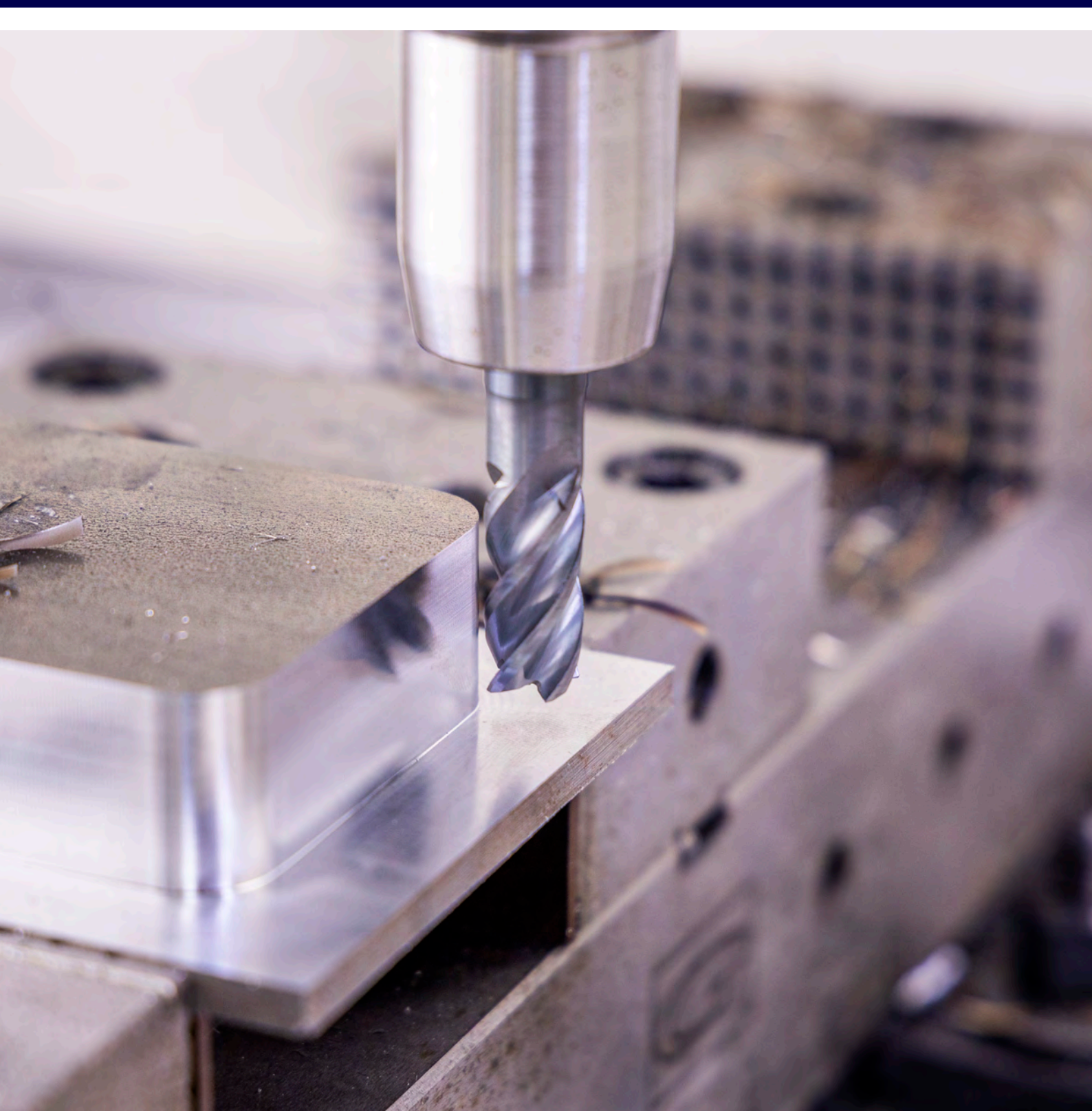




SOLID CARBIDE



CUTLINE HISTORY

CUTLINE has been created in 2011, following the success of GISS machining accessories.

It became obvious that the Rubix Group wanted to develop high-performance cutting tools with all necessary equipment for machining.

From a few hundred tools to more than 5,800 SKUs, CUTLINE is now available and delivered across Europe.

