

GSX/GSM Linear Actuator with Class I Division 2 Option

The GSX and GSM linear actuators are available with Class I Division 2 certification for hazardous locations. A hazardous location is defined as a place where concentrations of flammable gases or vapors occur. Electrical equipment that must be installed in these locations is designed and tested to ensure it does not initiate an explosion due to arcing contacts or high surface temperature of equipment.

The GSX or GSM actuators with this option offer the same product performance of the standard product offering as described in the GSX and GSM sections of this catalog. Please see those sections for performance and mechanical specifications.

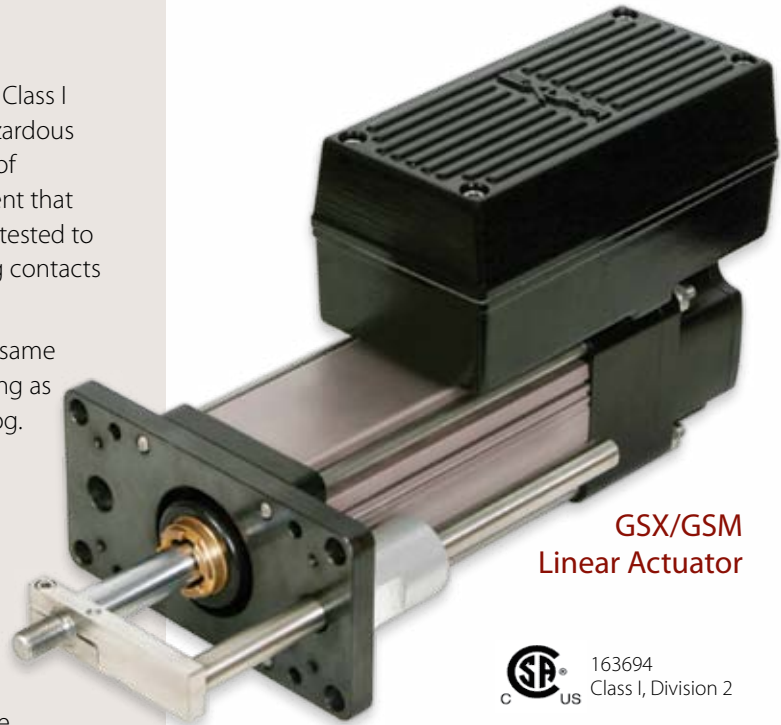
Options for Class I Division 2 products:

- Resolver feedback
- Handwheel


The GSX/M actuators are ideally suited for process control valve and damper applications in harsh environments. These actuators continuously hold the position of the valve stem or shaft allowing extremely fast response to the smallest command signal changes without overshoot even when friction is present. This results in improved loop performance and reduced process variability.

Typical Applications

Chemical Processing
Turbine Control
Fuel Skids
Oil & Gas Upstream & Downstream
Power Utilities
Pulp & Paper
Damper Control
Valve Control



GSX/GSM
Linear Actuator

 163694
Class I, Division 2

Features

T-LAM™ segmented lamination stator technology

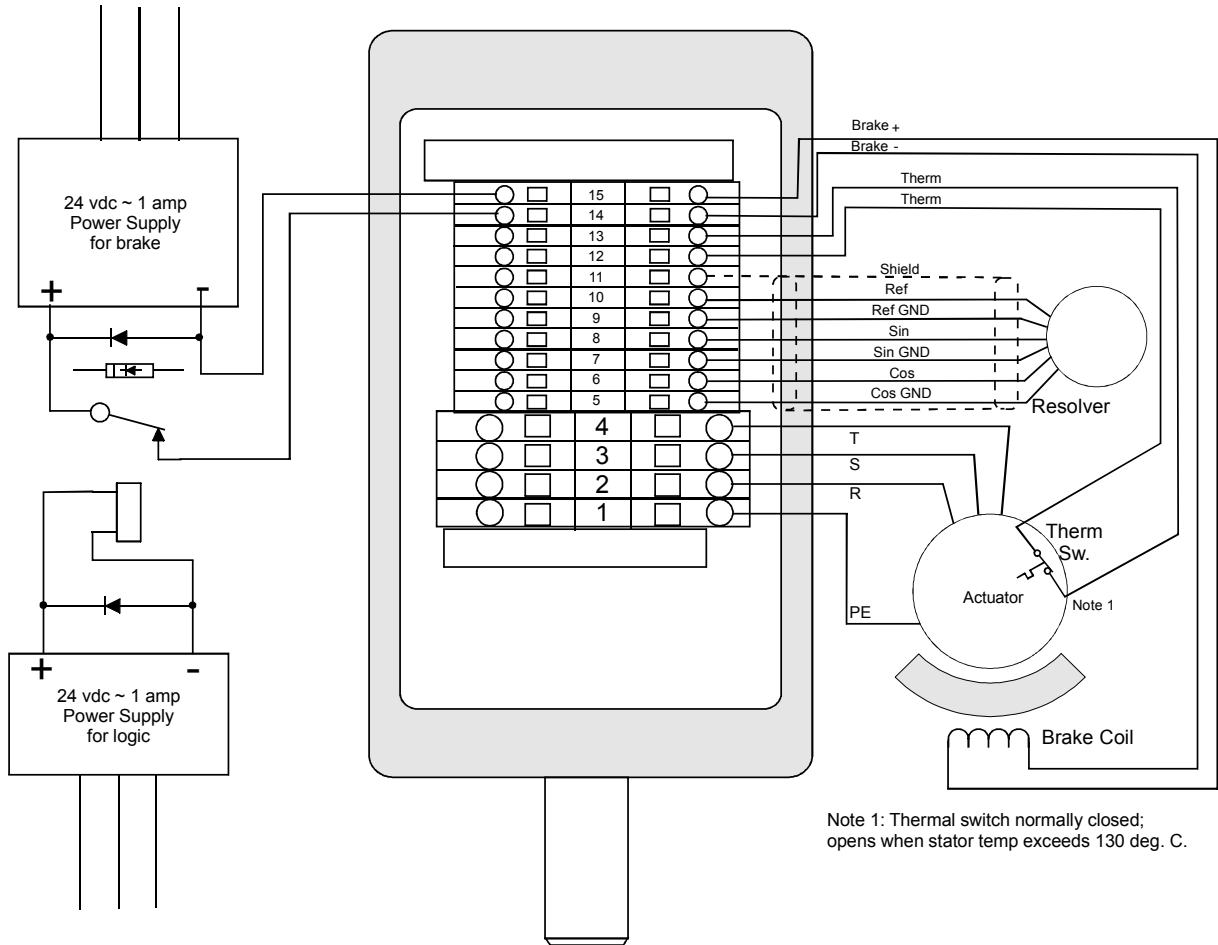
Up to 33 inch per second linear speeds

Resolver feedback

Class I, Division 2, Groups A, B, C & D certified

Terminal box with NPT ports

Terminal Box Wiring Diagram



Ordering Information

Please use the ordering guide from the GSX (page 134) and GSM (page 137) sections with two callout selections as described below. The required connections selection is "T" and the required options selection is "NI"

