



WALTER D3120 indexable insert drill

Application:

- High-performance drills with indexable inserts, drilling depth 2xD-4xD
- For universal use up to 1300 N/mm² in diameter range of 16 mm to 42 mm
- With medium requirements around surface quality and tolerance
- Various cutting material types and chip shapes for machining steel, cast iron, stainless steel and special alloys

Advantage:

- Shaft alignment for simple turning machine applications
- Two aligned cooling channels
- Measuring belt for Dc for easy drill bit identification, including when mounted
- Indexable insert for male and female
- Hardened and polished surface with polished grooves



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ATORN range of countersink indexable inserts for standard plates CC..06, CC..09 and CC..12 in drilling depths 3xD-7xD

application:

- broad countersinks program for use with ISO indexable inserts with CC.. form
- adjustable single-edge cutter/dual-edge cutter and reverse machining

advantage:

- broad countersink range
- large diameter range can be covered
- standard indexable inserts can be used
- minimises tool costs through flexible use
- high-quality backing material



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- Various cutting material types and chip shapes for machining steel, cast iron, stainless steel and special alloys

Advantage:

- Shaft alignment for simple turning machine applications
- Two aligned cooling channels
- Measuring belt for Dc for easy drill bit identification, including when mounted
- Indexable insert for male and female
- Hardened and polished surface with polished grooves



WALTER D3120 indexable insert drill 2xD

for universal use up to 1300 N/mm², in diameter range of 16.0-42.0 mm

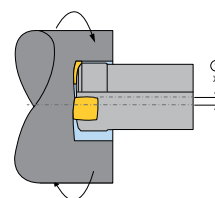
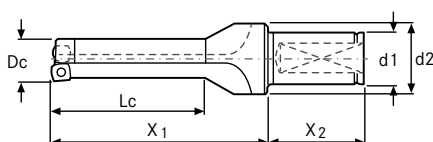


Application:

High-performance drilling in the diameter range 16.00 mm–42.00 mm and at drilling depths of 2xD in the steel, stainless steel, cast and special alloy material groups with medium requirements in terms of finish quality and tolerance.

Advantage:

- Precisely fitting inserts ensure optimum machining results even under difficult conditions
- Wide selection of indexable inserts
- Four true cutting edges per indexable insert for the entire range



								WALTER D3120 indexable insert drill 2xD		clamping screw	
Max. drilling depth (D)								2xD			
Dc (mm)	X (mm)	d1 (mm)	d2 (mm)	X2 (mm)	X1 (mm)	Lc (mm)	Suitable for indexable insert size	11202... Ident. No.		11295... Ident. No.	
16	+1,80	25	35	56	57	32	P284..S-1N	160	○	003	●
17	+1,50	25	35	56	59	34	P284..S-1N	170	○	003	●
18	+1,30	25	35	56	61	36	P284..S-1N	180	○	003	●
19	+1,00	25	35	56	63	38	P284..S-1N	190	●	003	●
20	+0,80	25	35	56	65	40	P284..S-1N	200	○	003	●
21	+2,00	25	35	56	67	42	P284..S-2N	210	○	004	●
22	+1,70	25	35	56	69	44	P284..S-2N	220	○	004	●
23	+1,50	25	35	56	71	46	P284..S-2N	230	○	004	●
24	+1,20	25	35	56	73	48	P284..S-2N	240	○	004	●
25	+1,00	25	35	56	75	50	P284..S-2N	250	○	004	●
26	+1,70	32	42	60	84	52	P284..S-3N	260	○	005	●
27	+1,40	32	42	60	86	54	P284..S-3N	270	○	005	●
28	+1,20	32	42	60	88	56	P284..S-3N	280	○	005	●
29	+0,90	32	42	60	90	58	P284..S-3N	290	○	005	●
30	+0,70	32	42	60	92	60	P284..S-3N	300	○	005	●
31	+1,90	32	42	60	94	62	P284..S-4N	310	○	006	●
32	+1,60	32	42	60	96	64	P284..S-4N	320	○	006	●
33	+1,40	32	42	60	98	66	P284..S-4N	330	○	006	●
34	+1,10	32	42	60	100	68	P284..S-4N	340	○	006	●
35	+0,80	32	42	60	102	70	P284..S-4N	350	○	006	●
36	+0,60	32	42	60	104	72	P284..S-4N	360	○	006	●
37	+1,80	40	50	70	114	74	P284..S-5N	370	○	007	●
38	+1,50	40	50	70	116	76	P284..S-5N	380	○	007	●
39	+1,20	40	50	70	118	78	P284..S-5N	390	●	007	●
40	+1,20	40	50	70	120	80	P284..S-5N	400	○	007	●
41	+0,90	40	50	70	122	82	P284..S-5N	410	○	007	●
42	+0,60	40	50	70	124	84	P284..S-5N	420	○	007	●