CUTLINE is being boosted to become the outsider in the machining equipment in Europe!



CUTLINE BRAND VALUE

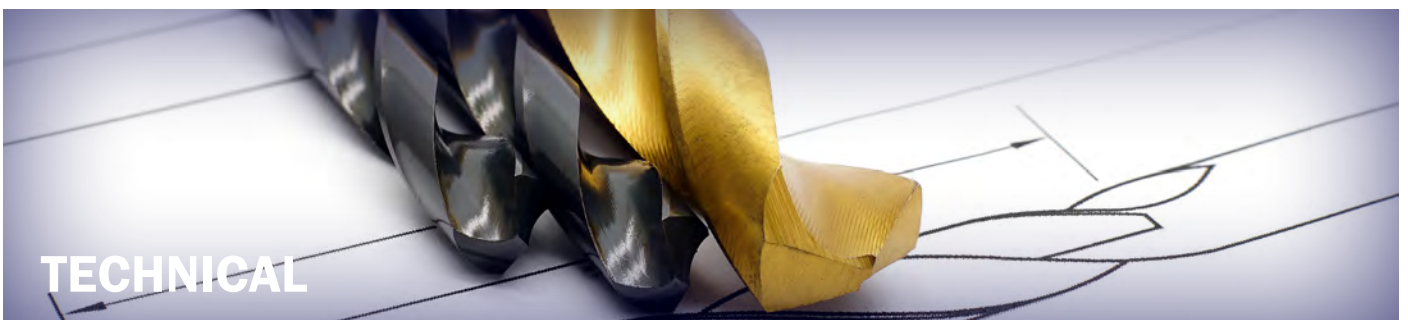
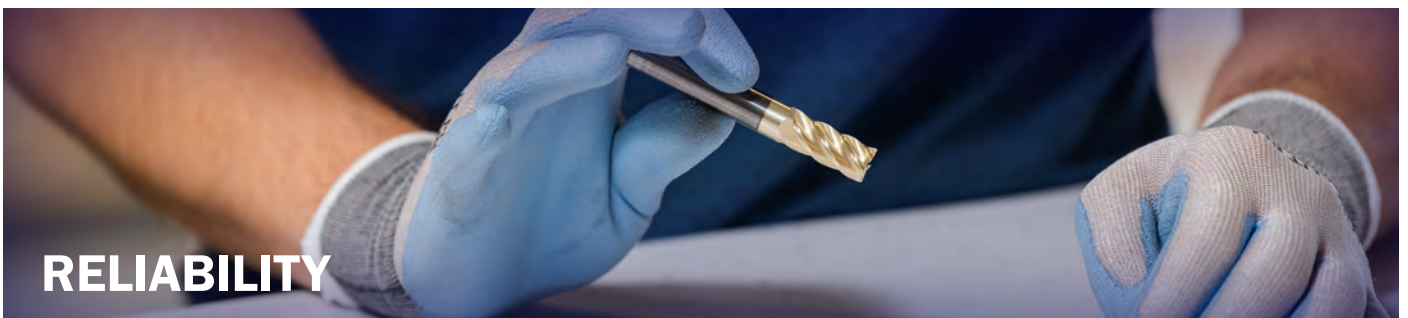
CUTLINE is a range of high-performance cutting tools and measuring instruments designed to serve all your machining needs for **PRODUCTION**.

It has been specially developed using customer feedback, in-depth field research and through close collaboration with leading industrial manufacturers.

Made to our exact specifications, every tool in the CUTLINE range has been expertly produced and tested, ensuring an exceptional level of quality across our comprehensive range.

CUTLINE is a true alternative to leading brands.

Our goal is to respect our four values:



CARBIDE RANGE TECHNICAL INFORMATION







MATERIAL GROUP ISO DESIGNATION

The ISO colours of material groups are common to all. It follows an ISO norm.

