EN

HARTNER

Precision Cutting Tools

MULTIPLEX

INTERCHANGEABLE INSERT DRILLING SYSTEM
WITH INTERNAL COOLING

+ Edition 2016
+ with new inserts

P	M	K	N	S	H	Standard	Type	Tool material	Surface	Cutting direction	Internal cooling	Drilling depth	d1/mm	Article no.	Progr. page

Multiplex holder with straight shank

Company std.	Ni	right-hand	with	<3xD	9.500 - 54.000	**86612**	7

Company std.	Ni	right-hand	with	<5xD	9.500 - 54.000	**86622**	8

Company std.	Ni	right-hand	with	<7xD	9.500 - 54.000	**86624**	9

Company std.	Ni	right-hand	with		13.157 - 89.845	**86628**	10

Multiplex holder with morse taper shank

Company std.	Ni	right-hand	with		9.500 - 22.000	**86630**	13

Company std.	Ni	right-hand	with		24.000 - 89.000	**86670**	14

Company std.	Ni	right-hand	with		9.500 - 22.000	**86650**	15

Company std.	Ni	right-hand	with		24.000 - 89.000	**86680**	16

Company std.	Ni	right-hand	with		34.393 - 89.844	**86678**	17

Interchangeable inserts

P	M	K	N	S	H	Standard	Type	Tool material	Surface	Cutting direction	Internal cooling	Drilling depth	d1/mm	Article no.	Progr. page
●	○	●	○			Company std.		HSS-E-PM	T	right-hand			10.000 - 25.000	**86602**	20
○	●	○	●			Company std.		HSS-E	T	right-hand			25.000 - 102.000	**86605**	21
●	○	●	○			Company std.		HSS-E-PM	F	right-hand			10.000 - 25.000	**86608**	22
●	○	●	○			Company std.		HSS-E-PM	A	right-hand			25.000 - 210.000	**86609**	23
●	○	●	○			Company std.		HSS-E-PM	A	right-hand			10.000 - 65.000	**86611**	24
●	○	●	○			Company std.		Solid carbide	T	right-hand			10.000 - 35.000	**86708**	26
●	○	●	○			Company std.		Solid carbide	F	right-hand			10.000 - 35.000	**86702**	27
●	○	●	○			Company std.		Solid carbide	T	right-hand			10.000 - 35.000	**86709**	28
●	○	●	○			Company std.		Solid carbide	F	right-hand			10.000 - 35.000	**86701**	29
			●			Company std.		Solid carbide	○	right-hand			10.000 - 65.000	**86711**	30

P	M	K	N	S	H	Standard	Type	Tool material	Surface	Cutting direction	Internal cooling	Drilling depth	d1/mm	Article no.	Progr. page

Accessories

		Company std.							31.750 - 63.500	**86690**	32

		Company std.			●				13.160 - 20.960	**82571**	32

		Company std.							9.000 - 13.000	**82578**	33

		Company std.							2.000 - 5.000	**86807**	33

		Company std.							6.001 - 25.001	**86842**	34

P	M	K	N	S	H	Standard	Type	Tool material	Surface	Cutting direction	Internal cooling	Drilling depth	d1/mm	Article no.	Progr. page

Coolant supply chuck for Multiplex

						Company std.			Ⓑ					**86691**	35

						Company std.			Ⓑ					**86692**	36

						Company std.			Ⓑ					**86693**	37

						Company std.			Ⓑ					**86694**	38

Reduction bushes for coolant supply chucks

						Company std.			Ⓑ					**86699**	39

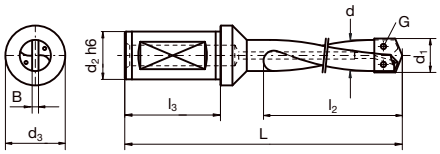
MULTIPLEX HOLDER WITH STRAIGHT SHANK

HARTNER

Multiplex holder with straight shank

Article no. 86612

nickel-plated • Holder for interchangeable inserts. The straight shank holder possesses internal coolant delivery. Wide flutes ensure optimal chip evacuation. Simple replacement of inserts via clamping screws. Adjustment of interchangeable inserts not necessary. The interchangeable inserted drill machines solid material. This drill is not suitable for drilling pre-cast or pre-drilled holes. Clamping screws art.-no. 86807 included.



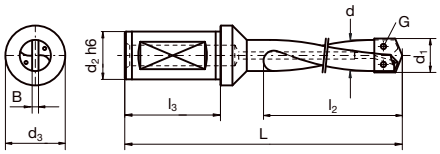
d1 mm	d mm	d2 mm	d3 mm	L mm	l2 mm	l3 mm	B mm	G	Code no.
10,00-11,7	9.500	20.000	25.000	108.000	50.000	40.000	2.500	86807 2.000	**9.500**
11.71-13.4	11.500	20.000	25.000	109.000	53.000	40.000	2.500	86807 2.000	**11.500**
13.41-16.4	13.000	20.000	25.000	116.000	60.000	40.000	3.500	86807 2.500	**13.000**
16.41-18.9	16.000	20.000	25.000	118.000	65.000	40.000	3.500	86807 2.501	**16.000**
18.91-22.4	18.500	20.000	25.000	124.000	73.000	40.000	4.000	86807 3.000	**18.500**
22.41-25.4	22.000	20.000	25.000	127.000	78.000	40.000	4.000	86807 3.001	**22.000**
25.41-29.0	24.000	32.000	40.000	178.000	105.000	60.000	5.000	86807 3.500	**24.000**
29.01-35.0	28.000	32.000	40.000	178.000	108.000	60.000	5.000	86807 3.500	**28.000**
35.01-45.0	34.000	32.000	40.000	223.000	152.000	60.000	7.000	86807 4.001	**34.000**
45.01-55.0	44.000	40.000	50.000	233.000	152.000	70.000	7.000	86807 4.001	**44.000**
55.01-65.0	54.000	40.000		233.000	152.000	70.000	7.000	86807 4.001	**54.000**

HARTNER

Multiplex holder with straight shank

Article no. 86622

nickel-plated • Holder for interchangeable inserts. The straight shank holder possesses internal coolant delivery. Wide flutes ensure optimal chip evacuation. Simple replacement of inserts via clamping screws. Adjustment of interchangeable inserts not necessary. The interchangeable inserted drill machines solid material. This drill is not suitable for drilling pre-cast or pre-drilled holes. Clamping screws art.-no. 86807 included.



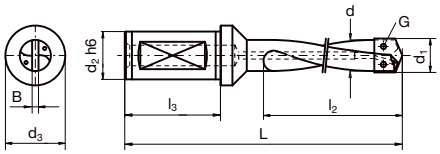
d1 mm	d mm	d2 mm	d3 mm	L mm	l2 mm	l3 mm	B mm	G	Code no.
10,00-11,7	9.500	20.000	25.000	140.000	83.000	40.000	2.500	86807 2.000	**9.500**
11.71-13.4	11.500	20.000	25.000	150.000	94.000	40.000	2.500	86807 2.000	**11.500**
13.41-16.4	13.000	20.000	25.000	160.000	104.000	40.000	3.500	86807 2.500	**13.000**
16.41-18.9	16.000	20.000	25.000	170.000	117.000	40.000	3.500	86807 2.501	**16.000**
18.91-22.4	18.500	20.000	25.000	180.000	129.000	40.000	4.000	86807 3.000	**18.500**
22.41-25.4	22.000	20.000	25.000	180.000	131.000	40.000	4.000	86807 3.001	**22.000**
25.41-29.0	24.000	32.000	40.000	240.000	166.000	60.000	5.000	86807 3.500	**24.000**
29.01-35.0	28.000	32.000	40.000	240.000	170.000	60.000	5.000	86807 3.500	**28.000**
35.01-45.0	34.000	32.000	40.000	280.000	210.000	60.000	7.000	86807 4.001	**34.000**
45.01-55.0	44.000	40.000	50.000	290.000	210.000	70.000	7.000	86807 4.001	**44.000**
55.01-65.0	54.000	40.000		290.000	210.000	70.000	7.000	86807 4.001	**54.000**

HARTNER

Multiplex holder with straight shank

Article no. 86624

nickel-plated • Holder for interchangeable inserts. The straight shank holder possesses internal coolant delivery. Wide flutes ensure optimal chip evacuation. Simple replacement of inserts via clamping screws. Adjustment of interchangeable inserts not necessary. The interchangeable inserted drill machines solid material. This drill is not suitable for drilling pre-cast or pre-drilled holes. Clamping screws art.-no. 86807 included.



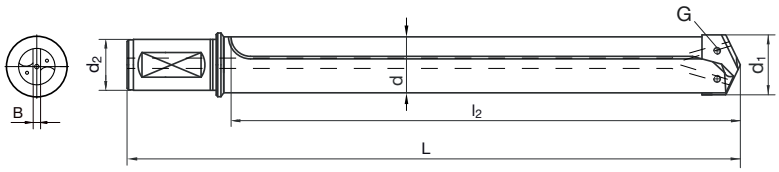
d1 mm	d mm	d2 mm	d3 mm	L mm	l2 mm	l3 mm	B mm	G	Code no.
10,00-11,7	9.500	20.000	25.000	180.000	123.000	40.000	2.500	86807 2.000	**9.500**
11.71-13.4	11.500	20.000	25.000	190.000	134.000	40.000	2.500	86807 2.000	**11.500**
13.41-16.4	13.000	20.000	25.000	210.000	155.000	40.000	3.500	86807 2.500	**13.000**
16.41-18.9	16.000	20.000	25.000	220.000	168.000	40.000	3.500	86807 2.501	**16.000**
18.91-22.4	18.500	20.000	25.000	250.000	199.000	40.000	4.000	86807 3.000	**18.500**
22.41-25.4	22.000	20.000	25.000	250.000	201.000	40.000	4.000	86807 3.001	**22.000**
25.41-29.0	24.000	32.000	40.000	320.000	246.000	60.000	5.000	86807 3.500	**24.000**
29.01-35.0	28.000	32.000	40.000	320.000	250.000	60.000	5.000	86807 3.500	**28.000**
35.01-45.0	34.000	32.000	40.000	380.000	310.000	60.000	7.000	86807 4.001	**34.000**
45.01-55.0	44.000	40.000	50.000	390.000	310.000	70.000	7.000	86807 4.001	**44.000**
55.01-65.0	54.000	40.000		390.000	310.000	70.000	7.000	86807 4.001	**54.000**

HARTNER

Multiplex holder with straight shank

Article no. 86628

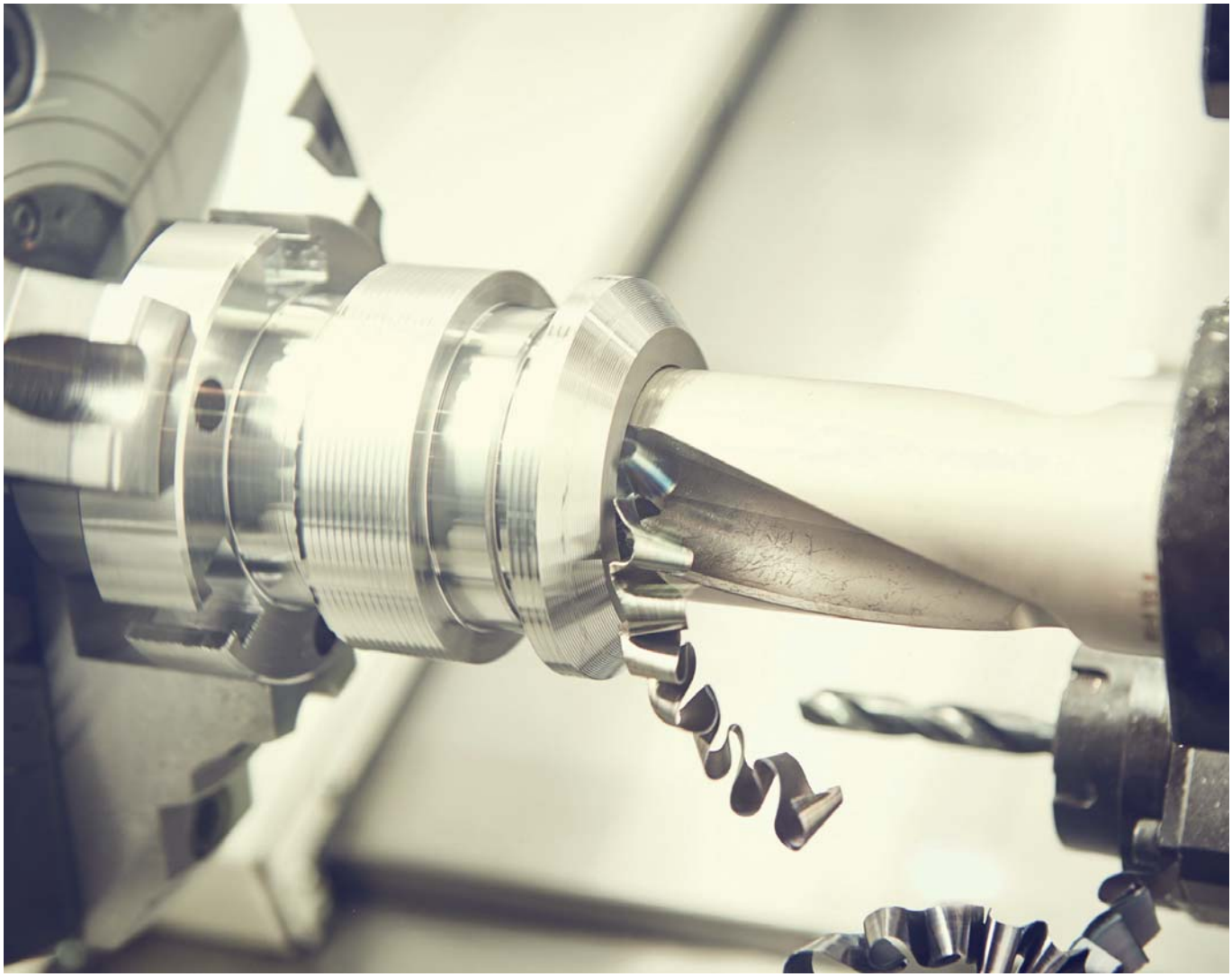
nickel-plated • Holder for interchangeable inserts. The extra length holder with straight shank possesses an internal coolant delivery. Wide flutes ensure optimal chip evacuation. Simple replacement of inserts via clamping screws. Adjustment of interchangeable inserts not necessary. The interchangeable inserted drill machines solid material. This drill is not suitable for drilling pre-cast or pre-drilled holes. Clamping screws art.-no. 86807 included

