

EN
2026



TOOLS AND INSERTS FOR DRILLING & MULTICUT

Cutting Tool Solutions





Founded in 2001, MASAM, s.r.o. has over 20 years of experience in the development and production of custom cutting tools, tool reconditioning and coating, as well as precision CNC machining for various industrial applications.



Headquarters

Vráble, **Slovakia**

Driven by a culture of professional development and technological leadership, MASAM invests continuously in machine upgrades, R&D, and dual-education partnerships with local technical schools. Its strategic goal is to expand capacity, enter new market segments, and exceed the expectations of industrial clients worldwide.

Facts and figures

1 production sites 

1 00 000 tools sharpened and produced annually 

10 countries in which we are active 

70 employees 

in-house design and development department 

strong focus on custom manufacturing 



Inserts and tools for indexable drilling in 3xD, 4xD and 5xD

Presentation:

▲ Ø14.0 mm to Ø44.0 mm



Your benefits:

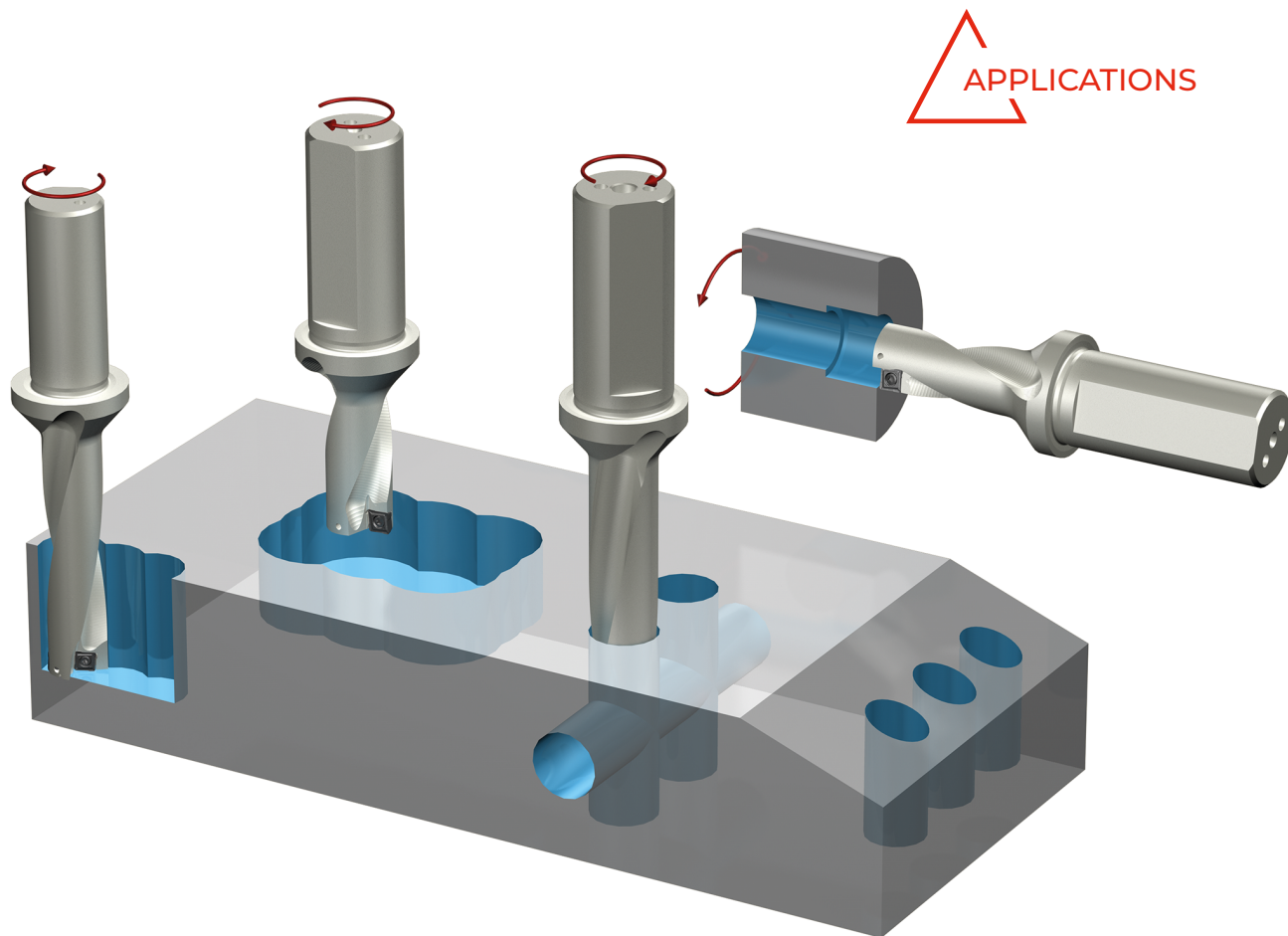
Performance booster suitable for extreme machining:

- ▲ drilling through stacks,
- ▲ drilling into edges,
- ▲ drilling into corner angles,
- ▲ drilling into weld seams or ridged surfaces

Costs savings:

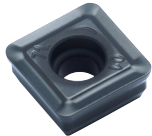
- ▲ Achieves an increase in cutting data and feed rates of up to 20 %
- ▲ Optimum dimensional accuracy in the most difficult drilling conditions
- ▲ A single tool combines key features such as real accuracy, top performance parameters and deep drilling depths.
- ▲ Cost reductions in stocking and ease of handling due to identical internal and external indexable inserts

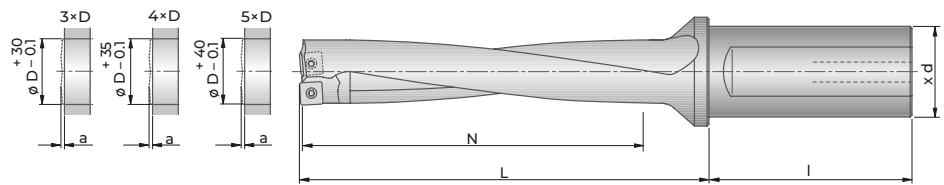




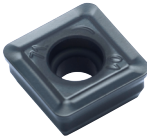
Range 3xD:
ø14.0 mm - ø19.5 mm

Tools	ø [mm]	Designation	ø d×l [mm]	N [mm]	L [mm]
	14.0	VRP.1400.20.05.C.3D	20x50	42	55
	14.5	VRP.1450.20.05.C.3D	20x50	45	59
	15.0	VRP.1500.20.05.C.3D	20x50	45	59
	15.5	VRP.1550.20.05.C.3D	20x50	48	64
	16.0	VRP.1600.20.05.C.3D	20x50	48	64
	16.5	VRP.1650.20.05.C.3D	20x50	51	68

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-050204-HCV MVP25	...-HCV	P
	PVR-90L-050204-CCV MVK15	...-CCV	K
	PVR-90L-050204-SCV MVP40	...-SCV	M
	PVR-90L-050204-HCV MVP40	...-HCV	S

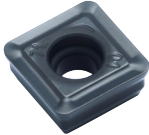


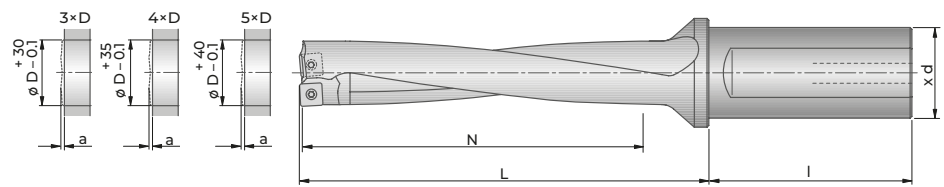
Tools 	$\varnothing$ [mm]	Designation	$\varnothing d \times l$ [mm]	N [mm]	L [mm]
	17.0	VRP.1700.20.06.C.3D	20x50	51	68
	17.5	VRP.1750.25.06.C.3D	25x56	51	71
	18.0	VRP.1800.25.06.C.3D	25x56	54	71
	18.5	VRP.1850.25.06.C.3D	25x56	55.5	75
	19.0	VRP.1900.25.06.C.3D	25x56	57	75
	19.5	VRP.1950.25.06.C.3D	25x56	60	78

Inserts 	Designation	Chipbreaker	Material group
	PVR-90L-06T206-HCV MVP25	...-HCV	P
	PVR-90L-06T206-CCV MVK15	...-CCV	K
	PVR-90L-06T206-SCV MVP40	...-SCV	M
	PVR-90L-06T206-HCV MVP40	...-HCV	S

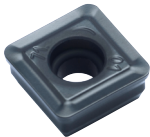
Range 3xD:
ø20.0 mm - ø28.0 mm

Tools	ø [mm]	Designation	ø d×l [mm]	N [mm]	L [mm]
	20.0	VRP.2000.25.07.C.3D	25x56	60	78
	20.5	VRP.2050.25.07.C.3D	25x56	61.5	82
	21.0	VRP.2100.25.07.C.3D	25x56	66	85
	21.5	VRP.2150.25.07.C.3D	25x56	66	85
	22.0	VRP.2200.25.07.C.3D	25x56	66	85
	22.5	VRP.2250.25.07.C.3D	25x56	69	89
	23.0	VRP.2300.25.07.C.3D	25x56	69	89

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-070308-HCV MVP25	...-HCV	P
	PVR-90L-070308-CCV MVK15	...-CCV	K
	PVR-90L-070308-SCV MVP40	...-SCV	M
	PVR-90L-070308-HCV MVP40	...-HCV	S

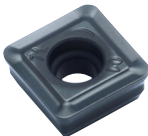


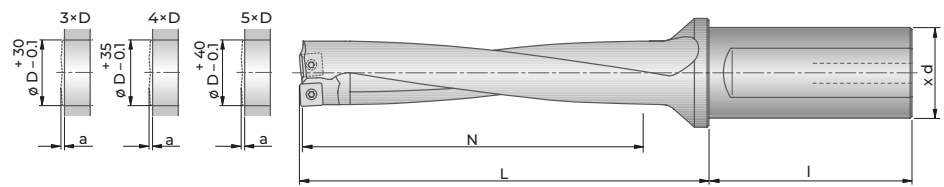
Tools	Ø [mm]	Designation	Ø d×l [mm]	N [mm]	L [mm]
	23.5	VRP.2350.32.08.C.3D	32x60	72	92
	24.0	VRP.2400.32.08.C.3D	32x60	72	92
	24.5	VRP.2450.32.08.C.3D	32x60	75	96
	25.0	VRP.2500.32.08.C.3D	32x60	78	96
	25.5	VRP.2550.32.08.C.3D	32x60	78	99
	26.0	VRP.2600.32.08.C.3D	32x60	81	99
	26.5	VRP.2650.32.08.C.3D	32x60	81	103
	27.0	VRP.2700.32.08.C.3D	32x60	81	103
	27.5	VRP.2750.32.08.C.3D	32x60	84	106
	28.0	VRP.2800.32.08.C.3D	32x60	84	106

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-080308-HCV MVP25	...-HCV	P
	PVR-90L-080308-CCV MVK15	...-CCV	K
	PVR-90L-080308-SCV MVP40	...-SCV	M
	PVR-90L-080308-HCV MVP40	...-HCV	S

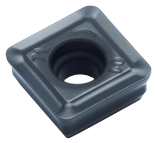
Range 3xD:
ø28.5 mm - ø38.0 mm

Tools	ø [mm]	Designation	ø d×l [mm]	N [mm]	L [mm]
	28.5	VRP.2850.32.10.C.3D	32x60	87	110
	29.0	VRP.2900.32.10.C.3D	32x60	87	110
	29.5	VRP.2950.32.10.C.3D	32x60	90	113
	30.0	VRP.3000.32.10.C.3D	32x60	90	113
	30.5	VRP.3050.40.10.C.3D	40x68	93	117
	31.0	VRP.3100.40.10.C.3D	40x68	93	117
	31.5	VRP.3150.40.10.C.3D	40x68	96	120
	32.0	VRP.3200.40.10.C.3D	40x68	96	120
	32.5	VRP.3250.40.10.C.3D	40x68	99	124
	33.0	VRP.3300.40.10.C.3D	40x68	99	124

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-10T308-HCV MVP25	...-HCV	P
	PVR-90L-10T308-CCV MVK15	...-CCV	K
	PVR-90L-10T308-SCV MVP40	...-SCV	M
	PVR-90L-10T308-HCV MVP40	...-HCV	S

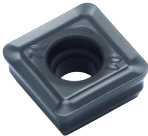


Tools	Ø [mm]	Designation	Ø d×l [mm]	N [mm]	L [mm]
	33.5	VRP.3350.40.11.C.3D	40x68	102	127
	34.0	VRP.3400.40.11.C.3D	40x68	102	127
	34.5	VRP.3450.40.11.C.3D	40x68	102	131
	35.0	VRP.3500.40.11.C.3D	40x68	105	131
	35.5	VRP.3550.40.11.C.3D	40x68	105	134
	36.0	VRP.3600.40.11.C.3D	40x68	108	134
	36.5	VRP.3650.40.11.C.3D	40x68	108	138
	37.0	VRP.3700.40.11.C.3D	40x68	111	138
	37.5	VRP.3750.40.11.C.3D	40x68	111	141
	38.0	VRP.3800.40.11.C.3D	40x68	114	141

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-110408-HCV MVP25	...-HCV	P
	PVR-90L-110408-CCV MVK15	...-CCV	K
	PVR-90L-110408-SCV MVP40	...-SCV	M
	PVR-90L-110408-HCV MVP40	...-HCV	S

Range 3xD:
ø38.5 mm - ø44.0 mm

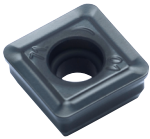
Tools	ø [mm]	Designation	ø d×l [mm]	N [mm]	L [mm]
	38.5	VRP.3850.40.13.C.3D	40x68	117	145
	39.0	VRP.3900.40.13.C.3D	40x68	117	145
	39.5	VRP.3950.40.13.C.3D	40x68	120	148
	40.0	VRP.4000.40.13.C.3D	40x68	120	148
	40.5	VRP.4050.40.13.C.3D	40x68	123	152
	41.0	VRP.4100.40.13.C.3D	40x68	123	152
	41.5	VRP.4150.40.13.C.3D	40x68	126	155
	42.0	VRP.4200.40.13.C.3D	40x68	126	155
	42.5	VRP.4250.40.13.C.3D	40x68	129	159
	43.0	VRP.4300.40.13.C.3D	40x68	129	159
	43.5	VRP.4350.40.13.C.3D	40x68	132	162
	44.0	VRP.4400.40.13.C.3D	40x68	132	162

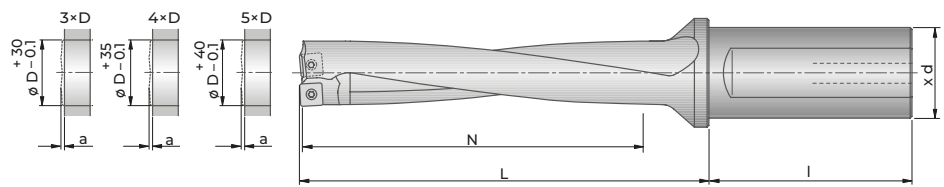
Inserts	Designation	Chipbreaker	Material group
	PVR-90L-130508-HCV MVP25	...-HCV	P
	PVR-90L-130508-CCV MVK15	...-CCV	K
	PVR-90L-130508-SCV MVP40	...-SCV	M
	PVR-90L-130508-HCV MVP40	...-HCV	S