Prod. Gr. 1AK



WALTER D3120 indexable insert drill 3xD

for universal use up to 1300 N/mm², in diameter range of 16.0-42.0 mm

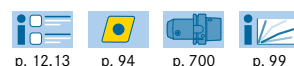
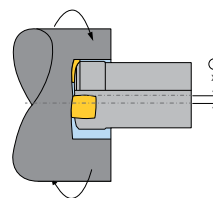
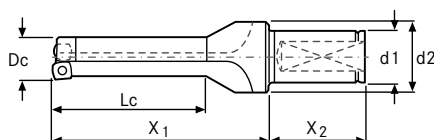


Application:

High-performance drilling in the diameter range 16.00 mm–42.00 mm and at drilling depths of 3xD in the steel, stainless steel, cast and special alloy material groups with medium requirements in terms of finish quality and tolerance.

Advantage:

- Precisely fitting inserts ensure optimum machining results even under difficult conditions
- Wide selection of indexable inserts
- Four true cutting edges per indexable insert for the entire range



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WALTER D3120 indexable insert drill 3xD

clamping screw

Dc (mm)	X (mm)	d1 (mm)	d2 (mm)	X2 (mm)	X1 (mm)	Lc (mm)	Suitable for indexable insert size	Max. drilling depth (D)		11203... Ident. No.	3xD	11295... Ident. No.
16	+1,80	25	35	56	73	48	P284..S-1N	160	○	003	●	●
17	+1,50	25	35	56	76	51	P284..S-1N	170	○	003	●	●
18	+1,30	25	35	56	79	54	P284..S-1N	180	●	003	●	●
19	+1,00	25	35	56	82	57	P284..S-1N	190	●	003	●	●
20	+0,80	25	35	56	85	60	P284..S-1N	200	●	003	●	●
21	+2,00	25	35	56	88	63	P284..S-2N	210	●	004	●	●
22	+1,70	25	35	56	91	66	P284..S-2N	220	●	004	●	●
23	+1,50	25	35	56	94	69	P284..S-2N	230	○	004	●	●
24	+1,20	25	35	56	97	72	P284..S-2N	240	○	004	●	●
25	+1,00	25	35	56	100	75	P284..S-2N	250	●	004	●	●
26	+1,70	32	42	60	110	78	P284..S-3N	260	○	005	●	●
27	+1,40	32	42	60	113	81	P284..S-3N	270	○	005	●	●
28	+1,20	32	42	60	116	84	P284..S-3N	280	●	005	●	●
29	+0,90	32	42	60	119	87	P284..S-3N	290	○	005	●	●
30	+0,70	32	42	60	122	90	P284..S-3N	300	●	005	●	●
31	+1,90	32	42	60	125	93	P284..S-4N	310	○	006	●	●
32	+1,60	32	42	60	128	96	P284..S-4N	320	○	006	●	●
33	+1,40	32	42	60	131	99	P284..S-4N	330	○	006	●	●
34	+1,10	32	42	60	134	102	P284..S-4N	340	○	006	●	●
35	+0,80	32	42	60	137	105	P284..S-4N	350	○	006	●	●
36	+0,60	32	42	60	140	108	P284..S-4N	360	○	006	●	●
37	+1,80	40	50	70	151	111	P284..S-5N	370	○	007	●	●
38	+1,50	40	50	70	154	114	P284..S-5N	380	○	007	●	●
39	+1,20	40	50	70	157	117	P284..S-5N	390	○	007	●	●
40	+1,20	40	50	70	160	120	P284..S-5N	400	○	007	●	●
41	+0,90	40	50	70	163	123	P284..S-5N	410	○	007	●	●
42	+0,60	40	50	70	166	126	P284..S-5N	420	○	007	●	●