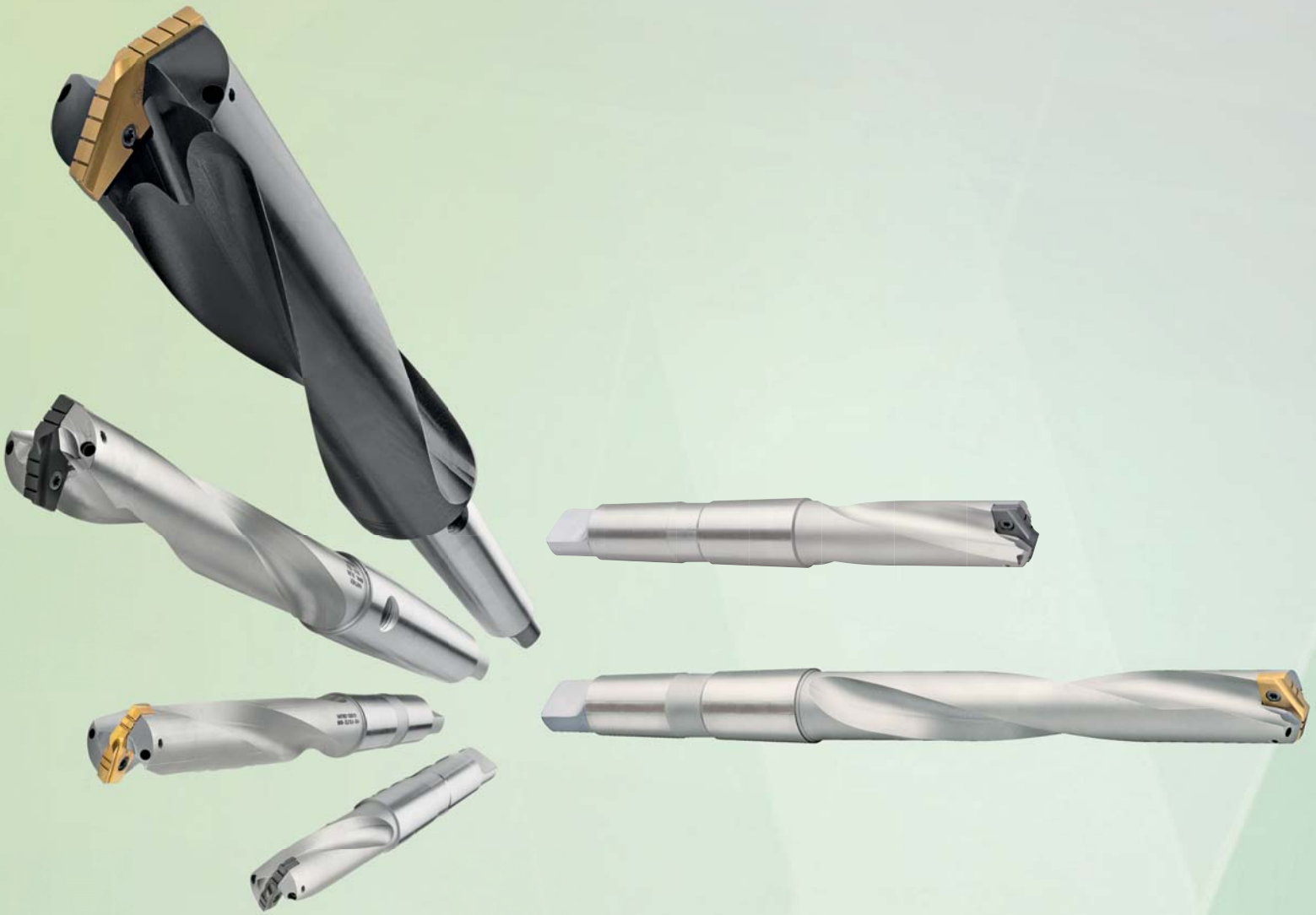


d1	d	d2	L	l2	B	G	**Code no.**
mm	mm	mm	mm	mm	mm		
13.41-16.4	13.000	20.000	198.500	156.500	3.500	86807 2.500	**13.157**
13.41-16.4	13.000	20.000	238.500	196.500	3.500	86807 2.500	**13.197**
13.41-16.4	13.000	20.000	318.500	276.500	3.500	86807 2.500	**13.277**
15.00-16.4	14.500	20.000	95.000	52.000	3.500	86807 2.500	**14.052**
15.00-16.4	14.500	20.000	125.000	82.000	3.500	86807 2.500	**14.082**
15.00-16.4	14.500	20.000	178.500	136.500	3.500	86807 2.500	**14.137**
15.00-16.4	14.500	20.000	198.500	156.500	3.500	86807 2.500	**14.157**
15.00-16.4	14.500	20.000	238.500	196.500	3.500	86807 2.500	**14.197**
15.00-16.4	14.500	20.000	268.500	226.500	3.500	86807 2.500	**14.227**
15.00-16.4	14.500	20.000	398.500	356.500	3.500	86807 2.500	**14.357**
16.41-18.9	16.000	20.000	260.500	218.500	3.500	86807 2.500	**16.219**
16.41-18.9	16.000	20.000	295.500	253.500	3.500	86807 2.500	**16.254**
16.41-18.9	16.000	20.000	410.500	368.500	3.500	86807 2.501	**16.369**
18.91-22.4	18.500	20.000	304.000	262.000	4.000	86807 3.000	**18.262**
18.91-22.4	18.500	20.000	344.000	302.000	4.000	86807 3.000	**18.302**
18.91-22.4	18.500	20.000	464.000	422.000	4.000	86807 3.000	**18.422**
22.41-25.4	22.000	20.000	285.000	243.000	4.000	86807 3.001	**22.243**
22.41-25.4	22.000	20.000	345.000	303.000	4.000	86807 3.001	**22.303**
22.41-25.4	22.000	20.000	385.000	343.000	4.000	86807 3.001	**22.343**
22.41-25.4	22.000	20.000	535.000	493.000	4.000	86807 3.001	**22.493**
25.41-29.0	23.000	32.000	138.000	63.000	5.000	86807 3.500	**23.063**
25.41-29.0	23.000	32.000	173.000	98.000	5.000	86807 3.500	**23.098**
25.41-29.0	23.000	32.000	225.000	150.000	5.000	86807 3.500	**23.150**
25.41-29.0	23.000	32.000	273.000	198.000	5.000	86807 3.500	**23.198**
25.41-29.0	23.000	32.000	343.000	268.000	5.000	86807 3.500	**23.268**
25.41-29.0	23.000	32.000	433.000	358.000	5.000	86807 3.500	**23.358**
25.41-29.0	23.000	32.000	503.000	428.000	5.000	86807 3.500	**23.428**
25.41-29.0	23.000	32.000	683.000	608.000	5.000	86807 3.500	**23.608**
29.01-35.0	28.000	32.000	393.000	321.500	5.000	86807 3.500	**28.322**
29.01-35.0	28.000	32.000	473.000	401.500	5.000	86807 3.500	**28.402**
29.01-35.0	28.000	32.000	553.000	481.500	5.000	86807 3.500	**28.482**
29.01-35.0	28.000	32.000	763.000	691.500	5.000	86807 3.500	**28.692**
33.20-36.0	33.000	32.000	148.000	80.500	5.000	86807 3.500	**33.081**
33.20-36.0	33.000	32.000	173.000	105.500	5.000	86807 3.500	**33.106**
33.20-36.0	33.000	32.000	223.000	155.500	5.000	86807 3.500	**33.156**
33.20-36.0	33.000	32.000	273.000	205.500	5.000	86807 3.500	**33.206**
33.20-36.0	33.000	32.000	393.000	325.500	5.000	86807 3.500	**33.326**
33.20-36.0	33.000	32.000	503.000	435.500	5.000	86807 3.500	**33.436**
33.20-36.0	33.000	32.000	603.000	535.500	5.000	86807 3.500	**33.536**
33.20-36.0	33.000	32.000	823.000	755.500	5.000	86807 3.500	**33.756**
35.01-45.0	34.000	32.000	457.000	388.000	7.000	86807 4.001	**34.388**
35.01-45.0	34.000	32.000	607.000	538.000	7.000	86807 4.001	**34.538**

Multiplex holder with straight shank

d1 mm	d mm	d2 mm	L mm	l2 mm	B mm	G	Code no.
35.01-45.0	34.000	32.000	907.000	838.000	7.000	86807 4.001	**34.838**
45.01-55.0	44.000	40.000	467.000	394.000	7.000	86807 4.001	**44.394**
45.01-55.0	44.000	40.000	617.000	544.000	7.000	86807 4.001	**44.544**
45.01-55.0	44.000	40.000	917.000	844.000	7.000	86807 4.001	**44.844**
55.01-65.0	54.000	40.000	467.000	393.000	7.000	86807 4.001	**54.393**
55.01-65.0	54.000	40.000	617.000	543.000	7.000	86807 4.001	**54.543**
55.01-65.0	54.000	40.000	917.000	843.000	7.000	86807 4.001	**54.843**
65.01-78.0	63.000	40.000	230.000	155.000	9.000	86807 5.000	**63.155**
65.01-78.0	63.000	40.000	340.000	265.000	9.000	86807 5.000	**63.265**
65.01-78.0	63.000	40.000	470.000	395.000	9.000	86807 5.000	**63.395**
65.01-78.0	63.000	40.000	620.000	545.000	9.000	86807 5.000	**63.545**
65.01-78.0	63.000	40.000	920.000	845.000	9.000	86807 5.000	**63.845**
78.01-90.0	77.000	50.000	240.000	155.000	9.000	86807 5.000	**77.155**
78.01-90.0	77.000	50.000	350.000	265.000	9.000	86807 5.000	**77.265**
78.01-90.0	77.000	50.000	480.000	395.000	9.000	86807 5.000	**77.395**
78.01-90.0	77.000	50.000	630.000	545.000	9.000	86807 5.000	**77.545**
78.01-90.0	77.000	50.000	930.000	845.000	9.000	86807 5.000	**77.845**
90.01-102.0	89.000	50.000	240.000	155.000	9.000	86807 5.000	**89.155**
90.01-102.0	89.000	50.000	350.000	265.000	9.000	86807 5.000	**89.265**
90.01-102.0	89.000	50.000	480.000	395.000	9.000	86807 5.000	**89.395**
90.01-102.0	89.000	50.000	630.000	545.000	9.000	86807 5.000	**89.545**
90.01-102.0	89.000	50.000	930.000	845.000	9.000	86807 5.000	**89.845**





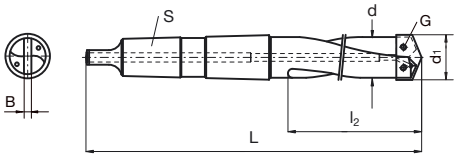
MULTIPLEX HOLDER WITH MORSE TAPER SHANK

HARTNER

Multiplex holder with morse taper shank

Article no. 86630

nickel-plated • Short design holder for interchangeable inserts. The taper shank holder possesses internal coolant delivery. Wide flutes ensure optimal chip evacuation. Simple replacement of inserts via clamping screws. Adjustment of interchangeable inserts not necessary. The interchangeable inserted drill machines solid material. This drill is not suitable for drilling pre-cast or pre-drilled holes.
Coolant delivery: axial (radial on request)
Clamping screws art.-no. 86807 included



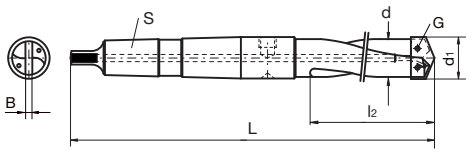
d1 mm	d mm	S	L mm	l2 mm	B mm	G	Code no.
10,00-11,7	9.500	MK-2	139.000	56.000	2.500	86807 2.000	**9.500**
11.71-13.4	11.500	MK-2	141.000	58.000	2.500	86807 2.000	**11.500**
13.41-16.4	13.000	MK-2	148.000	63.000	3.500	86807 2.500	**13.000**
16.41-18.9	16.000	MK-2	150.000	67.000	3.500	86807 2.501	**16.000**
18.91-22.4	18.500	MK-3	178.000	76.000	4.000	86807 3.000	**18.500**
22.41-25.4	22.000	MK-3	181.000	80.000	4.000	86807 3.001	**22.000**

HARTNER

Multiplex holder with morse taper shank

Article no. 86670

≤ Ø 28 mm: nickel-plated, > Ø 28 mm: burnished • Short design holder for interchangeable inserts with ring face for coolant delivery ring. The taper shank holder possesses internal coolant delivery. Wide flutes ensure optimal chip evacuation. Simple replacement of inserts via clamping screws. Adjustment of interchangeable inserts not necessary. The interchangeable inserted drill machines solid material. This drill is not suitable for drilling pre-cast or pre-drilled holes.
Coolant delivery: radial (axial on request)
From holder-Ø 63.0 mm: straight-fluted
Shank size MK 5: with cross-key slot
Clamping screws art.-no. 86807 included



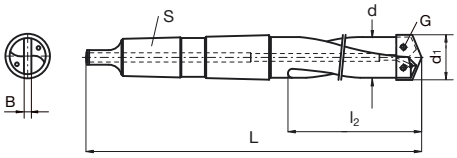
d1 mm	d mm	S	L mm	l2 mm	B mm	G	Code no.
25,01-29,0	24.000	MK-4	279.000	108.000	5.000	86807 3.500	**24.000**
29.01-35.0	28.000	MK-4	279.000	108.000	5.000	86807 3.500	**28.000**
35.01-45.0	34.000	MK-4	324.000	152.000	7.000	86807 4.001	**34.000**
45.01-55.0	44.000	MK-4	324.000	152.000	7.000	86807 4.001	**44.000**
55.01-65.0	54.000	MK-4	324.000	152.000	7.000	86807 4.001	**54.000**
65.01-78.0	63.000	MK-5	436.000	216.000	9.000	86807 5.000	**63.000**
78.01-90.0	77.000	MK-5	436.000	216.000	9.000	86807 5.000	**77.000**
90.01-102.0	89.000	MK-5	436.000	216.000	9.000	86807 5.000	**89.000**