GSXAA - BBCC - **DEF** - GGG - HHH - II - **(XX...XX)**

↓

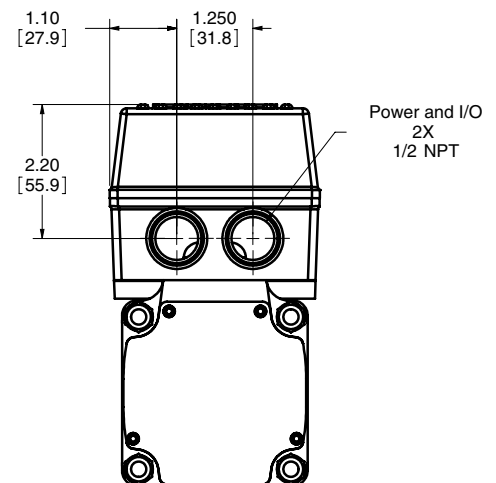
T

↓

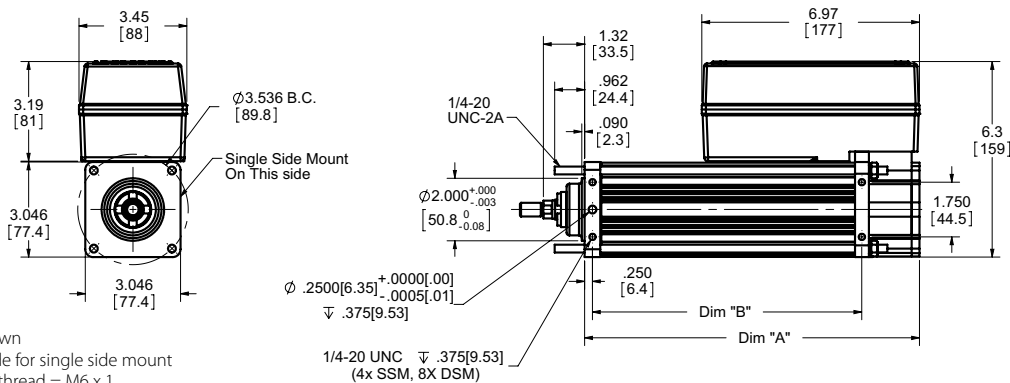
NI

Connections
T = Terminal box with NPT ports
Options
NI = Non-Incendive

Terminal Box Dimensions

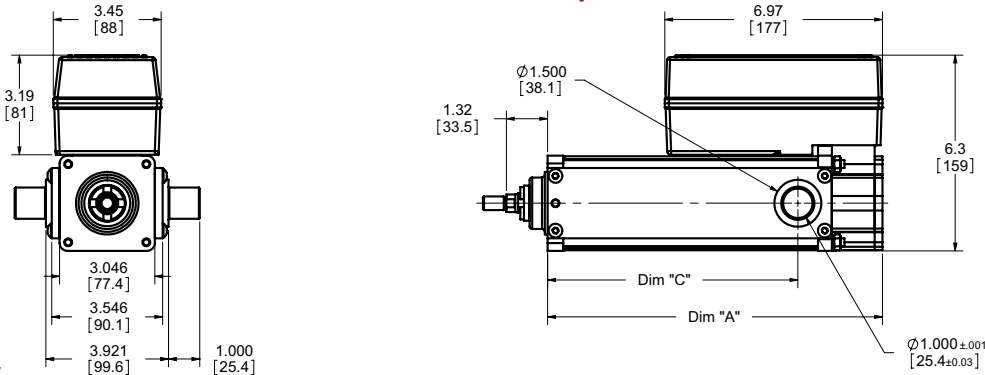


GSX30 Single, Double Side Mounts or Extended Tie Rod Mount with Class I Div 2 Option



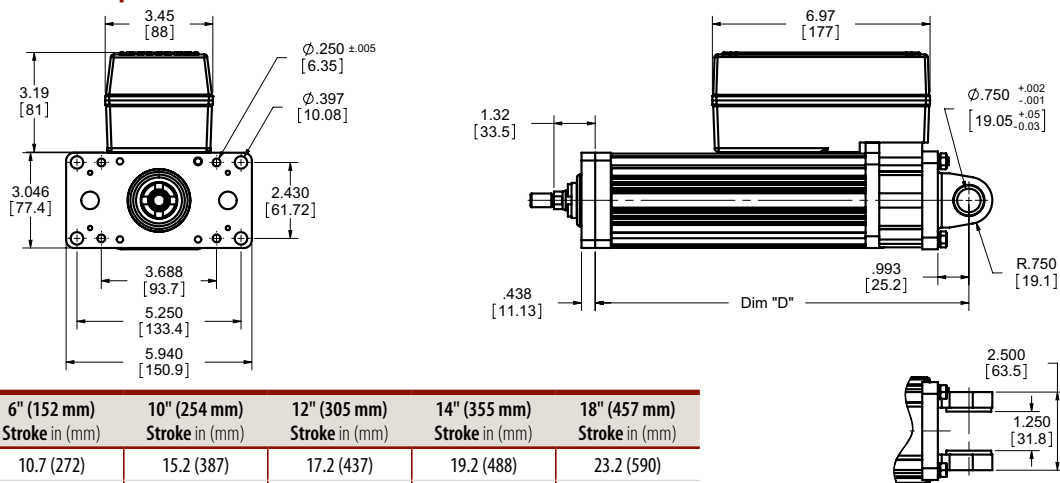
- Three mounting styles shown
- Shown view is standard side for single side mount
- * If "M" metric tie rod option, thread = M6 x 1
- * If "J" or "K" metric side mount options, M6 x 1.0 \downarrow 9 mm with \varnothing 6 mm M7 \downarrow 9 mm Dowel Hole