Prod. Gr. 1AK



WALTER D3120 indexable insert drill 4xD

for universal use up to 1300 N/mm², in diameter range of 23.0-42.0 mm

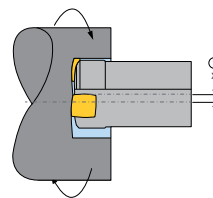
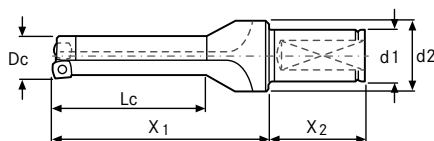


Application:

High-performance drilling in the diameter range 16.00 mm–42.00 mm and at drilling depths of 4xD in the steel, stainless steel, cast and special alloy material groups with medium requirements in terms of finish quality and tolerance.

Advantage:

- Precisely fitting inserts ensure optimum machining results even under difficult conditions
- Wide selection of indexable inserts
- Four true cutting edges per indexable insert for the entire range



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								WALTER D3120 indexable insert drill 4xD	clamping screw	
Max. drilling depth (D)								4xD		
Dc (mm)	X (mm)	d1 (mm)	d2 (mm)	X2 (mm)	X1 (mm)	Lc (mm)	Suitable for indexable insert size	11204... Ident. No.	11295... Ident. No.	
23	+0,80	25	35	56	117	92	P284..S-2N	230	004	●
24	+0,60	25	35	56	121	96	P284..S-2N	240	004	●
25	+0,40	25	35	56	125	100	P284..S-2N	250	004	●
26	+1,00	32	42	60	136	104	P284..S-3N	260	005	●
27	+0,80	32	42	60	140	108	P284..S-3N	270	005	●
28	+0,60	32	42	60	144	112	P284..S-3N	280	005	●
29	+0,40	32	42	60	148	116	P284..S-3N	290	005	●
30	+0,30	32	42	60	152	120	P284..S-3N	300	005	●
31	+1,10	32	42	60	156	124	P284..S-4N	310	006	●
32	+0,90	32	42	60	160	128	P284..S-4N	320	006	●
33	+0,70	32	42	60	164	132	P284..S-4N	330	006	●
34	+0,50	32	42	60	168	136	P284..S-4N	340	006	●
35	+0,30	32	42	60	172	140	P284..S-4N	350	006	●
36	+0,20	32	42	60	176	144	P284..S-4N	360	006	●
37	+0,90	40	50	70	188	148	P284..S-5N	370	007	●
38	+0,70	40	50	70	192	152	P284..S-5N	380	007	●
39	+0,50	40	50	70	196	156	P284..S-5N	390	007	●
40	+0,50	40	50	70	200	160	P284..S-5N	400	007	●
41	+0,40	40	50	70	204	164	P284..S-5N	410	007	●
42	+0,20	40	50	70	208	168	P284..S-5N	420	007	●

Prod. Gr. 1AK



Indexable inserts for WALTER D3120 Ø16-42mm for indexable insert drill no. 11202-11204



