HARTNER

Precision Cutting Tools

HYDRAULIC EXPANSION CHUCKS

HSK-A/C | ISO TAPER | MAS/BT

+ for universal application
+ high clamping force

HARTNER

Precision Cutting Tools

ISO taper hydraulic chucks with increased clamping force

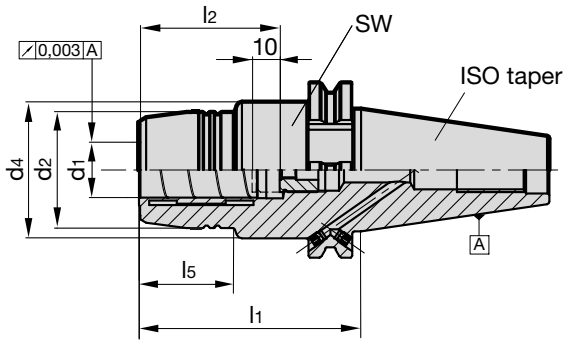
Article no. 89700

Product information

- ISO taper to DIN ISO 7388-1 form AD/AF
- form B supplied with threaded pins in bores
- balancing quality: G2.5 / 25,000 rev./min or U< 1gmm
- axial length setting
- for tool shank tolerance h6

Scope of delivery

- incl. adjustment screw
- incl. hexagon clamping key article no. 89761
- order pull studs separately



ISO taper	for shank Ø $d_{1\ h6}$	d_2	d_4	l_1	l_2	l_5	incl. adjustment screw	SW	kg	Code no.	89700 Availability
	mm	mm	mm	mm	mm	mm					Discount group 147
40	6	26.0	49.5	80.5	37	29.5	6.014	5	1.5	6,040	●
40	8	28.0	49.5	80.5	37	30.0	8.014	5	1.5	8,040	●
40	10	30.0	49.5	80.5	41	31.0	10.014	5	1.5	10,040	●
40	12	32.0	49.5	80.5	46	31.5	12.014	5	1.5	12,040	●
40	14	34.0	49.5	80.5	46	31.5	12.014	5	1.5	14,040	●
40	16	38.0	49.5	80.5	49	33.0	16.014	5	1.5	16,040	●
40	18	40.0	49.5	80.5	49	33.0	16.014	5	1.5	18,040	●
40	20	-	49.5	64.5	51	-	20.114	5	1.5	20,040	●
40	20	42.0	49.5	80.5	51	34.0	20.114	5	1.5	20,140	●
40	20	42.0	49.5	110.0	51	34.0	20.114	5	2.0	20,240	●
40	25	-	49.5	80.5	57	-	20.114	6	2.0	25,040	●
40	32	63.0	80.0	80.5	61	25.5	20.114	6	2.0	32,040	●
50	12	32.0	49.5	80.5	46	31.5	12.014	5	3.5	12,050	●
50	20	42.0	49.5	80.5	51	34.0	20.114	5	4.0	20,050	●
50	20	42.0	49.5	110.0	51	34.0	20.114	5	4.0	20,150	●
50	32	-	72.0	81.0	61	-	20.114	6	4.0	32,050	●

MAS/BT hydraulic chucks with increased clamping force

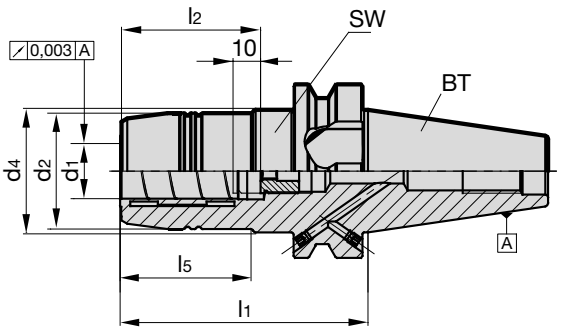
Article no. 89701

Product information

- balancing quality: G2.5 / 25,000 rev./min or U< 1gmm
- axial length setting
- max. deviation f. concentricity 3 µm
- for tool shank tolerance h6
- MAS/BT to JIS B 6339-2 form JD/JF
  (*: version JD without coolant supply over collar)

Scope of delivery

- incl. adjustment screw
- incl. hexagon clamping key article no. 89761
- order pull studs separately



