



TOOLS FOR METAL OPTI LINE

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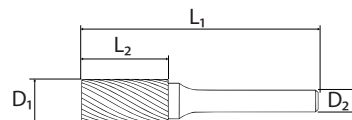
ROTARY BURRS



A/ZYA - Cylinder	6
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CYLINDER



STANDARD	STANDARD		Line
DSF	ALU		Chamfer

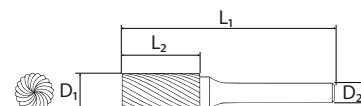
CODE		D ₁	L ₂	L ₁	D ₂
0641-500-000-030		3	13	38	3
0641-500-000-060		6	13	50	3
0641-500-000-065		6	16	63	6
0641-500-000-080	0641-500-000-508	8	20	65	6
0641-500-000-100	0641-500-000-510	10	20	65	6
0641-500-000-120	0641-500-000-512	12,7	25	70	6
0641-500-000-125		12,7	25	70	8
0641-500-000-160	0641-500-000-516	16	25	70	6
0641-500-000-208		8	20	170	6
0641-500-000-210		10	20	170	6
0641-500-000-212		12,7	25	175	6



PRO	PRO		Line
DSF	DSF		Chamfer
	BLUE		Coating

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-000-306	0641-500-000-406	6	16	50	6
0641-500-000-308	0641-500-000-408	8	20	65	6
0641-500-000-310	0641-500-000-410	10	20	65	6
0641-500-000-312	0641-500-000-412	12,7	25	70	6
0641-500-000-316		16	25	70	6

CYLINDER WITH ENDCUT



STANDARD	STANDARD		Line
DSF	ALU		Chamfer

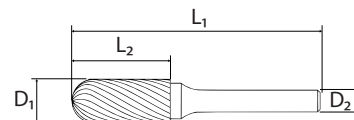
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0641-500-005-030		3	13	38	3
0641-500-005-060		6	13	50	3
0641-500-005-065		6	16	63	6
0641-500-005-080	0641-500-005-508	8	20	65	6
0641-500-005-100	0641-500-005-510	10	20	65	6
0641-500-005-120	0641-500-005-512	12,7	25	70	6
0641-500-005-125		12,7	25	70	8
0641-500-005-160	0641-500-005-516	16	25	70	6
0641-500-005-208		8	20	170	6
0641-500-005-210		10	20	170	6
0641-500-005-212		12,7	25	175	6



PRO	PRO		Line
DSF	DSF		Chamfer
	BLUE		Coating

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-005-306	0641-500-005-406	6	16	50	6
0641-500-005-308	0641-500-005-408	8	20	65	6
0641-500-005-310	0641-500-005-410	10	20	65	6
0641-500-005-312	0641-500-005-412	12,7	25	70	6
0641-500-005-316		16	25	70	6

BALL NOSED CYLINDER



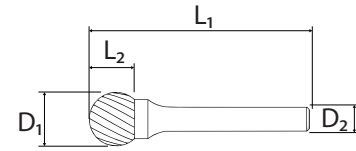
STANDARD	STANDARD		Line
DSF	ALU		Chamfer

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-010-030		3	13	38	3
0641-500-010-060		6	13	50	3
0641-500-010-065		6	16	60	6
0641-500-010-080	0641-500-010-508	8	20	65	6
0641-500-010-100	0641-500-010-510	10	20	65	6
0641-500-010-120	0641-500-010-512	12,7	25	70	6
0641-500-010-125		12,7	25	70	8
0641-500-010-160	0641-500-010-516	16	25	70	6
0641-500-010-206		6	16	166	6
0641-500-010-208		8	20	170	6
0641-500-010-210		10	20	170	6
0641-500-010-212		12,7	25	175	6
0641-500-010-214		12,7	25	175	8



PRO	PRO		Line
DSF	DSF		Chamfer
	BLUE		Coating

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-010-306	0641-500-010-406	6	16	50	6
0641-500-010-308	0641-500-010-408	8	20	65	6
0641-500-010-310	0641-500-010-410	10	20	65	6
0641-500-010-312	0641-500-010-412	12,7	25	70	6
0641-500-010-316		16	25	70	6



STANDARD	STANDARD		Line
DSF	ALU		Chamfer

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-015-030		3	3	38	3
0641-500-015-060		6	5	43	3
0641-500-015-065		6	5	50	6
0641-500-015-080	0641-500-015-508	8	7	56	6
0641-500-015-100	0641-500-015-510	10	9	56	6
0641-500-015-120	0641-500-015-512	12,7	10	56	6
0641-500-015-125		12,7	10	56	8
0641-500-015-160	0641-500-015-516	16	14	60	6
0641-500-015-190		19	17	63	6
0641-500-015-200		25	21	68	6
0641-500-015-210		10	9	160	6
0641-500-015-212		12,7	10	160	6

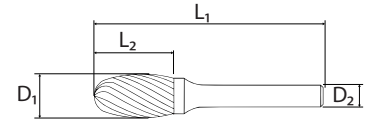


PRO	PRO		Line
DSF	DSF		Chamfer
	BLUE		Coating

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-015-306	0641-500-015-406	6	5	50	6
0641-500-015-308	0641-500-015-408	8	7	53	6
0641-500-015-310	0641-500-015-410	10	9	54	6
0641-500-015-312	0641-500-015-412	12,7	10	58	6
0641-500-015-316		16	14	60	6



STANDARD	STANDARD		Line
DSF	ALU		Chamfer



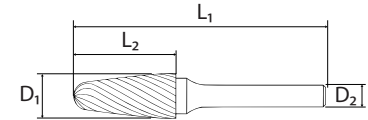
CODE	D ₁	L ₂	L ₁	D ₂
0641-500-020-030	3	6	38	3
0641-500-020-060	6	10	50	3
0641-500-020-065	6	10	55	6
0641-500-020-080	8	13	60	6
0641-500-020-100	10	16	60	6
0641-500-020-120	12,7	20	65	6
0641-500-020-160	16	25	70	6



PRO	PRO		Line
DSF	DSF		Chamfer
	BLUE		Coating

CODE	D ₁	L ₂	L ₁	D ₂
0641-500-020-306	6	10	50	6
0641-500-020-308	8	13	60	6
0641-500-020-310	10	16	60	6
0641-500-020-312	12,7	20	65	6
0641-500-020-316	16	25	70	6

BALL NOSED TREE



STANDARD	STANDARD		Line
DSF	ALU		Chamfer

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-025-030		3	13	38	3
0641-500-025-060		6	13	50	3
0641-500-025-065		6	16	63	6
0641-500-025-080		8	20	65	6
0641-500-025-100	0641-500-025-510	10	20	65	6
0641-500-025-120	0641-500-025-512	12,7	25	70	6
0641-500-025-125	0641-500-025-514	12,7	25	70	8
0641-500-025-160	0641-500-025-516	16	25	70	6
0641-500-025-206		6	16	166	6
0641-500-025-208		8	20	170	6
0641-500-025-210		10	20	170	6
0641-500-025-212		12,7	25	175	6
0641-500-025-214		12,7	25	175	8



PRO	PRO		Line
DSF	DSF		Chamfer
	BLUE		Coating

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-025-306	0641-500-025-406	6	16	50	6
0641-500-025-308	0641-500-025-408	8	20	65	6
0641-500-025-310	0641-500-025-410	10	20	65	6
0641-500-025-312	0641-500-025-412	12,7	25	70	6
0641-500-025-316		16	25	70	6

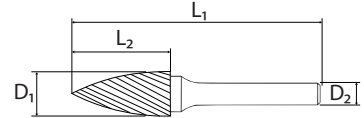
POINTED TREE



ISO
G

DIN
SPG

VHM



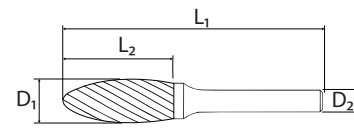
STANDARD	STANDARD		Line
DSF	ALU		Chamfer

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-030-030		3	13	38	3
0641-500-030-060		6	13	50	3
0641-500-030-065		6	16	63	6
0641-500-030-080		8	20	65	6
0641-500-030-100	0641-500-030-510	10	20	65	6
0641-500-030-120	0641-500-030-512	12,7	25	70	6
0641-500-030-125		12,7	25	70	8
0641-500-030-160	0641-500-030-516	16	25	70	6
0641-500-030-210		10	20	170	6
0641-500-030-212		12,7	25	175	6



