

NAKANISHI SPINDLE iSpeed3

iSpeed3

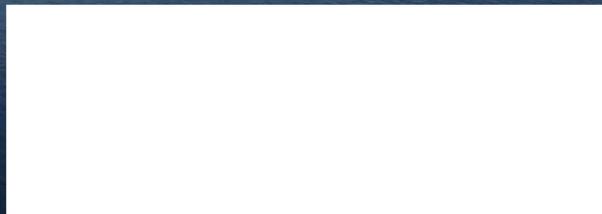


Headquarters • Factory
700 Shimohinata, Kanuma, Tochigi 322-8666, Japan
TEL +81-289-64-3520 FAX +81-289-62-1135

www.nakanishi-inc.com
NAKANISHI INC. 2018

PR-K312E Ver.4 '18.11.03.Ⓢ

Specifications and design are subject to change without notice.



Nature of Tochigi, Japan
Kinunuma in Spring

SERIES **iSpeed3**
ULTRA-HIGH-SPEED & SUPER-PRECISION

The Finger Tips

You can arrange this finger spindle as you wish and realize a magical machining

Max. power 140w, Max. rpm 80,000min⁻¹

Max. power 150w, Max. rpm 60,000min⁻¹

 **Spindle runout within 1μm**

- Optimum for high-precision machining
- Longer tool life

 **Ceramic Bearing**

- Longer bearing life
- Higher rigidity for heavy cutting

 **Brushless motor**

- Maintenance free
- Longer product life thanks to no dust from carbon brushes to the bearing



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With 50cm joint cord
Max.rpm 60,000min⁻¹

Motor cord

- 1. Joint type** For Motor and Motor spindle
[Feature] Connection possible out of the machine
[Length] 3m, 5m, 7m
- 2. Straight type** For Motor and Motor spindle
[Feature] Connection at the body end
[Length] 4m, 6m, 8m
- 3. Angle type** For Motor and Motor spindle
[Feature] Connection at the body end into 90° degrees
[Length] 4m, 6m, 8m

Controller

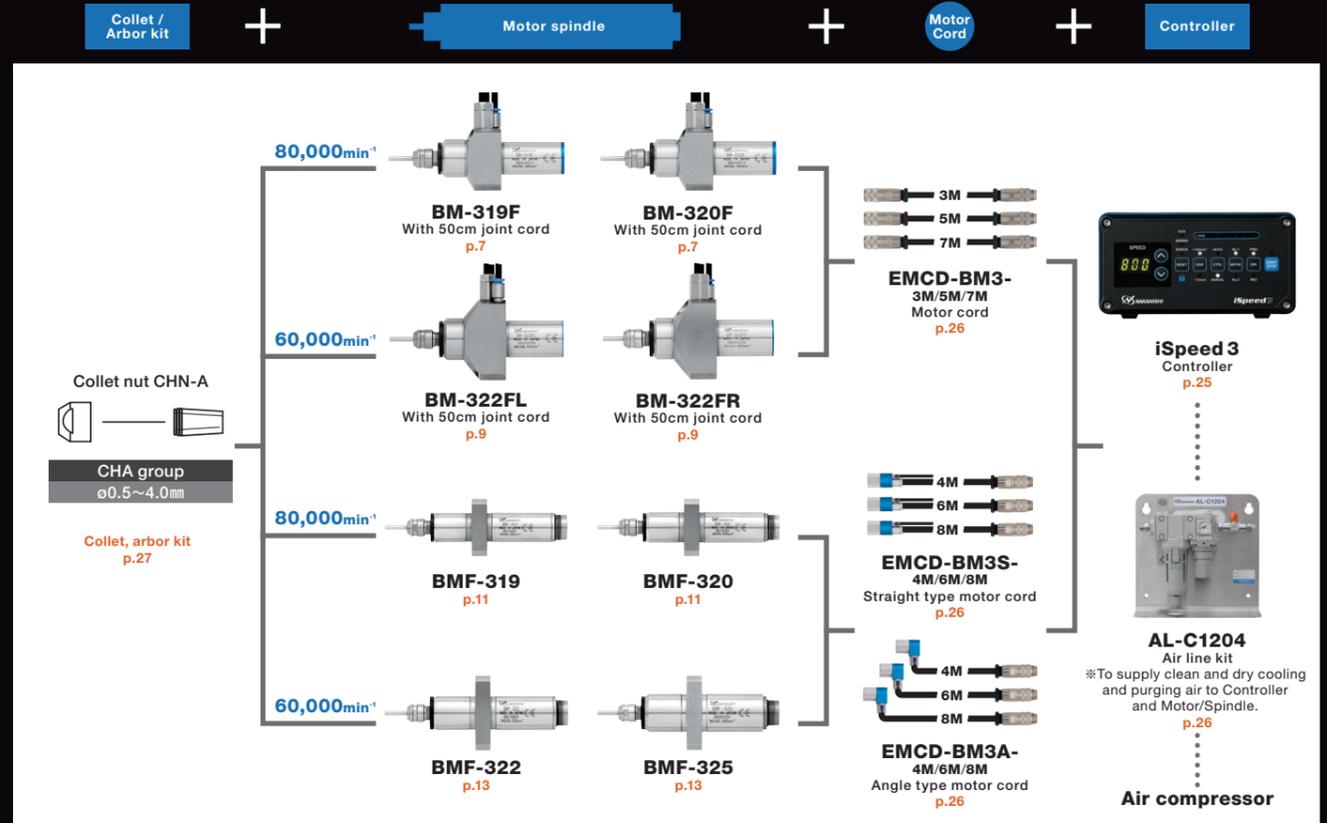
- iSpeed3 Controller** p.25

Accessories

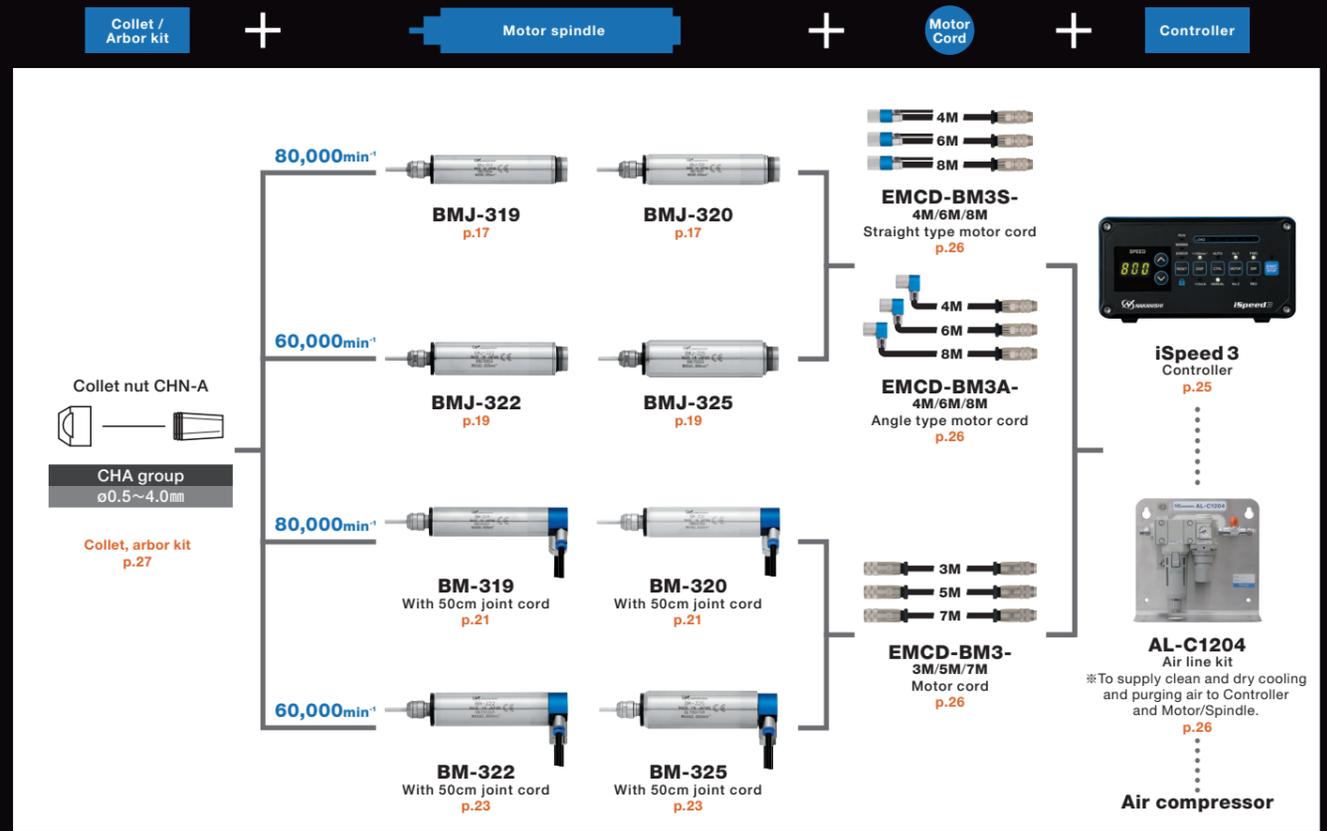
- AL-C1204** Air line kit p.26
- CHA / CHN-A** Collet / Collet nut p.27

