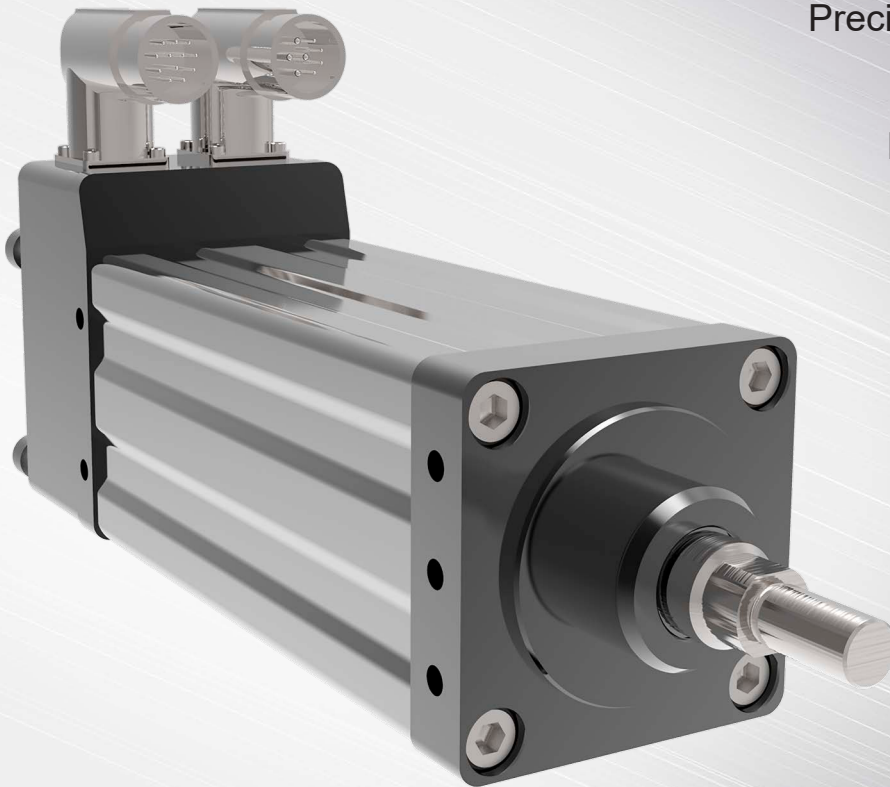


GTX Series

INTEGRATED SERVO MOTOR AND ACTUATOR



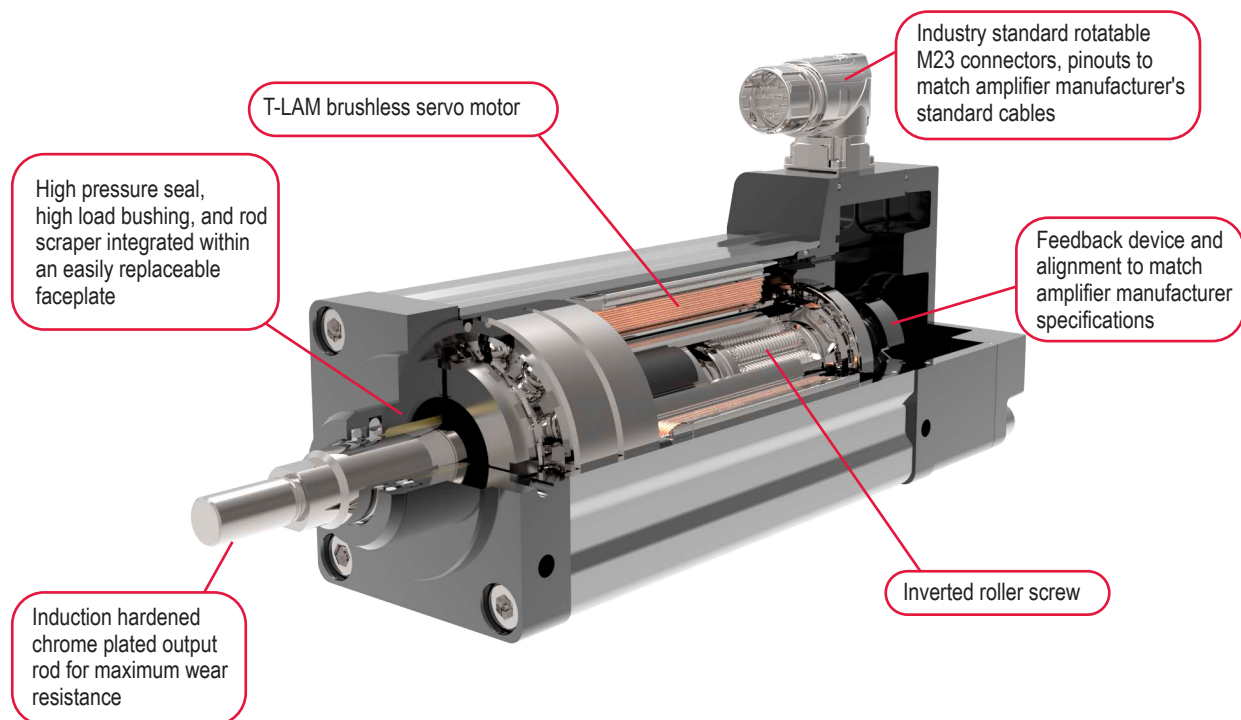
Ideal hydraulic replacement

Precise and programmable

Rugged and reliable

Powerful and compact

Product Features



- 1 - Front Flange Kit*
 - 2 - Face Mount Kit
 - 3 - External Limit Switch Kit**
 - 4 - External Anti-Rotate Kit
 - 5 - Multiple Rod End Threads***
 - 6 - Internal Anti-Rotate (Splined Rod)***
 - 7 - Rear Brake Option
 - 8 - Rear Clevis Kit*
- * Metric/Imperial Options
 ** Limit Switches Sold Separately
 *** Male/Female and Metric/Imperial Options

Mechanical Specifications

GTX060

	Stroke Length mm (in)	Screw Lead mm (in)	Continuous Force Rating N (lbf)		Max Velocity mm/s (in/s)		Dynamic Load Rating N (lbf)	Armature Inertia kg-m ² (in-lb-s ²)
			4 (VAC)	D (VDC)	4 (VAC)	D (VDC)		
GTX060-80-01	80 (3.2)	2.54 (0.1)	2,668 (600)	2,668 (600)	318 (12.5)	212 (8.3)	9,230 (2,075)	0.00007367 (0.000652)
GTX060-80-02		5.08 (0.2)	1,900 (427)	1,610 (392)	635 (25.0)	423 (16.7)	6,850 (1,540)	
GTX060-80-04		10.2 (0.4)	1,006 (226)	852 (192)	1,270 (50.0)	847 (33.3)	5,471 (1,230)	
GTX060-150-01	150 (5.9)	2.54 (0.1)	2,668 (600)	2,668 (600)	318 (12.5)	212 (8.3)	9,230 (2,075)	0.00008689 (0.000769)
GTX060-150-02		5.08 (0.2)	1,900 (427)	1,610 (392)	635 (25.0)	423 (16.7)	6,850 (1,540)	
GTX060-150-04		10.2 (0.4)	1,006 (226)	852 (192)	1,270 (50.0)	847 (33.3)	5,471 (1,230)	
GTX060-300-01	300 (11.8)	2.54 (0.1)	2,668 (600)	2,668 (600)	318 (12.5)	212 (8.3)	9,230 (2,075)	0.00011537 (0.001021)
GTX060-300-02		5.08 (0.2)	1,900 (427)	1,610 (392)	635 (25.0)	423 (16.7)	6,850 (1,540)	
GTX060-300-04		10.2 (0.4)	1,006 (226)	852 (192)	1,270 (50.0)	847 (33.3)	5,471 (1,230)	

Maximum velocities listed at maximum voltages
Configured stroke lengths available. Consult Exlar sales representative.

Do not exceed 2X the continuous force rating during operation
Continuous force rating based upon 25° C ambient conditions

GTX080

	Stroke Length mm (in)	Screw Lead mm (in)	Continuous Force Rating N (lbf)		Max Velocity mm/s (in/s)		Dynamic Load Rating N (lbf)	Armature Inertia kg-m ² (in-lb-s ²)
			4 (VAC)	D (VDC)	4 (VAC)	D (VDC)		
GTX080-100-01	100 (3.9)	2.54 (0.1)	8,365 (1,881)	7,101 (1,596)	254 (10.0)	102 (4.0)	24,535 (5,516)	0.000340 (0.003013)
GTX080-100-02		5.08 (0.2)	4,740 (1,066)	4,024 (905)	508 (20.0)	203 (8.0)	25,798 (5,800)	
GTX080-100-05		12.7 (0.5)	2,008 (451)	1,704 (383)	1,270 (50.0)	508 (20.0)	21,795 (4,900)	
GTX080-150-01	150 (5.9)	2.54 (0.1)	8,365 (1,881)	7,101 (1,596)	254 (10.0)	102 (4.0)	24,535 (5,516)	0.000369 (0.003267)
GTX080-150-02		5.08 (0.2)	4,740 (1,066)	4,024 (905)	508 (20.0)	203 (8.0)	25,798 (5,800)	
GTX080-150-05		12.7 (0.5)	2,008 (451)	1,704 (383)	1,270 (50.0)	508 (20.0)	21,795 (4,900)	
GTX080-300-01	300 (11.8)	2.54 (0.1)	8,365 (1,881)	7,101 (1,596)	254 (10.0)	102 (4.0)	24,535 (5,516)	0.000455 (0.004029)
GTX080-300-02		5.08 (0.2)	4,740 (1,066)	4,024 (905)	508 (20.0)	203 (8.0)	25,798 (5,800)	
GTX080-300-05		12.7 (0.5)	2,008 (451)	1,704 (383)	1,270 (50.0)	508 (20.0)	21,795 (4,900)	
GTX080-450-01	450 (17.7)	2.54 (0.1)	8,365 (1,881)	7,101 (1,596)	254 (10.0)	102 (4.0)	24,535 (5,516)	0.000541 (0.004790)
GTX080-450-02		5.08 (0.2)	4,740 (1,066)	4,024 (905)	508 (20.0)	203 (8.0)	25,798 (5,800)	
GTX080-450-05		12.7 (0.5)	2,008 (451)	1,704 (383)	1,270 (50.0)	508 (20.0)	21,795 (4,900)	

Maximum velocities listed at maximum voltages
Configured stroke lengths available. Consult Exlar sales representative.

Do not exceed 2X the continuous force rating during operation
Continuous force rating based upon 25° C ambient conditions

GTX100

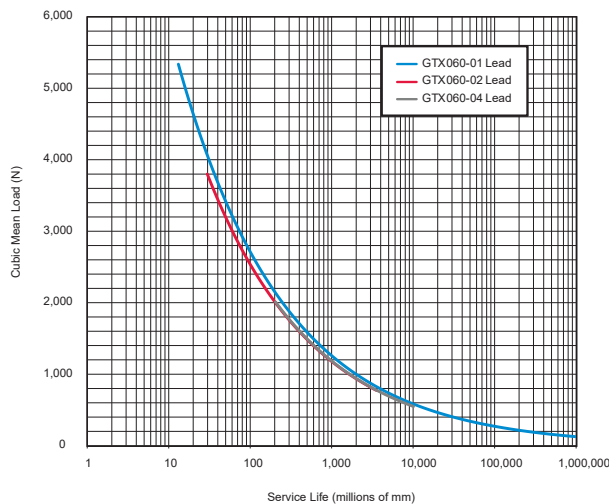
	Stroke Length mm (in)	Screw Lead mm (in)	Continuous Force Rating N (lbf)	Max Velocity mm/s (in/s)	Dynamic Load Rating N (lbf)	Armature Inertia kg-m ² (in-lb-s ²)
			4 (VAC)	4 (VAC)		
GTX100-150-01	150 (5.9)	2.54 (0.1)	15,392 (3,460)	191 (7.5)	54,557 (12,266)	0.0014085 (0.012467)
GTX100-150-02		5.08 (0.2)	12,098 (2,720)	381 (15.0)	55,972 (12,584)	
GTX100-150-05		12.7 (0.5)	5,444 (1,224)	953 (37.5)	37,141 (8,350)	
GTX100-300-01	300 (11.8)	2.54 (0.1)	15,392 (3,460)	191 (7.5)	54,557 (12,266)	0.0017399 (0.015399)
GTX100-300-02		5.08 (0.2)	12,098 (2,720)	381 (15.0)	55,972 (12,584)	
GTX100-300-05		12.7 (0.5)	5,444 (1,224)	953 (37.5)	37,141 (8,350)	

Maximum velocities listed at maximum voltages
Configured stroke lengths available. Consult Exlar sales representative.

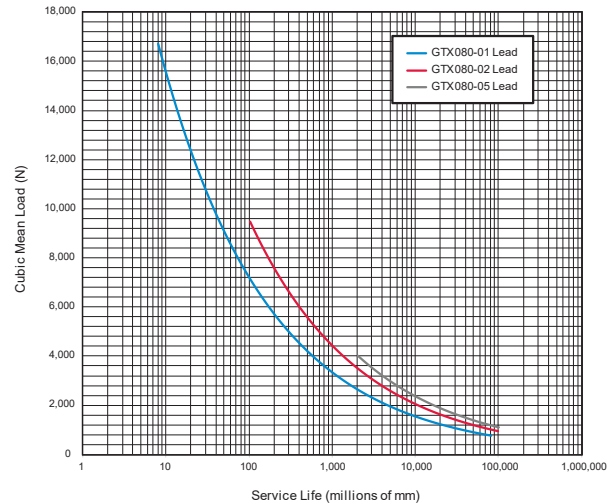
Do not exceed 2X the continuous force rating during operation
Continuous force rating based upon 25° C ambient conditions

Estimated Service Life

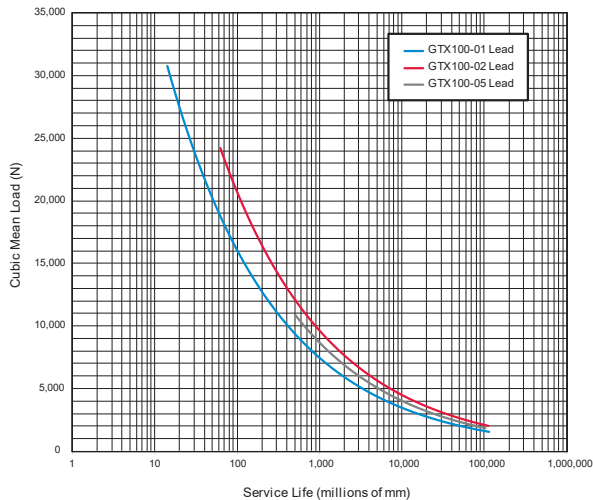
GTX060



GTX080



GTX100



Service Life Estimate Assumptions:

- Sufficient quality and quantity of lubrication is maintained throughout service life.
- No mechanical hard stops (external or internal) or impact loads
- No external side loads
- Does not apply to short stroke, high frequency applications such as fatigue testing or short stroke, high force applications such as pressing. If your application requires high force over a stroke length shorter than the length of the rollers/nut, please contact Exlar for additional details on calculating estimated service life. You may also download the article "Calculating Life Expectancy" at www.cw-actuation.com.