GSX30 Side Trunnion Mount with Class I Div 2 Option



- * If "Q" metric side trunnion option, \varnothing 25 mm h7

GSX30 Rear Clevis Mount or Front Flange Mount with Class I Div 2 Option

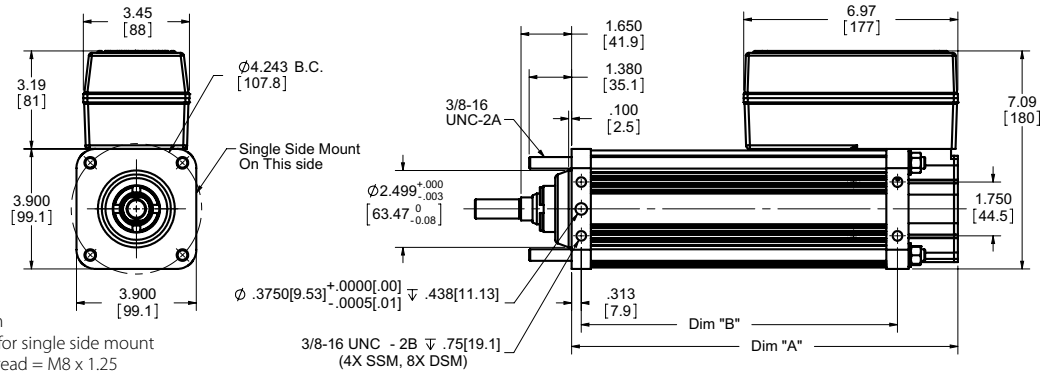


Dim	3" (76 mm) Stroke in (mm)	6" (152 mm) Stroke in (mm)	10" (254 mm) Stroke in (mm)	12" (305 mm) Stroke in (mm)	14" (355 mm) Stroke in (mm)	18" (457 mm) Stroke in (mm)
A	8.2 (209)	10.7 (272)	15.2 (387)	17.2 (437)	19.2 (488)	23.2 (590)
B	6.1 (156)	8.6 (219)	13.1 (333)	15.1 (384)	17.1 (435)	21.1 (536)
C	5.4 (137)	8.0 (203)	10.0 (254)	12.0 (305)	14.0 (356)	18.0 (457)
D	9.5 (241)	12.0 (304)	16.5 (418)	18.5 (469)	20.5 (520)	24.5 (621)

- Two mounting styles shown
- With flange mount, dimension A is equivalent to top two drawings

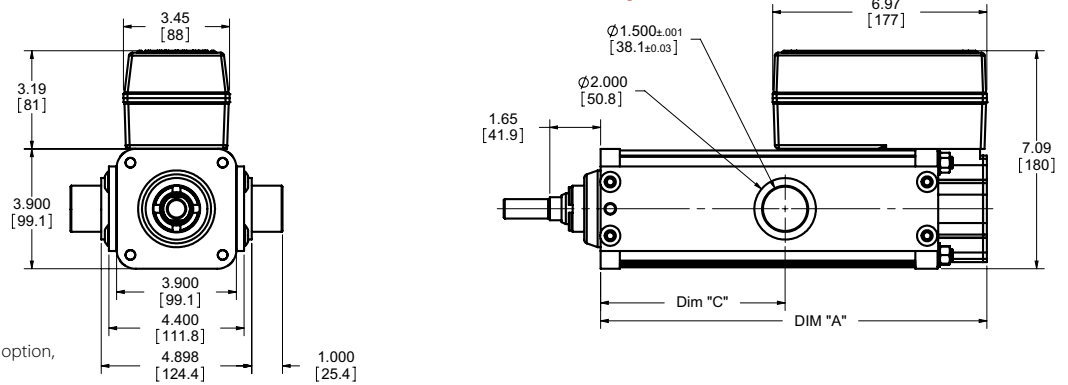
Note: Add 1.6 Inches (40.64 mm) to Dims "A" & "D" if ordering a Brake.
 * If "G" metric clevis option, \varnothing 20 mm +0.00 / -0.07
 Drawings subject to change. Consult Exlar for certified drawings.

GSX40 Single, Double Side Mounts or Extended Tie Rod Mount with Class I Div 2 Option



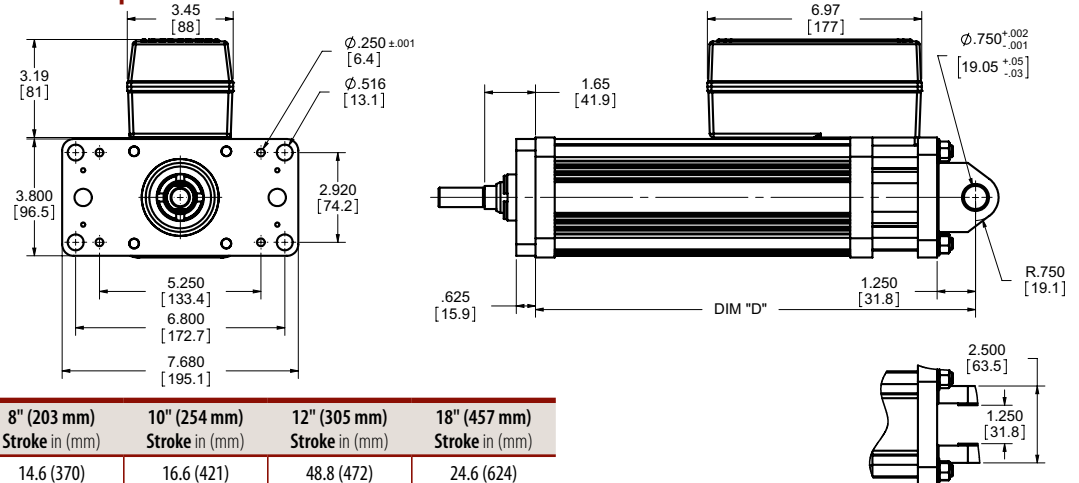
1. Three mounting styles shown
 2. Shown view is standard side for single side mount
- * If "M" metric tie rod option, thread = M8 x 1.25
 * If "J" or "K" metric side mount options, M10 x 1.5 ∇ 19 mm with \varnothing 8 mm M7 ∇ 12 mm Dowel Hole

GSX40 Side Trunnion Mount with Class I Div 2 Option



- * If "Q" metric side trunnion option, \varnothing 35 mm h7

GSX40 Rear Clevis Mount or Front Flange Mount with Class I Div 2 Option



Dim	6" (152 mm) Stroke in (mm)	8" (203 mm) Stroke in (mm)	10" (254 mm) Stroke in (mm)	12" (305 mm) Stroke in (mm)	18" (457 mm) Stroke in (mm)
A	012.6 (320)	14.6 (370)	16.6 (421)	48.8 (472)	24.6 (624)
B	10.3 (262)	12.3 (313)	14.3 (364)	16.3 (414)	22.3 (567)
C	6.0 (152)	8.0 (203)	10.0 (254)	12.0 (305)	18.0 (457)
D	14.5 (364)	16.3 (415)	18.3 (466)	20.3 (516)	26.3 (669)

Note: Add 2.33 Inches (59.18 mm) to Dims "A" & "D" if ordering a Brake.

