

NAKANISHI SPINDLE iSpeed3

iSpeed3



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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 1 μ m

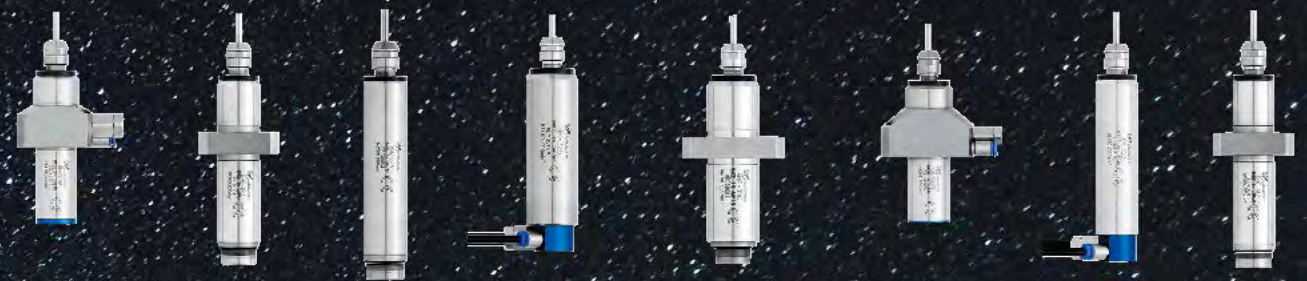
- Optimum for high-precision machining
- Longer tool life

