

Explosion Proof Servo Motors



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Parker Hannifin

The global leader in motion and control technologies

A world class player on a local stage

Global Product Design

Parker Hannifin has more than 40 years experience in the design and manufacturing of drives, controls, motors and mechanical products. With dedicated global product development teams, Parker draws on industry-leading technological leadership and experience from engineering teams in Europe, North America and Asia.

Local Application Expertise

Parker has local engineering resources committed to adapting and applying our current products and technologies to best fit our customers' needs.

Manufacturing to Meet Our Customers' Needs

Parker is committed to meeting the increasing service demands that our customers require to succeed in the global industrial market. Parker's manufacturing teams seek continuous improvement through the implementation of lean manufacturing methods throughout the process. We measure ourselves on meeting our customers' expectations of quality and delivery, not just our own. In order to meet these expectations, Parker operates and continues to invest in our manufacturing facilities in Europe, North America and Asia.

Electromechanical Worldwide Manufacturing Locations

Europe

Littlehampton, United Kingdom
Dijon, France
Offenburg, Germany
Filderstadt, Germany
Milan, Italy

Asia

Wuxi, China
Jangan, Korea
Chennai, India

North America

Rohnert Park, California
Irwin, Pennsylvania
Charlotte, North Carolina
New Ulm, Minnesota



Offenburg, Germany

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Parker provides sales assistance and local technical support through a network of dedicated sales teams and authorized technical distributors throughout Europe.

For contact information, please refer to the Sales Offices on the back cover of this document or visit www.parker.com



Milan, Italy



Littlehampton, UK



Filderstadt, Germany



Dijon, France

Series	EY		EX	
				
	www.parker.com/eme/ey page 11		www.parker.com/eme/ex page 19	
Marking	ATEX and IECEx		ATEX and IECEx	UL
EX Zone	Zone 2		Zone 1	Division 1
Classification	Gas and Dust		Gas or Gas and Dust	Gas (class 1)
Torque	1.8 to 41 Nm		1.75 to 35 Nm	1.6 to 31.4 Nm
Max Speed	6 800 min ⁻¹		6 800 min ⁻¹	7 600 min ⁻¹
Ingress protection level	IP65		IP64 (standard) IP65 (option)	IP65
Power Supply	230 - 400 VAC		230 - 400 VAC	230 - 480 VAC
Conformance	ATEX 2014/34/EU Directive		ATEX 2014/34/EU Directive	UL 674 standard: Electric Motors and Generators for use in Division 1 Hazardous (Classified) Locations

Standards

Hazardous Areas Classification

Dangerous Areas Identification

European directive 99/92/EC makes explicit the responsibility of employers to protect employees who may be exposed to risk of ATEX environments (Explosive Atmosphere). The employer must assess the risk and classify potentially dangerous areas. Equipment and materials must also be suited for use in dangerous areas in accordance with ATEX directive 2014/34/EU.

Hazard	Permanent	EX Series	
		Occasional	EY Series Unusual
Definition	Explosive atmospheres present continuously, for long periods or frequently	Explosive atmospheres are likely to occur	Explosive atmospheres are unlikely to occur or present only infrequently and for a short period only
Gas and vapour	Zone 0	Zone 1	Zone 2
Dust	Zone 20	Zone 21	Zone 22
Category	1 Very high level of protection	2 High level of protection	3 Normal level of protection

 Suitable for ATEX/IECEx Parker servomotors

Classification of common combustible gases and vapours according to temperature class and explosion group

T° Class	Group	EX Series					
		EY Series			T4	T5	T6
		T1	T2	T3	T4	T5	T6
I	I	Methane					
		Acetic acid	Butyl acetate	Cyclohexane	Acetaldehyde		
		Acetone	Amylic alcohol	Cyclohexanol	Ether		
		Ammonia	Liquefied gas	Diesel fuels			
II A	II A	Benzene	Natural gas	Gasoline			
		Carbon monoxide	Butane	Heptane			
		Ethane	Ethyl alcohol	Hexane			
		Ethyl...		Pentane			
		Methane		Petroleum			
		Methanol		(depending on composition)			
		Methyl...					
		Naphtalene					
		Propane					
		Toluene					
Xylene							
II B	II B	Coke gas	Butadiene	Hydrogen sulphide	Ethyl ether		
			Ethylene	Isoprene			
			Ethylbenzene	Petroleum			
II C	II C		Ethylene oxide	(depending on composition)			
		Hydrogen	Acetylene				Carbon disulphide Ethyl nitrate


Compliance with North American Standards

EX servomotors are CLASS 1, division 1, Groups C and D, explosion-proof apparatus designed to operate in explosive atmospheres in accordance with standard UL674 and UL1004 for electrical parts.



Marking in accordance with Standard UL674

Class I	Division 1	Group C&D	Temperature class	
Class I Gas, vapour and liquids	Explosive atmospheres can exist all the time or some of the time under normal operating conditions	A Acetylene	T1 450 °C	IP65
		B Hydrogen	T2 300 °C	
		C Ethylene	T3 200 °C	
		D Propane	T4 135 °C	
Class II Dust	E, F, G	T4A 120 °C		
Class III Fibers		T5 100 °C		
		T6 85 °C		

 Suitable for Parker UL servomotors

Operating category and marking of EY servomotors



ATEX/IECEx gaseous atmospheres

II 3 G Ex nA IIC T3 Gc IP65

II	3	G	Ex	nA	II	C	T3*	Gc	IP65	
I Mine	M1 Very high level of protection	G Gas Vapour	Protection against explosions	nC Equipment with protection against sparks	I Mine	Methane	T1 450 °C	Ma Very high level of protection	IP65	
	M2 High level of protection			nR Equipment with restricted breathing			T2 300 °C	Mb High level of protection		
II Surface	1 Very high level of protection			nA Equipment not generating sparks	II Surface	A Propane	T3 200 °C	Ga Very high level of protection		
	2 High level of protection						B Ethylene	T4 135 °C		Gb High level of protection
	3 Normal level of protection						C Hydrogen Acetylene	T5 100 °C		Gc Normal level of protection
								T6 85 °C		

* Maximum surface temperature

ATEX/IECEx dusty atmospheres

II 3 GD Ex nA IIC T3 Gc IP65 / Ex tc IIIC T200°C Dc IP65

II	3	D	Ex	tc	III	C	T3*	Dc	IP65
I Mine	M1 Very high level of protection	D Dust	Protection against explosions	ta Protection by enclosure	III Dust	A Combustible flying	T1 450 °C	Ma Very high level of protection	IP65
	M2 High level of protection			tb/tc Protection by enclosure			T2 300 °C	Mb High level of protection	
II Surface	1 Very high level of protection			pb/pc pressurized enclosure		T3 200 °C	Da Very high level of protection		
	2 High level of protection			ia/ib/ic intrinsic safety		T4 135 °C	Db High level of protection		
	3 Normal level of protection			ma/mb/mc Encapsulation	T5 100 °C	Dc Normal level of protection			
					T6 85 °C				

Suitable for ATEX/IECEx Parker EY servomotors

Operating category and marking of EX servomotors

ATEX/IECEx gaseous atmospheres



II2 G Ex d IIB T4 Gb IP64 – Group IIA or IIB – category 2G– zone 1 and 2.

II	2	G	Ex	d	II	B	T4*	Gb	IP64
I Mine	M1 Very high level of protection	G Gas Vapour	Protection against explosions	o Oil immersion	I Mine	Methane	T1 450 °C	Ma Very high level of protection	IP64
	M2 High level of protection			p Pressurized apparatus			T2 300 °C	Mb High level of protection	
II Surface	1 Very high level of protection			d Flameproof enclosure	II Surface	A Propane	T3 200 °C	Ga Very high level of protection	
	2 High level of protection			e Increased safety		B Ethylene	T4 135 °C	Gb High level of protection	
	3 Normal level of protection			m Encapsulation	C Hydrogen Acetylene	T5 100 °C	Gc Normal level of protection	IP65	
				i Intrinsic safety		T6 85 °C			

* Maximum surface temperature

ATEX/IECEx gaseous and dusty atmospheres

II2 GD Ex d IIB T4 Gb IP65 and II2 GD Ex tb IIC T135 °C IP65

II	2	D	Ex	tb	III	C	T135°C*	Db	IP65
I Mine	M1 Very high level of protection	D Dust	Protection against explosions	ta Protection by enclosure	III Dust	A Combustible flying	T1 450 °C	Ma Very high level of protection	IP65
	M2 High level of protection			tb/tc Protection by enclosure			T2 300 °C	Mb High level of protection	
II Surface	1 Very high level of protection			pb/pc pressurized enclosure		B Non- conductive dust	T3 200 °C	Ga Very high level of protection	
	2 High level of protection			ia/ib/ic intrinsic safety			T4 135 °C	Gb High level of protection	
	3 Normal level of protection			ma/mb/mc Encapsulation	C Conductive dust	T5 100 °C	Gc Normal level of protection		
						T6 85 °C			

Suitable for ATEX/IECEx Parker EX servomotors

Explosion Proof Motor for Zone 2 - EY Series

Overview

Description

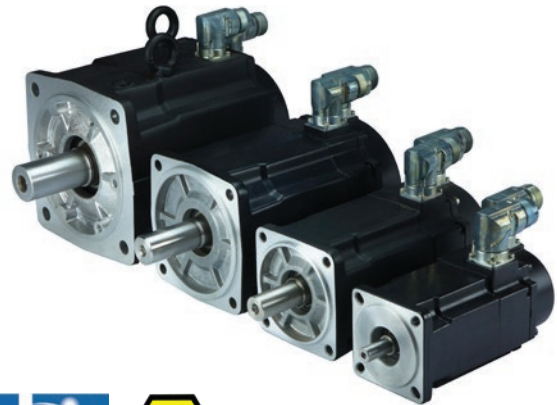
The EY series is a range of permanent magnet explosion-proof brushless servo motors designed for use in **explosive atmospheres in zone 2** for gas and dust at 40°C or 60°C ambient temperature. The EY series of servo motors are characterized by excellent motion quality, dynamic acceleration/deceleration capabilities and high torque output over a wide speed range. Various winding variants and numerous options are available to offer maximum flexibility. This range is in accordance with the European (CE) and International safety standards (IECEX).