The L_{10} expected life of a roller screw linear actuator is expressed as the linear travel distance that 90% of properly maintained roller screws manufactured are expected to meet or exceed. This is not a guarantee and these charts should be used for estimation purposes only.

The underlying formula that defines this value is:
Travel life in millions of inches, where:

$$L_{10} = \left(\frac{C_a}{F_{cml}} \right)^3 \times \ell$$

C_a = Dynamic load rating (lbf)
 F_{cml} = Cubic mean applied load (lbf)
 ℓ = Roller screw lead (inches)

For additional details on calculating estimated service life, please refer www.cw-actuation.com.

Electrical Specifications

GTX060

Motor Voltage		4 (AC)			D (DC)		
Max Bus Voltage	VAC	230/460 Vrms			24/48 VDC		
Speed @ Bus Voltage	RPM	5000/7500			2400/5000		
Actuator Lead	in	0.1	0.2	0.4	0.1	0.2	0.4
RMS Sinusoidal Commutation							
Continuous Motor Torque	Nm	1.35	1.81	1.81	1.35	1.53	1.53
	lbf-in	11.9	16.0	16.0	11.9	13.6	13.6
Continuous Current Rating	A	3.0	4.0	4.0	18.3	20.8	20.8
Peak Current Rating	A	6.0	8.0	8.0	36.7	41.7	41.7
Torque Constant (Kt) (+/- 10% @ 25°C)	Nm/A	0.5			0.08		
	lbf-in/A	4.5			0.7		
Voltage Constant (Ke) (+/- 10% @ 25°C)	V/kRPM	30.5			5.0		
0 - Peak Sinusoidal Commutation							
Continuous Motor Torque	Nm	1.8			1.5		
	lbf-in	16			13.6		
Continuous Current Rating	A	5.7			29.5		
Peak Current Rating	A	11.3			58.9		
Torque Constant (Kt) (+/- 10% @ 25°C)	Nm/A	0.35			0.06		
	lbf-in/A	3.2			0.5		
Voltage Constant (Ke) (+/- 10% @ 25°C)	V/kRPM	43.1			7.0		
Pole Configuration	Number of Poles	8			8		
Resistance (L-L) (+/- 5% @ 25°C)	Ohms	2.8			0.1		
Inductance (L-L)(+/- 15%)	mH	13.8			0.3		
Electrical Time Constant	ms	4.9			3.1		
Insulation Class	460 VAC Max, 180°C (Class H)						

Specifications subject to change without notice

Test data derived using NEMA recommended aluminum heatsink 10" x 10" x 1/4" at 25°C ambient

VAC Class winding operational compatible with drive voltages up to 460 VAC

VDC Class winding operational compatible with drive voltages up to 48 VDC

Rotational speed approximately proportional to drive input voltage

GTX060 Weights	
Description	kg (lb)
GTX060-80	2.3 (5.1)
GTX060-150	2.8 (6.2)
GTX060-300	3.9 (8.6)
Brake Adder	0.7 (1.4)
Front Flange (1)	0.4 (0.9)
Tapped Face (3)	0.3 (0.5)
Rear Clevis (5)	0.2 (0.5)
Imperial Flange (F)	0.3 (0.7)
Imperial Clevis (C)	0.3 (0.7)
Anti Rotate (80 mm stroke)	0.3 (0.7)
Anti Rotate (150 mm stroke)	0.5 (1.1)
Anti Rotate (300 mm stroke)	0.6 (1.3)
Limit Switch Assembly w/Anti-Rotate (80 mm stroke)	0.4 (0.9)
Limit Switch Assembly w/Anti-Rotate (150 mm stroke)	0.6 (1.4)
Limit Switch Assembly w/Anti-Rotate (300 mm stroke)	0.9 (2.0)

Brake Specifications		
Brake Holding Torque (minimum)	Nm	2.5
	lbf-in	22
Brake Voltage	VDC	24 (-10%/+6%)
Nominal Brake Current at 24 VDC	A	0.46
Brake Engage/Disengage Time (typical)	ms	10/25

GTX080

Motor Voltage		4 (AC)	D (DC)
Max Bus Voltage	VAC	230/460 Vrms	24/48 VDC
Speed @ Bus Voltage	RPM	3000/6000	1000/2400
RMS Sinusoidal Commutation			
Continuous Motor Torque	Nm	4.51	3.83
	lbf-in	39.9	33.9
Continuous Current Rating	A	4.9	24.2
Peak Current Rating	A	9.9	48.5
Torque Constant (Kt) (+/- 10% @ 25°C)	Nm/A	1.02	0.18
	lbf-in/A	9.0	1.6
Voltage Constant (Ke) (+/- 10% @ 25°C)	V/kRPM	61.6	10.7
0 - Peak Sinusoidal Commutation			
Continuous Motor Torque	Nm	4.51	3.83
	lbf-in	39.9	33.9
Continuous Current Rating	A	6.6	34.6
Peak Current Rating	A	13.3	69.2
Torque Constant (Kt) (+/- 10% @ 25°C)	Nm/A	0.72	0.13
	lbf-in/A	6.4	1.1
Voltage Constant (Ke) (+/- 10% @ 25°C)	V/kRPM	87.1	15.1
Pole Configuration	Number of Poles	8	8
Resistance (L-L) (+/- 5% @ 25°C)	Ohms	2.5	0.1
Inductance (L-L)(+/- 15%)	mH	17.3	0.46
Electrical Time Constant	ms	6.8	6.9
Insulation Class	460 VAC Max, 180°C (Class H)		

Specifications subject to change without notice

Test data derived using NEMA recommended aluminum heatsink 10" x 10" x 1/4" at 25°C ambient

VAC Class winding operational compatible with drive voltages up to 460 VAC
VDC Class winding operational compatible with drive voltages up to 48 VDC
Rotational speed approximately proportional to drive input voltage

GTX080 Weights	
Description	kg (lb)
GTX080-100	4.6 (10.0)
GTX080-150	5.2 (11.4)
GTX080-300	7.0 (15.4)
GTX080-450	8.9 (19.5)
Brake Adder	1.1 (2.5)
Front Flange (1)	1.0 (2.2)
Tapped Face (3)	0.6 (1.2)
Rear Clevis (5)	0.4 (0.8)
Imperial Flange (F)	0.8 (1.8)
Imperial Clevis (C)	0.8 (1.7)
Anti Rotate (100 mm stroke)	0.5 (1.1)
Anti Rotate (150 mm stroke)	0.6 (1.3)
Anti Rotate (300 mm stroke)	0.8 (1.8)
Anti Rotate (450 mm stroke)	1.1 (2.4)
Limit Switch Assembly w/Anti-Rotate (100 mm stroke)	0.9 (1.9)
Limit Switch Assembly w/Anti-Rotate (150 mm stroke)	1.0 (2.3)
Limit Switch Assembly w/Anti-Rotate (300 mm stroke)	1.6 (3.5)
Limit Switch Assembly w/Anti-Rotate (450 mm stroke)	2.1 (4.7)

Brake Specifications		
Brake Holding Torque (minimum)	Nm	4.5
	lbf-in	40
Brake Voltage	VDC	24 (-10%/+6%)
Nominal Brake Current at 24 VDC	A	0.5
Brake Engage/Disengage Time (typical)	ms	18/35

GTX100

Motor Voltage		4 (AC)
Max Bus Voltage	VAC	230/460 Vrms
Speed @ Bus Voltage	RPM	3000/4500
RMS Sinusoidal Commutation		
Continuous Motor Torque	Nm	12.23
	lbf-in	108.2
Continuous Current Rating*	A	12.3
Peak Current Rating*	A	24.7
Torque Constant (Kt) (+/- 10% @ 25°C)	Nm/A	1.11
	lbf-in/A	9.8
Voltage Constant (Ke) (+/- 10% @ 25°C)	V/kRPM	67.0
0 - Peak Sinusoidal Commutation		
Continuous Motor Torque	Nm	12.23
	lbf-in	108.2
Continuous Current Rating	A	17.4
Peak Current Rating	A	34.8
Torque Constant (Kt) (+/- 10% @ 25°C)	Nm/A	0.78
	lbf-in/A	6.92
Voltage Constant (Ke) (+/- 10% @ 25°C)	V/kRPM	94.8
Pole Configuration	Number of Poles	8
Resistance (L-L) (+/- 5% @ 25°C)	Ohms	0.65
Inductance (L-L)(+/- 15%)	mH	4.9
Electrical Time Constant	ms	7.6
Insulation Class	460 VAC Max, 180°C (Class H)	

Specifications subject to change without notice

Test data derived using NEMA recommended aluminum heatsink 12" x 12" x 1/2" at 25°C ambient

VAC Class winding operational compatible with drive voltages up to 460 VAC

Rotational speed approximately proportional to drive input voltage

* For actuators with a 0.1" lead, the torque and current must be limited to 8.89 Nm/9.0 A not to exceed the continuous force rating specified in the mechanical specifications table on page 6. Peak torque and current values would be 2x the continuous values

GTX100 Weights	
Description	kg (lb)
GTX100-150	13.1 (28.8)
GTX100-300	16.0 (35.2)
Brake Adder	1.2 (2.7)
Front Flange (1)	2.2 (4.7)
Tapped Face (3)	1.1 (2.4)
Rear Clevis (5)	0.8 (1.8)
Imperial Flange (F)	1.9 (4.1)
Imperial Clevis (C)	1.1 (2.5)
Anti Rotate (150 mm stroke)	1.5 (3.2)
Anti Rotate (300 mm stroke)	2.0 (4.5)
Limit Switch Assembly w/Anti-Rotate (150 mm stroke)	2.0 (4.5)
Limit Switch Assembly w/Anti-Rotate (300 mm stroke)	2.8 (6.2)

Brake Specifications		
Brake Holding Torque (minimum)	Nm	11
	lbf-in	97
Brake Voltage	VDC	24 (-10%/+6%)
Nominal Brake Current at 24 VDC	A	0.75
Brake Engage/Disengage Time (typical)	ms	25/40

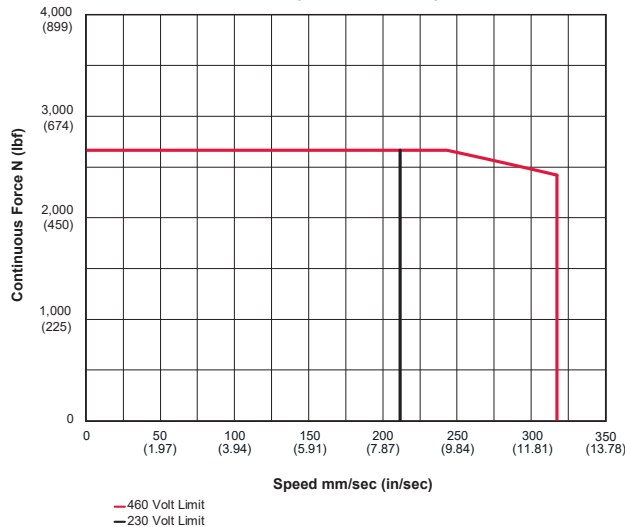
Speed vs. Force Curves

These charts represent typical linear speed versus linear force curves for the GTX actuators using common brushless motor amplifiers. The GTX Series are compatible with many different brushless motor amplifiers; any differences in the performance

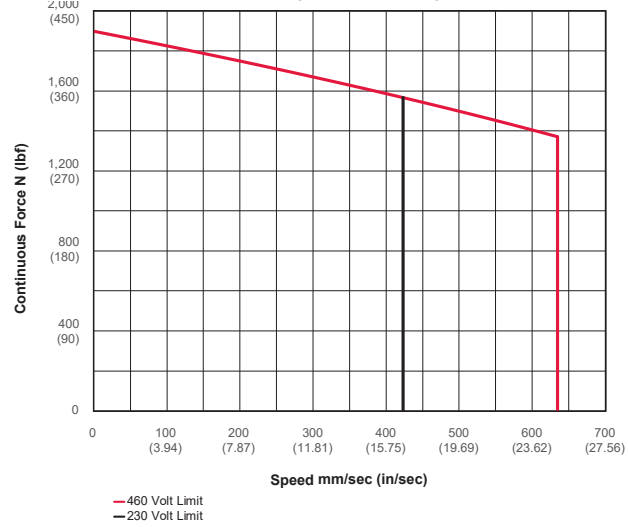
ratings of these amplifiers can alter the actuator's performance. Thus, the curves below should be used for estimation only. (Further information is available by contacting your local sales representative.)

AC Voltage Winding

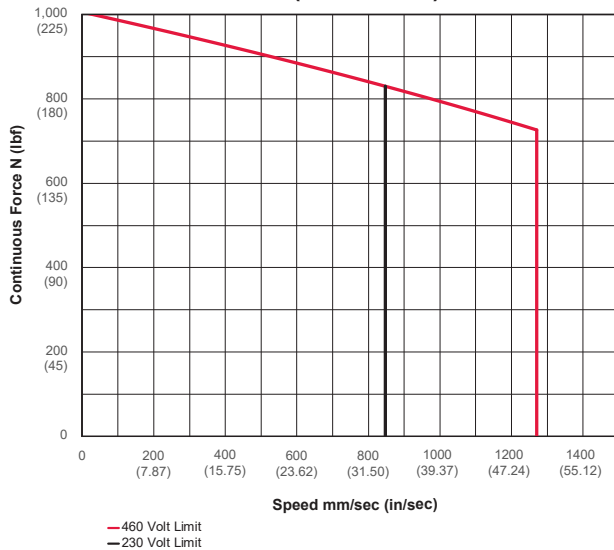
GTX060 (0.1 In Lead)



GTX060 (0.4 In Lead)



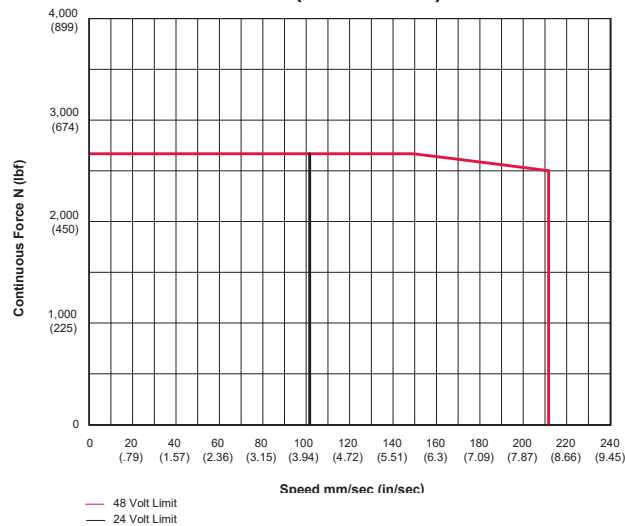
GTX060 (0.2 In Lead)



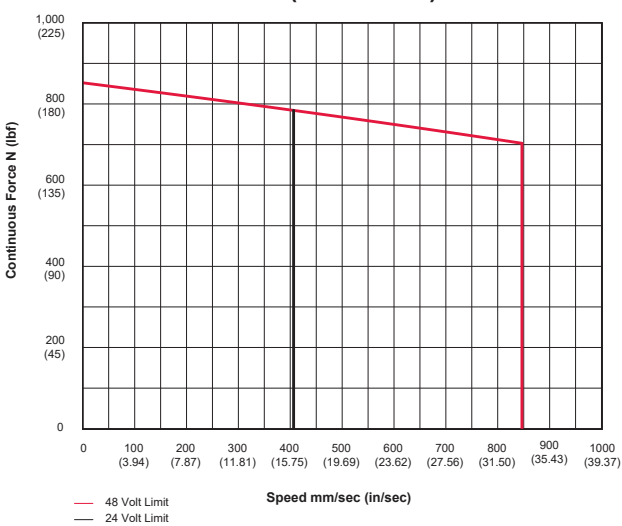
Test data derived using NEMA recommended aluminum heatsink 10" x 10" x 1/4" for GTX080.

