

# BSH0702T02F2A

AC servo motor BSH, Lexium 05, 2.12N.m,  
6000rpm, untapped shaft, with brake, IP50





## Main

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product or component type | Servo motor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Device short name         | BSH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Maximum mechanical speed  | 8000 rpm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Continuous stall torque   | 2.2 N.M for LXM32.D30M2 at 10 A, 115 V, single phase<br>2.12 N.M for LXM05AD17M2, 200...240 V, single phase<br>2.12 N.M for LXM05BD17M2, 200...240 V, single phase<br>2.12 N.M for LXM05CD17M2, 200...240 V, single phase<br>2.2 N.M for LXM32.D18M2 at 6 A, 230 V, single phase<br>2.12 N.M for LXM05AD17F1, 110...120 V, single phase<br>2.12 N.M for LXM05AD28M2, 200...240 V, single phase<br>2.12 N.M for LXM05BD17F1, 110...120 V, single phase<br>2.12 N.M for LXM05BD28M2, 200...240 V, single phase<br>2.12 N.M for LXM05CD17F1, 110...120 V, single phase<br>2.12 N.M for LXM05CD28M2, 200...240 V, single phase<br>2.12 N.M for LXM15LD17N4, 230 V, three phase<br>2.12 N.M for LXM15LD21M3, 230 V, three phase<br>2.12 N.M for LXM05AD42M3X, 200...240 V, three phase<br>2.12 N.M for LXM05BD42M3X, 200...240 V, three phase<br>2.12 N.m for LXM05CD42M3X, 200...240 V, three phase |
| Peak stall torque         | 6.1 N.M for LXM32.D30M2 at 10 A, 115 V, single phase<br>7.2 N.M for LXM32.D18M2 at 6 A, 230 V, single phase<br>4.14 N.M for LXM05AD17F1, 110...120 V, single phase<br>4.14 N.M for LXM05AD17M2, 200...240 V, single phase<br>4.14 N.M for LXM05BD17F1, 110...120 V, single phase<br>4.14 N.M for LXM05BD17M2, 200...240 V, single phase<br>4.14 N.M for LXM05CD17F1, 110...120 V, single phase<br>4.14 N.M for LXM05CD17M2, 200...240 V, single phase<br>6.8 N.M for LXM05AD28M2, 200...240 V, single phase<br>6.8 N.M for LXM05BD28M2, 200...240 V, single phase<br>6.8 N.M for LXM05CD28M2, 200...240 V, single phase<br>4.47 N.M for LXM15LD17N4, 230 V, three phase<br>5.45 N.M for LXM15LD21M3, 230 V, three phase<br>6.8 N.M for LXM05AD42M3X, 200...240 V, three phase<br>6.8 N.M for LXM05BD42M3X, 200...240 V, three phase<br>6.8 N.m for LXM05CD42M3X, 200...240 V, three phase       |

