

SUPERIOR DESIGN AND OPERATING FEATURES

Quality parts make each Geared Rotary Limit Switch highly dependable.

- The limit switch's ½" input shaft is connected to a worm gear. Adjustable self-lubricating nylon roller-cams are concentrically mounted to the worm gear. These adjustable cams actuate the precision limit switches by utilizing a lever assembly.
- Each Rotary Limit Switch can be provided with up to 4 switches and can be rotated clockwise or counterclockwise.
- NEMA 4 / 5 Rugged Cast Aluminum enclosure
- ½" Input Shaft with Woodruff Key for quick drive connection
- Self-lubricating Bearings – Powdered metal impregnated bearings for life-time lubrication
- Standard ratios range from 5:1 to 1080:1.
- External Mounting holes, permit mounting without internal interference
- Bronze gears and Nylon cams for longevity
- Gemco rugged duty precision Snap Action Switches – SPDT or DPDT with Isolated Contacts - UL Recognized
- No minimum speed is specified because snap action contacts are used. Maximum rated speed of the input shaft is 2,000 RPM.
- Easy to wire terminals
- Maximum Operating temperature -40°F to 180°F (-40°C to 82.2°C).
- CSA & CE rated electrical switches available upon request
- Optional - Potentiometer output or Pneumatic Switches available upon request



DESCRIPTION

AMETEK Factory Automation markets, engineers, and manufactures sensors and controls for demanding and harsh industrial environments. The Gemco[®] **Geared Rotary Limit Switches** are primarily used in material handling and rotary operations where motion is expressed in shaft rotation. The input shaft is typically connected to the motor or drive mechanism, after a set amount of turns, the cam trips the switches, thus starting or stopping the movement. The primary purpose of the switch is to control the intermediate or end limits in linear or rotary motion. The switch is often used as a safety device to protect against accidental damage to equipment due to over-travel. Our Geared Rotary Limit Switch line is designed for longevity. Units include all metal gearing and switches that are rated for 15 million operations.

In the 2006 Series (General Purpose) Watertight / Oil tight / Dust tight **NEMA 4 / 5 enclosures** are made of cast aluminum with ½" input shaft. External mounting holes enable switch mounting without internal interference. Available in 2 or 4 circuit units with either SPDT or DPDT switches, with ratios from 5:1 to 1080:1. Optional Potentiometers are available in our two circuit models for continuous feedback.

The NEMA 4 / 5 enclosure provides a clean environmental condition for the industrial duty snap action switches. When motion can be expressed in shaft rotation, either through a roller chain, gear train, or direct coupling, the Gemco[®] 2006 Series Geared Rotary Limit Switch makes it possible to open or close, up to four independent circuits at the desired angular positions.

Superior Design and Operating Features

All Metal Gearing for Longevity

SIMPLICITY IS THE KEY TO SUCCESS

EASY TO INSTALL

This limit switch may be mounted in any orientation. External mounting holes enable switch mounting without internal interface. When installed properly, this limit switch will provide long life with a minimum amount of service or maintenance.

EASY TO SET-UP

1. Simply loosen set screw to unlock the cam.
2. Then adjust thumb screw to desired trip point.



EASY TO WIRE

Screw head terminals for easy wiring



EASY TO MAINTAIN



The limit switch was lubricated at the factory and should not require lubrication for the life of the switch. Self-lubricating Bearings – Powdered metal impregnated bearings for life-time lubrication. Units include all metal gearing and electrical switches that are rated for 15 million operations.

PART NUMBERING

Units are available in 2 or 4 circuit models. Number of circuits, ratio, shaft extension and switch type are all configured in part number structure. Two circuit assemblies are available in either right hand or left hand shaft extensions, whereas four circuit models are only available with left hand shaft extensions. All units come supplied with our standard 25° cams. Consult factory for units needing longer dwell cams.

Potentiometer output or special dwell cams, require special part number. Consult Factory.