DC Voltage Winding

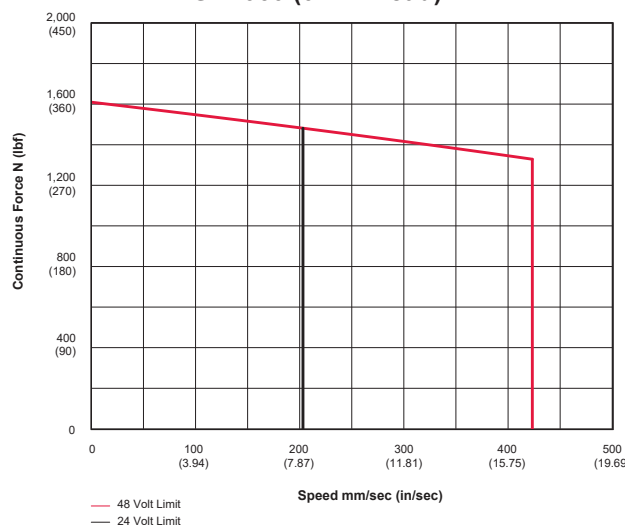
GTX060 (0.1 In Lead)



GTX060 (0.4 In Lead)

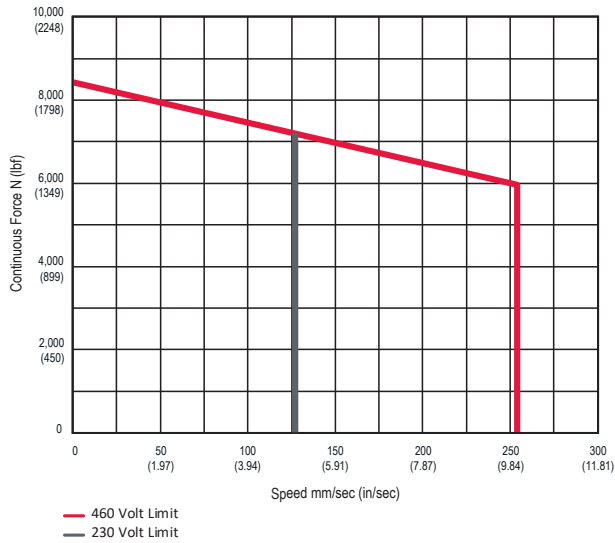


GTX060 (0.2 In Lead)

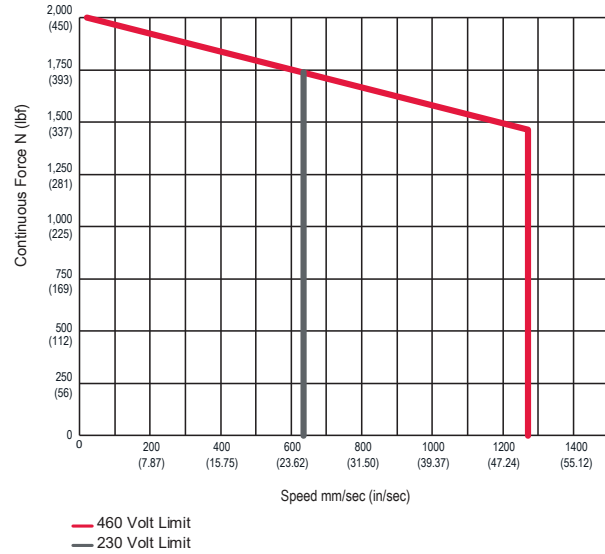


AC Voltage Winding

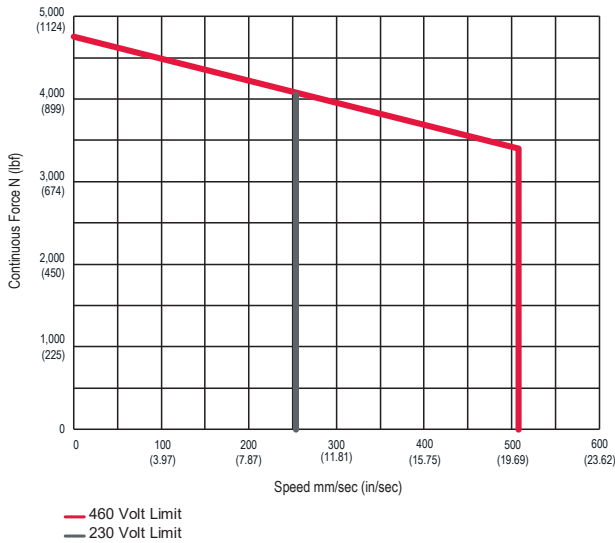
GTX080 (0.1 In Lead)



GTX080 (0.5 In Lead)

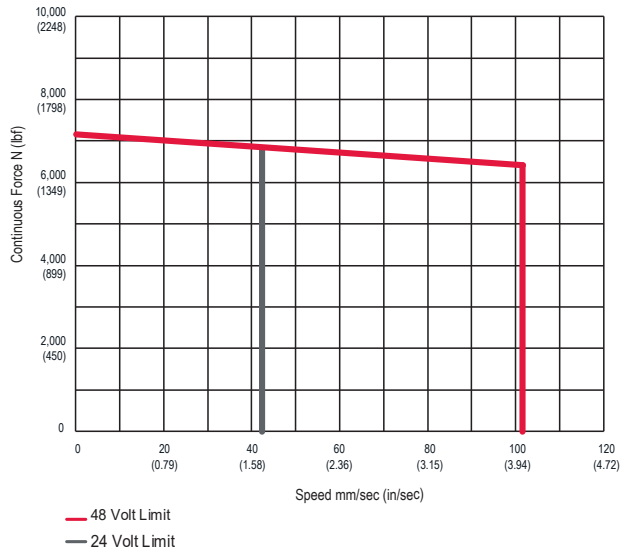


GTX080 (0.2 In Lead)

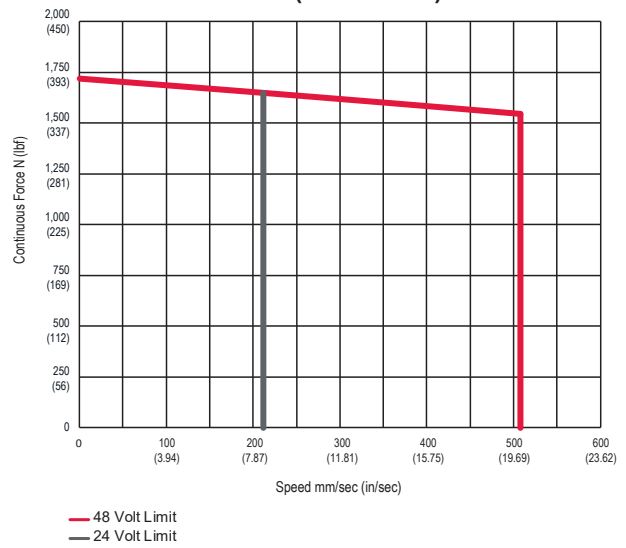


DC Voltage Winding

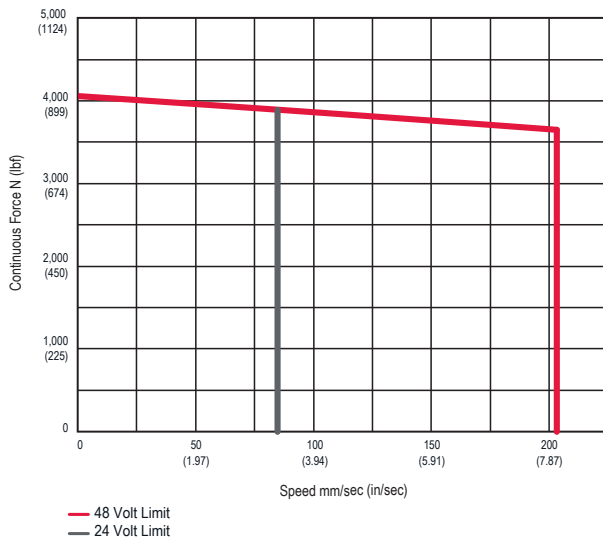
GTX080 (0.1 In Lead)



GTX080 (0.5 In Lead)



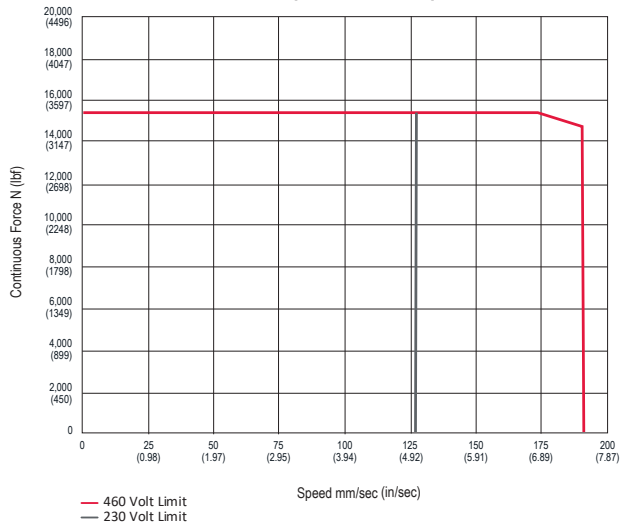
GTX080 (0.2 In Lead)



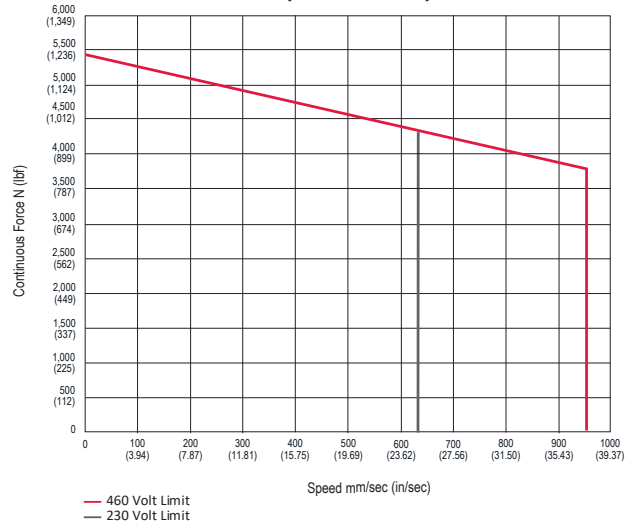
Test data derived using NEMA recommended aluminum heatsink 10" x 10" x 1/4" for GTX080.

AC Voltage Winding

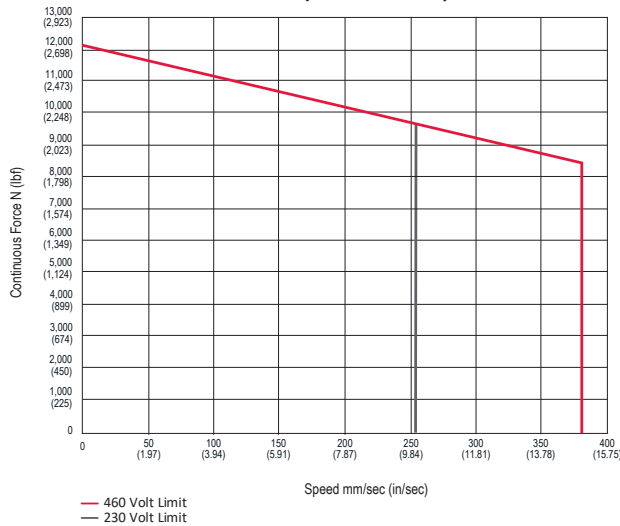
GTX100 (0.1 In Lead)



GTX100 (0.5 In Lead)



GTX100 (0.2 In Lead)



Test data derived using NEMA recommended aluminum heatsink 12" x 12" x 1/2" at 25°C ambient for GTX100.

Options

Motor Winding / Voltage

GTX actuators can be operated at a wide range of voltages (up to 460 VAC). For DC voltage applications, please refer to the order guide "D" callout. Refer to the mechanical/electrical specifications for motor torque and actuator rated force.

4	460 VAC Max
D	48 VDC Max

Internal Holding Brake

This option provides an internal holding brake for GTX Series actuators. The brake is a permanent magnet brake that is normally engaged. Power must be applied to the brake to disengage the brake.

Feedback Device Options:

Resolvers

Incremental Encoders

Absolute Encoders

Exlar GTX actuators are compatible with a variety of drive platforms available today. Exlar installs, aligns, and wires feedback devices to mimic a typical motor's wiring and cabling commonly used with the listed amplifier manufacturer (see wiring and alignment section for details). If your wiring and alignment is not listed, please consult Exlar.

External Anti-rotate Assembly

The unique design of the GTX Series of linear actuators permits the extending rod to rotate. This capability simplifies setup by allowing the user to rotate the rod in and out of the actuator for mechanical attachment or system testing.

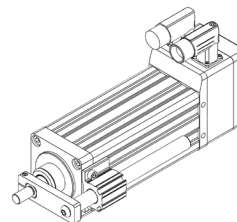
However, this feature also requires that once setup and testing are completed, the rod be kept from rotating so proper linear motion will be maintained. In most applications the actuator's load is coupled to linear bearings, or some other support device. In these cases the load cannot rotate, so an anti-rotation on the actuator is not needed.

