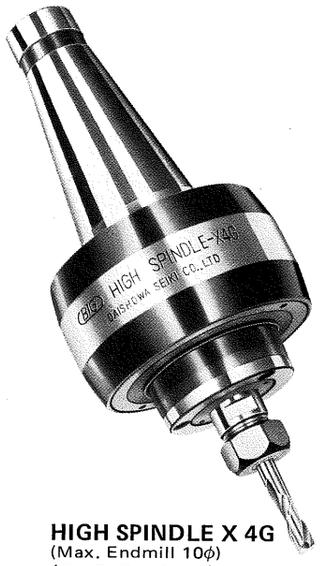
'BIG' HIGH SPINDLE — Increases spindle speed from 3 to 7 times.

HIGH SPINDLE

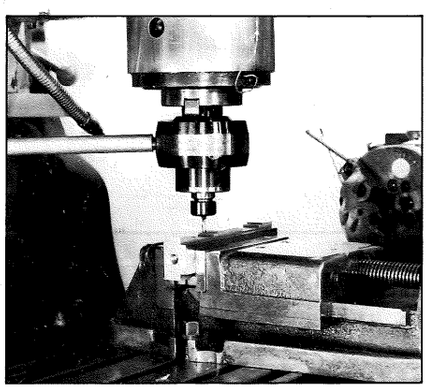
HIGH SPINDLE X 7G
(Max. Endmill 6ϕ)
(RATIO = 1 : 7)

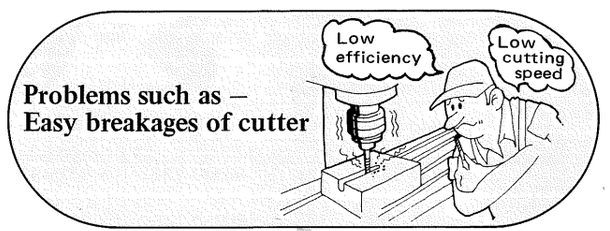


HIGH SPINDLE X 4G
(Max. Endmill 10ϕ)
(RATIO = 1 : 4)

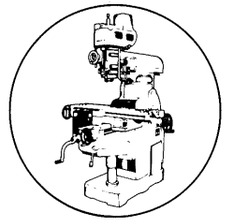
HIGH SPINDLE X 3G
(Max. Endmill 20ϕ)
(RATIO = 1 : 3)

The BIG High Spindle mounted on milling, drilling or boring machines equipped with N.C. or A.T.C. systems greatly increases cutting speed, giving increased efficiency when machining ferrous or non-ferrous materials with small diameter cutting tools. Also, by allowing the use of lower spindle speeds, machine life can be extended.

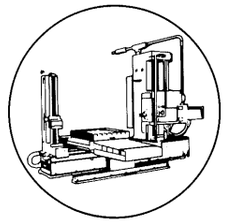




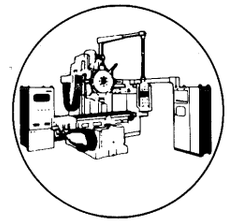
APPLICATION



JIG MILLING MACHINE



BORING MACHINE



N.C. MACHINE

For small diameter endmills and drills requiring high spindle speeds not available on conventional machines.

[FEATURES]

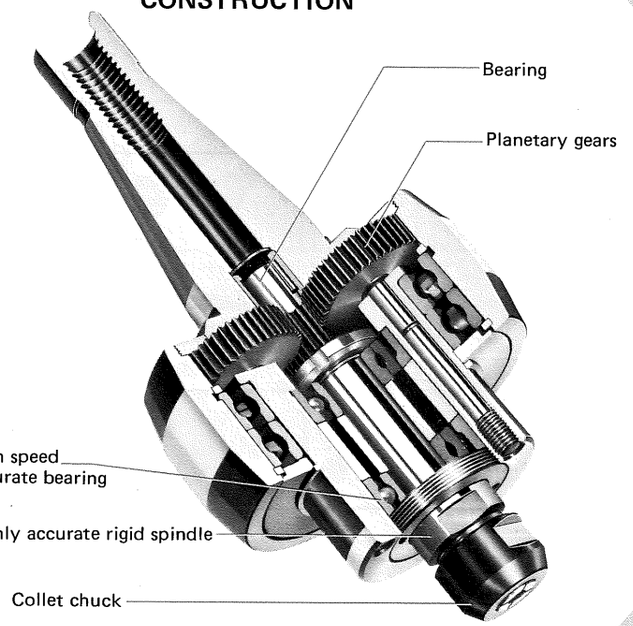
(1) With 'Big' High Spindle, Optimal cutting conditions are easily achieved, eliminating tool breakage and increasing efficiency.

