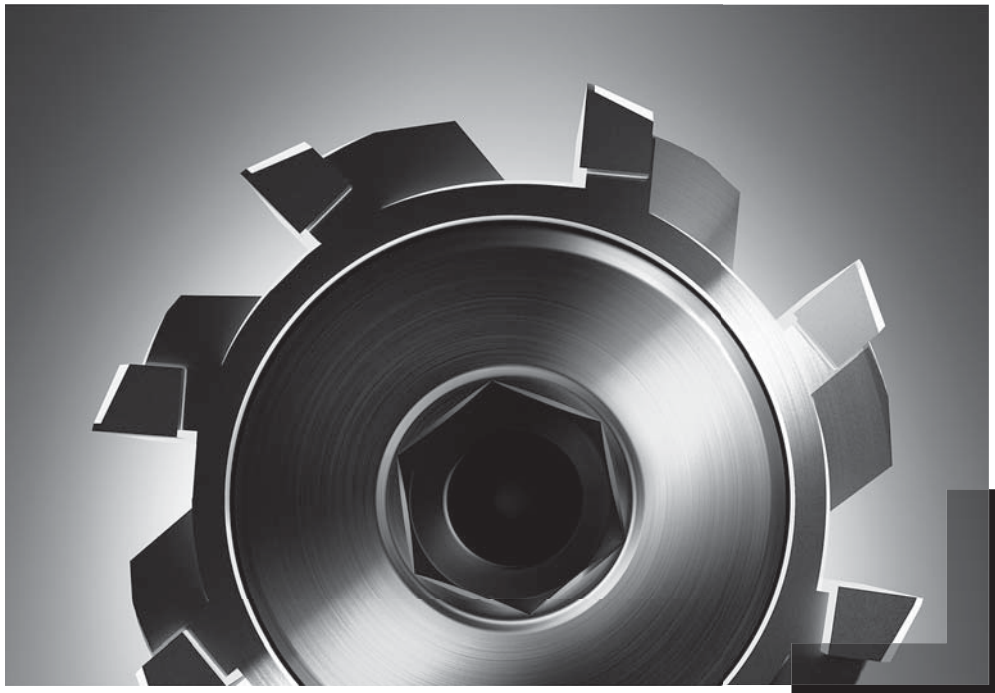
KOMET GROUP

KOMPASS – REAMING

KomPass Reaming – BENEFITS for you



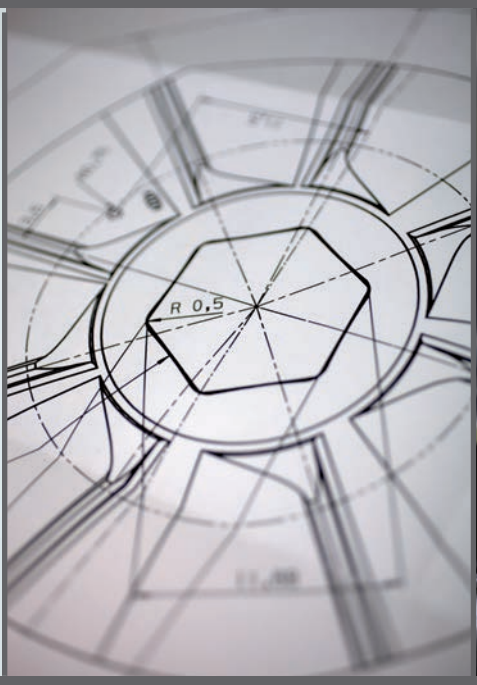
**As a brand of the KOMET GROUP,
DIHART® is known for its precision reaming technology which is sure to take you to the next level.**

For the cost effective finish machining of bores, Dihart® offers a comprehensive tool program of standardized Monomax® monobloc tools, PCD reamers, application specific multiblade stepped reamers and special tools. Dihart® reamers offer accurate, cost effective and reliable machining.

Innovative solutions for finish bore machining:

- Reamax® TS – Modular reaming system
- Reaming with indexable insert technology
- Compensating holder DAH® for accurate concentricity (<0.0002"/0.005 mm)

DIHART® – Innovative Solutions for Precision Finishing of Bores



The KOMET GROUP is a leading global provider of DIHART® reaming tools for the cost effective, precise machining of bores. Our innovative solutions potential, comprehensive performance range and dedication are the basis for successful partnerships with our customers.

For more than 60 years DIHART® has been synonymous with high-precision reaming. We are successfully meeting the increasing demand for application-specific solutions and standard tools and have been continuously expanding our solution competency and our innovative edge. Our leading market position is the result of consistently higher quality and continuous development.

The KOMET GROUP also offers the complete range of services internationally. You can find us wherever you manufacture your products with a demand for quality.

The standard tool range and the application-specific special tools guarantee precise, cost effective and reliable machining.

New product and solution concepts such as the modular high-speed reaming tools Reamax® TS, set a benchmark especially for standard products. Our knowledge of application-specific solutions offers unique perspectives.

DIHART® is the brand of the KOMET GROUP for precision reaming in new dimensions.

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DIHART® Tool Selection

This selection aid guides you quickly and easily to the tool system that is suitable for your requirements.

Step 1: Diameter and Tolerance Selection – Using your applications bore diameter and tolerance, select an IT class from charts below.

Numerical values for tolerance grades in 0.001 mm

For use with metric dimensions

	IT tolerance class											
Nominal dimension range	IT 1	IT 2	IT 3	IT 4	IT 5	IT 6	IT 7	IT 8	IT 9	IT 10	IT 11	IT 12
1 – 3 mm	0.8	1.2	2	3	4	6	10	14	25	40	60	100
> 3 – 6 mm	1	1.5	2.5	4	5	8	12	18	30	48	75	120
> 6 – 10 mm	1	1.5	2.5	4	6	9	15	22	36	58	90	150
> 10 – 18 mm	1.2	2	3	5	8	11	18	27	43	70	110	180
> 18 – 30 mm	1.5	2.5	4	6	9	13	21	33	52	84	130	210
> 30 – 50 mm	1.5	2.5	4	7	11	16	25	39	62	100	160	250
> 50 – 80 mm	2	3	5	8	13	19	30	46	74	120	190	300
> 80 – 120 mm	2.5	4	6	10	15	22	35	54	87	140	220	350
> 120 – 180 mm	3.5	5	8	12	18	25	40	63	100	160	250	400
> 180 – 250 mm	4.5	7	10	14	20	29	46	72	115	185	290	460
> 250 – 315 mm	6	8	12	16	23	32	52	81	130	210	320	520

- Example 1: If your application is Ø 32.5 mm with a total tolerance of 0.020 mm, this will be an IT 6 class.
- Example 2: If your application is Ø 110 mm with a total tolerance of 0.035 mm, this will be an IT 7 class.

Numerical values for tolerance grades in inch

	IT tolerance class											
Nominal dimension range	IT 1	IT 2	IT 3	IT 4	IT 5	IT 6	IT 7	IT 8	IT 9	IT 10	IT 11	IT 12
0.039 – 0.118	0.00003	0.00005	0.00008	0.00012	0.00016	0.00024	0.00039	0.00055	0.00098	0.00158	0.00236	0.00394
> 0.118 – 0.236	0.00004	0.00006	0.00010	0.00016	0.00020	0.00032	0.00047	0.00071	0.00118	0.00189	0.00295	0.00472
> 0.236 – 0.394	0.00004	0.00006	0.00010	0.00016	0.00024	0.00035	0.00059	0.00087	0.00142	0.00228	0.00354	0.00591
> 0.394 – 0.709	0.00005	0.00008	0.00012	0.00020	0.00032	0.00043	0.00071	0.00106	0.00169	0.00276	0.00433	0.00709
> 0.709 – 1.181	0.00006	0.00010	0.00016	0.00024	0.00035	0.00051	0.00083	0.00130	0.00205	0.00331	0.00512	0.00827
> 1.181 – 1.968	0.00006	0.00010	0.00016	0.00028	0.00043	0.00063	0.00098	0.00154	0.00244	0.00394	0.00630	0.00984
> 1.968 – 3.150	0.00008	0.00012	0.00020	0.00032	0.00051	0.00075	0.00118	0.00181	0.00291	0.00472	0.00748	0.01181
> 3.150 – 4.724	0.00010	0.00016	0.00024	0.00039	0.00059	0.00087	0.00138	0.00213	0.00343	0.00551	0.00866	0.01378
> 4.724 – 7.087	0.00014	0.00020	0.00032	0.00047	0.00071	0.00098	0.00158	0.00248	0.00394	0.00630	0.00984	0.01575
> 7.087 – 9.842	0.00018	0.00028	0.00039	0.00055	0.00079	0.00114	0.00181	0.00284	0.00453	0.00728	0.01142	0.01811
> 9.842 – 12.402	0.00024	0.00032	0.00047	0.00063	0.00091	0.00126	0.00205	0.00319	0.00512	0.00827	0.01260	0.02047

- Example 1: If your application is Ø 1.357 inch with a total tolerance of 0.0008 inch, this will be an IT 6 class.
- Example 2: If your application is Ø 4.250 inch with a total tolerance of 0.0015 inch, this will be an IT 7 class.

For rough conversion: 0.0001 inch => 0.0025 mm
0.001 mm => 0.00004 inch

Step 2: Tool Selection – Based on diameter and tolerance required, choose recommended tool series.

- **Example 1:** Diameter 20 H7 to be machined recommends Reamax® TS System or Monomax® Expandable
- **Example 2:** Diameter 1.7500" ± 0.0010"(IT8) to be machined recommends Reamax® TS System

Tool series selection based on IT-tolerance

IT-Tolerance	Ø 0.0551 – 0.2204 in (Ø 1.40 – 5.59 mm)	Ø 0.2205 – 0.4720 in (Ø 5.60 – 11.99 mm)	Ø 0.4721 – 0.7083 in (Ø 12.00 – 17.99 mm)	Ø 0.7084 – 1.5748 in (Ø 18 – 40 mm)	Ø 1.5748 – 2.5591 (Ø 40 – 65 mm)	Ø 2.5591 – 4.3307 in (Ø 65 – 110 mm)
IT 5 – IT 6	Solid carbide reamer	Monomax® expandable	Monomax® expandable	Reamax®TS / Monomax® expandable	Reamax® TS	Cutting ring
IT 7	Solid carbide reamer	Monomax® expandable	Reamax® / Monomax® expandable	Reamax®TS / Monomax® expandable	Reamax® TS	Cutting ring
≥ IT 8	Solid carbide reamer	Solid carbide reamer / Monomax® solid	Reamax® / Monomax® solid	Reamax® / Monomax® solid	Reamax® TS	Cutting ring

Note: For bore tolerance ≤ IT7; Expandable tooling is recommended for wear compensation. Generally, bore tolerances < IT5 should be machined by another process other than reaming

(..) = mm

Standard reamers overview

Series	Ø 0.0551 (Ø 1.400)	Ø 0.1575 (Ø 4.000)	Ø 0.2205 (Ø 5.600)	Ø 0.3779 (Ø 9.600)	Ø 0.3999 (Ø 10.159)	Ø 0.4724 (Ø 12.000)	Ø 0.5000 (Ø 12.700)	Ø 0.6929 (Ø 17.600)	Ø 0.7087 (Ø 18.000)	Ø 0.7441 (Ø 18.899)	Ø 0.7913 (Ø 20.100)	Ø 1.0196 (Ø 25.899)	Ø 1.5748 (Ø 40.000)	Ø 1.9685 (Ø 50.000)	Ø 2.3858 (Ø 60.600)	Ø 2.5591 (Ø 65.000)	Ø 4.3543 (Ø 110.599)	Ø 5.4960 (Ø 139.599)	Ø 11.8346 (Ø 300.599)	Tool connection
Reamax® TS									■	■	■	■	■	■	■	■	■			Cylindrical shank DAH® ABS®
Reamax®						■	■	■	■	■	■	■	■	■						Cylindrical shank
Monomax®– expandable			■	■	■	■	■	■	■	■	■	■	■	■						Cylindrical shank
Monomax®– solid			■	■	■	■	■	■	■	■	■	■	■	■						Cylindrical shank
Solid carbide reamer	■	■	■	■	■	■	■													Cylindrical shank
Cutting ring															■	■	■			Cylindrical shank DAH® ABS®
PCD reamer		■	■	■	■	■	■	■	■	■	■	■								Cylindrical shank

If you do not find a standard tool in this catalog for your machining needs, we are able to offer you an application-specific tool.

DIHART® Tool Selection

This selection aid guides you quickly and easily to the tool system that is suitable for your requirements.

Step 3: Tool Recommendation – According to the type of bore and material to be machined, you will be guided to the appropriate tool. The best cutting geometry (ASG) can be seen in the table "Tool recommendation" in each section.

Example:

Material:
non-alloy steel 1010
Bore type: Through bore

Tool recommendation:
DST cutting material
Order No.: 75J.93
Cutting geometry: ASG09

Recommended cutting data:
Cutting speed:
v_C = 330 – 660 ft/min (100 – 200 m/min)
Feed for ∅0.7874 inch (∅ 20.000 mm)
f_Z = 0.004 – 0.008 in/tooth
(0.10 – 0.21 mm/tooth)

DIHART Reamax® TS — Example

Tool Recommendation

Material group		Strength Rm (N/mm²)	Hardness HB	Material	Material example material code/DIN	High-speed machining					
						Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material/ coating
P	1.0	≤ 500		non-alloy steels	St37-2 / 1.0037; 9SMn28 / 1.0715; St44-2 / 1.0044	75J.93	ASG09	DST	75J.71	ASG09	TiN
P	2.0	500-900		non-alloy / low alloy steels	St52-2 / 1.0050, C55 / 1.0525, 16MnCr5 / 1.7131	75J.93	ASG09	DST	75J.71	ASG09	TiN
P	2.1	< 500		lead alloys	9SMnPb28 / 1.0718	75J.93	ASG09	DST	75J.71	ASG09	TiN

DIHART® Cutting Data

Material group		Strength Rm (lbf/ins²)	Hardness HB	Material	Material example ANSI / SAE	Guideline for reaming: Cutting speed v_C ft/min (m/min)													
						Reamers short / 3×D								Reamers long / 5×D					
						HM	DST	TiN	DBG-N	DBF	DJC	DBC	PCD	HM	DST	TiN	DBG-N	DBF	DJC	DBC
						min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max
P	1.0	≤ 72,500		Unalloyed steel	A570.36 1213 A573.81	19-32 (6-10)	330-660 (100-200)	195-460 (60-140)			330-660 (100-200)			19-32 (6-10)	260-525 (80-160)	195-390 (60-120)			260-525 (80-160)	
P	2.0	72,500 - 130,000		Low alloy steel	5120 1055 5115	19-32 (6-10)	330-660 (100-200)	195-460 (60-140)			330-660 (100-200)			19-32 (6-10)	260-525 (80-160)	195-390 (60-120)			260-525 (80-160)	

Example

Feed f_Z in/tooth (mm/tooth)			
straight fluted G03, ASG11, ASG1101		straight fluted ASG09, ASG09B, ASG1	
Ø 0.984 - 1.968 (Ø 25 - 50)	> Ø 1.968 (> Ø 50)	< Ø 0.472 (< Ø 12)	Ø 0.472 - 0.984 (Ø 12 - 25)
min-max	min-max	min-max	min-max
0.003-0.007 (0.09-0.20)	0.004-0.010 (0.10-0.25)	0.003-0.005 (0.07-0.14)	0.004-0.008 (0.10-0.21)
0.003-0.007 (0.09-0.20)	0.004-0.010 (0.10-0.25)	0.003-0.005 (0.07-0.14)	0.004-0.008 (0.10-0.21)

Complete cutting data can be found on page 102 – 103.

Reaming Bearing Case with Dihart® Cutting Ring

The task:
Finish machining operation for bearing case in class 25 cast iron.

Parameters:
Diameter: Ø 110 mm H6
Hole Length: 1.968 inch (50 mm)
Surface Finish: Ra 0.4
Pre-machined: Ø 4.315 inch (Ø 109.6 mm)

Machining Data:
Cutting Material: TIN
Geometry: ASG01
Surface Finish: Ra 0.4
Run-out: 0.003

Cutting data:
v_c = 246 SFM (75 m/min);
v_f = 787 ft/min (240 m/min)
n = 200 rpm
f = 0.047 in/rev (1.2 mm/U)

Reaming Cylinder Liner with Reamax® TS

The task:
Finish machining operation for cylinder liner in 34CrAlNi7V (nitride steel). Previously getting 23 ft of tool life.

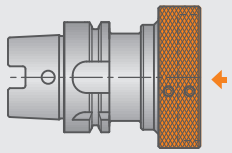
Parameters:
Diameter: Ø 25 mm H7
Hole Length: 0.9874 inch (25 mm)
Surface Finish: Rz 1.6

Machining Data:
Cutting Material: HM/TIN
Geometry: ASG09
Surface Finish: <Rz 1.6
Tool Life: 63 ft (19.2 m)

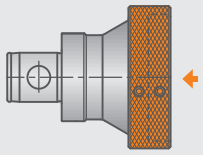
Cutting data:
v_c = 164 SFM (50 m/min);
v_f = 1443 ft/min (440 m/min)
n = 630 rpm
f = 0.004 in/rev (0.11 mm/U)

DIHART® Program Summary
Adapters

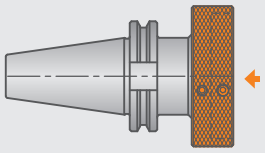
DAH® Compensating Holder
HSK adapter DIN 69893 A
▸ 78



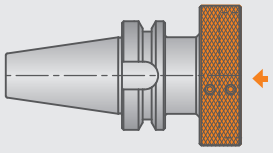
ABS® adapter
▸ 78



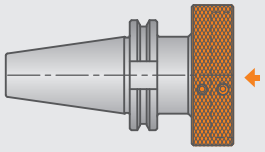
taper shank DIN 69871 AD/B
▸ 79



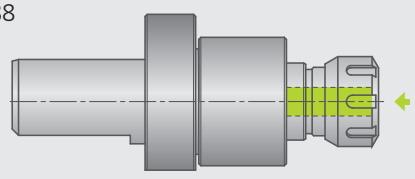
taper shank JIS B 6339 AD/B
▸ 79



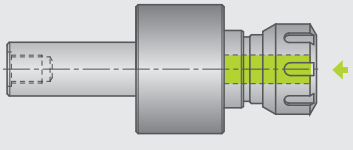
CAT / MS taper
▸ 80



DPS Floating Holder
VDI connection DIN 69880
▸ 88

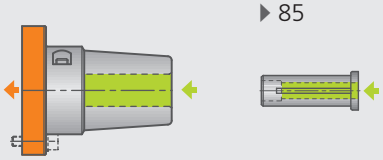


cylindrical shank similar to DIN 1835
▸ 88

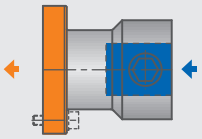


DAH® Hydraulic chuck
For cylindrical shank tooling
▸ 86

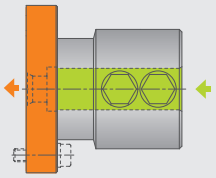
Reducer sleeve
▸ 85



DAH® Adapter
For ABS® connection tooling
▸ 86

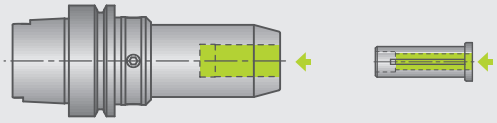


DAH® Cylindrical Shank Bushing
For cylindrical shank tooling
▸ 87

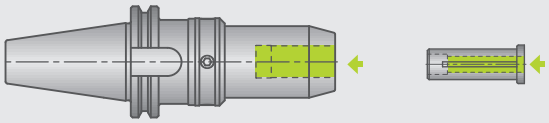


DAH® 50 HS Compensating Holder
HSK adapter DIN 69893 A
▸ 81

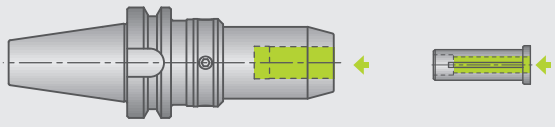
Reducer sleeve
▸ 85



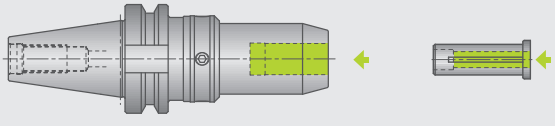
taper shank DIN 69871 AD
▸ 81



taper shank JIS B 6339 AD
▸ 81



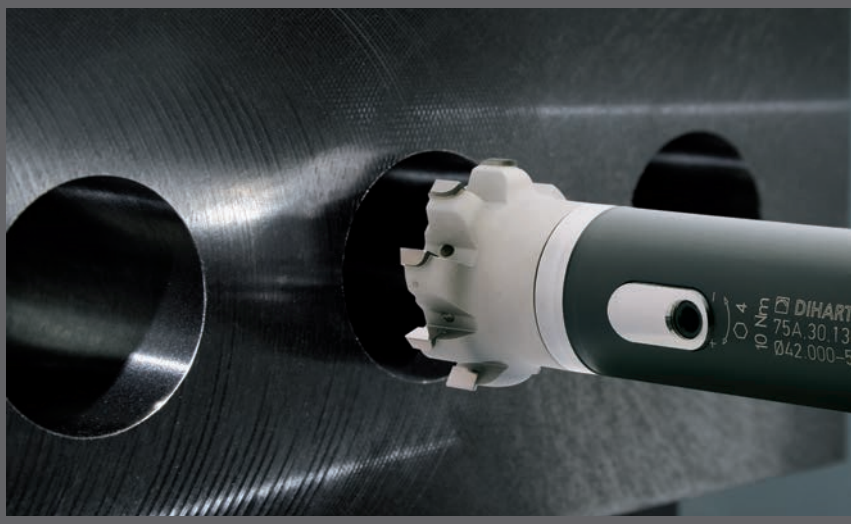
taper shank CAT 40
▸ 81



Reaming Tools

cylindrical connection DAH® connection ABS® connection

DIHART Reamax® TS



Modular Reaming System

The flexible and cost effective DIHART Reamax® TS offers a precise clamping system with a standard connection for all DIHART® Reamax® TS reaming heads, offering flexibility and cost-effectiveness thanks to fast and high-precision tool changing.

DIHART Reamax® TS offer system modularity due to a versatile and clearly structured range of reaming heads which can handle all common diameter ranges and machining requirements. Tool costs and holder inventory are thereby reduced to a minimum.

BENEFITS for you:

- High-precision manufacturing for guaranteed quality
- Modular tool system for the highest flexibility
- Compensation for wear through simple adjustment
- Integrated run-out adjustment for short lengths
- Can be adjusted for extremely small hole

Application:

- All current materials
- Through and blind holes
- Small bore tolerances
- Up to 5 × D
- High speed – up to 985 ft/min (300 m/min)
- High feed – up to 0.094 in/rev (2.4 mm/rev)

A connection for maximum production reliability

This high-precision connection guarantees safer transfer of the torque that occurs during reaming and provides the concentricity required for precision machining.
DIHART Reamax® TS is designed for high speed machining.

Multi-flute tools

Wear compensating for small tolerances and able to machine bore tolerances as small as IT4, all DIHART Reamax® TS multi-flute tools are adjustable. Maximum repeatable accuracy is achieved without pre-setting
- Longer tool life
- Maximum performance
- Extremely tight bore tolerances
- Less machine down time

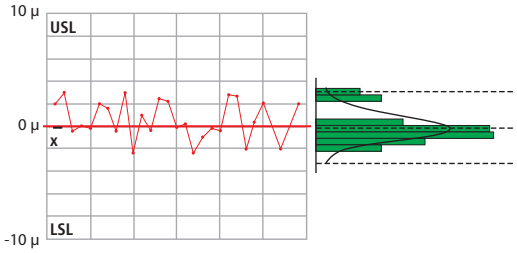
Internal coolant system

The coolant is supplied through the tool with flute or blind hole coolant styles.

Minimal setting time

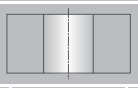
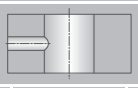
The radial clamping system allows the replaceable heads to be changed without removing the holder from the adaptor, reducing the setting time considerably.

DIHART Reamax® TS provides maximum production reliability for the smallest tolerances.



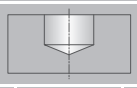
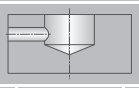
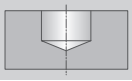
DIHART Reamax® TS

Tool Recommendation

Material group		Strength Rm (lbf/ins²)	Hardness HB	Material	Material example ANSI / SAE	High-speed machining						
												
						Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material/ coating	
P	1.0	≤ 72,500		non-alloy steels	1010 1144 1213	75J.93	ASG09	DST	75J.71	ASG09	TiN	
P	2.0	72,500 - 130,000		non-alloy / low alloy steels	1055 5115 5120	75J.93	ASG09	DST	75J.71	ASG09	TiN	
P	2.1	< 72,500		lead alloys	12L14	75J.93	ASG09	DST	75J.71	ASG09	TiN	
P	3.0	> 130,000		non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1064 4140	75J.93	ASG09	DST	75J.71	ASG07	TiN	
P	4.0	> 130,000		high alloy steels	H13 H21	75J.71	ASG0106	TiN	75J.71	ASG0106	TiN	
P	4.1			HSS	M10 T4							
S	5.0		250	special alloys: Inconel, Hastelloy, Nimonic, stc.	Inconel® 718 Nimonic® 80A							
S	5.1	58,000		titanium, titanium alloys	Ti-6Al-4V							
M	6.0	≤ 87,000		stainless steels	304L 316	75J.71	ASG0106	TiN	75J.71	ASG0106	TiN	
M	6.1	<130,000		stainless steels	630	75J.71	ASG0106	TiN	75J.71	ASG0106	TiN	
M	7.0	>130,000		stainless / fireproof steels	403 420	75J.71	ASG0106	TiN	75J.71	ASG0106	TiN	
K	8.0		180	gray cast iron	Class 25 G3000	75J.37	ASG07	DBG-N	75J.37	ASG07	DBG-N	
K	8.1		250	alloy gray cast iron	A436 Type 2	75J.37	ASG07	DBG-N	75J.37	ASG07	DBG-N	
K	9.0	≤ 87,000	130	ductile cast iron, ferritic	60-40-18 D4512	75J.93	ASG07	DST	75J.37	ASG07	DBG-N	
K	9.1		230	ductile cast iron, ferritic / perlitic	80-55-06 D5506	75J.37	ASG07	DBG-N	75J.37	ASG07	DBG-N	
K	10.0	> 87,000	250	spheroidal graphite cast iron, perlitic malleable iron	100-70-03 07003	75J.37	ASG07	DBG-N	75J.37	ASG07	DBG-N	
K	10.1		200	alloyed spheroidal graphite cast iron	A43D2	75J.37	ASG07	DBG-N	75J.37	ASG07	DBG-N	
K	10.2		300	vermicular cast iron		75J.37	ASG07	DBG-N	75J.37	ASG07	DBG-N	
N	12.0		90	copper alloy, brass, lead-alloy bronze, lead bronze: good cut	316	75J.93	ASG07	DST	75J.71	ASG07	TiN	
N	12.1		100	copper alloy, brass, bronze:average cut		75J.71	ASG07	TiN	75J.71	ASG07	TiN	
N	13.0		60	wrought aluminum alloys	6151 7075	75J.17	ASG0706	DBC				
N	13.1		75	cast aluminum alloy: Si-content <10% magnesium alloy	380 A356.0	75J.17	ASG0706	DBC				
N	14.0		100	cast aluminum alloy: Si-content > 10%	383 A413.0	75J.17	ASG0706	DBC				
H	15.0	203,000		hardened steels < 45 HRC		75J.37	ASG0106	DBG-N				
H	16.0	261,000		hardened steels > 45 HRC, ≤ 55 HRC		75J.37	ASG0106	DBG-N				

For inquiries concerning tools for materials without a recommendation, please contact us.

Patent applied for inside and outside Germany (Reamax®)

	High-speed machining						Conventional machining					
												
	Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material	Order No.	Cutting geometry (ASG)	Cutting material
	75H.93	ASG07	DST	75H.71	ASG07	TiN	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.93	ASG07	DST	75H.71	ASG07	TiN	75J.21	ASG02	HM	75H.21	ASG02	HM
	75H.93	ASG07	DST	75H.71	ASG07	TiN	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.93	ASG07	DST	75H.71	ASG07	TiN	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.71	ASG0106	TiN	75H.71	ASG0106	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
							75J.21	ASG03	HM	75H.21	ASG03	HM
	75H.71	ASG0106	TiN	75H.71	ASG0106	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
	75H.71	ASG0106	TiN	75H.71	ASG0106	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
	75H.71	ASG0106	TiN	75H.71	ASG0106	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
	75H.37	ASG07	DBG-N	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.37	ASG07	DBG-N	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.93	ASG07	DST	75H.37	ASG07	DBG-N	75J.21	ASG02	HM	75H.21	ASG02	HM
	75H.37	ASG07	DBG-N	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.37	ASG07	DBG-N	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.37	ASG07	DBG-N	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.37	ASG07	DBG-N	75H.37	ASG07	DBG-N	75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.93	ASG07	DST	75H.71	ASG07	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
	75H.71	ASG07	TiN	75H.71	ASG07	TiN	75J.21	ASG0106	HM	75H.21	ASG0106	HM
	75H.17	ASG0706	DBC				75J.21	ASG02	HM	75H.21	ASG02	HM
	75H.17	ASG0706	DBC				75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.17	ASG0706	DBC				75J.21	ASG07	HM	75H.21	ASG07	HM
	75H.37	ASG0106	DBG-N									
	75H.37	ASG0106	DBG-N									

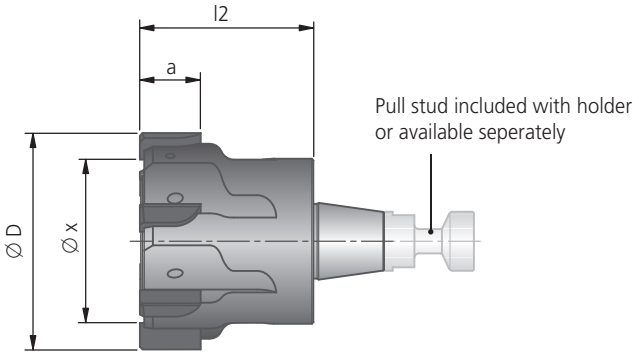
Cutting speed and feed see pages 102-103

Important: See chapter ⓘ for more application details and safety notes!

DIHART Reamax® TS

Reaming Head – expandable

Ø 0.7087 – 2.5591 inch
(Ø 18.000 – 65.000 mm)



Reamax® TS		
Cutting material / coating	Order No.	Order No.
HM	75J.21	75H.21
TiN	75J.71	75H.71
DBG-N	75J.37	75H.37
DST	75J.93	75H.93
DJC	75J.67	75H.67
DBF	75J.47	75H.47
DBC	75J.17	75H.17

(..) = mm

Dimensions					
Ø D	min. diameter for front cutting Ø x ~	a ~	l2 ~	No. of teeth	lbs
0.7087 – 0.7873 (18.000 – 19.999)	Ø D – 0.157 (Ø D – 4.0)	0.236 (6.0)	0.787 (20)	6	0.07
0.7874 – 0.8661 (20.000 – 21.999)	Ø D – 0.157 (Ø D – 4.0)	0.236 (6.0)	0.787 (20)	6	0.07
0.8662 – 1.0629 (22.000 – 26.999)	Ø D – 0.165 (Ø D – 4.2)	0.236 (6.0)	0.787 (20)	6	0.09
1.0630 – 1.2519 (27.000 – 31.799)	Ø D – 0.213 (Ø D – 5.4)	0.236 (6.0)	0.984 (25)	6	0.09
1.2520 – 1.3779 (31.800 – 34.999)	Ø D – 0.236 (Ø D – 6.0)	0.236 (6.0)	0.984 (25)	8	0.11
1.3780 – 1.6535 (35.000 – 41.999)	Ø D – 0.272 (Ø D – 6.9)	0.236 (6.0)	0.984 (25)	8	0.29-0.33
1.6536 – 2.0472 (42.000 – 51.999)	Ø D – 0.295 (Ø D – 7.5)	0.236 (6.0)	1.181 (30)	8	0.44-0.55
2.0473 – 2.5591 (52.000 – 65.000)	Ø D – 0.346 (Ø D – 8.8)	0.315 (8.0)	1.378 (35)	10	0.77-0.99

Preferred range available from stock. See page 92-93.

Order example:

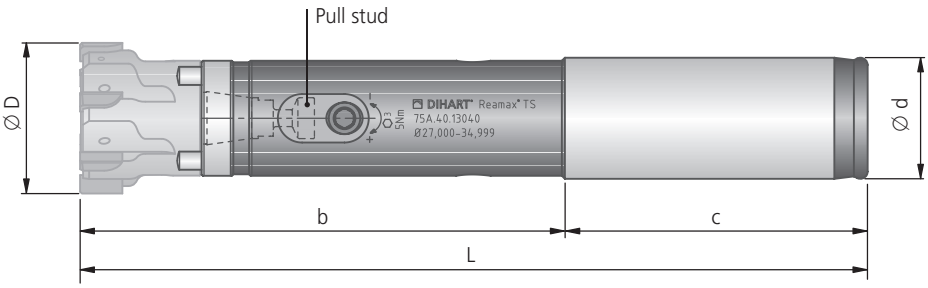
Order No.	Bore Diameter	Bore Tolerance	Material or ASG
75J.93	Ø 0.709 (Ø 18 mm)	+.0005/-0	Ductile iron ferritic

Patent applied for inside and outside Germany (Reamax®)

Ø 0.7087 – 2.5591 inch
(Ø 18.000 – 65.000 mm)

DIHART Reamax® TS
Holder with cylindrical shank similar to DIN 1835

with internal coolant supply ■



(..) = mm

	Short version						Long version					
Ø D	Order No.	L	b	c	Ø d	lbs	Order No.	L	b	c	Ø d	lbs
0.7087 – 0.7873 (18.000 - 19.999)	**75A.40.13010**	5.118 (130)	3.150 (80)	1.968 (50)	0.787 (20)	0.44	**75A.40.15010**	7.480 (190)	5.512 (140)	1.968 (50)	0.787 (20)	0.66
0.7874 – 0.8661 (20.000 - 21.999)	**75A.40.13020**	5.118 (130)	3.150 (80)	1.968 (50)	0.787 (20)	0.44	**75A.40.15020**	7.480 (190)	5.512 (140)	1.968 (50)	0.787 (20)	0.66
0.8662 – 1.0629 (22.000 - 26.999)	**75A.40.13030**	5.118 (130)	3.150 (80)	1.968 (50)	0.787 (20)	0.66	**75A.40.15030**	8.268 (210)	6.299 (160)	1.968 (50)	0.787 (20)	0.88
1.0630 – 1.2519 (27.000 - 31.799)	**75A.40.13040**	6.929 (176)	4.724 (120)	2.205 (56)	0.984 (25)	1.10	**75A.40.15040**	9.291 (236)	7.087 (180)	2.205 (56)	0.984 (25)	1.54
1.2520 – 1.3779 (31.800 - 34.999)												
1.3780 – 1.6535 (35.000 - 41.999)	**75A.40.13050**	6.929 (176)	4.724 (120)	2.205 (56)	0.984 (25)	1.32	**75A.40.15050**	10.079 (256)	7.874 (200)	2.205 (56)	0.984 (25)	2.20
1.6536 – 2.0472 (42.000 - 51.999)	**75A.40.13060**	7.087 (180)	4.724 (120)	2.362 (60)	1.260 (32)	1.98	**75A.40.15060**	11.024 (280)	8.661 (220)	2.362 (60)	1.260 (32)	3.31
2.0473 – 2.5591 (52.000 - 65.000)	**75A.40.13070**	7.087 (180)	4.724 (120)	2.362 (60)	1.260 (32)	2.20	**75A.40.15070**	11.024 (280)	8.661 (220)	2.362 (60)	1.260 (32)	4.41

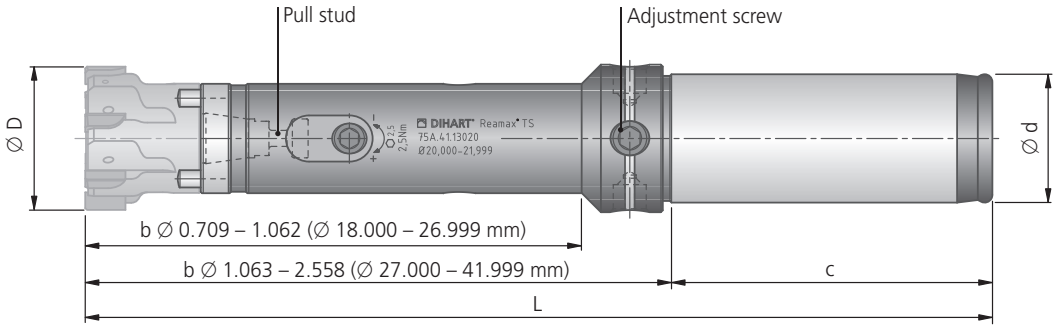
Includes: Reamax® TS holder complete with operating key, pull stud and open-end wrench (→ page 21).
Please order reaming head separately.

