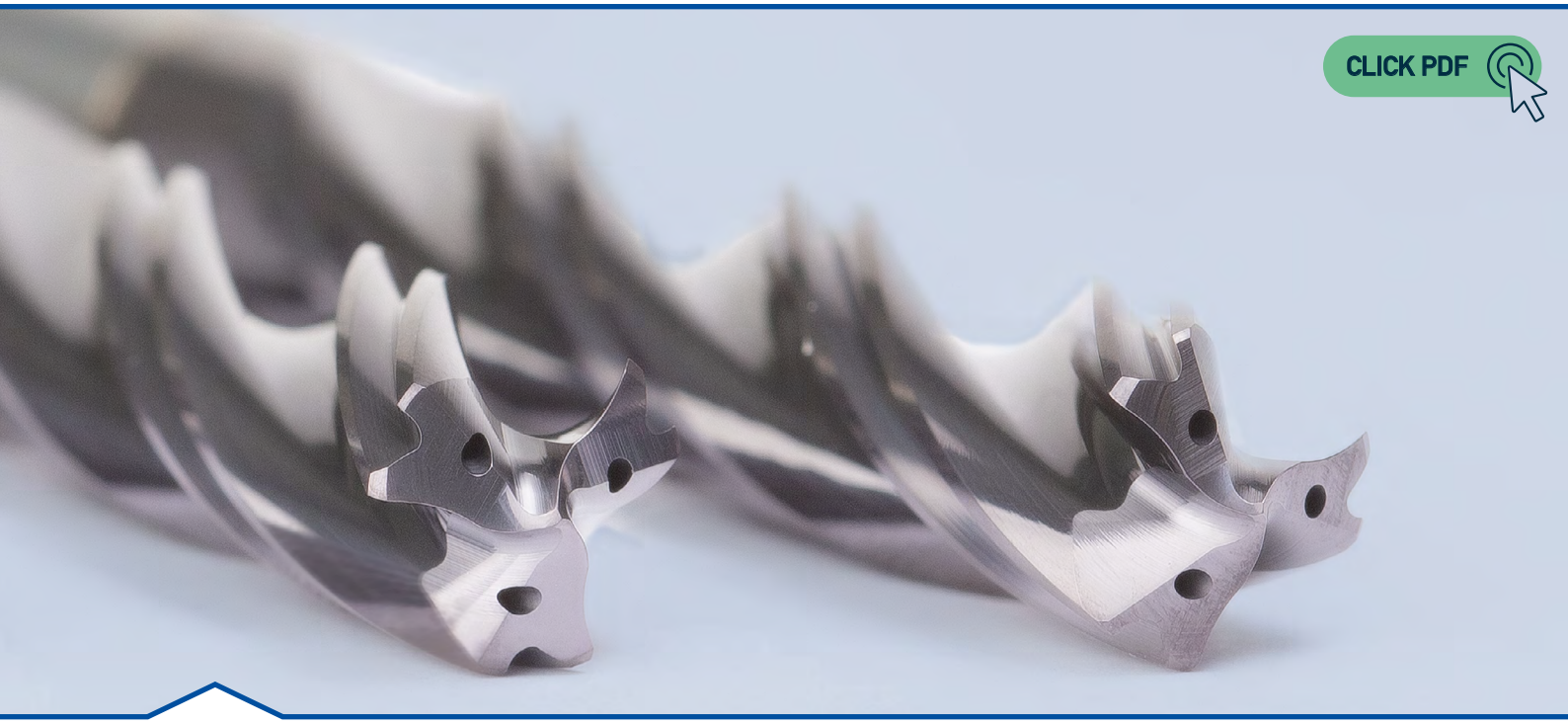


Your technology partner for cost-effective machining

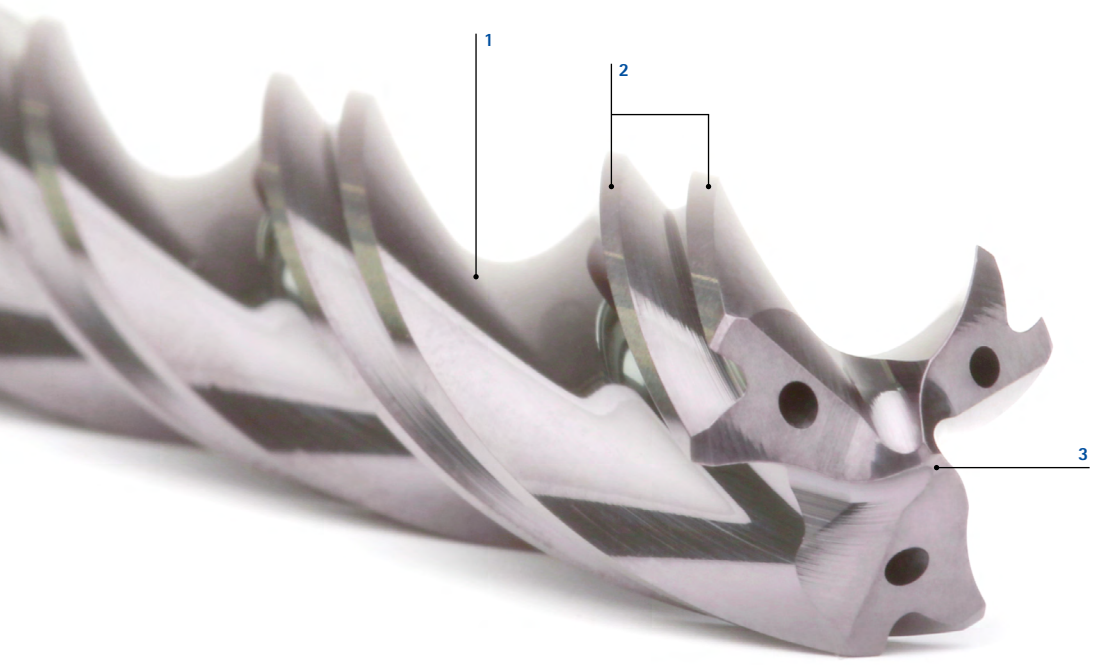
Tritan-Drill-Reamer

Tritan-Drill-Reamer

The most precise solution for drilling and reaming in one machining step

A proven way to manufacture as economically as possible is combining several machining steps in one tool. For example, bores can be drilled and reamed simultaneously with the Tritan-Drill-Reamer from MAPAL. MAPAL has developed the Tritan-Drill-Reamer in order to produce fitting bores even more accurately using just one tool. With six guiding chamfers for excellent guiding properties, precision-ground chip flutes with matching groove shape for good chip removal and a self-centring chisel edge, the new Tritan-Drill-Reamer is impressive all around.

