. While at null, the amplifier will not draw more than 10 mA.

This option is ideal for remote locations where actuators are operated by batteries or solar panels.

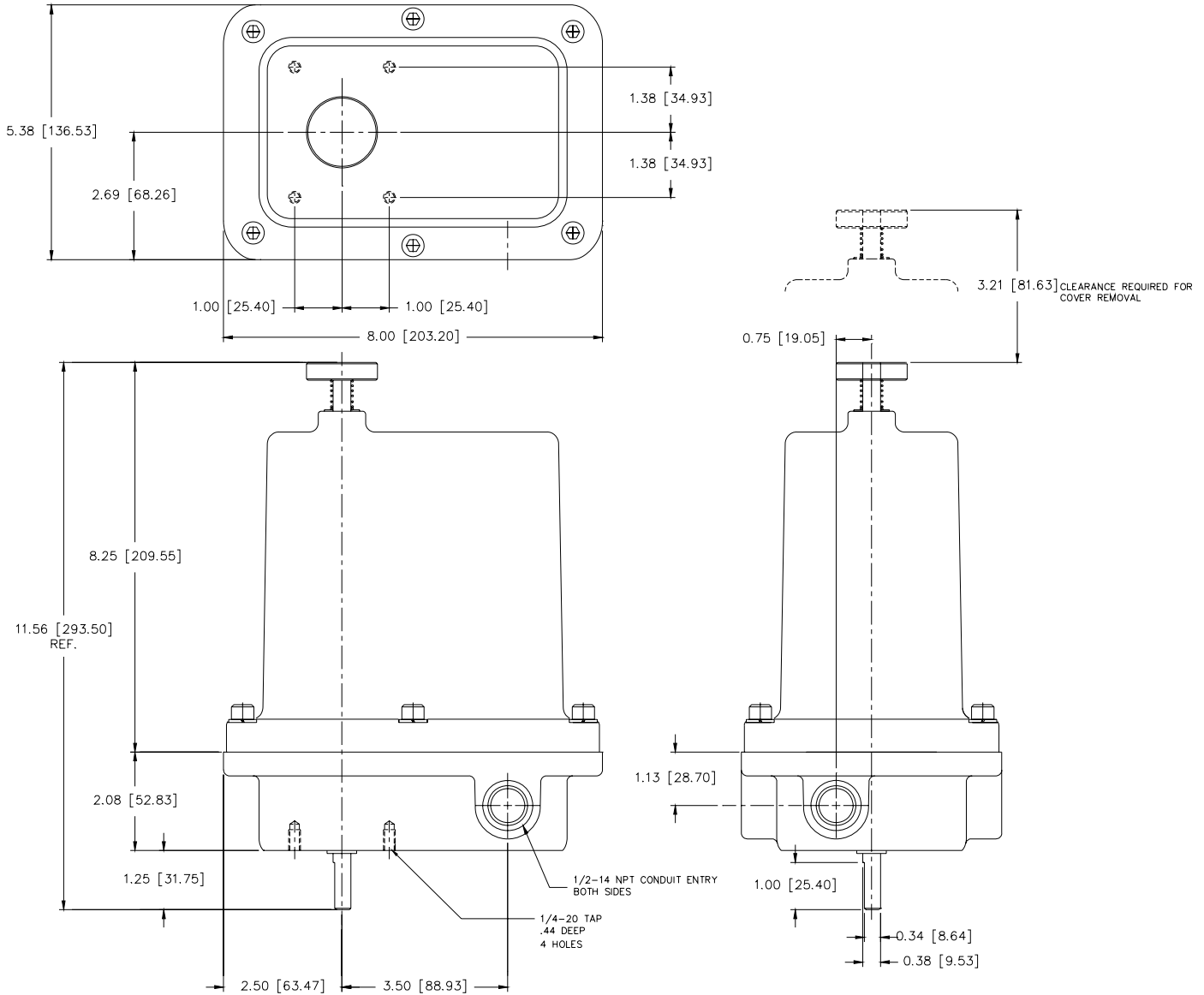
It is also ideal for critical applications which require the actuator to operate on very little power. The sensitivity is switch selectable in the field from 0.05 mA to 1.5 mA.