DIHART Reamax® TS

DAH® Zero Holder with cylindrical shank similar to DIN 1835

Ø 0.7087 – 1.6535 inch (Ø 18.000 – 41.999 mm)

- with internal coolant supply
- holder is set to a run-out of < 0.0002" (< 0.005 mm)



(..) = mm

	Short version						Long version					
Ø D	Order No.	L	b	c	Ø d	lbs	Order No.	L	b	c	Ø d	lbs
0.7087 – 0.7873 (18.000 - 19.999)	**75A.41.13010**	5.709 (145)	3.150 (80)	1.968 (50)	0.787 (20)	0.44	**75A.41.15010**	8.071 (205)	5.512 (140)	1.968 (50)	0.787 (20)	0.66
0.7874 – 0.8661 (20.000 - 21.999)	**75A.41.13020**	5.709 (145)	3.150 (80)	1.968 (50)	0.787 (20)	0.66	**75A.41.15020**	8.071 (205)	5.512 (140)	1.968 (50)	0.787 (20)	0.88
0.8662 – 1.0629 (22.000 - 26.999)	**75A.41.13030**	5.709 (145)	3.150 (80)	1.968 (50)	0.787 (20)	0.66	**75A.41.15030**	8.858 (225)	6.299 (160)	1.968 (50)	0.787 (20)	0.88
1.0630 – 1.3779 (27.000 - 34.999)	**75A.41.13040**	6.929 (176)	4.724 (120)	2.205 (56)	0.984 (25)	1.10	**75A.41.15040**	9.291 (236)	7.087 (180)	2.205 (56)	0.984 (25)	1.54
1.3780 – 1.6535 (35.000 - 41.999)	**75A.41.13050**	6.929 (176)	4.724 (120)	2.205 (56)	0.984 (25)	1.10	**75A.41.15050**	10.079 (256)	7.874 (200)	2.205 (56)	0.984 (25)	2.31

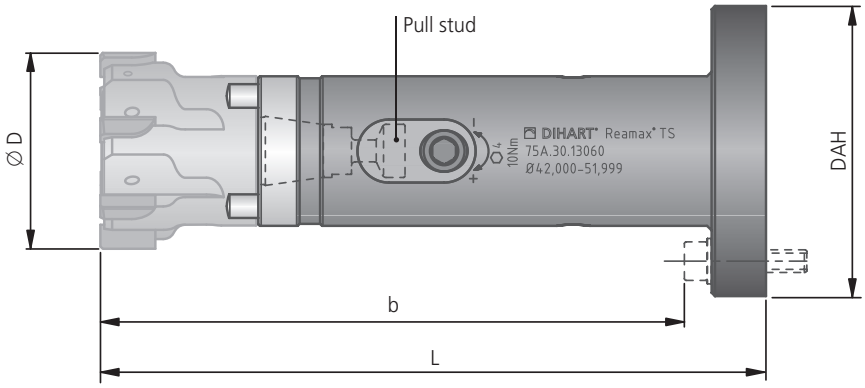
Includes: DAH® Zero holder complete with operating key, pull stud and open-end wrench (→ page 21).
Please order reaming head separately.

Patent applied (DAH® Zero)

Ø 1.6536 – 2.5591 inch
(Ø 42.000 – 65.000 mm)

DIHART Reamax® TS
Holder with DAH® Connection

with internal coolant supply ■



(..) = mm

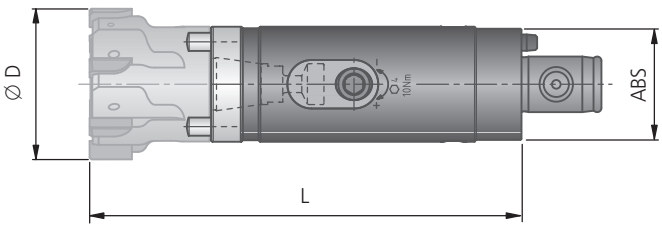
	Short version					Long version				
Ø D	Order No.	L	b	DAH	lbs	Order No.	L	b	DAH	lbs
1.6536 – 2.0472 (42.000 - 51.999)	**75A.30.13060**	5.433 (138)	4.724 (120)	81	1.98	**75A.30.15060**	9.370 (238)	8.661 (220)	81	3.31
2.0473 – 2.5591 (52.000 - 65.000)	**75A.30.13070**	5.433 (138)	4.724 (120)	81	2.20	**75A.30.15070**	9.370 (238)	8.661 (220)	81	4.41

Includes: Reamax® TS holder with operating key, pull stud and open-end wrench (→ page 21).
Please order reaming head separately. DAH® compensation holder see chapter 9.

Ø 1.3780 – 2.5591 inch
(Ø 35.000 – 65.000 mm)

Holder with ABS® Connection

with internal coolant supply ■



(..) = mm

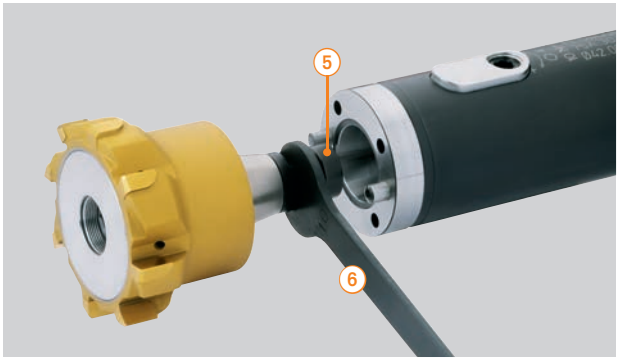
Dimensions				
Ø D	Order No.	L	ABS	lbs
1.3780 – 1.6535 (35.000 - 41.999)	**75A.60.13050**	4.331 (110)	32	0.92
1.6536 – 2.0472 (42.000 - 51.999)	**75A.60.13060**	4.527 (115)	32	1.17
2.0473 – 2.5591 (52.000 - 65.000)	**75A.60.13070**	4.921 (125)	40	1.83

Includes: Reamax® TS holder with operating key, pull stud and open-end wrench (→ page 21).
Please order reaming head separately.

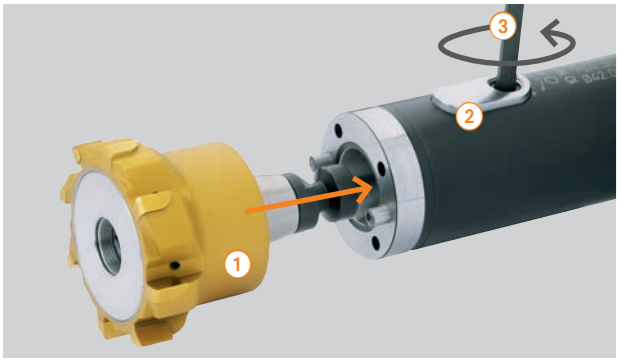
Patent applied for inside and outside Germany (Reamax®)

DIHART Reamax® TS

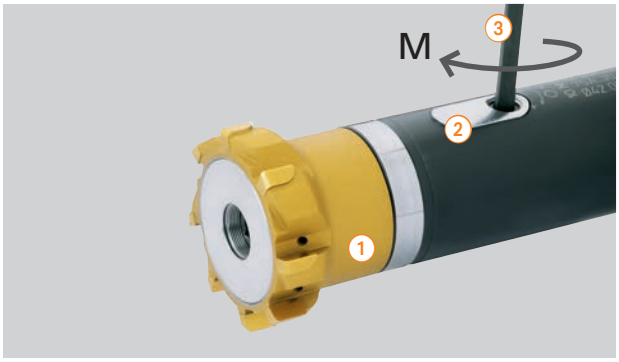
Assembly instructions



Clean taper/face contact thoroughly (grease and debris free).
Screw pull stud ⑤ into reaming head and tighten with open-end wrench ⑥.

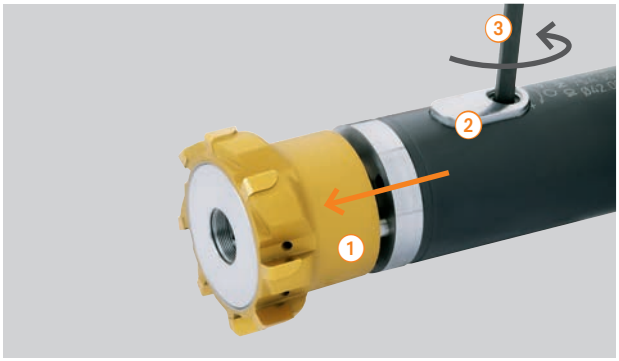


Open clamping jaws ② with key ③.
Insert reaming head ①.

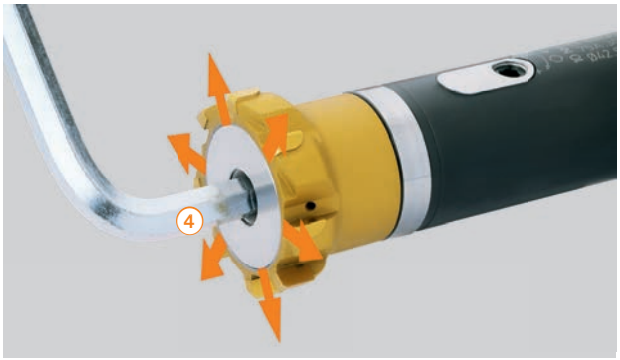


Close clamping jaws ② with key ③, noting recommended torque. When inserting the reaming head ① this is drawn into its final position by the clamping jaws ②.

Dia. range	Torque M
0.7087 – 0.7873 (18.000 - 19.999)	13 in-lbs (1.5 Nm)
0.7874 – 0.8661 (20.000 - 21.999)	22 in-lbs (2.5 Nm)
0.8662 – 1.0629 (22.000 - 26.999)	35 in-lbs (4 Nm)
1.0630 - 1.3779 (27.000 - 34.999)	44 in-lbs (5 Nm)
1.3780 - 1.6535 (35.000 - 41.999)	53 in-lbs (6 Nm)
1.6535 - 2.0472 (42.000 - 51.999)	88 in-lbs (10 Nm)
2.0473 - 2.5591 (52.000 - 65.000)	111 in-lbs (13 Nm)



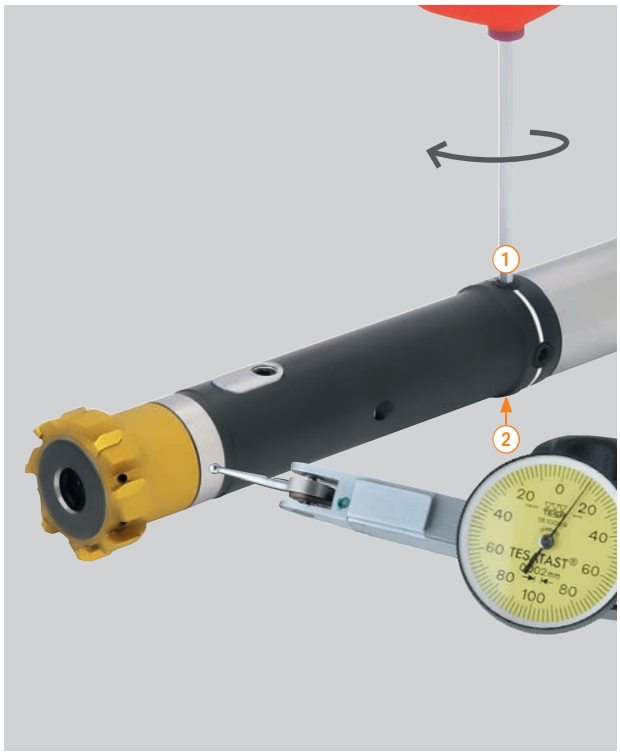
When removing, the reaming head ① is pressed out of its position by the clamping jaws ② which allows it to be easily removed from the holder: open the clamping jaws ② with the key ③, remove the reaming head ①.



Adjusting to compensate for wear

The bore tolerances as small as IT4 can be achieved by adjusting with the hexagonal key ④.
Hexogonal wrench not included with Reamax® TS heads or holders.

Patent applied for inside and outside Germany (Reamax®)



Adjusting:

- Set the indicator dial by adjusting the bezel position.
- Locate the highest run-out point on the dial by rotating the tool.
- Turn the adjustment screw clockwise using an Allen key ①, correcting the run-out.
  Over-tension by approx. 5 µm.
- Engage the opposite adjustment screws ② and drive back the tool by the specified over-tension value.
- Engage the two other adjustment screws.
- Align all 4 adjustment screws until concentricity is < 2 µm.

Please note:

- Only unscrew the adjustment screws by a max of ½ to 1 rotation.
- Never use the holder without the reamer head clamped and then only when the adjustment screws are tightened.
- In order to properly set this tool, an indicator with 0.002mm or 0.0001" discrimination is required.
- Indicate the tool when mounted in the machine spindle.

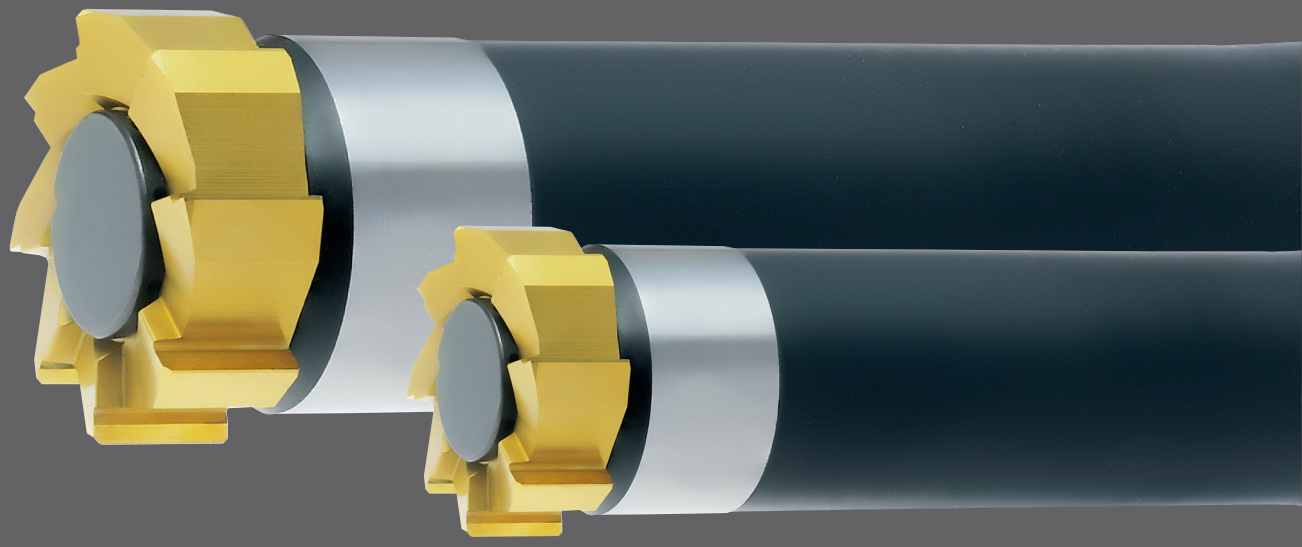
Replacement parts / Accessories

(..) = mm

	③				④	⑤	⑥	
	Operating key				Hexagonal key*	Pull studs	Open-end wrench for pull studs	
Ø D	Size	Order No.	L	Torque M	Size	Order No.	Size	Order No.
0.7087 – 0.7873 (18.000 - 19.999)	8IP	**L05 01240**		13.3 in-lbs (1.5 Nm)	SW 4	**15E.30.10010**	SW 5	**18589 10005**
0.7874 – 0.8661 (20.000 - 21.999)	SW 2.5	**18050 10025**	100	22.1 in-lbs (2.5 Nm)	SW 5	**15E.30.10020**	SW 5	**18589 10005**
0.8662 – 1.0629 (22.000 - 26.999)	SW 3	**18050 10030**	100	35.4 in-lbs (4 Nm)	SW 5	**15E.30.10030**	SW 6	**18589 10006**
1.0630 - 1.3779 (27.000 - 34.999)	SW 3	**18050 10030**	100	44.3 in-lbs (5 Nm)	SW 8	**15E.30.10040**	SW 8	**18589 10008**
1.3780 - 1.6535 (35.000 - 41.999)	SW 3	**18050 10030**	100	53.1 in-lbs (6 Nm)	SW 6	**15E.30.10050**	SW 10	**18589 10010**
1.6535 - 2.0472 (42.000 - 51.999)	SW 4	**18050 10040**	100	88.5 in-lbs (10 Nm)	SW 8	**15E.30.10050**	SW 10	**18589 10010**
2.0473 - 2.5590 (52.000 - 64.999)	SW 5	**18050 10050**	100	115 in-lbs (13 Nm)	SW 10	**15E.30.10070**	SW 13	**18589 10013**

* not included with Reamax® TS heads or holders.

DIHART Reamax®



The new dimension in high performance reaming

More performance. More flexibility.
DIHART's high-speed reaming series, Reamax®, provides maximum cutting performance through multiple cutting edges and offers all the advantages of replaceable cutting inserts in one system.

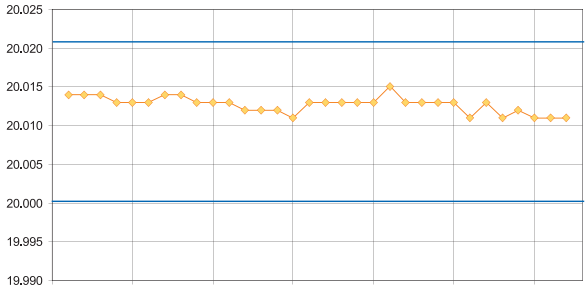
- Maximum efficiency and complete process capability
- High rigidity during maximum cutting speed
- No size setting when blades are replaced
- Maximum flexibility for combining cutting materials and coatings along with diameters and geometry of the replaceable inserts are available and can be chosen for each specific application
- Made to order, short delivery time
- Precise repeatability and replacement accuracy
- Designed for inner coolant supply and minimal quantity lubrication (MQL)

Reaming tools

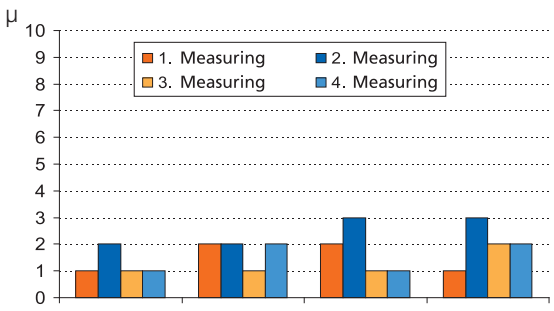
The modular reaming tool consists of a tool holder with cylindrical shaft and the Reamax® replaceable insert. A high precision short taper ensures the connection between the replaceable insert and the holder. Precise repeatability from head to head allows for minimal tool change time.

Maximum process efficiency and accurate repeatability

Result in steel with
DIHART Reamax® -replaceable insert



Replacement accuracy of the
DIHART Reamax® -connection



BENEFITS for you:

- Precision ground modular system for guaranteed consistency
- Maximum stability for the most demanding machining tasks
- Extremely high repeatability through a tapered flat bearing face
- Extremely high machining performance for the maximum efficiency
- Minimum quantity lubrication (MQL) optimised for environmentally friendly use

Simple possible replacement

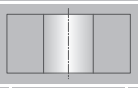
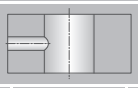
The DIHART Reamax® replaceable insert is fixed on to the tool holder with a tie-rod and a clamping nut. There is no need for time and cost intensive setting to the final size as the inserts are manufactured specifically for each application to the exact diameter and tolerance. DIHART Reamax® offers replacement time with no idle time.

Application:

- All current materials
- Through and blind holes
- 3 × D and 5 × D
- High speed – up to 985 ft/min (300 m/min)
- Feed – up to 0.094 in/rev (2.4 mm/rev)

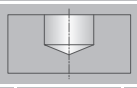
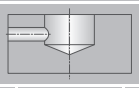
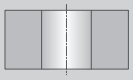
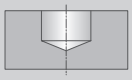
DIHART Reamax®

Tool Recommendation

Material group		Strength Rm (lbf/ins²)	Hardness HB	Material	Material example ANSI / SAE	High-speed machining						
												
						Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material/ coating	
P	1.0	≤ 72,500		non-alloy steels	1010 1144 1213	640.93	ASG09	DST	640.71	ASG09	TiN	
	2.0	72,500 - 130,000		non-alloy / low alloy steels	1055 5115 5120	640.93	ASG09	DST	640.71	ASG09	TiN	
	2.1	< 72,500		lead alloys	12L14	640.93	ASG09	DST	640.71	ASG09	TiN	
	3.0	> 130,000		non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1064 4140	640.93	ASG09	DST	640.71	ASG07	TiN	
	4.0	> 130,000		high alloy steels	H13 H21	640.71	ASG0106	TiN	640.71	ASG0106	TiN	
	4.1			HSS	M10 T4							
S	5.0		250	special alloys: Inconel, Hastelloy, Nimonic, stc.	Inconel® 718 Nimonic® 80A							
	5.1	58,000		titanium, titanium alloys	Ti-6Al-4V							
M	6.0	≤ 87,000		stainless steels	304L 316	640.71	ASG0106	TiN	640.71	ASG0106	TiN	
	6.1	<130,000		stainless steels	630	640.71	ASG0106	TiN	640.71	ASG0106	TiN	
	7.0	>130,000		stainless / fireproof steels	403 420	640.71	ASG0106	TiN	640.71	ASG0106	TiN	
K	8.0		180	gray cast iron	Class 25 G3000	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	
	8.1		250	alloy gray cast iron	A436 Type 2	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	
	9.0	≤ 87,000	130	ductile cast iron, ferritic	60-40-18 D4512	640.93	ASG07	DST	640.37	ASG07	DBG-N	
	9.1		230	ductile cast iron, ferritic / perlitic	80-55-06 D5506	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	
	10.0	> 87,000	250	spheroidal graphite cast iron, perlitic malleable iron	100-70-03 07003	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	
	10.1		200	alloyed spheroidal graphite cast iron	A43D2	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	
	10.2		300	vermicular cast iron		640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	
N	12.0		90	copper alloy, brass, lead-alloy bronze, lead bronze: good cut	316	640.93	ASG07	DST	640.71	ASG07	TiN	
	12.1		100	copper alloy, brass, bronze:average cut		640.71	ASG07	TiN	640.71	ASG07	TiN	
	13.0		60	wrought aluminum alloys	6151 7075							
	13.1		75	cast aluminum alloy: Si-content <10% magnesium alloy	380 A356.0							
	14.0		100	cast aluminum alloy: Si-content > 10%	383 A413.0							
H	15.0	203,000		hardened steels < 45 HRC		640.37	ASG0106	DBG-N				
	16.0	261,000		hardened steels > 45 HRC, ≤ 55 HRC		640.37	ASG0106	DBG-N				

For inquiries concerning tools for materials without a recommendation, please contact us.

Patent applied for inside and outside Germany (Reamax®)

	High-speed machining						Conventional machining					
												
	Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material	Order No.	Cutting geometry (ASG)	Cutting material
	640.93	ASG07	DST	640.71	ASG07	TiN	640.21	ASG07	HM	640.21	ASG07	HM
	640.93	ASG07	DST	640.71	ASG07	TiN	640.21	ASG02	HM	640.21	ASG02	HM
	640.93	ASG07	DST	640.71	ASG07	TiN	640.21	ASG07	HM	640.21	ASG07	HM
	640.93	ASG07	DST	640.71	ASG07	TiN	640.21	ASG07	HM	640.21	ASG07	HM
	640.71	ASG0106	TiN	640.71	ASG0106	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
							640.21	ASG03	HM	640.21	ASG03	HM
	640.71	ASG0106	TiN	640.71	ASG0106	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
	640.71	ASG0106	TiN	640.71	ASG0106	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
	640.71	ASG0106	TiN	640.71	ASG0106	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.93	ASG07	DST	640.37	ASG07	DBG-N	640.21	ASG02	HM	640.21	ASG02	HM
	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.37	ASG07	DBG-N	640.37	ASG07	DBG-N	640.21	ASG07	HM	640.21	ASG07	HM
	640.93	ASG07	DST	640.71	ASG07	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
	640.71	ASG07	TiN	640.71	ASG07	TiN	640.21	ASG0106	HM	640.21	ASG0106	HM
							640.21	ASG02	HM	640.21	ASG02	HM
							640.21	ASG07	HM	640.21	ASG07	HM
							640.21	ASG07	HM	640.21	ASG07	HM
	640.37	ASG0106	DBG-N									
	640.37	ASG0106	DBG-N									

Cutting speed and feed see pages 102-103

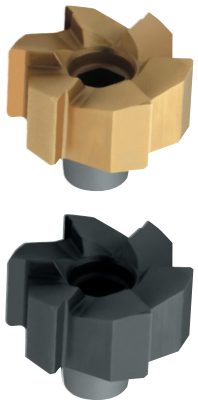
Important: See chapter ⓘ for more application details and safety notes !

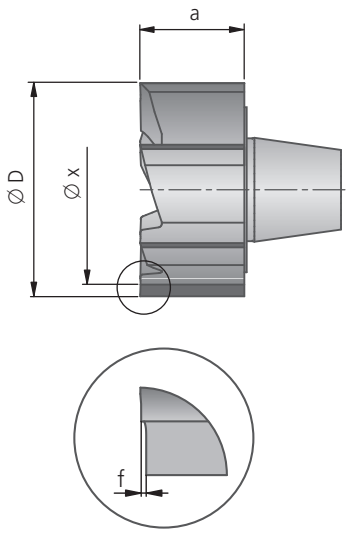
DIHART Reamax®

Replaceable Heads

Ø 0.4724 – 1.5748 inch
(Ø 12.000 – 40.000 mm)

■ for through and blind hole machining
Please note: do not use Ø 0.472 – 0.492" (Ø12.000 - 12.500mm) for blind hole machining





Reamax®	
Cutting material / coating	Order No.
HM	640.21
TiN	640.71
DBG-N	640.37
DST	640.93
DJC	640.67

(..) = mm

Dimensions				
Ø D	min. diameter for front cutting Ø x ~	a ~	f ~	No. of teeth
0.4724 – 0.6299 (12.000 – 15.999)	Ø D – 0.098 (Ø D – 2.5)	0.354 (9.0)	0.020 (0.5)	6
0.6300 – 0.8660 (16.000 – 21.999)	Ø D – 0.118 (Ø D – 3.0)	0.354 (9.0)	0.020 (0.5)	6
0.8661 – 1.0235 (22.000 – 25.999)	Ø D – 0.118 (Ø D – 3.0)	0.354 (9.0)	0.020 (0.5)	8
1.0236– 1.2598 (26.000 – 32.000)	Ø D – 0.157 (Ø D – 4.0)	0.354 (9.0)	0.020 (0.5)	8
1.2599 – 1.5748 (32.001 – 40.000)	Ø D – 0.157 (Ø D – 4.0)	0.354 (9.0)	0.020 (0.5)	8

Preferred range available from stock. See page 92-95.

Order example:

Order No.	Bore diameter	Bore tolerance	Material or ASG
640.93	Ø 0.787" (Ø 20 mm)	+.0005/-0	Ductile iron ferritic

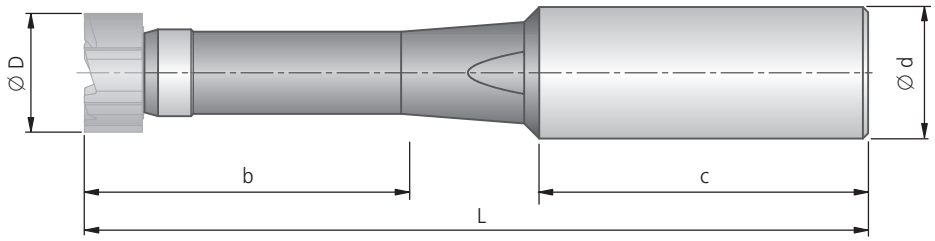
Patent applied for inside and outside Germany (Reamax®)

Ø 0.4724 – 1.5748 inch (Ø 12.000 – 40.000 mm)

DIHART Reamax®

Holder with cylindrical shank similar to DIN 1835

with internal coolant supply ■
not suitable for shrink fit ■



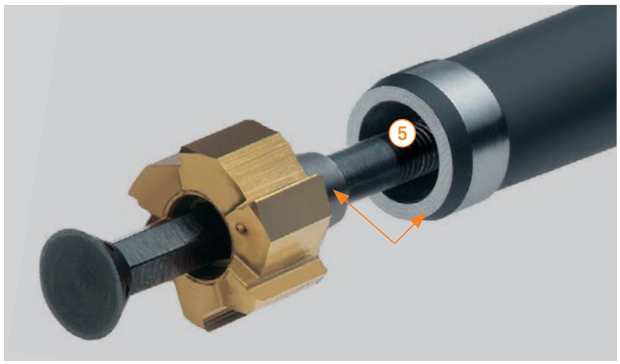
(..) = mm

for Ø D	Short version						Long version					
	Order No.	L	b	c	Ø d	lbs	Order No.	L	b	c	Ø d	lbs
0.4724 – 0.6299 (12.000 – 15.999)	**640.01.001**	4.213 (107)	1.890 (48)	1.890 (48)	0.630 (16)	0.24	**640.81.001**	5.394 (137)	2.953 (75)	1.890 (48)	0.630 (16)	0.29
0.6300 – 0.8660 (16.000 – 21.999)	**640.01.002**	4.685 (119)	2.520 (64)	1.969 (50)	0.787 (20)	0.40	**640.81.002**	6.653 (169)	4.370 (111)	1.968 (50)	0.787 (20)	0.51
0.8661 – 1.0235 (22.000 – 25.999)	**640.01.003**	5.512 (140)	3.071 (78)	2.205 (56)	0.984 (25)	0.75	**640.81.003**	7.746 (196)	5.157 (131)	2.205 (56)	0.984 (25)	0.97
1.0236 – 1.2598 (26.000 – 32.000)	**640.01.005**	6.299 (160)	4.094 (104)	2.205 (56)	0.984 (25)	1.01	**640.81.005**	8.898 (226)	6.693 (170)	2.205 (56)	0.984 (25)	1.43
1.2599 – 1.5748 (32.001 – 40.000)	**640.01.006**	7.835 (199)	5.472 (139)	2.362 (60)	1.260 (32)	1.90	**640.81.006**	10.630 (270)	8.268 (210)	2.362 (60)	1.260 (32)	2.49

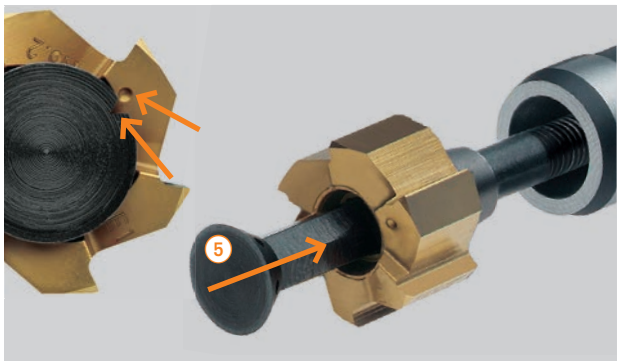
Includes: Reamax® holder complete with operating key, open-end wrench, tie rod, seal disc and clamping nut (page 29).
Please order replaceable head separately.

DIHART Reamax®

Assembly instructions



Clean taper/face contact thoroughly (grease and debris free).
Apply light grease on tie bar thread ⑤.

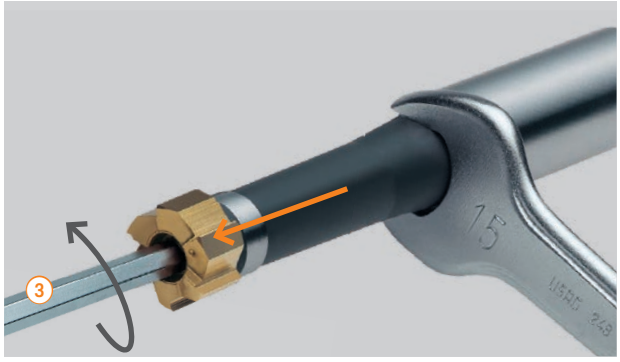


Locate tie bar ⑤ on insert and holder.
Important note: for taper size 3, 4 and 5, fit with marking on tie bar and insert aligned.

Draw in tie bar with the clamping nut. Before tightening, turn insert and tie bar clockwise until it stops.
Tighten the clamping nut as far as possible using the torque key to the recommended torque M.

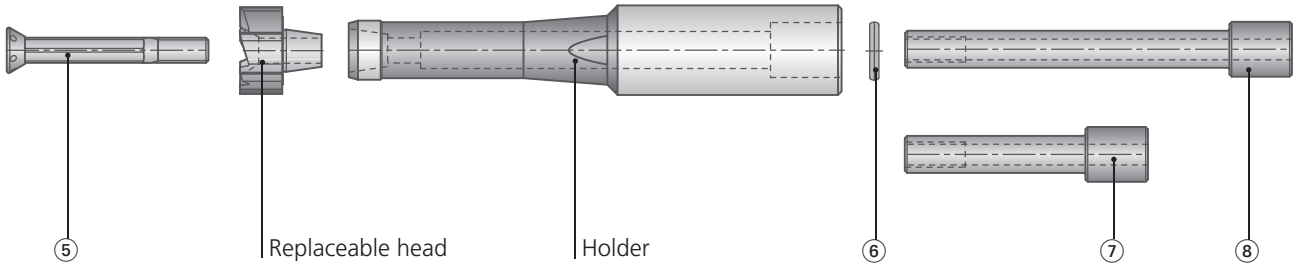
Dia Range	Torque M
0.4724 – 0.6299 (12.000 – 15.999)	35 - 44 in-lbs (4-5 Nm)
0.6300 – 0.8660 (16.000 – 21.999)	53 - 62 in-lbs (6-7 Nm)
0.8661 – 1.0235 (22.000 – 25.999)	88 -106 in-lbs (10-12 Nm)
1.0236– 1.2598 (26.000 – 32.000)	159 - 177 in-lbs (18-20 Nm)
1.2599 – 1.5748 (32.001 – 40.000)	230 - 248 in-lbs (26-28 Nm)

Removing the replaceable head:
Loosen the clamping screw.
Pull tie bar from holder and head.



Locate operating key ③ in head and loosen insert by turning.

Patent applied for inside and outside Germany (Reamax®)

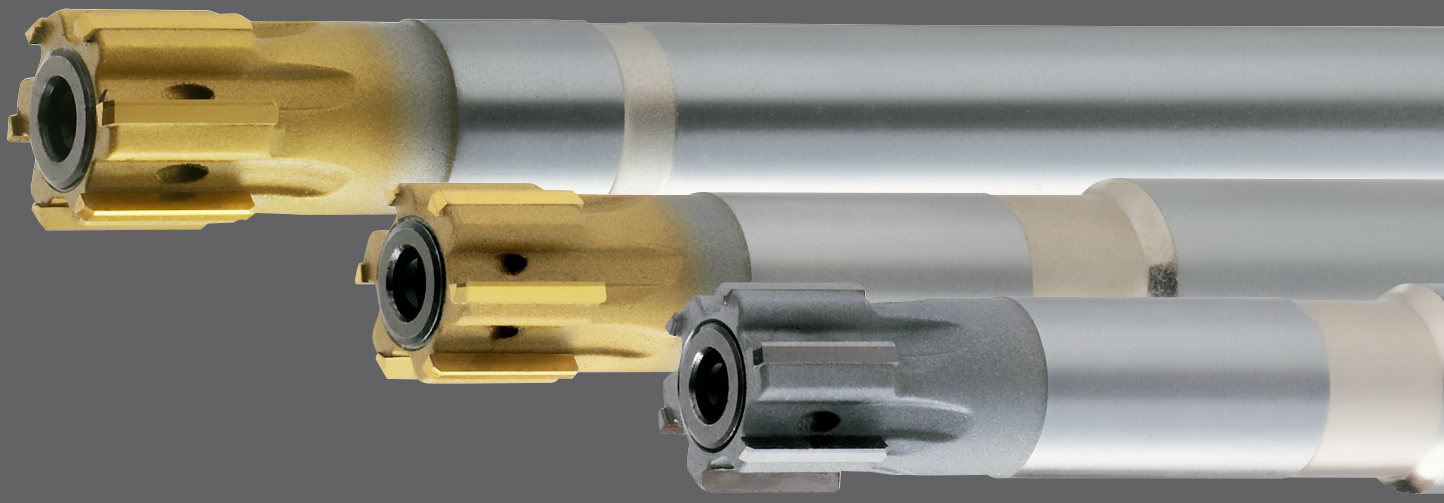


(..) = mm

	③					④	
	Operating key					Open-end wrench	
Ø D	Size	Order No. short version	L	Order No. long version	L	Size	Order No.
0.4724 – 0.6299 (12.000 – 15.999)	SW 4	18050 10040	100	18050 20040	200	SW 12	18589 00012
0.6300 – 0.8660 (16.000 – 21.999)	SW 5	18050 10050	100	18050 10055	350	SW 14	18589 00014
0.8661 – 1.0235 (22.000 – 25.999)	SW 7	18050 10070	100	18050 35070	350	SW 19	18589 00019
1.0236– 1.2598 (26.000 – 32.000)	SW 8	18050 10080	100	18050 35080	350	SW 22	18589 00022
1.2599 – 1.5748 (32.001 – 40.000)	SW 10	18050 20100	200	18050 35100	350	SW 27	18589 00027

	⑤	⑥	⑦	⑧
	Tie-rod	Seal disc DIN 472	Clamping nut short version	Clamping nut long version
for Ø D	Order No.	Order No.	Order No.	Order No.
0.4724 – 0.6299 (12.000 – 15.999)	640.03.001	55232 01010	640.04.001	640.84.001
0.6300 – 0.8660 (16.000 – 21.999)	640.03.002	55232 01210	640.04.002	640.84.002
0.8661 – 1.0235 (22.000 – 25.999)	640.03.003	55232 01610	640.04.003	640.84.003
1.0236– 1.2598 (26.000 – 32.000)	640.03.004	55232 01610	640.04.005	640.84.005
1.2599 – 1.5748 (32.001 – 40.000)	640.03.005	55232 02210	640.04.006	640.84.006

DIHART Monomax® – Expandable



DIHART Monomax®

One-piece tools – known as monobloc tools – are one of DIHART's specialities. The demands which have been made over decades are reflected in an enormous number of types and variations. This successful tool program has been completely revised with many of standards available through efficient manufacturing.