|                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal output power | 550 W for LXM32.D30M2 at 10 A, 115 V, single phase<br>600 W for LXM05AD17M2, 200...240 V, single phase<br>600 W for LXM05BD17M2, 200...240 V, single phase<br>600 W for LXM05CD17M2, 200...240 V, single phase<br>570 W for LXM05AD17F1, 110...120 V, single phase<br>570 W for LXM05BD17F1, 110...120 V, single phase<br>570 W for LXM05CD17F1, 110...120 V, single phase<br>600 W for LXM05AD28M2, 200...240 V, single phase<br>600 W for LXM05BD28M2, 200...240 V, single phase<br>600 W for LXM05CD28M2, 200...240 V, single phase<br>950 W for LXM32.D18M2 at 6 A, 230 V, single phase<br>1000 W for LXM15LD17N4, 230 V, three phase<br>1000 W for LXM15LD21M3, 230 V, three phase<br>600 W for LXM05AD42M3X, 200...240 V, three phase<br>600 W for LXM05BD42M3X, 200...240 V, three phase<br>600 W for LXM05CD42M3X, 200...240 V, three phase                                     |
| Nominal torque       | 2.07 N.M for LXM32.D30M2 at 10 A, 115 V, single phase<br>1.9 N.M for LXM05AD17M2, 200...240 V, single phase<br>1.9 N.M for LXM05BD17M2, 200...240 V, single phase<br>1.9 N.M for LXM05CD17M2, 200...240 V, single phase<br>1.83 N.M for LXM05AD17F1, 110...120 V, single phase<br>1.83 N.M for LXM05BD17F1, 110...120 V, single phase<br>1.83 N.M for LXM05CD17F1, 110...120 V, single phase<br>1.9 N.M for LXM05AD28M2, 200...240 V, single phase<br>1.9 N.M for LXM05BD28M2, 200...240 V, single phase<br>1.9 N.M for LXM05CD28M2, 200...240 V, single phase<br>1.8 N.M for LXM32.D18M2 at 6 A, 230 V, single phase<br>1.66 N.M for LXM15LD17N4, 230 V, three phase<br>1.66 N.M for LXM15LD21M3, 230 V, three phase<br>1.9 N.M for LXM05AD42M3X, 200...240 V, three phase<br>1.9 N.M for LXM05BD42M3X, 200...240 V, three phase<br>1.9 N.M for LXM05CD42M3X, 200...240 V, three phase |

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal speed             | 2500 rpm for LXM32.D30M2 at 10 A, 115 V, single phase<br>3000 rpm for LXM05AD17F1, 110...120 V, single phase<br>3000 rpm for LXM05BD17F1, 110...120 V, single phase<br>3000 rpm for LXM05CD17F1, 110...120 V, single phase<br>3000 rpm for LXM05AD17M2, 200...240 V, single phase<br>3000 rpm for LXM05BD17M2, 200...240 V, single phase<br>3000 rpm for LXM05CD17M2, 200...240 V, single phase<br>3000 rpm for LXM05AD28M2, 200...240 V, single phase<br>3000 rpm for LXM05BD28M2, 200...240 V, single phase<br>3000 rpm for LXM05CD28M2, 200...240 V, single phase<br>5000 rpm for LXM32.D18M2 at 6 A, 230 V, single phase<br>3000 rpm for LXM05AD42M3X, 200...240 V, three phase<br>3000 rpm for LXM05BD42M3X, 200...240 V, three phase<br>3000 rpm for LXM05CD42M3X, 200...240 V, three phase<br>6000 rpm for LXM15LD17N4, 230 V, three phase<br>6000 rpm for LXM15LD21M3, 230 V, three phase |
| Product compatibility     | LXM05AD17F1 at 110...120 V single phase<br>LXM05AD17M2 at 200...240 V single phase<br>LXM05AD28M2 at 200...240 V single phase<br>LXM05BD17F1 at 110...120 V single phase<br>LXM05BD17M2 at 200...240 V single phase<br>LXM05BD28M2 at 200...240 V single phase<br>LXM05CD17F1 at 110...120 V single phase<br>LXM05CD17M2 at 200...240 V single phase<br>LXM05CD28M2 at 200...240 V single phase<br>LXM32.D30M2 at 115 V single phase<br>LXM32.D18M2 at 230 V single phase<br>LXM15LD21M3 at 230 V three phase<br>LXM05AD42M3X at 200...240 V three phase<br>LXM05BD42M3X at 200...240 V three phase<br>LXM05CD42M3X at 200...240 V three phase<br>LXM15LD17N4 at 230 V three phase                                                                                                                                                                                                                |
| Shaft end                 | Untapped                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| IP degree of protection   | IP50 standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Speed feedback resolution | 131072 points/turn x 4096 turns                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Holding brake             | With                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Mounting support          | International standard flange                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Electrical connection     | Rotatable right-angled connectors                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## Complementary