HARTNER

Multiplex holder with morse taper shank

Article no. 86650

nickel-plated • Long design holder for interchangeable inserts. The taper shank holder possesses internal coolant delivery. Wide flutes ensure optimal chip evacuation. Simple replacement of inserts via clamping screws. Adjustment of interchangeable inserts not necessary. The interchangeable inserted drill machines solid material. This drill is not suitable for drilling pre-cast or pre-drilled holes.
Coolant delivery: axial (radial on request)
Clamping screws art.-no. 86807 included



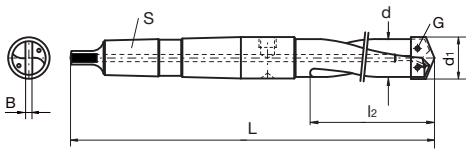
d1 mm	d mm	S	L mm	l2 mm	B mm	G	Code no.
10,00-11,7	9.500	MK-2	186.000	103.000	2.500	86807 2.000	**9.500**
11.71-13.4	11.500	MK-2	191.000	108.000	2.500	86807 2.000	**11.500**
13.41-16.4	13.000	MK-2	210.000	125.000	3.500	86807 2.500	**13.000**
16.41-18.9	16.000	MK-2	218.000	135.000	3.500	86807 2.501	**16.000**
18.91-22.4	18.500	MK-3	258.000	156.000	4.000	86807 3.000	**18.500**
22.41-25.4	22.000	MK-3	266.000	166.000	4.000	86807 3.001	**22.000**

HARTNER

Multiplex holder with morse taper shank

Article no. 86680

≤ Ø 28 mm: nickel-plated, > Ø 28 mm: burnished • Long design holder for interchangeable inserts with ring face for coolant delivery ring. The taper shank holder possesses internal coolant delivery. Wide flutes ensure optimal chip evacuation. Simple replacement of inserts via clamping screws. Adjustment of interchangeable inserts not necessary. The interchangeable inserted drill machines solid material. This drill is not suitable for drilling pre-cast or pre-drilled holes.
Coolant delivery: radial (axial on request)
From holder-Ø 63.0 mm: straight-fluted
Shank size MK 5: with cross-key slot
Clamping screws art.-no. 86807 included



d1 mm	d mm	S	L mm	l2 mm	B mm	G	Code no.
25,01-29,0	24.000	MK-4	379.000	208.000	5.000	86807 3.500	**24.000**
29.01-35.0	28.000	MK-4	379.000	208.000	5.000	86807 3.500	**28.000**
35.01-45.0	34.000	MK-4	429.000	257.000	7.000	86807 4.001	**34.000**
45.01-55.0	44.000	MK-4	429.000	257.000	7.000	86807 4.001	**44.000**
55.01-65.0	54.000	MK-4	429.000	257.000	7.000	86807 4.001	**54.000**
65.01-78.0	63.000	MK-5	536.000	316.000	9.000	86807 5.000	**63.000**
78.01-90.0	77.000	MK-5	536.000	316.000	9.000	86807 5.000	**77.000**
90.01-102.0	89.000	MK-5	536.000	316.000	9.000	86807 5.000	**89.000**

HARTNER

Multiplex holder with morse taper shank

Article no. 86678

Surface nickel-plated ≤ 1000 mm total length, > 1000 mm overall length: burnished • Extra length design holder for interchangeable inserts. The taper shank holder possesses internal coolant delivery. Wide flutes ensure optimal chip evacuation. Simple replacement of inserts via clamping screws. Adjustment of interchangeable inserts not necessary. The interchangeable inserted drill machines solid material. This drill is not suitable for drilling pre-cast or pre-drilled holes.
Coolant delivery: radial (axial on request)
Clamping screws art.-no. 86807 included

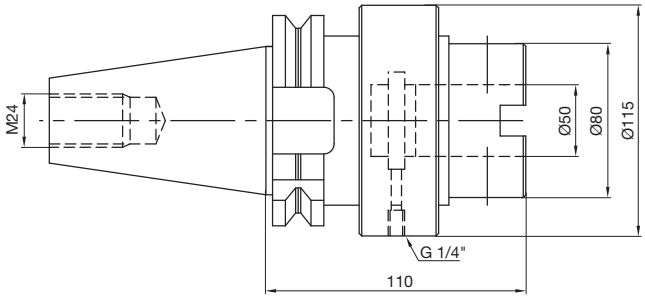
d1 mm	d mm	S	L mm	l2 mm	B mm	G	Code no.
35.01-45.0	34.000	MK-4	566.000	393.000	7.000	86807 4.001	**34.393**
35.01-45.0	34.000	MK-4	716.000	543.000	7.000	86807 4.001	**34.543**
35.01-45.0	34.000	MK-4	1016.000	843.000	7.000	86807 4.001	**34.843**
45.01-55.0	44.000	MK-4	716.000	544.500	7.000	86807 4.001	**44.545**
45.01-55.0	44.000	MK-4	1016.000	844.500	7.000	86807 4.001	**44.845**
55.01-65.0	54.000	MK-4	560.000	387.000	7.000	86807 4.001	**54.387**
55.01-65.0	54.000	MK-4	716.000	543.000	7.000	86807 4.001	**54.543**
55.01-65.0	54.000	MK-4	1016.000	843.000	7.000	86807 4.001	**54.843**
65.01-78.0	63.000	MK-5	766.000	547.000	9.000	86807 5.000	**63.547**
65.01-78.0	63.000	MK-5	1066.000	847.000	9.000	86807 5.000	**63.847**
78.01-90.0	77.000	MK-5	766.000	544.000	9.000	86807 5.000	**77.544**
78.01-90.0	77.000	MK-5	1066.000	844.000	9.000	86807 5.000	**77.844**
90.01-102.0	89.000	MK-5	766.000	544.000	9.000	86807 5.000	**89.544**
90.01-102.0	89.000	MK-5	1066.000	844.000	9.000	86807 5.000	**89.844**

Special range Multiplex modular system Ø 97 mm to 210 mm

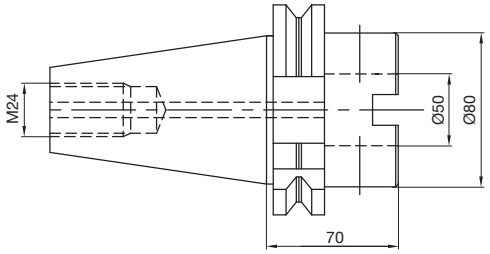
Adaptors

The following versions are available on request:

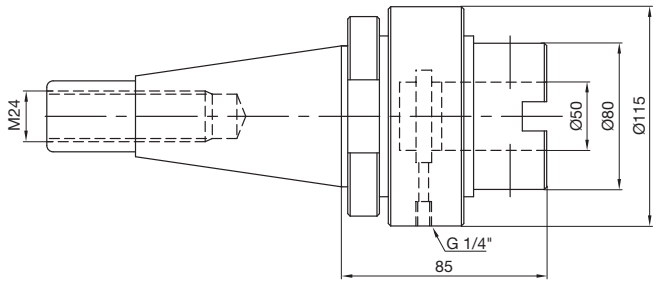
- ISO taper 50 DIN ISO 7388-1 with oil feed adaptors



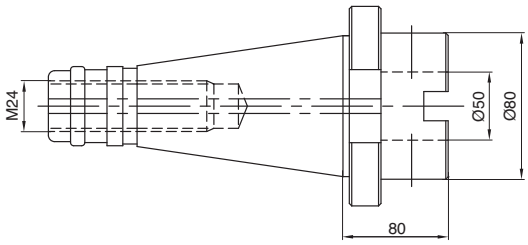
- ISO taper 50 DIN ISO 7388-1 without oil feed adaptors



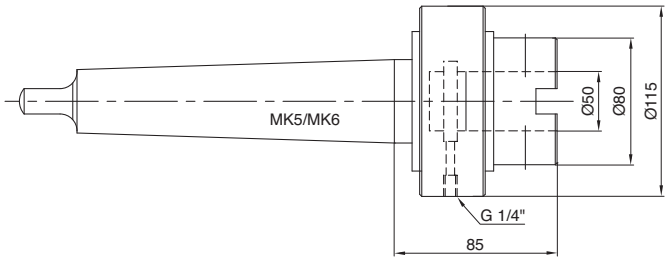
- ISO taper 50 DIN 2080 with oil feed adaptors



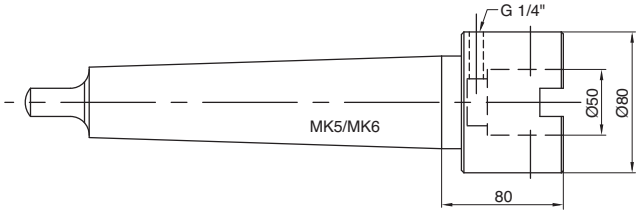
- ISO taper 50 DIN 2080 without oil feed adaptors



- MT 5/MT 6 with oil feed adaptors



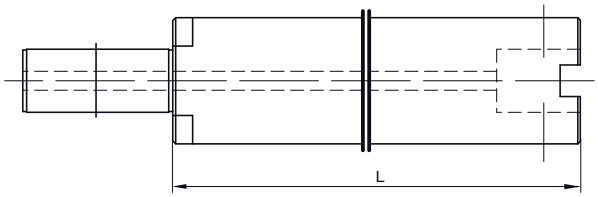
- MT 5/MT 6 without oil feed adaptors



Special range Multiplex modular system Ø 97 mm to 210 mm

Extensions for drill heads

Extensions for drill heads
Ø 97 mm - Ø 130 mm*
L = 186 mm
L = 300 mm



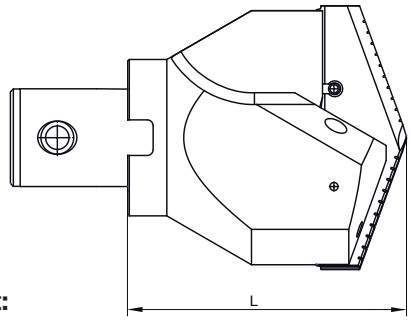
Extensions for drill heads
Ø 131 mm - Ø 165 mm and Ø 164 mm - Ø 210 mm
L = 204 mm
L = 300 mm
L = 500 mm

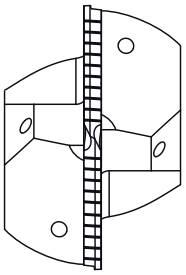
Tangs

small, for drill heads Ø 97 mm - Ø 130 mm, width 14 mm

large, for drill heads Ø 131 mm - Ø 165 mm and Ø 164 mm - Ø 210 mm, width 16 mm

Drill heads





The following versions are available on request:
- Ø 97 mm to Ø 130 mm, L = 118.5 mm*
- Ø 131 mm to Ø 165 mm, L = 142.5 mm
- Ø 164 mm to Ø 210 mm, L = 142.5 mm

*** Reduction unit required**

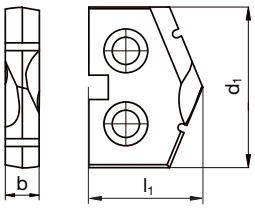
Interchangeable inserts

Article no. 86602

P	M	K	N	S	H
●	○	●	○		

HSS-E-PM | T | WN | 135° | R

web thinning ≥ Ø 9.800 • Interchangeable insert with chip breakers. 135° point angle. For universal application.



d1 mm	l1 mm	b mm	Code no.
10.000	8.700	2.500	**10.000**
10.200	8.700	2.500	**10.200**
10.500	8.700	2.500	**10.500**
11.000	8.700	2.500	**11.000**
11.110	8.700	2.500	**11.110**
11.500	8.700	2.500	**11.500**
11.750	8.700	2.500	**11.750**
12.000	8.700	2.500	**12.000**
12.300	8.700	2.500	**12.300**
12.500	8.700	2.500	**12.500**
12.750	8.700	2.500	**12.750**
13.000	8.700	2.500	**13.000**
13.250	8.700	2.500	**13.250**
13.500	11.700	3.500	**13.500**
13.750	11.700	3.500	**13.750**
14.000	11.700	3.500	**14.000**
14.250	11.700	3.500	**14.250**
14.500	11.700	3.500	**14.500**
14.750	11.700	3.500	**14.750**
15.000	11.700	3.500	**15.000**
15.250	11.700	3.500	**15.250**
15.500	11.700	3.500	**15.500**
15.750	11.700	3.500	**15.750**
16.000	11.700	3.500	**16.000**
16.500	11.700	3.500	**16.500**
16.750	11.700	3.500	**16.750**
17.000	11.700	3.500	**17.000**
17.250	11.700	3.500	**17.250**
17.500	11.700	3.500	**17.500**
17.750	11.700	3.500	**17.750**

d1 mm	l1 mm	b mm	Code no.
18.000	11.700	3.500	**18.000**
18.250	11.700	3.500	**18.250**
18.500	11.700	3.500	**18.500**
18.750	11.700	3.500	**18.750**
19.000	13.700	4.000	**19.000**
19.500	13.700	4.000	**19.500**
19.750	13.700	4.000	**19.750**
20.000	13.700	4.000	**20.000**
20.250	13.700	4.000	**20.250**
20.500	13.700	4.000	**20.500**
21.000	13.700	4.000	**21.000**
21.250	13.700	4.000	**21.250**
21.500	13.700	4.000	**21.500**
21.750	13.700	4.000	**21.750**
22.000	13.700	4.000	**22.000**
22.500	13.700	4.000	**22.500**
23.000	13.700	4.000	**23.000**
23.500	13.700	4.000	**23.500**
24.000	13.700	4.000	**24.000**
24.500	13.700	4.000	**24.500**
24.750	13.700	4.000	**24.750**
25.000	13.700	4.000	**25.000**

