NIPPON BEARING

SPINDLE SHAFT

NB Spindle Shaft is backed by decades of precision manufacturing experience as well as up to date manufacturing facility to meet demands. NB is capable of handling all your spindle needs such as manufacturing of bearing case and spindle base, design and manufacturing of spindle unit, and overhauling of spindles.

ADVANTAGES

Ultra Precision Machining

Spindle manufacturing facility is controlled to a constant temperature throughout the year for precision manufacturing of spindles.

Various Machining Solution Available

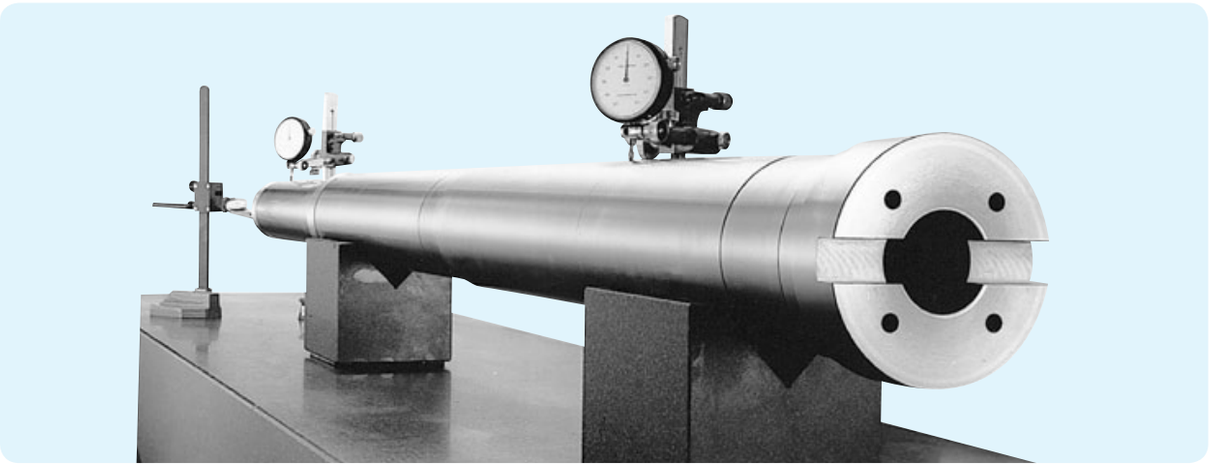
BT, BBT, HSK inner tapers, gauge and bearing matching, thread grinding, and many other spindle related machining are available.

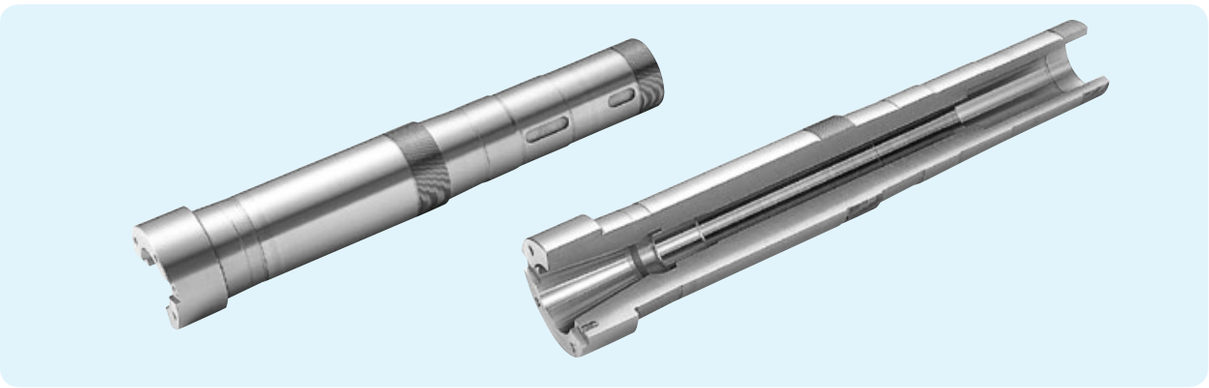
Surface Treatments

Various surface treatments are available such as hard chrome and ceramic coating. Repairing a damaged spindle with replating and grinding is also available.