PRO	PRO		Line
DSF	DSF		Chamfer
	BLUE		Coating

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-030-306		6	16	50	6
0641-500-030-308		8	20	65	6
0641-500-030-310		10	20	65	6
0641-500-030-312	0641-500-030-412	12,7	25	70	6
0641-500-030-316		16	25	70	6



STANDARD	STANDARD		Line
DSF	ALU		Chamfer

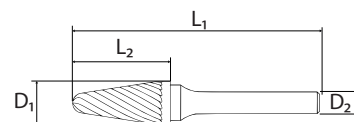
CODE	D ₁	L ₂	L ₁	D ₂
0641-500-035-030	3	8	38	3
0641-500-035-065	6	18	70	6
0641-500-035-080	8	20	65	6
0641-500-035-100	10	25	70	6
0641-500-035-120	12,7	32	76	6
0641-500-035-125	12,7	32	76	8
0641-500-035-160	16	36	80	6
0641-500-035-208	8	20	170	6
0641-500-035-210	10	25	175	6
0641-500-035-212	12,7	32	182	6



PRO	PRO		Line
DSF	DSF		Chamfer
	BLUE		Coating

CODE	D ₁	L ₂	L ₁	D ₂
0641-500-035-306	6	18	50	6
0641-500-035-308	8	20	65	6
0641-500-035-310	10	25	70	6
0641-500-035-312	12,7	32	76	6
0641-500-035-316	16	36	80	6

BALL NOSED CONE



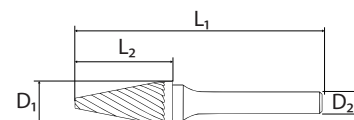
STANDARD	STANDARD	Line
DSF	ALU	Chamfer

CODE	CODE	D ₁	L ₂	L ₁	D ₂
0641-500-040-040		3	13	38	3
0641-500-040-065		6	16	60	6
0641-500-040-080		8	20	45	6
0641-500-040-100	0641-500-040-510	10	25	50	6
0641-500-040-120	0641-500-040-512	12,7	32	65	6
0641-500-040-125		12,7	32	70	8
0641-500-040-160	0641-500-040-516	16	33	70	6
0641-500-040-210		10	25	175	6
0641-500-040-212		12,7	32	180	6



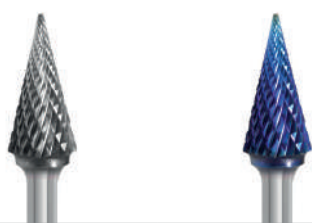
PRO	PRO	Line
DSF	DSF	Chamfer
	BLUE	Coating

CODE	CODE	D ₁	L ₂	L ₁	D ₂
0641-500-040-306	0641-500-040-406	6	16	50	6
0641-500-040-308	0641-500-040-408	8	20	45	6
0641-500-040-310	0641-500-040-410	10	25	50	6
0641-500-040-312	0641-500-040-412	12,7	32	65	6
0641-500-040-316		16	33	70	6



STANDARD	STANDARD		Line
DSF	ALU		Chamfer

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-045-030		3	11	38	3
0641-500-045-065		6	18	63	6
0641-500-045-080		8	20	65	6
0641-500-045-100	0641-500-045-510	10	20	65	6
0641-500-045-120	0641-500-045-512	12,7	25	70	6
0641-500-045-125		12,7	25	70	8
0641-500-045-160		16	25	70	6
0641-500-045-212		12,7	25	175	6



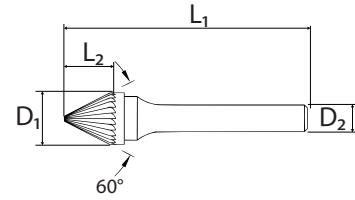
PRO	PRO		Line
DSF	DSF		Chamfer
	BLUE		Coating

CODE		D ₁	L ₂	L ₁	D ₂
0641-500-045-306	0641-500-045-406	6	18	50	6
0641-500-045-308		8	20	65	6
0641-500-045-310	0641-500-045-410	10	20	65	6
0641-500-045-312	0641-500-045-412	12,7	25	70	6
0641-500-045-316		16	25	70	6



STANDARD			Line
CS			Chamfer

COUNTERSINK 60°

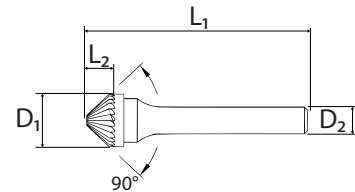


	CODE	D ₁	L ₂	L ₁	D ₂
	0641-500-050-060	6	4	50	6
	0641-500-050-100	10	8	50	6
	0641-500-050-120	12,7	11	58	6
	0641-500-050-160	16	14	61	6



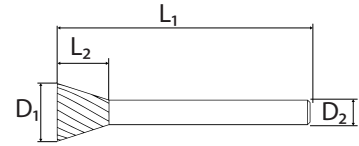
STANDARD			Line
CS			Chamfer

COUNTERSINK 90°



	CODE	D ₁	L ₂	L ₁	D ₂
	0641-500-055-100	10	5	54	6
	0641-500-055-120	12,7	6	55	6
	0641-500-055-160	16	8	56	6
	0641-500-055-190	19	10	57	6
	0641-500-055-250	25	12	65	6

INVERTED CONE









STANDARD			Line
DSF			Chamfer

CODE	D ₁	L ₂	L ₁	D ₂
0641-500-060-100	10	10	50	6
0641-500-060-120	12,7	12	58	6
0641-500-060-160	16	19	63	6

		ALUMINIUM, PLASTICS	BRASS, COPPER, CAST IRON, BRONZE	UNHARDENED STEEL	HARDENED STEEL, STAINLESS STEEL, NIMONIC ALLOY
Cutter diameter	Max working speed	Speed range	Speed range	Speed range	Speed range
3mm (1/8")	100.000	60.000-80.000	45.000-80.000	60.000-80.000	60.000-80.000
6mm (1/4")	65.000	15.000-60.000	22.000-60.000	45.000-60.000	30.000-45.000
10mm (3/8")	55.000	10.000-50.000	15.000-40.000	30.000-40.000	19.000-30.000
12mm (1/2")	35.000	7.000-30.000	11.000-30.000	22.000-30.000	15.000-22.000
16mm (5/8")	25.000	6.000-20.000	9.000-20.000	18.000-20.000	12.000-18.000
20mm (3/4")	20.000	5.000-17.000	8.000-17.000	15.000-17.000	10.000-15.000
25mm (1")	15.000	4.000-13.000	6.000-13.000	10.000-13.000	7.000-11.000

* Extra long burrs (>150mm long) require slower speeds.

			850	1200	1400	49HRC	INOX	GG	ALU	CU	TI	NI	PL
Standard Line		For general application.	DS	●	●	○	●	●	●	●	●	●	
		For general application. The finer pitch eliminates vibration of the tool at insufficient rotation.	DSF	●	●	○	●	●		●	●	●	
		For processing of aluminium and plastic alloys. Thicker edges enable removal of chips.	ALU						●				●
		For general application. Smooth surface finish.	CS	●	●	●	●	●	●		●	●	●
Pro Line		For general application.	DSF	●	●	●	●	●		●	●	●	
		For general application. Blue coating extends significantly the tool's life.	DSF	●	●	●	●	●		●	●	●	

Standard Line
 - Fine-grain carbide
 - Excellent ratio of price to quality

Pro Line
 - Ultra fine-grain carbide
 - Higher durability
 - Recommended for very hard materials

● - recommended ○ - acceptable



ANNULAR CUTTERS TREPANNING DRILLS



HSS ANNULAR CUTTERS / TREPANNING DRILLS 22



TCT ANNULAR CUTTERS / TREPANNING DRILLS 24



TCT RAIL ANNULAR CUTTERS / TREPANNING DRILLS 26



ACCESSORIES FOR ANNULAR CUTTERS 27



COUNTERSINKS 28

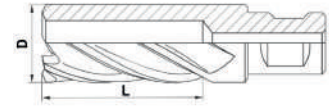


HSS ANNULAR CUTTERS / TREPANNING DRILLS



WELDON
SHANK
19mm (3/4")

HSS



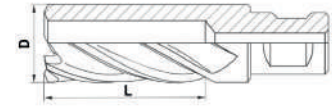
STANDARD	STANDARD	STANDARD	STANDARD	Line
HSS	HSS	HSS	HSS	Material
25mm	50mm	75mm	100mm	Cutting length
0641-231-050-300	0641-231-100-300	0641-231-124-300	0641-231-126-300	Pilot pin

