Integrated Industrial Technologies, Inc.
Innovative Ideas in Motion

Lexium

Lexium® – BSH Servo Motors

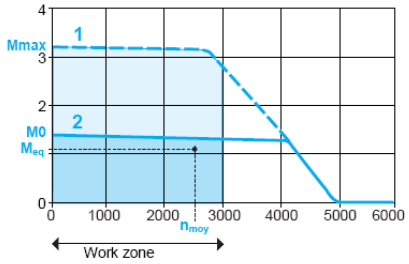
BSH servo motors offer an excellent response to dynamics and precision requirements. With five flange sizes and a variety of lengths they bring a solution that is fit for most applications, covering a torque range between 0.5 and 36 Nm and speed range from 1250 to 8000 min^{-1}.

The new technology in their windings, based upon salient poles, result in strong compactness in comparison with classical designs.

The BSH servo motors are offered with 5 possible flange sizes: 55, 70, 100, 140 and 205 mm. Thermal protection is provided by a temperature probe that is integrated into the motors. They are certified "Recognized" by the Underwriters Laboratories. They are compliant with standard UL1004 normes and with European directives (ce marking).

Speed/Torque Characteristics:

BSH motors show torque/speed profiles similar to example below:



1. Peak torque, depending on the servo drive model.
2. Continuous torque, depending on the servo drive model, where:

   6000 (in rpm) corresponds to the motor's maximum mechanical speed.

   M_{max} (in Nm) represents the peak stall torque value.

   M_n (in Nm) represents the continuous stall torque value.

Determine Size of Motor by Application:

Torque/speed curves can be used to determine optimum motor size. For example, for a supply voltage of 400V, 3-phase, the graphs used are graphs 1 and 2.

- Locate the work zone of the application in terms of speed.
- Verify, using the motor cycle diagram, that the torques required by the application during the different cycle phases are located within the area bounded by graph 1 in the work zone.
- Calculate the average speed n_{avg} and the equivalent thermal torque M_{eq}.
- The point defined by n_{avg} and M_{eq} must be within the area bounded by graph 2 in the work zone.

Functions:

BSH servo motors have been developed to meet the following requirements:

- Functional characteristics, robustness, safety, in compliance with IEC 60034-1.
- Ambient operating temperature: -20…+40°C in compliance with DIN 50019R14. Max. 55°C with derating from 40°C of 1% for °C
- Relative humidity: Class F in compliance with DIN 400
- Altitude: 1000 m without derating, 2000 m with k=0.86, 3000 m with k=0.8.
- Storage and transport temperature: -25..+70°C
- Winding insulation class: F (threshold temperature for windings 155°C) in compliance with VDE 0530
- Supply and sensor connections using straight connector or angled connectors rotatable
- Thermal protection by built-in PTC thermistor probe, controlled by the Lexium 05 servo drive
- Out-of-round, concentricity and perpendicularity between flange and shaft in compliance with DIN 42955, class N.
- Flange compliant with standard DIN 42948
- Permitted mounting positions: no mounting restriction for IMB5 – IMV1 and IMV3 in compliance with DIN 42950
- Polyester resin based paint: opaque black RAL 9005
- Degree of protection

  Motor casing: IP 65 in compliance with IEC/EN 60529

  Shaft end: IP 40 or IP 65 in compliance with IEC/EN 60529
- Integrated sensor, single turn or multi-turn absolute encoder SinCos Hiperface® high resolution interface.
- Standard sized smooth or keyed shaft end (in compliance with DIN 42948).

Lexium is a brand of Schneider Electric

Holding Brake:

The integral brake fitted on BSH servo motors (depending on the model) is a failsafe electro-magnetic holding brake.

Do not use the holding brake as a dynamic brake for deceleration purposes.

Built-in Sensor:

The servo motor is fitted with a high resolution interface absolute encoder SinCos Hiperface® single turn (128 points) or multi-turn (128 points x 4096 turns), with an angular shaft position precise to less than ± 1.3 arc minutes.

This performs the following functions:

- Gives the angular position of the rotor in such a way that flows can by synchronized.
- Measures the servo motor speed via the associated Lexium 05 servo drive. This information is used by the speed controller of the Lexium servo drive.
- Measures position information for the Lexium servo drive position controller.
- Measures and transmits position information, in incremental format, for the position return of a motion control module (Encoder emulation output of the Lexium servo drive).