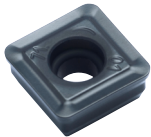
Range 4xD:
ø14.0 mm - ø19.5 mm

Tools	ø [mm]	Designation	ø d×l [mm]	N [mm]	L [mm]
	14.0	VRP.1400.20.05.C.4D	20x50	56	69
	14.5	VRP.1450.20.05.C.4D	20x50	60	74
	15.0	VRP.1500.20.05.C.4D	20x50	60	74
	15.5	VRP.1550.20.05.C.4D	20x50	64	80
	16.0	VRP.1600.20.05.C.4D	20x50	64	80
	16.5	VRP.1650.20.05.C.4D	20x50	68	85

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-050204-HCV MVP25	...-HCV	P
	PVR-90L-050204-CCV MVK15	...-CCV	K
	PVR-90L-050204-SCV MVP40	...-SCV	M
	PVR-90L-050204-HCV MVP40	...-HCV	S

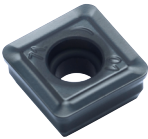


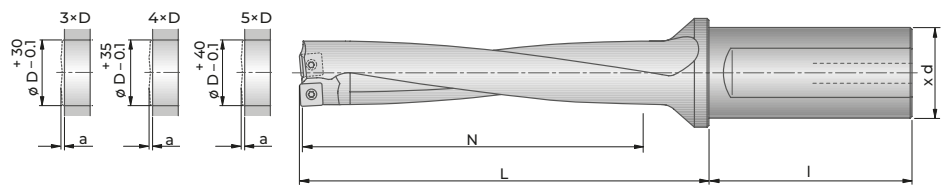
Tools	Ø [mm]	Designation	Ø d×l [mm]	N [mm]	L [mm]
	17.0	VRP.1700.20.06.C.4D	20x50	68	85
	17.5	VRP.1750.25.06.C.4D	25x56	72	89
	18.0	VRP.1800.25.06.C.4D	25x56	72	89
	18.5	VRP.1850.25.06.C.4D	25x56	76	94
	19.0	VRP.1900.25.06.C.4D	25x56	76	94
	19.5	VRP.1950.25.06.C.4D	25x56	80	98

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-06T206-HCV MVP25	...-HCV	P
	PVR-90L-06T206-CCV MVK15	...-CCV	K
	PVR-90L-06T206-SCV MVP40	...-SCV	M
	PVR-90L-06T206-HCV MVP40	...-HCV	S

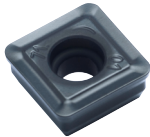
Range 4xD:
ø20.0 mm - ø28.0 mm

Tools	ø [mm]	Designation	ø d×l [mm]	N [mm]	L [mm]
	20.0	VRP.2000.25.07.C.4D	25x56	80	98
	20.5	VRP.2050.25.07.C.4D	25x56	84	103
	21.0	VRP.2100.25.07.C.4D	25x56	84	103
	21.5	VRP.2150.25.07.C.4D	25x56	88	107
	22.0	VRP.2200.25.07.C.4D	25x56	88	107
	22.5	VRP.2250.25.07.C.4D	25x56	92	112
	23.0	VRP.2300.25.07.C.4D	25x56	92	112

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-070308-HCV MVP25	...-HCV	P
	PVR-90L-070308-CCV MVK15	...-CCV	K
	PVR-90L-070308-SCV MVP40	...-SCV	M
	PVR-90L-070308-HCV MVP40	...-HCV	S

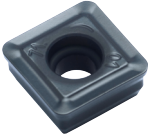


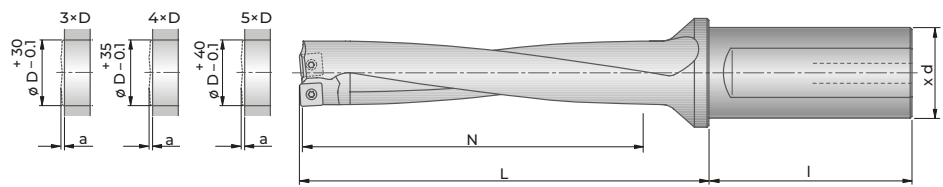
Tools	Ø [mm]	Designation	Ø d×l [mm]	N [mm]	L [mm]
	23.5	VRP.2350.32.08.C.4D	32x60	96	116
	24.0	VRP.2400.32.08.C.4D	32x60	96	116
	24.5	VRP.2450.32.08.C.4D	32x60	100	121
	25.0	VRP.2500.32.08.C.4D	32x60	100	121
	25.5	VRP.2550.32.08.C.4D	32x60	104	125
	26.0	VRP.2600.32.08.C.4D	32x60	104	125
	26.5	VRP.2650.32.08.C.4D	32x60	108	130
	27.0	VRP.2700.32.08.C.4D	32x60	108	130
	27.5	VRP.2750.32.08.C.4D	32x60	112	134
	28.0	VRP.2800.32.08.C.4D	32x60	112	134

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-080308-HCV MVP25	...-HCV	P
	PVR-90L-080308-CCV MVK15	...-CCV	K
	PVR-90L-080308-SCV MVP40	...-SCV	M
	PVR-90L-080308-HCV MVP40	...-HCV	S

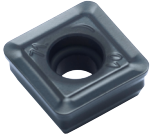
Range 4xD:
ø28.5 mm - ø38.0 mm

Tools	ø [mm]	Designation	ø d×l [mm]	N [mm]	L [mm]
	28.5	VRP.2850.32.10.C.4D	32x60	116	139
	29.0	VRP.2900.32.10.C.4D	32x60	116	139
	29.5	VRP.2950.32.10.C.4D	32x60	120	143
	30.0	VRP.3000.32.10.C.4D	32x60	120	143
	30.5	VRP.3050.40.10.C.4D	40x68	124	148
	31.0	VRP.3100.40.10.C.4D	40x68	124	148
	31.5	VRP.3150.40.10.C.4D	40x68	128	152
	32.0	VRP.3200.40.10.C.4D	40x68	128	152
	32.5	VRP.3250.40.10.C.4D	40x68	132	157
	33.0	VRP.3300.40.10.C.4D	40x68	132	157

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-10T308-HCV MVP25	...-HCV	P
	PVR-90L-10T308-CCV MVK15	...-CCV	K
	PVR-90L-10T308-SCV MVP40	...-SCV	M
	PVR-90L-10T308-HCV MVP40	...-HCV	S



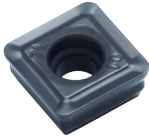
Tools	Ø [mm]	Designation	Ø d×l [mm]	N [mm]	L [mm]
	33.5	VRP.3350.40.11.C.4D	40x68	136	161
	34.0	VRP.3400.40.11.C.4D	40x68	136	161
	34.5	VRP.3450.40.11.C.4D	40x68	140	166
	35.0	VRP.3500.40.11.C.4D	40x68	140	166
	35.5	VRP.3550.40.11.C.4D	40x68	144	170
	36.0	VRP.3600.40.11.C.4D	40x68	144	170
	36.5	VRP.3650.40.11.C.4D	40x68	148	175
	37.0	VRP.3700.40.11.C.4D	40x68	148	175
	37.5	VRP.3750.40.11.C.4D	40x68	152	179
	38.0	VRP.3800.40.11.C.4D	40x68	152	179

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-110408-HCV MVP25	...-HCV	P
	PVR-90L-110408-CCV MVK15	...-CCV	K
	PVR-90L-110408-SCV MVP40	...-SCV	M
	PVR-90L-110408-HCV MVP40	...-HCV	S

Range 4xD:

Ø 38.5 mm - Ø 44.0 mm

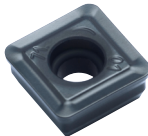
Tools	Ø [mm]	Designation	Ø d×l [mm]	N [mm]	L [mm]
	38.5	VRP.3850.40.13.C.4D	40x68	156	184
	39.0	VRP.3900.40.13.C.4D	40x68	156	184
	39.5	VRP.3950.40.13.C.4D	40x68	160	188
	40.0	VRP.4000.40.13.C.4D	40x68	160	188
	40.5	VRP.4050.40.13.C.4D	40x68	164	193
	41.0	VRP.4100.40.13.C.4D	40x68	164	193
	41.5	VRP.4150.40.13.C.4D	40x68	168	197
	42.0	VRP.4200.40.13.C.4D	40x68	168	197
	42.5	VRP.4250.40.13.C.4D	40x68	172	202
	43.0	VRP.4300.40.13.C.4D	40x68	172	202
	43.5	VRP.4350.40.13.C.4D	40x68	176	206
	44.0	VRP.4400.40.13.C.4D	40x68	176	206

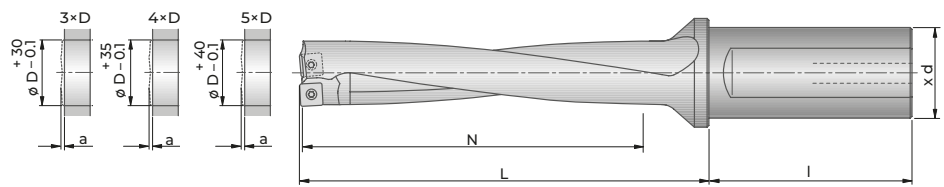
Inserts	Designation	Chipbreaker	Material group
	PVR-90L-130508-HCV MVP25	...-HCV	P
	PVR-90L-130508-CCV MVK15	...-CCV	K
	PVR-90L-130508-SCV MVP40	...-SCV	M
	PVR-90L-130508-HCV MVP40	...-HCV	S



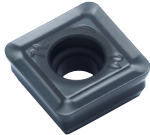
Range 5xD:
ø14.0 mm - ø19.5 mm

Tools	ø [mm]	Designation	ø d×l [mm]	N [mm]	L [mm]
	14.0	VRP.1400.20.05.C.5D	20x50	70	83
	14.5	VRP.1450.20.05.C.5D	20x50	75	89
	15.0	VRP.1500.20.05.C.5D	20x50	75	89
	15.5	VRP.1550.20.05.C.5D	20x50	80	96
	16.0	VRP.1600.20.05.C.5D	20x50	80	96
	16.5	VRP.1650.20.05.C.5D	20x50	85	102

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-050204-HCV MVP25	...-HCV	P
	PVR-90L-050204-CCV MVK15	...-CCV	K
	PVR-90L-050204-SCV MVP40	...-SCV	M
	PVR-90L-050204-HCV MVP40	...-HCV	S

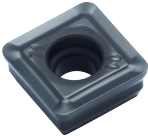


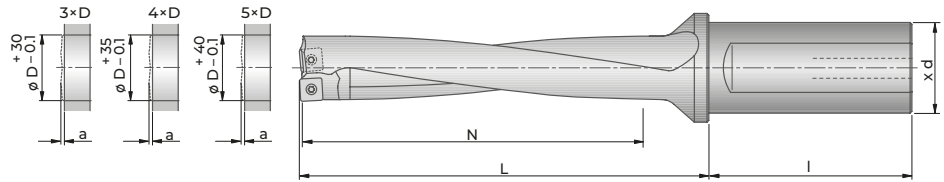
Tools	Ø [mm]	Designation	Ø d×l [mm]	N [mm]	L [mm]
	17.0	VRP.1700.20.06.C.5D	20x50	85	102
	17.5	VRP.1750.25.06.C.5D	25x56	90	107
	18.0	VRP.1800.25.06.C.5D	25x56	90	107
	18.5	VRP.1850.25.06.C.5D	25x56	95	113
	19.0	VRP.1900.25.06.C.5D	25x56	95	113
	19.5	VRP.1950.25.06.C.5D	25x56	100	118

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-06T206-HCV MVP25	...-HCV	P
	PVR-90L-06T206-CCV MVK15	...-CCV	K
	PVR-90L-06T206-SCV MVP40	...-SCV	M
	PVR-90L-06T206-HCV MVP40	...-HCV	S

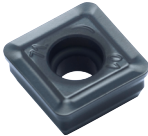
Range 5xD:
ø20.0 mm - ø28.0 mm

Tools	ø [mm]	Designation	ø d×l [mm]	N [mm]	L [mm]
	20.0	VRP.2000.25.07.C.5D	25x56	100	118
	20.5	VRP.2050.25.07.C.5D	25x56	105	124
	21.0	VRP.2100.25.07.C.5D	25x56	105	124
	21.5	VRP.2150.25.07.C.5D	25x56	110	129
	22.0	VRP.2200.25.07.C.5D	25x56	110	129
	22.5	VRP.2250.25.07.C.5D	25x56	115	135
	23.0	VRP.2300.25.07.C.5D	25x56	115	135

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-070308-HCV MVP25	...-HCV	P
	PVR-90L-070308-CCV MVK15	...-CCV	K
	PVR-90L-070308-SCV MVP40	...-SCV	M
	PVR-90L-070308-HCV MVP40	...-HCV	S

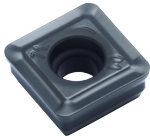


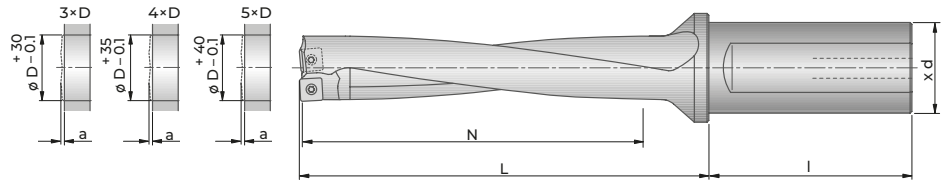
Tools	Ø [mm]	Designation	Ø d×l [mm]	N [mm]	L [mm]
	23.5	VRP.2350.32.08.C.5D	32x60	120	140
	24.0	VRP.2400.32.08.C.5D	32x60	125	140
	24.5	VRP.2450.32.08.C.5D	32x60	125	146
	25.0	VRP.2500.32.08.C.5D	32x60	130	146
	25.5	VRP.2550.32.08.C.5D	32x60	130	151
	26.0	VRP.2600.32.08.C.5D	32x60	135	151
	26.5	VRP.2650.32.08.C.5D	32x60	135	157
	27.0	VRP.2700.32.08.C.5D	32x60	135	157
	27.5	VRP.2750.32.08.C.5D	32x60	140	162
	28.0	VRP.2800.32.08.C.5D	32x60	140	162

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-080308-HCV MVP25	...-HCV	P
	PVR-90L-080308-CCV MVK15	...-CCV	K
	PVR-90L-080308-SCV MVP40	...-SCV	M
	PVR-90L-080308-HCV MVP40	...-HCV	S

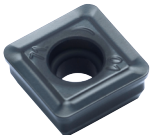
Range 5xD:
ø28.5 mm - ø38.0 mm

Tools	ø [mm]	Designation	ø d×l [mm]	N [mm]	L [mm]
	28.5	VRP.2850.32.10.C.5D	32x60	145	168
	29.0	VRP.2900.32.10.C.5D	32x60	145	168
	29.5	VRP.2950.32.10.C.5D	32x60	150	173
	30.0	VRP.3000.32.10.C.5D	32x60	150	173
	30.5	VRP.3050.40.10.C.5D	40x68	155	179
	31.0	VRP.3100.40.10.C.5D	40x68	155	179
	31.5	VRP.3150.40.10.C.5D	40x68	160	184
	32.0	VRP.3200.40.10.C.5D	40x68	160	184
	32.5	VRP.3250.40.10.C.5D	40x68	165	190
	33.0	VRP.3300.40.10.C.5D	40x68	165	190

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-10T308-HCV MVP25	...-HCV	P
	PVR-90L-10T308-CCV MVK15	...-CCV	K
	PVR-90L-10T308-SCV MVP40	...-SCV	M
	PVR-90L-10T308-HCV MVP40	...-HCV	S