Splined Rod Option

The splined rod is an internal anti-rotate option that will restrict rotation but still provide linear motion without the need for an external mechanism. It is not suitable for environments where contaminants may be able to penetrate the actuator. The option does NOT meet the IP66S rating as there is no sealing component where the driven rod extends and retracts. If the unit is installed vertically rod end down there is potential for grease to exit the unit in environments where overheating can occur.

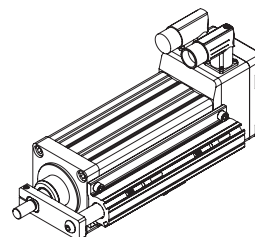
Mounting Options

Both as part of the actuator model code and sold as accessory kits. For applications in which the load is free to rotate, Exlar offers bolt-on anti-rotation systems.



External Limit Switch/ Anti-Rotate Assembly

This option allows external limit switches to be mounted to the GTX Series Actuator. These switches provide travel indication to the controller and are adjustable (Limit switches sold separately).



The external limit switch accessory for the GTX Series of linear actuators allows the user to externally mount adjustable switches for use as the end of travel limit switches or home position sensors.

(Limit switches sold separately from actuator)

NOTE: Accessory option "L" required in model mask to order

Switch Type	Exlar Part Number	Turck Part Number
Normally Closed Switch, PNP	43404	BIM-UNT-RP6X
Normally Open Switch, PNP	43403	BIM-UNT-AP6X
Normally Closed Switch, NPN	67635	BIM-UNT-RN6X
Normally Open Switch, NPN	67634	BIM-UNT-AN6X

Rod End Accessories

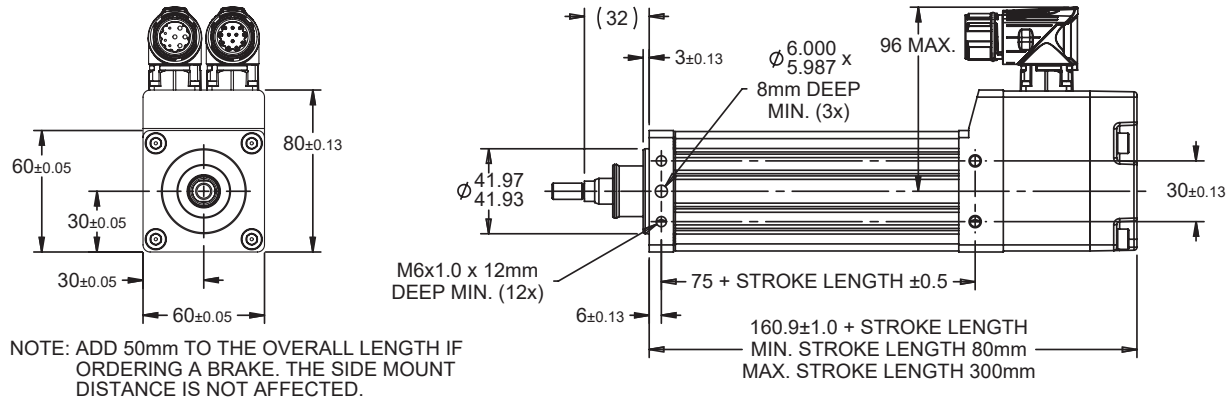
Spherical Rod Eye Rod Clevis

Rod end attachments sold separately from actuator.

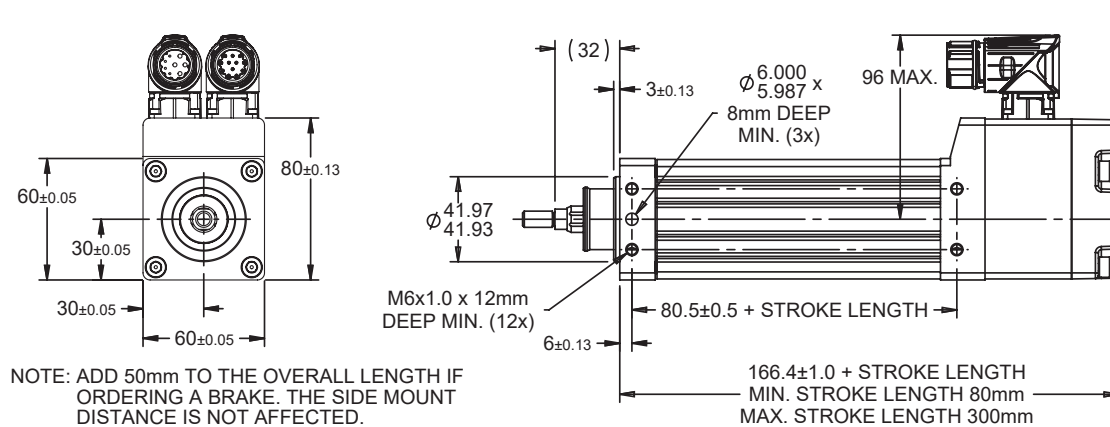
Dimensions

GTx060 BASE ACTUATOR

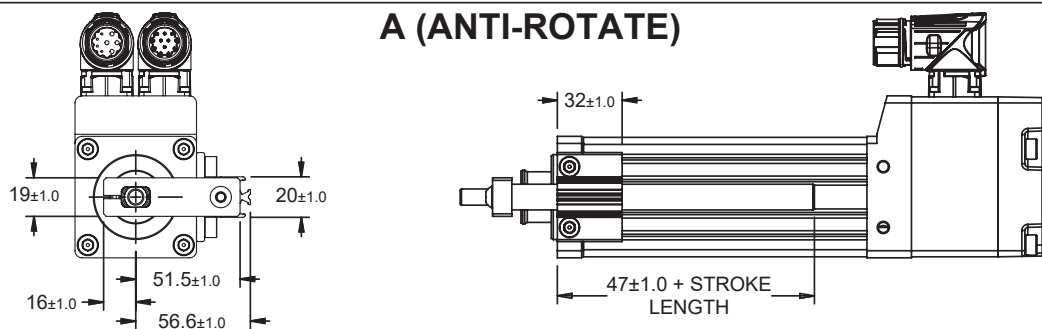
ALL DIMENSIONS ARE IN MILLIMETERS



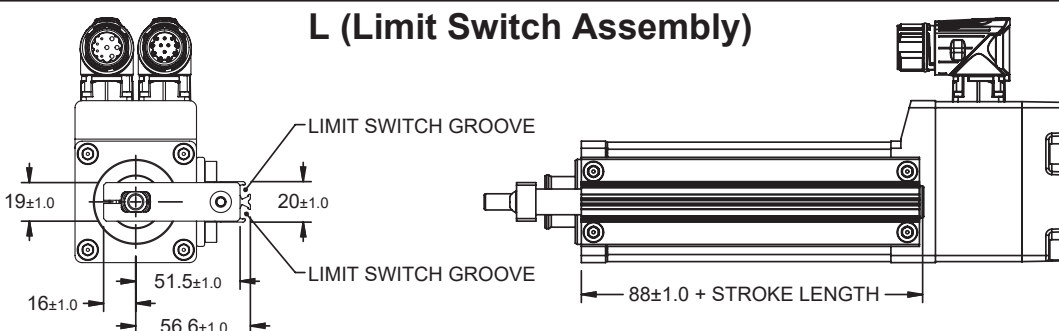
GTx060 WITH SPLINED MAIN ROD



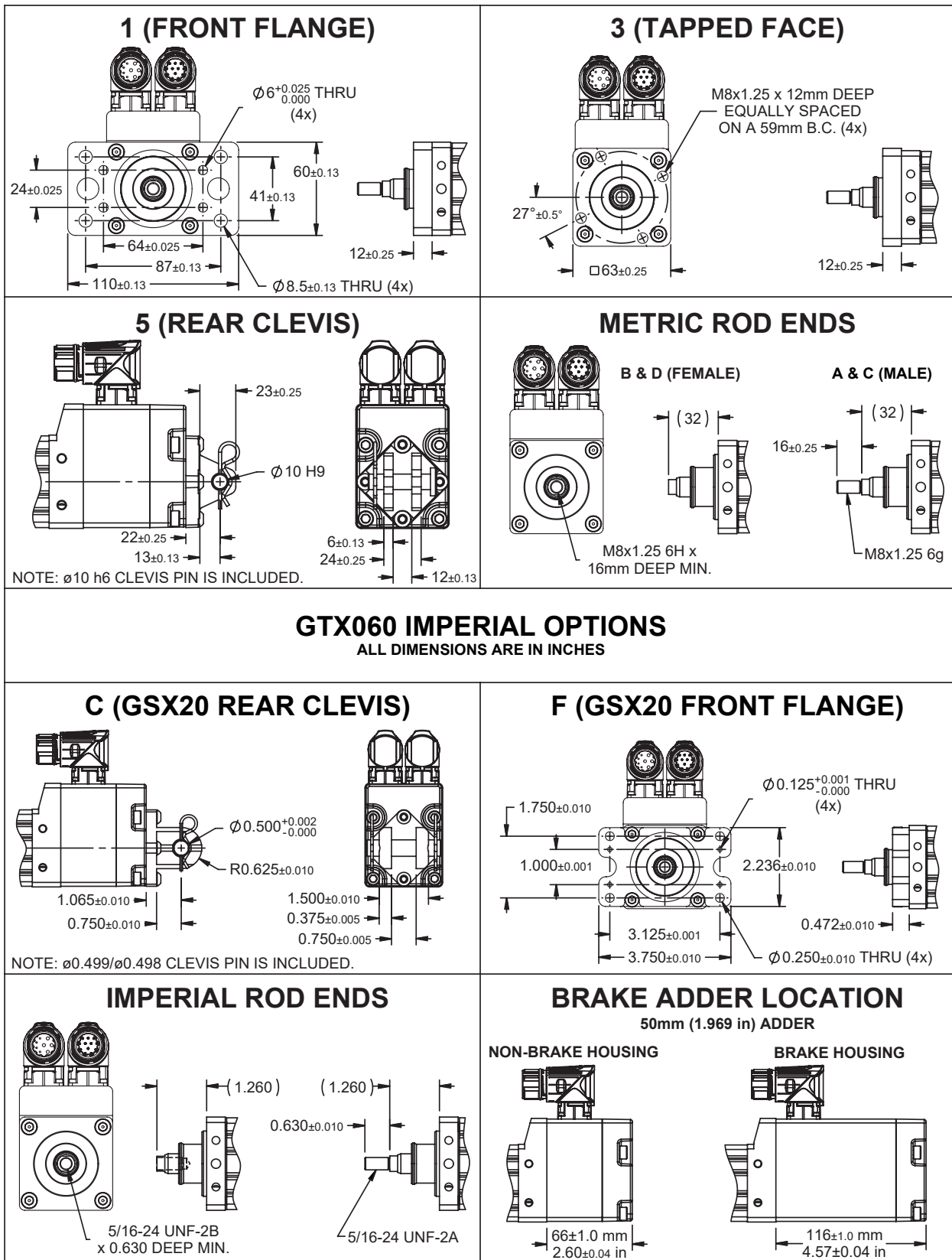
A (ANTI-ROTATE)



L (Limit Switch Assembly)

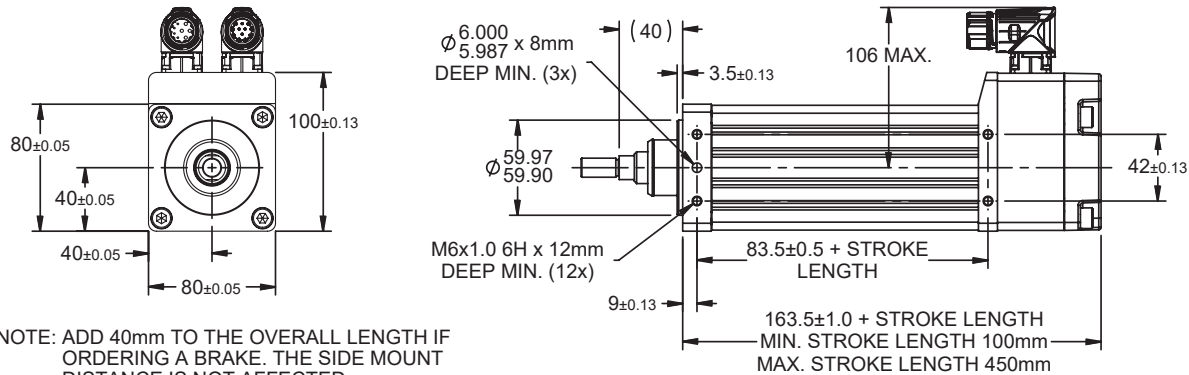


Pre-sale drawings and models are representative and are subject to change. Visit exlar.com to download a 3D model of your desired configuration.