BENEFITS for you:

- Designed for small hole diameters
- Wear compensation for extremely small hole tolerances
- Extremely durable due to one piece construction
- Precision ground to size

Application:

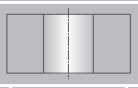
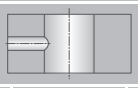
- Non-alloy and low alloy steels
- Stainless, heat resistant and high alloy steels
- Grey cast iron and spheroidal graphite cast iron
- Copper alloys, brass and bronze
- Aluminum
- Titanium, titanium alloys, CGI and plastic on request

Versions:

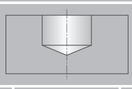
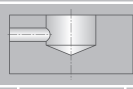
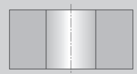
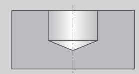
- Short and long versions
- Through and blind hole coolant outlets available
- Uncoated and coated carbide or DST
- Diameter range 0.2205 – 1.5980 inch (5.600 – 40.590 mm)

DIHART Monomax® – Expandable

Tool Recommendation

Material group		Strength Rm (lbf/ins²)	Hardness HB	Material	Material example ANSI / SAE	High-speed machining						
												
						Order No. long *short*	Cutting geometry (ASG)	Cutting material/ coating	Order No. long *short*	Cutting geometry (ASG)	Cutting material/ coating	
P	1.0	≤ 72,500		non-alloy steels	1010 1144 1213	56J.93 *56R.93*	ASG09	DST	56J.71 *56R.71*	ASG09	TiN	
P	2.0	72,500 - 130,000		non-alloy / low alloy steels	1055 5115 5120	56J.93 *56R.93*	ASG09	DST	56J.71 *56R.71*	ASG09	TiN	
P	2.1	< 72,500		lead alloys	12L14	56J.93 *56R.93*	ASG09	DST	56J.71 *56R.71*	ASG09	TiN	
P	3.0	> 130,000		non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1064 4140	56J.93 *56R.93*	ASG09	DST	56J.71 *56R.71*	ASG07	TiN	
P	4.0	> 130,000		high alloy steels	H13 H21	56J.71 *56R.71*	ASG0106	TiN	56J.71 *56R.71*	ASG0106	TiN	
P	4.1			HSS	M10 T4							
S	5.0		250	special alloys: Inconel, Hastelloy, Nimonic, stc.	Inconel® 718 Nimonic® 80A							
S	5.1	58,000		titanium, titanium alloys	Ti-6Al-4V							
M	6.0	≤ 87,000		stainless steels	304L 316	56J.71 *56R.71*	ASG0106	TiN	56J.71 *56R.71*	ASG0106	TiN	
M	6.1	<130,000		stainless steels	630	56J.71 *56R.71*	ASG0106	TiN	56J.71 *56R.71*	ASG0106	TiN	
M	7.0	>130,000		stainless / fireproof steels	403 420	56J.71 *56R.71*	ASG0106	TiN	56J.71 *56R.71*	ASG0106	TiN	
K	8.0		180	gray cast iron	Class 25 G3000	56J.37 *56R.37*	ASG07	DBG-N	56J.37 *56R.37*	ASG07	DBG-N	
K	8.1		250	alloy gray cast iron	A436 Type 2	56J.37 *56R.37*	ASG07	DBG-N	56J.37 *56R.37*	ASG07	DBG-N	
K	9.0	≤ 87,000	130	ductile cast iron, ferritic	60-40-18 D4512	56J.93 *56R.93*	ASG07	DST	56J.37 *56R.37*	ASG07	DBG-N	
K	9.1		230	ductile cast iron, ferritic / perlitic	80-55-06 D5506	56J.37 *56R.37*	ASG07	DBG-N	56J.37 *56R.37*	ASG07	DBG-N	
K	10.0	> 87,000	250	spheroidal graphite cast iron, perlitic malleable iron	100-70-03 07003	56J.37 *56R.37*	ASG07	DBG-N	56J.37 *56R.37*	ASG07	DBG-N	
K	10.1		200	alloyed spheroidal graphite cast iron	A43D2	56J.37 *56R.37*	ASG07	DBG-N	56J.37 *56R.37*	ASG07	DBG-N	
K	10.2		300	vermicular cast iron		56J.37 *56R.37*	ASG07	DBG-N	56J.37 *56R.37*	ASG07	DBG-N	
N	12.0		90	copper alloy, brass, lead-alloy bronze, lead bronze: good cut	316	56J.93 *56R.93*	ASG07	DST	56J.71 *56R.71*	ASG07	TiN	
N	12.1		100	copper alloy, brass, bronze:average cut		56J.71 *56R.71*	ASG07	TiN	56J.71 *56R.71*	ASG07	TiN	
N	13.0		60	wrought aluminum alloys	6151 7075							
N	13.1		75	cast aluminum alloy: Si-content <10% magnesium alloy	380 A356.0							
N	14.0		100	cast aluminum alloy: Si-content > 10%	383 A413.0							
H	15.0	203,000		hardened steels < 45 HRC		56J.37 *56R.37*	ASG0106	DBG-N				
H	16.0	261,000		hardened steels > 45 HRC, ≤ 55 HRC		56J.37 *56R.37*	ASG0106	DBG-N				

For inquiries concerning tools for materials without a recommendation, please contact us.

	High-speed machining						Conventional machining					
												
	Order No. long *short*	Cutting geometry (ASG)	Cutting material/ coating	Order No. long *short*	Cutting geometry (ASG)	Cutting material/ coating	Order No. long *short*	Cutting geometry (ASG)	Cutting material	Order No. long *short*	Cutting geometry (ASG)	Cutting material
	56H.93 *56Q.93*	ASG07	DST	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.93 *56Q.93*	ASG07	DST	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG02	HM	56H.21 *56Q.21*	ASG02	HM
	56H.93 *56Q.93*	ASG07	DST	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.93 *56Q.93*	ASG07	DST	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.71 *56Q.71*	ASG0106	TiN	56H.71 *56Q.71*	ASG0106	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
							56J.21 *56R.21*	ASG03	HM	56H.21 *56Q.21*	ASG03	HM
	56H.71 *56Q.71*	ASG0106	TiN	56H.71 *56Q.71*	ASG0106	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
	56H.71 *56Q.71*	ASG0106	TiN	56H.71 *56Q.71*	ASG0106	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
	56H.71 *56Q.71*	ASG0106	TiN	56H.71 *56Q.71*	ASG0106	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
	56H.37 *56Q.37*	ASG07	DBG-N	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.37 *56Q.37*	ASG07	DBG-N	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.93 *56Q.93*	ASG07	DST	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG02	HM	56H.21 *56Q.21*	ASG02	HM
	56H.37 *56Q.37*	ASG07	DBG-N	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.37 *56Q.37*	ASG07	DBG-N	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.37 *56Q.37*	ASG07	DBG-N	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.37 *56Q.37*	ASG07	DBG-N	56H.37 *56Q.37*	ASG07	DBG-N	56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.93 *56Q.93*	ASG07	DST	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
	56H.71 *56Q.71*	ASG07	TiN	56H.71 *56Q.71*	ASG07	TiN	56J.21 *56R.21*	ASG0106	HM	56H.21 *56Q.21*	ASG0106	HM
							56J.21 *56R.21*	ASG02	HM	56H.21 *56Q.21*	ASG02	HM
							56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
							56J.21 *56R.21*	ASG07	HM	56H.21 *56Q.21*	ASG07	HM
	56H.37 *56Q.37*	ASG0106	DBG-N									
	56H.37 *56Q.37*	ASG0106	DBG-N									

Cutting speed and feed see pages 102-103

Important: See chapter ⓘ for more application details and safety notes!

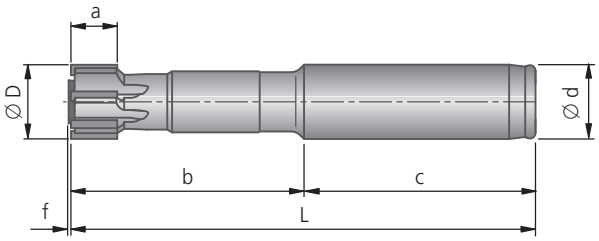
1 2 3 4 5 6 7 8 9

DIHART Monomax® – Expandable

Short version with cylindrical shank similar to DIN 1835

Ø 0.2205 – 1.5980 inch
(Ø 5.600 – 40.599 mm)

- with internal coolant supply
- coolant supply available for blind or through hole applications



Inch shank

Monomax® – Expandable		
Cutting material / coating	Order No.	Order No.
HM	55J.21	55H.21
TiN	55J.71	55H.71
DBG-N	55J.37	55H.37
DST	55J.93	55H.93
DJC	55J.67	55H.67

(..) = mm

Dimensions							
Ø D	Cylindrical shank Ø d × c inch	L inch	b inch	f ~inch	a ~inch	No. of teeth	lbs
0.2205 – 0.3500 (5.600 – 8.899)	0.500 × 1.772	3.346	1.575	0.004	0.374	4	
0.3501 – 0.6256 (8.900 – 15.899)	0.500 × 1.772	3.740	1.969	0.004	0.374	6	
0.6257 – 0.7437 (15.900 – 18.899)	0.625 × 1.969	3.937	1.969	0.004	0.374	6	
0.7438 – 1.0193 (18.900 – 25.899)	0.750 × 2.362	4.724	2.362	0.004	0.374	6	
1.0194 – 1.2831 (25.900 – 32.599)	1.000 × 2.362	5.315	2.953	0.004	0.374	6	
1.2832 – 1.5980 (32.600 – 40.599)	1.000 × 2.362	5.315	2.953	0.004	0.551	8	

Notes: Inch reamers can be used for metric bore applications. Preferred range available from stock, see page 94-95.

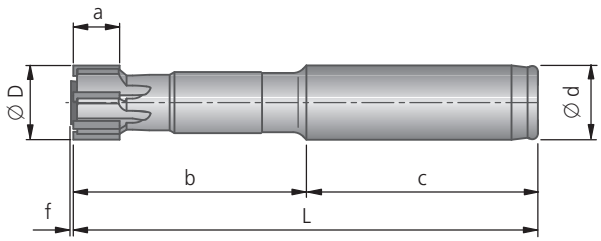
Order example:

Order No.	Bore diameter	Bore tolerance	Material or ASG
55J.93	Ø 0.472" (Ø 12 mm)	+.0005/-0	Ductile iron ferritic

Ø 5.600 – 40.599 mm (Ø 0.2205 – 1.5980 inch)

DIHART Monomax® – Expandable
Short version with cylindrical shank similar to DIN 1835

with internal coolant supply ■
coolant supply available for blind or through hole applications ■



Metric shank

Monomax® – Expandable		
Cutting material / coating	Order No.	Order No.
HM	56J.21	56H.21
TiN	56J.71	56H.71
DBG-N	56J.37	56H.37
DST	56J.93	56H.93
DJC	56J.67	56H.67

(..) = inch

Dimensions							
Ø D	Cylindrical shank Ø d × c mm	L mm	b mm	f ~mm	a ~mm	No. of teeth	lbs
5.600 – 8.899 (0.2205 – 0.3500)	12 × 45	85	40	0.1	9.5	4	
8.900 – 15.899 (0.3501 – 0.6256)	12 × 45	95	50	0.1	9.5	6	
15.900 – 18.899 (0.6257 – 0.7437)	16 × 50	100	50	0.1	9.5	6	
18.900 – 25.899 (0.7438 – 1.0193)	20 × 60	120	60	0.1	9.5	6	
25.900 – 32.599 (1.0194 – 1.2831)	25 × 60	135	75	0.1	9.5	6	
32.600 – 40.599 (1.2832 – 1.5980)	25 × 60	135	75	0.1	14.0	8	

Notes: Metric reamers can be used for inch bore applications. Preferred range available from stock, see page 94-95.

Order example:

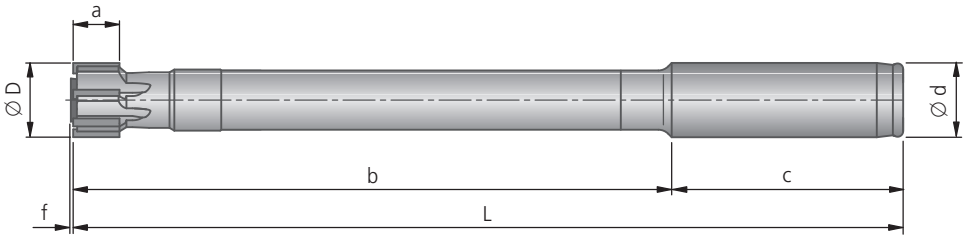
Order No.	Bore diameter	Bore tolerance	Material or ASG
56J.93	Ø 12 mm (Ø 0.472")	+0.013/-0	Ductile iron ferritic

DIHART Monomax® – Expandable

Long version with cylindrical shank similar to DIN 1835

Ø 0.2205 – 1.5980 inch (9.600 – 40.599 mm)

- with internal coolant supply
- coolant supply available for blind or through hole applications



Inch shank

Monomax® – Expandable		
Cutting material / coating	Order No.	Order No.
HM	55R.21	55Q.21
TiN	55R.71	55Q.71
DBG-N	55R.37	55Q.37
DST	55R.93	55Q.93
DJC	55R.67	55Q.67

(..) = mm

Dimensions							
Ø D	Cylindrical shank Ø d × c inch	L inch	b inch	f ~inch	a ~inch	No. of teeth	lbs
0.2205 – 0.3500 (5.600 – 8.899)	0.500 × 1.772	5.118	3.346	0.004	0.374	4	
0.3501 – 0.3897 (8.900 – 9.899)	0.500 × 1.772	5.118	3.346	0.004	0.374	6	
0.3898 – 0.6257 (9.900 – 15.899)	0.500 × 1.772	5.299	4.528	0.004	0.374	6	
0.6258 – 0.7438 (15.900 – 18.899	0.625 × 1.969	7.087	5.118	0.004	0.374	6	
0.7439 – 1.0193 (18.900 – 25.899)	0.750 × 2.362	7.874	5.512	0.004	0.374	6	
1.0194 – 1.2831 (25.900 – 32.599)	1.000 × 2.362	8.268	5.906	0.004	0.374	6	
1.2832 – 1.5980 (32.600 – 40.599)	1.000 × 2.362	8.268	5.906	0.004	0.551	8	

Notes: Inch reamers can be used for metric bore applications. Preferred range available from stock, see page 94-95.

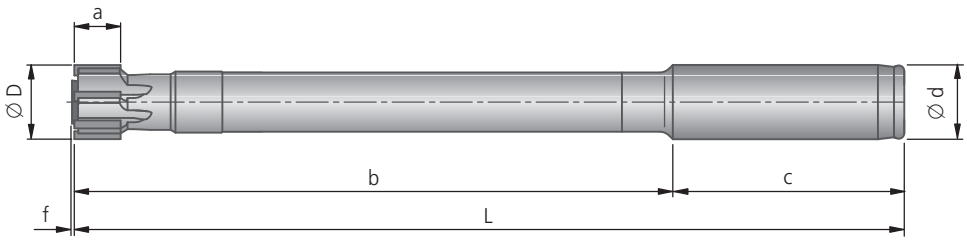
Order example:

Order No.	Bore diameter	Bore tolerance	Material or ASG
55R.93	Ø 0.472" (Ø 12 mm)	+.0005/-0	Ductile iron ferritic

Ø 5.600 – 40.599 mm (0.2205 – 1.5980 inch)

DIHART Monomax® – Expandable
Long version with cylindrical shank similar to DIN 1835

with internal coolant supply ■



Metric shank

Monomax® – Expandable		
Cutting material / coating	Order No.	Order No.
HM	56R.21	56Q.21
TiN	56R.71	56Q.71
DBG-N	56R.37	56Q.37
DST	56R.93	56Q.93
DJC	56R.67	56Q.67

(..) = inch

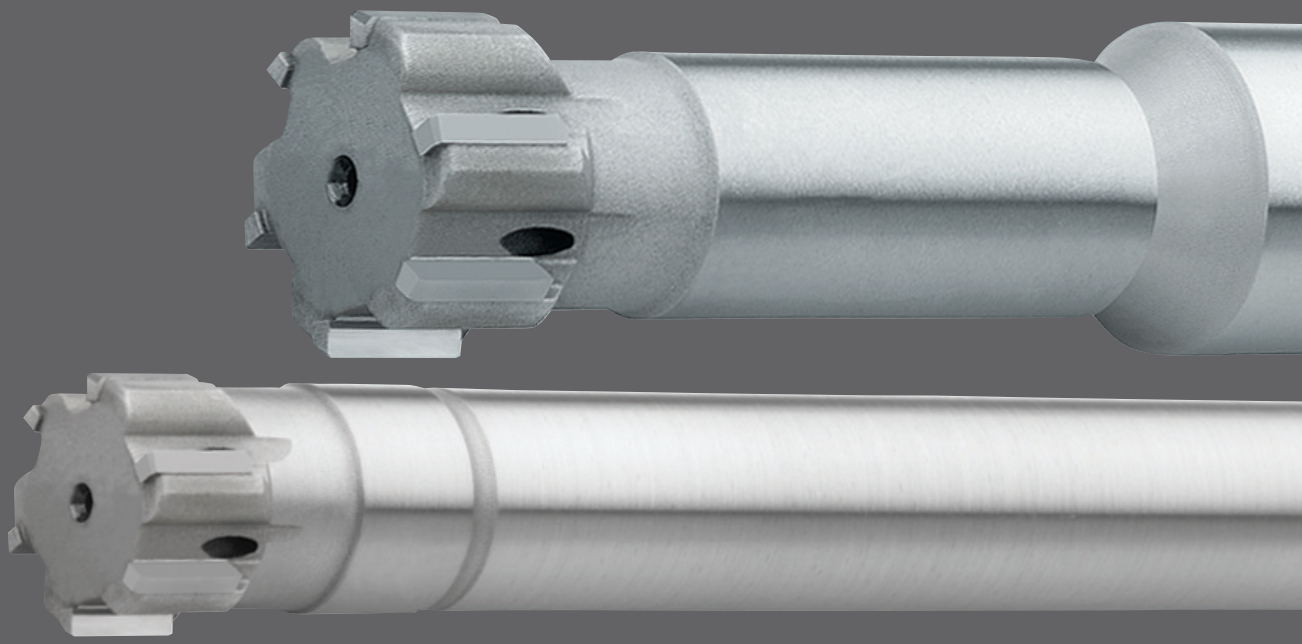
Dimensions							
Ø D	Cylindrical shank Ø d × c mm	L mm	b mm	f ~mm	a ~mm	No. of teeth	lbs
0.2205 – 0.3500 (5.600 – 8.899)	12 × 45	130	85	0.1	9.5	4	
0.3501 – 0.3897 (8.900 – 9.899)	12 × 45	130	85	0.1	9.5	6	
0.3898 – 0.6257 (9.900 – 15.899)	12 × 45	160	115	0.1	9.5	6	
0.6253 – 0.7438 (15.900 – 18.899)	16 × 50	180	130	0.1	9.5	6	
0.7439 – 1.0193 (18.900 – 25.899)	20 × 60	200	140	0.1	9.5	6	
1.0194 – 1.2831 (25.900 – 32.599)	25 × 60	210	150	0.1	9.5	6	
1.2832 – 1.5980 (32.600 – 40.599)	25 × 60	210	150	0.1	14.0	8	

Notes: Metric reamers can be used for inch bore applications. Preferred range available from stock, see page 94-95.

Order example:

Order No.	Bore diameter	Bore tolerance	Material or ASG
56R.93	Ø 12 mm (Ø 0.472")	+0.013/-0	Ductile iron ferritic

DIHART Monomax® – Solid



DIHART Monomax®

One-piece tools – known as monobloc tools – are one of DIHART's specialities. The demands which have been made over decades are reflected in an enormous number of types and variations. This successful tool program has been completely revised with many standards available through efficient manufacturing.

BENEFITS for you:

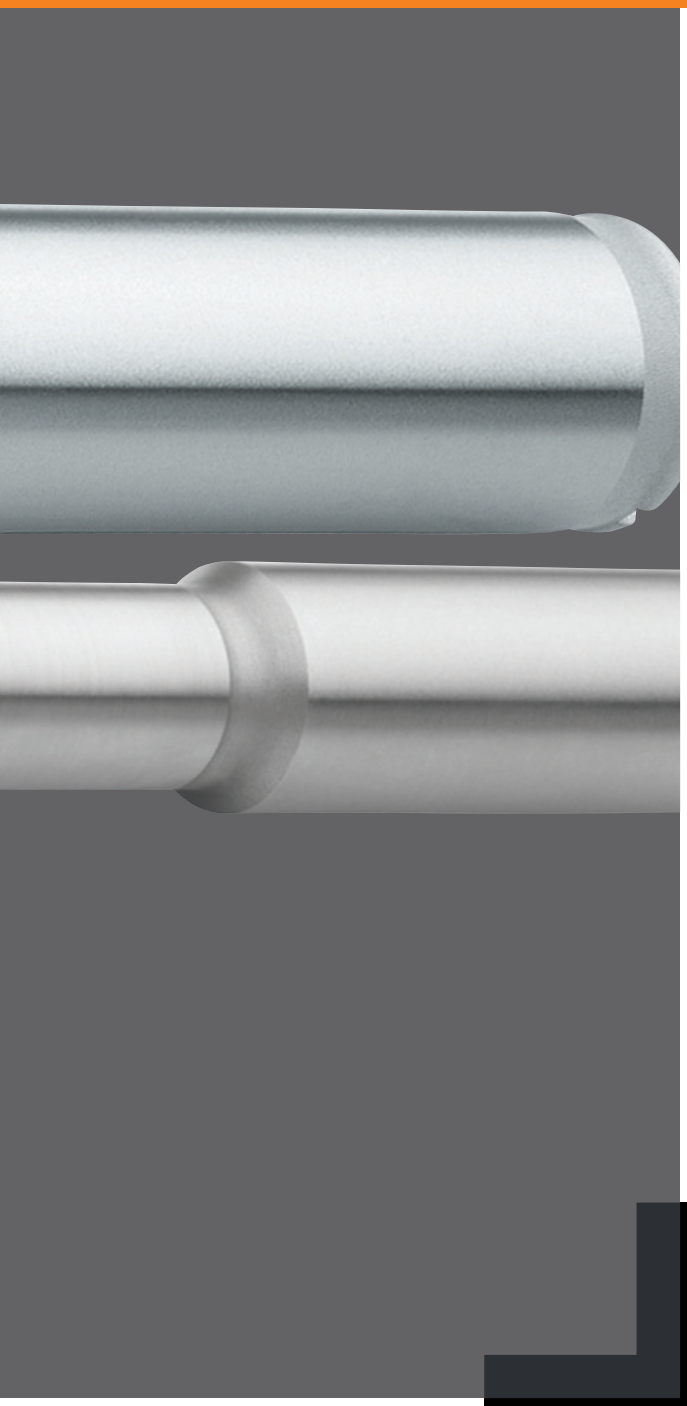
- Designed for small hole diameters
- Extremely durable due to one piece construction
- Precision ground to size

Application:

- Non-alloy and low alloy steels
- Stainless, heat resistant and high alloy steels
- Grey cast iron and spheroidal graphite cast iron
- Copper alloys, brass and bronze
- Aluminum
- Titanium, titanium alloys, CGI and plastic on request

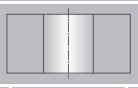
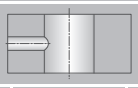
Versions:

- Short and long versions
- Through and blind hole coolant outlets available
- Uncoated and coated carbide or DST
- Diameter range 0.2205 – 1.5980 inch (5.600 – 40.599 mm)

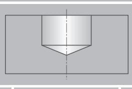
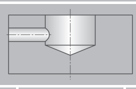
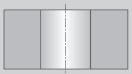
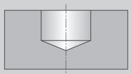


DIHART Monomax® – Solid

Tool Recommendation

Material group		Strength Rm (lbf/Ins²)	Hardness HB	Material	Material example ANSI / SAE	High-speed machining						
												
						Order No. long *short*	Cutting geometry (ASG)	Cutting material/ coating	Order No. long *short*	Cutting geometry (ASG)	Cutting material/ coating	
P	1.0	≤ 72,500		non-alloy steels	1010 1144 1213	56U.93 *56N.93*	ASG09	DST	56U.71 *56N.71*	ASG09	TiN	
P	2.0	72,500 - 130,000		non-alloy / low alloy steels	1055 5115 5120	56U.93 *56N.93*	ASG09	DST	56U.71 *56N.71*	ASG09	TiN	
P	2.1	< 72,500		lead alloys	12L14	56U.93 *56N.93*	ASG09	DST	56U.71 *56N.71*	ASG09	TiN	
P	3.0	> 130,000		non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1064 4140	56U.93 *56N.93*	ASG09	DST	56U.71 *56N.71*	ASG07	TiN	
P	4.0	> 130,000		high alloy steels	H13 H21	56U.71 *56N.71*	ASG0106	TiN	56U.71 *56N.71*	ASG0106	TiN	
P	4.1			HSS	M10 T4							
S	5.0		250	special alloys: Inconel, Hastelloy, Nimonic, stc.	Inconel® 718 Nimonic® 80A							
S	5.1	58,000		titanium, titanium alloys	Ti-6Al-4V							
M	6.0	≤ 87,000		stainless steels	304L 316	56U.71 *56N.71*	ASG0106	TiN	56U.71 *56N.71*	ASG0106	TiN	
M	6.1	<130,000		stainless steels	630	56U.71 *56N.71*	ASG0106	TiN	56U.71 *56N.71*	ASG0106	TiN	
M	7.0	>130,000		stainless / fireproof steels	403 420	56U.71 *56N.71*	ASG0106	TiN	56U.71 *56N.71*	ASG0106	TiN	
K	8.0		180	gray cast iron	Class 25 G3000	56U.37 *56N.37*	ASG07	DBG-N	56U.37 *56N.37*	ASG07	DBG-N	
K	8.1		250	alloy gray cast iron	A436 Type 2	56U.37 *56N.37*	ASG07	DBG-N	56U.37 *56N.37*	ASG07	DBG-N	
K	9.0	≤ 600	130	ductile cast iron, ferritic	60-40-18 D4512	56U.93 *56N.93*	ASG07	DST	56U.37 *56N.37*	ASG07	DBG-N	
K	9.1		230	ductile cast iron, ferritic / perlitic	80-55-06 D5506	56U.37 *56N.37*	ASG07	DBG-N	56U.37 *56N.37*	ASG07	DBG-N	
K	10.0	> 600	250	spheroidal graphite cast iron, perlitic malleable iron	100-70-03 07003	56U.37 *56N.37*	ASG07	DBG-N	56U.37 *56N.37*	ASG07	DBG-N	
K	10.1		200	alloyed spheroidal graphite cast iron	A43D2	56U.37 *56N.37*	ASG07	DBG-N	56U.37 *56N.37*	ASG07	DBG-N	
K	10.2		300	vermicular cast iron		56U.37 *56N.37*	ASG07	DBG-N	56U.37 *56N.37*	ASG07	DBG-N	
N	12.0		90	copper alloy, brass, lead-alloy bronze, lead bronze: good cut	316	56U.93 *56N.93*	ASG07	DST	56U.71 *56N.71*	ASG07	TiN	
N	12.1		100	copper alloy, brass, bronze:average cut		56U.71 *56N.71*	ASG07	TiN	56U.71 *56N.71*	ASG07	TiN	
N	13.0		60	wrought aluminum alloys	6151 7075							
N	13.1		75	cast aluminum alloy: Si-content <10% magnesium alloy	380 A356.0							
N	14.0		100	cast aluminum alloy: Si-content > 10%	383 A413.0							
H	15.0	1400		hardened steels < 45 HRC		56U.37 *56N.37*	ASG0106	DBG-N				
H	16.0	1800		hardened steels > 45 HRC, ≤ 55 HRC		56U.37 *56N.37*	ASG0106	DBG-N				

For inquiries concerning tools for materials without a recommendation, please contact us.

	High-speed machining						Conventional machining					
												
	Order No. long *short*	Cutting geometry (ASG)	Cutting material/ coating	Order No. long *short*	Cutting geometry (ASG)	Cutting material/ coating	Order No. long *short*	Cutting geometry (ASG)	Cutting material	Order No. long *short*	Cutting geometry (ASG)	Cutting material
	56T.93 *56M.93*	ASG07	DST	56T.71 *56M.71*	ASG07	TiN	56U.21 *56N.21*	ASG07	HM	56T.21 *56M.21*	ASG07	HM
	56T.93 *56M.93*	ASG07	DST	56T.71 *56M.71*	ASG07	TiN	56U.21 *56N.21*	ASG02	HM	56T.21 *56M.21*	ASG02	HM
	56T.93 *56M.93*	ASG07	DST	56T.71 *56M.71*	ASG07	TiN	56U.21 *56N.21*	ASG07	HM	56T.21 *56M.21*	ASG07	HM
	56T.93 *56M.93*	ASG07	DST	56T.71 *56M.71*	ASG07	TiN	56U.21 *56N.21*	ASG07	HM	56T.21 *56M.21*	ASG07	HM
	56T.71 *56M.71*	ASG0106	TiN	56T.71 *56M.71*	ASG0106	TiN	56U.21 *56N.21*	ASG0106	HM	56T.21 *56M.21*	ASG0106	HM
							56U.21 *56N.21*	ASG03	HM	56T.21 *56M.21*	ASG03	HM
	56T.71 *56M.71*	ASG0106	TiN	56T.71 *56M.71*	ASG0106	TiN	56U.21 *56N.21*	ASG0106	HM	56T.21 *56M.21*	ASG0106	HM
	56T.71 *56M.71*	ASG0106	TiN	56T.71 *56M.71*	ASG0106	TiN	56U.21 *56N.21*	ASG0106	HM	56T.21 *56M.21*	ASG0106	HM
	56T.71 *56M.71*	ASG0106	TiN	56T.71 *56M.71*	ASG0106	TiN	56U.21 *56N.21*	ASG0106	HM	56T.21 *56M.21*	ASG0106	HM
	56T.37 *56M.37*	ASG07	DBG-N	56T.37 *56M.37*	ASG07	DBG-N	56U.21 *56N.21*	ASG07	HM	56T.21 *56M.21*	ASG07	HM
	56T.37 *56M.37*	ASG07	DBG-N	56T.37 *56M.37*	ASG07	DBG-N	56U.21 *56N.21*	ASG07	HM	56T.21 *56M.21*	ASG07	HM
	56T.93 *56M.93*	ASG07	DST	56T.37 *56M.37*	ASG07	DBG-N	56U.21 *56N.21*	ASG02	HM	56T.21 *56M.21*	ASG02	HM
	56T.37 *56M.37*	ASG07	DBG-N	56T.37 *56M.37*	ASG07	DBG-N	56U.21 *56N.21*	ASG07	HM	56T.21 *56M.21*	ASG07	HM
	56T.37 *56M.37*	ASG07	DBG-N	56T.37 *56M.37*	ASG07	DBG-N	56U.21 *56N.21*	ASG07	HM	56T.21 *56M.21*	ASG07	HM
	56T.37 *56M.37*	ASG07	DBG-N	56T.37 *56M.37*	ASG07	DBG-N	56U.21 *56N.21*	ASG07	HM	56T.21 *56M.21*	ASG07	HM
	56T.37 *56M.37*	ASG07	DBG-N	56T.37 *56M.37*	ASG07	DBG-N	56U.21 *56N.21*	ASG07	HM	56T.21 *56M.21*	ASG07	HM
	56T.93 *56M.93*	ASG07	DST	56T.71 *56M.71*	ASG07	TiN	56U.21 *56N.21*	ASG0106	HM	56T.21 *56M.21*	ASG0106	HM
	56T.71 *56M.71*	ASG07	TiN	56T.71 *56M.71*	ASG07	TiN	56U.21 *56N.21*	ASG0106	HM	56T.21 *56M.21*	ASG0106	HM
							56U.21 *56N.21*	ASG02	HM	56T.21 *56M.21*	ASG02	HM
							56U.21 *56N.21*	ASG07	HM	56T.21 *56M.21*	ASG07	HM
							56U.21 *56N.21*	ASG07	HM	56T.21 *56M.21*	ASG07	HM
	56T.37 *56M.37*	ASG0106	DBG-N									
	56T.37 *56M.37*	ASG0106	DBG-N									

Cutting speed and feed see pages 102-103

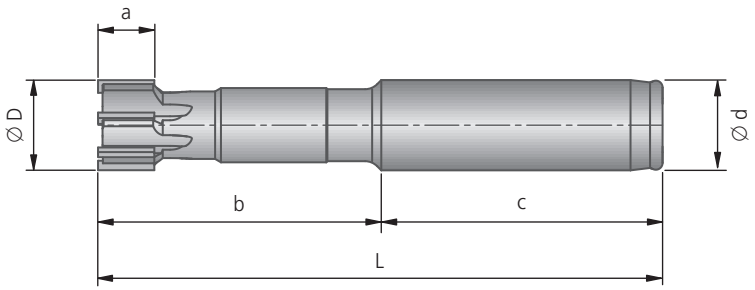
Important: See chapter ⓘ for more application details and safety notes!

DIHART Monomax® – Solid

Short version with cylindrical shank similar to DIN 1835

Ø 0.2205 – 1.5980 inch
(Ø 5.600 – 40.599 mm)

- with internal coolant supply
- coolant supply available for blind or through hole applications



Inch shank

Monomax® – Solid			
Cutting material / coating	Order No.	Order No.	Order No.
HM	55K.21	55N.21	55M.21
TiN	–	55N.71	55M.71
DBG-N	–	55N.37	55M.37
DST	–	55N.93	55M.93
DJC	–	55N.67	55M.67

(..) = mm

Dimensions						
Ø D	Cylindrical shank Ø d × c inch	L inch	b inch	a ~inch	No. of teeth	lbs
0.2205 – 0.3500 (5.600 – 8.899)	0.500 × 1.772	3.346	1.575	0.374	4	
0.3501 – 0.6256 (8.900 – 15.899)	0.500 × 1.772	3.740	1.969	0.374	6	
0.6257 – 0.7437 (15.900 – 18.899)	0.625 × 1.969	3.937	1.969	0.374	6	
0.7438 – 1.0193 (18.900 – 25.899)	0.750 × 2.362	4.724	2.362	0.374	6	
1.0194 – 1.2831 (25.900 – 32.599)	1.000 × 2.362	5.315	2.953	0.374	6	
1.2832 – 1.5980 (32.600 – 40.599)	1.000 × 2.362	5.315	2.953	0.551	8	

Notes: Inch reamers can be used for metric bore applications.

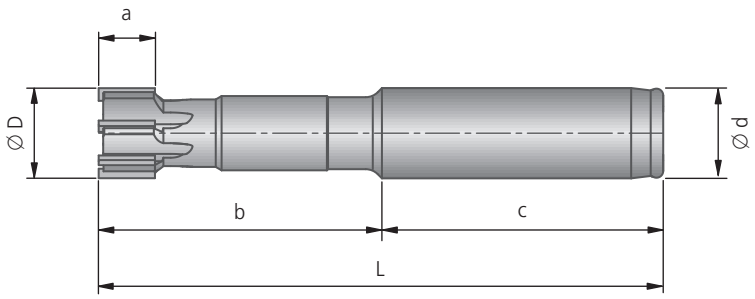
Order example:

Order No.	Bore diameter	Bore tolerance	Material or ASG
55N.93	Ø 0.472" (Ø 12 mm)	+.0005/-0	Ductile iron ferritic

Ø 5.600 – 40.599 mm (Ø 0.2205 – 1.5980 inch)

DIHART Monomax® – Solid
Short version with cylindrical shank similar to DIN 1835

with internal coolant supply ■
coolant supply available for blind or through hole applications ■



Metric shank

Monomax® – Solid			
Cutting material / coating	Order No.	Order No.	Order No.
HM	56K.21	56N.21	56M.21
TiN	–	56N.71	56M.71
DBG-N	–	56N.37	56M.37
DST	–	56N.93	56M.93
DJC	–	56N.67	56M.67

(..) = inch

Dimensions						
Ø D	Cylindrical shank Ø d × c mm	L mm	b mm	a ~mm	No. of teeth	lbs
5.600 – 8.899 (0.2205 – 0.3500)	12 × 45	85	40	9.5	4	
8.900 – 15.899 (0.3501 – 0.6256)	12 × 45	95	50	9.5	6	
15.900 – 18.899 (0.6257 – 0.7437)	16 × 50	100	50	9.5	6	
18.900 – 25.899 (0.7438 – 1.0193)	20 × 60	120	60	9.5	6	
25.900 – 32.599 (1.0194 – 1.2831)	25 × 60	135	75	9.5	6	
32.600 – 40.599 (1.2832 – 1.5980)	25 × 60	135	75	14.0	8	

Notes: Metric reamers can be used for inch bore applications.

