HR 500

HR 500
Solid carbide high-performance reamers
up to Ø 20 mm for universal application

HR 500 T
NEW

Solid carbide reamer head for Ø 16-38 mm

HR 500 Cast
Solid carbide high-performance reamers
for the machining of GG and GGG achieving
optimal surface quality and efficiency

HR 500 Alu
Solid carbide high-performance reamers
for the machining of aluminium and AlSi-alloys

HR 500 G
Carbide-tipped or cermet-tipped high-performance
reamers from Ø 6 mm up to 40 mm

HR 500 GT
Carbide-tipped or cermet-tipped high-performance
reamers from Ø 40 mm up to 76.2 mm

USA Edition 2018

EXCLUSIVELINE®

Made by Guhring

EXCLUSIVELINE®

HR 500 high-performance reamers
Pictograms

Tool material	Solid Carbide		Carbide Tipped			Cermet Tipped					
	Solid carbide		Carbide tipped			Cermet tipped					
Internal cooling											
Standard											
	to Guhring standard										
Type	HR 500 S	HR 500 T S	HR 500 Guss S	HR 500 Alu S	HR 500 G S	HR 500 GT S	HR 500 D	HR 500 T D	HR 500 Guss D	HR 500 Alu D	HR 500 G D	HR 500 GT D
	Blind hole (S)						Through hole (D)					
Cutting direction												
	Right hand											
Tolerance	H7	+0,005										
Hole type												
	Through hole			Blind hole								
No. of cutting edges												
Shank form												
Helix angle												
	straight-fluted											
Spacing												
	extremely unequal											

Guhring, Inc.
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(800) 776-6170 (262) 784-6730
www.guhring.com

EXCLUSIVELINE®

HR 500 high-performance reamers

HR 500
HIGH-PERFORMANCE REAMERS

Precise reaming through a wide range of diameters

HR 500 high-performance reamers are the optimal tooling solution for all diameters from 1.97 to 76.2 mm.
To apply the optimally designed HR 500 high-performance reamer a range of various HR 500 options is available.

- Solid carbide reamers up to diameter 38.00 mm
- Carbide-tipped and cermet-tipped reamers up to diameter 76.2 mm
- Solid carbide reamers for intermediate dimensions and stepped tools in HR 500 Active program

EXCLUSIVELINE®

HR 500 high-performance reamers
Program summary

Standard	Type	Tool illustration	Tool material	Surface finish	d1 (mm)	Guhring Series	Standard range page
G	HR 500 S		Solid carbide	a	2.000 - 20.000	1685	8
G	HR 500 S		Solid carbide	a	1.970 - 12.030	1675	9
G	HR 500 D		Solid carbide	a	2.000 - 20.000	1686	8
G	HR 500 D		Solid carbide	a	1.970 - 12.030	1676	9
G	HR 500 T S		Solid carbide	a	16.000 - 38.000	1548	11
G	HR 500 T D		Solid carbide	a	16.000 - 38.000	1549	11
G	HR 500 Guss S		Solid carbide	Y	3.000 - 20.000	1036	13
G	HR 500 Guss D		Solid carbide	Y	3.000 - 20.000	1037	13
G	HR 500 Alu S		Solid carbide	Cb	4.000 - 20.000	1678	14
G	HR 500 Alu D		Solid carbide	Cb	4.000 - 20.000	1679	14
G	HR 500 G S		Carbide Tipped	a	22.000 - 40.000	1680	15
G	HR 500 G S		Cermet Tipped	○	6.000 - 40.000	1682	16
G	HR 500 G D		Carbide Tipped	a	22.000 - 40.000	1681	15
G	HR 500 G D		Cermet Tipped	○	6.000 - 40.000	1683	16

HR 500 reamers are stocked in Germany

○ bright ○ steam tempered a nano-A Cb Carbo Y nano-Si

EXCLUSIVELINE®

HR 500 high-performance reamers
Program summary

Standard	Type	Tool illustration		Tool material	Surface finish	d1 (mm)	Guhring Series	Standard range page
G	HR 500 GT S		Semi-standard	Carbide Tipped	a	41.000 - 76.200	1038	19
G	HR 500 GT S		Semi-standard	Cermet Tipped	○	41.000 - 76.200	1040	18
G	HR 500 GT D		Semi-standard	Carbide Tipped	a	41.000 - 76.200	1039	19
G	HR 500 GT D		Semi-standard	Cermet Tipped	○	41.000 - 76.200	1041	18

HSK-A hydraulic chucks, extra length, for HR 500 GT

G						HSK-A 63	4290	20

Shrink fit extension for HR 500 T

G							4719	20

Tool selection for optimal results

			Ø ≤ 20 mm				Ø > 20 mm	
			Solid carbide HR 500 Universal		Solid carbide HR500 Guss	Solid carbide HR500 Alu	Carbide tipped HR500	Cermet tipped HR500
			1675	1676	1036	1678	1680/1038	1682/1040
			1685	1686	1037	1679	1681/1039	1683/1041
Steel	P	up to 1200 N/mm²	●	●			○	●
Stainless steel	M		●	●			●	
Cast iron	K	GG	○	○	●		●	
		GGG 40/50	○	○	●		○	●
		GGG 60/70	○	○	●		●	
Aluminium	N					●		
Ti-special alloys	S	Ti-Basis	●	●			●	
		Ni-Basis	●	●			●	
Hardened steel	H	up to 48 HRC	●	●			○	
		up to 63 HRC	●	●				

● optimal suitability ○ limited suitability

Optimal diameters of pre-drilled holes

Recommended stock allowance, in mm			up to Ø6	up to Ø10	up to Ø16	up to Ø25	up to Ø40	above Ø40
all materials			Ø 0.1 - 0.2	Ø 0.2	Ø 0.2 - 0.3	Ø 0.3	Ø 0.3 - 0.4	Ø 0.4 - 0.5
Hardened steel	H	up to 48 HRC	Ø 0.1 - 0.2	Ø 0.2	Ø 0.2	Ø 0.2	Ø 0.3	Ø 0.3
		up to 63 HRC	Ø 0.1	Ø 0.1	Ø 0.1 - 0.2	Ø 0.2	Ø 0.2	Ø 0.2

EXCLUSIVELINE®

HR 500 T – solid carbide head solution

now available as a standard tool

HR 500 T

With HR 500 T Guhring provides a solid carbide reamer head from 16 to 39.1 mm diameter.

With HR 500 T reamers the successful solid carbide design of HR 500 T is being extended to 39.1 mm diameter. Its short and compact design offers an economical reaming solution while maintaining the high-performance benefits of the HR500 reamers..

Thanks to the universal HA shank HR 500 T can be flexibly combined with standard chucks and extension options. This unique advantage makes expensive special holders unnecessary, and offers a cost-efficient and reliable reaming operation.

An overview of your advantages

- High-performance reamer ensures especially economical machining
- Flexible holder options thanks to HA shank
- Simple extension possible with shrink fit extension or hydraulic chuck
- Available as universal, cast iron or aluminium design options

EXCLUSIVELINE®

HR 500 T – versatile combination possibilities

3 options

a Standard option for universal application is nano-A coated

K Cast iron option with nano-Si coating is available as a special solution for the application in all cast irons

N With the Carbo-coated special solution for applications in aluminium, aluminium wrought alloys or AlSi cast alloys can be machined.

Wide-ranging extension possibilities

For applications with deep reaming depths and to provide clearance from the cutting diameter, HR 500 T can be combined with numerous extensions. For a cost-efficient price-to-performance ratio the **shrink fit extension (Guhring no. 4719)** can be used. When a slim holder is required and shrink fit is not an option, Guhring can provide the new **hydraulic chuck for clamping-Ø 10 mm**.

NEW!
Hydraulic chuck as a special holder from clamping-Ø 10 mm.

Concentricity check position

Shrink fit extension (Guhring no. 4719), p. 20)

Internal cooling

Blind hole design with central coolant exit

Through hole design with radial coolant delivery

Flexible combination possibilities

For short reaming depths HR 500 T can be clamped in conventional hydraulic chucks, shrink fit chucks or other precision clamping chucks thanks to the standardized shank to DIN 6535-HA.

EXCLUSIVELINE®

Universal

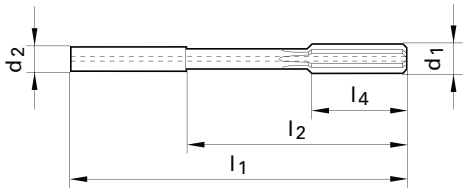
HR 500 solid carbide high-performance reamers

High-performance reamers

	Solid carbide	
	HR 500 S EU	HR 500 D EU
Series no.	1685	1686
Surface finish	a	a
Speeds & Feeds	p. 24	p. 24
	H7	H7

The solid carbide HR 500 reamer operates at unbelievably high cutting rates while producing extremely precise holes. Therefore, it offers considerable savings through process improvement and reliability.

Intermediate dimensions from Ø 2.0-20.1 mm can be produced as specials.



