



English



2024-2025

RHINO LINE



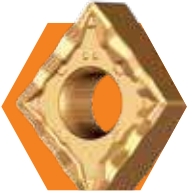
TRIVAX⁷
MÁQUINAS • FERRAMENTAS • EQUIPAMENTOS



2024-2025

RHINO LINE

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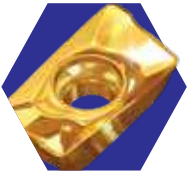
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RHINOSOLID

Solid Carbide End Mill	112-180
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***RHINO**TURN*



Recommendations for Chip Breakers

RHINO-TURN Negative inserts

For steel

Finishing	
Medium	

For stainless steel

Finishing	
Medium	

For super alloys

Finishing	
Medium	

For cast iron

Medium	
Roughing	

For aluminum

Medium	
Roughing	

For Swiss turn (Ground type)

Finishing	
Finishing-Medium	
Roughing	

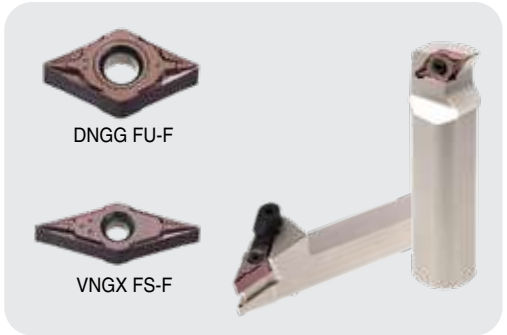
DNGX-ST Insert for Deep Depth of Cut Machining

- 4-corner double-sided insert
- Higher rake angle design for low cutting force
- 5.0 mm maximum depth of cut
- Continuous chip ensures low cutting force and a precise machining dimensions



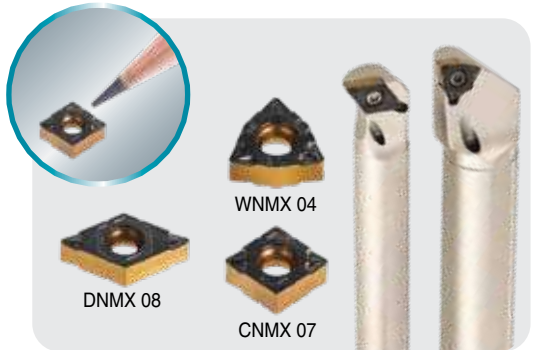
Double-sided ground inserts suitable for swiss type automatic lathes

- External holders and sleeve holders with high pressure coolant
- Ground and sharp cutting edge inserts with TT4410 and TT4430 new grades



Economical double-sided mini size inserts

- Optimum in low depth of cut less than 2mm
- Replaceable for ISO positive inserts
- Suitable for small boring diameter



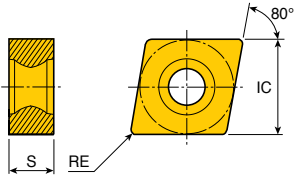
70° corner angle multi purpose inserts

- Integrated shape of C and D-type
- External/Internal turning, facing and profiling
- Low cutting force & reliable performance in tool-life, chip control for automotive parts











CNGG CNMA CNMG

Negative 80° rhombic inserts



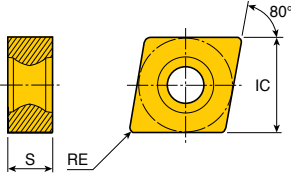
Size	Dimension (mm)		
	IC	S	RE
09	9.52	4.76	0.1-1.2

Insert	Designation	ap (mm)	Feed (mm/rev)	Coating																							
				Cermet			CVD coated								PVD coated		K10										
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235		TT15100	TT7100	TT5080	TT8020	TT9080	TT3010	TT3020	TT9020		
 Medium	CNGG 090401 ML	0.1-1.0	0.03-0.10																●						●		
	090402 ML	0.2-1.2	0.05-0.15																	●						●	
	090404 ML	0.5-1.5	0.05-0.20																	●						●	
	090408 ML	0.5-1.5	0.08-0.25																	●						●	
 Roughing	CNMA 090408	1.0-3.0	0.15-0.60				●	●																			
	090412	1.0-3.0	0.15-0.70				●	●																			
 Medium	CNMG 090404	0.5-3.0	0.10-0.45				●	●																			
	090408	0.5-3.0	0.10-0.50				●	●																			
	090412	0.5-3.0	0.10-0.55				●	●																			
 Finishing	CNMG 090404 EA	0.20-1.5	0.05-0.30											●	●	●			●	●							
	090408 EA	0.30-1.5	0.07-0.40											●	●	●			●	●							
 Medium	CNMG 090408 EM	0.5-3.0	0.13-0.40											●	●	●			●	●							
	090412 EM	0.7-3.0	0.15-0.40											●	●	●			●	●							
 Finishing	CNMG 090404 FG	0.2-2.0	0.07-0.30								●	●						●									
	090408 FG	0.5-2.0	0.10-0.35								●	●						●									
	090412 FG	0.5-2.0	0.15-0.40								●	●						●									
 Finishing	CNMG 090404 FM	0.25-2.0	0.07-0.30	●	●					●	●	●	●					●									
	090408 FM	0.3-2.0	0.10-0.35	●	●					●	●	●	●					●									
	090412 FM	0.35-2.0	0.15-0.40							●	●	●	●					●									
 Finishing	CNMG 090402 FS	0.2-1.5	0.05-0.25	●	●					●	●																
	090404 FS	0.25-1.5	0.07-0.30	●	●					●	●																
	090408 FS	0.5-1.5	0.10-0.30	●	●					●	●																








●: Standard items

CNMG CNMX

Negative 80° rhombic inserts



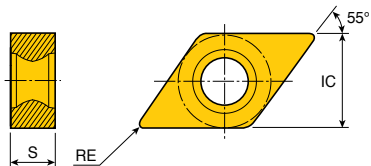
Size	Dimension (mm)		
	IC	S	RE
07	7.0	3.18	0.4-0.8
09	9.52	4.76	0.4-1.2

Insert	Designation	ap (mm)	Feed (mm/rev)	Cermat	CVD coated										PVD coated					K10									
					PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100		TT5080	TT8020	TT9080	TT3010	TT3020	TT9020			
 Finishing	CNMG 090404 FT	0.4-3.0	0.07-0.30																										
	090408 FT	0.5-3.0	0.10-0.40																										
	090412 FT	0.6-3.0	0.15-0.50																										
 Medium	CNMG 090404 MK	0.7-3.0	0.17-0.40																										
	090408 MK	1.0-3.0	0.20-0.50																										
	090412 MK	1.2-3.0	0.23-0.50																										
 Medium	CNMG 090404 MM	0.4-3.0	0.15-0.45																										
	090408 MM	0.5-3.0	0.20-0.50																										
	090412 MM	0.7-3.0	0.23-0.50																										
 Medium	CNMG 090404 MT	0.8-3.0	0.10-0.35																										
	090408 MT	1.0-3.0	0.15-0.45																										
	090412 MT	1.2-3.0	0.20-0.55																										
 Medium	CNMG 090404 PC	0.4-3.0	0.10-0.30																										
	090408 PC	0.5-3.0	0.15-0.40																										
	090412 PC	0.6-3.0	0.18-0.50																										
 Finishing	CNMG 090404 WA	0.25-2.5	0.08-0.25																										
	090408 WA	0.25-3.0	0.10-0.40																										
	090412 WA	0.4-3.0	0.20-0.50																										
 Finishing	CNMX 070304 FGP	0.3-2.0	0.05-0.25	●																									
	070308 FGP	0.4-2.0	0.08-0.25	●																									







●: Standard items

DNGG DNGX DNMG

Negative 55° rhombic inserts



Size	Dimension (mm)		
	IC	S	RE
08	7.0	3.18	0.1-0.4
13	11.11	5.56	0.1-1.2

Insert	Designation	ap (mm)	Feed (mm/rev)	Coating																							
				Cermetal		CVD coated								PVD coated													
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100	TT5080	TT3010	TT3020	TT9020	TT4410	TT4430	K10		
 Finishing For Swiss	DNGG 130501M FU-F	0.2-2.5	0.03-0.12																					•	•		
	130502M FU-F	0.2-2.5	0.04-0.12																						•	•	
	130504M FU-F	0.4-2.5	0.05-0.12																						•	•	
 Medium	DNGG 130501 ML	0.1-1.0	0.03-0.10																	•						•	
	130502 ML	0.2-1.2	0.05-0.15																	•						•	
	130504 ML	0.5-1.5	0.05-0.20																	•						•	
	130508 ML	0.5-1.5	0.08-0.25																	•						•	
 Finishing For Swiss	DNGX 080301M SM-F	0.1-1.0	0.02-0.10																				•	•			
	080302M SM-F	0.2-1.2	0.02-0.12																				•	•			
	080304M SM-F	0.2-1.5	0.02-0.15																				•	•			
 Roughing For Swiss	DNGX 130501M ST-R-E	0.3-5.0	0.03-0.08																							•	
	130502M ST-R-E	0.5-5.0	0.03-0.10																							•	
	130504M ST-R-E	0.75-5.0	0.05-0.12																							•	
	130501M ST-R-F	0.3-5.0	0.03-0.08																				•	•			
	130502M ST-R-F	0.5-5.0	0.03-0.10																				•	•			
	130504M ST-R-F	0.75-5.0	0.05-0.12																				•	•			
 Medium	DNMG130504	0.5-3.5	0.10-0.45				•	•																			
	130508	0.5-3.5	0.10-0.50				•	•												•	•						
	130512	0.5-3.5	0.10-0.55				•	•																			
 Finishing	DNMG130504 EA	0.20-1.5	0.05-0.30											•	•	•					•						
	130508 EA	0.30-1.5	0.07-0.40											•	•	•											

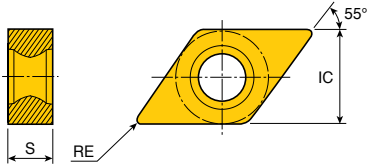
▶ M: Corner radius minus tolerance
▶ -E: Micro honing edge

▶ -R: Right hand insert
▶ -F: Sharp edge








•: Standard items

DNMG DNMX DNUX

Negative 55° rhombic inserts



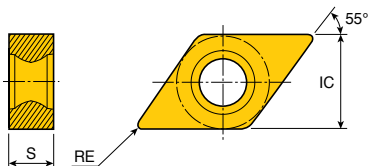
Size	Dimension (mm)		
	IC	S	RE
13	11.11	5.56	0.2-1.2

Insert	Designation	ap (mm)	Feed (mm/rev)	Coating																					
				Cermat		CVD coated								PVD coated				K10							
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100		TT7100	TT5080	TT8020	TT9080	TT3010	TT3020	TT9020
 Medium	DNMG 130508 EM	0.5-3.0	0.13-0.40											●	●	●			●		●				
	130512 EM	0.7-3.0	0.15-0.40											●	●	●			●		●				
 Finishing	DNMG 130504 FG	0.2-2.0	0.07-0.30							●	●						●								
	130508 FG	0.5-2.0	0.10-0.35							●	●						●								
	130512 FG	0.5-2.0	0.15-0.40							●	●						●								
 Finishing	DNMG 130504 FM	0.25-2.0	0.07-0.30	●	●					●	●	●	●				●								
	130508 FM	0.3-2.0	0.10-0.35	●	●					●	●	●	●				●								
	130512 FM	0.35-2.0	0.15-0.40	●						●	●	●	●				●								
 Finishing	DNMG 130502 FS	0.2-2.0	0.05-0.25	●	●					●	●														
	130504 FS	0.25-2.0	0.07-0.30	●	●					●	●														
	130508 FS	0.5-2.0	0.10-0.30	●	●					●	●														
 Finishing	DNMG 130504 FT	0.25-3.0	0.07-0.30							●	●	●	●				●								
	130508 FT	0.3-3.0	0.10-0.40							●	●	●	●				●								
	130512 FT	0.35-3.0	0.15-0.50							●	●	●	●				●								
 Medium	DNMG 130504 MK	0.7-4.0	0.17-0.40													●	●		●		●				
	130508 MK	1.0-4.0	0.20-0.45													●	●		●		●	●	●		
	130512 MK	1.2-4.0	0.23-0.50													●	●		●		●				
 Medium	DNMG 130504 MM	0.4-4.0	0.15-0.45							●	●	●	●	●	●	●			●		●				
	130508 MM	0.5-4.0	0.20-0.50							●	●	●	●	●	●	●									
	130512 MM	0.7-4.0	0.23-0.50							●	●	●	●	●	●	●									






● : Standard items

DNMG DNMX DNUX

Negative 55° rhombic inserts



Size	Dimension (mm)		
	IC	S	RE
08	7.0	3.18	0.4-0.8
13	11.11	5.56	0.4-1.2

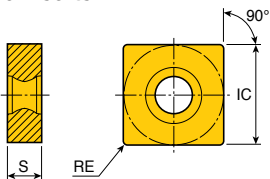
Insert	Designation	ap (mm)	Feed (mm/rev)	Coating																				
				Cermet		CVD coated							PVD coated											
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9235	TT5100	TT7100	TT5080	TT8020	TT9080	TT3010	TT3020	TT9020	K10
 Medium	DNMG 130504 MT	0.8-4.0	0.10-0.35							●	●	●	●			●								
	130508 MT	1.0-4.0	0.15-0.45							●	●	●	●			●								
	130512 MT	1.2-4.0	0.20-0.55								●	●	●	●			●							
 Medium	DNMG 130504 PC	0.4-3.5	0.10-0.30							●	●	●	●			●								
	130508 PC	0.5-3.5	0.15-0.40							●	●	●	●			●								
	130512 PC	0.6-3.5	0.18-0.50								●	●	●	●			●							
 Finishing	DNMG 130504 WA	0.25-2.5	0.08-0.25				●	●		●	●	●			●									
	130508 WA *	0.25-3.0	0.10-0.35				●	●		●	●	●			●									
	130512 WA *	0.4-3.5	0.15-0.45				●	●		●	●	●			●									
 Finishing	DNMX 080304 FGP	0.3-2.0	0.05-0.25	●						●	●							●					●	
	080308 FGP	0.4-2.0	0.08-0.25	●						●	●							●					●	
 Right hand Medium	DNUX 130504 R11	1.5-4.5	0.15-0.35							●	●			●	●					●				
	130504 L11	1.5-4.5	0.15-0.35							●	●			●	●					●				
	130508 R11	2.0-4.5	0.21-0.45							●	●	●		●	●					●				
	130508 L11	2.0-4.5	0.21-0.45							●	●			●	●					●				

*: Wiper inserts should be applied to □DJNR/L..., □DUNR/L..., □DZNR/L...









●: Standard items

SNMG

Negative square inserts



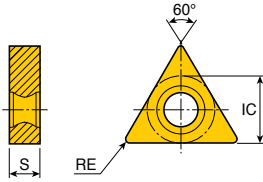
Size	Dimension (mm)		
	IC	S	RE
09	9.52	4.76	0.4-1.2

Insert	Designation	ap (mm)	Feed (mm/rev)	Cermet	CVD coated										PVD coated				K10							
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100		TT5080	TT8020	TT9080	TT3010	TT3020	TT9020	
 Medium	SNMG 090408	0.5-3.0	0.10-0.50					•	•																	
	090412	0.5-3.0	0.10-0.55					•	•																	
 Medium	SNMG 090408 EM	0.5-3.0	0.13-0.40															•								
	090412 EM	0.7-3.0	0.15-0.40																	•						
 Finishing	SNMG 090408 FG	0.5-2.0	0.10-0.35										•													
	090412 FG	0.5-2.0	0.15-0.40																							
 Finishing	SNMG 090412 FM	0.35-2.0	0.15-0.40																							
 Medium	SNMG 090404 MK	0.7-3.0	0.17-0.40																							
 Medium	SNMG 090404 MM	0.4-3.0	0.15-0.45																							
	090412 MM	0.7-3.0	0.23-0.50																							
 Medium	SNMG 090404 MT	0.8-3.0	0.10-0.35																							
	090408 MT	1.0-3.0	0.15-0.45																							
 Medium	SNMG 090408 PC	0.5-3.0	0.15-0.40																							
	090412 PC	0.6-3.0	0.18-0.50																							








• Standard items

TNGG TNMG

Negative triangular inserts



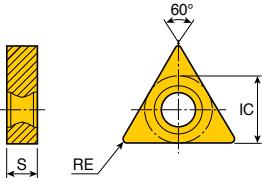
Size	Dimension (mm)		
	IC	S	RE
13	7.94	4.76	0.2-1.2

Insert	Designation	ap (mm)	Feed (mm/rev)	Coating																							
				Cermet			CVD coated							PVD coated													
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT15100	TT7100	TT5080	TT8020	TT9080	TT3010	TT3020	TT9020	K10		
 Left hand Medium	TNGG 130402 L	0.8-3.5	0.10-0.30	●																							
	130402 R	0.8-3.5	0.10-0.30	●																							
	130404 L	1.0-3.5	0.12-0.30	●																							
	130404 R	1.0-3.5	0.12-0.30	●																							
	130408 L	1.3-3.5	0.15-0.35	●																							
	130408 R	1.3-3.5	0.15-0.35	●																							
 Medium	TNMG 130404	0.5-3.5	0.10-0.45				●	●																			
	130408	0.5-3.5	0.10-0.50				●	●																			
	130412	0.5-3.5	0.10-0.55				●	●																			
 Finishing	TNMG 130404 EA	0.2-1.5	0.05-0.30											●	●	●		●		●							
	130408 EA	0.3-1.5	0.07-0.40											●	●	●		●		●							
 Medium	TNMG 130408 EM	0.5-3.0	0.13-0.40											●	●	●		●		●							
	130412 EM	0.7-3.0	0.15-0.40											●	●	●		●		●							
 Finishing	TNMG 130404 FG	0.25-1.5	0.07-0.30								●	●					●										
	130408 FG	0.3-1.5	0.10-0.35								●	●					●										
	130412 FG	0.35-1.5	0.15-0.40								●	●					●										
 Finishing	TNMG 130404 FM	0.25-1.5	0.07-0.30	●	●					●	●	●	●				●										
	130408 FM	0.3-1.5	0.10-0.35	●	●					●	●	●	●				●										
	130412 FM	0.35-1.5	0.15-0.40	●	●					●	●	●	●				●										
 Finishing	TNMG 130402 FS	0.2-1.0	0.05-0.25	●	●					●	●																
	130404 FS	0.25-1.0	0.07-0.30	●	●					●	●																
	130408 FS	0.5-1.0	0.10-0.30	●	●					●	●																

● : Standard items

TNMG

Negative triangular inserts



Size	Dimension (mm)		
	IC	S	RE
13	7.94	4.76	0.4-1.2

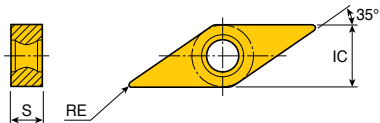
Insert	Designation	ap (mm)	Feed (mm/rev)	Coating																				
				Cermet		CVD coated								PVD coated				K10						
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100		TT7100	TT5080	TT8020	TT9080	TT3010	TT3020
Finishing	TNMG 130404 FT	0.25-2.5	0.07-0.30							●	●	●				●								
	130408 FT	0.3-2.5	0.10-0.40							●	●	●				●								
	130412 FT	0.35-2.5	0.15-0.50							●	●	●				●								
Medium	TNMG 130404 MK	0.7-3.0	0.17-0.40												●	●			●		●			
	130408 MK	1.0-3.0	0.20-0.45												●	●			●		●			
	130412 MK	1.2-3.0	0.23-0.50												●	●			●		●			
Medium	TNMG 130404 MM	0.4-3.0	0.15-0.45							●	●	●	●	●	●	●					●			
	130408 MM	0.5-3.0	0.20-0.50							●	●	●	●	●	●	●					●			
	130412 MM	0.7-3.0	0.23-0.50							●	●	●	●	●	●	●					●			
Medium	TNMG 130404 MT	0.8-3.0	0.10-0.35							●	●	●	●			●								
	130408 MT	1.0-3.0	0.15-0.45							●	●	●	●			●								
	130412 MT	1.2-3.0	0.20-0.55							●	●	●	●			●								
Medium	TNMG 130404 PC	0.4-3.0	0.10-0.30							●	●	●	●			●					●			
	130408 PC	0.5-3.0	0.15-0.40						●	●	●	●				●					●			
	130412 PC	0.6-3.0	0.18-0.50							●	●	●	●			●					●			
Finishing	TNMG 130404 WA*	0.25-2.5	0.08-0.25					●	●	●	●	●				●								
	130408 WA*	0.25-3.0	0.10-0.35					●	●	●	●	●				●								
	130412 WA*	0.40-3.5	0.15-0.45					●	●	●	●	●				●								

* Marked: Wiper inserts should be applied to □TGNR/L..., □TFNR/L...

● : Standard items

VNGX VNMX

Negative 35° rhombic inserts



Size	Dimension (mm)		
	IC	S	RE
13	7.94	4.76	0.1-1.2

Insert	Designation	ap (mm)	Feed (mm/rev)	Coating																								
				Cermet	CVD coated								PVD coated															
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100	TT5080	TT8020	TT9080	TT3010	TT3020	TT9020	TT4410	TT4430	K10	
Finishing For Swiss	VNGX 130401M FS-F	0.2-1.0	0.03-0.12																								● ●	
	130402M FS-F	0.2-1.0	0.04-0.12																								● ●	
Medium	VNGX 130401 ML	0.1-1.0	0.03-0.10																	●								●
	130402 ML	0.2-1.2	0.05-0.15																	●								
	130404 ML	0.5-1.5	0.05-0.20																	●								
Finishing	VNMX 130404 FG	0.5-2.0	0.08-0.20		●					● ●					●				●		●							
	130408 FG	0.5-2.0	0.10-0.23		●					● ●					●				●		●							
Finishing	VNMX 130404 FM	0.25-1.5	0.07-0.30		●					● ● ● ●					●				●		●							
	130408 FM	0.3-1.5	0.10-0.35		●					● ● ● ●					●				●		●							
Finishing	VNMX 130402 FS	0.2-1.0	0.05-0.20		● ●					● ●																		
	130404 FS	0.25-1.0	0.07-0.20		● ●					● ●																		
	130408 FS	0.5-1.0	0.10-0.23		● ●					● ●																		
Finishing	VNMX 130404 FX	0.2-2.0	0.05-0.20		● ●					● ●										●								
	130408 FX	0.2-2.0	0.07-0.20		● ●					● ●										●								
Medium	VNMX 130404 MK	0.7-3.0	0.17-0.35												● ●				●		●							
	130408 MK	1.0-3.0	0.20-0.40			●									● ●				●		● ● ● ●							
Medium	VNMX 130404 MT	0.8-3.0	0.15-0.36							● ● ● ●									●		●							
	130408 MT	1.0-3.0	0.17-0.36				● ●			● ● ● ●									●		●							
	130412 MT	1.5-3.0	0.20-0.40				● ●			● ● ● ●									●		●							
Medium	VNMX 130404 PC	0.4-3.0	0.15-0.36							● ● ● ●									●		●							
	130408 PC	0.5-3.0	0.17-0.36							● ● ● ●									●		●							
	130412 PC	1.0-3.0	0.20-0.40							● ● ● ●									●		●							

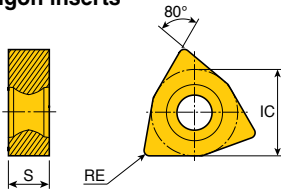
▶ M: Corner radius minus tolerance

▶ F: Sharp edge









●: Standard items

WNMX

Negative 80° trigon inserts



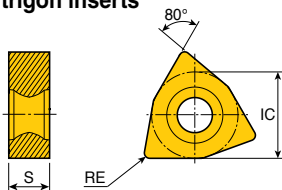
Size	Dimension (mm)		
	IC	S	RE
04	7	3.18	0.4-0.8
06	9.52	4.76	0.4-1.2

Insert	Designation	ap (mm)	Feed (mm/rev)	Coating																					
				Cermat		CVD coated										PVD coated									
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100	TT5080	TT8020	TT9080	TT3010	TT3020	TT9020	K10
 Medium	WNMX 060404 EM	0.4-3.0	0.10-0.35											●	●	●			●	●					
	060408 EM	0.5-3.0	0.13-0.40											●	●	●			●	●					
	060412 EM	0.7-3.0	0.15-0.40											●	●	●			●	●					
 Finishing	WNMX 060404 FG	0.2-2.0	0.07-0.30							●	●						●		●						
 Finishing	WNMX 040304 FGP	0.3-2.0	0.05-0.25	●						●	●								●				●		
	040308 FGP	0.4-2.0	0.08-0.25	●						●	●								●				●		
 Finishing	WNMX 060404 FM	0.25-2.0	0.07-0.30	●						●	●	●					●								
	060408 FM	0.3-2.0	0.10-0.35	●						●	●	●					●								
	060412 FM	0.35-2.0	0.15-0.40							●	●	●					●								
 Finishing	WNMX 060404 FS	0.25-1.5	0.07-0.30	●	●					●	●	●													
	060408 FS	0.5-1.5	0.10-0.30	●						●	●	●													
 Medium	WNMX 060404 MK	0.7-3.0	0.17-0.40												●	●			●	●					
	060408 MK	1.0-3.0	0.20-0.45												●	●			●	●					
	060412 MK	1.2-3.0	0.23-0.50												●	●			●	●					
 Medium	WNMX 060404 MM	0.4-3.0	0.15-0.45												●	●	●		●	●					
	060408 MM	0.5-3.0	0.20-0.50								●	●			●	●	●		●	●					
	060412 MM	0.7-3.0	0.23-0.50												●	●	●		●	●					
 Medium	WNMX 060404 MT	0.8-3.0	0.10-0.35				●	●		●	●	●		●	●	●			●						
	060408 MT	1.0-3.0	0.15-0.45				●	●		●	●	●		●	●	●			●						
	060412 MT	1.2-3.0	0.20-0.55				●	●		●	●	●					●								



●: Standard items

WNMX

Negative 80° trigon inserts



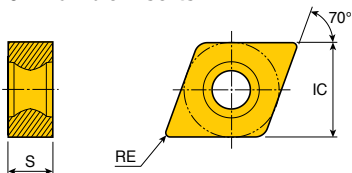
Size	Dimension (mm)		
	IC	S	RE
06	9.52	4.76	0.4-1.2

Insert	Designation	ap (mm)	Feed (mm/rev)	Coating																					
				Cermet			CVD coated							PVD coated			K10								
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235		TT15100	TT7100	TT15080	TT8020	TT9080	TT3010	TT3020	TT9020
 Medium	WNMX 060404 PC	0.4-3.0	0.10-0.30							•	•	•													
	060408 PC	0.5-3.0	0.15-0.40							•	•	•										•			
	060412 PC	0.6-3.0	0.18-0.50								•	•	•									•			
 Finishing	WNMX 060404 WA	0.25-2.5	0.08-0.25				•	•		•	•	•					•								
	060408 WA	0.25-3.0	0.10-0.40				•	•		•	•	•					•								
	060412 WA	0.4-3.0	0.20-0.50				•	•		•	•	•					•								




• Standard items

XNMG

Negative 70° rhombic inserts



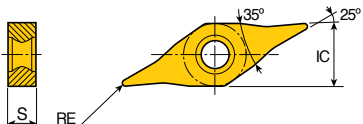
Size	Dimension (mm)		
	IC	S	RE
09	8.7	4.76	0.4
11	11.11	5.56	0.4-1.2

Insert	Designation	ap (mm)	Feed (mm/rev)	Coating																					
				Cermet			CVD coated							PVD coated			K10								
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235		TT15100	TT7100	TT15080	TT8020	TT9080	TT3010	TT3020	TT9020
 Finishing	XNMG 090404 FLP	0.2-1.5	0.07-0.30							•	•	•													
	XNMG 110504 FGP	0.25-2.0	0.07-0.30							•	•	•													
	110508 FGP	0.3-2.0	0.10-0.35								•	•	•												
 Finishing	110512 FGP	0.35-2.0	0.15-0.40							•	•														
	XNMG 110508 MLP	0.5-3.5	0.10-0.40							•	•	•													
 Medium	110512 MLP	0.6-3.5	0.15-0.50							•	•	•													


• Standard items

YNMG

Negative 25° rhombic inserts



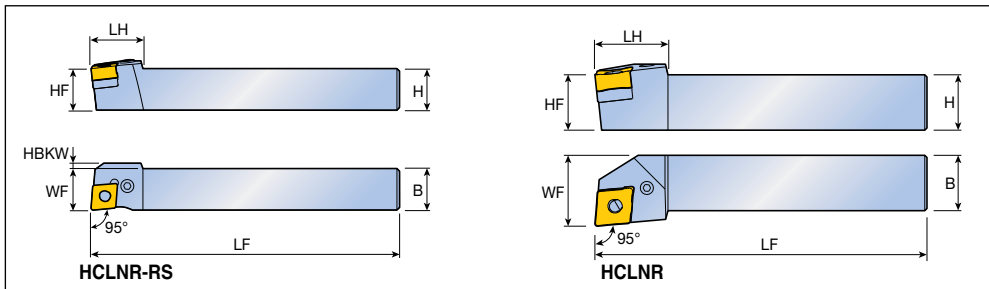
Size	Dimension (mm)		
	IC	S	RE
13	7.94	4.76	0.4-0.8

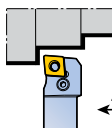
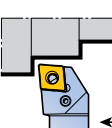
Insert	Designation	ap (mm)	Feed (mm/rev)	Coating																	K10					
				Cermet	CVD coated										PVD coated											
				PV3010	CT3000	TT3005	TT7005	TT7015	TT7025	TT8105B	TT8115B	TT8125B	TT8135B	TT9215	TT9225	TT9235	TT5100	TT7100	TT5080	TT8020	TT9080	TT3010	TT3020	TT9020		
 Finishing	YNMG 130404 FS	0.3-1.0	0.08-0.20	●	●						●								●		●					
	130408 FS	0.5-1.5	0.08-0.25	●	●						●									●						

●: Standard items







HCLNR/L-RS HCLNR/L

Hook lever type holders



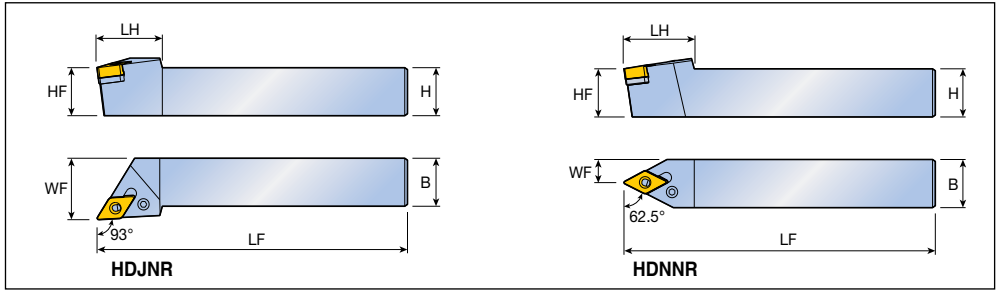
Approach angle	Designation	Dimension (mm)							Insert
		H	HF	B	LF	LH	WF	HBKW	
 95°	HCLNR/L 1212 K0904-RS	12	12	16	125	18	12	2	CN... 0904...
	1616 K0904-RS	16	16	16	125	20	16	-	
 95°	HCLNR/L 1616 H0904	16	16	16	100	22	20	-	CN... 0904...
	2020 H0904	20	20	20	100	22	25	-	
	2020 K0904	20	20	20	125	22	25	-	
	2525 M0904	25	25	25	150	22	32	-	

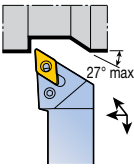
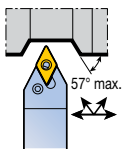
Spare parts

Designation	Lever	Screw	Snap ring	Shim	Shim pin	Wrench	
...1212...0904	 LCL 09B-NX	 LCS 3B	 LSR 3B	 -	 -	 L-W 2	
...0904	LCL 09-NX	LCS 3	-	LSC 32A	LSP 3A	L-W 2.5	

HDJNR/L HDNNR/L

Hook lever type holders



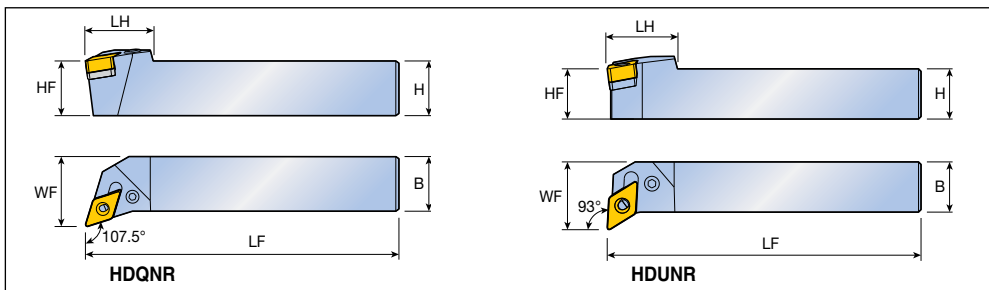
Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
93° 	HDJNR/L 2020 H1305	20	20	20	100	34	25	DN... 1305...
	2020 K1305	20	20	20	125	34	25	
	2525 M1305	25	25	25	150	34	32	
62.5° 	HDNNR/L 2020 K1305	20	20	20	125	36.5	10	
	2525 M1305	25	25	25	150	36.5	12	

Spare parts

Designation	Lever	Screw	Shim	Shim pin	Wrench		
...1305	LCL 11-NX	LCS 4	LSD 3.52	LSP 4	L-W 3		

HDQNR/L HDUNR/L

Hook lever type holders



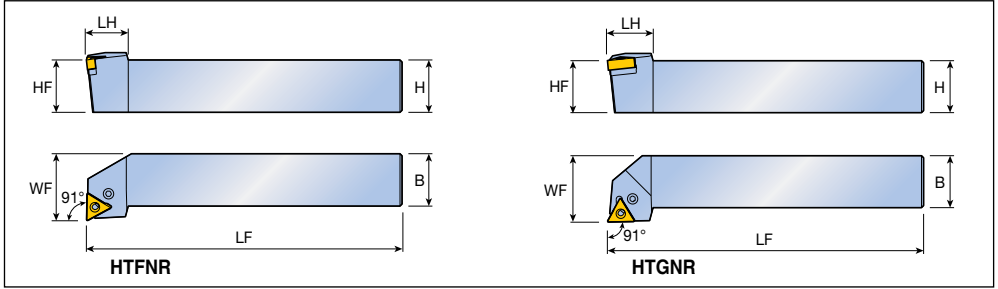
Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
107.5°	HDQNR/L 2020 K1305	20	20	20	125	31	25	DN... 1305...
	2525 M1305	25	25	25	150	31	32	
93°	HDUNR/L 2020 K1305	20	20	20	125	28	27	

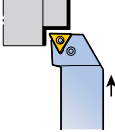
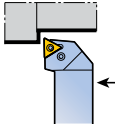
Spare parts

Designation	Lever	Screw	Shim	Shim pin	Wrench		
	...1305	LCL 11-NX	LCS 4	LSD 3.52	LSP 4	L-W 3	






HTFNR/L HTGNR/L

Hook lever type holders



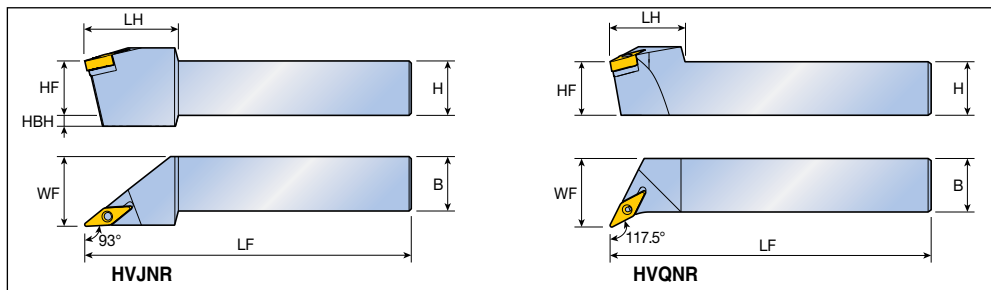
Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
91° 	HTFNR/L 2020 K1304	20	20	20	125	20	25	TN... 1304...
	2525 M1304	25	25	25	150	20	32	
91° 	HTGNR/L 1616 H1304	16	16	16	100	22	20	
	2020 H1304	20	20	20	100	22	25	
	2020 K1304	20	20	20	125	22	25	
	2525 M1304	25	25	25	150	22	32	

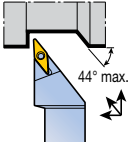
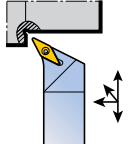
Spare parts

Designation	Lever	Screw	Shim	Shim pin	Wrench		
...1304	 LCL 08-NX	 LCS 3-NX	 LST 2.51.8	 LSP 3B	 L-W 2.5		






HVJNR/L HVQNR/L

Hook lever type holders



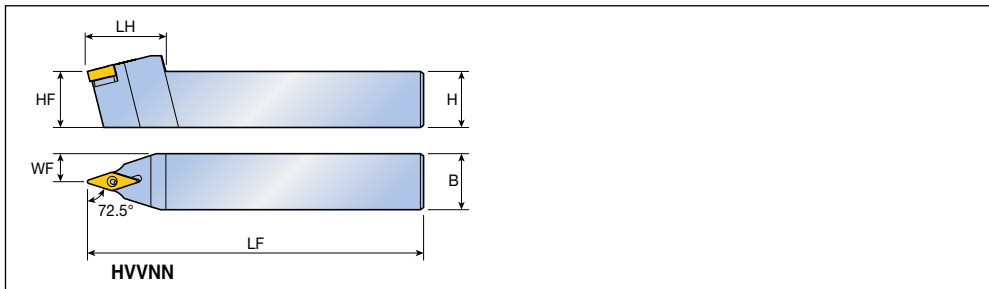
Approach angle	Designation	Dimension (mm)							Insert
		H	HF	B	LF	LH	WF	HBH	
93° 	HVJNR/L 1616 H1304	16	16	16	100	30	20	5	VN...X 1304...
	2020 K1304	20	20	20	125	35	25	-	YNMG 1304...
	2525 M1304	25	25	25	150	43	32	-	
117.5° 	HVQNR/L 2020 K1304	20	20	20	125	35	25	-	
	2525 M1304	25	25	25	150	35	32	-	

Spare parts

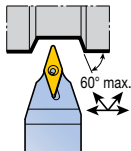
Designation	Lever	Screw	Shim	Shim pin	Wrench		
	...1304	 LCL 08-NX	 LCS 4-DH	 LSV 2.51.8H	 LSP 3B	 L-W 2.5	

HVVNN

Hook lever type holders



Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
72.5°	HVVNN 2020 K1304	20	20	20	125	35	10	VN...X 1304...
	2525 M1304	25	25	25	150	35	12.5	YNMG 1304...