System Chart

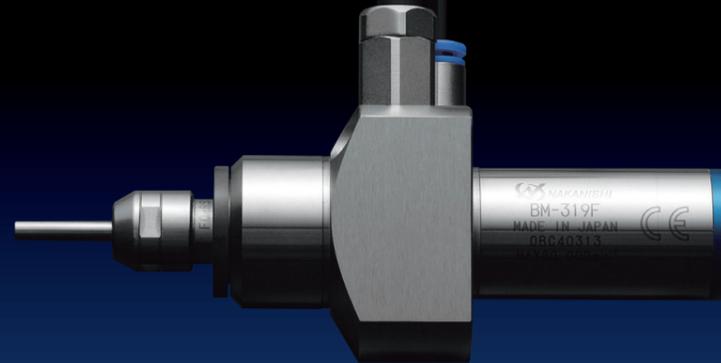
Flange type motor spindle



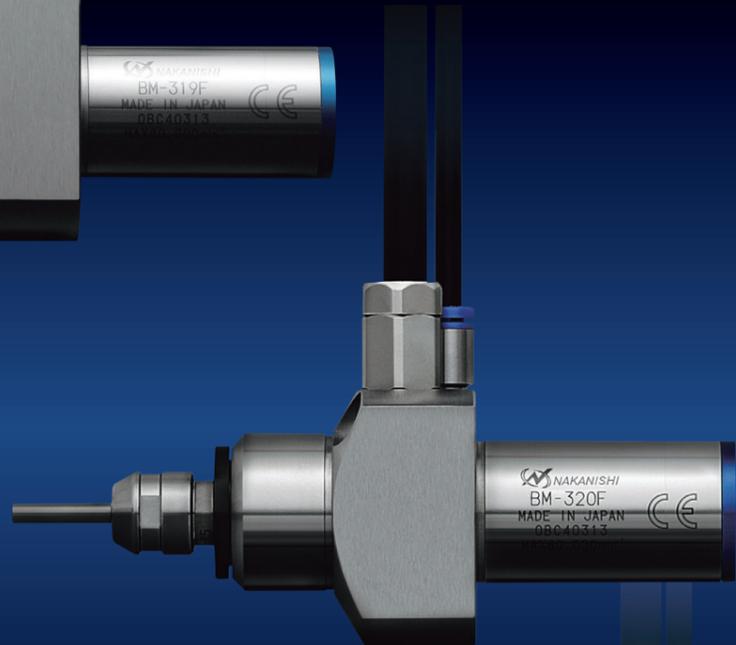
Straight type motor spindle



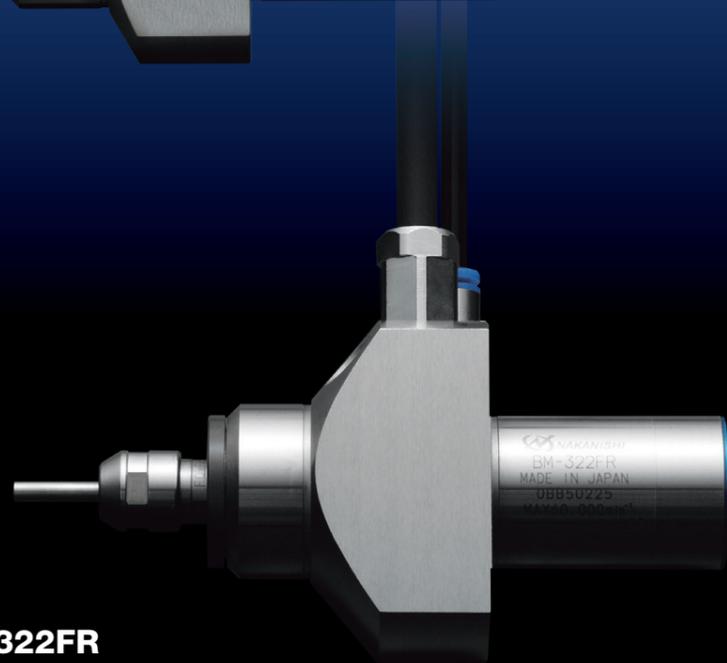
Flange type motor spindle



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Spindle Guide



BM-319F



BM-320F



EMCD-BM3
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iSpeed3
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iSpeed3 SERIES