✔ 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

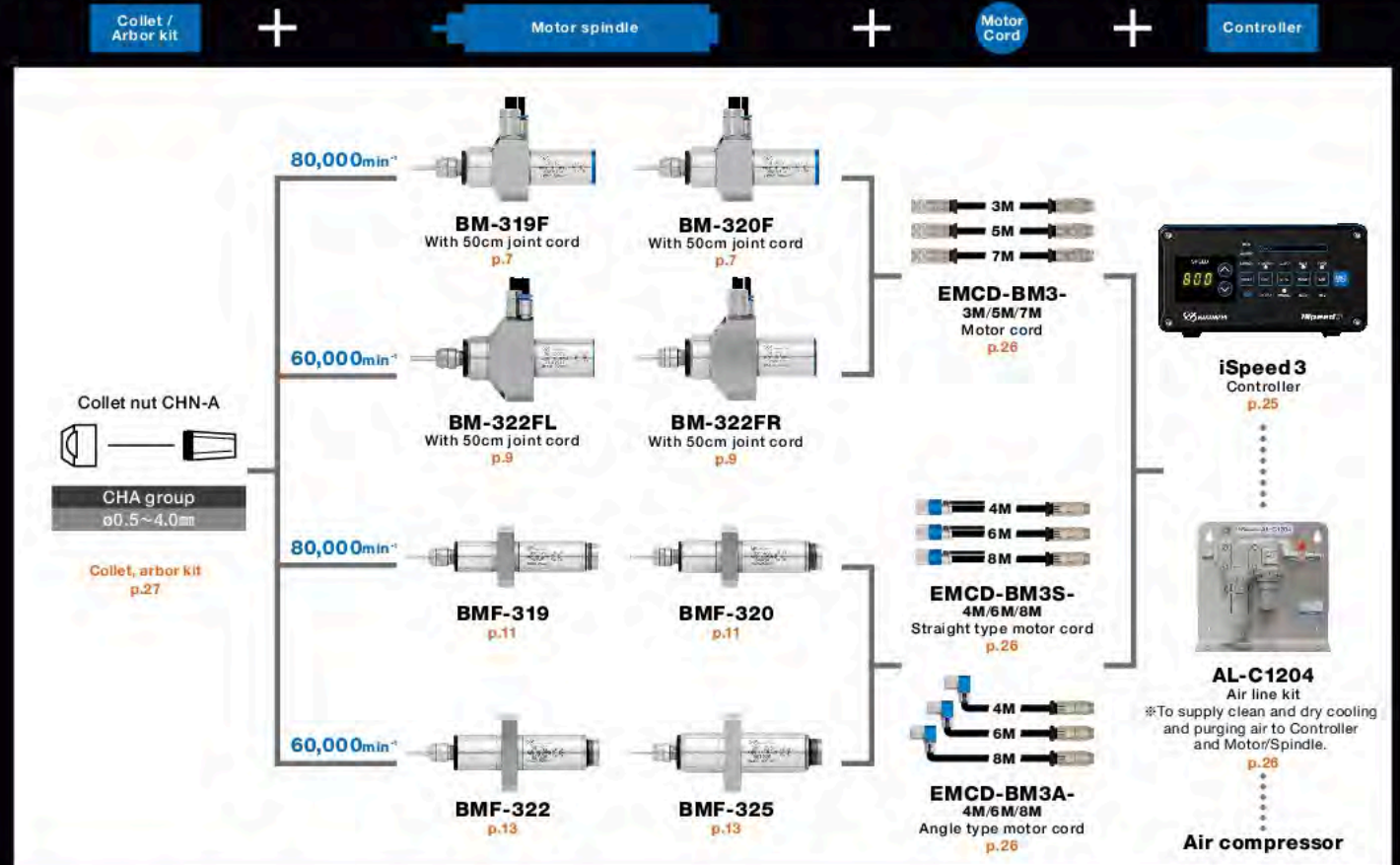


Accessories

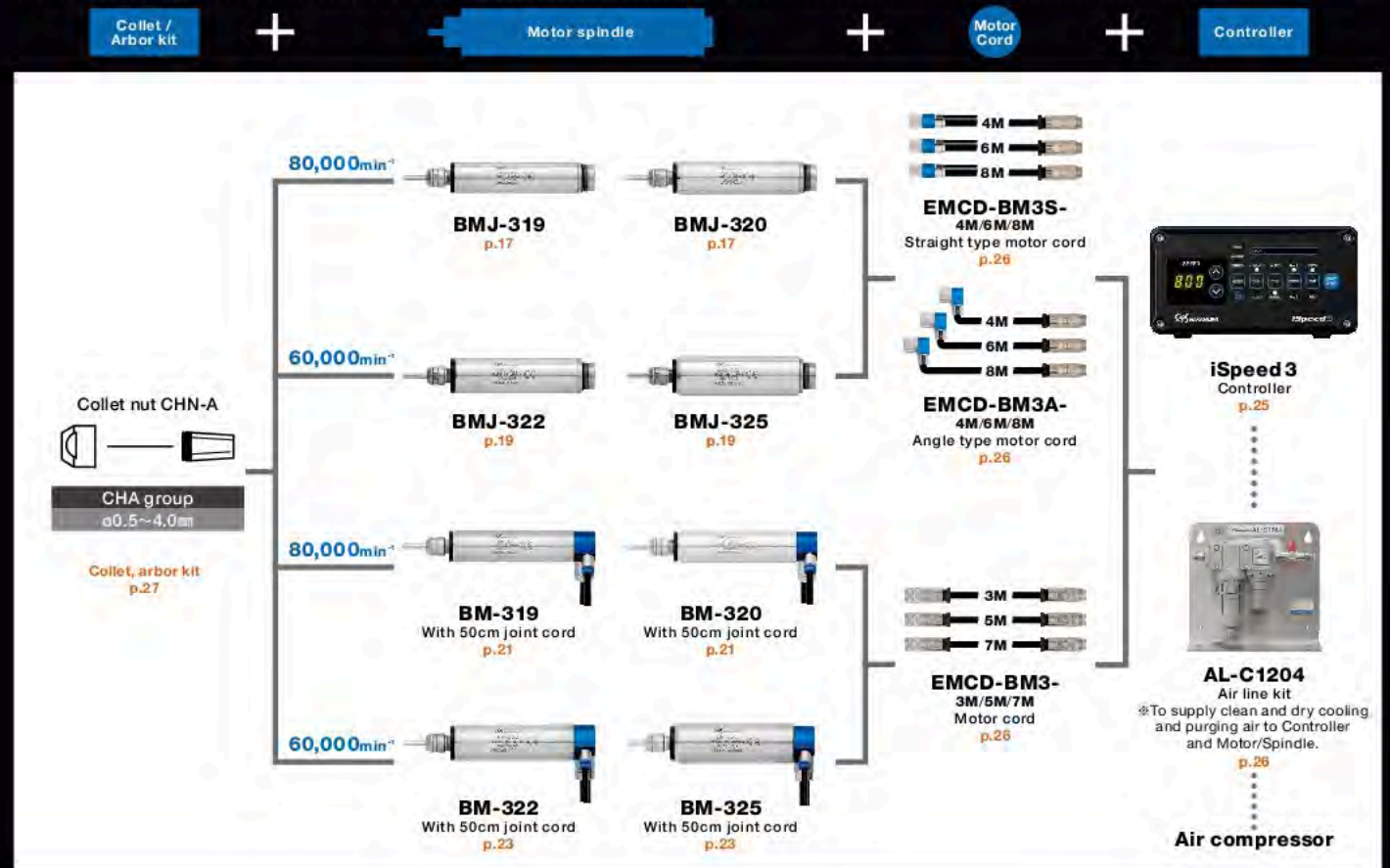


System Chart

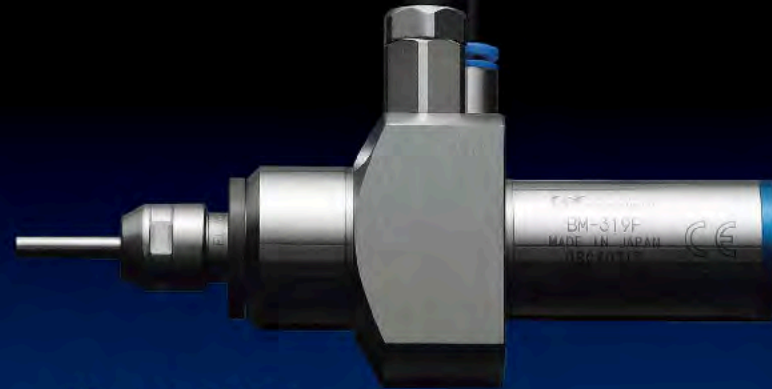
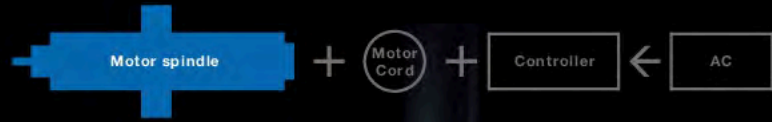
Flange type motor spindle



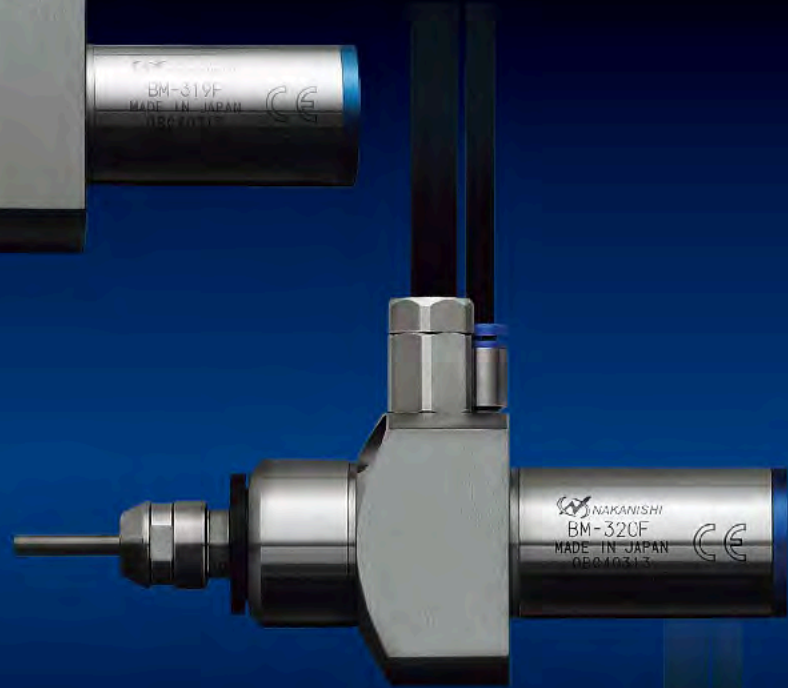
Straight type motor spindle



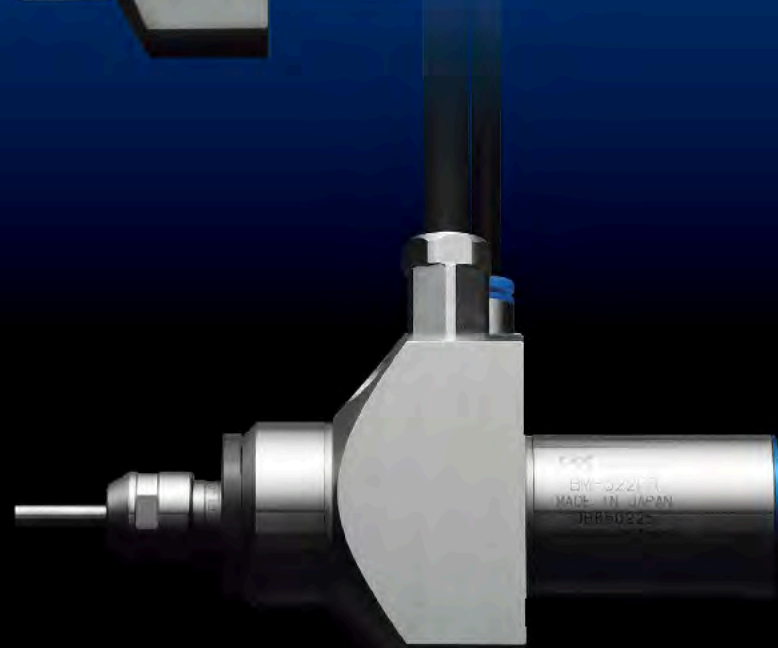
Flange type motor spindle



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20 BM-320F
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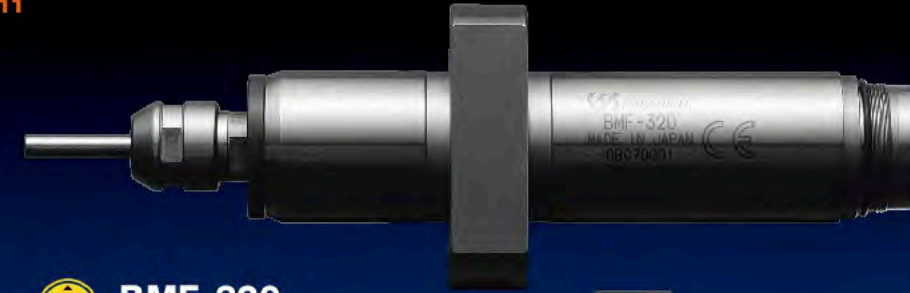