Ident. No. 027-048, 071-075, 081-085, 096-100, 106-110, 813-851



Ident. No. 049-065, 076-080, 086-090, 101-105, 146-150, 863

		Carbide type		Material to be processed		WKP25S		WKP35S		WSP45S		WXP 40	
						Steel Cast metal		Steel Cast metal		Steel Stainless steel Special alloy		Steel Stainless steel Cast metal Special alloy	
Suitable for min./max. cutting Ø	Suitable for indexable inserts	11210... Ident. No.		11210... Ident. No.		11210... Ident. No.		11210... Ident. No.		11210... Ident. No.		11210... Ident. No.	
16.0-20.0 mm	P2841S-1N-A57	027	●	071	●	096	●	-	-	-	-	-	-
16.0-20.0 mm	P2840S-1N-A57	813	●	044	●	081	●	106	●	-	-	-	-
16.0-20.0 mm	P2840S-1N-E67	-	-	049	●	086	●	146	●	-	-	-	-
16.0-20.0 mm	P2841S-1N-E67	-	-	076	●	101	●	-	-	-	-	-	-
20.5-25.0 mm	P2841S-2N-A57	028	●	072	●	097	●	-	-	-	-	-	-
20.5-25.0 mm	P2840S-2N-A57	814	●	045	●	082	●	107	●	-	-	-	-
20.5-25.0 mm	P2840S-2N-E67	-	-	050	●	087	●	147	●	-	-	-	-
20.5-25.0 mm	P2841S-2N-E67	-	-	077	●	102	●	-	-	-	-	-	-
25.5-30.0 mm	P2841S-3N-A57	029	●	073	●	098	●	-	-	-	-	-	-
25.5-30.0 mm	P2840S-3N-A57	815	○	046	●	083	●	108	●	-	-	-	-
25.5-30.0 mm	P2841S-3N-E67	-	-	078	●	103	●	-	-	-	-	-	-
25.5-30.0 mm	P2840S-3N-E67	-	-	863	●	088	●	148	●	-	-	-	-
31.0-36.0 mm	P2841S-4N-A57	030	●	074	●	099	●	-	-	-	-	-	-
31.0-36.0 mm	P2840S-4N-A57	816	○	047	●	084	●	109	●	-	-	-	-
31.0-36.0 mm	P2840S-4N-E67	-	-	064	●	089	●	149	●	-	-	-	-
31.0-36.0 mm	P2841S-4N-E67	-	-	079	●	104	●	-	-	-	-	-	-
37.0-42.0 mm	P2840S-5N-A57	817	○	048	○	085	●	110	○	-	-	-	-
37.0-42.0 mm	P2840S-5N-E67	-	-	065	●	090	●	150	●	-	-	-	-
37.0-42.0 mm	P2841S-5N-A57	851	●	075	●	100	●	-	-	-	-	-	-
37.0-42.0 mm	P2841S-5N-E67	-	-	080	●	105	●	-	-	-	-	-	-

Prod. Gr. 1AL



ATORN range of countersink indexable inserts for standard plates CC..06, CC..09 and CC..12 in drilling depths 3xD-7xD

application:

- broad countersinks program for use with ISO indexable inserts with CC.. form
- adjustable single-edge cutter/dual-edge cutter and reverse machining

advantage:

- broad countersink range
- large diameter range can be covered
- standard indexable inserts can be used
- minimises tool costs through flexible use
- high-quality backing material



ATORN® Reversible tip fine boring rod, single tooth cutter, adjustable

For universal application up to 1300 N/mm² with CC..06 and CC..09 Indexable inserts



Application:

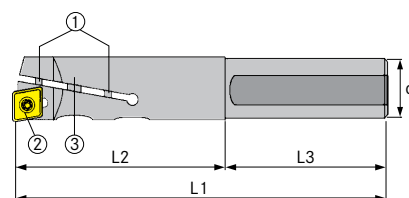
boring and drill out with CC.. indexable inserts in the diameter range from 10.00–50.00 mm in the material groups steel, stainless steel, non-ferrous metals, cast materials and special alloys.

Execution:

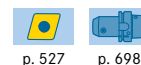
- Support material made from high-grade steel with adjusting range and clamping surface in line with DIN 18535B

Advantage:

- low cost boring and reaming tool with large adjustment range
- standard CC.. indexable inserts can be used, thereby optimising procurement and minimising tool costs
- nickel-plated tool for high corrosion-resistance



- ① Adjusting screws
② Indexable insert screw
③ Locking screw



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Min./max. cutting edge Ø	L2 (mm)	L3 (mm)	L1 (mm)	d (mm)	Suitable for indexable inserts	Reversible tip fine boring rod, single tooth cutter, adjustable		Clamping screw for indexable inserts		indexable inserts, fine-boring rod, adjusting screws under tension		Wendeplatten Feinbohrstange Einstellschraube Druck	
						11233... Ident. No.		16108... Ident. No.		16108... Ident. No.		16108... Ident. No.	
10-12 mm	30	70	100	10	CC..06	100	●	121	●	601	●	611	●
12-15 mm	30	70	105	12	CC..06	105	●	121	●	602	●	612	●
15-20 mm	50	60	110	16	CC..06	110	●	121	●	603	●	613	●
20-25 mm	60	60	120	20	CC..06	115	●	121	●	604	●	614	●
25-30 mm	70	70	140	25	CC..09	120	●	240	●	605	●	615	●
30-35 mm	90	70	160	25	CC..09	125	●	240	●	606	●	616	●
35-40 mm	100	70	170	32	CC..09	130	●	240	●	607	●	617	●
40-45 mm	120	70	190	32	CC..09	135	●	240	●	608	●	618	●
45-50 mm	150	70	220	32	CC..09	140	●	240	●	609	●	619	●

