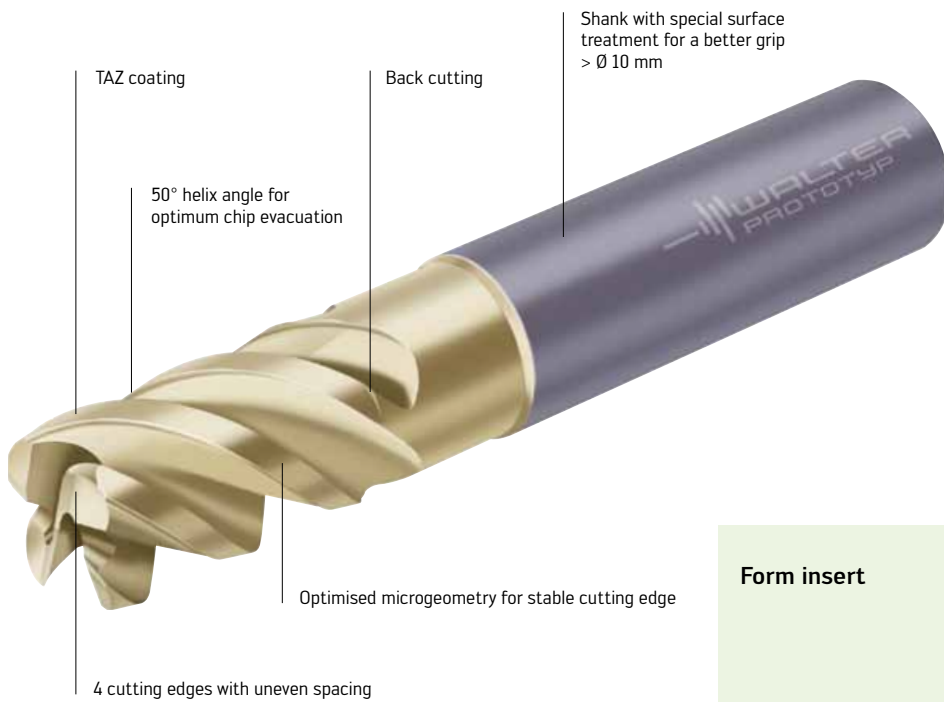


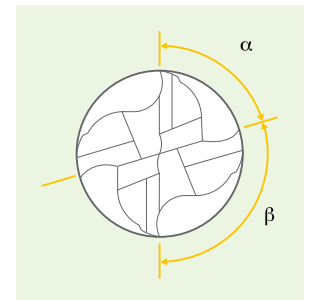


_INNOVATIONS

**New products,
convincing performance.**

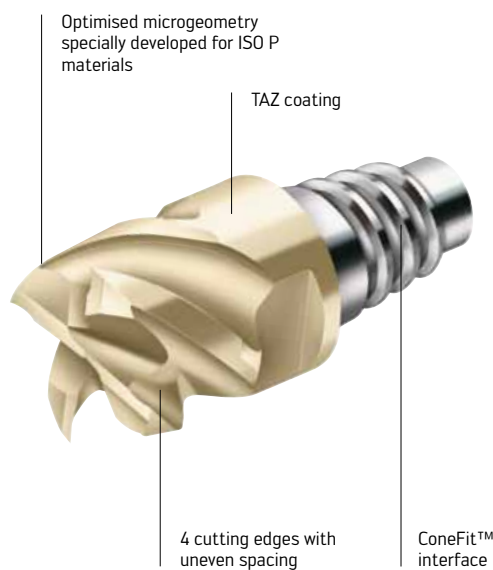


Uneven cutting edge spacing $\alpha < \beta$



Proto-max™ ST – high-performance end mill

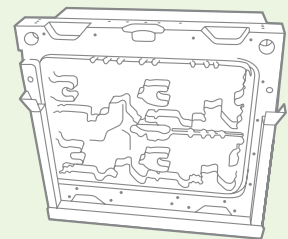
H4034217 metric
H4038217 metric
with corner radius