BT	for shank Ø $d_{1\ h6}$	d_2	d_4	l_1	l_2	l_5	incl. adjustment screw	SW	kg	Code no.	89701 Availability
	mm	mm	mm	mm	mm	mm					Discount group 147
30	6	-	26.0	51.0	37	-	6.014	4	0.6	6,030	●
30	8	-	28.0	51.0	37	-	8.014	4	0.6	8,030	●
30	10	-	30.0	51.0	41	-	10.014	4	0.6	10,030	●
30	12	-	32.0	51.0	46	19.5	12.014	4	0.6	12,030	●
30	16	-	38.0	90.0	49	50	16.014	4	1.0	16,030	●
30	20	-	42.0	90.0	51	50	8.014	5	1.0	20,030	●
40	6	26.0	44.5	90.0	37	43.0	6.014	5	1.5	6,040	●
40	8	28.0	44.5	90.0	37	44.5	8.014	5	1.5	8,040	●
40	10	30.0	44.5	90.0	41	44.5	10.014	5	1.5	10,040	●
40	12	32.0	44.5	90.0	46	44.5	12.014	5	1.5	12,040	●
40	14	34.0	44.5	90.0	46	44.5	12.014	5	1.5	14,040	●
40	16	38.0	44.5	90.0	49	47.5	16.014	5	1.5	16,040	●
40	18	40.0	44.5	90.0	49	47.5	16.014	5	1.5	18,040	●
40	20	-	49.5	72.5	51	-	20.114	5	1.5	20,040	●
40	20	42.0	44.5	90.0	51	47.5	20.114	5	1.5	20,140	●
40	25	-	49.5	83.0	57	-	20.114	6	1.8	25,040	●
40	32	63.0	80.0	83.0	61	25.5	20.114	6	2.0	32,040	●
50	12	32.0	44.5	90.0	46	34.0	12.014	5	4.0	12,050	●
50	20	42.0	44.5	90.0	51	34.0	20.114	5	4.0	20,050	●
50	32	-	72.0	90.0	61	-	20.114	6	4.0	32,050	●

HSK-A hydraulic chucks with increased clamping force

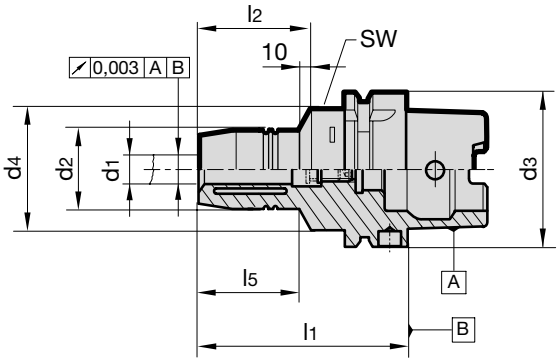
Article no. 89702

Product information

- balancing quality: G2.5 / 25,000 rev./min or U< 1gmm
- axial length setting
- max. deviation f. concentricity 3 µm
- for tool shank tolerance h6
- to DIN 69882-7
- also available in extra-long lengths l1 = 150 / 160 mm (concentricity 5 µm) and 200 mm (concentricity 7 µm)
- HSK-A to ISO 12164-1/DIN 69893-1

Scope of delivery

- incl. adjustment screw
- incl. hexagon clamping key article no. 89761
- order coolant supply set article no. 89762 separately



HSK-A d_3	for shank Ø $d_{1\ h6}$	d_2	d_4	l_1	l_2	l_5	incl. adjustment screw	SW	kg	Code no.	89702 Discount group 147 Availability
	mm	mm	mm	mm	mm	mm					
63	6	26	50.0	70	37	24.5	6.014	5	1.00	6,063	●
63	8	28	50.0	70	37	24.5	8.014	5	1.00	8,063	●
63	10	30	50.0	80	41	35.5	10.014	5	1.00	10,063	●
63	12	32	50.0	85	46	41.5	12.014	5	1.10	12,063	●
63	14	34	50.0	85	46	41.5	12.014	5	1.10	14,063	●
63	16	38	50.0	90	49	45.5	16.014	5	1.20	16,063	●
63	18	40	50.0	90	49	48.5	16.014	5	1.20	18,063	●
63	20	42	50.0	90	51	47.5	20.114	5	1.20	20,063	●
63	25	57	63.0	120	57	55.3	20.114	6	2.10	25,063	●
63	32	64	75.0	125	61	63	20.114	6	2.40	32,063	●
100	6	26	50.0	75	37	24	6.014	5	2.40	6,100	●
100	8	28	50.0	75	37	26	8.014	5	2.40	8,100	●
100	10	30	50.0	90	41	42	10.014	5	2.50	10,100	●
100	12	32	50.0	95	46	47	12.014	5	2.50	12,100	●
100	14	34	50.0	95	46	47	12.014	5	2.50	14,100	●
100	16	38	50.0	100	49	53	16.014	5	2.70	16,100	●
100	18	40	50.0	100	49	53	16.014	5	2.70	18,100	●
100	20	42	50.0	105	51	59	20.114	5	3.20	20,100	●
100	25	57	63.0	110	57	62	20.114	6	3.30	25,100	●
100	32	64	75.0	110	61	62	20.114	6	3.80	32,100	●