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ATORN® Indexable insert countersink, single tooth cutter For universal use up to 1300 N/mm² with CC..06 and CC..09 indexable inserts

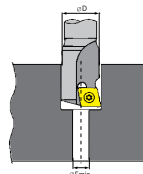
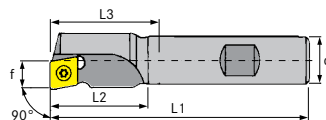


Application:

180° countersinks with CC.. indexable inserts in the diameter range from 10.00–33.00 mm, in the material groups steel, stainless steel, non-ferrous metals, cast materials and special alloys for use in single part and series production.

Execution:

- backing material made from high-grade steel with clamping surface in line with DIN 1835B



Advantage:

- precisely fitting inserts ensure optimum machining results even under difficult conditions
- universal use in all material groups
- cost-efficient tool in comparison with mono-block solutions



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D (mm)	L2 (mm)	L1 (mm)	F min (mm)	d (mm)	Suitable for indexable inserts	Indexable insert countersink, single tooth cutter		Clamping screw for indexable inserts	
						11240... Ident. No.		16108... Ident. No.	
10	15	85	4	12	CC..06	400	●	225	●
11	15	85	4	12	CC..06	410	●	225	●
12	18	85	4	12	CC..06	420	●	225	●
13	23	85	4	12	CC..06	430	○	225	●
14	23	85	5	12	CC..06	440	●	225	●
15	30	85	5	12	CC..06	450	●	225	●
16	30	85	5	12	CC..06	460	●	225	●
17	30	95	6	16	CC..09	470	●	240	●
18	40	95	6	16	CC..09	480	●	240	●
19	40	95	6	16	CC..09	490	○	240	●
20	40	95	5	16	CC..09	500	●	240	●
21	42	95	5	16	CC..09	510	●	240	●
22	42	95	6	16	CC..09	520	●	240	●
23	42	95	6	16	CC..09	530	●	240	●
24	42	95	6	16	CC..09	540	○	240	●
25	42	95	8	16	CC..09	550	●	240	●
26	56	120	8	20	CC..09	560	●	240	●
27	56	120	8	20	CC..09	570	○	240	●
28	56	120	10	20	CC..09	580	●	240	●
29	56	120	10	20	CC..09	590	○	240	●
30	56	120	10	20	CC..09	600	○	240	●
31	56	120	12	20	CC..09	610	○	240	●
32	56	120	12	20	CC..09	620	○	240	●
33	56	120	12	20	CC..09	630	●	240	●

Prod. Gr. 142

ATORN® Indexable insert countersink, dual cutter For universal application up to 1300 N/mm², with CC..06 and CC09.. Indexable inserts

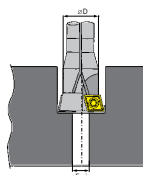
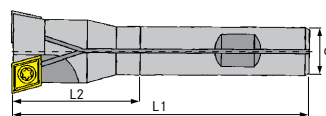


Application:

180° countersinks with CC.. indexable inserts in the diameter range from 10.00–33.00 mm, in the material groups steel, stainless steel, non-ferrous metals, cast materials and special alloys for use in single part and series production.