- Ease the reading of cutting parameters tables
- Ease the understanding of the capability of the tools. Ex: a tool presented with a green N pictogramme is a tool designed to work on non-ferrous / aluminium materials

ISO Code	Material Group	ISO Colour
P	ISO P – Steel	Blue
M	ISO M – Stainless Steel	Yellow
K	ISO K – Cast Iron	Red
N	ISO N – Non-ferrous Material (Including Aluminium)	Green
S	ISO S – Superalloys (Titanium, Nickel)	Orange

PICTOGRAMS

P	Tool designed to work on steels	HM	Solid carbide tools		Through coolant drills
M	Tool designed to work on stainless steels		Cylindrical shank		Self-centre drills
N	Tool designed to work on non-ferrous materials		30° helix angle for drills		Straight corners endmills
K	Tool designed to work on cast irons		140° tip angle for drills	POLI	Poliglass tool finish
S	Tool designed to work on superalloys				

COATINGS

With new ranges, come new coatings!
Increased tools versatility and lifetime to focus on high performance!

DRILLS

SCD range



CUTLINE polyvalent
multi-material

Extra fine AlCr based multilayer coating that provides high thermal resistance, stability at high cutting speeds, and an increased lifetime. This coating is specially formulated to withstand the high temperatures and pressures of drilling operations, ensuring that the drill maintains its sharpness and durability even after prolonged use.

Multi-material application:



ENDMILLS

Vari-helix, standard, ball-nose and roughing



CUTLINE polyvalence
performance

Nanostructure PVD AlCrN based coating that provides high wear resistance, tenacity and roughness for a wide range of material applications. This coating is specially formulated to withstand the high temperatures and pressures of milling operations, ensuring that the endmill maintains its sharpness and durability even after prolonged use. This coating is perfect for steel, stainless steel and cast-iron milling operations, but also can be used in non-ferrous materials, super-alloys and hard-materials.

Multi-material application:



CUTTING TOOLS CONTENT

DRILLS

PAGE 10

Solid Carbide Drill 3xD No Coolant



PAGE 15

Solid Carbide Drill 3xD Internal Coolant



PAGE 20

Solid Carbide Drill 5xD Internal Coolant



PAGE 25

Solid Carbide Drills 8xD Internal Coolant



ENDMILLS

PAGE 32 – SOLID CARBIDE ENDMILLS VARIABLE-HELIX

Page 32 – 4 Flutes Straight Shank and Weldon Shank



Page 34 – 4 Flutes Radius Corners Straight Shank and Weldon Shank



PAGE 37 – SOLID CARBIDE ENDMILLS STANDARD

Page 37 – 2 Flutes Straight Shank and Weldon Shank



Page 39 – 3 Flutes Straight Shank and Weldon Shank



Page 41 – 4 Flutes Straight Shank and Weldon Shank



Page 43 – 4 Flutes Radius Corners Straight Shank and Weldon Shank



PAGE 46 – SOLID CARBIDE ENDMILLS BALL-NOSE

Page 46 – 2 Flutes Straight Shank and Weldon Shank



Page 48 – 4 Flutes Straight Shank and Weldon Shank



PAGE 51 – SOLID CARBIDE ENDMILLS ROUGHING

Page 51 – 4 Flutes Straight Shank and Weldon Shank



PAGE 54 – SOLID CARBIDE ENDMILLS ALUMINIUM RANGE

Page 54 – 1 Flute Straight Shank



Page 55 – 2 Flutes Straight Shank and Weldon Shank



Page 57 – 3 Flutes Straight Shank and Weldon Shank



Page 59 – 3 Flutes Radius Corners Straight Shank



Page 61 – Ball nose 2 Flutes Straight Shank



QUALITY

PAGE 63

RUBIX CODE CONVERSION TABLE

PAGE 64

DRILLS

10

**SOLID CARBIDE DRILL 3XD
NO COOLANT**

15

**SOLID CARBIDE DRILL 3XD
INTERNAL COOLANT**

20

**SOLID CARBIDE DRILL 5XD
INTERNAL COOLANT**

25

**SOLID CARBIDE DRILL 8XD
INTERNAL COOLANT**



SOLID CARBIDE DRILL 3xD – NO COOLANT



- Solid carbide drill 3xD – SCD range
- Tip angle: 140° – 30° helix angle – split point
- Cylindrical shank DIN 6535 HA with h6 tolerance
- CUPMM coating for universal and multi-material application
- Extra fine AlCr based multilayer coating for high thermal resistance, stability at high cutting speed and increased lifetime
- Drill conception studied for high stability during the drilling operations: guiding chamfers, side cut technology, self-stabilisation and special geometry reducing friction
- m7 drilling tolerance
- Quality of holes: H8-H9
- High thermal stability thanks to PVD multilayer coating technology



Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
892735	13851153	3,0	66,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892736	13851155	3,1	66,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892737	13851156	3,2	66,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892738	13851157	3,3	66,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892739	13851158	3,4	66,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892740	13851159	3,5	66,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892741	13851160	3,6	66,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892742	13851161	3,7	66,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892743	13851162	3,8	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892744	13851163	3,9	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892745	13851164	4,0	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892746	13851165	4,1	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892747	13851166	4,2	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892748	13851167	4,3	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892749	13851168	4,4	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892750	13851169	4,5	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	No

Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
892751	13851170	4,6	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892752	13851171	4,7	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892753	13851172	4,8	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892754	13851173	4,9	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892755	13851174	5,0	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892756	13851175	5,1	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892757	13851176	5,2	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892758	13851177	5,3	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892759	13851178	5,4	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892760	13851179	5,5	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892761	13851180	5,6	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892762	13851181	5,7	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892763	13851182	5,8	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892764	13851183	5,9	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892765	13851184	6,0	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	No
892766	13851185	6,1	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892767	13851186	6,2	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892768	13851187	6,3	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892769	13851188	6,4	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892770	13851189	6,5	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892771	13851190	6,6	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892772	13851191	6,7	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892773	13851192	6,8	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892774	13851193	6,9	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892775	13851194	7,0	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892776	13851195	7,1	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892777	13851196	7,2	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892778	13851197	7,3	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892779	13851198	7,4	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892780	13851199	7,5	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	No

SOLID CARBIDE DRILL 3XD NO COOLANT



Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
892781	13851200	7,6	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892782	13851201	7,7	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892783	13851202	7,8	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892784	13851203	7,9	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892785	13851204	8,0	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	No
892786	13851205	8,1	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892787	13851206	8,2	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892788	13851207	8,3	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892789	13851208	8,4	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892790	13851209	8,5	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892791	13851210	8,6	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892792	13851211	8,7	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892793	13851212	8,8	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892794	13851213	8,9	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892795	13851214	9,0	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892796	13851215	9,1	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892797	13851216	9,2	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892798	13851217	9,3	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892799	13851218	9,4	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892800	13851219	9,5	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892801	13851220	9,6	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892802	13851221	9,7	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892803	13851222	9,8	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892804	13851223	9,9	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892805	13851224	10,0	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	No
892806	13851225	10,1	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	No
892807	13851226	10,2	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	No
892808	13851227	10,3	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	No
892809	13851228	10,5	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	No
892810	13851229	10,8	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	No

Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
892811	13851230	11,0	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	No
892812	13851231	11,2	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	No
892813	13851232	11,5	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	No
892814	13851233	11,8	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	No
892815	13851234	12,0	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	No
892816	13851235	12,2	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	No
892817	13851236	12,5	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	No
892818	13851237	12,8	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	No
892819	13851238	13,0	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	No
892820	13851239	13,2	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	No
892821	13851240	13,5	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	No
892822	13851241	13,8	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	No
892823	13851242	14,0	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	No
892824	13851243	14,2	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	No
892825	13851244	14,5	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	No
892826	13851245	14,8	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	No
892827	13851246	15,0	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	No
892828	13851247	15,2	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	No
892829	13851248	15,5	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	No
892830	13851249	15,8	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	No
892831	13851250	16,0	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	No
892832	13851251	16,5	123,0	51,0	30°	m7	3xD	Right hand	18	Cross-grinding	No
892833	13851252	17,0	123,0	51,0	30°	m7	3xD	Right hand	18	Cross-grinding	No
892834	13851253	17,5	123,0	51,0	30°	m7	3xD	Right hand	18	Cross-grinding	No
892835	13851254	18,0	123,0	51,0	30°	m7	3xD	Right hand	18	Cross-grinding	No
892836	13851255	18,5	131,0	55,0	30°	m7	3xD	Right hand	20	Cross-grinding	No
892837	13851256	19,0	131,0	55,0	30°	m7	3xD	Right hand	20	Cross-grinding	No
892838	13851257	19,5	131,0	55,0	30°	m7	3xD	Right hand	20	Cross-grinding	No
892839	13851258	20,0	131,0	55,0	30°	m7	3xD	Right hand	20	Cross-grinding	No