Shown In Actual Size

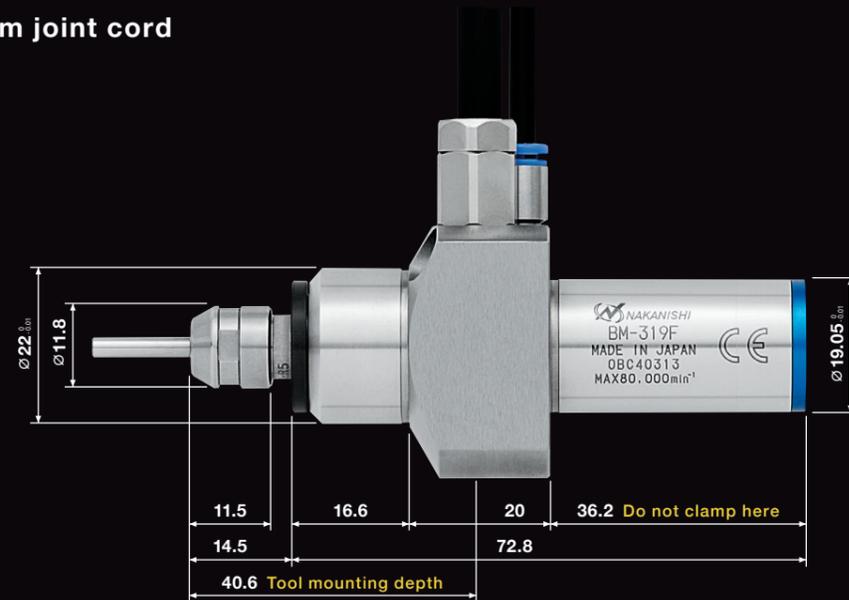
Flange type motor spindle

BM-319F

With 50cm joint cord



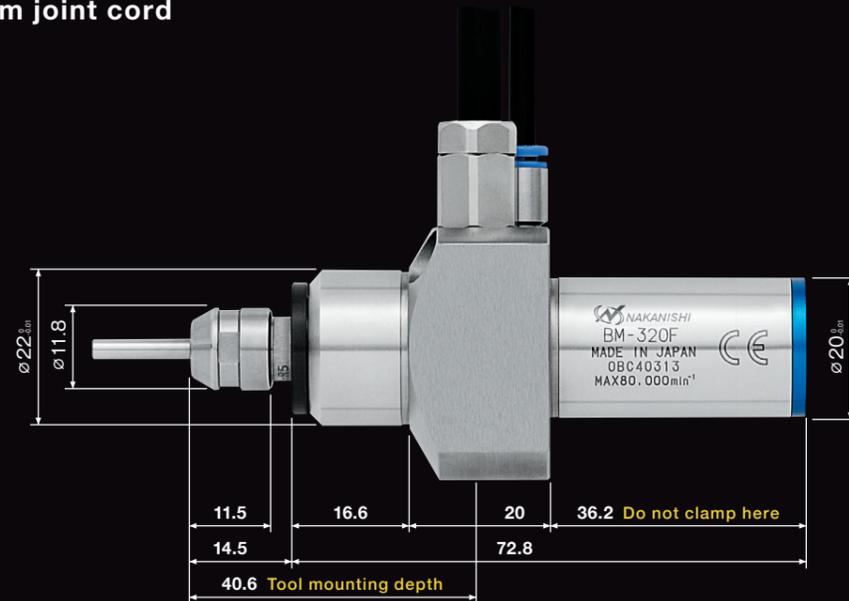
O.D. ϕ 19.05mm



O.D. ϕ 20mm

BM-320F

With 50cm joint cord



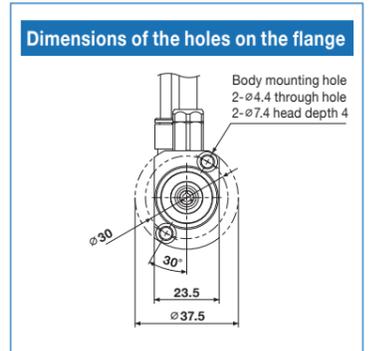
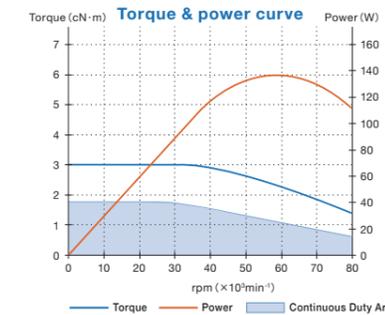
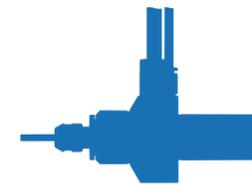
Specifications

DXF data DXF files are available on our website

Order by Code No.

BM-319F

Code No. **8511** Model **BM-319F**

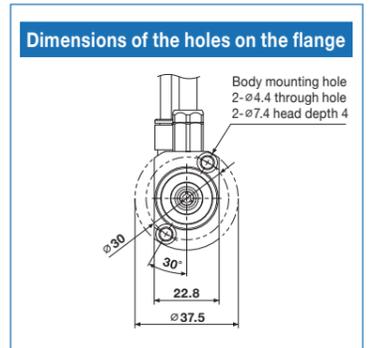
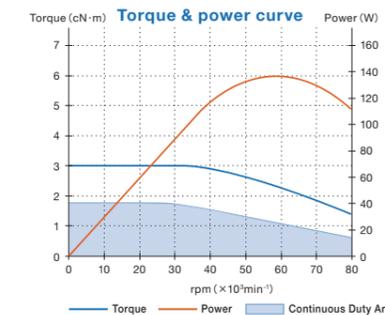
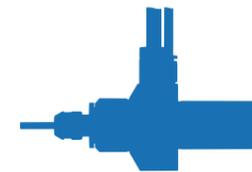


Cord length L=0.5m

O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 19.05mm	80,000 min^{-1}	140w	Within1 μm	260g
Standard Accessories	Collet : ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) Spanner (8 \times 5) · (9 \times 11) : 1pc. / Bolt : 2pcs. (M4 \times L25)			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord : Length 3m (9261) , 5m (9262) , 7m (9263)			

BM-320F

Code No. **8513** Model **BM-320F**



Cord length L=0.5m

O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 20mm	80,000 min^{-1}	140w	Within1 μm	270g
Standard Accessories	Collet : ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) Spanner (8 \times 5) · (9 \times 11) : 1pc. / Bolt : 2pcs. (M4 \times L25)			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord : Length 3m (9261) , 5m (9262) , 7m (9263)			

Spindle Guide



BM-322FL



BM-322FR



EMCD-BM3
p.26



iSpeed3
p.25



AL-C1204
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iSpeed3 SERIES

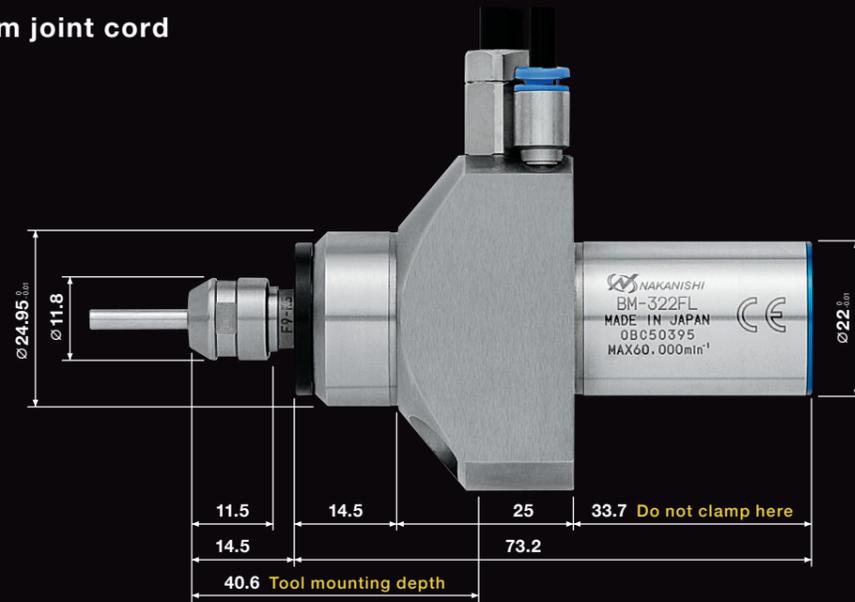
Shown In Actual Size

Flange type motor spindle

BM-322FL
With 50cm joint cord



O.D. ϕ 22mm



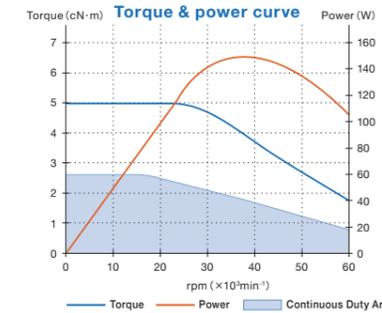
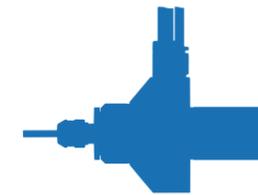
Specifications

DXF data DXF files are available on our website

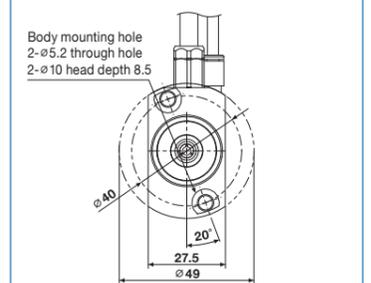
Order by Code No.

BM-322FL

Code No. **8519** Model **BM-322FL**



Dimensions of the holes on the flange



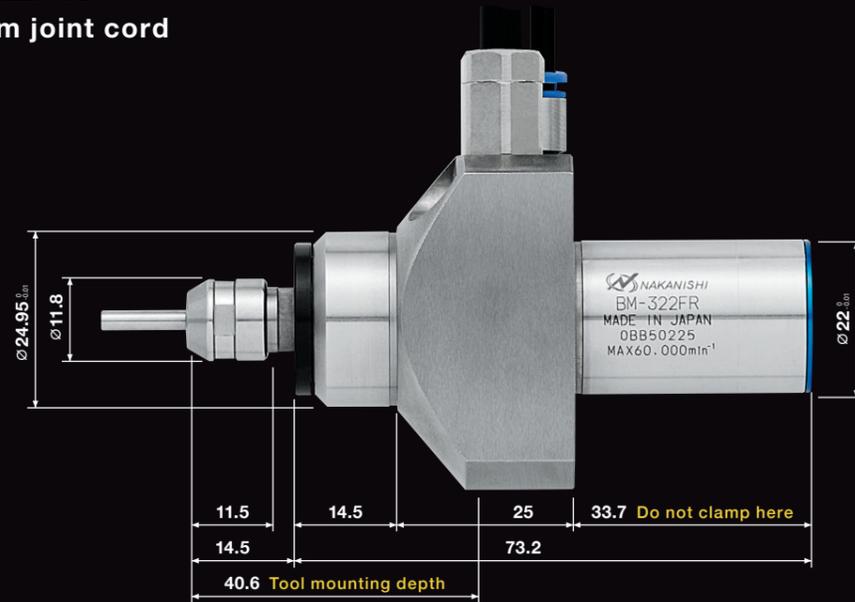
Cord length L=0.5m

O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 22mm	60,000min ⁻¹	150w	Within1 μ m	360g
Standard Accessories	Collet : ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) Spanner (8×5) · (9×11) : 1pc. / Bolt : 2pcs. (M5×L25)			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord : Length 3m (9261) , 5m (9262) , 7m (9263)			