|                          |                                     |
|--------------------------|-------------------------------------|
| Range compatibility      | Lexium 15<br>Lexium 32<br>Lexium 05 |
| Supply voltage max       | 480 V                               |
| Network number of phases | Three phase                         |
| Continuous stall current | 4.9 A                               |
| Maximum continuous power | 1.51 W                              |

|                                       |                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum current Irms                  | 20.6 A for LXM15LD21M3<br>20.6 A for LXM15LD17N4<br>19.9 A for LXM05AD17F1<br>19.9 A for LXM05AD17M2<br>19.9 A for LXM05AD28M2<br>19.9 A for LXM05AD42M3X<br>19.9 A for LXM05BD17F1<br>19.9 A for LXM05BD17M2<br>19.9 A for LXM05BD28M2<br>19.9 A for LXM05BD42M3X<br>19.9 A for LXM05CD17F1<br>19.9 A for LXM05CD17M2<br>19.9 A for LXM05CD28M2<br>19.9 A for LXM05CD42M3X<br>15 A for LXM32.D30M2<br>18 A for LXM32.D18M2 |
| Maximum permanent current             | 19.9 A                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Switching frequency                   | 8 kHz                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Second shaft                          | Without second shaft end                                                                                                                                                                                                                                                                                                                                                                                                    |
| Shaft diameter                        | 11 mm                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Shaft length                          | 23 mm                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Feedback type                         | Multiturn SinCos Hiperface                                                                                                                                                                                                                                                                                                                                                                                                  |
| Holding torque                        | 2 N.m holding brake                                                                                                                                                                                                                                                                                                                                                                                                         |
| Motor flange size                     | 70 mm                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Number of motor stacks                | 2                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Torque constant                       | 0.45 N.m/A at 120 °C                                                                                                                                                                                                                                                                                                                                                                                                        |
| Back emf constant                     | 28 V/krpm at 120 °C                                                                                                                                                                                                                                                                                                                                                                                                         |
| Number of motor poles                 | 6                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Rotor inertia                         | 0.482 kg.cm <sup>2</sup>                                                                                                                                                                                                                                                                                                                                                                                                    |
| Stator resistance                     | 1.5 Ohm at 20 °C                                                                                                                                                                                                                                                                                                                                                                                                            |
| Stator inductance                     | 6.7 mH at 20 °C                                                                                                                                                                                                                                                                                                                                                                                                             |
| Stator electrical time constant       | 4.47 ms at 20 °C                                                                                                                                                                                                                                                                                                                                                                                                            |
| Maximum radial force Fr               | 390 N at 6000 rpm<br>410 N at 5000 rpm<br>450 N at 4000 rpm<br>490 N at 3000 rpm<br>560 N at 2000 rpm<br>710 N at 1000 rpm                                                                                                                                                                                                                                                                                                  |
| Maximum axial force Fa                | 0.2 x Fr                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Brake pull-in power                   | 10 W                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Type of cooling                       | Natural convection                                                                                                                                                                                                                                                                                                                                                                                                          |
| Length                                | 212.5 mm                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Centring collar diameter              | 60 mm                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Centring collar depth                 | 2.5 mm                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Number of mounting holes              | 4                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Mounting holes diameter               | 5.5 mm                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Circle diameter of the mounting holes | 82 mm                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Net weight                            | 3 kg                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Packing Units

|                              |         |
|------------------------------|---------|
| Unit Type of Package 1       | PCE     |
| Number of Units in Package 1 | 1       |
| Package 1 Height             | 12.3 cm |
| Package 1 Width              | 12.8 cm |
| Package 1 Length             | 37.7 cm |
| Package 1 Weight             | 3.25 kg |

