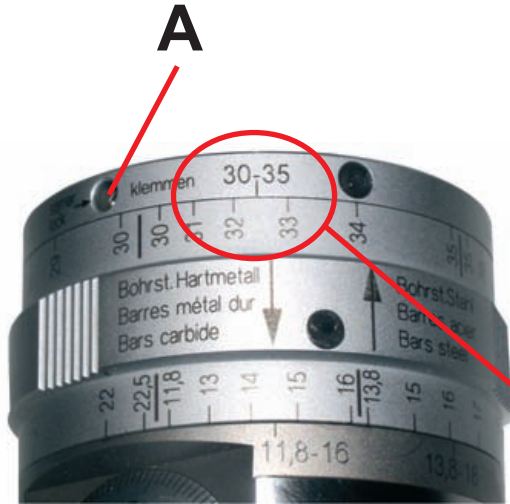


For URMA fine boring head when using HORN B105..../
B110... with B05 40 20 067 or DB05 40 20 067



Balancing the fine boring head:

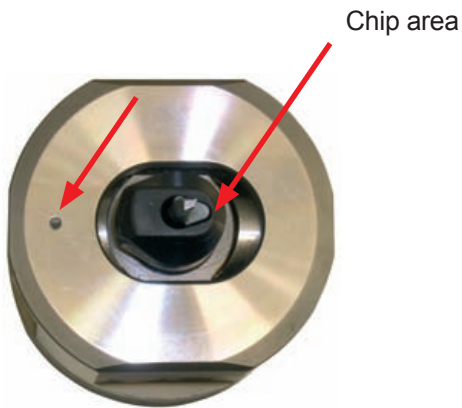
1. Loosening the locking screw A
2. Align the two scales to set the bore diameter
3. Re-tighten the locking screw

Example:

Insert R105.1823.4.5.2
Toolholder B105.0016.U1.01
Bore Ø 9 mm

Part number	Bore Ø	Bore Ø					
		5	6	7	8	9	10
R105.1823.4.5.2	5 - 10	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5

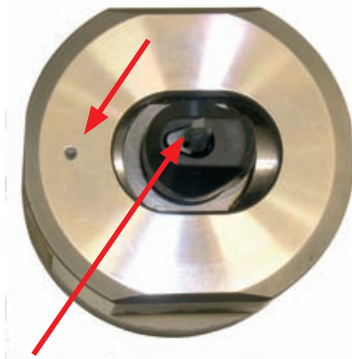
Dimensions in mm



Bore Ø 0.2 - 1.0 mm

Insert type left hand

For this bore range, it's necessary to turn the toolholder B105... by 180°. With this option, it is possible to set the insert behind the center line which is necessary for Ø less than 1.0 mm.

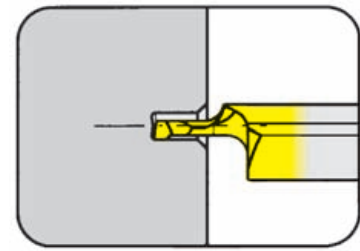


Bore Ø > 1.0 mm

Insert type right hand

for TOOLHOLDER Type

B105.0016.U1.01



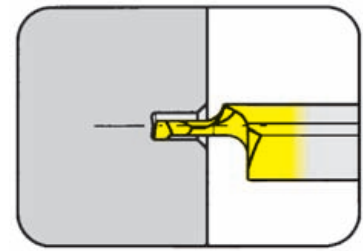
Part number	Bore Ø	Bore Ø				
		0.2/0.5/0.7	1	1.3/2/2.5	3	4
L105.1802.0.02*	0.2-1.0	(15-20) 17.0	(15-20) 16.3	-	-	-
L105.1802.0.03*						
L105.1802.0.05*	0.5-1.3	(10-15) 12.0	(10-15) 11.5	(20-25) 21.0	-	-
L105.1803.0.07*	0.7-1.0	(10-15) 10.3	(10-15) 10.0	-	-	-
R105.1805.005.0.1	1.0-3.0	-	(10-15) 10.0	(10-15) 11	(10-15) 12	-
R105.1805.005.1.1						
R105.1805.005.2.1						
R105.1805.0.1	1.0-3.0	-	(10-15) 10.0	(10-15) 11	(10-15) 12	-
R105.1805.0.1						
R105.1805.0.1						
R105.1813.005.0.15	2.5-4.0	-	-	(10-15) 9.9	(10-15) 10.5	(10-15) 10.5
R105.1813.005.1.15					(10-15) 10.5	-
R105.1813.005.2.15					(10-15) 10.3	-
R105.1813.01.0.15	2.5-4.0	-	-	(10-15) 9.9	(10-15) 10.5	(10-15) 10.5
R105.1813.01.1.15					(10-15) 10.5	-
R105.1813.01.2.15					(10-15) 10.3	-