BM-322FR
With 50cm joint cord

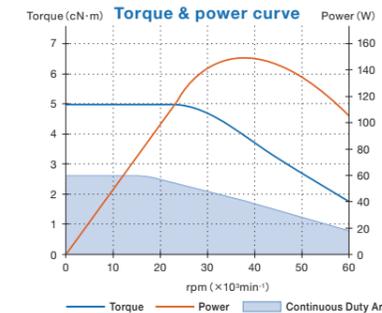
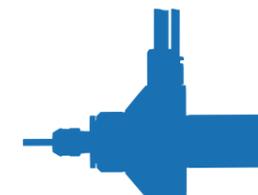


O.D. ϕ 22mm

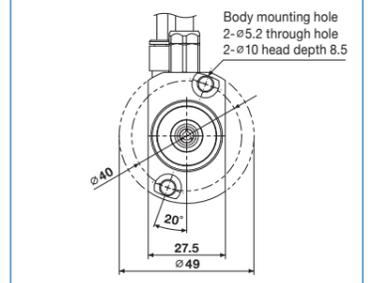


BM-322FR

Code No. **8521** Model **BM-322FR**



Dimensions of the holes on the flange



Cord length L=0.5m

O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 22mm	60,000min ⁻¹	150w	Within1 μ m	360g
Standard Accessories	Collet : ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) Spanner (8×5) · (9×11) : 1pc. / Bolt : 2pcs. (M5×L25)			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord : Length 3m (9261) , 5m (9262) , 7m (9263)			

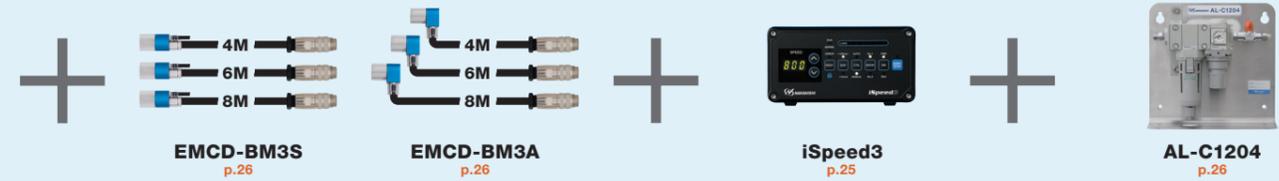
Spindle Guide



BMF-319



BMF-320



iSpeed3 SERIES

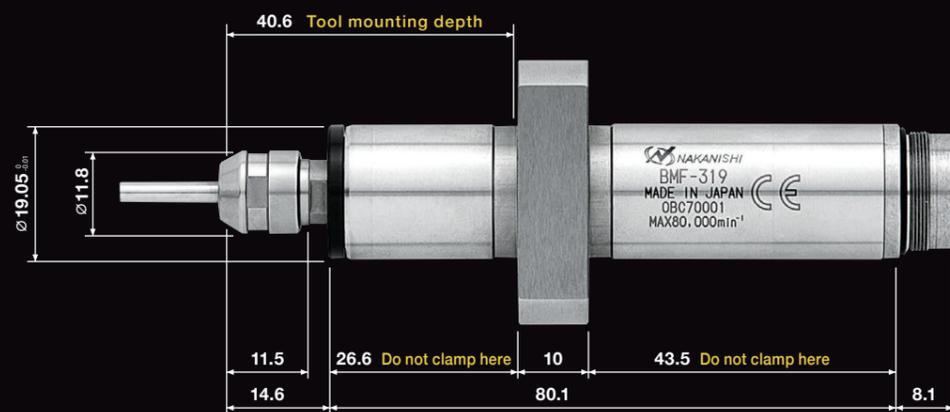
Shown In Actual Size

Flange type motor spindle

BMF-319



O.D. ϕ 19.05mm



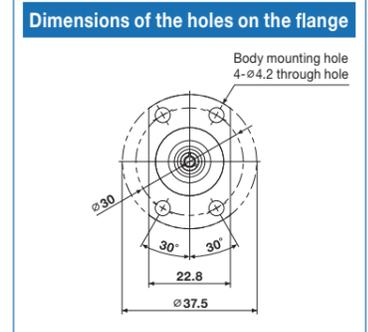
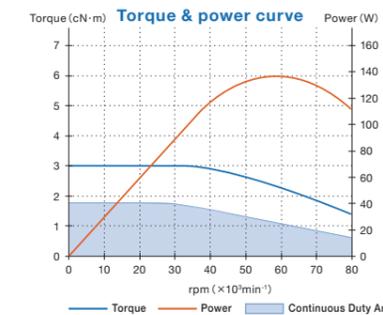
Specifications

DXF data DXF files are available on our website

Order by Code No.

BMF-319

Code No. **8529** Model **BMF-319**

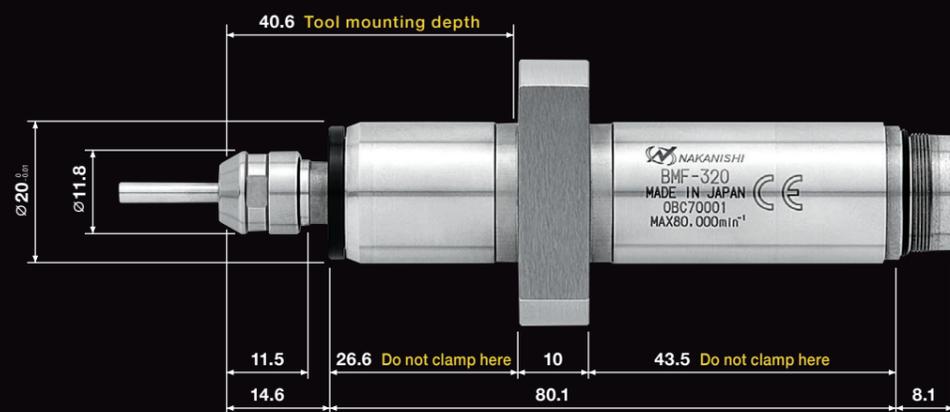


O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 19.05mm	80,000min ⁻¹	140w	Within1 μ m	180g
Standard Accessories	Collet : ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) Spanner (8×5) · (9×11) : 1pc. / Bolt : 2pcs. (M4×L16)			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord (Straight) : Length 4m (9264) , 6m (9265) , 8m (9266) Motor cord (Angle) : Length 4m (9267) , 6m (9268) , 8m (9269)			

BMF-320

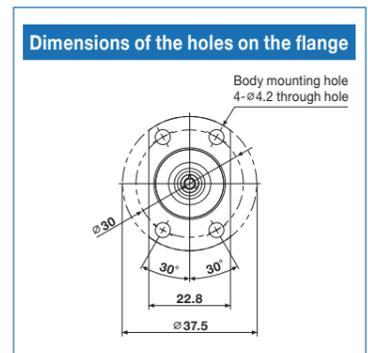
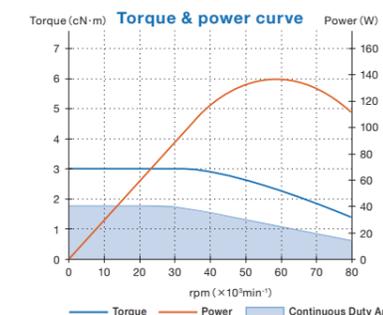


O.D. ϕ 20mm



BMF-320

Code No. **8530** Model **BMF-320**



O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 20mm	80,000min ⁻¹	140w	Within1 μ m	195g
Standard Accessories	Collet : ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) Spanner (8×5) · (9×11) : 1pc. / Bolt : 2pcs. (M4×L16)			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord (Straight) : Length 4m (9264) , 6m (9265) , 8m (9266) Motor cord (Angle) : Length 4m (9267) , 6m (9268) , 8m (9269)			