The self-centring chisel edge ensures good positioning accuracy and improved spot drilling behaviour. Three cutting edges guarantee optimal roundness of the fit bore and highest performance. The guiding chamfers produce best-quality surfaces.



1 Finely ground groove profile
- Finely ground chip flutes with adapted groove shape for very good chip removal

2 Six guiding chamfers
- For excellent guiding properties
- For the production of fitting bores with maximum economic efficiency and accuracy with only one tool

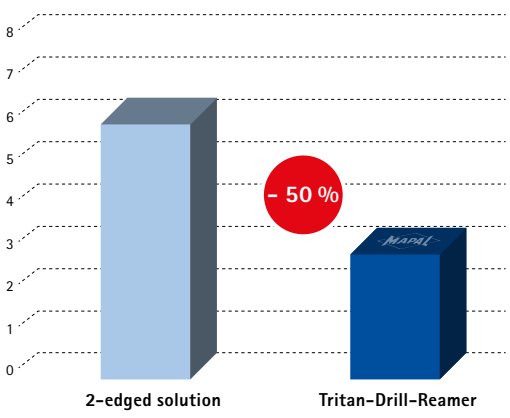
3 Innovative centre point
- Self-centring chisel edges for very good positional accuracy and improved spot drilling

Features

Dimensions:
- Combination of drilling and reaming
- Length versions 3xD and 5xD
- Three cutting edges and six guiding chamfers
- With internal cooling
- Tolerance versions ±0.003 mm and H7

Configurable diameter
- ø range: 3.800 - 20.005 mm

Processing time [sec.]

