HARTNER

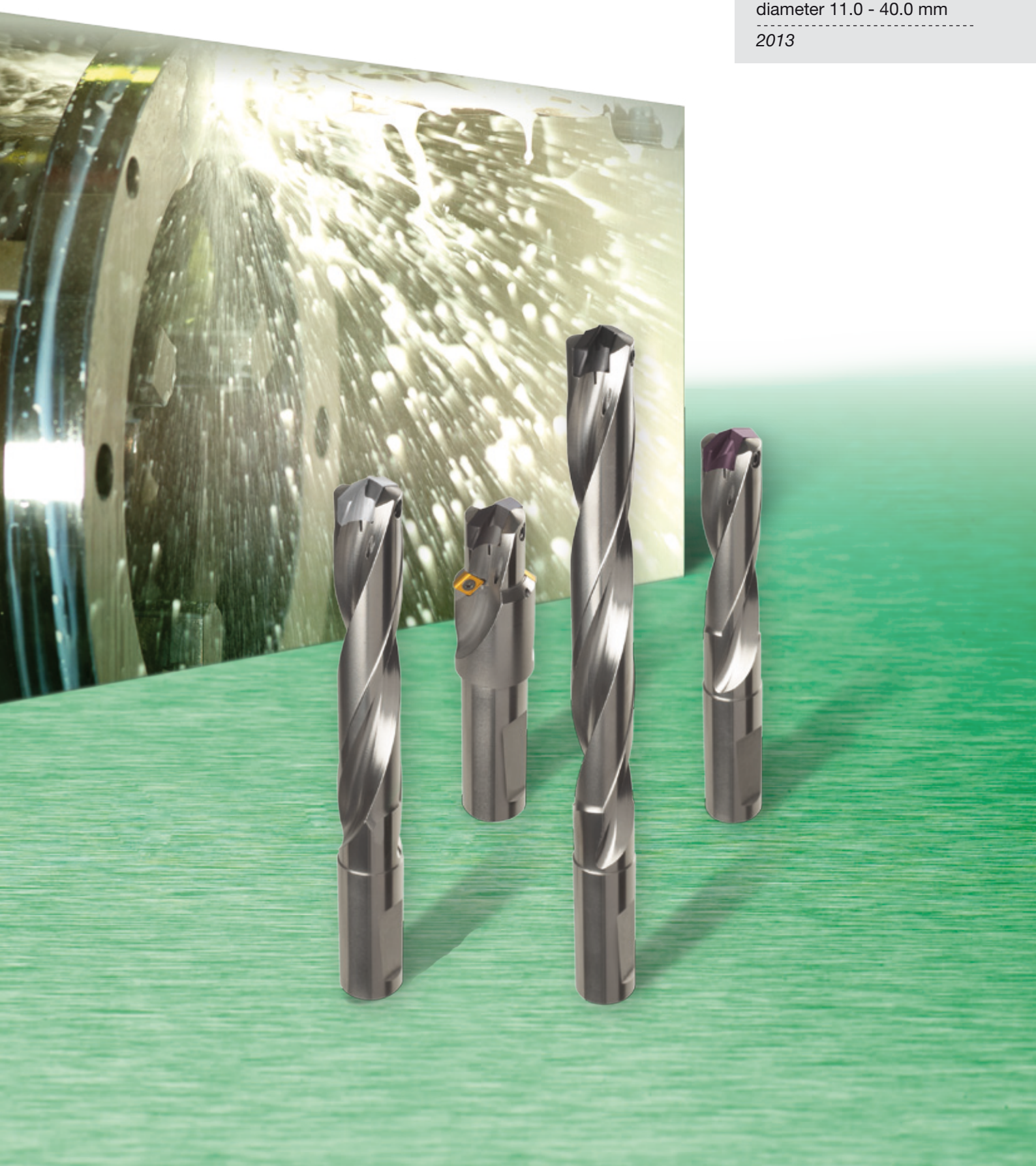
Precision Cutting Tools

Multiplex HPC

The interchangeable insert drilling system

New: for holes from diameter 11.0 - 40.0 mm

2013



MULTIPLEX HPC – TECHNOLOGY AND ADVANTAGES

With the new interchangeable drilling system Multiplex HPC Hartner provides high-performance and cost-efficient holders for holes in the diameter range from 11.00 to 40.0 mm that excell thanks to the following advantages:

- **Extended tool life**
  Thanks to special, micro-machined cutting edges and the application oriented surface finish the interchangeable inserts of the Multiplex HPC WP drilling system are especially wear resistant.
  The holders of the Multiplex HPC WP drilling system also possess a very high wear resistance. This is based on the optimised holder material with nickel plated surface as well as incremental holder sizes in steps of 0.5 mm up to diameter 31.99 mm and in steps of 1.0 mm above diameter 32.00 mm. This leads to less wear on the holder body.

- **Optimised chip flow**
  Thanks to their flute cross section the holders of the Multiplex HPC WP drilling system ensure optimal chip evacuation from the hole even with larger drilling depths.

- **Perfect cooling lubrication**
  A perfect cooling lubrication is ensured by coolant ducts with maximum cross section, exiting in the flute. Thereby enabling an optimal cooling lubrication of the cutting edges and additionally support the chip evacuation from the hole.

- **Highly accurate and rigid insert seat**
  The accurate insert seat enables the insert change in the machine in only a few, simple steps with a standard Torx screw driver. Thanks to the optimised material for the holders of the Multiplex HPC WP drilling system, the insert can be changed more frequently than with conventional systems before the holder needs to be replaced due to wear of the insert seat.
  The clamping screws with screw lock ensure a secure holding of the interchangeable insert in the holder even with machines subject to high levels of vibrations.

- **Rigid holders**
  The close stepped diameter jumps with the holder sizes not only reduce wear. Through the better guidance of the tool in the hole they also increase the rigidity of the Multiplex HPC WP drilling system. Subsequently, resulting in longer tool life as well as improved workpiece surfaces.

Extended tool life

Optimised chip flow and perfect cooling lubrication

Highly accurate and rigid insert seat and rigid holders

THE MULTIPLEX HPC HOLDER RANGE

The Multiplex-System offers a choice from different holders and indexable inserts:

Six straight shank holders for drilling depths of 1.5xD, 3xD, 5xD (diameter range 11.00 - 40.00 mm) or 7xD and 10xD (diameter range 11.00 - 31.99 mm) as well as 1xD for pilot drilling and 45° countersinking (diameter range 11.00 - 40.00 mm).

1,5 x D	Product no. **86682**	Page 4
3 x D	Product no. **86683**	Page 6
5 x D	Product no. **86684**	Page 8
7 x D	Product no. **86685**	Page 10
10 x D	Product no. **86686**	Page 12
1 x D, for pilot drilling/countersinking	Product no. **86681**	Page 14

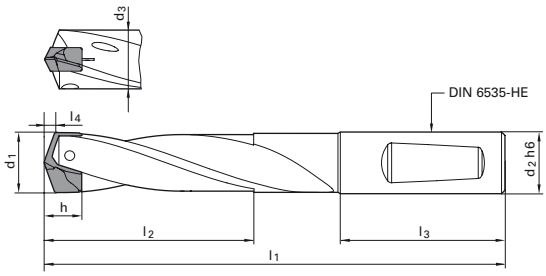
Eight interchangeable inserts are in respect of tool material, geometry and surface finish perfectly adapted to your specific range of application. Subsequently, you will always achieve optimal machining results with maximum performance and highest economic efficiency. The insert change with Multiplex HPC can be performed in the machine problem-free, the interchangeable insert always sits perfectly clamped and positioned in the holder. From diameter 26.00 up to 40.00 mm regrinding of inserts is possible.

F nanoFIRE for the machining of steel	Product no. **86722**	Page 18
F FIRE for the machining of cast iron	Product no. **86723**	Page 18
◯ bright for the machining of Aluminium	Product no. **86724**	Page 18
a AlTiN nano for stainless steels	Product no. **86725**	Page 18
a AlTiN nano for pilot drilling	Product no. **86721**	Page 15
T TiN for the machining of steel	Product no. **86728**	Page 21
A TiAlN for the machining of cast iron	Product no. **86726**	Page 21
◯ bright for the machining of Aluminium	Product no. **86727**	Page 21

Accessories:
Clamping screws
Torque key and Torx-bits
Screw drivers

Accessory	from page 21

MULTIPLEX HPC HOLDER 1.5xD



* l1 with drilling insert No. 86722, 86723, 86724 or 86725. With pilot insert No. 86721, see h and l4 dimensions page 15 to 17!

86682

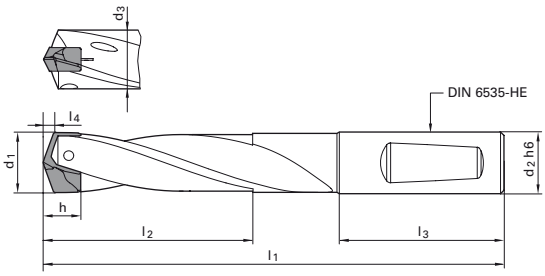
Holder size	d1	d2 h6	d3	l1* incl. insert	l2 max.	l3	Code no.	Availability
	mm	mm	mm	mm	mm	mm		Discount gr. 140
110	11.00 - 11.49	12.00	10.70	84.00	19.30	45.00	11,000	●
110	11.00 - 11.49	12.70	10.70	84.00	19.30	45.00	11,005	●
115	11.50 - 11.99	12.00	11.20	85.00	20.10	45.00	11,500	●
115	11.50 - 11.99	12.70	11.20	85.00	20.10	45.00	11,505	●
120	12.00 - 12.49	12.00	11.70	87.00	21.00	45.00	12,000	●
120	12.00 - 12.49	12.70	11.70	87.00	21.00	45.00	12,005	●
125	12.50 - 12.99	14.00	12.20	89.00	21.90	45.00	12,500	●
125	12.50 - 12.99	15.88	12.20	89.00	21.90	45.00	12,505	●
130	13.00 - 13.49	14.00	12.70	90.00	22.60	45.00	13,000	●
130	13.00 - 13.49	15.88	12.70	90.00	22.60	45.00	13,005	●
135	13.50 - 13.99	14.00	13.20	92.00	23.60	45.00	13,500	●
135	13.50 - 13.99	15.88	13.20	92.00	23.60	45.00	13,505	●
140	14.00 - 14.49	14.00	13.70	93.00	24.50	45.00	14,000	●
140	14.00 - 14.49	15.88	13.70	93.00	24.50	45.00	14,005	●
145	14.50 - 14.99	16.00	14.20	98.00	25.30	48.00	14,500	●
145	14.50 - 14.99	15.88	14.20	98.00	25.30	48.00	14,505	●
150	15.00 - 15.49	16.00	14.70	100.00	26.10	48.00	15,000	●
150	15.00 - 15.49	15.88	14.70	100.00	26.10	48.00	15,005	●
155	15.50 - 15.99	16.00	15.20	101.00	27.00	48.00	15,500	●
155	15.50 - 15.99	15.88	15.20	101.00	27.00	48.00	15,505	●
160	16.00 - 16.49	16.00	15.70	102.00	27.80	48.00	16,000	●
160	16.00 - 16.49	15.88	15.70	102.00	27.80	48.00	16,005	●
165	16.50 - 16.99	18.00	16.20	105.00	28.70	48.00	16,500	●
165	16.50 - 16.99	19.05	16.20	105.00	28.70	48.00	16,505	●
170	17.00 - 17.49	18.00	16.70	106.00	29.60	48.00	17,000	●
170	17.00 - 17.49	19.05	16.70	106.00	29.60	48.00	17,005	●
175	17.50 - 17.99	18.00	17.20	107.00	30.40	48.00	17,500	●
175	17.50 - 17.99	19.05	17.20	107.00	30.40	48.00	17,505	●
180	18.00 - 18.49	18.00	17.70	109.00	31.20	48.00	18,000	●
180	18.00 - 18.49	19.05	17.70	109.00	31.20	48.00	18,005	●
185	18.50 - 18.99	20.00	18.20	113.00	32.10	50.00	18,500	●
185	18.50 - 18.99	19.05	18.20	113.00	32.10	50.00	18,505	●
190	19.00 - 19.49	20.00	18.70	114.00	32.90	50.00	19,000	●
190	19.00 - 19.49	19.05	18.70	114.00	32.90	50.00	19,005	●
195	19.50 - 19.99	20.00	19.20	116.00	33.70	50.00	19,500	●
195	19.50 - 19.99	19.05	19.20	116.00	33.70	50.00	19,505	●
200	20.00 - 20.49	20.00	19.70	117.00	34.60	50.00	20,000	●
200	20.00 - 20.49	19.05	19.70	117.00	34.60	50.00	20,005	●
205	20.50 - 20.99	25.00	20.20	128.00	35.50	56.00	20,500	●
205	20.50 - 20.99	25.40	20.20	128.00	35.50	56.00	20,505	●
210	21.00 - 21.49	25.00	20.70	129.00	36.40	56.00	21,000	●
210	21.00 - 21.49	25.40	20.70	129.00	36.40	56.00	21,005	●
215	21.50 - 21.99	25.00	21.20	130.00	37.20	56.00	21,500	●
215	21.50 - 21.99	25.40	21.20	130.00	37.20	56.00	21,505	●
220	22.00 - 22.49	25.00	21.70	131.00	38.00	56.00	22,000	●