Dimensions in mm

*It's necessary to turn the toolholder B105.0016.U1.01 by 180°. With this option, it is possible to set the insert behind the center line which is necessary for Ø less than 1.0 mm.

for TOOLHOLDER Type

B105.0016.U1.01

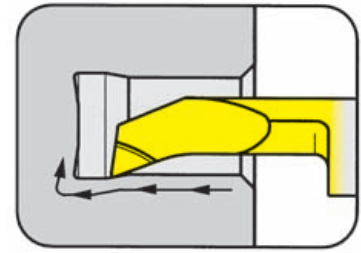


Part number	Bore Ø	Bore Ø					
		2	3	4	5	6	7
R105.1809.005.0.2	2-7	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1809.005.1.2		(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1809.005.2.2		(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1809.1.0.2	2-7	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1809.1.1.2		(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1809.1.2.2		(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1809.005.0.2	2-7	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1809.005.1.2		(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1809.005.2.2		(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1809.0.2	2-7	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1809.1.2		(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1809.2.2		(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5	(10-15) 10.5
R105.1813.005.0.25	3-8	-	(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.5	(10-15) 14.5
R105.1813.005.1.25		(10-15) 10.5	(10-15) 11.5	(10-15) 13.5	(10-15) 13.5	(10-15) 14.5	
R105.1813.005.2.25		(10-15) 11.4	(10-15) 13.4	(10-15) 13.4	(10-15) 14.4		
R105.1813.005.3.25		(10-15) 11.4	(10-15) 13.4	(10-15) 13.4	(10-15) 14.4		

Dimensions in mm

for TOOLHOLDER Type

B105.0016.U1.01

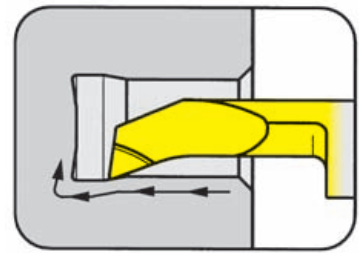


Part number	Bore \emptyset	Bore \emptyset						
		3	4	5	6	7	8	9
R105.1813.005.1.3	3-8	(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.5	(10-15) 14.5	(15-20) 19.9	-
R105.1813.005.2.3			(10-15) 11.5	(10-15) 13.5	(10-15) 13.5	(10-15) 14.5	(15-20) 19.9	
R105.1813.005.3.3			(10-15) 11.4	(10-15) 13.4	(10-15) 13.4	(10-15) 14.4	(15-20) 19.8	
R105.1813.1.1.3	3-8	(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.5	(10-15) 14.5	(15-20) 19.9	-
R105.1813.1.2.3			(10-15) 11.5	(10-15) 13.5	(10-15) 13.5	(10-15) 14.5	(15-20) 19.9	
R105.1813.1.3.3			(10-15) 11.4	(10-15) 13.4	(10-15) 13.4	(10-15) 14.4	(15-20) 19.8	
R105.1813.1.3	3-8	(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.5	(10-15) 14.5	(15-20) 19.9	-
R105.1813.2.3			(10-15) 11.5	(10-15) 13.5	(10-15) 13.5	(10-15) 14.5	(15-20) 19.9	
R105.1813.3.3			(10-15) 11.4	(10-15) 13.4	(10-15) 13.4	(10-15) 14.4	(15-20) 19.8	
R105.1809.005.1.4	4-9	-	(10-15) 10.3	(10-15) 11.3	(10-15) 12.3	(10-15) 13.3	(10-15) 14.3	(15-20) 19.7
R105.1809.005.2.4			(10-15) 10.2	(10-15) 11.2	(10-15) 12.2	(10-15) 13.2	(10-15) 14.2	(15-20) 19.7
R105.1809.005.3.4			(10-15) 10.2	(10-15) 11.2	(10-15) 12.2	(10-15) 13.2	(10-15) 14.2	(15-20) 19.7
R105.1819.1.4	4-9	-	(10-15) 10.3	(10-15) 11.3	(10-15) 12.3	(10-15) 13.3	(10-15) 14.3	(15-20) 19.7
R105.1809.1.2			(10-15) 10.2	(10-15) 11.2	(10-15) 12.2	(10-15) 13.2	(10-15) 14.2	(15-20) 19.7
R105.1809.2.2			(10-15) 10.2	(10-15) 11.2	(10-15) 12.2	(10-15) 13.2	(10-15) 14.2	(15-20) 19.7