Advantages

- Brushless servo motors with explosion proof certification from a notified body.
- Conforming with CE/ATEX and International safety standard
- For an ambient temperature at 40°C or 60°C
- For gas and dust explosive atmospheres
- High precision
- High motion quality
- High dynamic performance
- Low cogging
- Compactness and robustness
- Maintenance free
- High power density (6 kW in a 155 square frame)
- Compatible with all popular drives

Applications

- Printing machinery
- Paint spray equipments
- Chemical, petro-chemical and pharmaceutical industries
- Robot applications
- Special machines
- Cleaning applications
- Actuator for valve in Energy applications
- Waste processing plants

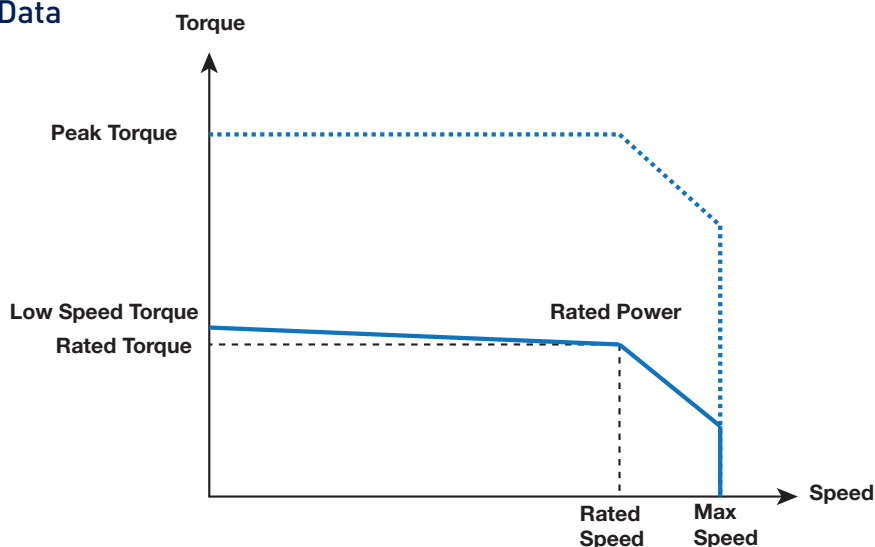


Technical characteristics

Motor type	Permanent magnet synchronous motors
Frame size	70 - 155 mm
Torque range	1.8 to 41 Nm
Speed range	Up to 6800 min ⁻¹
Number of poles	10
Mounting	Flange with smooth holes
Marking	CE / ATEX and IECEx
Voltage supply	230 / 400 VAC
Conformance	ATEX 2014/34/EU Directive IEC/EN60034-1 IEC/EN60034-5 IEC/EN60079-0 IEC/EN60079-15 (Gas) IEC/EN60079-31 (Dust)
Classification	II 3 GD Ex nA IIC T3 Gc IP65 / Ex tc IIIC T200°C Dc IP65 (Gas and dust)
Ingress protection level	IP65
Connections	Connector

EY Servo Motors - CE Marked for Explosive Atmospheres

Technical Data



230 VAC power supply - single or three-phased

Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M ₀	Low Speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}
	[kW]	[Nm]	[rpm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[rpm]
40°C ambient temperature									
EY310EAP	0.46	1.9	2300	1.4	2	1.4	4.7	3.6	2300
EY310EAK	0.72	1.7	4000	2.2	2	2.5	4.72	6.25	4000
EY420EAP	0.9	3.8	2300	2.7	4	2.8	9.47	7.03	2300
EY420EAJ	1.4	3.4	4000	4.2	4	4.9	9.47	12.2	4000
EY430EAL	1.2	5.0	2300	3.5	5.5	3.8	13.1	9.4	2300
EY430EAF	1.7	4.1	4000	5.1	5.5	6.6	13.1	16.5	4000
EY620EAV	0.9	7.9	1100	2.8	8	2.8	18.9	7.04	1100
EY620EAR	1.7	7.4	2200	5.0	8	5.3	18.9	13.2	2200
EY630EAR	1.7	11.3	1450	5.2	12	5.5	28.4	13.7	1450
EY630EAN	2.5	10.5	2300	7.3	12	8.3	28.4	20.6	2300
EY820EAR	3.3	14.5	2200	9.7	16	10.7	36.8	26.7	2200
EY840EAK	4.9	23.5	2000	13.7	28	16.2	65.8	40.4	2000
EY860EAJ	5.2	34.4	1450	14.9	41	17.7	96.7	44.2	1450
60°C ambient temperature									
EY310EAP	0.40	1.7	2300	1.2	1.8	1.3	4.3	3.21	2300
EY310EAK	0.61	1.5	4000	1.9	1.8	2.3	4.3	5.62	4000
EY420EAP	0.8	3.1	2300	2.2	3.5	2.5	8.39	6.14	2300
EY420EAJ	1.1	2.7	4000	3.4	3.5	4.3	8.39	10.6	4000
EY430EAL	1.1	4.4	2300	3.1	5.0	3.4	12	8.54	2300
EY430EAF	1.4	3.4	4000	4.2	5.0	6.0	12	15	4000
EY620EAV	0.8	7.0	1100	2.5	7.2	2.5	17.3	6.33	1100
EY620EAR	1.5	6.4	2200	4.3	7.2	4.8	17.3	11.9	2200
EY630EAR	1.5	10.1	1450	4.6	10.8	4.9	25.9	12.3	1450
EY630EAN	2.2	9.1	2300	6.3	10.8	7.4	25.9	18.6	2300
EY820EAR	2.7	11.7	2200	7.9	14.0	9.3	32.9	23.3	2200
EY840EAK	3.9	18.4	2000	10.8	25.5	14.7	60.8	36.8	2000
EY860EAJ	4.4	29.0	1450	12.6	37.0	15.9	88.5	39.8	1450

400 VAC power supply - three-phased

Motor	Rated Power Pn	Rated Torque Mn	Rated Speed Nn	Rated Current In	Low speed torque Mo	Low Speed Current Io	Peak Torque M peak	Peak Current I peak	Max. Speed N max
	[kW]	[Nm]	[rpm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[rpm]
40°C ambient temperature									
EY310EAP	0.72	1.7	4000	1.3	2	1.4	4.72	3.58	4000
EY310EAK	0.87	1.2	6800	1.6	2	2.5	4.72	6.25	6800
EY420EAP	1.1	3.6	3000	2.6	4	2.8	9.47	7.03	3000
EY420EAJ	1.7	2.6	6000	3.4	4	4.9	9.47	12.2	6000
EY430EAL	1.7	4.1	4000	2.9	5.5	3.8	13.1	9.4	4000
EY430EAF	1.6	2.7	5800	3.4	5.5	6.6	13.1	16.5	5800
EY620EAV	1.6	7.5	2000	2.7	8	2.8	18.9	7.04	2000
EY620EAR	2.5	6.2	3900	4.2	8	5.3	18.9	13.2	3900
EY630EAR	2.8	10.0	2700	4.6	12	5.5	28.4	13.7	2700
EY630EAN	3.3	7.9	4000	5.6	12	8.3	28.4	20.6	4000
EY820EAR	5.3	12.9	3900	8.8	16	10.7	36.8	26.7	3900
EY840EAK	6.8	18.6	3500	11.0	28	16.2	65.8	40.4	3500
EY860EAJ	6.3	23.0	2600	10.2	41	17.7	96.7	44.2	2600
60°C ambient temperature									
EY310EAP	0.61	1.5	4000	1.1	1.8	1.3	4.3	3.21	4000
EY310EAK	0.67	0.9	6800	1.3	1.8	2.3	4.3	5.62	6800
EY420EAP	0.9	3.0	3000	2.1	3.5	2.5	8.39	6.14	3000
EY420EAJ	1.2	2.0	6000	2.6	3.5	4.3	8.39	10.6	6000
EY430EAL	1.4	3.4	4000	2.4	5.0	3.4	12	8.54	4000
EY430EAF	1.3	2.6	4900	3.3	5.0	6.0	12	15	4900
EY620EAV	1.4	6.5	2000	2.3	7.2	2.5	17.3	6.33	2000
EY620EAR	2.0	4.9	3900	3.3	7.2	4.8	17.3	11.9	3900
EY630EAR	2.4	8.4	2700	3.9	10.8	4.9	25.9	12.3	2700
EY630EAN	2.4	5.8	4000	4.1	10.8	7.4	25.9	18.6	4000
EY820EAR	3.2	7.8	3900	5.4	14.0	9.3	32.9	23.3	3900
EY840EAK	3.9	14.1	2600	8.4	25.5	14.7	60.8	36.8	2600
EY860EAJ	4.8	21.8	2100	9.6	37.0	15.9	88.5	39.8	2100

Drive Associations

230 VAC power supply

Motor	Associated Drive Sizes ⁽¹⁾			
	PSD1 ⁽²⁾	Compax3	SLVD-N	AC890
With 40°C ambient temperature - 230 VAC power supply				
EY310EAP	PSD1SW1200...	C3S025V2...	SLVD2N...	890SD-231300B...
EY310EAK	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231550B...
EY420EAP	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EY420EAJ	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EY430EAL	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EY430EAF	-	C3S100V2...	SLVD7N...	890SD-232165B...
EY620EAV	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EY620EAR	-	C3S063V2...	SLVD7N...	890SD-231700B...
EY630EAR	-	C3S063V2...	SLVD7N...	890SD-232165B...
EY630EAN	-	C3S100V2...	SLVD10N...	890SD-232165B...
EY820EAR	-	C3S150V2...	SLVD15N...	890SD-232240C...
EY840EAK	-	-	-	890SD-232240C...
EY860EAJ	-	-	-	890SD-232240C...
With 60°C ambient temperature - 230 VAC power supply				
EY310EAP	PSD1SW1200...	C3S025V2...	SLVD2N...	890SD-231300B...
EY310EAK	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231550B...
EY420EAP	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EY420EAJ	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EY430EAL	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EY430EAF	-	C3S063V2...	SLVD7N...	890SD-232165B...
EY620EAV	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231550B...
EY620EAR	-	C3S063V2...	SLVD5N...	890SD-231700B...
EY630EAR	-	C3S063V2...	SLVD5N...	890SD-231700B...
EY630EAN	-	C3S100V2...	SLVD10N...	890SD-232165B...
EY820EAR	-	C3S100V2...	SLVD10N...	890SD-232165B...
EY840EAK	-	C3S150V2...	SLVD15N...	890SD-232240C...
EY860EAJ	-	-	-	890SD-232240C...

⁽¹⁾Ambient temperature for the drives is 40°C

⁽²⁾PSD drive with optional resolver board only

400 VAC power supply

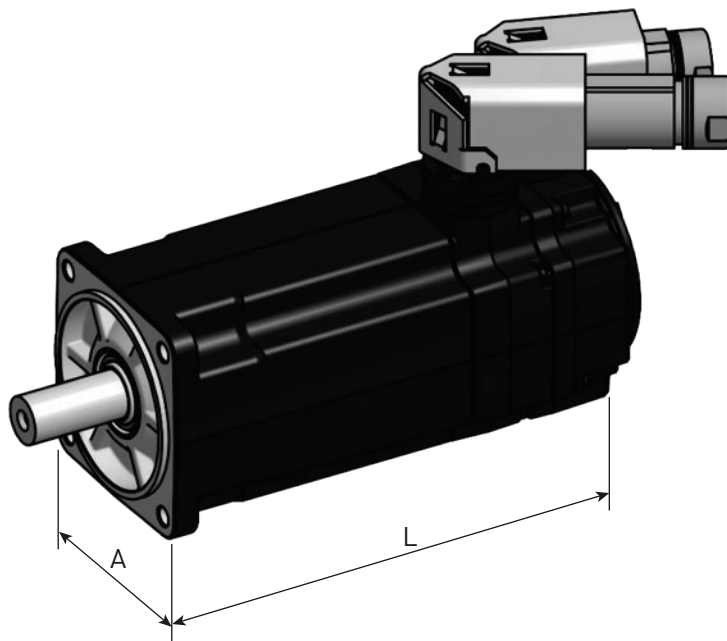
Motor	Associated Drive Sizes ⁽¹⁾			
	PSD1 ⁽²⁾	Compax3	AC890	AC30V
With 40°C ambient temperature - 400 VAC power supply				
EY310EAP	PSD1MW1300...	C3S015V4...	890SD-531200B...	31V-4D-0004
EY310EAK	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EY420EAP	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0004
EY420EAJ	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY430EAL	PSD1MW1300...	C3S038V4...	890SD-532100B...	31V-4D-0005
EY430EAF	PSD1MW1400...	C3S075V4...	890SD-532120B...	31V-4D-0008
EY620EAV	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0004
EY620EAR	PSD1MW1400...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY630EAR	PSD1MW1400...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY630EAN	PSD1MW1600...	C3S150V4...	890SD-532120B...	31V-4D-0010
EY820EAR	PSD1MW1600...	C3S150V4...	890SD-532160B...	31V-4D-0012
EY840EAK	PSD1MW1800...	C3S300V4...	890SD-53216SB...	31V-4E-0023
EY860EAJ	PSD1MW1800...	C3S300V4...	890SD-532240C...	31V-4E-0023
With 60°C ambient temperature - 400 VAC power supply				
EY310EAP	PSD1MW1300...	C3S015V4...	890SD-531200B...	31V-4D-0004
EY310EAK	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EY420EAP	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0004
EY420EAJ	PSD1MW1300...	C3S075V4...	890SD-531600B...	31V-4D-0006
EY430EAL	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0005
EY430EAF	PSD1MW1400...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY620EAV	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EY620EAR	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY630EAR	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0008
EY630EAN	PSD1MW1400...	C3S075V4...	890SD-532120B...	31V-4D-0010
EY820EAR	PSD1MW1600...	C3S150V4...	890SD-532160B...	31V-4D-0012
EY840EAK	PSD1MW1600...	C3S150V4...	890SD-53216SB...	31V-4E-0023
EY860EAJ	PSD1MW1800...	C3S300V4...	890SD-53216SB...	31V-4E-0023