HR 500 reamers are stocked in Germany

d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm		Code no.	EDP Number	
2.000	4.000	50.00	22.00	8.00	4	2.000	9016850020000	9016860020000
2.500	4.000	50.00	22.00	8.00	4	2.500	9016850025000	9016860025000
3.000	4.000	68.00	40.00	12.00	4	3.000	9016850030000	9016860030000
3.500	4.000	68.00	40.00	12.00	4	3.500	9016850035000	9016860035000
4.000	4.000	68.00	40.00	12.00	4	4.000	9016850040000	9016860040000
4.500	6.000	76.00	40.00	12.00	4	4.500	9016850045000	9016860045000
5.000	6.000	76.00	40.00	12.00	4	5.000	9016850050000	9016860050000
5.500	6.000	76.00	40.00	12.00	4	5.500	9016850055000	9016860055000
6.000	6.000	76.00	40.00	12.00	4	6.000	9016850060000	9016860060000
6.500	8.000	101.00	65.00	16.00	6	6.500	9016850065000	9016860065000
7.000	8.000	101.00	65.00	16.00	6	7.000	9016850070000	9016860070000
7.500	8.000	101.00	65.00	16.00	6	7.500	9016850075000	9016860075000
8.000	8.000	101.00	65.00	16.00	6	8.000	9016850080000	9016860080000
8.500	10.000	101.00	61.00	19.00	6	8.500	9016850085000	9016860085000
9.000	10.000	101.00	61.00	19.00	6	9.000	9016850090000	9016860090000
9.500	10.000	101.00	61.00	19.00	6	9.500	9016850095000	9016860095000
10.000	10.000	101.00	61.00	19.00	6	10.000	9016850100000	9016860100000
10.500	12.000	130.00	85.00	19.00	6	10.500	9016850105000	9016860105000
11.000	12.000	130.00	85.00	19.00	6	11.000	9016850110000	9016860110000
11.500	12.000	130.00	85.00	19.00	6	11.500	9016850115000	9016860115000
12.000	12.000	130.00	85.00	19.00	6	12.000	9016850120000	9016860120000
13.000	14.000	130.00	85.00	22.00	6	13.000	9016850130000	9016860130000
14.000	14.000	130.00	85.00	22.00	6	14.000	9016850140000	9016860140000
15.000	16.000	150.00	102.00	22.00	6	15.000	9016850150000	9016860150000
16.000	16.000	150.00	102.00	22.00	6	16.000	9016850160000	9016860160000
17.000	18.000	150.00	102.00	25.00	6	17.000	9016850170000	9016860170000
18.000	18.000	150.00	102.00	25.00	6	18.000	9016850180000	9016860180000
19.000	20.000	150.00	100.00	25.00	6	19.000	9016850190000	9016860190000
20.000	20.000	150.00	100.00	25.00	6	20.000	9016850200000	9016860200000

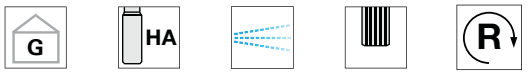
○ bright ● steam tempered a nano-A Cb Carbo Y nano-Si

EXCLUSIVELINE®

HR 500 solid carbide high-performance reamers

Universal

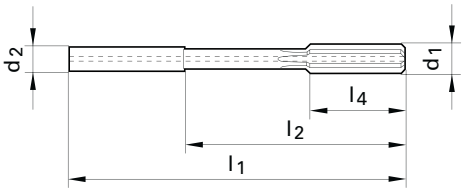
High-performance reamers



	Solid carbide			
	HR 500 S	EU	HR 500 D	EU
Series no.	1675		1676	
Surface finish	a		a	
Speeds & Feeds	p. 24		p. 24	
		+0,005		+0,005

The solid carbide HR 500 reamer operates at unbelievably high cutting rates while producing extremely precise holes. Therefore, it offers considerable savings through process improvement and reliability.

Intermediate dimensions from Ø 2.0-20.1 mm can be produced as specials.



HR 500 reamers are stocked in Germany

d1	d2 h6	l1	l2	l4		Code no.	EDP Number	
mm	mm	mm	mm	mm				
1.970	4.000	50.00	22.00	8.00	4	1.970	9016750019700	9016760019700
1.980	4.000	50.00	22.00	8.00	4	1.980	9016750019800	9016760019800
1.990	4.000	50.00	22.00	8.00	4	1.990	9016750019900	9016760019900
2.000	4.000	50.00	22.00	8.00	4	2.000	9016750020000	9016760020000
2.010	4.000	50.00	22.00	8.00	4	2.010	9016750020100	9016760020100
2.030	4.000	50.00	22.00	8.00	4	2.030	9016750020200	9016760020200
2.970	4.000	68.00	40.00	12.00	4	2.970	9016750029700	9016760029700
2.980	4.000	68.00	40.00	12.00	4	2.980	9016750029800	9016760029800
2.990	4.000	68.00	40.00	12.00	4	2.990	9016750029900	9016760029900
3.000	4.000	68.00	40.00	12.00	4	3.000	9016750030000	9016760030000
3.010	4.000	68.00	40.00	12.00	4	3.010	9016750030100	9016760030100
3.020	4.000	68.00	40.00	12.00	4	3.020	9016750030200	9016760030200
3.030	4.000	68.00	40.00	12.00	4	3.030	9016750030300	9016760030300
3.970	4.000	68.00	40.00	12.00	4	3.970	9016750039700	9016760039700
3.980	4.000	68.00	40.00	12.00	4	3.980	9016750039800	9016760039800
3.990	4.000	68.00	40.00	12.00	4	3.990	9016750039900	9016760039900
4.000	4.000	68.00	40.00	12.00	4	4.000	9016750040000	9016760040000
4.010	4.000	68.00	40.00	12.00	4	4.010	9016750040100	9016760040100
4.020	4.000	68.00	40.00	12.00	4	4.020	9016750040200	9016760040200
4.030	4.000	68.00	40.00	12.00	4	4.030	9016750040300	9016760040300
4.970	6.000	76.00	40.00	12.00	4	4.970	9016750049700	9016760049700
4.980	6.000	76.00	40.00	12.00	4	4.980	9016750049800	9016760049800
4.990	6.000	76.00	40.00	12.00	4	4.990	9016750049900	9016760049900
5.000	6.000	76.00	40.00	12.00	4	5.000	9016750050000	9016760050000
5.010	6.000	76.00	40.00	12.00	4	5.010	9016750050100	9016760050100
5.020	6.000	76.00	40.00	12.00	4	5.020	9016750050200	9016760050200
5.030	6.000	76.00	40.00	12.00	4	5.030	9016750050300	9016760050300
5.970	6.000	76.00	40.00	12.00	4	5.970	9016750059700	9016760059700
5.980	6.000	76.00	40.00	12.00	4	5.980	9016750059800	9016760059800
5.990	6.000	76.00	40.00	12.00	4	5.990	9016750059900	9016760059900

○ bright ● steam tempered (a) nano-A (Cb) Carbo (Y) nano-Si

EXCLUSIVELINE®

HR 500 solid carbide high-performance reamers

Universal

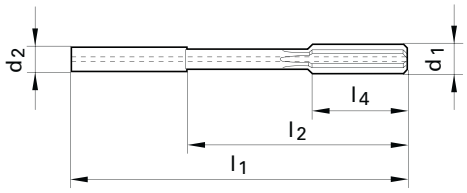
High-performance reamers

Solid carbide

	HR 500 S EU	HR 500 D EU
	1675	1676
Surface finish	a	a
Speeds & Feeds	p. 24	p. 24
	+0,005	+0,005

The solid carbide HR 500 reamer operates at unbelievably high cutting rates while producing extremely precise holes. Therefore, it offers considerable savings through process improvement and reliability.

Intermediate dimensions from Ø 2.0-20.1 mm can be produced as specials.



HR 500 reamers are stocked in Germany

d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm		Code no.	EDP Number	
6.000	6.000	76.00	40.00	12.00	4	6.000	9016750060000	9016760060000
6.010	6.000	76.00	40.00	12.00	4	6.010	9016750060100	9016760060100
6.020	6.000	76.00	40.00	12.00	4	6.020	9016750060200	9016760060200
6.030	6.000	76.00	40.00	12.00	4	6.030	9016750060300	9016760060300
7.000	8.000	101.00	65.00	16.00	6	7.000	9016750070000	9016760070000
7.970	8.000	101.00	65.00	16.00	6	7.970	9016750079700	9016760079700
7.980	8.000	101.00	65.00	16.00	6	7.980	9016750079800	9016760079800
7.990	8.000	101.00	65.00	16.00	6	7.990	9016750079900	9016760079900
8.000	8.000	101.00	65.00	16.00	6	8.000	9016750080000	9016760080000
8.010	8.000	101.00	65.00	16.00	6	8.010	9016750080100	9016760080100
8.020	8.000	101.00	65.00	16.00	6	8.020	9016750080200	9016760080200
8.030	8.000	101.00	65.00	16.00	6	8.030	9016750080300	9016760080300
9.000	10.000	101.00	61.00	19.00	6	9.000	9016750090000	9016760090000
9.970	10.000	101.00	61.00	19.00	6	9.970	9016750099700	9016760099700
9.980	10.000	101.00	61.00	19.00	6	9.980	9016750099800	9016760099800
9.990	10.000	101.00	61.00	19.00	6	9.990	9016750099900	9016760099900
10.000	10.000	101.00	61.00	19.00	6	10.000	9016750100000	9016760100000
10.010	10.000	101.00	61.00	19.00	6	10.010	9016750100100	9016760100100
10.020	10.000	101.00	61.00	19.00	6	10.020	9016750100200	9016760100200
10.030	10.000	101.00	61.00	19.00	6	10.030	9016750100300	9016760100300
11.000	12.000	130.00	85.00	19.00	6	11.000	9016750110000	9016760110000
11.970	12.000	130.00	85.00	19.00	6	11.970	9016750119700	9016760119700
11.980	12.000	130.00	85.00	19.00	6	11.980	9016750119800	9016760119800
11.990	12.000	130.00	85.00	19.00	6	11.990	9016750119900	9016760119900
12.000	12.000	130.00	85.00	19.00	6	12.000	9016750120000	9016760120000
12.010	12.000	130.00	85.00	19.00	6	12.010	9016750120100	9016760120100
12.020	12.000	130.00	85.00	19.00	6	12.020	9016750120200	9016760120200
12.030	12.000	130.00	85.00	19.00	6	12.030	9016750120300	9016760120300