CODE				D	shank
0641-231-050-010	0641-231-100-010			12	19
0641-231-050-015	0641-231-100-015			13	19
0641-231-050-020	0641-231-100-020			14	19
0641-231-050-025	0641-231-100-025			15	19
0641-231-050-030	0641-231-100-030			16	19
0641-231-050-035	0641-231-100-035			17	19
0641-231-050-040	0641-231-100-040	0641-231-104-040	0641-231-106-040	18	19
0641-231-050-045	0641-231-100-045	0641-231-104-045	0641-231-106-045	19	19
0641-231-050-050	0641-231-100-050	0641-231-104-050	0641-231-106-050	20	19
0641-231-050-055	0641-231-100-055	0641-231-104-055	0641-231-106-055	21	19
0641-231-050-060	0641-231-100-060	0641-231-104-060	0641-231-106-060	22	19
0641-231-050-065	0641-231-100-065	0641-231-104-065	0641-231-106-065	23	19
0641-231-050-070	0641-231-100-070	0641-231-104-070	0641-231-106-070	24	19
0641-231-050-075	0641-231-100-075	0641-231-104-075	0641-231-106-075	25	19
0641-231-050-080	0641-231-100-080	0641-231-104-080	0641-231-106-080	26	19
0641-231-050-085	0641-231-100-085	0641-231-104-085	0641-231-106-085	27	19
0641-231-050-090	0641-231-100-090	0641-231-104-090	0641-231-106-090	28	19
0641-231-050-095	0641-231-100-095	0641-231-104-095	0641-231-106-095	29	19
0641-231-050-100	0641-231-100-100	0641-231-104-100	0641-231-106-100	30	19
0641-231-050-105	0641-231-100-105	0641-231-104-105	0641-231-106-105	31	19
0641-231-050-110	0641-231-100-110	0641-231-104-110	0641-231-106-110	32	19
0641-231-050-115	0641-231-100-115	0641-231-104-115	0641-231-106-115	33	19
0641-231-050-120	0641-231-100-120	0641-231-104-120	0641-231-106-120	34	19
0641-231-050-125	0641-231-100-125	0641-231-104-125	0641-231-106-125	35	19
0641-231-050-130	0641-231-100-130	0641-231-104-130	0641-231-106-130	36	19
0641-231-050-135	0641-231-100-135	0641-231-104-135	0641-231-106-135	37	19
0641-231-050-140	0641-231-100-140	0641-231-104-140	0641-231-106-140	38	19
0641-231-050-145	0641-231-100-145	0641-231-104-145	0641-231-106-145	39	19
0641-231-050-150	0641-231-100-150	0641-231-104-150	0641-231-106-150	40	19
0641-231-050-155	0641-231-100-155	0641-231-104-155	0641-231-106-155	41	19
0641-231-050-160	0641-231-100-160	0641-231-104-160	0641-231-106-160	42	19
0641-231-050-165	0641-231-100-165	0641-231-104-165	0641-231-106-165	43	19
0641-231-050-170	0641-231-100-170	0641-231-104-170	0641-231-106-170	44	19
0641-231-050-175	0641-231-100-175	0641-231-104-175	0641-231-106-175	45	19
0641-231-050-177	0641-231-100-180	0641-231-104-180	0641-231-106-180	46	19
0641-231-050-179	0641-231-100-182	0641-231-104-182	0641-231-106-182	47	19
0641-231-050-182	0641-231-100-184	0641-231-104-184	0641-231-106-184	48	19
0641-231-050-185	0641-231-100-186	0641-231-104-186	0641-231-106-186	49	19
0641-231-050-200	0641-231-100-200	0641-231-104-200	0641-231-106-200	50	19
0641-231-050-500	0641-231-100-500	0641-231-104-500	0641-231-106-500	51	19
0641-231-050-502	0641-231-100-502	0641-231-104-502	0641-231-106-502	52	19
0641-231-050-504	0641-231-100-504	0641-231-104-504	0641-231-106-504	53	19
0641-231-050-506	0641-231-100-506	0641-231-104-506	0641-231-106-506	54	19
0641-231-050-508	0641-231-100-508	0641-231-104-508	0641-231-106-508	55	19
0641-231-050-510	0641-231-100-510	0641-231-104-510	0641-231-106-510	56	19
0641-231-050-512	0641-231-100-512	0641-231-104-512	0641-231-106-512	57	19
0641-231-050-514	0641-231-100-514	0641-231-104-514	0641-231-106-514	58	19
0641-231-050-516	0641-231-100-516	0641-231-104-516	0641-231-106-516	59	19
0641-231-050-518	0641-231-100-518	0641-231-104-518	0641-231-106-518	60	19

HSS ANNULAR CUTTERS / TREPANNING DRILLS

**WELDON
SHANK
19mm (3/4")**

HSS



PRO	PRO			Line
HSS	HSS			Material
25mm	50mm			Cutting length
0641-231-050-300	0641-231-100-300			Pilot pin
BLUE	BLUE			Coating

CODE		D	shank
0641-231-052-010	0641-231-102-010	12	19
0641-231-052-015	0641-231-102-015	13	19
0641-231-052-020	0641-231-102-020	14	19
0641-231-052-025	0641-231-102-025	15	19
0641-231-052-030	0641-231-102-030	16	19
0641-231-052-035	0641-231-102-035	17	19
0641-231-052-040	0641-231-102-040	18	19
0641-231-052-045	0641-231-102-045	19	19
0641-231-052-050	0641-231-102-050	20	19
0641-231-052-055	0641-231-102-055	21	19
0641-231-052-060	0641-231-102-060	22	19
0641-231-052-065	0641-231-102-065	23	19
0641-231-052-070	0641-231-102-070	24	19
0641-231-052-075	0641-231-102-075	25	19
0641-231-052-080	0641-231-102-080	26	19
0641-231-052-085	0641-231-102-085	27	19
0641-231-052-090	0641-231-102-090	28	19
0641-231-052-095	0641-231-102-095	29	19
0641-231-052-100	0641-231-102-100	30	19
0641-231-052-105	0641-231-102-105	31	19
0641-231-052-110	0641-231-102-110	32	19
0641-231-052-115	0641-231-102-115	33	19
0641-231-052-120	0641-231-102-120	34	19
0641-231-052-125	0641-231-102-125	35	19
0641-231-052-130	0641-231-102-130	36	19
0641-231-052-135	0641-231-102-135	37	19
0641-231-052-140	0641-231-102-140	38	19
0641-231-052-145	0641-231-102-145	39	19
0641-231-052-150	0641-231-102-150	40	19
0641-231-052-155	0641-231-102-155	41	19
0641-231-052-160	0641-231-102-160	42	19
0641-231-052-165	0641-231-102-165	43	19
0641-231-052-167	0641-231-102-170	44	19
0641-231-052-175	0641-231-102-175	45	19
0641-231-052-177	0641-231-102-180	46	19
0641-231-052-179	0641-231-102-182	47	19
0641-231-052-182	0641-231-102-184	48	19
0641-231-052-185	0641-231-102-186	49	19
0641-231-052-200	0641-231-102-200	50	19