MULTIPLEX HPC HOLDER 1.5xD

86682

Holder size	d1 mm	d2 h6 mm	d3 mm	l1* incl. insert mm	l2 max. mm	l3 mm	Code no.	Availability Discount gr. 140
220	22.00 - 22.49	25.40	21.70	131.00	38.00	56.00	22,005	●
225	22.50 - 22.99	25.00	22.20	134.00	38.90	56.00	22,500	●
225	22.50 - 22.99	25.40	22.20	134.00	38.90	56.00	22,505	●
230	23.00 - 23.49	25.00	22.70	135.00	39.80	56.00	23,000	●
230	23.00 - 23.49	25.40	22.70	135.00	39.80	56.00	23,005	●
235	23.50 - 23.99	25.00	23.20	137.00	40.60	56.00	23,500	●
235	23.50 - 23.99	25.40	23.20	137.00	40.60	56.00	23,505	●
240	24.00 - 24.49	25.00	23.70	138.00	41.50	56.00	24,000	●
240	24.00 - 24.49	25.40	23.70	138.00	41.50	56.00	24,005	●
245	24.50 - 24.99	25.00	24.20	140.00	42.30	56.00	24,500	●
245	24.50 - 24.99	25.40	24.20	140.00	42.30	56.00	24,505	●
250	25.00 - 25.49	25.00	24.70	142.00	43.20	56.00	25,000	●
250	25.00 - 25.49	25.40	24.70	142.00	43.20	56.00	25,005	●
255	25.50 - 25.99	32.00	25.20	148.00	44.00	60.00	25,500	●
255	25.50 - 25.99	31.75	25.20	148.00	44.00	60.00	25,505	●
260	26.00 - 26.49	32.00	25.70	151.00	44.30	60.00	26,000	●
260	26.00 - 26.49	31.75	25.70	151.00	44.30	60.00	26,005	●
265	26.50 - 26.99	32.00	26.20	153.00	45.10	60.00	26,500	●
265	26.50 - 26.99	31.75	26.20	153.00	45.10	60.00	26,505	●
270	27.00 - 27.49	32.00	26.70	155.00	46.00	60.00	27,000	●
270	27.00 - 27.49	31.75	26.70	155.00	46.00	60.00	27,005	●
275	27.50 - 27.99	32.00	27.20	156.00	46.80	60.00	27,500	●
275	27.50 - 27.99	31.75	27.20	156.00	46.80	60.00	27,505	●
280	28.00 - 28.49	32.00	27.70	157.00	47.70	60.00	28,000	●
280	28.00 - 28.49	31.75	27.70	157.00	47.70	60.00	28,005	●
285	28.50 - 28.99	32.00	28.20	159.00	48.50	60.00	28,500	●
285	28.50 - 28.99	31.75	28.20	159.00	48.50	60.00	28,505	●
290	29.00 - 29.49	32.00	28.70	161.00	49.40	60.00	29,000	●
290	29.00 - 29.49	31.75	28.70	161.00	49.40	60.00	29,005	●
295	29.50 - 29.99	32.00	29.20	162.00	50.20	60.00	29,500	●
295	29.50 - 29.99	31.75	29.20	162.00	50.20	60.00	29,505	●
300	30.00 - 30.49	32.00	29.70	164.00	50.90	60.00	30,000	●
300	30.00 - 30.49	31.75	29.70	164.00	50.90	60.00	30,005	●
305	30.50 - 30.99	32.00	30.20	166.00	51.70	60.00	30,500	●
305	30.50 - 30.99	31.75	30.20	166.00	51.70	60.00	30,505	●
310	31.00 - 31.49	32.00	30.70	167.00	52.60	60.00	31,000	●
310	31.00 - 31.49	31.75	30.70	167.00	52.60	60.00	31,005	●
315	31.50 - 31.99	32.00	31.20	168.00	53.40	60.00	31,500	●
315	31.50 - 31.99	31.75	31.20	168.00	53.40	60.00	31,505	●
320	32.00 - 32.99	32.00	31.70	172.00	55.10	60.00	32,000	●
320	32.00 - 32.99	31.75	31.70	172.00	55.10	60.00	32,005	●
330	33.00 - 33.99	32.00	32.70	175.00	56.80	60.00	33,000	●
330	33.00 - 33.99	31.75	32.70	175.00	56.80	60.00	33,005	●
340	34.00 - 34.99	32.00	33.70	178.00	58.50	60.00	34,000	●
340	34.00 - 34.99	31.75	33.70	178.00	58.50	60.00	34,005	●
350	35.00 - 35.99	32.00	34.70	181.00	60.20	60.00	35,000	●
350	35.00 - 35.99	31.75	34.70	181.00	60.20	60.00	35,005	●
360	36.00 - 36.99	32.00	35.70	184.00	61.80	60.00	36,000	●
360	36.00 - 36.99	31.75	35.70	184.00	61.80	60.00	36,005	●
370	37.00 - 37.99	32.00	36.70	188.00	63.50	60.00	37,000	●
370	37.00 - 37.99	31.75	36.70	188.00	63.50	60.00	37,005	●
380	38.00 - 38.99	32.00	37.70	191.00	65.20	60.00	38,000	●
380	38.00 - 38.99	31.75	37.70	191.00	65.20	60.00	38,005	●
390	39.00 - 40.00	32.00	38.70	194.00	66.90	60.00	39,000	●
390	39.00 - 40.00	31.75	38.70	194.00	66.90	60.00	39,005	●

MULTIPLEX HPC HOLDER 3xD



* l1 with drilling insert No. 86722, 86723, 86724 or 86725. With pilot insert No. 86721, see h and l4 dimensions page 15 to 17!

86683

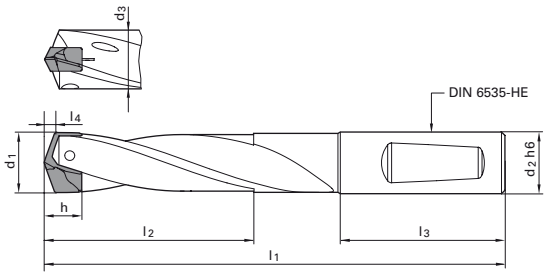
Holder size	d1	d2 h6	d3	l1* incl. insert	l2 max.	l3	Code no.	Availability
	mm	mm	mm	mm	mm	mm		Discount gr. 140
110	11.00 - 11.49	12.00	10.70	101.00	36.60	45.00	11,000	●
110	11.00 - 11.49	12.70	10.70	101.00	36.60	45.00	11,005	●
115	11.50 - 11.99	12.00	11.20	103.00	38.10	45.00	11,500	●
115	11.50 - 11.99	12.70	11.20	103.00	38.10	45.00	11,505	●
120	12.00 - 12.49	12.00	11.70	106.00	39.70	45.00	12,000	●
120	12.00 - 12.49	12.70	11.70	106.00	39.70	45.00	12,005	●
125	12.50 - 12.99	14.00	12.20	108.00	41.30	45.00	12,500	●
125	12.50 - 12.99	15.88	12.20	108.00	41.30	45.00	12,505	●
130	13.00 - 13.49	14.00	12.70	110.00	42.90	45.00	13,000	●
130	13.00 - 13.49	15.88	12.70	110.00	42.90	45.00	13,005	●
135	13.50 - 13.99	14.00	13.20	113.00	44.60	45.00	13,500	●
135	13.50 - 13.99	15.88	13.20	113.00	44.60	45.00	13,505	●
140	14.00 - 14.49	14.00	13.70	115.00	46.20	45.00	14,000	●
140	14.00 - 14.49	15.88	13.70	115.00	46.20	45.00	14,005	●
145	14.50 - 14.99	16.00	14.20	120.00	47.80	48.00	14,500	●
145	14.50 - 14.99	15.88	14.20	120.00	47.80	48.00	14,505	●
150	15.00 - 15.49	16.00	14.70	123.00	49.30	48.00	15,000	●
150	15.00 - 15.49	15.88	14.70	123.00	49.30	48.00	15,005	●
155	15.50 - 15.99	16.00	15.20	125.00	50.90	48.00	15,500	●
155	15.50 - 15.99	15.88	15.20	125.00	50.90	48.00	15,505	●
160	16.00 - 16.49	16.00	15.70	127.00	52.90	48.00	16,000	●
160	16.00 - 16.49	15.88	15.70	127.00	52.90	48.00	16,005	●
165	16.50 - 16.99	18.00	16.20	130.00	54.10	48.00	16,500	●
165	16.50 - 16.99	19.05	16.20	130.00	54.10	48.00	16,505	●
170	17.00 - 17.49	18.00	16.70	132.00	55.80	48.00	17,000	●
170	17.00 - 17.49	19.05	16.70	132.00	55.80	48.00	17,005	●
175	17.50 - 17.99	18.00	17.20	134.00	57.40	48.00	17,500	●
175	17.50 - 17.99	19.05	17.20	134.00	57.40	48.00	17,505	●
180	18.00 - 18.49	18.00	17.70	137.00	58.90	48.00	18,000	●
180	18.00 - 18.49	19.05	17.70	137.00	58.90	48.00	18,005	●
185	18.50 - 18.99	20.00	18.20	141.00	60.50	50.00	18,500	●
185	18.50 - 18.99	19.05	18.20	141.00	60.50	50.00	18,505	●
190	19.00 - 19.49	20.00	18.70	143.00	62.10	50.00	19,000	●
190	19.00 - 19.49	19.05	18.70	143.00	62.10	50.00	19,005	●
195	19.50 - 19.99	20.00	19.20	146.00	63.70	50.00	19,500	●
195	19.50 - 19.99	19.05	19.20	146.00	63.70	50.00	19,505	●
200	20.00 - 20.49	20.00	19.70	148.00	65.30	50.00	20,000	●
200	20.00 - 20.49	19.05	19.70	148.00	65.30	50.00	20,005	●
205	20.50 - 20.99	25.00	20.20	159.00	67.00	56.00	20,500	●
205	20.50 - 20.99	25.40	20.20	159.00	67.00	56.00	20,505	●
210	21.00 - 21.49	25.00	20.70	161.00	68.60	56.00	21,000	●
210	21.00 - 21.49	25.40	20.70	161.00	68.60	56.00	21,005	●
215	21.50 - 21.99	25.00	21.20	163.00	70.10	56.00	21,500	●
215	21.50 - 21.99	25.40	21.20	163.00	70.10	56.00	21,505	●
220	22.00 - 22.49	25.00	21.70	165.00	71.70	56.00	22,000	●

MULTIPLEX HPC HOLDER 3xD

86683

Holder size	d1 mm	d2 h6 mm	d3 mm	l1* incl. insert mm	l2 max. mm	l3 mm	Code no.	Availability Discount gr. 140
220	22.00 - 22.49	25.40	21.70	165.00	71.70	56.00	22,005	●
225	22.50 - 22.99	25.00	22.20	168.00	73.30	56.00	22,500	●
225	22.50 - 22.99	25.40	22.20	168.00	73.30	56.00	22,505	●
230	23.00 - 23.49	25.00	22.70	170.00	74.90	56.00	23,000	●
230	23.00 - 23.49	25.40	22.70	170.00	74.90	56.00	23,005	●
235	23.50 - 23.99	25.00	23.20	173.00	76.50	56.00	23,500	●
235	23.50 - 23.99	25.40	23.20	173.00	76.50	56.00	23,505	●
240	24.00 - 24.49	25.00	23.70	175.00	78.10	56.00	24,000	●
240	24.00 - 24.49	25.40	23.70	175.00	78.10	56.00	24,005	●
245	24.50 - 24.99	25.00	24.20	177.00	79.70	56.00	24,500	●
245	24.50 - 24.99	25.40	24.20	177.00	79.70	56.00	24,505	●
250	25.00 - 25.49	25.00	24.70	180.00	81.30	56.00	25,000	●
250	25.00 - 25.49	25.40	24.70	180.00	81.30	56.00	25,005	●
255	25.50 - 25.99	32.00	25.20	187.00	82.90	60.00	25,500	●
255	25.50 - 25.99	31.75	25.20	187.00	82.90	60.00	25,505	●
260	26.00 - 26.49	32.00	25.70	191.00	84.00	60.00	26,000	●
260	26.00 - 26.49	31.75	25.70	191.00	84.00	60.00	26,005	●
265	26.50 - 26.99	32.00	26.20	193.00	86.10	60.00	26,500	●
265	26.50 - 26.99	31.75	26.20	193.00	86.10	60.00	26,505	●
270	27.00 - 27.49	32.00	26.70	196.00	87.20	60.00	27,000	●
270	27.00 - 27.49	31.75	26.70	196.00	87.20	60.00	27,005	●
275	27.50 - 27.99	32.00	27.20	198.00	88.90	60.00	27,500	●
275	27.50 - 27.99	31.75	27.20	198.00	88.90	60.00	27,505	●
280	28.00 - 28.49	32.00	27.70	200.00	90.50	60.00	28,000	●
280	28.00 - 28.49	31.75	27.70	200.00	90.50	60.00	28,005	●
285	28.50 - 28.99	32.00	28.20	202.00	92.50	60.00	28,500	●
285	28.50 - 28.99	31.75	28.20	202.00	92.50	60.00	28,505	●
290	29.00 - 29.49	32.00	28.70	205.00	94.60	60.00	29,000	●
290	29.00 - 29.49	31.75	28.70	205.00	94.60	60.00	29,005	●
295	29.50 - 29.99	32.00	29.20	207.00	95.10	60.00	29,500	●
295	29.50 - 29.99	31.75	29.20	207.00	95.10	60.00	29,505	●
300	30.00 - 30.49	32.00	29.70	210.00	96.70	60.00	30,000	●
300	30.00 - 30.49	31.75	29.70	210.00	96.70	60.00	30,005	●
305	30.50 - 30.99	32.00	30.20	212.00	98.30	60.00	30,500	●
305	30.50 - 30.99	31.75	30.20	212.00	98.30	60.00	30,505	●
310	31.00 - 31.49	32.00	30.70	214.00	99.80	60.00	31,000	●
310	31.00 - 31.49	31.75	30.70	214.00	99.80	60.00	31,005	●
315	31.50 - 31.99	32.00	31.20	216.00	101.40	60.00	31,500	●
315	31.50 - 31.99	31.75	31.20	216.00	101.40	60.00	31,505	●
320	32.00 - 32.99	32.00	31.70	221.00	104.60	60.00	32,000	●
320	32.00 - 32.99	31.75	31.70	221.00	104.60	60.00	32,005	●
330	33.00 - 33.99	32.00	32.70	226.00	107.80	60.00	33,000	●
330	33.00 - 33.99	31.75	32.70	226.00	107.80	60.00	33,005	●
340	34.00 - 34.99	32.00	33.70	230.00	111.00	60.00	34,000	●
340	34.00 - 34.99	31.75	33.70	230.00	111.00	60.00	34,005	●
350	35.00 - 35.99	32.00	34.70	235.00	114.20	60.00	35,000	●
350	35.00 - 35.99	31.75	34.70	235.00	114.20	60.00	35,005	●
360	36.00 - 36.99	32.00	35.70	240.00	117.30	60.00	36,000	●
360	36.00 - 36.99	31.75	35.70	240.00	117.30	60.00	36,005	●
370	37.00 - 37.99	32.00	36.70	245.00	120.50	60.00	37,000	●
370	37.00 - 37.99	31.75	36.70	245.00	120.50	60.00	37,005	●
380	38.00 - 38.99	32.00	37.70	249.00	123.70	60.00	38,000	●
380	38.00 - 38.99	31.75	37.70	249.00	123.70	60.00	38,005	●
390	39.00 - 40.00	32.00	38.70	254.00	126.90	60.00	39,000	●
390	39.00 - 40.00	31.75	38.70	254.00	126.90	60.00	39,005	●

MULTIPLEX HPC HOLDER 5xD



* l1 with drilling insert No. 86722, 86723, 86724 or 86725. With pilot insert No. 86721, see h and l4 dimensions page 15 to 17!