⁽¹⁾Ambient temperature for the drives is 40°C

⁽²⁾PSD drive with optional resolver board only

Dimensions

EY



Motor	A [mm]	Mounting Flange centering / interaxis hole [mm]	Shaft diameter x length [mm]	Without Brake		With Brake	
				L [mm]	Weight [kg]	L [mm]	Weight [kg]
EY310	71	60 / 75-80	11 x 23	159	2	207	2.4
EY420	91.5	80 / 100	19 x 40	181	3.7	232	4.5
EY430				206	4.6	257	5.4
EY620	121	110 / 130	24 x 50	195	6.9	249	8
EY630				224	8.8	278	10
EY820	155	130 / 165	32 x 58	213	13	279	16.5
EY840				273	20	339	23.5
EY860				333	27	399	30.5

Order Code

EY Motors

	1	2	3	4	5	6	7	8	9	10
Order example	EY	3	10	E	A	K	B	7	1	10

1	Product Series
EY	Atex servo motor Zone 2
2	Motor size
3	71 mm square
4	92 mm square
6	121 mm square
8	155 mm square
3	Motor length
10	up to 60 depending on size
4	Fixed code
E	ATEX/IECEx motor
5	Feedback sensor
A	2 pole resolver
K	Without sensor
6	Torque/Speed characteristics
	see table "Technical data"
	...
7	Painting
B	Black RAL9005
8	Electric connection
7	Connector
9	Brake and thermal sensor option*
	PTC on power connector (AC890,AC30V,...)
1	PTC sensor
4	PTC sensor + brake
	PTC on feedback connector (PSD,Compax3,SLVD,...)
A	PTC sensor
D	PTC sensor + brake
10	Mechanical interface
10	IP65 with smooth shaft
11	IP65 with keyed shaft

* other options on request

Cables

Motor cable

Drive	Cable reference ⁽¹⁾	
	Current ≤ 12 A @40°C Current ≤ 9 A @60°C	Current ≤ 24 A @40°C Current ≤ 17 A @60°C
PSD1	CP1UQ1F1R0xxx	CP1UQ2F1R0xxx
Compax3	CC3UQ1F1R0xxx	CC3UQ2F1R0xxx
SLVDN	CS5UQ1F1R0xxx	CS5UQ2F1R0xxx
AC890	CS4UQ1F1R0xxx	CS4UQ2F1R0xxx
AC30	CS7UQ1F1R0xxx	CS7UQ2F1R0xxx

Feedback cable (2 pole resolver)

Drive	Cable reference ⁽¹⁾
PSD1	CP1UA1F1R0xxx
Compax3	CC3UA1F1R0xxx
SLVDN	CS5UA1F1R0xxx
AC890	CS4UA1F1R0xxx
AC30	CS7UA1F1R0xxx

⁽¹⁾ The 3 last digits indicate cable length in meters ± 5 % max
For non-standard length cable with length different from: 3/4/5/10/15/20/25/30/40/50m please contact us.
Example CC3UA1F1R0015: power cable, length = 15 m
For connecting other drives please see the technical manual

Explosion Proof Motor for Zone 1 - EX Series

Overview

Description

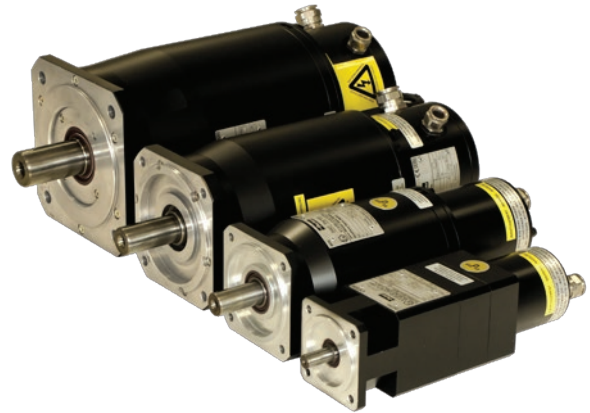
EX series is a range of permanent magnet servo motor designed for use in zone 1 explosive atmospheres. Featuring robust explosion-proof housings, EX motors are capable of bearing internal explosions with no risks of propagation to the neighbouring environment. Two versions are available, conforming with North American or European safety standards. EX servomotors are characterized by excellent motion quality, great acceleration / deceleration capabilities, and high torque output over a wide speed range. Various winding variants and numerous options are available to offer maximum flexibility.

Advantages

- Servo motors with explosion proof enclosure "d"
- Conforming with CE/ATEX, UL and IECEx
- For an ambient temperature at 40°C or 60°C
- For gas and dust explosive atmospheres
- High precision
- High motion quality
- High dynamic performance
- Low cogging
- Compactness and robustness
- Maintenance free
- High power density (6 kW in a 155 square frame)
- Compatible with all popular drives

Applications

- Printing machinery
- Packaging, filling machines
- Painting robots
- Coating machines
- Chemical, petro-chemical and pharmaceutical industries
- Robot applications
- Special machines
- Cleaning applications
- Actuator for valve in Energy applications
- Waste processing plants

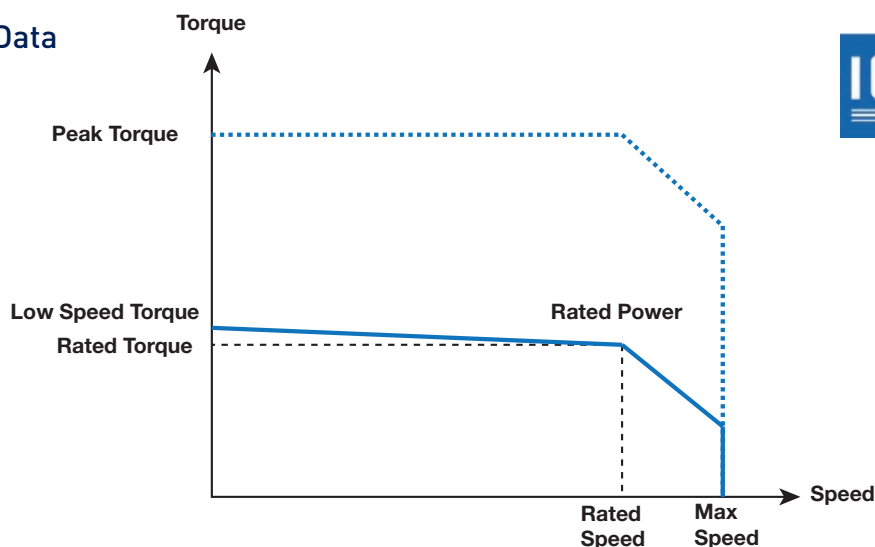


Technical Characteristics - Overview

Motor type	Permanent magnet synchronous motors	
Number of poles	10	
Torque range	1.6 ... 35 Nm	
Speed range	1100...7600 min ⁻¹	
Operating temperature	Up to +40°C (standard) Up to +60°C (with derating)	
Marking	ATEX and IECEx	UL
Voltage supply	230 / 400 VAC	230 / 480 VAC
Conformance	ATEX 2014/34/EU Directive	UL 674 standard: Electric Motors and Generators for use in Division 1 Hazardous (Classified) Locations
	IEC/EN60079-0, IEC/EN60079-1 IEC/EN60079-31 standards	
Classification	II 2G Ex d IIB T4 Gb IP64 (Gas)	Class 1, Division 1, Group C & D
	II 2GD Ex d IIB T4 Gb IP65 Ex tb IIC T135 °C Db IP65 (Gas and Dust)	
Ingress protection level	IP64 (standard)	IP65
	IP65 (option)	
Connections	Cable glands	Tapped holes

EX Servo Motors - CE Marked for Explosive Atmospheres

Technical Data



230 VAC power supply - single or three-phased

Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M ₀	Low Speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}
	[kW]	[Nm]	[rpm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[rpm]
40°C ambient temperature									
EX310EAP	0.40	1.66	2300	1.2	1.75	1.2	4.2	3.1	2300
EX310EAK	0.64	1.54	4000	2.0	1.75	2.2	4.2	5.4	4000
EX420EAP	0.77	3.18	2300	2.3	3.5	2.5	8.3	6.2	2300
EX420EAJ	1.12	2.67	4000	3.3	3.5	4.3	8.3	10.7	4000
EX430EAL	1.02	4.2	2300	3.0	4.8	3.3	11.5	8.3	2300
EX430EAF	1.37	3.3	4000	4.1	4.8	5.8	11.5	14.5	4000
EX620EAV	0.76	6.6	1100	2.4	6.7	2.4	16.7	6.0	1100
EX620EAR	1.33	5.8	2200	4.0	6.7	4.5	16.7	11.2	2200
EX630EAR	1.43	9.4	1450	4.2	10.4	4.6	25.9	11.5	1450
EX630EAN	2.02	8.4	2300	5.7	10.4	6.9	25.9	17.3	2300
EX820EAR	2.57	11.2	2200	7.5	14	9.3	32.5	23.2	2200
EX840EAK	3.31	15.8	2000	9.4	24.5	14.3	58.2	35.6	2000
EX860EAJ	3.86	25.4	1450	11.5	35	15.7	83.3	39.2	1450
60°C ambient temperature									
EX310EAP	0.31	1.30	2300	0.9	1.75	1.2	4.2	3.1	2300
EX310EAK	0.40	0.95	4000	1.3	1.75	2.2	4.2	5.4	4000
EX420EAP	0.59	2.45	2300	1.8	3	2.1	7.3	5.3	2300
EX420EAJ	0.63	1.5	4000	1.9	3	3.7	7.3	9.1	4000
EX430EAL	0.82	3.4	2300	2.4	4.2	2.9	10.2	7.2	2300
EX430EAF	0.90	2.9	3000	3.6	4.2	5.1	10.2	12.7	4000
EX620EAV	0.63	5.5	1100	2.0	6	2.2	15.0	5.3	1100
EX620EAR	0.88	3.8	2200	2.8	6	4.1	15.0	9.9	2200
EX630EAR	1.12	7.35	1450	3.4	9	4.0	22.5	9.8	1450
EX630EAN	1.24	5.15	2300	3.7	9	6.1	22.5	14.7	2300
EX820EAR	1.65	8.5	1850	5.8	11	7.3	26.6	18.3	2200
EX840EAK	2.23	11.5	1850	6.9	21	12.2	51.0	30.6	2000
EX860EAJ	2.74	18.0	1450	8.3	31	13.9	75.1	34.8	1450