SM-1000 MAJOR DIMENSIONS

(Up to 85 in. lbs. torque)

INCHES
(MILLIMETERS)

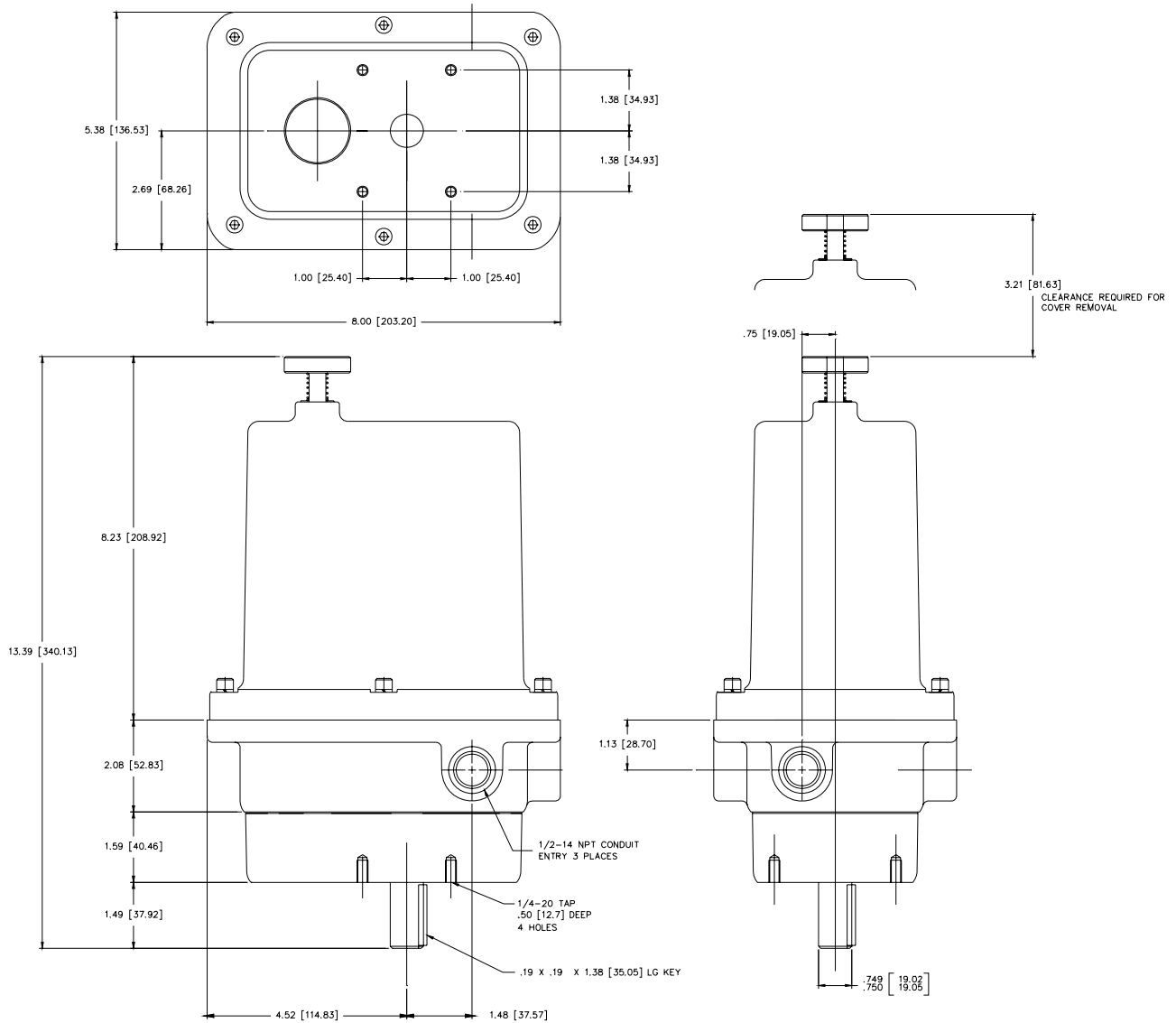


These dimensions are subject to change without notice and should not be used for preparation of drawings or fabrication of installation mounting. For current installation manuals and other product information, see www.jordancontrols.com.