HSK-C hydraulic chucks with increased clamping force

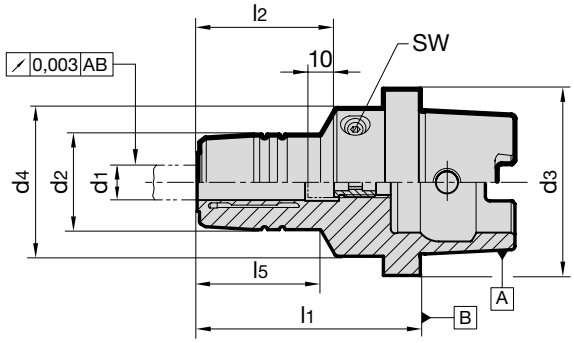
Article no. 89703

Product information

- balancing quality: G2.5 / 25,000 rev./min or U< 1gmm
- axial length setting
- for tool shank tolerance h6
- HSK-C to ISO 12164-1/DIN 69893-1

Scope of delivery

- incl. adjustment screw
- incl. hexagon clamping key article no. 89761



HSK-C d_3 mm	for shank Ø $d_{1\ h6}$ mm	d_2 mm	d_4 mm	l_1 mm	l_2 mm	l_5 mm	incl. adjustment screw	SW	kg	Code no.	89703 Discount group 147 Availability
63	6	26	50	60	37	25	6.014	5	1.0	6,063	●
63	8	28	50	60	37	26	8.014	5	1.0	8,063	●
63	10	30	50	65	41	31	10.014	5	1.0	10,063	●
63	12	32	50	75	46	41	12.014	5	1.1	12,063	●
63	14	34	50	75	46	42	12.014	5	1.0	14,063	●
63	16	38	50	80	49	48	16.014	5	1.1	16,063	●
63	18	40	50	80	49	48	16.014	5	1.2	18,063	●
63	20	42	50	80	51	49	20.114	5	1.2	20,063	●
63	25	57	63	95	57	63	20.114	6	2.0	25,063	●
63	32	62.5	75	100	61	60.3	20.114	6	2.0	32,063	●

Reduction bushes, sealed, for hydraulic chucks

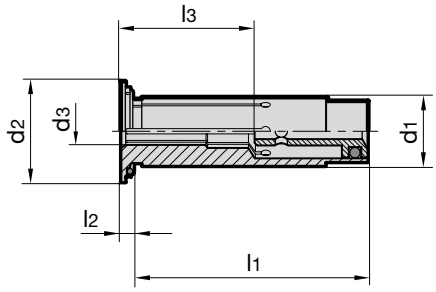
Article no. 89730

Product information

- for clamping smaller shank-Ø in hydraulic chucks
- clamping-Ø for tool shank tolerance h6
- closed endface, therefore leakproof up to 80 bar
- concentricity ≤ 2 µm
- with adjustable limit stop
- the application of reduction bushes makes it possible to increase the permissible transferable torque by approx. 25% in comparsion to direct clamping