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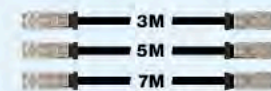
Spindle Guide



BM-319F



BM-320F



EMCD-BM3
p.26



iSpeed3
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AL-C1204
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iSpeed3 SERIES

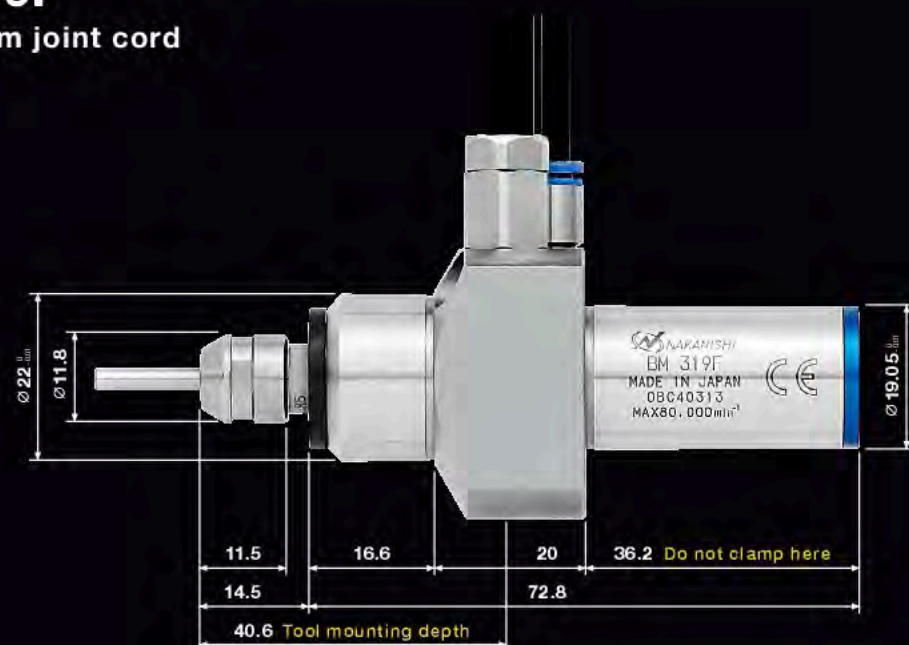
Shown In Actual Size

Flange type motor spindle

BM-319F
With 50cm joint cord



O.D. ϕ 19.05mm



Specifications

DXF data DXF files are available on our website

Order by Code No.

BM-319F

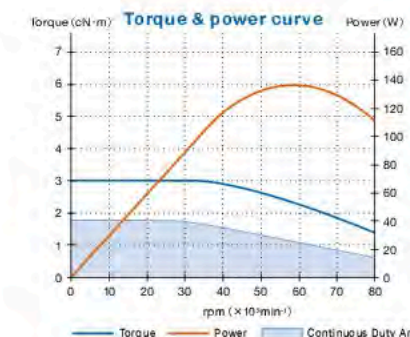
Code No. **8511**

Model **BM-319F**

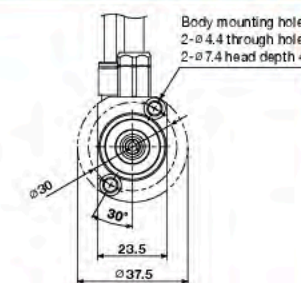


DXF-data

Cord length L=0.5m



Dimensions of the holes on the flange

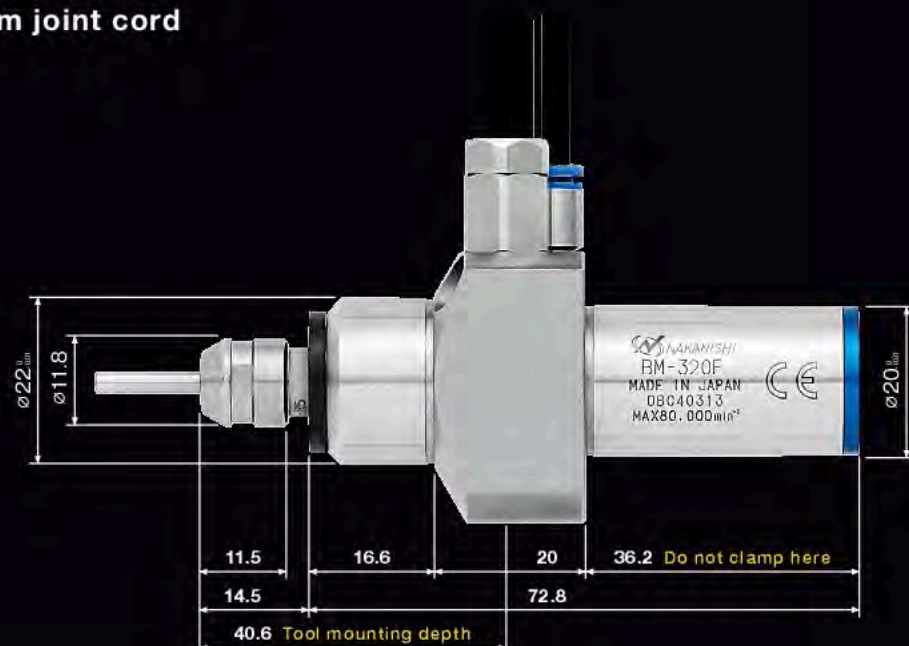


O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 19.05mm	80,000min ⁻¹	140w	Within1 μ m	260g
Standard Accessories	Collet : ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) Spanner (8×5) · (9×11) : 1pc. / Bolt : 2pcs. (M4×L25)			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord : Length 3m (9261) , 5m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