86684

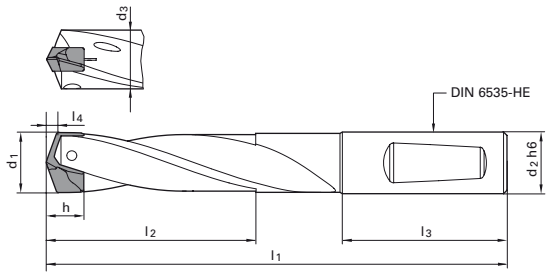
Holder size	d1	d2 h6	d3	l1* incl. insert	l2 max.	l3	Code no.	Availability
	mm	mm	mm	mm	mm	mm		Discount gr. 140
110	11.00 - 11.49	12.00	10.70	124.00	59.60	45.00	11.000	●
110	11.00 - 11.49	12.70	10.70	124.00	59.60	45.00	11.005	●
115	11.50 - 11.99	12.00	11.20	127.00	62.10	45.00	11.500	●
115	11.50 - 11.99	12.70	11.20	127.00	62.10	45.00	11.505	●
120	12.00 - 12.49	12.00	11.70	131.00	64.70	45.00	12.000	●
120	12.00 - 12.49	12.70	11.70	131.00	64.70	45.00	12.005	●
125	12.50 - 12.99	14.00	12.20	134.00	67.30	45.00	12.500	●
125	12.50 - 12.99	15.88	12.20	134.00	67.30	45.00	12.505	●
130	13.00 - 13.49	14.00	12.70	137.00	69.90	45.00	13.000	●
130	13.00 - 13.49	15.88	12.70	137.00	69.90	45.00	13.005	●
135	13.50 - 13.99	14.00	13.20	141.00	72.60	45.00	13.500	●
135	13.50 - 13.99	15.88	13.20	141.00	72.60	45.00	13.505	●
140	14.00 - 14.49	14.00	13.70	144.00	75.20	45.00	14.000	●
140	14.00 - 14.49	15.88	13.70	144.00	75.20	45.00	14.005	●
145	14.50 - 14.99	16.00	14.20	150.00	77.80	48.00	14.500	●
145	14.50 - 14.99	15.88	14.20	150.00	77.80	48.00	14.505	●
150	15.00 - 15.49	16.00	14.70	154.00	80.30	48.00	15.000	●
150	15.00 - 15.49	15.88	14.70	154.00	80.30	48.00	15.005	●
155	15.50 - 15.99	16.00	15.20	157.00	82.90	48.00	15.500	●
155	15.50 - 15.99	15.88	15.20	157.00	82.90	48.00	15.505	●
160	16.00 - 16.49	16.00	15.70	160.00	85.90	48.00	16.000	●
160	16.00 - 16.49	15.88	15.70	160.00	85.90	48.00	16.005	●
165	16.50 - 16.99	18.00	16.20	164.00	88.10	48.00	16.500	●
165	16.50 - 16.99	19.05	16.20	164.00	88.10	48.00	16.505	●
170	17.00 - 17.49	18.00	16.70	167.00	90.80	48.00	17.000	●
170	17.00 - 17.49	19.05	16.70	167.00	90.80	48.00	17.005	●
175	17.50 - 17.99	18.00	17.20	170.00	93.40	48.00	17.500	●
175	17.50 - 17.99	19.05	17.20	170.00	93.40	48.00	17.505	●
180	18.00 - 18.49	18.00	17.70	174.00	95.90	48.00	18.000	●
180	18.00 - 18.49	19.05	17.70	174.00	95.90	48.00	18.005	●
185	18.50 - 18.99	20.00	18.20	179.00	98.50	50.00	18.500	●
185	18.50 - 18.99	19.05	18.20	179.00	98.50	50.00	18.505	●
190	19.00 - 19.49	20.00	18.70	182.00	101.10	50.00	19.000	●
190	19.00 - 19.49	19.05	18.70	182.00	101.10	50.00	19.005	●
195	19.50 - 19.99	20.00	19.20	186.00	103.70	50.00	19.500	●
195	19.50 - 19.99	19.05	19.20	186.00	103.70	50.00	19.505	●
200	20.00 - 20.49	20.00	19.70	189.00	106.30	50.00	20.000	●
200	20.00 - 20.49	19.05	19.70	189.00	106.30	50.00	20.005	●
205	20.50 - 20.99	25.00	20.20	201.00	109.00	56.00	20.500	●
205	20.50 - 20.99	25.40	20.20	201.00	109.00	56.00	20.505	●
210	21.00 - 21.49	25.00	20.70	204.00	111.60	56.00	21.000	●
210	21.00 - 21.49	25.40	20.70	204.00	111.60	56.00	21.005	●
215	21.50 - 21.99	25.00	21.20	207.00	114.10	56.00	21.500	●
215	21.50 - 21.99	25.40	21.20	207.00	114.10	56.00	21.505	●
220	22.00 - 22.49	25.00	21.70	210.00	116.70	56.00	22.000	●

MULTIPLEX HPC HOLDER 5xD

86684

Holder size	d1	d2 h6	d3	l1* incl. insert	l2 max.	l3	Code no.	Availability
	mm	mm	mm	mm	mm	mm		Discount gr. 140
220	22.00 - 22.49	25.40	21.70	210.00	116.70	56.00	22.005	●
225	22.50 - 22.99	25.00	22.20	214.00	119.30	56.00	22.500	●
225	22.50 - 22.99	25.40	22.20	214.00	119.30	56.00	22.505	●
230	23.00 - 23.49	25.00	22.70	217.00	121.90	56.00	23.000	●
230	23.00 - 23.49	25.40	22.70	217.00	121.90	56.00	23.005	●
235	23.50 - 23.99	25.00	23.20	221.00	124.50	56.00	23.500	●
235	23.50 - 23.99	25.40	23.20	221.00	124.50	56.00	23.505	●
240	24.00 - 24.49	25.00	23.70	224.00	127.10	56.00	24.000	●
240	24.00 - 24.49	25.40	23.70	224.00	127.10	56.00	24.005	●
245	24.50 - 24.99	25.00	24.20	227.00	129.70	56.00	24.500	●
245	24.50 - 24.99	25.40	24.20	227.00	129.70	56.00	24.505	●
250	25.00 - 25.49	25.00	24.70	231.00	132.30	56.00	25.000	●
250	25.00 - 25.49	25.40	24.70	231.00	132.30	56.00	25.005	●
255	25.50 - 25.99	32.00	25.20	239.00	134.90	60.00	25.500	●
255	25.50 - 25.99	31.75	25.20	239.00	134.90	60.00	25.505	●
260	26.00 - 26.49	32.00	25.70	244.00	137.00	60.00	26.000	●
260	26.00 - 26.49	31.75	25.70	244.00	137.00	60.00	26.005	●
265	26.50 - 26.99	32.00	26.20	247.00	140.00	60.00	26.500	●
265	26.50 - 26.99	31.75	26.20	247.00	140.00	60.00	26.505	●
270	27.00 - 27.49	32.00	26.70	251.00	142.20	60.00	27.000	●
270	27.00 - 27.49	31.75	26.70	251.00	142.20	60.00	27.005	●
275	27.50 - 27.99	32.00	27.20	254.00	144.80	60.00	27.500	●
275	27.50 - 27.99	31.75	27.20	254.00	144.80	60.00	27.505	●
280	28.00 - 28.49	32.00	27.70	257.00	147.40	60.00	28.000	●
280	28.00 - 28.49	31.75	27.70	257.00	147.44	60.00	28.005	●
285	28.50 - 28.99	32.00	28.20	260.00	150.40	60.00	28.500	●
285	28.50 - 28.99	31.75	28.20	260.00	150.40	60.00	28.505	●
290	29.00 - 29.49	32.00	28.70	264.00	153.50	60.00	29.000	●
290	29.00 - 29.49	31.75	28.70	264.00	153.50	60.00	29.005	●
295	29.50 - 29.99	32.00	29.20	267.00	155.10	60.00	29.500	●
295	29.50 - 29.99	31.75	29.20	267.00	155.10	60.00	29.505	●
300	30.00 - 30.49	32.00	29.70	271.00	157.60	60.00	30.000	●
300	30.00 - 30.49	31.75	29.70	271.00	157.60	60.00	30.005	●
305	30.50 - 30.99	32.00	30.20	274.00	160.20	60.00	30.500	●
305	30.50 - 30.99	31.75	30.20	274.00	160.20	60.00	30.505	●
310	31.00 - 31.49	32.00	30.70	277.00	162.80	60.00	31.000	●
310	31.00 - 31.49	31.75	30.70	277.00	162.80	60.00	31.005	●
315	31.50 - 31.99	32.00	31.20	280.00	165.40	60.00	31.500	●
315	31.50 - 31.99	31.75	31.20	280.00	165.40	60.00	31.505	●
320	32.00 - 32.99	32.00	31.70	287.00	170.60	60.00	32.000	●
320	32.00 - 32.99	31.75	31.70	287.00	170.60	60.00	32.005	●
330	33.00 - 33.99	32.00	32.70	294.00	175.80	60.00	33.000	●
330	33.00 - 33.99	31.75	32.70	294.00	175.80	60.00	33.005	●
340	34.00 - 34.99	32.00	33.70	300.00	181.00	60.00	34.000	●
340	34.00 - 34.99	31.75	33.70	300.00	181.00	60.00	34.005	●
350	35.00 - 35.99	32.00	34.70	307.00	186.20	60.00	35.000	●
350	35.00 - 35.99	31.75	34.70	307.00	186.20	60.00	35.005	●
360	36.00 - 36.99	32.00	35.70	314.00	191.30	60.00	36.000	●
360	36.00 - 36.99	31.75	35.70	314.00	191.30	60.00	36.005	●
370	37.00 - 37.99	32.00	36.70	321.00	196.50	60.00	37.000	●
370	37.00 - 37.99	31.75	36.70	321.00	196.50	60.00	37.005	●
380	38.00 - 38.99	32.00	37.70	327.00	201.70	60.00	38.000	●
380	38.00 - 38.99	31.75	37.70	327.00	201.70	60.00	38.005	●
390	39.00 - 40.00	32.00	38.70	334.00	206.90	60.00	39.000	●
390	39.00 - 40.00	31.75	38.70	334.00	206.90	60.00	39.005	●

MULTIPLEX HPC HOLDER 7xD



* l1 with drilling insert No. 86722, 86723, 86724 or 86725. With pilot insert No. 86721, see h and l4 dimensions page 15 to 17!

86685

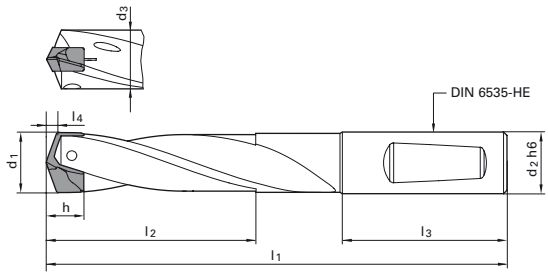
Holder size	d1	d2 h6	d3	l1* incl. insert	l2 max.	l3	Code no.	Availability
	mm	mm	mm	mm	mm	mm		Discount gr. 140
110	11.00 - 11.49	12.00	10.70	147.00	82.60	45.00	11,000	●
110	11.00 - 11.49	12.70	10.70	147.00	82.60	45.00	11,005	●
115	11.50 - 11.99	12.00	11.20	151.00	86.10	45.00	11,500	●
115	11.50 - 11.99	12.70	11.20	151.00	86.10	45.00	11,505	●
120	12.00 - 12.49	12.00	11.70	156.00	89.70	45.00	12,000	●
120	12.00 - 12.49	12.70	11.70	156.00	89.70	45.00	12,005	●
125	12.50 - 12.99	14.00	12.20	160.00	93.30	45.00	12,500	●
125	12.50 - 12.99	15.88	12.20	160.00	93.30	45.00	12,505	●
130	13.00 - 13.49	14.00	12.70	164.00	96.90	45.00	13,000	●
130	13.00 - 13.49	15.88	12.70	164.00	96.90	45.00	13,005	●
135	13.50 - 13.99	14.00	13.20	169.00	100.60	45.00	13,500	●
135	13.50 - 13.99	15.88	13.20	169.00	100.60	45.00	13,505	●
140	14.00 - 14.49	14.00	13.70	173.00	104.20	45.00	14,000	●
140	14.00 - 14.49	15.88	13.70	173.00	104.20	45.00	14,005	●
145	14.50 - 14.99	16.00	14.20	180.00	107.80	48.00	14,500	●
145	14.50 - 14.99	15.88	14.20	180.00	107.80	48.00	14,505	●
150	15.00 - 15.49	16.00	14.70	185.00	111.30	48.00	15,000	●
150	15.00 - 15.49	15.88	14.70	185.00	111.30	48.00	15,005	●
155	15.50 - 15.99	16.00	15.20	189.00	114.90	48.00	15,500	●
155	15.50 - 15.99	15.88	15.20	189.00	114.90	48.00	15,505	●
160	16.00 - 16.49	16.00	15.70	193.00	118.90	48.00	16,000	●
160	16.00 - 16.49	15.88	15.70	193.00	118.90	48.00	16,005	●
165	16.50 - 16.99	18.00	16.20	198.00	122.10	48.00	16,500	●
165	16.50 - 16.99	19.05	16.20	198.00	122.10	48.00	16,505	●
170	17.00 - 17.49	18.00	16.70	202.00	125.80	48.00	17,000	●
170	17.00 - 17.49	19.05	16.70	202.00	125.80	48.00	17,005	●
175	17.50 - 17.99	18.00	17.20	206.00	129.40	48.00	17,500	●
175	17.50 - 17.99	19.05	17.20	206.00	129.40	48.00	17,505	●
180	18.00 - 18.49	18.00	17.70	211.00	132.90	48.00	18,000	●
180	18.00 - 18.49	19.05	17.70	211.00	132.90	48.00	18,005	●
185	18.50 - 18.99	20.00	18.20	217.00	136.50	50.00	18,500	●
185	18.50 - 18.99	19.05	18.20	217.00	136.50	50.00	18,505	●
190	19.00 - 19.49	20.00	18.70	221.00	140.10	50.00	19,000	●
190	19.00 - 19.49	19.05	18.70	221.00	140.10	50.00	19,005	●
195	19.50 - 19.99	20.00	19.20	226.00	143.70	50.00	19,500	●
195	19.50 - 19.99	19.05	19.20	226.00	143.70	50.00	19,505	●
200	20.00 - 20.49	20.00	19.70	230.00	147.30	50.00	20,000	●
200	20.00 - 20.49	19.05	19.70	230.00	147.30	50.00	20,005	●
205	20.50 - 20.99	25.00	20.20	243.00	151.00	56.00	20,500	●
205	20.50 - 20.99	25.40	20.20	243.00	151.00	56.00	20,505	●
210	21.00 - 21.49	25.00	20.70	247.00	154.60	56.00	21,000	●
210	21.00 - 21.49	25.40	20.70	247.00	154.60	56.00	21,005	●
215	21.50 - 21.99	25.00	21.20	251.00	158.10	56.00	21,500	●
215	21.50 - 21.99	25.40	21.20	251.00	158.10	56.00	21,505	●
220	22.00 - 22.49	25.00	21.70	255.00	161.70	56.00	22,000	●

MULTIPLEX HPC HOLDER 7xD

86685

Holder size	d1 mm	d2 h6 mm	d3 mm	l1* incl. insert mm	l2 max. mm	l3 mm	Code no.	Availability Discount gr. 140
220	22.00 - 22.49	25.40	21.70	255.00	161.70	56.00	22,005	●
225	22.50 - 22.99	25.00	22.20	260.00	165.30	56.00	22,500	●
225	22.50 - 22.99	25.40	22.20	260.00	165.30	56.00	22,505	●
230	23.00 - 23.49	25.00	22.70	264.00	168.90	56.00	23,000	●
230	23.00 - 23.49	25.40	22.70	264.00	168.90	56.00	23,005	●
235	23.50 - 23.99	25.00	23.20	269.00	172.50	56.00	23,500	●
235	23.50 - 23.99	25.40	23.20	269.00	172.50	56.00	23,505	●
240	24.00 - 24.49	25.00	23.70	273.00	176.10	56.00	24,000	●
240	24.00 - 24.49	25.40	23.70	273.00	176.10	56.00	24,005	●
245	24.50 - 24.99	25.00	24.20	277.00	179.70	56.00	24,500	●
245	24.50 - 24.99	25.40	24.20	277.00	179.70	56.00	24,505	●
250	25.00 - 25.49	25.00	24.70	282.00	183.30	56.00	25,000	●
250	25.00 - 25.49	25.40	24.70	282.00	183.30	56.00	25,005	●
255	25.50 - 25.99	32.00	25.20	291.00	186.90	60.00	25,500	●
255	25.50 - 25.99	31.75	25.20	291.00	186.90	60.00	25,505	●
260	26.00 - 26.49	32.00	25.70	297.00	190.00	60.00	26,000	●
260	26.00 - 26.49	31.75	25.70	297.00	190.00	60.00	26,005	●
265	26.50 - 26.99	32.00	26.20	301.00	194.00	60.00	26,500	●
265	26.50 - 26.99	31.75	26.20	301.00	194.00	60.00	26,505	●
270	27.00 - 27.49	32.00	26.70	306.00	197.20	60.00	27,000	●
270	27.00 - 27.49	31.75	26.70	306.00	197.20	60.00	27,005	●
275	27.50 - 27.99	32.00	27.20	310.00	200.80	60.00	27,500	●
275	27.50 - 27.99	31.75	27.20	310.00	200.80	60.00	27,505	●
280	28.00 - 28.49	32.00	27.70	314.00	204.40	60.00	28,000	●
280	28.00 - 28.49	31.75	27.70	314.00	204.40	60.00	28,005	●
285	28.50 - 28.99	32.00	28.20	318.00	208.40	60.00	28,500	●
285	28.50 - 28.99	31.75	28.20	318.00	208.40	60.00	28,505	●
290	29.00 - 29.49	32.00	28.70	323.00	212.50	60.00	29,000	●
290	29.00 - 29.49	31.75	28.70	323.00	212.50	60.00	29,005	●
295	29.50 - 29.99	32.00	29.20	327.00	215.10	60.00	29,500	●
295	29.50 - 29.99	31.75	29.20	327.00	215.10	60.00	29,505	●
300	30.00 - 30.49	32.00	29.70	332.00	218.60	60.00	30,000	●
300	30.00 - 30.49	31.75	29.70	332.00	218.60	60.00	30,005	●
305	30.50 - 30.99	32.00	30.20	336.00	222.20	60.00	30,500	●
305	30.50 - 30.99	31.75	30.20	336.00	222.20	60.00	30,505	●
310	31.00 - 31.49	32.00	30.70	340.00	225.80	60.00	31,000	●
310	31.00 - 31.49	31.75	30.70	340.00	225.80	60.00	31,005	●
315	31.50 - 31.99	32.00	31.20	344.00	229.40	60.00	31,500	●
315	31.50 - 31.99	31.75	31.20	344.00	229.40	60.00	31,505	●

MULTIPLEX HPC HOLDER 10xD



* l1 with drilling insert No. 86722, 86723, 86724 or 86725. With pilot insert No. 86721, see h and l4 dimensions page 15 to 17!