SM-1000 MAJOR DIMENSIONS

(86 to 350 in. lbs. torque)

INCHES
(MILLIMETERS)

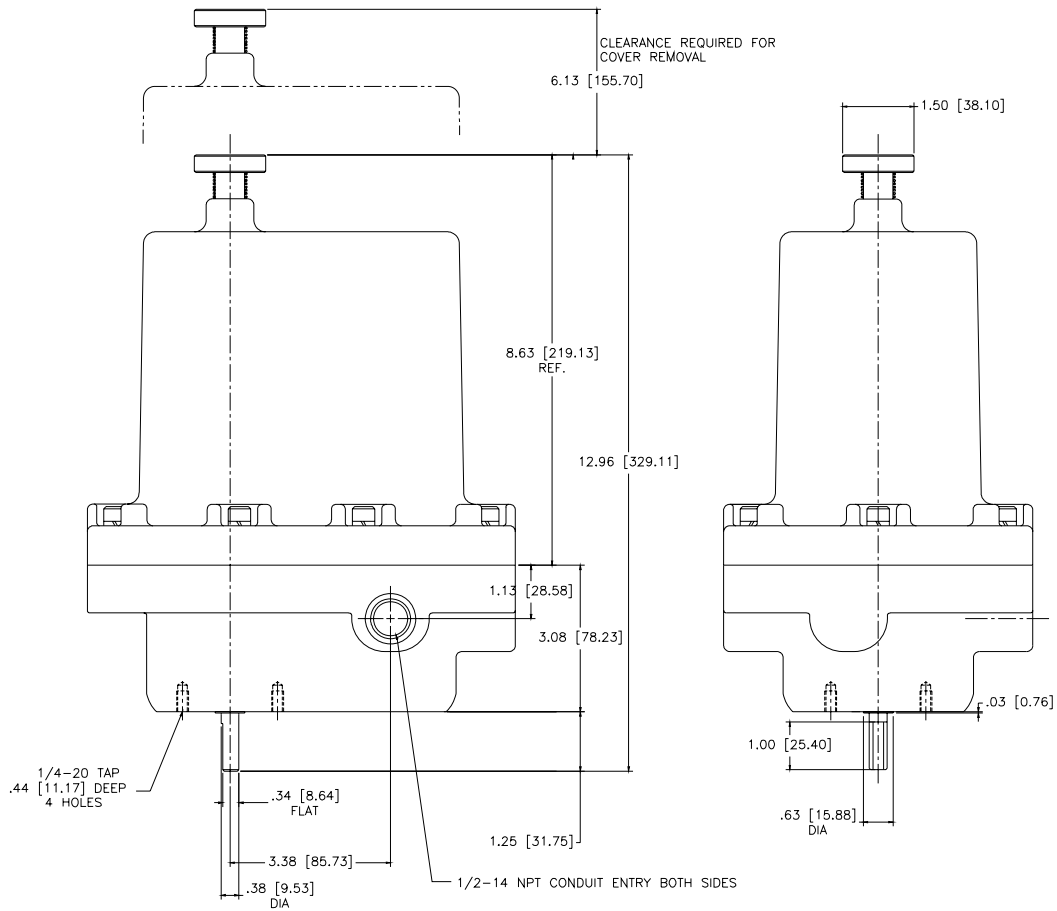
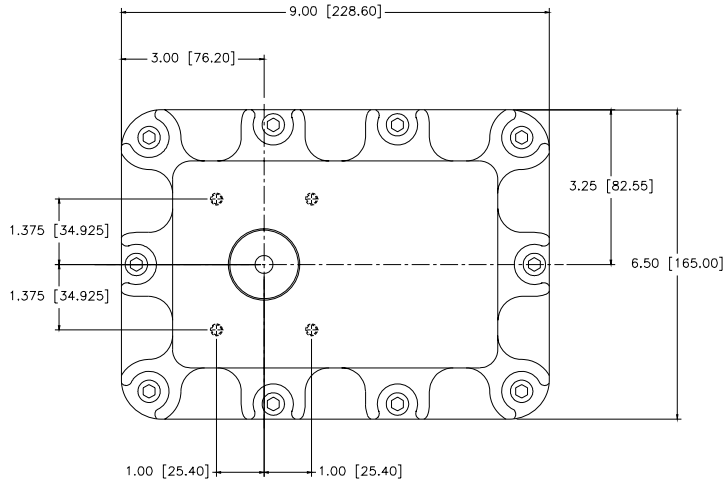


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SM-1000 MAJOR DIMENSIONS

Optional Group B Enclosure (E005)

INCHES
(MILLIMETERS)



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