400 VAC power supply - single or three-phased

Motor	Rated Power Pn	Rated Torque Mn	Rated Speed Nn	Rated Current In	Low speed torque Mo	Low Speed Current Io	Peak Torque M peak	Peak Current I peak	Max. Speed N max
	[kW]	[Nm]	[rpm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[rpm]
40°C ambient temperature									
EX310EAP	0.64	1.54	4000	1.1	1.75	1.2	4.2	3.1	4000
EX310EAK	0.87	1.23	6800	1.6	1.75	2.2	4.2	5.4	6800
EX420EAP	0.94	3	3000	2.1	3.5	2.5	8.3	6.2	3000
EX420EAJ	1.11	1.8	6000	2.3	3.5	4.3	8.3	10.7	6000
EX430EAL	1.37	3.3	4000	2.3	4.8	3.3	11.5	8.3	4000
EX430EAF	1.37	3.3	4000	4.1	4.8	5.8	11.5	14.5	5800
EX620EAV	1.25	6.0	2000	2.2	6.7	2.4	16.7	6.0	2000
EX620EAR	1.53	3.8	3900	2.7	6.7	4.5	16.7	11.2	3900
EX630EAR	2.19	7.8	2700	3.5	10.4	4.6	25.9	11.5	2700
EX630EAN	2.18	5.2	4000	3.8	10.4	6.9	25.9	17.3	4000
EX820EAR	2.84	7.5	3600	5.2	14	9.3	32.5	23.2	3900
EX840EAK	0.99	2.9	3300	2.1	24.5	14.3	58.2	35.6	3500
EX860EAJ	2.35	9.0	2500	4.4	35	15.7	83.3	39.2	2600
60°C ambient temperature									
EX310EAP	0.40	0.95	4000	0.7	1.8	1.2	4.2	3.1	4000
EX310EAK	0.40	0.95	4000	1.3	1.8	2.2	4.2	5.4	6800
EX420EAP	0.66	2.1	3000	1.5	3.0	2.1	7.3	5.3	3000
EX420EAJ	0.63	1.5	4000	1.9	3.0	3.7	7.3	9.1	6000
EX430EAL	0.90	2.9	3000	2.0	4.2	2.9	10.2	7.2	4000
EX430EAF	0.90	2.9	3000	3.6	4.2	5.1	10.2	12.7	4900
EX620EAV	0.88	4.2	2000	1.6	6.0	2.2	15.0	5.3	2000
EX620EAR	0.84	3.2	2500	2.4	6.0	4.1	15.0	9.9	3900
EX630EAR	1.18	4.5	2500	2.2	9.0	4.0	22.5	9.8	2700
EX630EAN	1.18	4.5	2500	3.3	9.0	6.1	22.5	14.7	4000
EX820EAR	1.65	8.5	1850	5.8	11.0	7.3	26.6	18.3	3900
EX840EAK	2.22	11.5	1850	6.9	21.0	12.2	51.0	30.6	2600
EX860EAJ	2.60	15.5	1600	7.2	31.0	13.9	75.1	34.8	2100

Drive Associations

230 VAC power supply

Motor	Associated Drive Sizes ⁽¹⁾			
	PSD1 ⁽²⁾	Compax3	SLVD-N	AC890
With 40°C ambient temperature - 230 VAC power supply				
EX310EAP	PSD1SW1200...	C3S025V2...	SLVD2N...	890SD-231300B...
EX310EAK	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231300B...
EX420EAP	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231550B...
EX420EAJ	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EX430EAL	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EX430EAF	-	C3S063V2...	SLVD7N...	890SD-231700B...
EX620EAV	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231550B...
EX620EAR	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EX630EAR	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EX630EAN	-	C3S100V2...	SLVD7N...	890SD-232110B...
EX820EAR	-	C3S100V2...	SLVD10N...	890SD-232165B...
EX840EAK	-	C3S150V2...	SLVD15N...	890SD-232240C...
EX860EAJ	-	-	-	890SD-232240C...
With 60°C ambient temperature - 230 VAC power supply				
EX310EAP	PSD1SW1200...	C3S025V2...	SLVD2N...	890SD-231300B...
EX310EAK	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231300B...
EX420EAP	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231300B...
EX420EAJ	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EX430EAL	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EX430EAF	-	C3S063V2...	SLVD7N...	890SD-231700B...
EX620EAV	PSD1SW1300...	C3S025V2...	SLVD5N...	890SD-231300B...
EX620EAR	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231700B...
EX630EAR	PSD1SW1300...	C3S063V2...	SLVD5N...	890SD-231550B...
EX630EAN	-	C3S063V2...	SLVD7N...	890SD-232110B...
EX820EAR	-	C3S100V2...	SLVD10N...	890SD-232110B...
EX840EAK	-	C3S150V2...	SLVD15N...	890SD-232240C...
EX860EAJ	-	C3S150V2...	SLVD15N...	890SD-232240C...

⁽¹⁾Ambient temperature for the drives is 40°C

⁽²⁾PSD drive with optional resolver board only

400 VAC power supply

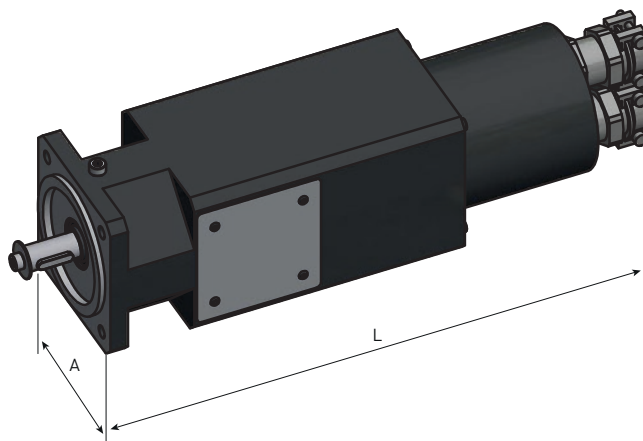
Motor	Associated Drive Sizes ⁽¹⁾			
	PSD1 ⁽²⁾	Compax3	AC890	AC30V
With 40°C ambient temperature - 400 VAC power supply				
EX310EAP	PSD1MW1300...	C3S015V4...	890SD-531200B...	31V-4D-0004
EX310EAK	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX420EAP	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX420EAJ	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0006
EX430EAL	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0005
EX430EAF	PSD1MW1400...	C3S075V4...	890SD-532100B...	31V-4D-0008
EX620EAV	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX620EAR	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0006
EX630EAR	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0008
EX630EAN	PSD1MW1400...	C3S150V4...	890SD-532120B...	31V-4D-0010
EX820EAR	PSD1MW1600...	C3S150V4...	890SD-532160B...	31V-4D-0012
EX840EAK	PSD1MW1600...	C3S150V4...	890SD-53216SB...	31V-4E-0023
EX860EAJ	PSD1MW1800...	C3S300V4...	890SD-53216SB...	31V-4E-0023
With 60°C ambient temperature - 400 VAC power supply				
EX310EAP	PSD1MW1300...	C3S015V4...	890SD-531200B...	31V-4D-0004
EX310EAK	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX420EAP	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX420EAJ	PSD1MW1300...	C3S038V4...	890SD-531600B...	31V-4D-0005
EX430EAL	PSD1MW1300...	C3S038V4...	890SD-531450B...	31V-4D-0004
EX430EAF	PSD1MW1400...	C3S075V4...	890SD-532100B...	31V-4D-0008
EX620EAV	PSD1MW1300...	C3S038V4...	890SD-531350B...	31V-4D-0004
EX620EAR	PSD1MW1300...	C3S075V4...	890SD-532100B...	31V-4D-0006
EX630EAR	PSD1MW1300...	C3S075V4...	890SD-531600B...	31V-4D-0006
EX630EAN	PSD1MW1400...	C3S075V4...	890SD-532120B...	31V-4D-0008
EX820EAR	PSD1MW1400...	C3S075V4...	890SD-532120B...	31V-4D-0010
EX840EAK	PSD1MW1600...	C3S150V4...	890SD-53216SB...	31V-4E-0016
EX860EAJ	PSD1MW1600...	C3S150V4...	890SD-53216SB...	31V-4E-0023

⁽¹⁾Ambient temperature for the drives is 40°C

⁽²⁾PSD drive with optional resolver board only

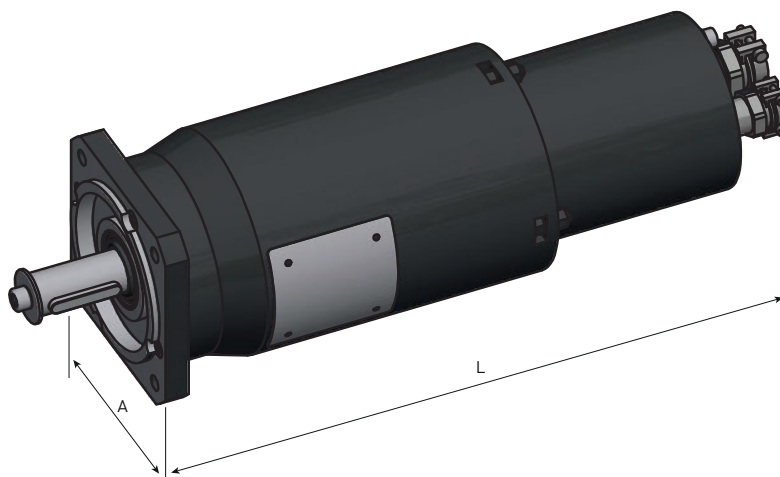
Dimensions (Resolver Version)

EX3



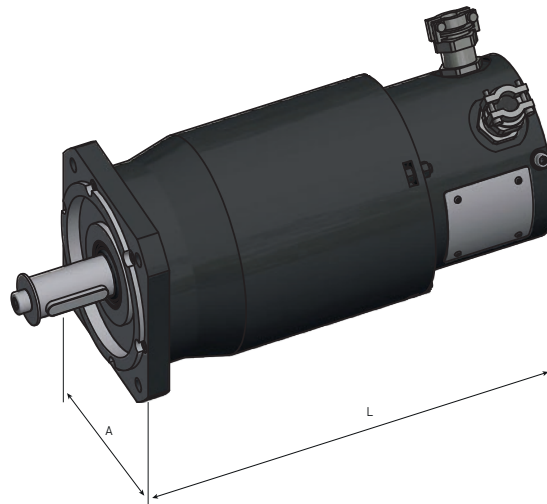
Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake	
	[mm]			[mm]	L [mm]	Weight [kg]	L [mm]
EX310	70	60 / 75	11 x 23	225	2.8	255	3.2

EX4



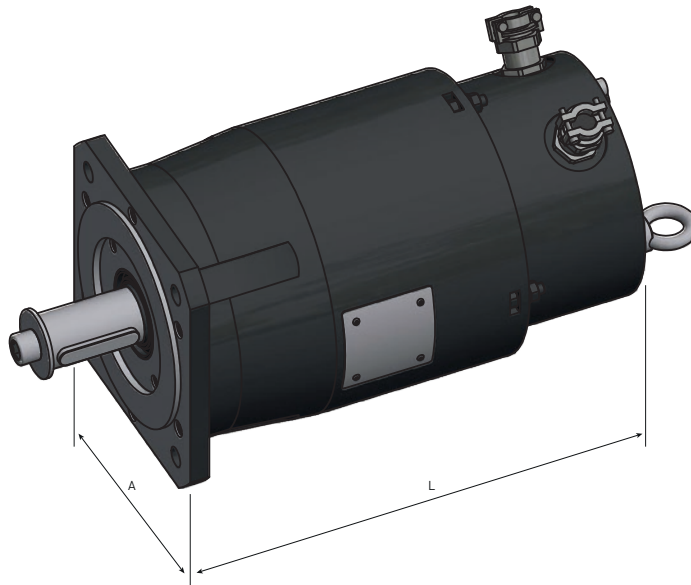
Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake	
	[mm]			[mm]	[mm]	Weight [kg]	L [mm]
EX420	92	80 / 100	19 x 40	305	7	330	8
EX430				330	8	355	9

EX6



Motor	A	Mounting Flange centering / interaxis hole [mm]	Shaft diameter x length [mm]	Without Brake		With Brake	
	[mm]			L [mm]	Weight [kg]	L [mm]	Weight [kg]
EX620	120	110 / 130	24 x 50	275	10	290	11
EX630				300	12.5	325	13.5

EX8



Motor	A	Mounting Flange centering / interaxis hole [mm]	Shaft diameter x length [mm]	Without Brake		With Brake	
	[mm]			L [mm]	Weight [kg]	L [mm]	Weight [kg]
EX820	155	130 / 165	32 x 58	325	22	360	25
EX840				385	28	420	31
EX860				445	38	480	41