86686

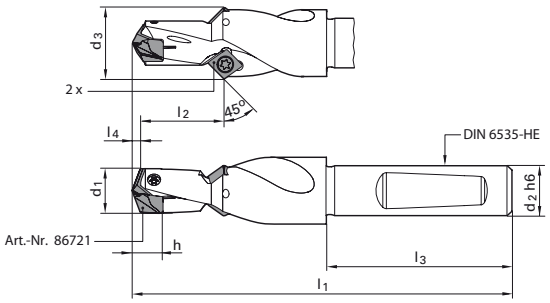
Holder size	d1	d2 h6	d3	l1* incl. insert	l2 max.	l3	Code no.	Availability
	mm	mm	mm	mm	mm	mm		Discount gr. 140
110	11.00 - 11.49	12.00	10.70	182.00	117.10	45.00	11,000	●
110	11.00 - 11.49	12.70	10.70	182.00	117.10	45.00	11,005	●
115	11.50 - 11.99	12.00	11.20	187.00	122.10	45.00	11,500	●
115	11.50 - 11.99	12.70	11.20	187.00	122.10	45.00	11,505	●
120	12.00 - 12.49	12.00	11.70	194.00	127.20	45.00	12,000	●
120	12.00 - 12.49	12.70	11.70	194.00	127.20	45.00	12,005	●
125	12.50 - 12.99	14.00	12.20	199.00	132.30	45.00	12,500	●
125	12.50 - 12.99	15.88	12.20	199.00	132.30	45.00	12,505	●
130	13.00 - 13.49	14.00	12.70	205.00	137.50	45.00	13,000	●
130	13.00 - 13.49	15.88	12.70	205.00	137.50	45.00	13,005	●
135	13.50 - 13.99	14.00	13.20	211.00	142.50	45.00	13,500	●
135	13.50 - 13.99	15.88	13.20	211.00	142.50	45.00	13,505	●
140	14.00 - 14.49	14.00	13.70	217.00	147.70	45.00	14,000	●
140	14.00 - 14.49	15.88	13.70	217.00	147.70	45.00	14,005	●
145	14.50 - 14.99	16.00	14.20	225.00	152.80	48.00	14,500	●
145	14.50 - 14.99	15.88	14.20	225.00	152.80	48.00	14,505	●
150	15.00 - 15.49	16.00	14.70	232.00	157.80	48.00	15,000	●
150	15.00 - 15.49	15.88	14.70	232.00	157.80	48.00	15,005	●
155	15.50 - 15.99	16.00	15.20	237.00	162.90	48.00	15,500	●
155	15.50 - 15.99	15.88	15.20	237.00	162.90	48.00	15,505	●
160	16.00 - 16.49	16.00	15.70	243.00	168.00	48.00	16,000	●
160	16.00 - 16.49	15.88	15.70	243.00	168.00	48.00	16,005	●
165	16.50 - 16.99	18.00	16.20	249.00	173.10	48.00	16,500	●
165	16.50 - 16.99	19.05	16.20	249.00	173.10	48.00	16,505	●
170	17.00 - 17.49	18.00	16.70	255.00	178.30	48.00	17,000	●
170	17.00 - 17.49	19.05	16.70	255.00	178.30	48.00	17,005	●
175	17.50 - 17.99	18.00	17.20	260.00	183.50	48.00	17,500	●
175	17.50 - 17.99	19.05	17.20	260.00	183.50	48.00	17,505	●
180	18.00 - 18.49	18.00	17.70	267.00	188.40	48.00	18,000	●
180	18.00 - 18.49	19.05	17.70	267.00	188.40	48.00	18,005	●
185	18.50 - 18.99	20.00	18.20	274.00	193.50	50.00	18,500	●
185	18.50 - 18.99	19.05	18.20	274.00	193.50	50.00	18,505	●
190	19.00 - 19.49	20.00	18.70	280.00	198.70	50.00	19,000	●
190	19.00 - 19.49	19.05	18.70	280.00	198.70	50.00	19,005	●
195	19.50 - 19.99	20.00	19.20	286.00	203.70	50.00	19,500	●
195	19.50 - 19.99	19.05	19.20	286.00	203.70	50.00	19,505	●
200	20.00 - 20.49	20.00	19.70	292.00	208.90	50.00	20,000	●
200	20.00 - 20.49	19.05	19.70	292.00	208.90	50.00	20,005	●
205	20.50 - 20.99	25.00	20.20	306.00	214.00	56.00	20,500	●
205	20.50 - 20.99	25.40	20.20	306.00	214.00	56.00	20,505	●
210	21.00 - 21.49	25.00	20.70	312.00	219.10	56.00	21,000	●
210	21.00 - 21.49	25.40	20.70	312.00	219.10	56.00	21,005	●
215	21.50 - 21.99	25.00	21.20	317.00	224.20	56.00	21,500	●
215	21.50 - 21.99	25.40	21.20	317.00	224.20	56.00	21,505	●
220	22.00 - 22.49	25.00	21.70	323.00	229.30	56.00	22,000	●

MULTIPLEX HPC HOLDER 10xD

86686

Holder size	d1 mm	d2 h6 mm	d3 mm	l1* incl. insert mm	l2 max. mm	l3 mm	Code no.	Availability Discount gr. 140
220	22.00 - 22.49	25.40	21.70	323.00	229.30	56.00	22,005	●
225	22.50 - 22.99	25.00	22.20	329.00	234.40	56.00	22,500	●
225	22.50 - 22.99	25.40	22.20	329.00	234.40	56.00	22,505	●
230	23.00 - 23.49	25.00	22.70	335.00	239.50	56.00	23,000	●
230	23.00 - 23.49	25.40	22.70	335.00	239.50	56.00	23,005	●
235	23.50 - 23.99	25.00	23.20	341.00	244.60	56.00	23,500	●
235	23.50 - 23.99	25.40	23.20	341.00	244.60	56.00	23,505	●
240	24.00 - 24.49	25.00	23.70	347.00	249.70	56.00	24,000	●
240	24.00 - 24.49	25.40	23.70	347.00	249.70	56.00	24,005	●
245	24.50 - 24.99	25.00	24.20	352.00	254.80	56.00	24,500	●
245	24.50 - 24.99	25.40	24.20	352.00	254.80	56.00	24,505	●
250	25.00 - 25.49	25.00	24.70	359.00	259.90	56.00	25,000	●
250	25.00 - 25.49	25.40	24.70	359.00	259.90	56.00	25,005	●
255	25.50 - 25.99	32.00	25.20	369.00	265.00	60.00	25,500	●
255	25.50 - 25.99	31.75	25.20	369.00	265.00	60.00	25,505	●
260	26.00 - 26.49	32.00	25.70	377.00	270.00	60.00	26,000	●
260	26.00 - 26.49	31.75	25.70	377.00	270.00	60.00	26,005	●
265	26.50 - 26.99	32.00	26.20	382.00	275.00	60.00	26,500	●
265	26.50 - 26.99	31.75	26.20	382.00	275.00	60.00	26,505	●
270	27.00 - 27.49	32.00	26.70	388.00	280.10	60.00	27,000	●
270	27.00 - 27.49	31.75	26.70	388.00	280.10	60.00	27,005	●
275	27.50 - 27.99	32.00	27.20	394.00	285.20	60.00	27,500	●
275	27.50 - 27.99	31.75	27.20	394.00	285.20	60.00	27,505	●
280	28.00 - 28.49	32.00	27.70	400.00	290.30	60.00	28,000	●
280	28.00 - 28.49	31.75	27.70	400.00	290.30	60.00	28,005	●
285	28.50 - 28.99	32.00	28.20	405.00	295.40	60.00	28,500	●
285	28.50 - 28.99	31.75	28.20	405.00	295.40	60.00	28,505	●
290	29.00 - 29.49	32.00	28.70	412.00	300.50	60.00	29,000	●
290	29.00 - 29.49	31.75	28.70	412.00	300.50	60.00	29,005	●
295	29.50 - 29.99	32.00	29.20	418.00	305.60	60.00	29,500	●
295	29.50 - 29.99	31.75	29.20	418.00	305.60	60.00	29,505	●
300	30.00 - 30.49	32.00	29.70	424.00	310.60	60.00	30,000	●
300	30.00 - 30.49	31.75	29.70	424.00	310.60	60.00	30,005	●
305	30.50 - 30.99	32.00	30.20	429.00	315.70	60.00	30,500	●
305	30.50 - 30.99	31.75	30.20	429.00	315.70	60.00	30,505	●
310	31.00 - 31.49	32.00	30.70	435.00	320.80	60.00	31,000	●
310	31.00 - 31.49	31.75	30.70	435.00	320.80	60.00	31,005	●
315	31.50 - 31.99	32.00	31.20	441.00	325.90	60.00	31,500	●
315	31.50 - 31.99	31.75	31.20	441.00	325.90	60.00	31,505	●

MULTIPLEX HPC HOLDER 1 x D

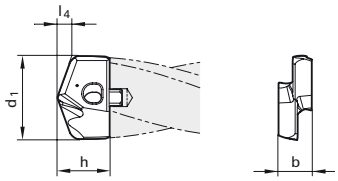


* l1 with pilot insert No. 86721. With drilling inserts No. 86722, 86723, 86724 or 86725, see h- and l4 dimensions page 18 to 20!

for pilot drilling and 45° countersinking — 86681

Holder size	d1	d2 h6	d3	l1* incl. insert	l2 max.	l3	Code no.	Availability
	mm	mm	mm	mm	mm	mm		Discount gr. 140
110	11.00-11.99	12.000	17.000	81.00	12.00	45.00	11,000	●
110	11.00-11.99	12.700	17.000	81.00	12.00	45.00	11,005	●
120	12.00-12.99	12.000	18.000	84.00	13.00	45.00	12,000	●
120	12.00-12.99	12.700	18.000	84.00	13.00	45.00	12,005	●
130	13.00-13.99	14.000	18.000	86.00	14.00	45.00	13,000	●
130	13.00-13.99	15.875	18.000	86.00	14.00	48.00	13,005	●
140	14.00-15.99	16.000	18.000	93.00	16.00	48.00	14,000	●
140	14.00-15.99	15.875	18.000	93.00	16.00	48.00	14,005	●
160	16.00-17.99	18.000	20.000	99.00	18.00	48.00	16,000	●
160	16.00-17.99	19.050	20.000	99.00	18.00	50.00	16,005	●
180	18.00-19.99	20.000	22.000	106.00	20.00	50.00	18,000	●
180	18.00-19.99	19.050	22.000	106.00	20.00	50.00	18,005	●
200	20.00-21.99	25.000	24.000	117.00	22.00	56.00	20,000	●
200	20.00-21.99	25.400	24.000	117.00	22.00	56.00	20,005	●
220	22.00-23.99	25.000	26.000	122.00	24.00	56.00	22,000	●
220	22.00-23.99	25.400	26.000	122.00	24.00	56.00	22,005	●
240	24.00-25.99	25.000	28.000	128.00	26.00	56.00	24,000	●
240	24.00-25.99	25.400	28.000	128.00	26.00	56.00	24,005	●
260	26.00-27.99	32.000	32.000	142.00	28.00	60.00	26,000	●
260	26.00-27.99	31.750	32.000	142.00	28.00	60.00	26,005	●
280	28.00-29.99	32.000	34.000	147.00	30.00	60.00	28,000	●
280	28.00-29.99	31.750	34.000	147.00	30.00	60.00	28,005	●
300	30.00-31.99	32.000	38.000	152.00	32.00	60.00	30,000	●
300	30.00-31.99	31.750	38.000	152.00	32.00	60.00	30,005	●
320	32.00-35.99	32.000	42.000	163.00	36.00	60.00	32,000	●
320	32.00-35.99	31.750	42.000	163.00	36.00	60.00	32,005	●
360	36.00-39.99	32.000	46.000	173.00	40.00	60.00	36,000	●
360	36.00-39.99	31.750	46.000	173.00	40.00	60.00	36,005	●

MULTIPLEX HPC INTERCHANGEABLE INSERTS

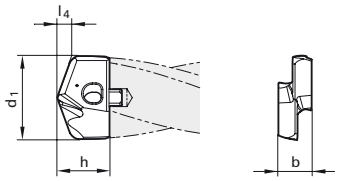


Tool material	Solid carbide
Surface finish	a AlTiN nano
Discount group	141
Point angle	145°
Tolerance	m7

for pilot drilling 86721

Holder size	d1 m7		l4	b	h	Code no.	Availability
	mm	inch	mm	mm	mm		
110	11.000		1.80	4.500	7.20	11,000	●
110	11.200		1.80	4.500	7.20	11,200	●
110	11.500		1.90	4.500	7.20	11,500	●
110	11.510	29/64	1.90	4.500	7.20	11,510	●
110	11.700		1.90	4.500	7.20	11,700	●
110	11.800		1.90	4.500	7.20	11,800	●
110	11.910	15/32	1.90	4.500	7.20	11,910	●
120	12.000		1.90	5.000	7.40	12,000	●
120	12.100		2.00	5.000	7.40	12,100	●
120	12.200		2.00	5.000	7.40	12,200	●
120	12.300	31/64	2.00	5.000	7.40	12,300	●
120	12.500		2.00	5.000	7.40	12,500	●
120	12.600		2.00	5.000	7.40	12,600	●
120	12.700	1/2	2.10	5.000	7.40	12,700	●
120	12.800		2.10	5.000	7.40	12,800	●
120	12.900		2.10	5.000	7.40	12,900	●
130	13.000		2.10	5.500	8.20	13,000	●
130	13.100	33/64	2.10	5.500	8.20	13,100	●
130	13.490	17/32	2.20	5.500	8.20	13,490	●
130	13.500		2.20	5.500	8.20	13,500	●
130	13.600		2.20	5.500	8.20	13,600	●
130	13.700		2.20	5.500	8.20	13,700	●
130	13.800		2.20	5.500	8.20	13,800	●
130	13.890	35/64	2.20	5.500	8.20	13,890	●
140	14.000		2.30	6.000	9.40	14,000	●
140	14.100		2.30	6.000	9.40	14,100	●
140	14.290	9/16	2.30	6.000	9.40	14,290	●
140	14.400		2.30	6.000	9.40	14,400	●
140	14.500		2.30	6.000	9.40	14,500	●
140	14.600		2.40	6.000	9.40	14,600	●
140	14.680	37/64	2.40	6.000	9.40	14,680	●
140	14.700		2.40	6.000	9.40	14,700	●
140	14.800		2.40	6.000	9.40	14,800	●
150	15.000		2.40	6.000	9.40	15,000	●
150	15.080	19/32	2.40	6.000	9.40	15,080	●
150	15.100		2.40	6.000	9.40	15,100	●
150	15.200		2.40	6.000	9.40	15,200	●
150	15.300		2.50	6.000	9.40	15,300	●
150	15.480	39/64	2.50	6.000	9.40	15,480	●
150	15.500		2.50	6.000	9.40	15,500	●
150	15.600		2.50	6.000	9.40	15,600	●
150	15.700		2.50	6.000	9.40	15,700	●
150	15.800		2.50	6.000	9.40	15,800	●
150	15.870	5/8	2.60	6.000	9.40	15,870	●
160	16.000		2.60	7.000	10.60	16,000	●