(2) Optimal cutting conditions give the highest accuracy and quality of surface finish.

(3) Machine wear can be reduced by using substantially lower spindle speeds.

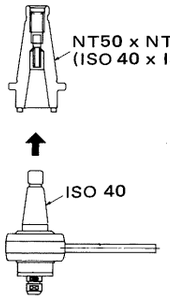
(4) A range of 'BIG' High Spindles are available for drilling, milling and boring machines and NC machining centres.

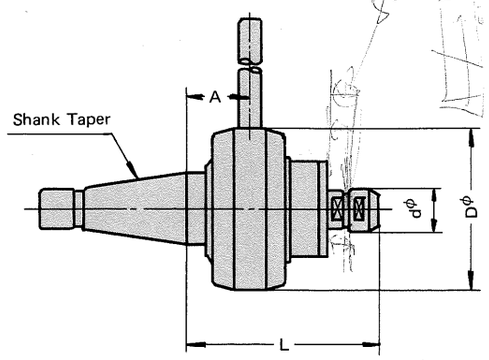
CONSTRUCTION



SPECIFICATION

Model	Speed Ratio	Shank Taper		Capacity (MAX) Drill	Capacity (MAX) Endmill	D φ	d φ	L	A
X7G-	1 : 7	ISO 30 ISO 40 ISO 45 MT3, MT4	10,000 r. p.m	5φ	6φ (aluminum 8mmφ)	102	28	121	39
X7G-L						102	28	161	39
X4G-	1 : 4	ISO 40 ISO 50 MT5, MT6	7,500 r. p.m	6.5φ	10φ (aluminum 12mmφ)	128	37	145	27
X4G-L						128	37	182	27
X3G-	1 : 3	ISO 50 ISO 60 MT6	4,000 r. p.m	—	20φ	175	58	184	37





Now various models are available!!

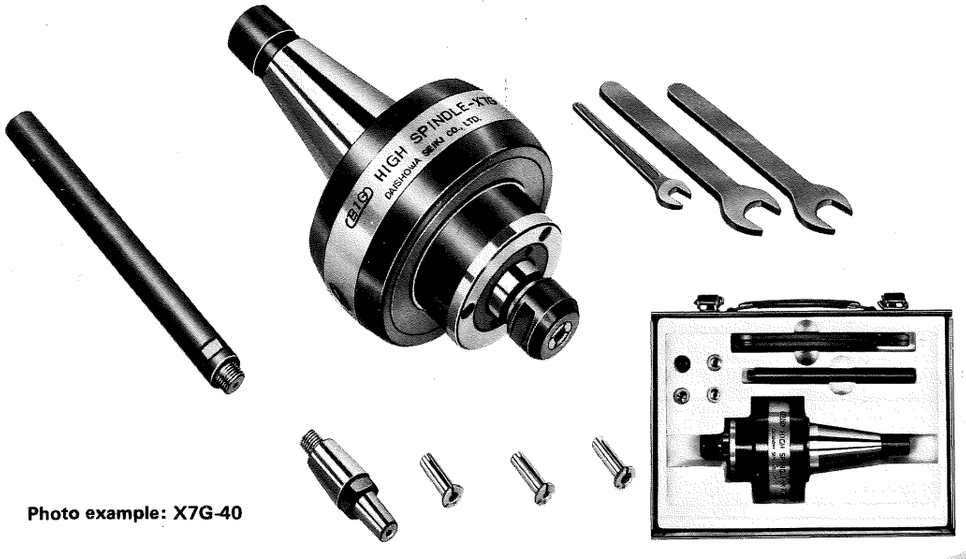
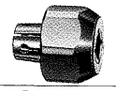
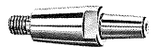


Photo example: X7G-40

SPECIAL ACCESSORY for HIGH SPINDLE

Description	Head	Model
1 STRAIGHT COLLET 	X7G	C6-3·4·5φ
	X4G	C10-3·4·5·6·8φ
	X3G	C20-6·8·10·12·16φ
2 COLLET W/NUT 	X7G	X7G-6·8φ (8φ available only for aluminum.)
	X4G	X4G-10·12φ (12φ available only for aluminum.)
3 DRILL CHUCK ADAPTOR 	X7G	X7G-J1·B10
	X4G	X4G-J1·B10
4 REDUCTION SLEEVE 	X7G-40 X4G-40	NT40×NT50 (ISO 40 x ISO 50)
5 KEYLESS DRILL CHUCK 	X7G X4G	30-J1 (0~3φ) 50-J1 (0~5φ) 65-J1 (0~6.5φ)