Proto-max™ ST with ConeFit™ interface

H4E34217 metric
H4E38217 metric with corner radius

Form insert

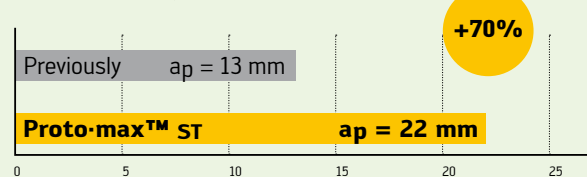


Workpiece material: X33CrS16 (1.2085)
Tensile strength: 1000 N/mm²
Tool: Proto-max™_{ST}
H4034217-16

Cutting data

	Previously	Proto-max™ _{ST}
\varnothing	16 mm	16 mm
z	4	4
a_e	16 mm	16 mm
a_p	13 mm	22 mm
v_c	160 m/min	160 m/min
N	3180 rpm	3180 rpm
f_z	0.08 mm	0.08 mm
v_f	1018 mm/min	1018 mm/min

Machined volume Q [cm³/min]

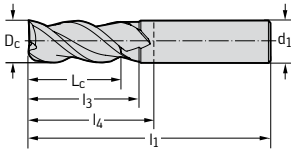


The result:

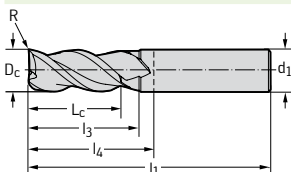
High level of process stability and productivity due to reduced wear with higher metal removal rates.

Proto-max™_{ST} high-performance end mill

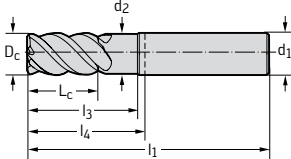
Proto-max™_{ST} – 3-flute – metric

	D _c h9 mm	L _c mm	d ₂ mm	l ₁ mm	l ₃ mm	l ₄ mm	d ₁ h6 mm	z	TAZ DIN 6535 HA Designation H4033217	TAZ DIN 6535 HB Designation H4133217
	2	5	1,92	57	7,5	21	6	3	-2	-
	3	7	2,9	57	10,5	21	6	3	-3	-
	4	9	3,8	57	15	21	6	3	-4	-
	5	11	4,75	57	16	21	6	3	-5	-
	6	13	5,7	57	19	21	6	3	-6	-
	8	18	7,6	63	25	27	8	3	-8	-
	10	22	9,5	72	30	32	10	3	-10	-10
	12	26	11,4	83	36	38	12	3	-12	-12
	16	34	15,2	92	42	44	16	3	-16	-16
	20	42	19	104	52	54	20	3	-20	-20

Proto-max™_{ST} – 3-flute with protective radius – metric

	D _c h9 mm	R mm	L _c mm	d ₂ mm	l ₁ mm	l ₃ mm	l ₄ mm	d ₁ h6 mm	z	TAZ DIN 6535 HA Designation H4036217
	2	0,08	5	1,92	57	7,5	21	6	3	-2
	3	0,08	7	2,9	57	10,5	21	6	3	-3
	4	0,08	9	3,8	57	15	21	6	3	-4
	5	0,16	11	4,75	57	16	21	6	3	-5
	6	0,16	13	5,7	57	19	21	6	3	-6
	8	0,16	18	7,6	63	25	27	8	3	-8
	10	0,25	22	9,5	72	30	32	10	3	-10
	12	0,25	26	11,4	83	36	38	12	3	-12
	16	0,25	34	15,2	92	42	44	16	3	-16
	20	0,4	42	19	104	52	54	20	3	-20

Proto-max™_{ST} – 4-flute – metric

	D _c h9 mm	L _c mm	d ₂ mm	l ₁ mm	l ₃ mm	l ₄ mm	d ₁ h6 mm	z	TAZ DIN 6535 HA Designation H4034217	TAZ DIN 6535 HB Designation H4134217
	3	5	2,9	57	8,5	21	6	4	-3	-
	4	7	3,8	57	11	21	6	4	-4	-
	5	8	4,75	57	14	21	6	4	-5	-
	6	10	5,7	57	16	21	6	4	-6	-
	8	13	7,6	63	22	27	8	4	-8	-
	10	16	9,5	72	28	32	10	4	-10	-10
	12	19	11,4	83	33	38	12	4	-12	-12
	14	22	13,3	83	36	38	14	4	-14	-14
	16	26	15,2	92	42	44	16	4	-16	-16
	18	29	17,1	92	42	44	18	4	-18	-18
	20	32	19	104	52	54	20	4	-20	-20