EXAMPLES OF MACHINING

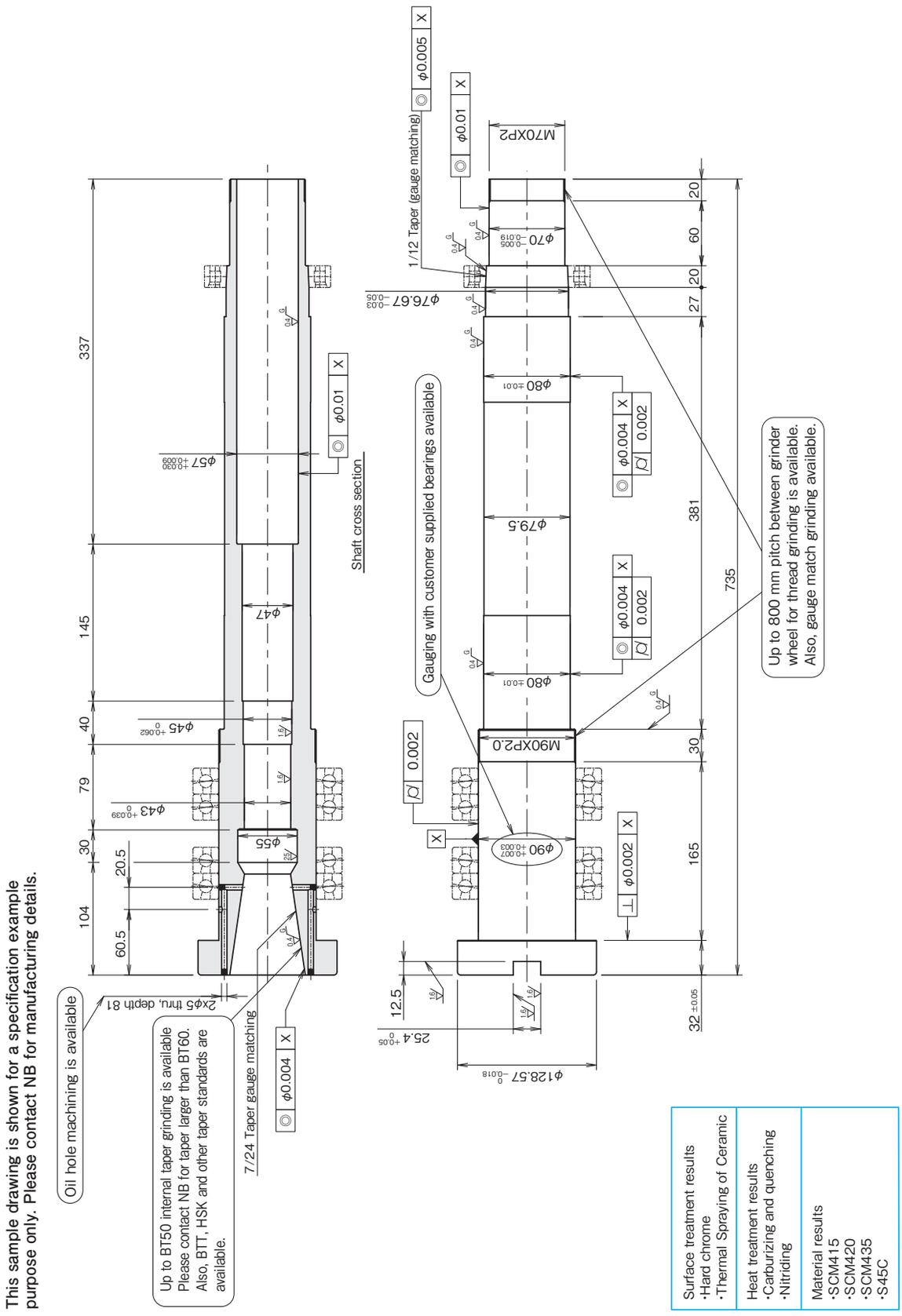
Spindle





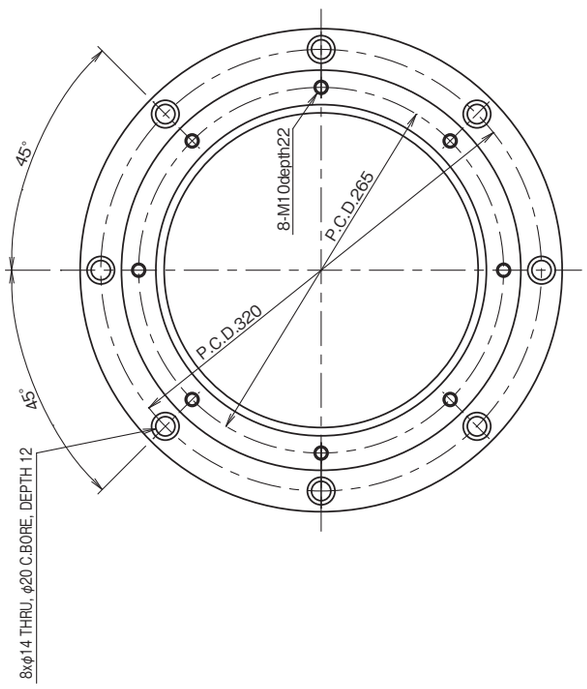
SHAFT

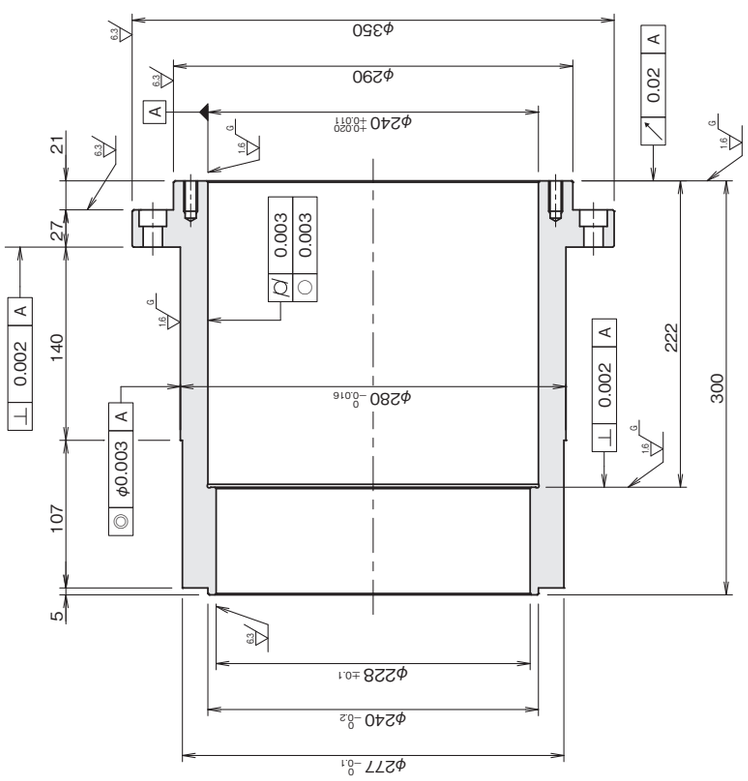
EXAMPLE OF DRAWING ①



NIPPON BEARING

EXAMPLE OF DRAWING ②