Order Code

EX Motors - CE Marked

	1	2	3	4	5	6	7	8	9	10	11
Order example	EX	3	10	E	A	P	B	1	2	0	1

1	Product Series	
	EX	Atex servo motor Zone 1
2	Motor size	
	3	70 mm square
	4	92 mm square
	6	120 mm square
	8	155 mm square
3	Motor length	
	10	up to 60 depending on size
4	Fixed code	
	E	ATEX/IECEX motor
5	Feedback sensor	
	A	2 pole resolver (standard)
	K	Without feedback sensor
	R	Absolute singleturn HIPERFACE SKS36 Encoder (128 periods/rev)
	S	Absolute multiturn HIPERFACE SKM36 Encoder (128 periods/rev)
6	Torque/Speed characteristics	see table "Technical data"
	...	
7	Painting	
	B	Black RAL9005
8	Electric connection	
	1	Cable gland
9	Brake	
	2	Motor without brake (standard) + thermal switch sensor
	5	Motor with brake + thermal switch sensor
10	Ingress protection level	
	0	IP64 (standard)
	1	IP65
11	Shaft end	
	0	Smooth shaft (standard)
	1	Key shaft

Cables

Motor cable

Drive	Cable reference ⁽¹⁾	
	Current ≤ 12 A @40°C Current ≤ 9 A @60°C	Current ≤ 24 A @40°C Current ≤ 17 A @60°C
PSD1	CP1UQ1D1R0xxx	CP1UQ2D1R0xxx
Compax3	CC3UQ1D1R0xxx	CC3UQ2D1R0xxx
SLVDN	CS5UQ1D1R0xxx	CS5UQ2D1R0xxx
AC890	CS4UQ1D1R0xxx	CS4UQ2D1R0xxx
AC30	CS7UQ1D1R0xxx	CS7UQ2D1R0xxx

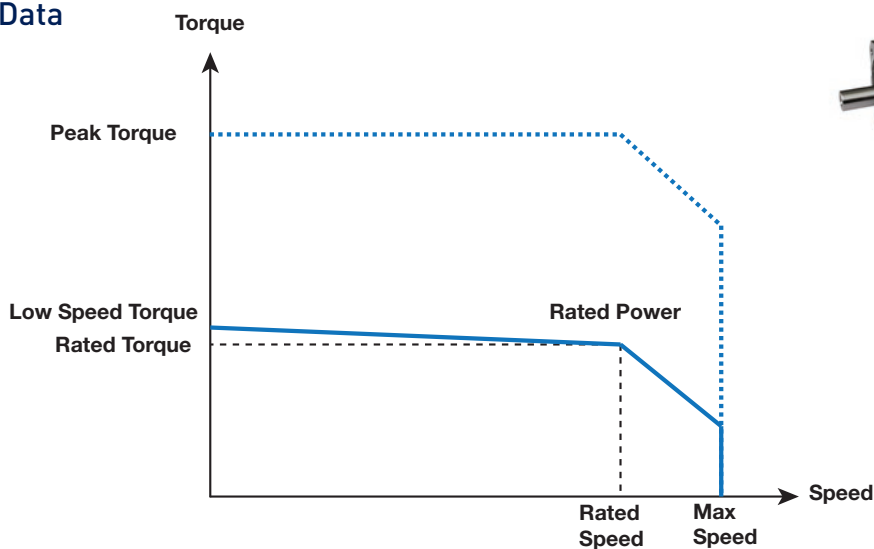
Feedback cable

Drive	Cable reference ⁽¹⁾	
	2 pole resolver	Hiperface
PSD1	CP1UA1D1R0xxx	-
Compax3	CC3UA1D1R0xxx	CC3UR1D1R0xxx
SLVDN	CS5UA1D1R0xxx	-
AC890	CS4UA1D1R0xxx	-
AC30	CS7UA1D1R0xxx	

⁽¹⁾ The 3 last digits indicate cable length in meters ± 5 % max
For non-standard length cable with length different from: 3/4/5/10/15/20/25/30/40/50m please contact us.
Example CC3UA1D1R0015: power cable, length = 15 m
For connecting other drives please see the technical manual

EX Servo Motors - UL Marked for Explosive Atmospheres

Technical Data



Motor	Rated Power P _n	Rated Torque M _n	Rated Speed N _n	Rated Current I _n	Low speed torque M ₀	Low Speed Current I ₀	Peak Torque M _{peak}	Peak Current I _{peak}	Max. Speed N _{max}
	[kW]	[Nm]	[rpm]	[Arms]	[Nm]	[Arms]	[Nm]	[Arms]	[rpm]
40°C ambient temperature - 230 VAC power supply									
EX310UAU	0.62	1.4	4200	2.2	1.60	2.5	4.0	6.3	4200
EX420UAI	1.03	2.5	4000	3.3	3	4.2	8.0	10.8	4000
EX430UAG	1.17	3.5	3200	3.9	4.4	4.9	10.0	11.3	3200
EX620UAM	1.37	4.8	2750	4.7	6	6.0	16.0	14.8	2750
EX630UAK	2.01	7.1	2700	6.2	10	7.9	23.7	19.4	2700
EX820UAQ	2.43	10.1	2300	7.2	13	9.1	29.7	22.8	2300
EX840UAL	2.90	16.8	1650	9.0	23	12.0	56.5	32.3	1650
EX860UAJ	3.50	22.3	1500	10.0	31	13.9	78.5	37.1	1500
40°C ambient temperature - 400 VAC power supply									
EX310UAU	0.82	1.0	7600	1.7	1.6	2.5	4.0	6.3	7600
EX420UAI	0.81	1.1	7000	1.6	3.2	4.2	8.0	10.8	7000
EX430UAG	1.02	1.7	5700	2.1	4.4	4.9	10.0	11.3	5700
EX620UAM	1.27	2.8	4300	3.0	6.4	6.0	16.0	14.8	4300
EX630UAK	1.92	4.4	4200	4.0	9.5	7.9	23.7	19.4	4200
EX820UAQ	2.62	7.0	3600	5.1	12.9	9.1	29.7	22.8	3600
EX840UAL	2.08	6.8	2900	3.9	22.6	12.0	56.5	32.3	2900
EX860UAJ	2.18	8.3	2500	4.0	31.4	13.9	78.5	37.1	2500

Drive Associations

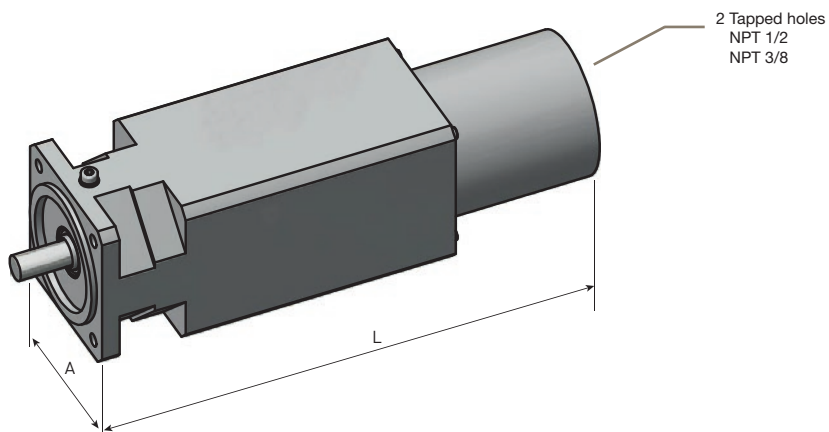
Motor	Associated Drive Sizes ⁽¹⁾			AC30	AC890
	PSD1 ⁽²⁾	Compax3	SLVD-N		
With 40°C ambient temperature - 230 VAC power supply					
EX310UAI	PSD1SW1300...	C3S025V2...	SLVD5N...	-	890SD-231550B...
EX420UAI	PSD1SW1300...	C3S063V2...	SLVD5N...	-	890SD-231700B...
EX430UAG	PSD1SW1300...	C3S063V2...	SLVD5N...	-	890SD-231700B...
EX620UAM	-	C3S063V2...	SLVD7N...	-	890SD-231700B...
EX630UAK	-	C3S100V2...	SLVD10N...	-	890SD-232110B...
EX820UAQ	-	C3S100V2...	SLVD10N...	-	890SD-232165B...
EX840UAL	-	C3S150V2...	SLVD15N...	-	890SD-232165B...
EX860UAJ	-	C3S150V2...	SLVD15N...	-	890SD-232240C...
With 40°C ambient temperature - 400 VAC power supply					
EX310UAI	PSD1MW1300...	C3S038V4...	-	31V-4D-0004	890SD-531350B...
EX420UAI	PSD1MW1300...	C3S075V4...	-	31V-4D-0006	890SD-532100B...
EX430UAG	PSD1MW1300...	C3S075V4...	-	31V-4D-0006	890SD-532100B...
EX620UAM	PSD1MW1400...	C3S075V4...	-	31V-4D-0008	890SD-532100B...
EX630UAK	PSD1MW1400...	C3S150V4...	-	31V-4D-0010	890SD-532120B...
EX820UAQ	PSD1MW1600...	C3S150V4...	-	31V-4D-0012	890SD-532160B...
EX840UAL	PSD1MW1600...	C3S150V4...	-	31V-4E-0016	890SD-532160B...
EX860UAJ	PSD1MW1600...	C3S150V4...	-	31V-4E-0023	890SD-532240B...

⁽¹⁾Ambient temperature for the drives is 40°C

⁽²⁾PSD drive with optional resolver board only

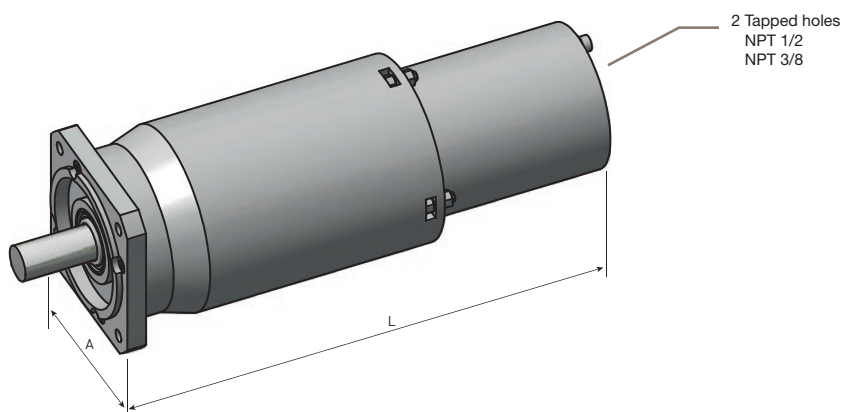
Dimensions (Resolver Version)

EX3



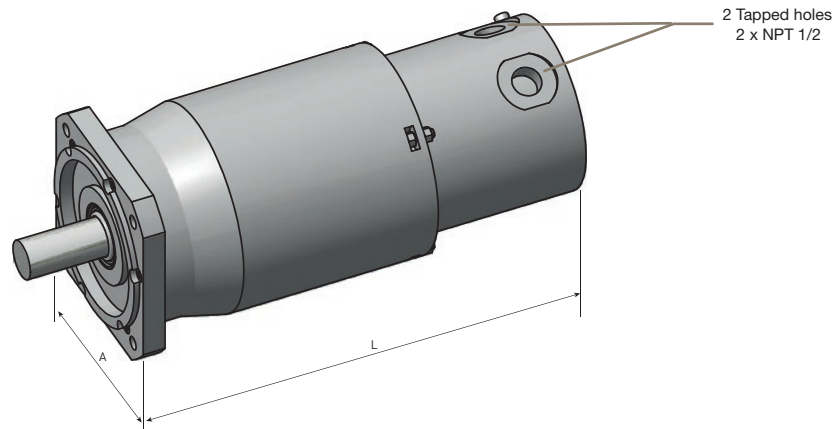
Motor	A	Mounting Flange centering / interaxis hole [mm]	Shaft diameter x length [mm]	Without Brake		With Brake	
	[mm]			L [mm]	Weight [kg]	L [mm]	Weight [kg]
EX310	70	60 / 75	11 x 23	240	2.8	270	3.2

