



Size R0.1~R2

# HTNB



Material Applications (☆ Highly Recommended ○ Recommended ○ Suggested)

Work Material															
Carbon Steels S45C S55C	Alloy Steels SK / SCM SUS	Prehardened Steels NAK HPM	Hardened Steels			Cast Iron	Aluminum Alloys	Graphite	Copper	Plastics	Glass Filled Plastics	Titanium Alloys	Heat Resistant Alloys	Cemented Carbide	Hard Brittle (Non-Metallic) Materials
			~55HRC	~60HRC	~70HRC										
○	○	○	○	○	○	○			○				○	○	
					○										

- Square
- Long Neck Square
- Radius
- Long Neck Radius
- Ball / Long Shank Ball
- Long Neck Ball
- Taper Neck Ball
- Taper
- Spiral V Cutter
- Drill Thread Mill
- EURO Series
- Technical Data

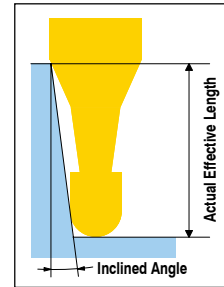
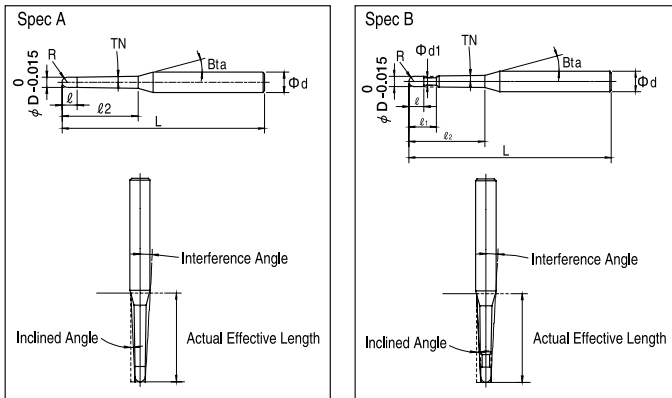
Total 158 models

Unit (mm)

Model Number	Radius of Ball Nose R	Neck Taper Angle TN	Neck Length $\ell_2$	Effective Length $\ell_1$	Length of Cut $\ell$	Neck Diameter $\phi d_1$	Shank Taper Angle Bta	Overall Length L	Shank Diameter $\phi d$	Spec	Price (¥)													
HTNB 2002-015-1	R0.1	30°	1.5	—	0.16	—	16°	50	4	A	11,520													
HTNB 2002-020-1			2					50	4		12,120													
HTNB 2002-030-1			3					50	4		14,400													
HTNB 2002-015-2			1.5					50	4		11,520													
HTNB 2002-020-2			2					50	4		12,120													
HTNB 2002-030-2			3					50	4		14,400													
HTNB 2002-015-3		1°	30°					1.5	—		0.24	—	16°	50	4	A	11,520							
HTNB 2002-020-3								2						50	4		12,120							
HTNB 2002-030-3								3						50	4		14,400							
HTNB 2003-020-1								R0.15						1°	2		—	0.32	—	16°	50	4	A	11,520
HTNB 2003-030-1															3						50	4		12,120
HTNB 2003-020-2															2						50	4		11,520
HTNB 2003-030-2	3	50	4	12,120																				
HTNB 2003-020-3	2	50	4	11,520																				
HTNB 2003-030-3	3	50	4	12,120																				
HTNB 2004-030-1	R0.2	30°	3	—	0.32	—	16°	50		4				A	8,880									
HTNB 2004-040-1			4					50		4					8,880									
HTNB 2004-060-1			6					50		4					9,600									
HTNB 2004-030-2			3					50	4	8,880														
HTNB 2004-040-2			4					50	4	8,880														
HTNB 2004-060-2			6					50	4	9,600														
HTNB 2004-030-3		1°	30°					3	—	0.32	—	16°	50		4	A	8,880							
HTNB 2004-040-3								4					50		4		8,880							
HTNB 2004-060-3								6					50		4		9,600							

Higher rigidity with modified taper neck shape.  
**HARDMAX offers outstanding heat resistance and low friction properties on hard milling up to 65HRC.**  
**Radius Tolerance:  $\pm 0.005$**   
**Diameter Tolerance:  $0/-0.015$**

The shank taper angle shown is not an exact value and to avoid contact with the work piece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the work piece.