Execution:

- backing material made from high-grade steel with clamping surface in line with DIN 1835B



Advantage:

- precision-engineered insert seat and two blades ensure optimum machining results and smooth running even under difficult operating conditions
- universal use in all material groups
- cost-efficient tool in comparison with mono-block solutions



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Cutting edge Ø (mm)	L2 (mm)	L1 (mm)	F min (mm)	d (mm)	Suitable for index- able inserts	Indexable insert countersink, dual cutter		Clamping screw for indexable inserts	
						11243... Ident. No.		16108... Ident. No.	
16	30	92	5	12	CC..06	160	●	225	●
17	32	94	6	16	CC..06	170	●	225	●
18	41	97	7	16	CC..06	180	●	225	●
19	41	100	8	16	CC..06	190	●	225	●
20	41	102	9	16	CC..06	200	●	225	●
21	41	105	10	16	CC..06	210	●	225	●
22	41	110	11	16	CC..06	220	○	225	●
23	41	112	12	16	CC..06	230	●	225	●
24	41	115	13	16	CC..06	240	●	225	●
25	40	120	8	16	CC..09	250	●	240	●
26	55	125	9	20	CC..09	260	●	240	●
27	55	128	10	20	CC..09	270	○	240	●
28	55	130	11	20	CC..09	280	○	240	●
29	55	132	12	20	CC..09	290	●	240	●
30	55	134	13	20	CC..09	300	●	240	●
31	55	136	14	20	CC..09	310	○	240	●
32	55	138	15	20	CC..09	320	●	240	●
33	55	140	16	20	CC..09	330	●	240	●
34	60	140	16	25	CC..09	340	●	240	●
35	60	140	17	25	CC..09	350	●	240	●
36	60	140	18	25	CC..09	360	●	240	●
37	60	140	19	25	CC..09	370	●	240	●
38	60	140	20	25	CC..09	380	○	240	●
39	60	140	21	25	CC..09	390	●	240	●
40	60	140	22	25	CC..09	400	●	240	●
41	60	140	23	25	CC..09	410	○	240	●
42	60	140	24	25	CC..09	420	○	240	●

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Reversible tip reverse boring bar, single tooth cutter

For universal use up to 1300 N/mm² with CC..06 and CC09 and CC12 Indexable inserts


Application:

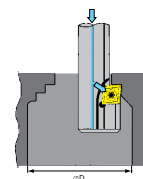
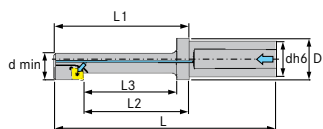
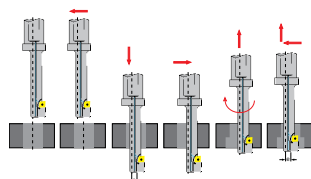
180° reverse counterboring with CC.. indexable inserts in the diameter range from 18.00–76.00 mm, in the material groups steel, stainless steel, non-ferrous metals, cast materials and special alloys for use in single part and series production.

Execution:

- backing material made from high-grade steel with clamping surface as per DIN 1835E

Advantage:

- standard CC.. indexable inserts can be used, thereby optimising procurement and minimising tool costs
- precisely fitting inserts ensure optimum machining results even under difficult conditions
- nickel-plated tool for high corrosion-resistance



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Counter- sink Ø (mm)	d min. (mm)	L (mm)	L1 (mm)	L2 (mm)	L3 (mm)	d (mm)	D1 (mm)	e (mm)	Suitable for indexable inserts	Reversible tip reverse boring bar, single tooth cutter		Clamping screw for indexable inserts	
										11251... Ident. No.		16108... Ident. No.	
18	10.5	112	62	47	40	20	25	4	CC..06	180	●	225	●
20	13	117	67	52	45	20	25	3.75	CC..06	200	●	225	●
24	15	122	72	57	50	20	25	4.75	CC..06	240	●	225	●
26	17	132	82	67	60	20	25	5	CC..06	260	●	225	●
30	19	142	92	77	65	20	25	6	CC..06	300	●	225	●
33	21	152	102	82	75	20	25	6.5	CC..09	330	●	240	●
36	23	173	113	93	85	32	25	7	CC..09	360	●	240	●
40	25	183	123	103	95	32	40	8	CC..09	400	●	240	●
43	30	183	123	103	95	32	40	7	CC..09	430	○	240	●
48	33	223	163	143	135	32	40	8	CC..09	480	●	240	●
53	36	210	140	-	110	40	-	9	CC..12	530	○	130	●
57	39	220	150	-	120	40	-	9.5	CC..12	570	○	130	●
66	45	245	165	-	135	50	-	11	CC..12	660	○	130	●
78	52	265	185	-	155	50	-	12.5	CC..12	760	○	130	●

