

Solid Carbide Hard Material End Mills

For Hardened Steels up to 65HRC

END MILL RANGES FEEDS AND SPEEDS										
Material Type	Rockwell C HRC	Recommended Surface Speed in m/min		Recommended feed in mm per tooth for Coated Carbide End Mills End Mill Diameter in mm						
		min	max	4	6	8	10	12	16	20
03G Solid Carbide 6 Flute Finishing End Mill REGULAR LENGTH, COATED										
based on 2.0 x D cutting depth with 0.15 x D cutting width.										
Hardened Steels, Irons	< 48	120	140	-	0.036	0.049	0.059	0.069	0.084	0.107
Hardened Steels, Irons	48 - 52	80	130	-	0.027	0.037	0.044	0.051	0.063	0.078
03I Solid Carbide 2 Flute Ball Nose Finishing End Mill REGULAR LENGTH, COATED										
based on 0.03 x D cutting depth with 0.03 x D cutting width.										
Hardened Steels, Irons	< 48	290	400	0.100	0.160	0.220	0.260	0.300	0.380	0.430
Hardened Steels, Irons	48 - 52	200	350	0.080	0.120	0.160	0.200	0.230	0.280	0.320
03J Solid Carbide 2 Flute Ball Nose Finishing End Mill LONG SERIES, COATED										
based on 0.03 x D cutting depth with 0.03 x D cutting width.										
Hardened Steels, Irons	< 48	290	400	0.100	0.160	0.220	0.260	0.300	0.380	0.430
Hardened Steels, Irons	48 - 52	200	350	0.080	0.120	0.160	0.200	0.230	0.280	0.320
03H Solid Carbide Hi Feed End Mill REGULAR LENGTH, COATED										
based on Ap1 and AP2 max. For Circular Interpolation note min and max circle diameter range.										
Hardened Steels, Irons	48 - 52	100	120	-	0.200	0.250	0.300	0.400	0.500	0.600
Hardened Steels, Irons	52 - 65	70	100	-	0.150	0.200	0.250	0.300	0.400	0.500



AN EXAMPLE OF BEFORE AND AFTER REGRINDING

Regrinding and Re-coating Services

Somta offers a cost effective value-added service of regrinding of any used carbide tooling, either standard or special form. This enables lower machining costs over the life of the solid carbide tool, with enhanced tool performance. Coupled to this, Somta also offers a re-coating service to further improve performance of the reground solid carbide tool.

The material and properties of the coating used is best matched to solid carbide cutting tool substrate material allowing the coated solid carbide end mill to be successfully employed under the extreme conditions of hard machining and typically permits much faster and more economical machining of dies in hard and super hard steels.



SOLID CARBIDE HARD MATERIAL END MILLS



Manufacturers & Suppliers

of Drills, Reamers, End Mills,

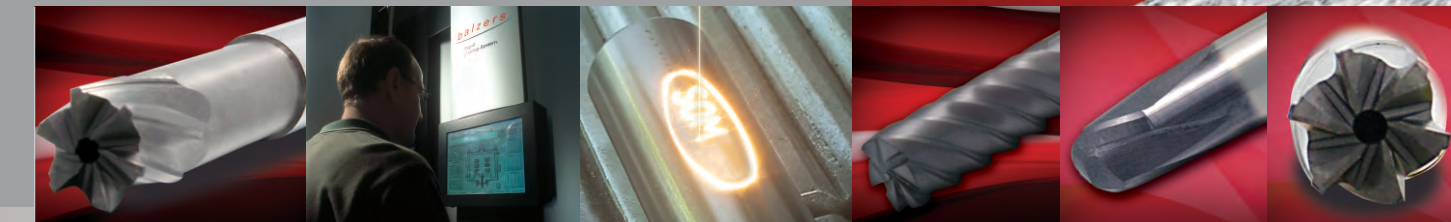
Bore Cutters, Taps & Dies,

Toolbits, Solid Carbide Tooling,

Carbide Insert Tooling,

Custom Tools and

Surface Coatings



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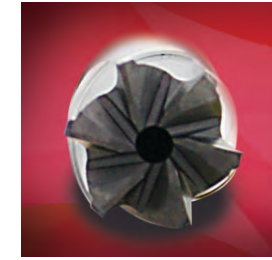
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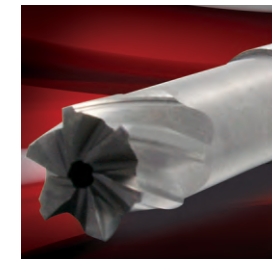
SOLID CARBIDE HARD MATERIAL END MILLS

Solid Carbide Hi-Feed End Mill

Unique and Patent Pending Geometry for Hard Steels up to 65HRC



Somta's Hi-Feed end mill with patent pending geometry removes the most amount of material in the least amount of time with extended tool life. It is excellent in 3 dimensional cutting of hard and super hard steels up to 65HRC (880HV).