2006

Series

402

Number of Circuits

402	NEMA 4 enclosure - 2 Circuits
404	NEMA 4 enclosure - 4 Circuits

L

Number of Circuits

L	Left Hand - Available in 2 & 4 Circuit Models
R	Right Hand - Only Available in 2 Circuit Models

10

Ratio

5	5 to 1
10	10 to 1
20	20 to 1
30	30 to 1
40	40 to 1
60	60 to 1
80	80 to 1
120	120 to 1
270	270 to 1
357	357 to 1
1080	1080 to 1

A

Switch Type for 402 (2 Circuit Models)

A	All SPDT
B	1 - DPDT, Balance SPDT
C	2 - DPDT
R	Quick Reset - (1950-1408 switches)

Switch Type for 404 (4 Circuit Models)

A	All SPDT
B	1 - DPDT, Balance SPDT
C	2 - DPDT, 2 SPDT
D	3 - DPDT, Balance SPDT
E	4 - DPDT
R	Quick Reset - (1950-1408 switches)

All Switches have isolated contacts

SPDT	1 NO - 1 NC Contacts
DPDT	2 NO - 2 NC Contacts

Special Cut 2006 Cam Assembly

Part Number	Interval for which Switch Contacts are Opened or Closed
PSD0090400	Std. 25 degree lobe
PSD0109200	30 degree lobe

STANDARD 2 CIRCUIT UNIT



STANDARD 4 CIRCUIT UNIT



2 CIRCUIT UNIT WITH POTENTIOMETER (2 CAMS & POTENTIOMETER) –

USES 4 CIRCUIT SIZE ENCLOSURE

Potentiometer - Optional

An optional feature of mounting a 2-watt multi-turn potentiometer within the enclosure, and gear coupled to the input shaft, is offered. This feature permits the potentiometer to be used as a remote position indicator or as a constant output auxiliary control device for open or closed loop feedback systems.

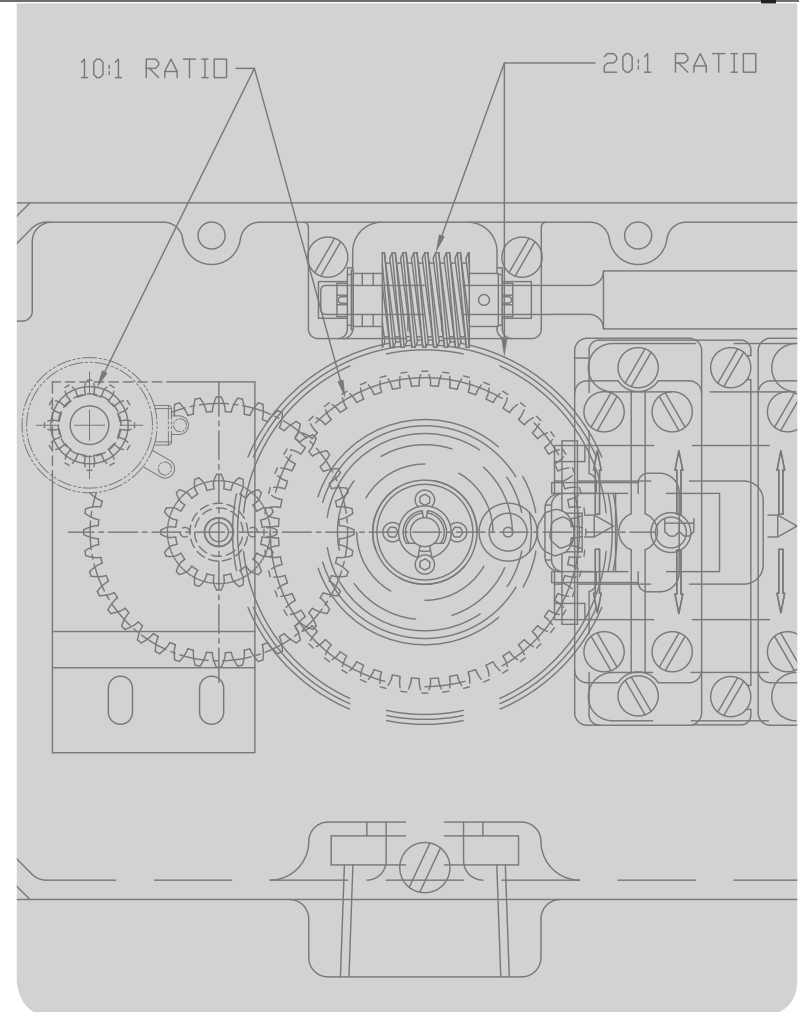
- Available in NEMA 4, 4 circuit style enclosures
- Two SPDT or DPDT switches and potentiometer
- Consult factory for part numbers and available ratios