MULTIPLEX HPC INTERCHANGEABLE INSERTS



Tool material	Solid carbide
Surface finish	a AlTiN nano
Discount group	141
Point angle	145°
Tolerance	m7

for pilot drilling 86721

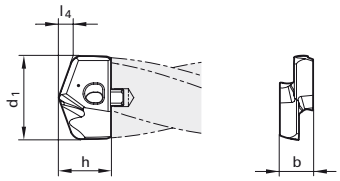
Holder size	d1 m7		l4	b	h	Code no.	Availability
	mm	inch	mm	mm	mm		
160	16.270	41/64	2.60	7.000	10.60	16,270	●
160	16.500		2.70	7.000	10.60	16,500	●
160	16.670	21/32	2.70	7.000	10.60	16,670	●
170	17.000		2.70	7.000	10.60	17,000	●
170	17.070	43/64	2.70	7.000	10.60	17,070	●
170	17.460	11/16	2.80	7.000	10.60	17,460	●
170	17.500		2.80	7.000	10.60	17,500	●
170	17.600		2.80	7.000	10.60	17,600	●
170	17.860	45/64	2.90	7.000	10.60	17,860	●
180	18.000		2.90	8.000	12.10	18,000	●
180	18.260	23/32	2.90	8.000	12.10	18,260	●
180	18.500		3.00	8.000	12.10	18,500	●
180	18.650	47/64	3.00	8.000	12.10	18,650	●
190	19.000		3.00	8.000	12.10	19,000	●
190	19.050	3/4	3.10	8.000	12.10	19,050	●
190	19.450	49/64	3.10	8.000	12.10	19,450	●
190	19.500		3.10	8.000	12.10	19,500	●
190	19.600		3.10	8.000	12.10	19,600	●
190	19.840	25/32	3.20	8.000	12.10	19,840	●
200	20.000		3.20	9.000	13.30	20,000	●
200	20.240	51/64	3.20	9.000	13.30	20,240	●
200	20.500		3.30	9.000	13.30	20,500	●
200	20.640	13/16	3.30	9.000	13.30	20,640	●
210	21.000		3.40	9.000	13.30	21,000	●
210	21.030	53/64	3.40	9.000	13.30	21,030	●
210	21.100		3.40	9.000	13.30	21,100	●
210	21.430	27/32	3.40	9.000	13.30	21,430	●
210	21.500		3.40	9.000	13.30	21,500	●
210	21.830	55/64	3.50	9.000	13.30	21,830	●
220	22.000		3.50	10.000	14.80	22,000	●
220	22.220	7/8	3.60	10.000	14.80	22,220	●
220	22.500		3.60	10.000	14.80	22,500	●
220	22.620	57/64	3.60	10.000	14.80	22,620	●
230	23.000		3.70	10.000	14.80	23,000	●
230	23.020	29/32	3.70	10.000	14.80	23,020	●
230	23.420	59/64	3.70	10.000	14.80	23,420	●
230	23.500		3.80	10.000	14.80	23,500	●
230	23.810	15/16	3.80	10.000	14.80	23,810	●
240	24.000		3.80	11.000	15.30	24,000	●
240	24.100		3.80	11.000	15.30	24,100	●
240	24.210	61/64	3.90	11.000	15.30	24,210	●
240	24.500		3.90	11.000	15.30	24,500	●
240	24.610	31/32	3.90	11.000	15.30	24,610	●
250	25.000	63/64	4.00	11.000	15.30	25,000	●
250	25.400	1	4.10	11.000	15.30	25,400	●

MULTIPLEX HPC INTERCHANGEABLE INSERTS

for pilot drilling 86721

Holder size	d1 m7		l4	b	h	Code no.	Availability
	mm	inch	mm	mm	mm		
250	25.500		4.10	11.000	15.30	25,500	●
250	25.700		4.00	11.000	15.30	25,700	●
260	26.000		4.10	12.000	19.40	26,000	●
260	26.190	1 1/32	4.10	12.000	19.40	26,190	●
260	26.500		4.20	12.000	19.40	26,500	●
260	26.590	1 3/64	4.20	12.000	19.40	26,590	●
270	27.000		4.30	12.000	19.40	27,000	●
270	27.500		4.30	12.000	19.40	27,500	●
270	27.700		4.30	12.000	19.40	27,700	●
270	27.780	1 3/32	4.30	12.000	19.40	27,780	●
280	28.000		4.40	13.000	20.10	28,000	●
280	28.180		4.40	13.000	20.10	28,180	●
280	28.500		4.50	13.000	20.10	28,500	●
280	28.580		4.50	13.000	20.10	28,580	●
290	29.000		4.60	13.000	20.10	29,000	●
290	29.370	1 5/32	4.60	13.000	20.10	29,370	●
290	29.500		4.60	13.000	20.10	29,500	●
300	30.000		4.70	14.000	21.70	30,000	●
300	30.160	1 3/16	4.70	14.000	21.70	30,160	●
300	30.500		4.80	14.000	21.70	30,500	●
300	30.960		4.80	14.000	21.70	30,960	●
310	31.000		4.90	14.000	21.70	31,000	●
310	31.500		4.90	14.000	21.70	31,500	●
310	31.750	1 1/4	4.90	14.000	21.70	31,750	●
320	32.000		5.00	15.000	22.40	32,000	●
320	32.500		5.10	15.000	22.40	32,500	●
320	32.540	1 9/32	5.10	15.000	22.40	32,540	●
330	33.000		5.20	15.000	22.40	33,000	●
330	33.340	1 5/16	5.20	15.000	22.40	33,340	●
330	33.500		5.30	15.000	22.40	33,500	●
340	34.000		5.40	15.000	22.40	34,000	●
340	34.130	1 11/32	5.40	15.000	22.40	34,130	●
340	34.500		5.40	15.000	22.40	34,500	●
340	34.930		5.40	15.000	22.40	34,930	●
350	35.000		5.50	15.000	22.40	35,000	●
350	35.500		5.60	15.000	22.40	35,500	●
350	35.720		5.60	15.000	22.40	35,720	●
360	36.000		5.70	16.000	23.20	36,000	●
360	36.500		5.70	16.000	23.20	36,500	●
360	36.510		5.70	16.000	23.20	36,510	●
370	37.000		5.80	16.000	23.20	37,000	●
370	37.310	1 15/32	5.80	16.000	23.20	37,310	●
370	37.500		5.90	16.000	23.20	37,500	●
380	38.000		6.00	16.000	23.20	38,000	●
380	38.100	1 1/2	6.00	16.000	23.20	38,100	●
380	38.500	1 33/64	6.10	16.000	23.20	38,500	●
390	39.000		6.20	16.000	23.20	39,000	●
390	39.500		6.20	16.000	23.20	39,500	●
390	40.000		6.20	16.000	23.20	40,000	●

MULTIPLEX HPC INTERCHANGEABLE INSERTS



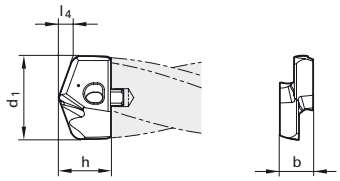
Tool material	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Surface finish	F nanoFIRE	F FIRE	bright	a AlTiN nano
Discount group	141	141	141	141
Point angle	140°	140°	140°	140°
Tolerance	h7	m7	h7	h7
Application	steel	cast iron	Aluminium	stainless steels

							86722	86723	86724	86725
Holder size	d1		l4	b	h	Code no.	Availability	Availability	Availability	Availability
	mm	inch	mm	mm	mm					
110	11.000		2.100	4.50	7.50	11,000	●	●	●	●
110	11.200		2.100	4.50	7.50	11,200	●	●	●	●
115	11.500		2.100	4.50	7.50	11,500	●	●	●	●
115	11.510	29/64	2.100	4.50	7.50	11,510	●	●	●	●
115	11.700		2.200	4.50	7.50	11,700	●	●	●	●
115	11.800		2.200	4.50	7.50	11,800	●	●	●	●
115	11.910	15/32	2.200	4.50	7.50	11,910	●	●	●	●
120	12.000		2.200	5.00	7.70	12,000	●	●	●	●
120	12.100		2.300	5.00	7.70	12,100	●	●	●	●
120	12.200		2.300	5.00	7.70	12,200	●	●	●	●
120	12.300	31/64	2.300	5.00	7.70	12,300	●	●	●	●
125	12.500		2.300	5.00	7.70	12,500	●	●	●	●
125	12.600		2.300	5.00	7.70	12,600	●	●	●	●
125	12.700	1/2	2.400	5.00	7.70	12,700	●	●	●	●
125	12.800		2.400	5.00	7.70	12,800	●	●	●	●
125	12.900		2.400	5.00	7.70	12,900	●	●	●	●
130	13.000		2.400	5.50	8.50	13,000	●	●	●	●
130	13.100	33/64	2.400	5.50	8.50	13,100	●	●	●	●
130	13.490	17/32	2.500	5.50	8.50	13,490	●	●	●	●
135	13.500		2.500	5.50	8.50	13,500	●	●	●	●
135	13.600		2.500	5.50	8.50	13,600	●	●	●	●
135	13.700		2.500	5.50	8.50	13,700	●	●	●	●
135	13.800		2.600	5.50	8.50	13,800	●	●	●	●
135	13.890	35/64	2.600	5.50	8.50	13,890	●	●	●	●
140	14.000		2.600	6.00	9.60	14,000	●	●	●	●
140	14.100		2.600	6.00	9.60	14,100	●	●	●	●
140	14.290	9/16	2.700	6.00	9.60	14,290	●	●	●	●
140	14.400		2.700	6.00	9.60	14,400	●	●	●	●
145	14.500		2.700	6.00	9.60	14,500	●	●	●	●
145	14.600		2.700	6.00	9.60	14,600	●	●	●	●
145	14.680	37/64	2.700	6.00	9.60	14,680	●	●	●	●
145	14.700		2.700	6.00	9.60	14,700	●	●	●	●
145	14.800		2.700	6.00	9.60	14,800	●	●	●	●
150	15.000		2.800	6.00	9.80	15,000	●	●	●	●
150	15.080	19/32	2.800	6.00	9.80	15,080	●	●	●	●
150	15.100		2.800	6.00	9.80	15,100	●	●	●	●
150	15.200		2.800	6.00	9.80	15,200	●	●	●	●
150	15.300		2.800	6.00	9.80	15,300	●	●	●	●
150	15.480	39/64	2.900	6.00	9.80	15,480	●	●	●	●
155	15.500		2.900	6.00	9.80	15,500	●	●	●	●
155	15.600		2.900	6.00	9.80	15,600	●	●	●	●
155	15.700		2.900	6.00	9.80	15,700	●	●	●	●
155	15.800		2.900	6.00	9.80	15,800	●	●	●	●
155	15.870	5/8	2.900	6.00	9.80	15,870	●	●	●	●
160	16.000		3.000	7.00	11.00	16,000	●	●	●	●

MULTIPLEX HPC INTERCHANGEABLE INSERTS

							86722	86723	86724	86725
Holder size	d1		l4	b	h	Code no.	Availability	Availability	Availability	Availability
	mm	inch	mm	mm	mm					
160	16.270	41/64	3.000	7.00	11.00	16,270	●	●	●	●
165	16.500		3.100	7.00	11.00	16,500	●	●	●	●
165	16.670	21/32	3.100	7.00	11.00	16,670	●	●	●	●
170	17.000		3.100	7.00	11.00	17,000	●	●	●	●
170	17.070	43/64	3.200	7.00	11.00	17,070	●	●	●	●
170	17.460	11/16	3.200	7.00	11.00	17,460	●	●	●	●
175	17.500		3.200	7.00	11.00	17,500	●	●	●	●
175	17.600		3.300	7.00	11.00	17,600	●	●	●	●
175	17.860	45/64	3.300	7.00	11.00	17,860	●	●	●	●
180	18.000		3.300	8.00	12.60	18,000	●	●	●	●
180	18.260	23/32	3.400	8.00	12.60	18,260	●	●	●	●
185	18.500		3.400	8.00	12.60	18,500	●	●	●	●
185	18.650	47/64	3.400	8.00	12.60	18,650	●	●	●	●
190	19.000		3.500	8.00	12.60	19,000	●	●	●	●
190	19.050	3/4	3.500	8.00	12.60	19,050	●	●	●	●
190	19.250		3.600	8.00	12.60	19,250	●	●	●	●
190	19.450	49/64	3.600	8.00	12.60	19,450	●	●	●	●
195	19.500		3.600	8.00	12.60	19,500	●	●	●	●
195	19.600		3.600	8.00	12.60	19,600	●	●	●	●
195	19.840	25/32	3.700	8.00	12.60	19,840	●	●	●	●
200	20.000		3.700	9.00	13.90	20,000	●	●	●	●
200	20.240	51/64	3.700	9.00	13.90	20,240	●	●	●	●
205	20.500		3.800	9.00	13.90	20,500	●	●	●	●
205	20.640	13/16	3.800	9.00	13.90	20,640	●	●	●	●
210	21.000		3.900	9.00	13.90	21,000	●	●	●	●
210	21.030	53/64	3.900	9.00	13.90	21,030	●	●	●	●
210	21.100		3.900	9.00	13.90	21,100	●	●	●	●
210	21.430	27/32	3.900	9.00	13.90	21,430	●	●	●	●
215	21.500		4.000	9.00	13.90	21,500	●	●	●	●
215	21.830	55/64	4.000	9.00	13.90	21,830	●	●	●	●
220	22.000		4.100	10.00	15.30	22,000	●	●	●	●
220	22.220	7/8	4.100	10.00	15.30	22,220	●	●	●	●
225	22.500		4.100	10.00	15.30	22,500	●	●	●	●
225	22.620	57/64	4.200	10.00	15.30	22,620	●	●	●	●
230	23.000		4.200	10.00	15.30	23,000	●	●	●	●
230	23.020	29/32	4.200	10.00	15.30	23,020	●	●	●	●
230	23.420	59/64	4.300	10.00	15.30	23,420	●	●	●	●
235	23.500		4.300	10.00	15.30	23,500	●	●	●	●
235	23.810	15/16	4.400	10.00	15.30	23,810	●	●	●	●
240	24.000		4.400	11.00	15.80	24,000	●	●	●	●
240	24.100		4.400	11.00	15.80	24,100	●	●	●	●
240	24.210	61/64	4.500	11.00	15.80	24,210	●	●	●	●
245	24.500		4.500	11.00	15.80	24,500	●	●	●	●
245	24.610	31/32	4.500	11.00	15.80	24,610	●	●	●	●
250	25.000	63/64	4.600	11.00	15.80	25,000	●	●	●	●
250	25.400	1	4.700	11.00	15.80	25,400	●	●	●	●
255	25.500		4.700	11.00	15.80	25,500	●	●	●	●
255	25.670		4.700	11.00	15.80	25,670	●	●	●	●
255	25.700		4.700	11.00	15.80	25,700	●	●	●	●
255	25.810		4.700	11.00	15.80	25,810	●	●	●	●
260	26.000		4.800	12.00	20.00	26,000	●	●	●	●
260	26.190	1 1/32	4.800	12.00	20.00	26,190	●	●	●	●
260	26.500		4.900	12.00	20.00	26,500	●	●	●	●
260	26.590	1 3/64	4.900	12.00	20.00	26,590	●	●	●	●
270	27.000		5.000	12.00	20.00	27,000	●	●	●	●
270	27.500		5.100	12.00	20.00	27,500	●	●	●	●
270	27.700		5.100	12.00	20.00	27,700	●	●	●	●