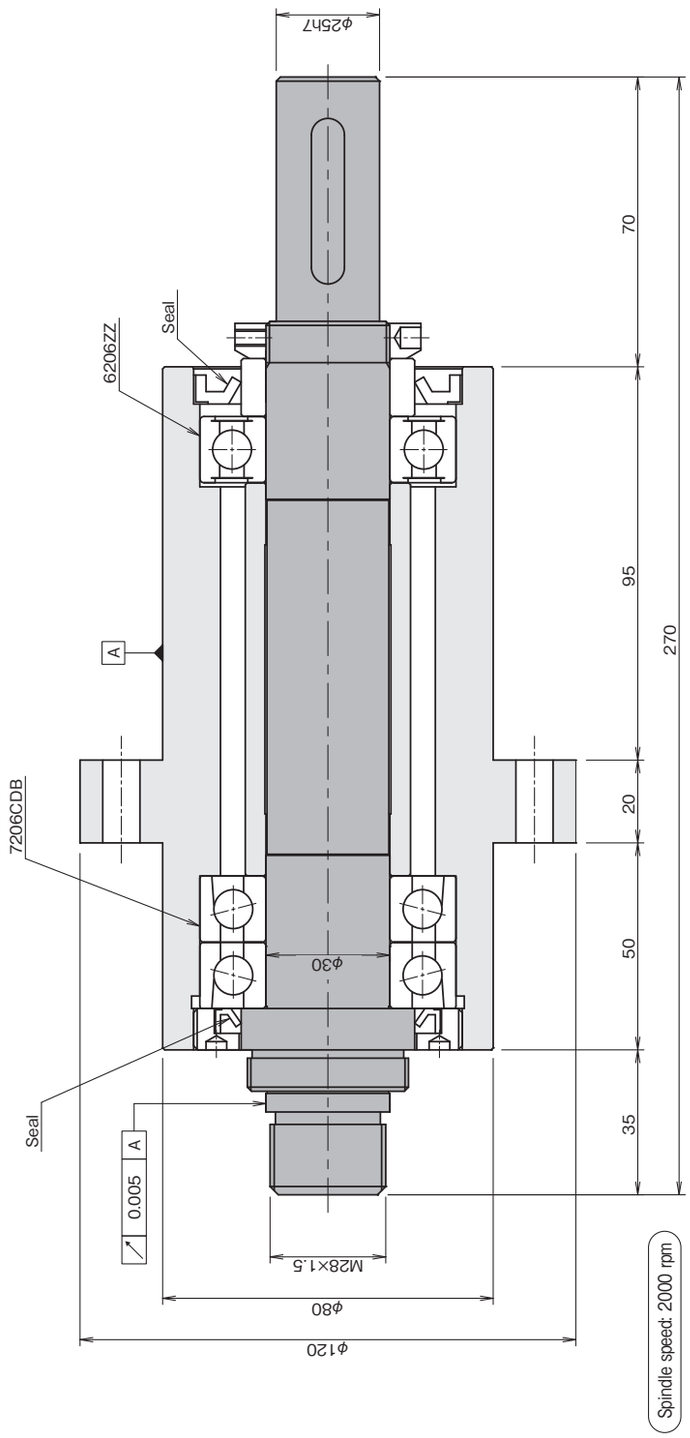


This sample drawing is shown for a specification example purpose only. Please contact NB for manufacturing details.

Material results
·S45C
·SCM435

SHAFT

EXAMPLE OF DRAWING ③



Custom design and manufacturing service for various spindle units is available. Please contact NB for details.

This sample drawing is shown for a specification example purpose only. Please contact NB for manufacturing details.