BM-320F
With 50cm joint cord



O.D. ϕ 20mm



BM-320F

Code No. **8513**

Model **BM-320F**

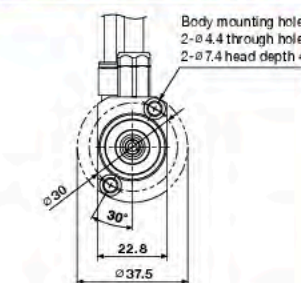


DXF-data

Cord length L=0.5m



Dimensions of the holes on the flange



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

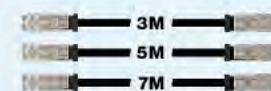
Spindle Guide



BM-322FL



BM-322FR



EMCD-BM3
p.26



iSpeed3
p.25



AL-C1204
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iSpeed3 SERIES

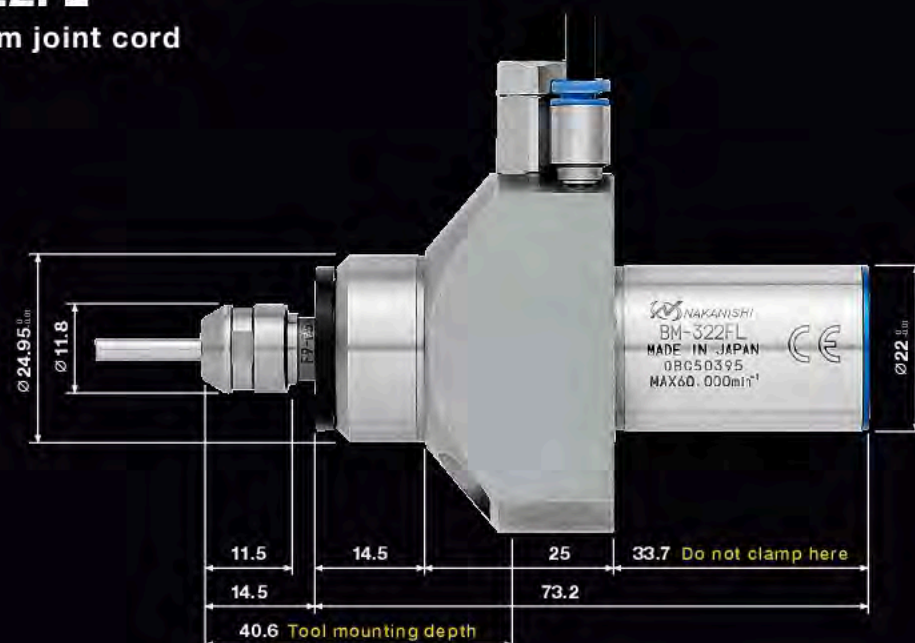
Shown In Actual Size

Flange type motor spindle

BM-322FL
With 50cm joint cord



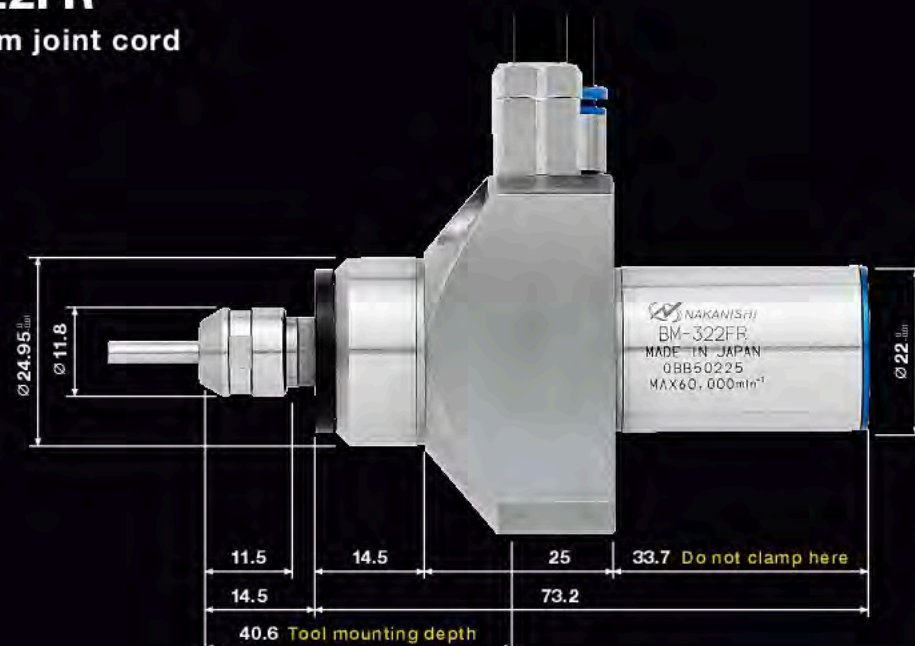
O.D. ϕ 22mm



BM-322FR
With 50cm joint cord



O.D. ϕ 22mm



Specifications

DXF data DXF files are available on our website

Order by Code No.

BM-322FL

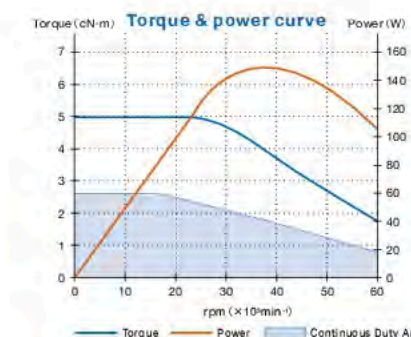
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Model **BM-322FL**

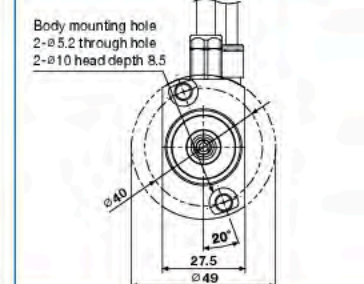


DXF data

Cord length L=0.5m



Dimensions of the holes on the flange



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

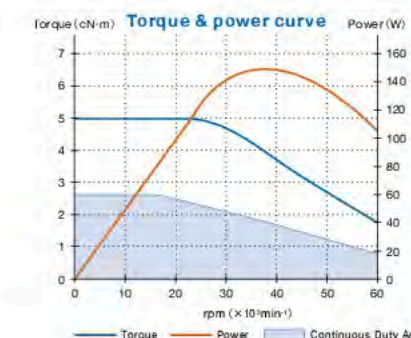
Code No. **8521**

Model **BM-322FR**

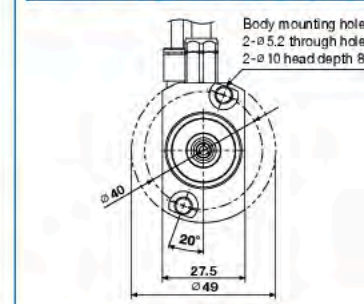


DXF data

Cord length L=0.5m



Dimensions of the holes on the flange

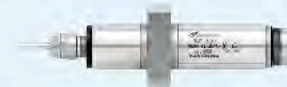


O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 22mm	60,000min ⁻¹	150w	Within1 μ m	360g
Standard Accessories	Collet : ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) Spanner (8×5) · (9×11) : 1pc. / Bolt : 2pcs. (M5×L25)			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord : Length 3m (9261) , 5m (9262)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