Dimensions in mm

for TOOLHOLDER Type

B105.0016.U1.01

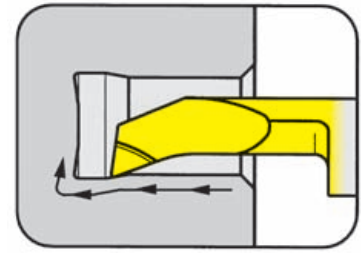


Part number	Bore \varnothing	Bore \varnothing								
		5	6	7	8	9	10	11	12	13
R105.1823.005.1.5	5-10	(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0			
R105.1823.005.2.5		(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.5	(15-20) 19.1	(25-30) 28.1			
R105.1823.005.3.5		(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0			
R105.1823.005.4.5		(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0			
R105.1823.005.5.5		(10-15) 10.3	(10-15) 11.3	(10-15) 12.3	(10-15) 13.3	(15-20) 19.0	(25-30) 28.0			
R105.1823.1.5	5-10	(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0			
R105.1823.2.5		(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.5	(15-20) 19.1	(25-30) 28.1			
R105.1823.3.5		(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0			
R105.1823.4.5		(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0			
R105.1823.5.5		(10-15) 10.3	(10-15) 11.3	(10-15) 12.3	(10-15) 13.3	(15-20) 19.0	(25-30) 28.0			
R105.1833.005.2.6	7-12			(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.1	(25-30) 28.1	
R105.1833.005.3.6				(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0	
R105.1833.005.4.6				(10-15) 10.4	(10-15) 11.3	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0	
R105.1833.005.5.6				(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0	
R105.1833.2.6	7-12			(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.1	(25-30) 28.1	
R105.1833.3.6				(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0	
R105.1833.4.6				(10-15) 10.4	(10-15) 11.3	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0	
R105.1833.5.6				(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0	
R105.1840.005.3.7	8-13				(10-15) 10.0	(10-15) 11.0	(10-15) 12.0	(10-15) 13.0	(10-15) 14.0	(15-20) 19.5
R105.1840.005.4.7					(10-15) 10.0	(10-15) 11.0	(10-15) 12.0	(10-15) 13.0	(10-15) 14.0	(15-20) 19.5
R105.1840.005.5.7					(10-15) 10.0	(10-15) 11.0	(10-15) 12.0	(10-15) 13.0	(10-15) 14.0	(15-20) 19.5
R105.1840.3.7	8-13				(10-15) 10.0	(10-15) 11.0	(10-15) 12.0	(10-15) 13.0	(10-15) 14.0	(15-20) 19.5
R105.1840.3.7					(10-15) 10.0	(10-15) 11.0	(10-15) 12.0	(10-15) 13.0	(10-15) 14.0	(15-20) 19.5
R105.1840.3.7					(10-15) 10.0	(10-15) 11.0	(10-15) 12.0	(10-15) 13.0	(10-15) 14.0	(15-20) 19.5