Order example:

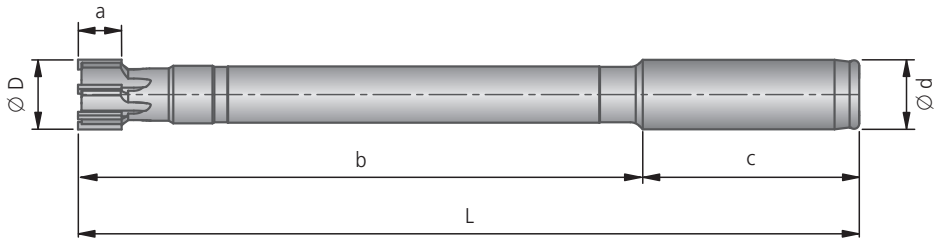
Order No.	Bore diameter	Bore tolerance	Material or ASG
56N.93	Ø 12 mm (Ø 0.472")	+0.013/-0	Ductile iron ferritic

DIHART Monomax® – Solid

Long version with cylindrical shank similar to DIN 1835

Ø 0.2205 – 1.5980 inch
(Ø 5.600 – 40.599 mm)

- with internal coolant supply
- coolant supply available for blind or through hole applications



Inch shank

Monomax® – Solid			
Cutting material / coating	Order No.	Order No.	Order No.
HM	55S.21	55U.21	55T.21
TiN	–	55U.71	55T.71
DBG-N	–	55U.37	55T.37
DST	–	55U.93	55T.93
DJC	–	55U.67	55T.67

(..) = mm

Dimensions						
Ø D	Cylindrical shank Ø d × c inch	L inch	b inch	a ~inch	No. of teeth	lbs
0.2205 – 0.3500 (5.600 – 8.899)	0.500 × 1.772	5.118	3.346	0.374	4	
0.3501 – 0.3897 (8.900 – 9.899)	0.500 × 1.772	5.118	3.346	0.374	6	
0.3898 – 0.6256 (9.900 – 15.899)	0.500 × 1.772	6.299	4.528	0.374	6	
0.6257 – 0.7437 (15.900 – 18.899)	0.625 × 1.969	7.087	5.118	0.374	6	
0.7438 – 1.0193 (18.900 – 25.899)	0.750 × 2.362	7.847	5.512	0.374	6	
1.0194 – 1.2831 (25.900 – 32.599)	1.000 × 2.362	8.268	5.906	0.374	6	
1.2832 – 1.5980 (32.600 – 40.599)	1.000 × 2.362	8.268	5.906	0.551	7	

Notes: Inch reamers can be used for metric bore applications.

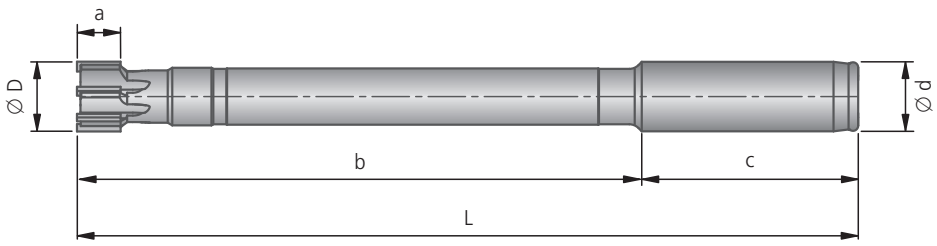
Order example:

Order No.	Bore diameter	Bore tolerance	Material or ASG
55U.93	Ø 0.472" (Ø 12 mm)	+.0005/-0	Ductile iron ferritic

Ø 5.600 – 40.599 mm (Ø 0.2205 – 1.5980 inch)

DIHART Monomax® – Solid
Long version with cylindrical shank similar to DIN 1835

with internal coolant supply ■
coolant supply available for blind or through hole applications ■



Metric shank

Monomax® – Solid			
Cutting material / coating	Order No.	Order No.	Order No.
HM	56S.21	56U.21	56T.21
TiN	–	56U.71	56T.71
DBG-N	–	56U.37	56T.37
DST	–	56U.93	56T.93
DJC	–	56U.67	56T.67

(..) = inch

Dimensions						
Ø D	Cylindrical shank Ø d × c mm	L mm	b mm	a ~mm	No. of teeth	lbs
5.600 – 8.899 (0.2205 – 0.3500)	12 × 45	130	85	9.5	4	
8.900 – 9.899 (0.3501 – 0.3897)	12 × 45	130	85	9.5	6	
9.900 – 15.899 (0.3898 – 0.6256)	12 × 45	160	115	9.5	6	
15.900 – 18.899 (0.6257 – 0.7437)	16 × 50	180	130	9.5	6	
18.900 – 25.899 (0.7438 – 1.0193)	20 × 60	200	140	9.5	6	
25.900 – 32.599 (1.0194 – 1.2831)	25 × 60	210	150	9.5	6	
32.600 – 40.599 (1.2832 – 1.5980)	25 × 60	210	150	14.0	8	

Notes: Metric reamers can be used for inch bore applications.

Order example:

Order No.	Bore diameter	Bore tolerance	Material or ASG
56U.93	Ø 12 mm (Ø 0.472")	+0.013/-0	Ductile iron ferritic

DIHART® Solid Carbide Reamers

Hightech for smaller diameters

The DIHART® solid carbide series of multiple blade reamers in diameters from 1.400 to 12.700 mm is the complement to the Reamax® series (diameters 12.000 - 40.000 mm). This offers you a solid carbide range for high-performance machining up to a diameter of 40 mm. The solid carbide reamers are delivered from the factory with the required dimensions manufactured specifically for your application.

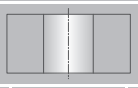
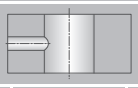
BENEFITS for you:

- For very small hole diameters
- Extremely rigid for optimum machining processes
- Extremely high cutting performance through DIHART® cutting edge geometry
- Internal coolant supply for long tool life
- Left-hand spiraled for controlled chip flow

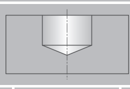
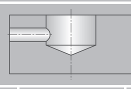
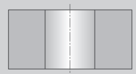
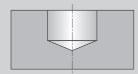
DIHART® Solid Carbide Reamers

DIHART® Solid Carbide Reamers

Tool Recommendation

Material group		Strength Rm (lbf/Ins²)	Hardness HB	Material	Material example ANSI / SAE	High-speed machining						
												
						Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material/ coating	
P	1.0	≤ 72,500		non-alloy steels	1010 1144 1213	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	2.0	72,500 - 130,000		non-alloy / low alloy steels	1055 5115 5120	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	2.1	< 72,500		lead alloys	12L14	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	3.0	> 130,000		non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1064 4140	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	4.0	> 130,000		high alloy steels	H13 H21	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	4.1			HSS	M10 T4							
S	5.0		250	special alloys: Inconel, Hastelloy, Nimonic, stc.	Inconel® 718 Nimonic® 80A							
	5.1	58,000		titanium, titanium alloys	Ti-6Al-4V							
M	6.0	≤ 87,000		stainless steels	304L 316	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	6.1	<130,000		stainless steels	630	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	7.0	>130,000		stainless / fireproof steels	403 420	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
K	8.0		180	gray cast iron	Class 25 G3000	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	8.1		250	alloy gray cast iron	A436 Type 2	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	9.0	≤ 87,000	130	ductile cast iron, ferritic	60-40-18 D4512	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	9.1		230	ductile cast iron, ferritic / perlitic	80-55-06 D5506	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	10.0	> 87,000	250	spheroidal graphite cast iron, perlitic malleable iron	100-70-03 07003	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	10.1		200	alloyed spheroidal graphite cast iron	A43D2	526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
	10.2		300	vermicular cast iron		526.37	ASG0501	DBG-N	526.37	ASG0501	DBG-N	
N	12.0		90	copper alloy, brass, lead-alloy bronze, lead bronze: good cut	316	526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	12.1		100	copper alloy, brass, bronze:average cut		526.39	ASG0501	TiN	526.39	ASG0501	TiN	
	13.0		60	wrought aluminum alloys	6151 7075							
	13.1		75	cast aluminum alloy: Si-content <10% magnesium alloy	380 A356.0							
	14.0		100	cast aluminum alloy: Si-content > 10%	383 A413.0							
H	15.0	203,000		hardened steels < 45 HRC								
	16.0	261,000		hardened steels > 45 HRC, ≤ 55 HRC								

For inquiries concerning tools for materials without a recommendation, please contact us.

	High-speed machining						Conventional machining					
												
	Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material	Order No.	Cutting geometry (ASG)	Cutting material
	526.19	ASG07	TiN	526.19	ASG07	TiN	526.35	ASG0501	HM	526.15	ASG07	HM
	526.19	ASG07	TiN	526.19	ASG07	TiN	526.35	ASG0501	HM	526.15	ASG02	HM
	526.19	ASG07	TiN	526.19	ASG07	TiN	526.35	ASG0501	HM	526.15	ASG07	HM
	526.19	ASG07	TiN	526.19	ASG07	TiN	526.35	ASG0501	HM	526.15	ASG07	HM
	526.19	ASG0106	TiN	526.19	ASG0106	TiN	526.35	ASG0501	HM	526.15	ASG0106	HM
										526.15	ASG0106	HM
	526.19	ASG0106	TiN	526.19	ASG0106	TiN	526.35	ASG0501	HM	526.15	ASG0106	HM
	526.19	ASG0106	TiN	526.19	ASG0106	TiN	526.35	ASG0501	HM	526.15	ASG0106	HM
	526.19	ASG0106	TiN	526.19	ASG0106	TiN	526.35	ASG0501	HM	526.15	ASG0106	HM
	526.17	ASG07	DBG-N	526.17	ASG07	DBG-N	526.35	ASG0501	HM	526.15	ASG07	HM
	526.17	ASG07	DBG-N	526.17	ASG07	DBG-N	526.35	ASG0501	HM	526.15	ASG07	HM
	526.17	ASG07	DBG-N	526.17	ASG07	DBG-N	526.35	ASG0501	HM	526.15	ASG07	HM
	526.17	ASG07	DBG-N	526.17	ASG07	DBG-N	526.35	ASG0501	HM	526.15	ASG07	HM
	526.17	ASG07	DBG-N	526.17	ASG07	DBG-N	526.35	ASG0501	HM	526.15	ASG07	HM
	526.17	ASG07	DBG-N	526.17	ASG07	DBG-N	526.35	ASG0501	HM	526.15	ASG07	HM
	526.17	ASG07	DBG-N	526.17	ASG07	DBG-N	526.35	ASG0501	HM	526.15	ASG07	HM
	526.19	ASG07	TiN	526.19	ASG07	TiN	526.35	ASG0501	HM	526.15	ASG0106	HM
	526.19	ASG07	TiN	526.19	ASG07	TiN	526.35	ASG0501	HM	526.15	ASG0106	HM
							526.35	ASG0501	HM	526.15	ASG07	HM
							526.35	ASG0501	HM	526.15	ASG07	HM
							526.35	ASG0501	HM	526.15	ASG07	HM
	526.17	ASG0106	DBG-N									
	526.17	ASG0106	DBG-N									

Cutting speed and feed see pages 102-103

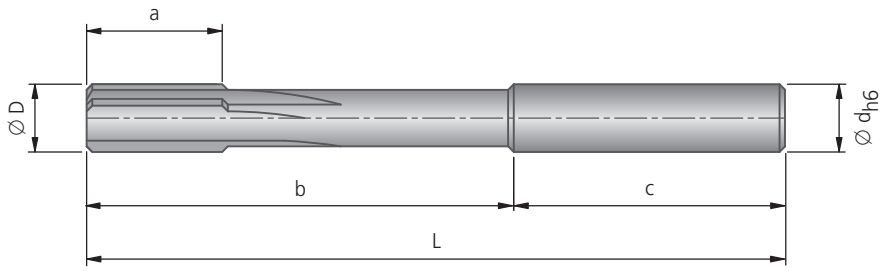
Important: See chapter ⓘ for more application details and safety notes!

DIHART® Solid Carbide Reamers
with cylindrical shank DIN 6535 HA

Ø 0.0551 – 0.5000 inch
(Ø 1.400 – 12.700 mm)

■ with or without internal coolant supply

for blind hole machining



(..) = mm

for blind hole machining		
Cutting material / coating	Ø 0.0551 – 0.1637 (Ø 0.400 – 4.159) without internal coolant supply	Ø 0.1638 – 0.3999 (Ø 4.160 – 10.159) with internal coolant supply
	Order No.	
HM	526.15	
TiN	526.19	
DBG-N	526.17	

(..) = mm

Dimensions						
Ø D	Cylindrical shank Ø d × c	L	b	a ~	No. of teeth	lbs
0.0551 – 0.1086 (1.400 – 2.759)	0.118 × 1.102 (3 × 28)	1.890 (48)	0.787 (20)	0.236 (6)	4	
0.1087 – 0.1243 (2.760 – 3.159)	0.118 × 1.102 (3 × 28)	1.890 (48)	0.787 (20)	0.315 (8)	4	
0.1244 – 0.1637 (3.160 – 4.159)	0.157 × 1.102 (4 × 28)	2.126 (54)	1.024 (26)	0.315 (8)	4	
0.1638 – 0.1889 (4.160 – 4.799)	0.236 × 1.417 (6 × 36)	2.913 (74)	1.496 (38)	0.315 (8)	4	
0.1890 – 0.2424 (4.800 – 6.159)	0.236 × 1.417 (6 × 36)	2.913 (74)	1.496 (38)	0.472 (12)	4	
0.2445 – 0.2676 (6.160 – 6.799)	0.315 × 1.417 (8 × 36)	3.583 (91)	2.165 (55)	0.472 (12)	4	
0.2677 – 0.2818 (6.800 – 7.159)	0.315 × 1.417 (8 × 36)	3.583 (91)	2.165 (55)	0.630 (16)	4	
0.2819 – 0.3212 (7.160 – 8.159)	0.315 × 1.417 (8 × 36)	3.583 (91)	2.165 (55)	0.630 (16)	6	
0.3213 – 0.3424 (8.160 – 8.699)	0.394 × 1.575 (10 × 40)	4.055 (103)	2.480 (63)	0.630 (16)	6	
0.3425 – 0.3999 (8.700 – 10.159)	0.394 × 1.575 (10 × 40)	4.055 (103)	2.480 (63)	0.787 (20)	6	
0.4000 – 0.4172 (10.160 – 10.599)	0.472 × 1.772 (12 × 45)	4.646 (118)	2.874 (73)	0.787 (20)	6	
0.4173 – 0.4787 (10.600 – 12.159)	0.472 × 1.772 (12 × 45)	4.646 (118)	2.874 (73)	0.945 (24)	6	
0.4788 – 0.5000 (12.160 – 12.700)	0.551 × 1.772 (14 × 45)	53197 (132)	3.425 (87)	1.102 (28)	6	

Order example:

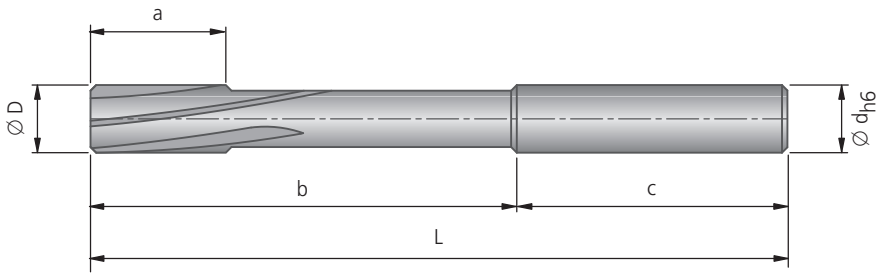
Order No.	Bore diameter	Bore tolerance	Material or ASG
526.19	Ø 0.197" (Ø 5 mm)	+.0005/-0	Ductile iron ferritic

Ø 0.1890 – 0.5000 inch (Ø 4.800 – 12.700 mm)

DIHART® Solid Carbide Reamers
with cylindrical shank DIN 6535 HA

with or without internal coolant supply ■

for through hole machining



for through hole machining	
Cutting material / coating	Order No.
HM	526.35
TiN	526.39
DBG-N	526.37

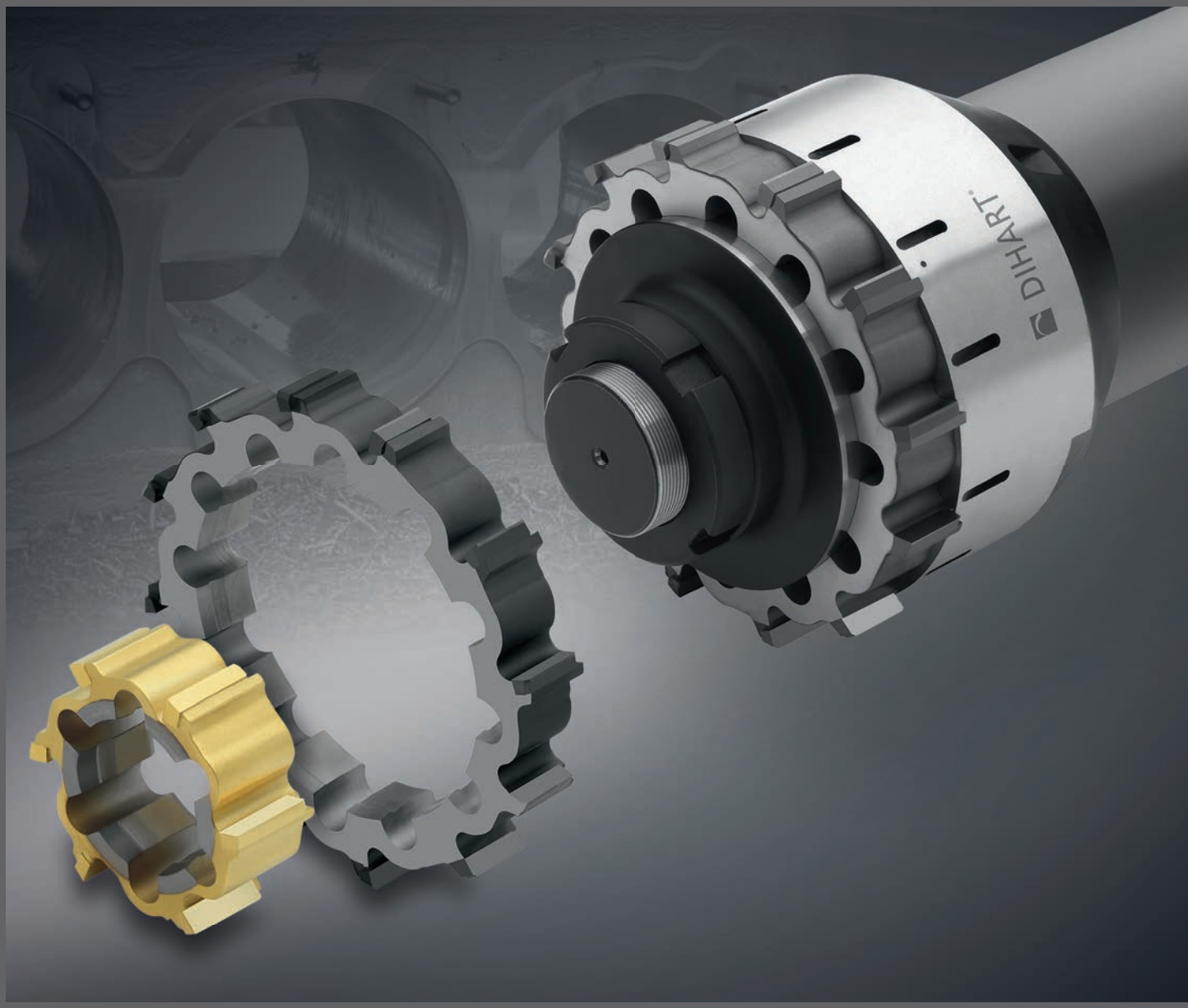
(..) = mm

Dimensions						
Cylindrical shank Ø D	Ø d × c	L	b	a ~	No. of teeth	lbs
0.1890 – 0.2424 (4.800 – 6.159)	0.236 × 1.417 (6 × 36)	2.913 (74)	1.496 (38)	0.472 (12)	4	
0.2445 – 0.2676 (6.160 – 6.799)	0.315 × 1.417 (8 × 36)	3.583 (91)	2.165 (55)	0.472 (12)	4	
0.2677 – 0.2818 (6.800 – 7.159)	0.315 × 1.417 (8 × 36)	3.583 (91)	2.165 (55)	0.630 (16)	4	
0.2819 – 0.3212 (7.160 – 8.159)	0.315 × 1.417 (8 × 36)	3.583 (91)	2.165 (55)	0.630 (16)	6	
0.3213 – 0.3424 (8.160 – 8.699)	0.394 × 1.575 (10 × 40)	4.055 (103)	2.480 (63)	0.630 (16)	6	
0.3425 – 0.3999 (8.700 – 10.159)	0.394 × 1.575 (10 × 40)	4.055 (103)	2.480 (63)	0.787 (20)	6	
0.4000 – 0.4172 (10.160 – 10.599)	0.472 × 1.772 (12 × 45)	4.646 (118)	2.874 (73)	0.787 (20)	6	
0.4173 – 0.4787 (10.600 – 12.159)	0.472 × 1.772 (12 × 45)	4.646 (118)	2.874 (73)	0.945 (24)	6	
0.4788 – 0.5000 (12.160 – 12.700)	0.551 × 1.772 (14 × 45)	53197 (132)	3.425 (87)	1.102 (28)	6	

Order example:

Order No.	Bore diameter	Bore tolerance	Material or ASG
526.39	Ø 0.197" (Ø 5 mm)	+.0005/-0	Ductile iron ferritic

DIHART® Cutting Ring



The cutting ring system is one of the modular tool series from DIHART®. Expansion zones permit an elastic expansion of the ring for wear compensation.

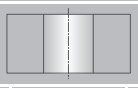
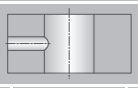
Through repeated regrinding or re-tipping, the service life of the ring can be increased. Cutting edge wear is compensated – all functional surfaces are fully reground. Reground or re-tipped tools have the same functionality and quality as new ones.

BENEFITS for you:

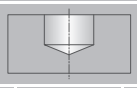
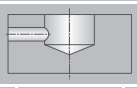
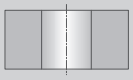
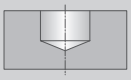
- For large hole diameters
- Multiple blade
- Modular
- Wear compensation through simple adjustment
- A variety of cutting materials and coatings
- Can be reground and re-tipped for long term reduction of cost per hole.

DIHART® Cutting Ring

Tool Recommendation

Material group		Strength Rm (lbf/Ins²)	Hardness HB	Material	Material example ANSI / SAE	High-speed machining						
												
						Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material/ coating	
P	1.0	≤ 72,500		non-alloy steels	1010 1144 1213	300.45	ASG09	DST	300.05	ASG09	TiN	
P	2.0	72,500 - 130,000		non-alloy / low alloy steels	1055 5115 5120	300.45	ASG09	DST	300.05	ASG09	TiN	
P	2.1	< 72,500		lead alloys	12L14	300.45	ASG09	DST	300.05	ASG09	TiN	
P	3.0	> 130,000		non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1064 4140	300.45	ASG09	DST	300.05	ASG07	TiN	
P	4.0	> 130,000		high alloy steels	H13 H21	300.05	ASG0106	TiN	300.05	ASG0106	TiN	
P	4.1			HSS	M10 T4							
S	5.0		250	special alloys: Inconel, Hastelloy, Nimonic, stc.	Inconel® 718 Nimonic® 80A							
S	5.1	58,000		titanium, titanium alloys	Ti-6Al-4V							
M	6.0	≤ 87,000		stainless steels	304L 316	300.05	ASG0106	TiN	300.05	ASG0106	TiN	
M	6.1	<130,000		stainless steels	630	300.05	ASG0106	TiN	300.05	ASG0106	TiN	
M	7.0	>130,000		stainless / fireproof steels	403 420	300.05	ASG0106	TiN	300.05	ASG0106	TiN	
K	8.0		180	gray cast iron	Class 25 G3000	300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	
K	8.1		250	alloy gray cast iron	A436 Type 2	300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	
K	9.0	≤ 87,000	130	ductile cast iron, ferritic	60-40-18 D4512	300.45	ASG07	DST	300.07	ASG07	DBG-N	
K	9.1		230	ductile cast iron, ferritic / perlitic	80-55-06 D5506	300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	
K	10.0	> 87,000	250	spheroidal graphite cast iron, perlitic malleable iron	100-70-03 07003	300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	
K	10.1		200	alloyed spheroidal graphite cast iron	A43D2	300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	
K	10.2		300	vermicular cast iron		300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	
N	12.0		90	copper alloy, brass, lead-alloy bronze, lead bronze: good cut	316	300.45	ASG07	DST	300.05	ASG07	TiN	
N	12.1		100	copper alloy, brass, bronze:average cut		300.05	ASG07	TiN	300.05	ASG07	TiN	
N	13.0		60	wrought aluminum alloys	6151 7075							
N	13.1		75	cast aluminum alloy: Si-content <10% magnesium alloy	380 A356.0							
N	14.0		100	cast aluminum alloy: Si-content > 10%	383 A413.0							
H	15.0	203,000		hardened steels < 45 HRC								
H	16.0	261,000		hardened steels > 45 HRC, ≤ 55 HRC								

For inquiries concerning tools for materials without a recommendation, please contact us.

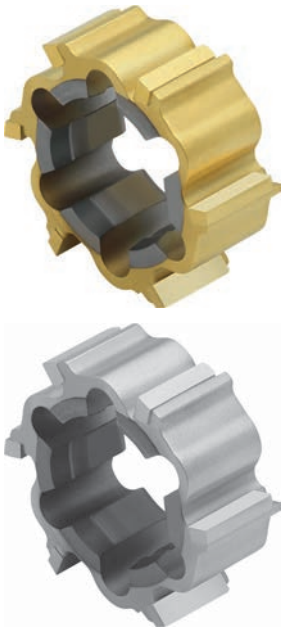
	High-speed machining						Conventional machining					
												
	Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material	Order No.	Cutting geometry (ASG)	Cutting material
	300.45	ASG07	DST	300.05	ASG07	TiN	300.25	ASG07	HM	300.25	ASG07	HM
	300.45	ASG07	DST	300.05	ASG07	TiN	300.25	ASG02	HM	300.25	ASG02	HM
	300.45	ASG07	DST	300.05	ASG07	TiN	300.25	ASG07	HM	300.25	ASG07	HM
	300.45	ASG07	DST	300.05	ASG07	TiN	300.25	ASG07	HM	300.25	ASG07	HM
	300.05	ASG0106	TiN	300.05	ASG0106	TiN	300.25	ASG0106	HM	300.25	ASG0106	HM
							300.25	ASG03	HM	300.25	ASG03	HM
	300.05	ASG0106	TiN	300.05	ASG0106	TiN	300.25	ASG0106	HM	300.25	ASG0106	HM
	300.05	ASG0106	TiN	300.05	ASG0106	TiN	300.25	ASG0106	HM	300.25	ASG0106	HM
	300.05	ASG0106	TiN	300.05	ASG0106	TiN	300.25	ASG0106	HM	300.25	ASG0106	HM
	300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	300.25	ASG07	HM	300.25	ASG07	HM
	300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	300.25	ASG07	HM	300.25	ASG07	HM
	300.45	ASG07	DST	300.07	ASG07	DBG-N	300.25	ASG02	HM	300.25	ASG02	HM
	300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	300.25	ASG07	HM	300.25	ASG07	HM
	300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	300.25	ASG07	HM	300.25	ASG07	HM
	300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	300.25	ASG07	HM	300.25	ASG07	HM
	300.07	ASG07	DBG-N	300.07	ASG07	DBG-N	300.25	ASG07	HM	300.25	ASG07	HM
	300.45	ASG07	DST	300.05	ASG07	TiN	300.25	ASG0106	HM	300.25	ASG0106	HM
	300.05	ASG07	TiN	300.05	ASG07	TiN	300.25	ASG0106	HM	300.25	ASG0106	HM
							300.25	ASG02	HM	300.25	ASG02	HM
							300.25	ASG07	HM	300.25	ASG07	HM
							300.25	ASG07	HM	300.25	ASG07	HM

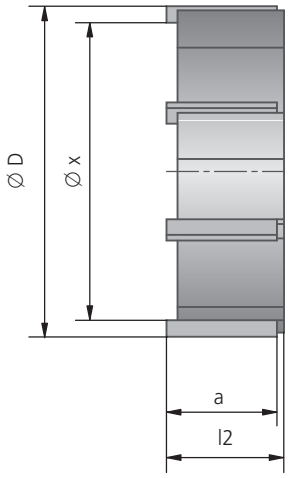
Cutting speed and feed see pages 102-103

Important: See chapter ⓘ for more application details and safety notes!

DIHART® Cutting Ring

Ø 2.3858 – 4.3543 inch (Ø 60.600 – 110.599 mm)





Cutting Ring	
Cutting material / coating	Order No.
HM	300.25
TiN	300.05
DBG-N	300.07
DST	300.45
DJC	300.08

(..) = mm

Dimensions						
Ø D	min. diameter for front cutting Ø x ~	a ~	HM TiN DBG-N l2 ~	DST DJC l2 ~	No. of teeth	lbs
2.3858 – 3.1338 (60.600 – 79.599)	Ø D – 0.331 (Ø D – 8.4)	0.630 (16.0)	0.728 (18.5)	0.689 (17.5)	6	
3.1339 – 3.9605 (79.600 – 100.599)	Ø D – 0.331 (Ø D – 8.4)	0.630 (16.0)	0.728 (18.5)	0.689 (17.5)	8	
3.9606 – 4.3543 (100.600 – 110.599)	Ø D – 0.331 (Ø D – 8.4)	0.630 (16.0)	0.728 (18.5)	0.689 (17.5)	10	

Cutting ring from dia. 0.6929 to 2.3857 inch (17.600 to 60.599 mm) and
Ø 4.3544 to 11.8346 inch (Ø110.600 to 300.599 mm) available by request.

Order example::

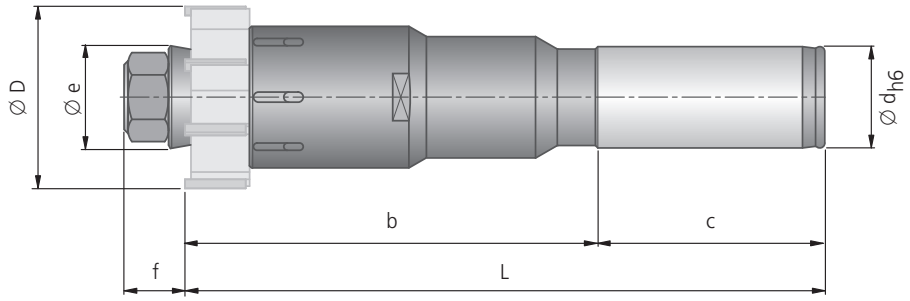
Order No.	Bore diameter	Bore tolerance	Material or ASG
300.45	Ø 2.756" (Ø 70 mm)	+.0005/-0	Ductile iron ferritic

Ø 60.600 – 100.599 mm (Ø 2.3858 – 3.9605 inch)

DIHART® Cutting Ring - Metric Shank
Holder with cylindrical shank similar to DIN 1835

with internal coolant supply ■
cylindrical shank with flat available on request ■

for through hole machining

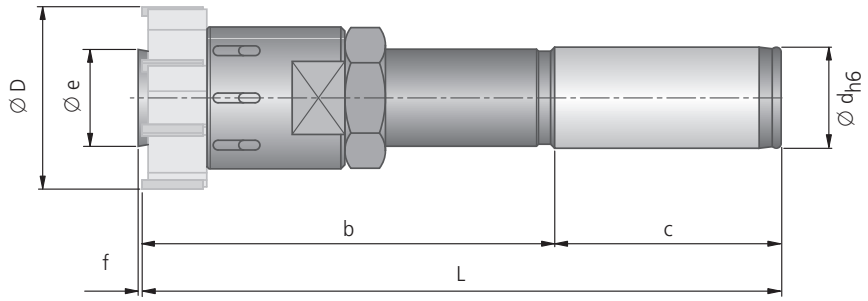


(..) = inch

for through hole machining				short version				long version			
for Ø D	Cylindrical shank Ø d × c	Ø e	f	Order No.	L	b	lbs	Order No.	L	b	lbs
60.600 – 70.599 (2.3858 – 2.7794)	32 × 60	40.0	24.5	**503.76.008**	189.5	105	3.99	**504.76.009**	321.5	237	7.63
70.600 – 79.599 (2.7795 – 3.1338)	32 × 60	40.0	24.5	**503.76.009**	189.5	105	4.41	**504.76.010**	321.5	237	8.53
79.600 – 90.599 (3.1339 – 3.5668)	40 × 70	56.2	28.5	**503.76.010**	203.5	105	7.50	**504.76.011**	338.5	240	13.54
90.600 – 100.599 (3.5669 – 3.9605)	40 × 70	56.2	28.5	**503.76.011**	203.5	105	13.54	**504.76.012**	338.5	240	

Includes: Adjusting nut, conical ring and drive pins (page 61). Please order cutting ring separately.

for blind hole machining



(..) = inch

for blind hole machining				short version					long version				
for Ø D	Cylindrical shank Ø d × c	Ø e	f ~	* Order No.	Order No.	L	b	lbs	* Order No.	Order No.	L	b	lbs
60.600 – 70.599 (2.3858 – 3.1338)	32 × 60	37.0	1.5	**513.76.008**	**513.81.008**	166.5	105	3.92	**514.76.008**	**514.81.008**	298.5	237	6.39
70.600 – 79.599 (3.1339 – 3.1338)	32 × 60	37.0	1.5	**513.76.009**	**513.81.009**	166.5	105	3.88	**514.76.009**	**514.81.009**	298.5	237	6.63
79.600 – 90.599 (3.1339 – 3.5668)	40 × 70	53.2	1.5	**513.76.010**	**513.81.010**	176.5	105	6.90	**514.76.010**	**514.81.010**	311.5	240	10.80
90.600 – 100.599 (3.5669 – 3.9605)	40 × 70	53.2	1.5	**513.76.011**	**513.81.011**	176.5	105		**514.76.011**	**514.81.011**	311.5	240	12.24

Includes: Cutting ring holder with connical screw, bushing and adjusting nut (page 61). Please order cutting ring separately.
(*Can also be used for through hole machining)

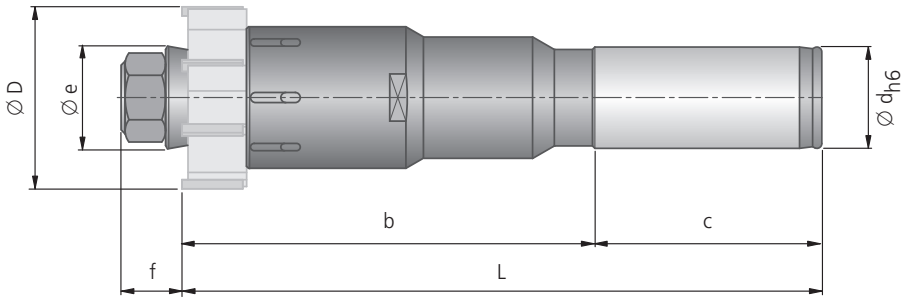
DIHART® Cutting Ring - Inch Shank

Holder with cylindrical shank similar to DIN 1835

Ø 2.3858 – 3.9605 inch
(Ø 60.600 – 100.599 mm)

- with internal coolant supply
- cylindrical shank with flat available on request

for through hole machining

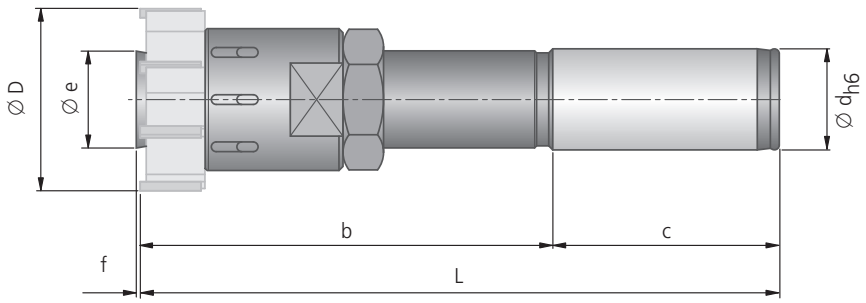


(..) = mm

for through hole machining				short version				long version			
for Ø D	Cylindrical shank Ø d × c	Ø e	f	Order No.	L	b	lbs	Order No.	L	b	lbs
2.3858 – 2.7794 (60.600 – 70.599)	1.500 × 2.756	1.575	0.965	**503.81.009**	7.855	4.134	3.99	**504.81.009**	12.657	8.937	7.63
2.7795 – 3.1338 (70.600 – 79.599)	1.500 × 2.756	1.575	0.965	**503.81.010**	7.855	4.134	4.41	**504.81.010**	12.657	8.937	8.53
3.1339 – 3.5668 (79.600 – 90.599)	1.500 × 2.756	2.213	1.122	**503.81.011**	8.012	4.134	7.50	**504.81.011**	12.657	9.449	13.54
3.5669 – 3.9605 (90.600 – 100.599)	1.500 × 2.756	2.213	1.122	**503.81.012**	8.012	4.134	13.54	**504.81.012**	12.657	9.449	