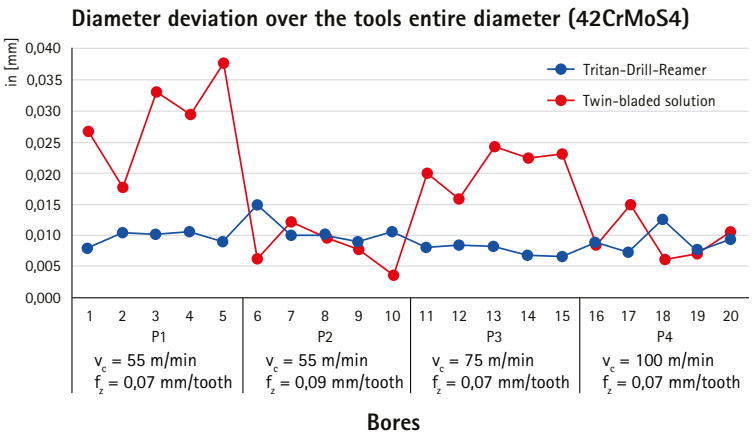


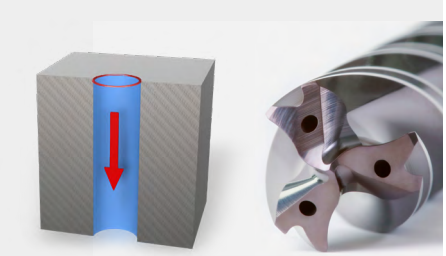
Material: 34CrS4
Diameter: 10H7
Drilling depth: 45 mm

2-edged standard solution:
v_c: 70 m/min
f_{rev}: 0,2 mm/revolution
n: 2,200 1/min
v_f: 440 mm/min

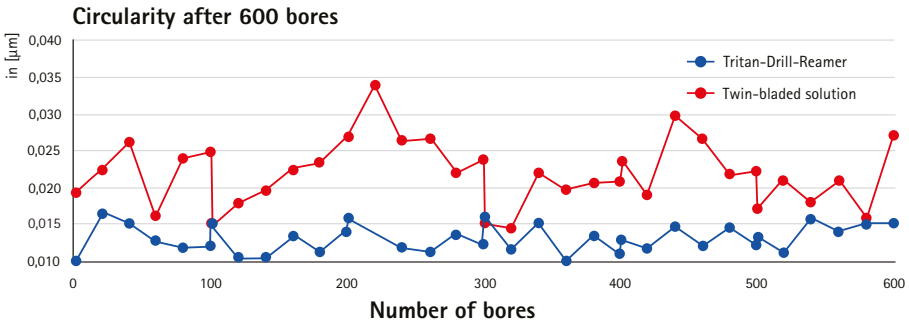
Tritan-Drill-Reamer
v_c: 70 m/min
f_{rev}: 0,39 mm/revolution
n: 2,200 1/min
v_f: 858 mm/min

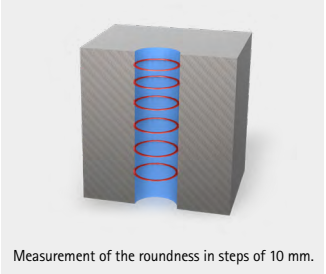
Comparison Tritan-Drill-Reamer and double edged solution





The Tritan-Drill-Reamer is significantly less sensitive to changes in the cutting values (compared to conventional, double edged solutions).