Scope of delivery

- incl. stop element
- special dimensions on request



							89730
							Discount group 114
d_1 mm	for shank Ø $d_{3\ h6}$ mm	d_2 mm	l_1 mm	l_2 mm	l_5 mm	Code no.	Availability
12	3	16.5	45	2	25.5	3,012	●
12	4	16.5	45	2	25.5	4,012	●
12	5	16.5	45	2	25.5	5,012	●
12	6	16.5	45	2	33.5	6,012	●
12	8	16.5	45	2	33.5	8,012	●
20	3	24.1	50.5	2	28.5	3,020	●
20	4	24.1	50.5	2	28.5	4,020	●
20	5	24.1	50.5	2	28.5	5,020	●
20	6	24.1	50.5	2	37.5	6,020	●
20	7	24.1	50.5	2	37.5	7,020	●
20	8	24.1	50.5	2	37.5	8,020	●
20	9	24.1	50.5	2	42.5	9,020	●
20	10	24.1	50.5	2	42.5	10,020	●
20	11	24.1	50.5	2	42.5	11,020	●
20	12	24.1	50.5	2	47.5	12,020	●
20	13	24.1	50.5	2	47.5	13,020	●
20	14	24.1	50.5	2	47.5	14,020	●
20	15	24.1	50.5	2	47.5	15,020	●
20	16	24.1	50.5	2	47.5	16,020	●
32	6	35.5	60.5	3	34.5	6,032	●
32	8	35.5	60.5	3	34.5	8,032	●
32	10	35.5	60.5	3	39.5	10,032	●
32	12	35.5	60.5	3	41.5	12,032	●
32	14	35.5	60.5	3	41.5	14,032	●
32	16	35.5	60.5	3	49.5	16,032	●
32	18	35.5	60.5	3	49.5	18,032	●
32	20	35.5	60.5	3	49.5	20,032	●
32	25	35.5	60.5	3	57.5	25,032	●

Clamping force measuring instrument

The hydraulic clamping technology is a well-known, proven and reliable method for the clamping of tools. Thanks to its completely closed design, the system is sealed and impervious, requires extremely low maintenance and guarantees longevity. Following many years of general use, however, thermal and mechanical influences can lead to a reduction in clamping force. The result can be a poor tool life and a diminished surface quality including expensive tool breakages during machining operations.

Determining the loss of clamping force was until now extremely costly and inaccurate. It involved either determining the number of clamping screw rotations or the torque with the assistance of a proofing bar and a torque key or the expansion rate applying an accurate internal measuring instrument.

The new Hartner measuring instrument offers a precise, quick and simple as well as consistent method of measuring the clamping force. An added advantage is the mobility of the system, i.e. for measuring within machines and fixtures.

The device determines the clamping force of the hydraulic chuck via a pressure sensitive plug gauge. The entire length of the plug gauge is clamped in the hydraulic chuck so that when tightening the clamping screw the clamping pressure of the chuck is optimally applied. The clamping force measuring instrument displays the clamping force as an absolute measurement value on the one hand and as a percentage clamping force in relation to a reference value that can be set individually on the other.

This way, the instrument can be adapted to customer specific application conditions and requirements.

The clamping force measuring instrument is supplied with a plug gauge for the respective clamping diameter as well as a carbide proofing bar for calibration purposes and a CR 2430 type battery – all in a sturdy and handy case.

Clamping force measuring instrument

Scope of delivery

- supplied respectively with measuring arbor, carbide proofing arbor, battery and case

clamping diameter mm	Code no.	89780 Net price Availability
6.0	6,000	on request
8.0	8,000	on request
10.0	10,000	on request
12.0	12,000	on request
14.0	14,000	on request
16.0	16,000	on request
18.0	18,000	on request
20.0	20,000	on request
25.0	25,000	on request
32.0	32,000	on request

Hexagon clamping keys

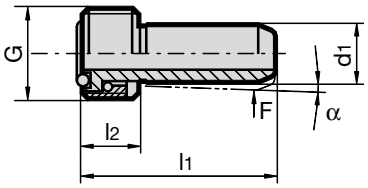
Product information
- for hexagon socket screws
- with ergonomic handle for the safe handling of our clamping devices

SW	Hexagon length mm	Code no.	89761 Discount group 114 Availability
4.0	100	4,600	●
5.0	100	5,000	●
6.0	100	6,000	●

Coolant supply sets for conventional cooling

Product information
- leak-proof screwed connection tested to 80 bar
- to DIN 69895
- F = angle movability ± 1°
- for HSK-A and HSK-E shanks

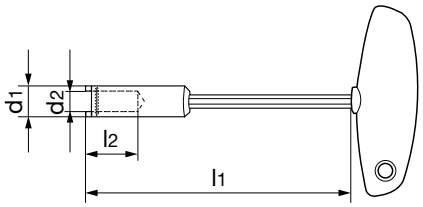
Scope of delivery
- incl. union nut and O-rings



for HSK-A	d_1 mm	a °	F	G	l_1 mm	l_2 mm	Code no.	89762 Discount group 114 Availability
63	12	1.3	6N	M18x1	36.5	11.5	18,063	●
100	16	1.4	7N	M24x1.5	44.0	15.5	24,100	●