Unit (mm)

Model Number	Radius of Ball Nose R	Neck Taper Angle TN	Neck Length $l_2$	Interference Angle	Effective Length by Inclined Angles — : Interference						
					30°	1°	1°30'	2°	3°		
HTNB 2002-015-1	RO.1	30°	1.5	13.85	—	1.50	1.55	1.60	1.72		
HTNB 2002-020-1			2	13.12	—	2.01	2.08	2.15	2.31		
HTNB 2002-030-1			3	11.86	—	3.05	3.15	3.26	3.50		
HTNB 2002-015-2		1°	1°	1.5	13.90	—	—	1.51	1.56	1.68	
HTNB 2002-020-2				2	13.18	—	—	2.03	2.10	2.25	
HTNB 2002-030-2				3	11.95	—	—	3.06	3.17	3.40	
HTNB 2002-015-3			1°30'	1°30'	1.5	13.95	—	—	—	1.53	1.64
HTNB 2002-020-3					2	13.25	—	—	—	2.04	2.19
HTNB 2002-030-3					3	12.05	—	—	—	3.08	3.31
HTNB 2003-020-1	RO.15	30°	2	13.11	—	2.01	2.08	2.15	2.30		
HTNB 2003-030-1			3	11.83	—	3.05	3.15	3.25	3.49		
HTNB 2003-020-2		1°	1°	2	13.17	—	—	2.03	2.10	2.25	
HTNB 2003-030-2				3	11.92	—	—	3.06	3.17	3.40	
HTNB 2003-020-3		1°30'	1°30'	2	13.24	—	—	—	2.05	2.19	
HTNB 2003-030-3				3	12.01	—	—	—	3.08	3.31	
HTNB 2004-030-1	RO.2	30°	3	11.79	—	3.04	3.14	3.25	3.48		
HTNB 2004-040-1			4	10.72	—	4.08	4.21	4.35	4.67		
HTNB 2004-060-1			6	9.09	—	6.14	6.34	6.56	7.04		
HTNB 2004-030-2		1°	1°	3	11.87	—	—	3.06	3.17	3.39	
HTNB 2004-040-2				4	10.82	—	—	4.10	4.23	4.54	
HTNB 2004-060-2				6	9.21	—	—	6.16	6.37	6.84	
HTNB 2004-030-3		1°30'	1°30'	3	11.97	—	—	—	3.08	3.30	
HTNB 2004-040-3				4	10.93	—	—	—	4.12	4.42	
HTNB 2004-060-3				6	9.33	—	—	—	6.19	6.64	

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Square

Square  
Long Neck  
Square

Radius

Radius  
Long Neck  
RadiusBall / Long  
Shank BallBall  
Long Neck  
BallTaper Neck  
Ball

Taper

Spiral  
V CutterDrill  
Thread Mill

EURO Series

Technical Data

Unit (mm)

Model Number	Radius of Ball Nose R	Neck Taper Angle TN	Neck Length $\ell_2$	Effective Length $\ell_1$	Length of Cut $\ell$	Neck Diameter $\phi d_1$	Shank Taper Angle Bta	Overall Length L	Shank Diameter $\phi d$	Spec	Price (¥)										
HTNB 2005-040-1	R0.25	30°	4	—	0.4	—	16°	50	4	A	8,400										
HTNB 2005-060-1			6					50	4		8,880										
HTNB 2005-080-1			8					50	4		8,880										
HTNB 2005-100-1			10					50	4		9,600										
HTNB 2005-040-2		1°	1°					4	50		4	8,400									
HTNB 2005-060-2								6	50		4	8,880									
HTNB 2005-080-2								8	50		4	8,880									
HTNB 2005-100-2								10	50		4	9,600									
HTNB 2005-040-3								1°30'	1°30'		4	50	4	8,640							
HTNB 2005-060-3											6	50	4	8,880							
HTNB 2005-080-3		8	50								4	8,880									
HTNB 2005-100-3		10	50								4	9,600									
HTNB 2006-040-1		R0.3	30°					4	0.9		0.48	0.56	16°	50	4	B	8,280				
HTNB 2006-060-1								6						50	4		8,520				
HTNB 2006-080-1	8			50	4	8,520															
HTNB 2006-100-1	10			50	4	8,640															
HTNB 2006-120-1	12			50	4	9,360															
HTNB 2006-160-1	16			50	4	9,360															
HTNB 2006-040-2	1°		1°	4	50	4	8,280														
HTNB 2006-060-2				6	50	4	8,520														
HTNB 2006-080-2				8	50	4	8,520														
HTNB 2006-100-2				10	50	4	8,640														
HTNB 2006-120-2				12	50	4	9,360														
HTNB 2006-160-2				16	50	4	9,360														
HTNB 2006-040-3				1°30'	1°30'	4	50	4		8,280											
HTNB 2006-060-3						6	50	4		8,520											
HTNB 2006-080-3						8	50	4		8,520											
HTNB 2006-100-3						10	50	4		8,640											
HTNB 2006-120-3						12	50	4		9,360											
HTNB 2006-160-3						16	50	4		9,360											
HTNB 2008-080-1						R0.4	30°	8		1.2				0.64	0.76		16°	50	4	B	8,880
HTNB 2008-120-1								12										60	4		9,360
HTNB 2008-080-2	1°	1°	8	50	4		8,880														
HTNB 2008-120-2			12	60	4		9,360														
HTNB 2008-080-3			1°30'	1°30'	8		50	4	8,880												
HTNB 2008-120-3					12		60	4	9,360												
HTNB 2010-080-1	R0.5	30°	8	1.5	0.8	0.95	16°	50	4	B	7,560										
HTNB 2010-120-1			12					50	4		7,560										
HTNB 2010-160-1			16					50	4		7,560										
HTNB 2010-200-1			20					60	4		9,600										
HTNB 2010-220-1			22					60	4		9,600										
HTNB 2010-260-1			26					65	4		10,080										
HTNB 2010-320-1			32					70	4		10,560										
HTNB 2010-360-1			36					80	4		11,040										