Includes: Adjusting nut, conical ring and drive pins (page 61). Please order cutting ring separately.

for blind hole machining



(..) = mm

for blind hole machining				short version					long version				
for Ø D	Cylindrical shank Ø d × c	Ø e	f ~	* Order No.	Order No.	L	b	lbs	* Order No.	Order No.	L	b	lbs
2.3858 – 2.7794 (60.600 – 70.599)	1.500 × 2.756	1.457	0.059	**513.36.008**	**513.41.008**	6.949	4.134	3.92	**514.36.008**	**514.41.008**	12.146	9.331	6.39
2.7795 – 3.1338 (70.600 – 79.599)	1.500 × 2.756	1.457	0.059	**513.36.009**	**513.41.009**	6.949	4.134	3.88	**514.36.009**	**514.41.009**	12.146	9.331	6.63
3.1339 – 3.5668 (79.600 – 90.599)	1.500 × 2.756	2.094	0.059	**513.36.010**	**513.41.010**	6.949	4.134	6.90	**514.36.010**	**514.41.010**	12.264	9.449	10.80
3.5669 – 3.9605 (90.600 – 100.599)	1.500 × 2.756	2.094	0.059	**513.36.011**	**513.41.011**	6.949	4.134		**514.36.011**	**514.41.011**	12.264	9.449	12.24

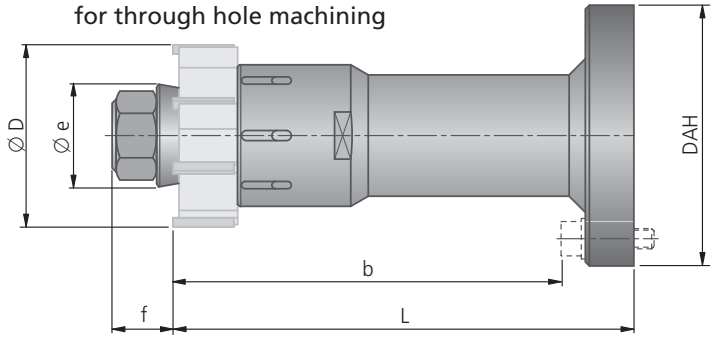
Includes: Cutting ring holder with connical screw, bushing and adjusting nut (page 61). Please order cutting ring separately.
(*Can also be used for through hole machining)

Ø 2.3858 – 4.3543 inch
(Ø 60.600 – 110.559 mm)

DIHART® Cutting Ring
Holder with DAH® Connection

with internal coolant supply ■

for through hole machining

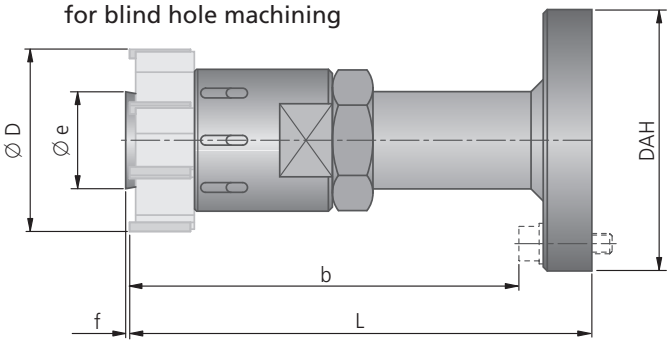


(..) = mm

for through hole machining													
for Ø D	Ø e	f	Order No.	DAH	L	b	lbs	Order No.	DAH	L	b	lbs
2.3858 – 2.7794 (60.600 – 70.599)	1.575 (40.0)	0.964 (24.5)	**507.02.008**	115	4.783 (121.5)	3.779 (96)	5.51	**507.02.043**	81	4.606 (117)	3.898 (99)	3.75
2.7795 – 3.1338 (70.600 – 79.599)	1.575 (40.0)	0.964 (24.5)	**507.02.009**	115	4.783 (121.5)	3.779 (96)	6.15	**507.02.044**	81	4.606 (117)	3.898 (99)	4.19
3.1339 – 3.5668 (79.600 – 90.599)	2.213 (56.2)	1.122 (28.5)	**507.02.010**	115	4.783 (121.5)	3.779 (96)	8.38					
3.5669 – 3.9605 (90.600 – 100.599)	2.213 (56.2)	1.122 (28.5)	**507.02.011**	115	4.783 (121.5)	3.779 (96)	9.30					
3.9606 – 4.3543 (100.600 – 110.599)	2.890 (73.4)	1.398 (35.5)	**507.02.012**	115	4.823 (122.5)	3.819 (97)	12.12					

Includes: Adjusting nut, conical ring and drive pins (page 61). Please order cutting ring separately.

for blind hole machining



(..) = mm

for blind hole machining								
for Ø D	Ø e	f ~	* Order No.	Order No.	DAH	L	b	lbs
2.3858 – 2.7794 (60.600 – 70.599)	1.457 (37.0)	0.059 (1.5)	**517.76.008**	**517.81.008**	115	5.728 (145.5)	4.724 (120)	5.55
2.7795 – 3.1338 (70.600 – 79.599)	1.457 (37.0)	0.059 (1.5)	**517.76.009**	**517.81.009**	115	5.728 (145.5)	4.724 (120)	5.55
3.1339 – 3.5668 (79.600 – 90.599)	2.094 (53.2)	0.059 (1.5)	**517.76.010**	**517.81.010**	115	6.122 (155.5)	5.118 (130)	8.71
3.5669 – 3.9605 (90.600 – 100.599)	2.094 (53.2)	0.059 (1.5)	**517.76.011**	**517.81.011**	115	6.122 (155.5)	5.118 (130)	9.55

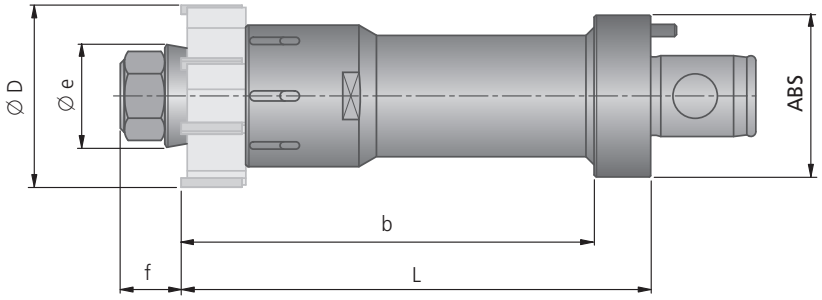
Includes: Cutting ring holder with connical screw, bushing and adjusting nut (page 61). Please order cutting ring separately.
DAH® adapters see chapter 9.
(*Can also be used for through hole machining)

DIHART® Cutting Ring
Holder with ABS® Connection

Ø 2.3858 – 4.3543 inch
(Ø 60.600 – 110.599 mm)

■ with internal coolant supply

for through hole machining

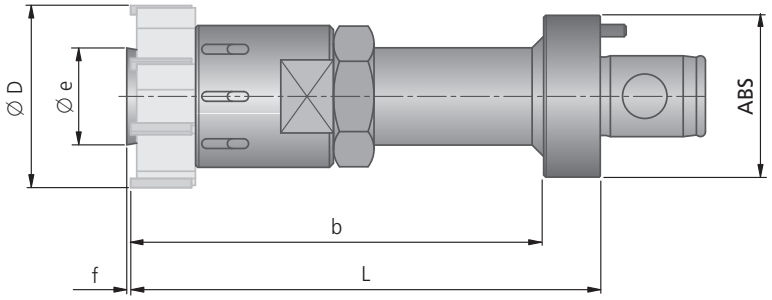


(..) = mm

for through hole machining							
for Ø D	Order No.	ABS	Ø e	f	L	b	lbs
2.3858 – 2.5826 (60.600 – 65.599)	**508.53.020**	50	1.575 (40.0)	0.964 (24.5)	4.685 (119)	4.134 (105)	4.30
2.5827 – 2.7794 (65.600 – 70.599)	**508.53.021**	63	1.575 (40.0)	0.964 (24.5)	4.921 (125)	4.134 (105)	5.14
2.7795 – 3.1338 (70.600 – 79.599)	**508.53.009**	63	1.575 (40.0)	0.964 (24.5)	4.921 (125)	4.134 (105)	5.51
3.1339 – 3.5668 (79.600 – 90.599)	**508.53.010**	63	2.213 (56.2)	1.122 (28.5)	4.921 (125)	4.134 (105)	7.83
3.5669 – 3.9605 (90.600 – 100.599)	**508.53.011**	63	2.213 (56.2)	1.122 (28.5)	4.921 (125)	4.134 (105)	8.66
3.9606 – 4.3543 (100.600 – 110.599)	**508.53.022**	80	2.890 (73.4)	1.398 (35.5)	5.177 (131.5)	4.193 (106.5)	13.69

Includes: Adjusting nut, conical ring and drive pins (page 61). Please order cutting ring separately.

for blind hole machining

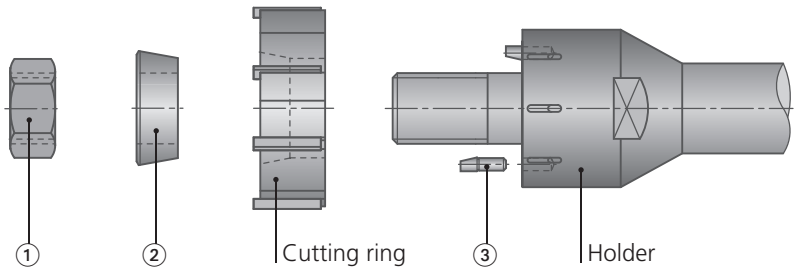


(..) = mm

for blind hole machining									
for Ø D	* Order No.	Order No.	ABS	Ø e	f ~	L	b	lbs
2.3858 – 2.5826 (60.600 – 65.599)	**518.78.013**	**518.82.013**	50	1.457 (37.0)	0.059 (1.5)	4.685 (119)	4.134 (105)	3.86
2.5827 – 2.7794 (65.600 – 70.599)	**518.78.014**	**518.82.014**	63	1.457 (37.0)	0.059 (1.5)	4.921 (125)	4.134 (105)	4.74
2.7795 – 3.1338 (70.600 – 79.599)	**518.78.009**	**518.82.009**	63	1.457 (37.0)	0.059 (1.5)	4.921 (125)	4.134 (105)	4.92
3.1339 – 3.5668 (79.600 – 90.599)	**518.78.010**	**518.82.010**	63	2.094 (53.2)	0.059 (1.5)	4.921 (125)	4.134 (105)	7.25
3.5669 – 3.9605 (90.600 – 100.599)	**518.78.011**	**518.82.011**	63	2.094 (53.2)	0.059 (1.5)	4.921 (125)	4.134 (105)	7.94

Includes: Cutting ring holder with connical screw, bushing and adjusting nut (page 61). Please order cutting ring separately.
(*Can also be used for through hole machining)

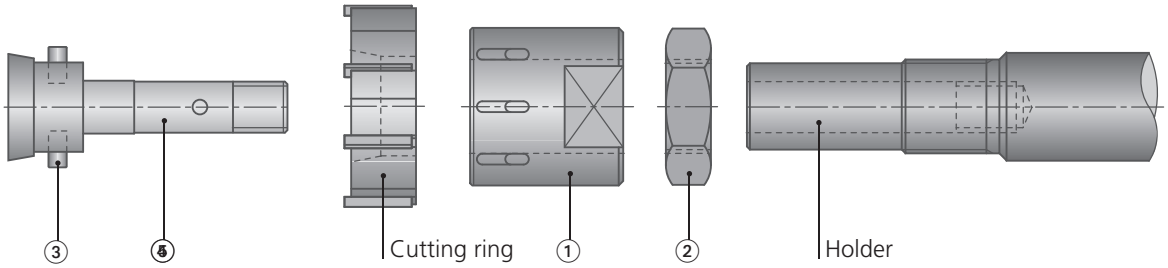
Replacement parts / Accessories: Holder for through hole machining



(..) = mm

	①	②	③
for Ø D	Adjusting nut Order No.	Conical ring Order No.	Drive pin Order No.
2.3858 – 3.1338 (60.600 – 79.599)	099.00.090	301.80.006	300.30.007
3.1339 – 3.9605 (79.600 – 100.599)	099.00.092	301.80.007	300.30.008
3.9606 – 4.3543 (100.600 – 110.599)	099.00.095	306.20.001	300.30.008

Replacement parts / Accessories: Holder for blind hole machining

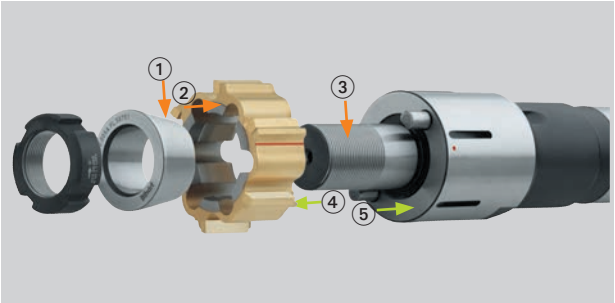


(..) = mm

	①	②	③	④		⑤	
for Ø D	Bushing Order No.	Adjusting Nut Order No.	Drive Pin Order No.	Conical screw Order No.	Ø e	Conical screw Order No.	Ø e
2.3858 – 2.7794 (60.600 – 70.599)	510.15.008	350.23.002	350.14.002	510.45.007	1.457 (37.0)	510.55.007	1.457 (37.0)
2.7795 – 3.1338 (70.600 – 79.599)	510.15.009	350.23.002	350.14.002	510.45.007	1.457 (37.0)	510.55.007	1.457 (37.0)
3.1339 – 3.5668 (79.600 – 90.599)	510.15.010	350.23.003	350.14.003	510.45.008	2.094 (53.2)	510.55.008	2.094 (53.2)
3.5669 – 3.9605 (90.600 – 100.599)	510.15.011	350.23.003	350.14.003	510.45.008	2.094 (53.2)	510.55.008	2.094 (53.2)

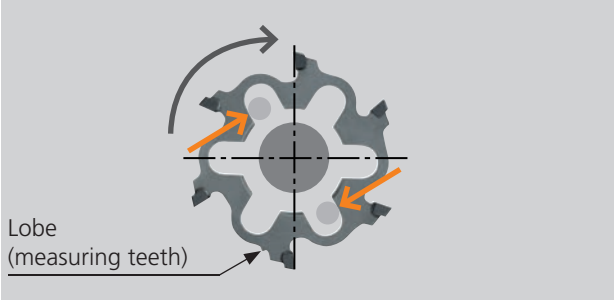
DIHART® Cutting Ring

Assembly instructions: Cutting ring holders for through hole machining

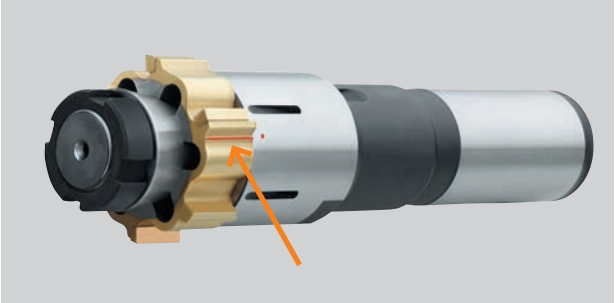


Greasing before assembly:

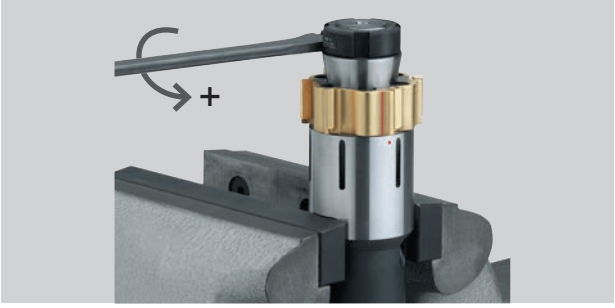
- Grease conical ring ① and I.D. cone of cutting ring ② on Ø 3.150 inch (80 mm) or larger.
- light grease ③
- No grease and must be free of debris ④ & ⑤



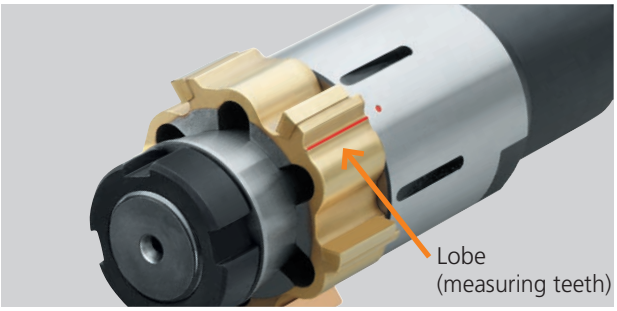
The position for the drive pins is marked with a lobe or in red. Before tightening and adjusting, rotate the cutting ring against the direction of machining until contact is made with the drive pins.



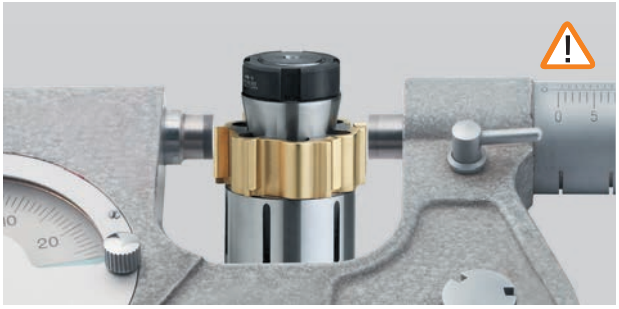
Align the markings on the cutting ring holder and cutting ring, to be sure that the coolant holes are aligned with the cutting edges.



Set-up the diameter utilizing the adjusting nut to the middle of the tolerance (counter-clockwise thread).



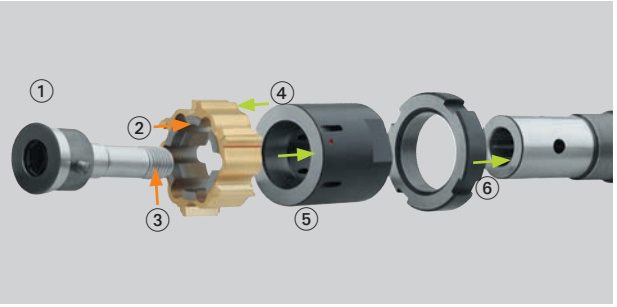
The diameter can only be measured at the marked cutting edges due to unequal flute spacing! (refer to page 101)



Measure the diameter

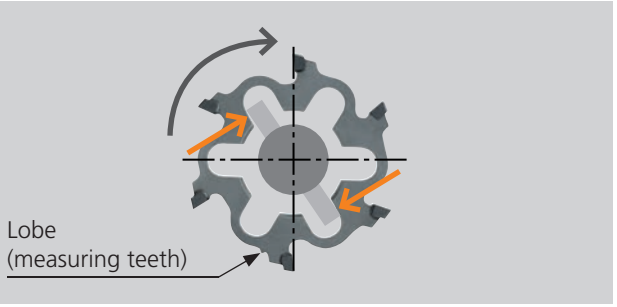
If the diameter was set too large, the adjusting nut must be loosened and the above process repeated.

Assembly instructions: Cutting ring holder for blind hole machining



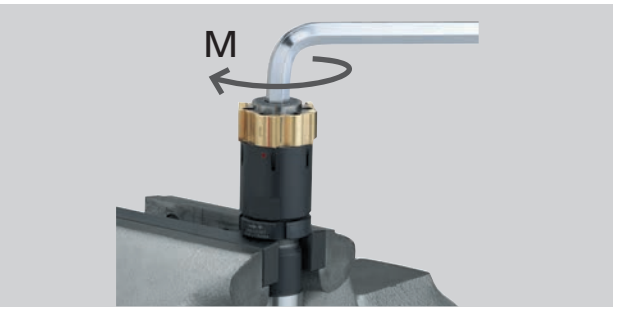
Greasing before assembly:

- Grease conical screw ① and I.D. cone of cutting ring ② on Ø 3.150 inch (80 mm) or larger.
- light grease ③
- No grease and must be free of debris ④, ⑤ & ⑥

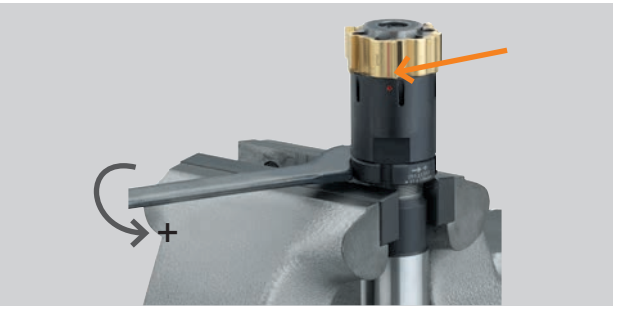


Screw the adjusting nut onto the holder with the smooth face away from the shank. Slide the bushing onto the holder with the wrench flats towards the shank. Mount the cutting ring with the conical screw.
After assembling the conical screw check that there is space between the bushing and cutting ring.
Tighten conical screw observing the specified torque M.

Dia. range	Torque M
2.3622 (60)	797 – 974 in-lbs (90 – 110 Nm)
2.3623 – 3.1492 (60.01 – 79.99)	1062 – 1239 in-lbs (120 – 140 Nm)
3.1493 – 3.9370 (80.00 – 100.0)	1593 – 1947 in-lbs (180 – 220 Nm)

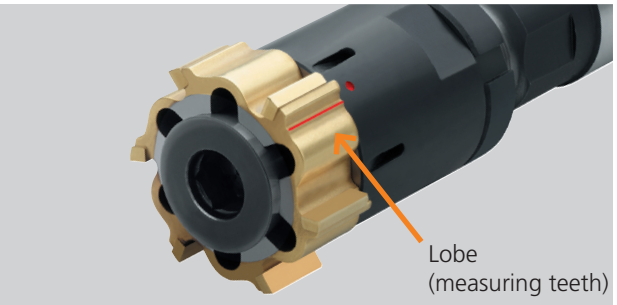


The position for the drive pins is marked with a lobe or in red. Before tightening and adjusting, rotate the cutting ring against the direction of machining until contact is made with the drive pins.



Align the markings on bushing and cutting ring to be sure that the coolant holes are aligned with the cutting edges.

Set-up the diameter to the middle of the tolerance.

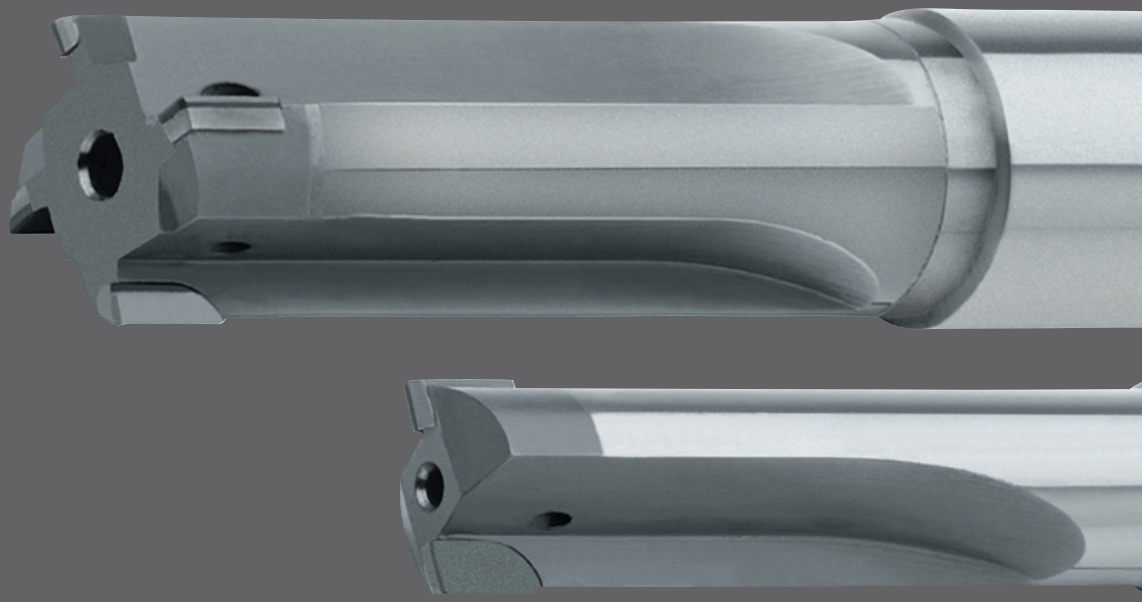


The diameter can only be measured at the marked cutting edges due to unequal flute spacing!

Measure the diameter

If the diameter was set too large, the adjusting nut must be loosened and the above process repeated.

DIHART® PCD Reamers



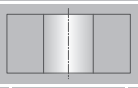
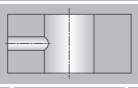
BENEFITS for you:

- 2 and 4 blade variations
- High stability from the carbide body
- Optimized for finishing pre-cast bores
- Through coolant supply for through and blind holes
- Newest cutting geometry

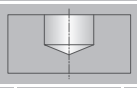
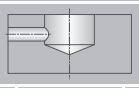
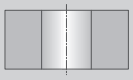
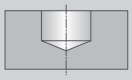
DIHART® PCD Reamers

DIHART® PCD Reamers

Tool Recommendation

Material group		Strength Rm (lbf/ins²)	Hardness HB	Material	Material example ANSI / SAE	High-speed machining						
												
						Order No. 4 edges *2 edges*	Cutting geometry (ASG)	Cutting material/ coating	Order No. 4 edges *2 edges*	Cutting geometry (ASG)	Cutting material/ coating	
P	1.0	≤ 72,500		non-alloy steels	1010 1144 1213							
	2.0	72,500 - 130,000		non-alloy / low alloy steels	1055 5115 5120							
	2.1	< 72,500		lead alloys	12L14							
	3.0	> 130,000		non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1064 4140							
	4.0	> 130,000		high alloy steels	H13 H21							
	4.1			HSS	M10 T4							
S	5.0		250	special alloys: Inconel, Hastelloy, Nimonic, stc.	Inconel® 718 Nimonic® 80A							
	5.1	58,000		titanium, titanium alloys	Ti-6Al-4V							
M	6.0	≤ 87,000		stainless steels	304L 316							
	6.1	<130,000		stainless steels	630							
	7.0	>130,000		stainless / fireproof steels	403 420							
K	8.0		180	gray cast iron	Class 25 G3000							
	8.1		250	alloy gray cast iron	A436 Type 2							
	9.0	≤ 87,000	130	ductile cast iron, ferritic	60-40-18 D4512							
	9.1		230	ductile cast iron, ferritic / perlitic	80-55-06 D5506							
	10.0	> 87,000	250	spheroidal graphite cast iron, perlitic malleable iron	100-70-03 07003							
	10.1		200	alloyed spheroidal graphite cast iron	A43D2							
	10.2		300	vermicular cast iron								
N	12.0		90	copper alloy, brass, lead-alloy bronze, lead bronze: good cut	316	**690.11** ***690.10***	ASG1101	PCD	**690.11** ***690.10***	ASG1101	PCD	
	12.1		100	copper alloy, brass, bronze:average cut								
	13.0		60	wrought aluminum alloys	6151 7075	**690.11** ***690.10***	ASG1101	PCD	**690.11** ***690.10***	ASG1101	PCD	
	13.1		75	cast aluminum alloy: Si-content <10% magnesium alloy	380 A356.0							
	14.0		100	cast aluminum alloy: Si-content > 10%	383 A413.0	**690.11** ***690.10***	ASG1101	PCD	**690.11** ***690.10***	ASG1101	PCD	
H	15.0	203,000		hardened steels < 45 HRC								
	16.0	261,000		hardened steels > 45 HRC, ≤ 55 HRC								

For inquiries concerning tools for materials without a recommendation, please contact us.

	High-speed machining						Conventional machining					
												
	Order No. 4 edges *2 edges*	Cutting geometry (ASG)	Cutting material/ coating	Order No. 4 edges *2 edges*	Cutting geometry (ASG)	Cutting material/ coating	Order No.	Cutting geometry (ASG)	Cutting material	Order No.	Cutting geometry (ASG)	Cutting material
	690.14 *690.13*	ASG1101	PCD	690.14 *690.13*	ASG1101	PCD						
	690.14 *690.13*	ASG1101	PCD	690.14 *690.13*	ASG1101	PCD						
	690.14 *690.13*	ASG1101	PCD	690.14 *690.13*	ASG1101	PCD						

Cutting speed and feed see pages 102-103

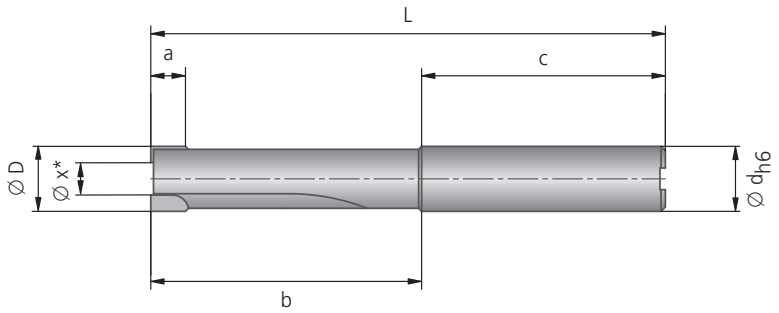
Important: See chapter ⓘ for more application details and safety notes!

DIHART® PCD Reamers

With 2 cutting edges

Ø 0.1575 – 0.7913 inch
(Ø 4.000 – 20.100 mm)

- with internal coolant supply
- solid carbide body



PCD Reamers		
Cutting material / coating	Order No.	Order No.
PCD	690.10	690.13

(..) = mm

Dimensions						
Ø D	min. diameter for front cutting Ø x ~	L	b	c	a	max stock allowance on dia. Ø
**0.1575 – 0.1811 (4.000 – 4.600)	Ø D – 0.094 (Ø D – 2.4)	2.520 (64)	1.102 (28)	1.417 (36)	0.276 (7)	0.02 (0.5)
**0.1812 – 0.2008 (4.601 – 5.100)	Ø D – 0.102 (Ø D – 2.6)	2.520 (64)	1.102 (28)	1.417 (36)	0.276 (7)	0.02 (0.5)
**0.2009 – 0.2205 (5.101 – 5.600)	Ø D – 0.106 (Ø D – 2.7)	2.520 (64)	1.102 (28)	1.417 (36)	0.276 (7)	0.02 (0.5)
0.2206 – 0.2402 (5.601 – 6.100)	Ø D – 0.110 (Ø D – 2.8)	2.795 (71)	1.378 (35)	1.417 (36)	0.276 (7)	0.06 (1.5)
0.2403 – 0.2598 (6.101 – 6.600)	Ø D – 0.134 (Ø D – 3.4)	2.992 (76)	1.575 (40)	1.417 (36)	0.276 (7)	0.06 (1.5)
0.2599 – 0.2795 (6.601 – 7.100)	Ø D – 0.134 (Ø D – 3.4)	2.992 (76)	1.575 (40)	1.417 (36)	0.276 (7)	0.06 (1.5)
0.2796 – 0.2992 (7.101 – 7.600)	Ø D – 0.134 (Ø D – 3.4)	2.992 (76)	1.575 (40)	1.417 (36)	0.276 (7)	0.08 (2.0)
0.2993 – 0.3189 (7.601 – 8.100)	Ø D – 0.141 (Ø D – 3.6)	2.992 (76)	1.575 (40)	1.417 (36)	0.276 (7)	0.10 (2.5)
0.3190 – 0.3386 (8.101 – 8.600)	Ø D – 0.141 (Ø D – 3.6)	3.346 (85)	1.575 (40)	1.772 (45)	0.276 (7)	0.10 (2.5)
0.3387 – 0.3583 (8.601 – 9.100)	Ø D – 0.161 (Ø D – 4.1)	3.346 (85)	1.575 (40)	1.772 (45)	0.276 (7)	0.12 (3.0)
0.3584 – 0.3976 (9.101 – 10.100)	Ø D – 0.181 (Ø D – 4.6)	3.346 (85)	1.575 (40)	1.772 (45)	0.276 (7)	0.12 (3.0)
0.3977 – 0.4567 (10.101 – 11.600)	Ø D – 0.197 (Ø D – 5.0)	3.740 (95)	1.969 (50)	1.772 (45)	0.276 (7)	0.12 (3.0)
0.4568 – 0.5552 (11.601 – 14.100)	Ø D – 0.236 (Ø D – 6.0)	3.740 (95)	1.969 (50)	1.772 (45)	0.276 (7)	0.16 (4.0)
0.5553 – 0.5945 (14.101 – 15.100)	Ø D – 0.260 (Ø D – 6.6)	3.858 (98)	1.969 (50)	1.890 (48)	0.276 (7)	0.16 (4.0)
0.5946 – 0.6339 (15.101 – 16.100)	Ø D – 0.280 (Ø D – 7.1)	3.858 (98)	1.969 (50)	1.890 (48)	0.276 (7)	0.16 (4.0)
0.6340 – 0.7126 (16.101 – 18.100)	Ø D – 0.315 (Ø D – 8.0)	4.252 (108)	2.362 (60)	1.890 (48)	0.276 (7)	0.20 (5.0)
0.7127 – 0.7913 (18.101 – 20.100)	Ø D – 0.339 (Ø D – 8.6)	4.331 (110)	2.362 (60)	1.968 (50)	0.276 (7)	0.20 (5.0)

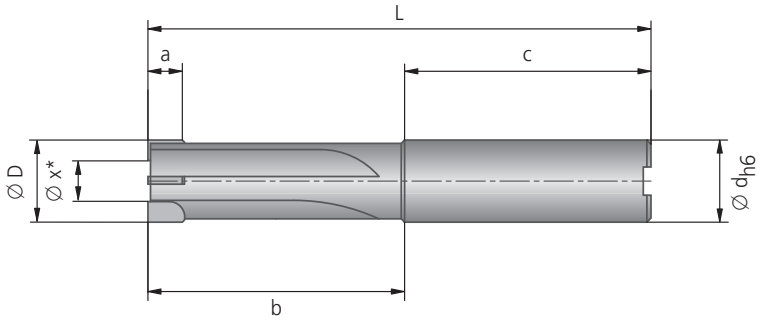
Order example:

Order No.	Bore diameter	Bore tolerance	Material or ASG
690.11	Ø 0.7087" (Ø 18 mm)	+.0005/-0	A360.2

Ø 0.3780 – 0.7913 inch
(Ø 9.601 – 20.100 mm)

DIHART® PCD Reamers
With 4 cutting edges

with internal coolant supply ■
solid carbide body ■



PCD Reamers		
Cutting material / coating	Order No.	Order No.
PCD	690.11	690.14

(..) = mm

Dimensions						
Ø D	min. diameter for front cutting Ø x ~	L	b	c	a	max stock allowance on dia. Ø
0.3780 – 0.3976 (9.600 – 10.100)	Ø D – 0.141 (Ø D – 3.6)	3.346 (85)	1.575 (40)	1.772 (45)	0.276 (7)	0.06 (1.5)
0.3977 – 0.4567 (10.101 – 11.600)	Ø D – 0.150 (Ø D – 3.8)	3.740 (95)	1.969 (50)	1.772 (45)	0.276 (7)	0.06 (1.5)
0.4568 – 0.5552 (11.601 – 14.100)	Ø D – 0.150 (Ø D – 3.8)	3.740 (95)	1.969 (50)	1.772 (45)	0.276 (7)	0.08 (2.0)
0.5553 – 0.5945 (14.101 – 15.100)	Ø D – 0.154 (Ø D – 3.9)	3.858 (98)	1.969 (50)	1.890 (48)	0.276 (7)	0.08 (2.0)
0.5946 – 0.6339 (15.101 – 16.100)	Ø D – 0.154 (Ø D – 3.9)	3.858 (98)	1.969 (50)	1.890 (48)	0.276 (7)	0.08 (2.0)
0.6340 – 0.7126 (16.101 – 18.100)	Ø D – 0.181 (Ø D – 4.6)	4.252 (108)	2.362 (60)	1.890 (48)	0.276 (7)	0.12 (3.0)
0.7127 – 0.7913 (18.101 – 20.100)	Ø D – 0.181 (Ø D – 4.6)	4.331 (110)	2.362 (60)	1.968 (50)	0.276 (7)	0.12 (3.0)

Order example:

Order No.	Bore diameter	Bore tolerance	Material or ASG
690.11	Ø 0.7087" (Ø 18 mm)	+.0005/-0	A360.2

Unique: Reaming with Indexable Insert Technology

The Technology

The use of indexable inserts is revolutionizing reaming with multiple blade reamers and setting new levels in precision and function.

Each insert has two cutting edges.
Unlike boring tools, inserts for reaming tools are ground as a complete set directly on the body in their specific insert pocket.

The positions of the individual cutting edges on an insert are precisely defined during manufacturing for the application. Cutting edges ground in a single operation ensure the degree of precision required for high precision bore machining.

Numerous cutting materials and coatings for machining a wide variety of materials.