EX4



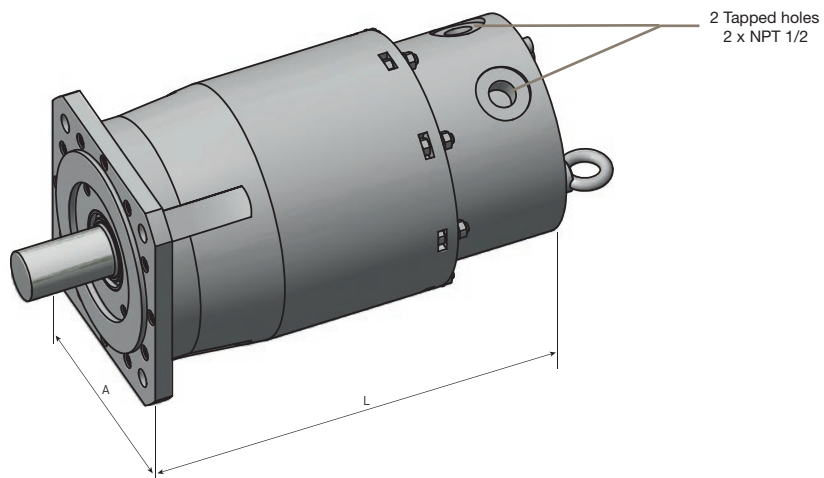
Motor	A	Mounting Flange centering / interaxis hole [mm]	Shaft diameter x length [mm]	Without Brake		With Brake	
	[mm]			L [mm]	Weight [kg]	L [mm]	Weight [kg]
EX420	92	80 / 100	19 x 40	310	7	335	8
EX430				335	8	360	9

EX6



Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake	
	[mm]			[mm]	[mm]	L [mm]	Weight [kg]
EX620	120	110 / 130	24 x 50	325	10	355	11
EX630				355	12.5	380	13.5

EX8



Motor	A	Mounting Flange centering / interaxis hole	Shaft diameter x length	Without Brake		With Brake	
	[mm]			[mm]	[mm]	L [mm]	Weight [kg]
EX820	155	130 / 165	32 x 58	335	22	370	25
EX840				395	28	430	31
EX860				455	38	490	41

Order Code

EX Motors - UL Marked

	1	2	3	4	5	6	7	8	9	10	11
Order example	EX	3	10	U	A	U	R	1	2	1	0

1	Product Series	
	EX	Atex servo motor Zone 1
2	Motor size	
	3	70 mm square
	4	92 mm square
	6	120 mm square
	8	155 mm square
3	Motor length	
	10	up to 60 depending on size
4	Fixed code	
	U	UL Standard
5	Feedback sensor	
	A	2 pole resolver (standard)
	K	Without feedback sensor
	R	Absolute singleturn HIPERFACE SKS36 Encoder (128 periods/rev)
	S	Absolute multiturn HIPERFACE SKM36 Encoder (128 periods/rev)
6	Torque/Speed characteristics	see table "Technical data"
	...	
7	Fixed code	
	R	
8	Electric connection	
	1	Tapped holes
9	Brake	
	2	Motor without brake + thermal switch sensor (standard)
	5	Motor with Brake + thermal switch sensor
10	Ingress protection level	
	1	IP65
11	Shaft end	
	0	Smooth shaft (standard)
	1	Key shaft

Additional Information

Feedback Sensors

2 poles resolver - option A

- Accuracy: $\pm 10'$ max
- Transformation ratio: $0.5 \pm 5\%$
- Max. operating speed: $17\,000\text{ min}^{-1}$
- Working temperature range: $-55\dots+155\text{ }^\circ\text{C}$

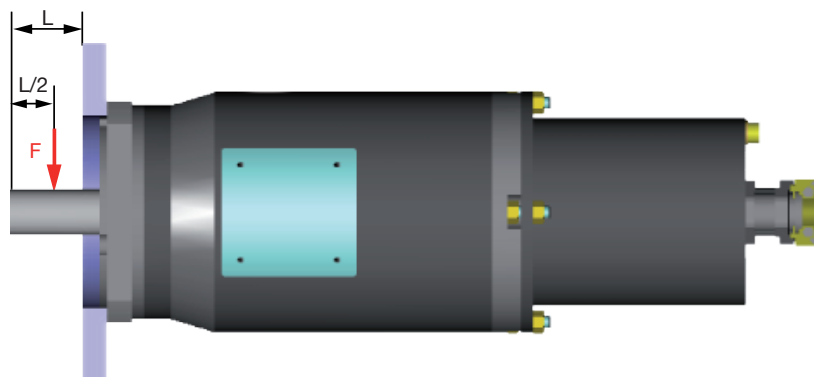
Single turn / Multiturn absolute encoder HIPERFACE SKS/SKM36 - option R/S

- Number of sine/cosine periods per revolution: 128
- Absolute position per revolution: 4096 (12 bits)
- Number of absolutely encodable revolutions: 4096 (SKM36)
- Max. operating speed SKS36: $12\,000\text{ min}^{-1}$
- Max. operating speed SKM36: $9\,000\text{ min}^{-1}$
- Working temperature range: $-20\dots+110\text{ }^\circ\text{C}$

Shaft Loads for CE and UL Motors

Maximum load acceptable on the shaft

The values written in the table are given for a load placed on the middle of the shaft like the picture below.



Due to the small ATEX airgap requirements between the shaft and the front flange, the radial loads on the shaft are lower than standard NX motors.

The ATEX airgap requirements depend on the volume of the motor and can lead to lower radial loads for bigger motors.

Regarding to these shaft loads, you must not use a pulley belt system without a load take-up system.

Type	Max. shaft load F [N]
EX310	100
EX430	500
EX630	500
EX860	250

ATEX Gearboxes GXA Series

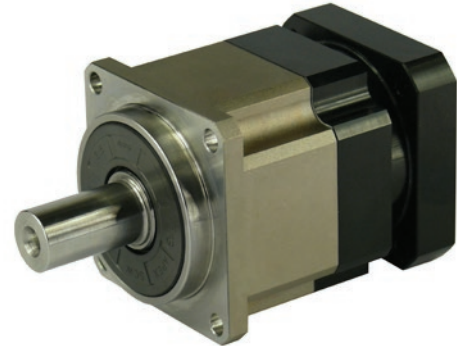
Overview

Description

GXA gearbox series has to be associated with the powerful Parker ATEX servomotors ranges for use in hazardous areas. The precision helical gearing design offers smooth and quiet operation for the most demanding high performance applications.

The solid uncaged needle roller bearings provides maximum contact points to increase stiffness and generates high output torque.

In addition the unique motor adapter and bushing module system design allows to obtain a compact structure and a quick and easy mounting of any ATEX certified Parker motor.



Features

- ATEX certify
- Low backlash
- High efficiency
- Easy mounting
- Low noise
- Compact structure
- Helical Gear Design



Technical Characteristics - Overview

Series	Unit	GXA
Gear geometry		Helical Gearing
Type		In-Line
Frame sizes	[mm]	60, 90, 115, 142, 180, 220
Maximum input speed	[min ⁻¹]	up to 10 000
Nominal torque	[Nm]	40...1800
Radial force	[N]	up to 50 000
Life	[h]	up to 20 000
Backlash	[arcmin]	up to ≤ 3
Efficiency	[%]	up to ≥ 97 %
Conformance		2014/34/EU Directive
Classification		II 2 GD c T6
Harmonized standard		EN 1127-1:2012
Other technical standards & specifications applied		EN 13463-1:2009, EN 13463-5:2013, ISO281:2004, ISO286:2013, DIN3960

Technical Characteristics

Model No.		Stage	Ratio ¹	GX..R02..	GX..R04..	GX..R06..	GX..R07..	GX..R09..	GX..R10..
Nominal Output Torque T_{2N}	[Nm]	1	3	55	130	208	342	588	-
			4	50	140	290	542	1050	-
			5	60	160	330	650	1200	-
			6	55	150	310	600	1100	-
			7	50	140	300	550	1100	-
			8	45	120	260	500	1000	-
			9	40	100	230	450	900	-
			10	40	100	230	450	900	-
		2	15	-	130	208	342	588	-
			20	-	140	290	542	1050	-
			25	-	160	330	650	1200	-
			30	-	150	310	600	1100	-
			35	-	140	300	550	1100	-
			40	-	120	260	500	1000	-
			45	-	100	230	450	900	-
			50	-	160	330	650	1200	-
			60	-	150	310	600	1100	-
			70	-	140	300	550	1100	1800
			80	-	120	260	500	1000	1600
			90	-	100	230	450	900	1500
100	-	100	230	450	900	1500			
Emergency Stop Torque T_{2NOT}^3	[Nm]	1,2	3~100	3 times of Nominal Output Torque					
Nominal Input Speed n_{1N}	[min ⁻¹]	1,2	3~100	5000	4000	4000	3000	3000	2000
Max. Input Speed n_{1B}	[min ⁻¹]	1,2	3~100	10 000	8000	8000	6000	6000	4000
Standard Backlash	[arcmin]	1	3~10	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
		2	15~100	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7	≤ 7
Reduced Backlash	[arcmin]	1	3~10	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3	≤ 3
		2	15~100	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5	≤ 5
Torsional Rigidity	[Nm / arcmin]	1,2	3~100	7	14	25	50	145	225
Max. Radial Load F_{2rB}^2	[N]	1,2	3~100	1530	3250	6700	9400	14500	50000
Max. Axial Load F_{2aB}^2	[N]	1,2	3~100	765	1625	3350	4700	7250	25000
Lifetime	[h]	1,2	3~100	20 000*					
Efficiency	[%]	1	3~10	≥ 97 %					
		2	15~100	≥ 94 %					
Weight	[kg]	1	3~10	1.3	3.7	7.8	14.5	29	48
		2	15~100	1.5	4.1	9	17.5	33	60
Operating Temp	[°C]	1,2	3~100	-10 to 40 °C					
Lubrication				Synthetic grease					
Degree of Gearbox Protection		1,2	3~100	IP65					
Mounting Position		1,2	3~100	All directions					
Noise Level ($n_1=3000 \text{ min}^{-1}$, No Load)	[dB(A)]	1,2	3~100	≤ 58	≤ 60	≤ 63	≤ 65	≤ 67	≤ 70

¹ Ratio (i=N in / N out)

² Applied to the output shaft center @ 100 min⁻¹

³ Max. acceleration torque $T_{2B} = 60\%$ of T_{2NOT}

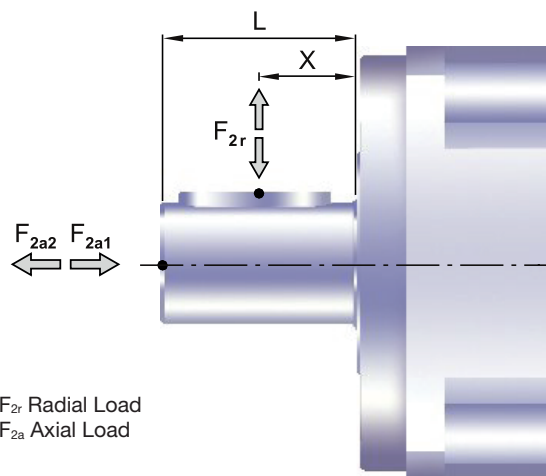
*S1 service life 10,000 hrs.