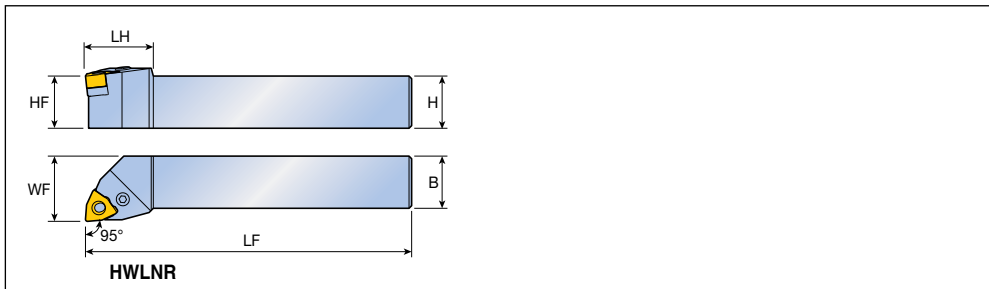


Spare parts

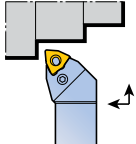
Designation	Lever	Screw	Shim	Shim pin	Wrench		
...1304	LCL 08-NX	LCS 4-DH	LSV 2.51.8H	LSP 3B	L-W 2.5		

HWLNRL/L

Hook lever type holders



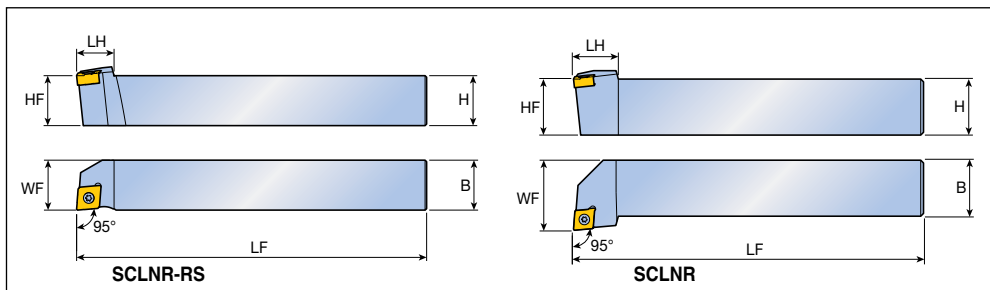
Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
95°	HWLNRL/L 1616 H0604	16	16	16	100	26	20	WN...X 0604...
	2020 K0604	20	20	20	125	26	25	
	2525 M0604	25	25	25	150	26	32	



Spare parts

Designation	Lever	Screw	Shim	Shim pin	Wrench		
...0604	LCL 09-NX	LCS 3	LSW 32A	LSP 3A	L-W 2.5		

Screw type holders



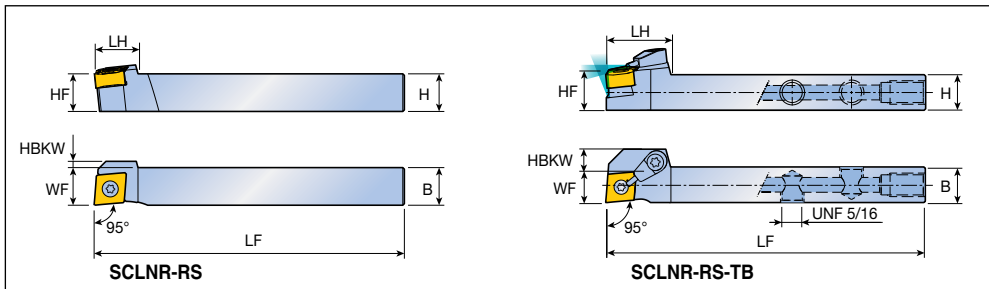
Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
95°	SCLNR/L 1212 K0703-RS	12	12	12	125	12	12	CNMX 0703...
	1616 K0703-RS	16	16	16	125	12	16	
95°	SCLNR/L 1616 H0703	16	16	16	100	12	20	
	2020 K0703	20	20	20	125	16	25	

Spare parts

Designation	Screw	Wrench				
	...0703...	TS 25D060/HG-P	T 7P			

SCLNR-RS SCLNR-RS-TB

Screw type holders

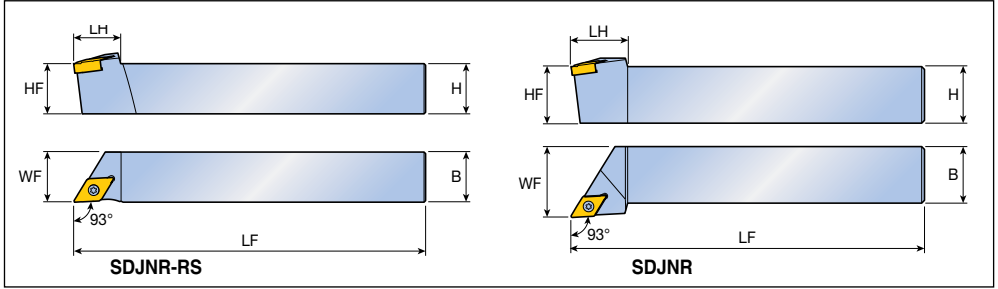


Approach angle	Designation	Dimension (mm)							Insert
		H	HF	B	LF	LH	WF	HBKW	
	SCLNR 1212 K0904-RS	12	12	12	125	14	12	2	CN... 0904
	1616 K0904-RS	16	16	16	125	14	16	-	
	2020 K0904-RS	20	20	20	125	14	20	-	
	SCLNR 1212 K0904-RS-TB	12	12	12	125	22	12	6	
	1616 K0904-RS-TB	16	16	16	125	22	16	2	
	2020 K0904-RS-TB	20	20	20	125	22	20	-	

Spare parts

Designation	Screw	Cooling unit	Plug	Wrench			
SCLNR-RS	TS 350831/HG	-	-	T 10	-		
SCLNR-RS-TB	TS 350831/HG	S-CU-TB	PLG 5/16 UNF	T 10	L-W 5/32		

Screw type holders



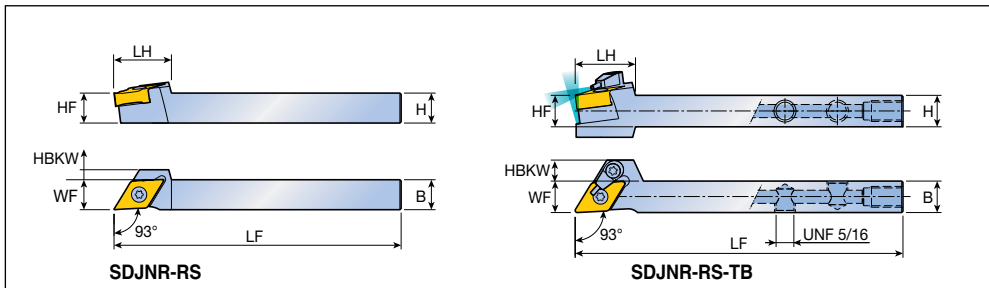
Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
93° 	SDJNR/L 1212 K0803-RS	12	12	12	125	15	12	DN...X 0803...
	1616 K0803-RS	16	16	16	125	15	16	
93° 	SDJNR/L 1616 H0803	16	16	16	100	16	20	
	2020 K0803	20	20	20	125	20	25	

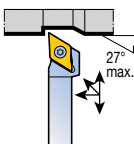
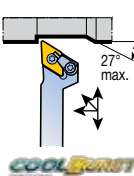
Spare parts

Designation	Screw	Wrench				
...0803...	TS 25D060/HG-P	T 7P				






SDJNR-RS SDJNR-RS-TB

Screw type holders



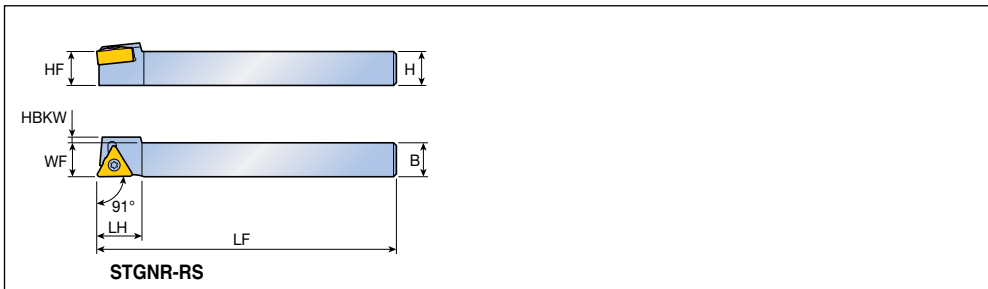
Approach angle	Designation	Dimension (mm)							Insert
		H	HF	B	LF	LH	WF	HBKW	
93° 	SDJNR 1212 K1305-RS	12	12	12	125	23	12	4	DN...1305...
	1616 K1305-RS	16	16	16	125	23	16	-	
	2020 K1305-RS	20	20	20	125	23	20	-	
93° 	SDJNR 1212 K1305-RS-TB	12	12	12	125	23	12	8	
	1616 K1305-RS-TB	16	16	16	125	23	16	4	

Spare parts

Designation	Screw	Cooling unit	Plug	Wrench		
						
SDJNR-RS	TS 40G110I	-	-	T 15	-	
SDJNR-RS-TB	TS 40G110I	S-CU-TB	PLG 5/16 UNF	T 15	L-W 5/32	



STGNR-RS

Screw type holders



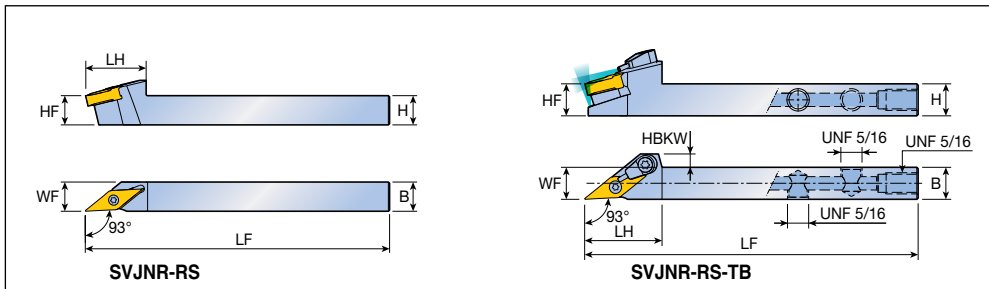
Approach angle	Designation	Dimension (mm)							Insert
		H	HF	B	LF	LH	WF	HBKW	
91°	STGNR 1212 K1304-RS	12	12	12	125	16	12	2	TN...1304...
	1616 K1304-RS	16	16	16	125	16	16	-	
	2020 K1304-RS	20	20	20	125	16	20	-	

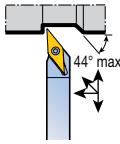
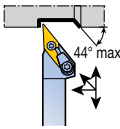
Spare parts

Designation	Screw	Wrench				
						
STGNR-RS	TS 300801/HG	T 9				






SVJNR-RS SVJNR-RS-TB

Screw type holders

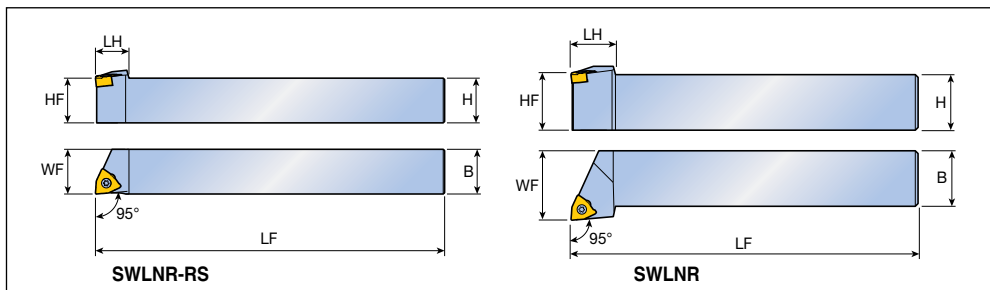


Approach angle	Designation	Dimension (mm)							Insert
		H	HF	B	LF	LH	WF	HBH	
93° 	SVJNR 1212 K1304-RS	12	12	12	125	25	12	-	VN...X 1304...
	1616 K1304-RS	16	16	16	125	25	16	-	YNMG 1304...
	2020 K1304-RS	20	20	20	125	25	20	-	
93°  COOLDRY	SVJNR 1212 K1305-RS-TB	12	12	12	125	29	12	5	
	1616 K1305-RS-TB	16	16	16	125	29	16	1	

Spare parts

Designation	Screw	Cooling unit	Plug	Wrench			
							
SVJNR-RS	TS 30080/HG	-	-	T 9	-		
SVJNR-RS-TB	TS 30080/HG	S-CU-TB	PLG 5/16 UNF	T 9	L-W 5/32		

Screw type holders



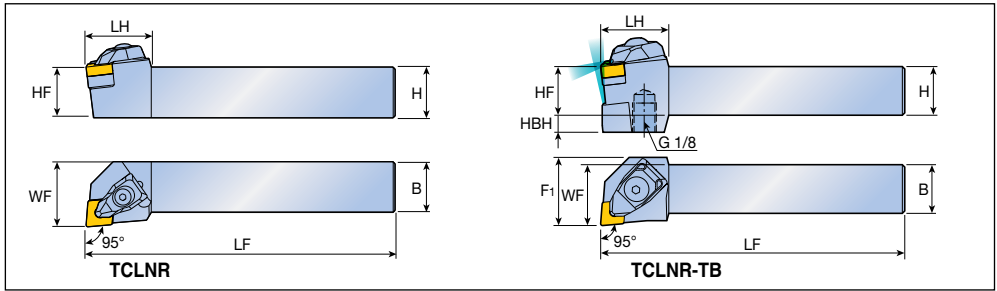
Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
95°	SWLNR/L 1212 K0403-RS	12	12	12	125	12	12	WNMX 0403...
	1616 K0403-RS	16	16	16	125	12	16	
95°	SWLNR/L 1616 H0403	16	16	16	100	16	20	
	2020 K0403	20	20	20	125	16	25	

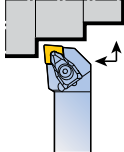
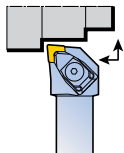

Spare parts

Designation	Screw	Wrench					
...0403...	TS 25D060/HG-P	T 7P					










TCLNR/L TCLNR/L-TB

T-holders



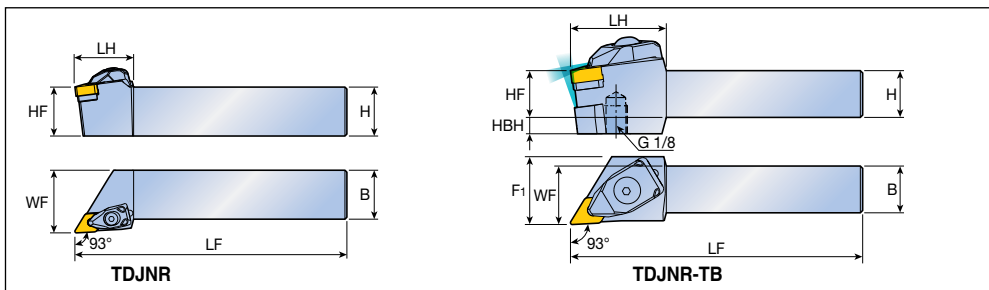
Approach angle	Designation	Dimension (mm)								Insert
		H	HF	B	LF	LH	WF	HBH	F ₁	
95° 	TCLNR/L 2020 H0904	20	20	20	100	25	25	-	-	CN... 0904...
	2020 K0904	20	20	20	125	25	25	-	-	
	2525 M0904	25	25	25	150	25	32	-	-	
95°  	TCLNR/L 2020 K0904-TB	20	20	20	125	28	25	7	28	
	2525 M0904-TB	25	25	25	150	28	32	7	32	

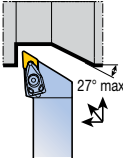
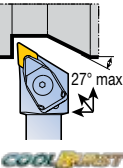
Spare parts

Designation	Clamp	Clamp screw	Spring	Upper O-ring	Lower O-ring	Shim	Shim screw	Wrench	
									
...0904	DLM 3-NX	DLS 3	DSP 3	-	-	LSC 32A	SO 40085I	L-W 2.5	T 15
...0904-TB	DLM 3-NX-TB	BH M4x0.7x16-TB	DSP 3	O-RING ID4.47x1.78	O-RING ID6.07x1.78	LSC 32A	SO 40085I	L-W 3	T 15










TDJNR/L TDJNR/L-TB

T-holders



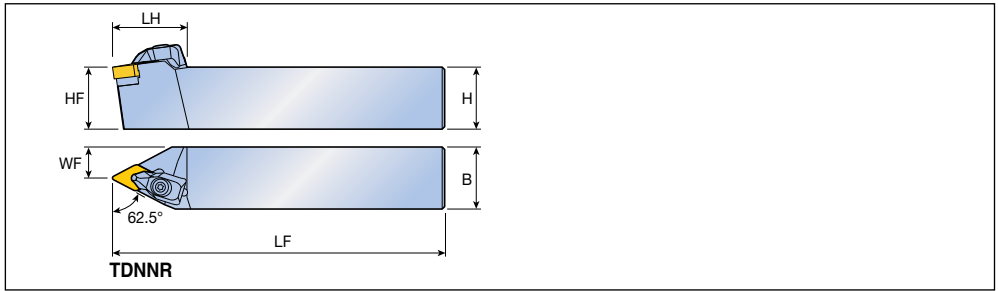
Approach angle	Designation	Dimension (mm)								Insert
		H	HF	B	LF	LH	WF	HBH	F ₁	
93° 	TDJNR/L 2020 H1305	20	20	20	100	33	25	-	-	DN... 1305...
	2020 K1305	20	20	20	125	33	25	-	-	
	2525 M1305	25	25	25	150	36	32	-	-	
93° 	TDJNR/L 2020 K1305-TB	20	20	20	125	41	25	7	29	
	2525 M1305-TB	25	25	25	150	41	32	7	32	

Spare parts

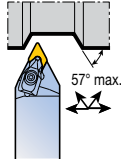
Designation	Clamp	Clamp screw	Spring	Upper O-ring	Lower O-ring	Shim	Shim screw	Wrench	
									
...1305	DLM 3.5-NX	DLS 4	DSP 4	-	-	LSD 3.52	SO 500901	L-W 3	T 20
...2020-TB	DLM 3.5-NX-TB	BH M5x0.8x21-MO-TB	DSP 4	O-RING ID5.28x1.78	O-RING ID7.59x2.62	LSD 3.52	SO 500901-MO	L-W 3	T 20
...2525-TB	DLM 3.5-NX-TB	BH M5x0.8x21-MO-TB	DSP 4	O-RING ID5.28x1.78	O-RING ID7.59x2.62	LSD 3.52	SO 500901	L-W 3	T 20

TDNNR/L

T-holders



Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
62.5°	TDNNR/L 2020 K1305	20	20	20	125	34	10	DN... 1305...
	2525 M1305	25	25	25	150	34	12.5	

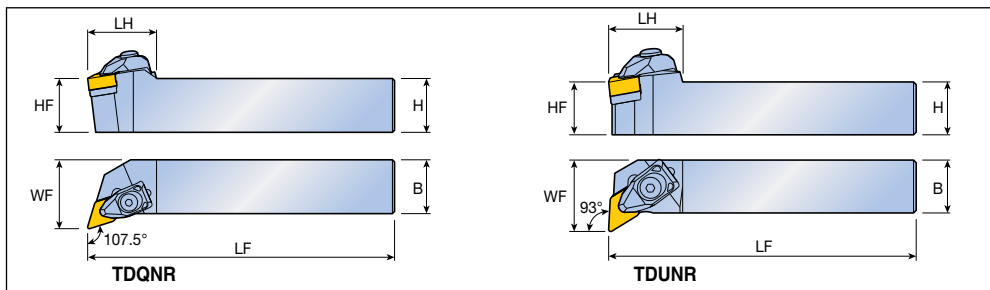


Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Wrench	
...1305	DLM 3.5-NX	DLS 4	DSP 4	LSD 3.52	SO 50090I	L-W 3	T 20

TDQNR/L TDUNR/L

T-holders



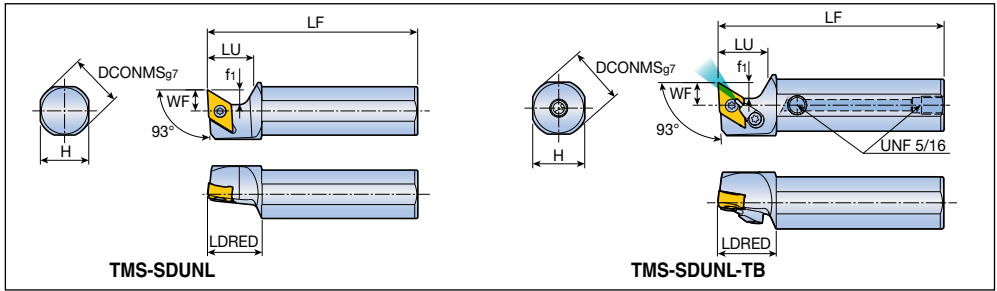
Approach angle	Designation	Dimension (mm)						Insert	
		H	HF	B	LF	LH	WF		
107.5°	TDQNR/L 2020 K1305	20	20	20	125	32	25	DN... 1305...	
	2525 M1305	25	25	25	150	32	32		
93°	TDUNR/L 2020 K1305	20	20	20	125	28	27		
	2525 M1305	25	25	25	150	28	32		

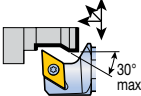
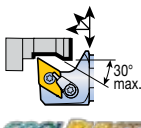
Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Wrench	
...1305	DLM 3.5-NX	DLS 4	DSP 4	LSD 3.52	SO 50090I	L-W 3	T 20






TMS-SDUNL TMS-SDUNL-TB

Sleeve holders



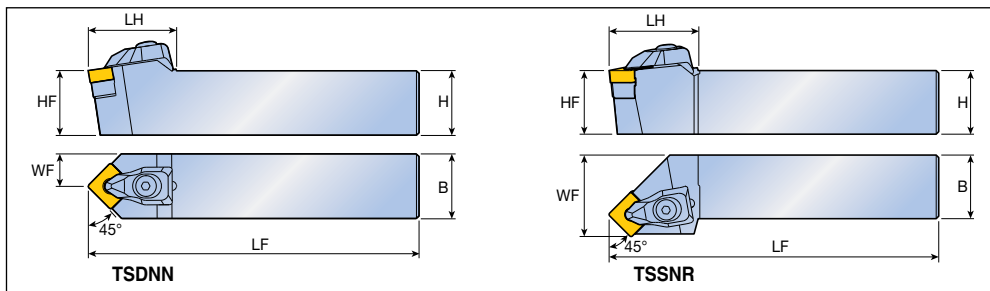
Approach angle	Designation	Dimension (mm)							Insert
		DCONMS	H	LF	f1	LU	LDRED	WF	
 93°	TMS-16X SDUNL 1305	16	15	85	7	22	26	10	DN...1305...
	19.05H SDUNL 1305	19.05	17	100	7	22	26	10	
	20H SDUNL 1305	20	18	100	7	22	26	10	
	22H SDUNL 1305	22	20	100	7	22	26	10	
	25H SDUNL 1305	25	23	100	7	22	26	10	
 93°	TMS-25H SDUNL 1305-TB	25	23	100	7	22	26	10	

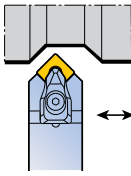
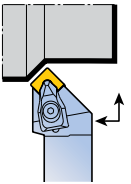
Spare parts

Designation	Screw	Cooling unit	Plug	Wrench			
							
TMS-SDUNL	TS 40G110I	-	-	T 15	-		
TMS-SDUNL-TB	TS 40G110I	S-CU-TB	PLG 5/16 UNF	T 15	L-W 5/32		







TSDNN TSSNR/L

T-holders



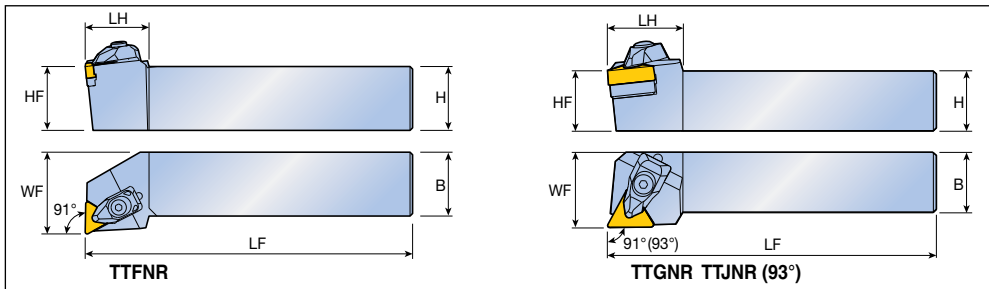
Approach angle	Designation	Dimension (mm)						Insert	
		H	HF	B	LF	LH	WF		
45° 	TSDNN 2020 K0904	20	20	20	125	28	10	SN... 0904...	
	2525 M0904	25	25	25	150	28	12.5		
45° 	TSSNR/L 2020 K0904	20	20	20	125	23	25		
	2525 M0904	25	25	25	150	23	32		

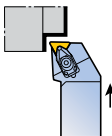
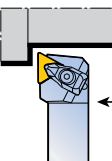
Spare parts

Designation	Clamp 	Clamp screw 	Spring 	Shim 	Shim screw 	Wrench 	
...0904	DLM 3-NX	DLS 3	DSP 3	LSS 32A	SO 40085I	L-W 2.5	T 15








TTFNR/L TTGNR/L TTJNR/L

T-holders



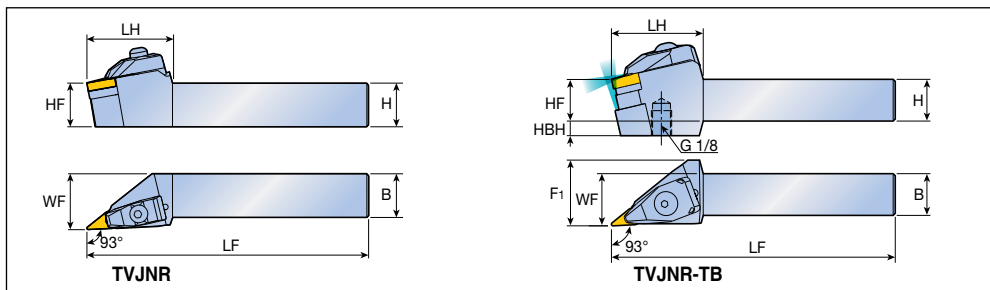
Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
91° 	TTFNR/L 2020 K1304	20	20	20	125	25	25	TN... 1304...
	2525 M1304	25	25	25	150	25	32	
91°(93°) 	TTGNR/L 2020 H1304	20	20	20	100	25	25	
	2020 K1304	20	20	20	125	25	25	
	2525 M1304	25	25	25	150	25	32	
	TTJNR/L 2525 M1304	25	25	25	150	25	32	

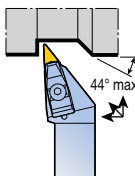
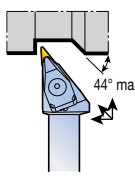
Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Wrench	
							
...1304	DLM 2.5-NX	DLS 3	DSP 3	LST 2.52	SO 400851	L-W 2.5	T 15










TVJNR/L TVJNR/L-TB

T-holders



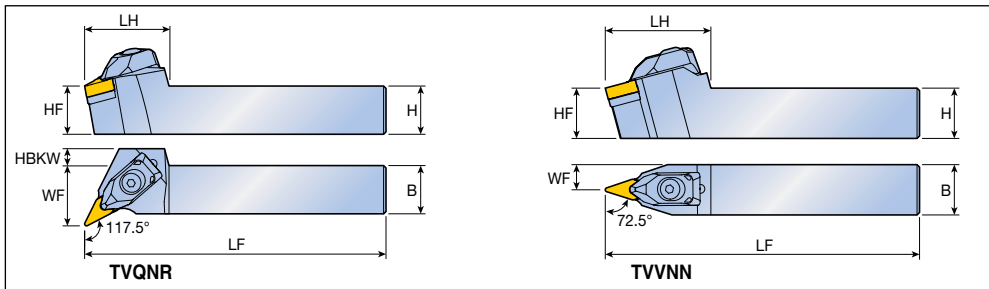
Approach angle	Designation	Dimension (mm)								Insert
		H	HF	B	LF	LH	WF	HBH	F ₁	
93° 	TVJNR/L 2020 K1304	20	20	20	125	42	25	-	-	VN...X 1304...
	2525 M1304	25	25	25	150	42	32	-	-	YNMG 1304...
93°  COOLBURST	TVJNR/L 2020 K1304-TB	20	20	20	125	44	25	7	31.5	
	2525 M1304-TB	25	25	25	150	44	32	7	32.0	

Spare parts

Designation	Clamp	Clamp screw	Spring	Upper O-ring	Lower O-ring	Shim	Shim screw	Wrench	
...1304									
...1304	DLM 2.5V-NX	DLS 4	DSP 4	-	-	MSVI 2.522	SO 40085I	L-W 3	T 15
...1304-TB	DLM 2.5V-NX-TB	BH M5X 0.8X21-MO-TB	DSP 4	O-RING ID5.28x 1.78	O-RING ID7.59x 2.62	MSVI 2.522	SO 40085I	L-W 3	T 15








TVQNR/L TVVNN

T-holders



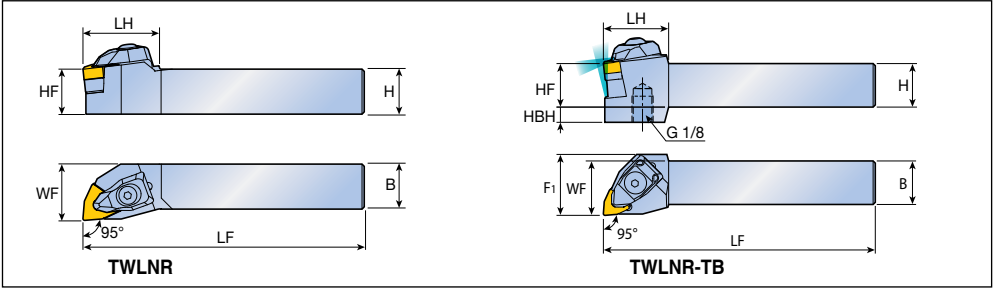
Approach angle	Designation	Dimension (mm)							Insert
		H	HF	B	LF	LH	WF	HBKW	
117.5°	TVQNR/L 2020 K1304	20	20	20	125	35	25	7	VN...X 1304...
	2525 M1304	25	25	25	150	35	32	-	YNMG 1304...
72.5°	TVVNN 2020 K1304	20	20	20	125	42	10		
	2525 M1304	25	25	25	150	42	12.5		

Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Wrench	
							
...1304	DLM 2.5V-NX	DLS 4	DSP 4	MSVI 2.522	SO 40085I	L-W 3	T 15

TWLNRL TWLNRL-TB

T-holders

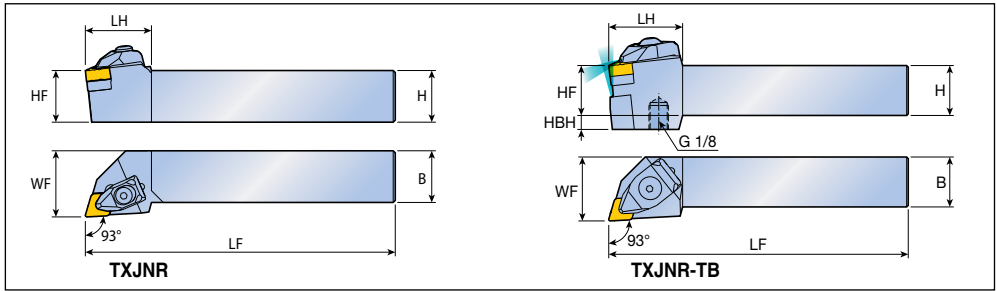


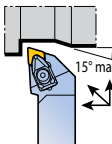


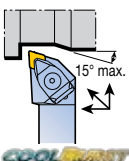

Approach angle	Designation	Dimension (mm)								Insert
		H	HF	B	LF	LH	WF	HBH	F ₁	
95° 	TWLNRL/L 2020 K0604	20	20	20	125	26	25	-	-	WN...X 0604...
	2525 M0604	25	25	25	150	26	32	-	-	
95° COOLBURST	TWLNRL/L 2020 K0604-TB	20	20	20	125	30	25	7	28	
	2525 M0604-TB	25	25	25	150	30	32	7	32	

Spare parts










Designation	Clamp	Clamp screw	Spring	Upper O-ring	Lower O-ring	Shim	Shim screw	Wrench	
...0604									
...0604	DLM 3-NX	DLS 3	DSP 3	-	-	LSW 32A	SO 40085I	L-W 2.5	T 15
...0604-TB	DLM 3-NX-TB	BH M4x0.7x16-TB	DSP 3	O-RING ID4.47x1.78	O-RING ID6.07x1.78	LSW 32A	SO 40085I	L-W 3	T 15

T-holders

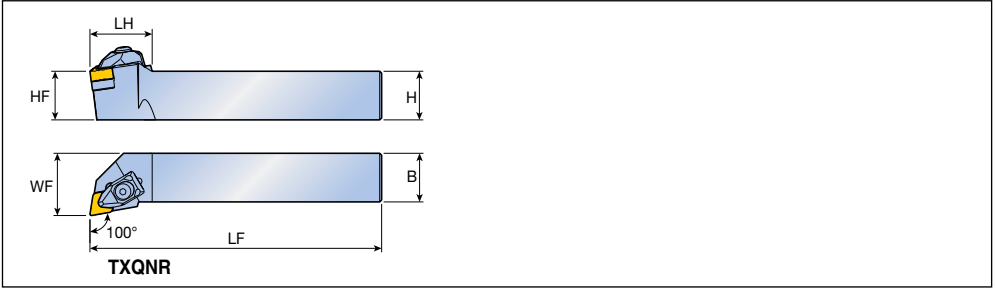


Approach angle	Designation	Dimension (mm)							Insert
		H	HF	B	LF	LH	WF	HBH	
93° 	TXJNR/L 2020 K0904	20	20	20	125	25	25	-	XNMG 0904...
	2525 M0904	25	25	25	150	25	32	-	
	2020 K1105	20	20	20	125	32	25	-	XNMG 1105...
	2525 M1105	25	25	25	150	32	32	-	
93° 	TXJNR/L 2525 M0904-TB	25	25	25	150	30	32	7	XNMG 0904...
	2525 M1105-TB	25	25	25	150	37	32	7	XNMG 1105...
									