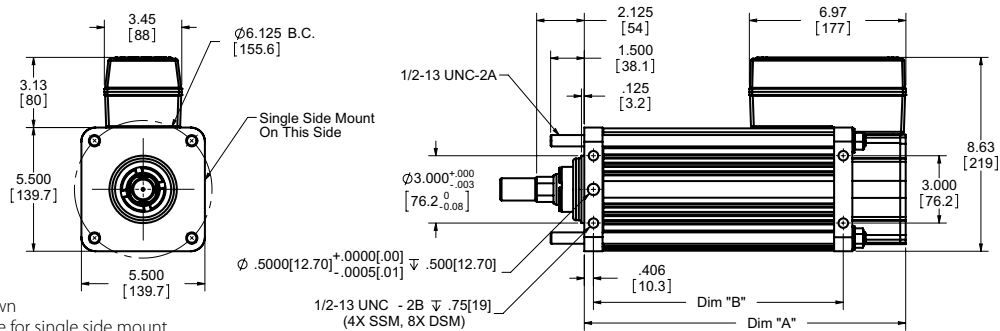
* If "G" metric clevis option, \varnothing 20 mm +0.00 / -0.07

Drawings subject to change. Consult Exlar for certified drawings.

1. Two mounting styles shown
2. With flange mount, dimension A is equivalent to top two drawings

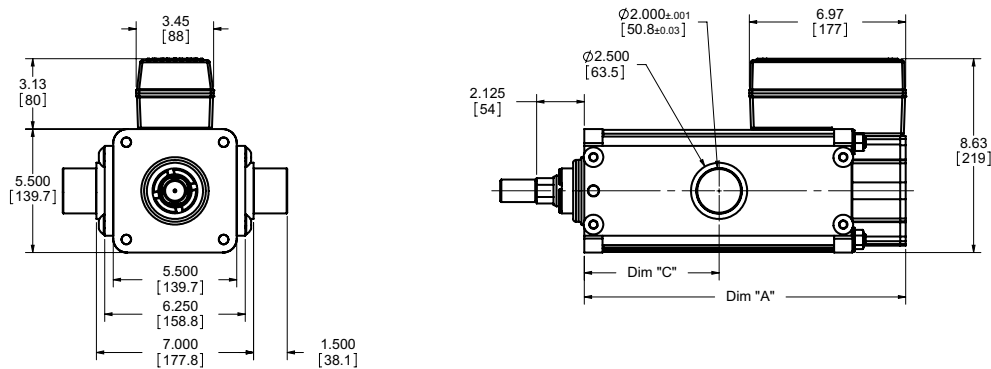
Hazardous Location GSX50 Class I Division 2

GSX50 Single, Double Side Mounts or Extended Tie Rod Mount with Class I Div 2 Option



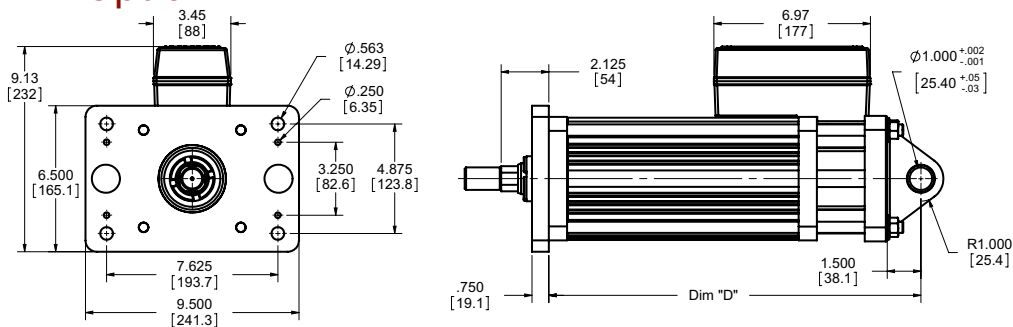
1. Three mounting styles shown
 2. Shown view is standard side for single side mount
- * If "M" metric tie rod option, thread = M8 x 1.25
 * If "J" or "K" metric side mount options, M12 x 1.75 ∇ 19 mm with \varnothing 12 mm M7 ∇ 12 mm Dowel Hole

GSX50 Side Trunnion Mount with Class I Div 2 Option



* If "Q" metric side trunnion option, \varnothing 50 mm h7

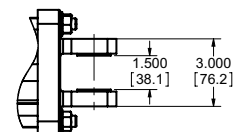
GSX50 Rear Clevis Mount or Front Flange Mount with Class I Div 2 Option



Dim	6" (152 mm) Stroke in (mm)	10" (254 mm) Stroke in (mm)	14" (355 mm) Stroke in (mm)
A	14.3 (364)	18.3 (465)	22.3 (567)
B	11.1 (282)	15.1 (384)	19.1 (486)
C	6.0 (152)	10.0 (254)	14.0 (356)
D	16.6 (421)	20.6 (522)	24.6 (624)

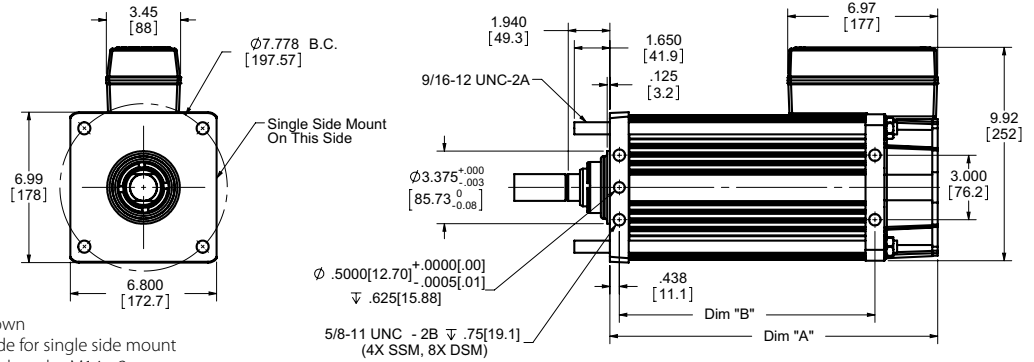
Note: Add 2.5 Inches to Dims "A" & "D" if ordering a Brake.

* If "G" metric clevis option, \varnothing 27 mm +0.00 / -0.06
 Drawings subject to change. Consult Exlar for certified drawings.