Square  
Long Neck Square

Radius  
Long Neck Radius

Ball / Long Shank Ball  
Long Neck Ball  
Taper Neck Ball

Taper

Spiral V Cutter

Drill Thread Mill

EURO Series

Technical Data

Unit (mm)

Model Number	Radius of Ball Nose R	Neck Taper Angle TN	Neck Length $l_2$	Interference Angle	Effective Length by Inclined Angles — : Interference					
					30°	1°	1°30'	2°	3°	
HTNB 2005-040-1	RO.25	30°	4	10.66	—	4.08	4.21	4.35	4.66	
HTNB 2005-060-1			6	9.01	—	6.14	6.34	6.55	7.03	
HTNB 2005-080-1			8	7.82	—	8.21	8.48	8.76	9.41	
HTNB 2005-100-1			10	6.92	—	10.27	10.61	10.97	11.78	
HTNB 2005-040-2		1°	4	10.76	—	—	4.10	4.23	4.54	
HTNB 2005-060-2			6	9.13	—	—	6.16	6.37	6.84	
HTNB 2005-080-2			8	7.94	—	—	8.23	8.51	9.13	
HTNB 2005-100-2			10	7.04	—	—	10.30	10.65	11.43	
HTNB 2005-040-3		1°30'	4	10.87	—	—	—	4.12	4.41	
HTNB 2005-060-3			6	9.25	—	—	—	6.19	6.64	
HTNB 2005-080-3			8	8.06	—	—	—	8.26	8.86	
HTNB 2005-100-3			10	7.16	—	—	—	10.33	11.09	
HTNB 2006-040-1	RO.3	30°	4	10.59	—	4.08	4.21	4.34	4.65	
HTNB 2006-060-1			6	8.93	—	6.14	6.34	6.55	7.03	
HTNB 2006-080-1			8	7.73	—	8.21	8.47	8.76	9.40	
HTNB 2006-100-1			10	6.82	—	10.27	10.61	10.97	11.77	
HTNB 2006-120-1			12	6.12	—	12.34	12.74	13.18	14.14	
HTNB 2006-160-1			16	5.10	—	16.46	17.01	17.59	18.89	
HTNB 2006-040-2		1°	4	10.70	—	—	4.10	4.23	4.53	
HTNB 2006-060-2			6	9.04	—	—	6.17	6.37	6.83	
HTNB 2006-080-2			8	7.85	—	—	8.23	8.51	9.13	
HTNB 2006-100-2			10	6.94	—	—	10.30	10.65	11.43	
HTNB 2006-120-2			12	6.23	—	—	12.37	12.79	13.72	
HTNB 2006-160-2			16	5.20	—	—	16.50	17.07	18.32	
HTNB 2006-040-3		1°30'	4	10.80	—	—	—	4.12	4.41	
HTNB 2006-060-3			6	9.16	—	—	—	6.19	6.64	
HTNB 2006-080-3			8	7.97	—	—	—	8.26	8.86	
HTNB 2006-100-3			10	7.06	—	—	—	10.34	11.09	
HTNB 2006-120-3			12	6.35	—	—	—	12.40	13.31	
HTNB 2006-160-3			16	5.31	—	—	—	16.54	17.76	
HTNB 2008-080-1		RO.4	30°	8	7.53	—	8.21	8.47	8.75	9.38
HTNB 2008-120-1				12	5.93	—	12.33	12.74	13.17	14.13
HTNB 2008-080-2			1°	8	7.65	—	—	8.23	8.51	9.12
HTNB 2008-120-2				12	6.04	—	—	12.37	12.79	13.72
HTNB 2008-080-3			1°30'	8	7.77	—	—	—	8.26	8.86
HTNB 2008-120-3				12	6.16	—	—	—	12.40	13.30
HTNB 2010-080-1	RO.5	30°	8	7.33	—	8.21	8.47	8.75	9.37	
HTNB 2010-120-1			12	5.73	—	12.33	12.73	13.16	14.11	
HTNB 2010-160-1			16	4.74	—	16.46	17.00	17.58	18.86	
HTNB 2010-200-1			20	4.06	—	20.60	21.27	22.00	23.61	
HTNB 2010-220-1			22	3.80	—	22.66	23.41	24.20	25.98	
HTNB 2010-260-1			26	3.37	—	26.79	27.67	28.62	No Interference	
HTNB 2010-320-1			32	2.90	—	32.98	34.07	35.24	No Interference	
HTNB 2010-360-1			36	2.67	—	37.11	38.34	39.66	No Interference	