Lexium® - BSH Servo Motor Ordering Information:

The BSH servo motors shown below are not equipped with gearboxes. For motors with GBX gearboxes, please call.

Continuous stall torque	Peak stall torque	Max. mechanical speed	**Associated servo drive LXM 05·**	Nominal speed	Reference *(1)*	Weight kg *(2)*
0.50 Nm	1.40 Nm	9000 min^{-1}	D10F1	3000 min^{-1}	BSH 0551T••••A	0.800
▲			D10M2	6000 min^{-1}		
			D10M3X	6000 min^{-1}		
0.90 Nm	1.77 Nm	9000 min^{-1}	D10F1	3000 min^{-1}	BSH 0552T••••A	1.100
▲			D10M2	6000 min^{-1}		
			D10M3X	6000 min^{-1}		
	2.25 Nm	9000 min^{-1}	D10M2	1500 min^{-1}	BSH 0552M••••A	1.100
			D10M3X	1500 min^{-1}		
	2.70 Nm	9000 min^{-1}	D17F1	3000 min^{-1}	BSH 0552T••••A	1.100
			D10M2	4000 min^{-1}	BSH 0552P••••A	1.100
			D10M3X	4000 min^{-1}		
			D14N4	6000 min^{-1}		
1.3 Nm	3.18 Nm	9000 min^{-1}	D10M2	4000 min^{-1}	BSH 0553F••••A	1.400
▲			D10M3X	4000 min^{-1}		
	3.31 Nm	9000 min^{-1}	D17F1	3000 min^{-1}	BSH 0553T••••A	1.400
			D17M2	6000 min^{-1}		
			D17M3X	6000 min^{-1}		
	3.50 Nm	9000 min^{-1}	D10M2	1500 min^{-1}	BSH 0553M••••A	1.400
			D10M3X	1500 min^{-1}		
	3.87 Nm	9000 min^{-1}	D14N4	6000 min^{-1}	BSH 0553F••••A	1.400
1.41 Nm	2.42 Nm	8000 min^{-1}	AD10F1	3000 min^{-1}	BSH 0701T••••A	2.100
			D10M3X	6000 min^{-1}		
	2.66 Nm	8000 min^{-1}	D10M3X	1500 min^{-1}	BSH 0701M••••A	2.100
			D10M2	3000 min^{-1}	BSH 0701F••••A	2.100
			D10M3X	3000 min^{-1}		
	3.19 Nm	8000 min^{-1}	D17M2	6000 min^{-1}	BSH 0701T••••A	2.100
			D17M3X	6000 min^{-1}		

Lexium® - BSH Servo Motor Ordering Information (*Cont'd*):

The BSH servo motors shown below are not equipped with gearboxes. For motors with GBX gearboxes, please call.