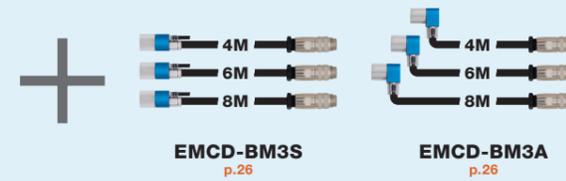
Spindle Guide



BMF-322



BMF-325



iSpeed3 SERIES

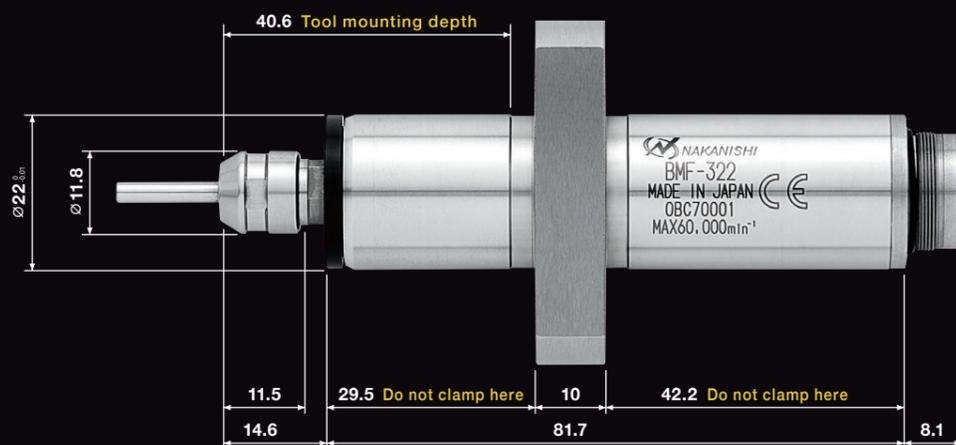
Shown In Actual Size

Flange type motor spindle

BMF-322



O.D. ϕ 22mm



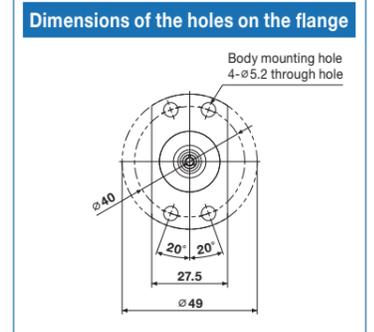
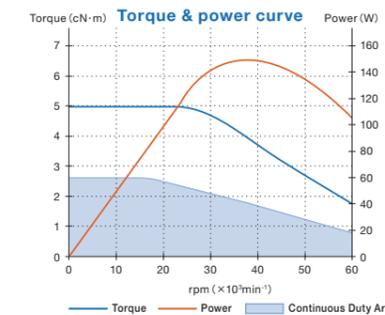
Specifications

DXF data DXF files are available on our website

Order by Code No.

BMF-322

Code No. **8531** Model **BMF-322**

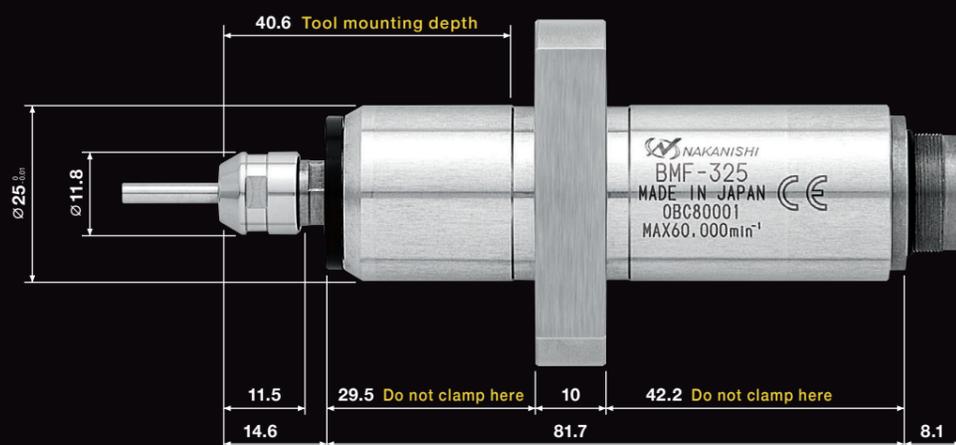


O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 22mm	60,000min ⁻¹	150w	Within1 μ m	250g
Standard Accessories	Collet : ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) Spanner (8×5) · (9×11) : 1pc. / Bolt : 2pcs. (M5×L16)			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord (Straight) : Length 4m (9264) , 6m (9265) , 8m (9266) Motor cord (Angle) : Length 4m (9267) , 6m (9268) , 8m (9269)			

BMF-325

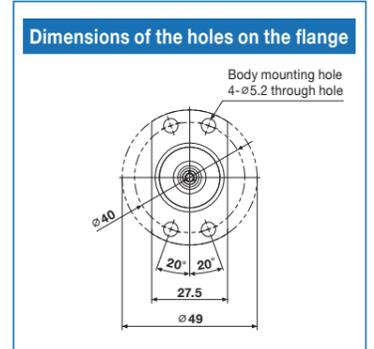
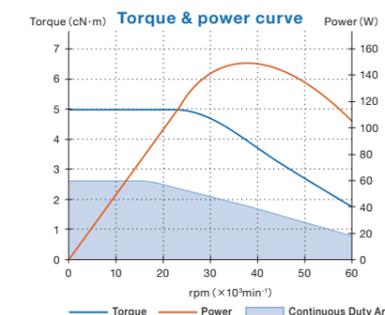


O.D. ϕ 25mm



BMF-325

Code No. **8532** Model **BMF-325**



O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 25mm	60,000min ⁻¹	150w	Within1 μ m	305g
Standard Accessories	Collet : ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) Spanner (8×5) · (9×11) : 1pc. / Bolt : 2pcs. (M5×L16)			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord (Straight) : Length 4m (9264) , 6m (9265) , 8m (9266) Motor cord (Angle) : Length 4m (9267) , 6m (9268) , 8m (9269)			