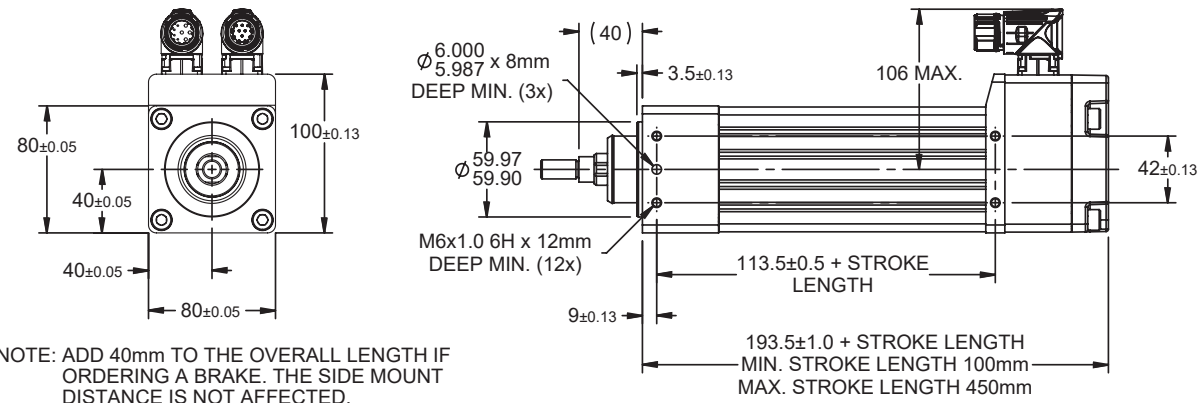


GTX080 BASE ACTUATOR

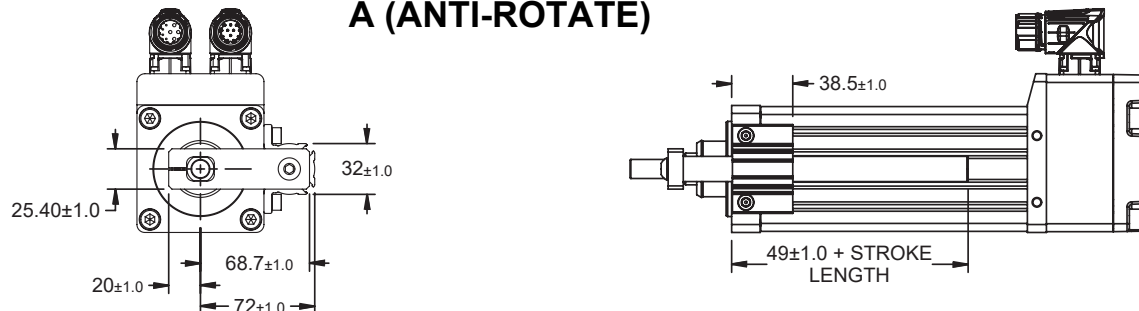
ALL DIMENSIONS ARE IN MILLIMETERS



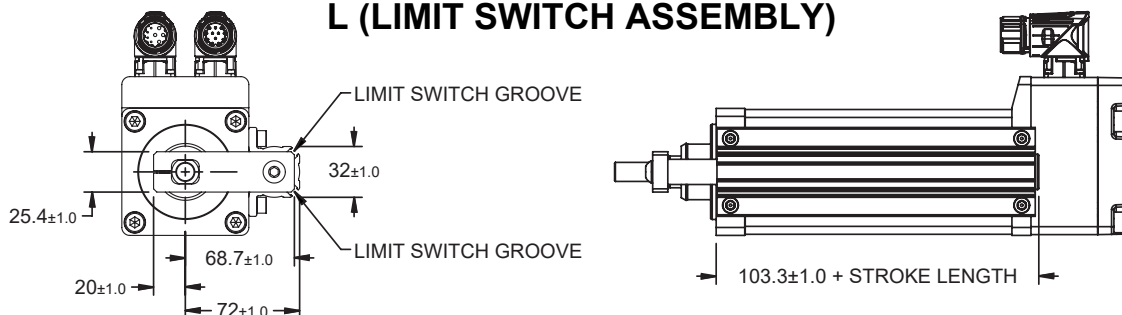
GTX080 WITH SPLINED MAIN ROD

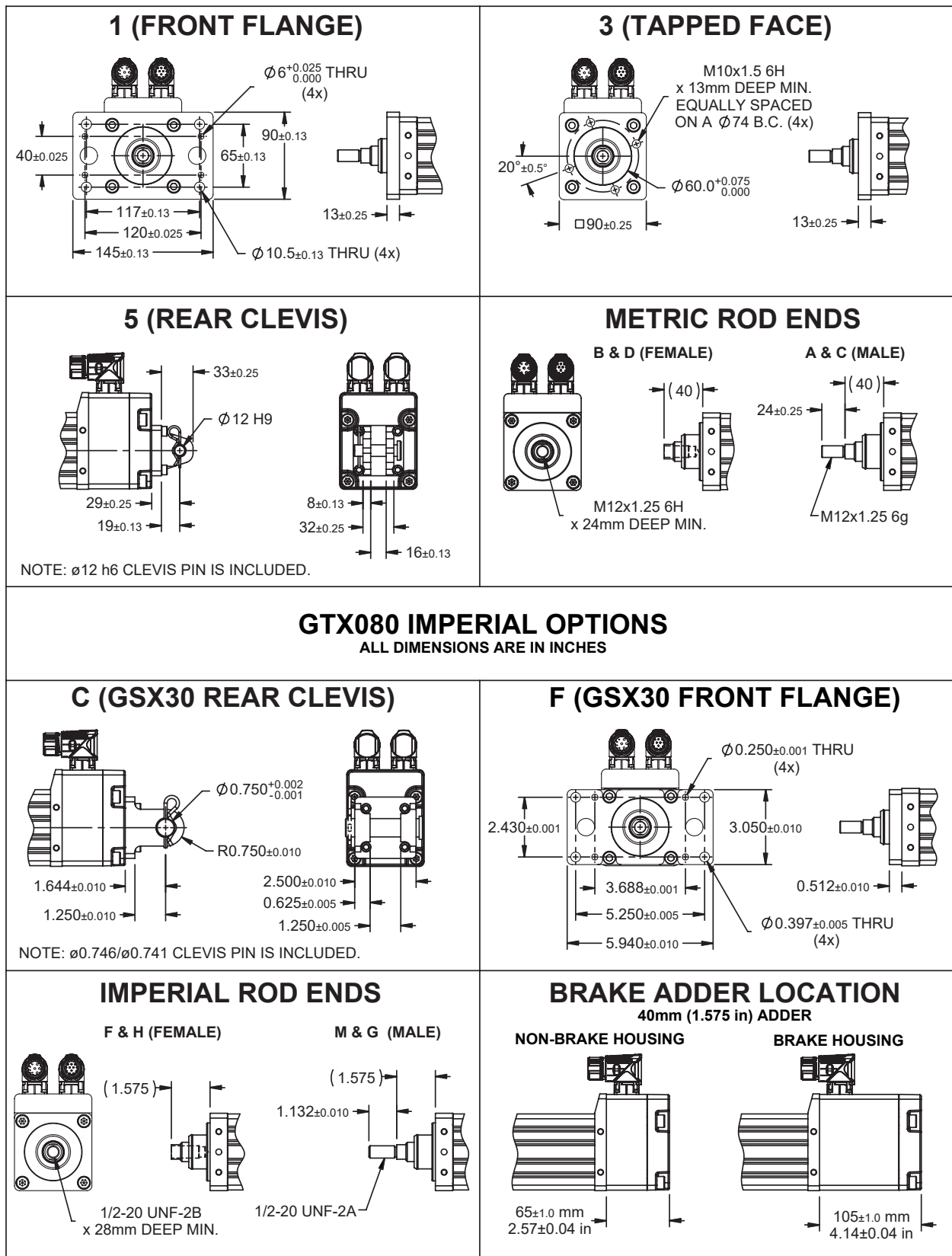


A (ANTI-ROTATE)



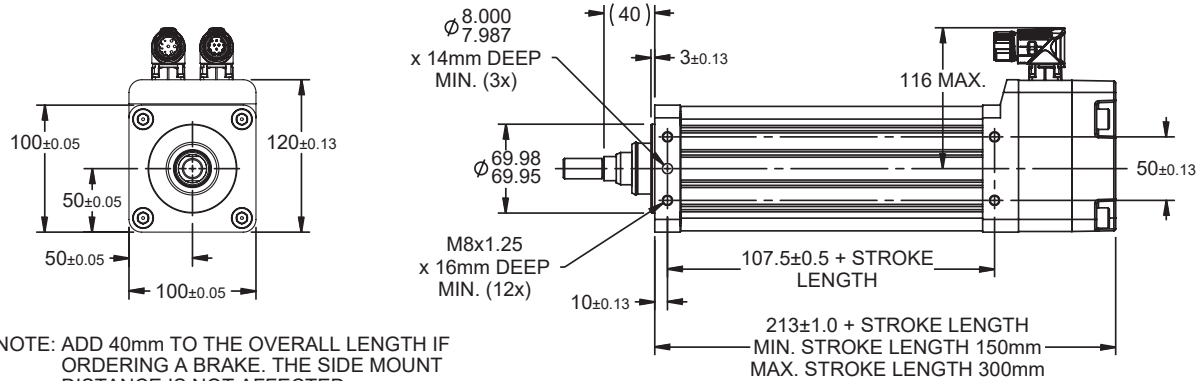
L (LIMIT SWITCH ASSEMBLY)



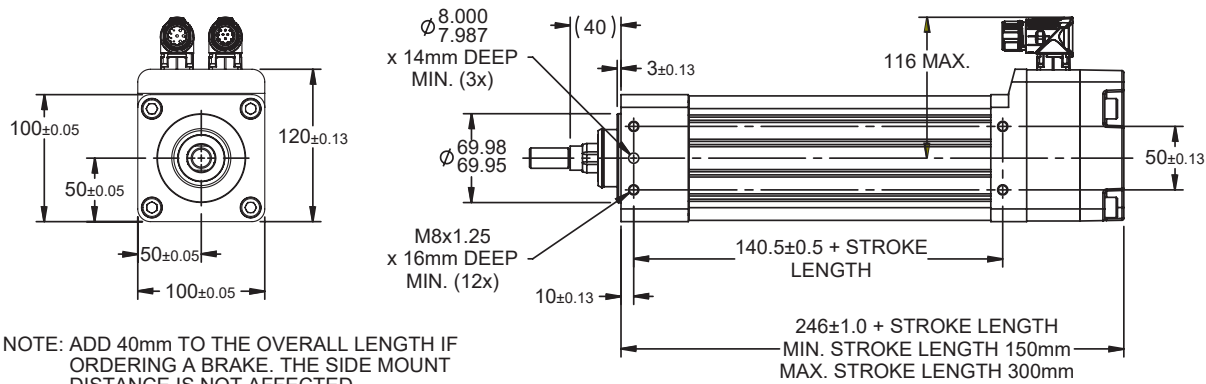


ALL DIMENSIONS ARE IN MILLIMETERS

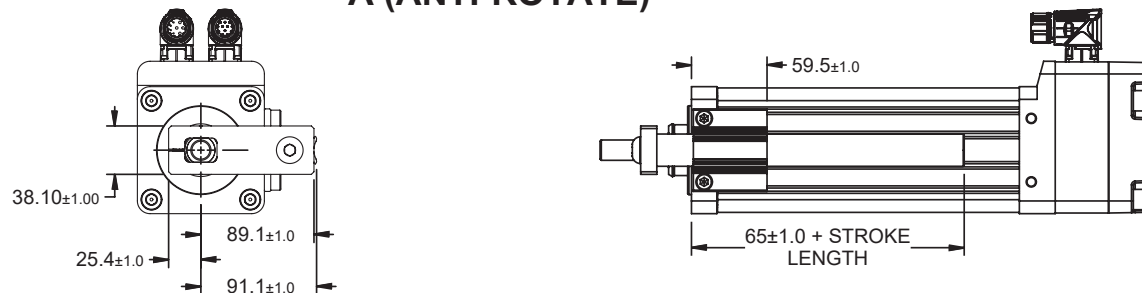
ALL DIMENSIONS ARE IN MILLIMETERS

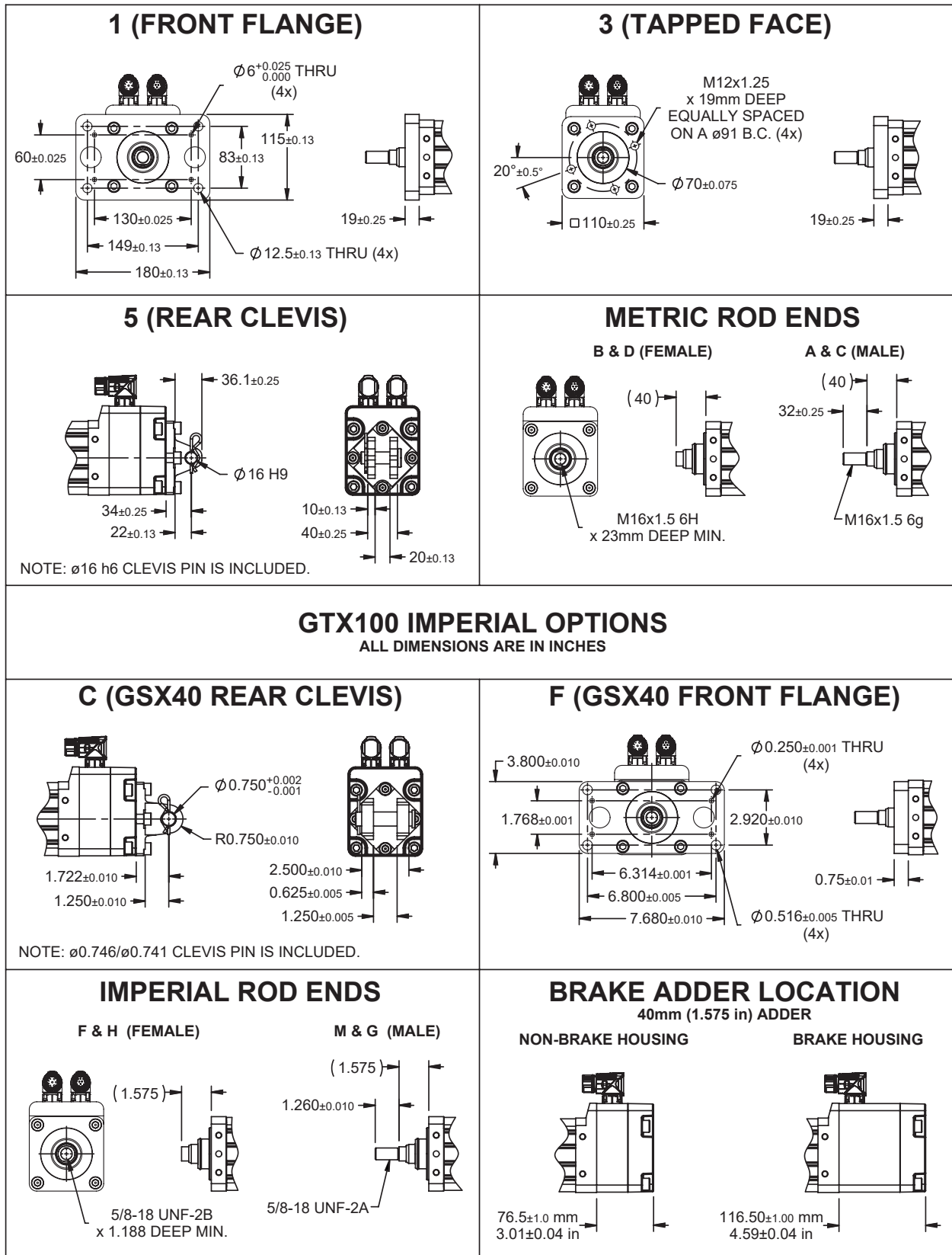


GTX100 WITH SPLINED MAIN ROD

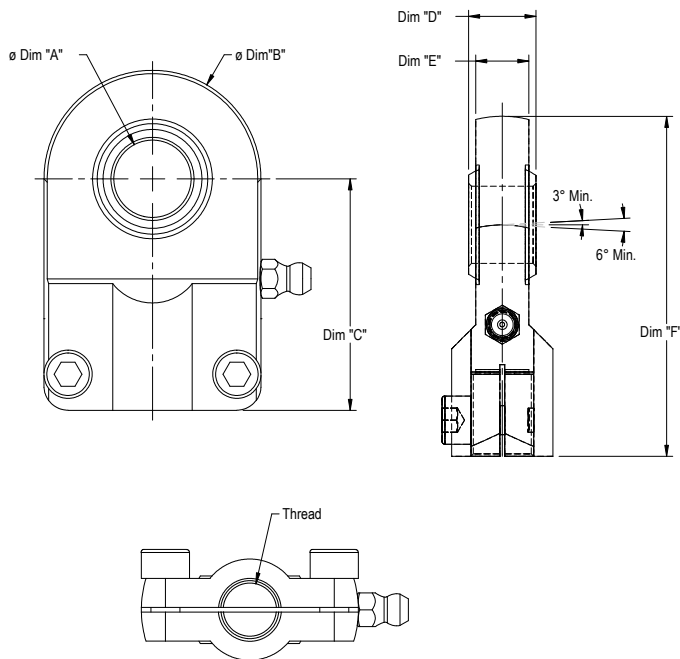


A (ANTI-ROTATE)