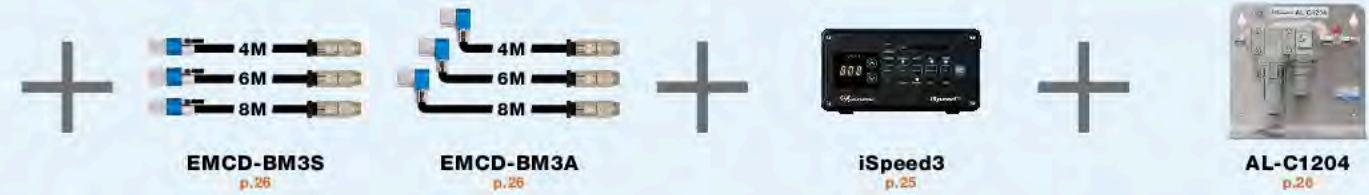
Spindle Guide



BMF-319



BMF-320



iSpeed3 SERIES

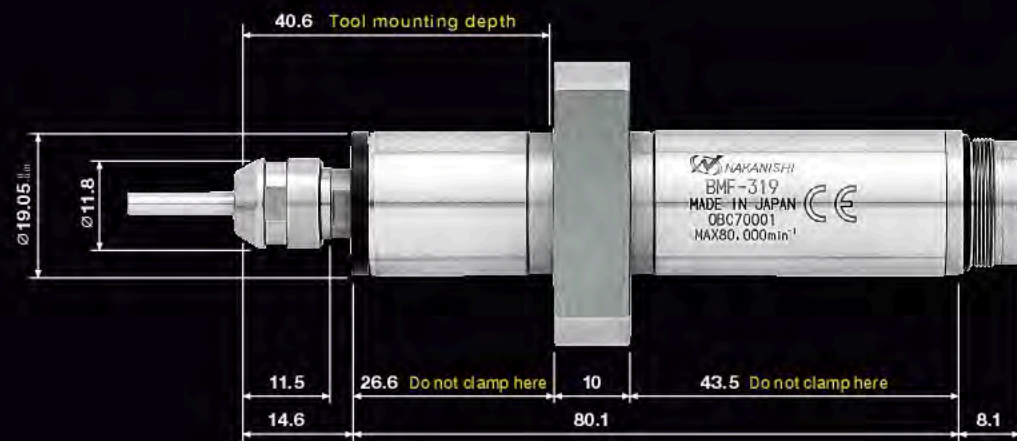
Shown In Actual Size

Flange type motor spindle

BMF-319



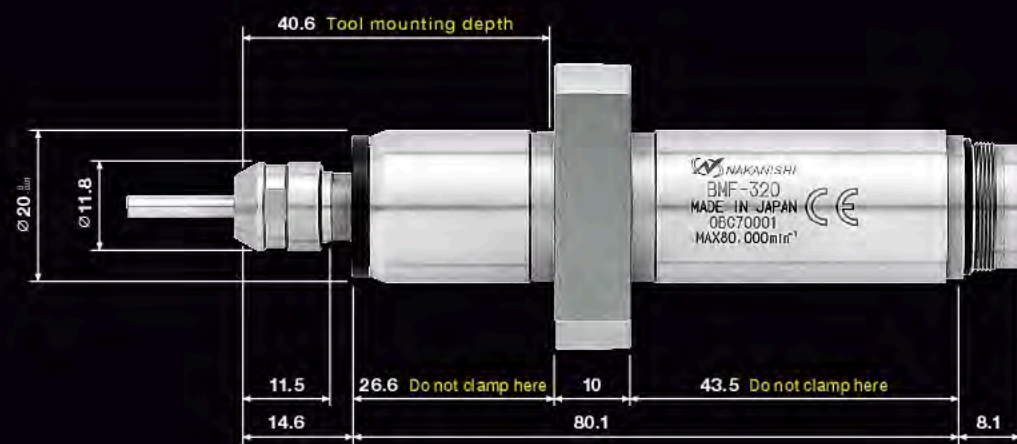
O.D. ϕ 19.05mm



BMF-320



O.D. ϕ 20mm



Specifications

DXF data DXF files are available on our website

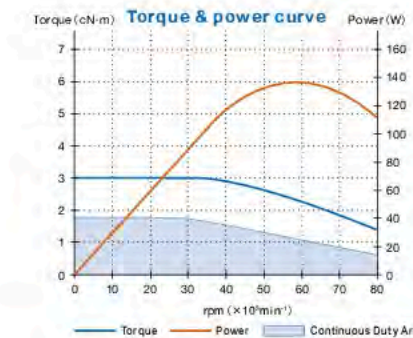
Order by Code No.

BMF-319

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



DXF-data



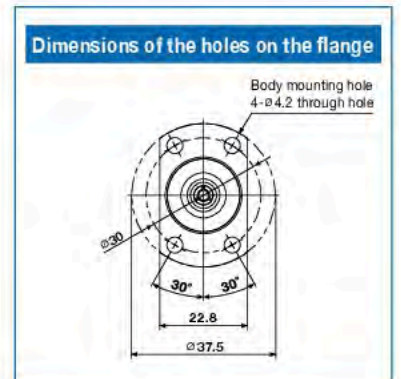
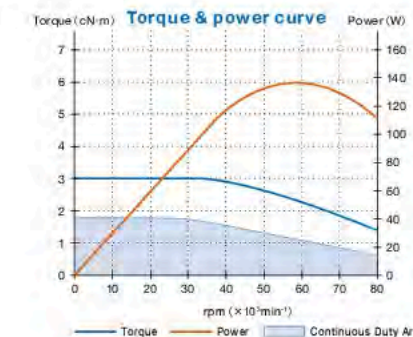
O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 19.05mm	80,000min ⁻¹	140w	Within1 μ m	180g
Standard Accessories	Collet : ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) Spanner (8×5) · (9×11) : 1pc. / Bolt : 2pcs. (M4×L16)			
Options	Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord (Straight) : Length 4m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

BMF-320

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



DXF-data



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)			