## Offer Sustainability

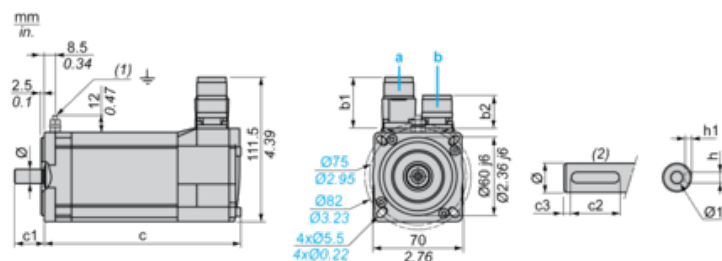
|                            |                                                                                                                                 |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| Sustainable offer status   | Green Premium product                                                                                                           |
| REACH Regulation           | <a href="#"> REACH Declaration</a>             |
| EU RoHS Directive          | Pro-active compliance (Product out of EU RoHS legal scope)                                                                      |
| Mercury free               | Yes                                                                                                                             |
| China RoHS Regulation      | <a href="#"> China RoHS Declaration</a>        |
| RoHS exemption information | <a href="#"> Yes</a>                           |
| Environmental Disclosure   | <a href="#"> Product Environmental Profile</a> |
| Circularity Profile        | No need of specific recycling operations                                                                                        |
| WEEE                       | The product must be disposed on European Union markets following specific waste collection and never end up in rubbish bins     |
| PVC free                   | Yes                                                                                                                             |

## Contractual warranty

|          |           |
|----------|-----------|
| Warranty | 18 months |
|----------|-----------|

## Servo Motors Dimensions

### Example with Straight Connectors



- a: Power supply for servo motor brake  
b: Power supply for servo motor encoder  
(1) M4 screw  
(2) Shaft end, keyed slot (optional)

Dimensions in mm

| Straight connectors |      | Rotatable angled connectors |      | c (without brake) | c (with brake) | c1 | c2 | c3  | h    | h1             | Ø     | Ø1 for screws |
|---------------------|------|-----------------------------|------|-------------------|----------------|----|----|-----|------|----------------|-------|---------------|
| b1                  | b2   | b1                          | b2   |                   |                |    |    |     |      |                |       |               |
| 39.5                | 25.5 | 39.5                        | 39.5 | 187               | 213            | 23 | 18 | 2.5 | 4 N9 | $2.5^{+0.1}_0$ | 11 k6 | M4 x 10       |

Dimensions in in.

| Straight connectors |      | Rotatable angled connectors |      | c (without brake) | c (with brake) | c1   | c2   | c3   | h       | h1                | Ø       | Ø1 for screws |
|---------------------|------|-----------------------------|------|-------------------|----------------|------|------|------|---------|-------------------|---------|---------------|
| b1                  | b2   | b1                          | b2   |                   |                |      |      |      |         |                   |         |               |
| 1.55                | 1.00 | 1.55                        | 1.55 | 7.36              | 8.38           | 0.90 | 0.70 | 0.09 | 0.16 N9 | $0.01^{+0.004}_0$ | 0.43 k6 | M4 x 0.39     |

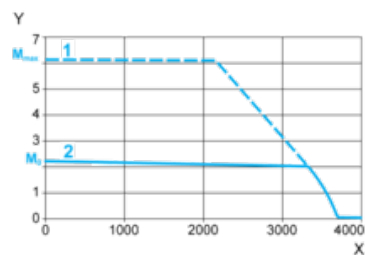
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## 115 V Single-Phase Supply Voltage

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### Torque/Speed Curves

Servo motor with LXM32•D30M2 servo drive



X Speed in rpm

Y Torque in Nm

1 Peak torque

2 Continuous torque

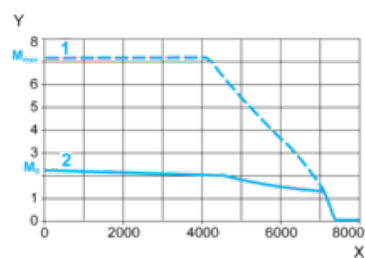
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## 230 V Single-Phase Supply Voltage

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### Torque/Speed Curves

Servo motor with LXM32•D18M2 servo drive



X Speed in rpm

Y Torque in Nm

1 Peak torque

2 Continuous torque