Gearbox Inertia

Model No.	Unit	Stage	Ratio	GX..R02..	GX..R04..	GX..R06..	GX..R07..	GX..R09..	GX..R10..
Mass Moments of inertia J₁	[kgmm²]	1	3	16	61	325	921	2898	-
			4	14	48	274	754	2367	-
			5	13	47	271	742	2329	-
			6	13	45	265	725	2275	-
			7	13	45	262	714	2248	-
			8	13	44	258	707	2259	-
			9	13	44	257	704	2253	-
			10	13	44	257	703	2251	-
		2	15	-	13	47	271	742	-
			20	-	13	47	271	742	-
			25	-	13	47	271	742	-
			30	-	13	47	271	742	-
			35	-	13	47	271	742	-
			40	-	13	47	271	742	-
			45	-	13	47	271	742	-
			50	-	13	44	257	703	-
			60	-	13	44	257	703	-
			70	-	13	44	257	703	2251
			80	-	13	44	257	703	2251
			90	-	13	44	257	703	2251
100	-	13	44	257	703	2251			

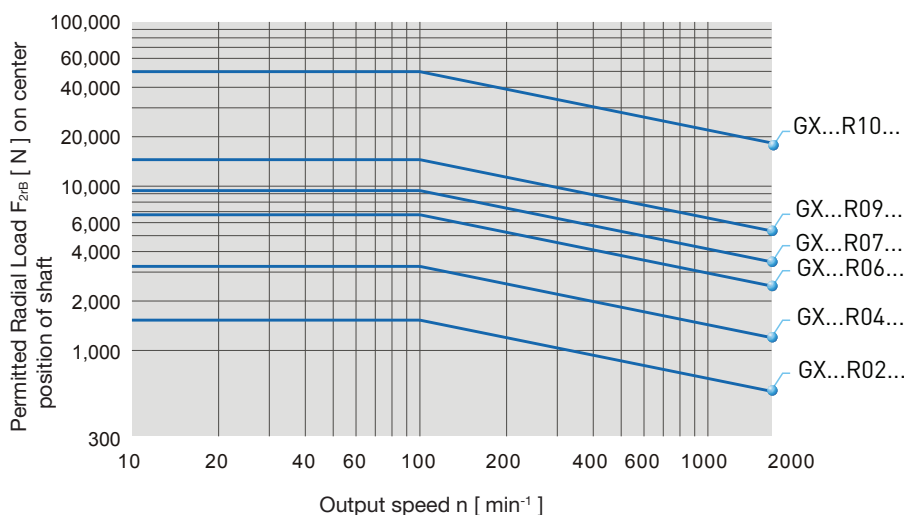
Permitted radial and axial loads on output shaft of the gearbox

The permitted radial and axial loads on output shaft of the gearbox depend on the design of the gearbox supporting bearings. GXA Series uses the extension straddle oversized ball bearing design. It can take heavy load from both axes.



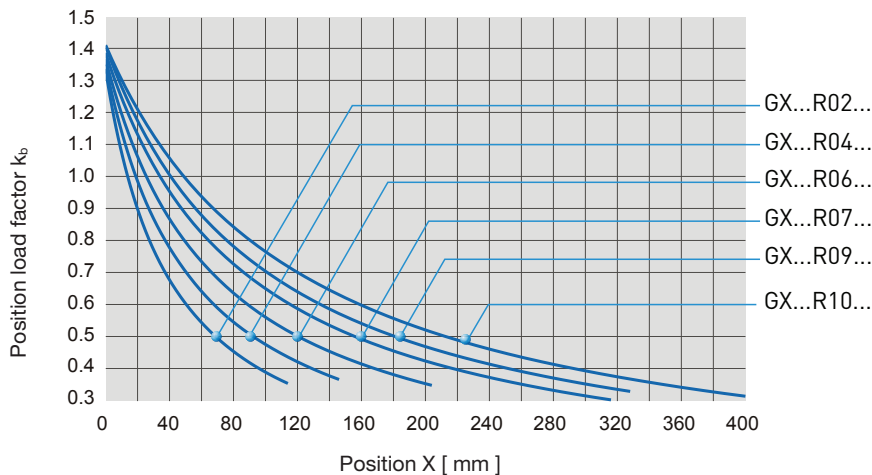
F_{2r} Radial Load
 F_{2a} Axial Load

If radial force F_{2r} exert on the center of the output shaft : $X=1/2 \times L$.



The permitted radial load is given on left diagram.

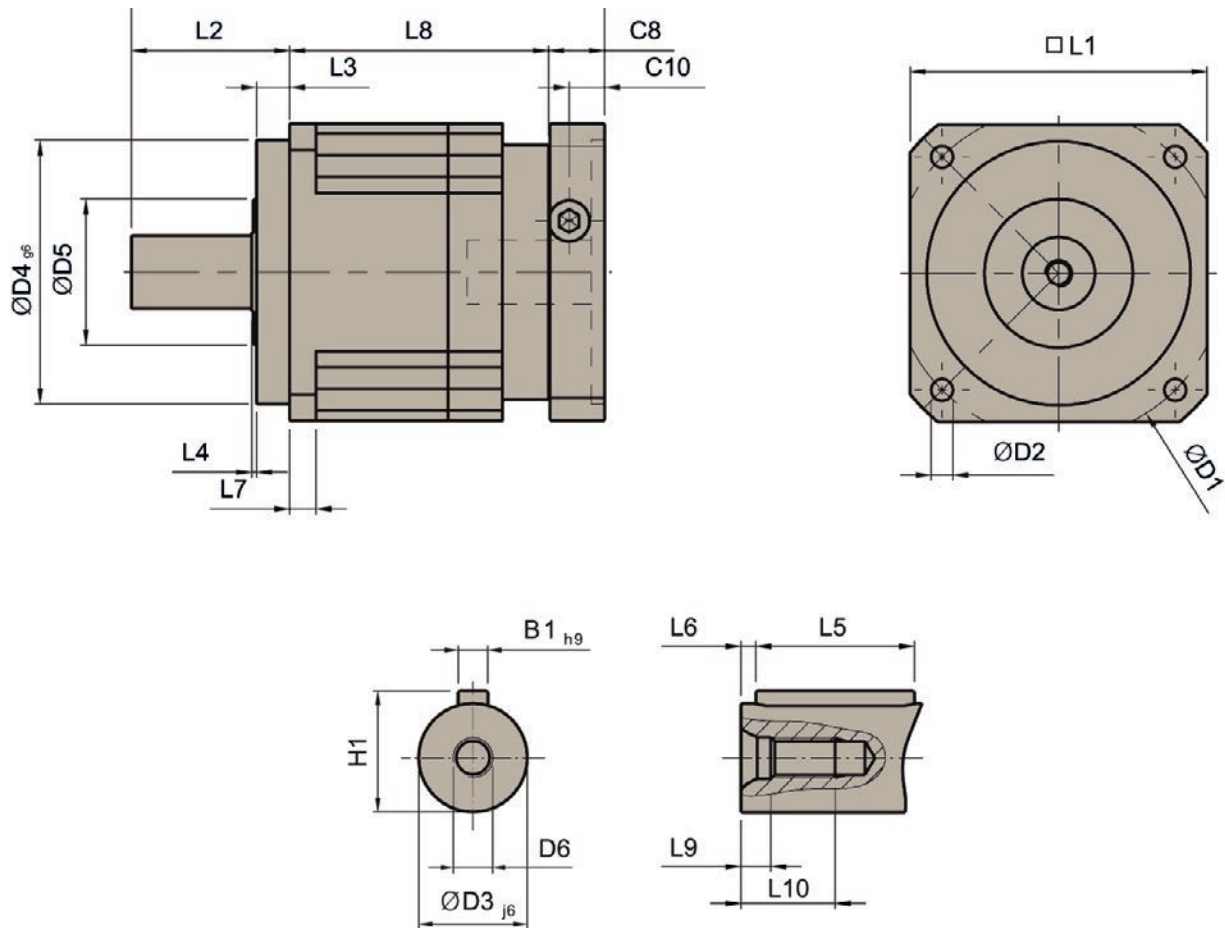
If radial force F_{2r} not exert on the center of the output shaft : $X < 1/2 \times L$ or $X > 1/2 \times L$



The permitted radial load can be calculated by multiplying the previous value by the position load factor k_b on the left diagram.

Dimensions

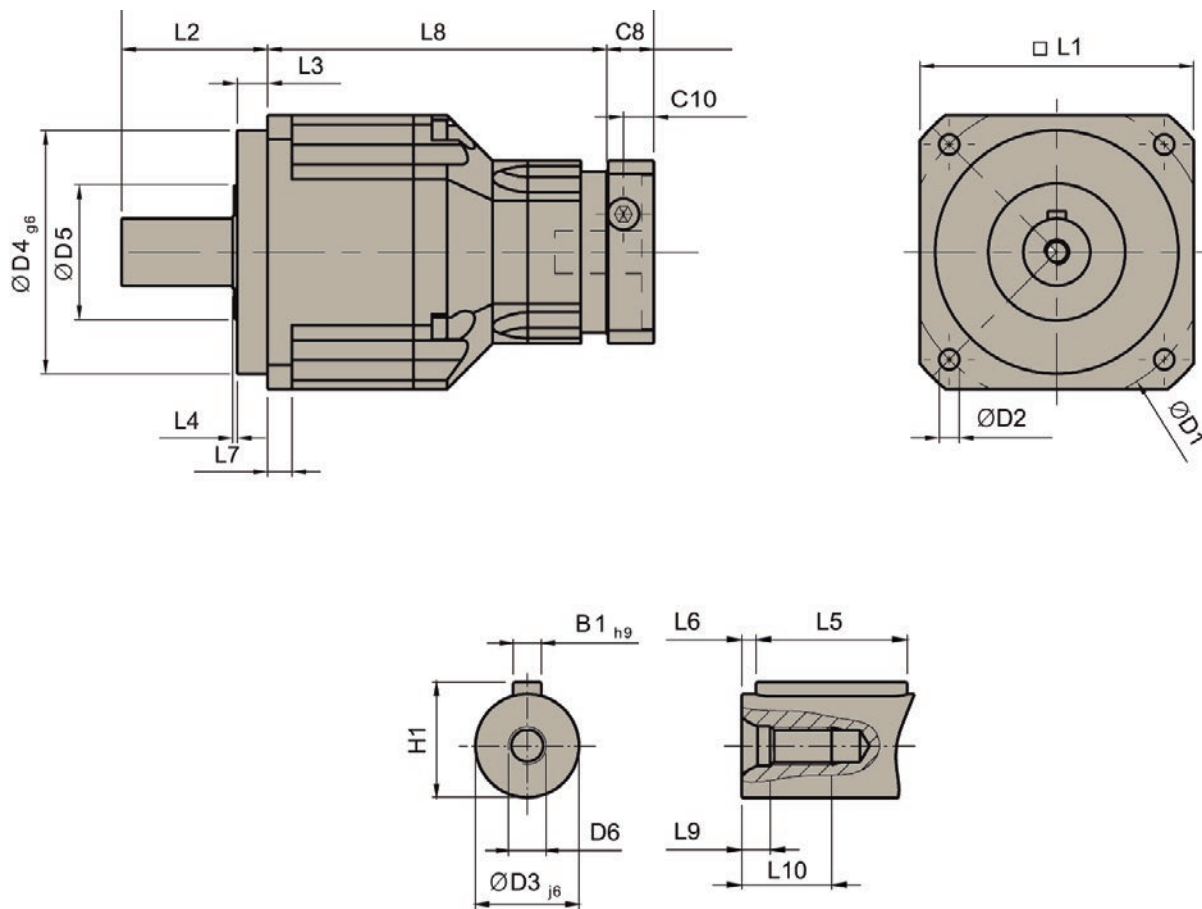
1 Stage - Ratio $i = 3 - 10$



	GX..R02..	GX..R04..	GX..R06..	GX..R07..	GX..R09..
D1	70	100	130	165	215
D2	5.5	6.6	9	11	13
D3 j6	16	22	32	40	55
D4 g6	50	80	110	130	160
D5	45	65	95	75	95
D6	M5 x 0.8	M8 x 1.25	M12 x 1.75	M16 x 0.8	M20 x 2.5
L1	60	90	115	142	180
L2	37	48	65	97	105
L3	7	10	12	15	20
L4	1.5	1.5	2	3	3
L5	25	32	40	63	70
L6	2	3	5	5	6
L7	6	8	10	12	15
L8	61	78.5	102	119.5	154
L9	4.8	7.2	10	12	15
L10	12.5	19	28	36	42
C8 ³	19	17	19.5	22.5	29
C10 ³	13.5	10.75	13	15	20.75
B1 _{h9}	5	6	10	12	16
H1	18	24.5	35	43	59

³C8-C10 are motor specific dimensions.