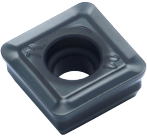


Tools	Ø [mm]	Designation	Ø d×l [mm]	N [mm]	L [mm]
	33.5	VRP.3350.40.11.C.5D	40x68	170	195
	34.0	VRP.3400.40.11.C.5D	40x68	170	195
	34.5	VRP.3450.40.11.C.5D	40x68	175	201
	35.0	VRP.3500.40.11.C.5D	40x68	175	206
	35.5	VRP.3550.40.11.C.5D	40x68	180	206
	36.0	VRP.3600.40.11.C.5D	40x68	180	212
	36.5	VRP.3650.40.11.C.5D	40x68	185	212
	37.0	VRP.3700.40.11.C.5D	40x68	185	212
	37.5	VRP.3750.40.11.C.5D	40x68	190	217
	38.0	VRP.3800.40.11.C.5D	40x68	190	217

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-110408-HCV MVP25	...-HCV	P
	PVR-90L-110408-CCV MVK15	...-CCV	K
	PVR-90L-110408-SCV MVP40	...-SCV	M
	PVR-90L-110408-HCV MVP40	...-HCV	S

Range 5xD:
ø38.5 mm - ø44.0 mm

Tools	ø [mm]	Designation	ø d×l [mm]	N [mm]	L [mm]
	38.5	VRP.3850.40.13.C.5D	40x68	195	223
	39.0	VRP.3900.40.13.C.5D	40x68	195	223
	39.5	VRP.3950.40.13.C.5D	40x68	200	228
	40.0	VRP.4000.40.13.C.5D	40x68	200	228
	40.5	VRP.4050.40.13.C.5D	40x68	205	234
	41.0	VRP.4100.40.13.C.5D	40x68	205	234
	41.5	VRP.4150.40.13.C.5D	40x68	210	239
	42.0	VRP.4200.40.13.C.5D	40x68	210	239
	42.5	VRP.4250.40.13.C.5D	40x68	215	245
	43.0	VRP.4300.40.13.C.5D	40x68	215	245
	43.5	VRP.4350.40.13.C.5D	40x68	220	250
	44.0	VRP.4400.40.13.C.5D	40x68	220	250

Inserts	Designation	Chipbreaker	Material group
	PVR-90L-130508-HCV MVP25	...-HCV	P
	PVR-90L-130508-CCV MVK15	...-CCV	K
	PVR-90L-130508-SCV MVP40	...-SCV	M
	PVR-90L-130508-HCV MVP40	...-HCV	S

Technical information

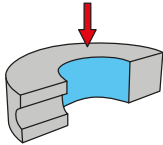


Guideline values for solid drilling					Cutting speed v_c (m/min)									
Material group	Strength Rm (N/mm ²)	Hardness HB	Material	Material example, material code/DIN	Geometry	 MVP25 (M/Min)			 MVP40 (M/Min)			 MVK15 (M/Min)		
						min	opt.	max	min	opt.	max	min	opt.	max
P	1.0	≤ 500	non-alloy steels	1.0037 (S235JR) 1.0715 (11SMn30) 1.0044 (S2575JR)	_HCV	200	260	320	-	-	-	-	-	-
	2.0	500-900	non-alloy / low alloy steels	1.0050 (E295) 1.0535 (C55) 1.7131 (16MnCr5)	_HCV	250	270	300	-	-	-	-	-	-
	2.1	< 500	lead alloys	1.0718 (11SMnPb30)	_HCV	200	260	320	-	-	-	-	-	-
	3.0	> 900	low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1.7225 (42CrMo4) 1.1221 (C60E)	_HCV	140	180	220	-	-	-	-	-	-
	4.0	> 900	high alloy steels	1.2341 (6CrMo15-5) 1.2601 (X165CrMoV12)	_HCV	120	160	200	-	-	-	-	-	-
	4.1		HSS		_HCV	50	70	90	-	-	-	-	-	-
S	5.0	250	special alloys: Inconel, Hastelloy, Nimonic, stc.	2.4668 (NiuCr19Fe19Nb5Mo3) 2.4631 (Nimonic 80A)	_HCV	-	-	-	20	40	60	-	-	-
	5.1	400	titanium, titanium alloys	3.7115 (TiAl5Sn2.5)	_HCV	-	-	-	40	60	60	-	-	-
M	6.0	≤ 600	stainless steels	1.4306 (X2CrNi19-11) 1.4401 (X5CrNiMo17-12-2)	_SCV	-	-	-	140	180	220	-	-	-
	6.1	< 900	stainless steels	1.4511 (X3CrNb17) 1.4571 (X10CrNiMoTi17-12-2)	_SCV	-	-	-	120	160	200	-	-	-
	7.0	> 900	stainless / fireproof steels	1.4713 (X10CrAlSi7) 1.4862 (X8NiCrSi38-18)	_SCV	-	-	-	120	160	200	-	-	-
K	8.0	180	gray cast iron	0.6025 (EN-GJL-250) 0.6035 (EN-GJL-350)	_CCV	-	-	-	-	-	-	160	240	320
	8.1	250	alloy gray cast iron	0.6660 (GGL-NiCr20 2)	_CCV	-	-	-	-	-	-	100	140	180
	9.0	≤ 600	130 spheroidal graphite cast iron, ferritic	0.7040 (EN-GJS-400-15)	_CCV	-	-	-	-	-	-	120	160	200
	9.1	230	spheroidal graphite cast iron, ferritic/perlitic	0.7050 (EN-GJS-500-7) 0.7055 (GJS-55) 0.8055 (GTW-55)	_CCV	-	-	-	-	-	-	100	140	180
	10.0	> 600	250 spheroidal graphite cast iron, perlitic malleable iron	0.7060 (EN-GJS-600-3) 0.8165 (GTS-65)	_CCV	-	-	-	-	-	-	90	120	150
	10.1	200	alloyed spheroidal graphite cast iron	0.7661 (EN-GJSA-XNiCr20-2)	_CCV	-	-	-	-	-	-	90	120	150
	10.2	300	vermicular cast iron	EN-GJV Ti < 0,2 EN-GJV Ti > 0,2	_CCV	-	-	-	-	-	-	70	100	130

Cutting values shown are relating to the basic recommendations for cutting materials given.

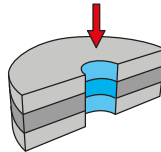
Feed f (mm/rev)						
Ø 14 – 16.5 f (mm/rev)	Ø 17 – 19.5 f (mm/rev)	Ø 20 – 23 f (mm/rev)	Ø 23.5 – 28 f (mm/rev)	Ø 28.5 – 33 f (mm/rev)	Ø 33.5 – 38 f (mm/rev)	Ø 38.5 – 44 f (mm/rev)
0.04 – 0.1	0.08 – 0.1	0.06 – 0.12	0.06 – 0.12	0.06 – 0.12	0.06 – 0.12	0.06 – 0.12
0.04 – 0.14	0.1 – 0.15	0.11 – 0.16	0.11 – 0.16	0.11 – 0.13	0.11 – 0.16	0.11 – 0.16
0.06 – 0.16	0.1 – 0.16	0.13 – 0.18	0.13 – 0.2	0.15 – 0.2	0.15 – 0.2	0.15 – 0.2
0.06 – 0.16	0.11 – 0.16	0.13 – 0.22	0.14 – 0.22	0.14 – 0.22	0.14 – 0.22	0.14 – 0.22
0.06 – 0.15	0.1 – 0.15	0.12 – 0.22	0.14 – 0.22	0.14 – 0.22	0.14 – 0.22	0.14 – 0.22
0.04 – 0.1	0.04 – 0.1	0.05 – 0.1	0.06 – 0.12	0.07 – 0.13	0.07 – 0.14	0.08 – 0.15
0.04 – 0.08	0.04 – 0.08	0.05 – 0.9	0.06 – 0.10	0.07 – 0.11	0.07 – 0.11	0.08 – 0.12
0.04 – 0.1	0.04 – 0.1	0.05 – 0.1	0.06 – 0.12	0.07 – 0.13	0.07 – 0.14	0.08 – 0.15
0.06 – 0.12	0.08 – 0.12	0.1 – 0.18	0.12 – 0.18	0.1 – 0.18	0.1 – 0.18	0.1 – 0.18
0.06 – 0.12	0.08 – 0.12	0.1 – 0.18	0.12 – 0.18	0.12 – 0.18	0.12 – 0.18	0.12 – 0.18
0.06 – 0.1	0.06 – 0.16	0.09 – 0.16	0.1 – 0.16	0.1 – 0.16	0.1 – 0.16	0.1 – 0.16
0.08 – 0.18	0.1 – 0.18	0.14 – 0.25	0.18 – 0.3	0.2 – 0.3	0.2 – 0.3	0.2 – 0.3
0.08 – 0.16	0.1 – 0.16	0.12 – 0.23	0.16 – 0.28	0.18 – 0.28	0.18 – 0.28	0.18 – 0.28
0.08 – 0.18	0.12 – 0.18	0.14 – 0.25	0.18 – 0.3	0.2 – 0.3	0.2 – 0.3	0.2 – 0.3
0.08 – 0.18	0.12 – 0.18	0.14 – 0.25	0.18 – 0.3	0.2 – 0.3	0.2 – 0.3	0.2 – 0.3
0.08 – 0.18	0.12 – 0.18	0.14 – 0.25	0.18 – 0.3	0.2 – 0.3	0.2 – 0.3	0.2 – 0.3
0.08 – 0.16	0.1 – 0.16	0.12 – 0.23	0.16 – 0.28	0.18 – 0.28	0.18 – 0.28	0.18 – 0.28
0.08 – 0.15	0.09 – 0.15	0.11 – 0.22	0.15 – 0.27	0.17 – 0.27	0.17 – 0.27	0.17 – 0.27

Applications



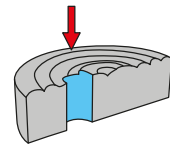
Producing a transverse through hole

Reduce the feed when the drill enters the transverse hole. With transverse bores you should drill from both sides if possible. Reduce feed rate between 30 and 60% (depending on the proportion of hole to transverse hole).



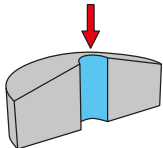
Stack drilling

When stack drilling ensure that there is either no gap or the maximum gap possible. Good work piece clamping is required.



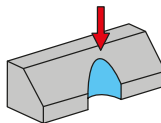
Drilling on an uneven surface

Depending on the surface quality, reduce the feed rate when drilling.



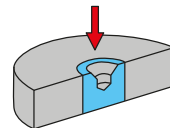
Drilling of a convex surface

When the drill enters the convex work piece surface, the central insert cuts first.



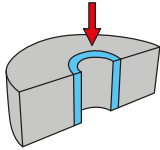
Drilling on inclined surfaces

When the drill enters or exits at an angle to the work piece surface, reduce the feed rate by 30 to 60%.

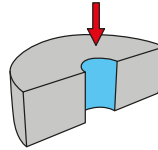


Spot drilling in a central hole

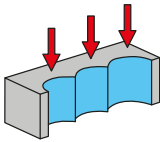
When spot drilling in a bead or central hole, reduce the feed rate by up to 50%.

**Reboring**

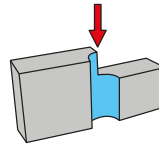
Possible.

**Drilling into
solid material**

Possible.

**Chain drilling**

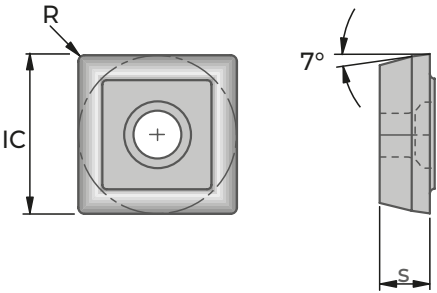
It is important to ensure a symmetrical distribution. Reduce the feed rate to 50% in case of cut interruption. Use tough insert types and a corner radius for optimal results.

**Drilling on a
stepped surface**

Due to the undefined drilling surface, pre-machining is required (face countersinking, face milling).

PVR inserts

Geometry:



Grades and materials:

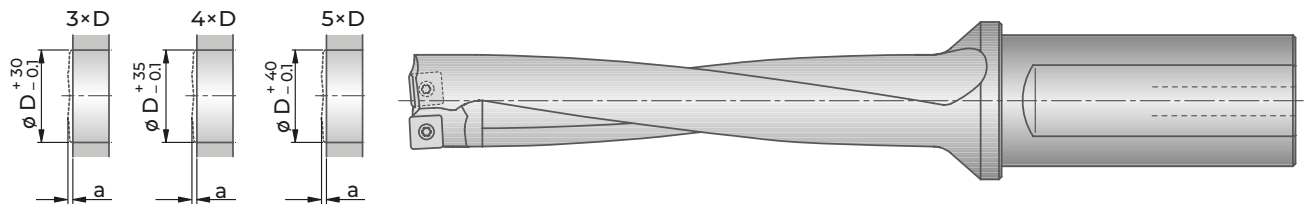
Material group		Grade
P	Steel	MVP25
M	Stainless steel	MVP40
K	Cast iron	MVK15
S	Super alloys	MVP40

Spare parts screws:

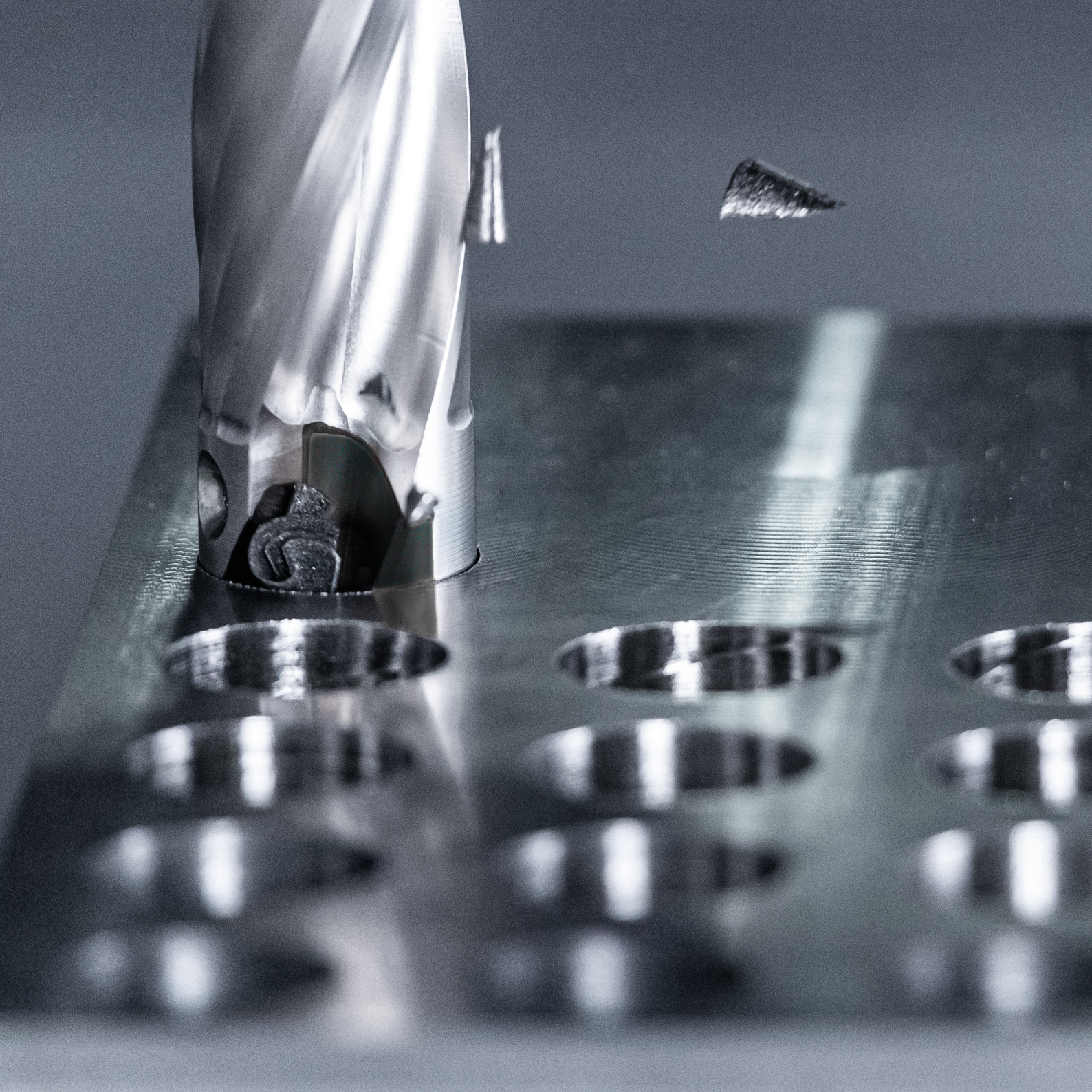
Insert	Clamping screw description	Key size	Recommended Torque	IC [mm]	s [mm]	R [mm]
PVR-90L-050204	S/M2x4,3-6IP	T06IP	0.52 Nm	5.0	2.1	0.4
PVR-90L-06T206	S/M2,2x5,5-6IP	T06IP	1.01 Nm	5.8	2.5	0.6
PVR-90L-070308	S/M2,5x6,3-8IP	T08IP	1.28 Nm	6.9	3.0	0.8
PVR-90L-080308	S3070-8IP	T08IP	2.25 Nm	8.4	3.5	0.8
PVR-90L-10T308	S3575-15IP	T15IP	2.8 Nm	10.3	4.0	0.8
PVR-90L-110408	S3585-15IP	T15IP	2.9 Nm	11.1	4.4	0.8
PVR-90L-130508	S45100-20IP	T20IP	6.25 Nm	13.3	5.0	0.8