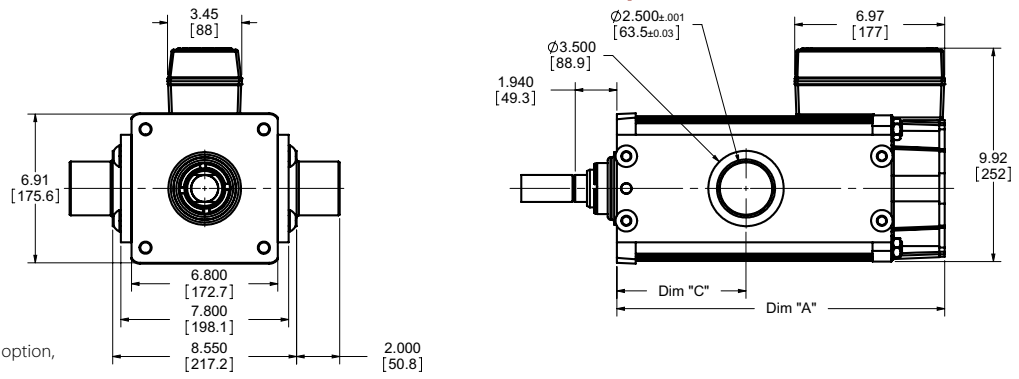
1. Two mounting styles shown
2. With flange mount, dimension A is equivalent to top two drawings

GSX60 Single, Double Side Mounts or Extended Tie Rod Mount with Class I Div 2 Option



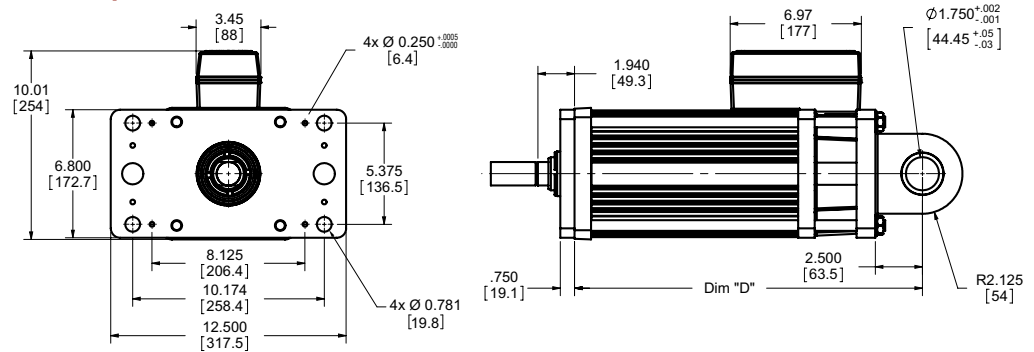
1. Three mounting styles shown
 2. Shown view is standard side for single side mount
- * If "M" metric tie rod option, thread = M14 x 2
 * If "J" or "K" metric side mount options, M16 x 2.0 ∇ 16 mm with \varnothing 12 mm M7 ∇ 12 mm Dowel Hole

GSX60 Side Trunnion Mount with Class I Div 2 Option



* If "Q" metric side trunnion option, \varnothing 60 mm h9

GSX60 Rear Clevis Mount or Front Flange Mount with Class I Div 2 Option

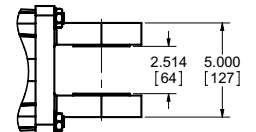


Dim	6" (152 mm) Stroke in (mm)	10" (254 mm) Stroke in (mm)
A	15.2 (387)	19.2 (488)
B	11.9 (302)	15.9 (403)
C	6.0 (152)	10.0 (254)
D	18.5 (469)	22.5 (571)

1. Two mounting styles shown
2. With flange mount, dimension A is equivalent to top two drawings

Note: Add 3.575 Inches to Dims "A" & "D" if ordering a Brake.

* If "G" metric clevis option, \varnothing 45 mm +0.00 / -0.08
 Drawings subject to change. Consult Exlar for certified drawings.



AA = Actuator Frame Size

- 30 = 3 inch (75 mm)
- 40 = 4 inch (100 mm)
- 50 = 5 inch (125 mm)
- 60 = 7 inch (175 mm)

BB = Stroke Length

- 03 = 3 inch (75 mm) GSX30
- 06 = 5.9 inch (150 mm) GSX30
6 inch (GSX20, 40, 50, 60)
- 08 = 8 inch (200 mm) GSX40
- 10 = 10 inch (250 mm) all models
- 12 = 12 inch (300 mm) GSX30, 40
- 14 = 14 inch (355 mm) GSX30, 50
- 18 = 18 inch (450 mm) GSX30, 40

CC = Lead (position change per motor revolution)

- 01 = 0.1 inch (2.54 mm) GSX30, 40, 50⁸
- 02 = 0.2 inch (5.08 mm) GSX30, 40, 50
- 03 = 0.25 inch (6.35 mm) GSX60
- 05 = 0.5 inch (12.7 mm) GSX30, 40, GSX50, 60
- 08 = 0.75 inch (20.32 mm) GSX40³
- 10 = 1.0 inch (25.4 mm) GSX50, 60⁴
- XX = Special lead

D = Connections

- T = Terminal box with NPT ports
See pg 129

E = Mounting

- B = Front and rear flange
- C = Rear clevis
- F = Front flange
- R = Rear flange
- S = Side mount
- D = Double side mount
- T = Side trunnion
- E = Extended tie rods
- J = Metric side mount
- K = Metric double side mount
- Q = Metric side trunnion
- M = Metric extended tie rods
- G = Metric rear clevis
- X = Special (please specify)

F = Rod End

- M = Male, US std thread
- A = Male, metric thread
- F = Female, US std thread
- B = Female, metric thread
- W = Male, US std thread 17-4 SS
- R = Male metric thread 17-4 SS
- V = Female, US std thread 17-4 SS
- L = Female metric thread 17-4 SS
- X = Special (please specify)

GGG = Feedback Type (Also specify the Amplifier/Drive Model being used when ordering) Resolver Only.

Standard Resolver – Size 15, 1024 line
(2048 cts) per rev, 2 pole resolver

Custom Feedback: Please consult application engineering:

- XX1 = Wiring and feedback device information must be provided and new feedback callout will be created
- AB6 = Allen Bradley/Rockwell - Std Resolver
- AM3 = Advanced Motion Control - Std Resolver
- AP1 = API Controls - Std Resolver
- BD2 = Baldor - Std Resolver
- BM2 = Baumuller - Std Resolver
- BR1 = B&R Automation - Std Resolver
- CO2 = Copely Controls - Std Resolver
- CT5 = Control Techniques/Emerson - Std Resolver
- DT2 = Delta Tau Data Systems - Std Resolver
- EL1 = Elmo Motion Control - Std Resolver
- EX4 = Exlar - Std Resolver
- IF1 = Infranor - Std Resolver
- IN6 = Indramat/Bosch-Rexroth - Std Resolver
- JT1 = Jetter Technologies - Std Resolver
- KM5 = Kollmorgen/Danaher - Std Resolver
- LZ5 = Lenze/AC Tech - Std Resolver
- MD1 = Modicon - Std Resolver
- MG1 = Moog - Std Resolver
- MX1 = Metronix - Std Resolver
- MN4 = Momentum - Std resolver
- OR1 = Ormec - Std Resolver
- PC7 = Parker Compumotor - Std Resolver – European only
- PC0 = Parker Compumotor - Std Resolver – US Only
- PS3 = Pacific Scientific - Std Resolver
- SM2 = Siemens - Std Resolver
- SW1 = SEW/Eurodrive - Std Resolver
- WD1 = Whedco - Std Resolver