Socket wrenches

Product information
- with T-handle
- for coolant supply sets for conventional cooling



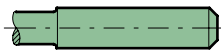
for HSK	d1 mm	d2 mm	l1 mm	l2 mm	Code no.	89760 Discount group 114 Availability
63	17.0	12.1	135	31.5	48,000	●
100	22.5	16.1	138	35.0	75,000	●

Technical information and advantages

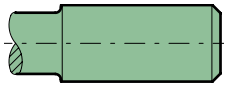
Clamping standard tool shanks to DIN 6535 in hydraulic chucks

Direct clamping
of tool preferred
run-out ≤ 0.003 mm

Form HA Ø 6 ... 20 mm



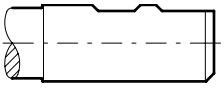
Form HA Ø 25 ... 32 mm



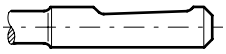
Form HB Ø 6 ... 20 mm

Clamping of tool shank
only with reduction bushes
run-out ≤ 0.005 mm

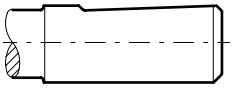
Form HB Ø 25 ... 32 mm



Form HE Ø 6 ... 20 mm



Form HE Ø 25 ... 32 mm



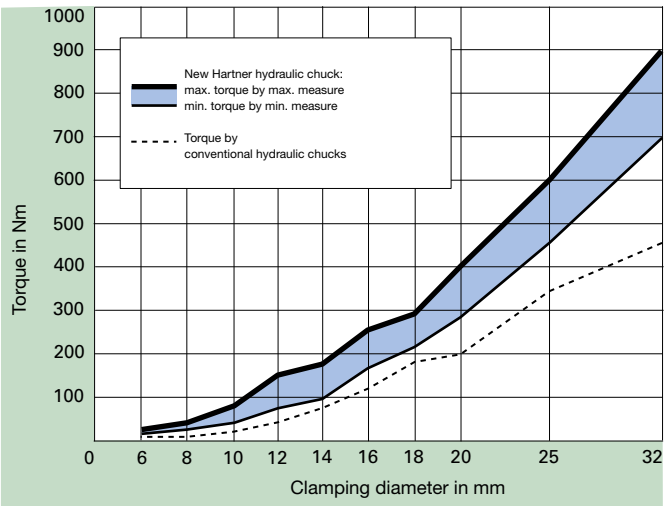
General notes:
Our hydraulic chucks must not be operated with motor-driven tools (impulse screwdrivers or similar). The hexagonal key should not exceed the key size over its entire length, this largely prevents excessive torque being transferred. We recommend the hexagon clamping key. A tightening moment of 10 Nm must not be exceeded.

Hartner Hydraulic chucks with increased clamping force

Hydraulic chucks are suitable for clamping rotary symmetrical tools or workpieces. Straight shank tools without drive flats may be clamped up to Ø 32 mm, but also shanks according to DIN 6535 form HA and HB up to Ø 20 mm without reduction bushes. The given values in the table below are not to be exceeded. If the inserted length is less than the given minimum insertion depth or other tool shanks than specified above are applied, lower accuracy and breakage may occur!

Above all it is the high revolutions with High-Speed-Cutting operations that puts special demands on the tool holder. The clamping of the tool in a hydraulic chuck is, therefore, especially significant. Hartner has developed a hydraulic chuck that offers reliable and powerful clamping with higher torque figures, guaranteeing excellent tool clamping in the tool holder.

Combined with precise concentricity (max. 3 µm deviation from concentricity), a very fast and simple tool change as well as the vibration cushioning effect of the pressure chamber, the new hydraulic chuck can tackle the most demanding of machining tasks. The result is optimal tool life and excellent surface qualities or dimensional accuracy of the workpiece respectively.



Considerably higher:
The clamping force of Hartner's new HSK-A hydraulic chuck in comparison to conventional chucks.