Indexable insert drill

Geometry:



Ø [mm]		Radius [mm]	a [mm]	Ø [mm]		Radius [mm]	a [mm]	Ø [mm]		Radius [mm]	a [mm]
14.0				23.5				33.5			
14.5				24.0	IC8.4	R0.8	2.3	34.0			
15.0	IC5.0	R0.4	1.5	24.5	Ø23.10- Ø28.00			34.5	IC11.1	R0.8	2.9
15.5	Ø14.0- Ø16.50			25.0				35.0	Ø33.10- Ø38.00		
16.0				25.5				35.5			
16.5				26.0				36.0			
17.0				26.5	IC8.4	R0.8	2.3	36.5			
17.5				27.0	Ø23.10- Ø28.00			37.0	IC11.1	R0.8	2.9
18.0	IC5.8	R0.6	1.7	27.5				37.5	Ø33.10- Ø38.00		
18.5	Ø16.60- Ø19.50			28.0				38.0			
19.0				28.5				38.5			
19.5				29.0				39.0			
20.0				29.5				39.5			
20.5				30.0				40.0			
21.0				30.5	IC10.3	R0.8	2.7	40.5			
21.5	IC6.9	R0.8	1.9	31.0	Ø28.10- Ø33.00			41.0	IC13.3	R0.8	
22.0	Ø19.60- Ø23.00			31.5				41.5	Ø38.10- Ø44.00		
22.5				32.0				42.0			
23.0				32.5				42.5			
				33.0				43.0			
								43.5			
								44.0			



Spade drill in 3xD and 5xD



Presentation:

▲ Ø14.0 mm to Ø30.0 mm



Your benefits:

- ▲ Easy handling
- ▲ Increase your productivity thanks to interchangeable insert
- ▲ Precise and stable insert seat, clamping via Torx Plus screw

Costs savings:

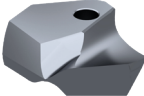
- ▲ Sustainable and economical
- ▲ Increase your productivity thanks to reducing your tool change time up to 20%
- ▲ High feed possibility up to 0.5 mm/rev in steel



Range 3xD:

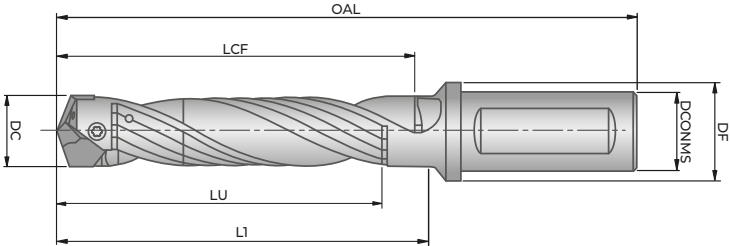
ø14.0 mm - ø30.0 mm

Tools	Ø [mm]	Designation
	14.0	VRH.1400.16.C.3D
	14.5	VRH.1450.16.C.3D
	15.0	VRH.1500.20.C.3D
	15.5	VRH.1550.20.C.3D
	16.0	VRH.1600.20.C.3D
	16.5	VRH.1650.20.C.3D
	17.0	VRH.1700.20.C.3D
	17.5	VRH.1750.20.C.3D
	18.0	VRH.1800.20.C.3D
	18.5	VRH.1850.20.C.3D
	19.0	VRH.1900.25.C.3D
	19.5	VRH.1950.25.C.3D
	20.0	VRH.2000.25.C.3D
	20.5	VRH.2050.25.C.3D
	21.0	VRH.2100.25.C.3D
	21.5	VRH.2150.25.C.3D

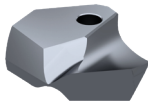
Inserts	Designation
	HLVR.1400MVP50
	HLVR.1450MVP50
	HLVR.1500MVP50
	HLVR.1550MVP50
	HLVR.1600MVP50
	HLVR.1650MVP50
	HLVR.1700MVP50
	HLVR.1750MVP50
	HLVR.1800MVP50
	HLVR.1850MVP50
	HLVR.1900MVP50
	HLVR.1950MVP50
	HLVR.2000MVP50
	HLVR.2050MVP50
	HLVR.2100MVP50
	HLVR.2150MVP50

Spare parts screws:

Spade Size Ø [mm]	Clamping screw description	Key size	Recommended Torque
14,00–15,99	M2,2x13-8IP	T08IP	0.9 Nm
16,00–17,99	M2,5x15-8IP	T08-IP	1.2 Nm
18,00–21,99	M3,0x17-10IP	T10-IP	2.2 Nm



Tools	∅ [mm]	Designation
	22.0	VRH.2200.25.C.3D
	22.5	VRH.2250.25.C.3D
	23.0	VRH.2300.25.C.3D
	23.5	VRH.2350.25.C.3D
	24.0	VRH.2400.32.C.3D
	24.5	VRH.2450.32.C.3D
	25.0	VRH.2500.32.C.3D
	25.5	VRH.2550.32.C.3D
	26.0	VRH.2600.32.C.3D
	26.5	VRH.2650.32.C.3D
	27.0	VRH.2700.32.C.3D
	27.5	VRH.2750.32.C.3D
	28.0	VRH.2800.32.C.3D
	28.5	VRH.2850.32.C.3D
	29.0	VRH.2900.32.C.3D
	29.5-30.0	VRH.2950.32.C.3D

Inserts	Designation
	HLVR.2200MVP50
	HLVR.2250MVP50
	HLVR.2300MVP50
	HLVR.2350MVP50
	HLVR.2400MVP50
	HLVR.2450MVP50
	HLVR.2500MVP50
	HLVR.2550MVP50
	HLVR.2600MVP50
	HLVR.2650MVP50
	HLVR.2700MVP50
	HLVR.2750MVP50
	HLVR.2800MVP50
	HLVR.2850MVP50
	HLVR.2900MVP50
	HLVR.2950MVP50

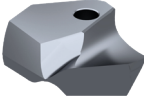
Spare parts screws:

Spade Size ∅ [mm]	Clamping screw description	Key size	Recommended Torque
22,00–23,99	M3,5x21-10IP	T10-IP	3.2 Nm
24,00–25,99	M4,0x23-15IP	T15-IP	5.0 Nm
26,00–30,00	M4,5x25-20IP	T20-IP	6.0 Nm

Range 5xD:

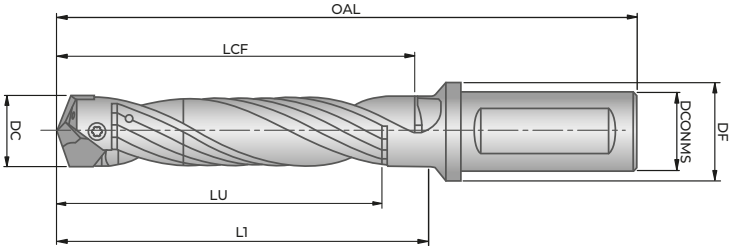
ø14.0 mm - ø30.0 mm

Tools	Ø [mm]	Designation
	14.0	VRH.1400.16.C.5D
	14.5	VRH.1450.16.C.5D
	15.0	VRH.1500.20.C.5D
	15.5	VRH.1550.20.C.5D
	16.0	VRH.1600.20.C.5D
	16.5	VRH.1650.20.C.5D
	17.0	VRH.1700.20.C.5D
	17.5	VRH.1750.20.C.5D
	18.0	VRH.1800.20.C.5D
	18.5	VRH.1850.20.C.5D
	19.0	VRH.1900.25.C.5D
	19.5	VRH.1950.25.C.5D
	20.0	VRH.2000.25.C.5D
	20.5	VRH.2050.25.C.5D
	21.0	VRH.2100.25.C.5D
	21.5	VRH.2150.25.C.5D

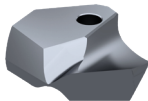
Inserts	Designation
	HLVR.1400MVP50
	HLVR.1450MVP50
	HLVR.1500MVP50
	HLVR.1550MVP50
	HLVR.1600MVP50
	HLVR.1650MVP50
	HLVR.1700MVP50
	HLVR.1750MVP50
	HLVR.1800MVP50
	HLVR.1850MVP50
	HLVR.1900MVP50
	HLVR.1950MVP50
	HLVR.2000MVP50
	HLVR.2050MVP50
	HLVR.2100MVP50
	HLVR.2150MVP50

Spare parts screws:

Spade Size Ø [mm]	Clamping screw description	Key size	Recommended Torque
14,00–15,99	M2,2x13-8IP	T08IP	0.9 Nm
16,00–17,99	M2,5x15-8IP	T08-IP	1.2 Nm
18,00–21,99	M3,0x17-10IP	T10-IP	2.2 Nm



Tools	Ø [mm]	Designation
	22.0	VRH.2200.25.C.5D
	22.5	VRH.2250.25.C.5D
	23.0	VRH.2300.25.C.5D
	23.5	VRH.2350.25.C.5D
	24.0	VRH.2400.32.C.5D
	24.5	VRH.2450.32.C.5D
	25.0	VRH.2500.32.C.5D
	25.5	VRH.2550.32.C.5D
	26.0	VRH.2600.32.C.5D
	26.5	VRH.2650.32.C.5D
	27.0	VRH.2700.32.C.5D
	27.5	VRH.2750.32.C.5D
	28.0	VRH.2800.32.C.5D
	28.5	VRH.2850.32.C.5D
	29.0	VRH.2900.32.C.5D
	29.5-30.0	VRH.2950.32.C.5D

Inserts	Designation
	HLVR.2200MVP50
	HLVR.2250MVP50
	HLVR.2300MVP50
	HLVR.2350MVP50
	HLVR.2400MVP50
	HLVR.2450MVP50
	HLVR.2500MVP50
	HLVR.2550MVP50
	HLVR.2600MVP50
	HLVR.2650MVP50
	HLVR.2700MVP50
	HLVR.2750MVP50
	HLVR.2800MVP50
	HLVR.2850MVP50
	HLVR.2900MVP50
	HLVR.2950MVP50

Spare parts screws:

Spade Size Ø [mm]	Clamping screw description	Key size	Recommended Torque
22,00–23,99	M3,5x21-10IP	T10-IP	3.2 Nm
24,00–25,99	M4,0x23-15IP	T15-IP	5.0 Nm
26,00–30,00	M4,5x25-20IP	T20-IP	6.0 Nm



Technical information

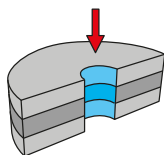


Recommended cutting speed								
Material group	Strength Rm (N/mm ²)	Hardness HB	Material	Material example, material code/DIN	Geometry	 MVP50 (M/Min) opt. max.		
						min		
P	1.0	≤ 500	non-alloy steels	1.0037 (S235JR) 1.0715 (11SMn30) 1.0044 (S2575JR)	_HCV	80	100	120
	2.0	500-900	non-alloy / low alloy steels	1.0050 (E295) 1.0535 (C55) 1.7131 (16MnCr5)	_HCV	80	100	120
	2.1	< 500	lead alloys	1.0718 (11SMnPb30)	_HCV	90	100	130
	3.0	> 900	low alloy steels: heat resistant structural, heat treated, nitride and tools steels	1.7225 (42CrMo4) 1.1221 (C60E)	_HCV	70	90	110
	4.0	> 900	high alloy steels	1.2341 (6CrMo15-5) 1.2601 (X165CrMoV12)	_HCV	40	50	60
	4.1		HSS		_HCV	40	50	60
S	5.0	250	special alloys: Inconel, Hastelloy, Nimonic, stc.	2.4668 (NiuCr19Fe19Nb5Mo3) 2.4631 (Nimonic 80A)	_HCV		–	
	5.1	400	titanium, titanium alloys	3.7115 (TiAl5Sn2.5)	_HCV		–	
M	6.0	≤ 600	stainless steels	1.4306 (X2CrNi19-11) 1.4401 (X5CrNiMo17-12-2)	_SCV		–	
	6.1	< 900	stainless steels	1.4511 (X3CrNb17) 1.4571 (X10CrNiMoTi17-12-2)	_SCV		–	
	7.0	> 900	stainless / fireproof steels	1.4713 (X10CrAlSi7) 1.4862 (X8NiCrSi38-18)	_SCV		–	
K	8.0	180	gray cast iron	0.6025 (EN-GJL-250) 0.6035 (EN-GJL-350)	_CCV		–	
	8.1	250	alloy gray cast iron	0.6660 (GGL-NiCr20 2)	_CCV		–	
	9.0	≤ 600	spheroidal graphite cast iron, ferritic	0.7040 (EN-GJS-400-15)	_CCV		–	
	9.1	230	spheroidal graphite cast iron, ferritic/perlitic	0.7050 (EN-GJS-500-7) 0.7055 (GJS-55) 0.8055 (GTW-55)	_CCV		–	
	10.0	> 600	spheroidal graphite cast iron, perlitic malleable iron	0.7060 (EN-GJS-600-3) 0.8165 (GTS-65)	_CCV		–	
	10.1	200	alloyed spheroidal graphite cast iron	0.7661 (EN-GJSA-XNiCr20-2)	_CCV		–	
	10.2	300	vermicular cast iron	EN-GJV Ti < 0,2 EN-GJV Ti > 0,2	_CCV		–	

Cutting values shown are relating to the basic recommendations for cutting materials given.

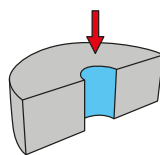
Recommended feed rate			
Ø 14 – 16 f (mm/rev)	Ø 16 – 20 f (mm/rev)	Ø 20 – 25 f (mm/rev)	Ø 25 – 30 f (mm/rev)
0.22	0.25	0.28	0.32
0.25	0.28	0.32	0.35
0.25	0.28	0.32	0.35
0.22	0.24	0.26	0.30
0.17	0.19	0.21	0.23
0.17	0.19	0.21	0.23
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Applications



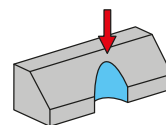
Stack drilling

When stack drilling ensure that there is either no gap or the maximum gap possible. Good work piece clamping is required.