SPHERICAL ROD EYE

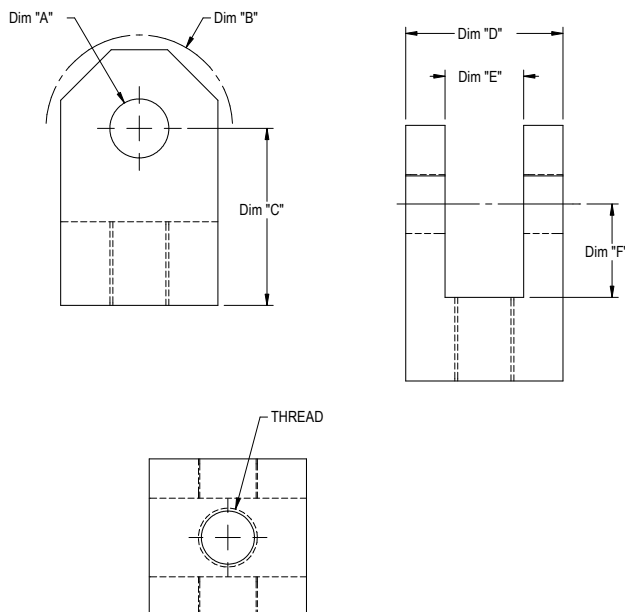


	Dimensional Specs		
	GTX060	GTX080	GTX100
ø Dim "A"	<u>8.065</u> 7.988	<u>16.000</u> 15.992	<u>25.021</u> 25.000
ø Dim "B"	22.25	45.0	65.0
Dim "C"	36.0	48.0	68.0
Dim "D"	12.0	14.0	20.0
Dim "E"	8.0	11.0	17.0
Dim "F"	47.1	70.5	100.5
Thread	M8x1.2	M12x1.25	M16x1.5
Weight (kg)	0.21	0.21	0.66

ROD END CODE "A" IS REQUIRED ON THE ACTUATOR

SPHERICAL ROD EYE ORDER CODE	
GTX060	GTX060-REI-KIT
GTX080	GTX080-REI-KIT
GTX100	GTX100-REI-KIT

ROD CLEVIS



	Dimensional Specs		
	GTX060	GTX080	GTX100
ø Dim "A"	<u>8.065</u> 7.988	<u>12.043</u> 12.000	<u>20.052</u> 20.000
ø Dim "B"	20.0	34.0	58.0
Dim "C"	32.0	36.0	54.0
Dim "D"	16.0	34.0	52.0
Dim "E"	8.0	16.0	30.0
Dim "F"	16.0	19.0	32.0
Thread	M8x1.25	M12x1.25	M16x1.5
Weight (kg)	0.25	0.25	1.0

ROD END CODE "A" IS REQUIRED ON THE ACTUATOR

SPHERICAL ROD EYE ORDER CODE	
GTX060	GTX060-RC1-KIT
GTX080	GTX080-RC1-KIT
GTX100	GTX100-RC1-KIT

Pre-sale drawings and models are representative and are subject to change. Visit exlar.com to download a 3D model of your desired configuration.

Feedback Types for GTX

Drive / Feedback Designator Callouts

Drive Manufacturers	Manufacturer Code	Resolver	Incremental Encoder	Stegmann Absolute Encoder	Stegmann Absolute DSL Encoder	Heidenhain Absolute Encoder
AMK	AK	R1A1				H1A1
B&R Automation	BR	R1A1				H1A2
Baldor	BD	R1A1				H1A1
Baumuellner	BM	R1A1		S1A1		H1A2
Beckhoff	BE					H1A2
Control Technologies/Nidec	CT	R2B1	E1B2	S1B1		H1B2
Elau/Schneider	EU			S1A1		
Elmo Motion Control	EL	R1B1	E1B2			H1B2
Exlar	EX	R1A1	E1A2	S1A2		H1A2
Infranor	IF	R1B2		S1B2		
Indramat/Bosch-Rexroth	IN			S2D3		H1D3
Kollmorgen	KM	R2A1	E1A2			H1A2
LTI	LS	R2A1		S1A2		
Lenze	LZ	R1B1		S1B1		
Parker	PC	R1B1	E1B2			H1B2
Rockwell Automation	RA		E1C2	S1C2	S3C0	
Siemens	SM	R1B1				H1B2
Stober Drives	SB	R2A1				H1A1

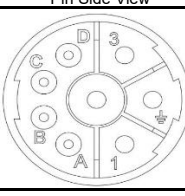
Feedbacks

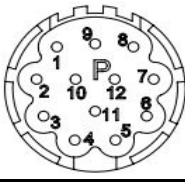
R1 – Standard Resolver – Size 15, 1024 line (2048 cts) per rev. two-pole resolver
R2 – Standard Resolver – Size 15, 1024 line (2048 cts) per rev. two-pole resolver
E1 – Standard Incremental Encoder – 2048 line (8192 cts) per rev. index pulse, Hall commutation, 5VDC
S1 – Hiperface Stegmann, SKM36 multi-turn absolute encoder
S2 – Hiperface Stegmann, SKM36 multi-turn absolute encoder
S3 – Hiperface DSL Stegmann, EKM36 multi-turn absolute encoder
H1 – EnDat Heidenhain, EQN 1125 multi-turn absolute encoder

Power Connectors	Feedback Connectors
A = 8 pin M23 Size 1, Right Angle Connector	0 = Feedback signal wired through power connector
B = 6 pin M23 Size 1, Right Angle Connector	1 = 12 pin M23 Size 1, P Type, Right Angle Connector
C = 9 pin M23 Size 1, Right Angle Connector	2 = 17 pin M23 Size 1, E Type, Right Angle Connector
D = 4+5 pin M23 size 1, Right Angle Connector	3 = 10 pin M23 Size 1, Right Angle Connector

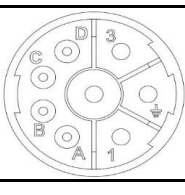
Wiring and Alignment Options

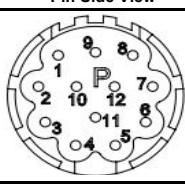
AMK-Resolver (AK-R1A1) - Standard Resolver w/M23 connectors

Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	U	
2	PE	
3	W	
4	V	
A	TH	
B	TH	
C	BR +	
D	BR 0V	

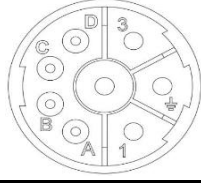
Feedback Connector Pin-Out		Pin Side View
19820 Connector	Drive Terminology	
1	+ Sin	
2	- Sin	
3	+ Cos	
4	- Cos	
5	-	
6	-	
7	-	
8	Shield	
9	+ UREF	
10	- UREF	
11	-	
12	-	
Actuator Case	-	

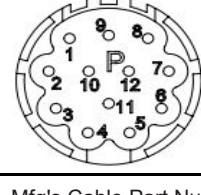
AMK-Heidenhain (AK-H1A1) - EnDat Heidenhain EQN1125 multi-turn absolute encoder – ED/EK motor wiring w/M23 connectors

Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	U	
2	PE	
3	W	
4	V	
A	TH	
B	TH	
C	BR +	
D	BR 0V	

Feedback Connector Pin-Out		Pin Side View
19820 Connector	Drive Terminology	
1	G2N	
2	G2I	
3	G1N	
4	G1I	
5	05P	
6	GND	
7	CLK+	
8	CLK-	
9	DAT+	
10	DAT-	
11	05P	
12	GND	
Actuator Case	-	

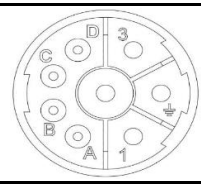
B & R Automation-Resolver (BR-R1A1) - Standard Resolver w/M23 connectors

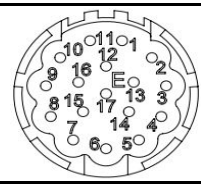
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	U	
2	PE	
3	W	
4	V	
A	PT1000	
B	PT1000	
C	Brake+	
D	Brake-	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	-	
2	-	
3	Cos+	
4	Sin+	
5	Ref+	
6	-	
7	Cos-	
8	Sin-	
9	Ref-	
10	-	
11	-	
12	-	
Actuator Case	-	

Mfg's Cable Part Number-
8CRXXX.12-1

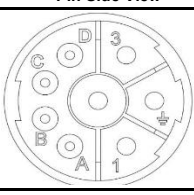
B & R Automation-Heidenhain (BR-H1A2) - EnDat Heidenhain EQN1125 multi-turn absolute encoder – 8LS/8LM motor wiring w/M23 connectors

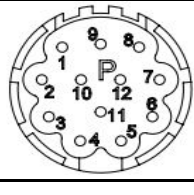
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	U	
2	PE	
3	W	
4	V	
A	PT1000	
B	PT1000	
C	Brake+	
D	Brake-	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Up Sense	
2	-	
3	-	
4	0V Sense	
5	-	
6	-	
7	Up voltage supply	
8	Clock	
9	Clock-	
10	0V voltage supply	
11	-	
12	B+	
13	B-	
14	Data	
15	A+	
16	A-	
17	Data-	
Actuator Case	-	

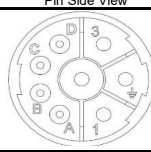
Mfg's Cable Part Number-
8CEXXX.12-1

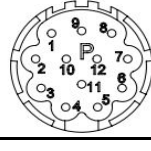
Baldor-Resolver (BD-R1A1) -
Standard Resolver w/M23 connectors

Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	U	
2	GND	
3	W	
4	V	
A	Therm	
B	Therm	
C	Brake+	
D	Brake-	

Feedback Connector Pin-Out		Pin Side View
19820 Connector	Drive Terminology	
1	R1 Ref Hi	
2	R2 Ref Lo	
3	S1 Cos+	
4	S3 Cos-	
5	S2 Sin+	
6	S4 Sin-	
7	-	
8	-	
9	-	
10	-	
11	-	
12	-	
Actuator Case	Shield	

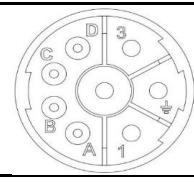
Baumuller-Resolver (BM-R1A1) -
Standard Resolver w/M23 connectors

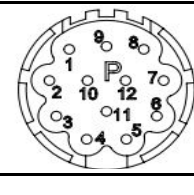
Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	Phase U	
2	PE	
3	Phase W	
4	Phase V	
A	Brake+	
B	Brake-	
C	-	
D	-	

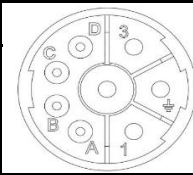
Feedback Connector Pin-Out		Pin Side View
19820 Connector	Drive Terminology	
1	Cos -	
2	-	
3	-	
4	-	
5	Sin -	
6	Sin +	
7	-	
8	Cos +	
9	-	
10	Ref +	
11	-	
12	Ref -	
Actuator Case	Shield	

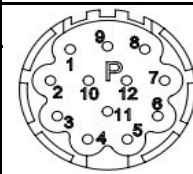
Baumuller-Stegmann (BM-S1A1) - Hiperface
Stegmann SKM36 multi-turn absolute encoder – SH motor wiring w/M23 connectors

Baldor-Heidenhain (BD-H1A1) - EnDat Heidenhain
EQN1125 multi-turn absolute encoder – ED/EK motor wiring w/M23 connectors

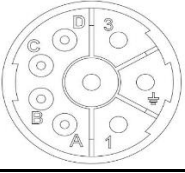
Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	T1	
2	Earth/Ground	
3	T3	
4	T2	
A	Thermal Switch	
B	Thermal Switch	
C	Brake+	
D	Brake-	

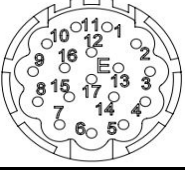
Feedback Connector Pin-Out		Pin Side View
19820 Connector	Drive Terminology	
1	Data-	
2	Sin+	
3	0	
4	Cos+	
5	Clock-	
6	-	
7	Clock+	
8	Cos-	
9	5 volt	
10	DGND	
11	Sin-	
12	Data+	
Actuator Case	-	

Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	Phase U	
2	PE	
3	Phase V	
4	Phase W	
A	Brake+	
B	Brake-	
C	PT1000	
D	PT1000	

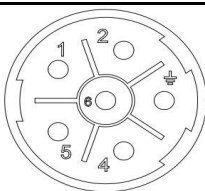
Feedback Connector Pin-Out		Pin Side View
19820 Connector	Drive Terminology	
1	Ref Cos	
2	Daten +	
3	-	
4	-	
5	Sin	
6	Ref Sin	
7	Daten -	
8	Cos	
9	-	
10	GND	
11	-	
12	+V	
Actuator Case	-	

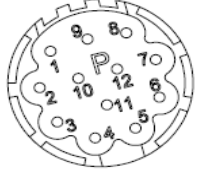
Baum Mueller-Heidenhain (BM-H1A2) -
EnDat Heidenhain EQN1125 multi-turn absolute encoder –
8LS/8LM motor wiring w/M23 connectors

Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	Phase U	
2	PE	
3	Phase V	
4	Phase W	
A	Brake+	
B	Brake-	
C	-	
D	-	

Feedback Connector Pin-Out		Pin Side View
20494 Connector	Drive Terminology	
1	Up Sense	
2	-	
3	-	
4	0V Sense	
5	PT1000	
6	PT1000	
7	Up voltage supply	
8	Clock	
9	Clock -	
10	0V voltage supply	
11	-	
12	B+	
13	B-	
14	Data	
15	A+	
16	A-	
17	Data -	
Actuator Case	-	

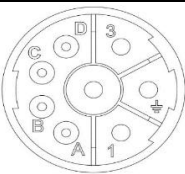
Control Technologies-Resolver (CT-R2B1) -
Standard Resolver – FM/UM/EZ motor wiring w/M23 connectors

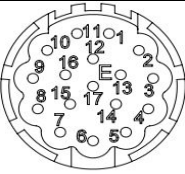
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	R	
2	S	
3	GND	
4	T	
5	Brake+	
6	Brake-	