Spare parts

Designation	Clamp	Clamp screw	Spring	Upper O-ring	Lower O-ring	Shim	Shim screw	Wrench	
									
...0904	DLM 2.5-NX	DLS 3	DSP 3	-	-	TSX 2.73	SO 40085I	L-W 2.5	T 15
...1105	DLM 3.5-NX	DLS 4	DSP 4	-	-	TSX 3.53	SO 50090I	L-W 3	T 20
...0904-TB	DLM 3-NX-TB	BH M4x 0.7x16-TB	DSP 3	O-RING ID4.47x 1.78	O-RING ID6.07x 1.78	TSX 2.73	SO 40085I	L-W 3	T 15
...1105-TB	DLM 3.5-NX-TB	BH M4x 0.7x16-TB	DSP 4	O-RING ID5.28x 1.78	O-RING ID7.59x 2.62	TSX 3.53	SO 50090I	L-W 3	T 20

T-holders



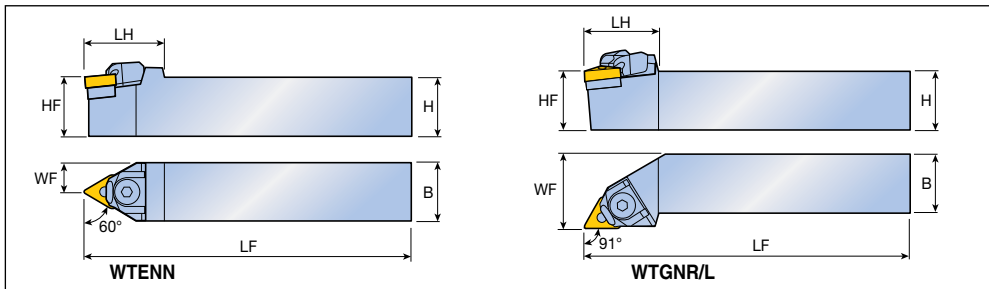
Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
100°	TXQNR/L 2020 K0904	20	20	20	125	25	25	XNMG 0904...
	2525 M0904	25	25	25	150	25	32	XNMG 1105...
	2020 K1105	20	20	20	125	30	25	XNMG 1105...
	2525 M1105	25	25	25	150	32	32	

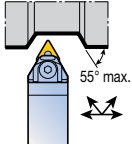
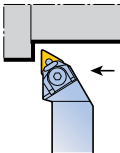
Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Wrench	
...0904	DLM 2.5-NX	DLS 3	DSP 3	TSX 2.73	SO 40085I	L-W 2.5	T 15
...1105	DLM 3.5-NX	DLS 4	DSP 4	TSX 3.53	SO 50090I	L-W 3	T 20






WTENN WTGNR/L

Wedge clamp type holders



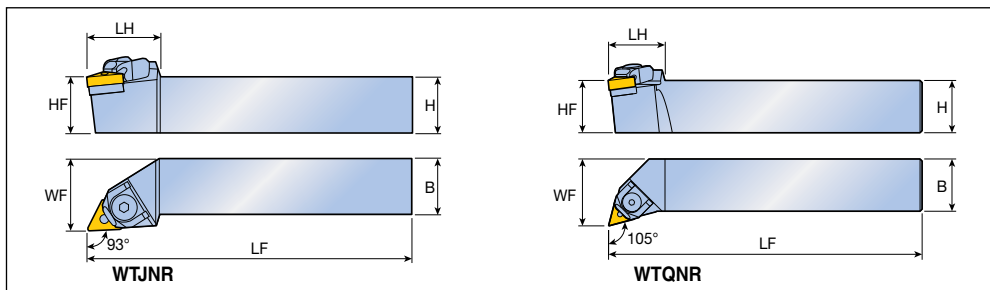
Approach angle	Designation		Dimension (mm)						Insert	
			H	HF	B	LF	LH	WF		
60° 	WTENN	2020 K1304	20	20	20	125	28	10.0	TN... 1304...	
		2525 M1304	25	25	25	150	28	12.5		
91° 	WTGNR/L	2020 K1304	20	20	20	125	27	25		
		2525 M1304	25	25	25	150	27	32		

Spare parts

Designation	Wedge clamp	Screw	Snap ring	Shim	Pin screw	Wrench	
...1304	 WC 2.53	 WCS 2.5	 CSR 2	 WST 2.52	 WSS 2.52	 L-W 2.5	

WTJNR/L WTQNR/L

Wedge clamp type holders



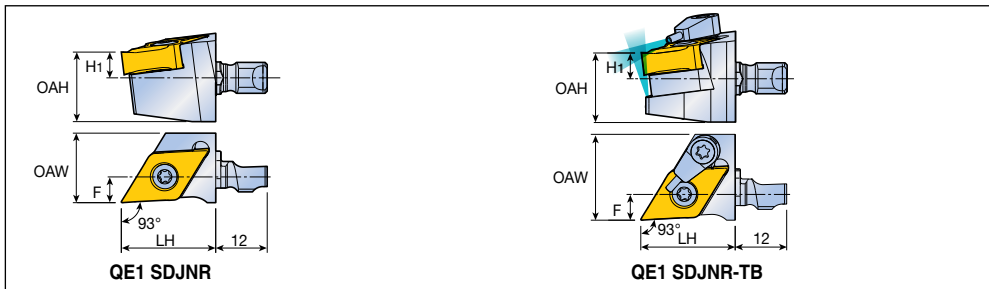
Approach angle	Designation	Dimension (mm)						Insert
		H	HF	B	LF	LH	WF	
93°	WTJNR/L 2020 K1304	20	20	20	125	27	25	TN... 1304...
	2525 M1304	25	25	25	150	27	32	
105°	WTQNR/L 2020 K1304	20	20	20	125	27	25	
	2525 M1304	25	25	25	150	27	32	

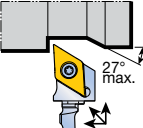

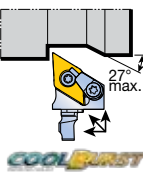

Spare parts

Designation	Wedge clamp	Screw	Snap ring	Shim	Pin screw	Wrench	
...1304	WC 2.53	WCS 2.5	CSR 2	WST 2.52	WSS 2.52	L-W 2.5	




QE1 SDJNR QE1 SDJNR-TB

Screw type modular heads for external turning



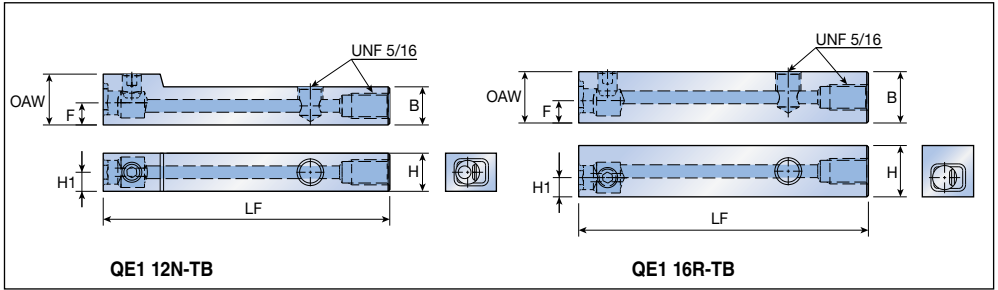
Approach angle	Designation	Dimension (mm)					Shank	Insert
		OAH	LH	OAW	H1	F		
93° 	QE1 SDJNR 0803	16.2	22.0	16.2	6.0	7.0	QE1 S12N-TB QE1 S16R-TB	DN...X 0803...  DN... 1305...
	QE1 SDJNR 1305	16.2	22.0	16.2	6.0	7.0		
93° 	QE1 SDJNR 0803-TB	16.2	22.0	16.2	6.0	7.0		DN...X 0803...  DN... 1305...
	QE1 SDJNR 1305-TB	16.2	22.0	20.0	6.0	7.0		

Spare parts

Designation	Screw	Cooling unit	Wrench			
...0803	 TS 25D060/HG-P	 -	 T 7P			
...0803-TB	TS 25D060/HG-P	S-CU-TB	T 7P			
...1305	TG 40G110I	-	T 15			
...1305-TB	TG 40G110I	S-CU-TB	T 15			

QE1 S12N-TB QE1 S16R/L-TB

High pressure coolant shanks for WIN-SWISS modular head






Designation	Dimension (mm)						Modular head
	H	H1	B	LF	OAW	F	
QE1 S12N-TB	12	6	12	107	16	7	QE1...R(-TB) QE1B...R(-TB) QE1Y...R(-TB)
QE1 S16R-TB	16	6	16	107	16	7	QE1...R(-TB) QE1B...R(-TB) QE1Y...R(-TB)
QE1 S16L-TB	16	6	16	107	16	7	QE1...R(-TB) QE1B...R(-TB) QE1Y...R(-TB)

Head designation	70 bar flow rate (ℓ/min)	100 bar flow rate (ℓ/min)	140 bar flow rate (ℓ/min)
QE1 SDJCR-TB *	9-11	11-13	14-16
QE1B SVXCR-TB	8-10	9-11	11-13
QE1Y SDJCR-TB	13-15	15-17	18-20

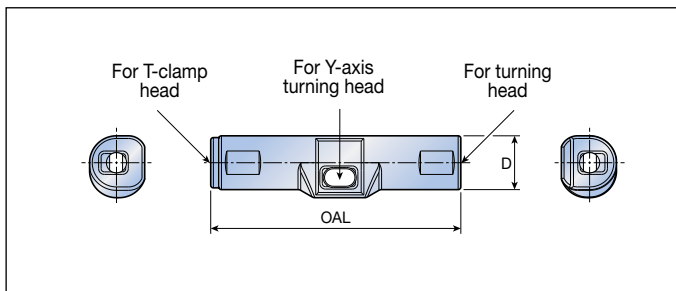
► * QE1 SVJBR, SVJCR, SDJNR same flow rate

Spare parts

Designation	Screw	Plug	Wrench	
				
QE1...-TB	SS M6F-7	PLG 5/16 UNF	L-W 3	L-W 5/32

QE1 FIX-20100

Insert replacement fixture



Designation	Dimensions (mm)	
	OAL	D
QE1 FIX-20100	93.0	20.0

► Fixture ordered separately

Insert replacement

► Due to the WIN-SWISS' small head sizes, replacing the inserts could be difficult.
Please use the fixture to facilitate insert replacement.

► Y-axis turning head



► T-clamp head

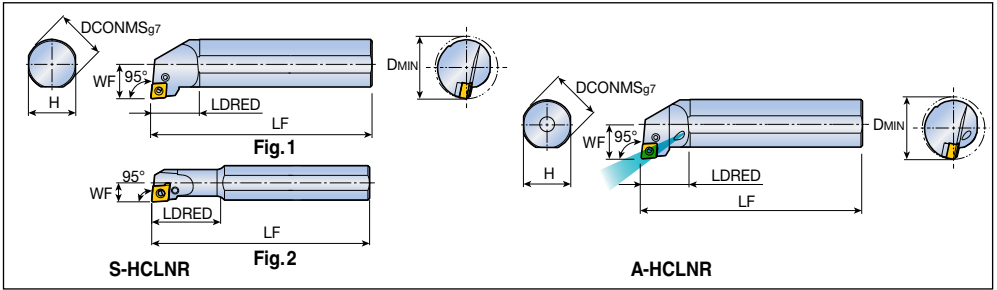


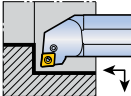
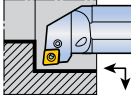
► Turning head









S-HCLNR/L A-HCLNR/L

Hook lever type boring bars



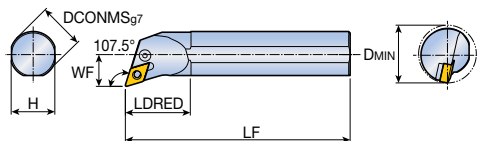
Approach angle	Designation	Dimension (mm)						Fig.	Insert
		DCONMS	H	LF	LDRED	WF	DMIN		
 95°	S16Q HCLNR/L 0904	16	15	180	25	11	20	1	CN... 0904...
	S20Q HCLNR/L 0904	20	18	180	28	13	25	1	
	S20Q HCLNR/L 0904-D20	20	18	180	40	11	20	2	
	S25R HCLNR/L 0904	25	23	200	31	17	32	1	
	S32S HCLNR/L 0904	32	30	250	31	22	40	1	
	S40T HCLNR/L 0904	40	37	300	55	27	50	1	
 95°	A16Q HCLNR/L 0904	16	15	180	25	11	20	-	
	A20Q HCLNR/L 0904	20	18	180	28	13	25	-	
	A25R HCLNR/L 0904	25	23	200	31	17	32	-	
	A32S HCLNR/L 0904	32	30	250	31	22	40	-	

Spare parts

Designation	Lever	Screw	Shim	Shim pin	Snap ring	Wrench	
							
S ...0904	LCL 09B-NX	LCS 3B	-	-	LSR 3B	L-W 2	
S ...0904...D	LCL 09B-NX	LCS 3B	-	-	LSR 3B	L-W 2	
S32S...0904	LCL 09-NX	LCS 3	LSC 32	LSP 3A	-	L-W 2.5	
S40T ...0904	LCL 09-NX	LCS 3	LSC 32	LSP 3A	-	L-W 2.5	
A ...0904	LCL 09B-NX	LCS 3B	-	-	LSR 3B	L-W 2	
A32S...0904	LCL 09-NX	LCS 3	LSC 32	LSP 3A	-	L-W 2.5	

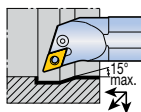
S-HDQNR/L

Hook lever type boring bars



S-HDQNR

Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
107.5°	S32S HDQNR/L 1305	32	30	250	45	22	40	DN... 1305...

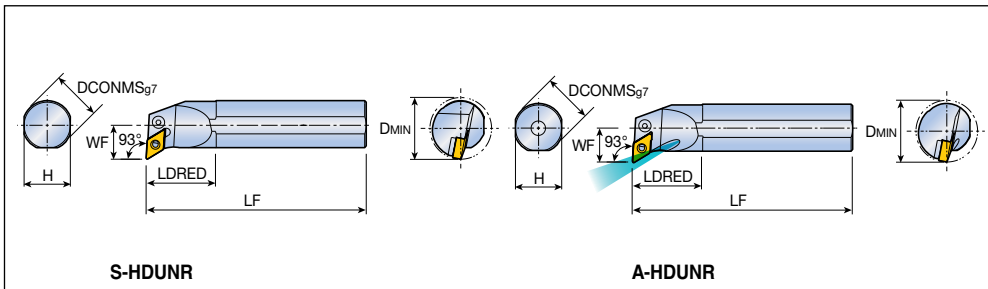


Spare parts

Designation	Lever	Screw	Shim	Shim pin	Wrench		
...1305	LCL 11-NX	LSC 4S	LSD 3.52B	LSP 4	L-W 3		

S-HDUNR/L A-HDUNR/L

Hook lever type boring bars



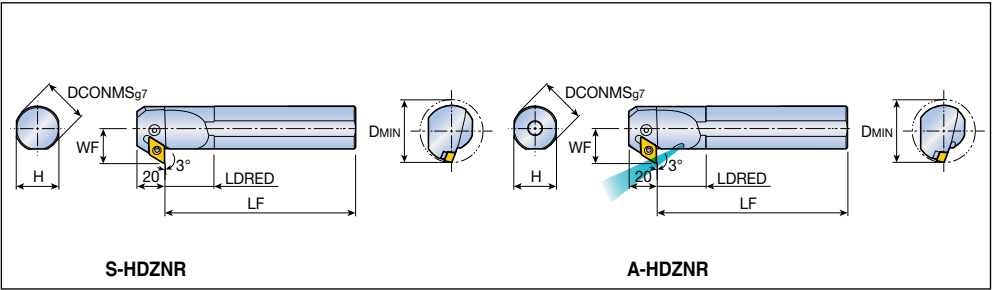
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
93°	S32S HDUNR/L 1305	32	30	250	45	22	40	DN... 1305...
	S40T HDUNR/L 1305	40	37	300	55	27	50	
93°	A32S HDUNR/L 1305	32	30	250	45	22	40	
	A40T HDUNR/L 1305	40	37	300	55	27	50	

Spare parts

Designation	Lever	Screw	Shim	Shim pin	Wrench		
	...1305	LCL 11-NX	LCS 4S	LSD 3.52B	LSP 4	L-W 3	

S-HDZNR/L A-HDZNR/L

Hook lever type boring bars



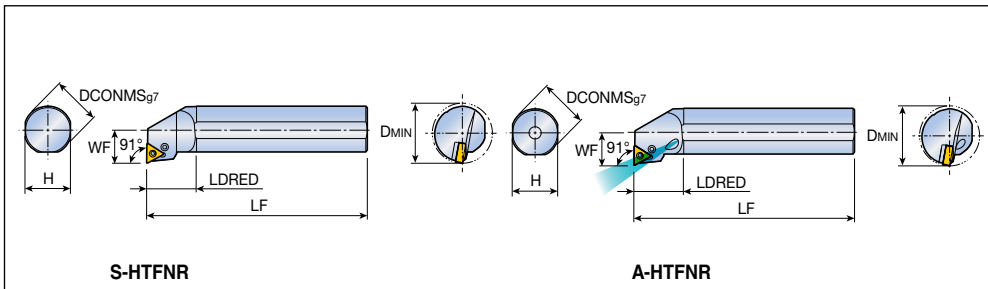
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
93°	S32S HDZNR/L 1305	32	30	250	35	25	45	DN... 1305...
	S40T HDZNR/L 1305	40	37	300	40	29	50	
93°	A32S HDZNR/L 1305	32	30	250	35	25	45	
	A40T HDZNR/L 1305	40	37	300	40	29	50	

Spare parts

Designation	Lever	Screw	Shim	Shim pin	Wrench		
...1305	LCL 11-NX	LCS 4S	LSD 3.52B	LSP 4	L-W 3		

S-HTFNR/L A-HTFNR/L

Hook lever type boring bars



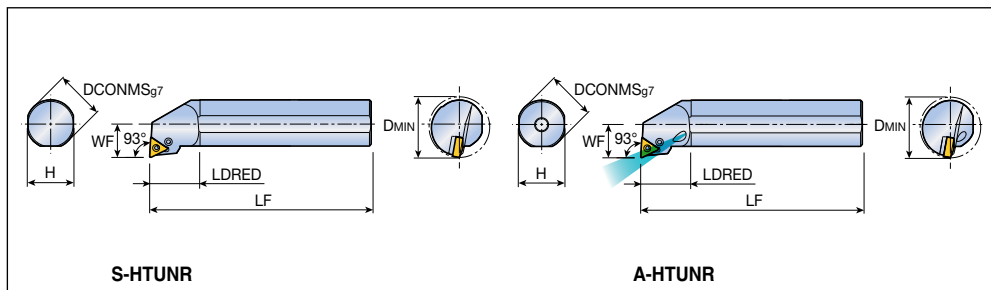
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
91°	S16Q HTFNR/L 1304	16	15	180	25	11	20	TN... 1304...
	S20Q HTFNR/L 1304	20	18	180	28	13	25	
	S25R HTFNR/L 1304	25	23	200	33	17	32	
	S32S HTFNR/L 1304	32	30	250	33	22	40	
91°	A16Q HTFNR/L 1304	16	15	180	25	11	20	
	A20Q HTFNR/L 1304	20	18	180	28	13	25	
	A25R HTFNR/L 1304	25	23	200	33	17	32	
	A32S HTFNR/L 1304	32	30	250	33	22	40	

Spare parts

Designation	Lever	Screw	Shim	Shim pin	Snap ring	Wrench	
	...1304	LCL 08B-NX	LCS 3B	-	-	LSR 3B	L-W 2
...32S...1304	LCL 08-NX	LCS 3-NX	LST 2.51.8B	LSP 3B	-	L-W 2.5	

S-HTUNR/L A-HTUNR/L

Hook lever type boring bars



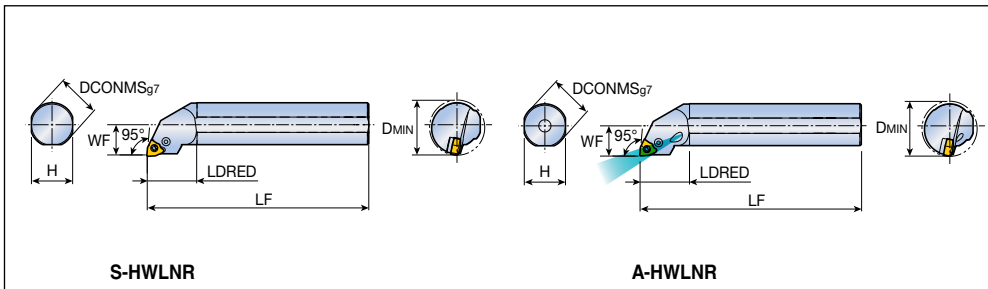
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
93°	S16Q HTUNR/L 1304	16	15	180	25	11	20	TN... 1304...
	S20Q HTUNR/L 1304	20	18	180	28	13	25	
	S25R HTUNR/L 1304	25	23	200	33	17	32	
	S32S HTUNR/L 1304	32	30	250	33	22	40	
93°	A16Q HTUNR/L 1304	16	15	180	25	11	20	
	A20Q HTUNR/L 1304	20	18	180	28	13	25	
	A25R HTUNR/L 1304	25	23	200	33	17	32	
	A32S HTUNR/L 1304	32	30	250	33	22	40	

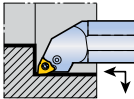
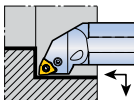
Spare parts

Designation	Lever	Screw	Shim	Shim pin	Snap ring	Wrench	
...1304	LCL 08B-NX	LCS 3B	-	-	LSR 3B	L-W 2	
...32S...1304	LCL 08-NX	LCS 3-NX	LST 2.51.8B	LSP 3B	-	L-W 2.5	


S-HWLNLR/L A-HWLNLR/L

Hook lever type boring bars



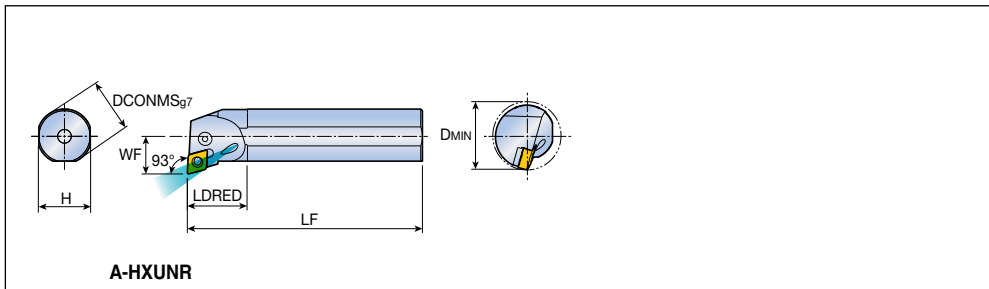
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
 95°	S16Q HWLNLR/L 0604	16	15	180	30	11	20	WN...X 0604...
	S20Q HWLNLR/L 0604	20	18	180	33	13	25	
	S25R HWLNLR/L 0604	25	23	200	36	17	32	
	S32S HWLNLR/L 0604	32	30	250	36	22	40	
 95°	A16Q HWLNLR/L 0604	16	15	180	30	11	20	
	A20Q HWLNLR/L 0604	20	18	180	33	13	25	
	A25R HWLNLR/L 0604	25	23	200	36	17	32	
	A32S HWLNLR/L 0604	32	30	250	36	22	40	

Spare parts

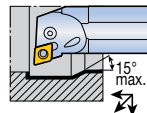
Designation	Lever	Screw	Shim	Shim pin	Snap ring	Wrench	
							
...0604	LCL 09B-NX	LCS 3B	-	-	LSR 3B	L-W 2	
...32S ...0604	LCL 09-NX	LCS 3	LSW 32	LSP 3A	-	L-W 2.5	

A-HXUNR/L

Hook lever type boring bars



Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
93°	A32S HXUNR/L 1105	32	30	250	35	22	40	XNMG 1105...

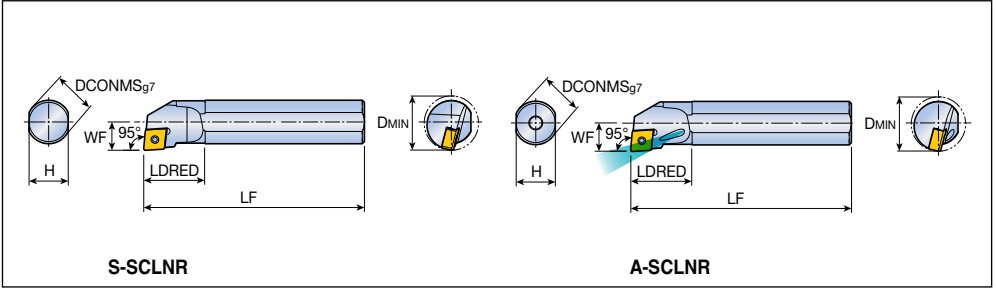


Spare parts

Designation	Lever	Lever screw	Shim	Shim pin	Wrench		
...1105	LCL 11-NX	LCS 4S	LSX 3.52B	LSP 4	L-W 3		

S-SCLNR/L A-SCLNR/L

Screw type boring bars



Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
95°	S16Q SCLNR/L 0904	16	15	180	25	11	20	CN... 0904...
	S20Q SCLNR/L 0904	20	18	180	28	13	25	
	S20Q SCLNR/L 0904-D20	20	18	180	40	11	20	
95°	A12M SCLNR/L 0703	12	11	150	21.5	9	16	CNMx 0703...
	A16Q SCLNR/L 0703	16	15	180	24.5	11	20	
	A16Q SCLNR/L 0904	16	15	180	25	11	20	CN... 0904...
	A20Q SCLNR/L 0904	20	18	180	28	13	25	

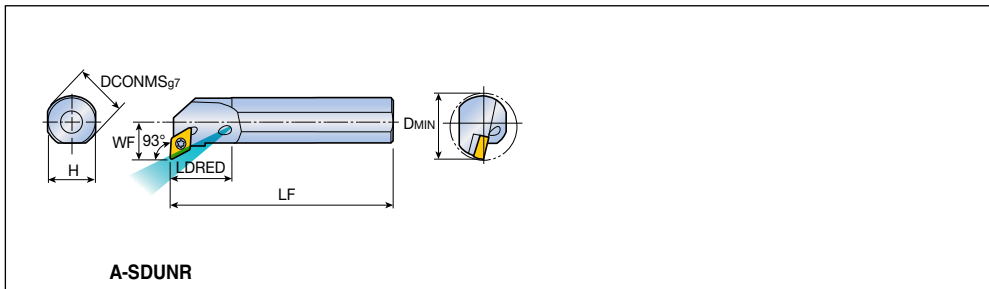
Spare parts

Designation	Screw	Wrench				
...0703	TS 25D060/HG-P	T 7P				
...0904	TS 350831/HG	T 10				

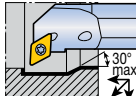
A-SDUNR/L



Screw type boring bars



Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
93°	A12M SDUNR/L 0803	12	11	150	21.5	9	16	DN...X 0803...
	A16Q SDUNR/L 0803	16	15	180	24.5	11	20	

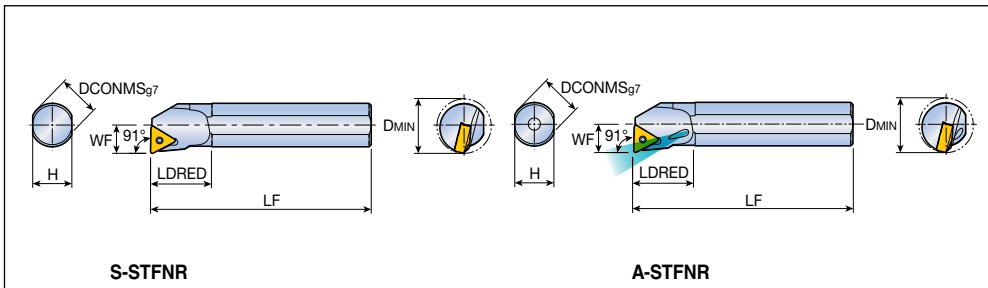


Spare parts

Designation	Screw	Wrench				
...0803	TS 25D060/HG-P	T 7P				



S-STFNR/L A-STFNR/L

Screw type boring bars



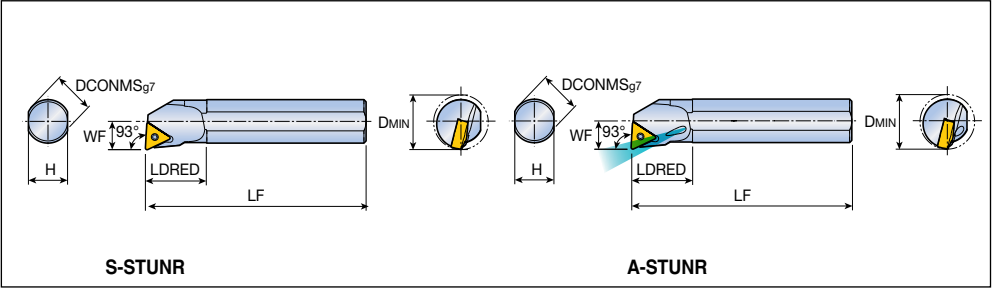
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
91°	S16Q STFNR/L 1304	16	15	180	25	11	20	TN... 1304...
	S20Q STFNR/L 1304	20	18	180	28	13	25	
91°	A16Q STFNR/L 1304	16	15	180	25	11	20	
	A20Q STFNR/L 1304	20	18	180	28	13	25	

Spare parts

Designation	Screw	Wrench				
	...1304	 TS 30080/HG	 T 9			

S-STUNR/L A-STUNR/L

Screw type boring bars



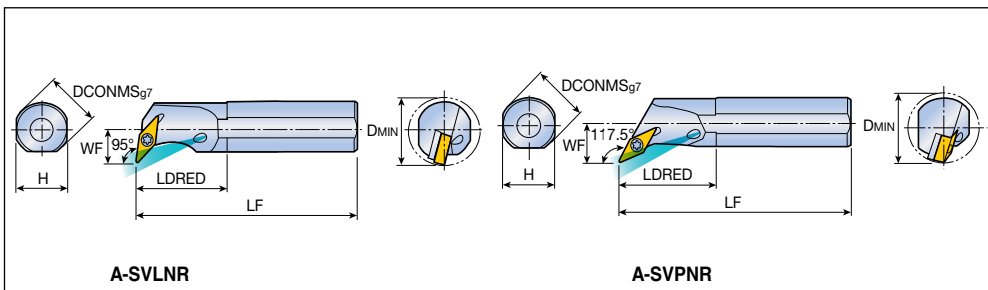
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
93°	S16Q STUNR/L 1304	16	15	180	25	11	20	TN... 1304...
	S20Q STUNR/L 1304	20	18	180	28	13	25	
93°	A16Q STUNR/L 1304	16	15	180	25	11	20	
	A20Q STUNR/L 1304	20	18	180	28	13	25	

Spare parts

Designation	Screw	Wrench					
...1304	TS 30080I/HG	T 9					





A-SVLNR/L A-SVPCR/L

Screw type boring bars

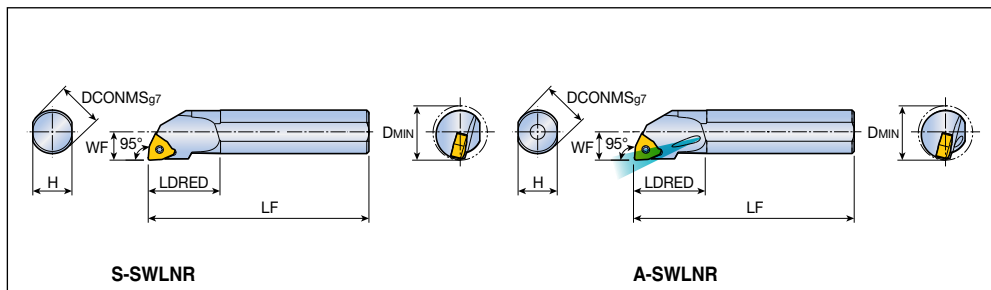


Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
95°	A25T SVLNR/L 1304	25	23	300	40	16	31	VN...X 1304...
	A32T SVLNR/L 1304	32	30	300	45	20	38	YNMG 1304...
117.5°	A25T SVPNR/L 1304	25	23	300	45	19	33	
	A32T SVPNR/L 1304	32	30	300	47	26	44	

Spare parts

Designation	Screw	Shim	Shim screw	Wrench			
							
A. ..1304	TS 30120I/HG	SSVN 2.523	TS 5030062S	T 9	L-W 3.5		

Screw type boring bars



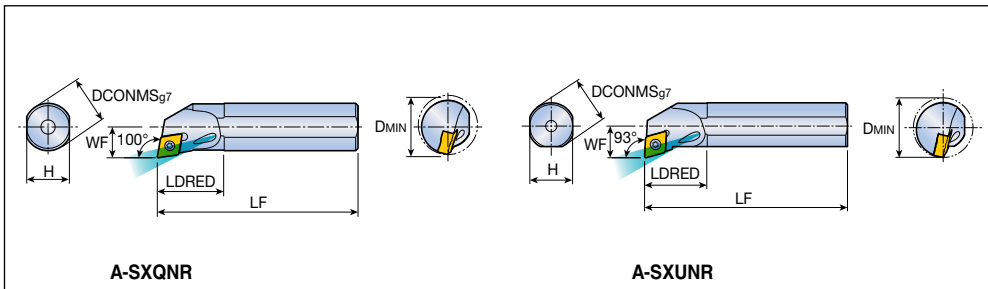
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
95°	S16Q SWLNR/L 0604	16	15	180	30	11	20	WN...X 0604...
	S20Q SWLNR/L 0604	20	18	180	33	13	25	
95°	A12M SWLNR/L 0403	12	11	150	21.5	9	16	WNMX 0403...
	A16Q SWLNR/L 0403	16	15	180	24.5	11	20	
	A16Q SWLNR/L 0604	16	15	180	30	11	20	WNMX 0604..
	A20Q SWLNR/L 0604	20	18	180	33	13	25	

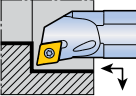


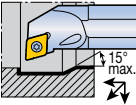
Spare parts

Designation	Screw	Wrench				
...0604	TS 350831/HG	T 10				
...0403	TS 25D060/HG-P	T 7P				



A-SXQNR/L A-SXUNR/L

Screw type boring bars



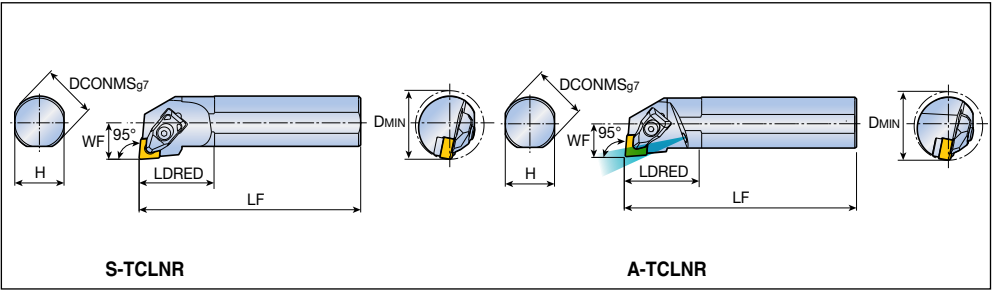
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
100° 	A16Q SXQNR/L 0904	16	15	180	24.5	11	20	XNMG 0904...
	A20Q SXQNR/L 0904	20	18	180	28	13	25	 XNMG 1105...
	A20Q SXQNR/L 1105	20	18	180	28	13	25	 XNMG 1105...
93° 	A25R SXUNR/L 1105	25	23	200	33.4	17	32	

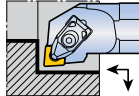
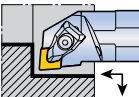
Spare parts

Designation	Screw	Wrench				
...0904	 TS 30080I/HG	 T 9				
...1105	TS 40G110I	T 15				

S-TCLNR/L A-TCLNR/L

T-holder type boring bars



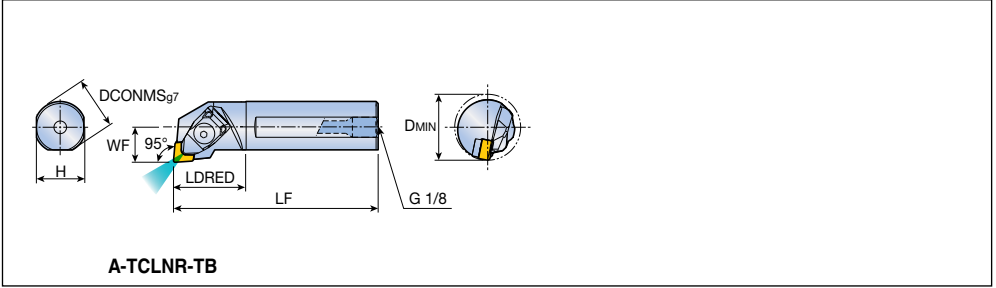
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
 95°	S25R TCLNR/L 0904	25	23	200	35	17	32	CN... 0904...
	S32S TCLNR/L 0904	32	30	250	35	22	40	
	S40T TCLNR/L 0904	40	37	300	45	27	50	
 95°	A25R TCLNR/L 0904	25	23	200	35	17	32	
	A32S TCLNR/L 0904	32	30	250	35	22	40	

Spare parts

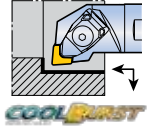
Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Nozzle	Wrench	
								
S25R ...0904	DLM 3-NX	DLS 3	DSP 3	LSC 32	SO 40073I	-	L-W 2.5	T 15
S32S,S40T...0904	DLM 3-NX	DLS 3	DSP 3	LSC 32	SO 40085I	-	L-W 2.5	T 15
A25R...0904	DLM 3-NX	DLS 3	DSP 3	LSC 32	SO 40073I	NZ 62	L-W 2.5	T 15
A32S...0904	DLM 3-NX	DLS 3	DSP 3	LSC 32	SO 40085I	NZ 62	L-W 2.5	T 15

A-TCLNR/L-TB

T-holder type boring bars with high pressure coolant



Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
95°	A25R TCLNR/L 0904-TB	25	23	200	33.4	17	32	CN... 0904...
	A32S TCLNR/L 0904-TB	32	30	250	33.4	22	40	

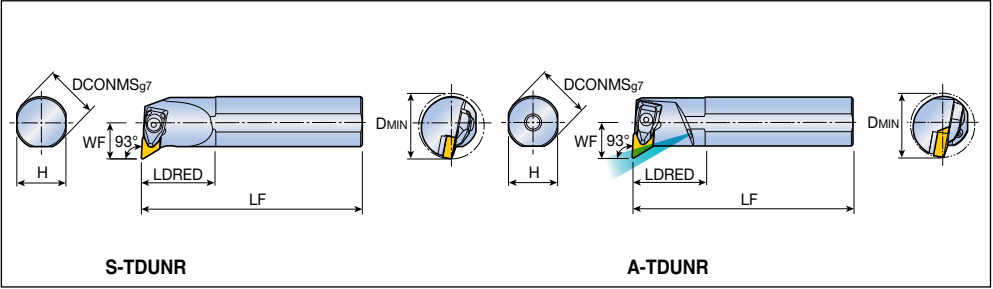


Spare parts

Designation	Clamp	Clamp screw	Spring	Upper O-ring	Lower O-ring	Shim	Shim screw	Wrench	
A-TCLNR/L-TB	DLM 3-NX-TB	BH M4x0.7x 16-TB	DSP 3	O-RING ID4.47x 1.78	O-RING ID6.07x 1.78	LSC 32	SO 40073I	L-W 3	T 15

S-TDUNR/L A-TDUNR/L

T-holder type boring bars



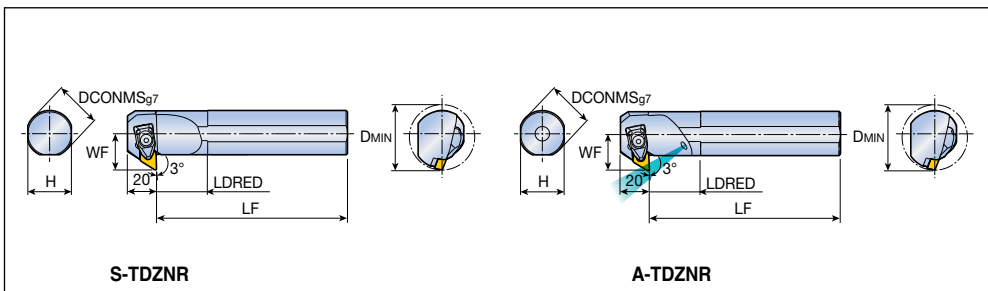
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
93°	S32S TDUNR/L 1305	32	30	250	45	22	40	DN... 1305...
	S40T TDUNR/L 1305	40	37	300	55	27	50	
93°	A32S TDUNR/L 1305	32	30	250	45	22	40	
	A40T TDUNR/L 1305	40	37	300	55	27	50	

Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Nozzle	Wrench	
S ...1305	DLM 3.5-NX	DLS 4	DSP 4	LSD 3.52B	TS 50A105I	-	L-W 3	T 20
A32S...1305	DLM 3.5-NX	DLS 4	DSP 4	LSD 3.52B	TS 50A105I	NZ 62	L-W 3	T 20
A40T...1305	DLM 3.5-NX	DLS 4	DSP 4	LSD 3.52B	TS 50A105I	NZ 104	L-W 3	T 20

S-TDZNR/L A-TDZNR/L

T-holder type boring bars



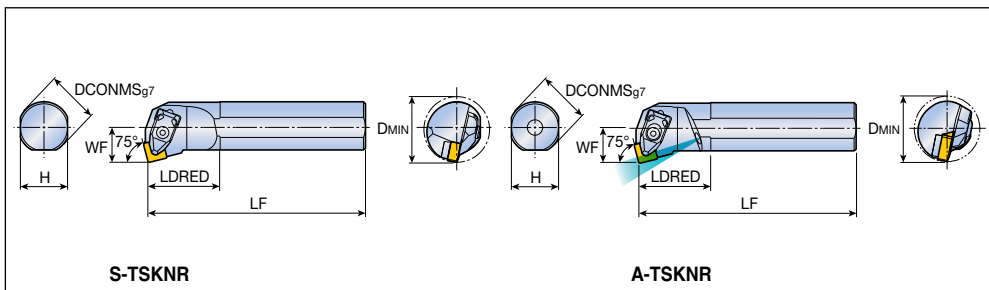
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
93°	S32S TDZNR/L 1305	32	30	250	35	25	45	DN... 1305...
	S40T TDZNR/L 1305	40	37	300	40	29	50	
93°	A32S TDZNR/L 1305	32	30	250	35	25	45	
	A40T TDZNR/L 1305	40	37	300	40	29	50	

Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Nozzle	Wrench	
S ...1305							L-W 3	T 20
A32S...1305	DLM 3.5-NX	DLS 4	DSP 4	LSD 3.52B	TS 50A105I	-	L-W 3	T 20
A40T...1305	DLM 3.5-NX	DLS 4	DSP 4	LSD 3.52B	TS 50A105I	NZ 104	L-W 3	T 20

S-TSKNR/L A-TSKNR/L

T-holder type boring bars



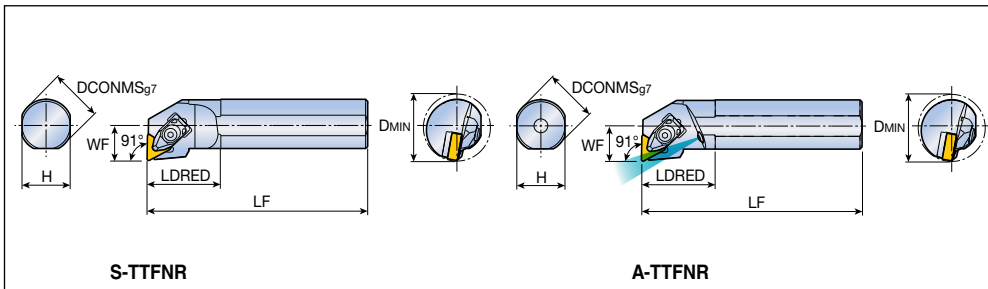
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
75°	S25R TSKNR/L 0904	25	23	200	35	17	32	SN... 0904...
	S32S TSKNR/L 0904	32	30	250	35	22	40	
75°	A25R TSKNR/L 0904	25	23	200	35	17	32	
	A32S TSKNR/L 0904	32	30	250	35	22	40	

Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Nozzle	Wrench	
S25R...0904	DLM 3.5-NX	DLS 3	DSP 3	LSS 32	SO 40073I	-	L-W 2.5	T 15
S32S...0904	DLM 3.5-NX	DLS 3	DSP 3	LSS 32	SO 40085I	-	L-W 2.5	T 15
A25R...0904	DLM 3.5-NX	DLS 3	DSP 3	LSS 32	SO 40073I	NZ 62	L-W 2.5	T 15
A32S...0904	DLM 3.5-NX	DLS 3	DSP 3	LSS 32	SO 40085I	NZ 62	L-W 2.5	T 15

S-TTFNR/L A-TTFNR/L

T-holder type boring bars



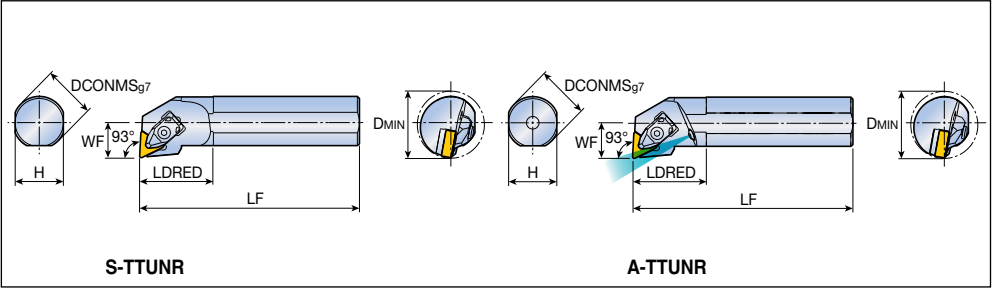
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
91°	S25R TTFNR/L 1304	25	23	200	35	17	32	TN... 1304...
	S32S TTFNR/L 1304	32	30	250	35	22	40	
91°	A25R TTFNR/L 1304	25	23	200	35	17	32	
	A32S TTFNR/L 1304	32	30	250	35	22	40	

Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Nozzle	Wrench	
S25R...1304	DLM 2.5-NX	DLS 3	DSP 3	LST 2.52B	SO 40073I	-	L-W 2.5	T 15
S32S...1304	DLM 2.5-NX	DLS 3	DSP 3	LST 2.52B	SO 40085I	-	L-W 2.5	T 15
A25R...1304	DLM 2.5-NX	DLS 3	DSP 3	LST 2.52B	SO 40073I	NZ 62	L-W 2.5	T 15
A32S...1304	DLM 2.5-NX	DLS 3	DSP 3	LST 2.52B	SO 40085I	NZ 62	L-W 2.5	T 15

S-TTUNR/L A-TTUNR/L

T-holder type boring bars



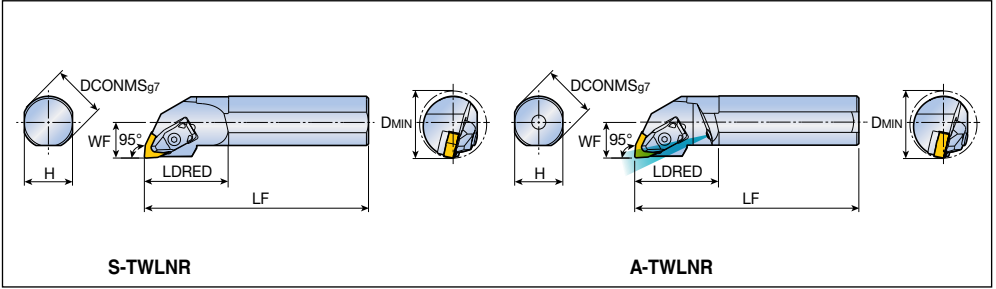
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
93°	S25R TTUNR/L 1304	25	23	200	35	17	32	TN... 1304...
	S32S TTUNR/L 1304	32	30	250	35	22	40	
93°	A25R TTUNR/L 1304	25	23	200	35	17	32	
	A32S TTUNR/L 1304	32	30	250	35	22	40	

Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Nozzle	Wrench	
S25R...1304	DLM 2.5-NX	DLS 3	DSP 3	LST 2.52B	SO 40073I	-	L-W 2.5	T 15
S32S...1304	DLM 2.5-NX	DLS 3	DSP 3	LST 2.52B	SO 40085I	-	L-W 2.5	T 15
A25R...1304	DLM 2.5-NX	DLS 3	DSP 3	LST 2.52B	SO 40073I	NZ 62	L-W 2.5	T 15
A32S...1304	DLM 2.5-NX	DLS 3	DSP 3	LST 2.52B	SO 40085I	NZ 62	L-W 2.5	T 15

S-TWLNR/L A-TWLNR/L

T-holder type boring bars



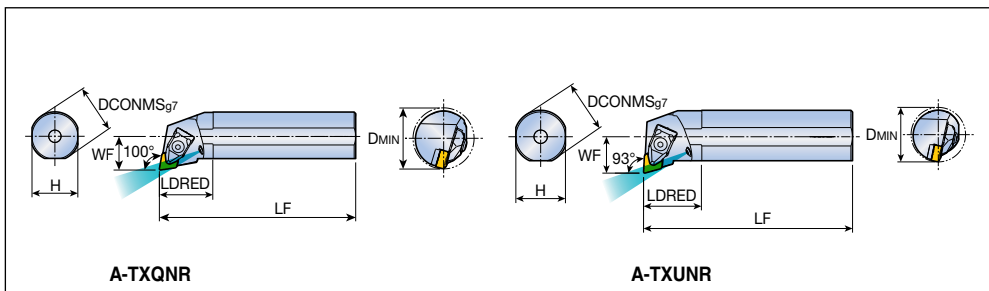
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
95°	S25R TWLNR/L 0604	25	23	200	40	17	32	WN...X 0604...
	S32S TWLNR/L 0604	32	30	250	45	22	40	
95°	A25R TWLNR/L 0604	25	23	200	40	17	32	
	A32S TWLNR/L 0604	32	30	250	45	22	40	

Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Nozzle	Wrench	
S25R...0604	DLM 3-NX	DLS 3	DSP 3	LSW 32	SO 40073I	-	L-W 2.5	T 15
S32S...0604	DLM 3-NX	DLS 3	DSP 3	LSW 32	SO 40085I	-	L-W 2.5	T 15
A25R...0604	DLM 3-NX	DLS 3	DSP 3	LSW 32	SO 40073I	NZ 62	L-W 2.5	T 15
A32S...0604	DLM 3-NX	DLS 3	DSP 3	LSW 32	SO 40085I	NZ 62	L-W 2.5	T 15

A-TXQNR/L A-TXUNR/L

T-holder type boring bars



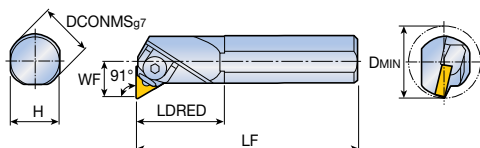
Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
100°	A25R TXQNR/L 1105	25	23	200	33.4	17	32	XNMG 1105...
	A32S TXQNR/L 1105	32	30	250	35	22	40	
93°	A32S TXUNR/L 1105	32	30	250	35	22	40	

Spare parts

Designation	Clamp	Clamp screw	Spring	Shim	Shim screw	Nozzle	Wrench	
A25R...1105	DLM 3.5-NX	DLS 4	DSP 4	-	-	NZ 62	L-W 3	-
A32S...1105	DLM 3.5-NX	DLS 4	DSP 4	LSX 3.52B	TS 50A105I	NZ 62	L-W 3	T 20

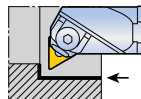
S-WTFNR/L

Wedge clamp type boring bars



S-WTFNR

Approach angle	Designation	Dimension (mm)						Insert
		DCONMS	H	LF	LDRED	WF	DMIN	
91°	S25R WTFNR/L 1304	25	23	200	40	17	32	TN... 1304...
	S32S WTFNR/L 1304	32	30	250	45	22	40	

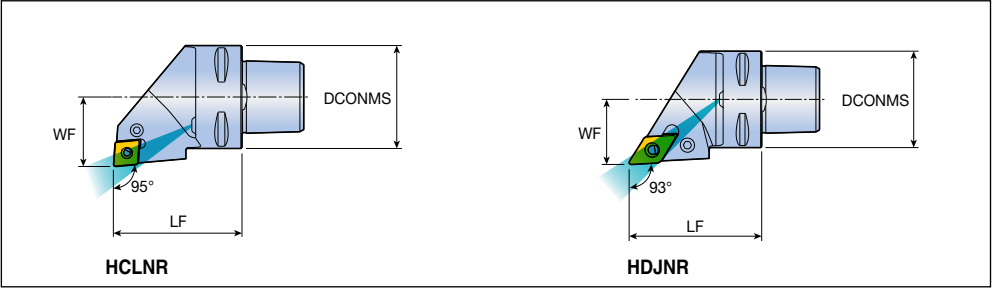


Spare parts

Designation	Wedge clamp	Screw	Snap ring	Shim	Pin screw	Wrench	
S25R...1304	WC 2.53	WCS 2.5	CSR 2	-	WSS 2.52-1	L-W 2.5	
S32S...1304	WC 2.53	WCS 2.5	CSR 2	WST 2.52	WSS 2.52	L-W 2.5	

HCLNR/L HDJNR/L

Hook lever type holders with C-ADAPTER



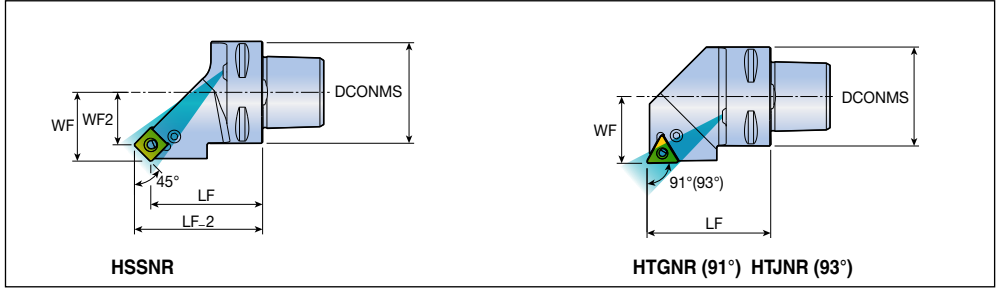
Approach angle	Designation	Dimension (mm)			Insert
		DCONMS	WF	LF	
95°	C4-HCLNR/L 27050-0904	40	27	50	CN... 0904...
93°	C4-HDJNR/L 27055-1305	40	27	55	DN... 1305...

Spare parts

Designation	Lever	Screw	Shim		Shim pin	Shim pin punch	Nozzle	Wrench
C4...HCLNR/L	LCL 09-NX	LCS 3	LSC 32	-	LSP 3A	SPP 3-4	NZ 83	L-W 2.5
C4...HDJNR/L	LCL 11-NX	LCS 4	-	LSD 3.52	LSP 4	SPP 3-4	NZ 83	L-W 3

HSSNR/L HTGNR/L HTJNR/L

Hook lever type holders with C-ADAPTER



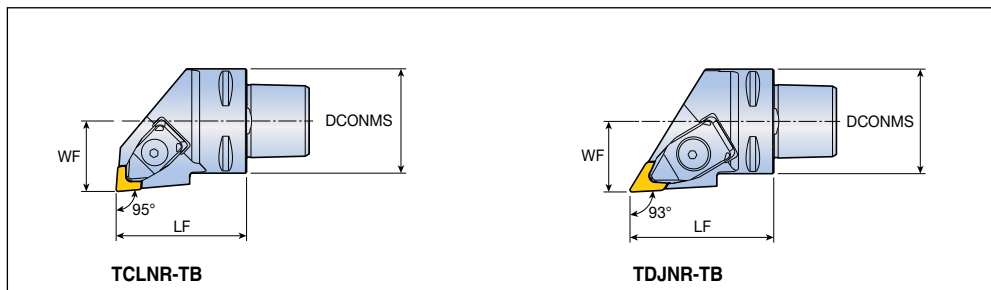
Approach angle	Designation	Dimension (mm)					Insert
		DCONMS	WF	WF2	LF	LF_2	
45°	C4-HSSNR/L 27042-0904	40	27	20.6	44	50.3	SN... 0904...
91°(93°)	C4-HTGNR/L 27050-1304	40	27	-	50	-	TN... 1304...
	C4-HTJNR/L 27050-1304	40	27	-	50	-	

Spare parts

Designation	Lever	Screw	Shim		Shim pin	Shim pin punch	Nozzle	Wrench
C4...0904	LCL 09-NX	LCS 3	LSS 32A	-	LSP 3A	SPP 3-4	NZ 83	L-W 2.5
C4...1304	LCL 08-NX	LCS 3-NX	-	LST 2.51.8	LSP 3B	SPP 3-3L	NZ 83	L-W 2.5

TCLNR/L-TB TDJNR/L-TB

High-pressure T-holders with C-ADAPTER



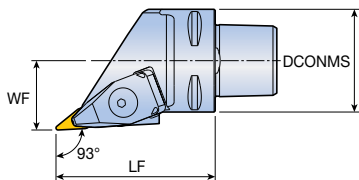
Approach angle	Designation	Dimension (mm)			Insert
		DCONMS	WF	LF	
95°	C4-TCLNR/L 27050-0904-TB	40	27	50	CN... 0904...
	C5-TCLNR/L 35060-0904-TB	50	35	60	
93°	C4-TDJNR/L 27055-1305-TB	40	27	50	DN... 1305...
	C5-TDJNR/L 35060-1305-TB	50	35	60	

Spare parts

Designation	Clamp	Clamp Screw	Spring	Upper O-ring	Lower O-ring	Shim		Shim Screw	Wrench	
TCLNR/L-TB	DLM 3-NX-TB	BH M4x0.7x 16-TB	DSP 3	O-RING ID4.47x 1.78	O-RING ID6.07x 1.78	LSC 32A	-	SO 400851	L-W 3	T 15
TDJNR/L-TB	DLM 3.5-NX-TB	BH M5x0.8x 21-MO-TB	DSP 4	O-RING ID5.28x 1.78	O-RING ID7.59x 2.62	-	LSD 3.52	SO 500901-MO	L-W 3	T 20

TVJNR/L-TB

High-pressure T-holders with C-ADAPTER



TVJNR-TB

Approach angle	Designation	Dimension (mm)			Insert
		DCONMS	WF	LF	
93°	C4-TVJNR/L 27062-1304-TB	40	27	62	
	C5-TVJNR/L 35065-1304-TB	50	35	65	

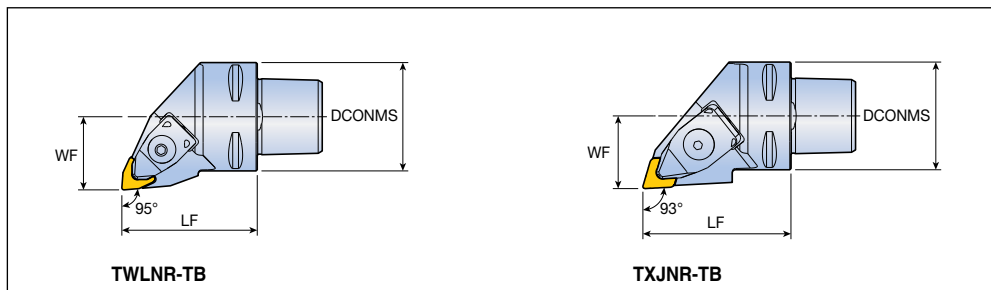
Spare parts

Designation	Clamp	Clamp Screw	Spring	Upper O-ring	Lower O-ring	Shim	Shim Screw	Wrench	
TVJNR/L-TB	DLM 2.5V-NX-TB	BH M5x0.8x21-MO-TB	DSP 4	O-RING ID5.28x1.78	O-RING ID7.59x2.62	MSVI 2.522	L-W 3	T 15	T 15

TWLNR/L-TB TXJNR/L-TB



High-pressure T-holders with C-ADAPTER



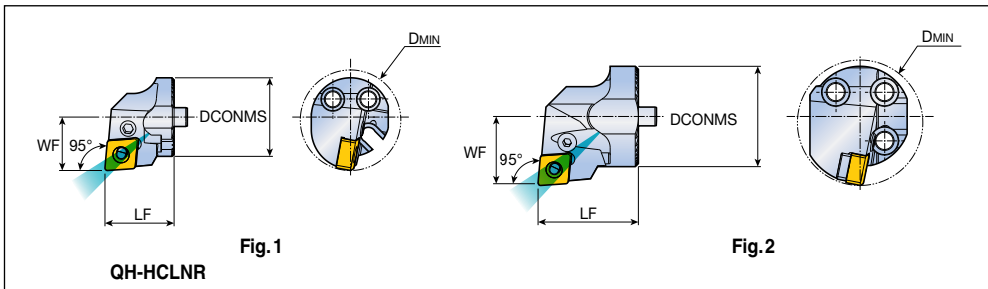
Approach angle	Designation	Dimension (mm)			Insert
		DCONMS	WF	LF	
95°	C4-TWLNR/L 27050-0604-TB	40	27	50	WN...X 0604...
	C5-TWLNR/L 35060-0604-TB	50	35	60	
93°	C4-TXJNR/L 27055-1105-TB	40	27	55	XN... 1105...
	C5-TXJNR/L 35060-1105-TB	50	35	60	

Spare parts

Designation	Clamp	Clamp Screw	Spring	Upper O-ring	Lower O-ring	Shim		Shim Screw	Wrench	
TWLNR/L-TB	DLM 3-NX-TB	BH M4x0.7x 16-TB	DSP 3	O-RING ID4.47x 1.78	O-RING ID6.07x 1.78	LSW 32A	-	SO 400851	L-W 3	T 15
TXJNR/L-TB	DLM 3.5-NX-TB	BH M5x0.8x 21-MO-TB	DSP 4	O-RING ID5.28x 1.78	O-RING ID7.59x 2.62	-	TSX 3.53	SO 500901	L-W 3	T 20

QH-HCLNR/L

Hook lever type boring heads



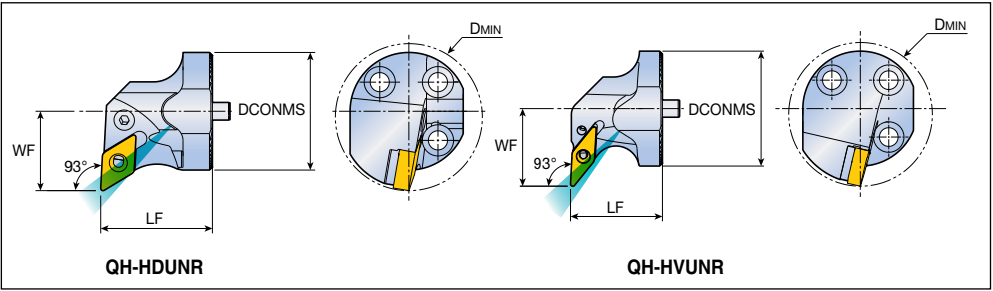
Approach angle	Designation	Dimension (mm)				Coolant hole	Fig.	Insert
		DCONMS	LF	WF	DMIN			
95°	QH25-HCLNR/L-0904	25	22	17	32	●	1	CN... 0904...
	QH32-HCLNR/L-0904	32	32	22	40	●	2	

Spare parts

Designation	Lever	Lever screw	Shim	Shim pin	Snap ring	Wrench	
QH25...0904	LCL 09B-NX	LCS 3B	-	-	LSR 3B	L-W 2	
QH32...0904	LCL 09-NX	LCS 3	LSC 32	LSP 3A	-	L-W 2.5	

QH-HDUNR/L QH-HVUNR/L

Hook lever type boring heads



Approach angle	Designation	Dimension (mm)				Coolant hole	Insert
		DCONMS	LF	WF	DMIN		
93°	QH40-HDUNR/L-1305 *	40	38	27	50	●	DN...G 1305...
93°	QH40-HVUNR/L-1304 *	40	32	27	50	●	VN...X 1304... YNMG 1304...

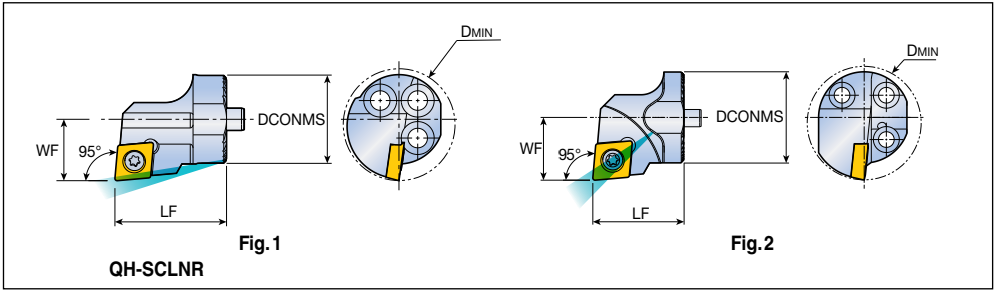
▶ * When applying Ø50mm shank, DMIN for the assembly is Ø60mm. When applying Ø60mm shank, DMIN for the assembly is Ø70mm.

Spare parts

Designation	Lever	Lever screw	Shim		Shim pin	Wrench	
HDUNR/L-1305	LCL 11-NX	LCS 4S	LSD 3.52B	-	LSP 4	L-W 3	
HVUNR/L-1304	LCL 08-NX	LCS 4-DH	-	LSV 2.51.8H	LSP 3B	L-W 2.5	

QH-SCLNR/L

Screw type boring heads

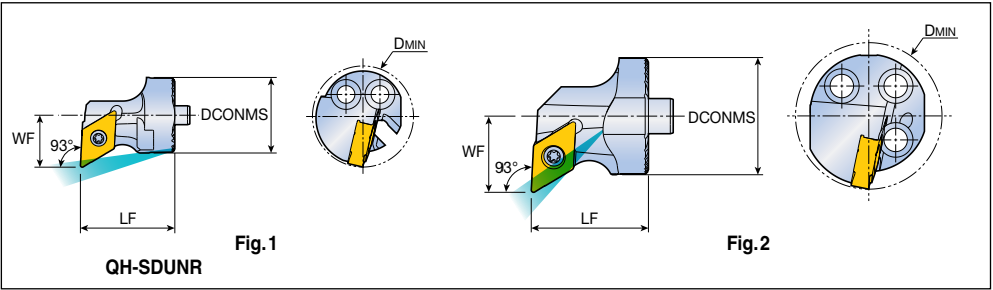


Approach angle	Designation	Dimension (mm)				Coolant hole	Fig.	Insert
		DCONMS	LF	WF	DMIN			
95°	QH16-SCLNR/L-0703	16	20	11	20	●	1	CNMX 0703...
	QH20-SCLNR/L-0703	20	20	13	25	●	2	

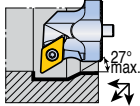
Spare parts

Designation	Screw	Wrench				
...0703	TS 25D060/HG-P	T 7P				

Screw type boring heads



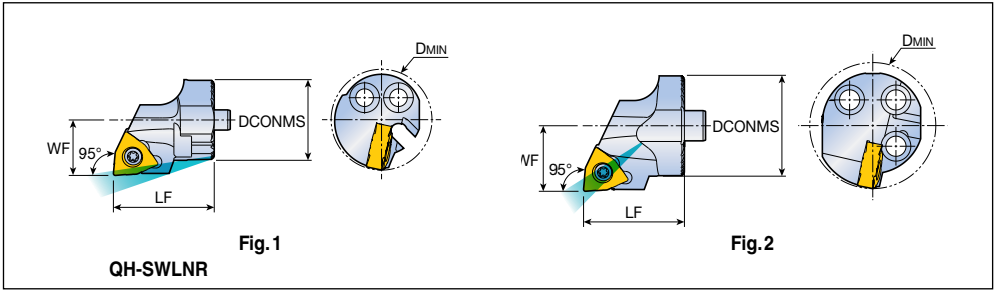
Approach angle	Designation	Dimension (mm)				Coolant hole	Fig.	Insert
		DCONMS	LF	WF	DMIN			
93°	QH16-SDUNR/L-0803	16	20	11	20	●	1	DN...X 0803...
	QH20-SDUNR/L-0803	20	20	13	25	●	2	DN...X 0803...
	QH32-SDUNR/L-1305	32	32	22	40	●	2	DN...G 1305...



Spare parts

Designation	Screw	Wrench					
...0803	TS 25D060/HG-P	T 7P					
...1305	TS 40G110I	T 15					

Screw type boring heads



Approach angle	Designation	Dimension (mm)				Coolant hole	Fig.	Insert
		DCONMS	LF	WF	DMIN			
95°	QH16-SWLNR/L-0403	16	20	11	20	●	1	WN...X 0403...
	QH20-SWLNR/L-0403	20	20	13	25	●	2	

Spare parts

Designation	Screw	Wrench				
SWLNR/L-0403	TS 25D060/HG-P	T 7P				

Anti-vibration shanks for boring

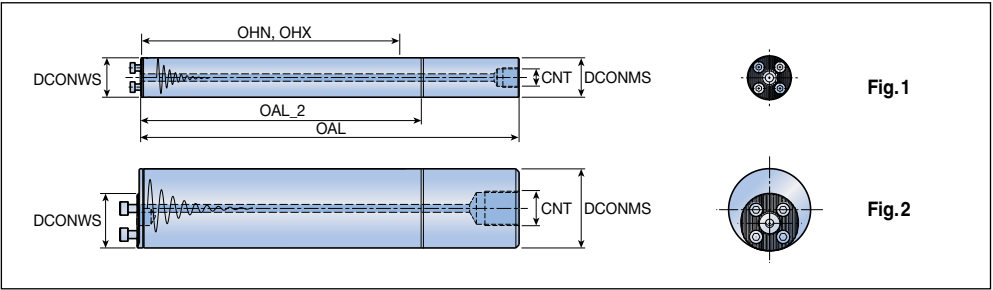




Fig. 1

Fig. 2

Designation	Dimension (mm)							Coolant hole	Fig.
	DCONMS	DCONWS	OAL	OAL_2	OHN	OHX	CNT		
QS16A-7D	16	16	156.3	100	55	92	G 1/8	●	1
QS16E-10D⁽¹⁾	16	16	204.3	-	96	140	-	●	1
QS20A-7D	20	20	200.3	125	70	120	G 1/4	●	1
QS20E-10D⁽¹⁾	20	20	260.3	-	120	180	-	●	1
QS25A-7D	25	25	257.5	155	88	155	G 1/4	●	1
QS25A-10D	25	25	332.5	255	155	230	G 1/4	●	1
QS25E-12D⁽¹⁾	25	25	380.0	-	230	280	G 1/8	●	1
QS25E-14D⁽¹⁾	25	25	430.0	-	280	330	G 1/8	●	1
QS32A-7D	32	32	323.0	190	120	192	G 3/8	●	1
QS32A-10D	32	32	419.0	320	192	288	G 3/8	●	1
QS32E-12D⁽¹⁾	32	32	480.0	-	288	352	G 1/4	●	1
QS32E-14D⁽¹⁾	32	32	544.0	-	352	416	G 1/4	●	1
QS40A-7D	40	40	411.0	240	128	251	G 1/2	●	1
QS40A-10D	40	40	531.0	410	248	368	G 1/2	●	1
QS40E-12D⁽¹⁾	40	40	608.0	-	368	448	G 3/8	●	1
QS40E-14D⁽¹⁾	40	40	688.0	-	448	528	G 3/8	●	1
QS50A-7D	50	40	523.0	305	168	318	G 1/2	●	2
QS50A-10D	50	40	673.0	520	318	468	G 1/2	●	2
QS50E-12D⁽¹⁾	50	40	768.0	-	468	568	G 1/2	●	2
QS50E-14D⁽¹⁾	50	40	868.0	-	568	668	G 1/2	●	2
QS60A-7D	60	40	633.0	380	208	388	G 3/4	●	2
QS60A-10D	60	40	813.0	630	388	568	G 3/4	●	2
QS60E-12D⁽¹⁾	60	40	920.0	-	588	688	G 3/4	●	2
QS60E-14D⁽¹⁾	60	40	1040.0	-	688	808	G 3/4	●	2

- ▶ ⁽¹⁾ Carbide shank
- ▶ OHN: Minimum overhang
- ▶ OHX: Maximum overhang
- ▶ OAL_2: Minimum length after shortening(only steel bar can be shortened)

Spare parts

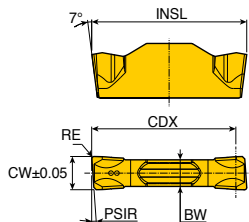
Designation	Screw	Wrench					
							
QS16	SH M3x0.5X10	L-W 2.5					
QS20	SH M3.5x0.6X10	L-W 2.5					
QS25	SH M4x0.7X12	L-W 3					
QS32	SH M5x0.8X12	L-W 4					
QS40/50/60	SH M6x1X16	L-W 5					

RHINO GROOVE



RDC

Double-ended inserts for shallow grooving and parting with "C" type chip breaker



Right hand shown

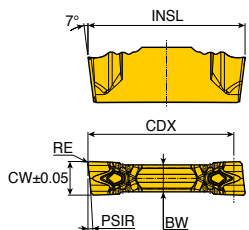
Size	Dimension (mm)					
	CW	RE	BW	INSL	PSIR	CDX
2 (.R)	2	0.2	1.7	14	0-6	13
2 RS	2	0.02	1.7	13.6	15	13
3 (.R)	3	0.2	2.4	14	0-15	13
4	4	0.3	3	14	-	13
5	5	0.3	4	17.5	-	17

Insert	Designation	Insert seat size	Feed (mm/rev)	Coated			Uncoated
				TT9080	TT7220	TT8020	K10
	RDC 2	2	0.05-0.18	●	●	●	●
	2-6R	2	0.04-0.14	●	●	●	
	2-15R	2	0.04-0.14	●	●	●	
	2-15RS	2	0.04-0.13	●			
	3	3	0.07-0.25	●	●	●	●
	3-6R	3	0.06-0.18	●	●	●	
	3-15R	3	0.06-0.18			●	
	4	4	0.08-0.30	●	●	●	●
	5	5	0.09-0.35	●	●	●	●

●: Standard items

RDJ

Double-ended inserts for shallow grooving and parting with "J" type chip breaker



Right hand shown

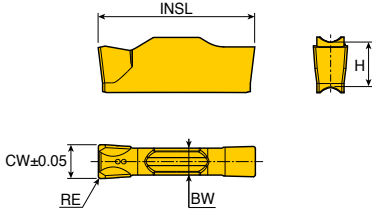
Size	Dimension (mm)					
	CW	RE	BW	INSL	PSIR	CDX
2 (.R)	2	0.2	1.7	14	0-15	13
2 RS	2	0.02	1.7	13.6	15	13
3 (.R)	3	0.2	2.4	14	0-15	13
3 RS	3	0.02	2.4	13.6	6-15	13
4	4	0.3	3	14	-	13
5	5	0.3	4	17.5	-	17

Insert	Designation	Insert seat size	Feed (mm/rev)	Coated			Uncoated
				TT9080	TT7220	TT8020	K10
	RDJ 2	2	0.05-0.18	●	●	●	●
	2-6R	2	0.03-0.08	●		●	
	2-15R	2	0.03-0.08	●		●	
	2-15RS	2	0.03-0.07	●	●	●	
	3	3	0.07-0.25	●	●	●	●
	3-6R	3	0.03-0.12	●	●	●	
	3-6RS	3	0.03-0.10			●	
	3-15R	3	0.03-0.12	●		●	
	3-15RS	3	0.03-0.10	●	●	●	
	4	4	0.08-0.30	●	●	●	●
5	5	0.09-0.35	●	●	●	●	

●: Standard items

RSC

Single-ended inserts for deep grooving and parting with "C" type chip breaker



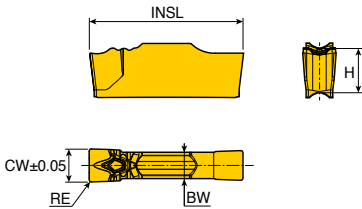
Size	Dimension (mm)				
	CW	RE	BW	INSL	H
2	2.0	0.20	1.6	14.0	4.0
3	3.0	0.20	2.4	14.0	4.0
4	4.0	0.30	3.0	14.0	4.0
5	5.0	0.30	4.0	17.5	5.1

Insert	Designation	Insert seat size	Feed (mm/rev)	Coated		
				TT9080	TT7220	TT8020
	RSC 2	2	0.05-0.18	●	●	●
	3	3	0.07-0.25	●	●	●
	4	4	0.08-0.30	●	●	●
	5	5	0.09-0.35	●	●	●

●: Standard items

RSJ

Single-ended inserts for deep grooving and parting with "J" type chip breaker



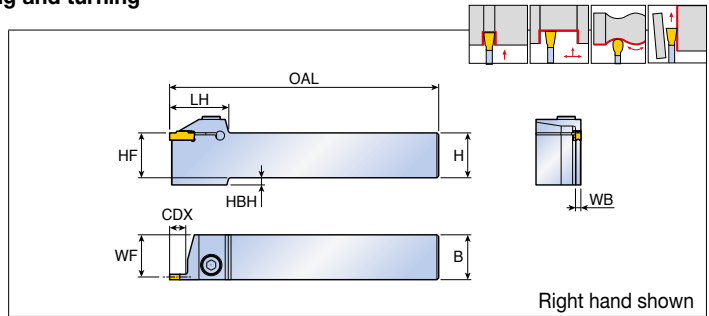
Size	Dimension (mm)				
	CW	RE	BW	INSL	H
2	2.0	0.20	1.6	14.0	4.0
3	3.0	0.20	2.4	14.0	4.0
4	4.0	0.30	3.0	14.0	4.0
5	5.0	0.30	4.0	17.5	5.1

Insert	Designation	Insert seat size	Feed (mm/rev)	Coated		
				TT9080	TT7220	TT8020
	RSJ 2	2	0.04-0.12	●	●	●
	3	3	0.04-0.16	●	●	●
	4	4	0.05-0.18	●	●	●
	5	5	0.05-0.20	●	●	●

●: Standard items



RGER/L

Holders for external grooving and turning



Designation	Insert seat size	Dimensions (mm)								Torque (N.m)	Insert
		H(HF)	B	OAL	WF	LH	WB	HBH	CDX		
RGER/L 1616-2T09	2	16	16	110	15.1	33	1.8	4	9	8	RDC/J RSC/J RDT
1616-2T16	2	16	16	110	15.1	35	1.8	4	16	8	
2020-2T09	2	20	20	125	19.1	33	1.8	-	9	8	
2020-2T16	2	20	20	125	19.1	35	1.8	-	16	8	
2525-2T09	2	25	25	150	24.1	33	1.8	-	9	8	
2525-2T16	2	25	25	150	24.1	35	1.8	-	16	8	
1616-3T09	3	16	16	110	14.8	33	2.4	4	9	8	
1616-3T16	3	16	16	110	14.8	35	2.4	4	16	8	
2020-3T09	3	20	20	125	18.8	33	2.4	-	9	8	
2020-3T16	3	20	20	125	18.8	35	2.4	-	16	8	
2525-3T09	3	25	25	150	23.8	33	2.4	-	9	8	
2525-3T16	3	25	25	150	23.8	35	2.4	-	16	8	
1616-4T10	4	16	16	110	14.5	32	3	4	10	8	
2020-4T10	4	20	20	125	18.5	32	3	-	10	8	
2020-4T16	4	20	20	125	18.5	35	3	-	16	8	
2525-4T10	4	25	25	150	23.5	32	3	-	10	8	
2525-4T16	4	25	25	150	23.5	35	3	-	16	8	
2020-5T12	5	20	20	125	18.1	35	3.9	-	12	8	
2020-5T20	5	20	20	125	18.1	37	3.9	-	20	8	
2525-5T12	5	25	25	150	23.1	35	3.9	-	12	8	
2525-5T20	5	25	25	150	23.1	37	3.9	-	20	8	

Spare parts

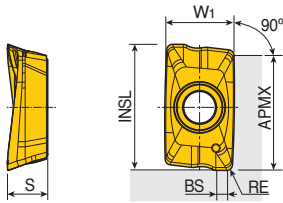
Designation	Screw	Wrench		
				
RGER/L 16/20	SH M6x1x20	L-W 5		
RGER/L 25	SH M6x1x25	L-W 5		

***RHINO**MILL*





APKT 1604

Inserts



Size	Dimension (mm)					
	INSL	W ₁	S	APMX	BS	RE
1604-REM	17.3	9.5	5.26	15	1.5	0.8
1604-RRE	17.3	9.6	5.56	15	1.5	0.8

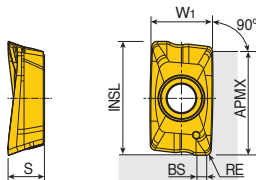
Insert	Designation	Recommended machining conditions		Coated					
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT6080	TT7080
	APKT 1604-REM	3.0 - 14.5	0.18 - 0.10	●		●	●	●	●
	APKT 1604-RRE *	3.0 - 14.5	0.20 - 0.12	●		●	●	●	●

- ▶ -REM: RHINO medium geometry
- ▶ -RRE: RHINO reinforced medium geometry
- *: Reinforced design, higher thickness and helix angle for smooth machining and higher productivity.