Drilling into solid material

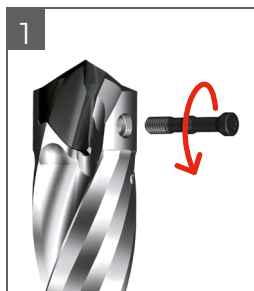
Possible.



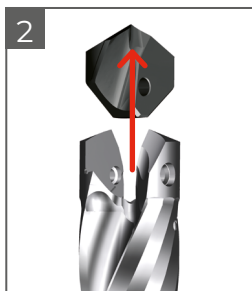
Drilling on inclined surfaces

When drilling into angled surfaces $<3^\circ$, reduce the feed by approx. 50%.
For an angled drill entrance $>3^\circ$, prior spot facing is required.

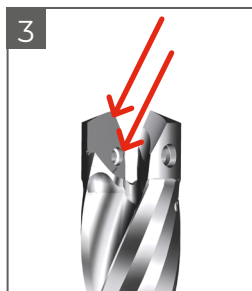
Assembly of the indexable insert



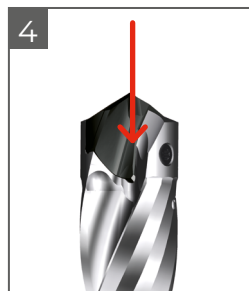
Loosen the clamping screw anti-clockwise using a TORX PLUS® screwdriver (screwdriver not included in the scope of supply).



Remove the indexable insert from the insert seat.



Clean the insert seat and screw thread with compressed air.

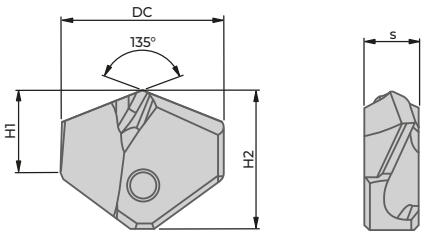


Insert the new indexable insert in the insert seat.



Insert clamping screw from correct side and tighten clockwise with the specified torque. Observe the change interval of the clamping screw!

Spade geometry



Grades and materials:

Material group	Grade
P Steel	MVP25

Spare parts screws:

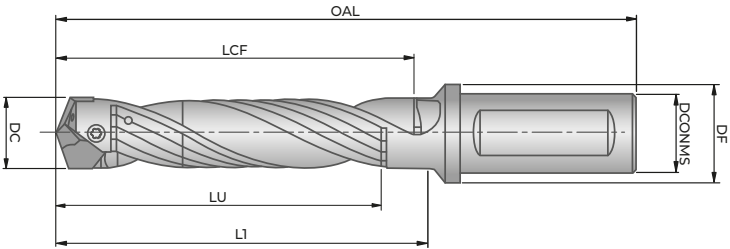
Insert
HLVR.1400MVP50
HLVR.1450MVP50
HLVR.1500MVP50
HLVR.1550MVP50
HLVR.1600MVP50
HLVR.1650MVP50
HLVR.1700MVP50
HLVR.1750MVP50
HLVR.1800MVP50
HLVR.1850MVP50

DC [mm]	H2 [mm]	s [mm]	H1 [mm]
14	12.8	5.1	7.73
14.5	13.1	5.1	7.84
15	13.4	5.1	7.95
15.5	13.7	5.1	8.05
16	14.4	5.9	9.06
16.5	14.7	5.9	9.17
17	15	5.9	9.28
17.5	15.3	5.9	9.39
18	16.3	6.6	10.19
18.5	16.6	6.6	10.3

Spare parts screws:

Insert	DC [mm]	H2 [mm]	s [mm]	H1 [mm]
HLVR.1900MVP50	19	16.9	6.6	10.41
HLVR.1950MVP50	19.5	17.2	6.6	10.52
HLVR.2000MVP50	20	18.2	7.3	11.33
HLVR.2050MVP50	20.5	18.5	7.3	11.43
HLVR.2100MVP50	21	18.8	7.3	11.54
HLVR.2150MVP50	21.5	19.1	7.3	11.65
HLVR.2200MVP50	22	20.2	8	12.56
HLVR.2250MVP50	22.5	20.5	8	12.67
HLVR.2300MVP50	23	20.8	8	12.78
HLVR.2350MVP50	23.5	21.1	8	12.88
HLVR.2400MVP50	24	22.1	8.7	13.69
HLVR.2450MVP50	24.5	22.4	8.7	13.8
HLVR.2500MVP50	25	22.7	8.7	13.91
HLVR.2550MVP50	25.5	23	8.7	14.02
HLVR.2600MVP50	26	24.1	9.5	14.92
HLVR.2650MVP50	26.5	24.4	9.5	15.03
HLVR.2700MVP50	27	24.7	9.5	15.14
HLVR.2750MVP50	27.5	25	9.5	15.25
HLVR.2800MVP50	28	25.3	9.5	15.36
HLVR.2850MVP50	28.5	25.6	9.5	15.47
HLVR.2900MVP50	29	25.9	9.5	15.57
HLVR.2950MVP50	29.5	26.2	9.5	15.68

Spade drill geometry



Designation	DC	DCONMS	OAL	LU	LCF	DF	LI
VRH.1400.16.C.5D	14,00-14,49	16	137.9	72.5	79.8	20	81.5
VRH.1450.16.C.5D	14,50-14,99	16	141	75	82.5	20	84.8
VRH.1500.20.C.5D	15,00-15,49	20	146.1	77.5	85.3	25	85.7
VRH.1550.20.C.5D	15,50-15,99	20	149.2	80	88.0	25	89
VRH.1600.20.C.5D	16,00-16,49	20	152.3	82.5	90.8	25	92.4
VRH.1650.20.C.5D	16,50-16,99	20	155.4	85	93.5	25	95.7
VRH.1700.20.C.5D	17,00-17,49	20	158.5	87.5	96.3	25	99.1
VRH.1750.20.C.5D	17,50-17,99	20	161.6	90	99.0	25	102.4
VRH.1800.20.C.5D	18,00-18,49	20	164.7	92.5	101.8	25	105.8
VRH.1850.20.C.5D	18,50-18,99	20	167.8	95	104.5	25	109.1
VRH.1900.25.C.5D	19,00-19,49	25	176.9	97.5	107.3	30	110
VRH.1950.25.C.5D	19,50-19,99	25	180	100	110.0	30	113.3
VRH.2000.25.C.5D	20,00-20,49	25	183.1	102.5	112.8	30	116.7
VRH.2050.25.C.5D	20,50-20,99	25	186.2	105	115.5	30	120
VRH.2100.25.C.5D	21,00-21,49	25	189.3	107.5	118.3	30	123.4
VRH.2150.25.C.5D	21,50-21,99	25	192.4	110	121.0	30	126.7
VRH.2200.25.C.5D	22,00-22,49	25	195.5	112.5	123.8	30	130.1
VRH.2250.25.C.5D	22,50-22,99	25	198.6	115	126.5	30	133.4
VRH.2300.25.C.5D	23,00-23,49	25	201.7	117.5	129.3	30	136.8
VRH.2350.25.C.5D	23,50-23,99	25	204.8	120	132.0	30	140.1
VRH.2400.32.C.5D	24,00-24,49	32	211.9	122.5	134.8	39	139
VRH.2450.32.C.5D	24,50-24,99	32	215	125	137.5	39	142.3
VRH.2500.32.C.5D	25,00-25,49	32	218.1	127.5	140.3	39	145.7
VRH.2550.32.C.5D	25,50-25,99	32	221.2	130	143.0	39	149
VRH.2600.32.C.5D	26,00-26,49	32	224.3	132.5	145.8	39	152.4

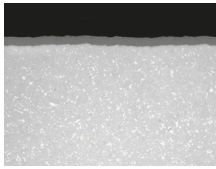
Designation	DC	DCONMS	OAL	LU	LCF	DF	LI
VRH.2650.32.C.5D	26,50-26,99	32	227.4	135	148.5	39	155.7
VRH.2700.32.C.5D	27,00-27,49	32	230.5	137.5	151.3	39	159.1
VRH.2750.32.C.5D	27,50-27,99	32	233.6	140	154.0	39	162.4
VRH.2800.32.C.5D	28,00-28,49	32	236.7	142.5	156.8	39	165.8
VRH.2850.32.C.5D	28,50-28,99	32	239.8	145	159.5	39	169.1
VRH.2900.32.C.5D	29,00-29,49	32	242.9	147.5	162.3	39	172.5
VRH.2950.32.C.5D	29,50-30,00	32	246	150	165.0	39	175.8
VRH.1400.16.C.3D	14,00-14,49	16	108.9	43.5	50.8	20	52.5
VRH.1450.16.C.3D	14,50-14,99	16	111	45	52.5	20	54.8
VRH.1500.20.C.3D	15,00-15,49	20	115.1	46.5	54.3	25	54.7
VRH.1550.20.C.3D	15,50-15,99	20	117.2	48	56.0	25	57
VRH.1600.20.C.3D	16,00-16,49	20	119.3	49.5	57.8	25	59.4
VRH.1650.20.C.3D	16,50-16,99	20	121.4	51	59.5	25	61.7
VRH.1700.20.C.3D	17,00-17,49	20	123.5	52.5	61.3	25	64.1
VRH.1750.20.C.3D	17,50-17,99	20	125.6	54	63.0	25	66.4
VRH.1800.20.C.3D	18,00-18,49	20	127.7	55.5	64.8	25	68.8
VRH.1850.20.C.3D	18,50-18,99	20	129.8	57	66.5	25	71.1
VRH.1900.25.C.3D	19,00-19,49	25	137.9	58.5	68.3	30	71
VRH.1950.25.C.3D	19,50-19,99	25	140	60	70.0	30	73.3
VRH.2000.25.C.3D	20,00-20,49	25	142.1	61.5	71.8	30	75.7
VRH.2050.25.C.3D	20,50-20,99	25	144.2	63	73.5	30	78
VRH.2100.25.C.3D	21,00-21,49	25	146.3	64.5	75.3	30	80.4
VRH.2150.25.C.3D	21,50-21,99	25	148.4	66	77.0	30	82.7
VRH.2200.25.C.3D	22,00-22,49	25	150.5	67.5	78.8	30	85.1
VRH.2250.25.C.3D	22,50-22,99	25	152.6	69	80.5	30	87.4
VRH.2300.25.C.3D	23,00-23,49	25	154.7	70.5	82.3	30	89.8
VRH.2350.25.C.3D	23,50-23,99	25	156.8	72	84.0	30	92.1
VRH.2400.32.C.3D	24,00-24,49	32	162.9	73.5	85.8	39	90
VRH.2450.32.C.3D	24,50-24,99	32	165	75	87.5	39	92.3
VRH.2500.32.C.3D	25,00-25,49	32	167.1	76.5	89.3	39	94.7
VRH.2550.32.C.3D	25,50-25,99	32	169.2	78	91.0	39	97
VRH.2600.32.C.3D	26,00-26,49	32	171.3	79.5	92.8	39	99.4
VRH.2650.32.C.3D	26,50-26,99	32	173.4	81	94.5	39	101.7
VRH.2700.32.C.3D	27,00-27,49	32	175.5	82.5	96.3	39	104.1
VRH.2750.32.C.3D	27,50-27,99	32	177.6	84	98.0	39	106.4
VRH.2800.32.C.3D	28,00-28,49	32	179.7	85.5	99.8	39	108.8
VRH.2850.32.C.3D	28,50-28,99	32	181.8	87	101.5	39	111.1
VRH.2900.32.C.3D	29,00-29,49	32	183.9	88.5	103.3	39	113.5
VRH.2950.32.C.3D	29,50-30,00	32	186	90	105.0	39	115.8

Grade overview



MVP25

HC-P25 | HC-M25



Specification:

Composition: Co 9.0%; mixed carbides 4.0%; WC balance | Grain size: fine/medium | Hardness: HV₃₀ 1510 |

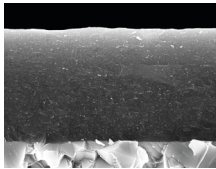
Coating specification: PVD TiAlN/TiN

Recommended application:

Particularly suitable for the machining of steels.

MVP40

HC-M40 | HC-P40



Specification:

Composition: Co 9.0%; mixed carbides 0.7%; others 0.7%; WC balance |

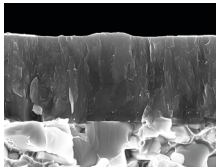
Grain size: submicron | Hardness: HV₃₀ 1590 | Coating specification: PVD TiAlN

Recommended application:

The first choice for the machining of austenitic steels as well as heat-resistant alloys.

MVK15

HC-K15



Specification:

Composition: Co 6.0%; WC balance; mixed carbides 2.0%; Grain size: fine |

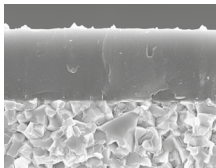
Hardness: HV₃₀ 1630

Recommended application:

Suitable for cast iron machining.

CTPP450

HC-P40



Specification:

Composition: Co 11.0%; others 0.8%; WC balance |

Grain size: submicron | Hardness: HV₃₀ 1500 | Coating specification: PVD TiAlXYN

Recommended application:

Drill grade for steel and stainless steel with a tough and wear resistant substrate combined with a heat resistant PVD coating.

MASAM designation system: Insert

A 85°
B 82°
K 55°
H 120°
L 90°
O 135°
P 108°
C 80°
D 55°
E 75°
M 86°
V 35°
R
S 90°
T 60°
W 80°
X
Z Special shapes