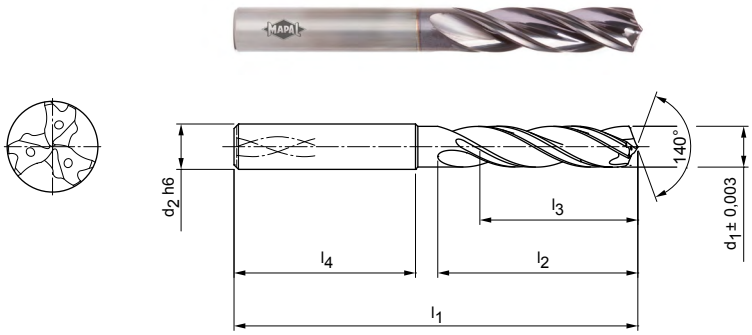
Measurement of the roundness in steps of 10 mm.

Tritan-Drill-Reamer

Drill reamer
SDR301G (3xD), internal coolant supply

Design:

Drill diameter:	3.800 – 20.050 mm
Bore tolerance:	≥ IT 7
Cutting material:	HP358
Number of cutting edges:	3
Number of guiding chamfers:	6
Tip angle:	140°
Side rake angle:	30°



Stocked preferred series in ±0.003

Dimensions						Shank form HA	
$d_{1\ +/-0.003}$	d_2 h6	l_1	l_2	l_3	l_4	Specification	Order no.
3,990	6	66	24	17	36	SDR301G-3.990+3-3-HA03-HP358	31196569
4,000	6	66	24	17	36	SDR301G-4.000+3-3-HA03-HP358	31196570
4,010	6	66	24	17	36	SDR301G-4.010+3-3-HA03-HP358	31196571
4,990	6	66	28	20	36	SDR301G-4.990+3-3-HA03-HP358	31196575
5,000	6	66	28	20	36	SDR301G-5.000+3-3-HA03-HP358	31196576
5,010	6	66	28	20	36	SDR301G-5.010+3-3-HA03-HP358	31196577
5,020	6	66	28	20	36	SDR301G-5.020+3-3-HA03-HP358	31196578
5,990	6	66	28	20	36	SDR301G-5.990+3-3-HA03-HP358	31196581
6,000	6	66	28	20	36	SDR301G-6.000+3-3-HA03-HP358	31196582
6,010	6	66	28	20	36	SDR301G-6.010+3-3-HA03-HP358	31196583
7,990	8	79	41	29	36	SDR301G-7.990+3-3-HA03-HP358	31196587
8,000	8	79	41	29	36	SDR301G-8.000+3-3-HA03-HP358	31196588
8,010	8	79	41	29	36	SDR301G-8.010+3-3-HA03-HP358	31196589
9,990	10	89	47	35	40	SDR301G-9.990+3-3-HA03-HP358	31196593
10,000	10	89	47	35	40	SDR301G-10.000+3-3-HA03-HP358	31196594
10,010	10	89	47	35	40	SDR301G-10.010+3-3-HA03-HP358	31196595
10,020	10	89	47	35	40	SDR301G-10.020+3-3-HA03-HP358	31196596
11,990	12	102	55	40	45	SDR301G-11.990+3-3-HA03-HP358	31196599
12,000	12	102	55	40	45	SDR301G-12.000+3-3-HA03-HP358	31196600
12,010	12	102	55	40	45	SDR301G-12.010+3-3-HA03-HP358	31196601
13,990	14	107	60	43	45	SDR301G-13.990+3-3-HA03-HP358	31196605
14,000	14	107	60	43	45	SDR301G-14.000+3-3-HA03-HP358	31196606
14,010	14	107	60	43	45	SDR301G-14.010+3-3-HA03-HP358	31196607
15,990	16	115	65	45	48	SDR301G-15.990+3-3-HA03-HP358	31196611
16,000	16	115	65	45	48	SDR301G-16.000+3-3-HA03-HP358	31196612
16,010	16	115	65	45	48	SDR301G-16.010+3-3-HA03-HP358	31196613