TCT ANNULAR CUTTERS / TREPANNING DRILLS



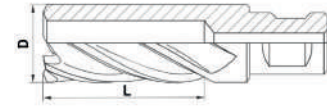
STANDARD	STANDARD	STANDARD	STANDARD	Line	
Tungsten carbide teeth	Tungsten carbide teeth	Tungsten carbide teeth	Tungsten carbide teeth	Material	
35mm	50mm	75mm	100mm	Cutting length	
0641-231-110-300 /D 12-16mm	0641-231-100-300 /D 12-16mm	0641-231-124-300	0641-231-126-300	Pilot pin	
0641-231-110-305 /od D 17mm	0641-231-120-300 /od D 17mm				
CODE				D	shank
0641-231-110-010	0641-231-120-010			12	19
0641-231-110-015	0641-231-120-015			13	19
0641-231-110-020	0641-231-120-020			14	19
0641-231-110-025	0641-231-120-025			15	19
0641-231-110-030	0641-231-120-030			16	19
0641-231-110-035	0641-231-120-035			17	19
0641-231-110-040	0641-231-120-040	0641-231-124-040	0641-231-126-040	18	19
0641-231-110-045	0641-231-120-045	0641-231-124-045	0641-231-126-045	19	19
0641-231-110-050	0641-231-120-050	0641-231-124-050	0641-231-126-050	20	19
0641-231-110-055	0641-231-120-055	0641-231-124-055	0641-231-126-055	21	19
0641-231-110-060	0641-231-120-060	0641-231-124-060	0641-231-126-060	22	19
0641-231-110-065	0641-231-120-065	0641-231-124-065	0641-231-126-065	23	19
0641-231-110-070	0641-231-120-070	0641-231-124-070	0641-231-126-070	24	19
0641-231-110-075	0641-231-120-075	0641-231-124-075	0641-231-126-075	25	19
0641-231-110-080	0641-231-120-080	0641-231-124-080	0641-231-126-080	26	19
0641-231-110-085	0641-231-120-085	0641-231-124-085	0641-231-126-085	27	19
0641-231-110-090	0641-231-120-090	0641-231-124-090	0641-231-126-090	28	19
0641-231-110-095	0641-231-120-095	0641-231-124-095	0641-231-126-095	29	19
0641-231-110-100	0641-231-120-100	0641-231-124-100	0641-231-126-100	30	19
0641-231-110-105	0641-231-120-105	0641-231-124-105	0641-231-126-105	31	19
0641-231-110-110	0641-231-120-110	0641-231-124-110	0641-231-126-110	32	19
0641-231-110-115	0641-231-120-115	0641-231-124-115	0641-231-126-115	33	19
0641-231-110-120	0641-231-120-120	0641-231-124-120	0641-231-126-120	34	19
0641-231-110-125	0641-231-120-125	0641-231-124-125	0641-231-126-125	35	19
0641-231-110-130	0641-231-120-130	0641-231-124-130	0641-231-126-130	36	19
0641-231-110-135	0641-231-120-135	0641-231-124-135	0641-231-126-135	37	19
0641-231-110-140	0641-231-120-140	0641-231-124-140	0641-231-126-140	38	19
0641-231-110-145	0641-231-120-145	0641-231-124-145	0641-231-126-145	39	19
0641-231-110-150	0641-231-120-150	0641-231-124-150	0641-231-126-150	40	19
0641-231-110-155	0641-231-120-155	0641-231-124-155	0641-231-126-155	41	19
0641-231-110-160	0641-231-120-160	0641-231-124-160	0641-231-126-160	42	19
0641-231-110-165	0641-231-120-165	0641-231-124-165	0641-231-126-165	43	19
0641-231-110-170	0641-231-120-170	0641-231-124-170	0641-231-126-170	44	19
0641-231-110-175	0641-231-120-175	0641-231-124-175	0641-231-126-175	45	19
0641-231-110-180	0641-231-120-180	0641-231-124-180	0641-231-126-180	46	19
0641-231-110-185	0641-231-120-185	0641-231-124-185	0641-231-126-185	47	19
0641-231-110-190	0641-231-120-190	0641-231-124-190	0641-231-126-190	48	19
0641-231-110-195	0641-231-120-195	0641-231-124-195	0641-231-126-195	49	19
0641-231-110-200	0641-231-120-200	0641-231-124-200	0641-231-126-200	50	19
0641-231-110-500	0641-231-120-500	0641-231-124-500	0641-231-126-500	51	19
0641-231-110-502	0641-231-120-502	0641-231-124-502	0641-231-126-502	52	19
0641-231-110-504	0641-231-120-504	0641-231-124-504	0641-231-126-504	53	19
0641-231-110-506	0641-231-120-506	0641-231-124-506	0641-231-126-506	54	19
0641-231-110-508	0641-231-120-508	0641-231-124-508	0641-231-126-508	55	19
0641-231-110-510	0641-231-120-510	0641-231-124-510	0641-231-126-510	56	19
0641-231-110-512	0641-231-120-512	0641-231-124-512	0641-231-126-512	57	19
0641-231-110-514	0641-231-120-514	0641-231-124-514	0641-231-126-514	58	19
0641-231-110-516	0641-231-120-516	0641-231-124-516	0641-231-126-516	59	19
0641-231-110-518	0641-231-120-518	0641-231-124-518	0641-231-126-518	60	19

TCT ANNULAR CUTTERS / TREPANNING DRILLS



WELDON
SHANK
32mm (1.1/4")

TCT

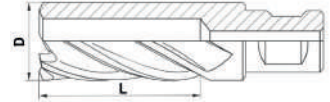


STANDARD	STANDARD	STANDARD	STANDARD	Line	
Tungsten carbide teeth	Tungsten carbide teeth	Tungsten carbide teeth	Tungsten carbide teeth	Material	
35mm	50mm	75mm	100mm	Cutting length	
0641-231-120-300	0641-231-124-300	0641-231-124-305	0641-231-126-305	Pilot pin	
CODE				D	shank
0641-231-110-520	0641-231-120-520	0641-231-124-520	0641-231-126-520	61	32
0641-231-110-522	0641-231-120-522	0641-231-124-522	0641-231-126-522	62	32
0641-231-110-524	0641-231-120-524	0641-231-124-524	0641-231-126-524	63	32
0641-231-110-536	0641-231-120-526	0641-231-124-526	0641-231-126-526	64	32
0641-231-110-538	0641-231-120-528	0641-231-124-528	0641-231-126-528	65	32
	0641-231-120-530	0641-231-124-530	0641-231-126-530	66	32
	0641-231-120-532	0641-231-124-532	0641-231-126-532	67	32
	0641-231-120-534	0641-231-124-534	0641-231-126-534	68	32
	0641-231-120-536	0641-231-124-536	0641-231-126-536	69	32
	0641-231-120-538	0641-231-124-538	0641-231-126-538	70	32
	0641-231-120-540	0641-231-124-540	0641-231-126-540	71	32
	0641-231-120-542	0641-231-124-542	0641-231-126-542	72	32
	0641-231-120-544	0641-231-124-544	0641-231-126-544	73	32
	0641-231-120-546	0641-231-124-546	0641-231-126-546	74	32
	0641-231-120-548	0641-231-124-548	0641-231-126-548	75	32
	0641-231-120-550	0641-231-124-550	0641-231-126-550	76	32
	0641-231-120-552	0641-231-124-552	0641-231-126-552	77	32
	0641-231-120-554	0641-231-124-554	0641-231-126-554	78	32
	0641-231-120-556	0641-231-124-556	0641-231-126-556	79	32
	0641-231-120-558	0641-231-124-558	0641-231-126-558	80	32
	0641-231-120-560	0641-231-124-560	0641-231-126-560	81	32
	0641-231-120-562	0641-231-124-562	0641-231-126-562	82	32
	0641-231-120-564	0641-231-124-564	0641-231-126-564	83	32
	0641-231-120-566	0641-231-124-566	0641-231-126-566	84	32
	0641-231-120-568	0641-231-124-568	0641-231-126-568	85	32
	0641-231-120-570	0641-231-124-570	0641-231-126-570	86	32
	0641-231-120-572	0641-231-124-572	0641-231-126-572	87	32
	0641-231-120-574	0641-231-124-574	0641-231-126-574	88	32
	0641-231-120-576	0641-231-124-576	0641-231-126-576	89	32
	0641-231-120-578	0641-231-124-578	0641-231-126-578	90	32
	0641-231-120-580	0641-231-124-580	0641-231-126-580	91	32
	0641-231-120-582	0641-231-124-582	0641-231-126-582	92	32
	0641-231-120-584	0641-231-124-584	0641-231-126-584	93	32
	0641-231-120-586	0641-231-124-586	0641-231-126-586	94	32
	0641-231-120-588	0641-231-124-588	0641-231-126-588	95	32
	0641-231-120-590	0641-231-124-590	0641-231-126-590	96	32
	0641-231-120-592	0641-231-124-592	0641-231-126-592	97	32
	0641-231-120-594	0641-231-124-594	0641-231-126-594	98	32
	0641-231-120-596	0641-231-124-596	0641-231-126-596	99	32
	0641-231-120-598	0641-231-124-598	0641-231-126-598	100	32
	0641-231-120-602	0641-231-124-602	0641-231-126-602	102	32
	0641-231-120-610	0641-231-124-610	0641-231-126-610	105	32
	0641-231-120-620	0641-231-124-620	0641-231-126-620	110	32
	0641-231-120-624	0641-231-124-624	0641-231-126-624	112	32
	0641-231-120-630	0641-231-124-630	0641-231-126-630	115	32
	0641-231-120-640	0641-231-124-640	0641-231-126-640	120	32



WELDON SHANK
19mm (3/4")