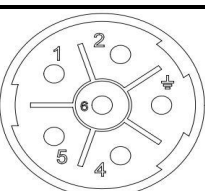
Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Excitation High	
2	Excitation Low	
3	Cos High	
4	Cos Low	
5	Sin High	
6	Sin Low	
7	Therm Switch	
8	Therm Switch	
9	-	
10	-	
11	-	
12	-	
Actuator Case	Shield	

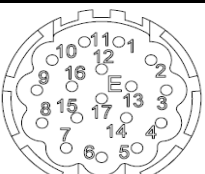
Mfg's Cable Part Number-
SRBBBBXXXX /
SRBBABXXXX

Beckhoff-Heidenhain (BE-H1A2) -
EnDat Heidenhain EQN1125 multi-turn absolute encoder –
AM3XXXX motor wiring w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	U	
2	PE	
3	W	
4	V	
A	Brake+	
B	Brake-	
C	PT1000	
D	PT1000	

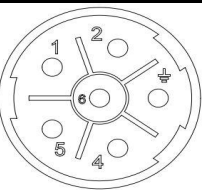
Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	B-	
2	0V voltage supply	
3	A-	
4	Up voltage supply	
5	Data	
6	-	
7	-	
8	Clock	
9	B+	
10	0V Sense	
11	A+	
12	Up Sense	
13	Data -	
14	-	
15	Clock -	
16	-	
17	-	
Actuator Case	-	

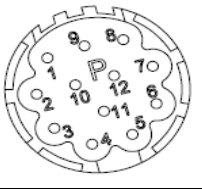
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	R	
2	S	
3	GND	
4	T	
5	Brake+	
6	Brake-	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Therm Switch	
2	Therm Switch	
3	-	
4	U	
5	U/	
6	V	
7	V/	
8	W	
9	W/	
10	A	
11	Z	
12	Z/	
13	A/	
14	B	
15	B/	
16	+ 5 VDC	
17	0V	
Actuator Case	-	

Mfg's Cable Part Number-
S1BAAAXXXX

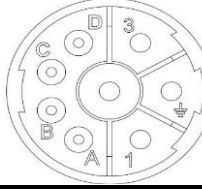
Control Technologies-Stegmann (CT-S1B1)-
Hiperface Stegmann SKM36 multi-turn absolute encoder – FM/UM/EZ
motor wiring w/M23 connectors

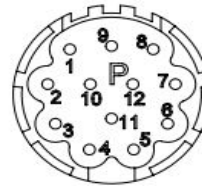
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	R	
2	S	
3	GND	
4	T	
5	Brake+	
6	Brake-	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Ref Cos	
2	Daten +	
3	Daten -	
4	Cos	
5	Sin	
6	Ref Sin	
7	Therm Switch	
8	Therm Switch	
9	Screen	
10	Com	
11	-	
12	+V	
Actuator Case	-	

Mfg's Cable Part Number-
SSBCABXXXX

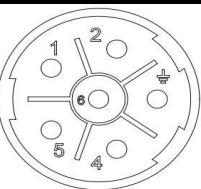
Elau-Stegmann (EU-S1A1) - Hiperface Stegmann SKM36
multi-turn absolute encoder – SH motor wiring w/M23 connectors

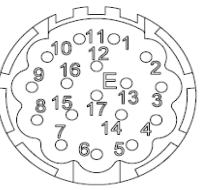
Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	U (1)	
2	PE	
3	W (3)	
4	V (2)	
A	br+ (8)	
B	br- (7)	
C	PT1000	
D	PT1000	

Feedback Connector Pin-Out		Pin Side View
19820 Connector	Drive Terminology	
1	REFCOS	
2	RS485+	
3	-	
4	-	
5	SIN	
6	REFSIN	
7	RS485-	
8	COS	
9	-	
10	GND	
11	-	
12	Us	
Actuator Case	-	

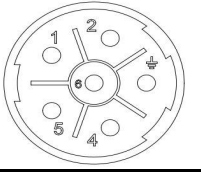
Mfg's Cable Part Number-
SH Series Absolute Encoder
Cable

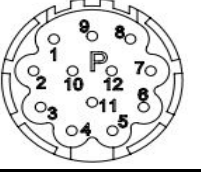
Control Technologies-Heidenhain (CT-H1B2) -
EnDat Heidenhain EQN1125 multi-turn absolute encoder unidrive
SP w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	R	
2	S	
3	GND	
4	T	
5	Brake+	
6	Brake-	

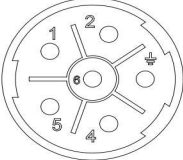
Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	PT1000	
2	PT1000	
3	-	
4	-	
5	-	
6	-	
7	-	
8	Clock +	
9	Clock -	
10	A+	
11	Data +	
12	Data -	
13	A-	
14	B+	
15	B-	
16	+ 5 VDC	
17	COM	
Actuator Case	Shield	

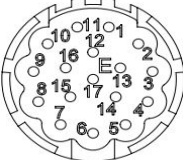
Elmo-Resolver (EL-R1B1) - Standard Resolver w/M23
connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	M1	
2	M3	
3	PE	
4	Brake-	
5	M2	
6	Brake+	

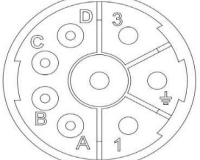
Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	-	
2	-	
3	Sin- S4	
4	Cos- S3	
5	Ref R2	
6	-	
7	Sin+ S2	
8	Cos+ S1	
9	Ref R1	
10	-	
11	-	
12	-	
Actuator Case	Shield	

Elmo-Encoder (EL-E1B2) - Standard Incremental Encoder w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	M1	
2	M3	
4	PE	
5	Brake-	
6	Brake+	

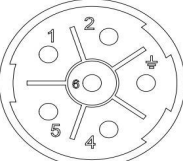
Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Power Supply 5V	
2	Therm Switch	
3	Power Supply 0V	
4	HC +	
5	HC -	
6	HA +	
7	HA -	
8	HB +	
9	HB -	
10	A +	
11	A -	
12	B +	
13	B -	
14	Z +	
15	Z -	
16	-	
17	Therm Switch	
Actuator Case	-	

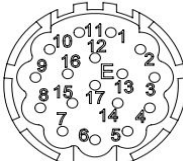
Exlar-Resolver (EX-R1A1) - Standard Resolver w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	R	
2	GND	
3	T	
4	S	
A	Brake+	CBL-PWRB1-SMI-XXX
B	Brake-	
C	-	
D	-	

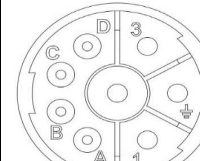
Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	-	
2	Therm Switch	
3	- Cos	
4	- Sin	
5	- Exc	
6	Therm Switch	
7	+ Cos	
8	+ Sin	
9	+ Exc	
10	-	
11	-	
12	-	
Actuator Case	Shield	CBL-RESOL-SMI-XXX

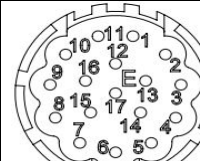
Elmo-Heidenhain (EL-H1B2) - EnDat Heidenhain EQN1125 multi-turn absolute encoder w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	U	
2	W	
4	PE	
5	V	
6	Brake+	

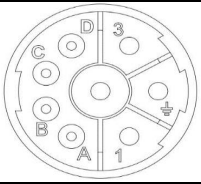
Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	B-	
2	0V voltage supply	
3	A-	
4	Up voltage supply	
5	Data	
6	-	
7	Therm Switch	
8	Clock	
9	B+	
10	0V Sense	
11	A+	
12	Up Sense	
13	Data -	
14	Therm Switch	
15	Clock -	
16	-	
17	-	
Actuator Case	-	

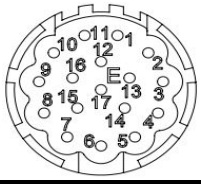
Exlar-Encoder (EX-E1A2) - Standard Incremental Encoder 2048 Line w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	R	
2	GND	
3	T	
4	S	
A	Brake+	CBL-PWRB1-SMI-XXX
B	Brake-	
C	-	
D	-	

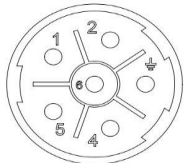
Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	B-	
2	B	
3	A	
4	A-	
5	Z	
6	Z-	
7	GND	
8	Therm Switch	
9	Therm Switch	
10	+5VDC	
11	-	
12	W-	
13	V-	
14	U-	
15	W	
16	V	
17	U	
Actuator Case	-	CBL-ENCOD-SMI-XXX

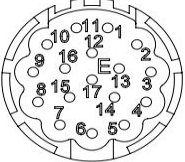
Exlar-Stegmann (EX-S1A2) - Hiperface Stegmann SKM36 multi-turn absolute encoder w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	R	
2	GND	
3	T	
4	S	
A	Brake+	
B	Brake-	
C	-	CBL-PWRB1-SMI-XXX
D	-	

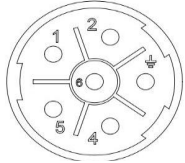
Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Sin +	
2	Com	
3	Cos +	
4	+ 5V	
5	Ref +	
6	-	
7	Therm Switch	
8	-	
9	Sin -	
10	-	
11	Cos -	
12	-	
13	Ref -	
14	Therm Switch	
15	-	
16	-	
17	-	
Actuator Case	-	CBL-ENCOD-SMI-XXX

Infranor-Resolver (IF-R1B2) - Standard Resolver w/M23 connectors

Power Connector Pin-Out		Pin Side View
20453 Connector	Drive Terminology	
1	R	
2	S	
3	GND	
4	T	
5	Brake+	
6	Brake-	

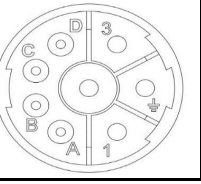
Feedback Connector Pin-Out		Pin Side View
20494 Connector	Drive Terminology	
1	S2	
2	S4	
3	S3	
4	S1	
5	R1	
6	R2	
7	-	
8	-	
9	-	
10	-	
11	-	
12	Therm	
13	Therm	
14	-	
15	-	
16	-	
17	-	
Actuator Case	-	

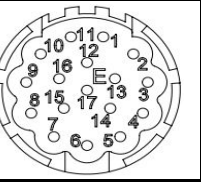
Infranor-Stegmann (IF-S1B2) - Hiperface Stegmann SKM36 multi-turn absolute encoder w/M23 connectors

Power Connector Pin-Out		Pin Side View
20453 Connector	Drive Terminology	
1	R	
2	S	
3	GND	
4	T	
5	Brake+	
6	Brake-	

Feedback Connector Pin-Out		Pin Side View
20494 Connector	Drive Terminology	
1	Sin +	
2	Sin -	
3	Cos +	
4	Cos -	
5	Ref +	
6	Ref -	
7	-	
8	-	
9	-	
10	Com	
11	+ 5V	
12	PT1000	
13	PT1000	
14	-	
15	-	
16	-	
17	0	
Actuator Case	-	

Exlar-Heidenhain (EX-H1A2) - EnDat Heidenhain EQN1125 multi-turn absolute encoder w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	U	
2	PE	
3	W	
4	V	
A	Brake+	
B	Brake-	
C	-	CBL-ENCOD-SMI-XXX
D	-	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	B-	
2	0V voltage supply	
3	A-	
4	Up voltage supply	
5	Data+	
6	-	
7	Therm Switch	
8	Clock	
9	B	
10	0V Sense	
11	A	
12	Up Sense	
13	Data -	
14	Therm Switch	
15	Clock -	
16	-	
17	-	
Actuator Case	-	CBL-PWRB1-SMI-XXX

Indramat/Bosch-Rexroth-Stegmann (IN-S2D3)- Hiperface Stegmann multi-turn absolute encoder – MSK motor wiring w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
U1	Phase U	
V1	Phase V	
W1	Phase W	
PE	Earth	
5	PT1000	
6	PT1000	
7	Brake+	
8	Brake-	
9	-	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Vcc_Encoder	
2	GND_Encoder	
3	A+	
4	A-	
5	B+	
6	B-	
7	EncData+	
8	EncData-	
9	-	
10	-	

Mfg's Cable Part Number-
RKG4200

Kollmorgen-Resolver (KM-R2A1) - Standard Resolver – AKM motor wiring w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	U	
2	GND	
3	W	
4	V	
A	Brake+	
B	Brake-	
C	-	
D	-	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	-	
2	Therm Switch	
3	Cos Lo (S4)	
4	Sin Lo (S3)	
5	Ref Lo (R2)	
6	Therm Switch	
7	Cos Hi (S2)	
8	Sin Hi (S1)	
9	Ref Hi (R1)	
10	-	
11	-	
12	-	

Mfg's Cable Part Number-
VF-RA2474N-XX

Indramat/Bosch-Rexroth-Heidenhain (IN-H1D3)- EnDat Heidenhain EQN1125 multi-turn absolute Indradrive wiring w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
U1	Phase U	
V1	Phase V	
W1	Phase W	
PE	Earth	
5	PT1000	
6	PT1000	
7	Brake+	
8	Brake-	
9	-	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Vcc_Encoder	
2	GND_Encoder	
3	A+	
4	A-	
5	B+	
6	B-	
7	Data +	
8	Data -	
9	Clock	
10	Clock -	

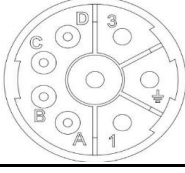
Kollmorgen-Encoder (KM-E1A2) - Standard Incremental Encoder – AKM motor wiring w/ M23 connectors

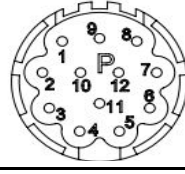
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	U	
2	PE	
3	W	
4	V	
A	Brake+	
B	Brake-	
C	-	
D	-	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	B+	
2	B-	
3	A+	
4	A-	
5	Z	
6	Z-	
7	GND	
8	Therm Switch	
9	Therm Switch	
10	Vcc	
11	-	
12	U-	
13	V-	
14	W-	
15	U	
16	V	
17	W	

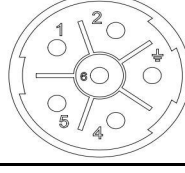
Mfg's Cable Part Number-
CF-CB7374N-XX

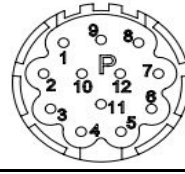
LTI-Resolver (LS-R2A1) - Standard Resolver – AKM motor wiring w/M23 connectors

Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	U	
2	GND	
3	W	
4	V	
A	Brake+	
B	Brake-	
C	-	
D	-	

Feedback Connector Pin-Out		Pin Side View
19820 Connector	Drive Terminology	
1	(S1) Cos +	
2	(S3) Cos -	
3	(S2) Sin +	
4	(S4) Sin -	
5	-	
6	(R1) Ref +	
7	(R2) Ref -	
8	-	
9	-	
10	-	
11	PT1000+	
12	PT1000-	
Actuator Case	-	