Insert shape

L
G

Pressed insert
Ground insert

Insert type

Index	s [mm]
02	2.1
T2	2.5
03	3.0
T3	3.5
04	4.0
05	5.0

Insert thickness

P

V

R

-

90

L

-

05

02

08

-

CCV

Insert size

Type	Index	[mm]
S 	05	5.0
	06	5.8
	07	6.9
	08	8.4
	10	10.3
	11.1	11.6
	13	13.3

Corner radius

Index	r [mm]
05	0.4
06	0.6
07	0.8
08	0.8
10	0.8
12	0.8
13	0.8

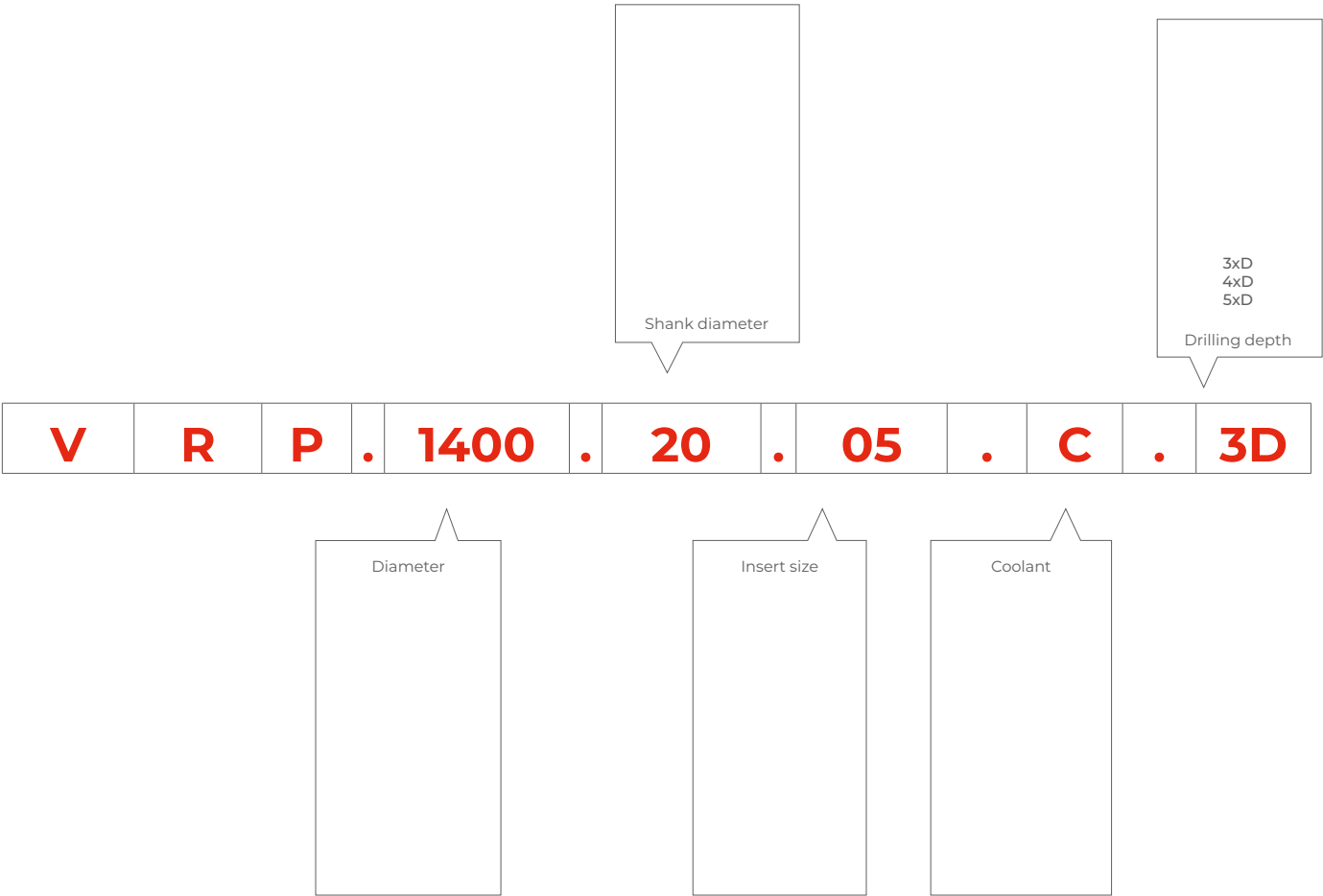
Chipformer

HCV Steel machining
SCV Stainless Steel machining
CCV Cast Iron machining

Note: Not applicable for spade drill

en.masam.sk

MASAM Designation system: Tool holder



Notes



MultiCut

Cutting Tool Solutions

Productivity

The system:

4 machining operations - only one tool

1. Drilling into solid material with flat bottom holes
2. Boring applications
3. Turning of face profiles
4. External turning applications



Available in 2 lengths



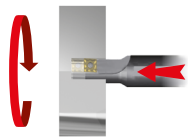
1.5 x D



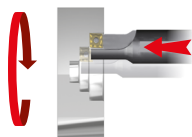
2.25 x D

Multi-purpose tool

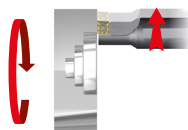
Turning and boring $\phi \geq 8$ mm



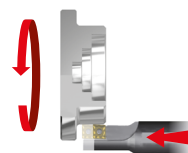
Drilling with flat bottom face



Turning of internal profiles



Facing operations



Turning of external profiles

Your benefits

- ▲ Problem solver for insufficient tool storage.
- ▲ Less programming effort.
- ▲ Produces a flat bottom hole.
- ▲ Reduced tool and insert inventory costs.
- ▲ Considerable acquisition cost savings.
- ▲ Shorter set-up times. Reduced pre-setting time.

Grades for Inserts

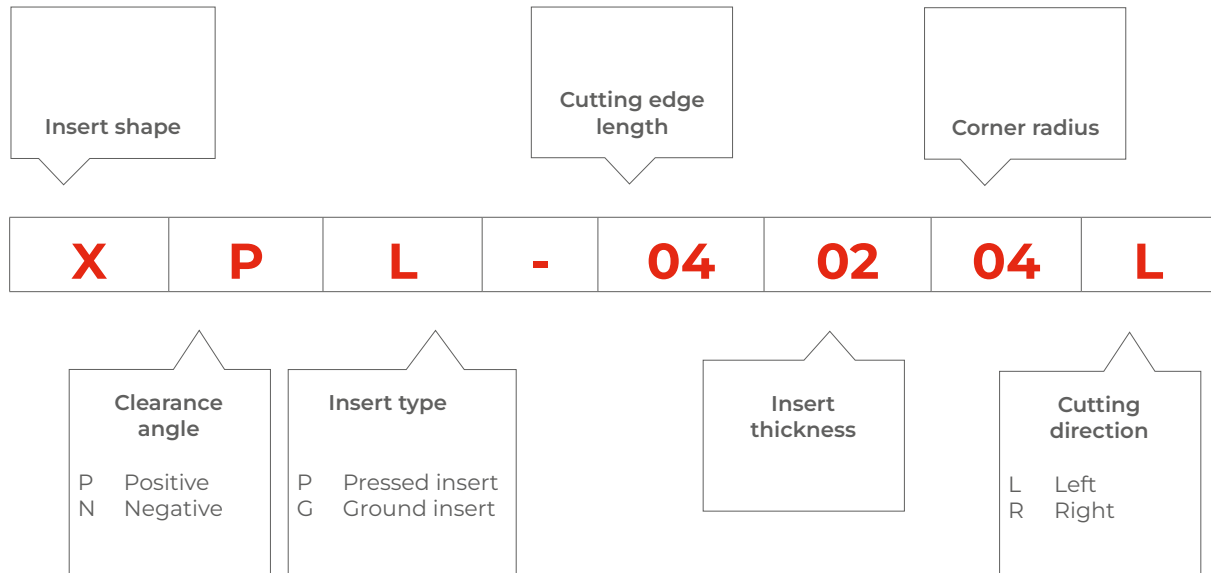
- ▲ Three coated high-performance grades: MKP25, MKP35, MKP30 and a new one for aluminium: MUN15-.
- ▲ Capable to cover all the ISO material groups P, M, K, N and S.

Tool performances

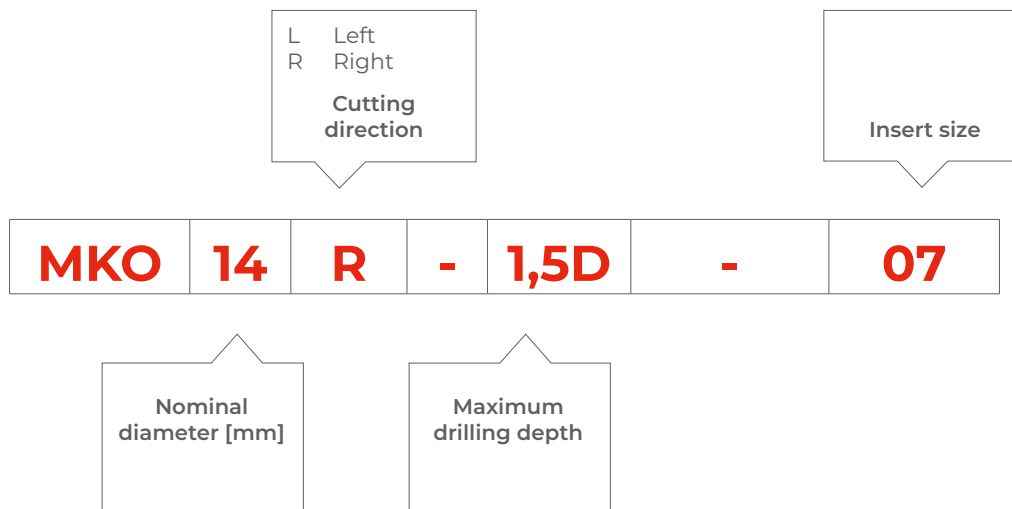
- ▲ Optimised stability.
- ▲ Torx Plus screws for better insert clamping. Easier and more reliable handling.
- ▲ "Hard & tough" surfaces for easy chip evacuating and reduced surface abrasion.

MASAM designation system

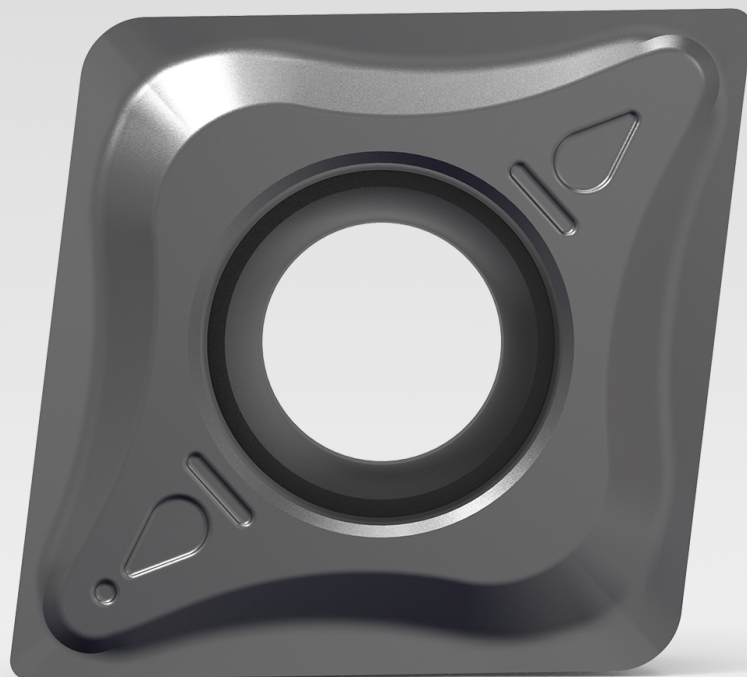
Designation system for inserts



Designation system for holders

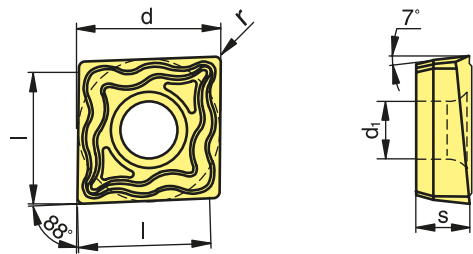


MultiCut XPL



XPL inserts

Designation	d [mm]	l [mm]	s [mm]	r [mm]	d ₁ [mm]	Grade materials	
XPL-040204L	4.50	4.00	1.80	0.40	2.10	MKP30	MKP35
XPL-040204R	4.50	4.00	1.80	0.40	2.10		
XPL-050204N	5.80	5.00	2.10	0.40	2.25		
XPL-060204N	6.50	6.00	2.92	0.40	2.50		
XPL-070304N	7.60	7.00	3.87	0.40	2.80		
XPL-080304N	8.50	8.00	3.87	0.40	3.40		
XPL-090404N	9.60	9.00	4.66	0.40	3.40		
XPL-100404N	10.60	10.00	4.66	0.40	4.40		
XPL-100408N	10.60	10.00	4.66	0.80	4.40		
XPL-130504N	13.50	12.50	5.45	0.40	5.30		
XPL-130508N	13.50	12.50	5.45	0.80	5.30		
XPL-170608N	17.50	16.00	6.25	0.80	5.30		



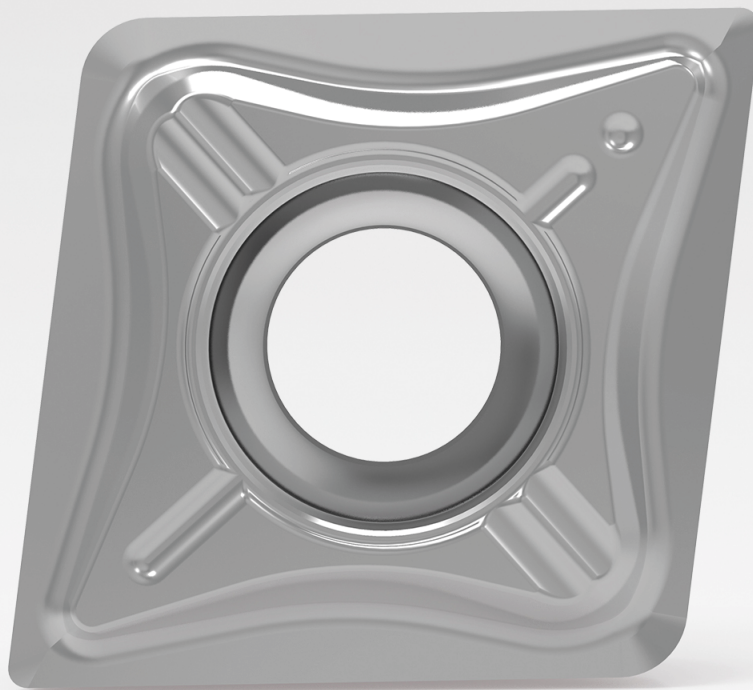
P	○	●
M	●	○
K	○	●
N	○	
S	●	
H		

● Main application
○ Extended application

MultiCut

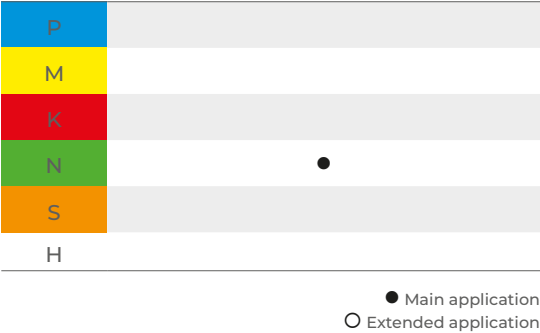
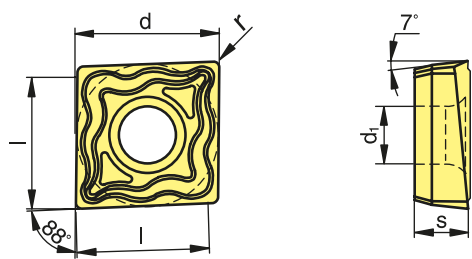
XPB ALUMINIUM