TCT RAIL



STANDARD	STANDARD			Line
Tungsten carbide teeth	Tungsten carbide teeth			Material
25mm	50mm			Cutting length
0641-231-050-300 / D 12-16mm	0641-231-100-300 / D 12-16mm			Pilot pin
0641-231-100-305 / od D 17mm	0641-231-120-300 / od D 17mm			

CODE		D	shank
0641-231-130-010	0641-231-135-010	12	19
0641-231-130-015	0641-231-135-015	13	19
0641-231-130-020	0641-231-135-020	14	19
0641-231-130-025	0641-231-135-025	15	19
0641-231-130-030	0641-231-135-030	16	19
0641-231-130-035	0641-231-135-035	17	19
0641-231-130-040	0641-231-135-040	18	19
0641-231-130-045	0641-231-135-045	19	19
0641-231-130-050	0641-231-135-050	20	19
0641-231-130-055	0641-231-135-055	21	19
0641-231-130-060	0641-231-135-060	22	19
0641-231-130-065	0641-231-135-065	23	19
0641-231-130-070	0641-231-135-070	24	19
0641-231-130-075	0641-231-135-075	25	19
0641-231-130-080	0641-231-135-080	26	19
0641-231-130-085	0641-231-135-085	27	19
0641-231-130-090	0641-231-135-090	28	19
0641-231-130-095	0641-231-135-095	29	19
0641-231-130-100	0641-231-135-100	30	19
0641-231-130-105	0641-231-135-105	31	19
0641-231-130-110	0641-231-135-110	32	19
0641-231-130-115	0641-231-135-115	33	19
0641-231-130-120	0641-231-135-120	34	19
0641-231-130-125	0641-231-135-125	35	19
0641-231-130-130	0641-231-135-130	36	19



PILOT PINS		
CODE	diameter mm	length mm
0641-231-050-300	6,34	77
0641-231-110-300	6,34	90
0641-231-100-300	6,34	103
0641-231-100-305	7,98	77
0641-231-110-305	7,98	90
0641-231-120-300	7,98	103
0641-231-124-300	7,98	130
0641-231-124-305	7,98	155
0641-231-126-300	7,98	165
0641-231-126-305	7,98	190



ADAPTER MK/WELDON		
CODE	outside connection Morse cone	inside connection mm
0641-231-120-310	MK2	Weldon 19
0641-231-120-320	MK3	Weldon 19
0641-231-120-325	MK3	Weldon 32



ADAPTER QUICK-IN/WELDON		
CODE	outside connection mm	inside connection mm
0641-231-120-340	Quick-in 18	Weldon 19



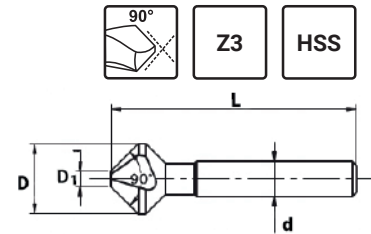
ADAPTER WELDON 19 / WELDON 32		
CODE	outside connection mm	inside connection mm
0641-231-120-340	Weldon 19	Weldon 32



EXTENSION		
CODE	outside/inside connection mm	length mm
0641-231-120-342	Weldon 19	50
0641-231-120-344	Weldon 19	75
0641-231-120-346	Weldon 19	100

COUNTERSINKS DIN 335-C

STANDARD	STANDARD	STANDARD	PRO	Line
HSS	HSS	HSSE	HSSE	Material
3	3	3	3	Flutes
	TIN		Blue	Coating

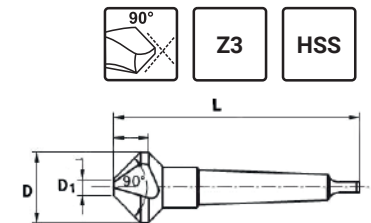


CODE				D	D ₁	d	L
0640-431-000-063	0640-431-020-063	0640-431-100-063	0640-431-170-063	6,3	1,5	5	45
0640-431-000-083	0640-431-020-083	0640-431-100-083	0640-431-170-083	8,3	2	6	50
0640-431-000-104	0640-431-020-104	0640-431-100-104	0640-431-170-104	10,4	2,5	6	50
0640-431-000-125	0640-431-020-125	0640-431-100-125	0640-431-170-125	12,4	2,8	8	56
0640-431-000-165	0640-431-020-165	0640-431-100-165	0640-431-170-165	16,5	3,2	10	60
0640-431-000-205	0640-431-020-205	0640-431-100-205	0640-431-170-205	20,5	3,5	10	63
0640-431-000-250	0640-431-020-250	0640-431-100-250	0640-431-170-250	25	3,8	10	67
0640-431-000-310	0640-431-020-310	0640-431-100-310	0640-431-170-310	31	4,2	12	71
0640-431-000-400	0640-431-020-400			40	7	13	80



COUNTERSINKS DIN 335-D

STANDARD				Line
HSS				Material
3				Flutes



CODE				D	D ₁	L	MK
0640-431-120-165				16,5	3	85	1
0640-431-120-205				20,5	3	100	2
0640-431-120-250				25	3	103	2
0640-431-120-310				31	3,5	112	2
0640-431-120-340				34	3,5	118	2
0640-431-120-370				37	4	118	2
0640-431-120-400				40	8	140	3
0640-431-120-500				50	12	150	3
0640-431-120-630				63	15	180	4
0640-431-120-800				80	22	190	4

CUTTING PARAMETERS FOR TREPANNING DRILLS

MATERIAL	CARBON STEEL		ALLOY STEEL		CAST IRON		ALUMINIUM	
	HSS 27 obr. / min.	TCT 45 obr. / min.	HSS 18 obr. / min.	TCT 32 obr. / min.	HSS 9 obr. / min.	TCT 36 obr. / min.	HSS 27 obr. / min.	TCT 36 obr. / min.
12	716	1194	477	848	239	954	716	1274
13	661	1102	441	783	220	881	661	1176
14	614	1023	409	727	205	818	614	1092
15	573	955	382	679	191	763	573	1019
16	537	895	358	636	179	716	537	955
17	506	843	337	599	169	674	506	899
18	477	796	318	565	159	636	477	849
19	452	754	302	536	151	603	452	805
20	430	716	286	509	143	572	430	764
21	409	682	273	485	136	545	409	728
22	391	651	260	462	130	520	391	695
23	374	623	249	442	125	498	374	665
24	358	597	239	424	119	477	358	637
25	344	573	229	407	115	458	344	611
26	331	551	220	391	110	440	331	588
27	318	531	212	377	106	424	318	566
28	307	512	205	363	102	409	307	546
29	296	494	198	351	99	395	296	527
30	286	477	191	339	96	381	286	510
31	277	462	185	328	92	369	277	493
32	269	448	179	318	90	358	269	478
33	260	434	174	308	87	347	260	463
34	253	421	169	299	84	337	253	450
35	246	409	164	291	82	327	246	437
36	239	398	159	282	80	318	239	425
37	232	387	155	275	77	309	232	413
38	226	377	151	268	75	301	226	402
39	220	367	147	261	73	293	220	392
40	215	358	143	254	72	286	215	382
41	210	349	140	248	70	279	210	373
42	205	341	136	242	68	272	205	364
43	200	333	133	236	67	266	200	356
44	195	326	130	231	65	260	195	347
45	191	318	127	226	64	254	191	340
46	187	311	125	221	62	249	187	332
47	183	305	122	216	61	243	183	325
48	179	298	119	212	60	238	179	318
49	175	292	117	207	58	233	175	312
50	172	286	115	203	57	229	172	306
51	169	281	112	199	56	224	169	300
52	165	275	110	195	55	220	165	294
53	162	270	108	192	54	216	162	288
54	159	265	106	188	53	212	159	283
55	156	260	104	185	52	208	156	278
60	143	239	95	169	48	190	143	255
61	141	235	94	166	47	187	141	251
65	132	220	88	156	44	176	132	235
68	126	211	84	149	42	168	126	225
70	123	205	82	145	41	163	123	218
71	121	202	81	143	40	161	121	215
75	115	191	76	135	38	152	115	204
80	107	179	72	127	36	143	107	191
85	101	169	67	119	34	134	101	180
90	95	159	64	113	32	127	95	170
95	90	151	60	107	30	120	90	161
100	86	143	57	101	29	114	86	153
110	78	130	52	92	26	104	78	139
120	72	119	48	84	24	95	72	127
130	66	110	44	78	22	88	66	118
140	61	102	41	72	20	81	61	109
150	57	95	38	67	19	76	57	102