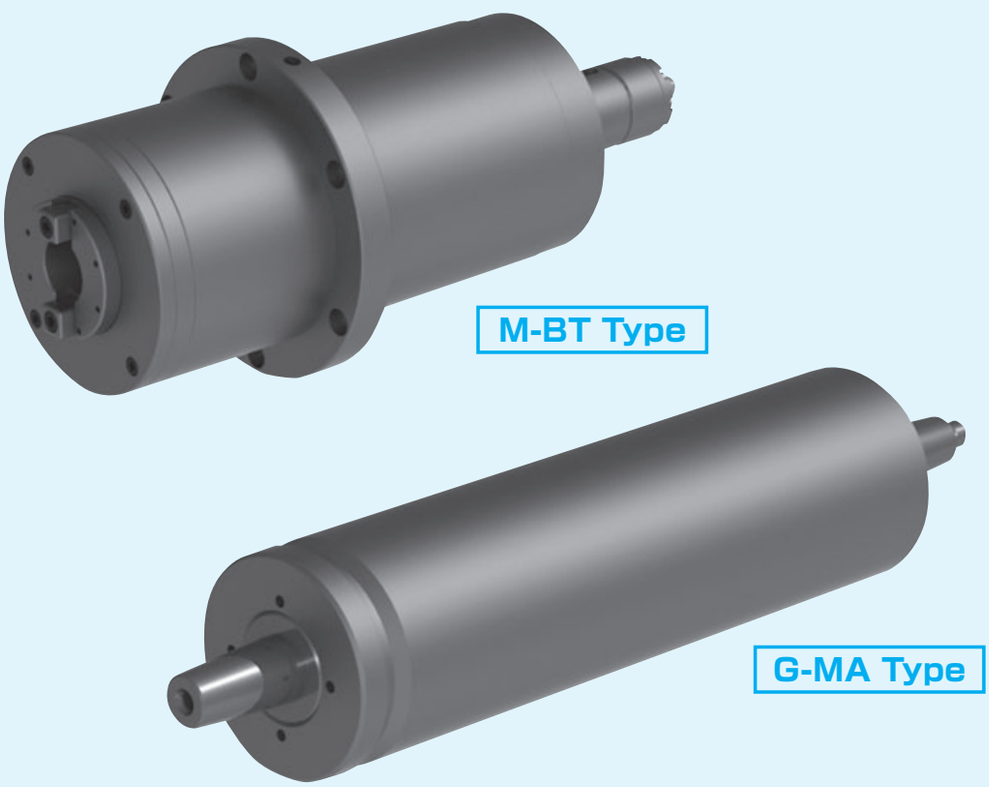
NIPPON BEARING

SPINDLE UNIT M-BT TYPE/G-MA TYPE

NB Spindle Shaft is backed by decades of precision manufacturing experience as well as up to date manufacturing facility to meet demands. NB is capable of handling all your spindle needs such as manufacturing of bearing case and spindle base, design and manufacturing of spindle unit, and overhauling of spindles, other than standard spindle unit M-BT and G-MA type.

ADVANTAGES

●M-BT type is used in various cut processing machines and machining centers. It can be successfully operated having high rigidity and stablity by utilizing angular ball bearings (the four-line combined) and double row cylindrical roller bearing.
●G-MA type is used in external grinding and flat surface grinding machines. It can be successfully rotated having high speed and stability by utilizing preloaded high accuracy angular ball bearings.
●Customised spindle units are available based on M-BT and G-MA type.
●M-BT and G-MA type can be used for long time coped with NB's overhaul.



SPECIAL REQUIREMENTS

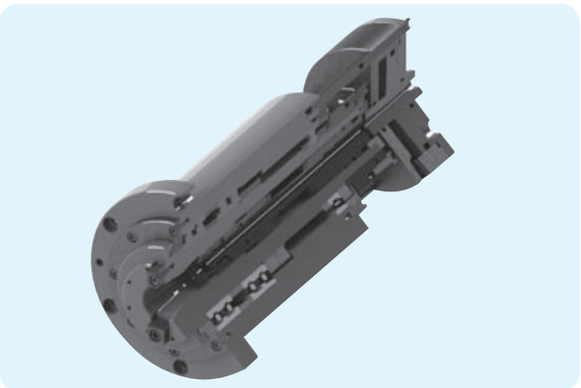
Other than spindle units for machine tool, designing spindle units for various industrial machineries is available. Please feel free to contact NB when you take orders of spindle units.

Flow of processes from ordering to delivery

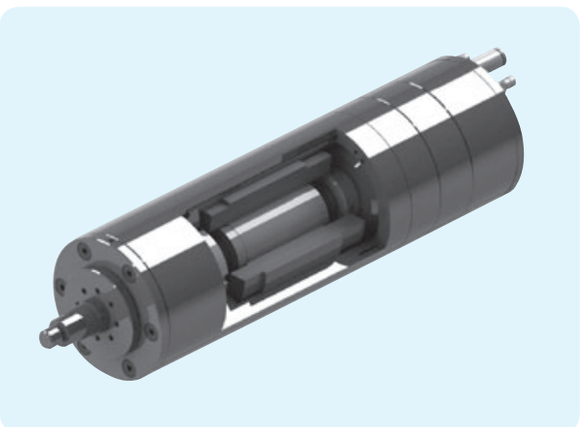
1 Receiving a required specification → 2 Preparing for the specification → 3 Submitting the quotation → 4 Manufacturing → 5 Inspection → 6 Delivery

[Examples of special requirements]
M-BT: Modifying outer dimensions / Adding a puley / Adding an unclamping cylinder / etc.
G-MA: Modifying shaft end machining / Adding a puley / Adding a grindstone flange / etc.