BENEFITS for you:

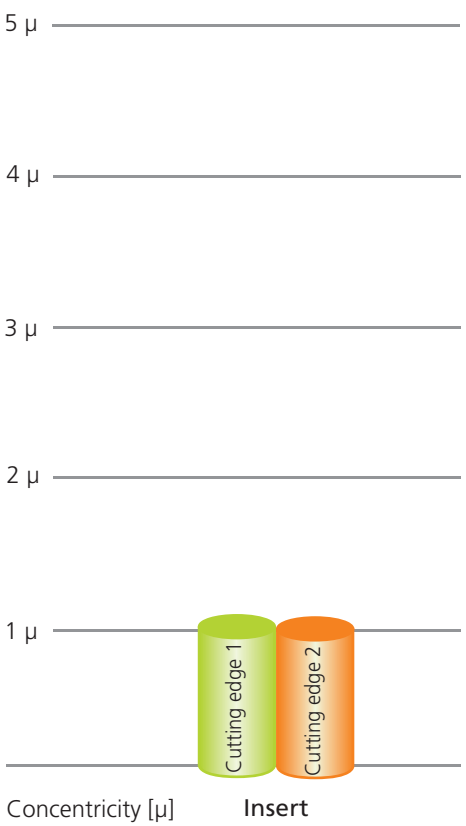
- Ground to size for maximum precision
- Low cost per bore
- Short set-up time
- Maximum flexibility
- Concept can be used for an extremely wide variety of DIHART® tools
- Low cost changes to tool and geometry
- Certain applications can be adjusted for wear compensation for extremely small bore tolerances

Two cutting edge insert

Inserts can be indexed for the shortest possible set-up without affecting the tools precision.

Set-up time is reduced and tool life is doubled by using two cutting edges.

Precision of rotations



Design your own tool!

There is an inquiry form on page 72.

Enter the required dimensions and send us your inquiry. We check your specifications for technical feasibility and you receive a prompt reply.

Assembly instructions

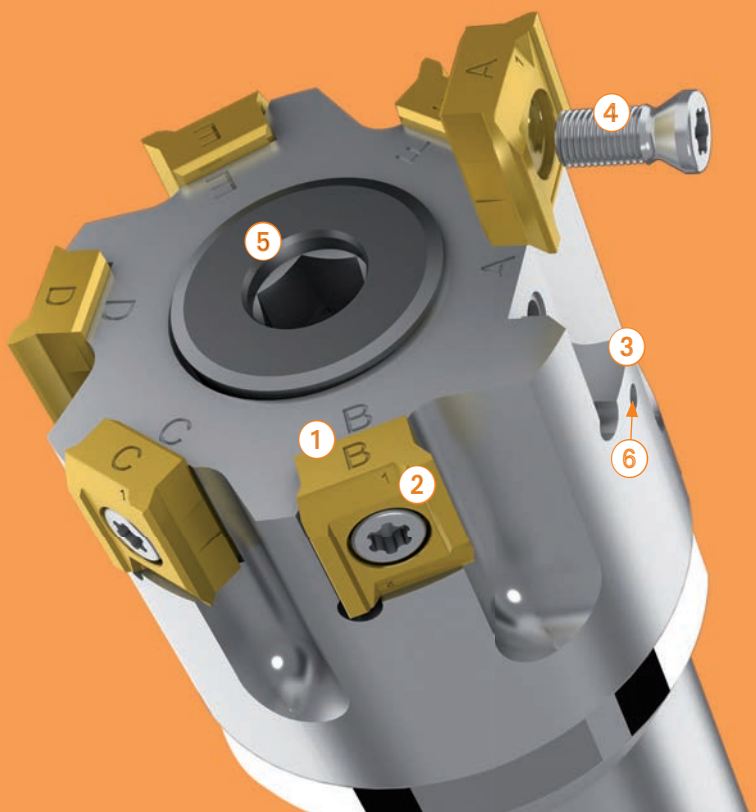
Cleaning:

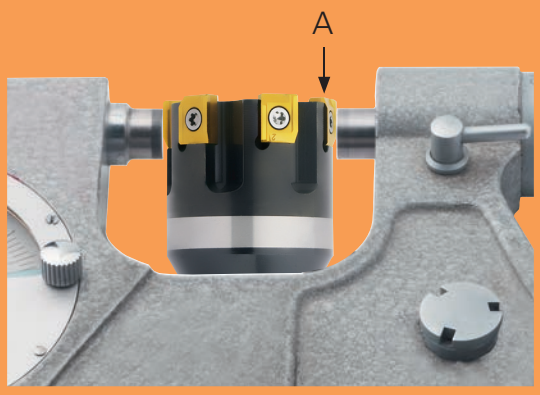
Make sure that the insert seats ③ and indexable inserts are absolutely clean (grease and debris free). If necessary, remove tiny dust particles with compressed air!

Assembly:

- All indexable inserts and insert seats are marked with letters ①. This ensures correct assignment to the insert seat.
- The number markings ② ensure that all indexable inserts are positioned correctly.

Tighten the screw ④ (order no. N00 57710) to 22 in-lbs (2.5 Nm) (torque wrench order no. L05 00940)





Measuring the diameter:

The measuring inset is located at letter A and is also marked on the holder with a punch mark ⑥. If the diameter is too large, loosen the conical screw ⑤ and turn it to the right to set the correct diameter. The conical screw ⑤ does not have to be removed completely!

Caution!

- Uneven flute spacing!
- There are 2 inserts 180° opposed = measuring flute A.
- Measure the diameter at the front of the cutter (see illustration). Measuring further back will yield an incorrect measurement as inserts are ground with back taper.
- Avoid damaging the inserts.
- When indexing the insert on an adjustable holder, the diameter may need to be adjusted.

Patent applied for inside and outside Germany (WSP-Reiben)

Inquiry Form: Fax to (800) 865-6638

DIHART® Insert Reaming

Design your own tool!

Unique: Reaming with Indexable Insert Technology

The use of inserts is revolutionizing multiple blade reaming and setting new levels in precision, function and economy.

We'll check your specifications for technical feasibility and reply promptly.

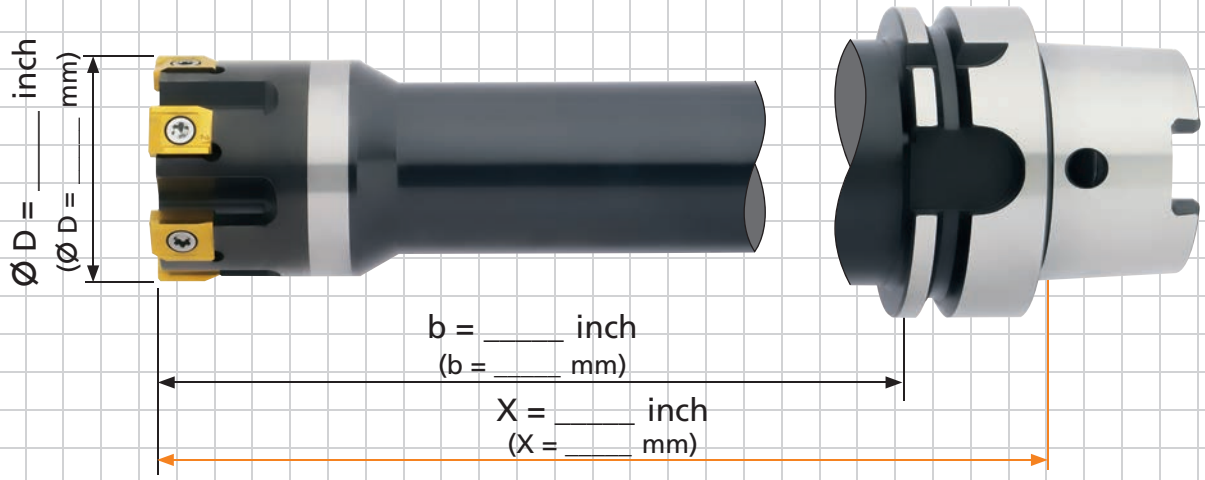
Company: Contact:

Department: E-Mail:

Telephone: Customer-No.:

Fax: Distributor:

Date:



Material to be machined:

Machining method

☐ through hole ☐ blind hole

Length of bore:

Interrupted cut

☐ yes ☐ no

Bore tolerance:

Required surface finish:

Stock allowance on dia.:

Required cutting material/coating

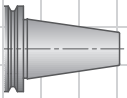
☐ carbide ☐ TiN ☐ DBG-N
☐ DST ☐ DJC ☐ PCD
☐ DBF ☐ DBC
☐ other:

Other:

No. of inserts (Z)
for calculating the feed rate
f_z inch/tooth (mm/tooth):

Ø D	Z
1.7953 – 3.1338 (45.600 – 79.599)	6
3.1339 – 3.9605 (79.600 – 100.599)	8
3.9606 – 4.3542 (100.600 – 110.599)	10
4.3543 – 5.4960 (110.600 – 139.599)	12

Connection (Type and size)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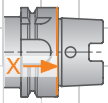
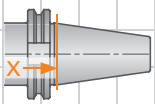
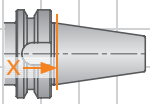


☐ HSK _____
DIN 69893 A

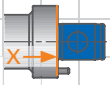


☐ ISO _____
DIN 69871 AD/B

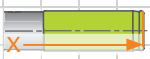


☐ BT _____
JIS B 6339 AD/B
(MAS 403 BT)

☐ DAH _____



☐ ABS _____



☐ Ø _____ inch
☐ (Ø _____ mm)
similar DIN 1835

other ☐ _____

DIHART® Easy Special™

Inquiry Form: Fax to (800) 865-6638

Design your own tool!

No standard solution within your range? Dimensions not what you require?

Easy Special™ makes it possible for you create your own combination of standard modules in the widest variety of dimensions.
Select the series, define the effective length and choose the desired adapter for the tool.

We'll check your specifications for technical feasibility and reply promptly.

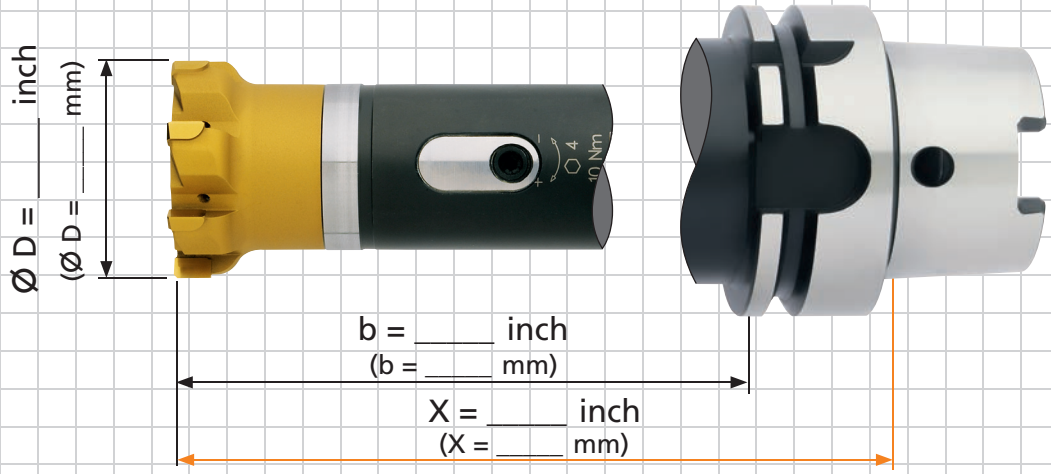
Company: | Contact:

Department: | E-Mail:

Telephone: | Customer-No.:

Fax: | Distributor:

Date:



Material to be machined:

Machining method
☐ through hole ☐ blind hole

Length of bore:

Interrupted cut
☐ yes ☐ no

Bore tolerance:

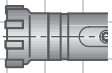
Required surface finish:

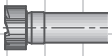
Stock allowance on dia.:

Required cutting material/coating
☐ carbide ☐ TiN ☐ DBG-N
☐ DST ☐ DJC ☐ PCD
☐ DBF ☐ DBC
☐ other:

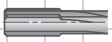
Other:

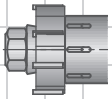
Cutter Style

☐ Reamax® TS 

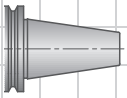
☐ Reamax® 

☐ Monomax® 

☐ Solid carbide reamer 

☐ Cutting ring 

Connection (Type and size)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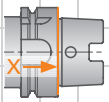
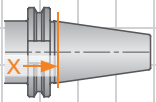

☐ HSK _____
DIN 69893 A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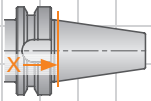
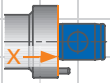
DIN 69871 AD/B


☐ BT _____
JIS B 6339 AD/B
(MAS 403 BT)


☐ DAH _____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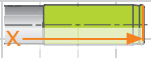

☐ Ø _____ inch
☐ (Ø _____ mm)
similar DIN 1835

other ☐ _____

DIHART® Special Tools

Special Solutions and Multi-step Tools – More Possibilities, Lower Machining Costs

The development of customers specific solutions represents a major area of experience for DIHART®.

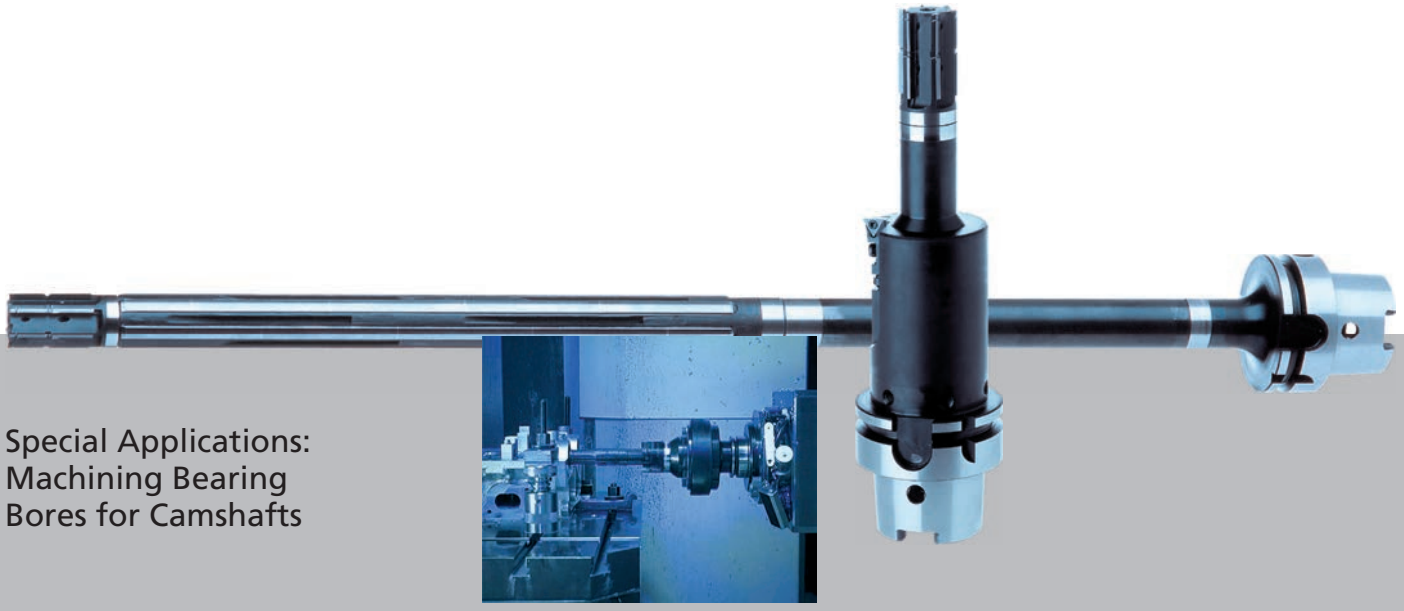
It is often impossible to carry out machining tasks with standard tools because of the demands for form, tolerance or quality that require special process analysis and tool development work.

The form on page 108 of this catalog can be used at any time to inquire about and order special tools.

References to applications can be found in our application examples.

BENEFITS for you:

- Application specific design
- Reduction of cycle time
- Technical advice by experienced DIHART® engineers
- Combining several machining operations
- Highest efficiency, productivity and cost reduction



Special Applications: Machining Bearing Bores for Camshafts

Example:
Finish machining operation for camshaft bearing for cylinder heads in Ck AlSi9Cu3 for car engines.

The task:
To simplify the process on transfer lines or machining centers.

The solution:
Using application specific tooling, machining the cylinder heads on transfer lines is reduced to one station. On machining centers, a short pilot tool, fitted with PCD blades is initially used to pre-machine the bores for the first step. The finishing tool (also with PCD blades), which matches the length of the engine, then reams all the bores to size: ∅ 1.025" (∅26.045 mm) H7.

The concept has now become well established in engine and vehicle manufacturing.

The cutting data is as follows:

v_C = 721 ft/min (220 m/min);
f = 42.5 in/min (1080 mm/min)

Patent applied for inside and outside Germany

Multi-flute stepped reaming tools and special solutions from DIHART® improve the economics of reaming. The latest generation of tools is characterized by extremely high cutting speeds and feeds. Designed to suit workpiece and material, they guarantee dimensional stability and reliable production.

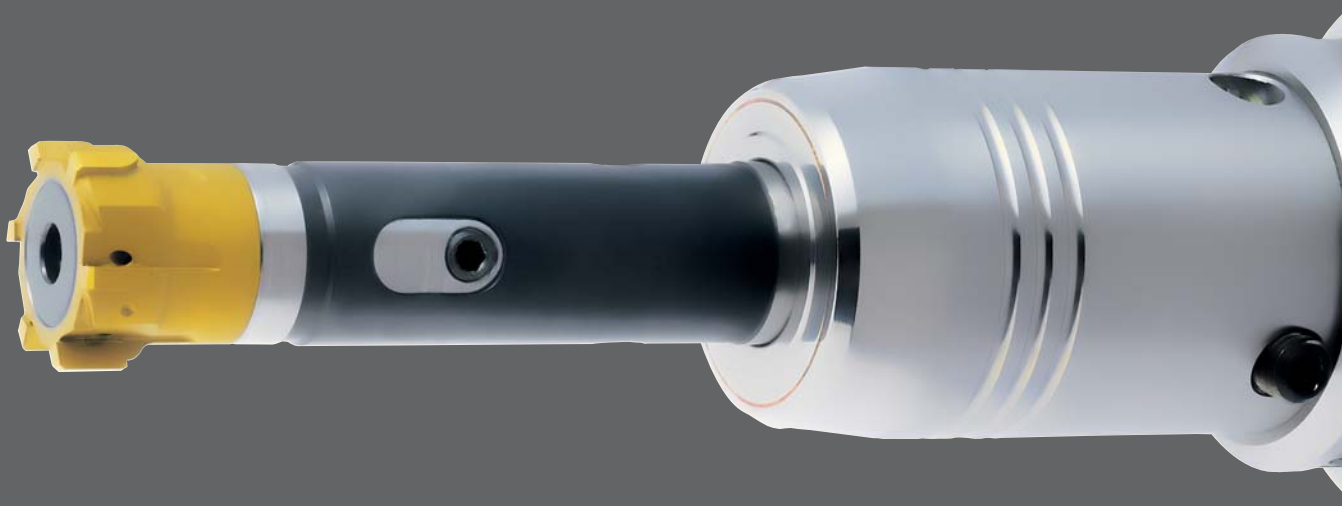
Multi-step tools

Multi-step and modular reaming tools from DIHART® improve production performance. DIHART® increases the range of functions for the tools and in doing so reduces machining time and costs.

Special tools

- Use of latest technology
- Tool design to suit application
- Technical support from DIHART® experts
- Multi-flute reaming tools for best bore quality and economy
- Reduction in secondary costs

DIHART® Compensating Holder



DIHART® DAH® compensating holders are static compensating systems; DPS floating holder are dynamic compensating systems. Axial and radial run-out are very easily compensated for.

Using the patented DAH® from DIHART® the concentricity of reaming tools and all rotating machining tools can be adjusted quickly, effortlessly and precisely, right on the machine.

Precision bore machining can then be executed with extremely high cutting speeds and feed values.

The bore quality achieved, such as circularity, cylindricity and surface finish will satisfy your production needs.

The use of the DAH® enables you to machine precision bores up to tolerance class IT 4.

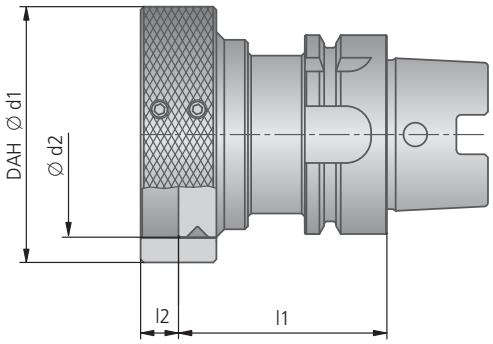
DIHART® Compensating Holder

BENEFITS for you:

- Compensation systems for µm-precise concentricity
- Easy correction of concentricity and axial error
- High speed machining
- With internal coolant supply
- Minimal run-out contributed to longer tool life

DIHART DAH® Compensating Holder
with HSK Adapter DIN 69893 A

■ with internal coolant supply



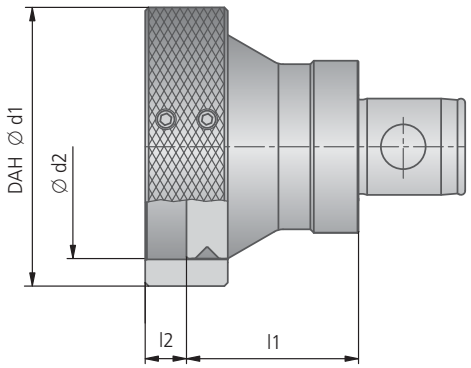
(..) = mm

HSK-A						
Order No.	DAH Ø d1	HSK-A	Ø d2	l1	l2	lbs
545.07.011	63	63	1.969 (50)	2.598 (66)	0.472 (12)	3.24
545.07.002	81	40	2.559 (65)	2.047 (52)	0.472 (12)	2.14
545.07.003	81	50	2.559 (65)	2.598 (66)	0.472 (12)	3.06
545.07.004	81	63	2.559 (65)	2.598 (66)	0.472 (12)	3.92
545.07.009	81	80	2.559 (65)	2.992 (76)	0.472 (12)	5.78
545.07.010	81	100	2.559 (65)	2.992 (76)	0.472 (12)	7.89
545.07.005	115	80	3.937 (100)	2.992 (76)	0.630 (16)	3.86
545.07.006	115	100	3.937 (100)	3.110 (79)	0.630 (16)	11.42

Includes: DAH® compensating holder complete with assembling screws and DAH® ring. DAH® replacement parts see page 84.

with ABS® Adapter

■ with internal coolant supply



(..) = mm

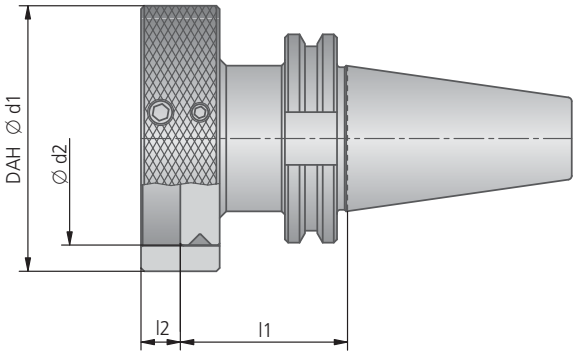
ABS						
Order No.	DAH Ø d1	ABS	Ø d2	l1	l2	lbs
545.00.001	81	40	2.559 (65)	1.969 (50)	0.472 (12)	1.98
545.00.003	81	50	2.559 (65)	1.969 (50)	0.472 (12)	3.20
545.00.002	115	63	3.937 (100)	2.126 (54)	0.630 (16)	6.06

Includes: DAH® compensating holder complete with assembling screws and DAH® ring. DAH® replacement parts see page 84.

EP 0 547 049 and other patents (ABS®)

DIHART DAH® Compensating Holder
with Taper Shank DIN 69871 AD/B

with internal coolant supply ■
long version on request ■



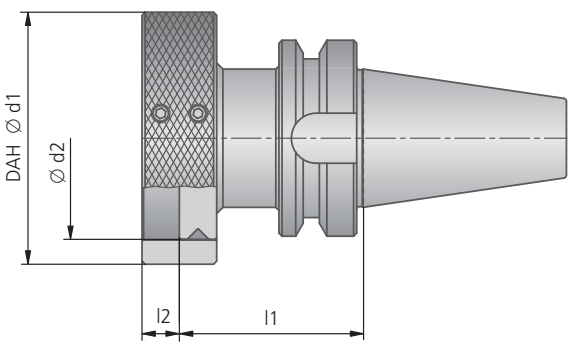
(..) = mm

DIN 69871 AD/B						
Order No.	DAH Ø d1	ISO taper	Ø d2	l1	l2	lbs
545.10.010	63	30	1.969 (50)	2.008 (51)	0.472 (12)	2.16
545.10.011	63	40	1.969 (50)	2.008 (51)	0.472 (12)	3.20
545.10.001	81	40	2.559 (65)	2.008 (51)	0.472 (12)	3.57
545.10.003	81	50	2.559 (65)	2.008 (51)	0.472 (12)	8.13
545.10.004	115	50	3.937 (100)	2.716 (69)	0.630 (16)	12.37

Includes: DAH® compensating holder complete with assembling screws and DAH® ring. DAH® replacement parts see page 84.

with Taper Shank JIS B 6339 AD/B (MAS 403 BT)

with internal coolant supply ■
long version on request ■



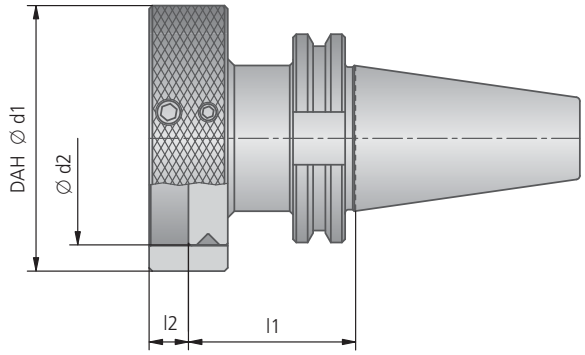
(..) = mm

JIS B 6339 AD/B						
Order No.	DAH Ø d1	ISO taper	Ø d2	l1	l2	lbs
545.77.011	63	40	1.969 (50)	2.323 (59)	0.472 (12)	3.42
545.77.001	81	40	2.559 (65)	2.323 (59)	0.472 (12)	3.95
545.77.003	81	50	2.559 (65)	2.756 (70)	0.472 (12)	10.32
545.77.004	115	50	3.937 (100)	3.464 (88)	0.630 (16)	14.55

Includes: DAH® compensating holder complete with assembling screws and DAH® ring. DAH® replacement parts see page 84.

DIHART DAH® Compensating Holder
with CAT / MS Taper

■ with internal coolant supply through taper or flange (MS)



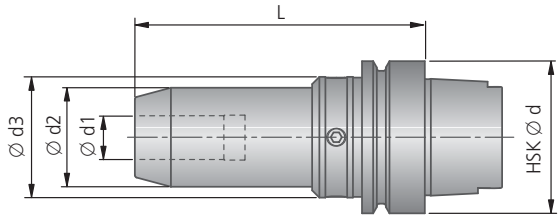
(..) = mm

CAT / MS Taper					
Order No.	DAH Ø d1	CAT MS Taper	Ø d2	l1	l2
545.87.010	50	30	1.969 (50)	2.008 (51)	0.472 (12)
545.87.011	50	40	1.969 (50)	2.008 (51)	0.472 (12)
545.87.001	65	40	2.559 (65)	2.008 (51)	0.472 (12)
545.87.003	65	50	2.559 (65)	2.008 (51)	0.472 (12)
545.87.004	100	50	3.937 (100)	2.716 (69)	0.630 (16)

Includes: DAH® compensating holder complete with assembling screws and DAH® ring. DAH® replacement parts see page 84.

HSK Adapter

■ with internal coolant supply
■ clamping range ∅ 0.118 – 0.787 inch (∅3 – 20 mm)

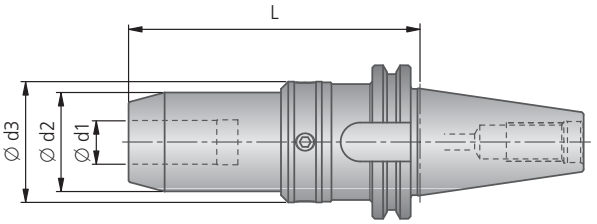


(..) = mm

HSK						
Order No.	HSK Ø d	Ø d1	Ø d2	Ø d3	L	lbs
54B.10.00030	63	0.787 (20)	1.968 (50)	1.614 (41)	4.331 (110)	2.87

Taper Shank DIN 69871 AD/B

with internal coolant supply ■
clamping range ∅ 0.118 – 0.787 inch (∅3 – 20 mm) ■

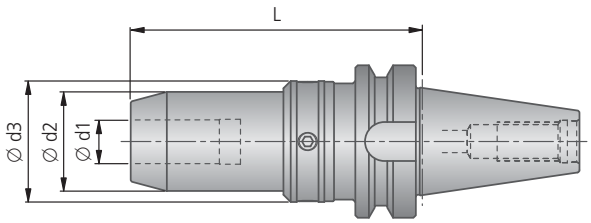


(..) = mm

DIN 69871 AD						
Order No.	ISO Taper	Ø d1	Ø d2	Ø d3	L	lbs
54B.90.00030	40	0.787 (20)	1.968 (50)	1.614 (41)	4.331 (110)	3.31

Taper Shank JIS B 6339 AD (MAS 403 BT)

■ with internal coolant supply
■ clamping range ∅ 0.118 – 0.787 inch (∅3 – 20 mm)

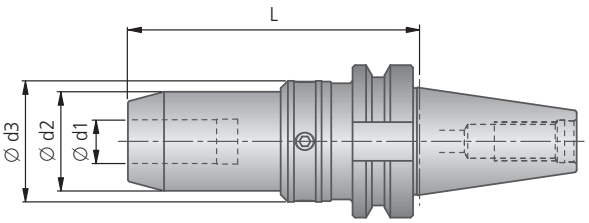


(..) = mm

JIS B 6339 AD (MAS 403 BT)						
Order No.	BT Taper	Ø d1	Ø d2	Ø d3	L	lbs
54B.91.00030	40	0.787 (20)	1.968 (50)	1.614 (41)	4.331 (110)	3.75

Taper Shank CAT

with internal coolant supply ■
clamping range ∅ 0.118 – 0.787 inch (∅3 – 20 mm) ■



(..) = mm

CAT40					
Order No.	CAT Taper	Ø d1	Ø d2	Ø d3	L
54B.93.00030	40	0.750 (19.05)	1.614 (41)	1.969 (50)	4.764 (121)
54B.93.00035	40	0.787 (20)	1.614 (41)	1.969 (50)	4.764 (121)

Includes: DAH® 50 HS compensating holder complete with adjustment ring and adjustment screws.
Reducer sleeve for clamping range ∅ 0.118 – 0.630 inch (∅ 3 – 16 mm) see page 85.

DIHART DAH® Compensating Holder
Assembly instructions

Clean grinding surfaces thoroughly
→ dry and free of grease and debris.

Pre-load evenly with the 6 assembling screws ②
(compressing the spring washer flat)

Adjusting the DAH® must be done in the machine on the spindle where the tool will be in use!
Center the indicator on the gauge line as shown.
KOMET recommends using an indicator with either 0.0001" or 0.002 µm increments

Determine the run-out by rotating the tool until the indicator is at its highest reading.
Rotate so that the adjustment screw ④ is at the highest point.
Tighten the adjusting screw ④ so that the indicated run-out is reduced in half.
Repeat this procedure until the run-out error is < 5 µm (0.0002").

Tighten the assembling screws ② in a cross-wise pattern.
Please observe the specified torque M in the index-table. After fastening, fix the adjusting ring ① by locking the thread pin ④.

DAH Ø d1	Torque M
63	62 – 80 in-lbs (7 – 9 Nm)
81	62 – 80 in-lbs (7 – 9 Nm)
115	221 – 310 in-lbs (25 – 35 Nm)

Cross-wise pattern

A final check should show a run-out of < 5 µm (0.0002").

DIHART DAH® 50 Compensating Holder
High speed machining – with maximum quality

For maximum precision and concentricity

DIHART's DAH® 50 HS compensating holders ensure that the tool runs concentrically. They allow precision adjustment of the tool in the µm range at the cutting edge reducing any machine spindle error to a minimum.

Maximum concentricity guarantees reliable production for extremely close tolerances.

The quality of the bore, including surface finish, roundness, parallelism and above all, dimensional accuracy are improved considerably.

This significantly increases the process capability of DIHART® multiple blade reamers.

BENEFITS for you:

- Proven hydraulic clamping
- Maximum concentricity and repeatability < 1 µ for uniform blade contact
- Extremely simple run-out adjustment
- Compact design
- Optimum vibration damping for excellent surface quality
- Reducer sleeves increase clamping Ø range.
- Speeds up to 25,000 rpm
- Compatible with minimum quantity coolant (MQL)

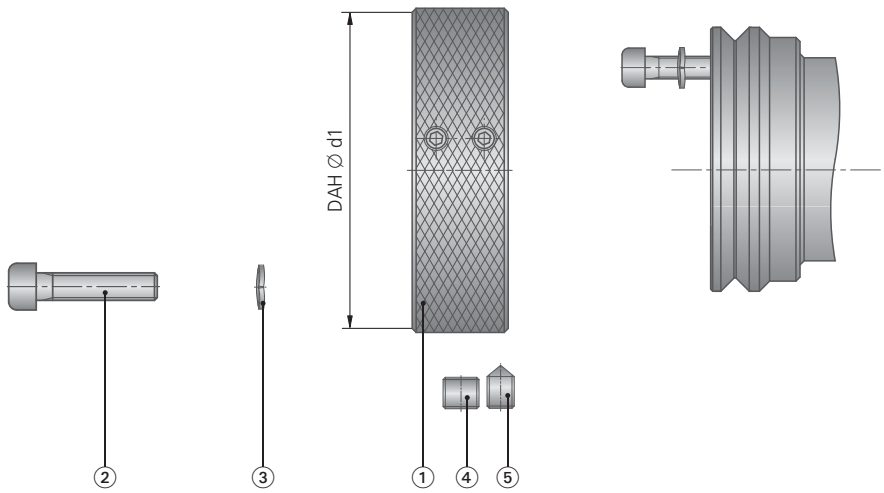
Simple handling – reduced machine down times

In comparison to previous solutions the hydraulic chuck is integrated into the new DIHART® compensating holders. This means one less connection.

Four adjustable screws allow rapid and precise adjustment of the concentricity of the multiple blade reamer, reducing run-out to virtually zero. The extremely slim design of these new compensating holders ensures that they fit easily into practically all tool magazines.

The DIHART DAH® 50 HS compensating holders enable the run-out of a tool to be adjusted with µm-precision at the cutting edge, reducing to a minimum any machine spindle error.

DIHART DAH® Compensating Holder
Replacement parts / Accessories



	①	②		③	④		⑤	
for DAH Ø d1	Adjusting ring Complete with ④ & ⑤ Order No.	Assembling screw Article	Order No.	Spring washer Order No.	Radial adjusment screw Article	Order No.	Hanger point screw Article	Order No.
63	545.25.010	M5×22	545.26.001A	545.27.001	M8×6	5505108006	M6×8	5505206008
81	545.25.001	M5×22	545.26.001A	545.27.001	M8×6	5505108006	M6×10	5505206010
115	545.25.002	M8×30	545.26.002	545.27.002	M8×8	5505108008	M8×10	5505208010 (x 2)

Replacement parts ABS®

ABS location spigot	
ABS	Order No. Spares assortment
32	N00 17660
40	N00 17670
50	N00 17681
63	N00 17691
80	N00 17700

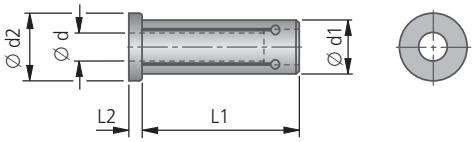
ABS location hole	
ABS	Order No. Spares assortment
32	N00 15260
40	N00 15270
50	N00 15281
63	N00 15291
80	N00 15300

Individual spares (spares assortment) are supplied for replacement purposes only. Any other use is not permitted and represents an infringement of the patent.

Replacement parts HSK-A

HSK-A Coolant supply unit		
HSK-A	Order No. Spares assortment	Order No. O ring
40	51391 00040	52911 00751 (x 2)
50	51391 00050	52911 00920 (x 2)
63	51391 00063	52911 01025 (x 1) 52911 01020 (x 1)
80	51391 00080	52911 01320 (x 2)
100	51391 00100	52911 01430 (x 2)

Includes HSK-A spares assortment:
Coolant tube, locking collar and two O rings.