Square

Radius

Ball / Long Shank Ball

Taper

Spiral V Cutter

Drill Thread Mill

EURO Series

Technical Data

Next Page ➡

Unit (mm)

Model Number	Radius of Ball Nose R	Neck Taper Angle TN	Neck Length $\ell_2$	Effective Length $\ell_1$	Length of Cut $\ell$	Neck Diameter $\phi d_1$	Shank Taper Angle $\beta$	Overall Length L	Shank Diameter $\phi d$	Spec	Price (¥)
HTNB 2010-080-2	R0.5	1°	8	1.5	0.8	0.95	16°	50	4	B	7,560
HTNB 2010-120-2			12					50	4		7,560
HTNB 2010-160-2			16					50	4		7,560
HTNB 2010-200-2			20					60	4		9,600
HTNB 2010-220-2			22					60	4		9,600
HTNB 2010-260-2			26					65	4		10,080
HTNB 2010-320-2		32	70					4	10,560		
HTNB 2010-360-2		36	80					4	11,040		
HTNB 2010-080-3		1°30'	8					50	4		7,560
HTNB 2010-120-3			12					50	4		7,560
HTNB 2010-160-3			16					50	4		7,560
HTNB 2010-200-3			20					60	4		9,600
HTNB 2010-220-3	22		60	4	9,600						
HTNB 2010-260-3	26		65	4	10,080						
HTNB 2010-320-3	32	70	4	10,560							
HTNB 2010-360-3	36	80	4	11,040							
HTNB 2015-100-1	R0.75	30°	10	2.25	1.2	1.42	16°	60	4	B	7,920
HTNB 2015-120-1			12					60	4		7,920
HTNB 2015-160-1			16					60	4		8,640
HTNB 2015-200-1			20					60	4		8,640
HTNB 2015-260-1			26					70	4		9,360
HTNB 2015-300-1			30					70	4		9,360
HTNB 2015-360-1		36	80					4	11,040		
HTNB 2015-100-2		1°	10					60	4		7,920
HTNB 2015-120-2			12					60	4		7,920
HTNB 2015-160-2			16					60	4		8,640
HTNB 2015-200-2			20					60	4		8,640
HTNB 2015-260-2			26					70	4		9,360
HTNB 2015-300-2			30					70	4		9,360
HTNB 2015-360-2		36	80					4	11,040		
HTNB 2015-100-3		1°30'	10					60	4		7,920
HTNB 2015-120-3			12					60	4		7,920
HTNB 2015-160-3			16					60	4		8,640
HTNB 2015-200-3			20					60	4		8,640
HTNB 2015-260-3	26		70	4	9,360						
HTNB 2015-300-3	30		70	4	9,360						
HTNB 2015-360-3	36	80	4	11,040							
HTNB 2020-160-1	R1	30°	16	3	1.6	1.91	16°	60	4	B	8,100
HTNB 2020-200-1			20					60	4		8,640
HTNB 2020-220-1			22					60	4		8,640
HTNB 2020-260-1			26					60	4		9,600
HTNB 2020-300-1			30					70	4		10,560
HTNB 2020-320-1			32					70	4		10,560
HTNB 2020-360-1			36					80	4		11,040
HTNB 2020-400-1			40					80	4		12,480

Square  
Long Neck Square

Radius  
Long Neck Radius

Ball / Long Shank Ball  
Long Neck Ball  
Taper Neck Ball

Taper

Spiral V Cutter

Drill Thread Mill

EURO Series

Technical Data

Unit (mm)