2006 RIGHT ANGLE GEAR REDUCER ADAPTER

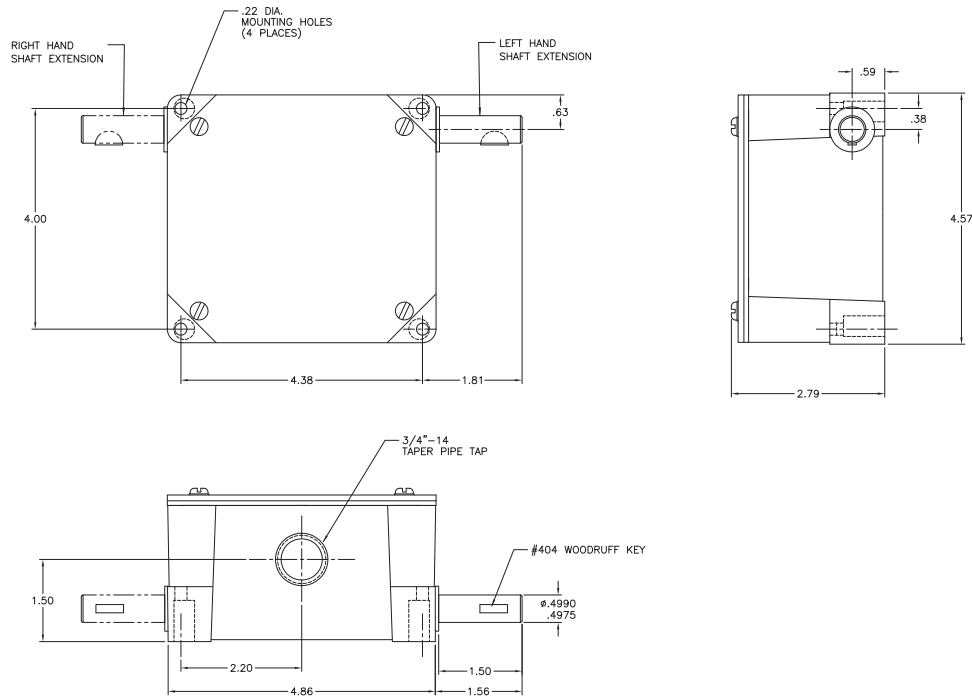
Flange Mount 40:1 Right Angle Gear Reducers are available for both the 2000 and 2006 Series Geared Rotary Limit Switches. Made of cast aluminum with ½" Slotted Input shaft.

- NEMA 4 Rugged Cast Aluminum baseplate
- ½" Input Shaft with slotted keyway for quick drive connection
- Self-lubricating Bearings – Powdered metal impregnated bearings for life-time lubrication
- Gear ratio 40:1 – In addition to ratio of Rotary Limit Switch
- External Mounting holes, permit mounting without internal interference
- Bronze gear and steel input shaft for longevity
- Bases available for 2000 Series and 2006 Series
 - 2006 Series – 2 Circuit Model – SD0315400
 - 2006 series – 4 Circuit Model – SD0315100