Tritan-Drill-Reamer | Drill reamer SDR301G (3xD), internal coolant supply

Configurable features

Diameter:
Diameter in increments of
0.001 mm freely selectable

Specification:
SDR301G-**[diameter]**+3-3-HA03-HP358

Example:
SDR301G-**4.001**+3-3-HA03-HP358

Tool diameter d_1 = 4.001 mm

Dimensions of configurable series

d_1 min.	d_1 max.	d_2 h6	l_1	l_2	l_3	l_4
3,800	4,700	6	66	24	17	36
4,701	6,050	6	66	28	20	36
6,051	8,050	8	79	41	29	36
8,051	10,050	10	89	47	35	40
10,051	12,050	12	102	55	40	45
12,970	14,050	14	107	60	43	45
14,970	16,050	16	115	65	45	48
16,800	18,050	18	123	73	51	48
18,700	20,050	20	131	79	55	50

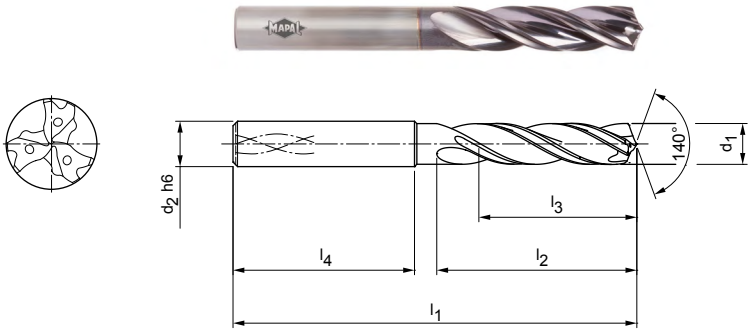
Dimensions in mm.
For tolerance class fit bores up to max. IT7, with sufficient machine stability and cooling.
For help in calculating the optimum nominal diameter for different fitting bores, please refer to the information field at page 10.
For cutting data recommendations, see page 10.
Special designs and other coatings available upon request.

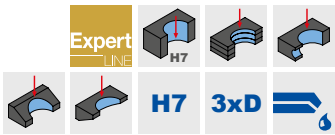
Tritan-Drill-Reamer

Drill reamer
SDR301 (3xD), internal coolant supply

Design:

Drill diameter:	4.000 – 16.000 mm
Bore tolerance:	≥ IT 7
Cutting material:	HP358
Number of cutting edges:	3
Number of guiding chamfers:	6
Tip angle:	140°
Side rake angle:	30°





Stocked preferred series in H7

Dimensions						Shank form HA	
d_1 H7	d_2 h6	l_1	l_2	l_3	l_4	Specification	Order no.
4,000	6	66	24	17	36	SDR301-4.000H7-HA03-HP358	31196337
5,000	6	66	28	20	36	SDR301-5.000H7-HA03-HP358	31196338
6,000	6	66	28	20	36	SDR301-6.000H7-HA03-HP358	31196339
8,000	8	79	41	29	36	SDR301-8.000H7-HA03-HP358	31196560
10,000	10	89	47	35	40	SDR301-10.000H7-HA03-HP358	31196561
12,000	12	102	55	40	45	SDR301-12.000H7-HA03-HP358	31196562
14,000	14	107	60	43	45	SDR301-14.000H7-HA03-HP358	31196563
16,000	16	115	65	45	48	SDR301-16.000H7-HA03-HP358	31196564

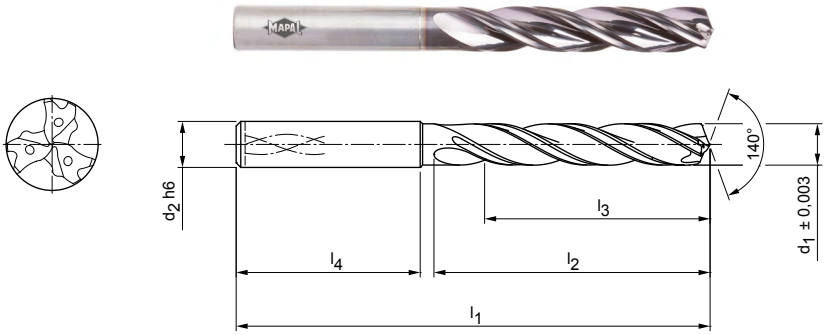
Dimensions in mm.
For tolerance class fit bores of H7, with sufficient machine stability and cooling.
For cutting data recommendations, see page 10.
Special designs and other coatings available upon request.

