



# Solid Carbide Cutters

## *Multi-Application*

### **MC-X**



The Right Tool at the Right Time



# Features & *Benefits*

## MC-X

### MATERIAL

Micrograin carbide, with high hardness and toughness properties, for excellent wear resistance and long tool life.

### SURFACE TREATMENT

Bright finish.

### FLUTE GEOMETRY

2, 3 and 4 flute cutters to cover contouring (semi-finishing and finishing), ramping and slotting operations. Centre cutting.

### SHANK

To DIN 6535 HA.

### LENGTH

Medium cut length.

### CHAMFER

Robust chamfer design on the end teeth, to reduce chipping.

### HELIX ANGLE

30° right hand helix.

S902



S903



S904



### RANGE

**S902** 2.00 - 20.00 mm

**S903** 2.00 - 20.00 mm

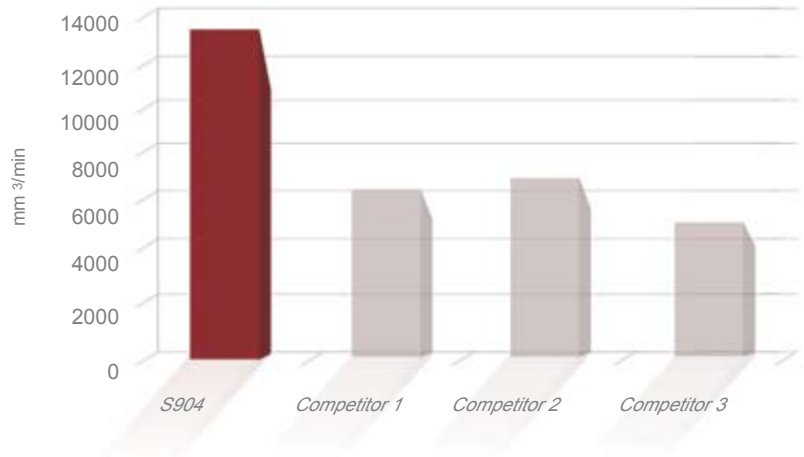
**S904** 2.00 - 20.00 mm

## CUSTOMER **BENEFITS**

- **High productivity**, as well as **excellent value for money** designed and priced to promote a **highly competitive milling operation**.
- **Multi-application – one tool for milling in many materials**, with the added benefit of **reduced inventory**.
- Stable design for **contouring (semi-finishing and finishing), ramping and slotting operations**.
- Flutes designed for good swarf evacuation and a **continuous, trouble-free machining operation**.
- **High wear resistance and long tool life**.
- Reinforced end teeth to **reduce chipping**, particularly important on materials with low machinability.

## TestResults

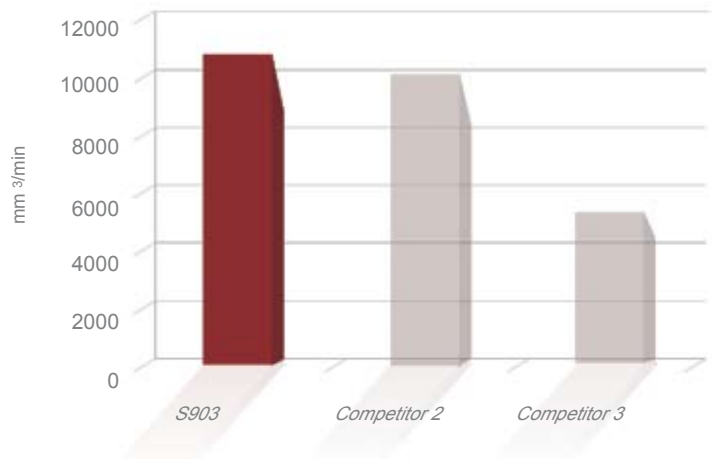
Productivity S904



The graph shows the productivity during this finishing operation on AMG 1.4, W.nr.1.2311. The S904 achieved almost twice the productivity of its nearest competitor at the manufacturers' recommended feed rates.