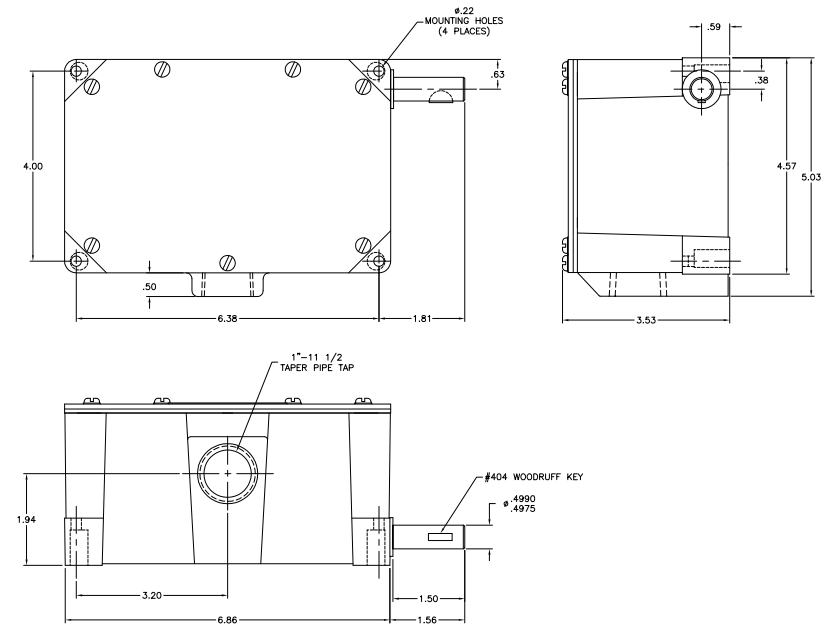


DIMENSIONS

2006-402 (2 CIRCUIT RIGHT OR LEFT HAND DIMENSIONS)

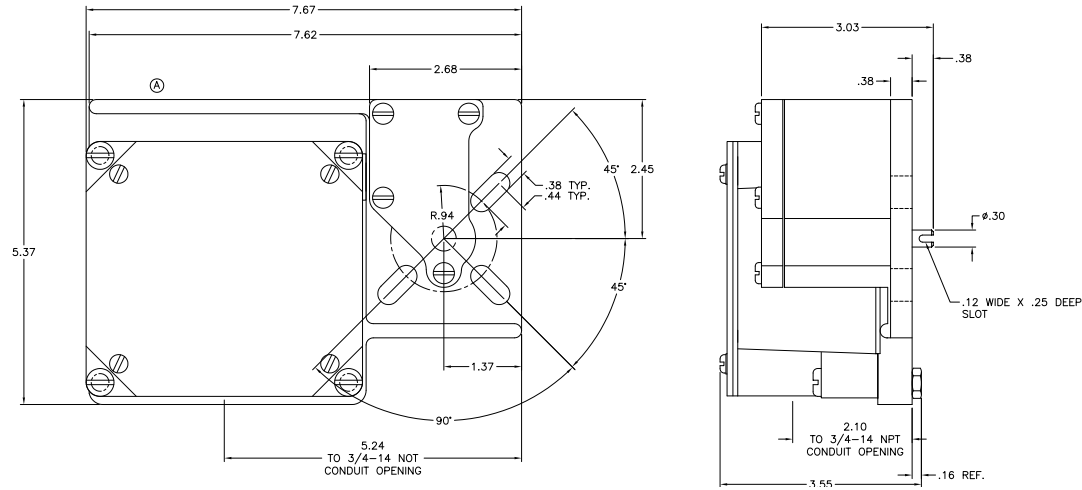


2006-404 (4 CIRCUIT LEFT HAND DIMENSIONS)