VHM END MILLS AND DRILLS



VHM END MILLS for general applications 32



GOLD VHM END MILLS for hardened materials 36



BLUE VHM END MILLS for very hard materials 38



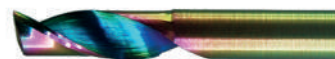
INOX VHM END MILLS for stainless steel 40



ALU VHM END MILLS for aluminium 41



PVC VHM END MILLS for aluminium and PVC 42



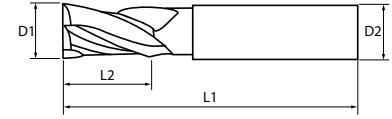
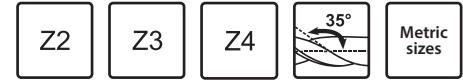
VHM END MILLS for aluminium and PVC windows frames 43



VHM DRILLS 44



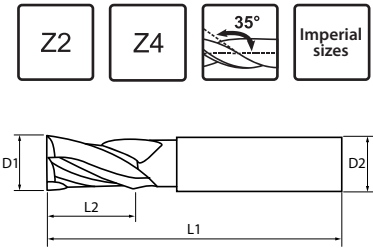
VHM END MILLS for general applications



GENERAL	GENERAL	GENERAL	Line
2	3	4	Flutes
≤ 45	≤ 45	≤ 45	Hardness HRC
square	square	square	Shape

CODE			D1	L2	L1	D2
0640-232-040-020	0640-233-040-020	0640-234-040-020	2	5	50	4
0640-232-040-030	0640-233-040-030	0640-234-040-030	3	8	50	3
0640-232-040-040	0640-233-040-040	0640-234-040-040	4	10	50	4
0640-232-040-050	0640-233-040-050	0640-234-040-050	5	13	50	5
0640-232-040-060	0640-233-040-060	0640-234-040-060	6	15	50	6
0640-232-040-080	0640-233-040-080	0640-234-040-080	8	20	60	8
0640-232-040-100	0640-233-040-100	0640-234-040-100	10	25	75	10
0640-232-040-120	0640-233-040-120	0640-234-040-120	12	30	75	12
0640-232-040-140	0640-233-040-140	0640-234-040-140	14	45	100	14
0640-232-040-160	0640-233-040-160	0640-234-040-160	16	45	100	16
0640-232-040-180	0640-233-040-180	0640-234-040-180	18	45	100	18
0640-232-040-200	0640-233-040-200	0640-234-040-200	20	45	100	20
0640-232-041-040	0640-233-041-040	0640-234-041-040	4	16	75	4
0640-232-041-050	0640-233-041-050	0640-234-041-050	5	20	75	5
0640-232-041-060	0640-233-041-060	0640-234-041-060	6	24	75	6
0640-232-041-080	0640-233-041-080	0640-234-041-080	8	30	75	8
0640-232-041-100	0640-233-041-100	0640-234-041-100	10	40	100	10
0640-232-041-120	0640-233-041-120	0640-234-041-120	12	45	100	12
0640-232-041-140	0640-233-041-140	0640-234-041-140	14	60	150	14
0640-232-041-160	0640-233-041-160	0640-234-041-160	16	65	150	16
0640-232-041-180	0640-233-041-180	0640-234-041-180	18	70	150	18
0640-232-041-200	0640-233-041-200	0640-234-041-200	20	70	150	20
0640-232-042-040	0640-233-042-040	0640-234-042-040	4	20	100	4
0640-232-042-050	0640-233-042-050	0640-234-042-050	5	25	100	5
0640-232-042-060	0640-233-042-060	0640-234-042-060	6	30	100	6
0640-232-042-080	0640-233-042-080	0640-234-042-080	8	35	100	8
0640-232-042-100	0640-233-042-100	0640-234-042-100	10	50	150	10
0640-232-042-120	0640-233-042-120	0640-234-042-120	12	50	150	12

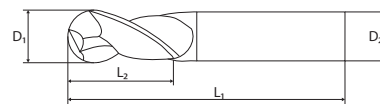
VHM END MILLS for general applications



GENERAL	GENERAL		Line
2	4		Flutes
≤ 45	≤ 45		Hardness HRC
square	square		Shape

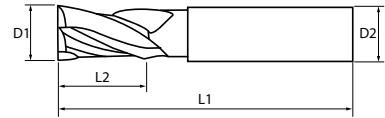
CODE		D1	L2	L1	D2
0640-232-045-010	0640-234-045-010	1/32"	1/8"	1-1/2"	1/8"
0640-232-045-020	0640-234-045-020	3/64"	1/8"	1-1/2"	1/8"
0640-232-045-030	0640-234-045-030	1/16"	3/16"	1-1/2"	1/8"
0640-232-045-040	0640-234-045-040	5/64"	1/4"	1-1/2"	1/8"
0640-232-045-050	0640-234-045-050	3/32"	3/8"	1-1/2"	1/8"
0640-232-045-060	0640-234-045-060	7/64"	3/8"	1-1/2"	1/8"
0640-232-045-070	0640-234-045-070	1/8"	1/2"	1-1/2"	1/8"
0640-232-045-080	0640-234-045-080	9/64"	9/16"	2"	3/16"
0640-232-045-090	0640-234-045-090	5/32"	9/16"	2"	3/16"
0640-232-045-100	0640-234-045-100	11/64"	5/8"	2"	3/16"
0640-232-045-110	0640-234-045-110	3/16"	5/8"	2"	3/16"
0640-232-045-120	0640-234-045-120	13/64"	5/8"	2-1/2"	1/4"
0640-232-045-130	0640-234-045-130	7/32"	5/8"	2-1/2"	1/4"
0640-232-045-140	0640-234-045-140	15/64"	3/4"	2-1/2"	1/4"
0640-232-045-150	0640-234-045-150	1/4"	3/4"	2-1/2"	1/4"
0640-232-045-160	0640-234-045-160	17/64"	3/4"	2-1/2"	5/16"
0640-232-045-170	0640-234-045-170	9/32"	3/4"	2-1/2"	5/16"
0640-232-045-180	0640-234-045-180	19/64"	13/16"	2-1/2"	5/16"
0640-232-045-190	0640-234-045-190	5/16"	13/16"	2-1/2"	5/16"
0640-232-045-200	0640-234-045-200	11/32"	1"	2-1/2"	3/8"
0640-232-045-210	0640-234-045-210	3/8"	1"	2-1/2"	3/8"
0640-232-045-220	0640-234-045-220	1/2"	1"	3"	1/2"
0640-232-045-230	0640-234-045-230	5/8"	1-1/4"	3-1/2"	5/8"
0640-232-045-240	0640-234-045-240	11/16"	1-3/8"	4"	3/4"
0640-232-045-250	0640-234-045-250	3/4"	1-1/2"	4"	3/4"
0640-232-045-260	0640-234-045-260	1"	1-1/2"	4"	1"
0640-232-045-270	0640-234-045-270	1/8"	1"	3"	1/8"
0640-232-045-280	0640-234-045-280	3/16"	1-1/8"	3"	3/16"
0640-232-045-290	0640-234-045-290	1/4"	1-1/8"	3"	1/4"
0640-232-045-300	0640-234-045-300	1/4"	1-1/2"	4"	1/4"
0640-232-045-310	0640-234-045-310	5/16"	1-1/8"	3"	5/16"
0640-232-045-320	0640-234-045-320	5/16"	1-5/8"	4"	5/16"
0640-232-045-330	0640-234-045-330	3/8"	1-1/8"	3"	3/8"
0640-232-045-340	0640-234-045-340	3/8"	1-3/4"	4"	3/8"
0640-232-045-350	0640-234-045-350	1/2"	2"	4"	1/2"
0640-232-045-360	0640-234-045-360	1/2"	3"	6"	1/2"
0640-232-045-370	0640-234-045-370	1/2"	1-1/2"	6"	1/2"
0640-232-045-380	0640-234-045-380	5/8"	2-1/4"	5"	5/8"
0640-232-045-390	0640-234-045-390	5/8"	3"	6"	5/8"
0640-232-045-400	0640-234-045-400	3/4"	2-1/4"	5"	3/4"
0640-232-045-410	0640-234-045-410	3/4"	3"	6"	3/4"
0640-232-045-420	0640-234-045-420	1"	3"	6"	1"