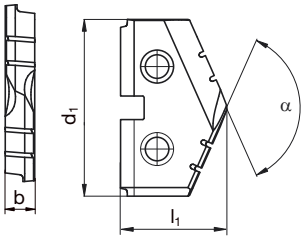
Interchangeable inserts

Article no. 86605

P	M	K	N	S	H
○	●	○	●		

HSS-E | T | WN | 132° | R

web thinning ≥ Ø 25.000 • Interchangeable insert with chip breakers. INOX geometry for stainless steel, aluminium alloys and non-ferrous metals.
Point angle:
≥ Ø 25.0 mm = 132°
> Ø 66.0 mm = 140°



d1 mm	l1 mm	b mm	Code no.
25.000	18.000	5.000	**25.000**
25.500	18.000	5.000	**25.500**
26.000	18.000	5.000	**26.000**
26.500	18.000	5.000	**26.500**
27.000	18.000	5.000	**27.000**
28.000	18.000	5.000	**28.000**
29.000	18.000	5.000	**29.000**
29.500	18.000	5.000	**29.500**
30.000	18.000	5.000	**30.000**
31.000	18.000	5.000	**31.000**
32.000	18.000	5.000	**32.000**
33.000	18.000	5.000	**33.000**
34.000	18.000	5.000	**34.000**
35.000	18.000	5.000	**35.000**
36.000	25.000	7.000	**36.000**
37.000	25.000	7.000	**37.000**
37.500	25.000	7.000	**37.500**
38.000	25.000	7.000	**38.000**
39.000	25.000	7.000	**39.000**
40.000	25.000	7.000	**40.000**
41.000	25.000	7.000	**41.000**
42.000	25.000	7.000	**42.000**
43.000	25.000	7.000	**43.000**
44.000	25.000	7.000	**44.000**
45.000	25.000	7.000	**45.000**
46.000	25.000	7.000	**46.000**
47.000	25.000	7.000	**47.000**
48.000	25.000	7.000	**48.000**
49.000	25.000	7.000	**49.000**
50.000	25.000	7.000	**50.000**
50.500	25.000	7.000	**50.500**
51.000	25.000	7.000	**51.000**
52.000	25.000	7.000	**52.000**
53.000	25.000	7.000	**53.000**
54.000	25.000	7.000	**54.000**
55.000	25.000	7.000	**55.000**

d1 mm	l1 mm	b mm	Code no.
56.000	25.000	7.000	**56.000**
57.000	25.000	7.000	**57.000**
58.000	25.000	7.000	**58.000**
59.000	25.000	7.000	**59.000**
60.000	25.000	7.000	**60.000**
62.000	25.000	7.000	**62.000**
64.000	25.000	7.000	**64.000**
65.000	25.000	7.000	**65.000**
66.000	37.000	9.000	**66.000**
68.000	37.000	9.000	**68.000**
70.000	37.000	9.000	**70.000**
74.000	37.000	9.000	**74.000**
75.000	37.000	9.000	**75.000**
78.000	37.000	9.000	**78.000**
80.000	37.000	9.000	**80.000**
82.000	37.000	9.000	**82.000**
84.000	37.000	9.000	**84.000**
85.000	37.000	9.000	**85.000**
88.000	37.000	9.000	**88.000**
90.000	37.000	9.000	**90.000**
94.000	37.000	9.000	**94.000**
95.000	37.000	9.000	**95.000**
96.000	37.000	9.000	**96.000**
98.000	37.000	9.000	**98.000**
100.000	37.000	9.000	**100.000**
102.000	37.000	9.000	**102.000**

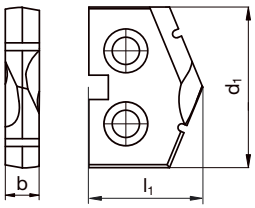
Interchangeable inserts

Article no. 86608

P	M	K	N	S	H
●	○	●	○		

HSS-E-PM | F | WN | 135° | R

web thinning ≥ Ø 10.000 • Interchangeable insert with chip breakers. 135° point angle. For universal application.



d1 mm	l1 mm	b mm	Code no.
10.000	8.700	2.500	**10.000**
10.500	8.700	2.500	**10.500**
11.000	8.700	2.500	**11.000**
11.500	8.700	2.500	**11.500**
11.750	8.700	2.500	**11.750**
12.000	8.700	2.500	**12.000**
12.500	8.700	2.500	**12.500**
12.750	8.700	2.500	**12.750**
13.000	8.700	2.500	**13.000**
13.250	8.700	2.500	**13.250**
13.500	11.700	3.500	**13.500**
13.750	11.700	3.500	**13.750**
14.000	11.700	3.500	**14.000**
14.250	11.700	3.500	**14.250**
14.500	11.700	3.500	**14.500**
14.750	11.700	3.500	**14.750**
15.000	11.700	3.500	**15.000**
15.250	11.700	3.500	**15.250**
15.500	11.700	3.500	**15.500**
15.750	11.700	3.500	**15.750**
16.000	11.700	3.500	**16.000**
16.500	11.700	3.500	**16.500**
17.000	11.700	3.500	**17.000**
17.500	11.700	3.500	**17.500**

d1 mm	l1 mm	b mm	Code no.
17.750	11.700	3.500	**17.750**
18.000	11.700	3.500	**18.000**
18.250	11.700	3.500	**18.250**
18.500	11.700	3.500	**18.500**
18.750	11.700	3.500	**18.750**
19.000	13.700	4.000	**19.000**
19.500	13.700	4.000	**19.500**
19.750	13.700	4.000	**19.750**
20.000	13.700	4.000	**20.000**
20.250	13.700	4.000	**20.250**
20.500	13.700	4.000	**20.500**
21.000	13.700	4.000	**21.000**
21.250	13.700	4.000	**21.250**
21.500	13.700	4.000	**21.500**
21.750	13.700	4.000	**21.750**
22.000	13.700	4.000	**22.000**
22.500	13.700	4.000	**22.500**
23.000	13.700	4.000	**23.000**
23.500	13.700	4.000	**23.500**
24.000	13.700	4.000	**24.000**
24.500	13.700	4.000	**24.500**
24.750	13.700	4.000	**24.750**
25.000	13.700	4.000	**25.000**

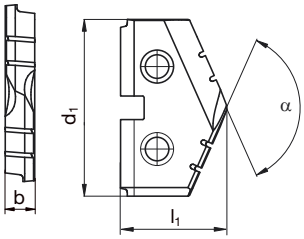
Interchangeable inserts

Article no. 86609

P	M	K	N	S	H
●	○	●	○		

HSS-E-PM | A | WN | 132° | R

web thinning ≥ Ø 25.000 • Interchangeable insert with chip breakers. For universal application.
Point angle:
≥ Ø 25.0 mm = 132°
> Ø 66.0 mm = 140°; > Ø 190.0 mm = 150°
Tool material:
≤ Ø 66.0 mm HSS-E-PM
> Ø 66.0 mm HSS-E



d1 mm	l1 mm	b mm	Code no.
25.000	18.000	5.000	**25.000**
25.500	18.000	5.000	**25.500**
26.000	18.000	5.000	**26.000**
26.500	18.000	5.000	**26.500**
27.000	18.000	5.000	**27.000**
28.000	18.000	5.000	**28.000**
29.000	18.000	5.000	**29.000**
29.500	18.000	5.000	**29.500**
30.000	18.000	5.000	**30.000**
31.000	18.000	5.000	**31.000**
32.000	18.000	5.000	**32.000**
33.000	18.000	5.000	**33.000**
34.000	18.000	5.000	**34.000**
35.000	18.000	5.000	**35.000**
36.000	25.000	7.000	**36.000**
37.000	25.000	7.000	**37.000**
38.000	25.000	7.000	**38.000**
39.000	25.000	7.000	**39.000**
40.000	25.000	7.000	**40.000**
41.000	25.000	7.000	**41.000**
42.000	25.000	7.000	**42.000**
43.000	25.000	7.000	**43.000**
44.000	25.000	7.000	**44.000**
45.000	25.000	7.000	**45.000**
46.000	25.000	7.000	**46.000**
47.000	25.000	7.000	**47.000**
48.000	25.000	7.000	**48.000**
49.000	25.000	7.000	**49.000**
50.000	25.000	7.000	**50.000**
51.000	25.000	7.000	**51.000**
52.000	25.000	7.000	**52.000**
53.000	25.000	7.000	**53.000**
54.000	25.000	7.000	**54.000**
55.000	25.000	7.000	**55.000**
56.000	25.000	7.000	**56.000**
57.000	25.000	7.000	**57.000**
58.000	25.000	7.000	**58.000**
59.000	25.000	7.000	**59.000**
60.000	25.000	7.000	**60.000**
62.000	25.000	7.000	**62.000**
64.000	25.000	7.000	**64.000**
65.000	25.000	7.000	**65.000**

d1 mm	l1 mm	b mm	Code no.
66.000	37.000	9.000	**66.000**
68.000	37.000	9.000	**68.000**
70.000	37.000	9.000	**70.000**
74.000	37.000	9.000	**74.000**
75.000	37.000	9.000	**75.000**
78.000	37.000	9.000	**78.000**
80.000	37.000	9.000	**80.000**
82.000	37.000	9.000	**82.000**
84.000	37.000	9.000	**84.000**
85.000	37.000	9.000	**85.000**
88.000	37.000	9.000	**88.000**
90.000	37.000	9.000	**90.000**
93.000	37.000	9.000	**93.000**
95.000	37.000	9.000	**95.000**
96.000	37.000	9.000	**96.000**
98.000	37.000	9.000	**98.000**
100.000	37.000	9.000	**100.000**
102.000	37.000	9.000	**102.000**
103.000	37.000	9.000	**103.000**
105.000	37.000	9.000	**105.000**
110.000	37.000	9.000	**110.000**
115.000	37.000	9.000	**115.000**
120.000	37.000	9.000	**120.000**
125.000	37.000	9.000	**125.000**
130.000	37.000	9.000	**130.000**
135.000	47.000	9.000	**135.000**
140.000	47.000	9.000	**140.000**
145.000	47.000	9.000	**145.000**
150.000	47.000	9.000	**150.000**
155.000	47.000	9.000	**155.000**
160.000	47.000	9.000	**160.000**
165.000	47.000	9.000	**165.000**
170.000	47.000	9.000	**170.000**
175.000	47.000	9.000	**175.000**
180.000	47.000	9.000	**180.000**
185.000	47.000	9.000	**185.000**
190.000	47.000	9.000	**190.000**
195.000	47.000	9.000	**195.000**
200.000	47.000	9.000	**200.000**
205.000	47.000	9.000	**205.000**
210.000	47.000	9.000	**210.000**

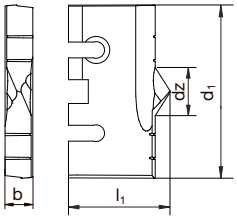
Interchangeable inserts

Article no. 86611

P	M	K	N	S	H
●	○	●	○		

HSS-E-PM | A | WN | 180° | R

web thinning ≥ Ø 10,000 • Interchangeable insert with chip breakers. For universal application.
Point angle of center point:
≤ Ø 35 = 120°
> Ø 35 = 140°