Radial Depth [mm]  $0,1 \times \varnothing = 1,2$   
Axial Depth [mm]  $1,5 \times \varnothing = 18$

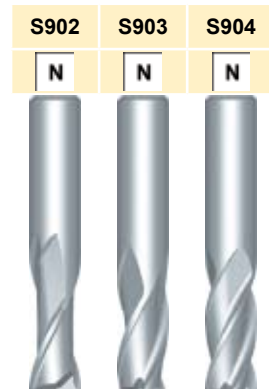
Productivity S903



The graph shows the productivity during this slotting operation on AMG 1.4, W.nr.1.2311. Competitor 2 achieved 5% lower productivity compared to the Dormer S903. Competitor 3 achieved less than half the productivity of the S903 at the manufacturers' recommended feed rates.

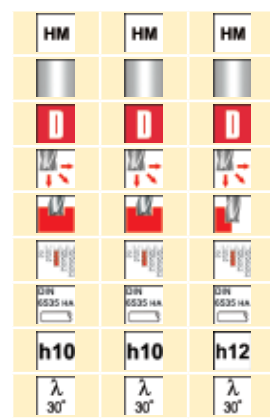
Radial Depth [mm]  $1 \times \varnothing = 12$   
Axial Depth [mm]  $0,5 \times \varnothing = 6$

# Application *Material Groups*



- Excellent for Application
  - Good for Application
- Example  
 65 = Peripheral speed in metres/minute +/- 10%  
 B = Feed range

Z	fz	Ø mm mm/z ± 25%											
			2	3	4	5	6	8	10	12	14	16	20
3-4	↑ 1,5 ↔ 0,1	A	0.012	0.019	0.028	0.036	0.048	0.048	0.070	0.080	0.090	0.107	0.134
		B	0.015	0.022	0.034	0.042	0.057	0.057	0.079	0.094	0.110	0.126	0.155
		C	0.016	0.025	0.038	0.047	0.063	0.063	0.088	0.106	0.123	0.141	0.176
3-4	↑ 1,5 ↔ 0,25	A	0.010	0.015	0.023	0.028	0.038	0.038	0.053	0.064	0.075	0.085	0.107
		B	0.012	0.018	0.027	0.034	0.046	0.046	0.063	0.076	0.088	0.100	0.125
		C	0.013	0.020	0.030	0.038	0.051	0.051	0.070	0.084	0.099	0.113	0.141
2-3	↑ 0,5 ↔ 1	A	0.005	0.007	0.009	0.013	0.016	0.024	0.033	0.040	0.046	0.053	0.053
		B	0.006	0.008	0.011	0.016	0.019	0.029	0.040	0.048	0.056	0.064	0.064
		C	0.006	0.009	0.012	0.017	0.021	0.031	0.043	0.051	0.060	0.068	0.068
2-3	↑ 1 ↔ 1	A	0.002	0.004	0.006	0.007	0.011	0.013	0.019	0.027	0.032	0.037	0.042
		B	0.004	0.007	0.009	0.013	0.015	0.023	0.032	0.038	0.045	0.051	0.051
		C	0.005	0.007	0.010	0.014	0.016	0.025	0.034	0.041	0.048	0.055	0.055