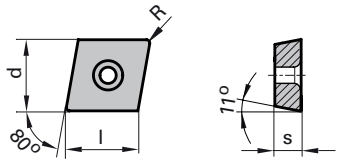
MULTIPLEX HPC INTERCHANGEABLE INSERTS



Tool material	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Surface finish	F nanoFIRE	F FIRE	bright	a AlTiN nano
Discount group	141	141	141	141
Point angle	140°	140°	140°	140°
Tolerance	h7	m7	h7	h7
Application	steel	cast iron	Aluminium	stainless steels

							86722	86723	86724	86725
Holder size	d1		l4	b	h	Code no.	Availability	Availability	Availability	Availability
	mm	inch	mm	mm	mm					
270	27.780	1 3/32	5.100	12.00	20.00	27,780	●	●	●	●
280	28.000		5.100	13.00	20.70	28,000	●	●	●	●
280	28.180	1 7/64	5.200	13.00	20.70	28,180	●	●	●	●
280	28.500		5.200	13.00	20.70	28,500	●	●	●	●
280	28.580		5.300	13.00	20.70	28,580	●	●	●	●
290	29.000		5.300	13.00	20.70	29,000	●	●	●	●
290	29.370	1 5/32	5.400	13.00	20.70	29,370	●	●	●	●
290	29.500		5.400	13.00	20.70	29,500	●	●	●	●
290	29.770	1 11/64	5.500	13.00	20.70	29,770	●	●	●	●
300	30.000		5.500	14.00	22.30	30,000	●	●	●	●
300	30.160	1 3/16	5.500	14.00	22.30	30,160	●	●	●	●
300	30.500		5.600	14.00	22.30	30,500	●	●	●	●
300	30.960	1 7/32	5.700	14.00	22.30	30,960	●	●	●	●
310	31.000		5.700	14.00	22.30	31,000	●	●	●	●
310	31.500		5.800	14.00	22.30	31,500	●	●	●	●
310	31.750	1 1/4	5.800	14.00	22.30	31,750	●	●	●	●
320	32.000		5.900	15.00	23.10	32,000	●	●	●	●
320	32.500		6.000	15.00	23.10	32,500	●	●	●	●
320	32.540	1 9/32	6.000	15.00	23.10	32,540	●	●	●	●
320	32.940	1 19/6	6.000	15.00	23.10	32,940	●	●	●	●
330	33.000		6.100	15.00	23.10	33,000	●	●	●	●
330	33.340	1 5/16	6.100	15.00	23.10	33,340	●	●	●	●
330	33.500		6.100	15.00	23.10	33,500	●	●	●	●
340	34.000		6.200	15.00	23.10	34,000	●	●	●	●
340	34.130	1 11/3	6.300	15.00	23.10	34,130	●	●	●	●
340	34.500		6.300	15.00	23.10	34,500	●	●	●	●
340	34.930		6.400	15.00	23.10	34,930	●	●	●	●
350	35.000		6.400	15.00	23.10	35,000	●	●	●	●
350	35.500		6.500	15.00	23.10	35,500	●	●	●	●
350	35.720	1 13/3	6.600	15.00	23.10	35,720	●	●	●	●
360	36.000		6.600	16.00	23.90	36,000	●	●	●	●
360	36.500		6.700	16.00	23.90	36,500	●	●	●	●
360	36.510	1 7/16	6.700	16.00	23.90	36,510	●	●	●	●
370	37.000		6.800	16.00	23.90	37,000	●	●	●	●
370	37.310	1 15/3	6.800	16.00	23.90	37,310	●	●	●	●
370	37.500		6.900	16.00	23.90	37,500	●	●	●	●
380	38.000		7.000	16.00	23.90	38,000	●	●	●	●
380	38.100	1 1/2	7.000	16.00	23.90	38,100	●	●	●	●
380	38.460		7.000	16.00	23.90	38,460	●	●	●	●
380	38.500	1 33/6	7.100	16.00	23.90	38,500	●	●	●	●
390	39.000		7.100	16.00	23.90	39,000	●	●	●	●
390	39.500		7.200	16.00	23.90	39,500	●	●	●	●
390	40.000		7.300	16.00	23.90	40,000	●	●	●	●

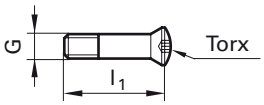
MULTIPLEX HPC COUNTERSINK INSERTS

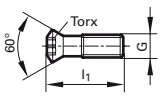


Tool material	Solid carbide	Solid carbide	Solid carbide
Surface finish	A TiAlN	bright	T TiN
Discount group	142	142	142
Type	CPGW ...	CPGT ... R	CPGT ... R
Application	cast iron	Aluminium	steel

						86726		86727		86728	
f. holder size	d mm	s mm	r mm	l mm	Code no.	Size	Availability	Size	Availability	Size	Availability
110 - 140	5.56	2.38	0.40	5.64	52,040	CPGW0502	●	CPGT0502	●	CPGT0502	●
160 - 280	6.35	2.38	0.40	6.45	62,040	CPGW0602	●	CPGT0602	●	CPGT0602	●
300 - 360	9.53	3.97	0.80	9.67	93,080	CPGW09T3	●	CPGT09T3	●	CPGT09T3	●

CLAMPING SCREWS





for holders 1.5 - 10 x D — 86843

for holder size	G	l1 mm	Torx	Code no.	Availability Discount group 142
110/115	M2.2	9.50	T7	2,200	●
120/125	M2.2	10.50	T7	2,201	●
130/135	M2.5	11.40	T8	2,500	●
140/145	M3	12.10	T9	3,000	●
150/155	M3	13.10	T9	3,001	●
160 - 175	M3.5	14.25	T10	3,500	●
180 - 195	M4	16.00	T15	4,000	●
200 - 215	M4.5	18.00	T15	4,500	●
220 - 235	M5	19.75	T20	5,000	●
240 - 255	M5	21.75	T20	5,001	●
260 - 295	M5	23.40	T20	5,003	●
300 - 315	M6	27.00	T25	6,000	●
320 - 350	M6	28.50	T25	6,001	●
360 - 390	M6	32.50	T25	6,002	●

for countersink holders — 86846

for holder size	G	l1 mm	Torx	Code no.	Availability Discount group 142
110 - 140	M 2	5.50	T6	2,000	●
160 - 280	M 2.5	5.30	T7	2,500	●
300 - 360	M 4	9.50	T15	4,006	●

Please observe the following notes and recommendations for the application of Multiplex HPC tools:

We recommend when changing the insert to also replace the clamping screw!
Therefore, every holder is supplied with a clamping screw, Product no. 86843, and screwdriver, Product no. 86842. Every interchangeable insert is also supplied with a clamping screw, Product no. 86843.
When changing the insert please observe the following tightening torques for the clamping screw. Adhering to them is absolutely necessary for optimal machining results!

Diameter range	**11.0 - 12.99**	**13.0 - 13.99**	**14.0 - 15.99**	**16.0 - 17.99**	**18.0 - 19.99**	**20.0 - 21.99**	**22.0 - 29.99**	**30.0 - 40.00**
Thread	M2.2	M2.5	M3	M3.5	M4	M4.5	M5	M6
Torx size	T7	T8	T9	T10	T15	T15	T20	T25
Tightening torque [Nm]	**0.8**	**1.0**	**1.7**	**2.7**	**4.0**	**6.0**	**8.0**	**14.0**

TORQUE KEY

					86844
Type	Drive	l1 mm	Torque	Code no.	Availability Discount group 142
A	1/4“ ⬢	160.00	0.8...2	2,000	●
A	1/4“ ⬢	160.00	2...8	8,000	●
A	1/4“ ⬢	200.00	5...14	14,000	●

TORX-BITS

				86845
Torx	Drive	l1 mm	Code no.	Availability Discount group 142
T7	1/4“ ⬢	25.00	7,000	●
T8	1/4“ ⬢	25.00	8,000	●
T9	1/4“ ⬢	25.00	9,000	●
T10	1/4“ ⬢	25.00	10,000	●
T15	1/4“ ⬢	25.00	15,000	●
T20	1/4“ ⬢	25.00	20,000	●
T25	1/4“ ⬢	25.00	25,001	●

SCREW DRIVER

							86842
for holder size	Torx	Code no.	Availability Discount group 142	for holder size	Torx	Code no.	Availability Discount group 142
pilot holder 110 - 140	T6	6,000	●	pilot holder 300 - 360	T15	15,000	●
pilot holder 160 - 280	T7	7,000	●	180 - 215	T15	15,001	●
110 - 125	T7	7,001	●	220 - 295	T20	20,001	●
130/135	T8	8,001	●	300 - 390	T25	25,001	●
140 - 155	T9	9,001	●				
160 - 175	T10	10,001	●				

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Fax Number
+49 7431 / 125-21 547

Special Tools Questionnaire

☐ **Order** ☐ **Enquiry**

Contact for queries

Name/customer no. if available ☐ New customer

Order number

Street/house no.

Town/post code

Telephone

Fax

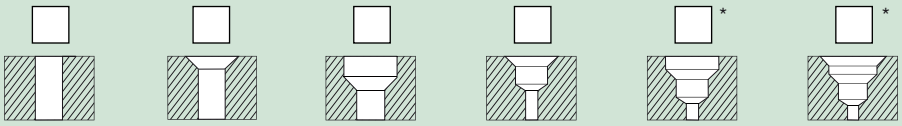
Date

Signature

Quantity ☐ holders ☐ inserts

Material to be machined ☐

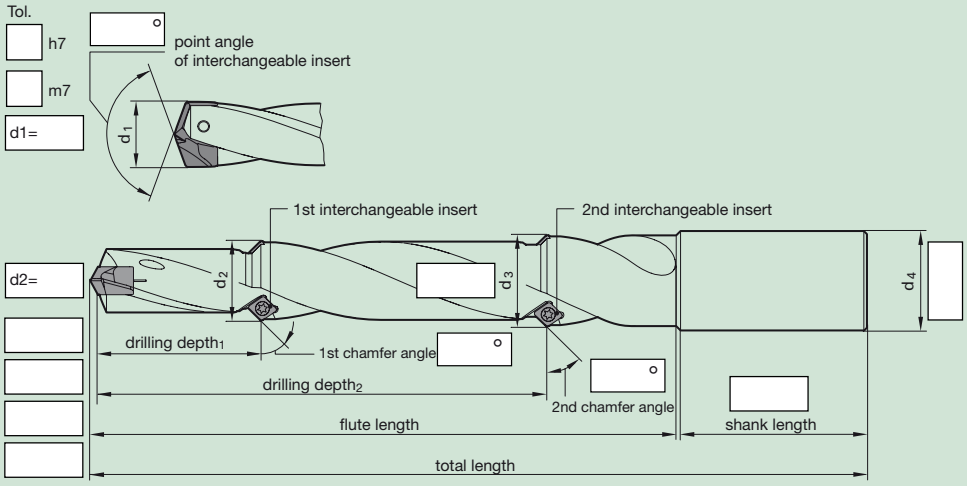
Machining



*please incl. separate drawing

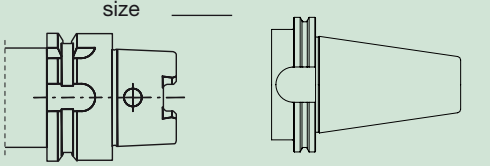
Flute ☐ spiral ☐ partly spiral ☐ straight

Dimensions
For spiral- & straight-fluted types



Shank form

☐ HA ☐ HE ☐ HSK, form ____ size ____ ☐ SK, size ____



Internal cooling ☐ yes ☐ no

Interchangeable insert coating ☐ FIRE ☐ TiAlN SuperA ☐ TiAlN ☐ TiCN ☐ TiN ☐ bright ☐ nano FIRE ☐ AlTiN nano

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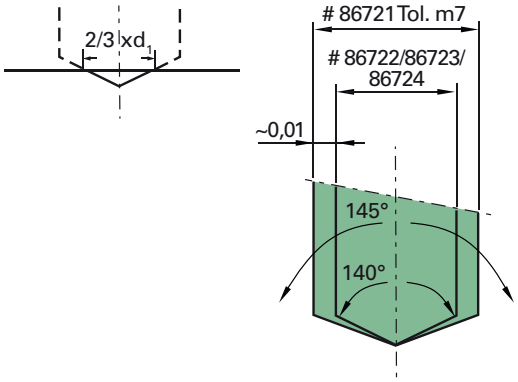
Application recommendations for **Multiplex HPC**



- for through holes supporting lands must remain in permanent contact.
- don't apply drilling tool without trial for interrupted cutting (grooves, transverse holes). For interrupted cutting (max. 0.2 x D) it is recommended to reduce the feed rate whenever possible.
- in contrast to conventional indexable inserts, Multiplex HPC tools are also suitable for the drilling of stacked sheets.
- on a lathe (stationary tool) it must be ensured that the tool is accurately centred.
- pre-condition for optimal machining results is a sufficient cooling lubricant supply with soluble or neat oil.
- the tool is only of limited suitability for dry machining or MQL. For MQL application we recommend the use of the conical MQL shank end as well as Hartner MQL components. Please contact our Sales Management.

Drill Ø mm	Feed column no. 1	2	3	4	5	6	7	8	9
	f (mm/rev.)								
10.00	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.400
12.50	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500
16.00	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630
20.00	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.630
25.00	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	0.800
31.50	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000
40.00	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000	1.250

Coolant:
○ air
● oil
◍ soluble oil

All data are approximate values. The actually achievable cutting speeds and feed rates depend on the respective machining conditions.
We recommend suitable drilling trials.