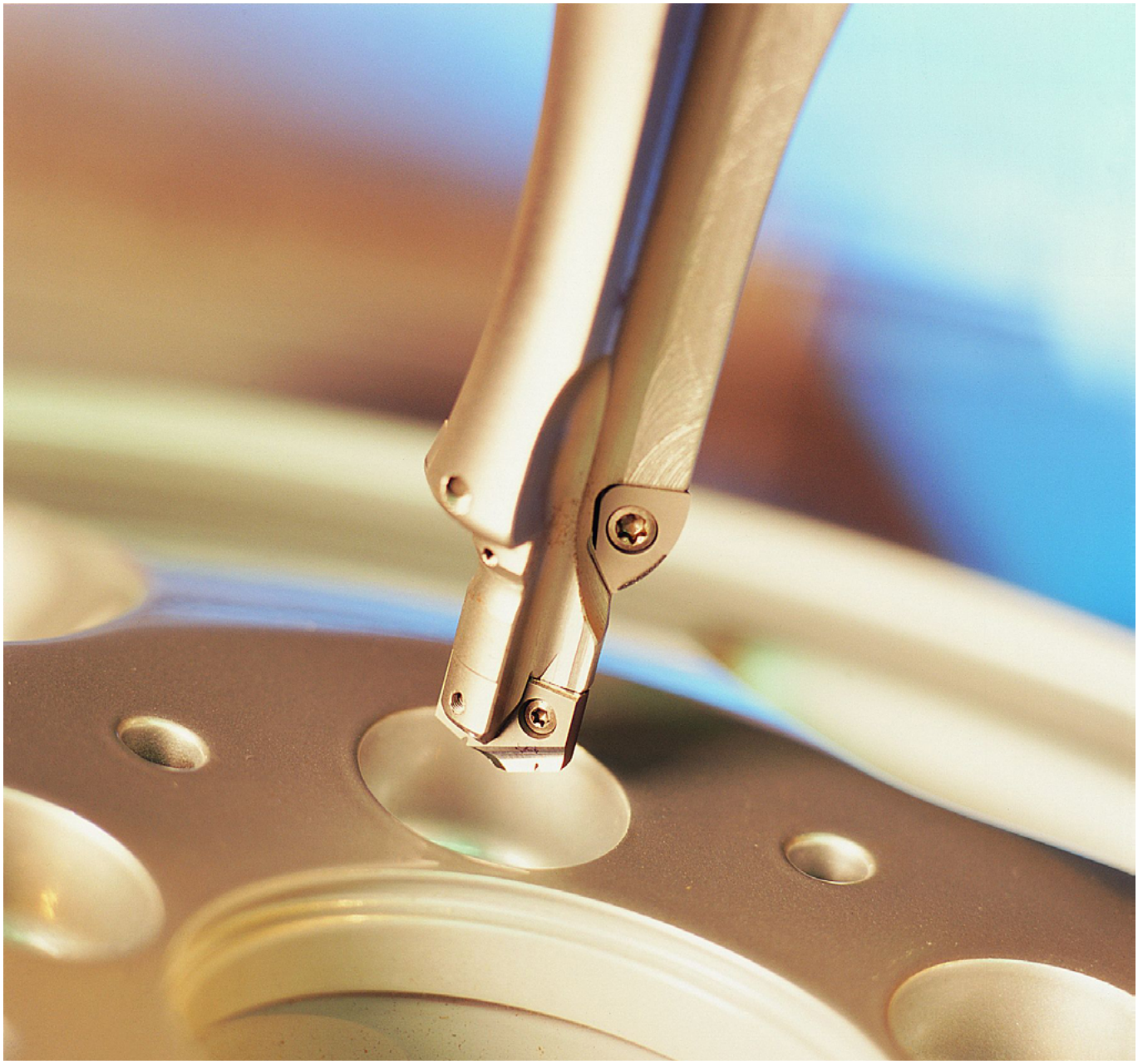
d1 mm	l1 mm	dz	b mm	Code no.
10,000	10,000	5,000	2,500	**10,000**
10,500	10,000	5,000	2,500	**10,500**
11,000	10,000	5,000	2,500	**11,000**
11,500	10,000	5,000	2,500	**11,500**
11,750	10,000	5,000	2,500	**11,750**
12,000	10,000	5,000	2,500	**12,000**
12,500	10,000	5,000	2,500	**12,500**
12,700	10,000	5,000	2,500	**12,700**
12,750	10,000	5,000	2,500	**12,750**
13,000	10,000	5,000	2,500	**13,000**
13,250	10,000	5,000	2,500	**13,250**
13,500	13,000	6,000	3,500	**13,500**
13,750	13,000	6,000	3,500	**13,750**
14,000	13,000	6,000	3,500	**14,000**
14,250	13,000	6,000	3,500	**14,250**
14,500	13,000	6,000	3,500	**14,500**
14,750	13,000	6,000	3,500	**14,750**
15,000	13,000	6,000	3,500	**15,000**
15,250	13,000	6,000	3,500	**15,250**
15,500	13,000	6,000	3,500	**15,500**
15,750	13,000	6,000	3,500	**15,750**
16,000	13,000	6,000	3,500	**16,000**
16,500	13,000	6,000	3,500	**16,500**
17,000	13,000	6,000	3,500	**17,000**
17,500	13,000	6,000	3,500	**17,500**
17,750	13,000	6,000	3,500	**17,750**
18,000	13,000	6,000	3,500	**18,000**
18,250	13,000	6,000	3,500	**18,250**
18,500	13,000	6,000	3,500	**18,500**
18,750	13,000	6,000	3,500	**18,750**
19,000	15,000	7,000	4,000	**19,000**
19,500	15,000	7,000	4,000	**19,500**
19,750	15,000	7,000	4,000	**19,750**
20,000	15,000	7,000	4,000	**20,000**
20,250	15,000	7,000	4,000	**20,250**
20,500	15,000	7,000	4,000	**20,500**
21,000	15,000	7,000	4,000	**21,000**
21,250	15,000	7,000	4,000	**21,250**
21,500	15,000	7,000	4,000	**21,500**
21,750	15,000	7,000	4,000	**21,750**
22,000	15,000	7,000	4,000	**22,000**
22,500	15,000	7,000	4,000	**22,500**

d1 mm	l1 mm	dz	b mm	Code no.
23,000	15,000	7,000	4,000	**23,000**
23,500	15,000	7,000	4,000	**23,500**
24,000	15,000	7,000	4,000	**24,000**
24,500	15,000	7,000	4,000	**24,500**
24,750	15,000	7,000	4,000	**24,750**
25,000	15,000	7,000	4,000	**25,000**
25,000	18,500	9,000	5,000	**25,001**
25,400	18,500	9,000	5,000	**25,400**
25,500	18,500	9,000	5,000	**25,500**
26,000	18,500	9,000	5,000	**26,000**
26,500	18,500	9,000	5,000	**26,500**
27,000	18,500	9,000	5,000	**27,000**
28,000	18,500	9,000	5,000	**28,000**
29,000	18,500	9,000	5,000	**29,000**
29,500	18,500	9,000	5,000	**29,500**
30,000	18,500	9,000	5,000	**30,000**
31,000	18,500	9,000	5,000	**31,000**
32,000	18,500	9,000	5,000	**32,000**
33,000	18,500	9,000	5,000	**33,000**
34,000	18,500	9,000	5,000	**34,000**
35,000	18,500	9,000	5,000	**35,000**
36,000	25,500	13,000	7,000	**36,000**
37,000	25,500	13,000	7,000	**37,000**
38,000	25,500	13,000	7,000	**38,000**
39,000	25,500	13,000	7,000	**39,000**
40,000	25,500	13,000	7,000	**40,000**
41,000	25,500	13,000	7,000	**41,000**
42,000	25,500	13,000	7,000	**42,000**
43,000	25,500	13,000	7,000	**43,000**
44,000	25,500	13,000	7,000	**44,000**
45,000	25,500	13,000	7,000	**45,000**
46,000	25,500	13,000	7,000	**46,000**
47,000	25,500	13,000	7,000	**47,000**
48,000	25,500	13,000	7,000	**48,000**
49,000	25,500	13,000	7,000	**49,000**
50,000	25,500	13,000	7,000	**50,000**
51,000	25,500	13,000	7,000	**51,000**
52,000	25,500	13,000	7,000	**52,000**
53,000	25,500	13,000	7,000	**53,000**
54,000	25,500	13,000	7,000	**54,000**
55,000	25,500	13,000	7,000	**55,000**
56,000	25,500	13,000	7,000	**56,000**

Interchangeable inserts

d1 mm	l1 mm	dz	b mm	**Code-Nr.**
57,000	25,500	13,000	7,000	**57,000**
58,000	25,500	13,000	7,000	**58,000**
59,000	25,500	13,000	7,000	**59,000**
60,000	25,500	13,000	7,000	**60,000**
62,000	25,500	13,000	7,000	**62,000**
64,000	25,500	13,000	7,000	**64,000**

d1 mm	l1 mm	dz	b mm	**Code-Nr.**
65,000	25,500	13,000	7,000	**65,000**



Step holders on request

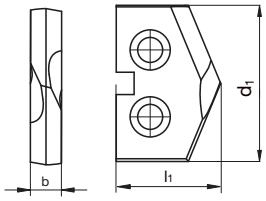
Interchangeable inserts

Article no. 86708

P	M	K	N	S	H
●	○	●	○		

VHM | T | WN | 135° | R

web thinning ≥ Ø 9.800 • Interchangeable insert without chip breaker grooves. For materials above 600 N/mm². For universal application.
point angle:
≤ Ø 25.4 mm = 135°
> Ø 25.4 mm = 132°
with chamfer (see “Application Recommendations Multiplex”/Technichal Section)



d1 mm	l1 mm	b mm	Code no.
10.000	8.700	2.500	**10.000**
10.200	8.700	2.500	**10.200**
10.500	8.700	2.500	**10.500**
11.000	8.700	2.500	**11.000**
11.500	8.700	2.500	**11.500**
12.000	8.700	2.500	**12.000**
12.250	8.700	2.500	**12.250**
12.500	8.700	2.500	**12.500**
12.750	8.700	2.500	**12.750**
13.000	8.700	2.500	**13.000**
13.500	11.700	3.500	**13.500**
13.750	11.700	3.500	**13.750**
14.000	11.700	3.500	**14.000**
14.250	11.700	3.500	**14.250**
14.500	11.700	3.500	**14.500**
14.750	11.700	3.500	**14.750**
15.000	11.700	3.500	**15.000**
15.500	11.700	3.500	**15.500**
15.750	11.700	3.500	**15.750**
16.000	11.700	3.500	**16.000**
16.250	11.700	3.500	**16.250**
16.500	11.700	3.500	**16.500**
16.750	11.700	3.500	**16.750**
17.000	11.700	3.500	**17.000**
17.500	11.700	3.500	**17.500**
17.750	11.700	3.500	**17.750**
18.000	11.700	3.500	**18.000**
18.250	11.700	3.500	**18.250**
18.500	11.700	3.500	**18.500**
19.000	13.700	4.000	**19.000**

d1 mm	l1 mm	b mm	Code no.
19.500	13.700	4.000	**19.500**
19.750	13.700	4.000	**19.750**
20.000	13.700	4.000	**20.000**
20.500	13.700	4.000	**20.500**
21.000	13.700	4.000	**21.000**
21.500	13.700	4.000	**21.500**
22.000	13.700	4.000	**22.000**
22.500	13.700	4.000	**22.500**
22.750	13.700	4.000	**22.750**
23.000	13.700	4.000	**23.000**
23.500	13.700	4.000	**23.500**
24.000	13.700	4.000	**24.000**
24.250	13.700	4.000	**24.250**
24.500	13.700	4.000	**24.500**
25.000	13.700	4.000	**25.000**
26.000	17.300	5.000	**26.000**
27.000	17.300	5.000	**27.000**
28.000	17.300	5.000	**28.000**
29.000	17.300	5.000	**29.000**
30.000	17.300	5.000	**30.000**
31.000	17.300	5.000	**31.000**
32.000	17.300	5.000	**32.000**
34.000	17.300	5.000	**34.000**
35.000	17.300	5.000	**35.000**

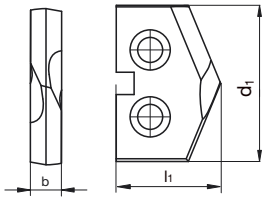
Interchangeable inserts

Article no. 86702

P	M	K	N	S	H
●	○	●	○		

VHM | F | WN | 135° | R

web thinning ≥ Ø 10.000 • Interchangeable insert without chip breaker grooves. For materials above 600 N/mm². For universal application.
point angle:
≤ Ø 25.4 mm = 135°
> Ø 25.4 mm = 132°
with chamfer (see “Application Recommendations Multiplex”/Technichal Section)



d1 mm	l1 mm	b mm	Code no.
10.000	8.700	2.500	**10.000**
10.200	8.700	2.500	**10.200**
10.500	8.700	2.500	**10.500**
11.000	8.700	2.500	**11.000**
12.000	8.700	2.500	**12.000**
12.500	8.700	2.500	**12.500**
12.750	8.700	2.500	**12.750**
13.000	8.700	2.500	**13.000**
13.500	11.700	3.500	**13.500**
13.750	11.700	3.500	**13.750**
14.000	11.700	3.500	**14.000**
14.100	11.700	3.500	**14.100**
14.500	11.700	3.500	**14.500**
14.750	11.700	3.500	**14.750**
15.000	11.700	3.500	**15.000**
15.500	11.700	3.500	**15.500**
16.000	11.700	3.500	**16.000**
16.250	11.700	3.500	**16.250**
16.500	11.700	3.500	**16.500**
16.750	11.700	3.500	**16.750**
17.000	11.700	3.500	**17.000**
17.500	11.700	3.500	**17.500**
17.750	11.700	3.500	**17.750**
18.000	11.700	3.500	**18.000**
18.250	11.700	3.500	**18.250**
18.500	11.700	3.500	**18.500**
19.000	13.700	4.000	**19.000**
19.500	13.700	4.000	**19.500**
19.750	13.700	4.000	**19.750**
20.000	13.700	4.000	**20.000**

d1 mm	l1 mm	b mm	Code no.
20.500	13.700	4.000	**20.500**
21.000	13.700	4.000	**21.000**
21.500	13.700	4.000	**21.500**
22.000	13.700	4.000	**22.000**
22.300	13.700	4.000	**22.300**
22.750	13.700	4.000	**22.750**
23.000	13.700	4.000	**23.000**
24.250	13.700	4.000	**24.250**
24.500	13.700	4.000	**24.500**
25.000	13.700	4.000	**25.000**
26.000	17.300	5.000	**26.000**
26.500	17.300	5.000	**26.500**
27.000	17.300	5.000	**27.000**
28.000	17.300	5.000	**28.000**
29.000	17.300	5.000	**29.000**
29.800	17.300	5.000	**29.800**
30.000	17.300	5.000	**30.000**
32.000	17.300	5.000	**32.000**
33.000	17.300	5.000	**33.000**
34.000	17.300	5.000	**34.000**
35.000	17.300	5.000	**35.000**

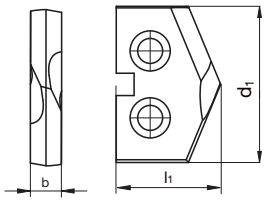
Interchangeable inserts

Article no. 86709

P	M	K	N	S	H
●	○	●	○		

VHM | T | WN | 135° | R

web thinning ≥ Ø 9.800 • Interchangeable insert without chip breakers. For materials up to 600 N/mm². For universal application.
Point angle:
≤ Ø 25.4 mm = 135°
> Ø 25.4 mm = 132°
Without chamfer (see “Application Recommendations Multiplex”/Technical section)



d1 mm	l1 mm	b mm	Code no.
10.000	8.700	2.500	**10.000**
10.200	8.700	2.500	**10.200**
10.500	8.700	2.500	**10.500**
11.000	8.700	2.500	**11.000**
11.110	8.700	2.500	**11.110**
12.000	8.700	2.500	**12.000**
12.500	8.700	2.500	**12.500**
12.700	8.700	2.500	**12.700**
12.750	8.700	2.500	**12.750**
13.000	8.700	2.500	**13.000**
13.500	11.700	3.500	**13.500**
14.000	11.700	3.500	**14.000**
14.500	11.700	3.500	**14.500**
14.750	11.700	3.500	**14.750**
15.000	11.700	3.500	**15.000**
15.880	11.700	3.500	**15.880**
16.250	11.700	3.500	**16.250**
16.500	11.700	3.500	**16.500**
16.670	11.700	3.500	**16.670**
16.750	11.700	3.500	**16.750**
17.000	11.700	3.500	**17.000**
17.500	11.700	3.500	**17.500**
17.750	11.700	3.500	**17.750**
18.000	11.700	3.500	**18.000**

d1 mm	l1 mm	b mm	Code no.
18.250	11.700	3.500	**18.250**
18.500	11.700	3.500	**18.500**
19.000	13.700	4.000	**19.000**
19.500	13.700	4.000	**19.500**
20.000	13.700	4.000	**20.000**
20.500	13.700	4.000	**20.500**
20.640	13.700	4.000	**20.640**
21.000	13.700	4.000	**21.000**
21.500	13.700	4.000	**21.500**
22.000	13.700	4.000	**22.000**
23.000	13.700	4.000	**23.000**
23.250	13.700	4.000	**23.250**
24.500	13.700	4.000	**24.500**
25.000	13.700	4.000	**25.000**
26.000	17.300	5.000	**26.000**
27.000	17.300	5.000	**27.000**
28.000	17.300	5.000	**28.000**
29.000	17.300	5.000	**29.000**
30.000	17.300	5.000	**30.000**
33.000	17.300	5.000	**33.000**
34.000	17.300	5.000	**34.000**
35.000	17.300	5.000	**35.000**