Model Number	Radius of Ball Nose R	Neck Taper Angle TN	Neck Length $l_2$	Interference Angle	Effective Length by Inclined Angles — : Interference					
					30°	1°	1°30'	2°	3°	
HTNB 2010-080-2	R0.5	1°	8	7.44	—	—	8.24	8.51	9.12	
HTNB 2010-120-2			12	5.84	—	—	12.38	12.79	13.72	
HTNB 2010-160-2			16	4.83	—	—	16.51	17.07	18.31	
HTNB 2010-200-2			20	4.14	—	—	20.64	21.35	22.91	
HTNB 2010-220-2			22	3.88	—	—	22.71	23.48	25.21	
HTNB 2010-260-2			26	3.44	—	—	26.85	27.76	No Interference	
HTNB 2010-320-2			32	2.97	—	—	33.05	34.18	No Interference	
HTNB 2010-360-2			36	2.73	—	—	37.18	38.46	No Interference	
HTNB 2010-080-3		1°30'	1°30'	8	7.55	—	—	8.28	8.87	
HTNB 2010-120-3				12	5.94	—	—	12.42	13.32	
HTNB 2010-160-3				16	4.93	—	—	16.56	17.77	
HTNB 2010-200-3				20	4.23	—	—	20.70	22.21	
HTNB 2010-220-3				22	3.96	—	—	22.77	24.44	
HTNB 2010-260-3				26	3.52	—	—	26.91	28.88	
HTNB 2010-320-3				32	3.04	—	—	33.11	No Interference	
HTNB 2010-360-3				36	2.79	—	—	37.25	No Interference	
HTNB 2015-100-1	R0.75	30°	10	5.85	—	10.27	10.59	10.93	11.70	
HTNB 2015-120-1			12	5.18	—	12.33	12.72	13.14	14.08	
HTNB 2015-160-1			16	4.24	—	16.46	16.99	17.56	18.82	
HTNB 2015-200-1			20	3.61	—	20.59	21.26	21.98	23.57	
HTNB 2015-260-1			26	2.99	—	26.79	27.66	28.60	No Interference	
HTNB 2015-300-1			30	2.69	—	30.92	31.93	33.01	No Interference	
HTNB 2015-360-1			36	2.36	—	37.11	38.33	No Interference	No Interference	
HTNB 2015-100-2			1°	1°	10	5.95	—	—	10.31	10.65
HTNB 2015-120-2		12			5.28	—	—	12.38	12.78	13.69
HTNB 2015-160-2		16			4.32	—	—	16.51	17.06	18.29
HTNB 2015-200-2		20			3.69	—	—	20.65	21.34	22.89
HTNB 2015-260-2		26			3.05	—	—	26.85	27.76	No Interference
HTNB 2015-300-2		30			2.75	—	—	30.98	32.03	No Interference
HTNB 2015-360-2		36			2.41	—	—	37.18	No Interference	No Interference
HTNB 2015-100-3		1°30'			1°30'	10	6.06	—	—	10.36
HTNB 2015-120-3			12	5.38		—	—	12.43	13.31	
HTNB 2015-160-3			16	4.41		—	—	16.57	17.76	
HTNB 2015-200-3			20	3.77		—	—	20.71	22.21	
HTNB 2015-260-3			26	3.12		—	—	26.91	No Interference	
HTNB 2015-300-3			30	2.81		—	—	31.05	No Interference	
HTNB 2015-360-3			36	2.47		—	—	No Interference	No Interference	
HTNB 2020-160-1			R1	30°		16	3.68	—	16.47	16.99
HTNB 2020-200-1		20			3.12	—	20.60	21.26	21.97	No Interference
HTNB 2020-220-1		22			2.91	—	22.66	23.39	24.17	No Interference
HTNB 2020-260-1	26	2.57			—	26.79	27.66	28.59	No Interference	
HTNB 2020-300-1	30	2.32			—	30.92	31.93	No Interference	No Interference	
HTNB 2020-320-1	32	2.21			—	32.99	34.07	No Interference	No Interference	
HTNB 2020-360-1	36	2.03			—	37.12	38.33	No Interference	No Interference	
HTNB 2020-400-1	40	1.89			—	41.25	No Interference	No Interference	No Interference	

Square

Square  
Long Neck  
Square

Radius

Radius  
Long Neck  
RadiusBall / Long  
Shank BallBall  
Long Neck  
BallTaper Neck  
BallTaper  
TaperSpiral  
V CutterDrill  
Thread Mill

EURO Series

Technical Data

Next Page ➡

Unit (mm)

Model Number	Radius of Ball Nose R	Neck Taper Angle TN	Neck Length $\ell_2$	Effective Length $\ell_1$	Length of Cut $\ell$	Neck Diameter $\phi d_1$	Shank Taper Angle $\beta$	Overall Length L	Shank Diameter $\phi d$	Spec	Price (¥)	
HTNB 2020-160-2	R1	1°	16	3	1.6	1.91	16°	60	4	B	8,100	
HTNB 2020-200-2			20					60	4		8,640	
HTNB 2020-220-2			22					60	4		8,640	
HTNB 2020-260-2			26					60	4		9,600	
HTNB 2020-300-2			30					70	4		10,560	
HTNB 2020-320-2			32					70	4		10,560	
HTNB 2020-360-2			36					80	4		11,040	
HTNB 2020-400-2			40					80	4		13,100	
HTNB 2020-160-3			16					1°30'	60		4	8,100
HTNB 2020-200-3			20						60		4	8,640
HTNB 2020-220-3	22	60	4	8,640								
HTNB 2020-260-3	26	60	4	9,600								
HTNB 2020-300-3	30	70	4	10,560								
HTNB 2020-320-3	32	70	4	10,560								
HTNB 2020-360-3	36	80	4	11,040								
HTNB 2020-400-3	40	80	4	13,100								
HTNB 2030-200-1	R1.5	30°	20	4.5	2.4	2.89	16°		60	6	B	9,740
HTNB 2030-260-1			26						70	6		10,400
HTNB 2030-300-1			30					70	6	11,880		
HTNB 2030-320-1			32					70	6	12,480		
HTNB 2030-360-1			36					80	6	13,000		
HTNB 2030-400-1			40					80	6	13,200		
HTNB 2030-420-1			42					90	6	13,680		
HTNB 2030-520-1			52					100	6	15,360		
HTNB 2030-200-2			20					60	6	9,740		
HTNB 2030-260-2			26					70	6	10,400		
HTNB 2030-300-2		30	70					6	11,880			
HTNB 2030-320-2		32	70					6	12,480			
HTNB 2030-360-2		36	80					6	13,000			
HTNB 2030-400-2		40	80					6	13,200			
HTNB 2030-420-2		42	90					6	13,680			
HTNB 2030-520-2		52	100					6	15,360			
HTNB 2030-200-3		20	60					6	9,740			
HTNB 2030-260-3		26	70					6	10,400			
HTNB 2030-300-3		30	70					6	11,880			
HTNB 2030-320-3		32	70					6	12,480			
HTNB 2030-360-3	36	80	6	13,000								
HTNB 2030-400-3	40	80	6	13,200								
HTNB 2030-420-3	42	90	6	13,680								
HTNB 2030-580-3	58	100	6	15,360								
HTNB 2040-400-1	R2	30°	40	6	3.2	3.87	16°	80	6	B	15,000	
HTNB 2040-620-1		62	120					6	19,200			
HTNB 2040-400-2		1°	40					80	6		15,000	
HTNB 2040-600-2			60					120	6		19,200	
HTNB 2040-410-3			1°30'					41	80		6	15,000