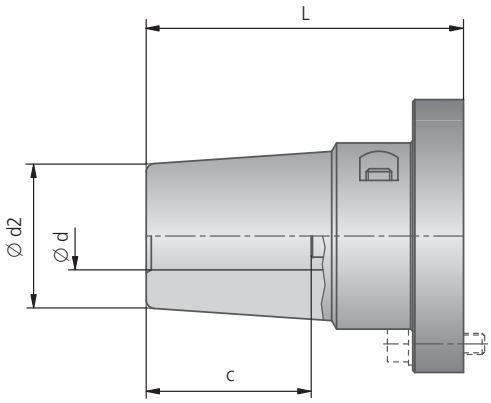


(..) = mm

Reducer sleeve						
Order No.	Ø d	Ø d1	Ø d2	L1	L2	lbs
L01 14291	0.118 (3)	0.472 (12)	0.748 (19)	1.772 (45)	0.079 (2)	0.22
L01 14301	0.157 (4)					
L01 14311	0.197 (5)					
L01 14321	0.236 (6)					
L01 14331	0.315 (8)					
L01 14261	0.118 (3)	0.787 (20)	1.142 (29)	1.988 (50.5)	0.079 (2)	0.22
L01 14271	0.157 (4)					
L01 14281	0.197 (5)					
L01 14201	0.236 (6)					
L01 14211	0.315 (8)					
L01 14221	0.394 (10)					
L01 14231	0.472 (12)					
L01 14241	0.551 (14)					
L01 14251	0.630 (16)					
L01 14501	0.236 (6)	1.260 (32)	1.535 (39)	2.382 (60.5)	0.118 (3)	0.66
L01 14511	0.315 (8)					
L01 14521	0.394 (10)					
L01 14531	0.472 (12)					
L01 14541	0.551 (14)					
L01 14551	0.630 (16)					
L01 14561	0.709 (18)					
L01 14571	0.787 (20)					
L01 14581	0.984 (25)					

DIHART DAH® Bushing
Hydraulic chuck

- with internal coolant supply
- easy length adjustment from outside



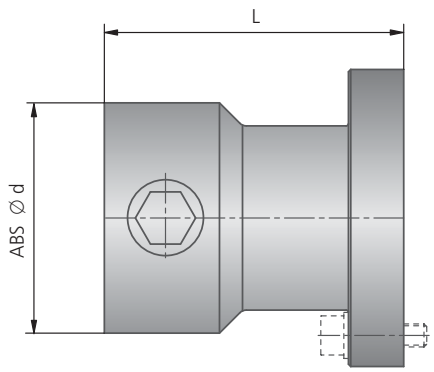
(..) = mm

Hydraulic chuck						
Order No.	Ø d	DAH	Ø d2	L	c	lbs
545.62.004	0.472 (12)	63	0.945 (24)	2.756 (70)	1.378 – 1.772 (35 – 45)	0.95
545.62.015	0.630 (16)	81	1.338 (34)	2.953 (75)	1.535 – 1.929 (39 – 49)	
545.62.016	0.787 (20)	81	1.457 (37)	2.953 (75)	1.614 – 2.008 (41 – 51)	1.72
545.62.017	0.984 (25)	81	1.968 (50)	4.331 (110)	1.811 – 2.205 (46 – 56)	3.15
545.62.018	1.260 (32)	81	2.362 (60)	4.527 (115)	2.008 – 2.401 (51 – 61)	3.79

Includes: DAH® adapter complete with length adjustment screw. Reducer sleeve see page 85.

for tools with ABS® connection

- with internal coolant supply



(..) = mm

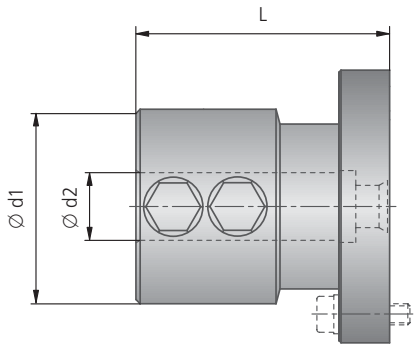
ABS				
Order No.	ABS Ø d	DAH	L	lbs
545.40.006	32	63	1.653 (42)	
545.40.007	32	81	1.378 (35)	
545.40.001	40	81	1.378 (35)	0.97
545.40.003	50	81	2.559 (65)	1.83
545.40.004	50	115	1.811 (46)	2.62
545.40.002	63	115	2.047 (52)	3.22

Includes: DAH® adapter complete with ABS® hardware.

EP 0 547 049 and other patents (ABS®)

DIHART DAH® Cylindrical Shank Bushing
for use with DIN 1835 B cylindrical shank weldon

with internal coolant supply ■

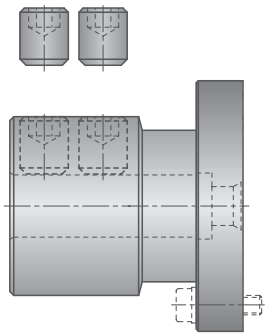


(..) = mm

DAH				
Order No.	Ø d1	DAH	L	Ø d2
545.85.001	1.575 (40)	81	2.047 (52)	0.500 (12)
545.85.002	1.575 (40)	81	2.047 (52)	0.625 (16)
545.85.003	1.772 (45)	81	2.441 (62)	0.750 (19)
545.85.004	1.890 (48)	81	2.441 (62)	1.000 (25)
545.85.005	2.835 (72)	115	2.992 (76)	1.500 (38)

Supply includes: DAH® adapter complete with set screw. For replacement parts, see below

Replacement parts



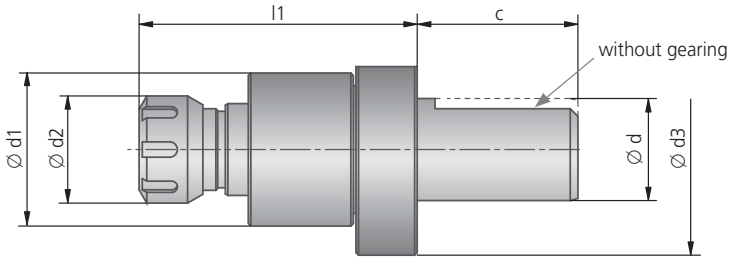
(..) = mm

for Cylindrical Shank Bushing	
DAH	 Order No.
81	5505108012 (x2)
81	5505108012 (x2)
81	5505108012 (x2)
81	5505108012 (x2)
115	5505112016 (x2)

DIHART® DPS Floating Holder

VDI connection DIN 69880

- shank without gearing
- for stationary tools
- with internal coolant supply
- angular compensation 30' (not adjustable)
- radial play 0.003" (0.08 mm) (not adjustable)



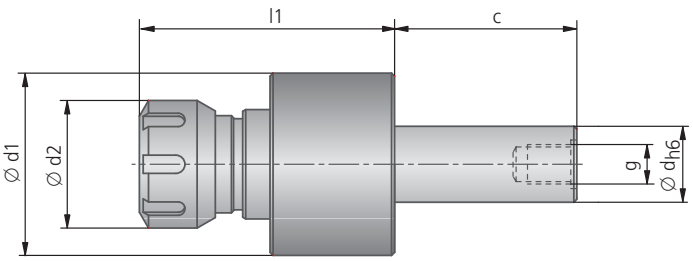
(..) = mm

VDI								Assembly parts	Accessories
Oder No.	VDI Ø d	Ø d1	Ø d2	Ø d3	l1	c	lbs	Collet nut Oder No.	Collet Size
57B.49.00010	1.181 (30)	2.323 (59)	1.653 (42)	2.677 (68)	4.291 (109)	2.165 (55)	4.08	**51200 00425**	ER 25
57B.49.00020	1.575 (40)	2.323 (59)	1.653 (42)	3.268 (83)	4.291 (109)	2.480 (63)	5.73	**51200 00425**	ER 25
57B.49.00030	1.575 (40)	2.520 (64)	1.968 (50)	3.268 (83)	4.567 (116)	2.480 (63)	6.04	**51200 00432**	ER 32
57B.49.00040	1.968 (50)	2.520 (64)	1.968 (50)	3.858 (98)	4.567 (116)	3.071 (78)	7.94	**51200 00432**	ER 32

Includes: DPS floating holder with collet nut. Please order collets and seal discs (page 89) separately.

cylindrical shank similar to DIN 1835

- for stationary tools
- with internal coolant supply
- angular compensation 30' (not adjustable)
- radial play 0.003" (0.08 mm) (not adjustable)

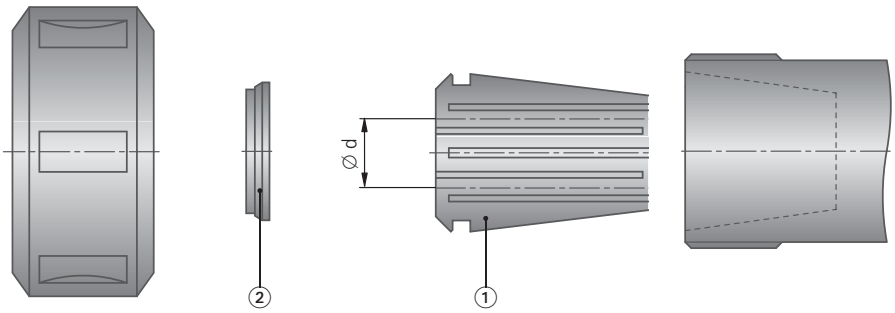


(..) = mm

Cylindrical shank								Assembly parts	Accessories
Oder No.	Cylindrical shank Ø d_{h6}	Ø d1	Ø d2	l1	c	g	lbs	Collet nut Oder No.	Collet Size
57B.40.00010	0.984 (25)	2.323 (59)	1.653 (42)	3.307 (84)	2.362 (60)	G ¼	2.45	**51200 00425**	ER 25
57B.40.00020	1.260 (32)	2.520 (64)	1.968 (50)	3.583 (91)	3.150 (80)	G ⅜	3.75	**51200 00432**	ER 32
57B.50.00010	1.000 (25.4)	2.323 (59)	1.653 (42)	3.307 (84)	2.362 (60)	G ¼	2.27	**51200 00425**	ER 25
57B.50.00020	1.250 (31.75)	2.520 (64)	1.968 (50)	3.583 (91)	3.150 (80)	G ⅜	3.90	**51200 00432**	ER 32

Includes: DPS floating holder with collet nut. Please order collets and seal discs (page 89) separately.

DIHART® Collets
for DPS floating holder



(..) = mm

Ø d ①	Ø d ②	ER32 Collet Order No.	ER32 Seal disc Order No.	ER25 Collet Order No.	ER25 Seal disc Order No.
0.157 – 0.119 (4.00 – 3.01)	0.137 – 0.119 (3.50 – 3.01)	A33 55000.0400	52806 32035	A33 54000.0400	52806 25035
	0.157 – 0.138 (4.00 – 3.51)		52806 32040		52806 25040
0.196 – 0.158 (5.00 – 4.01)	0.177 – 0.158 (4.50 – 4.01)	A33 55000.0500	52806 32045	A33 54000.0500	52806 25045
	0.196 – 0.178 (5.00 – 4.51)		52806 32050		52806 25050
0.236 – 0.197 (6.00 – 5.01)	0.216 – 0.197 (5.50 – 5.01)	A33 55000.0600	52806 32055	A33 54000.0600	52806 25055
	0.236 – 0.217 (6.00 – 5.51)		52806 32060		52806 25060
0.275 – 0.237 (7.00 – 6.01)	0.255 – 0.237 (6.50 – 6.01)	A33 55000.0700	52806 32065	A33 54000.0700	52806 25065
	0.275 – 0.256 (7.00 – 6.51)		52806 32070		52806 25070
0.314 – 0.276 (8.00 – 7.01)	0.295 – 0.276 (7.50 – 7.01)	A33 55000.0800	52806 32075	A33 54000.0800	52806 25075
	0.314 – 0.296 (8.00 – 7.51)		52806 32080		52806 25080
0.354 – 0.315 (9.00 – 8.01)	0.334 – 0.315 (8.50 – 8.01)	A33 55000.0900	52806 32085	A33 54000.0900	52806 25085
	0.354 – 0.335 (9.00 – 8.51)		52806 32090		52806 25090
0.393 – 0.355 (10.00 – 9.01)	0.374 – 0.355 (9.50 – 9.01)	A33 55000.1000	52806 32095	A33 54000.1000	52806 25095
	0.393 – 0.375 (10.00 – 9.51)		52806 32100		52806 25100
0.433 – 0.394 (11.00 – 10.01)	0.413 – 0.394 (10.50 – 10.01)	A33 55000.1100	52806 32105	A33 54000.1100	52806 25105
	0.433 – 0.414 (11.00 – 10.51)		52806 32110		52806 25110
0.472 – 0.434 (12.00 – 11.01)	0.452 – 0.434 (11.50 – 11.01)	A33 55000.1200	52806 32115	A33 54000.1200	52806 25115
	0.472 – 0.453 (12.00 – 11.51)		52806 32120		52806 25120
0.511 – 0.473 (13.00 – 12.01)	0.492 – 0.473 (12.50 – 12.01)	A33 55000.1300	52806 32125	A33 54000.1300	52806 25125
	0.511 – 0.493 (13.00 – 12.51)		52806 32130		52806 25130
0.551 – 0.512 (14.00 – 13.01)	0.531 – 0.512 (13.50 – 13.01)	A33 55000.1400	52806 32135	A33 54000.1400	52806 25135
	0.551 – 0.532 (14.00 – 13.51)		52806 32140		52806 25140
0.590 – 0.552 (15.00 – 14.01)	0.570 – 0.552 (14.50 – 14.01)	A33 55000.1500	52806 32145	A33 54000.1500	52806 25145
	0.590 – 0.571 (15.00 – 14.51)		52806 32150		52806 25150
0.630 – 0.591 (16.00 – 15.01)	0.610 – 0.591 (15.50 – 15.01)	A33 55000.1600	52806 32155	A33 54000.1600	52806 25155
	0.630 – 0.611 (16.00 – 15.51)		52806 32160		52806 25160
0.669 – 0.630 (17.00 – 16.01)	0.649 – 0.630 (16.50 – 16.01)	A33 55000.1700	52806 32165		
	0.669 – 0.650 (17.00 – 16.51)		52806 32170		
0.708 – 0.670 (18.00 – 17.01)	0.688 – 0.670 (17.50 – 17.01)	A33 55000.1800	52806 32175		
	0.708 – 0.689 (18.00 – 17.51)		52806 32180		
0.748 – 0.709 (19.00 – 18.01)	0.728 – 0.709 (18.50 – 18.01)	A33 55000.1900	52806 32185		
	0.748 – 0.729 (19.00 – 18.51)		52806 32190		
0.787 – 0.749 (20.00 – 19.01)	0.767 – 0.749 (19.50 – 19.01)	A33 55000.2000	52806 32195		
	0.787 – 0.768 (20.00 – 19.51)		52806 32200		

IDEEN-FABRIK +

The Factory of Ideas

The IDEEN-FABRIK+ (Factory of Ideas) reflects the evolution of the KOMET GROUP from a tool manufacturer into a creative expert for solutions covering all aspects of boring, reaming, thread milling and mechatronic tools.

The main objective is to offer our customers and employees scope for creative working and learning.

On a total area of 8,200 sqft, we have created a modern, multi-story factory environment. The IDEEN-FABRIK+ was deliberately constructed not as a separately detached training building, but integrated directly above a manufacturing facility.

While the metal chips fly down below, ideas are exchanged above. By this, we aim to demonstrate that the work here is always associated with new ideas and creative ambition.

The IDEEN-FABRIK+ and a comprehensive seminar program for customers as well as employees offer you a measurable and permanent competitive advantage in your markets.

Ask for our no-obligation specialist seminar brochure.

TOOLS+IDEAS™

The KOMET GROUP is the worldwide technology leader for innovative tool concepts and complete solutions for holemaking.

Our customers know us as a manufacturer of premium tools, and know the ideas behind our solutions. Additional creativity is still unused and remains to be discovered. We have set the objective of maximizing added value, creating benefits for our customers.

We call this TOOLS+IDEAS™. A new and different way of being able to offer our customers long-term, sustainable advantages through a plus in support and services.

Our IDEEN-FABRIK+ in Besigheim is the first step in this direction.

DIHART® Information

DIHART® Preferred Diameter Range

Short delivery times!

Our modular reaming systems; Reamax®, Reamax® TS as well as the adjustable DIHART Monomax® are offered in a wide range of diameters with H7 tolerances and are currently available in preferred diameter ranges.

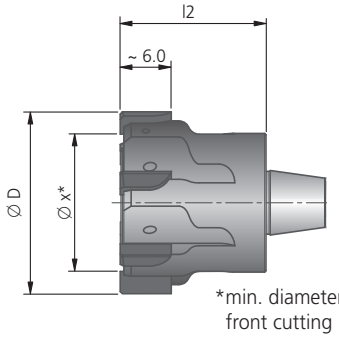
The new preferred diameter ranges of DIHART® reamers offer the enduser shorter delivery times.

The preferred ranges are stocked and produced in large batch sizes allowing users to benefit from the advantages of more cost-effective production. Initially designed for ISO H7 tolerances and for diameters of 0.2362 to 1.9685 inch (6 to 50 mm), it covers the most commonly used tolerance range in a wide machining range.

The new preferred diameter ranges are suitable for all steels up to 900 N/mm², cast metal, nodular cast iron, vermicular cast iron, light alloy and aluminum materials.

(..) = inch

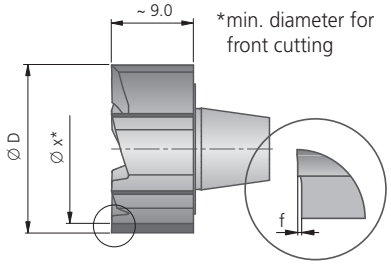
Reamax® TS	Dimensions				75J.71 – TiN coated	
Reaming Head – Expandable finish-ground to H7 tolerance					Cutting geometry ASG 07	Cutting geometry ASG 09
	Ø D^{H7}	Tolerance	Ø x ~	l2 ~	No. of teeth	Order No.	Order No.
	18 (0.7087)	0.018/0 (0.00071/0)	14	20	6	75J.71.18H7G	75J.71.18H7L
	20 (0.7874)	0.021/0 (0.00083/0)	16	20	6	75J.71.20H7G	75J.71.20H7L
	22 (0.8661)	0.021/0 (0.00083/0)	17.8	20	6	75J.71.22H7G	75J.71.22H7L
	24 (0.9449)	0.021/0 (0.00083/0)	19.8	20	6	75J.71.24H7G	75J.71.24H7L
	25 (0.9842)	0.021/0 (0.00083/0)	20.8	20	6	75J.71.25H7G	75J.71.25H7L
	28 (1.1024)	0.021/0 (0.00083/0)	22.6	25	6	75J.71.28H7G	75J.71.28H7L
	30 (1.1811)	0.021/0 (0.00083/0)	24.6	25	6	75J.71.30H7G	75J.71.30H7L
	32 (1.2598)	0.025/0 (0.00098/0)	26	25	8	75J.71.32H7G	75J.71.32H7L
	35 (1.3779)	0.025/0 (0.00098/0)	28.1	25	8	75J.71.35H7G	75J.71.35H7L
	40 (1.5748)	0.025/0 (0.00098/0)	33.1	25	8	75J.71.40H7G	75J.71.40H7L
	50 (1.9685)	0.025/0 (0.00098/0)	42.5	30	8	75J.71.50H7G	75J.71.50H7L



*min. diameter for front cutting

(..) = inch

Reamax®	Dimensions				640.93 – DST Cutting material	
Replaceable Head – Solid finish-ground to H7 tolerance					Cutting geometry ASG 07	Cutting geometry ASG 09
	Ø D^{H7}	Tolerance	Ø x ~	f ~	No. of teeth	Order No.	Order No.
	15 (0.5905)	0.018/0 (0.00071/0)	12.5	0.5	6	640.93.15H7G	640.93.15H7L
	16 (0.6299)	0.018/0 (0.00071/0)	13	0.5	6	640.93.16H7G	640.93.16H7L
	18 (0.7087)	0.018/0 (0.00071/0)	15	0.5	6	640.93.18H7G	640.93.18H7L
	20 (0.7874)	0.021/0 (0.00083/0)	17	0.5	6	640.93.20H7G	640.93.20H7L
	22 (0.8661)	0.021/0 (0.00083/0)	19	0.5	8	640.93.22H7G	640.93.22H7L
	24 (0.9449)	0.021/0 (0.00083/0)	21	0.5	8	640.93.24H7G	640.93.24H7L
	25 (0.9842)	0.021/0 (0.00083/0)	22	0.5	8	640.93.25H7G	640.93.25H7L
	28 (1.1024)	0.021/0 (0.00083/0)	24	0.5	8	640.93.28H7G	640.93.28H7L
	30 (1.1811)	0.021/0 (0.00083/0)	26	0.5	8	640.93.30H7G	640.93.30H7L

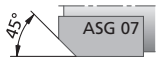
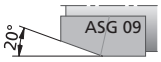
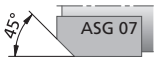


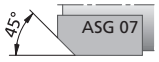
*min. diameter for front cutting

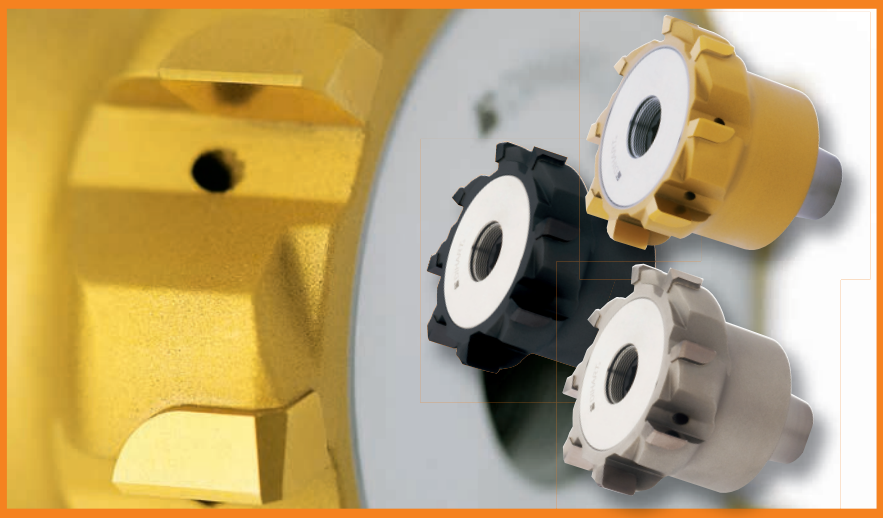
Patent applied for inside and outside Germany (Reamax®)

BENEFITS for you:

- Short delivery times!
- High-precision manufacturing for guaranteed quality and processing
- Modular tooling systems for maximum flexibility
- Cost per bore significantly reduced

75J.37 – DBG-N coated	75J.93 – DST Cutting material		75J47 – DBF coated	75J.17 – DBC coated
Cutting geometry 	Cutting geometry 	Cutting geometry 	Cutting geometry 	Cutting geometry 
Order No.	Order No.	Order No.	Order No.	Order No.
75J.37. 18H7G	75J.93.18H7G	75J.93.18H7L	75J.47.18H7G	75J.17.18H7G
75J.37. 20H7G	75J.93.20H7G	75J.93.20H7L	75J.47.20H7G	75J.17.20H7G
75J.37. 22H7G	75J.93.22H7G	75J.93.22H7L	75J.47.22H7G	75J.17.22H7G
75J.37. 24H7G	75J.93.24H7G	75J.93.24H7L	75J.47.24H7G	75J.17.24H7G
75J.37. 25H7G	75J.93.25H7G	75J.93.25H7L	75J.47.25H7G	75J.17.25H7G
75J.37. 28H7G	75J.93.28H7G	75J.93.28H7L	75J.47.28H7G	75J.17.28H7G
75J.37. 30H7G	75J.93.30H7G	75J.93.30H7L	75J.47.30H7G	75J.17.30H7G
75J.37. 32H7G	75J.93.32H7G	75J.93.32H7L	75J.47.32H7G	75J.17.32H7G
75J.37. 35H7G	75J.93.35H7G	75J.93.35H7L	75J.47.35H7G	75J.17.35H7G
75J.37. 40H7G	75J.93.40H7G	75J.93.40H7L	75J.47.40H7G	75J.17.40H7G
75J.37. 50H7G	75J.93.50H7G	75J.93.50H7L	75J.47.50H7G	75J.17.50H7G

640.37 – DBG-N coated
Cutting geometry 
Order No.
640.37.15H7G
640.37.16H7G
640.37.18H7G
640.37.20H7G
640.37.22H7G
640.37.24H7G
640.37.25H7G
640.37.28H7G
640.37.30H7G

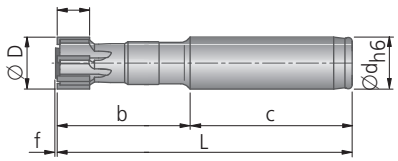


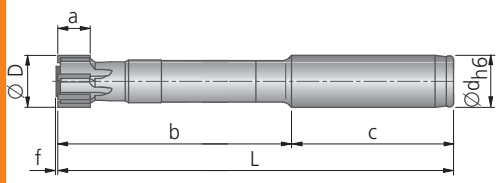
Explanation of cutting material and coatings can be found on page 97.

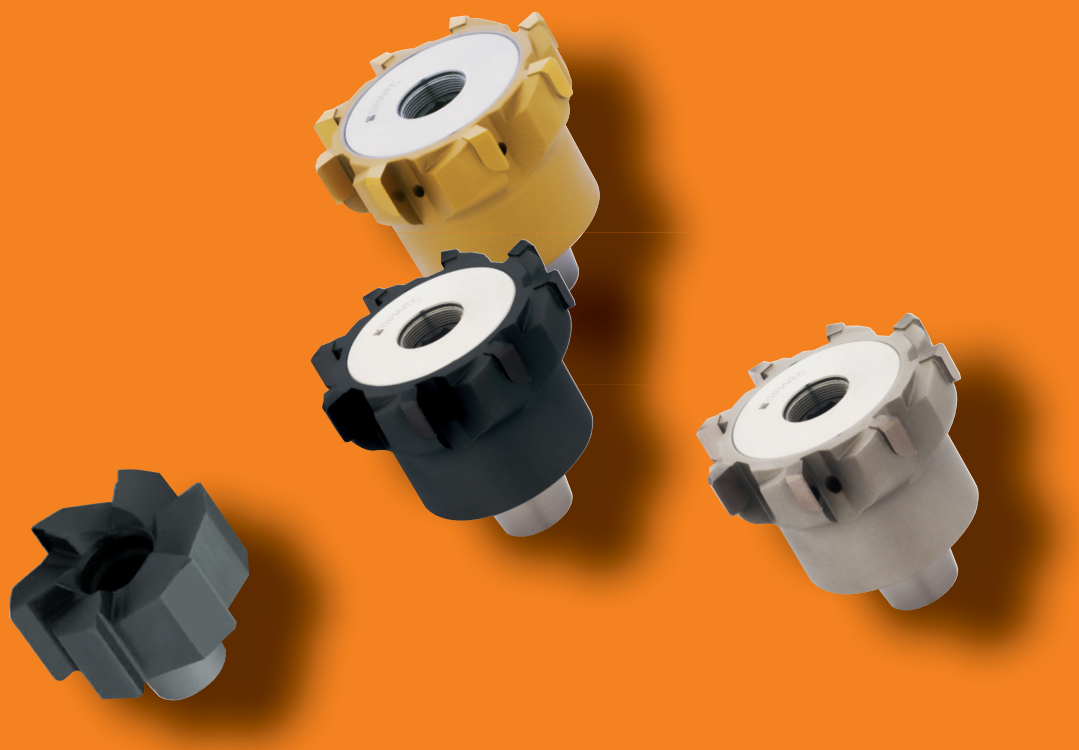
DIHART® Preferred Diameter Range
Short delivery times!

(..) = inch

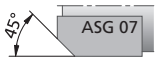
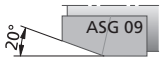
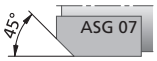
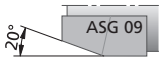
Monomax®								
Reaming Tool – Expandable finish ground to H7 tolerance cylindrical shank similar to DIN 1835								
	Dimensions – short version							
	Ø D^{H7}		Ø d × c	L	b	f ~	a ~	No. of teeth
	6 (0.2362)	0.015/0 (0.00059/0)	12 × 45	85	40	0.1	9.5	4
	8 (0.3150)	0.015/0 (0.00059/0)	12 × 45	85	40	0.1	9.5	4
	10 (0.3937)	0.015/0 (0.00059/0)	12 × 45	95	50	0.1	9.5	6
	12 (0.4724)	0.018/0 (0.00071/0)	12 × 45	95	50	0.1	9.5	6
	14 (0.5512)	0.018/0 (0.00071/0)	12 × 45	95	50	0.1	9.5	6
	15 (0.5905)	0.018/0 (0.00071/0)	12 × 45	95	50	0.1	9.5	6
	16 (0.6299)	0.018/0 (0.00071/0)	16 × 50	100	50	0.1	9.5	6
	18 (0.7087)	0.018/0 (0.00071/0)	16 × 50	100	50	0.1	9.5	6
	20 (0.7874)	0.021/0 (0.00083/0)	20 × 60	120	60	0.1	9.5	6
	Dimensions – long version							
	6 (0.2362)	0.015/0 (0.00059/0)	12 × 45	130	85	0.1	9.5	4
	8 (0.3150)	0.015/0 (0.00059/0)	12 × 45	130	85	0.1	9.5	4
	10 (0.3937)	0.015/0 (0.00059/0)	12 × 45	160	115	0.1	9.5	6
	12 (0.4724)	0.018/0 (0.00071/0)	12 × 45	160	115	0.1	9.5	6
	14 (0.5512)	0.018/0 (0.00071/0)	12 × 45	160	115	0.1	9.5	6
	15 (0.5905)	0.018/0 (0.00071/0)	12 × 45	160	115	0.1	9.5	6
	16 (0.6299)	0.018/0 (0.00071/0)	16 × 50	180	130	0.1	9.5	6
	18 (0.7087)	0.018/0 (0.00071/0)	16 × 50	180	130	0.1	9.5	6
	20 (0.7874)	0.021/0 (0.00083/0)	20 × 60	200	140	0.1	9.5	6







Patent applied for inside and outside Germany (Reamax®)

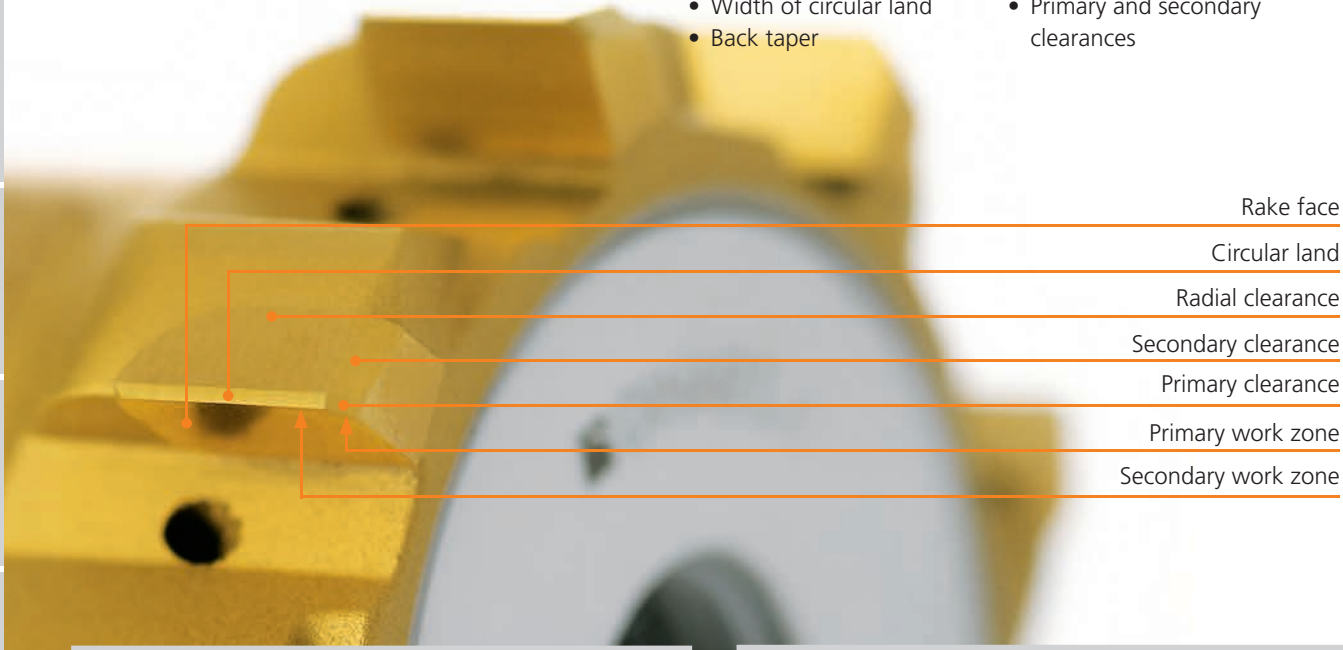
56J.71 – TiN coated		56J.37 – DBG-N coated	56J.93 – DST Cutting material	
				
56J.71.06H7G	56J.71.06H7L	56J.37.06H7G	56J.93.06H7G	56J.93.06H7L
56J.71.08H7G	56J.71.08H7L	56J.37.08H7G	56J.93.08H7G	56J.93.08H7L
56J.71.10H7G	56J.71.10H7L	56J.37.10H7G	56J.93.10H7G	56J.93.10H7L
56J.71.12H7G	56J.71.12H7L	56J.37.12H7G	56J.93.12H7G	56J.93.12H7L
56J.71.14H7G	56J.71.14H7L	56J.37.14H7G	56J.93.14H7G	56J.93.14H7L
56J.71.15H7G	56J.71.15H7L	56J.37.15H7G	56J.93.15H7G	56J.93.15H7L
56J.71.16H7G	56J.71.16H7L	56J.37.16H7G	56J.93.16H7G	56J.93.16H7L
56J.71.18H7G	56J.71.18H7L	56J.37.18H7G	56J.93.18H7G	56J.93.18H7L
56J.71.20H7G	56J.71.20H7L	56J.37.20H7G	56J.93.20H7G	56J.93.20H7L
56R.71 – TiN coated		56R.37 – DBG-N coated	56R.93 – DST Cutting material	
56R.71.06H7G	56R.71.06H7L	56R.37.06H7G	56R.93.06H7G	56R.93.06H7L
56R.71.08H7G	56R.71.08H7L	56R.37.08H7G	56R.93.08H7G	56R.93.08H7L
56R.71.10H7G	56R.71.10H7L	56R.37.10H7G	56R.93.10H7G	56R.93.10H7L
56R.71.12H7G	56R.71.12H7L	56R.37.12H7G	56R.93.12H7G	56R.93.12H7L
56R.71.14H7G	56R.71.14H7L	56R.37.14H7G	56R.93.14H7G	56R.93.14H7L
56R.71.15H7G	56R.71.15H7L	56R.37.15H7G	56R.93.15H7G	56R.93.15H7L
56R.71.16H7G	56R.71.16H7L	56R.37.16H7G	56R.93.16H7G	56R.93.16H7L
56R.71.18H7G	56R.71.18H7L	56R.37.18H7G	56R.93.18H7G	56R.93.18H7L
56R.71.20H7G	56R.71.20H7L	56R.37.20H7G	56R.93.20H7G	56R.93.20H7L

Explanation of cutting material and coatings can be found on page 97.

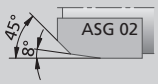
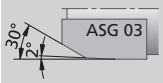
DIHART® ASG – Cutting Geometry

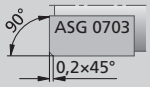
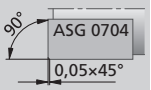
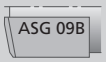
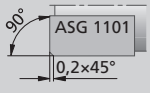
The cutting geometry (ASG) defines:

- Bevel angle
- Width of circular land
- Back taper
- Flute angle
- Primary and secondary clearances



Standard Geometries

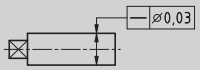
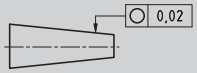
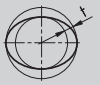
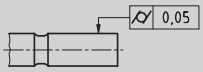
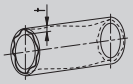
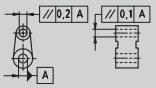
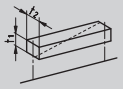
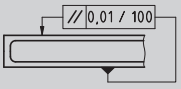
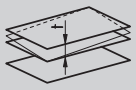
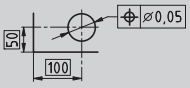
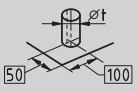
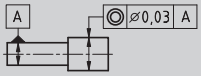
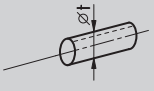
Geometry	Flute form	Chip evacuation	Bevel angles	Cutting material / coating
ASG0106	straight			HM TiN DBG-N DBF
ASG02	straight			HM
ASG03	straight			HM
ASG0501	left hand spiraled			HM TiN DBG-N DJC DBF
ASG07	straight			HM TiN DST DBG-N DJC
ASG0706	straight			DBC
ASG09	straight			HM TiN DST DBG-N DJC

Geometry	Flute form	Chip evacuation comment	Bevel angles	Cutting material / coating
ASG0703	straight	front cutting		HM TiN DST DBG-N DJC DBF
ASG0704	straight	front cutting for increased positional accuracy		HM TiN DST DBG-N DJC DBF
ASG09B	straight	chip breaking < Ø 32 mm		HM TiN DST DBG-N DJC
ASG1402	straight	chip breaking > Ø 32 mm		HM TiN DST DBG-N DJC
ASG11	straight			PCD
ASG1101	straight	front cutting		PCD

DIHART® Cutting Material and Coatings

Cutting materials	HM	HM is a fine-grained carbide, that features high abrasion resistance and achieves good results in standard materials. It is very suitable for coating, and is mainly used also as cutting material for coated reamers.
	DST	DST is a high-performance cutting material, and very suitable for high-speed reaming. DST is ideal for machining non-alloyed or low alloyed steels up to 1200 N/mm² tensile strength and is also excellent for reaming ductile iron.
Coatings	TiN	TiN is an all purpose coating material. It has a very smooth surface and has very little affinity to many materials. This prevents structure deformation which gives excellent surface-finish results when reaming, and offers considerably higher cutting data than with non coated carbide reamers.
	DBG-N	DBG-N is a coating which offers a very high grade of hardness. The coating also has very high oxidation resistance. Making it a particularly high-performance coating that is very suitable for high cutting speeds and also for use with minimum quantity lubrication (MQL) machining.
	DJC	DJC is a combination of the high-performance cutting material DST and the high-performance coating DBG-N. This combination offers very high tool life and higher cutting data can be achieved.
	DBF	DBF is a coating that exhibits a very high level of hardness and a high resistance to oxidation. This makes the coating suitable for cast iron machining. A very smooth layer means that stainless materials can also be successfully machined.
	DBC	DBC is a coating with a very high level of hardness and an extremely smooth surface. It is suitable for machining aluminum and copper alloys.