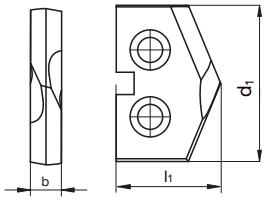
Interchangeable inserts

Article no. 86701

P	M	K	N	S	H
●	○	●	○		

VHM | F | WN | 135° | R

web thinning ≥ Ø 10.000 • Interchangeable insert without chip breakers. For materials up to 600 N/mm². For universal application.
Point angle:
≤ Ø 25.4 mm = 135°
> Ø 25.4 mm = 132°
Without chamfer (see “Application Recommendations Multiplex”/Technical section)



d1 mm	l1 mm	b mm	Code no.
10.000	8.700	2.500	**10.000**
10.200	8.700	2.500	**10.200**
10.500	8.700	2.500	**10.500**
11.000	8.700	2.500	**11.000**
11.500	8.700	2.500	**11.500**
12.000	8.700	2.500	**12.000**
12.500	8.700	2.500	**12.500**
12.750	8.700	2.500	**12.750**
13.000	8.700	2.500	**13.000**
13.500	11.700	3.500	**13.500**
13.750	11.700	3.500	**13.750**
14.000	11.700	3.500	**14.000**
14.250	11.700	3.500	**14.250**
14.500	11.700	3.500	**14.500**
14.750	11.700	3.500	**14.750**
15.000	11.700	3.500	**15.000**
15.500	11.700	3.500	**15.500**
15.750	11.700	3.500	**15.750**
16.000	11.700	3.500	**16.000**
16.250	11.700	3.500	**16.250**
16.500	11.700	3.500	**16.500**
16.750	11.700	3.500	**16.750**
17.000	11.700	3.500	**17.000**
17.500	11.700	3.500	**17.500**

d1 mm	l1 mm	b mm	Code no.
17.750	11.700	3.500	**17.750**
18.000	11.700	3.500	**18.000**
18.500	11.700	3.500	**18.500**
19.000	13.700	4.000	**19.000**
19.500	13.700	4.000	**19.500**
20.000	13.700	4.000	**20.000**
20.500	13.700	4.000	**20.500**
21.000	13.700	4.000	**21.000**
21.500	13.700	4.000	**21.500**
22.000	13.700	4.000	**22.000**
23.000	13.700	4.000	**23.000**
24.000	13.700	4.000	**24.000**
24.500	13.700	4.000	**24.500**
25.000	13.700	4.000	**25.000**
26.000	17.300	5.000	**26.000**
27.000	17.300	5.000	**27.000**
28.000	17.300	5.000	**28.000**
29.000	17.300	5.000	**29.000**
30.000	17.300	5.000	**30.000**
31.000	17.300	5.000	**31.000**
32.000	17.300	5.000	**32.000**
33.000	17.300	5.000	**33.000**
34.000	17.300	5.000	**34.000**
35.000	17.300	5.000	**35.000**

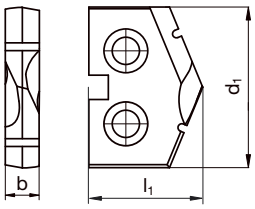
Interchangeable inserts

Article no. 86711

P	M	K	N	S	H
			•		

VHM | WN | 135° | R

web thinning ≥ Ø 10,0 • Interchangeable insert with chip breakers. Aluminium geometry for aluminium, non-ferrous metals and plastics.
≤ Ø 25,4 mm = 135°
> Ø 25,4 mm = 132°



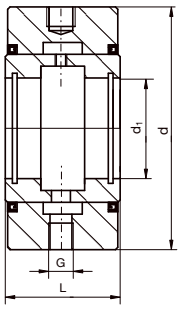
d1 mm	l1 mm	b mm	Code no.	d1 mm	l1 mm	b mm	Code no.
10,000	8,700	2,500	**10,000**	24,000	13,700	4,000	**24,000**
10,200	8,700	2,500	**10,200**	24,250	13,700	4,000	**24,250**
10,500	8,700	2,500	**10,500**	24,500	13,700	4,000	**24,500**
11,000	8,700	2,500	**11,000**	25,000	13,700	4,000	**25,000**
11,500	8,700	2,500	**11,500**	25,400	17,300	5,000	**25,400**
12,000	8,700	2,500	**12,000**	26,000	17,300	5,000	**26,000**
12,250	8,700	2,500	**12,250**	27,000	17,300	5,000	**27,000**
12,500	8,700	2,500	**12,500**	28,000	17,300	5,000	**28,000**
12,700	8,700	2,500	**12,700**	29,000	17,300	5,000	**29,000**
12,750	8,700	2,500	**12,750**	30,000	17,300	5,000	**30,000**
13,000	8,700	2,500	**13,000**	31,000	17,300	5,000	**31,000**
13,500	11,700	3,500	**13,500**	32,000	17,300	5,000	**32,000**
13,750	11,700	3,500	**13,750**	34,000	17,300	5,000	**34,000**
14,000	11,700	3,500	**14,000**	35,000	17,300	5,000	**35,000**
14,250	11,700	3,500	**14,250**	36,000	24,000	7,000	**36,000**
14,500	11,700	3,500	**14,500**	37,000	24,000	7,000	**37,000**
14,750	11,700	3,500	**14,750**	38,000	24,000	7,000	**38,000**
15,000	11,700	3,500	**15,000**	39,000	24,000	7,000	**39,000**
15,500	11,700	3,500	**15,500**	40,000	24,000	7,000	**40,000**
15,750	11,700	3,500	**15,750**	41,000	24,000	7,000	**41,000**
16,000	11,700	3,500	**16,000**	42,000	24,000	7,000	**42,000**
16,250	11,700	3,500	**16,250**	43,000	24,000	7,000	**43,000**
16,500	11,700	3,500	**16,500**	44,000	24,000	7,000	**44,000**
16,750	11,700	3,500	**16,750**	45,000	24,000	7,000	**45,000**
17,000	11,700	3,500	**17,000**	46,000	24,000	7,000	**46,000**
17,500	11,700	3,500	**17,500**	47,000	24,000	7,000	**47,000**
17,750	11,700	3,500	**17,750**	48,000	24,000	7,000	**48,000**
18,000	11,700	3,500	**18,000**	49,000	24,000	7,000	**49,000**
18,250	11,700	3,500	**18,250**	50,000	24,000	7,000	**50,000**
18,500	11,700	3,500	**18,500**	51,000	24,000	7,000	**51,000**
19,000	13,700	4,000	**19,000**	52,000	24,000	7,000	**52,000**
19,500	13,700	4,000	**19,500**	53,000	24,000	7,000	**53,000**
19,750	13,700	4,000	**19,750**	54,000	24,000	7,000	**54,000**
20,000	13,700	4,000	**20,000**	55,000	24,000	7,000	**55,000**
20,500	13,700	4,000	**20,500**	56,000	24,000	7,000	**56,000**
21,000	13,700	4,000	**21,000**	57,000	24,000	7,000	**57,000**
21,500	13,700	4,000	**21,500**	58,000	24,000	7,000	**58,000**
22,000	13,700	4,000	**22,000**	59,000	24,000	7,000	**59,000**
22,500	13,700	4,000	**22,500**	60,000	24,000	7,000	**60,000**
22,750	13,700	4,000	**22,750**	62,000	24,000	7,000	**62,000**
23,000	13,700	4,000	**23,000**	64,000	24,000	7,000	**64,000**
23,500	13,700	4,000	**23,500**	65,000	24,000	7,000	**65,000**

ACCESSORIES

Article no. 86690

WN

Coolant supply ring for holder with Morse Taper and ring face 86670 and 86680 (without screw set).

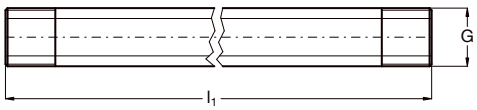


Size	d mm	d1 mm	d1	l1 mm	**Code no.**
MK 4	31.750	80.000	G1/4	45.000	**31.750**
MK 5	63.500	127.000	G1/2	60.000	**63.500**

Article no. 82571

WN

Coolant supply tube for coolant supply rings art. no. 86690



d1	l1 mm	**Code no.**
G1/4	200.000	**13.160**
G1/2	200.000	**20.960**

Article no. 82578

WN

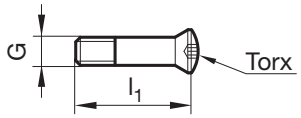
quick release pipe union for item no. 82571

d1	d3 mm	l1 mm	**Code no.**
G1/4	9.000	118.000	**9.000**
G1/2	13.000	118.000	**13.000**

Article no. 86807

WN

Torx screws for Multiplex holders



d1	l1 mm	Size	**Code no.**
M2	4.000	T6	**2.000**
M 2.5	5.000	T7	**2.500**
M 2.5	7.000	T7	**2.501**
M3	6.000	T9	**3.000**
M3	8.000	T9	**3.001**
M 3.5	10.000	T15	**3.500**
M4	6.000	T15	**4.000**
M4	15.000	T20	**4.001**
M5	20.000	T20	**5.000**

Article no. 86842

WN

screwdriver for Torx screws

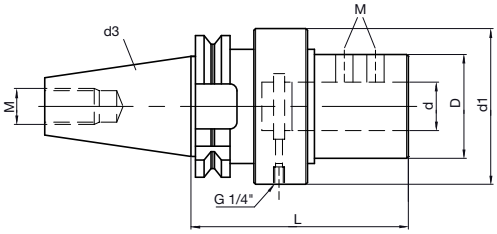
Size	l1 mm	Code no.
T6	150.000	**6.001**
T7	150.000	**7.001**
T8	150.000	**8.001**
T9	150.000	**9.001**
T10	170.000	**10.001**
T15	190.000	**15.001**
T20	205.000	**20.001**
T25	207.000	**25.001**

Coolant supply chuck for Multiplex

Article no. 86691

B WN SK

Coolant supply chuck with ISO taper to DIN ISO 7388-1 and cylindrical bore. Application of reducing sleeve with smaller shank-Ø.



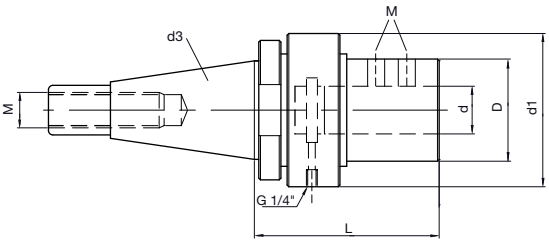
d3	d mm	D mm	d1 mm	L mm	M	Code no.
SK 40	32.000	65.000	88.000	130.000	M16	32.040
SK 50	40.000	65.000	98.000	135.000	M24	40.050
SK 50	50.000	90.000	123.000	165.000	M24	50.050

Coolant supply chuck for Multiplex

Article no. 86692

B WN SK

Coolant supply chuck with ISO taper to DIN 2080 and cylindrical bore. Application of reducing sleeve with smaller shank-Ø.



d3	d mm	D mm	d1 mm	L mm	M	Code no.
SK 40	32.000	65.000	88.000	110.000	M16	32.040
SK 50	40.000	65.000	98.000	120.000	M24	40.050
SK 50	50.000	90.000	123.000	145.000	M24	50.050

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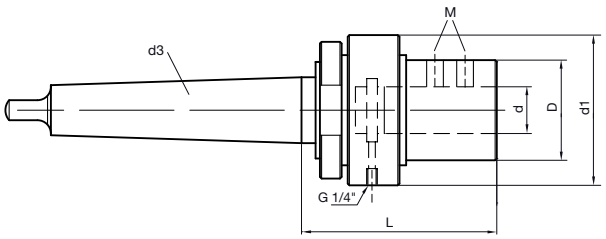
Coolant supply chuck for Multiplex

Article no. 86693

B WN MK

Coolant supply chuck with Morse Taper to DIN 228 B and cylindrical bore. Application of reducing sleeve with smaller shank-Ø.



d3	d mm	D mm	d1 mm	L mm	M	Code no.
MK-4	32.000	65.000	88.000	100.000	M14	32.400
MK-5	40.000	75.000	98.000	110.000	M16	40.500
MK-6	40.000	75.000	98.000	120.000	M16	40.600
MK-5	50.000	90.000	123.000	140.000	M20	50.500
MK-6	50.000	90.000	123.000	140.000	M20	50.600

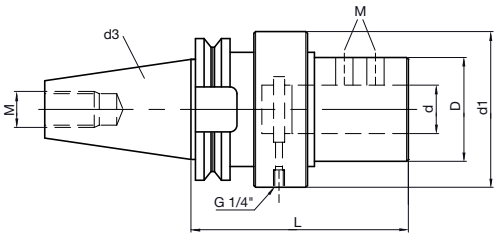
HARTNER

Coolant supply chuck for Multiplex

Article no. 86694

B WN MAS-BT

Coolant supply chuck with MAS BT to DIN ISO 7388-2 and cylindrical bore. Application of reducing sleeve with smaller shank-Ø.