Polished - grinded



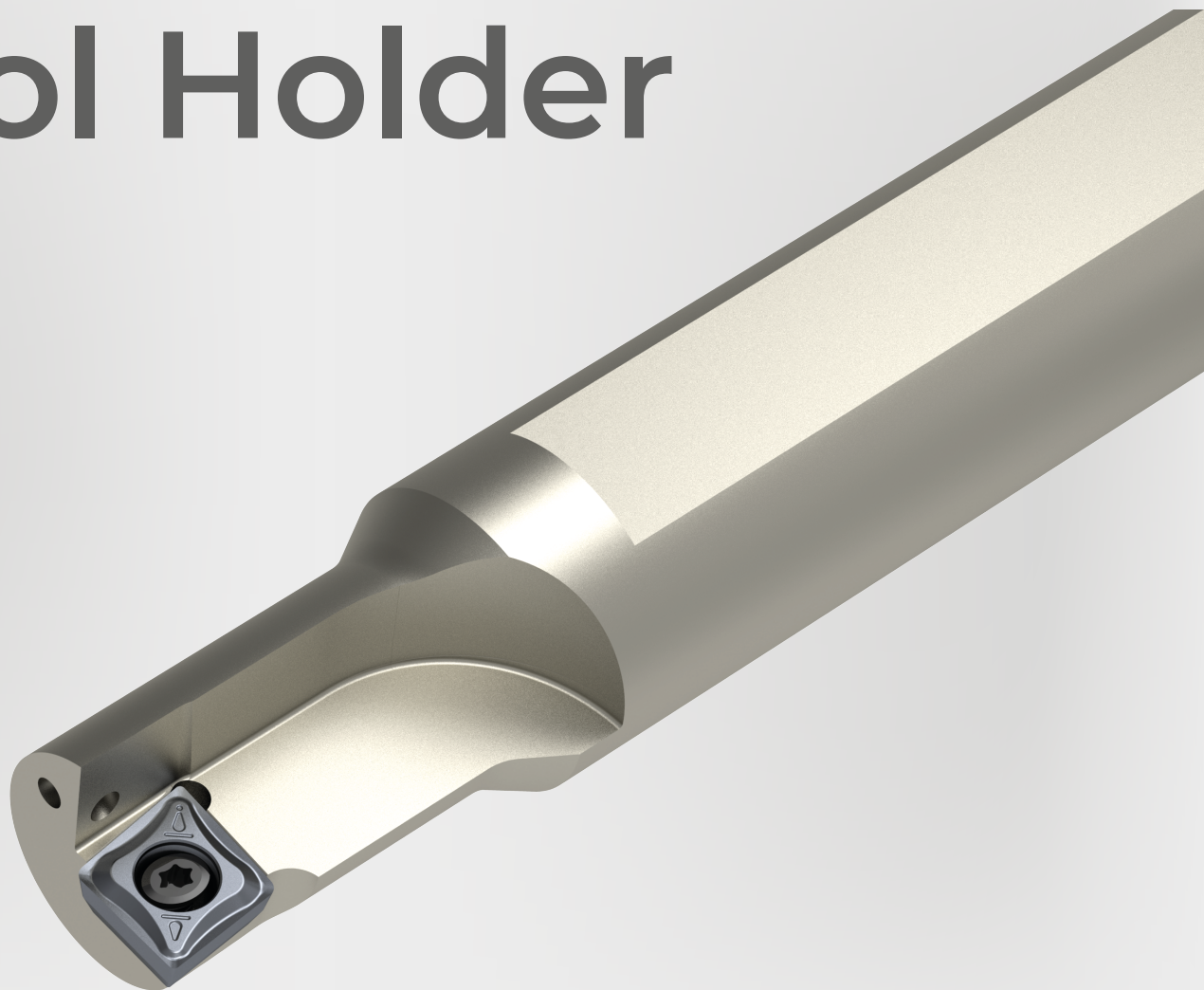
XPB inserts for aluminium

Designation	d [mm]	l [mm]	s [mm]	r [mm]	d ₁ [mm]	Grade materials
XPB-050204N	5.80	5.00	2.10	0.40	2.25	MUN15-
XPB-060204N	6.50	6.00	2.92	0.40	2.50	
XPB-070304N	7.60	7.00	3.87	0.40	2.80	
XPB-080304N	8.50	8.00	3.87	0.40	3.40	
XPB-090404N	9.60	9.00	4.66	0.40	3.40	
XPB-100404N	10.60	10.00	4.66	0.40	4.40	
XPB-130504N	13.50	12.50	5.45	0.40	5.30	
XPB-170608N	17.50	16.00	6.25	0.80	5.30	



MultiCut

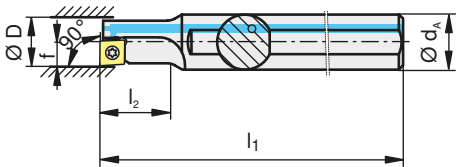
Tool Holder



Drilling depth up to 1.5 x D

Available range for XPNT and XPET

D [mm]	Type Description	d _A [mm]	l ₁ [mm]	l ₂ [mm]	f [mm]	 [XPNT/XPET]			
8.00	MKO-08R-1.5D-04*	12.00	80.00	12.00	4.00	XPNT 0402	M1,8x3,6-06IP	–	TORX
	MKO-08L-1.5D-04*								
10.00	MKO-10R-1.5D-05	12.00	90.00	15.00	5.00	XP...T 0502	M2,0x4,3-06IP	–	TORX
	MKO-10L-1.5D-05								
12.00	MKO-12R-1.5D-06	16.00	100.00	18.00	6.00	XP...T 0602	M2,2x5,0-07IP	–	TORX
	MKO-12L-1.5D-06								
14.00	MKO-14R-1.5D-07	16.00	110.00	21.00	7.00	XP...T 0703	M2,5x6,0-08IP	–	TORX
	MKO-14L-1.5D-07								
16.00	MKO-16R-1.5D-08	20.00	125.00	24.00	8.00	XP...T 0803	M3,0x7,0-09IP	–	TORX
	MKO-16L-1.5D-08								
18.00	MKO-18R-1.5D-09	25.00	135.00	27.00	9.00	XP...T 0904	M3,0x7,0-09IP	–	TORX
	MKO-18L-1.5D-09								
20.00	MKO-20R-1.5D-10	25.00	150.00	30.00	10.00	XP...T 1004	M3,5X8,6-15IP	TORX	–
	MKO-20L-1.5D-10								
25.00	MKO-25R-1.5D-13	32.00	180.00	37.50	12.50	XP...T 1305	M4,5X10,5-20IP	TORX	–
	MKO-25L-1.5D-13								
32.00	MKO-32R-1.5D-17	40.00	200.00	48.00	16.00	XP...T 1706	M4,5X10,5-20IP	TORX	–
	MKO-32L-1.5D-17								



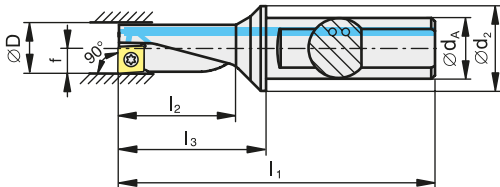
Drawing shows right-hand tool

* Right-hand holder - Right-hand indexable insert
* Left-hand holder - Left-hand indexable insert

Drilling depth up to 2.25 x D

Available range for XPNT and XPET

D [mm]	Type Description	d _A [mm]	d ₂ [mm]	l ₁ [mm]	l ₂ [mm]	l ₃ [mm]	f [mm]	 [XPL/XPB]			
8.00	MKO-08R-2.25D-04* MKO-08L-2.25D-04*	10.00	15.00	60.00	18.00	22.00	4.00	XPL 0402	M1,8x3,6-06IP	–	TORX
10.00	MKO-10R-2.25D-05 MKO-10L-2.25D-05	12.00	18.00	69.50	22.50	27.50	5.00	XPL 0502	M2,0x4,3-06IP	–	TORX
12.00	MKO-12R-2.25D-06 MKO-12L-2.25D-06	16.00	22.00	78.00	27.00	33.00	6.00	XPL 0602	M2,2x5,0-07IP	–	TORX
14.00	MKO-14R-2.25D-07 MKO-14L-2.25D-07	16.00	23.00	83.50	31.50	38.50	7.00	XPL 0703	M2,5x6,0-08IP	–	TORX
16.00	MKO-16R-2.25D-08 MKO-16L-2.25D-08	20.00	28.00	94.00	36.00	44.00	8.00	XPL 0803	M3,0x7,0-09IP	–	TORX
18.00	MKO-18R-2.25D-09 MKO-18L-2.25D-09	25.00	36.00	109.50	40.50	53.50	9.00	XPL 0904	M3,0x7,0-09IP	–	TORX
20.00	MKO-20R-2.25D-10 MKO-20L-2.25D-10	25.00	35.00	111.00	45.00	55.00	10.00	XPL 1004	M3,5x8,6-15IP	TORX	–
25.00	MKO-25R-2.25D-13 MKO-25L-2.25D-13	32.00	44.00	129.00	56,50	69.00	12.50	XPL 1304	M4,5x10,5-20IP	TORX	–
32.00	MKO-32R-2.25D-17 MKO-32L-2.25D-17	40.00	54.00	158.00	72.00	88.00	16.00	XPL 1706	M4,5x10,5-20IP	TORX	–



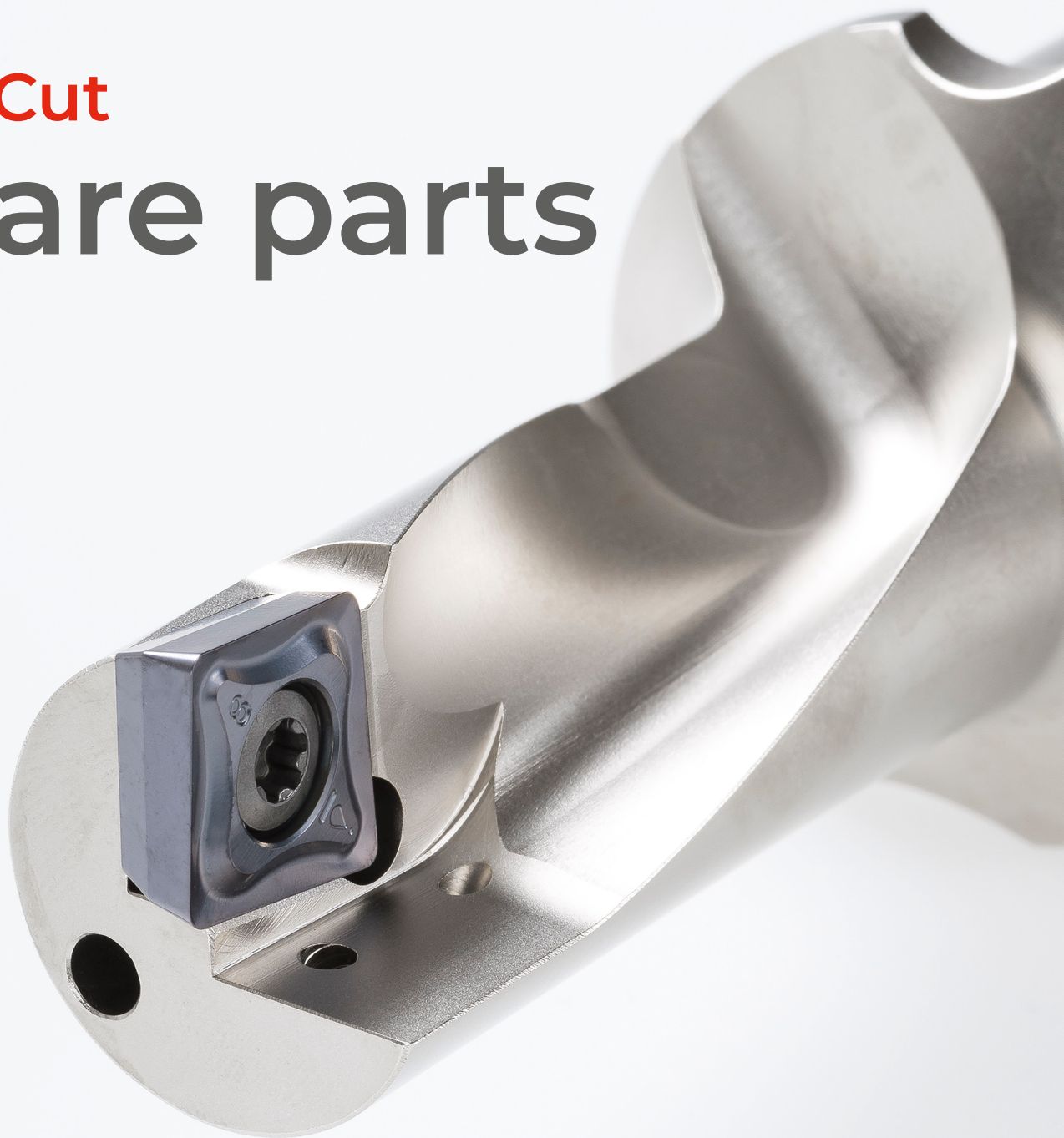
Drawing shows right-hand tool

* Right-hand holder - Right-hand indexable insert
* Left-hand holder - Left-hand indexable insert



MultiCut

Spare parts



Spare parts

	Type description	Key size
	TORX 08IP F	T08IP
	TORX 07IP F	T07IP
	TORX 06IP F	T06IP
	TORX 09IP F	T09IP
	TORX 15IP	T15IP
	TORX 20IP	T20IP

	Type description	Length [mm]	Thread size	Key size
	M3.0x7.0-09IP	7.00	M3.0	T09IP
	M3.5x8.6-15IP	8.60	M3.5	T15IP
	M2.2x5.0-071IP	5.00	M2.2	T07IP
	M2.5x6.0-08IP	6.00	M2.5	T08IP
	M4.5x10.5-20IP	10.50	M4.5	T20IP
	M2.0x4.3-06IP	4.30	M2.0	T06IP
	M1.8x3.6-06IP	3.60	M1.8	T06IP

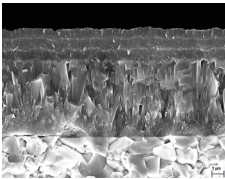
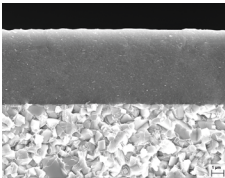
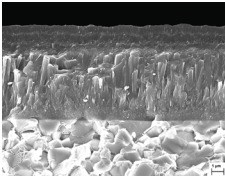
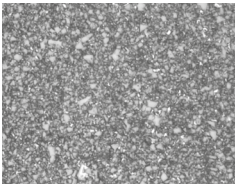
Grade overview



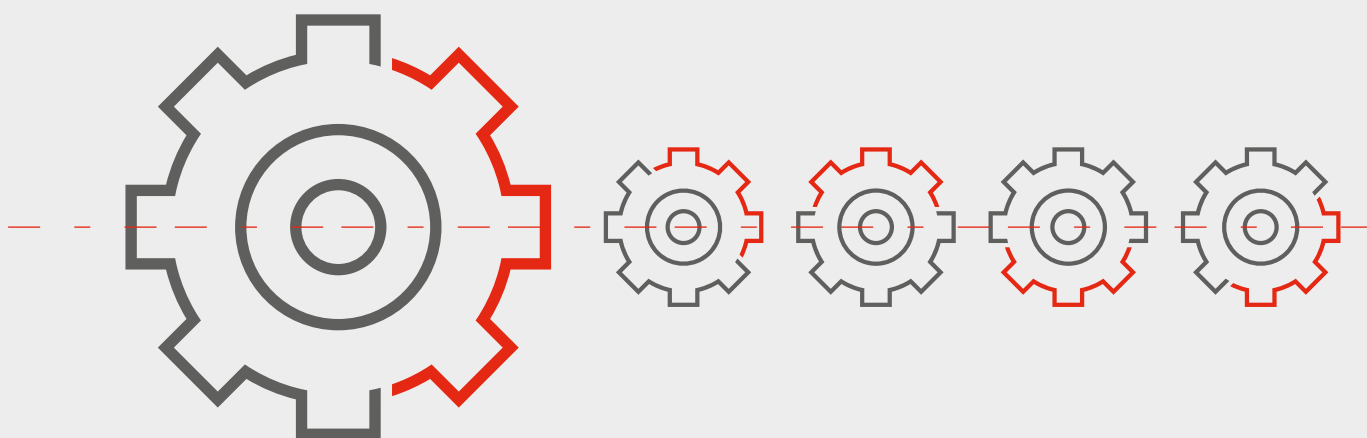
Grade overview

Grade description		Standard designation		ISO	ANSI	*Type of cutting material	Application range																P	M	K	N	S	H																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
							01	05	10	15	20	25	30	35	40	45	50	Steel	Stainless steel	Cast iron	Non-ferrous metals	Heat resistant alloys	Hard materials																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
MKP25		HC-P25	C6	C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														

Grade description

MKP25	HC-P25 HC-K30 HC-M20
	Specification: Composition: Co 7.0%; mixed carbides 8.1%; WC balance Grain size: 1-2 µm Hardness: HV₃₀ 1450 Coating specification: CVD Ti(CN) + Al₂O₃ multi-layer Recommended application: The wear-resistant solution for steel and cast iron under stable conditions and with high cutting speed
MKP30	HC-P30 HC-M25 HC-S25 HC-K30 HC-N25
	Specification: Composition: Co 9.0%; others 0.75%; WC balance Grain size: 0.85 µm Hardness: HV₃₀ 1590 Coating specification: PVD TiAlN Recommended application: The universal high-performance grade for steel, austenitic steel and heat-resistant alloys
MKP35	HC-P35 HC-K40 HC-M30
	Specification: Composition: Co 9.6%; mixed carbides 7.8%; others 0.4%; WC balance Grain size: 1-2 µm Hardness: HV₃₀ 1400 Coating specification: CVD Ti(C,N) + Al₂O₃ multi-layer Recommended application: The reliable choice when machining steel and cast iron under unstable conditions.
MUN15-	HW-K15
	Specification: Composition: Co 6.0% WC balance; other: 0.20% Grain size: 0.8-1.3 µm Hardness: HV₃₀ 1650 Recommended application: The uncoated carbide grade for the machining of aluminium and other non-ferrous metals