Somta's Hi-Feed end mill provides outstanding metal removal rates with an excellent surface finish.

The main features of these Hi-Feed end mills include:

- Unique and Patent Pending Geometry designed in conjunction with our international development partners who have decades of design and development experience in the carbide tooling industry, provides high performance combining metal removal rates with an extended tool life.
- Specially adapted Oerlikon Balzers coating which further improves operational performance and tool life.
- Ultra fine carbide grade of European origin.
- Necked shanks provide extended reach in deep cavities.
- Internal centre coolant hole allows for optimal coolant and chip evacuation.
- Ultra negative axial rake angle and special cutting edge geometry for extra strength and longer tool life.
- Designed to works standard over the 6mm to 20mm diameter range.
- Cylindrical shank with h6 tolerance.

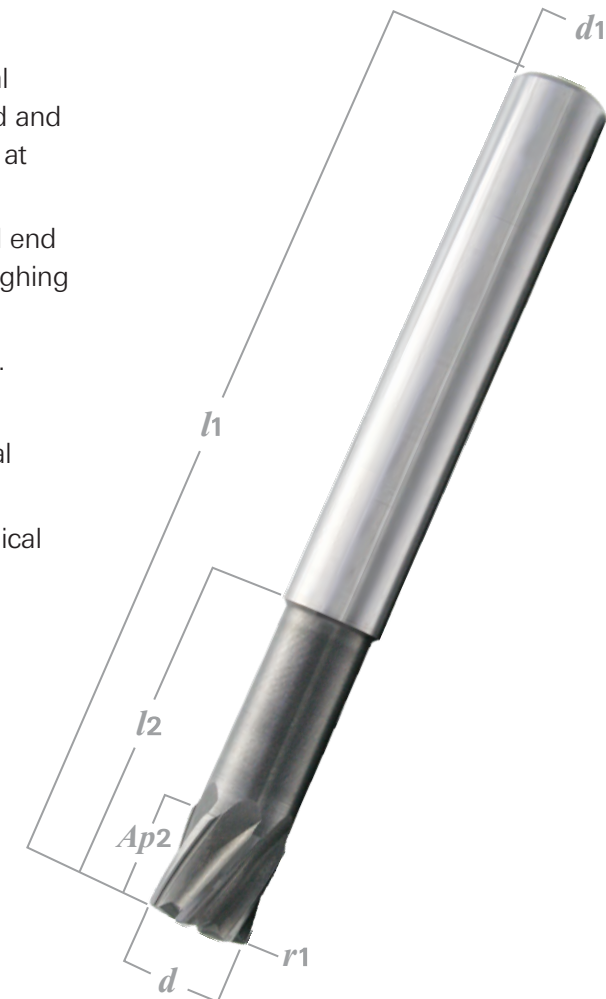
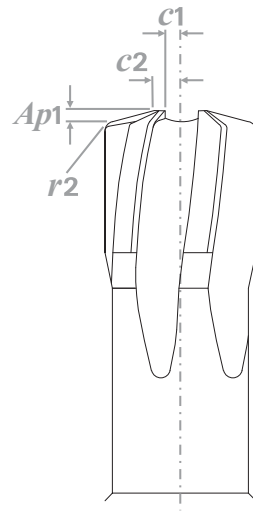
Somta has integrated a state of the art Walter Helicheck Basic 3 into its quality check management process. The Walter Helicheck is a 4-axis CNC measuring machine for non-contact complete measurement of rotationally symmetrical precision tools with complex geometry.

SOLID CARBIDE HARD MATERIAL END MILLS



Applications of these Hi-Feed end mills:

- High productivity 3 dimensional rough cutting (helical ramping, circular interpolation, and pocketing) in hard and super hard steels up to 65HRC with shallow cut and at super high feeds.
- In face milling and 3-D applications, Somta's Hi-Feed end mill can be used for finishing, semi finishing, and roughing operations.
- Perfect for roughing in hardened steels up to 65HRC.
- Prevents chipping on cutting edges and corners.
- Provides superior performance, combining high metal removal rates with an extended tool life.
- Suited for the die and mould industry as well as medical markets.



Ap1 - Maximum axial cutting depth on face milling
Ap2 - Maximum axial cutting depth on side milling
c1 - Distance from the centre line to the crown of radius.
c2 - Distance from the centre line to the start of the cutting edge.
 Minimum radius for helical ramping.
r1 - Programmable radius.
r2 - Shoulder radius or radius at the corner of the cutter.
z - Number of flutes.