VHM END MILLS for general applications



GENERAL	GENERAL		Line
2	2		Flutes
≤ 45	≤ 45		Hardness HRC
ball	ball		Shape

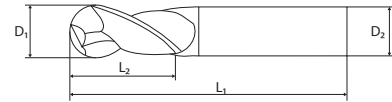
CODE		D1	L2	L1	D2
0640-232-145-010	0640-234-145-010	1/32"	1/8"	1-1/2"	1/8"
0640-232-145-020	0640-234-145-020	3/64"	1/8"	1-1/2"	1/8"
0640-232-145-030	0640-234-145-030	1/16"	3/16"	1-1/2"	1/8"
0640-232-145-040	0640-234-145-040	5/64"	1/4"	1-1/2"	1/8"
0640-232-145-050	0640-234-145-050	3/32"	3/8"	1-1/2"	1/8"
0640-232-145-060	0640-234-145-060	7/64"	3/8"	1-1/2"	1/8"
0640-232-145-070	0640-234-145-070	1/8"	1/2"	1-1/2"	1/8"
0640-232-145-080	0640-234-145-080	9/64"	9/16"	2"	3/16"
0640-232-145-090	0640-234-145-090	5/32"	9/16"	2"	3/16"
0640-232-145-100	0640-234-145-100	11/64"	5/8"	2"	3/16"
0640-232-145-110	0640-234-145-110	3/16"	5/8"	2"	3/16"
0640-232-145-120	0640-234-145-120	13/64"	5/8"	2-1/2"	1/4"
0640-232-145-130	0640-234-145-130	7/32"	5/8"	2-1/2"	1/4"
0640-232-145-140	0640-234-145-140	15/64"	3/4"	2-1/2"	1/4"
0640-232-145-150	0640-234-145-150	1/4"	3/4"	2-1/2"	1/4"
0640-232-145-160	0640-234-145-160	17/64"	3/4"	2-1/2"	5/16"
0640-232-145-170	0640-234-145-170	9/32"	3/4"	2-1/2"	5/16"
0640-232-145-180	0640-234-145-180	19/64"	13/16"	2-1/2"	5/16"
0640-232-145-190	0640-234-145-190	5/16"	13/16"	2-1/2"	5/16"
0640-232-145-200	0640-234-145-200	11/32"	1"	2-1/2"	3/8"
0640-232-145-210	0640-234-145-210	3/8"	1"	2-1/2"	3/8"
0640-232-145-220	0640-234-145-220	1/2"	1"	3"	1/2"
0640-232-145-230	0640-234-145-230	5/8"	1-1/4"	3-1/2"	5/8"
0640-232-145-240	0640-234-145-240	11/16"	1-3/8"	4"	3/4"
0640-232-145-250	0640-234-145-250	3/4"	1-1/2"	4"	3/4"
0640-232-145-260	0640-234-145-260	1"	1-1/2"	4"	1"
0640-232-145-270	0640-234-145-270	1/8"	1"	3"	1/8"
0640-232-145-280	0640-234-145-280	3/16"	1-1/8"	3"	3/16"
0640-232-145-290	0640-234-145-290	1/4"	1-1/8"	3"	1/4"
0640-232-145-300	0640-234-145-300	1/4"	1-1/2"	4"	1/4"
0640-232-145-310	0640-234-145-310	5/16"	1-1/8"	3"	5/16"
0640-232-145-320	0640-234-145-320	5/16"	1-5/8"	4"	5/16"
0640-232-145-330	0640-234-145-330	3/8"	1-1/8"	3"	3/8"
0640-232-145-340	0640-234-145-340	3/8"	1-3/4"	4"	3/8"
0640-232-145-350	0640-234-145-350	1/2"	2"	4"	1/2"
0640-232-145-360	0640-234-145-360	1/2"	3"	6"	1/2"
0640-232-145-370	0640-234-145-370	1/2"	1-1/2"	6"	1/2"
0640-232-145-380	0640-234-145-380	5/8"	2-1/4"	5"	5/8"
0640-232-145-390	0640-234-145-390	5/8"	3"	6"	5/8"
0640-232-145-400	0640-234-145-400	3/4"	2-1/4"	5"	3/4"
0640-232-145-410	0640-234-145-410	3/4"	3"	6"	3/4"
0640-232-145-420	0640-234-145-420	1"	3"	6"	1"



GOLD	GOLD	GOLD	Line
2	4	4	Flutes
≤ 55	≤ 55	≤ 55	Hardness HRC
square	square	square	Shape
		Roughing chip breaker	Special features

CODE		D1	L2	L1	D2	
0640-232-050-020	0640-234-050-020	2	5	50	4	
0640-232-050-030	0640-234-050-030	3	8	50	3	
0640-232-050-040	0640-234-050-040	0640-234-852-040	4	10	50	4
0640-232-050-050	0640-234-050-050	0640-234-852-050	5	13	50	5
0640-232-050-060	0640-234-050-060	0640-234-852-060	6	15	50	6
0640-232-050-080	0640-234-050-080	0640-234-852-080	8	20	60	8
0640-232-050-100	0640-234-050-100	0640-234-852-100	10	25	75	10
0640-232-050-120	0640-234-050-120	0640-234-852-120	12	30	75	12
0640-232-050-140	0640-234-050-140	0640-234-852-140	14	45	100	14
0640-232-050-160	0640-234-050-160	0640-234-852-160	16	45	100	16
0640-232-050-180	0640-234-050-180	0640-234-852-180	18	45	100	18
0640-232-050-200	0640-234-050-200	0640-234-852-200	20	45	100	20
	0640-234-051-040	4	16	75	4	
	0640-234-051-050	5	20	75	5	
	0640-234-051-060	6	24	75	6	
	0640-234-051-080	8	30	75	8	
	0640-234-051-100	10	40	100	10	
	0640-234-051-120	12	45	100	12	
	0640-234-051-140	14	60	150	14	
	0640-234-051-160	16	65	150	16	
	0640-234-051-180	18	70	150	18	
	0640-234-051-200	20	70	150	20	
	0640-234-052-040	4	20	100	4	
	0640-234-052-050	5	25	100	5	
	0640-234-052-060	6	30	100	6	
	0640-234-052-080	8	35	100	8	
	0640-234-052-100	10	50	150	10	
	0640-234-052-120	12	50	150	12	

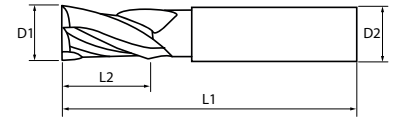
GOLD VHM END MILLS for hardened materials



GOLD	GOLD	GOLD	Line
2	4	4	Flutes
≤ 55	≤ 55	≤ 55	Hardness HRC
ball	ball	corner radius	Shape

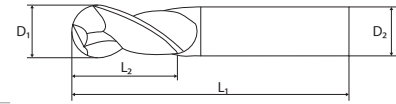
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0640-232-150-020	0640-234-150-020	2	1	5	50	4
0640-232-150-030	0640-234-150-030	3	1,5	8	50	3
0640-232-150-040	0640-234-150-040	4	2	10	50	4
0640-232-150-050	0640-234-150-050	5	2,5	13	50	5
0640-232-150-060	0640-234-150-060	6	3	15	50	6
0640-232-150-080	0640-234-150-080	8	4	20	60	8
0640-232-150-100	0640-234-150-100	10	5	25	75	10
0640-232-150-120	0640-234-150-120	12	6	30	75	12
0640-232-150-140	0640-234-150-140	14	7	45	100	14
0640-232-150-160	0640-234-150-160	16	8	45	100	16
0640-232-150-180	0640-234-150-180	18	9	45	100	18
0640-232-150-200	0640-234-150-200	20	10	45	100	20
	0640-234-050-031	3	0,5	8	50	3
	0640-234-050-041	4	0,5	10	50	4
	0640-234-050-051	5	0,5	13	50	5
	0640-234-050-061	6	0,5	15	50	6
	0640-234-050-062	6	1	15	50	6
	0640-234-050-081	8	0,5	20	60	8
	0640-234-050-082	8	1	20	60	8
	0640-234-050-101	10	0,5	25	75	10
	0640-234-050-102	10	1	25	75	10
	0640-234-050-121	12	0,5	30	75	12
	0640-234-050-122	12	1	30	75	12