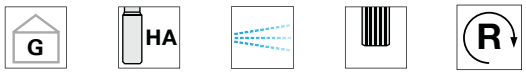
○ bright ● steam tempered (a) nano-A (Cb) Carbo (Y) nano-Si

EXCLUSIVELINE®

HR 500 T solid carbide high-performance reamers

Universal

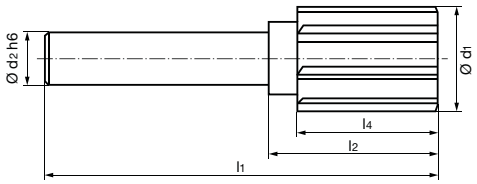
High-performance reamers



	Solid carbide	
	HR 500 T S / EU	HR 500 T D / EU
Series no.	1548	1549
Surface finish	a	a
Speeds & Feeds	p. 23	p. 23
	H7	H7

The solid carbide HR500 T reamer operates at maximum productivity. The blind hole design utilizes a central coolant hole, while the through hole design utilizes radial coolant holes and a spiral point to ensure proper chip evacuation.

Intermediate dimensions from Ø 15.9 – 39.1 mm can be produced as specials.



HR 500 reamers are stocked in Germany

d1	d2 h6	l1	l2	l4		Code no.	EDP Number	
mm	mm	mm	mm	mm				
16.000	8.000	66.00	30.00	25.00	8	16.000	9015480160000	9015490160000
18.000	8.000	66.00	30.00	25.00	8	18.000	9015480180000	9015490180000
20.000	10.000	70.00	30.00	25.00	8	20.000	9015480200000	9015490200000
22.000	10.000	70.00	30.00	25.00	8	22.000	9015480220000	9015490220000
24.000	12.000	75.00	30.00	25.00	8	24.000	9015480240000	9015490240000
25.000	12.000	75.00	30.00	25.00	8	25.000	9015480250000	9015490250000
26.000	12.000	75.00	30.00	25.00	8	26.000	9015480260000	9015490260000
28.000	12.000	75.00	30.00	25.00	8	28.000	9015480280000	9015490280000
30.000	16.000	78.00	30.00	25.00	8	30.000	9015480300000	9015490300000
32.000	16.000	78.00	30.00	25.00	8	32.000	9015480320000	9015490320000
34.000	20.000	80.00	30.00	25.00	8	34.000	9015480340000	9015490340000
36.000	20.000	80.00	30.00	25.00	8	36.000	9015480360000	9015490360000
38.000	20.000	80.00	30.00	25.00	8	38.000	9015480380000	9015490380000

○ bright ● steam tempered (a) nano-A (Cb) Carbo (Y) nano-Si

HR 500 Cast – specialist for optimal surface finish

Cast iron machining with only one tool

APPLICATION EXAMPLES

GG-30 brake housing

Ø 18.00 mm H7
Surface finish requirement R_a = 0.8
v_c = 200 m/min
f_u = 1.2 mm/rev.

Tool life: 48 m

GGG-50 transmission housing

Ø 20.00 mm
Surface finish requirement R_z = 10
v_c = 195 m/min
f_u = 1.1 mm/rev.

Tool life: 66 m

The customer also machines GG-25 with the same tool and achieves optimal machining results.

GG+GGG

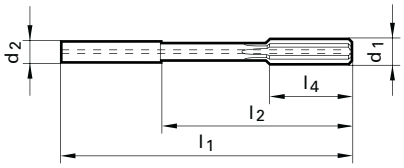
HR 500 Cast solid carbide high-performance reamers

High-performance reamers Cast

	Solid carbide			
	HR 500 Guss S	EU	HR 500 Guss D	EU
Series no.	1036		1037	
Surface finish	Y		Y	
Speeds & Feeds	p. 22		p. 22	
		H7		H7

The solid carbide HR 500 reamer operates at unbelievably high cutting rates while producing extremely precise holes. Therefore, it offers considerable savings through process improvement and reliability.

Intermediate dimensions from Ø 2.0-20.1 mm can be produced as specials..



HR 500 reamers are stocked in Germany

d1	d2 h6	l1	l2	l4		Code no.	EDP Number	
mm	mm	mm	mm	mm				
3.000	4.000	68.00	40.00	12.00	6	3.000	9010360030000	9010370030000
4.000	4.000	68.00	40.00	12.00	6	4.000	9010360040000	9010370040000
5.000	6.000	76.00	40.00	12.00	6	5.000	9010360050000	9010370050000
6.000	6.000	76.00	40.00	12.00	6	6.000	9010360060000	9010370060000
7.000	8.000	101.00	65.00	16.00	8	7.000	9010360070000	9010370070000
8.000	8.000	101.00	65.00	16.00	8	8.000	9010360080000	9010370080000
9.000	10.000	101.00	61.00	19.00	8	9.000	9010360090000	9010370090000
10.000	10.000	101.00	61.00	19.00	8	10.000	9010360100000	9010370100000
11.000	12.000	130.00	85.00	19.00	8	11.000	9010360110000	9010370110000
12.000	12.000	130.00	85.00	19.00	8	12.000	9010360120000	9010370120000
13.000	14.000	130.00	85.00	22.00	8	13.000	9010360130000	9010370130000
14.000	14.000	130.00	85.00	22.00	8	14.000	9010360140000	9010370140000
15.000	16.000	150.00	102.00	22.00	8	15.000	9010360150000	9010370150000
16.000	16.000	150.00	102.00	22.00	8	16.000	9010360160000	9010370160000
17.000	18.000	150.00	102.00	25.00	8	17.000	9010360170000	9010370170000
18.000	18.000	150.00	102.00	25.00	8	18.000	9010360180000	9010370180000
19.000	20.000	150.00	100.00	25.00	8	19.000	9010360190000	9010370190000
20.000	20.000	150.00	100.00	25.00	8	20.000	9010360200000	9010370200000

○ bright ● steam tempered (a) nano-A (Cb) Carbo (Y) nano-Si

EXCLUSIVELINE®

HR 500 ALU solid carbide high-performance reamers

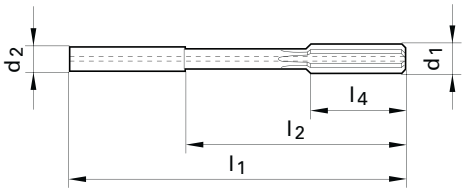
ALU

High-performance reamers ALU

	Solid carbide			
	HR 500 Alu S	EU	HR 500 Alu D	EU
Series no.	1678		1679	
Surface finish	Cb		Cb	
Speeds & Feeds	p. 24		p. 24	
	H7		H7	

The solid carbide HR 500 reamer operates at unbelievably high cutting rates while producing extremely precise holes. Therefore, it offers considerable savings through process improvement and reliability.

Intermediate dimensions from Ø 2.0-20.1 mm can be produced as specials.