03H Solid Carbide Hi-Feed End Mill

REGULAR LENGTH, COATED

d	d1	Ap1	Ap2	l2	h1	r1	r2	c1	c2	z	CODE	Ramping Guide for Circular and Linear Ramping						
												Min	Max	1°	2°	3°	4°	5°
6	6	0.32	4.8	18	63	0.63	0.37	0.75	1.32	6	03H0600W	8.64	12.00	18.12	9.06	6.03	4.52	3.61
8	8	0.42	6.4	24	76	0.83	0.50	1.00	1.76	6	03H0800W	11.52	16.00	24.16	12.08	8.05	6.03	4.82
10	10	0.53	8	30	89	1.04	0.62	1.25	2.20	6	03H1000W	14.40	20.00	30.20	15.09	10.06	7.54	6.02
12	12	0.63	9.6	36	100	1.24	0.75	1.50	2.64	6	03H1200W	17.28	24.00	36.24	18.11	12.07	9.05	7.23
16	16	0.84	12.8	48	110	1.66	1.00	2.00	3.52	6	03H1600W	23.04	32.00	48.31	24.15	16.09	12.05	9.64
20	20	1.05	16	60	125	2.07	1.25	2.50	4.40	6	03H2000W	28.80	40.00	50.39	30.19	20.11	15.08	12.05

Recommended % of Programmed Feed Rate to use while Ramping: 100% 70% 50% 30% 10%

Solid Carbide Finishing End Mills

Finisher for Hard Materials up to 52HRC



A range of high performance finishing end mills for operation on hard materials. The finishers are designed for peripheral milling of contours and complex shapes, and are ideal for hardened mould and die steels up to 52HRC (512HB).

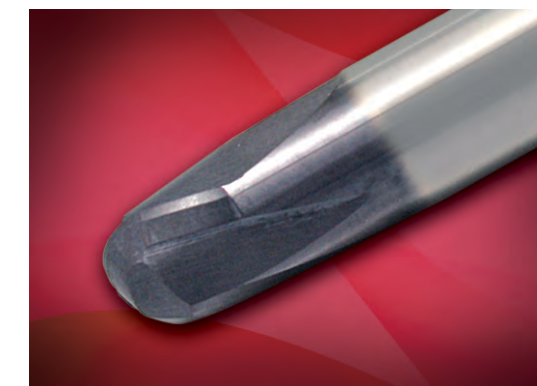
The main features of these Finishing End Mills include:

- Innovative new geometries designed in conjunction with our international development partners who have decades of design and development experience in the carbide tooling industry. The benefit is a range of state-of-the-art carbide cutting tools with superior performance.
- Specially adapted Oerlikon Balzers coating which further improves operational performance and tool life.
- Ultra fine carbide grade of European origin.
- Chamfer and dubbing features to reinforce cutting tool corners for extended tool life and reduced cutting tool forces at higher speeds.
- Cylindrical shank with h6 tolerance.
- High performance finishers for hard steel applications include: Regular length square end (03G), regular length (03I) and long series (03J) ball nose variants.
- Designed to works standard over the 4mm to 20mm diameter range.
- Non centre cutting.
- Possible design modifications - neck according to customer request.

In combination, these features result in an extremely high performance carbide cutting tool range, which competes favourably with current global state-of-the-art solid carbide cutting tool designs. **In some tested applications these new solid carbide end mills have outperformed competitive products by up to four times.** High stock removal rates at high speeds and feeds, excellent finish quality and extended tool life are the major benefits of these new designs, in very hard work materials with complex applications.

Applications of these Finishing End Mills include:

- Designed for peripheral milling of contours and complex shapes.
- Ideal for hardened mould and die steels up to 52HRC.



03I Solid Carbide 2 Flute Ball Nose Finishing End Mill

REGULAR LENGTH, COATED

d	d1	l2	r1	CODE
4	4	4	50	03I0400W
6	6	6	50	03I0600W
8	8	8	63	03I0800W
10	10	10	76	03I1000W
12	12	12	76	03I1200W
16	16	16	89	03I1600W
20	20	20	104	03I2000W

03J Solid Carbide 2 Flute Ball Nose Finishing End Mill

LONG SERIES, COATED

d	d1	l2	r1	CODE
4	6	4	76	03J0400W
6	6	6	76	03J0600W
8	8	8	100	03J0800W
10	10	10	100	03J1000W
12	12	12	125	03J1200W
16	16	16	125	03J1600W
20	20	20	150	03J2000W

03G Solid Carbide 6 Flute Finishing End Mill

REGULAR LENGTH, COATED

d	d1	l2	r1	CODE
6	6	15	60	03G0600W
8	8	20	75	03G0800W
10	10	25	80	03G1000W
12	12	30	100	03G1200W
16	16	40	110	03G1600W
20	20	45	120	03G2000W

SOLID CARBIDE HARD MATERIAL END MILLS