Dimensions in mm

for TOOLHOLDER Type

B105.0016.U1.01

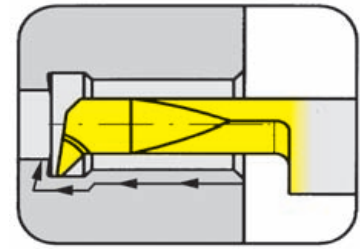


Part number	Bore \varnothing	Bore \varnothing									
		4	5	6	7	8	9	10	11	12	13
R105.1819.1.H4	4-9	(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0				
R105.1819.1.H4		(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0				
R105.1819.1.H4		(10-15) 10.3	(10-15) 11.3	(10-15) 12.3	(10-15) 13.3	(15-20) 19.0	(25-30) 28.0				
R105.1823.1.H5	5-10		(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.5	(15-20) 19.1	(25-30) 28.1			
R105.1823.2.H5			(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.5	(15-20) 19.1	(25-30) 28.1			
R105.1823.3.H5			(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.5	(15-20) 19.1	(25-30) 28.1			
R105.1823.4.H5			(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.0	(25-30) 28.0			
R105.1823.5.H5			(10-15) 10.4	(10-15) 11.4	(10-15) 12.5	(10-15) 13.5	(15-20) 19.1	(25-30) 28.1			
R105.1833.2.H6	7-12				(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.5	(15-20) 19.1	(25-30) 28.1	
R105.1833.3.H6					(10-15) 10.4	(10-15) 11.4	(10-15) 12.5	(10-15) 13.5	(15-20) 19.1	(25-30) 28.1	
R105.1833.4.H6					(10-15) 10.4	(10-15) 11.4	(10-15) 12.5	(10-15) 13.5	(15-20) 19.1	(25-30) 28.1	
R105.1833.5.H6					(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(15-20) 19.1	(25-30) 28.1	
R105.1840.3.H7	8-13					(10-15) 10.0	(10-15) 11.0	(10-15) 12.0	(10-15) 13.1	(10-15) 14.1	(15-20) 19.5
R105.1840.4.H7						(10-15) 10.0	(10-15) 11.0	(10-15) 12.0	(10-15) 13.0	(10-15) 14.0	(15-20) 19.5
R105.1840.5.H7						(10-15) 10.0	(10-15) 11.0	(10-15) 12.0	(10-15) 13.0	(10-15) 14.0	(15-20) 19.5

Dimensions in mm

for TOOLHOLDER Type

B105.0016.U1.01

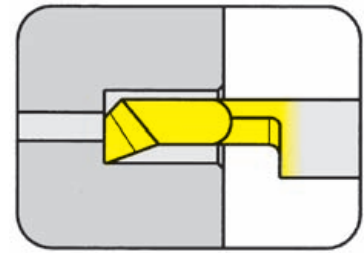


Part number	Bore \varnothing	Bore \varnothing									
		4	5	6	7	8	9	10	11	12	
R105.4719.1.4 R105.4719.3.4	4-9	(10-15) 10.3	(10-15) 11.3	(10-15) 12.3	(10-15) 13.3	(15-20) 19.0	(25-30) 28.0				
R105.4723.2.5 R105.4723.4.5	5-10		(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.5	(10-15) 14.5	(20-25) 24.0			
R105.4733.3.6 R105.4733.5.6	7-12				(10-15) 10.2	(10-15) 11.2	(10-15) 12.5	(10-15) 18.0	(15-20) 19.0	(15-20) 19.8	