BLUE VHM END MILLS for very hard materials



BLUE	BLUE		Line
4	4		Flutes
≤ 65	≤ 65		Hardness HRC
square	corner radius		Shape

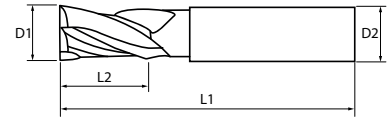
CODE	D1	R	L2	L1	D2	
0640-234-070-020	2		5	50	4	
0640-234-070-030	3		8	50	3	
0640-234-070-040	4		10	50	4	
0640-234-070-050	5		13	50	5	
0640-234-070-060	6		15	50	6	
0640-234-070-080	8		20	60	8	
0640-234-070-100	10		25	75	10	
0640-234-070-120	12		30	75	12	
0640-234-070-140	14		45	100	14	
0640-234-070-160	16		45	100	16	
0640-234-070-180	18		45	100	18	
0640-234-070-200	20		45	100	20	
	0640-234-070-031	3	0,5	8	50	3
	0640-234-070-041	4	0,5	10	50	4
	0640-234-070-051	5	0,5	13	50	5
	0640-234-070-061	6	0,5	15	50	6
	0640-234-070-062	6	1	15	50	6
	0640-234-070-081	8	0,5	20	60	8
	0640-234-070-082	8	1	20	60	8
	0640-234-070-101	10	0,5	25	75	10
	0640-234-070-102	10	1	25	75	10
	0640-234-070-121	12	0,5	30	75	12
	0640-234-070-122	12	1	30	75	12



BLUE			Line
2			Flutes
≤ 65			Hardness HRC
ball			Shape

	CODE	D1	R	L2	L1	D2
0640-232-170-020		2	1	5	50	2
0640-232-170-030		3	1,5	8	50	3
0640-232-170-040		4	2	10	50	4
0640-232-170-050		5	2,5	13	50	5
0640-232-170-060		6	3	15	50	6
0640-232-170-080		8	4	20	60	8
0640-232-170-100		10	5	25	75	10
0640-232-170-120		12	6	30	75	12
0640-232-170-140		14	7	45	100	14
0640-232-170-160		16	8	45	100	16
0640-232-170-180		18	9	45	100	18
0640-232-170-200		20	10	45	100	20

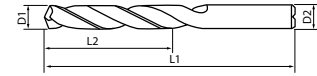
INOX VHM END MILLS for stainless steel



INOX			Line
2			Flutes
≤ 60			Hardness HRC
square			Shape

	CODE	D1	L2	L1	D2
	0640-234-160-020	2	5	50	4
	0640-234-160-030	3	8	50	3
	0640-234-160-040	4	10	50	4
	0640-234-160-050	5	13	50	5
	0640-234-160-060	6	15	50	6
	0640-234-160-080	8	20	60	8
	0640-234-160-100	10	25	75	10
	0640-234-160-120	12	30	75	12

VHM DRILLS



GOLD	GOLD			Line
2	2			Flutes
≤ 55	≤ 55			Hardness HRC
	Internal cooling			Special features

CODE		D1	L2	L1	D2
0640-424-300-100		1	6	50	4
0640-424-300-150		1,5	9	50	4
0640-424-300-160		1,6	10	50	4
0640-424-300-200		2	12	50	4
0640-424-300-250		2,5	15	50	4
0640-424-300-300	0640-424-600-300	3	28	66	4
0640-424-300-320	0640-424-600-320	3,2	28	66	4
0640-424-300-330	0640-424-600-330	3,3	28	66	4
0640-424-300-350	0640-424-600-350	3,5	28	66	4
0640-424-300-400	0640-424-600-400	4	36	66	4
0640-424-300-420	0640-424-600-420	4,2	36	74	6
0640-424-300-450	0640-424-600-450	4,5	36	74	6
0640-424-300-500	0640-424-600-500	5	44	82	6
0640-424-300-520	0640-424-600-520	5,2	44	82	6
0640-424-300-550	0640-424-600-550	5,5	44	82	6
0640-424-300-600	0640-424-600-600	6	44	82	6
0640-424-300-650	0640-424-600-650	6,5	53	91	8
0640-424-300-680	0640-424-600-680	6,8	53	91	8
0640-424-300-700	0640-424-600-700	7	53	91	8
0640-424-300-750	0640-424-600-750	7,5	53	91	8
0640-424-300-800	0640-424-600-800	8	53	91	8
0640-424-300-850	0640-424-600-850	8,5	61	103	10
0640-424-300-900	0640-424-600-900	9	61	103	10
0640-424-300-950	0640-424-600-950	9,5	61	103	10
0640-424-301-000	0640-424-601-000	10	61	103	10
0640-424-301-020	0640-424-601-020	10,2	71	118	12
0640-424-301-050	0640-424-601-050	10,5	71	118	12
0640-424-301-100	0640-424-601-100	11	71	118	12
0640-424-301-150	0640-424-601-150	11,5	71	118	12
0640-424-301-200	0640-424-601-200	12	71	118	12
0640-424-301-250	0640-424-601-250	12,5	77	124	14
0640-424-301-300	0640-424-601-300	13	77	124	14

ISO		MATERIAL	HARDNESS	DURABILITY	Vc	mm/blade				
			[HRC]	Rm [N/mm ²]	[m/min]	ø 2 - 4	ø 4 - 8	ø 8 - 12	ø 12 - 16	ø 16 - 20
P	1.1	Low carbon, free-cutting, unalloyed steels	< 22	≤ 800	80-160	0,01-0,02	0,02-0,03	0,03-0,04	0,04-0,05	0,05-0,08
	1.2	Unalloyed and alloyed steels containing (<0,5%C - <0,5%C)	< 32	≤ 1000	50-110	0,009-0,01	0,01-0,02	0,02-0,03	0,03-0,04	0,04-0,05
	1.3	Alloyed tool, high- alloy steels with high hardness and durability	< 44	≤ 1400	30-65	0,008-0,01	0,01-0,015	0,015-0,02	0,02-0,03	0,03-0,05
M	2.1	Stainless and acid-resistant steels		≤ 850	40-80	0,006-0,02	0,02-0,04	0,04-0,06	0,06-0,08	0,08-0,09
	2.2	Stainless and acid-resistant steels with increased content of Cr and Ni		850 - 1000	20-65	0,005-0,015	0,015-0,03	0,03-0,04	0,04-0,05	0,05-0,06
K	3.1	Gray, malleable cast, iron spheroidal		≤ 700	60-130	0,01-0,03	0,03-0,06	0,06-0,08	0,08-0,09	0,09-0,10
	3.2	High- alloy, troublesome cast iron		700 - 1000	50-100	0,008-0,02	0,02-0,03	0,03-0,04	0,04-0,05	0,05-0,07
N	4.1	Aluminum, copper			60-250	0,01-0,02	0,02-0,04	0,04-0,06	0,06-0,08	0,08-0,10
	4.2	Aluminum alloy, copper alloy			140-350	0,01-0,02	0,02-0,05	0,05-0,08	0,08-0,12	0,12-0,15
	4.3	Plastic, composites			90-350	0,01-0,03	0,03-0,05	0,05-0,08	0,08-0,10	0,10-0,15
S	5.1	Titanium, titanium alloy		≤ 1250	30-65	0,01-0,03	0,03-0,04	0,04-0,05	0,05-0,06	0,06-0,08
	5.2	Superalloy based on Fe, Ni, Co		≤ 1600	20-55	0,005-0,02	0,02-0,03	0,03-0,04	0,04-0,05	0,05-0,07
H	6.1	Hardened and improved steel alloys	>42 - <50		25-60	0,005-0,02	0,02-0,03	0,03-0,04	0,04-0,05	0,05-0,06
	6.2	Hardened and improved steel alloys	>50 - <55		20-50	0,005-0,02	0,02-0,03	0,03-0,04	0,04-0,05	0,05-0,06
	6.3	Hardened and improved steel alloys	>55 - <65		20-50	0,005-0,02	0,02-0,03	0,03-0,04	0,04-0,05	0,05-0,06

WARNING: For extended end mills type L and XL parameters Vc and fz should be properly reduced.

VHM END MILLS USE ACCORDING TO ISO MATERIALS

	P			M		K		N			S		H		
ISO Material	1.1	1.2	1.3	2.1	2.2	3.1	3.2	4.1	4.2	4.3	5.1	5.2	6.1	6.2	6.3
Line															
General	●	●	●	○	○	●	○				○		○		
Gold	●	●	●	○	○	●	●				●	○	●	●	
Blue	●	●	●	○	○	●	○				●	●	●	●	●
INOX	●	○	○	●	●	●	●				●	●	●	●	●
ALU								●	●						
ALU DLC								●	●						
PVC										●					
WIN								●	●	●					
WIN DLC								●	●	●					

● - recommended ○ - acceptable





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