H = Motor Stacks

- 1 = 1 stack magnets
- 2 = 2 stack magnets
- 3 = 3 stack magnets⁷
- x = Special

I = Voltage Rating

- A = 24 V DC
- B = 48 V DC
- C = 120 V DC
- 1 = 115 Volt RMS
- 3 = 230 Volt RMS
- 5 = 400 Volt RMS
- 6 = 460 Volt RMS
- X = Special voltage rating - not to exceed 460 Vrms

J = Motor Poles

- 8 = 8 motor poles

KK = Motor Speed

- 24 = 2400 rpm, GSX/M50, GSX60
- 30 = 3000 rpm, GSX/M30, 40
- 01-99 = Rated speed in RPM x 100

XX .. XX = Options (please list desired options)

Travel Options

- AR = External anti-rotate²
- HW = Side handwheel manual drive including Class I Div 2 limit switch
- NI = Non-incendive construction (see pg 129)
- PF = Preloaded follower¹
- RB = Rear electric brake
- RD = Rear manual drive
- SD = Hex side drive
- PB = Protective bellows¹⁰
- SR = Splined main roll

Housing Options

- EN = Electroless nickel plating⁵
- FG = White epoxy
- HC = type III anodizing hard coat⁵
- SS = Stainless steel housing^{5,9}
- XH = Special housing option
- XL = Special lubrication (greases only)
- XM = Special motor option
- XT = Special travel options including high temp bellows¹⁰

= Part No. Designator for Specials

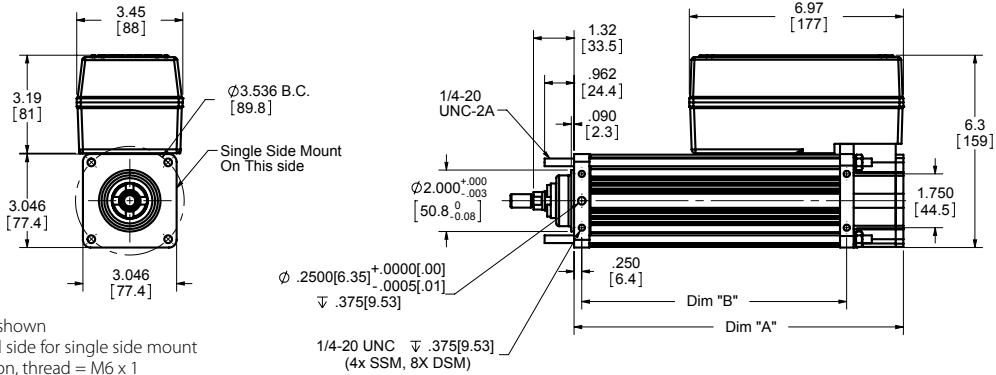
Optional 5 digit assigned part number to designate unique model numbers for specials.

Notes:

1. The dynamic load rating of preloaded screws is 63% of the rating of non-preloaded screws. Travel life of preloaded screw is 25% of non-preloaded screw of same size.
2. A second anti-rotate arm is used on GSX30 10 inch and longer stroke; GSX40 12 inch and longer.
3. 0.75 inch (20.32 mm) lead N/A above 12 inch (305 mm) stroke on GSX40.
4. 1.0 inch (25.4 mm) lead N/A above 10 inch (250 mm) stroke on GSX50 or 60.
5. These housing options may also indicate the need for special material main rods or mounting.
6. Due to reduced dia of splined main rod on GSX50, the std "A" male metric rod end is N/A. An "X" should be used in the rod end location of the model mask. If not otherwise specified by customer, an M24X2 male rod end will be used.
7. 3 stack stator not available on 3" stroke.
8. 0.1 inch lead N/A over 10" stroke on GSX50.
9. Force, torque and current ratings are reduced 25% with this option.
10. N/A with extended tie rod mounting option.

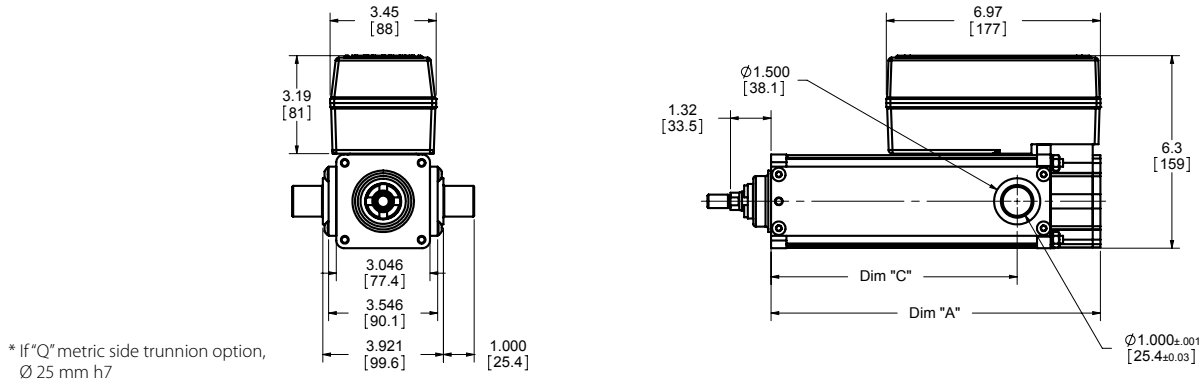
See page 22 for Accessories and page 108 for Cables.

GSM30 Single, Double Side Mounts or Extended Tie Rod Mount with Class I Div 2 Option



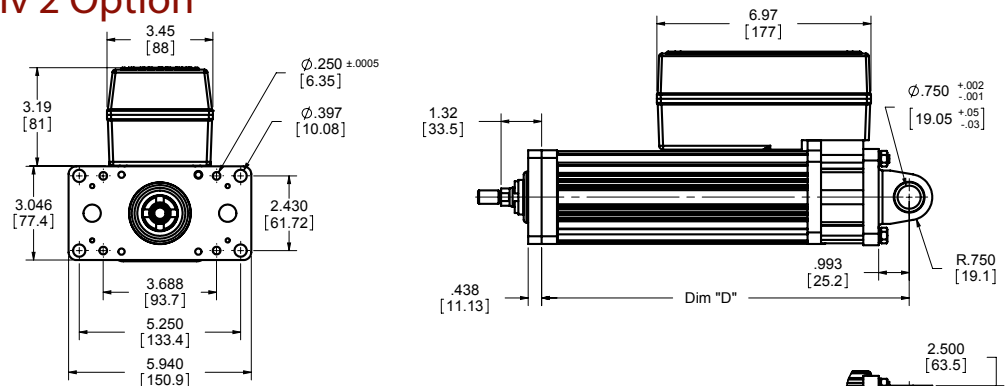
1. Three mounting styles shown
 2. Shown view is standard side for single side mount
- * If "M" metric tie rod option, thread = M6 x 1
 * If "J" or "K" metric side mount options, M6 x 1.0 ∇ 9 mm with ∇ 6 mm M7 ∇ 9 mm Dowel Hole