EXAMPLES OF SPINDLE UNIT



Example of spindle unit specification	
application	machining center
mounting	vertical
rpm	max 10,000 (without tool: max 700)
spindle shaft shape	#30
lubrication	grease
lubricant	ISOFLEX NBU 15 (NOK Klüber)
tool clamping power	400kgf (theoretical value)
estimated driving force	3.5kW
estimated weight	31kg



Example of spindle unit specification	
cooling method	oil cooling
mounting	horizontal
rpm	max 30,000
lubrication	grease
lubricant	ISOFLEX NBU 15 (NOK Klüber)
estimated weight	3.9kg
output characteristic	frequency: 500Hz
voltage: 200V	current value: 3.9A
rpm: 30,000	torque: 0.3Nm
repeated load continuous use (S6)	continuous rated output: 0.85kW

OVERHAUL

Also, other than NB's designed spindle unit can be overhauled. Please feel free to contact NB.

Flow of receiving order of overhaul

1 Deposit of the product → 2 Disassembling and quotation → 3 Receiving order → 4 Repairing → 5 Inspection → 6 Delivery

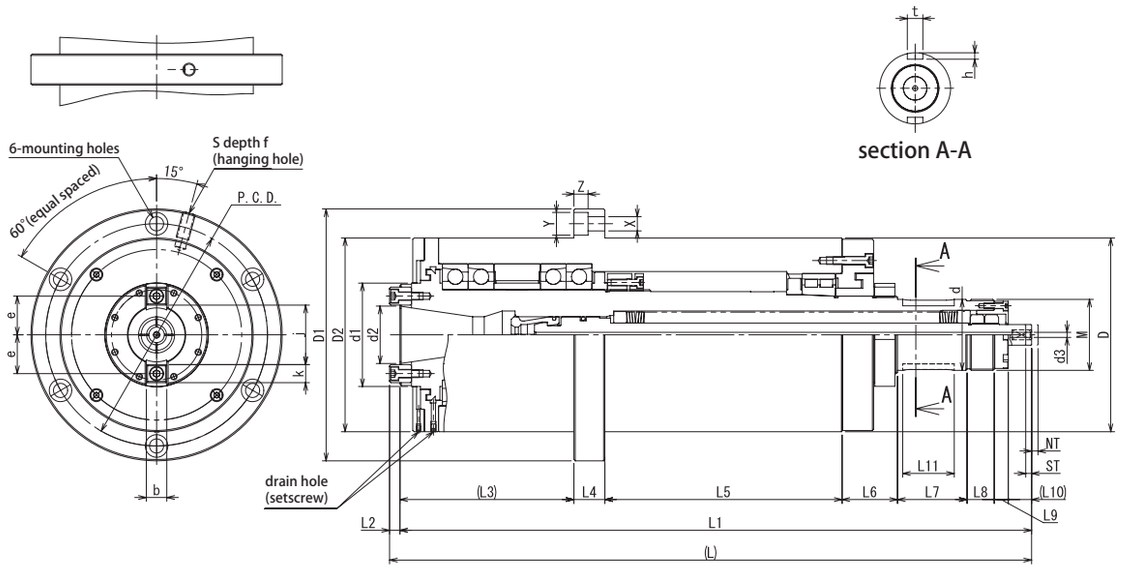
NIPPON BEARING

M-BT TYPE

part number	major dimensions																				
	D	tolerance	D_1	D_2	d	tolerance	d_1	d_2	d_3	L	L_1	L_2	L_3	L_4	L_5	L_6	L_7	L_8	L_9	L_{10}	L_{11}	tolerance
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm
M-BT30-01	130	0 −0.018	170	130	45	0 −0.016	68	31.75	4	413	405	8	115	20	137	43	39	26	8	17	30	+0.2 0
M-BT40-01	150		195	150	55	0 −0.019	80	44.45	4	498	490	8	135	24	184	43	54	21	11	18	40	
M-BT50-01	230	0 −0.020	290	230	85	0 −0.022	130	69.85	4	717	704.5	12.5	197	35	270	59	79	30	11	23.5	60	