Straight type motor spindle



19_{mm} BMJ-319
p.17



19_{mm} BM-319
p.21



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22 BMJ-322
p.19



20 BM-320
p.21



25 BMJ-325
p.19

22 BM-322
p.23



25 BM-325
p.23

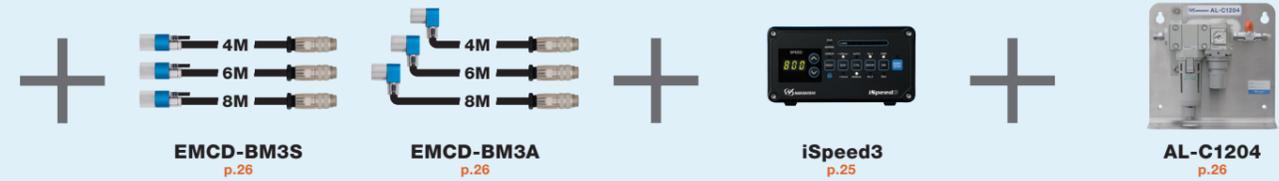


Spindle
Guide

BMJ-319



BMJ-320

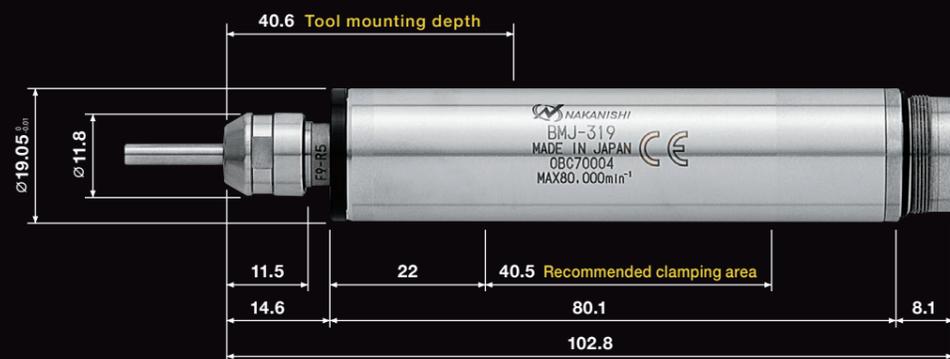


iSpeed3 SERIES

Shown In Actual Size

Straight type motor spindle

BMJ-319

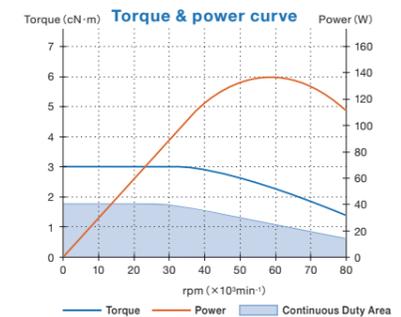
O.D. ϕ 19.05mm

Specifications

DXF data DXF files are available on our website

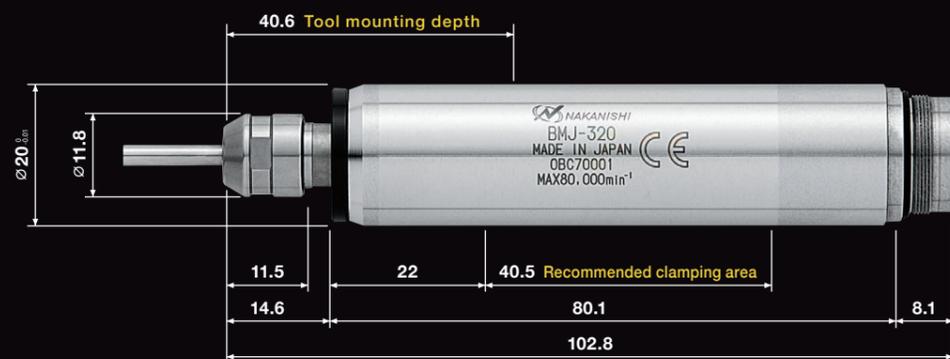
Order by Code No.

BMJ-319

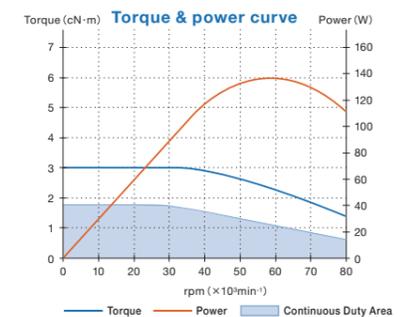
Code No. **8525** Model **BMJ-319**

O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 19.05mm	80,000min ⁻¹	140w	Within1 μ m	145g
Standard Accessories	Collet: ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord (Straight) : Length 4m (9264) , 6m (9265) , 8m (9266) Motor cord (Angle) : Length 4m (9267) , 6m (9268) , 8m (9269)			

BMJ-320

O.D. ϕ 20mm

BMJ-320

Code No. **8526** Model **BMJ-320**

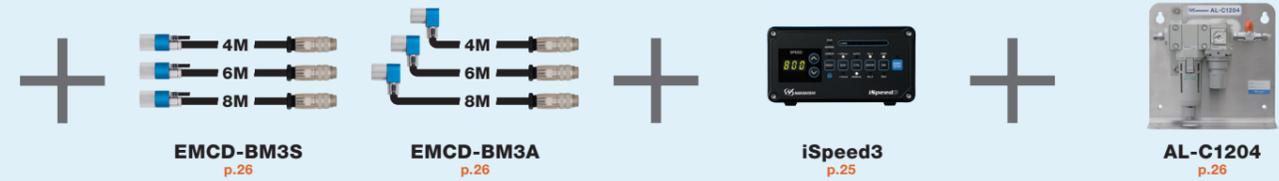
O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 20mm	80,000min ⁻¹	140w	Within1 μ m	160g
Standard Accessories	Collet: ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord (Straight) : Length 4m (9264) , 6m (9265) , 8m (9266) Motor cord (Angle) : Length 4m (9267) , 6m (9268) , 8m (9269)			



BMJ-322



BMJ-325

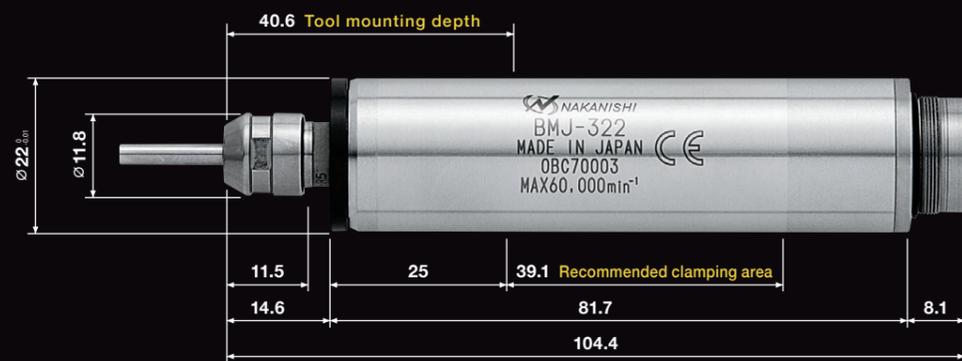


iSpeed3 SERIES

Shown In Actual Size

Straight type motor spindle

BMJ-322

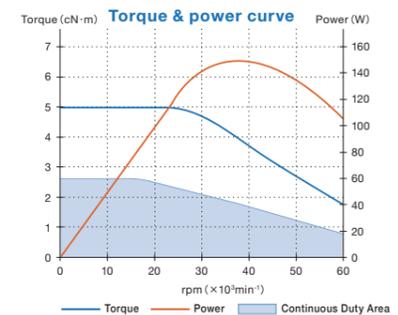
O.D. \varnothing 22mm

Specifications

DXF data DXF files are available on our website

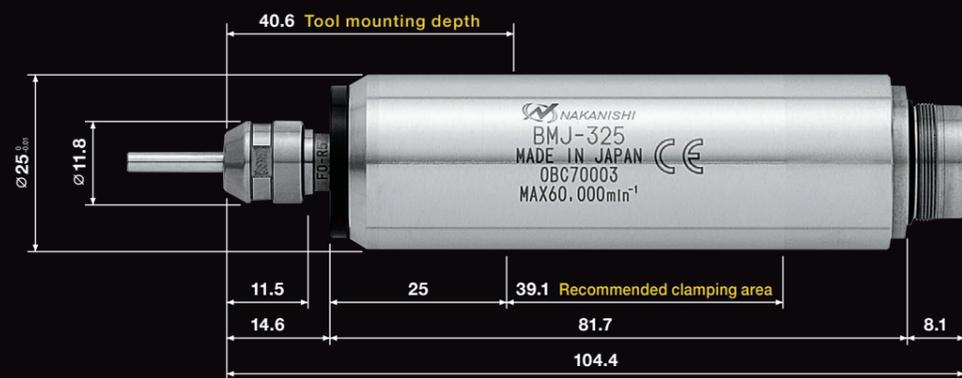
Order by Code No.

BMJ-322

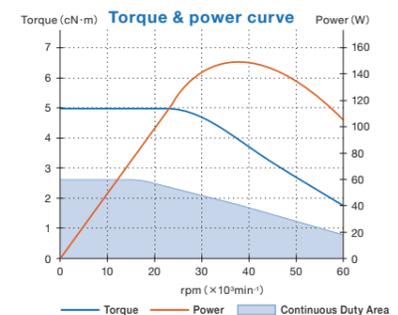
Code No. **8527** Model **BMJ-322**

O.D.	Max. rpm	Max. power	Spindle runout	Weight
\varnothing 22mm	60,000min ⁻¹	150w	Within1 μ m	190g
Standard Accessories	Collet: \varnothing 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.			
Options	Collet (CHA group) : \varnothing 0.5~ \varnothing 4.0mm p.27 Motor cord (Straight) : Length 4m (9264) , 6m (9265) , 8m (9266) Motor cord (Angle) : Length 4m (9267) , 6m (9268) , 8m (9269)			

BMJ-325

O.D. \varnothing 25mm

BMJ-325

Code No. **8528** Model **BMJ-325**

O.D.	Max. rpm	Max. power	Spindle runout	Weight
\varnothing 25mm	60,000min ⁻¹	150w	Within1 μ m	255g
Standard Accessories	Collet: \varnothing 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.			
Options	Collet (CHA group) : \varnothing 0.5~ \varnothing 4.0mm p.27 Motor cord (Straight) : Length 4m (9264) , 6m (9265) , 8m (9266) Motor cord (Angle) : Length 4m (9267) , 6m (9268) , 8m (9269)			