Square  
Long Neck Square

Radius  
Long Neck Radius

Ball / Long Shank Ball  
Long Neck Ball  
Taper Neck Ball

Taper

Spiral V Cutter

Drill Thread Mill

EURO Series

Technical Data

Unit (mm)

Model Number	Radius of Ball Nose R	Neck Taper Angle TN	Neck Length $\ell_2$	Interference Angle	Effective Length by Inclined Angles — : Interference					
					30°	1°	1°30'	2°	3°	
HTNB 2020-160-2	R1	1°	16	3.75	—	—	16.53	17.08	18.29	
HTNB 2020-200-2			20	3.18	—	—	20.67	21.35	No Interference	
HTNB 2020-220-2			22	2.97	—	—	22.73	23.49	No Interference	
HTNB 2020-260-2			26	2.62	—	—	26.87	27.77	No Interference	
HTNB 2020-300-2			30	2.37	—	—	31.00	No Interference	No Interference	
HTNB 2020-320-2			32	2.26	—	—	33.07	No Interference	No Interference	
HTNB 2020-360-2			36	2.08	—	—	37.20	No Interference	No Interference	
HTNB 2020-400-2			40	1.93	—	—	No Interference	No Interference	No Interference	
HTNB 2020-160-3		1°30'	1°30'	16	3.83	—	—	16.60	17.78	
HTNB 2020-200-3				20	3.25	—	—	20.74	No Interference	
HTNB 2020-220-3				22	3.03	—	—	22.81	No Interference	
HTNB 2020-260-3				26	2.68	—	—	26.95	No Interference	
HTNB 2020-300-3				30	2.42	—	—	No Interference	No Interference	
HTNB 2020-320-3				32	2.31	—	—	No Interference	No Interference	
HTNB 2020-360-3				36	2.12	—	—	No Interference	No Interference	
HTNB 2020-400-3				40	1.97	—	—	No Interference	No Interference	
HTNB 2030-200-1	R1.5	30°	20	4.20	—	20.59	21.23	21.92	23.46	
HTNB 2030-260-1			26	3.46	—	26.78	27.63	28.54	No Interference	
HTNB 2030-300-1			30	3.11	—	30.91	31.90	32.96	No Interference	
HTNB 2030-320-1			32	2.97	—	32.98	34.04	35.17	No Interference	
HTNB 2030-360-1			36	2.72	—	37.11	38.30	39.58	No Interference	
HTNB 2030-400-1			40	2.52	—	41.23	42.57	44.00	No Interference	
HTNB 2030-420-1			42	2.43	—	43.30	44.70	No Interference	No Interference	
HTNB 2030-520-1			52	2.09	—	53.62	55.38	No Interference	No Interference	
HTNB 2030-200-2		1°	1°	20	4.28	—	—	20.66	21.33	22.83
HTNB 2030-260-2				26	3.53	—	—	26.87	27.75	29.72
HTNB 2030-300-2				30	3.18	—	—	31.00	32.03	No Interference
HTNB 2030-320-2				32	3.03	—	—	33.07	34.17	No Interference
HTNB 2030-360-2				36	2.78	—	—	37.20	38.44	No Interference
HTNB 2030-400-2				40	2.57	—	—	41.33	42.72	No Interference
HTNB 2030-420-2				42	2.48	—	—	43.40	44.86	No Interference
HTNB 2030-520-2				52	2.13	—	—	53.74	No Interference	No Interference
HTNB 2030-200-3	1°30'	1°30'	20	4.37	—	—	20.75	22.20		
HTNB 2030-260-3			26	3.61	—	—	26.96	28.87		
HTNB 2030-300-3			30	3.25	—	—	31.09	No Interference		
HTNB 2030-320-3			32	3.10	—	—	33.16	No Interference		
HTNB 2030-360-3			36	2.84	—	—	37.30	No Interference		
HTNB 2030-400-3			40	2.63	—	—	41.44	No Interference		
HTNB 2030-420-3			42	2.54	—	—	43.51	No Interference		
HTNB 2030-580-3			58	2.02	—	—	No Interference	No Interference		
HTNB 2040-400-1	R2	30°	40	1.92	—	41.23	No Interference	No Interference	No Interference	
HTNB 2040-620-1			62	1.43	—	No Interference	No Interference	No Interference	No Interference	
HTNB 2040-400-2		1°	40	1.96	—	—	No Interference	No Interference	No Interference	
HTNB 2040-600-2			60	1.49	—	—	No Interference	No Interference	No Interference	
HTNB 2040-410-3			41	1.97	—	—	—	No Interference	No Interference	