Material group	Material examples, new description (old description in brackets) Figures in bold = material no. to DIN EN	Tensile strength MPa (N/mm²)	Hardness	Coolant
Common structural steels	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2)	≤500		◍
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤1000		◍
Free-cutting steels	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		◍
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤1000		◍
Unalloyed heat-treatable steels	**1.0402** C22, **1.1178** C30E (Ck30)	≤700		◍
	1.0503 C45, **1.1191** C45E (Ck45)	≤850		◍
	1.0601 C60, **1.1221** C60E (Ck60)	≤1000		◍
Alloyed heat-treatable steels	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	≤1000		◍
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1400		◍
Unalloyed case hardened steels	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		◍
Alloyed case hardened steels	**1.7276** 10CrMo11, **1.5125** 11MnSi6	≤1000		●
	1.5752 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1400		●
Nitriding steels	**1.8504** 34CrAl6	≤1000		◍
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	≤1400		●
Tool steels	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		◍
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤1400		●
High speed steels	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Spring steels	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Stainless steels, sulphured	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤900		●
austenitic	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitic	**1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤1500		●
Hardened steels	–		≤48 HRC	●
			≤66 HRC	●
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Cast iron	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20)		≤240 HB	◍ ○
	0.6025 EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤350 HB	◍ ○
Spheroidal graphite iron and	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35)		≤240 HB	◍
malleable cast iron	**0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤350 HB	◍
Chilled cast iron	–		≤350 HB	◍
Ti and Ti-alloys	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		●
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
Aluminium and Al-alloys	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		◍
Al wrought alloys	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		◍
Al cast alloys ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		◍
≤ 24 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		◍
Magnesium alloys	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		◍
Copper, low-alloyed	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		◍
Brass, short-chipping	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		◍
long-chipping	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		◍
Bronze, short-chipping	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		◍ ●
	2.0790 CuNi18Zn19Pb	≤850		●
Bronze, long-chipping	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		●
	2.0980 CuAl11Ni, **2.1247** CuBe2	≤1000		●
New cast materials GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)		≤220 HB	◍ ○
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤300 HB	◍ ○
New cast materials ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	≤1000		◍ ○
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1400		◍ ○

Tool holders for drilling depths ≤ 1×D Product no. 86681 for pilot drilling/countersinking

Product no.	86721	86722	86725	86723	86724
Tool material	Solid carbide	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Carbide grade	K/P	K/P	K/P	K/P	K
Surface finish	AlTiN nano	nanoFIRE	AlTiN nano	FIRE	bright
Application	pilot drill./countersink.	Steel	Stainless steel	Cast iron	Al/Al alloys

v_c m/min	Feed column no.	v_c m/min	Feed column no.	v_c m/min	Feed column no.	v_c m/min	Feed column no.	v_c m/min	Feed column no.
130	6	130	6						
110	5	110	5						
130	7	130	7						
110	6	110	6						
130	6	130	6						
125	6	125	6						
110	5	110	5						
110	6	110	6						
90	5	90	5						
130	7	130	7						
110	6	110	6						
70	4	70	4						
105	5	105	5						
70	4	70	4						
60	5	60	5						
55	4	55	4						
55	3	55	3						
50	2	50	2						
55	3			55	3				
40	3			40	3				
35	3			35	3				
25	2			25	2				
25	2			25	2				
100	6					100	6		
90	6					90	6		
120	7					120	7		
100	6					100	6		
90	6			90	6				
40	3			40	3				
35	2			35	2				
200	7							200	7
180	7							180	7
150	7							150	7
120	7							120	7
180	7							180	7
70	6							70	6
180	7							180	7
120	6							120	6
70	6							70	6
50	6							50	6
45	6							45	6
35	5							35	5
80	5					80	5		
80	5					80	5		
80	5					80	5		
80	5					80	5		

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Application recommendations for **Multiplex HPC**

- for through holes supporting lands must remain in permanent contact.
- don't apply drilling tool without trial for interrupted cutting (grooves, transverse holes). For interrupted cutting (max. 0.2 x D) it is recommended to reduce the feed rate whenever possible.
- in contrast to conventional indexable inserts, Multiplex HPC tools are also suitable for the drilling of stacked sheets.
- on a lathe (stationary tool) it must be ensured that the tool is accurately centred.
- pre-condition for optimal machining results is a sufficient cooling lubricant supply with soluble or neat oil.
- the tool is only of limited suitability for dry machining or MQL. For MQL application we recommend the use of the conical MQL shank end as well as Hartner MQL components. Please contact our Sales Management.

Drill Ø mm	Feed column no. 1	2	3	4	5	6	7	8	9
	f (mm/rev.)								
10.00	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.400
12.50	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500
16.00	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630
20.00	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.630
25.00	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	0.800
31.50	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000
40.00	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000	1.250

Coolant:
○ air
● oil
◍ soluble oil

All data are approximate values. The actually achievable cutting speeds and feed rates depend on the respective machining conditions.
We recommend suitable drilling trials.

Material group	Material examples, new description (old description in brackets) Figures in bold = material no. to DIN EN	Tensile strength MPa (N/mm²)	Hardness	Coolant
Common structural steels	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2)	≤500		◍
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤1000		◍
Free-cutting steels	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		◍
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤1000		◍
Unalloyed heat-treatable steels	**1.0402** C22, **1.1178** C30E (Ck30)	≤700		◍
	1.0503 C45, **1.1191** C45E (Ck45)	≤850		◍
	1.0601 C60, **1.1221** C60E (Ck60)	≤1000		◍
Alloyed heat-treatable steels	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	≤1000		◍
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1400		◍
Unalloyed case hardened steels	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		◍
Alloyed case hardened steels	**1.7276** 10CrMo11, **1.5125** 11MnSi6	≤1000		●
	1.5752 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1400		●
Nitriding steels	**1.8504** 34CrAl6	≤1000		◍
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	≤1400		●
Tool steels	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		◍
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤1400		●
High speed steels	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Spring steels	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Stainless steels, sulphured	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤900		●
austenitic	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitic	**1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤1500		●
Hardened steels	–		≤48 HRC	●
			≤66 HRC	●
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Cast iron	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20)		≤240 HB	◍ ○
	0.6025 EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤350 HB	◍ ○
Spheroidal graphite iron and	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35)		≤240 HB	◍
malleable cast iron	**0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤350 HB	◍
Chilled cast iron	–		≤350 HB	◍
Ti and Ti-alloys	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		●
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
Aluminium and Al-alloys	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		◍
Al wrought alloys	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		◍
Al cast alloys ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		◍
≤ 24 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		◍
Magnesium alloys	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		◍
Copper, low-alloyed	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		◍
Brass, short-chipping	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		◍
long-chipping	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		◍
Bronze, short-chipping	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		◍ ●
	2.0790 CuNi18Zn19Pb	≤850		●
Bronze, long-chipping	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		●
	2.0980 CuAl11Ni, **2.1247** CuBe2	≤1000		●
New cast materials GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)		≤220 HB	◍ ○
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤300 HB	◍ ○
New cast materials ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	≤1000		◍ ○
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1400		◍ ○

Tool holders for drilling depths ≤ 1,5×D Product no. 86682

Product no.	86722	86725	86723	86724
Tool material	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Carbide grade	K/P	K/P	K/P	K
Surface finish	nanoFIRE	AlTiN nano	FIRE	bright
Application	**Steel**	**Stainless steel**	**Cast iron**	**Al and Al alloys**

v_c m/min	Feed column no.
130	6
110	5
130	7
110	6
130	6
125	6
110	5
110	6
90	5
130	7
110	6
70	4
105	5
70	4
60	5
55	4
55	3
50	2

v_c m/min	Feed column no.
55	3
40	3
35	3
25	2
25	2
90	6
40	3
35	2

v_c m/min	Feed column no.
100	6
90	6
120	7
100	6
80	5
80	5
80	5
80	5

v_c m/min	Feed column no.
200	7
180	7
150	7
120	7
180	7
70	6
180	7
120	6
70	6
50	6
45	6
35	5

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Application recommendations for **Multiplex HPC**

- for through holes supporting lands must remain in permanent contact.
- don't apply drilling tool without trial for interrupted cutting (grooves, transverse holes). For interrupted cutting (max. 0.2 x D) it is recommended to reduce the feed rate whenever possible.
- in contrast to conventional indexable inserts, Multiplex HPC tools are also suitable for the drilling of stacked sheets.
- on a lathe (stationary tool) it must be ensured that the tool is accurately centred.
- pre-condition for optimal machining results is a sufficient cooling lubricant supply with soluble or neat oil.
- the tool is only of limited suitability for dry machining or MQL. For MQL application we recommend the use of the conical MQL shank end as well as Hartner MQL components. Please contact our Sales Management.

Drill Ø mm	Feed column no. 1	2	3	4	5	6	7	8	9
	f (mm/rev.)								
10.00	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.400
12.50	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500
16.00	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630
20.00	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.630
25.00	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	0.800
31.50	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000
40.00	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000	1.250

Coolant:
○ air
● oil
◍ soluble oil

All data are approximate values. The actually achievable cutting speeds and feed rates depend on the respective machining conditions.
We recommend suitable drilling trials.

Material group	Material examples, new description (old description in brackets) Figures in bold = material no. to DIN EN	Tensile strength MPa (N/mm²)	Hardness	Coolant
Common structural steels	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2)	≤500		○
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤1000		○
Free-cutting steels	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		○
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤1000		○
Unalloyed heat-treatable steels	**1.0402** C22, **1.1178** C30E (Ck30)	≤700		○
	1.0503 C45, **1.1191** C45E (Ck45)	≤850		○
	1.0601 C60, **1.1221** C60E (Ck60)	≤1000		○
Alloyed heat-treatable steels	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	≤1000		○
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1400		○
Unalloyed case hardened steels	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		○
Alloyed case hardened steels	**1.7276** 10CrMo11, **1.5125** 11MnSi6	≤1000		●
	1.5752 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1400		●
Nitriding steels	**1.8504** 34CrAl6	≤1000		○
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	≤1400		●
Tool steels	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		○
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤1400		●
High speed steels	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Spring steels	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Stainless steels, sulphured	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤900		●
austenitic	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitic	**1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤1500		●
Hardened steels	–		≤48 HRC	●
			≤66 HRC	●
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Cast iron	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20)		≤240 HB	◍ ○
	0.6025 EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤350 HB	◍ ○
Spheroidal graphite iron and	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35)		≤240 HB	◍
malleable cast iron	**0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤350 HB	◍
Chilled cast iron	–		≤350 HB	◍
Ti and Ti-alloys	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		●
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
Aluminium and Al-alloys	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		◍
Al wrought alloys	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		◍
Al cast alloys ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		◍
≤ 24 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		◍
Magnesium alloys	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		◍
Copper, low-alloyed	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		◍
Brass, short-chipping	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		◍
long-chipping	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		◍
Bronze, short-chipping	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		◍ ●
	2.0790 CuNi18Zn19Pb	≤850		●
Bronze, long-chipping	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		●
	2.0980 CuAl11Ni, **2.1247** CuBe2	≤1000		●
New cast materials GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)		≤220 HB	◍ ○
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤300 HB	◍ ○
New cast materials ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	≤1000		◍ ○
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1400		◍ ○

Application recommendations for **Multiplex HPC**

Tool holders for drilling depths ≤ 3×D Product no. 86683

Product no.	86722	86725	86723	86724
Tool material	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Carbide grade	K/P	K/P	K/P	K
Surface finish	nanoFIRE	AlTiN nano	FIRE	bright
Application	**Steel**	**Stainless steel**	**Cast iron**	**Al and Al alloys**

v_c m/min	Feed column no.	v_c m/min	Feed column no.	v_c m/min	Feed column no.	v_c m/min	Feed column no.
130	6						
110	5						
130	7						
110	6						
130	6						
125	6						
110	5						
110	6						
90	5						
130	7						
110	6						
70	4						
105	5						
70	4						
60	5						
55	4						
55	3						
50	2						
		55	3				
		40	3				
		35	3				
		25	2				
		25	2				
				100	6		
				90	6		
				120	7		
				100	6		
		90	6				
		40	3				
		35	2				
						200	7
						180	7
						150	7
						120	7
						180	7
						70	6
						180	7
						120	6
						70	6
						50	6
						45	6
						35	5
				80	5		
				80	5		
				80	5		
				80	5		

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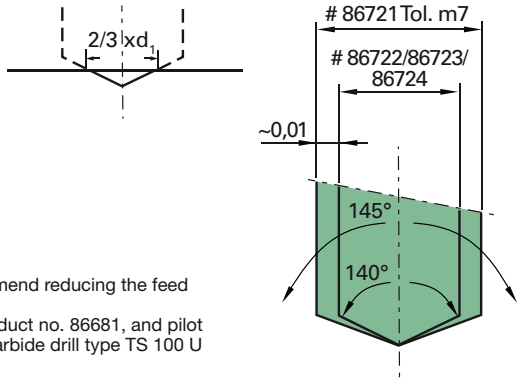
Application recommendations for **Multiplex HPC**



- for through holes supporting lands must remain in permanent contact. In addition, we recommend reducing the feed rate prior to exiting.
- for drilling depths from 5xD we generally recommend centring or pilot drilling with holder, Product no. 86681, and pilot insert, Product no. 86721. Alternatively – depending on the material to be machined – solid carbide drill type TS 100 U or TS 100 VA can be applied.
- for drilling without centring we recommend reducing the feed rate at the start of the hole.
- don't apply drilling tool without trial for interrupted cutting (grooves, transverse holes). For interrupted cutting (max. 0.2 x D) it is recommended to reduce the feed rate whenever possible.
- in contrast to conventional indexable inserts, Multiplex HPC tools are also suitable for the drilling of stacked sheets.
- on a lathe (stationary tool) it must be ensured that the tool is accurately centred.
- pre-condition for optimal machining results is a sufficient cooling lubricant supply with soluble or neat oil.
- the tool is only of limited suitability for dry machining or MQL. For MQL application we recommend the use of the conical MQL shank end as well as Hartner MQL components. Please contact our Sales Management.

Drill Ø mm	Feed column no. 1	2	3	4	5	6	7	8	9
	f (mm/rev.)								
10.00	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.400
12.50	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500
16.00	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630
20.00	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.630
25.00	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	0.800
31.50	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000
40.00	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000	1.250

Coolant:
○ air
● oil
◍ soluble oil

All data are approximate values. The actually achievable cutting speeds and feed rates depend on the respective machining conditions.
We recommend suitable drilling trials.

Material group	Material examples, new description (old description in brackets) Figures in bold = material no. to DIN EN	Tensile strength MPa (N/mm²)	Hardness	Coolant
Common structural steels	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2)	≤500		◍
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤1000		◍
Free-cutting steels	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		◍
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤1000		◍
Unalloyed heat-treatable steels	**1.0402** C22, **1.1178** C30E (Ck30)	≤700		◍
	1.0503 C45, **1.1191** C45E (Ck45)	≤850		◍
	1.0601 C60, **1.1221** C60E (Ck60)	≤1000		◍
Alloyed heat-treatable steels	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	≤1000		◍
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1400		◍
Unalloyed case hardened steels	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		◍
Alloyed case hardened steels	**1.7276** 10CrMo11, **1.5125** 11MnSi6	≤1000		●
	1.5752 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1400		●
Nitriding steels	**1.8504** 34CrAl6	≤1000		◍
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	≤1400		●
Tool steels	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		◍
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤1400		●
High speed steels	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Spring steels	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Stainless steels, sulphured	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤900		●
austenitic	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitic	**1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤1500		●
Hardened steels	–		≤48 HRC	●
			≤66 HRC	●
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Cast iron	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20)		≤240 HB	◍ ○
	0.6025 EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤350 HB	◍ ○
Spheroidal graphite iron and	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35)		≤240 HB	◍
malleable cast iron	**0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤350 HB	◍
Chilled cast iron	–		≤350 HB	◍
Ti and Ti-alloys	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		●
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
Aluminium and Al-alloys	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		◍
Al wrought alloys	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		◍
Al cast alloys ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		◍
≤ 24 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		◍
Magnesium alloys	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		◍
Copper, low-alloyed	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		◍
Brass, short-chipping	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		◍
long-chipping	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		◍
Bronze, short-chipping	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		◍ ●
	2.0790 CuNi18Zn19Pb	≤850		●
Bronze, long-chipping	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		●
	2.0980 CuAl11Ni, **2.1247** CuBe2	≤1000		●
New cast materials GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)		≤220 HB	◍ ○
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤300 HB	◍ ○
New cast materials ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	≤1000		◍ ○
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1400		◍ ○

Tool holders for drilling depths ≤ 5×D Product no. 86684

Product no.	86722	86725	86723	86724
Tool material	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Carbide grade	K/P	K/P	K/P	K
Surface finish	nanoFIRE	AlTiN nano	FIRE	bright
Application	**Steel**	**Stainless steel**	**Cast iron**	**Al and Al alloys**

v_c m/min	Feed column no.
125	**6**
105	**5**
125	**7**
105	**6**
125	**6**
120	**6**
105	**5**
105	**6**
85	**5**
125	**7**
105	**6**
70	**4**
105	**5**
70	**4**
55	**5**
50	**4**
55	**3**
50	**2**

v_c m/min	Feed column no.
55	**3**
40	**3**
35	**3**
25	**2**
25	**2**
90	**6**
40	**3**
35	**2**

v_c m/min	Feed column no.
100	**6**
90	**6**
120	**7**
100	**6**
80	**5**
80	**5**
80	**5**
80	**5**

v_c m/min	Feed column no.
180	**7**
180	**7**
140	**7**
110	**7**
180	**7**
70	**6**
180	**7**
120	**6**
70	**6**
50	**6**
45	**6**
35	**5**

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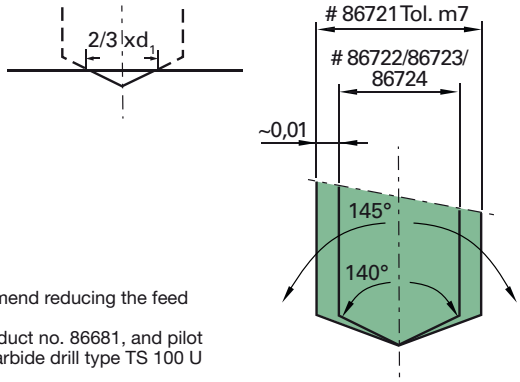
Application recommendations for **Multiplex HPC**



- for through holes supporting lands must remain in permanent contact. In addition, we recommend reducing the feed rate prior to exiting.
- for drilling depths from 5xD we generally recommend centring or pilot drilling with holder, Product no. 86681, and pilot insert, Product no. 86721. Alternatively – depending on the material to be machined – solid carbide drill type TS 100 U or TS 100 VA can be applied.
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- don't apply drilling tool without trial for interrupted cutting (grooves, transverse holes). For interrupted cutting (max. 0.2 x D) it is recommended to reduce the feed rate whenever possible.
- in contrast to conventional indexable inserts, Multiplex HPC tools are also suitable for the drilling of stacked sheets.
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- pre-condition for optimal machining results is a sufficient cooling lubricant supply with soluble or neat oil.
- the tool is only of limited suitability for dry machining or MQL. For MQL application we recommend the use of the conical MQL shank end as well as Hartner MQL components. Please contact our Sales Management.