Tritan-Drill-Reamer

Drill reamer
SDR301G (5xD), internal coolant supply

Design:

Drill diameter:	3.800 – 20.050 mm
Bore tolerance:	≥ IT 7
Cutting material:	HP358
Number of cutting edges:	3
Number of guiding chamfers:	6
Tip angle:	140°
Side rake angle:	30°



Stocked preferred series in ±0.003

Dimensions						Shank form HA	
$d_{1\ +/-0.003}$	d_2 h6	l_1	l_2	l_3	l_4	Specification	Order no.
3,990	6	74	36	29	36	SDR301G-3.990+3-3-HA05-HP358	31196639
4,000	6	74	36	29	36	SDR301G-4.000+3-3-HA05-HP358	31196640
4,010	6	74	36	29	36	SDR301G-4.010+3-3-HA05-HP358	31196641
4,020	6	74	36	29	36	SDR301G-4.020+3-3-HA05-HP358	31196642
4,990	6	82	44	35	36	SDR301G-4.990+3-3-HA05-HP358	31196645
5,000	6	82	44	35	36	SDR301G-5.000+3-3-HA05-HP358	31196646
5,010	6	82	44	35	36	SDR301G-5.010+3-3-HA05-HP358	31196647
5,990	6	82	44	35	36	SDR301G-5.990+3-3-HA05-HP358	31196651
6,000	6	82	44	35	36	SDR301G-6.000+3-3-HA05-HP358	31196652
6,010	6	82	44	35	36	SDR301G-6.010+3-3-HA05-HP358	31196653
7,990	8	91	53	43	36	SDR301G-7.990+3-3-HA05-HP358	31196658
8,000	8	91	53	43	36	SDR301G-8.000+3-3-HA05-HP358	31196659
8,010	8	91	53	43	36	SDR301G-8.010+3-3-HA05-HP358	31196660
8,020	8	91	53	43	36	SDR301G-8.020+3-3-HA05-HP358	31196661
9,990	10	103	61	49	40	SDR301G-9.990+3-3-HA05-HP358	31196664
10,000	10	103	61	49	40	SDR301G-10.000+3-3-HA05-HP358	31196665
10,010	10	103	61	49	40	SDR301G-10.010+3-3-HA05-HP358	31196666
11,990	12	118	71	59	45	SDR301G-11.990+3-3-HA05-HP358	31196670
12,000	12	118	71	59	45	SDR301G-12.000+3-3-HA05-HP358	31196671
12,010	12	118	71	59	45	SDR301G-12.010+3-3-HA05-HP358	31196672
13,990	14	124	77	60	45	SDR301G-13.990+3-3-HA05-HP358	31196676
14,000	14	124	77	60	45	SDR301G-14.000+3-3-HA05-HP358	31196677
14,010	14	124	77	60	45	SDR301G-14.010+3-3-HA05-HP358	31196678
15,990	16	133	83	63	48	SDR301G-15.990+3-3-HA05-HP358	31196682
16,000	16	133	83	63	48	SDR301G-16.000+3-3-HA05-HP358	31196683
16,010	16	133	83	63	48	SDR301G-16.010+3-3-HA05-HP358	31196684

Continued on next page.