Straight type motor spindle



19_{mm} BMJ-319
p.17



19_{mm} BM-319
p.21

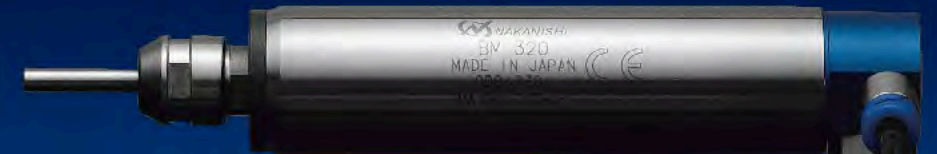


20 BMJ-320
p.17

22 BMJ-322
p.19



20 BM-320
p.21

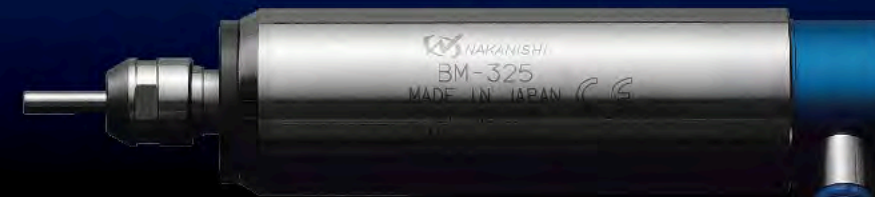


25 BMJ-325
p.19

22 BM-322
p.23



25 BM-325
p.23



Spindle
Guide

BMJ-319



BMJ-320

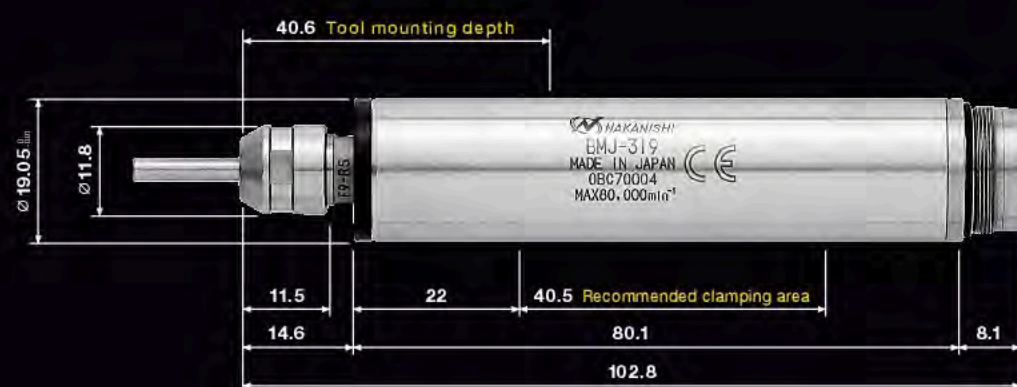


iSpeed3 SERIES

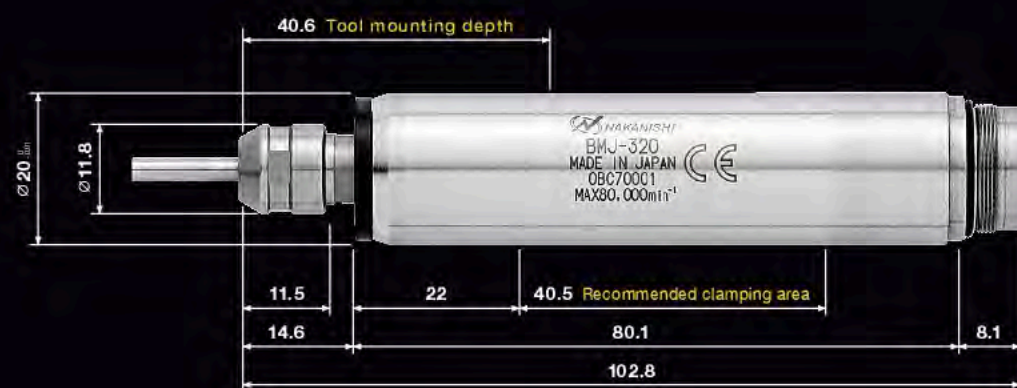
Shown In Actual Size

Straight type motor spindle

BMJ-319

O.D. ϕ 19.05mm

BMJ-320

O.D. ϕ 20mm

Specifications

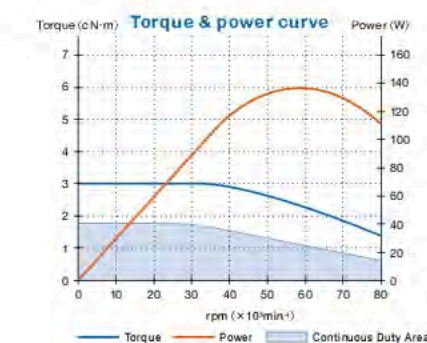
DXF data DXF files are available on our website

Order by Code No.

BMJ-319

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

DXF-data

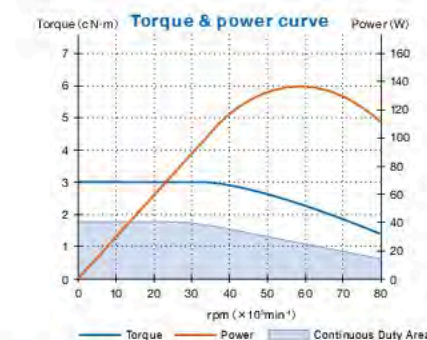


O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 19.05mm	80,000min ⁻¹	140w	Within1 μ m	145g
Standard Accessories Collet: ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.				
Options Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord (Straight) : Length 4m (9264) , 6m (9265) , 8m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

BMJ-320

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

DXF-data



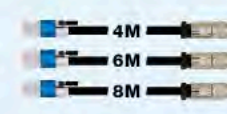
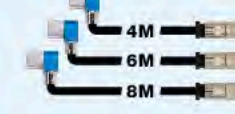
O.D.	Max. rpm	Max. power	Spindle runout	Weight
ϕ 20mm	80,000min ⁻¹	140w	Within1 μ m	160g
Standard Accessories Collet: ϕ 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.				
Options Collet (CHA group) : ϕ 0.5~ ϕ 4.0mm p.27 Motor cord (Straight) : Length 4m (9264) , 6m (9265) , 8m (9266)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

Spindle
Guide

BMJ-322



BMJ-325

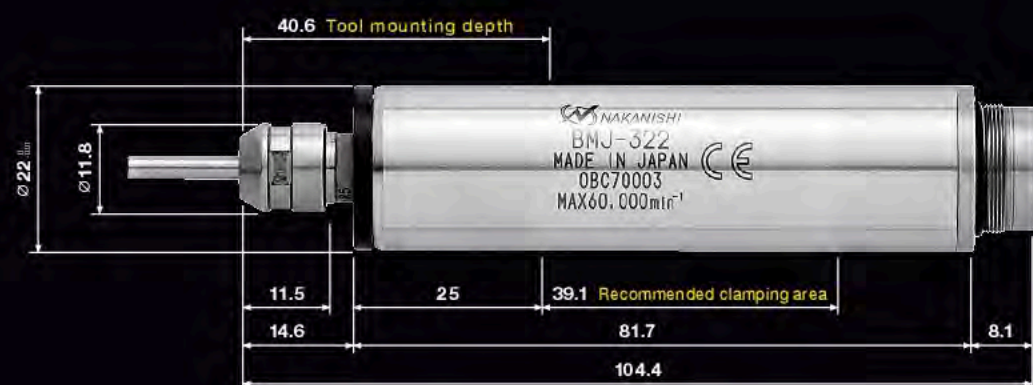
EMCD-BM3S
p.26EMCD-BM3A
p.26iSpeed3
p.25AL-C1204
p.26