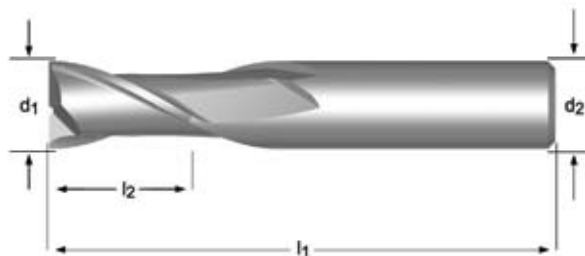
2.00 - 20.00 2.00 - 20.00 2.00 - 20.00

NEW	NEW	NEW	
2008.09	2008.09	2008.09	
5	6	7	
■65B	■65B	■95B	
■65B	■65B	■95B	
■55B	■55B	■80B	
■50B	■50B	■70B	
●30B	●30B	●55B	
		●30B	
■55B	■55B	■80B	
●30B	●30B	●55B	
■55B	■55B	■70B	
●30B	●30B	●55B	
■65B	■65B	■95B	
●30B	●30B	●40B	
●15B	●15B	●30B	
■65B	■65B	■135B	
		●30A	
		●25A	
■145C	■145C	■200C	
■145C	■145C	■200C	
■145C	■145C	■200C	
●28B	●28B	●30B	
●550C	●550C	●640C	
●550C	●550C	●640C	
●160C	●160C	●320C	
●160C	●160C	●160C	
●65C	●65C	●95C	
●30B	●30B	●55B	
a <sub>Z</sub>	0.8	0.8	0.8

Application Material Groups (AMG)		Hardness HB	Tensile Strength N/mm²
1. Steel	1.1 Magnetic soft steel	<120	<400
	1.2 Structural Steel / case carburising steel	<200	<700
	1.3 Plain Carbon steel	<250	<850
	1.4 Alloy steel	<250	<850
	1.5 Alloy steel/ Hardened and tempered steel	>250 <350	>850 <1200
	1.6 Alloy steel/ Hardened and tempered steel	>350	>1200 <1620
	1.7 Alloy steel Hardened	49-55HRC	>1620
	1.8 Alloy steel Hardened	55-63HRC	<1960
2. Stainless Steel	2.1 Free machining Stainless Steel	<250	<850
	2.2 Austenitic	<320	<1100
	2.3 Ferritic + Austenitic, Martensitic	<300	<1000
	2.4 Precipitation Hardened	>320 <410	>1100 <1400
3. Cast Iron	3.1 Lamellar graphite	<150	<500
	3.2 Lamellar graphite	>150 <300	>500 <1000
	3.3 Nodular graphite/ Malleable Cast Iron	<200	<700
	3.4 Nodular graphite/ Malleable Cast Iron	>200 <300	>700 <1000
4. Titanium	4.1 Titanium, unalloyed	<200	<700
	4.2 Titanium, alloyed	<270	<900
	4.3 Titanium, alloyed	>270 <350	>900 <1250
5. Nickel	5.1 Nickel, unalloyed	<150	<500
	5.2 Nickel, alloyed	<270	<900
	5.3 Nickel, alloyed	>270 <350	>900 <1200
6. Copper	6.1 Copper	<100	<350
	6.2 β-Brass, Bronze	<200	<700
	6.3 α-Brass	<200	<700
	6.4 High Strength Bronze	<470	<1500
7. Aluminium Magnesium	7.1 Al, Mg, unalloyed	<100	<350
	7.2 Al alloyed, Si<0.5%	<150	<500
	7.3 Al alloyed, Si>0.5%<10%	<120	<400
	7.4 Al alloyed, Si>10% Whisker reinforced Al-alloys, Mg alloys	<120	<400
8. Synthetic Materials	8.1 Thermoplastics	---	---
	8.2 Thermosetting plastics	---	---
	8.3 Reinforced plastic materials	---	---
9. Hard Materials	9.1 Cermets (Metal-ceramics)	<550	<1700
10. Graphite	10.1 Standard graphite	---	<100

# S902

- End Mill
- Frases de finition
- Schafffräser
- Fresas de acabado
- Vingerfrezen
- Fresa de Acabamento



**NEW**

2008.09

**CMC-X**

## S902

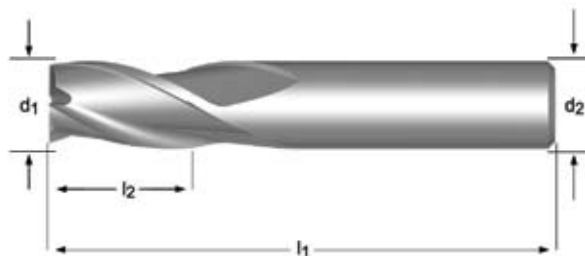


- 1.1 1.2 1.3 1.4 3.1 3.3 4.1 5.1 6.1 6.2 6.3
- 1.5 3.2 3.4 4.2 4.3 6.4 7.1 7.2 7.3 8.1 8.2 8.3