Drill Ø mm	Feed column no. 1	2	3	4	5	6	7	8	9
	f (mm/rev.)								
10.00	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.400
12.50	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500
16.00	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630
20.00	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.630
25.00	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	0.800
31.50	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000
40.00	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000	1.250

Coolant:
○ air
● oil
◍ soluble oil

All data are approximate values. The actually achievable cutting speeds and feed rates depend on the respective machining conditions.
We recommend suitable drilling trials.

Material group	Material examples, new description (old description in brackets) Figures in bold = material no. to DIN EN	Tensile strength MPa (N/mm²)	Hardness	Coolant
Common structural steels	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2)	≤500		◍
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤1000		◍
Free-cutting steels	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		◍
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤1000		◍
Unalloyed heat-treatable steels	**1.0402** C22, **1.1178** C30E (Ck30)	≤700		◍
	1.0503 C45, **1.1191** C45E (Ck45)	≤850		◍
	1.0601 C60, **1.1221** C60E (Ck60)	≤1000		◍
Alloyed heat-treatable steels	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	≤1000		◍
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1400		◍
Unalloyed case hardened steels	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		◍
Alloyed case hardened steels	**1.7276** 10CrMo11, **1.5125** 11MnSi6	≤1000		●
	1.5752 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1400		●
Nitriding steels	**1.8504** 34CrAl6	≤1000		◍
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	≤1400		●
Tool steels	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		◍
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤1400		●
High speed steels	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Spring steels	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Stainless steels, sulphured	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤900		●
austenitic	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitic	**1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤1500		●
Hardened steels	–		≤48 HRC	●
			≤66 HRC	●
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Cast iron	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20)		≤240 HB	◍ ○
	0.6025 EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤350 HB	◍ ○
Spheroidal graphite iron and	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35)		≤240 HB	◍
malleable cast iron	**0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤350 HB	◍
Chilled cast iron	–		≤350 HB	◍
Ti and Ti-alloys	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		●
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
Aluminium and Al-alloys	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		◍
Al wrought alloys	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		◍
Al cast alloys ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		◍
≤ 24 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		◍
Magnesium alloys	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		◍
Copper, low-alloyed	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		◍
Brass, short-chipping	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		◍
long-chipping	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		◍
Bronze, short-chipping	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		◍ ●
	2.0790 CuNi18Zn19Pb	≤850		●
Bronze, long-chipping	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		●
	2.0980 CuAl11Ni, **2.1247** CuBe2	≤1000		●
New cast materials GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)		≤220 HB	◍ ○
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤300 HB	◍ ○
New cast materials ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	≤1000		◍ ○
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1400		◍ ○

Tool holders for drilling depths ≤ 7×D Product no. 86685

Product no.	86722	86725	86723	86724
Tool material	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Carbide grade	K/P	K/P	K/P	K
Surface finish	nanoFIRE	AlTiN nano	FIRE	bright
Application	**Steel**	**Stainless steel**	**Cast iron**	**Al and Al alloys**

v_c m/min	Feed column no.
120	5
105	4
120	6
105	5
120	5
110	5
100	4
100	5
85	4
120	6
100	5
70	4
105	4
70	3
55	4
50	3
55	2
50	2

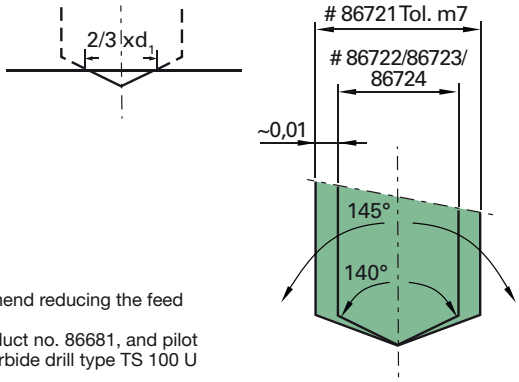
v_c m/min	Feed column no.
55	2
40	2
35	2
25	1
25	1
70	6
40	2
35	1
60	5
60	5
60	5
60	5

v_c m/min	Feed column no.
80	6
70	6
100	7
80	6

v_c m/min	Feed column no.
180	6
180	6
140	6
110	6
180	6
70	5
180	6
120	5
70	5
50	5
45	5
35	4

HARTNER

Application recommendations for **Multiplex HPC**



- for through holes supporting lands must remain in permanent contact. In addition, we recommend reducing the feed rate prior to exiting.
- for drilling depths from 5xD we generally recommend centring or pilot drilling with holder, Product no. 86681, and pilot insert, Product no. 86721. Alternatively – depending on the material to be machined – solid carbide drill type TS 100 U or TS 100 VA can be applied.
- for drilling without centring we recommend reducing the feed rate at the start of the hole.
- don't apply drilling tool without trial for interrupted cutting (grooves, transverse holes). For interrupted cutting (max. 0.2 x D) it is recommended to reduce the feed rate whenever possible.
- in contrast to conventional indexable inserts, Multiplex HPC tools are also suitable for the drilling of stacked sheets.
- on a lathe (stationary tool) it must be ensured that the tool is accurately centred.
- pre-condition for optimal machining results is a sufficient cooling lubricant supply with soluble or neat oil.
- the tool is only of limited suitability for dry machining or MQL. For MQL application we recommend the use of the conical MQL shank end as well as Hartner MQL components. Please contact our Sales Management.

Drill Ø mm	Feed column no. 1	2	3	4	5	6	7	8	9
	f (mm/rev.)								
10.00	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.400
12.50	0.080	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500
16.00	0.100	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630
20.00	0.125	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.630
25.00	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	0.800
31.50	0.160	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000
40.00	0.200	0.250	0.315	0.400	0.500	0.630	0.800	1.000	1.250

Coolant:
○ air
● oil
◍ soluble oil

All data are approximate values. The actually achievable cutting speeds and feed rates depend on the respective machining conditions.
We recommend suitable drilling trials.

Material group	Material examples, new description (old description in brackets) Figures in bold = material no. to DIN EN	Tensile strength MPa (N/mm²)	Hardness	Coolant
Common structural steels	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2)	≤500		◍
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** P500NH (WStE500)	≤1000		◍
Free-cutting steels	**1.0718** 11SMnPb30 (9SMnPb28), **1.0736** 11SMn37 (9SMn36)	≤850		◍
	1.0727 46S20 (45S20), **1.0728** (60S20), **1.0757** 46SPb20 (45SPb20)	≤1000		◍
Unalloyed heat-treatable steels	**1.0402** C22, **1.1178** C30E (Ck30)	≤700		◍
	1.0503 C45, **1.1191** C45E (Ck45)	≤850		◍
	1.0601 C60, **1.1221** C60E (Ck60)	≤1000		◍
Alloyed heat-treatable steels	**1.5131** 50MnSi4, **1.7003** 38Cr2, **1.7030** 28Cr4	≤1000		◍
	1.5710 36NiCr6, **1.7035** 41Cr4, **1.7225** 42CrMo4	≤1400		◍
Unalloyed case hardened steels	**1.0301** (C10), **1.1121** C10E (Ck10)	≤850		◍
Alloyed case hardened steels	**1.7276** 10CrMo11, **1.5125** 11MnSi6	≤1000		●
	1.5752 15NiCr13, **1.7131** 16MnCr5, **1.7264** 20CrMo5	≤1400		●
Nitriding steels	**1.8504** 34CrAl6	≤1000		◍
	1.8519 31CrMoV9, **1.8550** 34CrAlNi7	≤1400		●
Tool steels	**1.1750** C75W, **1.2067** 102Cr6, **1.2307** 29CrMoV9	≤850		◍
	1.2080 X210Cr12, **1.2083** X42Cr13, **1.2419** 105WCr6, **1.2767** X45NiCrMo4	≤1400		●
High speed steels	**1.3243** S 6-5-2-5, **1.3343** S 6-5-2, **1.3344** S 6-5-3	≤1400		●
Spring steels	**1.5026** 55Si7, **1.7176** 55Cr3, **1.8159** 51CrV4 (51CrV4)		≤350 HB	●
Stainless steels, sulphured	**1.4005** X12CrS13, **1.4104** X14CrMoS17, **1.4105** X6CrMoS17, **1.4305** X8CrNiS18-9	≤900		●
austenitic	**1.4301** X5CrNi18-10 (V2A), **1.4541** X6CrNiTi18-10, **1.4571** X6CrNiMoTi 17-12-2 (V4A)	≤1100		●
martensitic	**1.4057** X20CrNi172 (X17CrNi16-2), **1.4122** X39CrMo17-1, **1.4521** X2CrMoTi18-2	≤1500		●
Hardened steels	–		≤48 HRC	●
			≤66 HRC	●
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
Cast iron	**0.6010** EN-GJL-100 (GG10), **0.6020** EN-GJL-200 (GG20)		≤240 HB	◍ ○
	0.6025 EN-GJL-250 (GG25), **0.6035** EN-GJL-350 (GG35)		≤350 HB	◍ ○
Spheroidal graphite iron and	**0.7050** EN-GJS-500-7 (GGG50), **0.8035** EN-GJMW-350-4 (GTW35)		≤240 HB	◍
malleable cast iron	**0.7070** EN-GJS-700-2 (GGG70), **0.8170** EN-GJMB-700-2 (GTS70)		≤350 HB	◍
Chilled cast iron	–		≤350 HB	◍
Ti and Ti-alloys	**3.7024** Ti99,5, **3.7114** TiAl5Sn2,5, **3.7124** TiCu2	≤850		●
	3.7154 TiAl6Zr5, **3.7165** TiAl6V4, **3.7184** TiAl4Mo4Sn2,5, - TiAl8Mo1V1	≤1400		●
Aluminium and Al-alloys	**3.0255** Al99,5, **3.2315** AlMgSi1, **3.3515** AlMg1	≤400		◍
Al wrought alloys	**3.0615** AlMgSiPb, **3.1325** AlCuMg1, **3.3245** AlMg3Si, **3.4365** AlZnMgCu1,5	≤650		◍
Al cast alloys ≤ 10 % Si	**3.2131** G-AlSi5Cu1, **3.2153** G-AlSi7Cu3, **3.2573** G-AlSi9	≤600		◍
≤ 24 % Si	**3.2581** G-AlSi12, **3.2583** G-AlSi12Cu, - G-AlSi12CuNiMg	≤600		◍
Magnesium alloys	**3.5200** MgMn2, **3.5812.05** G-MgAl8Zn1, **3.5612.05** G-MgAl6Zn1	≤400		◍
Copper, low-alloyed	**2.0070** SE-Cu, **2.1020** CuSn6, **2.1096** G-CuSn5ZnPb	≤500		◍
Brass, short-chipping	**2.0380** CuZn39Pb2, **2.0401** CuZn39Pb3, **2.0410** CuZn43Pb2	≤600		◍
long-chipping	**2.0250** CuZn20, **2.0280** CuZn33, **2.0332** CuZn37Pb0,5	≤600		◍
Bronze, short-chipping	**2.1090** CuSn7ZnPb, **2.1170** CuPb5Sn5, **2.1176** CuPb10Sn	≤600		◍ ●
	2.0790 CuNi18Zn19Pb	≤850		●
Bronze, long-chipping	**2.0916** CuAl5, **2.0960** CuAl9Mn, **2.1050** CuSn10	≤850		●
	2.0980 CuAl11Ni, **2.1247** CuBe2	≤1000		●
New cast materials GGV	**EN-GJV250** (GGV25), **EN-GJV350** (GGV35)		≤220 HB	◍ ○
	EN-GJV400 (GGV40), **EN-GJV500** (GGV50), SiMo 6		≤300 HB	◍ ○
New cast materials ADI	**EN-GJS-800-8** (ADI800), **EN-GJS-1000-5** (ADI1000)	≤1000		◍ ○
	EN-GJS-1200-2 (ADI1200), **EN-GJS-1400-1** (ADI1400)	≤1400		◍ ○

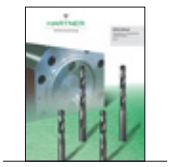
Tool holders for drilling depths ≤ 10×D Product no. 86686

Product no.	86722	86725	86723	86724
Tool material	Solid carbide	Solid carbide	Solid carbide	Solid carbide
Carbide grade	K/P	K/P	K/P	K
Surface finish	nanoFIRE	AlTiN nano	FIRE	bright
Application	**Steel**	**Stainless steel**	**Cast iron**	**Al and Al alloys**

v_c m/min	Feed column no.	v_c m/min	Feed column no.	v_c m/min	Feed column no.	v_c m/min	Feed column no.
100	5						
95	4						
100	6						
95	5						
100	5						
95	5						
90	4						
90	5						
85	4						
100	6						
90	5						
70	4						
95	4						
70	3						
55	4						
50	3						
55	2						
50	2						
		55	2				
		40	2				
		35	2				
		25	1				
		25	1				
				80	6		
				70	6		
				100	7		
				80	6		
		70	6				
		40	2				
		35	1				
						150	6
						150	6
						130	6
						105	6
						150	6
						70	5
						150	6
						110	5
						70	5
						50	5
						45	5
						35	4
				60	5		
				60	5		
				60	5		
				60	5		

Our programme:

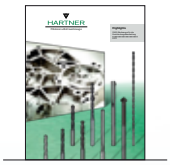
FU 500/FN500



INOX Drills

Micro Precision Drills

TS-Drills



Highlights

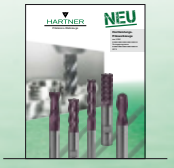
Gun Drills

Multiplex

Multiplex HPC

Standard Range

TM Vending Machines



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