HR 500 reamers are stocked in Germany

d1	d2 h6	l1	l2	l4		Code no.	EDP Number	
mm	mm	mm	mm	mm				
4.000	4.000	68.00	40.00	12.00	4	4.000	9016780040000	9016790040000
5.000	6.000	76.00	40.00	12.00	4	5.000	9016780050000	9016790050000
6.000	6.000	76.00	40.00	12.00	4	6.000	9016780060000	9016790060000
7.000	8.000	101.00	65.00	16.00	6	7.000	9016780070000	9016790070000
8.000	8.000	101.00	65.00	16.00	6	8.000	9016780080000	9016790080000
10.000	10.000	101.00	61.00	19.00	6	10.000	9016780100000	9016790100000
12.000	12.000	130.00	85.00	19.00	6	12.000	9016780120000	9016790120000
14.000	14.000	130.00	85.00	22.00	6	14.000	9016780140000	9016790140000
16.000	16.000	150.00	102.00	22.00	6	16.000	9016780160000	9016790160000
18.000	18.000	150.00	102.00	25.00	6	18.000	9016780180000	9016790180000
20.000	20.000	150.00	100.00	25.00	6	20.000	9016780200000	9016790200000

○ bright ● steam tempered (a) nano-A (Cb) Carbo (Y) nano-Si

EXCLUSIVELINE®

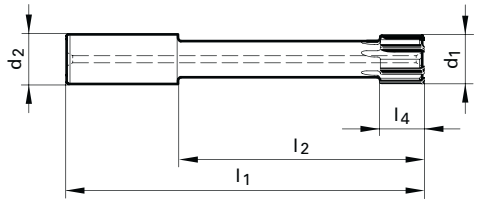
HR 500 G high-performance reamers

High-performance reamers

The carbide-tipped and cermet-tipped HR 500 G reamers operate at unbelievably high cutting rates while producing extremely precise holes. Therefore, it offers considerable savings through process improvement and reliability. Further advantages:

- Intermediate dimensions from Ø 20.1 mm can be supplied as specials
- Carbide-tipped tools with nano-Si coating for GG machining meet the highest hole quality requirements. (see cutting rates for Guhring series 1036/1037)

	Carbide Tipped	
	HR 500 G S / EU	HR 500 G D / EU
Series no.	1680	1681
Surface finish	a	a
Speeds & Feeds	p. 25	p. 25
	H7	H7



HR 500 reamers are stocked in Germany

d1 mm	d2 h6 mm	l1 mm	l2 mm	l4 mm		Code no.	EDP Number	
22.000	20.000	160.00	110.00	22.00	6	22.000	9016800220000	9016810220000
24.000	25.000	180.00	124.00	22.00	6	24.000	9016800240000	9016810240000
25.000	25.000	180.00	124.00	22.00	6	25.000	9016800250000	9016810250000
26.000	25.000	180.00	124.00	22.00	6	26.000	9016800260000	9016810260000
28.000	25.000	180.00	124.00	25.00	6	28.000	9016800280000	9016810280000
30.000	25.000	180.00	124.00	25.00	6	30.000	9016800300000	9016810300000
32.000	32.000	200.00	140.00	25.00	6	32.000	9016800320000	9016810320000
34.000	32.000	200.00	140.00	25.00	6	34.000	9016800340000	9016810340000
36.000	32.000	200.00	140.00	25.00	8	36.000	9016800360000	9016810360000
38.000	32.000	200.00	140.00	25.00	8	38.000	9016800380000	9016810380000
40.000	32.000	200.00	140.00	25.00	8	40.000	9016800400000	9016810400000

○ bright ● steam tempered (a) nano-A (Cb) Carbo (Y) nano-Si

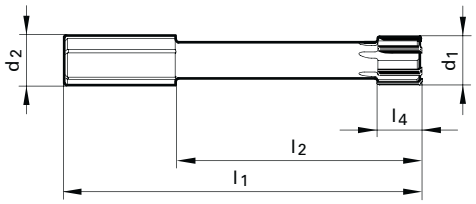
EXCLUSIVELINE®

HR 500 G high-performance reamers

High-performance reamers

	Cermet Tipped	
	HR 500 G S / EU	HR 500 G D / EU
Series no.	**1682**	**1683**
Surface finish	◯	◯
Speeds & Feeds	**p. 25**	**p. 25**
	H7	H7

The carbide-tipped and cermet-tipped HR 500 G reamers operate at unbelievably high cutting rates while producing extremely precise holes. Therefore, it offers considerable savings through process improvement and reliability.



HR 500 reamers are stocked in Germany

d1	d2 h6	l1	l2	l4		Code no.	EDP Number	
mm	mm	mm	mm	mm				
6.000	6.000	76.00	40.00	12.00	4	6.000	9016820060000	9016830060000
8.000	8.000	101.00	65.00	16.00	4	8.000	9016820080000	9016830080000
10.000	10.000	101.00	61.00	16.00	4	10.000	9016820100000	9016830100000
12.000	12.000	130.00	85.00	16.00	4	12.000	9016820120000	9016830120000
14.000	14.000	130.00	85.00	16.00	6	14.000	9016820140000	9016830140000
16.000	16.000	150.00	102.00	19.00	6	16.000	9016820160000	9016830160000
18.000	18.000	150.00	102.00	19.00	6	18.000	9016820180000	9016830180000
20.000	20.000	150.00	100.00	19.00	6	20.000	9016820200000	9016830200000
22.000	20.000	160.00	110.00	22.00	6	22.000	9016820220000	9016830220000
24.000	25.000	180.00	124.00	22.00	6	24.000	9016820240000	9016830240000
25.000	25.000	180.00	124.00	22.00	6	25.000	9016820250000	9016830250000
26.000	25.000	180.00	124.00	22.00	6	26.000	9016820260000	9016830260000
28.000	25.000	180.00	124.00	25.00	6	28.000	9016820280000	9016830280000
30.000	25.000	180.00	124.00	25.00	6	30.000	9016820300000	9016830300000
32.000	32.000	200.00	140.00	25.00	6	32.000	9016820320000	9016830320000
34.000	32.000	200.00	140.00	25.00	6	34.000	9016820340000	9016830340000
36.000	32.000	200.00	140.00	25.00	8	36.000	9016820360000	9016830360000
38.000	32.000	200.00	140.00	25.00	8	38.000	9016820380000	9016830380000
40.000	32.000	200.00	140.00	25.00	8	40.000	9016820400000	9016830400000

◯ bright ● steam tempered (a) nano-A (Cb) Carbo (Y) nano-Si

HR 500 GT high-performance reamers for applications above Ø 40.00 mm

For diameters above 40.00 mm Guhring's HR 500 technology is the first choice for high-performance reaming, ensuring maximum production rates while maintaining extreme precision and hole quality.

Variety for perfect machining results
The HR 500 GT reamer heads are available in the semi-standard range with short delivery times in the diameter range > 40.0 to 76.2 mm for the following material ranges:

- Carbide-tipped with nano-A coating for stainless steels, GGG 60, GG, special alloys and non-ferrous metals
- Carbide-tipped with nano-Si coating for the highest surface quality requirements in GG and GGG 60
- Carbide-tipped with Carbo-coating for Al machining
- Cermet-tipped for steels and GGG 40/50

In addition, we manufacture special tools to customer specific requirements on request.

Optimal cooling lubrication
Thanks to the newly developed, patent-pending, coolant directing screw at the face side of the HR 500 GT reamer heads, the coolant is accurately directed to the cutting edge, and it is impossible for chips to clog in the coolant ports. Thanks to the special design of the coolant directing screw it is possible to machine blind holes right up to the bottom of the hole. If necessary, the coolant directing screw can be completely removed for the machining of blind holes.

EXCLUSIVELINE®

HR 500 GT high-performance reamers

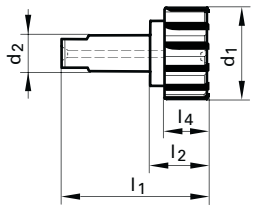
High-performance reamers

	Cermet Tipped			
	HR 500 GT S	EU	HR 500 GT D	EU
Series no.	**1040**		**1041**	
Surface finish	○		○	
Speeds & Feeds	p. 23		p. 23	
		H7		H7

HR 500 GT as semi-standard
Straight shank ~ DIN 6535 HA tol. H6 with tang for optimal holding in extra length, slender hydraulic chuck Guhring no. 4290, but also in conventional hydraulic chucks or shrink fit chucks.

Minimum order quantity is 2.

When applying long hydraulic chucks with tang:
Eliminate play between chuck and reamer by rotating to stop prior to clamping.



HR 500 reamers are stocked in Germany

d1	d2 h6	l1	l2	l4		Code no.	EDP Number	
mm	mm	mm	mm	mm				
41.000	25.000	90.00	34.00	25.00	8	41.000	9010400410000	9010410410000
42.000	25.000	90.00	34.00	25.00	8	42.000	9010400420000	9010410420000
44.000	25.000	90.00	34.00	25.00	8	44.000	9010400440000	9010410440000
46.000	25.000	90.00	34.00	25.00	8	46.000	9010400460000	9010410460000
47.000	25.000	90.00	34.00	25.00	8	47.000	9010400470000	9010410470000
48.000	25.000	90.00	34.00	25.00	8	48.000	9010400480000	9010410480000
50.000	25.000	90.00	34.00	25.00	8	50.000	9010400500000	9010410500000
52.000	25.000	90.00	34.00	25.00	8	52.000	9010400520000	9010410520000
53.000	25.000	90.00	34.00	25.00	8	53.000	9010400530000	9010410530000
54.000	25.000	90.00	34.00	25.00	8	54.000	9010400540000	9010410540000
56.000	25.000	90.00	34.00	25.00	8	56.000	9010400560000	9010410560000
58.000	25.000	90.00	34.00	25.00	8	58.000	9010400580000	9010410580000
59.000	32.000	95.00	35.00	25.00	8	59.000	9010400590000	9010410590000
60.000	32.000	95.00	35.00	25.00	8	60.000	9010400600000	9010410600000
62.000	32.000	95.00	35.00	25.00	8	62.000	9010400620000	9010410620000
64.000	32.000	95.00	35.00	25.00	8	64.000	9010400640000	9010410640000
65.000	32.000	95.00	35.00	25.00	8	65.000	9010400650000	9010410650000
66.000	32.000	95.00	35.00	25.00	10	66.000	9010400660000	9010410660000
68.000	32.000	95.00	35.00	25.00	10	68.000	9010400680000	9010410680000
70.000	32.000	95.00	35.00	25.00	10	70.000	9010400700000	9010410700000
71.000	32.000	95.00	35.00	25.00	10	71.000	9010400710000	9010410710000
72.000	32.000	95.00	35.00	25.00	10	72.000	9010400720000	9010410720000
74.000	32.000	95.00	35.00	25.00	10	74.000	9010400740000	9010410740000
76.000	32.000	95.00	35.00	25.00	10	76.000	9010400760000	9010410760000