iSpeed3 SERIES

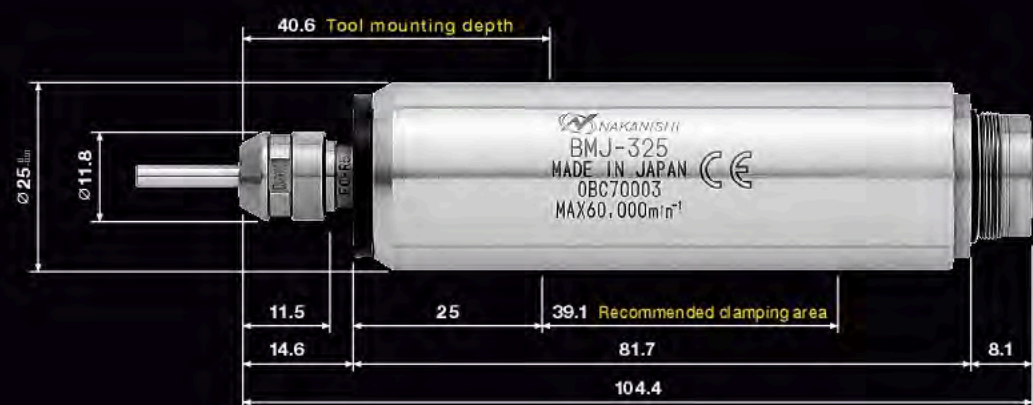
Shown In Actual Size

Straight type motor spindle

BMJ-322

O.D. \varnothing 22mm

BMJ-325

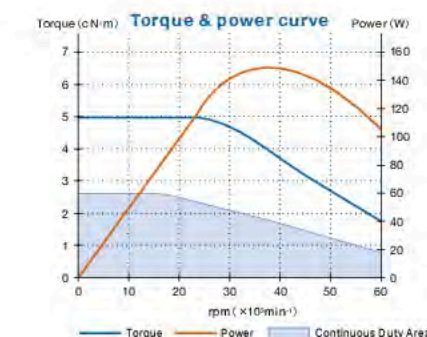
O.D. \varnothing 25mm

Specifications

DXF data DXF files are available on our website

Order by Code No.

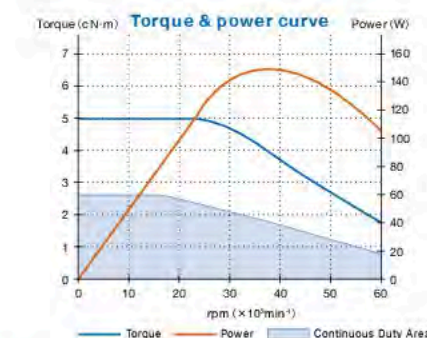
BMJ-322

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

DXF-data

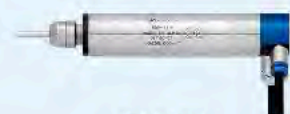
O.D.	Max. rpm	Max. power	Spindle runout	Weight
\varnothing 22mm	60,000min ⁻¹	150w	Within1 μ m	190g
Standard Accessories	Collet: \varnothing 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.			
Options	Collet (CHA group) : \varnothing 0.5~ \varnothing 4.0mm p.27 Motor cord (Straight)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

BMJ-325

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

DXF-data

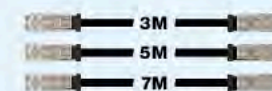
O.D.	Max. rpm	Max. power	Spindle runout	Weight
\varnothing 25mm	60,000min ⁻¹	150w	Within1 μ m	255g
Standard Accessories	Collet: \varnothing 3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.			
Options	Collet (CHA group) : \varnothing 0.5~ \varnothing 4.0mm p.27 Motor cord (Straight) : 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.26iSpeed3
p.25AL-C1204
p.26

iSpeed3 SERIES

Shown In Actual Size

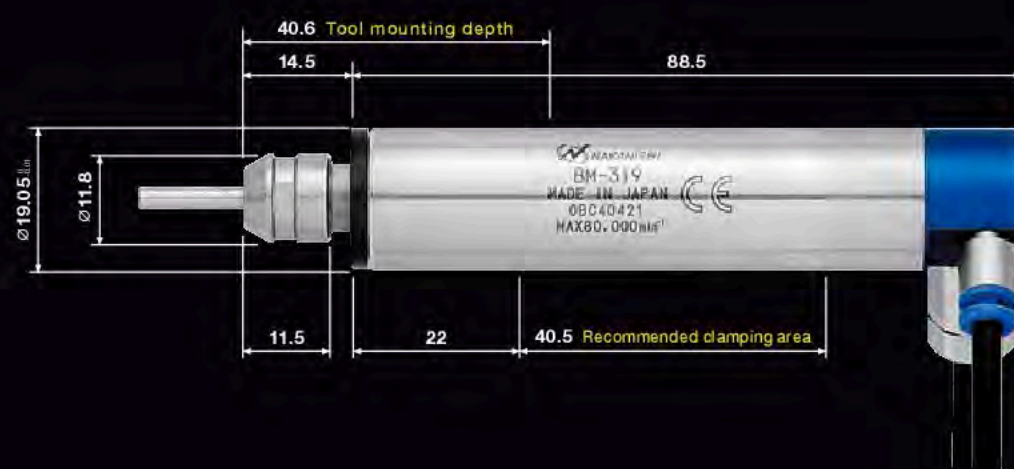
Straight type motor spindle

BM-319

With 50cm joint cord



O.D. ø19.05mm

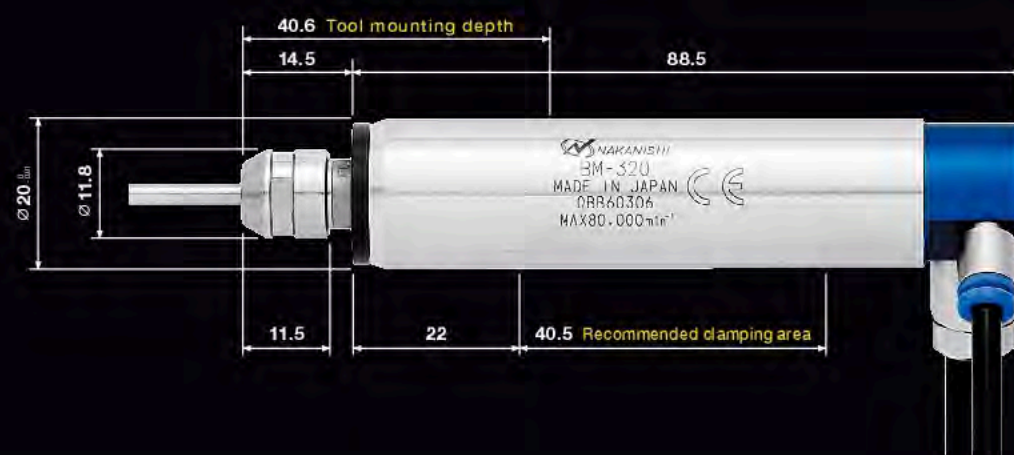


BM-320

With 50cm joint cord



O.D. ø20mm



Specifications

DXF data DXF files are available on our website

Order by Code No.