Continuous stall torque	Peak stall torque	Max. mechanical speed	**Associated servo drive LXM 05·**	Nominal speed	Reference *(1)*	Weight kg *(2)*
2.12 Nm	4.14 Nm	8000 min^{-1}	D17F1	3000 min^{-1}	BSH 0702T••••A	2.800
			D17M2	6000 min^{-1}		
	6.75 Nm	8000 min^{-1}	D28M2	6000 min^{-1}		
			D42M3X	6000 min^{-1}		
	4.57 Nm	8000 min^{-1}	D10M2	3000 min^{-1}	BSH 0702F••••A	2.800
			D10M3X	3000 min^{-1}		
	5.63 Nm	8000 min^{-1}	D10M2	1500 min^{-1}		
			D10M3X	1500 min^{-1}		
			D14N4	6000 min^{-1}	BSH 0702F••••A	2.800
			D17M2	3000 min^{-1}		
			D17M3X	3000 min^{-1}		
2.83 Nm	7.16 Nm	8000 min^{-1}	D17M2	3000 min^{-1}	BSH 0703F••••A	3.600
			D17M3X	3000 min^{-1}		
	7.38 Nm	8000 min^{-1}	D28F1	3000 min^{-1}	BSH 0703T••••A	3.600
			AD28M2	6000 min^{-1}		
	8.58 Nm	8000 min^{-1}	D10M2	1500 min^{-1}	BSH 0703M••••A	3.600
			D10M3X	1500 min^{-1}		
			D14N4	3000 min^{-1}		
	8.75Nm	8000 min^{-1}	D22N4	6000 min^{-1}	BSH 0703F••••A	3.600
	10.25 Nm	8000 min^{-1}	D42M3X	6000 min^{-1}	BSH 0703T••••A	3.600
	10.3 Nm	8000 min^{-1}	D28M2	3000 min^{-1}	BSH 0703F••••A	3.600
3.39 Nm	7.1 Nm	8000 min^{-1}	D14N4	2000 min^{-1}	BSH 1001M••••A	4.300
			D17M3X	2000 min^{-1}	BSH 1001F••••A	4.300
	8.5 Nm	8000 min^{-1}	D22N4	4000 min^{-1}	BSH 1001T••••A	4.300
			D28F1	2500 min^{-1}		
			D28M2	6000 min^{-1}		
			D42M3X	4000 min^{-1}		
5.52 Nm	11.23 Nm	6000 min^{-1}	D17M3X	2000 min^{-1}	BSH 1002F••••A	5.800
	13.33 Nm	6000 min^{-1}	D14N4	2000 min^{-1}	BSH 1002M••••A	5.800
	13.92 Nm	6000 min^{-1}	D22N4	4000 min^{-1}	BSH 1002F••••A	5.800
	16 Nm	6000 min^{-1}	D28M2	2000 min^{-1}		
			D42M3X	4000 min^{-1}	BSH 1002T••••A	5.800
7.76 Nm	19.68 Nm	6000 min^{-1}	D28M2	2000 min^{-1}	BSH 1003F••••A	7.500
	23 Nm	6000 min^{-1}	D34N4	4000 min^{-1}		
	23.17 Nm	6000 min^{-1}	D42M3X	2000 min^{-1}		
			AD22N4	2000 min^{-1}	BSH 1003M••••A	7.500
9.31 Nm	23.47 Nm	6000 min^{-1}	D34N4	3000 min^{-1}	BSH 1004F••••A	9.200
	35.70 Nm	6000 min^{-1}	D42M3X	2000 min^{-1}		
			D57N4	3000 min^{-1}		
11.71 Nm	27.15 Nm	4000 min^{-1}	D42M3X	3000 min^{-1}	BSH 1401T••••A	11.900
	28 Nm	4000 min^{-1}	D3N4	2500 min^{-1}	BSH 1401F••••A	11.900
17.16 Nm	29.63 Nm	4000 min^{-1}	D42M3X	3000 min^{-1}	BSH 1402T••••A	16.600
17.62 Nm	38.63 Nm	4000 min^{-1}	D34N4	2500 min^{-1}	BSH 1402F••••A	16.600
	45.43 Nm	4000 min^{-1}	D42M3X	1500 min^{-1}		
	54.3 Nm	4000 min^{-1}	D57N4	2000 min^{-1}		
	57 Nm	4000 min^{-1}	D34N4	1250 min^{-1}	BSH 1402M••••A	16.600
25.33 Nm	62.25 Nm	4000 min^{-1}	D57N4	3000 min^{-1}	BSH 1403F••••A	21.300
	70.35 Nm	4000 min^{-1}	D34N4	1250 min^{-1}	BSH 1403M••••A	21.300
	84.30 Nm	4000 min^{-1}	D57N4	1250 min^{-1}		
29.94 Nm	63.81 Nm	4000 min^{-1}	D57N4	3000 min^{-1}	BSH 1404F••••A	26.000
	102.57 Nm	4000 min^{-1}	D57N4	1500 min^{-1}	BSH 1404M••••A	26.000
36 Nm	82 Nm	3000 min^{-1}	D57N4	1500 min^{-1}	BSH 2051M••••A	33.000
▲						

(1) To fill up at the end of each reference, see table below.

(2) Without brake, for weight of motor with holding brake, please call.

To order a BSH motor, fill out at the end of each reference:

			BSH 0701P	.	.	.	.	A
Shaft end	IP 40	Smooth		0				
	IP 65	Keyed		1				
		Smooth		2				
		Keyed		3				
Integrated sensor	Single turn, SinCos Hiperface® 128 points/turn				1			
	Multiturn, SinCos Hiperface® (no. of turns: 4096)				2			
Holding brake	Without					A		
	With					F		
Connection	Straight connectors						1	
	Rotatable 90° angled connectors						2	
Flange	International standard							A