○ bright ● steam tempered a nano-A Cb Carbo Y nano-Si

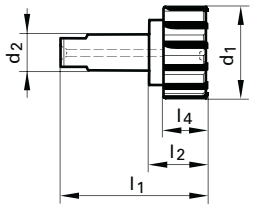
EXCLUSIVELINE®

HR 500 GT high-performance reamers

High-performance reamers

HR 500 GT as semi-standard
Straight shank ~ DIN 6535 HA tol. H6 with tang for optimal holding in extra length hydraulic chuck series no. 4290, but also in conventional hydraulic chucks or shrink fit chucks.
Further advantages:
• Intermediate dimensions from Ø 40.0-76.2 mm can be produced as specials
• Carbide-tipped tools with nano-Si coating for GG machining meet the highest hole quality requirements (for cutting rates see Guhring series 1036/1037)
When applying long hydraulic chucks with tang: Eliminate play between chuck and reamer by rotating to stop prior to clamping.

	Carbide Tipped	
	HR 500 GT S / EU	HR 500 GT D / EU
Series no.	1038	1039
Surface finish	a	a
Speeds & Feeds	p. 22	p. 22
	H7	H7



HR 500 reamers are stocked in Germany

d1	d2 h6	l1	l2	l4		Code no.	EDP Number	
mm	mm	mm	mm	mm				
41.000	25.000	90.00	34.00	25.00	8	41.000	9010380410000	9010390410000
42.000	25.000	90.00	34.00	25.00	8	42.000	9010380420000	9010390420000
44.000	25.000	90.00	34.00	25.00	8	44.000	9010380440000	9010390440000
46.000	25.000	90.00	34.00	25.00	8	46.000	9010380460000	9010390460000
47.000	25.000	90.00	34.00	25.00	8	47.000	9010380470000	9010390470000
48.000	25.000	90.00	34.00	25.00	8	48.000	9010380480000	9010390480000
50.000	25.000	90.00	34.00	25.00	8	50.000	9010380500000	9010390500000
52.000	25.000	90.00	34.00	25.00	8	52.000	9010380520000	9010390520000
53.000	25.000	90.00	34.00	25.00	8	53.000	9010380530000	9010390530000
54.000	25.000	90.00	34.00	25.00	8	54.000	9010380540000	9010390540000
56.000	25.000	90.00	34.00	25.00	8	56.000	9010380560000	9010390560000
58.000	25.000	90.00	34.00	25.00	8	58.000	9010380580000	9010390580000
59.000	32.000	95.00	35.00	25.00	8	59.000	9010380590000	9010390590000
60.000	32.000	95.00	35.00	25.00	8	60.000	9010380600000	9010390600000
62.000	32.000	95.00	35.00	25.00	8	62.000	9010380620000	9010390620000
64.000	32.000	95.00	35.00	25.00	8	64.000	9010380640000	9010390640000
65.000	32.000	95.00	35.00	25.00	8	65.000	9010380650000	9010390650000
66.000	32.000	95.00	35.00	25.00	10	66.000	9010380660000	9010390660000
68.000	32.000	95.00	35.00	25.00	10	68.000	9010380680000	9010390680000
70.000	32.000	95.00	35.00	25.00	10	70.000	9010380700000	9010390700000
71.000	32.000	95.00	35.00	25.00	10	71.000	9010380710000	9010390710000
72.000	32.000	95.00	35.00	25.00	10	72.000	9010380720000	9010390720000
74.000	32.000	95.00	35.00	25.00	10	74.000	9010380740000	9010390740000
76.000	32.000	95.00	35.00	25.00	10	76.000	9010380760000	9010390760000

○ bright ● steam tempered (a) nano-A (Cb) Carbo (Y) nano-Si

EXCLUSIVELINE®

HSK-A hydraulic chucks, extra length, for HR 500 GT
Shrink fit extension

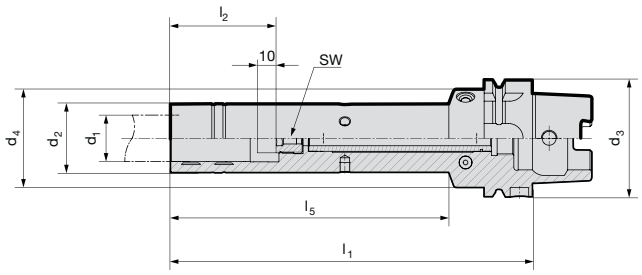
HSK-A hydraulic chucks, extra length

For high precision reamers HR 500 GT with tang.

Series no. 4290

Scope of delivery:
- incl. adjustment screw Guhring no. 4900
- incl. hexagon chuck key Guhring no. 4912

- **order coolant delivery set Guhring no. 4949 separately**



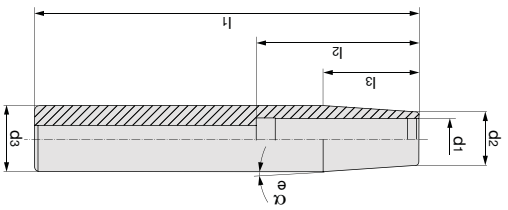
d3	f. d1 h6	d2	d4	l1	l2	l5	inc.	SW	kg	Code no.
HSK-A	mm	mm	mm	mm	mm	mm	4900 ...			
63	25	37	53	195	57	150	20.114	5.0	1.9	25.063
63	25	37	53	295	57	250	20.114	5.0	2.7	25.163
63	32	44	53	195	61	150	20.114	5.0	2.2	32.063
63	32	44	53	295	61	250	20.114	5.0	3.4	32.163

EDP Number
9042900250630
9042900251630
9042900320630
9042900321630

Shrink fit extension for HR 500 T

Series no. 4719

For clamping in hydraulic or shrink fit chuck.



for shank-Ø	d_2	$d_{3\ h6}$	l_1	l_2	l_3	α	Code no.
$d_{1\ h6}$ mm	mm	mm	mm	mm	mm	e	
6	10	12	125	38	19.1	3	6.012
6	10	12	200	38	21	3	6.312
8	12	14	125	38	19.1	3	8.014
8	12	14	200	38	21	3	8.314
10	14	16	160	42	19.1	3	10.116
10	14	16	250	42	21	3	10.316
12	16	20	160	47	38.2	3	12.120
12	16	20	250	47	40	3	12.320
16	22	25	160	50	28.6	3	16.225
16	22	25	250	50	30.5	3	16.325
20	27	32	160	52	47.7	3	20.332
20	27	32	250	52	49.6	3	20.432

EDP Number
9047190060120
9047190063120
9047190080140
9047190083140
9047190101160
9047190103160
9047190121200
9047190123200
9047190162250
9047190163250
9047190203320
9047190204320

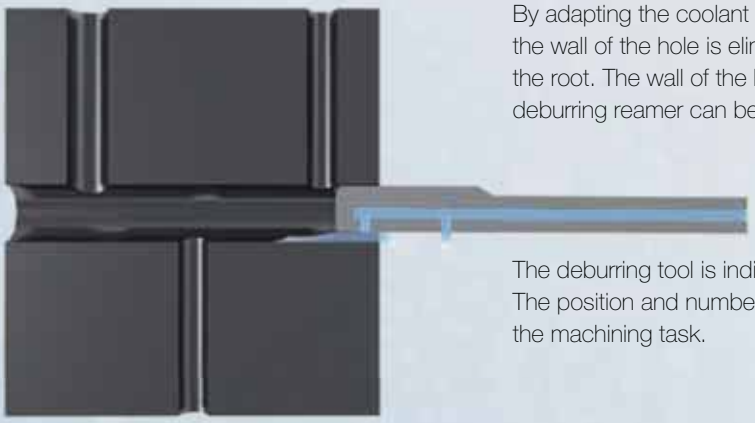
EXCLUSIVELINE®

EWR 500 de-burring reamer

Simple and efficient

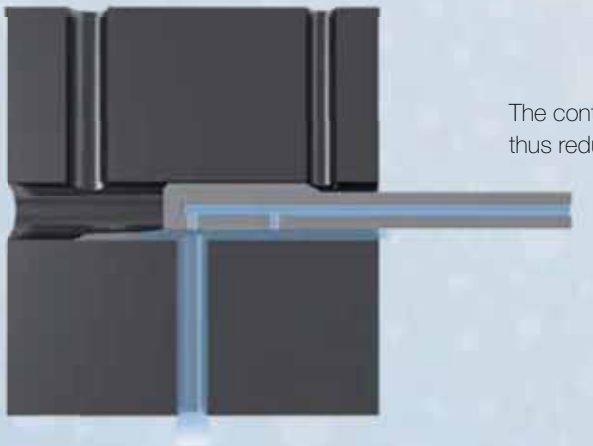
Deburring cross-holes with EWR 500

With conventional reamers the burr at the cross-hole is simply folded over rather than being cut off. The surface finish quality and hole quality is reduced. The new EWR 500 deburring reamer reliably deburrs cross-holes.