Square

Square  
Long Neck  
Square

Radius

Radius  
Long Neck  
RadiusBall / Long  
Shank BallBall  
Long Neck  
BallTaper Neck  
Ball

Taper

Spiral  
V CutterDrill  
Thread Mill

EURO Series

Technical Data



Milling Conditions for HTNB

WORK MATERIAL			COPPER/CARBON/STEELS Cu / S45 / S50C			PREHARDENED STEELS HARDENED STEELS NAK / SKD (30~45HRC)			HARDENED STEELS SKD / SKT (45~55HRC)			HARDENED STEELS SKD / SKS (55~65HRC)		
Model Number	Radius of Ball Nose (mm)	Effective Length (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)
2002	R0.1	1.5	42,000	640	0.008	29,000	430	0.006	28,000	330	0.006	28,000	260	0.005
		2	33,000	370	0.006	23,500	260	0.005	22,000	210	0.004	22,000	190	0.004
		3	27,000	270	0.002	19,000	165	0.001	17,500	150	0.001	17,500	130	0.001
2003	R0.15	2	36,000	650	0.009	25,200	400	0.007	23,500	350	0.006	23,500	300	0.005
		3	33,000	500	0.004	23,000	330	0.003	21,500	250	0.003	21,500	200	0.002
2004	R0.2	3	42,000	1,300	0.018	29,000	800	0.014	27,000	670	0.012	27,000	500	0.010
		4	33,000	800	0.008	23,000	520	0.006	22,000	430	0.006	22,000	380	0.005
		6	27,000	550	0.005	19,000	330	0.004	18,000	300	0.004	18,000	260	0.003
2005	R0.25	4	36,000	1,330	0.020	28,000	870	0.016	27,500	650	0.014	27,500	625	0.011
		6	29,000	900	0.012	23,000	650	0.009	22,000	530	0.008	22,000	500	0.007
		8	23,500	600	0.007	19,000	450	0.006	17,000	380	0.005	17,000	350	0.004
		10	20,000	480	0.004	18,000	380	0.003	16,000	330	0.002	16,000	300	0.002
2006	R0.3	4	44,000	2,340	0.032	32,500	1,500	0.025	25,500	850	0.022	25,500	713	0.018
		6	36,000	1,500	0.018	29,000	1,100	0.014	21,000	700	0.012	21,000	550	0.010
		8	28,500	1,150	0.018	24,000	770	0.014	17,000	510	0.012	17,000	425	0.010
		10	28,500	950	0.014	24,000	720	0.011	17,000	470	0.009	16,000	390	0.008
		12	28,500	950	0.009	24,000	720	0.007	16,000	400	0.006	15,000	350	0.005
		16	25,000	700	0.005	22,000	600	0.004	15,000	350	0.003	14,500	300	0.003
2008	R0.4	8	28,500	1,500	0.023	20,000	950	0.019	17,000	680	0.016	17,000	600	0.013
		12	28,500	1,200	0.018	16,500	600	0.014	14,000	480	0.012	14,000	420	0.010
2010	R0.5	8	28,000	2,200	0.050	19,000	1,500	0.040	19,000	1,130	0.034	18,000	920	0.028
		12	19,000	1,360	0.027	14,000	1,000	0.022	12,600	760	0.019	12,600	615	0.015
		16	18,000	1,150	0.025	13,000	850	0.020	12,000	700	0.017	12,000	540	0.014
		20	17,000	1,100	0.016	12,000	800	0.013	11,000	640	0.011	11,000	490	0.009
		22	17,000	1,100	0.016	12,000	800	0.013	11,000	640	0.011	11,000	490	0.009
		26	16,000	1,000	0.015	11,000	700	0.012	10,000	570	0.010	10,000	460	0.009
		32	12,000	750	0.011	9,000	550	0.009	9,000	490	0.008	9,000	380	0.007
		36	10,000	620	0.009	7,000	420	0.007	7,000	380	0.006	7,000	280	0.005
2015	R0.75	10	20,000	2,300	0.065	13,000	1,600	0.050	13,000	1,200	0.040	13,000	950	0.035
		12	18,000	2,000	0.055	13,000	1,500	0.045	11,000	950	0.035	11,000	750	0.030
		16	16,000	1,600	0.050	12,000	1,200	0.030	11,000	900	0.030	11,000	750	0.025
		20	14,000	1,400	0.035	10,000	950	0.025	10,000	800	0.020	10,000	650	0.018
		26	12,000	1,200	0.025	10,000	900	0.020	9,000	700	0.017	9,000	600	0.015
		30	10,000	950	0.020	8,000	700	0.015	8,000	600	0.013	8,000	500	0.013
		36	10,000	950	0.020	7,000	600	0.015	7,000	500	0.013	7,000	400	0.013
2020	R1	16	15,000	2,350	0.081	11,000	1,700	0.065	10,500	1,360	0.056	10,500	1,070	0.046
		20	11,000	1,600	0.068	8,400	1,100	0.055	9,450	1,150	0.048	9,450	920	0.038
		22	11,000	1,600	0.063	8,400	1,050	0.050	9,450	1,150	0.043	9,450	920	0.036
		26	10,000	1,350	0.063	7,350	900	0.050	8,400	1,020	0.043	8,400	800	0.036
		30	10,000	1,350	0.050	7,350	870	0.038	7,350	850	0.033	7,350	690	0.028
		32	10,000	1,350	0.041	7,350	850	0.032	7,350	850	0.028	7,350	690	0.023
		36	10,000	1,350	0.041	7,000	800	0.032	6,500	745	0.028	6,500	610	0.023
		40	10,000	1,350	0.041	7,000	800	0.032	6,500	745	0.028	6,500	610	0.023