Tritan-Drill-Reamer | Drill reamer SDR301G (5xD), internal coolant supply

Configurable features

Diameter:
Diameter in increments of
0.001 mm freely selectable

Specification:
SDR301G-**[diameter]**+3-3-HA05-HP358

Example:
SDR301G-**04001**+3-3-HA05-HP358

Tool diameter d_1 = 4.001 mm

Dimensions of configurable series

d_1 min.	d_1 max.	d_2 h6	l_1	l_2	l_3	l_4
3,800	4,700	6	74	36	29	36
4,701	6,050	6	82	44	35	36
6,051	8,050	8	91	53	43	36
8,051	10,050	10	103	61	49	40
10,051	12,050	12	118	71	56	45
12,970	14,050	14	124	77	60	45
14,970	16,050	16	133	83	63	48
16,800	18,050	18	143	93	71	48
18,700	20,050	20	153	101	77	50

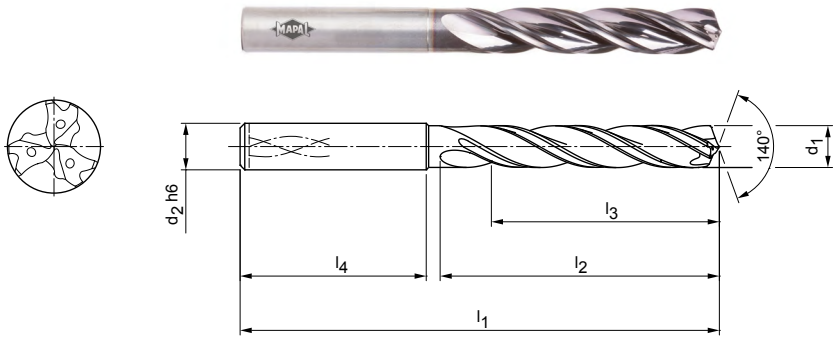
Dimensions in mm.
For tolerance class fit bores up to max. IT7, with sufficient machine stability and cooling.
For help in calculating the optimum nominal diameter for different fitting bores, please refer to the information field at page 10.
For cutting data recommendations, see page 10.
Special designs and other coatings available upon request.

Tritan-Drill-Reamer

Drill reamer
SDR301 (5xD), internal coolant supply

Design:

Drill diameter:	4.000 – 20.000 mm
Bore tolerance:	≥ IT 7
Cutting material:	HP358
Number of cutting edges:	3
Number of guiding chamfers:	6
Tip angle:	140°
Side rake angle:	30°



Stocked preferred series in H7

Dimensions						Shank form HA	
d_1 H7	d_2 h6	l_1	l_2	l_3	l_4	Specification	Order no.
4,000	6	74	36	29	36	SDR301-4.000H7-HA05-HP358	31196627
5,000	6	82	44	35	36	SDR301-5.000H7-HA05-HP358	31196628
6,000	6	82	44	35	36	SDR301-6.000H7-HA05-HP358	31196629
8,000	8	91	53	43	36	SDR301-8.000H7-HA05-HP358	31196630
10,000	10	103	61	49	40	SDR301-10.000H7-HA05-HP358	31196631
12,000	12	118	71	56	45	SDR301-12.000H7-HA05-HP358	31196632
14,000	14	124	77	60	45	SDR301-14.000H7-HA05-HP358	31196633
16,000	16	133	83	63	48	SDR301-16.000H7-HA05-HP358	31196634
18,000	18	143	93	71	48	SDR301-18.000H7-HA05-HP358	31196635
20,000	20	153	101	77	50	SDR301-20.000H7-HA05-HP358	31196636

Dimensions in mm.
For tolerance class fit bores of H7, with sufficient machine stability and cooling.
For cutting data recommendations, see page 10.
Special designs and other coatings available upon request.