By adapting the coolant pressure, the gap between reamer and the wall of the hole is eliminated. This enables a clean cut of the burr at the root. The wall of the hole is not damaged during operation so the deburring reamer can be applied for precision fits.

The deburring tool is individually designed by Guhring.
The position and number of coolant exits is determined based on the machining task.



The contact pressure is applied through several coolant exits thus reducing the drop in pressure.

EWR 500

TECHNICAL DATA

Series 1036 - 1037

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR < 4 mm	4 mm	5 mm	6.3 mm	8 mm	10 mm	12.5 mm	16 mm	20 mm	25 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301											
Unalloyed heat-treatable steels	≤ 20	≤ 220											
	≤ 25	≤ 255											
	≤ 32	≤ 301											
Alloyed heat-treatable steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Nitriding steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Tool steels	≤ 25	≤ 255											
	≤ 43	≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Stainless steels, sulphured	≤ 28	≤ 273											
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Cast iron	≤ 23	≤ 242	655	0.0315	0.0394	0.0394	0.0472	0.0709	0.0709	0.0787	0.0866	0.0866	0.0984
	≤ 38	≤ 354	655	0.0315	0.0394	0.0394	0.0472	0.0709	0.0709	0.0787	0.0866	0.0866	0.0984
Spheroidal graphite iron and	≤ 23	≤ 242	395 - 985	0.0039	0.0049	0.0049	0.0063	0.0079	0.0098	0.0098	0.0124	0.0157	0.0197
malleable cast iron	≤ 38	≤ 354	260 - 395	0.0039	0.0049	0.0049	0.0063	0.0079	0.0098	0.0098	0.0124	0.0157	0.0197
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301	655	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402	655	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
> 10 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											

Series 1038 - 1039

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 8 mm	10 mm	12.5 mm	16 mm	20 mm	25 mm	31.5 mm	40 mm	50 mm	> 50 mm
Common structural steels	-	≤ 150	80 - 130								0.0472	0.0551	0.0630
	≤ 32	≤ 301	80 - 130								0.0472	0.0551	0.0630
Free-cutting steels	≤ 25	≤ 255	80 - 130								0.0472	0.0551	0.0630
	≤ 32	≤ 301	80 - 130								0.0472	0.0551	0.0630
Unalloyed heat-treatable steels	≤ 20	≤ 220	80 - 130								0.0472	0.0551	0.0630
	≤ 25	≤ 255	80 - 130								0.0472	0.0551	0.0630
	≤ 32	≤ 301	80 - 130								0.0472	0.0551	0.0630
Alloyed heat-treatable steels	≤ 32	≤ 301	80 - 130								0.0472	0.0551	0.0630
	≤ 43	≤ 402	80 - 130								0.0472	0.0551	0.0630
Unalloyed case hardened steels	≤ 25	≤ 255	80 - 130								0.0472	0.0551	0.0630
Alloyed case hardened steels	≤ 32	≤ 301	80 - 130								0.0472	0.0551	0.0630
	≤ 43	≤ 402	80 - 130								0.0472	0.0551	0.0630
Nitriding steels	≤ 32	≤ 301	80 - 130								0.0472	0.0551	0.0630
	≤ 43	≤ 402	80 - 130								0.0472	0.0551	0.0630
Tool steels	≤ 25	≤ 255	80 - 130								0.0472	0.0551	0.0630
	≤ 43	≤ 402	80 - 130								0.0472	0.0551	0.0630
High speed steels	≤ 43	≤ 402	65 - 100								0.0472	0.0551	0.0630
Spring steels	≤ 38	≤ 354	65 - 100								0.0472	0.0551	0.0630
Stainless steels, sulphured	≤ 28	≤ 273	100 - 195								0.0472	0.0551	0.0630
austenitic	≤ 36	≤ 337	65 - 100								0.0472	0.0551	0.0630
martensitic	≤ 46	≤ 435	65 - 100								0.0472	0.0551	0.0630
Hardened steels	≤ 48	≤ 460	35 - 65								0.0248	0.0315	0.0394
	≤ 66	-											
Cast iron	≤ 23	≤ 242	130 - 330								0.0787	0.0866	0.0866
	≤ 38	≤ 354	130 - 330								0.0787	0.0866	0.0866
Spheroidal graphite iron and	≤ 23	≤ 242	165 - 395								0.0787	0.0866	0.0866
malleable cast iron	≤ 38	≤ 354	165 - 330								0.0787	0.0866	0.0866
Chilled cast iron	≤ 38	≤ 354	65 - 130								0.0472	0.0551	0.0630
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301	195 - 260								0.0472	0.0551	0.0630
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402	130 - 260								0.0472	0.0551	0.0630
Special alloys	≤ 54	≤ 549	65 - 100										
Ti and Ti-alloys	≤ 25	≤ 255	65 - 130								0.0315	0.0394	0.0492
	≤ 43	≤ 402	65 - 130								0.0315	0.0394	0.0492
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
> 10 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120	260 - 525								0.0787	0.0866	0.0866
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180	130 - 395								0.0472	0.0551	0.0630
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180	165 - 395								0.0472	0.0551	0.0630
	≤ 25	≤ 255	165 - 395								0.0472	0.0551	0.0630
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											
Duroplastics			130 - 395								0.0472	0.0551	0.0630
Thermoplastics			130 - 395								0.0472	0.0551	0.0630
Kevlar			130 - 395								0.0197	0.0248	0.0315
Glass, carbon concentrated plastics			130 - 395								0.0197	0.0248	0.0315

Series 1040 - 1041

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 8 mm	10 mm	12.5 mm	16 mm	20 mm	25 mm	31.5 mm	40 mm	50 mm	> 50 mm
Common structural steels	-	≤ 150	330 - 590								0.0787	0.0866	0.0866
	≤ 32	≤ 301	330 - 590								0.0787	0.0866	0.0866
Free-cutting steels	≤ 25	≤ 255	330 - 590								0.0787	0.0866	0.0866
	≤ 32	≤ 301	330 - 590								0.0787	0.0866	0.0866
Unalloyed heat-treatable steels	≤ 20	≤ 220	330 - 590								0.0787	0.0866	0.0866
	≤ 25	≤ 255	330 - 590								0.0787	0.0866	0.0866
	≤ 32	≤ 301	330 - 590								0.0787	0.0866	0.0866
Alloyed heat-treatable steels	≤ 32	≤ 301	330 - 590								0.0787	0.0866	0.0866
	≤ 43	≤ 402	260 - 395								0.0472	0.0551	0.0630
Unalloyed case hardened steels	≤ 25	≤ 255	330 - 590								0.0787	0.0866	0.0866
Alloyed case hardened steels	≤ 32	≤ 301	330 - 590								0.0787	0.0866	0.0866
	≤ 43	≤ 402	260 - 395								0.0472	0.0551	0.0630
Nitriding steels	≤ 32	≤ 301	330 - 590								0.0787	0.0866	0.0866
	≤ 43	≤ 402	260 - 395								0.0472	0.0551	0.0630
Tool steels	≤ 25	≤ 255	330 - 590								0.0787	0.0866	0.0866
	≤ 43	≤ 402	260 - 395								0.0472	0.0551	0.0630
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354	330 - 395								0.0472	0.0551	0.0630
Stainless steels, sulphured	≤ 28	≤ 273											
austenitic	≤ 36	≤ 337	130 - 260										
martensitic	≤ 46	≤ 435	195 - 395										
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Cast iron	≤ 23	≤ 242											
	≤ 38	≤ 354											
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	395 - 985								0.0248	0.0315	0.0394
	≤ 38	≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys Ti and Ti-alloys													
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
> 10 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											