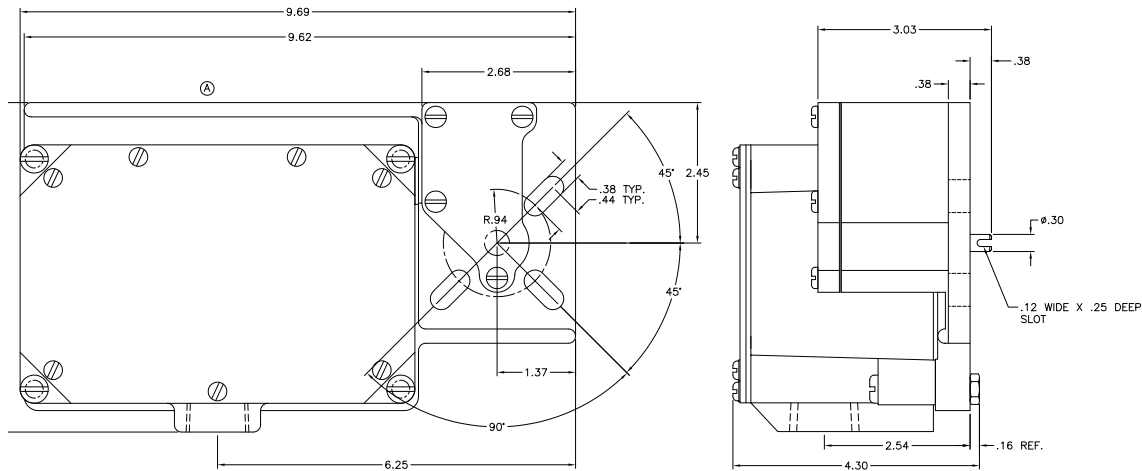


DIMENSIONS

2006-402 (2 CIRCUIT LEFT HAND DIMENSIONS WITH RIGHT ANGLE GEAR REDUCER)



2006-404 (4 CIRCUIT LEFT HAND DIMENSIONS WITH RIGHT ANGLE GEAR REDUCER)



SPECIFICATIONS

Enclosure	
Housing - Material	Die Cast Aluminum
Cover - Material	Steel
Rating	NEMA 4 / 5 Oil tight, Watertight, Dust tight
Cover Gasket	Rubber - Buna N
Paint	Gray Powder Coat
Bearings	Powdered metal impregnated bearings for life-time lubrication
Input Shaft	1/2" w/ 404 Woodruff Key - Maximum Load 5 lbs.
Input Shaft - Material	ASTM A311 Class B - Black Oxide Finish
Gear Ratios - Available	5:1 to 1080:1
Gears - Internal	Bronze
Cams	Nylon - 25° Lobe standard - Longer dwells available upon request
Switches	SPDT or DPDT with Isolated Contacts - UL Recognized. Rated for 15 million operations
Operating Temperature	-40°F to 180°F (-40°C to 82.2°C)
RPM	2,000 RPM Maximum
Potentiometers	Optional - Multi-turn wire wound, 2 watt
Wiring - Conduit Entrance	
2 Circuit Model	3/4" - 14 Taper Pipe Thread
4 Circuit Model	1" - 11 Taper Pipe Thread

Nominal Input shaft to Cam Ratio	Turns of Input Shaft			
	Maximum	Minimum	Over Travel	To Reset
5:1	4	1/8	1/8	1/16
10:1	8 - 1/2	1/4	1/4	1/8
20:1	17	1/2	1/2	1/4
30:1	26	1	3/4	3/8
40:1	35	1	1	1/2
60:1	53	2	2	3/4
80:1	72	2-1/2	2-1/2	1
120:1	108	3	3	1-1/2

ELECTRICAL SWITCH RATINGS

Electrical Contact Ratings											
Switch	Contacts	Volts	AC						Volt	DC	
			Inductive Pilot Duty 35% Power Factor				Resistive 75% Power Factor			Inductive Pilot Duty and Resistive	
			Make		Break		Continuous Carrying Amperes	Make, Break and Continuous Carrying Amperes		Make and Break Amperes	Continuous Carrying Amperes
			Amps.	VA	Amps.	VA				Double Throw	
1950-1-B-A-DO	SPDT	110	40	-	15	-	15	15	115	0.25	15
1950-1-B-A-DO	SPDT	220	20	-	10	-	15	15	230	0.1	15
1950-1-B-A-DO	SPDT	440	10	-	6	-	15	15	600	-	15
1950-1-B-A-DO	SPDT	600	8	-	5	-	15	15			15
1950-4-B-A-DO	DPDT	115	30	3450	3	345	10	10	115	0.2	10
1950-4-B-A-DO	DPDT	230	15	3450	1.5	345	10	10	230	0.1	10
1950-4-B-A-DO	DPDT	440	7.5	3450	0.75	345	10	10	600	-	10
1950-4-B-A-DO	DPDT	575	6	3450	0.6	345	10	10			10
NOTE: The maximum period for which the switch contacts are opened or closed during one revolution (360°) of the cam block assembly is 25° or 335°. Multiply the gear ratio times 25° or 335° to obtain the input shaft rotation which will yield 25° or 335° of cam block rotation.											