Dimensions in mm

for TOOLHOLDER Type

B105.0016.U1.01

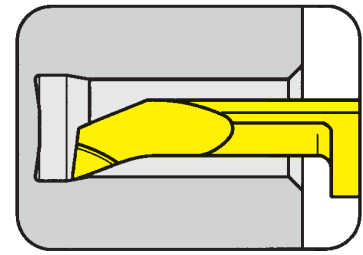


Part number	Bore \emptyset	Bore \emptyset							
		3	4	5	6	7	8	9	10
R105.9013.01.1.3	3-8	(10-15) 10.6	(10-15) 11.6	(10-15) 12.6	(10-15) 13.7	(10-15) 14.6	(20-25) 24.0		
R105.9013.01.2.3									
R105.9013.1.3									
R105.9013.2.3									
R105.9019.01.1.4	4-9		(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(10-15) 14.4	(20-25) 28.0	
R105.9019.01.2.4			(10-15) 10.2	(10-15) 11.2	(10-15) 12.2	(10-15) 13.2	(10-15) 14.1	(20-25) 27.8	
R105.9019.01.3.4			(10-15) 10.2	(10-15) 11.2	(10-15) 12.2	(10-15) 13.2	(10-15) 14.1	(20-25) 27.8	
R105.9019.1.4			(10-15) 10.4	(10-15) 11.4	(10-15) 12.4	(10-15) 13.4	(10-15) 14.4	(20-25) 28.0	
R105.9019.2.4			(10-15) 10.2	(10-15) 11.2	(10-15) 12.2	(10-15) 13.2	(10-15) 14.1	(20-25) 27.8	
R105.9023.01.1.5	5-10			(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(10-15) 13.6	(10-15) 14.5	(20-25) 24.0
R105.9023.01.2.5									
R105.9023.1.5									
R105.9023.2.5									
R105.9023.3.5									

Dimensions in mm

for TOOLHOLDER Type

B105.0016.U1.02

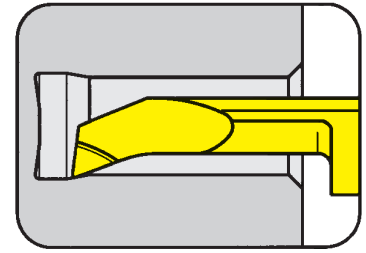


Part number	Bore Ø	Bore Ø								
		5	6	7	8	9	10	11	12	13
R105.1823.4.5.2 R105.1823.5.5.2	5-10	(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(25-30) 27.0	(30-35) 32.5	(20-25) 24.2			
R105.1833.4.6.2 R105.1833.5.6.2	7-12			(10-15) 10.5	(10-15) 11.5	(10-15) 12.5	(25-30) 27.0	(30-35) 32.5	(20-25) 24.2	
R105.1840.4.7.2 R105.1840.5.7.2 R105.1840.7.7.2	8-13				(10-15) 10.0	(10-15) 11.0	(15-20) 17.0	(15-20) 18.0	(15-20) 19.0	(15-20) 19.8
R105.4733.5.6.2	7-12			(10-15) 10.3	(10-15) 11.5	(10-15) 12.6	(10-15) 13.7	(10-15) 14.8	(20-25) 24.2	

Dimensions in mm

for TOOLHOLDER Type

B110.0016.U1.02



Part number	Bore \emptyset	Bore \emptyset							
		3	4	5	6	7	8	9	10
R105.9013.1.3	6-11	(30-35) 30.0	(25-30) 26.0	(15-20) 18.0	(25-30) 27.5	(20-25) 24.2	(25-30) 29.0		
R105.9013.2.3		(30-35) 30.0	(25-30) 26.0	(15-20) 18.0	(25-30) 27.5	(20-25) 24.2	(25-30) 29.0		
R105.9019.1.4	8-13			(10-15) 10.0	(10-15) 11.5	(10-15) 13.0	(15-20) 19.0	(15-20) 20.0	(25-30) 28.9

Dimensions in mm

UNCOATED GRADES

MG12 - a universal grade with good wear resistance. Used at low or medium cutting speeds for machining steel, cast iron and non ferrous materials

COATED GRADES

TN35 - a very popular grade TiN coated used to low or medium cutting speeds. Also recommended for machining stainless steel or exotic alloyed materials

TI25 - a TiCN coated grade with high abrasion resistance. Recommended for machining steel and non ferrous materials at medium cutting speeds

TF45 - a TiAlN coated grade. This coating has a very high temperature stability and high hardness and is only used for special applications.

TH35 - new standard grade - extreme Oxidation resistance with high hardness and very good coefficient of friction.

AS45 - new standard grade and first choice for most machining operations. This grade offers extreme Oxidation resistance and high hardness providing good wear resistance.