● : Standard items

AXMT 0903

Inserts



Size	Dimension (mm)					
	INSL	W ₁	S	APMX	BS	RE
09	10.7	6.3	3.6	8.8	0.8	0.4

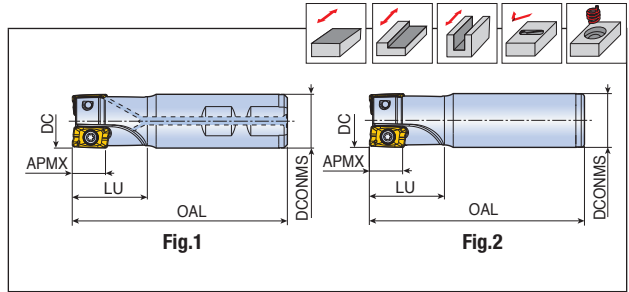
Insert	Designation	Recommended machining conditions		Coated					
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT6080	TT7080
	AXMT 0903-REM	2.0 - 8.0	0.18 - 0.10	●					

- ▶ -REM: RHINO medium geometry
- ▶ AXMT 09 inserts are mounted on existing APKT 09 cutters.
2S TFM90...-09 2S TE90...-09 2S TE90...M...-09

● : Standard items

TE90AP-16

End mills



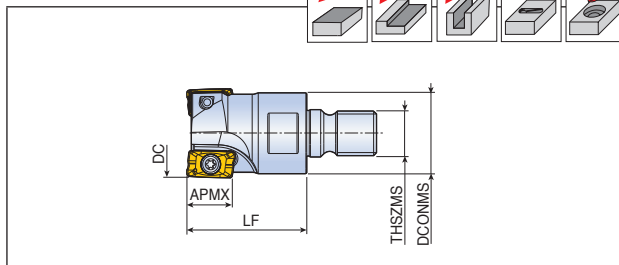
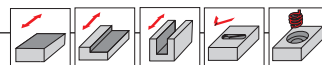
Designation		Dimension (mm)					Coolant Hole	Fig.		Insert
		DC	DCONMS	OAL	LU	APMX				
TE90AP 120-W20-16-L90	1	20	20	90	32	15	x	1	0.19	APKT 1604...
120-W20-16-L90-C	1	20	20	90	32	15	○	1	0.18	
225-24-16-L100	2	25	24	100	40	15	x	2	0.30	
225-W25-16-L100	2	25	25	100	39	15	x	1	0.32	
225-W25-16-L100-C	2	25	25	100	39	15	○	1	0.30	
225-25-16-L210	2	25	25	210	40	15	x	2	0.75	
226-25-16-L200	2	26	25	200	40	15	x	2	0.72	
226-25-16-L250	2	26	25	250	40	15	x	2	0.90	
232-32-16-L250	2	32	32	250	65	15	x	2	1.46	
332-W32-16-L110	3	32	32	110	40	15	x	1	0.59	
332-W32-16-L110-C	3	32	32	110	40	15	○	1	0.58	
332-W32-16-L200	3	32	32	200	65	15	x	1	1.12	
332-32-16-L200	3	32	32	200	65	15	x	2	1.13	
233-32-16-L200	2	33	32	200	40	15	x	2	1.18	
233-32-16-L250	2	33	32	250	40	15	x	2	1.50	
233-32-16-L300	2	33	32	300	40	15	x	2	1.81	
333-32-16-L250	3	33	32	250	55	15	x	2	1.46	
240-32-16-L250	2	40	32	250	54	15	x	2	1.61	
340-32-16-L200	3	40	32	200	54	15	x	2	1.27	
440-W32-16-L115	4	40	32	115	32	15	x	1	0.69	
440-W32-16-L115-C	4	40	32	115	32	15	○	1	0.68	
440-32-16-L200	4	40	32	200	54	15	x	2	1.26	
442-W32-16	4	42	32	115	32	15	x	1	0.74	

Spare parts

Designation	Screw	Wrench			
TE90AP-16 (-Ø25)	TS 400801	TD15			
TE90AP-16 (Ø26-Ø42)	TS 400931	TD15			

TE90AP-M-16

Modular heads



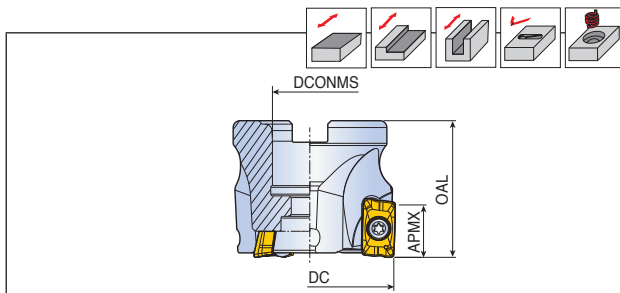
Designation		Dimension (mm)						Insert
		DC	DCONMS	LF	THSZMS	APMX		
TE90AP 120-M10-16	1	20	18	44.6	10	15	0.09	APKT 1604...
225-M12-16	2	25	21	43	12	15	0.12	
232-M16-16	2	32	29	43	16	15	0.24	
332-M16-16	3	32	29	43	16	15	0.21	
340-M16-16	3	40	29	43	16	15	0.27	
440-M16-16	4	40	29	43	16	15	0.27	

Spare parts

Designation	Screw	Wrench			
TE90AP-16 (-Ø25)	TS 40080I	TD15			
TE90AP-16 (Ø32-Ø40)	TS 40093I	TD15			

TFM90AP-16

Face mills



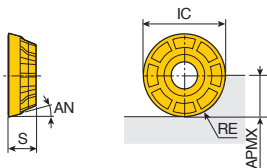
Designation		Dimension (mm)				Arbor style	Kg	Arbor style	Insert
		DC	DCONMS	OAL	APMX				
TFM90AP 340-16R-16	3	40	16	40	15	A	0.2	SH M8x1.25x30	APKT 1604...
440-16R-16	4	40	16	40	15	A	0.2	SH M8x1.25x30	
350-22R-16	3	50	22	40	15	A	0.3	SH M10x1.5x30	
450-22R-16	4	50	22	40	15	A	0.3	SH M10x1.5x30	
550-22R-16	5	50	22	40	15	A	0.3	SH M10x1.5x30	
550-27R-16	5	50	27	50	15	A	0.4	SH M12x1.75x35	
463-22R-16	4	63	22	40	15	A	0.4	SH M10x1.5x30	
663-22R-16	6	63	22	40	15	A	0.5	SH M10x1.5x30	
663-27R-16	6	63	27	50	15	A	0.7	SH M12x1.75x35	
480-27R-16	4	80	27	50	15	A	1.0	SH M12x1.75x35	
580-27R-16	5	80	27	50	15	A	0.9	SH M12x1.75x35	
680-27R-16	6	80	27	50	15	A	1.0	SH M12x1.75x35	
780-27R-16	7	80	27	50	15	A	1.0	SH M12x1.75x35	
6100-32R-16	6	100	32	50	15	B	1.6	-	
8100-32R-16	8	100	32	50	15	B	1.6	-	
7125-40R-16	7	125	40	63	15	B	2.7	-	
8125-40R-16	8	125	40	63	15	B	2.7	-	
9125-40R-16	9	125	40	63	15	B	2.7	-	
8160-40R-16	8	160	40	63	15	C	4.1	-	

Spare parts

Designation	Screw	Wrench			
TFM90AP-16 (Ø40, Ø50, Ø63)	TS 40093I	T-T15			
TFM90AP-16 (Ø80-)	TS 40120I	T-T15			

RXM(H)X

Inserts



Size	Dimension (mm)					
	RE	IC	S	APMX	AN	
10	5.0	10	3.18	5.0	15°	
12	6.0	12	3.97	6.0	15°	
16	8.0	16	4.76	8.0	15°	
20	10.0	20	6.35	10.0	11°	

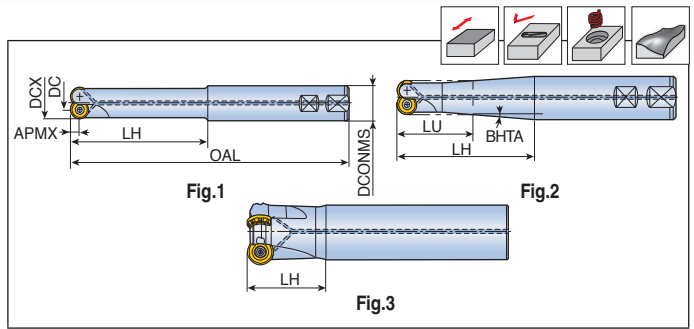


Insert	Designation	Recommended machining conditions		Coated							Uncoated		
		ap (mm)	Feed (mm/tooth)	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10	
	RXMX 1003-M	1.5-4.0	0.30-0.10	●			●		●	●			
	12T3-M	1.8-5.0	0.50-0.10	●	●	●	●		●	●			
	1604-M	2.0-6.5	0.50-0.10	●			●						
	2006-M	3.0-8.0	0.50-0.10	●			●						
	RXMX 1003-ML	1.5-4.0	0.30-0.05	●			●						
	12T3-ML	1.5-5.0	0.45-0.05	●	●		●						
	1604-ML	2.0-6.5	0.45-0.10	●			●						
	RXMX 1003-MR	1.5-4.0	0.30-0.05	●	●								
	12T3-MR	1.5-5.0	0.35-0.05	●	●								
	1604-MR	2.0-6.5	0.40-0.10	●	●								
	2006-MR	3.0-8.0	0.40-0.10	●	●		●						
	RXHX 1003-AL	1.5-4.0	0.80-0.10									●	
	12T3-AL	1.5-5.0	0.80-0.10									●	

● : Standard items

TERX

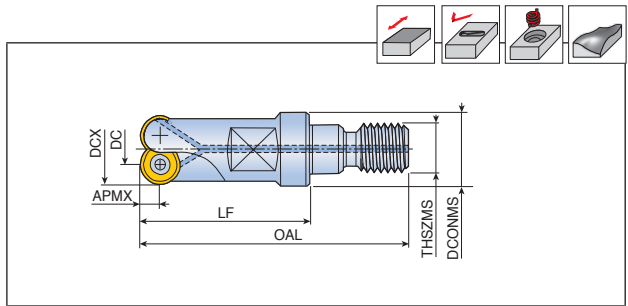
End mills



Designation		Dimension (mm)									Coolant hole	Fig.	Insert
		DCX	DC	DCONMS	OAL	LH	LU	BHTA	APMX				
TERX 220-W20-10	2	20	10	20	160	60	-	-	5.0	●	1	RXM(H)X 1003...	
220-25-10-L	2	20	10	25	250	80	60	4.0	5.0	●	2		
221-20-10-L160	2	21	11	20	160	30	-	-	5.0	●	3		
221-20-10-L200	2	21	11	20	200	30	-	-	5.0	●	3		
225-W25-10	2	25	15	25	160	60	-	-	5.0	●	1		
226-25-10-L200	2	26	16	25	200	30	-	-	5.0	●	3		
226-25-10-L300	2	26	16	25	300	30	-	-	5.0	●	3		
325-W25-10	3	25	15	25	160	60	-	-	5.0	●	1		
432-W32-10	4	32	22	32	160	60	-	-	5.0	●	1		
TERX 225-W25-12	2	25	13	25	160	60	-	-	6.0	●	1	RXM(H)X 12T3...	
226-25-12-L250	2	26	14	25	250	40	-	-	6.0	●	3		
232-32-12-L	2	32	20	32	250	50	-	-	6.0	●	3		
332-W32-12	3	32	20	32	160	64	-	-	6.0	●	1		
233-32-12-L200	2	33	21	32	200	40	-	-	6.0	●	3		
233-32-12-L250	2	33	21	32	250	40	-	-	6.0	●	3		
233-32-12-L300	2	33	21	32	300	40	-	-	6.0	●	3		
340-32-12-L250	3	40	28	32	250	40	-	-	6.0	●	3		
440-W32-12	4	40	28	32	160	50	-	-	6.0	●	1		
TERX 240-W32-16	2	40	24	32	160	50	-	-	8.0	●	1	RXMX 1604...	
340-32-16-L250	3	40	24	32	250	50	-	-	8.0	●	3		

TERX-M

Modular heads



Designation		Dimension (mm)							Coolant hole	Insert
		DCX	DC	DCONMS	LF	OAL	THSZMS	APMX		
TERX 220-M10-10	2	20	10	18	30	50	M10	5.0	●	RXM(H)X 1003...
225-M12-10	2	25	15	21	35	57	M12	5.0	●	
325-M12-10	3	25	15	21	35	57	M12	5.0	●	
430-M16-10	4	30	20	29	43	68	M16	5.0	●	
432-M16-10	4	32	22	29	43	68	M16	5.0	●	
542-M16-10	5	42	32	29	43	68	M16	5.0	●	
TERX 224-M12-12	2	24	12	21	35	57	M12	6.0	●	RXM(H)X 12T3...
332-M16-12	3	32	20	29	43	68	M16	6.0	●	
335-M16-12	3	35	23	29	43	68	M16	6.0	●	

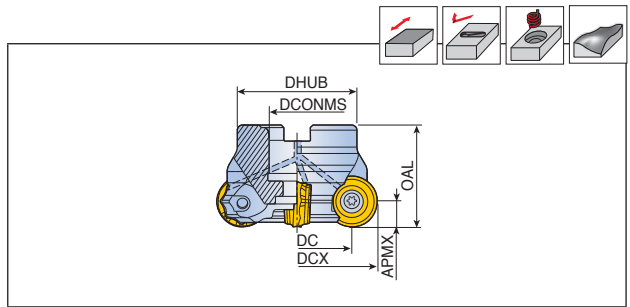
► Matched with T-FLEXTEC holder

Spare parts

Designation	Screw	Wrench			
TERD-05	TS 20038I	TD 6			
TERD-07	SO 25050I	TD 7			
TERX-10	TS 35070I/HG	TD 15			
TERX-12	TS 35085I/HG	TD 15			
TERX-16	TS 45A100I/HG	TD 20			
TERX-20	TS 50115I/HG	TD 20			

TFMRX-16/20

Face mills



Designation		Dimension (mm)						Coolant hole	Arbor style		Mounting bolt	Insert
		DCX	DC	DCONMS	DHUB	OAL	APMX					
TFMRX 452-22R-16	4	52	36	22	40	40	8.0	●	A	0.2	SH M10x30	RXMX 1604...
463-22R-16	4	63	47	22	47	40	8.0	●	A	0.4	LH M10x25	
566-27R-16	5	66	50	27	58	50	8.0	●	A	0.5	SH M12x35	
580-27R-16	5	80	64	27	58	50	8.0	●	A	0.8	SH M12x35	
6100-32R-16	6	100	84	32	66	50	8.0	x	B	1.1	-	
7125-40R-16	7	125	109	40	85	63	8.0	x	B	2.4	-	
8160-40R-16	8	160	144	40	110	63	8.0	x	C	3.6	-	
TFMRX 463-22R-20	4	63	43	22	47	40	10.0	●	A	0.3	LH M10x25	RXMX 2006...
580-27R-20	5	80	60	27	58	50	10.0	●	A	0.8	LH M12x30	
6100-32R-20	6	100	80	32	85	50	10.0	x	B	1.0	-	
7125-40R-20	7	125	105	40	85	63	10.0	x	B	2.5	-	
8160-40R-20	8	160	140	40	110	63	10.0	x	C	3.7	-	

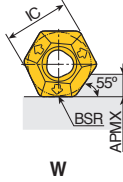
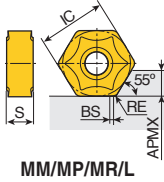
▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

Spare parts

Designation	Screw	Wrench			
TFMRX-10	TS 35070I/HG	T-T15			
TFMRX-12	TS 35085I/HG	T-T15			
TFMRX-16	TS 45A100I/HG	T-T20			
TFMRX-20	TS 50115I	T-T20			

HNC(M)X 05

Inserts



Size	Dimension (mm)					
	IC	S	APMX	BS	RE	BSR
05	12.7	5.0-6.0	5.0	0 - 0.6	1.0	-
05-W	12.7	5.56	5.0	-	-	250

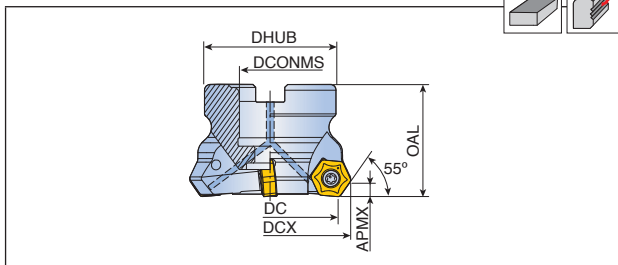


Insert	Designation	Recommended machining conditions		Ceramic							Coated		Uncoated	
		ap (mm)	Feed (mm/tooth)	AS10	TT9080	TT9030	TT8080	TT8525B	TT7080	TT7515	TT6080	TT2510	K10	
	HNCX 050410-L	1.5-4.0	0.20-0.05		●		●				●			
	HNCX 050410R-MP	1.5-4.0	0.20-0.05		●				●		●			
	HNCX 050410-MM	1.5-4.0	0.20-0.05		●	●				●	●			
	HNMX050410-MM	1.5-4.0	0.20-0.07		●	●	●			●	●	●		
	HNCX 050610-MR	1.5-4.0	0.25-0.13	●										
	HNCX 05R-W	0.1-1.0	0.15-0.05		●	●					●			

● : Standard items

TFM55AHNS-05

Face mills



Designation		Dimension (mm)							Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX						
TFM55AHNS 450-22R-05B	4	50	58.2	22	45	40	5.0	●	A	0.4	SH M10x30	HNC(M)X 05...	
650-22R-05	6	50	58.2	22	45	40	5.0	●	A	0.4	SH M10x30		
563-22R-05B	5	63	71.2	22	47	40	5.0	●	A	0.6	SH M10x30		
863-22R-05	8	63	71.2	22	47	40	5.0	●	A	0.5	SH M10x30		
680-27R-05B	6	80	88.2	27	70	50	5.0	●	A	1.3	SH M12x35		
880-27R-05	8	80	88.2	27	70	50	5.0	●	A	1.2	SH M12x35		
1080-27R-05	10	80	88.2	27	70	50	5.0	●	A	1.2	SH M12x35		
7100-32R-05B	7	100	108.2	32	85	50	5.0	●	A	2.0	SH M16x35		
10100-32R-05	10	100	108.2	32	85	50	5.0	●	A	2.0	SH M16x35		
12100-32R-05	12	100	108.2	32	85	50	5.0	●	A	2.0	SH M16x35		
10125-40R-05B	10	125	133.2	40	85	63	5.0	●	A	3.2	SH M20x40		
12125-40R-05	12	125	133.2	40	85	63	5.0	●	A	3.4	SH M20x40		
16125-40R-05	16	125	133.2	40	85	63	5.0	●	A	3.2	SH M20x40		
12160 -40R-05B	12	160	168.2	40	110	63	5.0	x	C	4.7	-		
TFM55AHNS 680-25.4R-05B	6	80	88.2	25.4	70	50	5.0	●	A	1.3	SH M12x35		
7100-31.75R-05B	7	100	108.2	31.75	80	50	5.0	x	B	2.0	-		
10125-38.1R-05B	10	125	133.2	38.1	80	63	5.0	x	B	3.2	-		

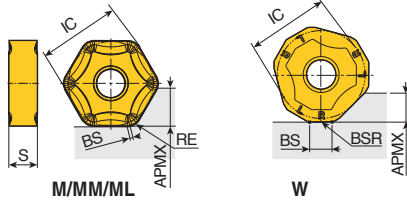
▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

Spare parts

Designation	Screw	Wrench			
	TFM55AHNS	TS 40B100I	T-T15		

HNHX 10

Inserts



Size	Dimension (mm)					
	IC	S	APMX	BS	RE	BSR
HNHX10	19.05	6.35	6.1	1.0	1.0	-
HNHX10-W	19.05	6.35	6.1	4.85	-	250

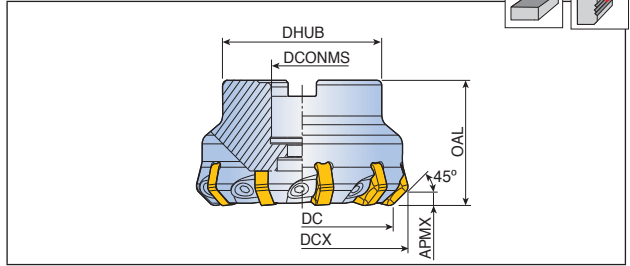
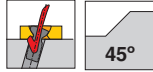


Insert	Designation	Recommended machining conditions		Coated						Uncoated	
		ap (mm)	Feed (mm/tooth)	Ceramic	Coated						Uncoated
				AS10	TT9080	TT8080	TT8525B	TT7080	TT7515	TT6080	K10
	HNHX 1006 ANT-N-M	1.5-5.0	0.20-0.10		●	●	●	●	●	●	
	HNHX 1006 ANT-N-MM	1.5-5.0	0.25-0.125		●					●	
	HNHX 1006 ANT-N-ML	1.5-5.0	0.20-0.10							●	
	HNHX 1006 ANT-N-W	0.1-1.0	0.20-0.10		●					●	
	HNHX 1006 ANT-N-CE	1.5-5.0	0.25-0.125	●							

●: Standard items

TFM45HN-10

Face mills



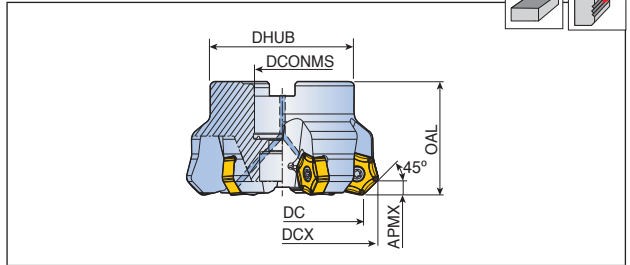
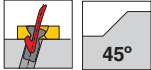
Designation		Dimension (mm)						Arbor style		Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX				
TFM45HN 1080-27R-10	10	80	94	27	70	55	6.1	A	1.9	SH M12x35	HNHX 1006...
14100-32R-10	14	100	114	32	85	63	6.1	A	3.3	SH M16x35	
18125-40R-10	18	125	139	40	85	63	6.1	B	3.9	-	
22160-40R-10	22	160	174	40	110	63	6.1	C	5.6	-	
28200-60R-10	28	200	214	60	130	63	6.1	C	7.9	-	
36250-60R-10	36	250	264	60	160	63	6.1	C	13.1	-	

Spare parts

Designation	Wedge	Wedge screw	Wrench		
	TFM45HN	 WFZ 8H	 WS 8	 T-W 4	

TFM45HNS-10

Face mills



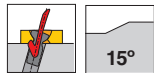
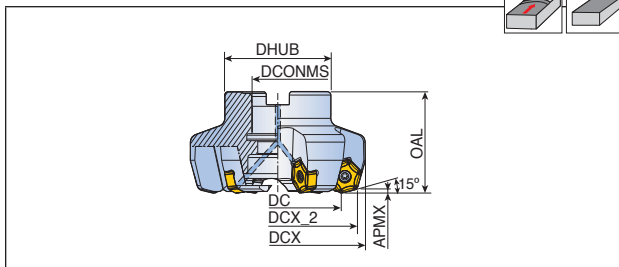
Designation		Dimension (mm)							Coolant hole	Arbor style	Weight (Kg)	Mounting bolt	Insert
		DC	DCX	DCONMS	DHUB	OAL	APMX						
TFM45HNS 563-22R-10	5	63	77	22	47	50	6.1	●	A	0.8	SH M10x25	HNHX 1006...	
663-22R-10F	6	63	77	22	47	50	6.1	●	A	0.9	SH M10x25		
680-27R-10	6	80	94	27	70	55	6.1	●	A	1.6	SH M12x35		
780-27R-10F	7	80	94	27	70	55	6.1	●	A	1.6	SH M12x35		
7100-32R-10	7	100	114	32	85	63	6.1	●	A	2.7	SH M16x35		
9100-32R-10F	9	100	114	32	85	63	6.1	●	A	2.8	SH M16x35		
8125-40R-10	8	125	139	40	85	63	6.1	x	B	3.4	-		
10125-40R-10	10	125	139	40	85	63	6.1	x	B	3.4	-		
12125-40R-10F	12	125	139	40	85	63	6.1	x	B	3.4	-		
10160-40R-10	10	160	174	40	110	63	6.1	x	C	4.8	-		
12160-40R-10	12	160	174	40	110	63	6.1	x	C	4.8	-		
14160-40R-10F	14	160	174	40	110	63	6.1	x	C	4.9	-		
12200-60R-10	12	200	214	60	130	63	6.1	x	C	6.9	-		
16200-60R-10F	16	200	214	60	130	63	6.1	x	C	7.0	-		
16250-60R-10	16	250	264	60	160	63	6.1	x	C	11.8	-		
TFM45HNS 680-25.4R-10	6	80	94	25.4	70	55	6.1	●	A	1.6	SH M12x35		
7100-31.75R-10	7	100	114	31.75	80	63	6.1	x	B	2.7	-		
9100-31.75R-10F	9	100	114	31.75	80	63	6.1	x	B	2.8	-		
8125-38.1R-10	8	125	139	38.1	80	63	6.1	x	B	3.4	-		
10125-38.1R-10	10	125	139	38.1	80	63	6.1	x	B	3.4	-		
10160-50.8R-10	10	160	174	50.8	100	63	6.1	x	B	4.8	-		
12160-50.8R-10	12	160	174	50.8	100	63	6.1	x	B	4.8	-		
12200-47.625R-10	12	200	214	47.625	130	63	6.1	x	C	6.9	-		
16250-47.625R-10	16	250	264	47.625	160	63	6.1	x	C	11.8	-		

Spare parts

Designation	Screw	Wrench			
	TFM45HNS	TS 50C130I/HG	T-T20		

TFM15HNS-10

Face mills



Designation		Dimension (mm)							Coolant hole	Arbor style	Kg	Mounting bolt	Insert
		DCX 2	DC	DCX	DCONMS	DHUB	OAL	APMX					
TFM15HNS 580-27R-10	5	80	61.8	85.2	27	58	55	2.0	•	A	1.3	SH M12x35	HNHX 1006 ANTN-M
6100-32R-10	6	100	81.7	105.2	32	66	63	2.0	x	B	1.9	-	
8125-40R-10	8	125	106.7	130.2	40	85	63	2.0	x	B	2.9	-	

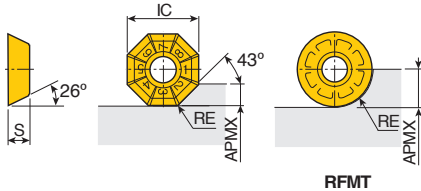
▶ Mounting bolt with coolant through hole is available on request (ordering example: SH M10x1.5x30-C)

Spare parts

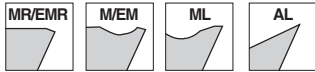
Designation	Screw	Wrench			
	TFM15HNS	TS 50C130/HG	T-T20		

OFCW(T) 05/OFMT 05/RFMT 14

Inserts



Size	Dimension (mm)			
	IC	S	APMX	RE
OF... 05	12.7	3.76-3.86	3.5	0.5-0.8
RFMT 14	14.0	4.53	70	70

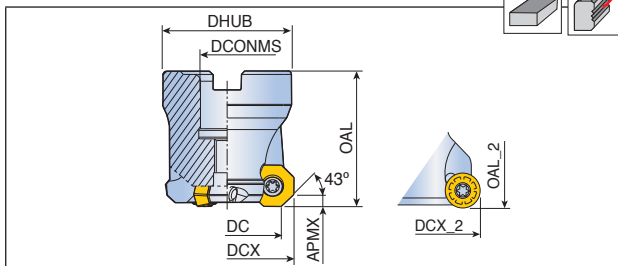


Insert	Designation	Recommended machining conditions		Cermet							Coated		Uncoated	
		ap (mm)	Feed (mm/tooth)	CT7000	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080	TT7515	TT6080	K10	
	OFCW 05T3 TN-MR	1.0-3.0	0.08-0.04		●									
	05T3 TN-EMR	1.0-3.0	0.15-0.08		● ●		●		●		●			
	OFCT 05T3 TN-M	1.0-3.0	0.15-0.08							●		●		
	05T3 TN-EM	1.0-3.0	0.10-0.05		● ●		●		●		●			
	OFCT 05T3 TN-AL	1.0-3.0	0.50-0.10									●		
	OFMT 05T3 TN-ML	1.0-3.0	0.12-0.06		● ●	● ●	● ●	● ●	● ●		● ●	● ●		
	RFMT 1404-ML	2.0-6.0	0.27-0.14		●			●			●			

● : Standard items

TFM430FS-05

Face mills



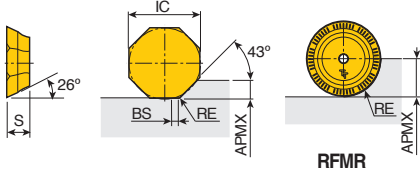
Designation		Dimension (mm)									Arbor style	kg	Mounting bolt	Insert
		DC	DCX	DCX_2	DCONMS	DHUB	OAL	OAL_2	APMX					
TFM430FS 332-16R-05	3	32	39.6	40.8	16	30	40	40.6	3.5	E	0.3	KTB32B	OFCW	
440-16R-05	4	40	47.5	48.7	16	38	40	40.6	3.5	A	0.4	SH M8x30	05T3...,	
550-22R-05	5	50	57.9	59.0	22	45	40	40.6	3.5	A	0.6	SH M10x30	OFCT	
663-22R-05	6	63	71.0	72.0	22	47	40	40.6	3.5	A	1.0	SH M10x30	05T3...,	
780-27R-05	7	80	88.0	89.0	27	70	50	50.6	3.5	A	1.3	SH M12x35	OFMT	
8100-32R-05	8	100	108.0	109.0	32	85	50	50.6	3.5	A	2.6	LH M16x35	05T3...,	
9125-40R-05	9	125	133.0	134.0	40	85	63	63.6	3.5	B	3.0	-	RFMT	
TFM430FS 780-25.4R-05	7	80	88.0	89.0	25.4	70	50	50.6	3.5	A	1.3	SH M12x35	1404...	
9125-38.1R-05	9	125	133.0	134.0	38.1	80	63	63.6	3.5	B	3.0	-		

Spare parts

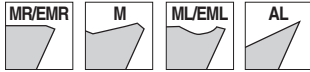
Designation	Screw	Wrench			
TFM430FS	TS 400931	T-T15			

OFCN 07/OFMR 07/OFMR 19

Inserts



Size	Dimension (mm)					
	IC	S	APMX	BS	RE	
OF... 07	17.94	5.0-5.1	5.0	13-2.2	0.8	
RFMR 19	19.00	5.3	9.5	-	9.5	

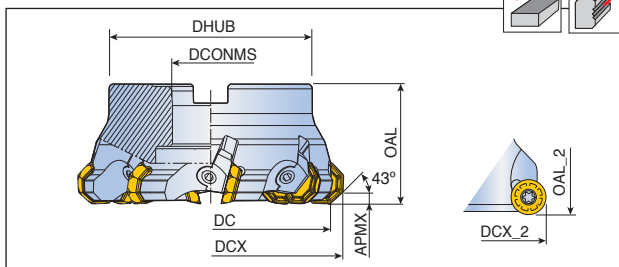


Insert	Designation	Recommended machining conditions		Cermets							Coated	Uncoated	
		ap (mm)	Feed (mm/tooth)	CT7000	TT9080	TT9030	TT8080	TT8020	TT8525B	TT7080			TT7515
	OFCN 0704 TN-MR	1.5-4.0	0.20-0.08	●						●	●		
	OFCN 0704 TN-EMR	1.5-4.0	0.15-0.08		●			●	●	●	●		
	OFMR 0704 AER-M	1.5-4.0	0.19-0.10		●	●	●	●	●	●	●		
	OFMR 0704 TN-AL	1.5-4.0	0.15-0.08									●	
	OFCR 0704 TN-ML	1.5-4.0	0.15-0.05					●		●	●		
	OFCR 0704 TN-EML	1.5-4.0	0.15-0.08		●	●		●	●	●	●		
	RFMR 1904-M	2.5-8.0	0.14-0.07		●	●		●		●			

●: Standard items

TFM43ZOFW-07

Face mills



Designation		Dimension (mm)									Arbor style	Kg	Mounting bolt	Insert
		DC	DCX	DCX_2	DCONMS	DHUB	OAL	OAL_2	APMX					
TFM43ZOFW 463-22R-07	4	63	75.1	76.1	22	47	40	40.7	5.0	A	0.5	LH M10x25	OFCN	
580-27R-07	5	80	92.0	93.1	27	70	50	50.7	5.0	A	1.2	SH M12x35	0704..., OFCR	
6100-32R-07	6	100	112.0	113.1	32	85	50	50.7	5.0	B	1.8	-	0704..., OFMR	
8100-32R-07	8	100	112.0	113.1	32	85	50	50.7	5.0	B	1.8	-	0704..., RFMR	
8125-40R-07	8	125	137.0	138.1	40	85	63	63.7	5.0	B	3.0	-	1904...	
10125-40R-07	10	125	137.0	138.1	40	85	63	63.7	5.0	B	3.0	-		
10160-40R-07	10	160	172.0	173.1	40	100	63	63.7	5.0	C	4.7	-		
12160-40R-07	12	160	172.0	173.1	40	110	63	63.7	5.0	C	4.7	-		
12200-60R-07	12	200	212.0	213.1	60	130	63	63.7	5.0	C	7.0	-		
14200-60R-07	14	200	212.0	213.1	60	130	63	63.7	5.0	C	7.0	-		
TFM43ZOFW 6100-31.75R-07	6	100	112.0	113.1	31.75	80	50	50.7	5.0	B	1.8	-		
8125-38.1R-07	8	125	137.0	138.1	38.1	80	63	63.7	5.0	B	3.0	-		
10160-50.8R-07	10	160	172.0	173.1	50.8	100	63	63.7	5.0	B	4.7	-		

Spare parts

Designation	Wedge	Wedge screw	Wrench		
TFM43ZOFW	WFO-8Z	WS 8, *WS 8S, WS 8M	T-W 4		

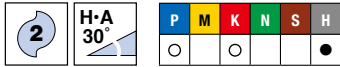
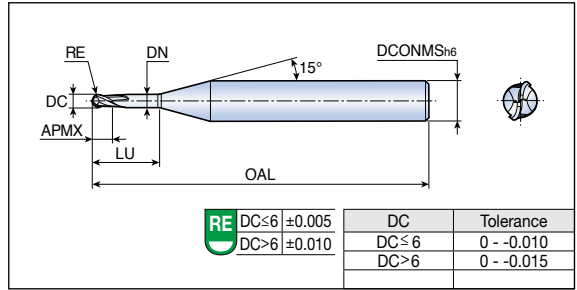
► *WS8S: For TFM43ZOFW-463...only

RHINOSOLID



HSB 2

2 flute long neck ball

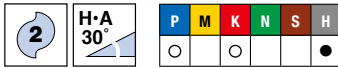
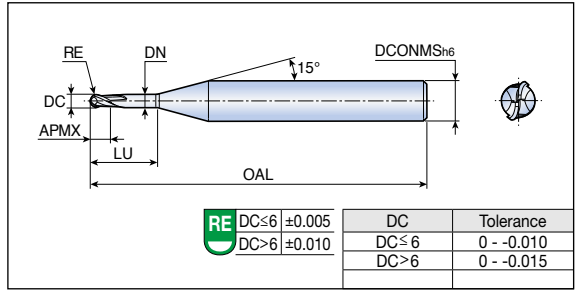


Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LU	DN	DCONMS	
HSB 2003 003 010	0.3	0.15	45	0.3	1.0	0.27	4.0	●
2003 003 020	0.3	0.15	45	0.3	2.0	0.27	4.0	●
2003 003 030	0.3	0.15	45	0.3	3.0	0.27	4.0	●
2004 004 010	0.4	0.2	45	0.4	1.0	0.36	4.0	●
2004 004 015	0.4	0.2	45	0.4	1.5	0.36	4.0	●
2004 004 020	0.4	0.2	45	0.4	2.0	0.36	4.0	●
2004 004 025	0.4	0.2	45	0.4	2.5	0.36	4.0	●
2004 004 030	0.4	0.2	45	0.4	3.0	0.36	4.0	●
2004 004 040	0.4	0.2	45	0.4	4.0	0.36	4.0	●
2005 005 010	0.5	0.25	45	0.5	1.0	0.45	4.0	●
2005 005 015	0.5	0.25	45	0.5	1.5	0.45	4.0	●
2005 005 020	0.5	0.25	45	0.5	2.0	0.45	4.0	●
2005 005 025	0.5	0.25	45	0.5	2.5	0.45	4.0	●
2005 005 030	0.5	0.25	45	0.5	3.0	0.45	4.0	●
2005 005 040	0.5	0.25	45	0.5	4.0	0.45	4.0	●
2005 005 050	0.5	0.25	45	0.5	5.0	0.45	4.0	●
2005 005 060	0.5	0.25	45	0.5	6.0	0.45	4.0	●
2005 005 080	0.5	0.25	45	0.5	8.0	0.45	4.0	●
2006 006 020	0.6	0.3	45	0.6	2.0	0.55	4.0	●
2006 006 030	0.6	0.3	45	0.6	3.0	0.55	4.0	●
2006 006 040	0.6	0.3	45	0.6	4.0	0.55	4.0	●
2006 006 050	0.6	0.3	45	0.6	5.0	0.55	4.0	●
2006 006 060	0.6	0.3	45	0.6	6.0	0.55	4.0	●
2006 006 080	0.6	0.3	45	0.6	8.0	0.55	4.0	●
2006 006 100	0.6	0.3	45	0.6	10.0	0.55	4.0	●
2008 008 020	0.8	0.4	45	0.8	2.0	0.75	4.0	●
2008 008 030	0.8	0.4	45	0.8	3.0	0.75	4.0	●
2008 008 040	0.8	0.4	45	0.8	4.0	0.75	4.0	●
2008 008 050	0.8	0.4	45	0.8	5.0	0.75	4.0	●
2008 008 060	0.8	0.4	45	0.8	6.0	0.75	4.0	●
2008 008 080	0.8	0.4	45	0.8	8.0	0.75	4.0	●
2008 008 100	0.8	0.4	45	0.8	10.0	0.75	4.0	●
2008 008 120	0.8	0.4	45	0.8	12.0	0.75	4.0	●

●: Standard items

HSB 2

2 flute long neck ball

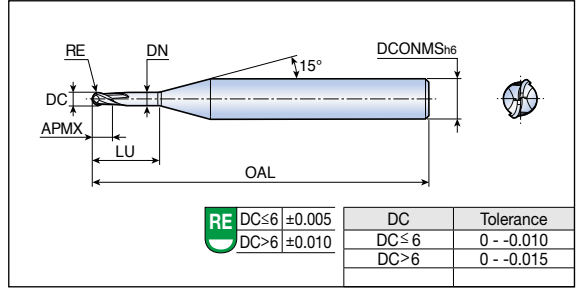


Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LU	DN	DCONMS	
HSB 2010 010 030	1.0	0.5	50	1.0	3	0.97	4.0	●
2010 010 040	1.0	0.5	50	1.0	4	0.97	4.0	●
2010 010 050	1.0	0.5	50	1.0	5	0.97	4.0	●
2010 010 060	1.0	0.5	50	1.0	6	0.97	4.0	●
2010 010 070	1.0	0.5	50	1.0	7	0.97	4.0	●
2010 010 080	1.0	0.5	50	1.0	8	0.95	4.0	●
2010 010 090	1.0	0.5	50	1.0	9	0.95	4.0	●
2010 010 100	1.0	0.5	50	1.0	10	0.95	4.0	●
2010 010 120	1.0	0.5	50	1.0	12	0.93	4.0	●
2010 010 140	1.0	0.5	50	1.0	14	0.93	4.0	●
2010 010 160	1.0	0.5	50	1.0	16	0.93	4.0	●
2010 010 180	1.0	0.5	55	1.0	18	0.93	4.0	●
2010 010 200	1.0	0.5	55	1.0	20	0.93	4.0	●
2012 012 040	1.2	0.6	50	1.2	4	1.15	4.0	●
2012 012 060	1.2	0.6	50	1.2	6	1.15	4.0	●
2012 012 080	1.2	0.6	50	1.2	8	1.15	4.0	●
2012 012 100	1.2	0.6	50	1.2	10	1.15	4.0	●
2012 012 120	1.2	0.6	50	1.2	12	1.13	4.0	●
2015 015 040	1.5	0.75	50	1.5	4	1.45	4.0	●
2015 015 060	1.5	0.75	50	1.5	6	1.45	4.0	●
2015 015 080	1.5	0.75	50	1.5	8	1.45	4.0	●
2015 015 100	1.5	0.75	50	1.5	10	1.45	4.0	●
2015 015 120	1.5	0.75	50	1.5	12	1.43	4.0	●
2015 015 140	1.5	0.75	50	1.5	14	1.43	4.0	●
2015 015 160	1.5	0.75	50	1.5	16	1.41	4.0	●
2015 015 180	1.5	0.75	55	1.5	18	1.41	4.0	●
2015 015 200	1.5	0.75	55	1.5	20	1.39	4.0	●
2020 030 060	2.0	1.0	50	3.0	6	1.95	4.0	●
2020 030 080	2.0	1.0	50	3.0	8	1.95	4.0	●
2020 030 100	2.0	1.0	50	3.0	10	1.95	4.0	●
2020 030 120	2.0	1.0	50	3.0	12	1.93	4.0	●
2020 030 140	2.0	1.0	50	3.0	14	1.93	4.0	●
2020 030 160	2.0	1.0	50	3.0	16	1.93	4.0	●
2020 030 180	2.0	1.0	55	3.0	18	1.93	4.0	●
2020 030 200	2.0	1.0	55	3.0	20	1.93	4.0	●

●: Standard items

HSB 2

2 flute long neck ball



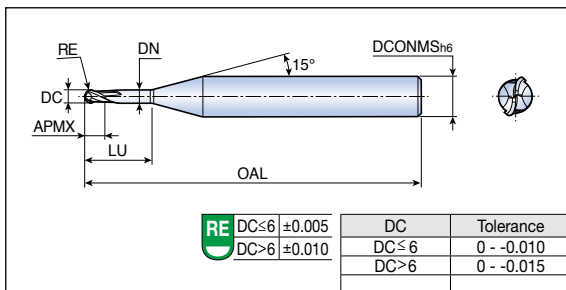
2	H-A 30°	P	M	K	N	S	H
		○	○	○	○	○	●

Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LU	DN	DCONMS	
HSB 2020 030 250	2.0	1.0	60	3.0	25	1.93	4.0	●
2020 030 300	2.0	1.0	70	3.0	30	1.93	4.0	●
2025 035 080	2.5	1.25	55	3.5	8	2.45	4.0	●
2025 035 100	2.5	1.25	55	3.5	10	2.45	4.0	●
2025 035 120	2.5	1.25	55	3.5	12	2.43	4.0	●
2025 035 160	2.5	1.25	55	3.5	16	2.41	4.0	●
2025 035 200	2.5	1.25	55	3.5	20	2.41	4.0	●
2030 040 080	3.0	1.5	55	4.0	8	2.85	6.0	●
2030 040 100	3.0	1.5	55	4.0	10	2.85	6.0	●
2030 040 120	3.0	1.5	55	4.0	12	2.85	6.0	●
2030 040 140	3.0	1.5	55	4.0	14	2.85	6.0	●
2030 040 160	3.0	1.5	55	4.0	16	2.85	6.0	●
2030 040 180	3.0	1.5	60	4.0	18	2.85	6.0	●
2030 040 200	3.0	1.5	60	4.0	20	2.85	6.0	●
2030 040 250	3.0	1.5	60	4.0	25	2.85	6.0	●
2030 040 300	3.0	1.5	75	4.0	30	2.85	6.0	●
2030 040 350	3.0	1.5	75	4.0	35	2.85	6.0	●
2030 040 400	3.0	1.5	80	4.0	40	2.85	6.0	●
2040 050 100	4.0	2.0	55	5.0	10	3.9	6.0	●
2040 050 120	4.0	2.0	55	5.0	12	3.9	6.0	●
2040 050 160	4.0	2.0	55	5.0	16	3.9	6.0	●
2040 050 200	4.0	2.0	60	5.0	20	3.9	6.0	●
2040 050 250	4.0	2.0	60	5.0	25	3.9	6.0	●
2040 050 300	4.0	2.0	75	5.0	30	3.9	6.0	●
2040 050 350	4.0	2.0	75	5.0	35	3.9	6.0	●
2040 050 400	4.0	2.0	80	5.0	40	3.9	6.0	●
2050 060 120	5.0	2.5	70	6.0	12	4.9	6.0	●
2050 060 300	5.0	2.5	70	6.0	30	4.9	6.0	●

● Standard items

HSB 2...S6

2 flute long neck ball (Shank 6mm)



2

H-A
30°

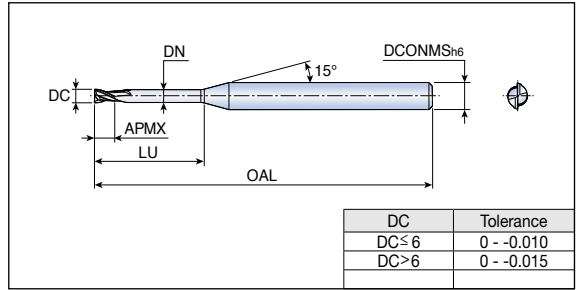
P	M	K	N	S	H
○	○	○	○	○	●

Designation	Dimension (mm)							Grade TT5505
	DC	RE	OAL	APMX	LU	DN	DCONMS	
HSB 2006 006 020 S6	0.6	0.3	45	0.6	2	0.55	6.0	●
2006 006 040 S6	0.6	0.3	45	0.6	4	0.55	6.0	●
2006 006 060 S6	0.6	0.3	45	0.6	6	0.55	6.0	●
2008 008 020 S6	0.8	0.4	45	0.8	2	0.75	6.0	●
2008 008 040 S6	0.8	0.4	45	0.8	4	0.75	6.0	●
2008 008 060 S6	0.8	0.4	45	0.8	6	0.75	6.0	●
2008 008 080 S6	0.8	0.4	45	0.8	8	0.75	6.0	●
2010 010 030 S6	1.0	0.5	50	1.0	3	0.95	6.0	●
2010 010 040 S6	1.0	0.5	50	1.0	4	0.95	6.0	●
2010 010 060 S6	1.0	0.5	50	1.0	6	0.95	6.0	●
2010 010 080 S6	1.0	0.5	50	1.0	8	0.95	6.0	●
2010 010 100 S6	1.0	0.5	50	1.0	10	0.95	6.0	●
2015 015 040 S6	1.5	0.75	50	1.5	4	1.45	6.0	●
2015 015 060 S6	1.5	0.75	50	1.5	6	1.45	6.0	●
2015 015 080 S6	1.5	0.75	50	1.5	8	1.45	6.0	●
2015 015 100 S6	1.5	0.75	50	1.5	10	1.45	6.0	●
2015 015 120 S6	1.5	0.75	50	1.5	12	1.45	6.0	●
2020 030 060 S6	2.0	1.0	50	3.0	6	1.95	6.0	●
2020 030 080 S6	2.0	1.0	50	3.0	8	1.95	6.0	●
2020 030 100 S6	2.0	1.0	50	3.0	10	1.95	6.0	●
2020 030 120 S6	2.0	1.0	50	3.0	12	1.95	6.0	●
2020 030 160 S6	2.0	1.0	50	3.0	16	1.95	6.0	●

● Standard items

HSF 2

2 flute long neck flat

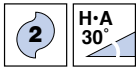
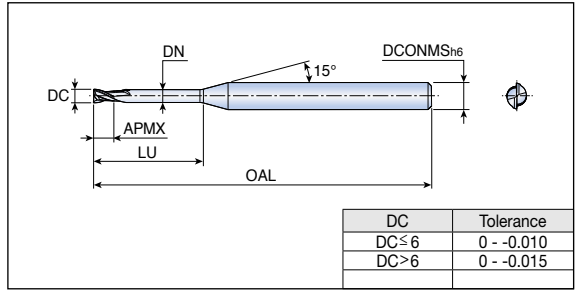


Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5505
		DC	OAL	APMX	LU	DN	DCONMS	
HSF 2003 004 010	0.001-0.005	0.3	45	0.4	1.0	0.27	4.0	●
2003 004 015	0.001-0.005	0.3	45	0.4	1.5	0.27	4.0	●
2003 004 020	0.001-0.005	0.3	45	0.4	2.0	0.27	4.0	●
2003 004 025	0.001-0.005	0.3	45	0.4	2.5	0.27	4.0	●
2003 004 030	0.001-0.005	0.3	45	0.4	3.0	0.27	4.0	●
2003 004 040	0.001-0.005	0.3	45	0.4	4.0	0.27	4.0	●
2003 004 050	0.001-0.005	0.3	45	0.4	5.0	0.27	4.0	●
2004 006 010	0.001-0.007	0.4	45	0.6	1.0	0.37	4.0	●
2004 006 015	0.001-0.007	0.4	45	0.6	1.5	0.37	4.0	●
2004 006 020	0.001-0.007	0.4	45	0.6	2.0	0.37	4.0	●
2004 006 025	0.001-0.007	0.4	45	0.6	2.5	0.37	4.0	●
2004 006 030	0.001-0.007	0.4	45	0.6	3.0	0.37	4.0	●
2004 006 040	0.001-0.007	0.4	45	0.6	4.0	0.37	4.0	●
2004 006 050	0.001-0.007	0.4	45	0.6	5.0	0.37	4.0	●
2004 006 060	0.001-0.007	0.4	45	0.6	6.0	0.37	4.0	●
2005 007 010	0.001-0.008	0.5	45	0.7	1.0	0.45	4.0	●
2005 007 015	0.001-0.008	0.5	45	0.7	1.5	0.45	4.0	●
2005 007 020	0.001-0.008	0.5	45	0.7	2.0	0.45	4.0	●
2005 007 025	0.001-0.008	0.5	45	0.7	2.5	0.45	4.0	●
2005 007 030	0.001-0.008	0.5	45	0.7	3.0	0.45	4.0	●
2005 007 040	0.001-0.008	0.5	45	0.7	4.0	0.45	4.0	●
2005 007 050	0.001-0.008	0.5	45	0.7	5.0	0.45	4.0	●
2005 007 060	0.001-0.008	0.5	45	0.7	6.0	0.45	4.0	●
2005 007 080	0.001-0.008	0.5	45	0.7	8.0	0.45	4.0	●
2006 009 020	0.001-0.010	0.6	45	0.9	2.0	0.55	4.0	●
2006 009 030	0.001-0.010	0.6	45	0.9	3.0	0.55	4.0	●
2006 009 040	0.001-0.010	0.6	45	0.9	4.0	0.55	4.0	●
2006 009 050	0.001-0.010	0.6	45	0.9	5.0	0.55	4.0	●
2006 009 060	0.001-0.010	0.6	45	0.9	6.0	0.55	4.0	●
2006 009 080	0.001-0.010	0.6	45	0.9	8.0	0.55	4.0	●
2006 009 100	0.001-0.010	0.6	45	0.9	10.0	0.55	4.0	●
2007 012 020	0.001-0.010	0.7	45	1.2	2.0	0.65	4.0	●
2007 012 040	0.001-0.010	0.7	45	1.2	4.0	0.65	4.0	●
2007 012 060	0.001-0.010	0.7	45	1.2	6.0	0.65	4.0	●
2007 012 080	0.001-0.010	0.7	45	1.2	8.0	0.65	4.0	●
2007 012 100	0.001-0.010	0.7	45	1.2	10.0	0.65	4.0	●

●: Standard items

HSF 2

2 flute long neck flat

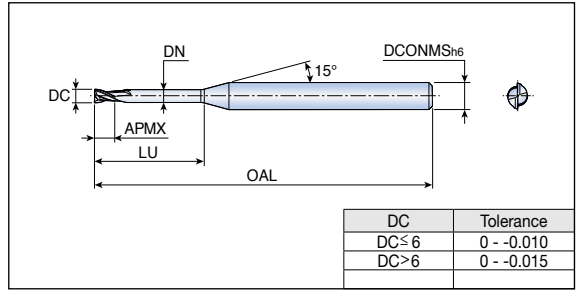


Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5505
		DC	OAL	APMX	LU	DN	DCONMS	
HSF 2007 012 120	0.001-0.010	0.7	45	1.2	12.0	0.65	4.0	●
2008 012 020	0.001-0.015	0.8	45	1.2	2.0	0.75	4.0	●
2008 012 030	0.001-0.015	0.8	45	1.2	3.0	0.75	4.0	●
2008 012 040	0.001-0.015	0.8	45	1.2	4.0	0.75	4.0	●
2008 012 050	0.001-0.015	0.8	45	1.2	5.0	0.75	4.0	●
2008 012 060	0.001-0.015	0.8	45	1.2	6.0	0.75	4.0	●
2008 012 080	0.001-0.015	0.8	45	1.2	8.0	0.73	4.0	●
2008 012 100	0.001-0.015	0.8	45	1.2	10.0	0.73	4.0	●
2008 012 120	0.001-0.015	0.8	45	1.2	12.0	0.73	4.0	●
2010 015 030	0.002-0.020	1.0	50	1.5	3.0	0.97	4.0	●
2010 015 040	0.002-0.020	1.0	50	1.5	4.0	0.97	4.0	●
2010 015 050	0.002-0.020	1.0	50	1.5	5.0	0.97	4.0	●
2010 015 060	0.002-0.020	1.0	50	1.5	6.0	0.97	4.0	●
2010 015 070	0.002-0.020	1.0	50	1.5	7.0	0.97	4.0	●
2010 015 080	0.002-0.020	1.0	50	1.5	8.0	0.95	4.0	●
2010 015 100	0.002-0.020	1.0	50	1.5	10.0	0.95	4.0	●
2010 015 120	0.002-0.020	1.0	50	1.5	12.0	0.93	4.0	●
2010 015 140	0.002-0.020	1.0	50	1.5	14.0	0.93	4.0	●
2010 015 160	0.002-0.020	1.0	50	1.5	16.0	0.91	4.0	●
2010 015 180	0.002-0.020	1.0	55	1.5	18.0	0.91	4.0	●
2010 015 200	0.002-0.020	1.0	55	1.5	20.0	0.85	4.0	●
2012 018 040	0.004-0.030	1.2	50	1.8	4.0	1.17	4.0	●
2012 018 060	0.004-0.030	1.2	50	1.8	6.0	1.17	4.0	●
2012 018 080	0.004-0.030	1.2	50	1.8	8.0	1.15	4.0	●
2012 018 100	0.004-0.030	1.2	50	1.8	10.0	1.15	4.0	●
2012 018 120	0.004-0.030	1.2	50	1.8	12.0	1.15	4.0	●
2012 018 160	0.004-0.030	1.2	50	1.8	16.0	1.13	4.0	●
2015 023 040	0.006-0.040	1.5	50	2.3	4.0	1.47	4.0	●
2015 023 060	0.006-0.040	1.5	50	2.3	6.0	1.47	4.0	●
2015 023 080	0.006-0.040	1.5	50	2.3	8.0	1.45	4.0	●
2015 023 100	0.006-0.040	1.5	50	2.3	10.0	1.45	4.0	●
2015 023 120	0.006-0.040	1.5	50	2.3	12.0	1.43	4.0	●
2015 023 140	0.006-0.040	1.5	50	2.3	14.0	1.43	4.0	●
2015 023 160	0.006-0.040	1.5	50	2.3	16.0	1.41	4.0	●
2015 023 180	0.006-0.040	1.5	55	2.3	18.0	1.41	4.0	●
2015 023 200	0.006-0.040	1.5	55	2.3	20.0	1.41	4.0	●

●: Standard items

HSF 2

2 flute long neck flat

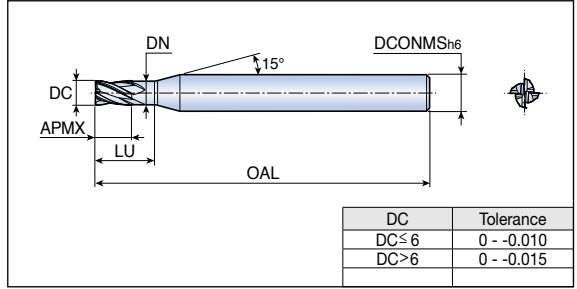


Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	OAL	APMX	LU	DN	DCONMS	
HSF 2020 030 040	0.007-0.045	2.0	50	3.0	4	1.95	4.0	●
2020 030 060	0.007-0.045	2.0	50	3.0	6	1.95	4.0	●
2020 030 080	0.007-0.045	2.0	50	3.0	8	1.95	4.0	●
2020 030 100	0.007-0.045	2.0	50	3.0	10	1.95	4.0	●
2020 030 120	0.007-0.045	2.0	50	3.0	12	1.93	4.0	●
2020 030 140	0.007-0.045	2.0	50	3.0	14	1.93	4.0	●
2020 030 160	0.007-0.045	2.0	50	3.0	16	1.91	4.0	●
2020 030 180	0.007-0.045	2.0	55	3.0	18	1.91	4.0	●
2020 030 200	0.007-0.045	2.0	55	3.0	20	1.91	4.0	●
2020 030 250	0.007-0.045	2.0	60	3.0	25	1.91	4.0	●
2020 030 300	0.007-0.045	2.0	70	3.0	30	1.91	4.0	●
2025 040 080	0.007-0.050	2.5	50	4.0	8	2.4	4.0	●
2025 040 100	0.007-0.050	2.5	50	4.0	10	2.4	4.0	●
2025 040 120	0.007-0.050	2.5	50	4.0	12	2.4	4.0	●
2025 040 160	0.007-0.050	2.5	50	4.0	16	2.4	4.0	●
2025 040 200	0.007-0.050	2.5	55	4.0	20	2.4	4.0	●
2030 045 080	0.010-0.060	3.0	55	4.5	8	2.85	6.0	●
2030 045 100	0.010-0.060	3.0	55	4.5	10	2.85	6.0	●
2030 045 120	0.010-0.060	3.0	55	4.5	12	2.85	6.0	●
2030 045 140	0.010-0.060	3.0	55	4.5	14	2.85	6.0	●
2030 045 160	0.010-0.060	3.0	55	4.5	16	2.85	6.0	●
2030 045 180	0.010-0.060	3.0	60	4.5	18	2.85	6.0	●
2030 045 200	0.010-0.060	3.0	60	4.5	20	2.85	6.0	●
2030 045 250	0.010-0.060	3.0	60	4.5	25	2.85	6.0	●
2030 045 300	0.010-0.060	3.0	70	4.5	30	2.85	6.0	●
2030 045 350	0.010-0.060	3.0	75	4.5	35	2.85	6.0	●
2030 045 400	0.010-0.060	3.0	80	4.5	40	2.85	6.0	●
2040 060 100	0.020-0.070	4.0	55	6.0	10	3.9	6.0	●
2040 060 120	0.020-0.070	4.0	55	6.0	12	3.9	6.0	●
2040 060 160	0.020-0.070	4.0	55	6.0	16	3.9	6.0	●
2040 060 200	0.020-0.070	4.0	60	6.0	20	3.9	6.0	●
2040 060 250	0.020-0.070	4.0	60	6.0	25	3.9	6.0	●
2040 060 300	0.020-0.070	4.0	70	6.0	30	3.9	6.0	●
2040 060 350	0.020-0.070	4.0	75	6.0	35	3.9	6.0	●
2040 060 400	0.020-0.070	4.0	80	6.0	40	3.9	6.0	●

●: Standard items

HSF 4

4 flute long neck flat

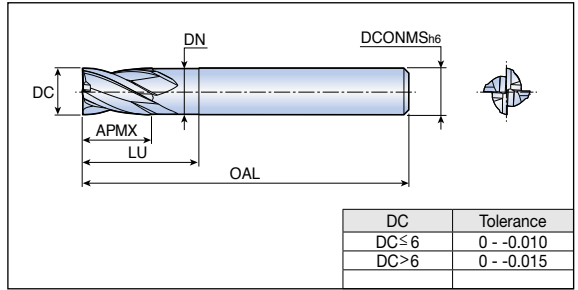


Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5505
		DC	OAL	APMX	LU	DN	DCONMS	
HSF 4010 015 030	0.002-0.015	1.0	50	1.5	3	0.97	4.0	●
4010 015 040	0.002-0.015	1.0	50	1.5	4	0.97	4.0	●
4010 015 060	0.002-0.015	1.0	50	1.5	6	0.97	4.0	●
4010 015 080	0.002-0.015	1.0	50	1.5	8	0.97	4.0	●
4010 015 100	0.002-0.015	1.0	50	1.5	10	0.97	4.0	●
4015 025 040	0.006-0.025	1.5	50	2.5	4	1.45	4.0	●
4015 025 060	0.006-0.025	1.5	50	2.5	6	1.45	4.0	●
4015 025 080	0.006-0.025	1.5	50	2.5	8	1.45	4.0	●
4015 025 100	0.006-0.025	1.5	50	2.5	10	1.45	4.0	●
4015 025 120	0.006-0.025	1.5	50	2.5	12	1.45	4.0	●
4015 025 160	0.006-0.025	1.5	50	2.5	16	1.45	4.0	●
4020 030 060	0.007-0.030	2.0	50	3.0	6	1.95	4.0	●
4020 030 080	0.007-0.030	2.0	50	3.0	8	1.95	4.0	●
4020 030 100	0.007-0.030	2.0	50	3.0	10	1.95	4.0	●
4020 030 120	0.007-0.030	2.0	50	3.0	12	1.95	4.0	●
4020 030 160	0.007-0.030	2.0	50	3.0	16	1.95	4.0	●
4020 030 200	0.007-0.030	2.0	50	3.0	20	1.95	4.0	●
4030 045 080	0.010-0.040	3.0	55	4.5	8	2.85	6.0	●
4030 045 100	0.010-0.040	3.0	55	4.5	10	2.85	6.0	●
4030 045 120	0.010-0.040	3.0	55	4.5	12	2.85	6.0	●
4030 045 160	0.010-0.040	3.0	55	4.5	16	2.85	6.0	●
4030 045 200	0.010-0.040	3.0	60	4.5	20	2.85	6.0	●
4040 060 100	0.015-0.050	4.0	55	6.0	10	3.90	6.0	●
4040 060 120	0.015-0.050	4.0	55	6.0	12	3.90	6.0	●
4040 060 160	0.015-0.050	4.0	55	6.0	16	3.90	6.0	●
4040 060 200	0.015-0.050	4.0	60	6.0	20	3.90	6.0	●
4040 060 250	0.015-0.050	4.0	60	6.0	25	3.90	6.0	●
4050 080 150	0.015-0.060	5.0	60	8.0	15	4.80	6.0	●
4050 080 300	0.015-0.060	5.0	90	8.0	30	4.80	6.0	●

● Standard items

HSF 4

4 flute long neck flat



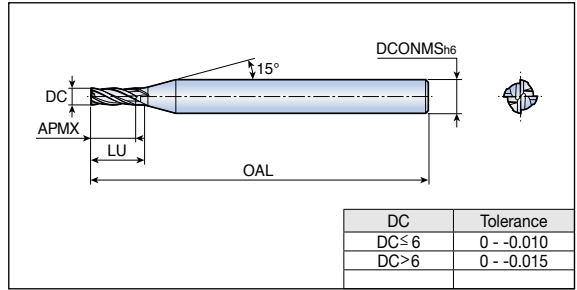
P	M	K	N	S	H
○	○	○	○	○	●

Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	OAL	APMX	LU	DN	DCONMS	
HSF 4060 090 150	0.025-0.080	6.0	60	9	15	5.9	6.0	●
4060 090 200	0.025-0.080	6.0	80	9	20	5.9	6.0	●
4060 090 300	0.025-0.080	6.0	100	9	30	5.9	6.0	●
4080 120 200	0.030-0.100	8.0	65	12	20	7.9	8.0	●
4080 120 300	0.030-0.100	8.0	80	12	30	7.9	8.0	●
4080 120 400	0.030-0.100	8.0	100	12	40	7.9	8.0	●
4100 150 250	0.040-0.120	10.0	70	15	25	9.9	10.0	●
4100 150 350	0.040-0.120	10.0	80	15	35	9.9	10.0	●
4100 150 450	0.040-0.120	10.0	100	15	45	9.9	10.0	●
4120 180 300	0.045-0.120	12.0	80	18	30	11.9	12.0	●
4120 180 400	0.045-0.120	12.0	100	18	40	11.9	12.0	●
4120 180 500	0.045-0.120	12.0	120	18	50	11.9	12.0	●

● Standard items

HSF 4...M

4 flute medium flat

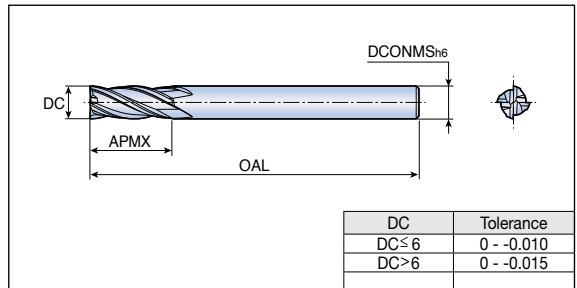


Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	OAL	APMX	LU	DCONMS	
HSF 4010M 025	0.002-0.015	1.0	50	2.5	3	6.0	●
4012M 030	0.004-0.020	1.2	50	3.0	4	6.0	●
4015M 040	0.006-0.025	1.5	50	4.0	5	6.0	●
4020M 060	0.007-0.030	2.0	50	6.0	7	6.0	●
4025M 070	0.007-0.035	2.5	50	7.0	8.5	6.0	●
4030M 080	0.010-0.040	3.0	60	8.0	9.5	6.0	●
4035M 090	0.010-0.045	3.5	60	9.0	11	6.0	●
4040M 100	0.015-0.050	4.0	60	10.0	12	6.0	●
4050M 130	0.015-0.060	5.0	60	13.0	15.5	6.0	●
4070M 180	0.025-0.090	7.0	65	18.0	22	8.0	●
4090M 220	0.035-0.110	9.0	70	22.0	25	10.0	●
4110M 280	0.040-0.120	11.0	80	28.0	33	12.0	●

●: Standard items

HSF 4...M

4 flute medium flat

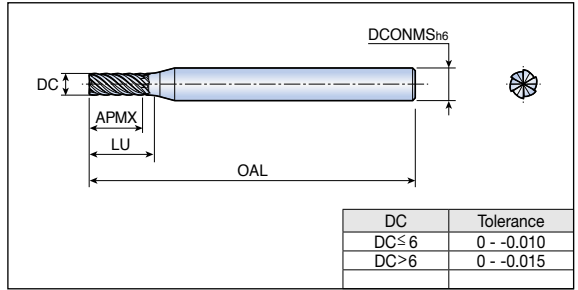


Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	
HSF 4060M 150	0.025-0.080	6.0	60	15.0	6.0	●
4080M 200	0.030-0.100	8.0	65	20.0	8.0	●
4100M 250	0.040-0.120	10.0	70	25.0	10.0	●
4120M 300	0.045-0.120	12.0	80	30.0	12.0	●

●: Standard items

HSF 6...M

6 flute medium flat



• Finishing

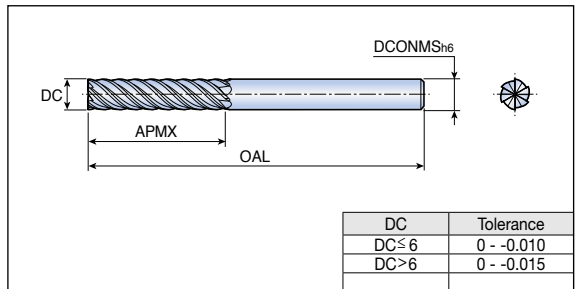


Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	OAL	APMX	LU	DCONMS	
HSF 6030M 080	0.010-0.030	3.0	50	8	10	6.0	●
6040M 100	0.015-0.040	4.0	60	10	12	6.0	●
6050M 150	0.015-0.050	5.0	60	15	17	6.0	●
6060M 150	0.020-0.050	6.0	60	15	-	6.0	●
6080M 200	0.030-0.060	8.0	65	20	-	8.0	●
6100M 220	0.035-0.080	10.0	70	22	-	10.0	●
6120M 260	0.040-0.100	12.0	80	26	-	12.0	●

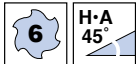
●: Standard items

HSF 6...XLT

6 flute extra long flat



• Finishing

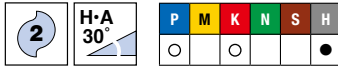
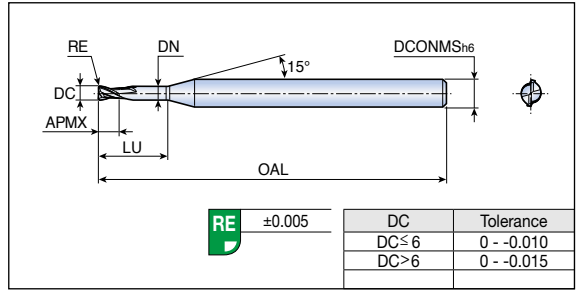


Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	
HSF 6050XLT 250	0.015-0.050	5.0	80	25	6.0	●
6060XLT 250	0.020-0.050	6.0	80	25	6.0	●
6080XLT 350	0.030-0.060	8.0	90	35	8.0	●
6100XLT 450	0.035-0.080	10.0	100	45	10.0	●
6120XLT 550	0.040-0.100	12.0	110	55	12.0	●

●: Standard items

HSR 2

2 flute long neck corner radius

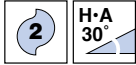
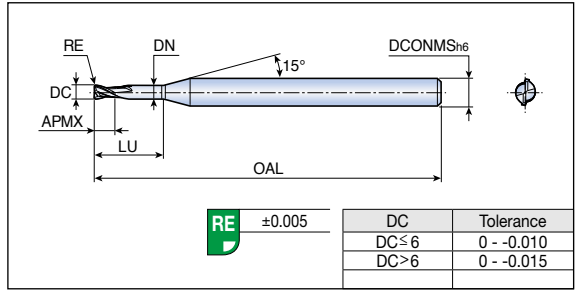


Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 2003 005 010	0.001-0.005	0.3	0.05	45	0.4	1.0	0.27	4.0	●
2003 005 020	0.001-0.005	0.3	0.05	45	0.4	2.0	0.27	4.0	●
2003 005 030	0.001-0.005	0.3	0.05	45	0.4	3.0	0.27	4.0	●
2004 005 010	0.001-0.007	0.4	0.05	45	0.6	1.0	0.37	4.0	●
2004 005 015	0.001-0.007	0.4	0.05	45	0.6	1.5	0.37	4.0	●
2004 005 025	0.001-0.007	0.4	0.05	45	0.6	2.5	0.37	4.0	●
2004 005 030	0.001-0.007	0.4	0.05	45	0.6	3.0	0.37	4.0	●
2004 005 040	0.001-0.007	0.4	0.05	45	0.6	4.0	0.37	4.0	●
2005 005 010	0.001-0.008	0.5	0.05	45	0.7	1.0	0.45	4.0	●
2005 005 015	0.001-0.008	0.5	0.05	45	0.7	1.5	0.45	4.0	●
2005 005 025	0.001-0.008	0.5	0.05	45	0.7	2.5	0.45	4.0	●
2005 005 030	0.001-0.008	0.5	0.05	45	0.7	3.0	0.45	4.0	●
2005 005 040	0.001-0.008	0.5	0.05	45	0.7	4.0	0.45	4.0	●
2006 005 020	0.001-0.010	0.6	0.05	45	0.9	2.0	0.55	4.0	●
2006 005 040	0.001-0.010	0.6	0.05	45	0.9	4.0	0.55	4.0	●
2006 005 060	0.001-0.010	0.6	0.05	45	0.9	6.0	0.55	4.0	●
2006 010 020	0.001-0.010	0.6	0.10	45	0.9	2.0	0.55	4.0	●
2006 010 040	0.001-0.010	0.6	0.10	45	0.9	4.0	0.55	4.0	●
2006 010 060	0.001-0.010	0.6	0.10	45	0.9	6.0	0.55	4.0	●
2006 020 020	0.001-0.010	0.6	0.20	45	0.9	2.0	0.55	4.0	●
2006 020 040	0.001-0.010	0.6	0.20	45	0.9	4.0	0.55	4.0	●
2006 020 060	0.001-0.010	0.6	0.20	45	0.9	6.0	0.55	4.0	●
2008 005 020	0.001-0.015	0.8	0.05	45	1.2	2.0	0.75	4.0	●
2008 005 040	0.001-0.015	0.8	0.05	45	1.2	4.0	0.75	4.0	●
2008 005 060	0.001-0.015	0.8	0.05	45	1.2	6.0	0.75	4.0	●
2008 005 080	0.001-0.015	0.8	0.05	45	1.2	8.0	0.73	4.0	●
2008 010 020	0.001-0.015	0.8	0.10	45	1.2	2.0	0.75	4.0	●
2008 010 040	0.001-0.015	0.8	0.10	45	1.2	4.0	0.75	4.0	●
2008 010 060	0.001-0.015	0.8	0.10	45	1.2	6.0	0.75	4.0	●
2008 010 080	0.001-0.015	0.8	0.10	45	1.2	8.0	0.73	4.0	●
2008 020 020	0.001-0.015	0.8	0.20	45	1.2	2.0	0.75	4.0	●
2008 020 040	0.001-0.015	0.8	0.20	45	1.2	4.0	0.75	4.0	●
2008 020 060	0.001-0.015	0.8	0.20	45	1.2	6.0	0.75	4.0	●
2008 020 080	0.001-0.015	0.8	0.20	45	1.2	8.0	0.73	4.0	●

● Standard items

HSR 2

2 flute long neck corner radius

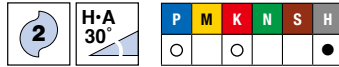
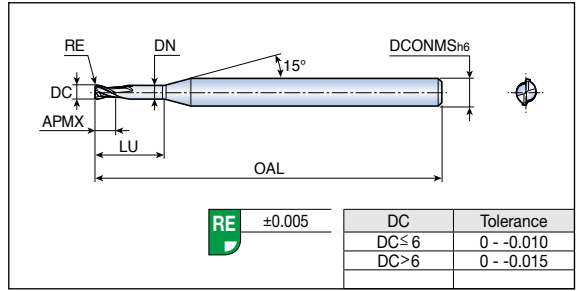


Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 2010 005 030	0.002-0.020	1.0	0.05	50	2.0	3	0.97	4.0	●
2010 005 040	0.002-0.020	1.0	0.05	50	2.0	4	0.97	4.0	●
2010 005 060	0.002-0.020	1.0	0.05	50	2.0	6	0.97	4.0	●
2010 005 080	0.002-0.020	1.0	0.05	50	2.0	8	0.95	4.0	●
2010 005 100	0.002-0.020	1.0	0.05	50	2.0	10	0.95	4.0	●
2010 010 030	0.002-0.020	1.0	0.10	50	2.0	3	0.97	4.0	●
2010 010 040	0.002-0.020	1.0	0.10	50	2.0	4	0.97	4.0	●
2010 010 060	0.002-0.020	1.0	0.10	50	2.0	6	0.97	4.0	●
2010 010 080	0.002-0.020	1.0	0.10	50	2.0	8	0.95	4.0	●
2010 010 100	0.002-0.020	1.0	0.10	50	2.0	10	0.95	4.0	●
2010 020 030	0.002-0.020	1.0	0.20	50	2.0	3	0.97	4.0	●
2010 020 040	0.002-0.020	1.0	0.20	50	2.0	4	0.97	4.0	●
2010 020 060	0.002-0.020	1.0	0.20	50	2.0	6	0.97	4.0	●
2010 020 080	0.002-0.020	1.0	0.20	50	2.0	8	0.95	4.0	●
2010 020 100	0.002-0.020	1.0	0.20	50	2.0	10	0.95	4.0	●
2010 030 030	0.002-0.020	1.0	0.30	50	2.0	3	0.97	4.0	●
2010 030 040	0.002-0.020	1.0	0.30	50	2.0	4	0.97	4.0	●
2010 030 060	0.002-0.020	1.0	0.30	50	2.0	6	0.97	4.0	●
2010 030 080	0.002-0.020	1.0	0.30	50	2.0	8	0.95	4.0	●
2010 030 100	0.002-0.020	1.0	0.30	50	2.0	10	0.95	4.0	●
2012 010 040	0.004-0.030	1.2	0.10	50	2.2	4	1.17	4.0	●
2012 010 060	0.004-0.030	1.2	0.10	50	2.2	6	1.17	4.0	●
2012 010 080	0.004-0.030	1.2	0.10	50	2.2	8	1.15	4.0	●
2012 010 100	0.004-0.030	1.2	0.10	50	2.2	10	1.15	4.0	●
2012 020 040	0.004-0.030	1.2	0.20	50	2.2	4	1.17	4.0	●
2012 020 060	0.004-0.030	1.2	0.20	50	2.2	6	1.17	4.0	●
2012 020 080	0.004-0.030	1.2	0.20	50	2.2	8	1.15	4.0	●
2012 020 100	0.004-0.030	1.2	0.20	50	2.2	10	1.15	4.0	●
2012 030 040	0.004-0.030	1.2	0.30	50	2.2	4	1.17	4.0	●
2012 030 060	0.004-0.030	1.2	0.30	50	2.2	6	1.17	4.0	●
2012 030 080	0.004-0.030	1.2	0.30	50	2.2	8	1.15	4.0	●
2012 030 100	0.004-0.030	1.2	0.30	50	2.2	10	1.15	4.0	●

●: Standard items

HSR 2

2 flute long neck corner radius

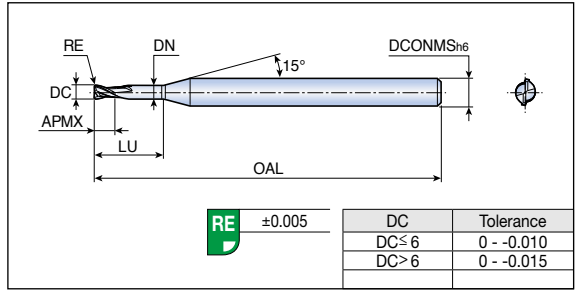


Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 2015 005 060	0.006-0.040	1.5	0.05	50	2.5	6	1.47	4.0	●
2015 005 080	0.006-0.040	1.5	0.05	50	2.5	8	1.45	4.0	●
2015 005 100	0.006-0.040	1.5	0.05	50	2.5	10	1.45	4.0	●
2015 005 120	0.006-0.040	1.5	0.05	50	2.5	12	1.43	4.0	●
2015 010 040	0.006-0.040	1.5	0.10	50	2.5	4	1.47	4.0	●
2015 010 060	0.006-0.040	1.5	0.10	50	2.5	6	1.47	4.0	●
2015 010 080	0.006-0.040	1.5	0.10	50	2.5	8	1.45	4.0	●
2015 010 100	0.006-0.040	1.5	0.10	50	2.5	10	1.45	4.0	●
2015 010 120	0.006-0.040	1.5	0.10	50	2.5	12	1.43	4.0	●
2015 020 040	0.006-0.040	1.5	0.20	50	2.5	4	1.47	4.0	●
2015 020 060	0.006-0.040	1.5	0.20	50	2.5	6	1.47	4.0	●
2015 020 080	0.006-0.040	1.5	0.20	50	2.5	8	1.45	4.0	●
2015 020 100	0.006-0.040	1.5	0.20	50	2.5	10	1.45	4.0	●
2015 020 120	0.006-0.040	1.5	0.20	50	2.5	12	1.43	4.0	●
2015 030 040	0.006-0.040	1.5	0.30	50	2.5	4	1.47	4.0	●
2015 030 060	0.006-0.040	1.5	0.30	50	2.5	6	1.47	4.0	●
2015 030 080	0.006-0.040	1.5	0.30	50	2.5	8	1.45	4.0	●
2015 030 100	0.006-0.040	1.5	0.30	50	2.5	10	1.45	4.0	●
2015 030 120	0.006-0.040	1.5	0.30	50	2.5	12	1.43	4.0	●
2015 050 040	0.006-0.040	1.5	0.50	50	2.5	4	1.47	4.0	●
2015 050 060	0.006-0.040	1.5	0.50	50	2.5	6	1.47	4.0	●
2015 050 080	0.006-0.040	1.5	0.50	50	2.5	8	1.45	4.0	●
2015 050 100	0.006-0.040	1.5	0.50	50	2.5	10	1.45	4.0	●
2015 050 120	0.006-0.040	1.5	0.50	50	2.5	12	1.43	4.0	●
2020 010 060	0.007-0.045	2.0	0.10	50	3.0	6	1.95	4.0	●
2020 010 080	0.007-0.045	2.0	0.10	50	3.0	8	1.95	4.0	●
2020 010 100	0.007-0.045	2.0	0.10	50	3.0	10	1.95	4.0	●
2020 010 120	0.007-0.045	2.0	0.10	50	3.0	12	1.93	4.0	●
2020 010 160	0.007-0.045	2.0	0.10	50	3.0	16	1.91	4.0	●
2020 010 200	0.007-0.045	2.0	0.10	50	3.0	20	1.91	4.0	●

● Standard items

HSR 2

2 flute long neck corner radius

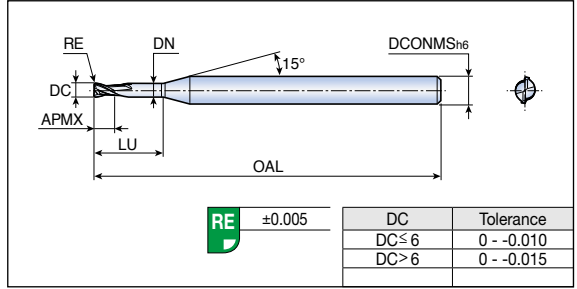


Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 2020 020 060	0.007-0.045	2.0	0.2	50	3.0	6	1.95	4.0	●
2020 020 080	0.007-0.045	2.0	0.2	50	3.0	8	1.95	4.0	●
2020 020 100	0.007-0.045	2.0	0.2	50	3.0	10	1.95	4.0	●
2020 020 120	0.007-0.045	2.0	0.2	50	3.0	12	1.93	4.0	●
2020 020 160	0.007-0.045	2.0	0.2	50	3.0	16	1.91	4.0	●
2020 020 200	0.007-0.045	2.0	0.2	50	3.0	20	1.91	4.0	●
2020 030 060	0.007-0.045	2.0	0.3	50	3.0	6	1.95	4.0	●
2020 030 080	0.007-0.045	2.0	0.3	50	3.0	8	1.95	4.0	●
2020 030 100	0.007-0.045	2.0	0.3	50	3.0	10	1.95	4.0	●
2020 030 120	0.007-0.045	2.0	0.3	50	3.0	12	1.93	4.0	●
2020 030 160	0.007-0.045	2.0	0.3	50	3.0	16	1.91	4.0	●
2020 030 200	0.007-0.045	2.0	0.3	50	3.0	20	1.91	4.0	●
2020 050 060	0.007-0.045	2.0	0.5	50	3.0	6	1.95	4.0	●
2020 050 080	0.007-0.045	2.0	0.5	50	3.0	8	1.95	4.0	●
2020 050 100	0.007-0.045	2.0	0.5	50	3.0	10	1.95	4.0	●
2020 050 120	0.007-0.045	2.0	0.5	50	3.0	12	1.93	4.0	●
2020 050 160	0.007-0.045	2.0	0.5	50	3.0	16	1.91	4.0	●
2020 050 200	0.007-0.045	2.0	0.5	50	3.0	20	1.91	4.0	●
2025 020 080	0.007-0.050	2.5	0.2	55	3.5	8	2.4	4.0	●
2025 020 100	0.007-0.050	2.5	0.2	55	3.5	10	2.4	4.0	●
2025 020 120	0.007-0.050	2.5	0.2	55	3.5	12	2.4	4.0	●
2025 020 160	0.007-0.050	2.5	0.2	55	3.5	16	2.4	4.0	●
2025 030 080	0.007-0.050	2.5	0.3	55	3.5	8	2.4	4.0	●
2025 030 100	0.007-0.050	2.5	0.3	55	3.5	10	2.4	4.0	●
2025 030 120	0.007-0.050	2.5	0.3	55	3.5	12	2.4	4.0	●
2025 030 160	0.007-0.050	2.5	0.3	55	3.5	16	2.4	4.0	●
2025 050 080	0.007-0.050	2.5	0.5	55	3.5	8	2.4	4.0	●
2025 050 100	0.007-0.050	2.5	0.5	55	3.5	10	2.4	4.0	●
2025 050 120	0.007-0.050	2.5	0.5	55	3.5	12	2.4	4.0	●
2025 050 160	0.007-0.050	2.5	0.5	55	3.5	16	2.4	4.0	●

●: Standard items

HSR 2

2 flute long neck corner radius



2

H-A
 30°

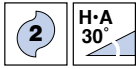
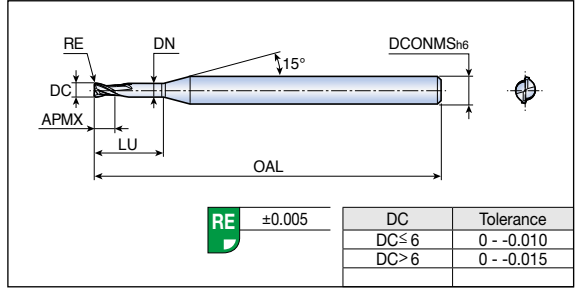
P	M	K	N	S	H
○	○	○	○	○	●

Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 2030 010 080	0.010-0.060	3.0	0.1	55	4.5	8	2.85	6.0	●
2030 010 100	0.010-0.060	3.0	0.1	55	4.5	10	2.85	6.0	●
2030 010 120	0.010-0.060	3.0	0.1	55	4.5	12	2.85	6.0	●
2030 010 160	0.010-0.060	3.0	0.1	55	4.5	16	2.85	6.0	●
2030 010 200	0.010-0.060	3.0	0.1	60	4.5	20	2.85	6.0	●
2030 010 250	0.010-0.060	3.0	0.1	60	4.5	25	2.85	6.0	●
2030 020 080	0.010-0.060	3.0	0.2	55	4.5	8	2.85	6.0	●
2030 020 100	0.010-0.060	3.0	0.2	55	4.5	10	2.85	6.0	●
2030 020 120	0.010-0.060	3.0	0.2	55	4.5	12	2.85	6.0	●
2030 020 160	0.010-0.060	3.0	0.2	55	4.5	16	2.85	6.0	●
2030 020 200	0.010-0.060	3.0	0.2	60	4.5	20	2.85	6.0	●
2030 020 250	0.010-0.060	3.0	0.2	60	4.5	25	2.85	6.0	●
2030 030 080	0.010-0.060	3.0	0.3	55	4.5	8	2.85	6.0	●
2030 030 100	0.010-0.060	3.0	0.3	55	4.5	10	2.85	6.0	●
2030 030 120	0.010-0.060	3.0	0.3	55	4.5	12	2.85	6.0	●
2030 030 160	0.010-0.060	3.0	0.3	55	4.5	16	2.85	6.0	●
2030 030 200	0.010-0.060	3.0	0.3	60	4.5	20	2.85	6.0	●
2030 030 250	0.010-0.060	3.0	0.3	60	4.5	25	2.85	6.0	●
2030 050 080	0.010-0.060	3.0	0.5	55	4.5	8	2.85	6.0	●
2030 050 100	0.010-0.060	3.0	0.5	55	4.5	10	2.85	6.0	●
2030 050 120	0.010-0.060	3.0	0.5	55	4.5	12	2.85	6.0	●
2030 050 160	0.010-0.060	3.0	0.5	55	4.5	16	2.85	6.0	●
2030 050 200	0.010-0.060	3.0	0.5	60	4.5	20	2.85	6.0	●
2030 050 250	0.010-0.060	3.0	0.5	60	4.5	25	2.85	6.0	●
2030 100 080	0.010-0.060	3.0	1.0	55	4.5	8	2.85	6.0	●
2030 100 100	0.010-0.060	3.0	1.0	55	4.5	10	2.85	6.0	●
2030 100 120	0.010-0.060	3.0	1.0	55	4.5	12	2.85	6.0	●
2030 100 160	0.010-0.060	3.0	1.0	55	4.5	16	2.85	6.0	●
2030 100 200	0.010-0.060	3.0	1.0	60	4.5	20	2.85	6.0	●

● Standard items

HSR 2

2 flute long neck corner radius

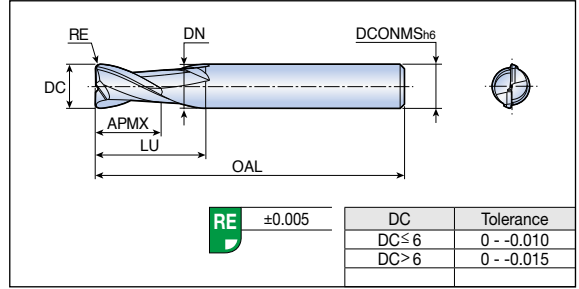


Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 2040 010 100	0.020-0.070	4.0	0.1	55	6.0	10	3.9	6.0	●
2040 010 120	0.020-0.070	4.0	0.1	55	6.0	12	3.9	6.0	●
2040 010 160	0.020-0.070	4.0	0.1	55	6.0	16	3.9	6.0	●
2040 010 200	0.020-0.070	4.0	0.1	60	6.0	20	3.9	6.0	●
2040 010 250	0.020-0.070	4.0	0.1	60	6.0	25	3.9	6.0	●
2040 010 300	0.020-0.070	4.0	0.1	70	6.0	30	3.9	6.0	●
2040 020 100	0.020-0.070	4.0	0.2	55	6.0	10	3.9	6.0	●
2040 020 120	0.020-0.070	4.0	0.2	55	6.0	12	3.9	6.0	●
2040 020 160	0.020-0.070	4.0	0.2	55	6.0	16	3.9	6.0	●
2040 020 200	0.020-0.070	4.0	0.2	60	6.0	20	3.9	6.0	●
2040 020 250	0.020-0.070	4.0	0.2	60	6.0	25	3.9	6.0	●
2040 020 300	0.020-0.070	4.0	0.2	70	6.0	30	3.9	6.0	●
2040 030 100	0.020-0.070	4.0	0.3	55	6.0	10	3.9	6.0	●
2040 030 120	0.020-0.070	4.0	0.3	55	6.0	12	3.9	6.0	●
2040 030 160	0.020-0.070	4.0	0.3	55	6.0	16	3.9	6.0	●
2040 030 200	0.020-0.070	4.0	0.3	60	6.0	20	3.9	6.0	●
2040 030 250	0.020-0.070	4.0	0.3	60	6.0	25	3.9	6.0	●
2040 030 300	0.020-0.070	4.0	0.3	70	6.0	30	3.9	6.0	●
2040 050 100	0.020-0.070	4.0	0.5	55	6.0	10	3.9	6.0	●
2040 050 120	0.020-0.070	4.0	0.5	55	6.0	12	3.9	6.0	●
2040 050 160	0.020-0.070	4.0	0.5	55	6.0	16	3.9	6.0	●
2040 050 200	0.020-0.070	4.0	0.5	60	6.0	20	3.9	6.0	●
2040 050 250	0.020-0.070	4.0	0.5	60	6.0	25	3.9	6.0	●
2040 050 300	0.020-0.070	4.0	0.5	70	6.0	30	3.9	6.0	●
2040 100 100	0.020-0.070	4.0	1.0	55	6.0	10	3.9	6.0	●
2040 100 120	0.020-0.070	4.0	1.0	55	6.0	12	3.9	6.0	●
2040 100 160	0.020-0.070	4.0	1.0	55	6.0	16	3.9	6.0	●
2040 100 200	0.020-0.070	4.0	1.0	60	6.0	20	3.9	6.0	●
2040 100 250	0.020-0.070	4.0	1.0	60	6.0	25	3.9	6.0	●

● Standard items

HSR 2

2 flute long neck corner radius



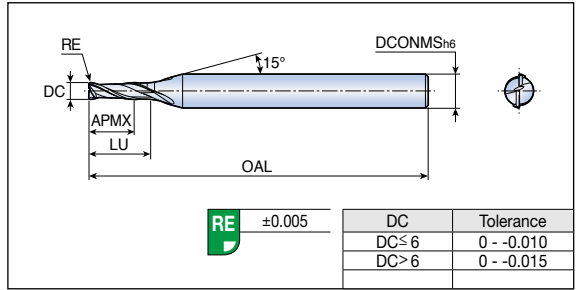
2	H-A 30°	P	M	K	N	S	H
		○		○			●

Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 2060 020 150	0.030-0.090	6.0	0.2	60	9	15	5.9	6.0	●
2060 030 150	0.030-0.090	6.0	0.3	60	9	15	5.9	6.0	●
2060 030 200	0.030-0.090	6.0	0.3	60	9	20	5.9	6.0	●
2060 050 150	0.030-0.090	6.0	0.5	60	9	15	5.9	6.0	●
2060 050 200	0.030-0.090	6.0	0.5	60	9	20	5.9	6.0	●
2060 100 150	0.030-0.090	6.0	1.0	60	9	15	5.9	6.0	●
2060 100 200	0.030-0.090	6.0	1.0	60	9	20	5.9	6.0	●
2060 150 150	0.030-0.090	6.0	1.5	60	9	15	5.9	6.0	●
2060 200 150	0.030-0.090	6.0	2.0	60	9	15	5.9	6.0	●
2080 020 200	0.040-0.100	8.0	0.2	65	12	20	7.9	8.0	●
2080 030 200	0.040-0.100	8.0	0.3	65	12	20	7.9	8.0	●
2080 050 200	0.040-0.100	8.0	0.5	65	12	20	7.9	8.0	●
2080 100 200	0.040-0.100	8.0	1.0	65	12	20	7.9	8.0	●
2080 150 200	0.040-0.100	8.0	1.5	65	12	20	7.9	8.0	●
2100 020 250	0.050-0.120	10.0	0.2	75	15	25	9.9	10.0	●
2100 030 250	0.050-0.120	10.0	0.3	75	15	25	9.9	10.0	●
2100 050 250	0.050-0.120	10.0	0.5	75	15	25	9.9	10.0	●
2100 100 250	0.050-0.120	10.0	1.0	75	15	25	9.9	10.0	●
2100 150 250	0.050-0.120	10.0	1.5	75	15	25	9.9	10.0	●
2100 200 250	0.050-0.120	10.0	2.0	75	15	25	9.9	10.0	●
2120 030 280	0.050-0.120	12.0	0.3	85	18	28	11.9	12.0	●
2120 050 280	0.050-0.120	12.0	0.5	85	18	28	11.9	12.0	●
2120 100 280	0.050-0.120	12.0	1.0	85	18	28	11.9	12.0	●
2120 150 280	0.050-0.120	12.0	1.5	85	18	28	11.9	12.0	●
2120 200 280	0.050-0.120	12.0	2.0	85	18	28	11.9	12.0	●

● Standard items

HSR 2...M

2 flute medium corner radius

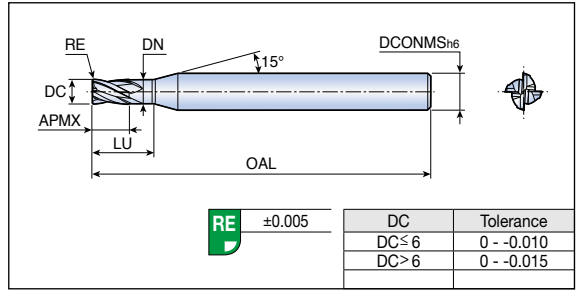


Designation	Feed (mm/tooth)	Dimension (mm)						Grade TT5505
		DC	RE	OAL	APMX	LU	DCONMS	
HSR 2003M 002	0.001-0.005	0.3	0.02	45	0.6	0.9	4.0	●
2003M 005	0.001-0.005	0.3	0.05	45	0.6	0.9	4.0	●
2004M 005	0.001-0.007	0.4	0.05	45	0.8	1.1	4.0	●
2004M 010	0.001-0.007	0.4	0.10	45	0.8	1.1	4.0	●
2005M 005	0.001-0.008	0.5	0.05	45	1.0	1.3	4.0	●
2005M 010	0.001-0.008	0.5	0.10	45	1.0	1.3	4.0	●
2006M 005	0.001-0.010	0.6	0.05	45	1.2	1.5	4.0	●
2006M 010	0.001-0.010	0.6	0.10	45	1.2	1.5	4.0	●
2006M 020	0.001-0.010	0.6	0.20	45	1.2	1.5	4.0	●
2008M 005	0.001-0.015	0.8	0.05	45	1.6	2	4.0	●
2008M 010	0.001-0.015	0.8	0.10	45	1.6	2	4.0	●
2008M 020	0.001-0.015	0.8	0.20	45	1.6	2	4.0	●
2010M 005	0.002-0.020	1.0	0.05	50	2.0	3.5	6.0	●
2010M 010	0.002-0.020	1.0	0.10	50	2.0	3.5	6.0	●
2010M 020	0.002-0.020	1.0	0.20	50	2.0	3.5	6.0	●
2010M 030	0.002-0.020	1.0	0.30	50	2.0	3.5	6.0	●
2012M 005	0.004-0.030	1.2	0.05	50	2.5	4	6.0	●
2012M 010	0.004-0.030	1.2	0.10	50	2.5	4	6.0	●
2012M 020	0.004-0.030	1.2	0.20	50	2.5	4	6.0	●
2012M 030	0.004-0.030	1.2	0.30	50	2.5	4	6.0	●
2015M 005	0.006-0.040	1.5	0.05	50	3.0	5	6.0	●
2015M 010	0.006-0.040	1.5	0.10	50	3.0	5	6.0	●
2015M 020	0.006-0.040	1.5	0.20	50	3.0	5	6.0	●
2015M 030	0.006-0.040	1.5	0.30	50	3.0	5	6.0	●
2020M 010	0.007-0.045	2.0	0.10	50	5.0	7	6.0	●
2020M 020	0.007-0.045	2.0	0.20	50	5.0	7	6.0	●
2020M 030	0.007-0.045	2.0	0.30	50	5.0	7	6.0	●
2020M 050	0.007-0.045	2.0	0.50	50	5.0	7	6.0	●
2025M 010	0.007-0.050	2.5	0.10	60	7.0	9	6.0	●
2025M 020	0.007-0.050	2.5	0.20	60	7.0	9	6.0	●
2025M 030	0.007-0.050	2.5	0.30	60	7.0	9	6.0	●
2025M 050	0.007-0.050	2.5	0.50	60	7.0	9	6.0	●

●: Standard items

HSR 4

4 flute long neck corner radius

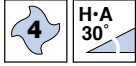
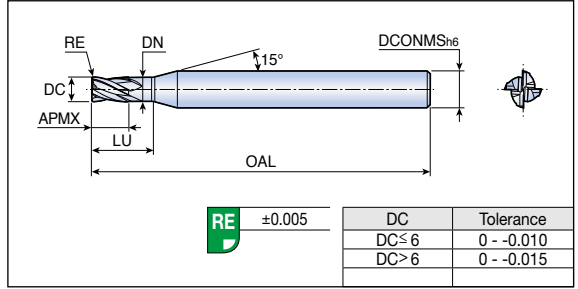


Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 4010 010 030	0.002-0.015	1.0	0.1	50	2.0	3	0.97	4.0	●
4010 010 040	0.002-0.015	1.0	0.1	50	2.0	4	0.97	4.0	●
4010 010 060	0.002-0.015	1.0	0.1	50	2.0	6	0.97	4.0	●
4010 020 030	0.002-0.015	1.0	0.2	50	2.0	3	0.97	4.0	●
4010 020 040	0.002-0.015	1.0	0.2	50	2.0	4	0.97	4.0	●
4010 020 060	0.002-0.015	1.0	0.2	50	2.0	6	0.97	4.0	●
4010 030 030	0.002-0.015	1.0	0.3	50	2.0	3	0.97	4.0	●
4010 030 040	0.002-0.015	1.0	0.3	50	2.0	4	0.97	4.0	●
4010 030 060	0.002-0.015	1.0	0.3	50	2.0	6	0.97	4.0	●
4015 010 040	0.006-0.025	1.5	0.1	50	2.5	4	1.45	4.0	●
4015 010 060	0.006-0.025	1.5	0.1	50	2.5	6	1.45	4.0	●
4015 020 040	0.006-0.025	1.5	0.2	50	2.5	4	1.45	4.0	●
4015 020 060	0.006-0.025	1.5	0.2	50	2.5	6	1.45	4.0	●
4015 030 040	0.006-0.025	1.5	0.3	50	2.5	4	1.45	4.0	●
4015 030 060	0.006-0.025	1.5	0.3	50	2.5	6	1.45	4.0	●
4020 010 060	0.007-0.030	2.0	0.1	50	3.0	6	1.95	4.0	●
4020 010 080	0.007-0.030	2.0	0.1	50	3.0	8	1.95	4.0	●
4020 010 100	0.007-0.030	2.0	0.1	50	3.0	10	1.95	4.0	●
4020 010 120	0.007-0.030	2.0	0.1	50	3.0	12	1.95	4.0	●
4020 010 160	0.007-0.030	2.0	0.1	50	3.0	16	1.95	4.0	●
4020 020 060	0.007-0.030	2.0	0.2	50	3.0	6	1.95	4.0	●
4020 020 080	0.007-0.030	2.0	0.2	50	3.0	8	1.95	4.0	●
4020 020 100	0.007-0.030	2.0	0.2	50	3.0	10	1.95	4.0	●
4020 020 120	0.007-0.030	2.0	0.2	50	3.0	12	1.95	4.0	●
4020 020 160	0.007-0.030	2.0	0.2	50	3.0	16	1.95	4.0	●
4020 030 060	0.007-0.030	2.0	0.3	50	3.0	6	1.95	4.0	●
4020 030 080	0.007-0.030	2.0	0.3	50	3.0	8	1.95	4.0	●
4020 030 100	0.007-0.030	2.0	0.3	50	3.0	10	1.95	4.0	●
4020 030 120	0.007-0.030	2.0	0.3	50	3.0	12	1.95	4.0	●
4020 030 160	0.007-0.030	2.0	0.3	50	3.0	16	1.95	4.0	●
4020 050 060	0.007-0.030	2.0	0.5	50	3.0	6	1.95	4.0	●
4020 050 080	0.007-0.030	2.0	0.5	50	3.0	8	1.95	4.0	●
4020 050 100	0.007-0.030	2.0	0.5	50	3.0	10	1.95	4.0	●
4020 050 120	0.007-0.030	2.0	0.5	50	3.0	12	1.95	4.0	●
4020 050 160	0.007-0.030	2.0	0.5	50	3.0	16	1.95	4.0	●

● Standard items

HSR 4

4 flute long neck corner radius

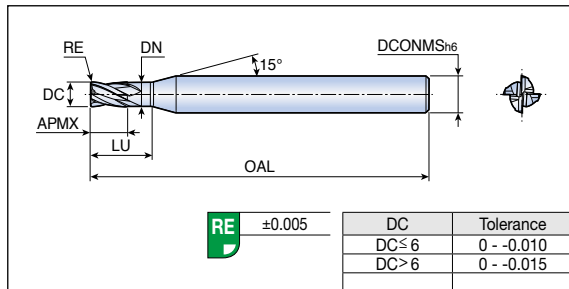


Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 4030 010 080	0.010-0.040	3.0	0.1	55	4	8	2.85	6.0	●
4030 010 100	0.010-0.040	3.0	0.1	55	4	10	2.85	6.0	●
4030 010 120	0.010-0.040	3.0	0.1	55	4	12	2.85	6.0	●
4030 010 160	0.010-0.040	3.0	0.1	55	4	16	2.85	6.0	●
4030 010 200	0.010-0.040	3.0	0.1	60	4	20	2.85	6.0	●
4030 010 250	0.010-0.040	3.0	0.1	60	4	25	2.85	6.0	●
4030 020 080	0.010-0.040	3.0	0.2	55	4	8	2.85	6.0	●
4030 020 100	0.010-0.040	3.0	0.2	55	4	10	2.85	6.0	●
4030 020 120	0.010-0.040	3.0	0.2	55	4	12	2.85	6.0	●
4030 020 160	0.010-0.040	3.0	0.2	55	4	16	2.85	6.0	●
4030 020 200	0.010-0.040	3.0	0.2	60	4	20	2.85	6.0	●
4030 020 250	0.010-0.040	3.0	0.2	60	4	25	2.85	6.0	●
4030 030 080	0.010-0.040	3.0	0.3	55	4	8	2.85	6.0	●
4030 030 100	0.010-0.040	3.0	0.3	55	4	10	2.85	6.0	●
4030 030 120	0.010-0.040	3.0	0.3	55	4	12	2.85	6.0	●
4030 030 160	0.010-0.040	3.0	0.3	55	4	16	2.85	6.0	●
4030 030 200	0.010-0.040	3.0	0.3	60	4	20	2.85	6.0	●
4030 030 250	0.010-0.040	3.0	0.3	60	4	25	2.85	6.0	●
4030 050 080	0.010-0.040	3.0	0.5	55	4	8	2.85	6.0	●
4030 050 100	0.010-0.040	3.0	0.5	55	4	10	2.85	6.0	●
4030 050 120	0.010-0.040	3.0	0.5	55	4	12	2.85	6.0	●
4030 050 160	0.010-0.040	3.0	0.5	55	4	16	2.85	6.0	●
4030 050 200	0.010-0.040	3.0	0.5	60	4	20	2.85	6.0	●
4030 050 250	0.010-0.040	3.0	0.5	60	4	25	2.85	6.0	●
4030 100 080	0.010-0.040	3.0	1.0	55	4	8	2.85	6.0	●
4030 100 100	0.010-0.040	3.0	1.0	55	4	10	2.85	6.0	●
4030 100 120	0.010-0.040	3.0	1.0	55	4	12	2.85	6.0	●
4030 100 160	0.010-0.040	3.0	1.0	55	4	16	2.85	6.0	●
4030 100 200	0.010-0.040	3.0	1.0	60	4	20	2.85	6.0	●

●: Standard items

HSR 4

4 flute long neck corner radius



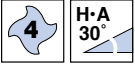
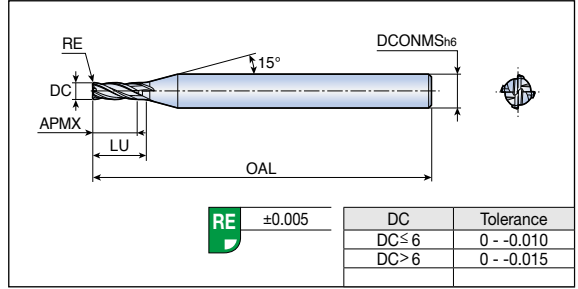
	H-A 30°	P	M	K	N	S	H
		○	○	○	○	○	●

Designation	Feed (mm/tooth)	Dimension (mm)								Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	TT5505	
HSR 4040 010 100	0.015-0.050	4.0	0.1	55	6	10	3.9	6.0	●	
4040 010 120	0.015-0.050	4.0	0.1	55	6	12	3.9	6.0	●	
4040 010 160	0.015-0.050	4.0	0.1	55	6	16	3.9	6.0	●	
4040 010 200	0.015-0.050	4.0	0.1	60	6	20	3.9	6.0	●	
4040 010 250	0.015-0.050	4.0	0.1	60	6	25	3.9	6.0	●	
4040 010 300	0.015-0.050	4.0	0.1	70	6	30	3.9	6.0	●	
4040 020 100	0.015-0.050	4.0	0.2	55	6	10	3.9	6.0	●	
4040 020 120	0.015-0.050	4.0	0.2	55	6	12	3.9	6.0	●	
4040 020 160	0.015-0.050	4.0	0.2	55	6	16	3.9	6.0	●	
4040 020 200	0.015-0.050	4.0	0.2	60	6	20	3.9	6.0	●	
4040 020 250	0.015-0.050	4.0	0.2	60	6	25	3.9	6.0	●	
4040 020 300	0.015-0.050	4.0	0.2	70	6	30	3.9	6.0	●	
4040 030 100	0.015-0.050	4.0	0.3	55	6	10	3.9	6.0	●	
4040 030 120	0.015-0.050	4.0	0.3	55	6	12	3.9	6.0	●	
4040 030 160	0.015-0.050	4.0	0.3	55	6	16	3.9	6.0	●	
4040 030 200	0.015-0.050	4.0	0.3	60	6	20	3.9	6.0	●	
4040 030 250	0.015-0.050	4.0	0.3	60	6	25	3.9	6.0	●	
4040 030 300	0.015-0.050	4.0	0.3	70	6	30	3.9	6.0	●	
4040 050 100	0.015-0.050	4.0	0.5	55	6	10	3.9	6.0	●	
4040 050 120	0.015-0.050	4.0	0.5	55	6	12	3.9	6.0	●	
4040 050 160	0.015-0.050	4.0	0.5	55	6	16	3.9	6.0	●	
4040 050 200	0.015-0.050	4.0	0.5	60	6	20	3.9	6.0	●	
4040 050 250	0.015-0.050	4.0	0.5	60	6	25	3.9	6.0	●	
4040 050 300	0.015-0.050	4.0	0.5	70	6	30	3.9	6.0	●	
4040 100 100	0.015-0.050	4.0	1.0	55	6	10	3.9	6.0	●	
4040 100 120	0.015-0.050	4.0	1.0	55	6	12	3.9	6.0	●	
4040 100 160	0.015-0.050	4.0	1.0	55	6	16	3.9	6.0	●	
4040 100 200	0.015-0.050	4.0	1.0	60	6	20	3.9	6.0	●	
4040 100 250	0.015-0.050	4.0	1.0	60	6	25	3.9	6.0	●	

● Standard items

HSR 4...M

4 flute medium corner radius

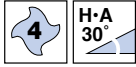
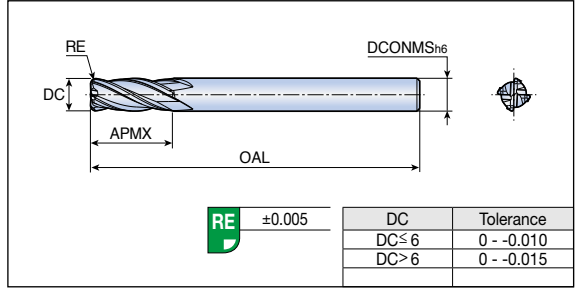


Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	RE	OAL	APMX	LU	DCONMS	
HSR 4010M 005	0.002-0.015	1.0	0.05	50	2.0	2.5	6.0	●
4010M 010	0.002-0.015	1.0	0.1	50	2.0	2.5	6.0	●
4010M 020	0.002-0.015	1.0	0.2	50	2.0	2.5	6.0	●
4010M 030	0.002-0.015	1.0	0.3	50	2.0	2.5	6.0	●
4012M 005	0.004-0.020	1.2	0.05	50	2.5	3	6.0	●
4012M 010	0.004-0.020	1.2	0.1	50	2.5	3	6.0	●
4012M 020	0.004-0.020	1.2	0.2	50	2.5	3	6.0	●
4012M 030	0.004-0.020	1.2	0.3	50	2.5	3	6.0	●
4015M 005	0.006-0.025	1.5	0.05	50	3.0	3.5	6.0	●
4015M 010	0.006-0.025	1.5	0.1	50	3.0	3.5	6.0	●
4015M 020	0.006-0.025	1.5	0.2	50	3.0	3.5	6.0	●
4015M 030	0.006-0.025	1.5	0.3	50	3.0	3.5	6.0	●
4020M 010	0.007-0.030	2.0	0.1	50	5.0	6	6.0	●
4020M 020	0.007-0.030	2.0	0.2	50	5.0	6	6.0	●
4020M 030	0.007-0.030	2.0	0.3	50	5.0	6	6.0	●
4020M 050	0.007-0.030	2.0	0.5	50	5.0	6	6.0	●
4025M 010	0.007-0.035	2.5	0.1	60	7.0	8	6.0	●
4025M 020	0.007-0.035	2.5	0.2	60	7.0	8	6.0	●
4025M 030	0.007-0.035	2.5	0.3	60	7.0	8	6.0	●
4025M 050	0.007-0.035	2.5	0.5	60	7.0	8	6.0	●
4030M 010	0.010-0.040	3.0	0.1	60	8.0	9.5	6.0	●
4030M 020	0.010-0.040	3.0	0.2	60	8.0	9.5	6.0	●
4030M 030	0.010-0.040	3.0	0.3	60	8.0	9.5	6.0	●
4030M 050	0.010-0.040	3.0	0.5	60	8.0	9.5	6.0	●
4040M 010	0.015-0.050	4.0	0.1	70	10.0	12	6.0	●
4040M 020	0.015-0.050	4.0	0.2	70	10.0	12	6.0	●
4040M 030	0.015-0.050	4.0	0.3	70	10.0	12	6.0	●
4040M 050	0.015-0.050	4.0	0.5	70	10.0	12	6.0	●
4040M 100	0.015-0.050	4.0	1.0	70	10.0	12	6.0	●