Prod. Gr. 142



troubleshooting indexable insert drilling

wear to open space

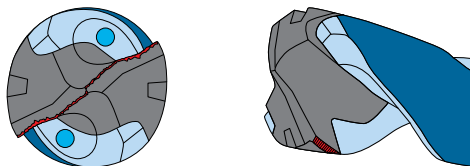
wear to open space is the preferred type of wear, if it is even.

problem

- cutting speed too high
- oil content in coolant too low
- too little cooling
- concentricity error

countermeasures

- lower cutting speed
- increase oil content in coolant
- increase coolant quantity
- check concentricity



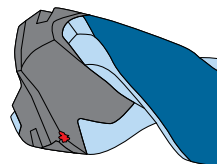
plastic deformation

problem

- cutting speed too high
- feed rate too high
- too little cooling

countermeasure

- reduce cutting speed
- reduce feed rate
- increase cooling



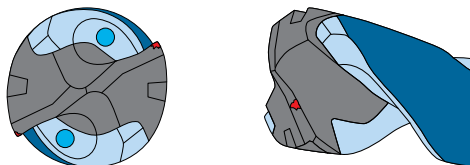
breakouts

problem

- tip angles do not match
- unstable conditions
- concentricity error
- feed rate too high
- too little cooling

countermeasure

- check tip angle
- check clamping
- check concentricity
- reduce feed rate
- increase cooling



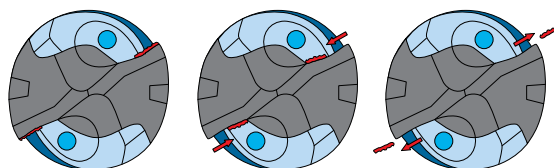
built-up edge

problem

- cutting speed too high/too low
- oil content of coolant too low

countermeasure

- increase cutting speed so that the built-up edge moves to the centre
- decrease cutting speed so that the built-up edge moves to the outer edge or is avoided
- increase coolant oil content





troubleshooting indexable insert drilling

rapid wear of the peripheral cutting edge

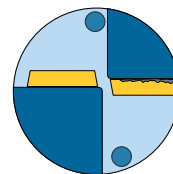
wear to open space is the preferred type of wear, if it is even.

problem

- cutting speed too high
- too little cooling
- wrong cemented carbide type

countermeasures

- reduce cutting speed
- increase cooling
- select a more wear-resistant cemented carbide type



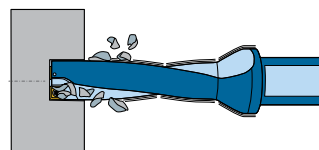
vibrations on the tool body

problem

- cutting speed too high
- feed rate too high
- too little cooling

countermeasure

- reduce cutting speed
- reduce feed rate
- increase cooling



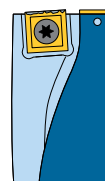
rapid wear of the inner cutting edge

problem

- uneven workpiece surface
- unstable tool/workpiece clamping conditions
- wrong cemented carbide type

countermeasure

- reduce feed rate by 50%
- check tool/workpiece clamping
- select a tougher grade of cemented carbide



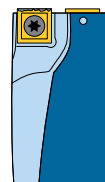
rapid wear of the outer cutting edge

problem

- feed rate too high
- uneven workpiece surface
- wrong cemented carbide type
- wrong indexable insert geometry

countermeasure

- reduce feed rate
- reduce feed rate by 50%
- select a tougher grade of cemented carbide
- use an indexable insert geometry for higher feed rates



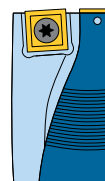
chips welding to the tool body

problem

- cutting speed too low (long-chipping)
- feed rate too high (long-chipping)
- feed rate too low
- too little cooling

countermeasure

- increase cutting speed (long-chipping)
- reduce feed rate (long-chipping)
- increase feed rate
- increase cooling



long continuous chips are produced



problem

- cutting speed too low (long-chipping)
- feed rate too high (long-chipping)
- feed rate too low
- incorrect indexable insert geometry

countermeasure

- increase cutting speed (long-chipping)
- reduce feed rate (long-chipping)
- increase feed rate
- use an indexable insert geometry for lower feed rates