SET COMPOSITION

X7G-40
- 40 → Shank ISO No. 40
- X7G → Ratio

Model	Taper	Stand and Accessory			Thread
X7G-30	ISO 30	Straight Collet	C6–3 · 4 · 5φ	1 pc (each)	U1/2-13 (M12P1.75)
-30L					
-40	ISO 40	Collet w/Nut	X7G–6φ	1 pc	U5/8-11 (M16P2.0)
-40L		Drill Chuck Adaptor	X7G–J1 (or B10)	1 pc	
-3	MT3	Stop Bar		1 pc	U1/2-13 (M10P1.5)
-4	MT4	Wrenches		3 pcs	U5/8-11 (Tang)
-32	32φ				Stgt Shank
-T45	ISO 45				for QUICK CHANGE master holder, MH50
X4G-40	ISO 40	Straight Collet	C10–6 · 8φ	1 pc (each)	U5/8-11 (M16P2.0)
-50	ISO 50	Collet w/Nut	X4G–10φ	1	U1-8 (M24P3.0)
-5	MT5	Stop Bar		1	U3/4-10 (Tang)
-T45	ISO 45	Wrenches		2 pcs	for QUICK CHANGE master holder, MH50
X3G-50	ISO 50	Straight Collet	C20–6 · 8 · 10 · 12 · 16φ	1 pc (each) 16φ	U1-8 (M24P3.0)
-60	ISO 60	Drill Chuck Adaptor		1	U1-1/4-7 (M30P3.5)
-6	MT6	Wrenches		2 pcs	U1-8 (Tang)

1. Indicate dimensions for cotter hole when necessary.
2. Indicate kind of thread and whether threaded or w/tang.

INSTRUCTIONS FOR OPERATION

[1] Mount 'BIG' High Spindle on machine spindle
[2] Set the stop bar as indicated in the sketch on the right.
[3] Affix a bar to the machine to locate the stop bar.
[4] Insert the tool into the collet chuck and clamp with the accessory wrench.
[5] Select cutting speed refering to the table below.
TABLE A shows cutting speeds for different materials using high speed steel tools. TABLE B, the rpm corresponding to the tool diameter for given cutting speeds.

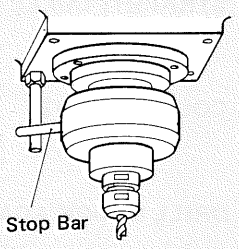


Table A
CUTTING SPEEDS for TYPE of MATERIAL

Material	Hss Tool	Carbide Tool
Aluminum	100 m/min	100 m/min
Brass	45 m/min	100 m/min
Light Steel	20 ~ 30 m/min	60 ~ 90 m/min
Soft Steel	15 ~ 25 m/min	50 ~ 70 m/min
Hard Steel	15 ~ 30 m/min	50 ~ 70 m/min
Stainless Steel	8 ~ 12 m/min	40 ~ 60 m/min

m/mn \ Bore	0.4φ	0.5φ	0.8φ	1φ	2φ	3φ	4φ	5φ	6φ	8φ	10φ
10	8,000	6,300	4,200	3,200	1,600						
15	12,000	9,500	6,000	4,800	2,400	1,600					
20	16,000	12,000	8,000	6,400	3,200	2,100	1,600				
25	19,800	15,800	10,000	8,000	4,000	2,650	2,000	1,600	1,300	1,000	
30		19,000	12,000	9,600	4,800	3,100	2,500	1,900	1,600	1,200	950
40			16,000	12,700	6,400	4,250	3,200	2,550	2,150	1,600	1,300
50			20,000	16,000	8,000	5,300	4,000	3,200	2,650	2,000	1,600
80					12,800	8,500	6,300	5,100	4,250	3,200	2,500
100					16,000	10,500	8,000	6,400	5,300	4,000	3,200
120							9,500	7,600	6,400	4,800	3,800

EXAMPLE
In the case of cutting steel with an endmill of diameter 2 mm , Table A shows a cutting speed of 25 m/min Refering to Table B, a cutting speed of 25 m/min using a 2 mm diameter tool yields a figure of 4,000 rpm suitable for BIG High Spindle. When X7G is employed (4,000 divided by 7 equals 570), therefore, spindle speed is set to 570 rpm.
Roughly twice the rpm can be used with carbide cutters.

< MAINTENANCE >
(1) 'BIG' High Spindles are sealed units and, during normal use, need no attention.
(2) After 6,000 hours of use (approximately six months) it is advisable to dismantle for cleaning and greasing.
Contact your BIG Agent.