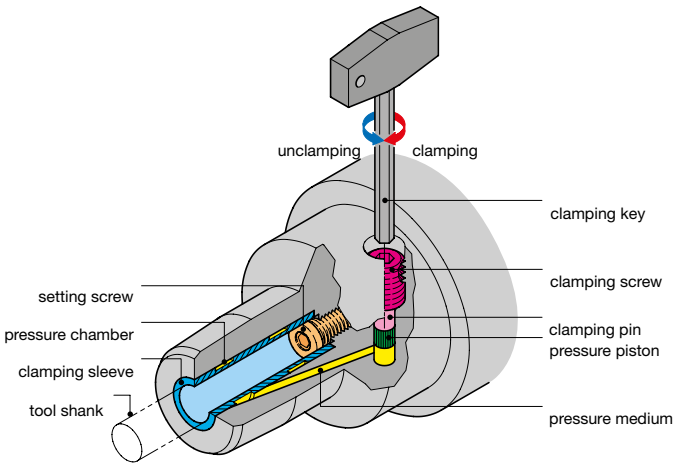
Hydraulic chucks

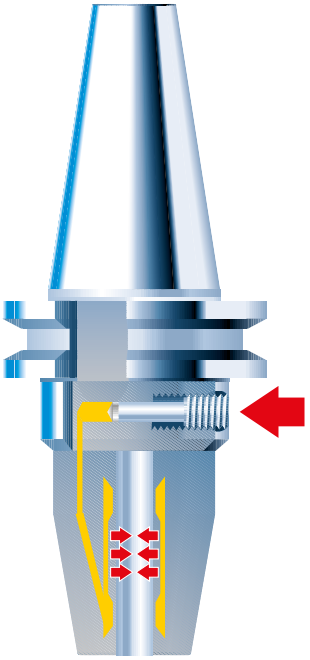
Technical information and advantages

Modern machining processes place heavy demands on tool holding. Hydraulic chucks provide excellent clamping characteristics combined with precise concentricity. Furthermore, they enable a simple and fast tool change, with the assistance of a special extraction key.
Turning the pressure screw generates sufficient pressure in the pressure chamber resulting in an elastic deformation of the clamping bush, providing powerful tool clamping and precise concentricity. A safe and powerful fit is guaranteed. If reduction bushes are applied that are able to hold varying tool diameters, the tool application may be extended without problem. If such bushes are not applied, it is essential to observe the minimum clamping length!

A summary of the advantages:

- precise tool clamping with a maximum 3 µm deviation from concentricity
- transmission of high torque through (excellent clamping) optimised bush clamping system
- high speed compatibility (no centrifugal forces from clamping segments)
- precise concentricity, therefore excellent surface qualities and dimensional accuracy of the workpiece
- rapid tool change thanks to simple operation of the clamping screw
- optimal tool life
- hydraulic cushioning has vibration absorbing effect





Convincing operation: the pressure medium is compressed via a screw and ensures safe positioning of the tool.

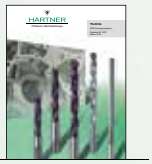
for shank-Ø in mm	**max. r.p.m. in 1/min**	max. transferable torque in Nm	min. insertion depth in mm	max. adjustment l_3 mm	max. rad. force F on chuck with 50 mm from the nose in N	operating temperature in °C	max. coolant pressure in bar
3 h_6	50 000	2.5	27	7	25	20 - 50	80
4 h_6	50 000	6	27	7	40	20 - 50	80
5 h_6	50 000	10	27	7	65	20 - 50	80
6 h_6	50 000	16	27	10	225	20 - 50	80
8 h_6	50 000	26	27	10	370	20 - 50	80
10 h_6	50 000	50	31	10	540	20 - 50	80
12 h_6	50 000	82	36	10	650	20 - 50	80
14 h_6	50 000	125	36	10	900	20 - 50	80
16 h_6	50 000	190	39	10	1410	20 - 50	80
18 h_6	50 000	275	39	10	1580	20 - 50	80
20 h_6	50 000	310	41	10	1860	20 - 50	80
25 h_6	25 000	520	47	10	4400	20 - 50	80
32 h_6	25 000	770	51	10	6500	20 - 50	80

Our programme:

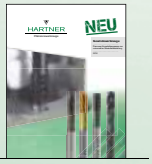

FU 500/FN500


INOX Drills


Micro Precision Drills


TS-Drills


Highlights


Threading Tools


De-burring Tools


TF 100 Multi-Mill


Gun Drills


Multiplex


Multiplex HPC


Standard Range


TM Vending Machines


Solid Carbide
High Performance Milling Cutters


Chamfering Milling Cutters

Hartner GmbH
P.O. Box 10 04 27, D-72425 Albstadt
Tel. +49 74 31/1 25-0, Fax +49 74 31/1 25-21 547

www.hartner.de

148 867/1601-I-20 • Printed in Germany • 2016