Square  
Square  
Long Neck Square

Radius  
Radius  
Long Neck Radius

Ball / Long Shank Ball  
Ball  
Long Neck Ball  
Taper Neck Ball

Taper  
Taper

Spiral V Cutter

Drill Thread Mill

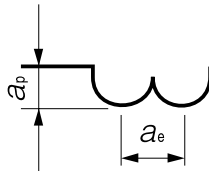
EURO Series

Technical Data

## Milling Conditions for HTNB

WORK MATERIAL			COPPER/CARBON/STEELS Cu / S45 / S50C			PREHARDENED STEELS HARDENED STEELS NAK / SKD (30~45HRC)			HARDENED STEELS SKD / SKT (45~55HRC)			HARDENED STEELS SKD / SKS (55~65HRC)		
Model Number	Radius of Ball Nose (mm)	Effective Length (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)
2030	R1.5	20	11,000	2,350	0.095	8,400	1,500	0.075	8,000	1,400	0.065	8,000	1,200	0.053
		26	10,000	2,050	0.085	7,600	1,300	0.068	7,500	1,200	0.060	7,500	1,050	0.048
		30	10,000	2,000	0.081	7,500	1,250	0.065	7,000	1,100	0.057	7,000	980	0.047
		32	10,000	1,900	0.081	7,500	1,200	0.065	7,000	1,100	0.056	7,000	950	0.046
		36	9,000	1,700	0.073	6,000	950	0.058	6,000	950	0.050	6,000	800	0.042
		40	8,500	1,600	0.065	6,000	950	0.053	5,500	850	0.045	5,500	750	0.038
		42	8,500	1,600	0.063	6,000	950	0.050	5,500	850	0.043	5,500	750	0.036
		52	8,500	1,550	0.045	6,000	900	0.036	5,500	800	0.031	5,500	700	0.026
2040	R2	40	6,500	1,300	0.086	3,900	650	0.068	3,600	600	0.059	3,600	530	0.048
		41	6,500	1,300	0.086	3,900	650	0.068	3,600	600	0.059	3,600	530	0.048
		60	4,300	780	0.063	3,300	500	0.050	3,100	450	0.043	3,100	400	0.036
		62	4,300	750	0.063	3,300	480	0.050	3,100	420	0.043	3,100	380	0.036
Milling Amount (mm)		Roughing	a <sub>e</sub> ≤ 0.1D			a <sub>e</sub> ≤ 0.1D			a <sub>e</sub> ≤ 0.08D			a <sub>e</sub> ≤ 0.06D		
		Finishing	a <sub>e</sub> ≤ V <sub>f</sub> / n											

$a_p$  : Axial Depth (mm)  
 $a_e$  : Radial Depth (mm)  
 $D$  : Outside Diameter (mm)  
 $n$  : Spindle Speed (min<sup>-1</sup>)  
 $V_f$  : Feed Rate (mm/min)



### Note:

- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- The neck length and taper angle may affect the milling parameters. In operation, fine adjustments may be required.
- Recommend air blow or oil mist.
- Recommend oil coolant for Stainless Steels and Heat Resistant Alloys.
- Recommend wet coolant for Copper.

Square

Square

Long Neck Square

Radius

Radius

Long Neck Radius

Ball / Long Shank Ball

Ball

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Taper Neck Ball

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Spiral V Cutter

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