Spindle Guide



BM-319



BM-320



EMCD-BM3
p.26



iSpeed3
p.25



AL-C1204
p.26

iSpeed3 SERIES

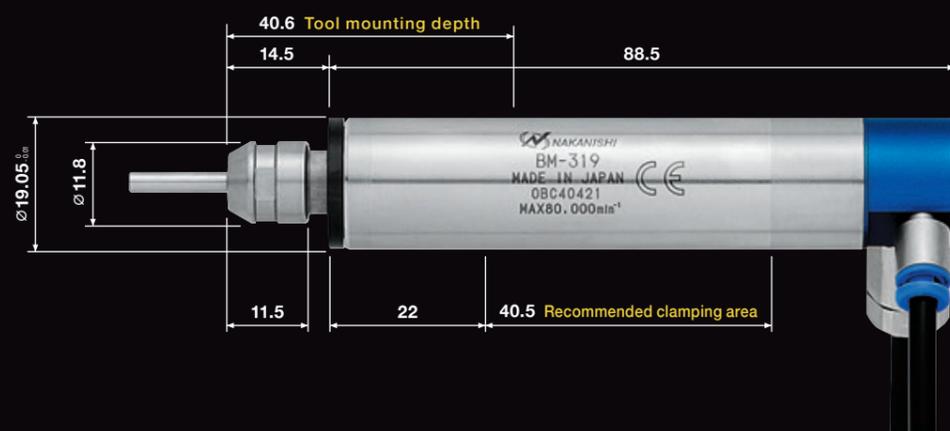
Shown In Actual Size

Straight type motor spindle

BM-319
With 50cm joint cord

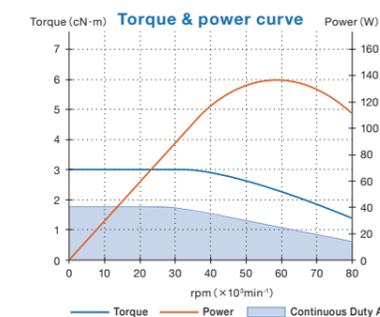


O.D. ϕ 19.05mm



BM-319

Code No. **8507** Model **BM-319**



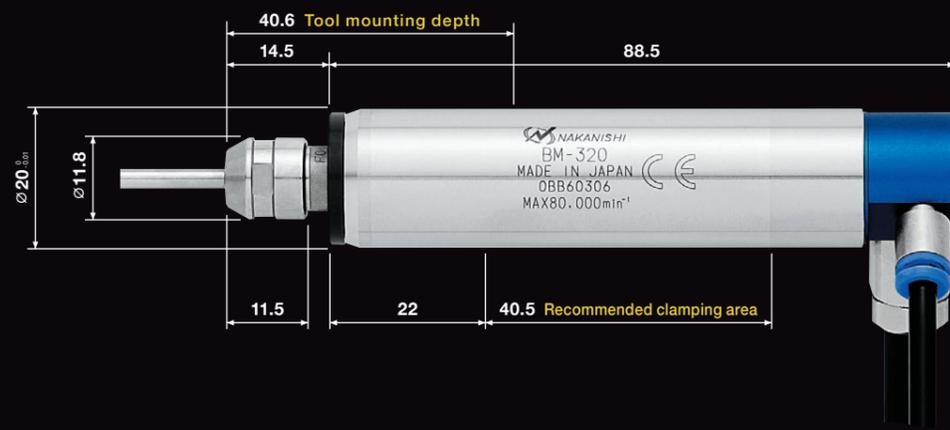
Cord length L=0.5m

O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 19.05mm	80,000min ⁻¹	140w	Within1 μ m	210g
Standard Accessories	Collet: ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord : Length 3m (9261) , 5m (9262) , 7m (9263)			

BM-320
With 50cm joint cord

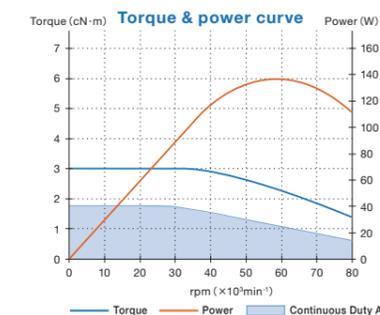


O.D. ϕ 20mm



BM-320

Code No. **8509** Model **BM-320**



Cord length L=0.5m

O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 20mm	80,000min ⁻¹	140w	Within1 μ m	230g
Standard Accessories	Collet: ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord : Length 3m (9261) , 5m (9262) , 7m (9263)			

Spindle
Guide

BM-322



BM-325

EMCD-BM3
p.26iSpeed3
p.25AL-C1204
p.26

iSpeed3 SERIES

Shown In Actual Size

Straight type motor spindle

BM-322

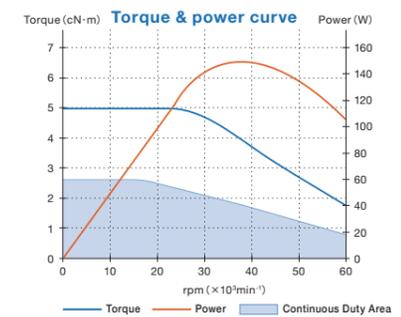
O.D. \varnothing 22mm

Specifications

DXF data DXF files are available on our website

Order by Code No.

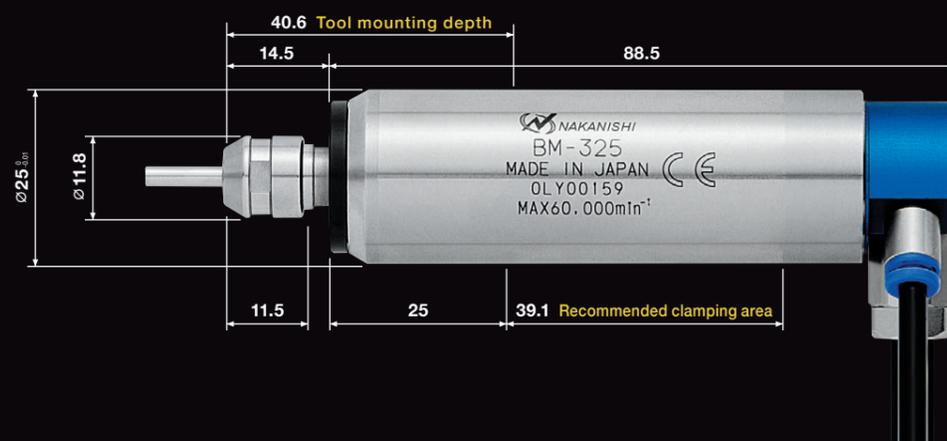
BM-322

Code No. **8515** Model **BM-322**

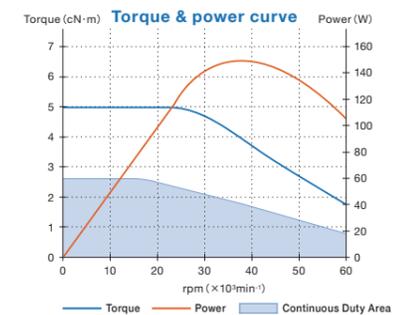
Cord length L=0.5m

O.D.	Max. rpm	Max. power	Spindle runout	Weight
\varnothing 22mm	60,000min ⁻¹	150w	Within1 μ m	250g
Standard Accessories	Collet: \varnothing 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.			
Options	Collet (CHA group) : \varnothing 0.5~ \varnothing 4.0mm p.27 Motor cord : Length 3m (9261) , 5m (9262) , 7m (9263)			

BM-325

O.D. \varnothing 25mm

BM-325

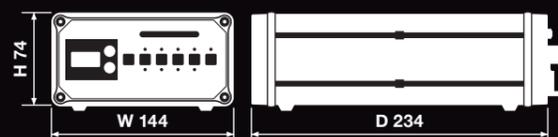
Code No. **8517** Model **BM-325**

Cord length L=0.5m

O.D.	Max. rpm	Max. power	Spindle runout	Weight
\varnothing 25mm	60,000min ⁻¹	150w	Within1 μ m	320g
Standard Accessories	Collet: \varnothing 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.			
Options	Collet (CHA group) : \varnothing 0.5~ \varnothing 4.0mm p.27 Motor cord : Length 3m (9261) , 5m (9262) , 7m (9263)			

iSpeed3 Controller

iSpeed3 Controller



External Input / Output Control Signal Operation

●External Input
Motor Rotating / Stopped, Error Released, Rotating Direction, Motor Speed Setting and etc.

●External Monitor
Motor Current, Error, Warning, Rotating pulse and etc.