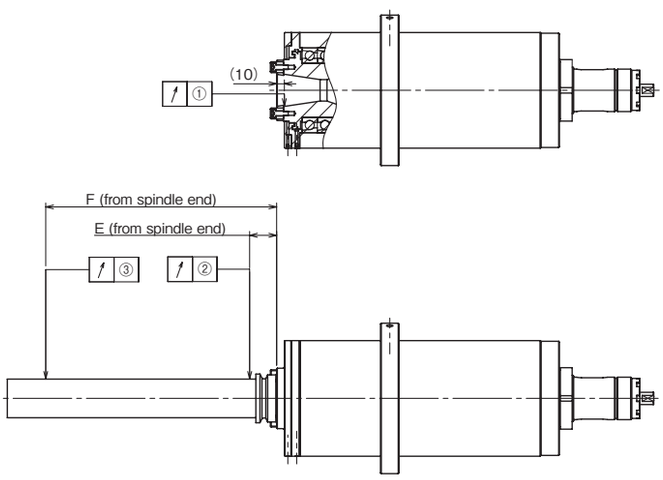
- When mounting this model or mounting mounted object, please handle with the utmost care and avoid shock.
- This model doesn't come with lubrication mechanism. Amount of pre-applied grease is enough for use.
- When using this model for the first time or not using for a long time, perform the running-in operation properly.
- The figure shows, the position of draw bar is when clamping the tool.
- Only when unclampling, air blow from d3 through hole is possible. Please use dried and clean air for air blow.
- Do not rotate at a high speed without clamping the tool.
- The drain hole is plugged when shipping. Please open the drain hole by unplugged the setscrew as needed.
- This is horizontal mounting model. Please contact NB for vertical mounting model.

SPINDLE



※The figure shows, the position of draw bar is when clamping the tool.

major dimensions														unclamping stroke		without tool	tool clamping power (theoretical value)	estimated weight	maximum revolutions	bearings	
P.C.D.	X×Y×Z	S	f	e	b	tolerance	j	k	M	t	tolerance	h	tolerance	ST	tolerance	NT				front	rear
mm	mm		mm	mm	mm	mm	mm	mm		mm	mm	mm	mm	mm	mm	mm	N	kg	rpm		
152	9×14 ×8.6	M10	20	24	15.9	−0.02 −0.04	34	14	M45 ×1.5	8	0 −0.036	4	+0.2 0	4.5	+0.5 0	3 ~ 4.5	3920	29	8000	7012C	NN3010
172	11×17.5 ×11	M10	20	30	15.9		46	14	M55 ×2.0	12		5		4.5		2.5 ~ 5	7840	47	7000	7014C	NN3012
260	16×23 ×15.2	M16	30	49	25.4		72	26	M85 ×2.0	14	0 −0.043	5.5		6.5		3 ~ 8	15680	161	4500	7022C	NN3019



■Rotational accuracy (max.)

part number	runout of the taper part (μm) ①	runout of the test bar (μm) ②	③	distance from spindle end (mm) E	F
M-BT30-01	2	3	8	30	230
M-BT40-01	2	3	8	35	300
M-BT50-01	2	3	8	45	300