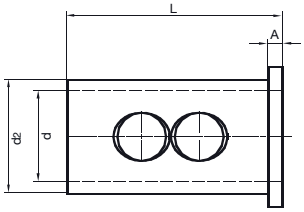
d3	d mm	D mm	d1 mm	L mm	M	Code no.
BT 40	32.000	65.000	88.000	125.000	M16	32.040
BT 50	40.000	65.000	98.000	145.000	M24	40.050
BT 50	50.000	90.000	123.000	170.000	M24	50.050

Reduction bushes for coolant supply chucks

Article no. 86699

B WN Cyl

Reducing bush for coolant supply chuck with cylindrical internal bore

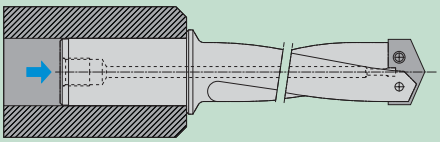


d mm	d2 mm	L mm	A mm	Code no.
20.000	32.000	65.000	5.000	**20.032**
20.000	40.000	75.000	5.000	**20.040**
25.000	32.000	65.000	5.000	**25.032**
25.000	40.000	75.000	5.000	**25.040**
32.000	40.000	75.000	5.000	**32.040**

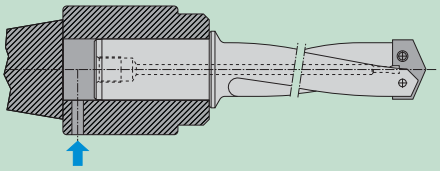
Multiplex - The Coolant Supply

Every Multiplex holder is equipped with an internal coolant system guaranteeing an optimal supply of the coolant or the lubricant respectively to the cutting edges during horizontal as well as vertical drilling operations and subsequently improving tool life. In addition, the coolant ensures an optimised chip evacuation from the hole.
The type of coolant supply is dependent on the shank design:

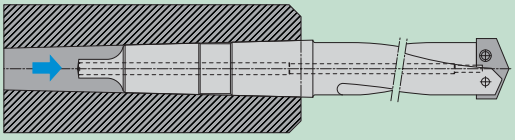
Coolant supply bore on the end face of the shank
For **static** and **rotary** tools:
Axial coolant supply through the tool holder.
For straight shank holders and hole-Ø 10 to 102 mm.
Holder product no. 86612/86622/86624/86730/86740/86750
and extra length holders



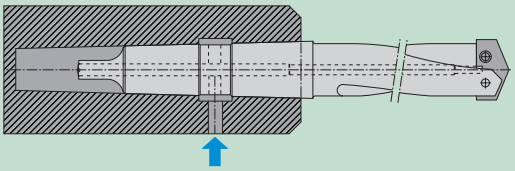
Coolant supply bore on the surface of the shank with supply chuck
For **rotary** tools:
Radial coolant supply through the coolant supply chuck.
For straight shank holders and hole-Ø 10 to 102 mm.
Holder product no. 86612/86622/86624/86730/86740/86750
and extra length holders
Coolant feed chucks SK40/50 and Morsetaper MT4/5/6 to cyl.



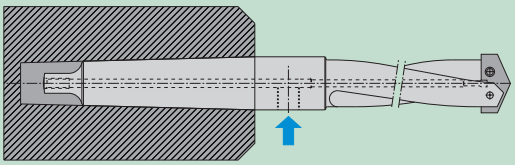
Coolant supply bore in tang
For **static** and **rotary** tools:
Axial coolant supply through the tool holder.
For Morse taper holders and hole-Ø 10 to 25 mm.
Holder product no. 86630/86650



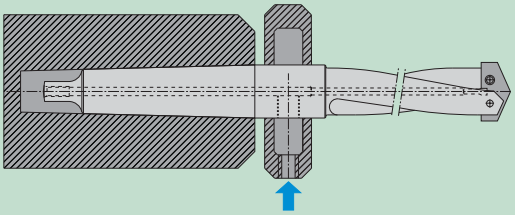
Lateral coolant supply bore on Morse taper
For **static** tools:
Radial coolant supply through the tool holder.
For Morse taper holders and hole-Ø 10 to 25 mm.
Holder on request



Lateral coolant supply bore at seat of collar position
For **static** tools:
Coolant supply via direct hose/pipe connection
with thread R1/4" and R1/2". For Morse taper holders with
seat for supply collar for hole-Ø 25 to 102 mm.
Holder product no. 86670/86680 and extra length holders



Lateral coolant supply bore at seat of collar position
For **rotary** tools:
Radial coolant supply through the supply collar. For Morse taper
holders with collar running face for hole-Ø over 25 mm.
Holder product no. 86670/86680 and extra length holders

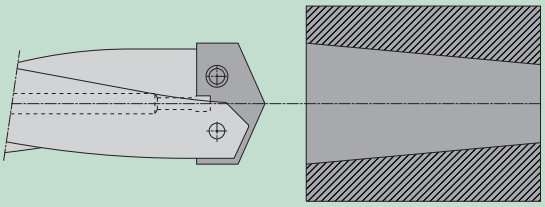


HARTNER

Multiplex - Tips and Tricks

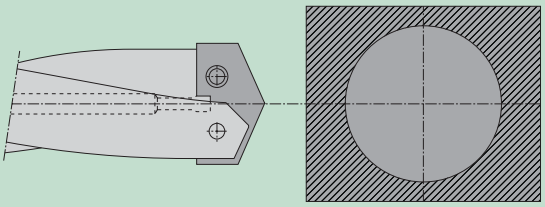
Drilling pre-drilled holes

As Multiplex system is guided predominantly by the chisel edge, it is not suitable for drilling pre-cast or pre-drilled holes. However, if the system is applied under the aforementioned conditions, the cutting parameters should be reduced.



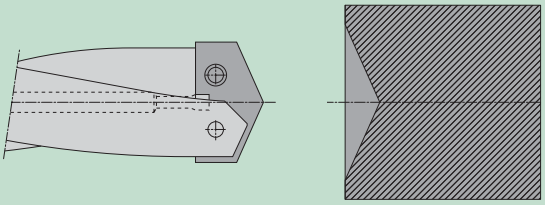
Interrupted cutting

The Multiplex system is not suitable for interrupted cutting (i.e. transverse holes that are larger than the drill diameter).



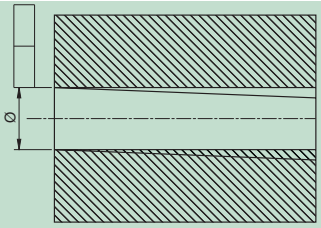
Centering

The inserts for the Multiplex system are web thinned. Therefore, centering is only necessary for larger drilling depths. If centering is necessary for technical reasons, the centering point angle must be equal or larger than the point angle of the insert.
The following applies: up to d = 25.4 mm = 135°
up to d = 66.0 mm = 132°
from d = 66.0 mm = 140°
A short holder (3xD) may also be applied for centering.



Drill running off center

A drill running off center can be due to several factors. An approximate value of 0.1-0.16 mm for drilling depths up to 7xD is accepted as the norm. In this case the shortest possible and therefore the most rigid holder type should be applied.



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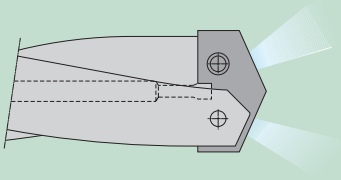
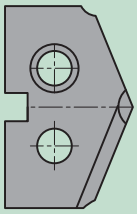
Coolant pressure

The coolant used with the Multiplex system is extremely important for the chip evacuation. It can be delivered at a pressure from approx. 5 bar. Generally, the following rule applies. The more coolant available, the better.
Through the use of coolant collars or coolant supply chucks, the Multiplex system can also be applied on older machines with existing external cooling. One of our technical engineers will gladly find a solution to your specific application task.



Heavy cutting edge wear

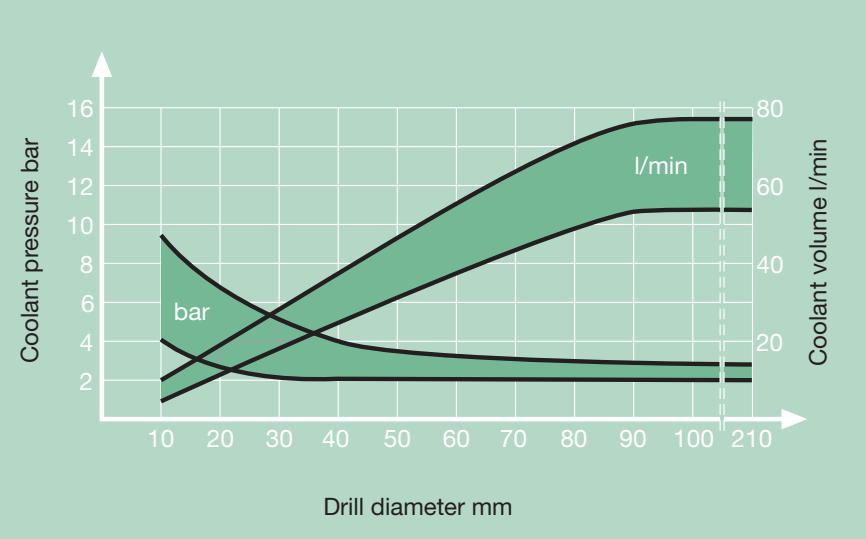
If heat has eroded the corners, the cutting speed is too high and has to be reduced. Measure the unaffected diameter and re-calculate the cutting speed based on this new diameter. Subtract 10% from resulting speed and enter the value into the machine.



Multiplex - Cooling Agents

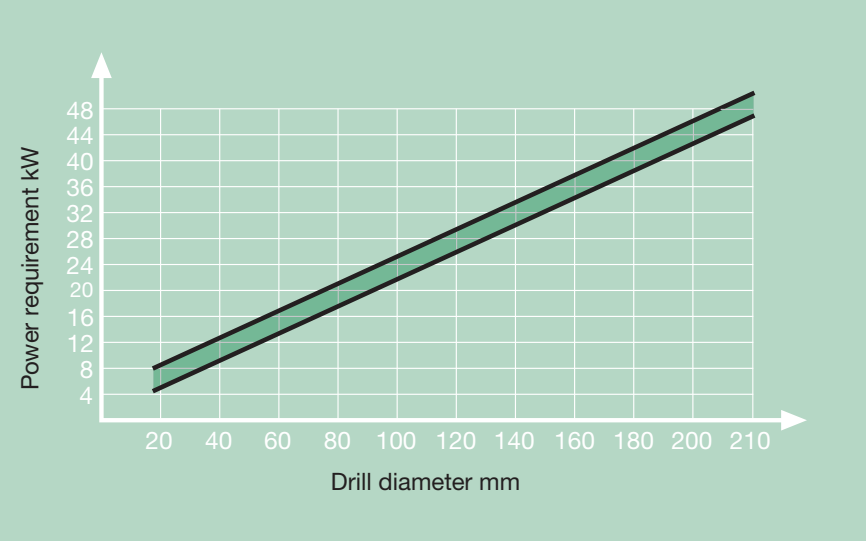
An efficient cooling agent is of extreme importance. Insufficient coolant pressure and volume can result in an unsatisfactory surface finish or tool breakage.
If possible, the size of solid particles in the coolant should not exceed 50 µm.

For the application of Multiplex tools with high speed steel or carbide inserts we recommend soluble oil as coolant applying the standard ratio of mixture of 1 : 20.
The coolant pressure and volume are more important than the composition of the soluble oil. An efficient cooling agent is therefore an important pre-requisite for sufficient cooling and lubrication.



Machine and Workpiece

Only a rigid machine, spindle, workpiece and tool clamping make the application of carbide possible. Insufficient rigidity leads to vibrations or rapid corner wear of the drill during the production of through holes when the chisel edge exits the workpiece, resulting in reduced tool life or insert breakage.

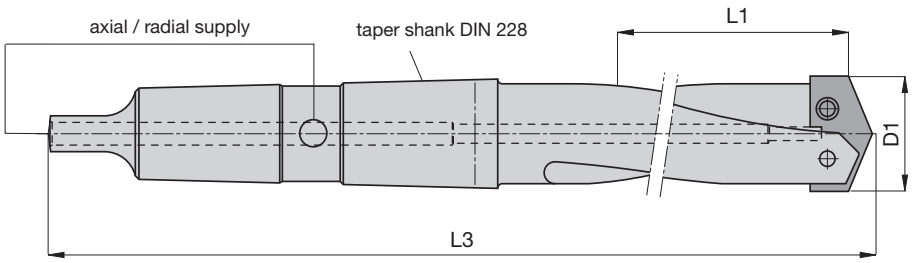


HARTNER

Multiplex - We can provide special solutions on request

(PLEASE MARK WITH A CROSS ACCORDING TO YOUR REQUIREMENTS):

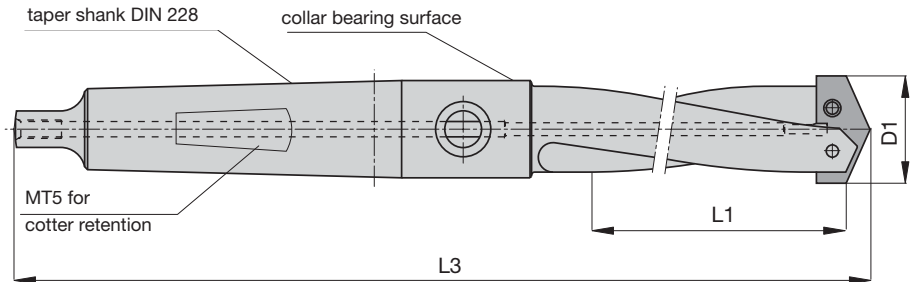
☐ **Morse taper shank holder**



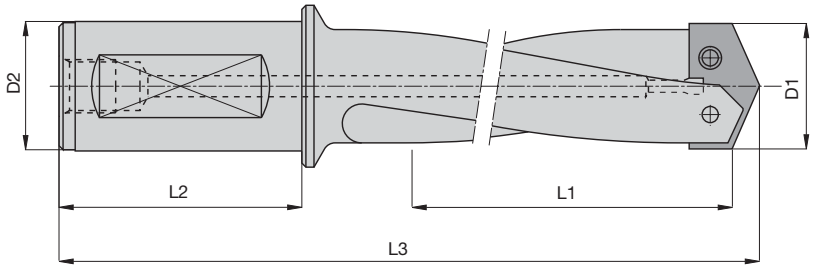
☐ **Morse taper shank holder with collar bearing surface for supply collar product no. 86690**

☐ **with flat**

☐ **without flat**



☐ **Straight shank holder**



To supply a quote we also require the following data:

Hole diameter
(max. diameter of insert 210 mm) ..... ☐

Material to be machined ..... ☐

Drilling depth L1 ..... ☐

Coolant pressure ..... ☐

Flute length ..... ☐

Quantity
(minimum order 2 units) ..... ☐

Total length
(up to approx. 1000 mm) ..... ☐

Transverse slot
(if Morse taper) ..... ☐

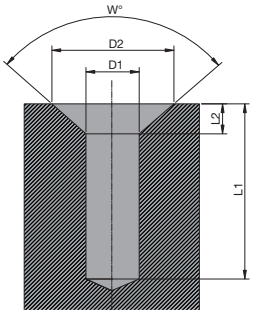
Shank diameter
(if Weldon shank) ..... ☐

For further information please contact our technical department. Telephone +49 74 31/125-0

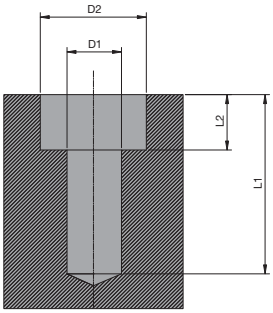
HARTNER

Multiplex - For special stepped holes we require the following data

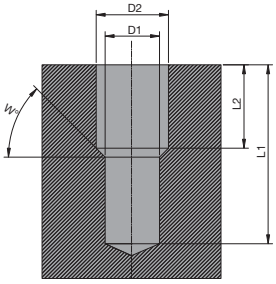
Step drill
for tapping size hole
with 90° step angle



Step drill
with 180° step angle



Stepped hole
with variable step angle



To supply a quote we also require the following data:

	Please mark with a cross above		
Hole form		**Angle W°**	
Diameter D1		**Material to be machined**	
Diameter D2			
Length L1			
Length L2			

or send us a drawing section that includes all the measurements required.