Not recommended for these materials

Series 1548 - 1549

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 8 mm	10 mm	12.5 mm	16 mm	20 mm	25 mm	31.5 mm	40 mm	50 mm	> 50 mm
Common structural steels	-	≤ 150	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
	≤ 32	≤ 301	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
Free-cutting steels	≤ 25	≤ 255	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
	≤ 32	≤ 301	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
Unalloyed heat-treatable steels	≤ 20	≤ 220	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
	≤ 25	≤ 255	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
	≤ 32	≤ 301	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
Alloyed heat-treatable steels	≤ 32	≤ 301	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
	≤ 43	≤ 402	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
Unalloyed case hardened steels	≤ 25	≤ 255	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
Alloyed case hardened steels	≤ 32	≤ 301	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
	≤ 43	≤ 402	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
Nitriding steels	≤ 32	≤ 301	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
	≤ 43	≤ 402	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
Tool steels	≤ 25	≤ 255	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
	≤ 43	≤ 402	395 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
High speed steels	≤ 43	≤ 402	195 - 395				0.0551	0.0551	0.0630	0.0787	0.0787		
Spring steels	≤ 38	≤ 354	100 - 195				0.0157	0.0197	0.0248	0.0248	0.0315		
Stainless steels, sulphured	≤ 28	≤ 273	195 - 395				0.0315	0.0315	0.0394	0.0394	0.0472		
austenitic	≤ 36	≤ 337	130 - 260				0.0315	0.0315	0.0394	0.0394	0.0472		
martensitic	≤ 46	≤ 435	195 - 395				0.0315	0.0315	0.0394	0.0394	0.0472		
Hardened steels	≤ 48	≤ 460	130 - 195				0.0157	0.0197	0.0248	0.0248	0.0315		
	≤ 66	-	100 - 195				0.0157	0.0197	0.0248	0.0248	0.0315		
Cast iron	≤ 23	≤ 242	195 - 460				0.0551	0.0551	0.0630	0.0787	0.0787		
	≤ 38	≤ 354	195 - 460				0.0551	0.0551	0.0630	0.0787	0.0787		
Spheroidal graphite iron and malleable cast iron	≤ 23	≤ 242	395 - 820				0.0315	0.0315	0.0394	0.0394	0.0472		
	≤ 38	≤ 354	195 - 395				0.0315	0.0315	0.0394	0.0394	0.0472		
Chilled cast iron	≤ 38	≤ 354	100 - 165				0.0315	0.0315	0.0394	0.0394	0.0472		
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301	260				0.0551	0.0551	0.0630	0.0787	0.0787		
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402	260				0.0551	0.0551	0.0630	0.0787	0.0787		
Special alloys Ti and Ti-alloys	≤ 54	≤ 549	130 - 195				0.0315	0.0315	0.0394	0.0394	0.0472		
	≤ 25	≤ 255	130 - 195				0.0315	0.0315	0.0394	0.0394	0.0472		
	≤ 43	≤ 402	130 - 195				0.0315	0.0315	0.0394	0.0394	0.0472		
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
> 10 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120	260 - 525				0.0551	0.0551	0.0630	0.0787	0.0787		
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180	330 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180	330 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
	≤ 25	≤ 255	330 - 820				0.0551	0.0551	0.0630	0.0787	0.0787		
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											
Duroplastics			260 - 655				0.0551	0.0551	0.0630	0.0787	0.0787		
Thermoplastics			260 - 655				0.0551	0.0551	0.0630	0.0787	0.0787		
Kevlar			260				0.0098	0.0124	0.0157	0.0157	0.0197		
Glass, carbon concentrated plastics			260				0.0098	0.0124	0.0157	0.0157	0.0197		

TECHNICAL DATA

Series 1675-1676-1685-1686

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR < 4 mm	4 mm	5 mm	6.3 mm	8 mm	10 mm	12.5 mm	16 mm	20 mm	25 mm
Common structural steels	-	≤ 150	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
	≤ 32	≤ 301	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Free-cutting steels	≤ 25	≤ 255	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
	≤ 32	≤ 301	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Unalloyed heat-treatable steels	≤ 20	≤ 220	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
	≤ 25	≤ 255	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
	≤ 32	≤ 301	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Alloyed heat-treatable steels	≤ 32	≤ 301	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
	≤ 43	≤ 402	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Unalloyed case hardened steels	≤ 25	≤ 255	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Alloyed case hardened steels	≤ 32	≤ 301	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
	≤ 43	≤ 402	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Nitriding steels	≤ 32	≤ 301	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
	≤ 43	≤ 402	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Tool steels	≤ 25	≤ 255	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
	≤ 43	≤ 402	395 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
High speed steels	≤ 43	≤ 402	195 - 395	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Spring steels	≤ 38	≤ 354	100 - 195	0.0049	0.0063	0.0063	0.0079	0.0098	0.0124	0.0124	0.0157	0.0197	0.0248
Stainless steels, sulphured	≤ 28	≤ 273	195 - 395	0.0118	0.0118	0.0157	0.0157	0.0236	0.0236	0.0315	0.0315	0.0315	0.0394
austenitic	≤ 36	≤ 337	130 - 260	0.0118	0.0118	0.0157	0.0157	0.0236	0.0236	0.0315	0.0315	0.0315	0.0394
martensitic	≤ 46	≤ 435	195 - 395	0.0118	0.0118	0.0157	0.0157	0.0236	0.0236	0.0315	0.0315	0.0315	0.0394
Hardened steels	≤ 48	≤ 460	130 - 195	0.0049	0.0063	0.0063	0.0079	0.0098	0.0124	0.0124	0.0157	0.0197	0.0248
	≤ 66	-	100 - 195	0.0049	0.0063	0.0063	0.0079	0.0098	0.0124	0.0124	0.0157	0.0197	0.0248
Cast iron	≤ 23	≤ 242	195 - 460	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
	≤ 38	≤ 354	195 - 460	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Spheroidal graphite iron and	≤ 23	≤ 242	395 - 820	0.0118	0.0118	0.0157	0.0157	0.0236	0.0236	0.0315	0.0315	0.0315	0.0394
malleable cast iron	≤ 38	≤ 354	195 - 395	0.0118	0.0118	0.0157	0.0157	0.0236	0.0236	0.0315	0.0315	0.0315	0.0394
Chilled cast iron	≤ 38	≤ 354	100 - 165	0.0118	0.0118	0.0157	0.0157	0.0236	0.0236	0.0315	0.0315	0.0315	0.0394
New cast materials GGV	≤ 20	≤ 220	-										
	≤ 32	≤ 301	260	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
New cast materials ADI	≤ 32	≤ 301	-										
	≤ 43	≤ 402	260	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Special alloys	≤ 54	≤ 549	130 - 195	0.0118	0.0118	0.0157	0.0157	0.0236	0.0236	0.0315	0.0315	0.0315	0.0394
Ti and Ti-alloys	≤ 25	≤ 255	130 - 195	0.0118	0.0118	0.0157	0.0157	0.0236	0.0236	0.0315	0.0315	0.0315	0.0394
	≤ 43	≤ 402	130 - 195	0.0118	0.0118	0.0157	0.0157	0.0236	0.0236	0.0315	0.0315	0.0315	0.0394
Aluminium and Al-alloys	-	≤ 120	-										
Al wrought alloys	-	≤ 200	-										
Al cast alloys ≤ 10 % Si	-	≤ 180	-										
> 10 % Si	-	≤ 180	-										
Magnesium alloys	-	≤ 120	260 - 525	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Copper, low-alloyed	-	≤ 150	-										
Brass, short-chipping	-	≤ 180	330 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
long-chipping	-	≤ 180	-										
Bronze, short-chipping	-	≤ 180	330 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
	≤ 25	≤ 255	330 - 820	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Bronze, long-chipping	≤ 25	≤ 255	-										
	≤ 32	≤ 301	-										
Duroplastics			260 - 655	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Thermoplastics			260 - 655	0.0197	0.0197	0.0236	0.0276	0.0394	0.0472	0.0472	0.0551	0.0551	0.0630
Kevlar			260	0.0031	0.0039	0.0039	0.0049	0.0063	0.0079	0.0079	0.0098	0.0124	0.0157
Glass, carbon concentrated plastics			260	0.0031	0.0039	0.0039	0.0049	0.0063	0.0079	0.0079	0.0098	0.0124	0.0157

Series 1678 - 1679

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR < 4 mm	4 mm	5 mm	6.3 mm	8 mm	10 mm	12.5 mm	16 mm	20 mm	25 mm
Common structural steels	-	≤ 150											
	≤ 32	≤ 301											
Free-cutting steels	≤ 25	≤ 255											
	≤ 32	≤ 301											
Unalloyed heat-treatable steels	≤ 20	≤ 220											
Alloyed heat-treatable steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Unalloyed case hardened steels	≤ 25	≤ 255											
Alloyed case hardened steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Nitriding steels	≤ 32	≤ 301											
	≤ 43	≤ 402											
Tool steels	≤ 25	≤ 255											
	≤ 43	≤ 402											
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354											
Stainless steels, sulphured	≤ 28	≤ 273											
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435											
Hardened steels	≤ 48	≤ 460											
	≤ 66	-											
Cast iron	≤ 23	≤ 242											
	≤ 38	≤ 354											
Spheroidal graphite iron and	≤ 23	≤ 242											
malleable cast iron	≤ 38	≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120	655 - 985	0.0315	0.0394	0.0394	0.0472	0.0709	0.0709	0.0787	0.0866	0.0866	0.0984
Al wrought alloys	-	≤ 200	655 - 985	0.0315	0.0394	0.0394	0.0472	0.0709	0.0709	0.0787	0.0866	0.0866	0.0984
Al cast alloys ≤ 10 % Si	-	≤ 180	655 - 985	0.0315	0.0394	0.0394	0.0472	0.0709	0.0709	0.0787	0.0866	0.0866	0.0984
> 10 % Si	-	≤ 180	655 - 985	0.0315	0.0394	0.0394	0.0472	0.0709	0.0709	0.0787	0.0866	0.0866	0.0984
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180											
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180											
	≤ 25	≤ 255											
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											
Duroplastics													
Thermoplastics													
Kevlar													
Glass, carbon concentrated plastics													