GSM30 Side Trunnion Mount with Class I Div 2 Option



* If "Q" metric side trunnion option, ∇ 25 mm h7

GSM30 Rear Clevis Mount or Front Flange Mount with Class I Div 2 Option



Dim	3" (76 mm) Stroke in (mm)	6" (152 mm) Stroke in (mm)	10" (254 mm) Stroke in (mm)	12" (305 mm) Stroke in (mm)	14" (355 mm) Stroke in (mm)	18" (457 mm) Stroke in (mm)
A	8.2 (209)	10.7 (272)	15.2 (387)	17.2 (437)	19.2 (488)	23.2 (590)
B	6.1 (156)	8.6 (219)	13.1 (333)	15.1 (384)	17.1 (435)	21.1 (536)
C	5.4 (137)	8.0 (203)	10.0 (254)	12.0 (305)	14.0 (356)	18.0 (457)
D	9.5 (241)	12.0 (304)	16.5 (418)	18.5 (469)	20.5 (520)	24.5 (621)

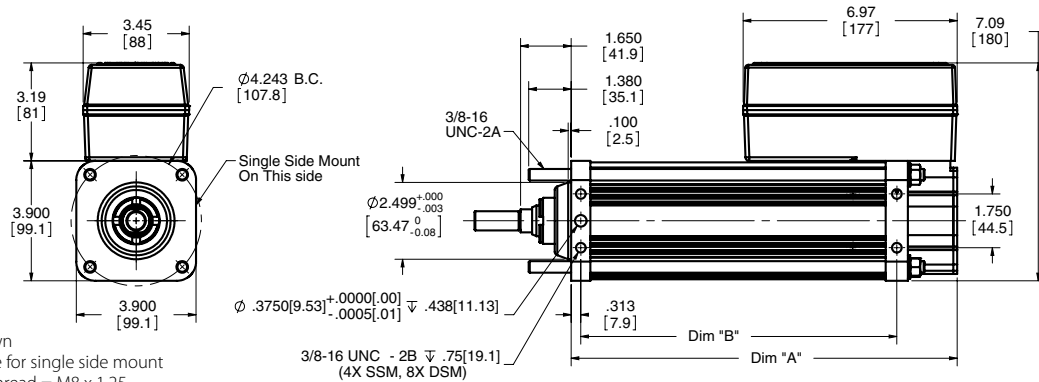
1. Two mounting styles shown
2. With flange mount, dimension A is equivalent to top two drawings

Note: Add 1.6 Inches (40.64 mm) to Dims "A" & "D" if ordering a Brake.

* If "G" metric clevis option, ∇ 20 mm +0.00 / -0.07
 Drawings subject to change. Consult Exlar for certified drawings.

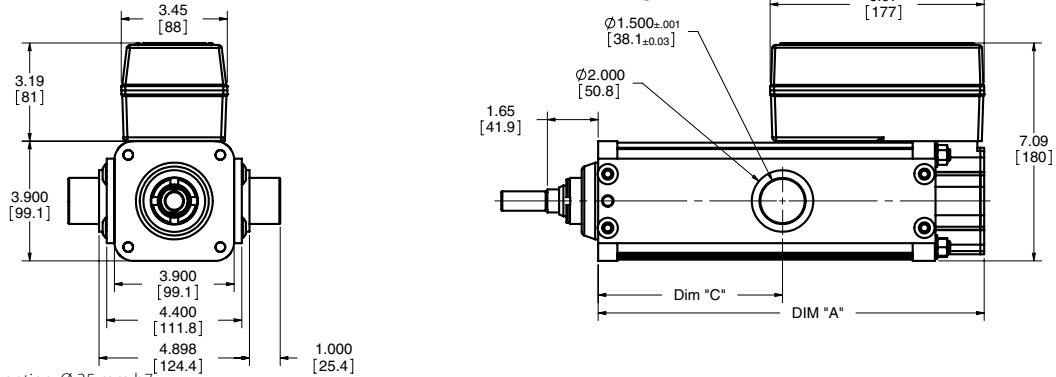
Hazardous Location GSM40 Class I Division 2

GSM40 Single, Double Side Mounts or Extended Tie Rod Mount with Class I Div 2 Option



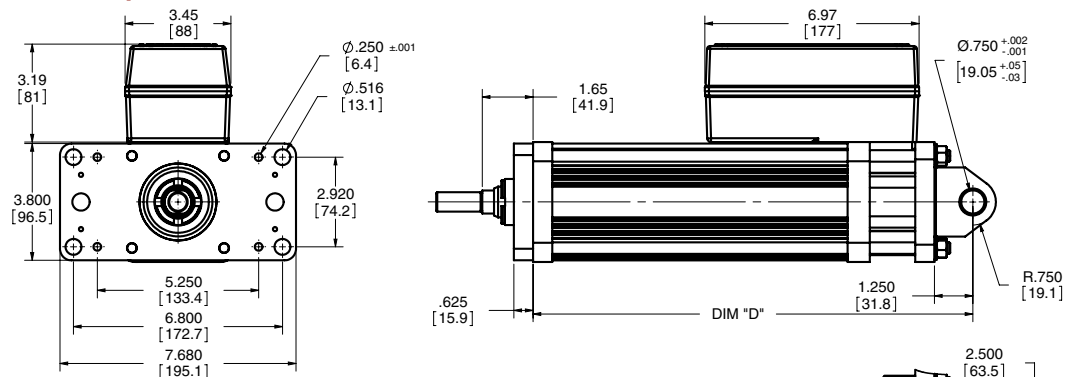
- Three mounting styles shown
 - Shown view is standard side for single side mount
- * If "M" metric tie rod option, thread = M8 x 1.25
 * If "J" or "K" metric side mount options, M10 x 1.5 ∇ 19 mm with ∇ 8 mm M7 ∇ 12 mm Dowel Hole

GSM40 Side Trunnion Mount with Class I Div 2 Option



* If "Q" metric side trunnion option, ∇ 35 mm h7

GSM40 Rear Clevis Mount or Front Flange Mount with Class I Div 2 Option



Dim	6" (152 mm) Stroke in (mm)	8" (203 mm) Stroke in (mm)	10" (254 mm) Stroke in (mm)	12" (305 mm) Stroke in (mm)	18" (457 mm) Stroke in (mm)
A	012.6 (320)	14.6 (370)	16.6 (421)	18.6 (472)	24.6 (624)
B	10.3 (262)	12.3 (313)	14.3 (364)	16.3 (414)	22.3 (567)
C	6.0 (152)	8.0 (203)	10.0 (254)	12.0 (305)	18.0 (457)
D	14.5 (364)	16.3 (415)	18.3 (466)	20.3 (516)	26.3 (669)

- Two mounting styles shown
- With flange mount, dimension A is equivalent to top two drawings

Note: Add 2.33 Inches (59.18 mm) to Dims "A & D" if ordering a Brake.