$d_1$ Ø	$d_2$ Ø	$l_2$	$l_1$	z	e-Code	$d_1$ Ø	$d_2$ Ø	$l_2$	$l_1$	z	e-Code
2.00	3	6	38	2	S9022.0	9.00	10	21	72	2	S9029.0
2.50	3	9	38	2	S9022.5	10.00	10	22	72	2	S90210.0
3.00	3	12	38	2	S9023.0	12.00	12	25	73	2	S90212.0
4.00	4	14	50	2	S9024.0	14.00	14	30	83	2	S90214.0
5.00	5	16	50	2	S9025.0	16.00	16	32	92	2	S90216.0
6.00	6	19	57	2	S9026.0	18.00	18	32	92	2	S90218.0
7.00	8	19	63	2	S9027.0	20.00	20	38	104	2	S90220.0
8.00	8	19	63	2	S9028.0						

# S903

- End Mill
- Schafffräser
- Vingerfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento



**NEW**

2008.09

**MC-X**

## S903

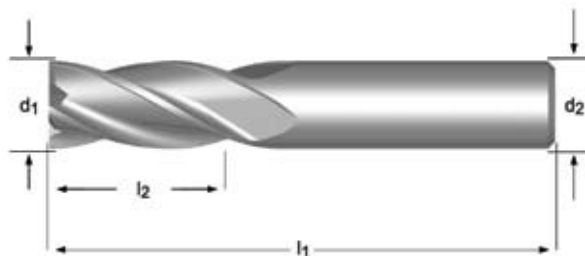


- 1.1 1.2 1.3 1.4 3.1 3.3 4.1 5.1 6.1 6.2 6.3
- 1.5 3.2 3.4 4.2 4.3 6.4 7.1 7.2 7.3 8.1 8.2 8.3

$d_1$ Ø	$d_2$ Ø	$l_2$	$l_1$	z	e-Code	$d_1$ Ø	$d_2$ Ø	$l_2$	$l_1$	z	e-Code
2.00	3	6	38	3	S9032.0	9.00	10	21	72	3	S9039.0
2.50	3	9	38	3	S9032.5	10.00	10	22	72	3	S90310.0
3.00	3	12	38	3	S9033.0	12.00	12	25	73	3	S90312.0
4.00	4	14	50	3	S9034.0	14.00	14	30	83	3	S90314.0
5.00	5	16	50	3	S9035.0	16.00	16	32	92	3	S90316.0
6.00	6	19	57	3	S9036.0	18.00	18	32	92	3	S90318.0
7.00	8	19	63	3	S9037.0	20.00	20	38	104	3	S90320.0
8.00	8	19	63	3	S9038.0						

# S904

- End Mill
- Schafffräser
- Vingerfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento



**NEW**

2008.09

**MC-X**

## S904



- 1.1 1.2 1.3 1.4 3.1 3.3 4.1 5.1 6.1 6.2 6.3
- 1.5 1.6 3.2 3.4 4.2 4.3 5.2 5.3 6.4 7.1 7.2 7.3 8.1 8.2 8.3

$d_1$ Ø	$d_2$ Ø	$l_2$	$l_1$	z	e-Code	$d_1$ Ø	$d_2$ Ø	$l_2$	$l_1$	z	e-Code
2.00	3	6	38	4	S9042.0	9.00	10	21	72	4	S9049.0
2.50	3	9	38	4	S9042.5	10.00	10	22	72	4	S90410.0
3.00	3	12	38	4	S9043.0	12.00	12	25	73	4	S90412.0
4.00	4	14	50	4	S9044.0	14.00	14	30	83	4	S90414.0
5.00	5	16	50	4	S9045.0	16.00	16	32	92	4	S90416.0
6.00	6	19	57	4	S9046.0	18.00	18	32	92	4	S90418.0
7.00	8	19	63	4	S9047.0	20.00	20	38	104	4	S90420.0
8.00	8	19	63	4	S9048.0						



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