2 Stages - Ratio $i = 15 - 100$



	GX..R04..	GX..R06..	GX..R07..	GX..R09..	GX..R10..
D1	100	130	165	215	250
D2	6.6	9	11	13	17
D3 j6	22	32	40	55	75
D4 g6	80	110	130	160	180
D5	65	95	75	95	115
D6	M8 x 1.25	M12 x 1.75	M16 x 2	M20 x 2.5	M20 x 2.5
L1	90	115	142	180	220
L2	48	65	97	105	138
L3	10	12	15	20	30
L4	1.5	2	3	3	3
L5	32	40	63	70	90
L6	3	5	5	6	7
L7	8	10	12	15	20
L8	111.5	143.5	176	209.5	248
L9	7.2	10	12	15	15
L10	19	28	36	42	42
C8 ⁴	19	17	19.5	22.5	29
C10 ⁴	13.5	10.75	13	15	20.75
B1_{h9}	6	10	12	16	20
H1	24.5	35	43	59	79.5

4. C8-C10 are motor specific dimensions.

Gearbox Combinations

	Ratio	Motor Size				
		EX3 / EY3	EX4 / EY4	EX6 / EY6	EX8 / EY8	
1 stage	3	GXA3N003R0201	GXA4N003R0401	GXA6N003R0601	GXA8N003R0701	
	4	GXA3N004R0201	GXA4N004R0401	GXA6N004R0601	GXA8N004R0701	
	5	GXA3N005R0201	GXA4N005R0401	GXA6N005R0601	GXA8N005R0701	
	6	GXA3N006R0201	GXA4N006R0401	GXA6N006R0601	GXA8N006R0701	
	7	GXA3N007R0201	GXA4N007R0401	GXA6N007R0601	GXA8N007R0701	
	8	GXA3N008R0201	GXA4N008R0401	GXA6N008R0601	GXA8N008R0701	
	9	GXA3N009R0201	GXA4N009R0401	GXA6N009R0601	GXA8N009R0701	
	10	GXA3N010R0201	GXA4N010R0401	GXA6N010R0601	GXA8N010R0701	
2 stages	15	GXA3N015R0401	GXA4N015R0601	GXA6N015R0701	GXA8N015R0901	
	20	GXA3N020R0401	GXA4N020R0601	GXA6N020R0701	GXA8N020R0901	
	25	GXA3N025R0401	GXA4N025R0601	GXA6N025R0701	GXA8N025R0901	
	30	GXA3N030R0401	GXA4N030R0601	GXA6N030R0701	GXA8N030R0901	
	35	GXA3N035R0401	GXA4N035R0601	GXA6N035R0701	GXA8N035R0901	
	40	GXA3N040R0401	GXA4N040R0601	GXA6N040R0701	GXA8N040R0901	
	45	GXA3N045R0401	GXA4N045R0601	GXA6N045R0701	GXA8N045R0901	
	50	GXA3N050R0401	GXA4N050R0601	GXA6N050R0701	GXA8N050R0901	
	60	GXA3N060R0401	GXA4N060R0601	GXA6N060R0701	GXA8N060R0901	
	70			GXA4N070R0601		GXA8N070R0901
		GXA3N070R0401	GXA4N070R0701	GXA6N070R0701	GXA8N070R1001	
	80	GXA3N080R0401	GXA4N080R0601	GXA6N080R0701	GXA8N080R0901	
			GXA4N080R0701		GXA8N080R1001	
	90	GXA3N090R0401	GXA4N090R0601	GXA6N090R0701	GXA8N090R0901	
			GXA4N090R0701		GXA8N090R1001	
	100	GXA3N100R0401	GXA4N100R0601	GXA6N100R0701		
		GXA4N100R0701		GXA8N100R1001		

Motor gearhead possible combination with torque limitation, please consult us at EM-motion@parker.com

Order Code

GXA Gearboxes

	1	2	3	4	5	6	7
Order example	GX	A	3	N	005	R060	0

1 Gearbox Series	GX	Gearbox for in-line mounting
2 Gearbox Type	A	ATEX version
3 Motor size association *	3	EX3, EY3 (60/75/11/23)
	4	EX4, EY4 (80/100/19/40)
	6	EX6, EY6 (110/130/24/50)
	8	EX8, EY8 (130/165/32/58)
4 Backlash	N	Normal
	R	Reduced
5 Ratio	3 to 10	for GXA 1 stage
	15 to 100	for GXA 2 stages
6 Gearbox Size *	R020	Size 60
	R040	Size 90
	R060	Size 115
	R070	Size 142
	R090	Size 180
	R100	Size 220
7 Shaft	0	Smooth shaft
	1	Keyed shaft

* To find out about possible combinations please refer to the table on page 41.

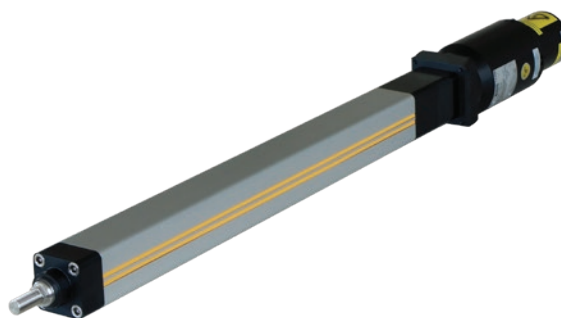
Related Products

ETH - Electro Thrust Cylinder for ATEX Environment

The ETH Series High Force Electro Cylinders are rod-style linear actuators that offers all the benefits of an electromechanical solution and the ETH ATEX range is ATEX certified for device group II, category 2 in explosive gas atmospheres. This allows Parker Hannifin to offer a complete drive package for ATEX applications.

Typical Features:

- Stroke up to 2000 mm
- Force up to 114 000 N
- Speed up to 1.7 m/s
- Acceleration up to 15 m/s²
- Classification: ETH032,050: II 2G c IIC T4
ETH080, 100, 125: II 2G c IIB T4



For more information please contact your local Parker Sales Office or consult our web page: www.parker.com/eme/eth



Parker's Motion & Control Technologies

At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 00800 27 27 5374



Aerospace

Key Markets

Aftermarket services
Commercial transports
Engines
General & business aviation
Helicopters
Launch vehicles
Military aircraft
Missiles
Power generation
Regional transports
Unmanned aerial vehicles

Key Products

Control systems & actuation products
Engine systems & components
Fluid conveyance systems & components
Fluid metering, delivery & atomization devices
Fuel systems & components
Fuel tank inerting systems
Hydraulic systems & components
Thermal management
Wheels & brakes



Climate Control

Key Markets

Agriculture
Air conditioning
Construction Machinery
Food & beverage
Industrial machinery
Life sciences
Oil & gas
Precision cooling
Process
Refrigeration
Transportation

Key Products

Accumulators
Advanced actuators
CO₂ controls
Electronic controllers
Filter driers
Hand shut-off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves



Electromechanical

Key Markets

Aerospace
Factory automation
Life science & medical
Machine tools
Packaging machinery
Paper machinery
Plastics machinery & converting
Primary metals
Semiconductor & electronics
Textile
Wire & cable

Key Products

AC/DC drives & systems
Electric actuators, gantry robots & slides
Electrohydraulic actuation systems
Electromechanical actuation systems
Human machine interface
Linear motors
Stepper motors, servo motors, drives & controls
Structural extrusions



Filtration

Key Markets

Aerospace
Food & beverage
Industrial plant & equipment
Life sciences
Marine
Mobile equipment
Oil & gas
Power generation & renewable energy
Process
Transportation
Water Purification

Key Products

Analytical gas generators
Compressed air filters & dryers
Engine air, coolant, fuel & oil filtration systems
Fluid condition monitoring systems
Hydraulic & lubrication filters
Hydrogen, nitrogen & zero air generators
Instrumentation filters
Membrane & fiber filters
Microfiltration
Sterile air filtration
Water desalination & purification filters & systems



Fluid & Gas Handling

Key Markets

Aerial lift
Agriculture
Bulk chemical handling
Construction machinery
Food & beverage
Fuel & gas delivery
Industrial machinery
Life sciences
Marine
Mining
Mobile
Oil & gas
Renewable energy
Transportation

Key Products

Check valves
Connectors for low pressure fluid conveyance
Deep sea umbilicals
Diagnostic equipment
Hose couplings
Industrial hose
Mooring systems & power cables
PTFE hose & tubing
Quick couplings
Rubber & thermoplastic hose
Tube fittings & adapters
Tubing & plastic fittings



Hydraulics

Key Markets

Aerial lift
Agriculture
Alternative energy
Construction machinery
Forestry
Industrial machinery
Machine tools
Marine
Material handling
Mining
Oil & gas
Power generation
Refuse vehicles
Renewable energy
Truck hydraulics
Turf equipment

Key Products

Accumulators
Cartridge valves
Electrohydraulic actuators
Human machine interfaces
Hybrid drives
Hydraulic cylinders
Hydraulic motors & pumps
Hydraulic systems
Hydraulic valves & controls
Hydrostatic steering
Integrated hydraulic circuits
Power take-offs
Power units
Rotary actuators
Sensors



Pneumatics

Key Markets

Aerospace
Conveyor & material handling
Factory automation
Life science & medical
Machine tools
Packaging machinery
Transportation & automotive

Key Products

Air preparation
Brass fittings & valves
Manifolds
Pneumatic accessories
Pneumatic actuators & grippers
Pneumatic valves & controls
Quick disconnects
Rotary actuators
Rubber & thermoplastic hose & couplings
Structural extrusions
Thermoplastic tubing & fittings
Vacuum generators, cups & sensors



Process Control

Key Markets

Alternative fuels
Biopharmaceuticals
Chemical & refining
Food & beverage
Marine & shipbuilding
Medical & dental
Microelectronics
Nuclear Power
Offshore oil exploration
Oil & gas
Pharmaceuticals
Power generation
Pulp & paper
Steel
Water/wastewater

Key Products

Analytical Instruments
Analytical sample conditioning products & systems
Chemical injection fittings & valves
Fluoropolymer chemical delivery fittings, valves & pumps
High purity gas delivery fittings, valves, regulators & digital flow controllers
Industrial mass flow meters/controllers
Permanent no-weld tube fittings
Precision industrial regulators & flow controllers
Process control double block & bleeds
Process control fittings, valves, regulators & manifold valves



Sealing & Shielding

Key Markets

Aerospace
Chemical processing
Consumer
Fluid power
General Industrial
Information technology
Life sciences
Microelectronics
Military
Oil & gas
Power generation
Renewable energy
Telecommunications
Transportation

Key Products

Dynamic seals
Elastomeric o-rings
Electro-medical instrument design & assembly
EMI shielding
Extruded & precision-cut, fabricated elastomeric seals
High temperature metal seals
Homogeneous & inserted elastomeric shapes
Medical device fabrication & assembly
Metal & plastic retained composite seals
Shielded optical windows
Silicone tubing & extrusions
Thermal management
Vibration dampening

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