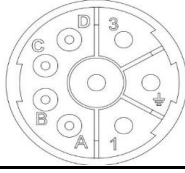
Lenze-Resolver (LZ-R1B1) - Standard Resolver – MCS motor wiring w/M23 connectors

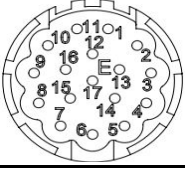
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Y1 / BD1	
2	Y2 / BD2	
3	PI	
4	U	
5	V	
6	W	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	+ Ref	
2	- Ref	
3	-	
4	+ Cos	
5	- Cos	
6	+ Sin	
7	- Sin	
8	-	
9	-	
10	-	
11	PT1000	
12	PT1000	
Actuator Case	-	

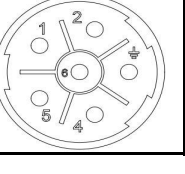
Mfg's Cable Part Number-
MCS Series Resolver Cable

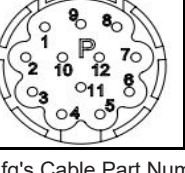
LTI-Stegmann (LS-S1A2) - Hiperface Stegmann SKM36 multi-turn absolute encoder w/M23 connectors

Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	Phase U	
2	Protective Earth	
3	Phase W	
4	Phase V	
A	Brake+	
B	Brake-	
C	PT1000	
D	PT1000	

Feedback Connector Pin-Out		Pin Side View
20494 Connector	Drive Terminology	
1	COS+	
2	REFCOS	
3	SIN+	
4	REFSIN	
5	-	
6	-	
7	GND	
8	-	
9	Us 7-12v	
10	Dataen+ RS485	
11	Dataen- RS485	
12	-	
13	-	
14	-	
15	-	
16	-	
17	-	
Actuator Case	-	

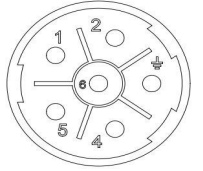
Lenze-Encoder (LZ-S1B1) - Hiperface Stegmann SKM36 multi-turn absolute encoder – FM/UM/EZ motor wiring w/M23 connectors

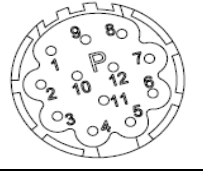
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Y1 / BD1	
2	Y2 / BD2	
3	PI	
4	U	
5	V	
6	W	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	+ SIN	
2	- COS	
3	+ COS	
4	+ 8 V	
5	Mass	
6	- RS485	
7	+ RS485	
8	-	
9	- SIN	
10	-	
11	PT1000	
12	PT1000	
Actuator Case	-	

Mfg's Cable Part Number-
MCS Series Absolute Encoder
Cable

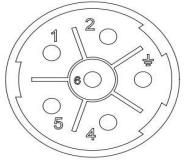
Parker-Resolver (PC-R1B1) - Standard Resolver –
SMH motor wiring w/M23 connectors

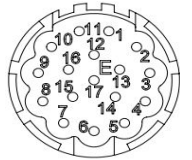
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	U	
2	V	
3	PE	
4	Brake+	
5	Brake-	
6	W	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Sin -	
2	Sin +	
3	-	
4	-	
5	-	
6	-	
7	Ref -	
8	PT1000	
9	PT1000	
10	Ref +	
11	Cos +	
12	Cos -	
Actuator Case	Shield	

Mfg's Cable Part Number-
SMH Series Incremental
Encoder Cable

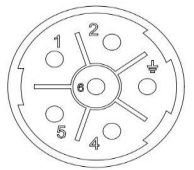
**Parker-Encoder (PC-E1B2) - Standard Incremental
Encoder – MPP series motor wiring w/M23 connectors**

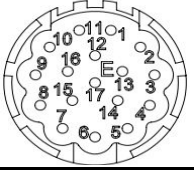
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	U	
2	W	
3	PE	
4	Brake+	
5	Brake-	
6	V	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	A-	
2	A+	
3	-	
4	Hall 1	
5	Hall 3	
6	Hall 2	
7	Ground	
8	+5 vdc	
9	Therm Switch	
10	-	
11	B	
12	B -	
13	Therm Switch	
14	-	
15	Z+	
16	Z-	
17	-	
Actuator Case	-	

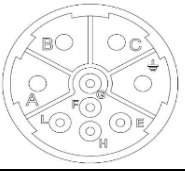
Mfg's Cable Part Number-
SMH Series Resolver Cable

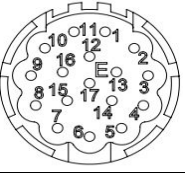
Parker-Heidenhain (PC-H1B2) -
EnDat Heidenhain EQN1125 multi-turn absolute encoder unidrive
SP w/M23 connectors

Power Connector Pin-Out		Pin Side View
20453 Connector	Drive Terminology	
1	U	
2	V	
3	GND	
4	Brake+	
5	Brake-	
6	W	

Feedback Connector Pin-Out		Pin Side View
20494 Connector	Drive Terminology	
1	CH A-	
2	CH A+	
3	-	
4	CLK +	
5	CLK -	
6	-	
7	Ground	
8	Vcc	
9	Therm	
10	-	
11	CH B+	
12	CH B-	
13	Therm	
14	Up	
15	Data +	
16	Data -	
17	-	
Actuator Case	-	

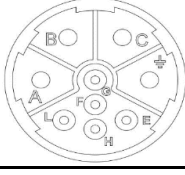
Rockwell Automation-Encoder (RA-E1C2) -
Standard Incremental Encoder - MPL Type M feedback w/M23 connectors

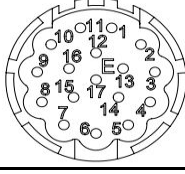
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
A	Phase U	
B	Phase V	
C	Phase W	
D	Ground	
E	-	
F	Brake+	
G	Brake-	
H	-	
L	-	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	A(+)	
2	A(-)	
3	B(+)	
4	B(-)	
5	I(+)	
6	I(-)	
7	-	
8	-	
9	EPWR_5V	
10	Common	
11	-	
12	-	
13	Therm Switch	
14	Therm Switch	
15	S1	
16	S2	
17	S3	
Actuator Case	-	

Mfg's Cable Part Number-
2090-CFBM7DF-CDAXxy

RockwellAutomation-Stegmann (RA-S1C2) -
Hiperface, SKM36 multi-turn absolute encoder. MPL Type V feedback
(128 sin/cos) /M23 connectors¹

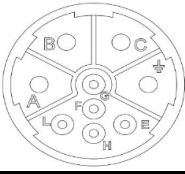
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
A	Phase U	
B	Phase V	
C	Phase W	
D	Ground	
E	-	
F	Brake+	
G	Brake-	
H	-	
L	-	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	Sine +	
2	Sine -	
3	Cos +	
4	Cos -	
5	Data +	
6	Data -	
7	-	
8	-	
9	-	
10	ECOM	
11	+ 9 vdc	
12	-	
13	Therm Switch	
14	Therm Switch	
15	-	
16	-	
17	-	
Actuator Case	-	

Mfg's Cable Part Number-
2090-CFBM7DF-CDAXxy

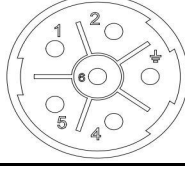
1. Not compatible with Kinetix
300 Drives.

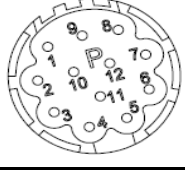
**RockwellAutomation-Stegmann Absolute DSL
Encoder (RA-S3C0) -** Hiperface, EKM36 multi-turn absolute
encoder w/M23 connectors

Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
A	Phase U	
B	Phase V	
C	Phase W	
D	Ground	
E	Data +	
F	Brake+	
G	Brake-	
H	Data -	
L	-	

Mfg's Cable Part Number-
2090-CSBM1DE-14AA05

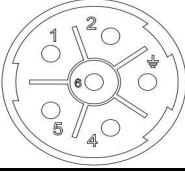
Siemens-Resolver (SM-R1B1) - Standard Resolver –
1FK7 motor wiring w/M23 connectors

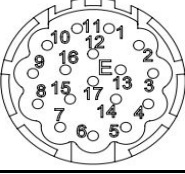
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	U	
2	V	
4	GNYE	
5	BD1+	
6	BD2- W	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	SIN	
2	*SIN	
3	-	
4	-	
5	-	
6	Shield	
7	-Vpp	
8	PT1000	
9	PT1000	
10	+Vpp	
11	COS	
12	*COS	
Actuator Case	Shield	

Mfg's Cable Part Number-
6FX5002-2CF02-...

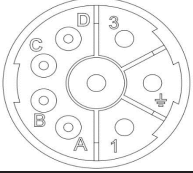
Siemens-Heidenhain (SM-H1B2) - EnDat Heidenhain
EQN1125 multi-turn absolute encoder – 1FK7 motor wiring w/M23
connectors

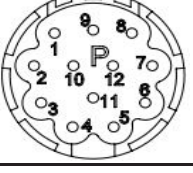
Power Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	U	
2	V	
4	GNYE	
5	BD1+	
6	BD2- W	

Feedback Connector Pin-Out		Pin Side View
M23 Connector	Drive Terminology	
1	A+	
2	A-	
3	+ data	
4	-	
5	+clock	
6	-	
7	M-Encoder	
8	PT1000	
9	PT1000	
10	P-Encoder	
11	B+	
12	B-	
13	- data	
14	-clock	
15	0 V Sense	
16	5 V Sense	
17	-	
Actuator Case	-	

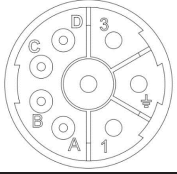
Mfg's Cable Part Number-
6FX5002-EQ10-...

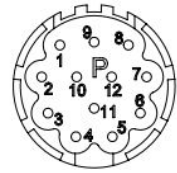
Stober-Resolver (SB-R2A1) - Standard Resolver ED/EK motor wiring w/M23 connector

Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	U	
2	GND	
3	V	
4	W	
A	Brake	
B	Brake	
C	Therm Switch	
D	Therm Switch	

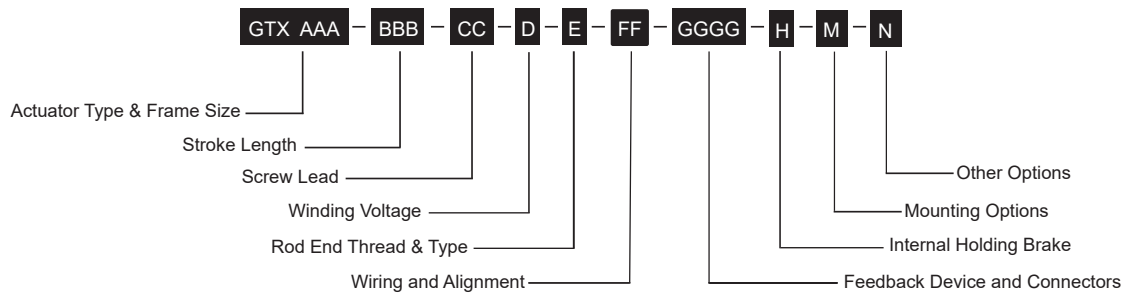
Feedback Connector Pin-Out		Pin Side View
19820 Connector	Drive Terminology	
1	Sin + (S4)	
2	Sin - (S2)	
3	Cos + (S3)	
4	Cos - (S1)	
5	-	
6	-	
7	Erreg+ (R2)	
8	Erreg- (R1)	
9	-	
10	-	
11	-	
12	-	
Actuator Case	-	

Stober-Heidenhain (SB-H1A1) - EnDat Heidenhain EQN1125 multi-turn absolute encoder – ED/EK motor wiring w/M23 connectors

Power Connector Pin-Out		Pin Side View
19819 Connector	Drive Terminology	
1	U	
2	GND	
3	S	
4	T	
A	Brake	
B	Brake	
C	Therm Switch	
D	Therm Switch	

Feedback Connector Pin-Out		Pin Side View
19820 Connector	Drive Terminology	
1	Clock +	
2	Up Sense	
3	-	
4	-	
5	Data -	
6	Data	
7	-	
8	Clock -	
9	-	
10	0V	
11	-	
12	Up	
Actuator Case	-	

Mfg's Cable Part Number-
Stober Absolute Encoder
Cable



AAA = GTX Integrated Motor / Actuator

060 = 60 mm (2.36 in)
080 = 80 mm (3.15 in)
100 = 100 mm (3.94)

BBB = Stroke Length

080 = 80 mm (GTX060)
100 = 100 mm (GTX060, GTX080)
150 = 150 mm
300 = 300 mm
450 = 450 mm (GTX080)

CC = Screw Lead

01 = 0.10 in (2.54 mm)
02 = 0.20 in (5.08 mm)
04 = 0.40 in (10.2 mm) GTX060
05 = 0.50 in (12.7 mm)

D = Winding Voltage

4 = 460 VAC Max
D = 48 VDC Max (GTX060, GTX080)

E = Rod End Thread & Type

A = Male, Metric
B = Female, Metric²
C = Male, Metric Splined²
D = Female, Metric Splined²
M = Male, English²
G = Male, English Splined²
F = Female, English²
H = Female, English Splined²

FF = Wiring and Alignment

AK = AMK
BR = B&R Automation
BD = Baldor
BE = Beckhoff
BM = Baumuller
CT = Control Techniques/Nidec
EU = Elau/Schneider
EL = Elmo Motion Control
EX = Exlar
IF = Infranor
IN = Indramat/Bosch-Rexroth
KM = Kollmorgen/Danaher
LS = LTI
LZ = Lenze/AC Tech
PC = Parker Compumotor
RA = Rockwell Automation
SM = Siemens
SB = Stober Drives

GGGG = Feedback Device and Connectors

For more detailed descriptions of available feedback types see page 25

Resolver
R1A1
R1B1
R1B2
R2A1
R2B1
Incremental Encoder
E1A2
E1B2
E1C2

Absolute Encoder - Stegmann

S1A1
S1A2
S1B1
S1B2
S1C2
S2D3

Absolute DSL Encoder - Stegmann

S3C0

Absolute Encoder - Heidenhain

H1A1
H1A2
H1B2
H1D3

H = Internal Holding Brake

N = No Brake
B = Internal Holding Brake, Electronically Released

M = Mounting Options

N = None
1 = Front Flange, Metric
3 = Tapped Face, Metric
5 = Rear Clevis, Metric
F = Front Flange, English
C = Rear Clevis, English

N = Other Options

N = None
A = Anti-Rotate Assembly, External
L = Limit Switch Housing/ Anti-Rotate Assembly¹

¹Switches sold separately

²Splined Rod (Internal Anti-Rotate) option reduces IP rating.



For options or specials not listed above or for extended temperature operation, please contact Exlar