Additional high-tech coatings are available for special applications.

Form and positional tolerances						
Tolerance type		Symbols and characteristics to tolerance		Drawing details examples	Explanation	Tolerance zone
Form tolerances		—	**Straightness** of a line or axis		The axis of the cylindrical part of the pin must lie within the cylinder to t = 0.0012" (0.03 mm)	
		○	**Circularity** of a disc, a cylinder, a cone, etc.		The circumference line of any cross section must be contained in a circular ring with a width to t = 0.0008" (0.02 mm)	
		⌭	**Cylindricity**		The surface to tolerance must lie within two coaxial cylinders which have a radial spacing to t = 0.0020" (0.05 mm)	
Positional tolerances	Directional tolerances	//	**Parallelism** of a line (axis) with reference to a basic straight line		The top axis must lie in a square-shaped area, within 0.0039" (0.1 mm) in the vertical and 0.0079" (0.2 mm) in the horizontal direction. The area will lie parallel to the basic axis of bore A.	
		//	**Parallelism** of a surface with reference to a basic plane		Any 3.937" (100 mm) long section of the top surface must lie with a gap of 0.0004" (0.01 mm) between two parallel planes. The planes will lie parallel to the lower surface (basic surface).	
	Location tolerances	⌖	**Position** of lines, axes or surfaces in relation to one another or to one or several basic elements		The axis of the hole must lie within a cylinder with a diameter to tolerance t = 0.0020" (0.05 mm), whose axis lies at the precise geometrical place (with dimensions as shown in boxes).	
		◎	**Concentricity** of an axis or a point in relation to a basic axis (basic point)		The axis of the part of the shaft to tolerance must lie within a cylinder with a diameter to tolerance t = 0.0012" (0.03 mm), whose axis aligns with the base axis.	

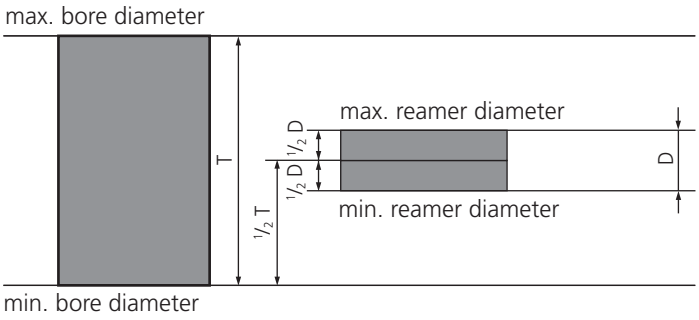
Material group		Surface finish class	N11	N10	N9	N8		N7	N6		N5	N4	N3	N2	N1
		RMS values in µ inch	~985	~492.5	~240	~126		~63	~31.5		~15.7	~7.8	~3.9	~1.5	~1.1
		Mean surface finish R_a	25	12.5	6.3	3.2		1.6	0.8		0.4	0.2	0.1	0.05	0.025
		Average surface uniformity R_z	100	63	40	25	16	10	6.3	4	2.5	1.6	1	0.63	0.25
P	1.0 – 4.0	structural steel, low alloy steels: case-hardened steels, heat-treated steel													
S	5.0	special alloys: Inconel													
S	5.1	titanium, titanium alloys													
M	6.0 – 7.0	stainless steels, fireproof steels													
K	8.0 – 10.2	gray cast iron ferritic													
K	8.0 – 10.2	gray cast iron perlitic													
K	8.0 – 10.2	spheroidal graphite cast iron ferritic													
K	8.0 – 10.2	spheroidal graphite cast iron perlitic													
N	12.0	copper alloy, brass													
N	13.0	wrought aluminum alloys													
N	13.1	cast aluminum alloy: Si-content < 10%													
N	14.0	cast aluminum alloy: Si-content > 10%													
H	15.0	hardened steels < 45 HRC													
H	16.0	hardened steels > 45 HRC, ≤ 55 HRC													

achievable — limited achievability

All other surface values on request.

Manufacturing tolerance of expandable reamers

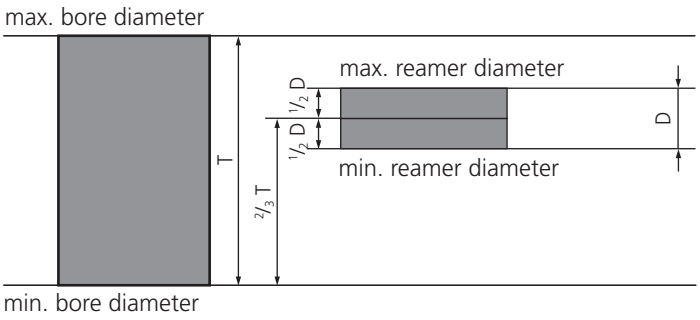
The manufacturing tolerance field D of expandable reamers is centered on the nominal bore tolerace T.
The expansion feature of these tools allows for wear compensation.



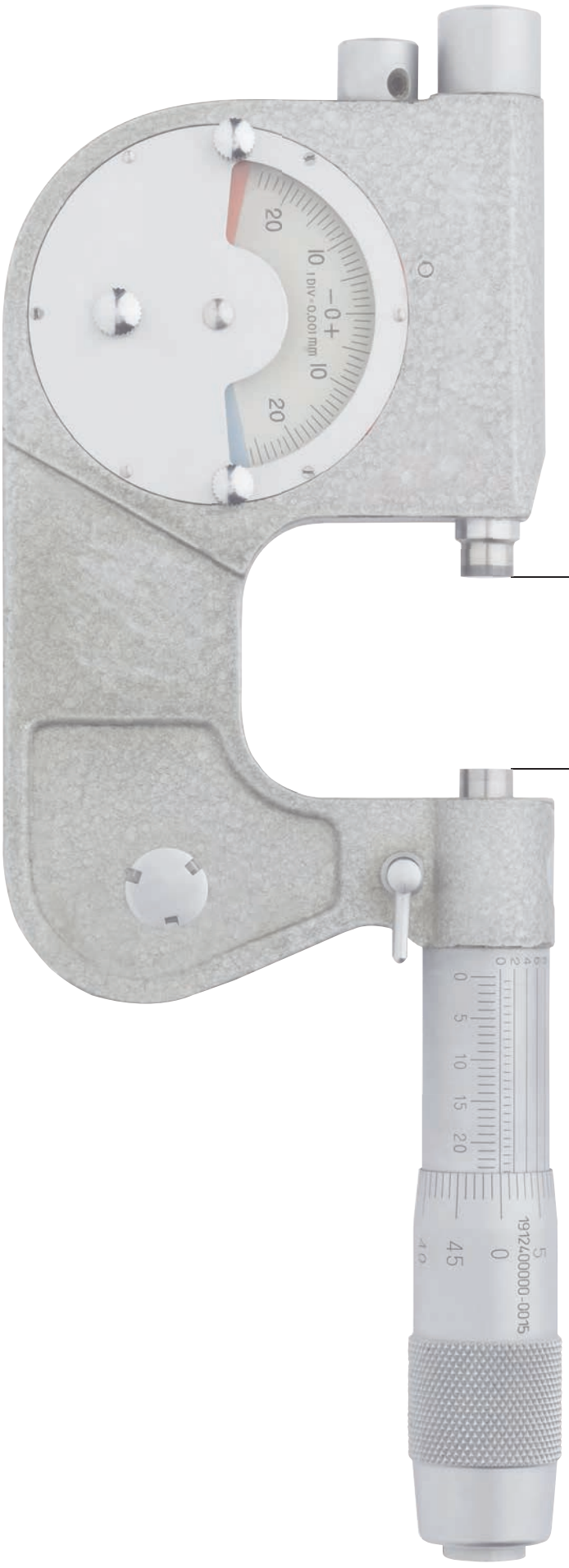
T = Tolerance field of bore
D = Manufacturing tolerance of reamer

Manufacturing tolerance of solid reamers

The manufacturing tolerance field D of solid reamers is in the upper third of the bore tolerance T.

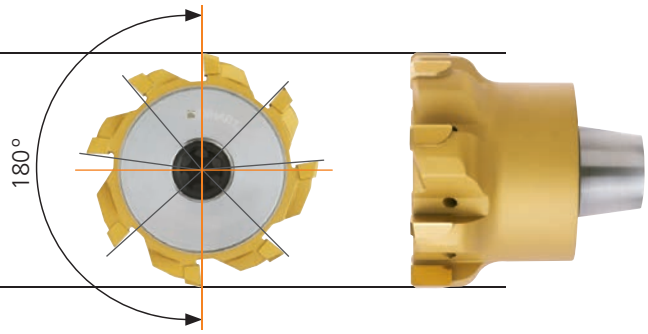


T = Tolerance field of bore
D = Manufacturing tolerance of reamer

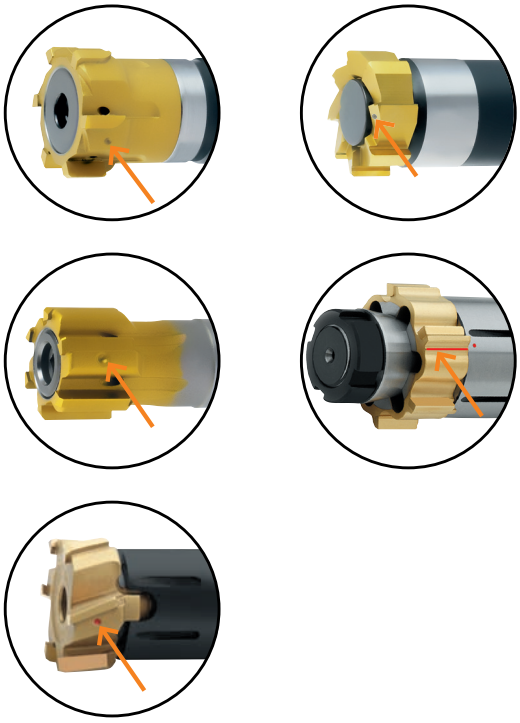


Unequal flute spacing!
Only two cutting edges are 180° opposed.
→ These are the measuring teeth
The tools back taper means that the measurement has to be done at the front edge of the cutting edge.

PCD tipped reamers require non-contact measuring device! Any attempt to measure a PCD tool with anything other than a non-contact measuring device may result in cutting edge damage.



Designation of measuring teeth
- Drive pin, lobe
- Number
- Punch-mark



DIHART® Cutting Data

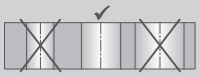
Guideline for reaming						Cutting speed v_c ft/min (m/min)															
						Reamers short / 3×D								Reamers long / 5×D							
Material group	Strength Rm (lbf/ins²)	Hardness HB	Material	Material example ANSI / SAE		HM	DST	TiN	DBG-N	DBF	DJC	DBC	PCD	HM	DST	TiN	DBG-N	DBF	DJC	DBC	PCD
						min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max
P	1.0	≤ 72,500		non-alloy steels	1010 1144 1213	19-32 (6-10)	330-660 (100-200)	195-460 (60-140)			330-660 (100-200)			19-32 (6-10)	260-525 (80-160)	195-390 (60-120)			260-525 (80-160)		
P	2.0	72,500 - 130,000		non-alloy / low alloy steels	1055 5115 5120	19-32 (6-10)	330-660 (100-200)	195-460 (60-140)			330-660 (100-200)			19-32 (6-10)	260-525 (80-160)	195-390 (60-120)			260-525 (80-160)		
P	2.1	< 72,500		lead alloys	12L14	50-145 (15-45)	330-660 (100-200)	195-460 (60-140)			330-660 (100-200)			50-145 (15-45)	260-525 (80-160)	195-390 (60-120)			260-525 (80-160)		
P	3.0	> 130,000		non alloy / low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1064 4140	16-30 (5-9)	260-490 (80-150)	195-360 (60-110)			260-490 (80-150)			16-30 (5-9)	260-390 (80-120)	195-295 (60-90)			260-390 (80-120)		
P	4.0	> 130,000		high alloy steels	H13 H21	13-23 (4-7)		50-145 (15-45)						13-23 (4-7)		50-145 (15-45)					
P	4.1			HSS	M10 T4																
S	5.0		250	special alloys: Inconel, Hastelloy, Nimonic, stc.	Inconel® 718 Nimonic® 80A																
S	5.1	58,000		titanium, titanium alloys	Ti-6Al-4V	16-40 (5-12)								16-40 (5-12)							
M	6.0	≤ 87,000		stainless steels	304L 316	16-26 (5-8)		50-130 (15-40)		100-195 (30-60)				16-26 (5-8)		50-130 (15-40)		100-195 (30-60)			
M	6.1	<130,000		stainless steels	630	13-19 (4-6)		32-115 (10-35)		65-165 (20-50)				13-19 (4-6)		32-115 (10-35)		65-165 (20-50)			
M	7.0	>130,000		stainless / fireproof steels	403 420	13-19 (4-6)		32-115 (10-35)		65-165 (20-50)				13-19 (4-6)		32-15 (10-35)		65-165 (20-50)			
K	8.0		180	gray cast iron	Class 25 G3000	12-82 (10-25)		165-425 (50-130)	260-720 (80-220)	260-720 (80-220)				12-82 (10-25)		65-330 (50-100)	260-490 (80-150)	260-490 (80-150)			
K	8.1		250	alloy gray cast iron	A436 Type 2	19-40 (6-12)		100-295 (30-90)	130-425 (40-130)	130-425 (40-130)				19-40 (6-12)		100-295 (30-90)	130-330 (40-100)	130-330 (40-100)			
K	9.0	≤ 87,000	130	ductile cast iron, ferritic	60-40-18 D4512	30-59 (9-18)	425-980 (130-300)		425-980 (130-300)	425-980 (130-300)	425-980 (130-300)			30-59 (9-18)	390-590 (120-180)		390-590 (120-180)	390-590 (120-180)	390-590 (120-180)		
K	9.1		230	ductile cast iron, ferritic / perlitic	80-55-06 D5506	30-59 (9-18)	330-820 (100-250)		330-820 (100-250)	330-820 (100-250)	330-820 (100-250)			30-59 (9-18)	330-525 (100-160)		330-520 (100-160)	330-520 (100-160)	330-525 (100-160)		
K	10.0	> 87,000	250	spheroidal graphite cast iron, perlitic malleable iron	100-70-03 07003	26-50 (8-15)	260-590 (80-180)		260-590 (80-180)	260-590 (80-180)	260-590 (80-180)			26-50 (8-15)	260-490 (80-150)		260-490 (80-150)	260-490 (80-150)	260-490 (80-150)		
K	10.1		200	alloyed spheroidal graphite cast iron	A43D2	19-40 (6-12)		100-195 (30-60)	165-330 (50-100)	165-330 (50-100)				19-40 (6-12)		100-195 (30-60)	165-330 (50-100)	165-330 (50-100)	165-330 (50-100)		
K	10.2		300	vermicular cast iron		19-40 (6-12)		100-230 (30-70)	130-425 (40-130)	130-425 (40-130)				19-40 (6-12)		100-230 (30-70)	130-425 (40-130)	130-425 (40-130)	130-425 (40-130)		
N	12.0		90	copper alloy, brass, lead-alloy bronze, lead bronze: good cut	316	12-100 (10-30)	330-1050 (100-320)	260-660 (80-200)						12-100 (10-30)	330-660 (100-200)	260-490 (80-150)					
N	12.1		100	copper alloy, brass, bronze:average cut		12-65 (10-20)		165-490 (50-150)						12-65 (10-20)		165-390 (50-120)					
N	13.0		60	wrought aluminum alloys	6151 7075	12-100 (10-30)						165-980 (50-300)	360-1080 (110-330)	12-100 (10-30)						165-785 (50-240)	330-785 (100-240)
N	13.1		75	cast aluminum alloy: Si-content <10% magnesium alloy	380 A356.0	12-100 (10-30)						490-980 (150-300)	360-1800 (110-550)	12-100 (10-30)						490-820 (150-250)	330-980 (100-300)
N	14.0		100	cast aluminum alloy: Si-content > 10%	383 A413.0	26-65 (8-20)						490-980 (150-300)	360-1440 (110-440)	26-65 (8-20)						490-820 (150-250)	330-820 (100-250)
H	15.0	203,000		hardened steels < 45 HRC					130-195 (40-60)								130-195 (40-60)				
H	16.0	261,000		hardened steels > 45 HRC, ≤ 55 HRC					100-165 (30-50)								100-165 (30-50)				

(..) = mm

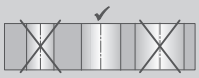
	Feed f_z in/tooth (mm/tooth)								
	straight fluted ASG07, ASG0106, ASG03, ASG11, ASG1101				straight fluted ASG09, ASG09B, ASG1402				left hand spiraled ASG0501
	< Ø 0.472 (< Ø 12)	Ø 0.472 - 0.984 (Ø 12 - 25)	Ø 0.984 - 1.968 (Ø 25 - 50)	> Ø 1.968 (> Ø 50)	< Ø 0.472 (< Ø 12)	Ø 0.472 - 0.984 (Ø 12 - 25)	Ø 0.984 - 1.968 (Ø 25 - 50)	> Ø 1.968 (> Ø 50)	Ø 0.189 - 0.500 (Ø 4.8 - 12.7)
	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max	min-max
	0.002-0.004 (0.05-0.10)	0.003-0.006 (0.07-0.15)	0.003-0.007 (0.09-0.20)	0.004-0.010 (0.10-0.25)	0.003-0.005 (0.07-0.14)	0.004-0.008 (0.10-0.21)	0.005-0.009 (0.12-0.24)	0.005-0.012 (0.13-0.30)	0.003-0.005 (0.07-0.14)
	0.002-0.004 (0.05-0.10)	0.003-0.006 (0.07-0.15)	0.003-0.007 (0.09-0.20)	0.004-0.010 (0.10-0.25)	0.003-0.005 (0.07-0.14)	0.004-0.008 (0.10-0.21)	0.005-0.009 (0.12-0.24)	0.005-0.012 (0.13-0.30)	0.003-0.005 (0.07-0.14)
	0.002-0.004 (0.05-0.10)	0.003-0.006 (0.07-0.15)	0.003-0.007 (0.09-0.20)	0.004-0.010 (0.10-0.25)	0.003-0.005 (0.07-0.14)	0.004-0.008 (0.10-0.21)	0.005-0.009 (0.12-0.24)	0.005-0.012 (0.13-0.30)	0.003-0.005 (0.07-0.14)
	0.001-0.003 (0.04-0.08)	0.002-0.005 (0.06-0.12)	0.002-0.006 (0.07-0.16)	0.003-0.008 (0.08-0.20)	0.002-0.004 (0.06-0.11)	0.003-0.007 (0.08-0.17)	0.003-0.007 (0.09-0.19)	0.004-0.009 (0.10-0.24)	0.002-0.004 (0.06-0.11)
	0.001-0.003 (0.04-0.07)	0.002-0.004 (0.05-0.11)	0.002-0.005 (0.06-0.14)	0.003-0.007 (0.07-0.18)					
	0.002-0.004 (0.05-0.11)	0.003-0.007 (0.07-0.17)	0.004-0.009 (0.10-0.24)	0.004-0.012 (0.11-0.30)					
	0.001-0.003 (0.04-0.08)	0.002-0.005 (0.06-0.12)	0.003-0.006 (0.07-0.16)	0.003-0.008 (0.08-0.20)					0.002-0.005 (0.06-0.12)
	0.001-0.003 (0.04-0.08)	0.002-0.005 (0.06-0.12)	0.003-0.006 (0.07-0.16)	0.003-0.008 (0.08-0.20)					0.002-0.005 (0.06-0.12)
	0.001-0.003 (0.04-0.08)	0.002-0.005 (0.06-0.12)	0.003-0.006 (0.07-0.16)	0.003-0.008 (0.08-0.20)					0.002-0.005 (0.06-0.12)
	0.002-0.005 (0.06-0.13)	0.003-0.008 (0.08-0.20)	0.004-0.010 (0.11-0.26)	0.005-0.013 (0.12-0.33)					0.003-0.008 (0.08-0.20)
	0.002-0.005 (0.06-0.12)	0.003-0.007 (0.08-0.18)	0.004-0.009 (0.11-0.24)	0.005-0.012 (0.12-0.30)					0.003-0.007 (0.08-0.18)
	0.002-0.005 (0.06-0.13)	0.003-0.008 (0.08-0.20)	0.004-0.010 (0.11-0.26)	0.005-0.013 (0.12-0.33)					0.003-0.008 (0.08-0.20)
	0.002-0.005 (0.06-0.13)	0.003-0.008 (0.08-0.20)	0.004-0.010 (0.11-0.26)	0.005-0.013 (0.12-0.33)					0.003-0.008 (0.08-0.20)
	0.002-0.005 (0.06-0.12)	0.003-0.007 (0.08-0.18)	0.004-0.009 (0.11-0.24)	0.005-0.012 (0.12-0.30)					0.003-0.007 (0.08-0.18)
	0.002-0.005 (0.06-0.12)	0.003-0.007 (0.08-0.18)	0.004-0.009 (0.11-0.24)	0.005-0.012 (0.12-0.30)					0.003-0.007 (0.08-0.18)
	0.002-0.005 (0.06-0.12)	0.003-0.007 (0.08-0.18)	0.004-0.009 (0.11-0.24)	0.005-0.012 (0.12-0.30)					0.003-0.007 (0.08-0.18)
	0.002-0.005 (0.05-0.12)	0.003-0.007 (0.07-0.18)	0.003-0.009 (0.09-0.24)	0.004-0.012 (0.10-0.30)					0.003-0.007 (0.07-0.18)
	0.002-0.005 (0.05-0.12)	0.003-0.007 (0.07-0.18)	0.003-0.009 (0.09-0.24)	0.004-0.012 (0.10-0.30)					0.003-0.007 (0.07-0.18)
	0.002-0.005 (0.05-0.12)	0.003-0.007 (0.07-0.18)	0.003-0.009 (0.09-0.24)	0.004-0.012 (0.10-0.30)					0.003-0.007 (0.07-0.18)
	0.002-0.005 (0.05-0.12)	0.003-0.007 (0.07-0.18)	0.003-0.009 (0.09-0.24)	0.004-0.012 (0.10-0.30)					0.003-0.007 (0.07-0.18)
	0.002-0.005 (0.05-0.12)	0.003-0.007 (0.07-0.18)	0.003-0.009 (0.09-0.24)	0.004-0.012 (0.10-0.30)					0.003-0.007 (0.07-0.18)
	0.001-0.003 (0.04-0.08)	0.002-0.005 (0.06-0.12)	0.003-0.006 (0.07-0.16)	0.003-0.008 (0.08-0.20)					
	0.001-0.003 (0.04-0.08)	0.002-0.005 (0.06-0.12)	0.003-0.006 (0.07-0.16)	0.003-0.008 (0.08-0.20)					

DIHART® Technical Data – Troubleshooting

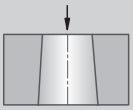
Problems • Possible Causes → Solutions



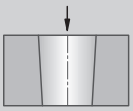
Bore too large
- Run-out of the reamer in the spindle → Use DAH® compensating holder and reduce run-out
- Alignment not precise, reamer cuts at the back end → Correct alignment and use DPS floating holder
- Built-up edge → reduce cutting speed v_C for uncoated carbide cutting material, increase for DST and coated cutting material or increase the coolant concentration
- Reamer too big → have the reamer reworked



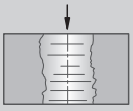
Bore too small
- Worn reamer → have the reamer readjusted, replaced or repaired
- Stock allowance too small → Increase stock allowance
- Cutting forces too large → reduce feed or choose a different cutting geometry (ASG)
- Reamer too small → have reamer readjusted, replaced or repaired



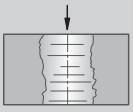
Conical bore, tapered
- Poor alignment → Correct alignment and use DPS floating holder
- Misalignment of head-stock in relation to turret → correct turret and use DPS floating holder



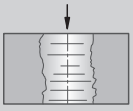
Conical bore, lipped
- Poor alignment. Cutting edges press at start → Correct alignment and use DPS floating holder



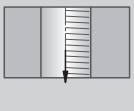
Bore not straight
- Run-out of reamer too large → correct run-out using DAH® compensation system
- Poor alignment → Correct alignment and use DPS floating holder
- Asymmetric cutting through uneven entry surface → Countersink bore
- Deformation through clamping of the work piece → Correct clamping of the work piece
- Bore not premachined properly → optimize premachining
- Feed too high → reduce feed



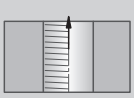
Bore shows chatter marks
- Cutting speed too high → reduce cutting speed
- L to D ratio too large → reduce the entry speed, utilize a pilot bore or choose a different cutting geometry (ASG)



Surface quality unsatisfactory
- Cutting edge build-up → reduce cutting speed v_c for uncoated carbide cutting material, increase for DST and coated cutting material or increase the coolant concentration
- Cutting edges worn → have reamers repaired or replace tool
- Run-out error of reamer → correct run-out using DAH® compensation system
- Failing or insufficient coolant, chips getting jammed → use internal coolant supply and increase coolant pressure
- Unsuitable coolant → increase the coolant concentration
- Incorrect cutting data → use data according to catalog recommendation

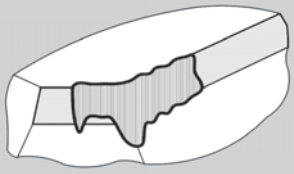


Scoring in bore «feed marks»
- Cutters worn → replace reamer or have repaired
- Cutting edge build-ups → reduce cutting speed vc for uncoated carbide cutting material, and increase for DST and coated cutting material or increase the coolant concentration

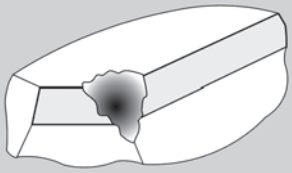


Scoring in bore «retraction marks»
- Reamer is allowed to travel too far out of the bore → Only allow the reamer to travel out of the bore 2 mm more than the cutting length at the most
- Material springs back → do not rapid retract, rather feed (2-3 times) out

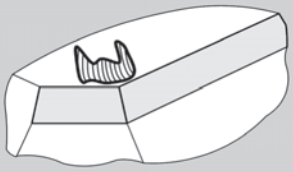
Types of Tool Wear



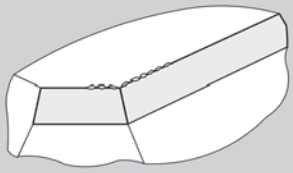
Flank wear
Reduce cutting speed or use a cutting material or coating with higher abrasion resistance.



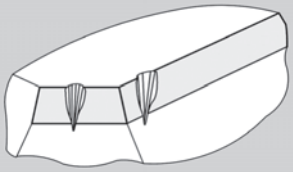
Major breakage
Reduce feed rate and stock allowance. Use carbide with coating instead of DST for interrupted bores.



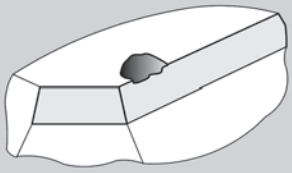
Pitting of chip surface
Reduce cutting speed or use a more positive rake angle.



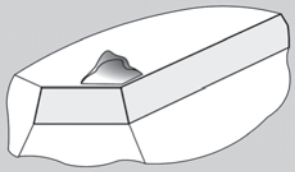
Edge wear
Increase cutting speed or use a more positive rake angle.



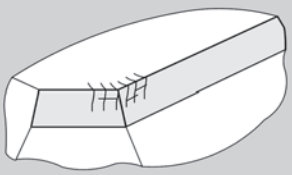
Notch wear
Reduce cutting speed or use a cutting material or coating with higher abrasion resistance.



Fatigue wear
Reduce feed rate, increase stability of the reamer.



Build-up on chip surface
Use positive cutting geometry, increase coolant concentration, reduce cutting speed v_C for uncoated carbide cutting material, increase for DST and coated cutting material.



Micro cracks
Use enough coolant and inner coolant supply, reduce cutting speed.

DIHART®

Usage and Safety Notes

Safety notes:

- The technical notes provided in the application details depend on the environmental and application conditions (such as machine, environmental temperature, lubrication/coolant used and desired machining results): these are based on proper application conditions, use and compliance with the spindle speed limits given for the tools.
- To prevent damage to machine and tool, we recommend that the drive power be calculated in advance. The drive power which is actually available will be found in the machine manufacturer's spindle speed/performance diagram.
- Safety equipment should be provided to protect personnel from flying chips.
  Please see our safety note (enclosed with packing).

Hazard warning:

If using tungsten carbide-based hard metal products together with cobalt as a binder metal, please read our safety data sheets, which are available for you to download from our website.
(http://www.komet.com/navigation-top/download/msds.html)

Liability information:

Subject to change. The KOMET GROUP is not liable for damages resulting from selecting the incorrect tools.

Abbreviations used:

ISO	International Organisation for Standardisation	The International Organization for Standardization– abbreviated ISO (grade: "isos") – is the international federation of standards organizations and develops international standards many sectors
DIN	German Institute for Standardisation (Deutsches Institut für Normung e. V)	The German Institute for Standardization is the most important national standardization organisation in the Federal Republic of Germany.
JIS (MAS-BT)	Japan Industrial Standard	Machine tools from Asia normally use tool holders in accordance with the JIS B standard ... (former designation MAS-BT).
HSK	Hollow shank taper	The hollow shank taper, HSK for short, is used as a tool adaptor in machine tools (standardized according to DIN 69893).
CAT	American Standard	A tool taper developed by Caterpillar with equal sized lands on the outer diameter of the flange. Also called V-flange, CAT is an American standard.
SK	Steep taper	The steep taper is the standardized form of a tool taper for clamping tools in the main spindle of a machine tool (standardized in DIN 69871 part 1).
MK	Morse taper	The Morse taper or Morse cone is the standardized form of a tool taper for clamping tools.
ABS	Adapter attachment system (ABS)	The KOMET ABS system is often used as a direct adapter in spindles. In contrast to steep taper adapters, with the ABS System, the spindle or shank diameter is decisive for vibration stability and enables a relatively extended tool projection.
DAH	DIHART compensating holder	DIHART compensating holders are static compensating systems. Axis and concentricity errors are compensated for extremely simply.
DPS	DIHART floating holder	DIHART floating holders are dynamic compensating systems. Axis and concentricity errors are compensated for extremely simply.
ASG	Cutting geometry	The cutting geometry defines the following sizes: cutting angle, circular land, back taper, rake angle, primary and secondary relief angle.
HM VHM	Carbide Solid carbide	Carbide in this case means sintered carbide.
TiN	Titanium nitride	TiN is the chemical molecular formula for titanium nitride, a ceramic material with very high hardness and corrosion resistance.
DST	DIHART cutting material	DST is a high-performance cutting material.
DBG-N	DIHART coating	DBG-N is a coating that is characterised by a very high level of hardness.
DJC	DIHART coating	DJC is a combination of the high-performance cutting tool material DST with the high-performance coating DBG-N.
DBF	DIHART coating	DBF is a coating that exhibits a very high level of hardness and a high resistance to oxidation.
DBC	DIHART coating	DBC is a coating with a very high level of hardness and an extremely smooth surface.
PCD	Polycrystalline diamond	Polycrystalline diamond is a synthetically manufactured, extremely hard, mass of diamond particles with random orientation sintered in a metal matrix.
Rm	Tensile strength (N/mm²)	Tensile strength is a material property and describes the mechanical resistance with which a material opposes plastic deformation or separation.
HB	Brinell hardness testing	Hardness is the mechanical resistance with which a material opposes mechanical penetration by a harder test piece.
R_a R_z	Roughness depth (µm)	R_a = Mean surface finish to DIN 3142 R_z = Average surface uniformity to DIN 4768

Inquiries:

In order to meet the requirements of the customers when processing their enquiries following details are needed:

- A completed questionnaire (page 108)
- A part drawing or hand sketch of the application in question

This will enable the quotations department to get an idea of the tools required.

Test-results and tool performance issues:

To process complaints and test-results efficiently following details and items are needed:

- A completed evaluation sheet (page 109)
- A part drawing or hand sketch of the application in question
- If possible the faulty work-piece and/or tool

Then a fast and simple procedure can be provided.

Please forward this information to your local KOMET representative.

The addresses of KOMET GROUP are on the last pages of this catalogue.

DIHART®

Questionnaire

For elaboration on tool and machining recommendations,
please send the completed questionnaire to your local KOMET representative

KOMET FORM 500

Sales Rep: _____

Sales Rep #: _____

Request Date: _____

Distributor

Distributor Acct. No: _____

Inquiry No: _____

Send Quote To: _____

Telephone: _____

Fax: _____

E-Mail: _____

End User

Date of Visit: _____

Technical Contact: _____

Telephone: _____

Fax: _____

E-Mail: _____

Tooling Needed: _____

Quotation

☐ Fixed price ☐ Budgetary price

Concept Drawing Required: ☐ Yes ☐ No

Date Quotation Needed: _____

Tool Delivery Date Requested: _____

Quantity Requested: _____

For OEM's:

☐ Machine on order
☐ Machine order expected
☐ Quotation for project

Annual Production / Batch Size: _____

Tool Information

Max tool weight & moment: _____

Max tool width: _____

Max tool length: _____

Bore length: _____

Tool change: ☐ Automatic ☐ Manual

Tool set-up: ☐ Inside machine ☐ Outside

Type of connection: _____

Part Information

Drawing Number: _____

Material Specification: _____

Tensile Strength (specify unit): _____

Hardness (specify unit): _____

Application:

☐ Drilling ☐ Roughing ☐ Semi finish machining ☐ Finish machining
☐ Reaming ☐ Threading ☐ Milling ☐ Other

Stock removal on Ø: _____

Position Requirement: _____

Fixture Interference

☐ None ☐ See Drawing

CPK-Value:

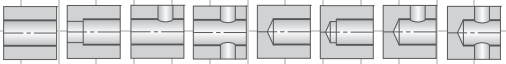
Reaming Information

Diameter & Tolerance: _____

Pre-machined Ø: _____

Pre-machining Method: _____

Hole Type:



☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Length of Interruption: _____

Bottom Machined: ☐ Yes ☐ No

Surface Quality (specify unit): _____

Roundness Requirement: _____

Machine Information

Brand / Type: _____

Condition: ☐ New ☐ Used

No. of Spindles: _____

Operation: ☐ Horizontal ☐ Vertical

Available Horse Power: _____

Spindle Speed: Variable ☐ Yes ☐ No

Spindle Speed: rpm_{min} _____ rpm_{max} _____

☐ Tools rotating
☐ Parts rotating

Feed Type: ☐ NC ☐ Hydraulic

Spindle Type (CAT, HSK, etc.): _____

Spindle Runout: _____

Coolant: ☐ Through Spindle ☐ Flood ☐ Dry ☐ MQL

Coolant Pressure (psi): _____

Coolant Type & Concentration: _____

Sketch or Process Description

Evaluation Sheet

DIHART®

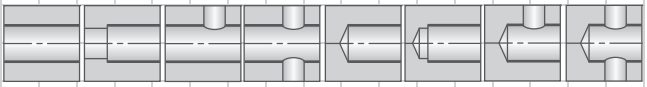
For friction tests and complaints, please send the completed questionnaire to your local KOMET representative

Company:	Contact:
Department:	E-Mail:
Telephone:	Customer-No.:
Fax:	Distributor:
Date:	

1. Work piece

Name of work piece:	Tensile strength:
Material specification:	Heat treatment:
Material No.:	Additional information:

2. Bore

Diameter and tolerance:	Type of bore
Length of bore:	☐ ☐[1] ☐[2] ☐[2] ☐[1] ☐[1] ☐[1)2)] ☐[1)2)]
Surface finish CLA / R_t / R_z:	
Circular error allowed:	
CPK:	
Diameter of pre-machining:	[1] bottom to be reamed? ☐ yes ☐ no
Method of pre-reaming:	[2] length of interruption: inch / (mm)
Number of bores, parts per year:	

3. Machine and tool fixing arrangement

Machine type and brand:	Machining: ☐ horizontal ☐ vertical
Attachment of spindle:	Tool: ☐ rotating ☐ stationary
Tool fixing arrangement:	Coolant supply through tool shank: ☐ yes ☐ no
max. speed: rpm ☐ variable ☐ fix	Brand and type of lubricant:
max. feed: inch (mm) / min ☐ variable ☐ fix	Lubricant ratio of mixture:
Circular accuracy of spindle:	

4. Tool

Type:	Cutting material / coating:
Order No.:	Cutting geometry (ASG):

5. Test results

Bore:	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Cutting speed ft/min (m/min):						
Speed (rpm):						
Feed: ☐ inch (mm) / rev ☐ inch (mm) / min						
Concentricity of the tool measured in the machine (µm):						
Bore diameter: entrance						
exit						
Circular error (µm):						
Surface quality: ☐ CLA ☐ R_t ☐ R_z						
No. of reamed bores:						
Tool life ft (m):						
Performance:						

Overall performance: ☐ excellent ☐ good ☐ unsatisfactory

Numerical Index

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