Technical information

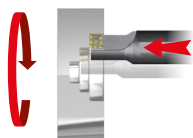


Grades / materials

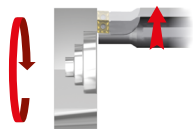
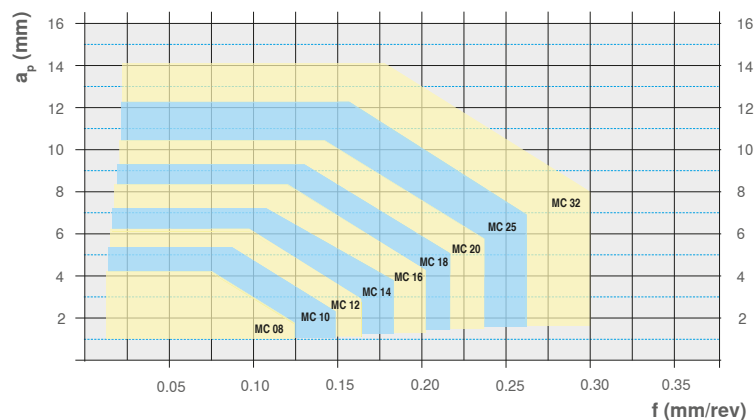
Cutting data

		Coated carbide				
Work piece material		Type of treatment / alloy	MKP25 v _c [m/min]	MKP30 v _c [m/min]	MKP35 v _c [m/min]	MUN15- v _c [m/min]
P	Steel	Non-alloyed steel	270 – 90	230 – 50	80 – 280	–
		Low-alloyed steel	270 – 70	160 – 50	700 – 200	–
		High-alloyed steel	170 – 60	150 – 50	600 – 180	–
		Corrosion-resistant steel	200 – 90	180 – 50	800 – 200	–
M	Stainless steel	Stainless steel	200 – 90	160 – 50	100 – 180	–
			–	–	–	–
			–	–	–	–
			–	–	–	–
K	Cast iron	Grey cast iron	250 – 120	180 – 90	120 – 250	–
		Spheroidal cast iron	250 – 110	180 – 90	110 – 250	–
		Malleable cast iron	250 – 100	140 – 60	100 – 250	–
			–	–	–	–
N	Non-ferrous metals	Aluminium wrought alloys	–	1800 – 70	80 – 2000	100 – 2250
		Aluminium cast alloys	–	1350 – 70	80 – 1500	100 – 1250
		Copper and copper alloys (bronze, brass)	–	360 – 70	80 – 400	100 – 600
		Non-metallic materials	–	180 – 50	60 – 200	60 – 220
S	Heat resistant alloys	Heat-resistant alloys	–	80 – 20	10 – 50	–
		Titanium alloys	–	90 – 30	30 – 120	–
			–	–	–	–
			–	–	–	–

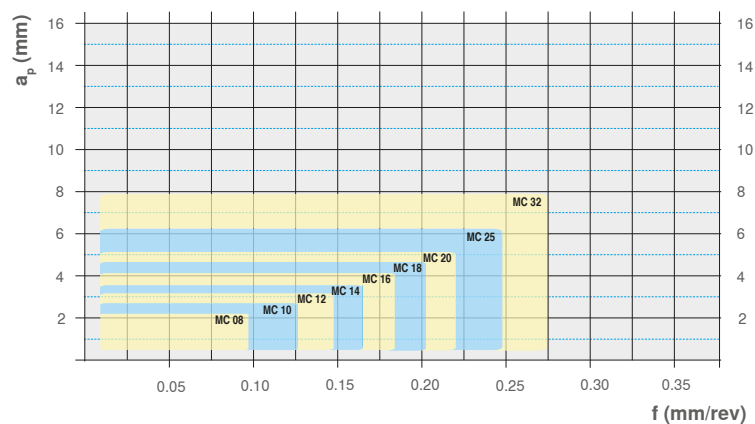
Depth of cut / feed rate - 1.5 x D



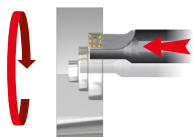
Turning of internal profiles



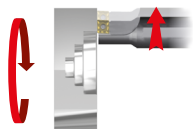
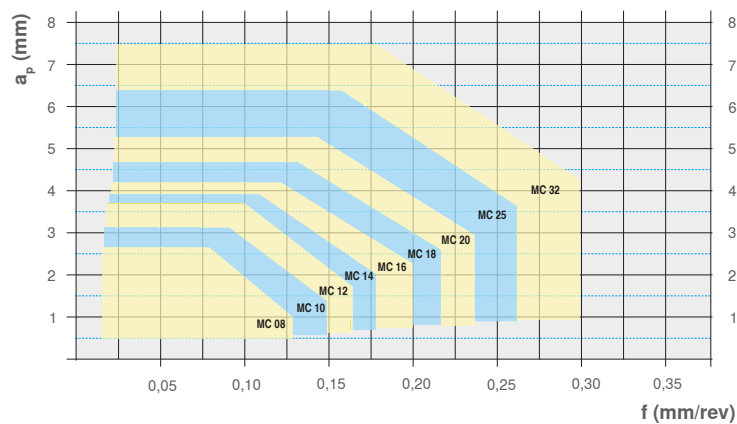
Facing operations



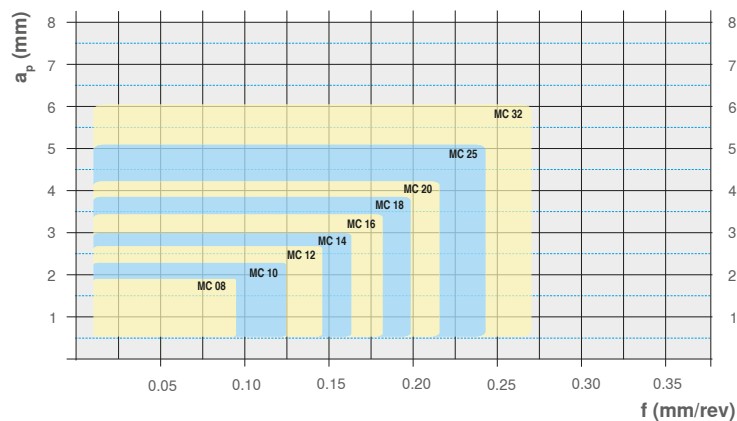
Depth of cut / feed rate – 2.25 x D



Turning of internal profiles

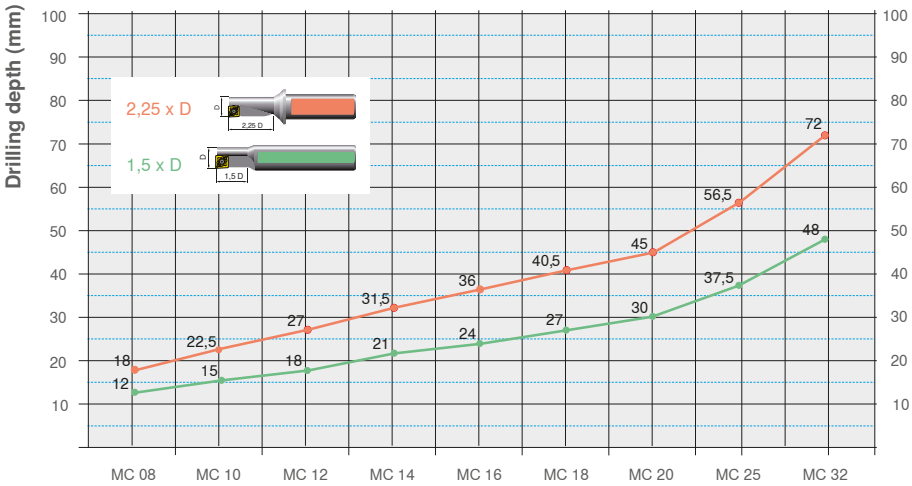


Facing operations

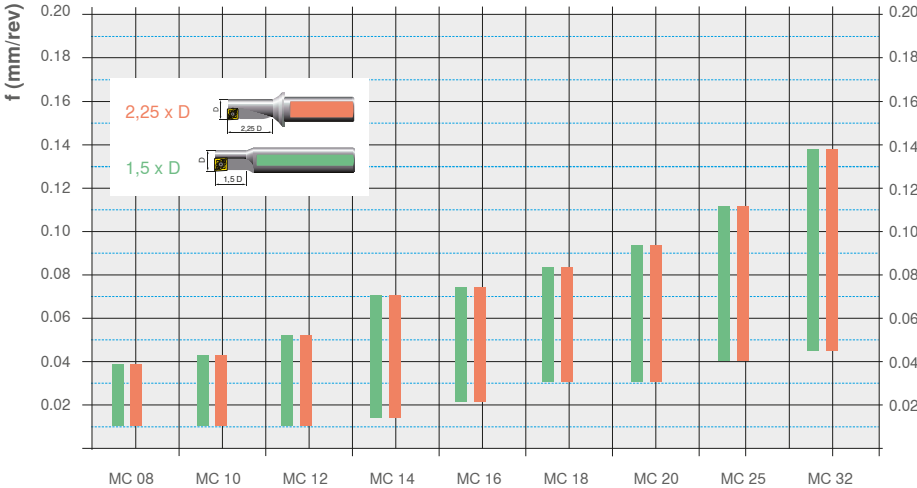


Drilling depth / feed rate

Drilling depth



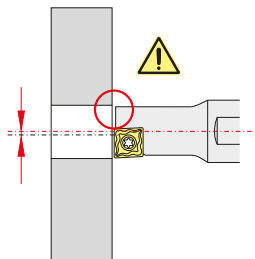
Drilling feed rate



Application reference

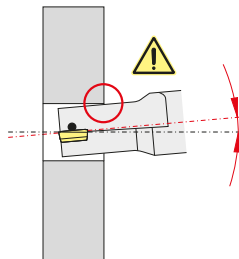
Application

Axial displacement of the machine



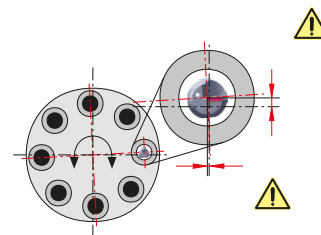
Displacement in x -direction

Correct tool positioning



Angular error

Turret and/or spindle adjustment



Turret position error

Adjust turret plate (Y-axis)



Mounting of the insert

For tools $\varnothing$ 8 mm right-hand or left-hand inserts are required. From $\varnothing$ 10-32 mm neutral inserts are applied.



Through hole

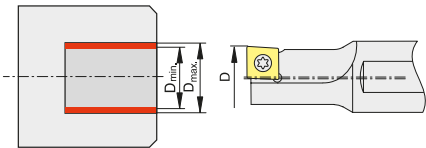
With through holes a sharp-edged disk is created as tool break-out occurs. Safety measures are necessary.



Off-centre drilling

Application

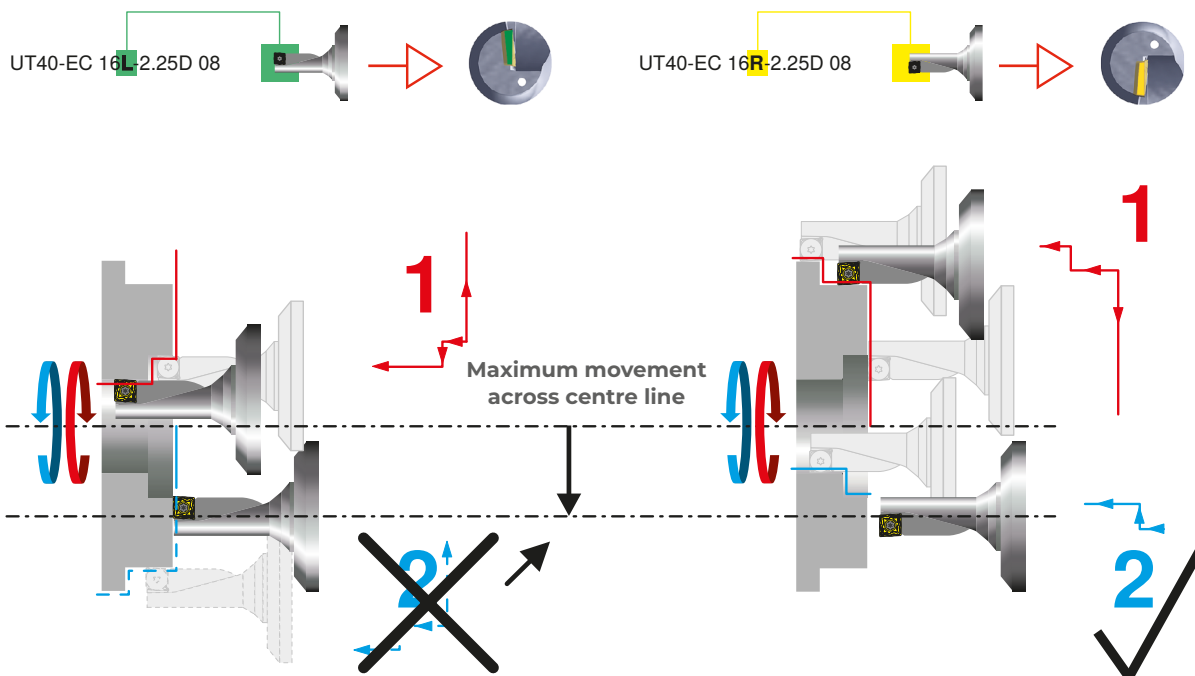
Type of tool Solid carbide	Nominal tool D [mm]	Workpiece bore diameter	
		D _{min} [mm]	D _{max} [mm]
MKO 08 R/L ... 04	8.00	7.85	8.30
MKO 10 R/L ... 05	10.00	9.85	10.50
MKO 12 R/L ... 06	12.00	11.85	12.50
MKO 14 R/L ... 07	14.00	13.85	14.50
MKO 16 R/L ... 08	16.00	15.85	16.50
MKO 18 R/L ... 09	18.00	17.85	18.50
MKO 20 R/L ... 10	20.00	19.80	20.50
MKO 25 R/L ... 13	25.00	24.80	25.80
MKO 32 R/L ... 17	32.00	31.80	33.00



Thanks to the special design of the holder and the indexable inserts off-centre drilling is possible.

Machining across centre line

Application



Situation:

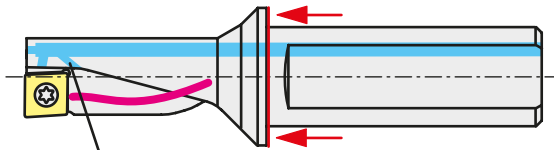
In case of insufficient movement of the machine across the centre line the external diameter cannot be machined with the same tool

Solution:

Use a right-hand MultiCut tool

Chip booster / coolant pressure

Application



- Internal coolant supply (chip booster)
- Helical chip pocket (stability)
- Axial abutment face (stability)



MultiCut offers an innovative detail solution for range 2.25D, namely additional bidirectional coolant supply for better chip evacuation.

An additional backwards directed coolant stream improves chip evacuation from the flute area. A minimum coolant pressure of 1.5 – 3 bar (optimum 5 – 7 bar) is required.

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