* If "G" metric clevis option, ∇ 20 mm +0.00 / -0.07

Drawings subject to change. Consult Exlar for certified drawings.

AA = Actuator Frame Size

- 30 = 3 inch (75 mm)
- 40 = 4 inch (100 mm)

BB = Stroke Length

- 03 = 3 inch (75 mm) GSM30
- 06 = 6 inch (150 mm) all models
GSM30 = 5.9 inch
- 08 = 0.75 inch (20.32 mm) GSM40
- 10 = 10 inch (250 mm) all models
- 12 = 12 inch (300 mm) all models
- 18 = 18 inch (450 mm) GSM30, 40

CC = Lead (position change per motor revolution)

- 01 = 0.1 inch (2.54 mm)
- 02 = 0.2 inch (5.08 mm)
- 05 = 0.5 inch (12.7 mm)
- 08 = 0.75 inch (20.32 mm)³

D = Connections

- T = Terminal Box with NPT ports
(see pg 129)

E = Mounting

- B = Front and rear flange
- C = Rear clevis
- F = Front flange
- R = Rear flange
- S = Side mount
- D = Double side mount
- T = Side trunnion
- E = Extended tie rods
- J = Metric side mount
- K = Metric double side mount
- Q = Metric side trunnion
- M = Metric extended tie rods
- G = Metric rear clevis
- Z = Clevis mount with same pin to pin as SR Series
- X = Special (please specify)

F = Rod End

- M = Male, US std thread
- A = Male, metric thread
- F = Female, US std thread
- B = Female, metric thread
- W = Male, US std thread 17-4 SS
- R = Male metric thread 17-4 SS
- V = Female, US std thread 17-4 SS
- L = Female metric thread 17-4 SS
- X = Special (please specify)

GGG = Feedback Type (Also specify the Amplifier/Drive Model being used when ordering) Resolver Only

Standard Resolver – Size 15, 1024 line (2048 cts) per rev, 2 pole resolver

Custom Feedback: Please consult application engineering:

- XX1 = Wiring and feedback device
information must be provided and new feedback callout will be created
- AB6 = Allen Bradley/Rockwell - Std Resolver
- AM3 = Advanced Motion Control - Std Resolver
- AP1 = API Controls - Std Resolver
- BD2 = Baldor - Std Resolver - BSM motor wiring w/M23 connectors for "M" option
- BM2 = Baumuller - Std Resolver
- BR1 = B&R Automation - Std Resolver
- CO2 = Copely Controls - Std Resolver
- CT5 = Control Techniques/Emerson - Std Resolver – FM/UM/EZ motor wiring w/M23 euro connectors for "M" option
- DT2 = Delta Tau Data Systems - Std Resolver
- EL1 = Elmo Motion Control - Std Resolver
- EX4 = Exlar - Std Resolver
- IF1 = Infranor - Std Resolver
- IN6 = Indramat/Bosch-Rexroth-Std Resolver – MKD/MHD motor wiring w/M23 euro connectors for "M" option
- JT1 = Jetter Technologies - Std Resolver – JH/JL motor wiring w/M23 euro connectors for "M" option
- KM5 = Kollmorgen/Danaher - Std Resolver – AKM motor wiring w/M23 euro connectors for "M" option
- LZ5 = Lenze/AC Tech - Std Resolver – MCS motor wiring w/M23 euro connectors for "M" option
- MD1 = Modicon - Std Resolver
- MG1 = Moog - Std Resolver
- MX1 = Metronix - Std Resolver
- MN4 = Momentum - Std resolver
- OR1 = Ormec - Std Resolver
- PC7 = Parker Compumotor - Std Resolver – SMH motor wiring w/M23 connectors for "M" option – European only
- PC0 = Parker Compumotor - Std Resolver – MPP motor wiring w/PS connectors for "M" option – US Only
- PS3 = Pacific Scientific - Std Resolver – PMA motor wiring w/M23 connectors for "M" option
- SM2 = Siemens - Std Resolver – 1FK7 motor wiring w/M23 connectors for "M" option
- SW1 = SEW/Eurodrive - Std Resolver – CM motor wiring w/ M23 euro connectors for "M" option
- WD1 = Whedco - Std Resolver

H = Motor Stacks

- 1 = 1 stack magnets
- 2 = 2 stack magnets
- x = Special

I = Voltage Rating

- A = 24 Volt DC
- B = 48 Volt DC
- C = 120 Volt DC
- 1 = 115 Volt RMS
- 3 = 230 Volt RMS
- 5 = 400 Volt RMS
- 6 = 460 Volt RMS
- X = Special Voltage Rating - Not to exceed 460 Vrms

J = Motor Poles

- 8 = 8 Motor Poles

KK = Motor Speed

- 24 = 2400 rpm, GSX/M50, GSX60
- 30 = 3000 rpm, GSX/M30, 40
- 01-99 = Rated speed in RPM x 100

XX .. XX = Options (please list desired options)

Travel Options

- AR = External anti-rotate⁴
- NI = Non-incendive construction, see pg 129
- PF = Preloaded follower¹
- RB = Rear electric brake
- RD = Rear manual drive
- SD = Hex side drive
- HW = Side handwheel manual drive including Class I Div 2 limit switch
- P5 = IP65
- PB = Protective bellows⁵
- SR = Splined main roll

Housing Options

- EN = Electroless nickel plating²
- HC = type III anodizing hard coat²
- XH = Special housing option
- XL = Special lubrication (greases only)
- XM = Special motor option
- XT = Special travel options, high temp bellows and angular contact bearings

= Part No. Designator for Specials

Optional 5 digit assigned part number to designate unique model numbers for specials.

Notes:

1. The dynamic load rating of preloaded screws is 63% of the rating of non-preloaded screws. Travel life of preloaded screw is 25% of non-preloaded screw of same size.
2. These housing options may also indicate the need for special material main rods or mounting.
3. 0.75 inch (20.32 mm) lead N/A over 12 inch (450 mm) stroke.
4. A second anti-rotate arm is used on GSM30 10 inch and longer stroke; GSM40 12 inch and longer stroke.
5. Not available with extended tie rod mounting option.