BM-319

Code No. 8507

Model

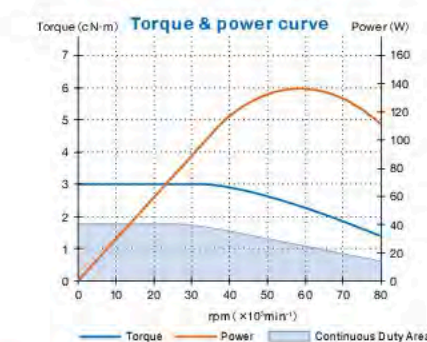
BM-319



DXF-data

Cord length L=0.5m

O.D.	Max. rpm	Max. power	Spindle runout	Weight
ø19.05mm	80,000min ⁻¹	140w	Within1μm	210g
Standard Accessories Collet: ø3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.				
Options Collet (CHA group) : ø0.5~ø4.0mm p.27 Motor cord : Length 3m (9261) , 5m (9262) , 7m (9263)				



BM-320

Code No. 8509

Model

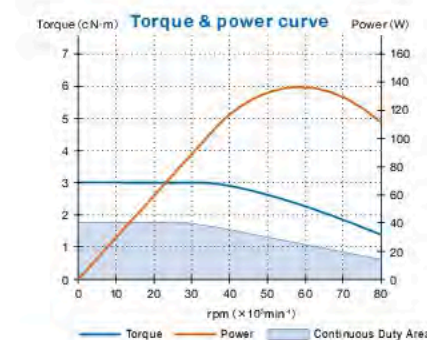
BM-320



DXF-data

Cord length L=0.5m

O.D.	Max. rpm	Max. power	Spindle runout	Weight
ø20mm	80,000min ⁻¹	140w	Within1μm	230g
Standard Accessories Collet: ø3.0mm (CHA-3.0) / Collet nut (CHN-A) / Spanner (8×5) · (9×11) : 1pc.				
Options Collet (CHA group) : ø0.5~ø4.0mm p.27 Motor cord : Length 3m (9261) , 5m (9262) , 7m (9263)				

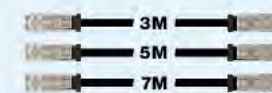


Spindle
Guide

BM-322



BM-325

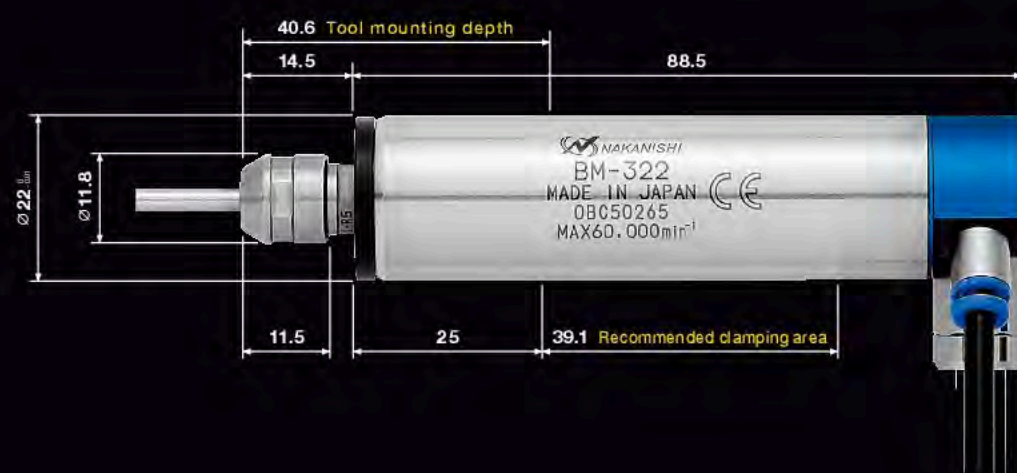
EMCD-BM3
p.26iSpeed3
p.25AL-C1204
p.26

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

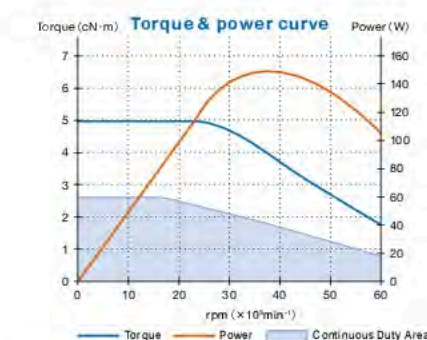
Order by Code No.

BM-322

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

DXF-data

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

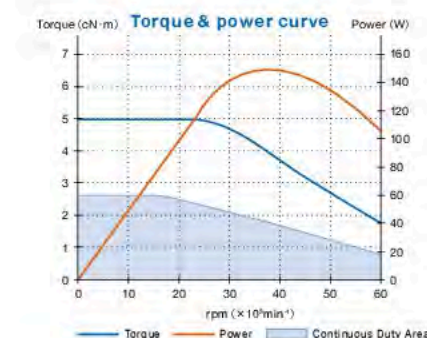
O.D. \varnothing 25mm

BM-325

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

DXF-data

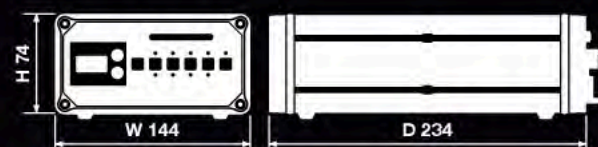
Cord length L=0.5m



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



DXF-data_side DXF-data_back

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.

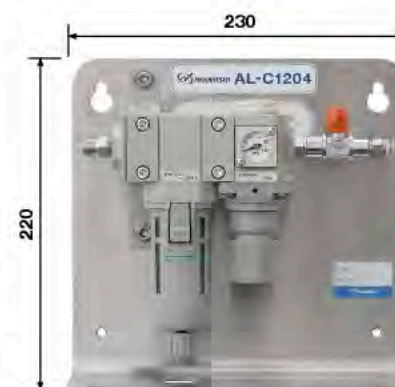


Motor output	Speed Range	Max. power	Power consumption	Air consumption	Weight
2 Motor spindles (Can't be operated simultaneously.)	1,000~80,000min ⁻¹	150w	0.65A (200V)	1 spindle : 30Nℓ/min (0.25MPa) 2 spindles : 60Nℓ/min (0.25MPa)	3.5kg
Standard Accessories	Power cord : 2m / Air hose with filter : 2m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

Accessories

AL-C1204

Air line kit



DXF-data

※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>Collet CHA Group</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		
				ø0.5, ø0.6, ø0.7, ø0.8, ø0.9	※: High precision type AA (Spindle runout within 2μm)
				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	
		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 ~ 40,000 min⁻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 ~ 80,000 min⁻¹ Max. 350W
[ø30/25/20mm]

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

HES SERIES

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

[HESB10]

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

E2000 SERIES

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

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

iSpeed3 SERIES

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

- Super short motor spindle
- High efficiency brushless motor

HES10

50,000 min⁻¹, 8.75cN·m

- BT, NT, CAT, I, 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 ~ 60,000 min⁻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 ~ 30,000 min⁻¹ Max. 125W
[ø22.8mm]

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

SMS SERIES

40,000 min⁻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. 160,000 min⁻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. 65,000 min⁻¹

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

HTS SERIES

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

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