● Standard items

HSR 4...M

4 flute medium corner radius

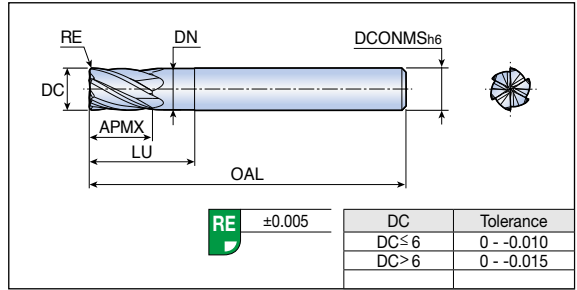


Designation	Feed (mm/tooth)	Dimension (mm)					Grade TT5505
		DC	RE	OAL	APMX	DCONMS	
HSR 4060M 020	0.025-0.080	6.0	0.2	90	15	6.0	●
4060M 030	0.025-0.080	6.0	0.3	90	15	6.0	●
4060M 050	0.025-0.080	6.0	0.5	90	15	6.0	●
4060M 100	0.025-0.080	6.0	1.0	90	15	6.0	●
4060M 150	0.025-0.080	6.0	1.5	90	15	6.0	●
4060M 200	0.025-0.080	6.0	2.0	90	15	6.0	●
4080M 020	0.030-0.100	8.0	0.2	100	20	8.0	●
4080M 030	0.030-0.100	8.0	0.3	100	20	8.0	●
4080M 050	0.030-0.100	8.0	0.5	100	20	8.0	●
4080M 100	0.030-0.100	8.0	1.0	100	20	8.0	●
4080M 150	0.030-0.100	8.0	1.5	100	20	8.0	●
4080M 200	0.030-0.100	8.0	2.0	100	20	8.0	●
4100M 020	0.040-0.120	10.0	0.2	100	25	10.0	●
4100M 030	0.040-0.120	10.0	0.3	100	25	10.0	●
4100M 050	0.040-0.120	10.0	0.5	100	25	10.0	●
4100M 100	0.040-0.120	10.0	1.0	100	25	10.0	●
4100M 150	0.040-0.120	10.0	1.5	100	25	10.0	●
4100M 200	0.040-0.120	10.0	2.0	100	25	10.0	●
4120M 030	0.045-0.120	12.0	0.3	110	30	12.0	●
4120M 050	0.045-0.120	12.0	0.5	110	30	12.0	●
4120M 100	0.045-0.120	12.0	1.0	110	30	12.0	●
4120M 150	0.045-0.120	12.0	1.5	110	30	12.0	●
4120M 200	0.045-0.120	12.0	2.0	110	30	12.0	●

●: Standard items

HSR 6

6 flute long neck corner radius



• Finishing

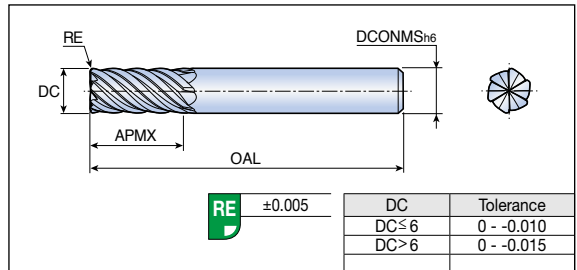


Designation	Feed (mm/tooth)	Dimension (mm)							Grade
		DC	RE	OAL	APMX	LU	DN	DCONMS	
HSR 6060 050 150	0.020-0.050	6.0	0.5	60	9	15	5.8	6.0	●
6060 100 150	0.020-0.050	6.0	1.0	60	9	15	5.8	6.0	●
6080 050 200	0.030-0.060	8.0	0.5	70	12	20	7.8	8.0	●
6080 100 200	0.030-0.060	8.0	1.0	70	12	20	7.8	8.0	●
6100 050 250	0.035-0.080	10.0	0.5	75	15	25	9.8	10.0	●
6100 100 250	0.035-0.080	10.0	1.0	75	15	25	9.8	10.0	●
6120 050 300	0.040-0.100	12.0	0.5	85	18	30	11.6	12.0	●
6120 100 300	0.040-0.100	12.0	1.0	85	18	30	11.6	12.0	●

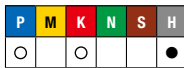
• Standard items

HSR 6...M

6 flute medium corner radius



• Finishing

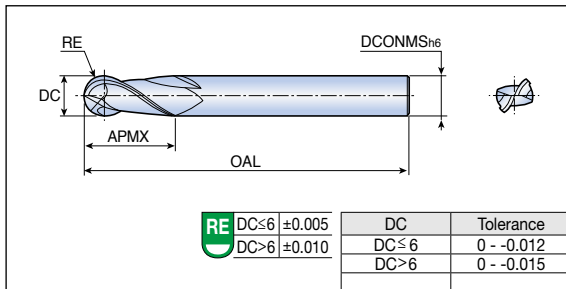


Designation	Feed (mm/tooth)	Dimension (mm)					Grade
		DC	RE	OAL	APMX	DCONMS	
HSR 6060M 050	0.020-0.050	6.0	0.5	60	15	6.0	●
6060M 100	0.020-0.050	6.0	1.0	60	15	6.0	●
6080M 050	0.030-0.060	8.0	0.5	65	20	8.0	●
6080M 100	0.030-0.060	8.0	1.0	65	20	8.0	●
6100M 050	0.035-0.080	10.0	0.5	70	22	10.0	●
6100M 100	0.035-0.080	10.0	1.0	70	22	10.0	●
6100M 150	0.035-0.080	10.0	1.5	70	22	10.0	●
6120M 050	0.040-0.100	12.0	0.5	80	26	12.0	●
6120M 100	0.040-0.100	12.0	1.0	80	26	12.0	●
6120M 150	0.040-0.100	12.0	1.5	80	26	12.0	●

• Standard items

SBE 2...T

2 flute medium ball



2	H-A 30°	P	M	K	N	S	H
		●	○	●	○	○	

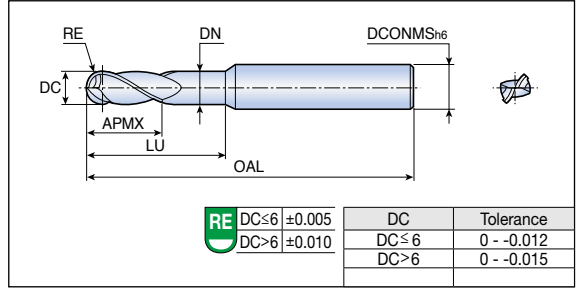
Designation	Dimension (mm)					Grade
	DC	RE	OAL	APMX	DCONMS	TT5515
SBE 2010T	1.0	0.5	50	1.5	4	●
2010T-6	1.0	0.5	50	1.5	6	●
2012T	1.2	0.6	50	1.8	4	●
2015T	1.5	0.75	50	2.3	4	●
2015T-5X70	1.5	0.75	70	5.0	6	●
2015T-6	1.5	0.75	50	2.3	6	●
2016T	1.6	0.8	50	2.4	4	●
2020T	2.0	1.0	50	3.0	4	●
2020T-6	2.0	1.0	50	3.0	6	●
2020T-7X70	2.0	1.0	70	7.0	6	●
2025T	2.5	1.25	50	3.8	4	●
2025T-6	2.5	1.25	50	3.8	6	●
2030T	3.0	1.5	70	8.0	6	●
2030T-10X70	3.0	1.5	70	10.0	6	●
2035T	3.5	1.75	70	8.0	6	●
2040T	4.0	2.0	70	8.0	6	●
2040T-12X70	4.0	2.0	70	12.0	6	●
2045T	4.5	2.25	80	8.0	6	●
2050T	5.0	2.5	80	12.0	6	●
2050T-15X80	5.0	2.5	80	15.0	6	●
2060T	6.0	3.0	80	12.0	6	●
2060T-15X80	6.0	3.0	80	15.0	6	●
2065T	6.5	3.25	90	12.0	8	●
2070T	7.0	3.5	90	15.0	8	●
2080T	8.0	4.0	90	15.0	8	●
2080T-20X90	8.0	4.0	90	20.0	8	●
2090T	9.0	4.5	100	20.0	10	●
2100T	10.0	5.0	100	20.0	10	●
2100T-25X100	10.0	5.0	100	25.0	10	●
2110T	11.0	5.5	110	25.0	12	●
2120T	12.0	6.0	110	25.0	12	●
2120T-30X100	12.0	6.0	100	30.0	12	●
2140T	14.0	7.0	120	30.0	12	●
2150T	15.0	7.5	125	35.0	16	●
2160T	16.0	8.0	125	35.0	16	●
2180T	18.0	9.0	150	40.0	20	●
2200T	20.0	10.0	150	40.0	20	●

► Weldon shank is available on request (Ordering example: SBEW 2...T)

● Standard items

SBE 2...L

2 flute long ball



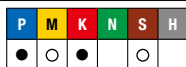
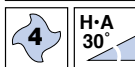
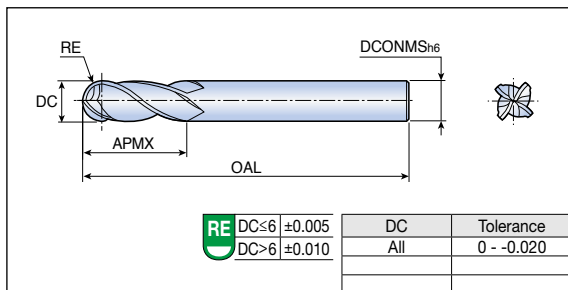
2	H-A 30°	P	M	K	N	S	H
					●		

Designation	Dimension (mm)							Grades
	DC	RE	OAL	APMX	LU	DN	DCONMS	UF10N
SBE 2030L	3	1.5	100	4	35	2.85	6	●
2040L	4	2.0	100	6	35	3.85	6	●
2060L	6	3.0	115	8	45	5.8	8	●
2060L-6D	6	3.0	115	8	45	5.8	6	●
2070L	7	3.5	125	10	45	6.8	10	●
2080L	8	4.0	125	12	55	7.8	10	●
2090L	9	4.5	140	15	65	8.8	10	●
2100L	10	5.0	140	15	65	9.8	10	●
2120L	12	6.0	150	18	75	11.8	12	●
2160L	16	8.0	155	30	75	15.6	16	●

● Standard items

SBE 4...T

4 flute medium ball

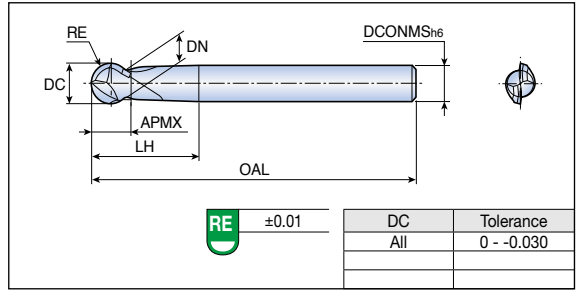


Designation	Dimension (mm)					Grade
	DC	RE	OAL	APMX	DCONMS	TT5515
SBE 4010T-6	1.0	0.5	50	2.5	6	●
4015T	1.5	0.75	50	4.0	4	●
4020T	2.0	1.0	50	5.0	6	●
4030T	3.0	1.5	57	8.0	6	●
4040T	4.0	2.0	70	8.0	6	●
4050T	5.0	2.5	80	12.0	6	●
4060T	6.0	3.0	80	12.0	6	●
4070T	7.0	3.5	90	15.0	8	●
4080T	8.0	4.0	90	15.0	8	●
4090T	9.0	4.5	100	20.0	10	●
4100T	10.0	5.0	100	20.0	10	●
4120T	12.0	6.0	110	25.0	12	●
4160T	16.0	8.0	125	35.0	16	●
4180T	18.0	9.0	150	40.0	20	●
4200T	20.0	10.0	150	40.0	20	●

► Weldon shank is available on request (Ordering example: SBEW 4...T) ● Standard items

BES 2...T

2 flute spherical ball

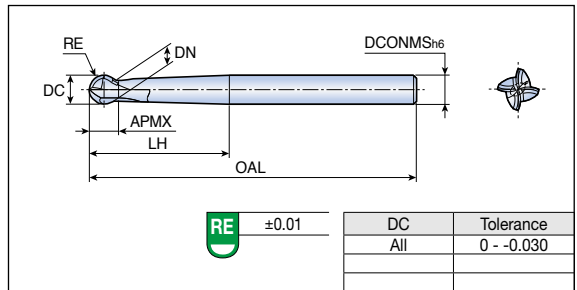


Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LH	DN	DCONMS	
BES 2030T	3	1.5	80	3.3	28.5	2.52	6	●
2040T	4	2.0	80	4.1	28.5	3.35	6	●
2050T	5	2.5	80	5.4	38.0	4.19	6	●
2060T	6	3.0	100	6.1	28.0	5.03	6	●
2080T	8	4.0	100	8.2	33.0	6.71	8	●
2100T	10	5.0	100	9.7	40.0	8.39	10	●
2120T	12	6.0	110	12.3	49.0	10.06	12	●
2160T	16	8.0	155	15.4	58.0	13.42	16	●

●: Standard items

BES 4...T

4 flute spherical ball

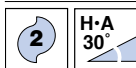
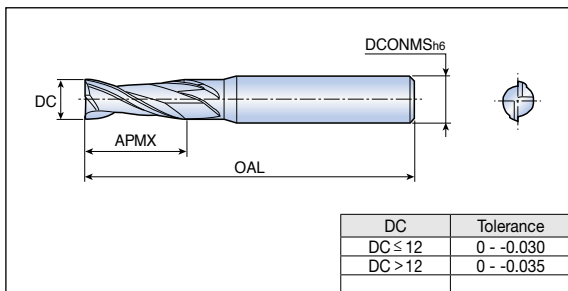


Designation	Dimension (mm)							Grade
	DC	RE	OAL	APMX	LH	DN	DCONMS	
BES 4030T	3	1.5	80	3.3	28.5	2.52	6	●
4040T	4	2.0	80	4.1	28.5	3.35	6	●
4050T	5	2.5	80	5.4	38.0	4.19	6	●
4060T	6	3.0	100	6.1	28.0	5.03	6	●
4080T	8	4.0	100	8.2	33.0	6.71	8	●
4100T	10	5.0	100	9.7	40.0	8.39	10	●
4120T	12	6.0	110	12.3	49.0	10.06	12	●

●: Standard items

TSE 2...M

2 flute medium flat



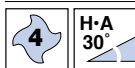
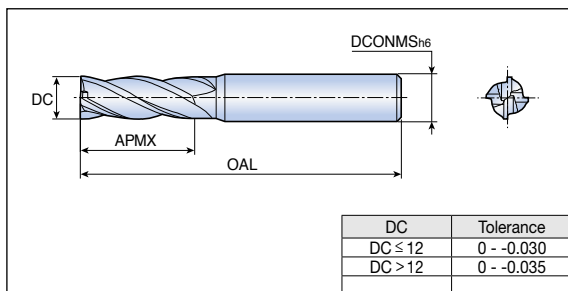
Designation	Feed (mm/tooth)	Dimension (mm)				Grades		
		DC	OAL	APMX	DCONMS	TT5515	TT5525	UF10
TSE 2010M-4	0.008-0.030	1.0	40	3	4	●	●	●
2010M	0.008-0.030	1.0	42	3	6	●	●	
2012M	0.008-0.030	1.2	42	3	6	●	●	
2015M-4	0.008-0.030	1.5	40	4	4	●	●	
2015M	0.008-0.030	1.5	42	4	6	●	●	
2020M-4	0.010-0.030	2.0	40	6	4	●	●	
2020M	0.010-0.030	2.0	42	6	6	●	●	●
2025M-4	0.010-0.030	2.5	40	8	4	●	●	●
2025M	0.010-0.030	2.5	42	8	6	●	●	●
2030M	0.010-0.030	3.0	57	10	6	●	●	
2035M-4	0.010-0.030	3.5	50	12	4	●	●	
2035M	0.010-0.030	3.5	47	10	6	●	●	●
2040M(12X47)	0.010-0.050	4.0	47	12	6			●
2040M-4	0.010-0.050	4.0	50	12	4	●	●	
2040M	0.010-0.050	4.0	57	12	6	●	●	●
2045M	0.010-0.050	4.5	57	14	6	●	●	●
2050M-5	0.015-0.060	5.0	50	14	5	●	●	●
2050M	0.015-0.060	5.0	57	14	6	●	●	
2055M	0.015-0.060	5.5	57	16	6	●	●	
2060M	0.020-0.060	6.0	57	16	6	●	●	●
2065M-7	0.020-0.060	6.5	60	20	7	●	●	
2065M	0.020-0.060	6.5	60	20	8	●	●	●
2070M	0.030-0.070	7.0	60	20	8	●	●	●
2075M	0.030-0.070	7.5	63	20	8	●	●	
2080M	0.030-0.100	8.0	63	20	8	●	●	●
2085M	0.030-0.100	8.5	72	22	10	●	●	
2090M	0.030-0.100	9.0	68	25	10	●	●	
2095M	0.030-0.100	9.5	72	24	10	●	●	
2100M(25X68)	0.030-0.120	10.0	68	25	10	●	●	
2100M	0.030-0.120	10.0	72	22	10	●	●	
2105M	0.030-0.120	10.5	76	26	12	●	●	
2110M	0.030-0.120	11.0	76	30	12	●	●	
2115M	0.030-0.120	11.5	83	30	12	●	●	
2120M(30X76)	0.030-0.120	12.0	76	30	12	●	●	●
2120M	0.030-0.120	12.0	83	25	12	●	●	●

► Weldon shank is available on request (Ordering example: TSEW 2...M)

●: Standard items

TSE 4...M

4 flute medium flat



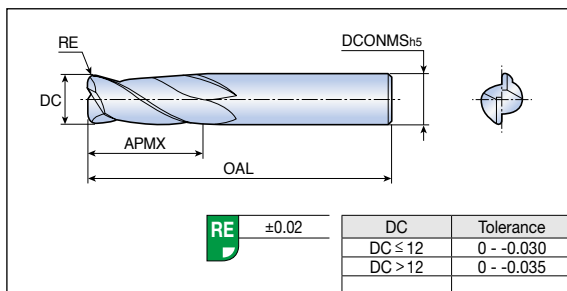
Designation	Feed (mm/tooth)	Dimension (mm)				Grades		
		DC	OAL	APMX	DCONMS	TT5515	TT5525	UF10
TSE 4010M	0.005-0.010	1.0	42	2.5	6	●	●	
4015M	0.005-0.012	1.5	42	4	6	●	●	
4020M	0.008-0.017	2.0	42	6	6	●	●	●
4025M-4	0.008-0.017	2.5	40	8	4	●	●	●
4025M	0.008-0.017	2.5	42	8	6	●	●	
4030M	0.009-0.020	3.0	57	10	6	●	●	●
4035M-4	0.010-0.028	3.5	50	12	4	●		
4035M	0.010-0.028	3.5	47	10	6	●	●	●
4040M-4	0.010-0.042	4.0	50	12	4	●	●	●
4040M	0.010-0.042	4.0	57	12	6	●	●	●
4045M	0.010-0.042	4.5	57	12	6	●		
4050M	0.020-0.059	5.0	57	14	6	●	●	●
4055M	0.020-0.059	5.5	57	14	6	●	●	
4060M	0.020-0.075	6.0	57	16	6	●	●	●
4065M	0.020-0.075	6.5	60	20	8	●	●	
4070M	0.020-0.075	7.0	60	20	8	●	●	●
4075M	0.020-0.075	7.5	60	20	8	●	●	
4080M	0.030-0.100	8.0	63	20	8	●	●	●
4085M	0.030-0.100	8.5	68	25	10	●	●	
4090M	0.030-0.100	9.0	68	25	10	●	●	
4095M	0.030-0.100	9.5	68	25	10	●	●	
4100M(25X68)	0.030-0.120	10.0	68	25	10	●	●	
4100M	0.030-0.120	10.0	72	22	10	●	●	●
4105M	0.030-0.120	10.5	76	30	12	●	●	
4110M	0.030-0.120	11.0	76	30	12	●	●	
4115M	0.030-0.120	11.5	76	30	12	●	●	
4120M(30X76)	0.030-0.136	12.0	76	30	12	●	●	
4120M	0.030-0.136	12.0	83	25	12	●	●	●
4130M	0.030-0.136	13.0	85	35	14	●	●	
4140M-14	0.030-0.136	14.0	83	25	14	●	●	
4140M	0.030-0.136	14.0	85	35	16		●	
4140M(35X85)	0.030-0.136	14.0	85	35	16	●		●
4150M	0.040-0.140	15.0	92	32	16	●	●	
4160M(40X90)	0.040-0.146	16.0	90	40	16	●	●	
4160M	0.040-0.146	16.0	92	32	16	●	●	●

► Weldon shank is available on request (Ordering example: TSEW 4...M)

● Standard items

HES 2...T-R

2 flute medium corner radius



2

H-A
30°

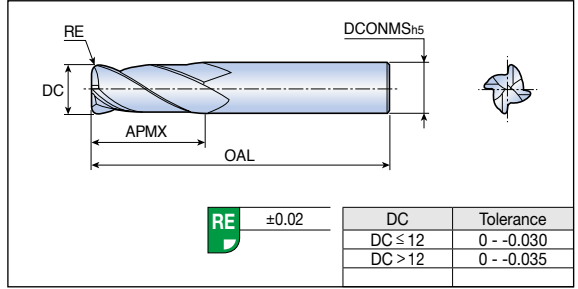
P	M	K	N	S	H
●	○	●	○	○	○

Designation	Feed (mm/tooth)	Dimension (mm)					Grades	
		DC	RE	OAL	APMX	DCONMS	TT5515	TT5525
HES 2030T-R0.5	0.010-0.030	3	0.5	47	10	6	●	●
2040T-R0.5	0.010-0.050	4	0.5	47	12	6	●	●
2050T-R0.5	0.020-0.060	5	0.5	52	15	6	●	●
2060T-R0.5	0.020-0.060	6	0.5	52	15	6	●	●
2060T-R1.0	0.020-0.060	6	1.0	52	15	6	●	●
2080T-R0.5	0.030-0.100	8	0.5	60	20	8	●	●
2080T-R1.0	0.030-0.100	8	1.0	60	20	8	●	●
2080T-R1.5	0.030-0.100	8	1.5	60	20	8	●	●
2080T-R2.0	0.030-0.100	8	2.0	60	20	8	●	●
2100T-R0.5	0.030-0.120	10	0.5	68	25	10	●	●
2100T-R1.0	0.030-0.120	10	1.0	68	25	10	●	●
2100T-R1.5	0.030-0.120	10	1.5	68	25	10	●	●
2100T-R2.0	0.030-0.120	10	2.0	68	25	10	●	●
2100T-R2.5	0.030-0.120	10	2.5	68	25	10	●	●
2100T-R3.0	0.030-0.120	10	3.0	68	25	10	●	●
2120T-R0.5	0.030-0.120	12	0.5	76	30	12	●	●
2120T-R1.0	0.030-0.120	12	1.0	76	30	12	●	●
2120T-R1.5	0.030-0.120	12	1.5	76	30	12	●	●
2120T-R2.0	0.030-0.120	12	2.0	76	30	12	●	●
2120T-R2.5	0.030-0.120	12	2.5	76	30	12	●	●
2120T-R3.0	0.030-0.120	12	3.0	76	30	12	●	●
2160T-R0.5	0.040-0.142	16	0.5	90	40	16	●	●
2160T-R1.0	0.040-0.142	16	1.0	90	40	16	●	●
2160T-R1.5	0.040-0.142	16	1.5	90	40	16	●	●
2160T-R2.0	0.040-0.142	16	2.0	90	40	16	●	●
2160T-R3.0	0.040-0.142	16	3.0	90	40	16	●	●
2200T-R0.5	0.040-0.142	20	0.5	110	45	20	●	●
2200T-R1.0	0.040-0.142	20	1.0	110	45	20	●	●
2200T-R1.5	0.040-0.142	20	1.5	110	45	20	●	●
2200T-R2.0	0.040-0.142	20	2.0	110	45	20	●	●
2200T-R3.0	0.040-0.142	20	3.0	110	45	20	●	●

●: Standard items

HES 4...T-R

4 flute medium corner radius

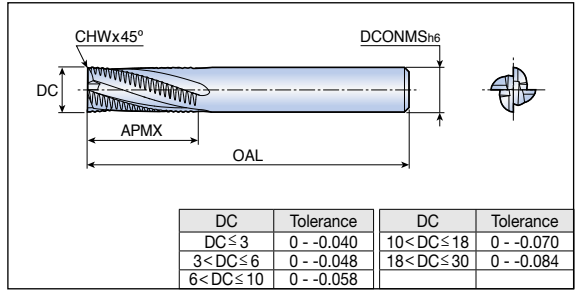


Designation	Feed (mm/tooth)	Dimension (mm)					Grades	
		DC	RE	OAL	APMX	DCONMS	TT5515	TT5525
HES 4030T-R0.3	0.01-0.04	3	0.3	47	10	6	●	●
4040T-R0.3	0.02-0.05	4	0.3	47	12	6	●	●
4050T-R0.3	0.02-0.06	5	0.3	52	15	6	●	●
4060T-R0.5	0.03-0.07	6	0.5	52	15	6	●	●
4060T-R1.0	0.03-0.07	6	1.0	52	15	6	●	●
4080T-R0.5	0.03-0.09	8	0.5	60	20	8	●	●
4080T-R1.0	0.03-0.09	8	1.0	60	20	8	●	●
4080T-R1.5	0.03-0.09	8	1.5	60	20	8	●	●
4080T-R2.0	0.03-0.09	8	2.0	60	20	8	●	●
4100T-R0.5	0.03-0.10	10	0.5	68	25	10	●	●
4100T-R1.0	0.03-0.10	10	1.0	68	25	10	●	●
4100T-R1.5	0.03-0.10	10	1.5	68	25	10	●	●
4100T-R2.0	0.03-0.10	10	2.0	68	25	10	●	●
4100T-R2.5	0.03-0.10	10	2.5	68	25	10	●	●
4100T-R3.0	0.03-0.10	10	3.0	68	25	10	●	●
4120T-R0.5	0.04-0.11	12	0.5	76	30	12	●	●
4120T-R1.0	0.04-0.11	12	1.0	76	30	12	●	●
4120T-R1.5	0.04-0.11	12	1.5	76	30	12	●	●
4120T-R2.0	0.04-0.11	12	2.0	76	30	12	●	●
4120T-R2.5	0.04-0.11	12	2.5	76	30	12	●	●
4120T-R3.0	0.04-0.11	12	3.0	76	30	12	●	●
4160T-R0.5	0.05-0.13	16	0.5	90	40	16	●	●
4160T-R1.0	0.05-0.13	16	1.0	90	40	16	●	●
4160T-R1.5	0.05-0.13	16	1.5	90	40	16	●	●
4160T-R2.0	0.05-0.13	16	2.0	90	40	16	●	●
4160T-R3.0	0.05-0.13	16	3.0	90	40	16	●	●
4200T-R0.5	0.05-0.13	20	0.5	110	45	20	●	●
4200T-R1.0	0.05-0.13	20	1.0	110	45	20	●	●
4200T-R1.5	0.05-0.13	20	1.5	110	45	20	●	●
4200T-R2.0	0.05-0.13	20	2.0	110	45	20	●	●
4200T-R3.0	0.05-0.13	20	3.0	110	45	20	●	●

●: Standard items

REL ...L

3-4 flute rough long corner chamfer



Designation	Feed (mm/tooth)	Dimension (mm)						Grade
		DC	NOF	CHW	OAL	APMX	DCONMS	
REL 3060L	0.03-0.06	6	3	0.38	57	16	6	●
3080L	0.03-0.08	8	3	0.38	63	16	8	●
4100L	0.03-0.09	10	4	0.61	72	22	10	●
4120L	0.04-0.10	12	4	0.61	83	26	12	●
4140L-14	0.05-0.11	14	4	0.61	83	26	14	●
4160L	0.05-0.11	16	4	0.61	92	32	16	●
4200L	0.05-0.11	20	4	0.61	104	38	20	●

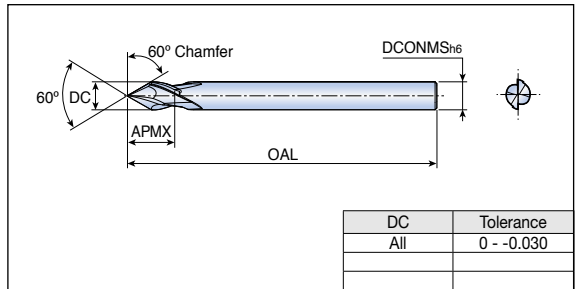
▶ Weldon shank is available on request (Ordering example: RELW ...L)

▶ NOF: Number of flutes

●: Standard items

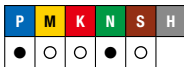
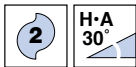
CEM 2...-C60

2 flute, 60° chamfering



● Multi-function

- Chamfer boring, chamfer milling, side milling



Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	
CEM 2040-C60	0.02-0.04	4	70	7.5	6	●
2060-C60	0.02-0.04	6	80	11.2	6	●
2080-C60	0.03-0.06	8	90	14.9	8	●
2100-C60	0.03-0.08	10	100	18.7	10	●
2120-C60	0.04-0.09	12	110	22.4	12	●
2160-C60	0.05-0.10	16	125	29.9	16	●
2200-C60	0.05-0.10	20	150	37.3	20	●

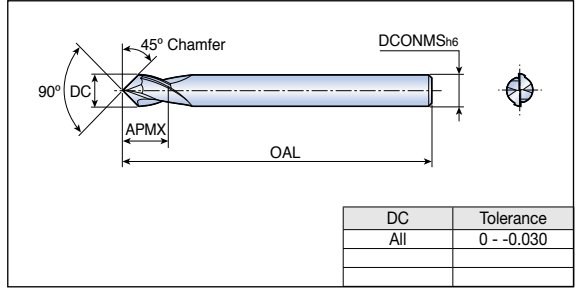
●: Standard items

CEM 2

2 flute, 45° chamfering



- Multi-function
 - Chamfer boring, chamfer milling, side milling,
 - *centering, V-slot milling



2

H·A
30°

P	M	K	N	S	H
●	○	○	●	○	○

Designation	Feed (mm/tooth)	Dimension (mm)				Grade	
		DC	OAL	APMX	DCONMS	UF10	TT5525
CEM 2040	0.02-0.05	4	70	6	6	●	●
2060	0.02-0.05	6	80	9	6	●	●
2080	0.03-0.07	8	90	12	8	●	●
2100	0.03-0.10	10	100	15	10	●	●
2120	0.04-0.10	12	110	18	12	●	●
2160	0.05-0.10	16	125	24	16	●	●
2200	0.05-0.10	20	150	30	20	●	●

▶ *Centering of 45° is only applicable on cast iron & non-ferrous material

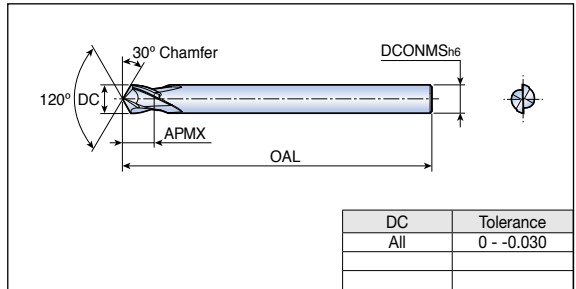
●: Standard items

CEM 2...-C120

2 flute, 30° chamfering



- Multi-function
 - Chamfer boring, chamfer milling, side milling, centering, V-slot milling, drilling



2

H·A
30°

P	M	K	N	S	H
●	○	○	●	○	○

Designation	Feed (mm/tooth)	Dimension (mm)				Grade
		DC	OAL	APMX	DCONMS	UF10
CEM 2040-C1204	0.02-0.05	4	70	5.2	6	●
2060-C120	0.02-0.05	6	80	7.7	6	●
2080-C120	0.03-0.07	8	90	10.3	8	●
2100-C120	0.03-0.10	10	100	12.9	10	●
2120-C120	0.04-0.10	12	110	15.5	12	●
2160-C120	0.05-0.10	16	125	20.6	16	●
2200-C120	0.05-0.10	20	150	25.8	20	●

●: Standard items

ECEM 2

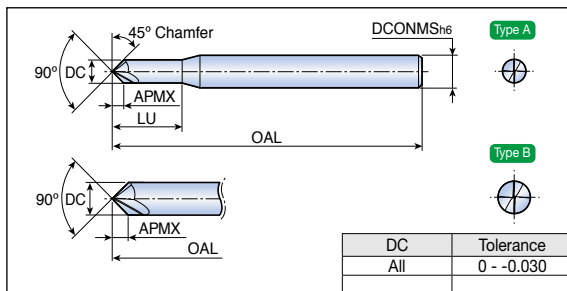
2 flute, 45° chamfering - Economical type



- Multi-function
- Chamfer boring, chamfer milling, centering, V-slot milling



P	M	K	N	S	H
●	○	○	●	○	



Designation	Feed (mm/tooth)	Dimension (mm)					Type	Grade
		DC	OAL	APMX	LU	DCONMS		
ECEM 2020	0.01-0.03	2	57	1.0	6	6	A	●
2030	0.01-0.04	3	57	1.5	9	6	A	●
2040	0.02-0.05	4	57	2.0	12	6	A	●
2060	0.02-0.05	6	57	2.9	-	6	B	●
2080	0.03-0.07	8	63	3.8	-	8	B	●
2100	0.03-0.10	10	72	4.9	-	10	B	●
2120	0.04-0.10	12	83	5.9	-	12	B	●
2160	0.05-0.10	16	92	7.9	-	16	B	●

●: Standard items

ECEM 4

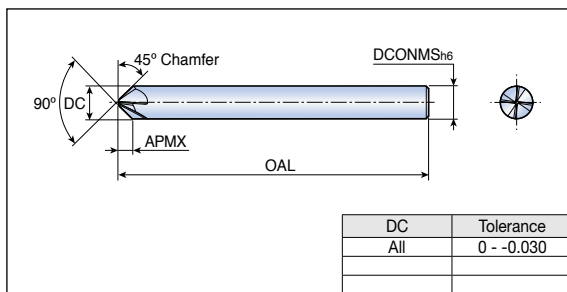
4 flute, 45° chamfering - Economical type



- Chamfer milling



P	M	K	N	S	H
●	○	○	●	○	

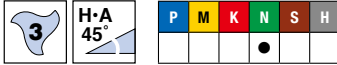
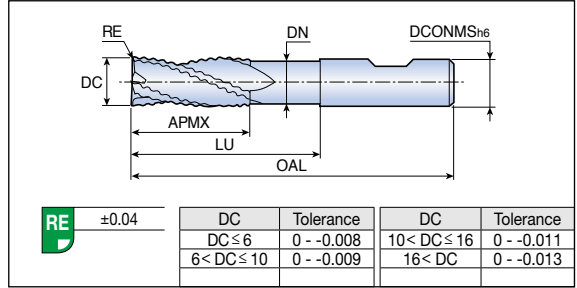


Designation	Feed (mm/tooth)	Dimension (mm)				Grade	
		DC	OAL	APMX	DCONMS	UF10	TT5525
ECEM 4060	0.02-0.04	6	57	2.5	6	●	●
4080	0.02-0.05	8	63	3.4	8	●	●
4100	0.03-0.08	10	72	4.4	10	●	●
4120	0.03-0.08	12	83	5.1	12	●	●

●: Standard items

REMA 3/ 3...C

3 flute rough corner radius

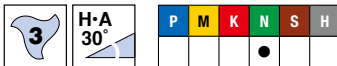
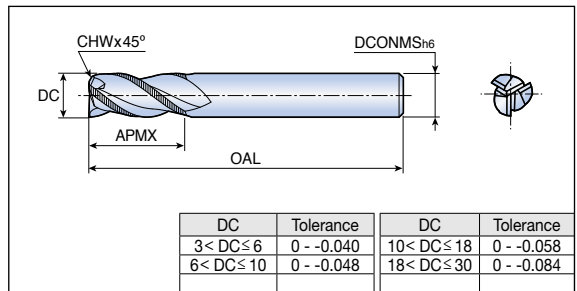


Designation		Feed (mm/tooth)	Dimension (mm)							Grade UF10
Cylindrical shank	Welded shank		DC	RE	OAL	APMX	LU	DN	DCONMS	
REMA 3060C	REMA 3060	0.03-0.07	6	0.2	57	9	21	5.5	6	●
3080C	3080	0.03-0.11	8	0.2	63	12	27	7.2	8	●
3100C	3100	0.05-0.14	10	0.2	72	12	31	9.0	10	●
3120C	3120	0.07-0.16	12	0.2	83	12	37	11.0	12	●
3160C	3160	0.07-0.18	16	0.2	92	14	43	15.0	16	●
3200C	3200	0.07-0.20	20	0.2	104	17	53	18.8	20	●

●: Standard items

REA 3...L

3 flute rough corner chamfer



Designation		Feed (mm/tooth)	Dimension (mm)					Grade UF10
Cylindrical shank	Welded shank		DC	CHW	OAL	APMX	DCONMS	
REA 3060L	3060L	0.03-0.07	6	0.61	57	16	6	●
3080L	3080L	0.03-0.15	8	0.61	63	16	8	●
3100L	3100L	0.05-0.20	10	0.61	72	22	10	●
3120L	3120L	0.07-0.22	12	0.66	83	26	12	●
3140L-14	3140L-14	0.07-0.22	14	0.99	83	26	14	●
3160L	3160L	0.07-0.25	16	0.99	92	32	16	●
3200L	3200L	0.07-0.25	20	0.99	104	38	20	●

●: Standard items



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