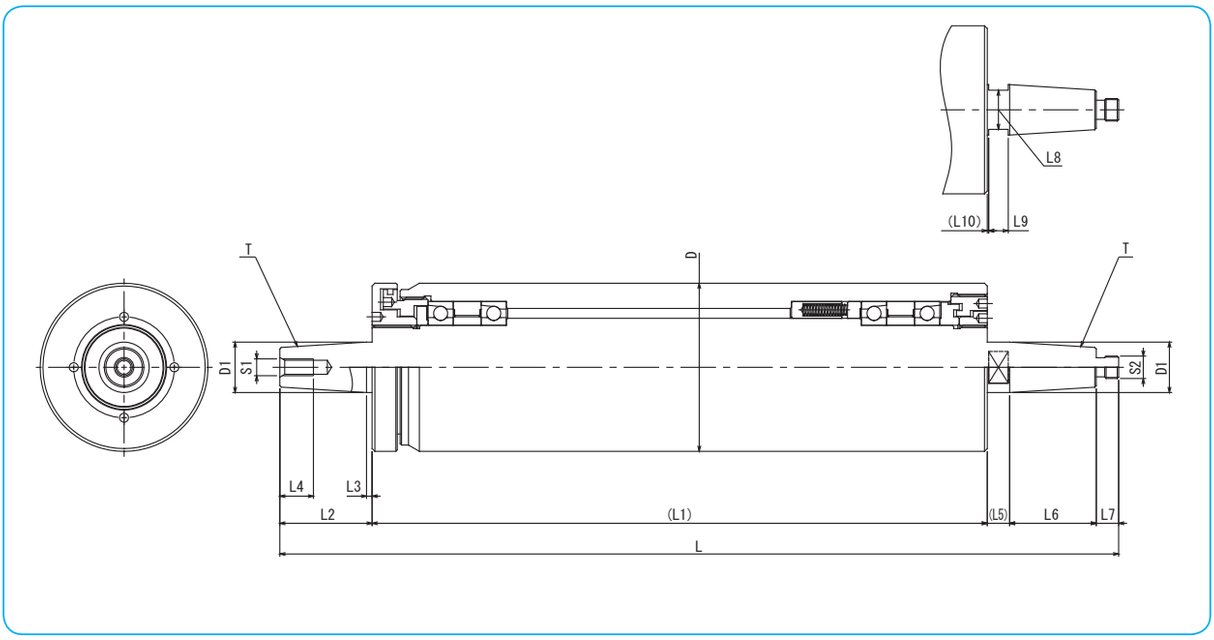
NIPPON BEARING

G-MA TYPE

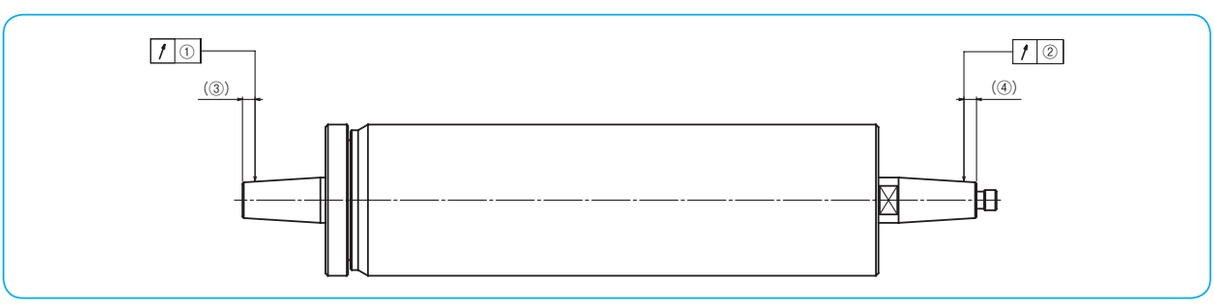
part number	major dimensions								
	D	tolerance	D_1	L	L_1	L_2	L_3	L_4	L_5
	mm	mm	mm	mm	mm	mm	mm	mm	mm
G-MA060-01	60	0 −0.030	18	300	220	33	2	12	8
G-MA080-01	80		28	382	250	55	3	24	12
G-MA100-01	100	0 −0.035	38	460	300	65	8	32	16

- When mounting this model or mounting mounted object, please handle with the utmost care and avoid shock.
- This model doesn't come with lubrication mechanism. Amount of pre-applied grease is enough for use.
- When using this model for the first time or not using for a long time, perform the running-in operation properly.
- When holding the spindle unit, do not deform the outer cylinder.
- Maximum revolutions are based on the spindle unit single-body. Maximum revolutions are decreased by the external factors such as grindstone, belt tension, etc..
- Please contact NB for grindstone flange and puley.

SPINDLE



major dimensions								estimated weight	maximum revolutions	bearings
L_6 mm	L_7 mm	L_8 mm	L_9 mm	L_{10} mm	S_1 mm	S_2 mm	T taper	kg	rpm	
31	8	14	7	0.5	M6	M8×0.75 (left-hand thread)	1/8	4.5	15000	7906C
52	13	24	11	0.5	M12	M12×1 (left-hand thread)	1/8	9	12000	7007C
57	22	32	15	0.5	M16	M20×1 (left-hand thread)	1/5	17.5	9500	7009C



■Rotational accuracy (max.)

part number	runout of the taper part (μm) ①	runout of the taper part (μm) ②	measuring point dimension (mm) ③	measuring point dimension (mm) ④
G-MA060-01	2	2	4	3
G-MA080-01	2	2	6	7
G-MA100-01	3	3	8	3