●Parameter Setting
Maximum motor speed setting, Fix the motor speed
※For more information, please refer to the operation manual on our website.

Plug type	Code No.
200V (C Type)	8479

※ 8477 (100V), 8478 (120V), 8480 (230V) are available.

Plug type	Area	Product
100V (A Type)	Japan	
120V (B Type)	USA Canada	
200V (C Type)	Without plug	
230V (D Type)	Europe	

※ Please select Voltage for purchasing.

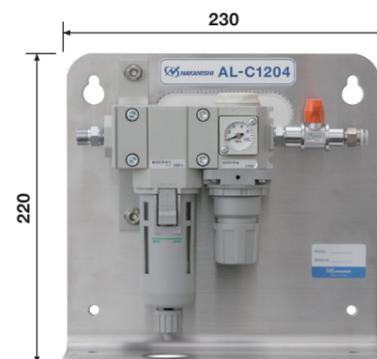


Motor output	Speed Range	Max. power	Power consumption	Air consumption	Weight
2 Motor spindles (Can't be operated simultaneously.)	1,000~80,000min ⁻¹	150w	0.65A (200V)	1 spindle : 30Nℓ/min (0.25MPa) 2 spindles : 60Nℓ/min (0.25MPa)	3.5kg
Standard Accessories	Power cord : 2m / Air hose with filter : 2m / Motor connector cap : 2pcs. Bracket : 2pcs. / Plate nut : 4pcs. / M3 bolt : 4pcs. / Fuse : 2pcs.				

Accessories

AL-C1204

Air line kit



※Recommendation of nominal filtration rating: 0.3μm, Pressure range: 0.1-1.0Mpa
Recommendation of air filter: M2000-WS (CKD)

Code No.	4504	Model	AL-C1204
Standard Accessories	Hose pipe (K-260) : 2m		

Motor cord	Code No.	Model	Length	Standard Accessories	Compatible model
 4M 6M 8M Straight type	9264	EMCD-BM3S-4M	4m	Air hose Connector cap (Included)	BMF-319 · BMF-320 BMF-322 · BMF-325 BMJ-319 · BMJ-320 BMJ-322 · BMJ-325
	9265	EMCD-BM3S-6M	6m		
	9266	EMCD-BM3S-8M	8m		
 4M 6M 8M Angle type	9267	EMCD-BM3A-4M	4m	Air hose Connector cap (Included)	BMF-319 · BMF-320 BMF-322 · BMF-325 BMJ-319 · BMJ-320 BMJ-322 · BMJ-325
	9268	EMCD-BM3A-6M	6m		
	9269	EMCD-BM3A-8M	8m		

Motor cord	Code No.	Model	Length	Standard Accessories	Compatible model
 3M 5M 7M Joint type	9261	EMCD-BM3-3M	3m	Air hose Connector cap (Included)	BMF-319F · BMF-320F BM-322FL · BM-322FR BM-319 · BM-320 BM-322 · BM-325
	9262	EMCD-BM3-5M	5m		
	9263	EMCD-BM3-7M	7m		

Accessories (Collet, etc.)

Collet	Code No.	Model	I.D.	Compatible model
<p>φ1.0 and over</p>	91492	CHA-2.35	ø2.35	BMF-319 · BMF-320 BMF-322 · BMF-325 BMJ-319 · BMJ-320 BMJ-322 · BMJ-325 BM-319F · BM-320F BM-322FL · BM-322FR BM-319 · BM-320 BM-322 · BM-325
	91430	CHA-3.0	ø3.0	
	91493	CHA-3.175	ø3.175	
	91440	CHA-4.0	ø4.0	
<p>φ0.5~φ0.9</p> <p>Collet CHA Group</p>	—	CHA-□□	ø0.5, ø0.6, ø0.7, ø0.8, ø0.9 ø1.1, ø1.2, ø1.3, ø1.4, ø1.7, ø1.8, ø1.9 ø2.1, ø2.2, ø2.3, ø2.4, ø2.6, ø2.7, ø2.8, ø2.9 ø3.1, ø3.2, ø3.3, ø3.4, ø3.6, ø3.7, ø3.8, ø3.9 ø1.0, ø1.5, ø2.0, ø2.5, ø3.5 ø1.6	※: High precision type AA (Spindle runout within 2μm)
	91494	CHA-3.0AA	ø3.0AA※	
	91496	CHA-3.175AA	ø3.175AA※	
	91495	CHA-4.0AA	ø4.0AA※	

Collet nut	Code No.	Model	Description	Compatible model
	2102	CHN-A	Collet nut for CHA collet	BMF-319 · BMF-320 · BMF-322 BMF-325 · BMJ-319 · BMJ-320 BMJ-322 · BMJ-325 · BM-319F BM-320F · BM-322FL BM-322FR · BM-319 · BM-320 BM-322 · BM-325

Spacer · Bush	Code No.	Model	Description	Compatible model
	1882	SP-22×10L	Spacer (for BM-322FL / BM-322FR) Dimensions : ø22 (I.D.) × 10mm	BM-322FL · BM-322FR
	1883	RB-22×25×34L	ø25 Bush Dimensions : ø22 (I.D.) × ø25 (O.D.) × 33.5mm	BM-322FL · BM-322FR BMF-322
	1884	RB-22×25.4×34L	ø25.4 Bush Dimensions : ø22 (I.D.) × ø25.4 (O.D.) × 33.5mm	BM-322FL · BM-322FR BMF-322
	1887	RB-19.05×25.4×36L	ø25.4 Bush Dimensions : ø19.05 (I.D.) × ø25.4 (O.D.) × 36mm	BM-319F

NAKANISHI Solutions LINE UP

Electric Motors & Spindles

Brushless Motors & Spindles



Application for CNC lathes / Special purpose machines

Application for machining centers and milling machines

E4000 SERIES

1,000~40,000min⁻¹ Max.1,200W
[ø40mm]

- World's highest power in this class
- Max. power: 1,200W, Max. torque: 1.0N·m

E3000 SERIES

1,000~80,000min⁻¹ Max.350W
[ø30/25/20mm]

- The largest product lines for various processing
- Space-saving solution for small CNC lathe

HES SERIES

Max.80,000min⁻¹
[For small diameter endmills and drills only]

[HES810]

- The most cost effective solution to add high-speed machining capability
- 80,000min⁻¹, 6.0cN·m
- BT, NT, HSK A63, ST shanks are available
- Driven by E3000 Controller

E2000 SERIES

1,000~50,000min⁻¹ Max.200W
[ø22.8/25mm]

- Small size spindle allows multi-axis installation in limited space

iSpeed3 SERIES

1,000~80,000min⁻¹ Max.150W
[ø19.05/20/22/25mm]

- Super short motor spindle
- High efficiency brushless motor

[HESS10]

- 50,000min⁻¹, 8.75cN·m
- BT, NT, CAT, IT, HSK A, ST shanks are available
- Driven by E3000 Controller

Air Motors & Spindles



Application for CNC lathes / Special purpose machines

Application for machining centers and milling machines

AM SERIES One-piece type

1,000~60,000min⁻¹ Max.350W
[ø30/25/20mm]

- Short body enables the spindle to mount in a limited space on a small NC/CNC lathe or on a special purpose machine

AM SERIES Modular type

5,000~30,000min⁻¹ Max.125W
[ø22.8mm]

- Separate motor and spindle for flexible application changes
- Adjustable to various application through changing spindles

SMS SERIES

40,000min⁻¹
[For small diameter endmills and drills only]

- Ceramic bearings for higher rigidity and precision
- Straight and BT, NT shanks are available

Air Turbine Spindles



Application for CNC lathes / Special purpose machines

Application for machining centers and milling machines

Xpeed SERIES

Max.160,000min⁻¹
[ø65/40mm]

- Extreme accuracy-Runout 1μm
- For high precision small diameter drilling, internal grinding of ceramics
- Long life of spindle thanks to contactless rotation mechanism

PLANET SERIES

Max.65,000min⁻¹

- A milling machine turns into a jig grinder
- For high precision internal grinding

HTS SERIES

150,000min⁻¹
[For small diameter endmills and drills only]

- No thermal expansion on Z axis thanks to air turbine generating little heat
- Ultra high speed 150,000min⁻¹ with higher rigidity thanks to ceramic bearings
- BT, HSK E and straight (M2040) shanks are available