Multiplex - Special geometries

Form insert* to customer's drawing (HSS-E/PM HSS-E or carbide).

NC insert (HSS-E/PM HSS-E or carbide) with 90° or 120°. (depending on Ø the 90° angle at the point is distorted)

Insert with corner radius (HSS-E/PM HSS-E or carbide).

Stepped insert (HSS-E/PM HSS-E or carbide).

Brass geometry (carbide) for the application in brass and similar materials.

Radius insert* (HSS-E/PM HSS-E or carbide).

Point grind for fiber plastics (carbide).

*** Please note when using form or contour inserts:**

- Application only with short holders.
- Pre-machining of bore hole with standard Multiplex insert (Ø of standard insert ≤ Ø of blind hole insert)
- Drilling in solid material is recommended only under special conditions.
- Please forward a drawing of bore hole to our technicians, if possible.

Special geometries in combination with different coatings from our programme are available on request.
Please contact us. **Delivery period is approximately 3 weeks.**

Application recommendations Multiplex

Order-Nr.
Standard/DIN
Tool material
Carbide Type
Carbide grade
Surface finish

Tools with bold feed column no. are preferred choice.

Drill Ø mm	Feed column no. 1	2	3	4	5	6
	f (mm/rev.)					
10,00	0,08	0,09	0,11	0,14	0,19	0,24
12,50	0,09	0,11	0,13	0,17	0,22	0,28
16,00	0,11	0,13	0,16	0,21	0,27	0,34
20,00	0,13	0,15	0,19	0,25	0,32	0,40
25,00	0,16	0,18	0,23	0,29	0,38	0,48
31,50	0,19	0,22	0,27	0,35	0,45	0,57
40,00	0,23	0,26	0,33	0,42	0,54	0,69
50,00	0,27	0,31	0,39	0,50	0,64	0,82
63,00	0,32	0,38	0,47	0,60	0,77	0,98
102,00	0,40	0,48	0,59	0,74	0,85	1,20
150,00	0,59	0,70	0,87	1,09	1,25	1,76
100,00	0,78	0,93	1,16	1,45	1,67	2,35

Coolant:
○ Air
● Neat oil
● Soluble oil

Material group	Material examples Figures in bold = material no. to DIN EN 10 027	Tensile strength 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 hard. 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	●
Hardened steels	–		≤48 HRC	●
			≤66 HRC	●
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		●
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	●
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		● ○
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
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		●
Duroplastics	Epoxy resin, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastics	Plexiglass, Hostalen, Novodur, Makralon	≤100		● ○
Kevlar	Kevlar	≤1000		○
Glass, carbon concentr. plastics	GFK/CFK	≤1000		○

86602	86608	86605	86609	86611
10...25	10...25	25...102	10...102	10 - 65
HSS-E-PM	HSS-E-PM	HSS-E	HSS-E-PM	HSS-E-PM
T	F	T	A	A





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.
40	4	48	4	40	4	48	4	25	3
35	4	42	4	35	4	42	4	25	3
50	5	60	5	50	5	60	5	30	3
40	5	50	5	40	5	50	5	25	3
40	4	45	4	40	4	45	4	22	3
35	4	40	4	35	4	40	4	20	3
30	4	35	4	30	4	35	4	20	3
25	3	28	3	25	3	28	3	15	2
22	2	25	2	22	2	25	2	15	2
35	3	40	3	35	3	40	3	20	2
25	3	28	3	25	3	28	3	15	2
22	2	25	2	22	2	25	2	15	2
22	3	25	3	22	3	25	3	15	2
15	2	18	2	15	2	18	2	12	1
26	3	28	3	26	3	28	3	15	2
22	2	25	2	22	2	25	2	15	2
12	2	18	2	12	2	18	2	10	1
10	2	13	2	10	2	13	2	8	1
20	2	23	2	20	2	23	2	10	1
15	2	17	2	15	2	17	2	10	1
15	2	20	2	15	2	20	2	10	1
35	4	40	4	35	4	40	4	20	3
35	4	40	4	35	4	40	4	20	3
35	4	40	4	35	4	40	4	20	3
28	4	33	4	28	4	33	4	15	3
60	5	65	5	60	5	65	5	32	4
80	5	85	5	80	5	85	5	42	4
85	5	85	5	85	5	85	5	42	4
70	5	70	5	70	5	70	5	35	4
45	4	50	4	45	4	50	4	25	3
45	4	50	4	45	4	50	4	25	3
60	5	65	5	60	5	65	5	32	4
45	4	50	4	45	4	50	4	25	3
32	5	35	5	32	5	35	5	20	4
40	3	45	3	40	3	45	3	22	2
36	3	40	3	36	3	40	3	20	2
28	3	32	3	28	3	32	3	15	2
22	3	27	3	22	3	27	3	15	2

Application recommendations Multiplex

Order-Nr.
Standard/DIN
Tool material
Carbide Type
Carbide grade
Surface finish

Tools with bold feed column no. are preferred choice.

Drill Ø mm	Feed column no. 1	2	3	4	5	6
	f (mm/rev.)					
10,00	0,08	0,09	0,11	0,14	0,19	0,24
12,50	0,09	0,11	0,13	0,17	0,22	0,28
16,00	0,11	0,13	0,16	0,21	0,27	0,34
20,00	0,13	0,15	0,19	0,25	0,32	0,40
25,00	0,16	0,18	0,23	0,29	0,38	0,48
31,50	0,19	0,22	0,27	0,35	0,45	0,57
40,00	0,23	0,26	0,33	0,42	0,54	0,69
50,00	0,27	0,31	0,39	0,50	0,64	0,82
63,00	0,32	0,38	0,47	0,60	0,77	0,98
102,00	0,40	0,48	0,59	0,74	0,85	1,20
150,00	0,59	0,70	0,87	1,09	1,25	1,76
100,00	0,78	0,93	1,16	1,45	1,67	2,35

Coolant:
○ Air
● Neat oil
● Soluble oil

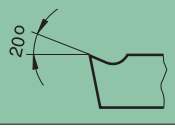
Material group	Material examples Figures in bold = material no. to DIN EN 10 027	Tensile strength N/mm²	Hardness	Coolant
Common structural steels	**1.0035** S185(St33), **1.0486** P275N(StE285), **1.0345** P235GH(H1), **1.0425** P265GH(H2)	≤500		●
	1.0050 E295 (St50-2), **1.0070** E360 (St70-2), **1.8937** 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 hard. 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	●
Hardened steels	–		≤48 HRC	●
			≤66 HRC	●
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		●
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	●
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		● ○
Special alloys	Nimonic, Inconel, Monel, Hastelloy	≤2000		●
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		●
Duroplastics	Epoxy resin, Resopal, Pertinax, Moltopren	≤150		○
Thermoplastics	Plexiglass, Hostalen, Novodur, Makralon	≤100		● ○
Kevlar	Kevlar	≤1000		○
Glass, carbon concentr. plastics	GFK/CFK	≤1000		○

86708	86709
10...35	10...35
VHM	VHM
H22	H22
K20/K40	K20/K40
T	T

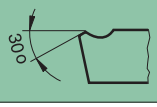
86701	86702
10...35	10...35
VHM	VHM
H22	H22
K20/K40	K20/K40
F	F

86711
10 - 65
VHM
H22
K20/K40
○

Order no. 86709/86701
without chamfer
For materials with tensile strength up to 600 N/mm²



Order no. 86708/86702
with chamfer
For materials with tensile strength over 600 N/mm²



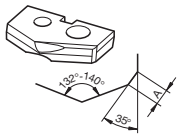




v_c m/min	Feed column no.	v_c m/min	Feed column no.	v_c m/min	Feed column no.
60	5	70	5		
55	4	65	4		
100	4	115	4		
95	4	105	4		
80	4	90	4		
80	4	90	4		
75	3	85	3		
70	4	80	4		
60	3	70	3		
85	4	95	4		
70	4	80	4		
55	3	65	3		
60	3	65	3		
50	2	55	2		
40	3	45	3		
35	2	40	2		
40	2	45	2		
35	2	40	2		
25	1	30	1		
40	2	45	2		
25	2	30	2		
100	**5**	120	**5**		
90	**4**	105	**4**		
80	**4**	90	**4**		
65	**3**	75	**3**		
25	**1**	30	**1**		
180	5			180	**5**
160	5			160	**5**
140	5			140	**5**
130	5			130	**5**
150	5			150	**4**
70	4			70	**5**
160	5			160	**4**
110	4			110	**5**
80	5			80	**4**
65	4			65	**4**
45	4			45	**4**
35	4			35	**4**
70	3		3	70	**3**
70	3		3	70	**3**
70	3		3	70	**3**
70	3		3	70	**3**

Point angle for insert diameter
≤ Ø 25,4 = 135°
> Ø 25,4 = 132°
> Ø 66,0 = 140°
> Ø 190,0 = 150°

Margin for carbide inserts Ø 10.0 - 35 mm and HSS-E-PM inserts Ø 10.0 - 25.4 mm



Insert diameter	Margin A
Ø 10,0 - 13,4	0,25 ±0,05
Ø 13,5 - 18,9	0,30 ±0,05
Ø 19,0 - 25,4	0,35 ±0,05
Ø 25,5 - 35,0	0,40 ±0,05

Please note:
As Multiplex tools are predominantly guided by the chisel edge, they are not suitable for the drilling of pre-cast or pre-drilled holes!

Further details can be found in the chapter „Important Notes" on page 24.

The interchangeable insert 86609 is made from PM HSS

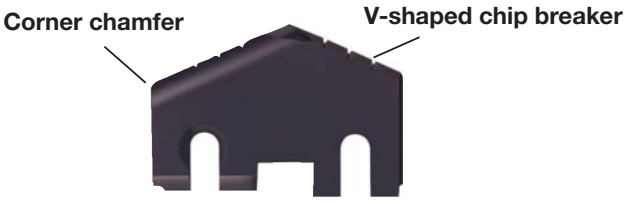
The insert has an optimised geometry and AlTiN-coating for an improved chip formation, longer tool life and reduced wear.

The V-form chip breakers reduce the jamming of chips and therefore increase the tool life of the insert.

Application range:
Steel, cast iron, high heat resistant alloys

Advantages:

- **Improved chip formation**
- **Increased tool life (thanks to corner chamfer) and reduced corner wear and reduced burr formation especially on 'break through'**
- **Improved heat dissipation and reduced wear thanks to corner chamfer**
- **Higher cutting speeds and longer tool life achievable thanks to new HSS-E-PM (≤ Ø 66.0mm; > Ø 66,0 mm: HSS-E)**



Code ISO

P	Steel, high-alloyed steel
M	Stainless steel
K	Grey cast iron, spher, graphite/mall. cast iron
N	Aluminium and other non-ferrous metals
S	Special, super and titanium alloys
H	Hardened steel and chilled cast iron

Pictograms

Tool material	HSS-E	HSS-E-PM		VHM			
	High-speed steel			solid carbide			
Surface finish	bright	steam tempered	AlTiN	FIRE	TiN	nickel-plated	browned
Drilling depth	<3xD	<5xD	<7xD				
Standard	WN	Hartner standard					
Point angle	132°	135°	140°	150°	180°		
Cutting direction	R						
	right						
Shank form	~HB			MK		SK	MAS-BT
	selon norme DIN 6535			Morse taper		Taper shank	
Web thinned							
	with web thinned						
Internal coolant							
	with IC						

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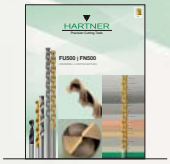
Our programme:



FU 500/FN500

INOX Drills

Micro Precision Drills

TS-Drills

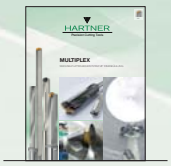
Highlights

Threading Tools

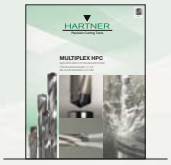
De-burring Tools

TF 100 Multi-Mill

Gun Drills



Multiplex



Multiplex HPC

Standard Range

TM Vending Machines

Solid Carbide
High Performance Milling Cutters

Chamfering Milling Cutters

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