Nominal cutting speeds with HORN grades

ISO	Material	Hardness Brinell HB	Cutting speed *v _c m/min						
			Feed rate f mm/U						
			MG12	TN35	TI25	TF45	TH35	CB10/50	
			Supermini® 		Mini 				
				0,01 - 0,02		0,01 - 0,03			
				0,02 - 0,05		0,03 - 0,10			
				0,02 - 0,05		0,01 - 0,08			
P	Carbon steel	C < 0,4%	125						
		C > 0,4% < 0,6 %	150	14-110	14-180	14-180	14-180		
		C > 0,4% < 0,6 %	200						
	low alloyed steel	annealed	180						
		quenched	275	16-90	16-150	16-150		16-180	
		quenched	300						
	high alloyed steel	annealed	200		19-90	19-90		19-120	
		quenched	325						
	Cast steel	unalloyed	180						
		low alloye- dgiertLng2>	220	19-110	19-180	19-180		19-180	
high alloyed		225							
M	Stainless steel	martensitic, ferritic	200		19-90	19-90		19-90	
		austenitic	180		16-80			16-80	
K	Grey cast iron		180-260	16-90	16-150	16-150	16-150	16-150	
	Spheroidal graphite cast iron		180-260	16-90	16-130	16-130	16-150	16-150	
	Malleable cast iron		130-230		16-130	16-130	16-150	16-150	
N	Al-alloys			14-220	16-600	16-600		16-600	
	Copper and brass alloys			14-220	14-700	14-700		14-700	
S	Heat resistant alloy	NiFe				18-75	18-75	18-75	
		NiCo				18-40	18-40	18-40	
H	hardened material	> 54 HRC						20-140	

V_c is depending on the tool diameter and therefore of the maximum numbers of revolutions of the machine.

Material			Indexable Insert Type 315								Feed rate f mm/U	
			Hardness Brinell (HB)	Cutting speed v _c (m/min)								
				K10	MG12	P20	T122 TN32	T125 TN35	TF45 TH35	TF46		AS62
P	Carbon steel	0,2% C	140			180-120	200-160	180-130	100-80	280-180	250-180	0,03 - 0,15
		0,4% C	180			160-110	180-150	170-120	90-60	250-140	230-170	
		0,6% C	200			140-90	180-140	150-100		230-120	220-160	
	Alloyed steel	annealed	180			140-100	180-140	160-110	90-60	230-100	200-150	
		quenched	280			110-90	160-110	130-90		190-90	160-110	
		quenched	350			80	140-90	100-70		170-80	130-100	
	high alloyed steel(>5%)	annealed	200			120-80	120-90			200-140	180-120	
		hardened	-									
	Cast steel	unalloyed	180				130-100				200-150	
		alloyed	220				110-80				160-100	
M	Stainless steel	martensitic, ferritic	200		90-70		130-100	120-60		180-120	170-120	0,03 - 0,10
		austenitic	180		90-60			100-70		140-110		
K	Grey cast iron	low tensile strength	180	90-60	80-60				130-90	180-120	180-120	0,03 - 0,20
		high tensile strength	250	90-60	80-60				90-70	140-100	140-100	
	Spheroidal graphite cast iron	ferritic	160				90-70	90-70	120-80	170-90	170-90	0,03 - 0,15
		perlitic	250				70-60	70-60	110-80	180-80	150-80	
	Malleable cast iron	ferritic	125		100-80		140-120	100-70		120-100	190-140	
		perlitic	225		70-50		100-80	80-60		90-80	140-100	
N	Al-alloys	not heat treatable	30-80	1000-600	800-400			1000-600				0,03 - 0,15
		heat treatable	80-120	400-220	300-200			400-220				
	Al-cast-alloy	not heat treatable	80	1000-600	800-400			1000-600				
		heat treatable	100	600-300	400-250			600-300				
	Copper-alloys	not heat treatable	90	200-120			200-150	210-130		200-150		
		heat treatable	100	150-90			150-60	160-90		150-110		
S	Heat resistant alloy (Fe)	annealed	200		50-30			50-30				0,03 - 0,08
		hardened	275		40-20			40-20				
	Heat resistant alloy (Ni, Co)	annealed	250		30-20			30-20				
		hardened	350		20-10			20-10				

CHOICE OF CARBIDE GRADES