Not recommended for these materials

Not recommended for these materials

Series 1680 - 1681

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 8 mm	10 mm	12.5 mm	16 mm	20 mm	25 mm	31.5 mm	40 mm	50 mm	> 50 mm
Common structural steels	-	≤ 150	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
	≤ 32	≤ 301	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Free-cutting steels	≤ 25	≤ 255	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
	≤ 32	≤ 301	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Unalloyed heat-treatable steels	≤ 20	≤ 220	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
	≤ 25	≤ 255	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
	≤ 32	≤ 301	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Alloyed heat-treatable steels	≤ 32	≤ 301	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
	≤ 43	≤ 402	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Unalloyed case hardened steels	≤ 25	≤ 255	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Alloyed case hardened steels	≤ 32	≤ 301	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
	≤ 43	≤ 402	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Nitriding steels	≤ 32	≤ 301	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
	≤ 43	≤ 402	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Tool steels	≤ 25	≤ 255	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
	≤ 43	≤ 402	80 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
High speed steels	≤ 43	≤ 402	65 - 100					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Spring steels	≤ 38	≤ 354	65 - 100					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Stainless steels, sulphured	≤ 28	≤ 273	100 - 195					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
austenitic	≤ 36	≤ 337	65 - 100					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
martensitic	≤ 46	≤ 435	65 - 100					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Hardened steels	≤ 48	≤ 460	35 - 65					0.0157	0.0197	0.0197	0.0248	0.0315	0.0394
	≤ 66	-											
Cast iron	≤ 23	≤ 242	130 - 330					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
	≤ 38	≤ 354	130 - 330					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
Spheroidal graphite iron and	≤ 23	≤ 242	165 - 395					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
malleable cast iron	≤ 38	≤ 354	165 - 330					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
Chilled cast iron	≤ 38	≤ 354	65 - 130					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301	195 - 260					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402	130 - 260					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Special alloys	≤ 54	≤ 549	65 - 100					0.0197	0.0248	0.0248	0.0315	0.0394	0.0492
Ti and Ti-alloys	≤ 25	≤ 255	65 - 130					0.0197	0.0248	0.0248	0.0315	0.0394	0.0492
	≤ 43	≤ 402	65 - 130					0.0197	0.0248	0.0248	0.0315	0.0394	0.0492
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
> 10 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120	260 - 525					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
Copper, low-alloyed	-	≤ 150											
Brass, short-chipping	-	≤ 180	130 - 395					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
long-chipping	-	≤ 180											
Bronze, short-chipping	-	≤ 180	165 - 395					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
	≤ 25	≤ 255	165 - 395					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											
Duroplastics			130 - 395					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Thermoplastics			130 - 395					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Kevlar			260					0.0124	0.0157	0.0157	0.0197	0.0248	0.0315
Glass, carbon concentrated plastics			260					0.0124	0.0157	0.0157	0.0197	0.0248	0.0315

Series 1682 - 1683

Material group	Hardness HRc	Hardness Bhn	SFM	Feed Rate - IPR 8 mm	10 mm	12.5 mm	16 mm	20 mm	25 mm	31.5 mm	40 mm	50 mm	> 50 mm
Common structural steels	-	≤ 150	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
	≤ 32	≤ 301	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
Free-cutting steels	≤ 25	≤ 255	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
	≤ 32	≤ 301	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
Unalloyed heat-treatable steels	≤ 20	≤ 220	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
	≤ 25	≤ 255	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
	≤ 32	≤ 301	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
Alloyed heat-treatable steels	≤ 32	≤ 301	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
	≤ 43	≤ 402	260 - 395					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
Unalloyed case hardened steels	≤ 25	≤ 255	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
Alloyed case hardened steels	≤ 32	≤ 301	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
	≤ 43	≤ 402	260 - 395					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
Nitriding steels	≤ 32	≤ 301	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
	≤ 43	≤ 402	260 - 395					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
Tool steels	≤ 25	≤ 255	330 - 590					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
	≤ 43	≤ 402	260 - 395					0.0551	0.0630	0.0787	0.0787	0.0866	0.0866
High speed steels	≤ 43	≤ 402											
Spring steels	≤ 38	≤ 354	330 - 395					0.0315	0.0394	0.0394	0.0472	0.0551	0.0630
Stainless steels, sulphured	≤ 28	≤ 273											
austenitic	≤ 36	≤ 337											
martensitic	≤ 46	≤ 435											
Hardened steels	≤ 48	≤ 460											
Cast iron	≤ 23	≤ 242											
	≤ 38	≤ 354											
Spheroidal graphite iron and	≤ 23	≤ 242	395 - 985					0.0157	0.0197	0.0197	0.0248	0.0315	0.0394
malleable cast iron	≤ 38	≤ 354											
Chilled cast iron	≤ 38	≤ 354											
New cast materials GGV	≤ 20	≤ 220											
	≤ 32	≤ 301											
New cast materials ADI	≤ 32	≤ 301											
	≤ 43	≤ 402											
Special alloys	≤ 54	≤ 549											
Ti and Ti-alloys	≤ 25	≤ 255											
	≤ 43	≤ 402											
Aluminium and Al-alloys	-	≤ 120											
Al wrought alloys	-	≤ 200											
Al cast alloys ≤ 10 % Si	-	≤ 180											
> 10 % Si	-	≤ 180											
Magnesium alloys	-	≤ 120											
Copper, low-alloyed	-	≤ 150											
Brass	-	≤ 180											
Bronze	-	≤ 180											
Bronze, long-chipping	≤ 25	≤ 255											
	≤ 32	≤ 301											
Duroplastics													
Thermoplastics													
Kevlar													
Glass, carbon concentrated plastics													

Not recommended for these materials

APPLICATION EXAMPLES

Application examples for Guhring's HR 500 S and HR 500 D solid carbide high-performance reamers with highest feed rates and tool life.

The HR 500 S and HR 500 D solid carbide high-performance reamers have shown their performance in several applications, see following table:

Tool type	HR 500 S	HR 500 D	HR 500 D	HR 500 S	HR 500 Cast D
Guhring no.	1685	1686	special reamer for tighter tolerances	1685	1037
component machined	hinge	ring	valve body	ring	cylinder head
workpiece material	gen. steel	alloyed steel	gen. steel	alloyed steel	GG 30
hole diameter (mm)	9	8	5,9	15	20.2
hole tolerance	H7	H7	H6	IT 5	H7
reaming depth (mm)	30	25	48	20	60
cutting speed v_c (m/min.)	120	200	190	250	200
feed rate v_f (mm/min.)	4200	12700	6100	7200	6300
tool life (m)	60	100	55	200	150

Application examples for Guhring special high-performance reamers HR 500 G

Carbide- or cermet-tipped special high-performance reamers HR 500 G S and HR 500 G D have already been able to demonstrate their efficiency in numerous applications. The following table contains some examples.

Tool type	HR 500 G D	HR 500 G D	HR 500 G D
Guhring no.	1683 (shortened)	1681	1683
tool material/coating	Cermet	HM + TiAlN nanoA	Cermet
component machined	universal joint	wheel flange	differential housing
workpiece material	steel	cast iron	cast iron
hole diameter (mm)	25	22	32
hole tolerance	F7	H8	H7
reaming depth (mm)	18	20	50
cutting speed v_c (m/min.)	130	120	120
feed rate v_f (mm/min.)	2000	2600	3000
tool life (m)	175	120	160

EXCLUSIVELINE®

HR 500 ACTIVE
Special range of HR 500 solid carbide high-performance reamers

Ever since their introduction, Guhring's solid carbide high-performance reamers HR 500 D for through holes and HR 500 S for blind holes have impressed customers with their outstanding performance. Even under difficult machining conditions such as interrupted cutting or unstable machines they ream holes at cutting rates higher than cermet levels with maximum tool life and optimal quality in almost all materials.

So the user can also fully utilize the advantages of HR 500 high-performance reamers for the machining of the special applications Guhring has developed the HR 500 ACTIVE range.

There is a choice of four HR 500 ACTIVE types:

- **for cylindrical blind holes**
- **for cylindrical through holes**
- **for stepped blind holes**
- **for stepped through holes**

The four HR 500 ACTIVE types are available in the following designs:

- **with or without internal cooling**
- **short or long version**
- **with different coatings or bright finish**
- **to hole tolerance or reamer manufacturing tolerance**

You have the choice of designing the optimal HR 500 reamer for your specific application! Simply complete the questionnaire.

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