Cutting data recommendations for drill reamer

Feed and cutting speed

Tritan-Drill-Reamer | SDR301

MMG*			Material	Strength/ Hardness [N/mm²] [HRC]	Cutting speed v_c [m/min]				Feed f [mm] at drill diameter					
					Internal ccolant	External coolant	MQL	Air	4,00	5,50	7,50	10,50	14,50	20,00
P	P1	P1.1	Structural, free-cutting, case hardened and heat-treated	< 700	70	65	65		0,17	0,22	0,27	0,34	0,41	0,47
		P1.2	Structural, free-cutting, case hardened and heat-treated	< 1.200	65	55	55		0,22	0,27	0,34	0,42	0,51	0,59
	P2	P2.1	Nitrated, case hardened and heat-treated steel, alloyed	< 900	70	60	60		0,20	0,26	0,32	0,40	0,48	0,56
		P2.2	Nitrated, case hardened and heat-treated steel, alloyed	< 1.400	50	40	40		0,17	0,21	0,26	0,32	0,38	0,44
	P3	P3.1	Tool, roller bearing, spring and high speed steel**	< 800	55	45	45		0,18	0,23	0,29	0,36	0,43	0,50
		P3.2	Tool, roller bearing, spring and high speed steel**	< 1.000	40	40	40		0,15	0,19	0,24	0,30	0,36	0,41
		P3.3	Tool, roller bearing, spring and high speed steel**	< 1.500	40	30	35		0,13	0,16	0,19	0,23	0,28	0,32
	P5	P5.1	Cast steel		70	60	60		0,20	0,26	0,32	0,40	0,48	0,56
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), EN-GJL	< 300	100	70	70	70	0,25	0,33	0,42	0,55	0,67	0,79
	K2	K2.1	Cast iron with spheroidal graphite, EN-GJS	< 500	135	85	100	100	0,24	0,32	0,40	0,51	0,62	0,72
		K2.2	Cast iron with spheroidal graphite, EN-GJS	≤ 800	85	65	65		0,22	0,28	0,35	0,44	0,54	0,62
		K2.3	Cast iron with spheroidal graphite, EN-GJS	> 800	50	35	45		0,11	0,13	0,16	0,20	0,24	0,28
	K3	K3.1	Cast iron with vermicular graphite, EN-GJV; Malleable cast	< 500	75	70	70		0,23	0,30	0,38	0,47	0,58	0,67
		K3.2	Cast iron with vermicular graphite, EN-GJV; Malleable cast	> 500	70	60	60		0,20	0,25	0,31	0,38	0,46	0,53

Example calculation

Please note that the result may be influenced by additional parameters such as the machine tool or tool clamping.

Formula for calculating the optimum nominal tool diameter:

$(G_{oB} + G_{uB}) / 2$

Example:

- Fitting bore: ø 10 F7
- Maximum bore dimension G_{oB}: 10.028 mm
- Minimum bore dimension G_{uB}: 10.013 mm

➔ (10.028 mm + 10.013 mm) / 2 = 10.021 mm = selection of tool nominal diameter 10.021 mm

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Best bore results with a combination of Tritan-Drill-Reamer and the new hydraulic clamping chuck Hydro DReaM Chuck 4.5°

The newly developed hydraulic clamping system permits high machining parameters through the excellent stability and accuracy. It minimalises self-generated vibrations, through this the tool being clamped is not subjected to micro vibrations. This also leads to a reduction spindle strain of up to 5 percent, providing significantly longer tool life and assures optimal surface finish values.

The through MAPAL specially developed polishing process, that provides a brilliant surface finish resulting in the chuck being more resistant to dirt and corrosion. Operators can clamp the tool in the chuck with reduced force. „Foolproof-Handling"provides this, as well as the simply self-explanatory handling of the chuck.

Especially by the Hydro DReaM Chuck 4,5° this means significant time savings compared to other clamping systems.

ADVANTAGES

- Corrosion resistant clamping chuck
- Self-explanatory and simple handling-Foolproofing
- Greatest possible stability with an optimal use of resources

To obtain the optimal bore quality MAPAL suggests using the Tritan-Drill-Reamer in combination with the new hydraulic clamping chuck Hydro DReaM Chuck 4.5°.

Further clamping chucks can be found in the MAPAL catalogue "CLAMPING".

Discover tool and service solutions now that give you a lead:

BORE MACHINING

REAMING | FINE BORING

DRILLING FROM SOLID | BORING | COUNTERSINKING

MILLING

CLAMPING

TURNING

ACTUATING

SETTING | MEASURING | DISPENSING

SERVICES

FOLLOW US

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TRITAN-EN-PC-01-007-0824-VVA Printed in Austria. Technical data subject to change without notice.

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