CUTTING PARAMETERS

SOLID CARBIDE DRILL 3XD – NO COOLANT

Material	Vc (m/min)	fn (mm)							
		Ø 3 to 5	Ø 5 to 7	Ø 7 to 9	Ø 9 to 11	Ø 11 to 13	Ø 13 to 15	Ø 15 to 17	Ø 17 to 20
Steel <500 N/mm ² (<150 HB)	135	0,06	0,09	0,12	0,15	0,18	0,21	0,24	0,27
Steel <1000 N/mm ² (<32 HRC)	120	0,05	0,08	0,1	0,13	0,15	0,18	0,2	0,23
Steel <1400 N/mm ² (<44 HRC)	90	0,04	0,06	0,09	0,11	0,13	0,15	0,17	0,19
H Steel <2000 N/mm ² (<54 HRC)	40	0,04	0,05	0,07	0,09	0,11	0,13	0,14	0,16
Stainless Steel <700 N/mm ² (<205 HB)	75	0,05	0,07	0,09	0,12	0,14	0,17	0,19	0,21
Stainless Steel >700 N/mm ² (>205 HB)	55	0,04	0,06	0,08	0,1	0,12	0,14	0,16	0,18
Cast Iron <180HB	190	0,07	0,1	0,14	0,17	0,2	0,24	0,27	0,3
Cast Iron with Graphite >180HB	145	0,06	0,08	0,11	0,14	0,17	0,2	0,22	0,25
Aluminium <8% Si	290	0,08	0,12	0,16	0,2	0,24	0,28	0,32	0,36
Aluminium >8% Si	240	0,08	0,12	0,16	0,2	0,24	0,28	0,32	0,36
Titanium and HRSA	30	0,03	0,04	0,06	0,07	0,08	0,1	0,11	0,13

Recommended	P	M	K
Usable	N	S	H

SOLID CARBIDE DRILL 3xD – INTERNAL COOLANT



- Solid carbide drill 3xD with internal coolant – SCD range
- Tip angle: 140° – 30° helix angle – split point
- Cylindrical shank DIN 6535 HA with h6 tolerance
- Internal coolant to ease chips evacuation, reduce heat, increase lifetime and performance of the drill
- CUPMM coating for universal and multi-material application
- Extra fine AlCr based multilayer coating for high thermal resistance, stability at high cutting speed and increased lifetime
- Drill conception studied for high stability during the drilling operations: guiding chamfers, sicle cut technology, self-stabilisation and special geometry reducing friction
- m7 drilling tolerance
- Quality of holes: H8-H9
- High thermal stability thanks to PVD multilayer coating technology



Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
892841	13851259	3,0	62,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892842	13851260	3,1	62,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892843	13851261	3,2	62,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892844	13851262	3,3	62,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892845	13851263	3,4	62,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892846	13851264	3,5	62,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892847	13851265	3,6	62,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892848	13851266	3,7	62,0	14,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892849	13851267	3,8	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892850	13851268	3,9	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892851	13851269	4,0	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892852	13851270	4,1	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892853	13851271	4,2	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892854	13851272	4,3	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892855	13851273	4,4	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892856	13851274	4,5	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892857	13851275	4,6	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892858	13851276	4,7	66,0	17,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892859	13851277	4,8	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes

SOLID CARBIDE DRILL 3XD INTERNAL COOLANT



Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
892860	13851278	4,9	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892861	13851279	5,0	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892862	13851280	5,1	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892863	13851281	5,2	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892864	13851282	5,3	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892865	13851283	5,4	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892866	13851284	5,5	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892867	13851285	5,6	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892868	13851286	5,7	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892869	13851287	5,8	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892870	13851288	5,9	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892871	13851289	6,0	66,0	20,0	30°	m7	3xD	Right hand	6	Cross-grinding	Yes
892872	13851290	6,1	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892873	13851291	6,2	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892874	13851292	6,3	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892875	13851293	6,4	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892876	13851294	6,5	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892877	13851295	6,6	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892878	13851296	6,7	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892879	13851297	6,8	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892880	13851298	6,9	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892881	13851299	7,0	79,0	24,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892882	13851300	7,1	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892883	13851301	7,2	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892884	13851302	7,3	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892885	13851303	7,4	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892886	13851304	7,5	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892887	13851305	7,6	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892888	13851306	7,7	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892889	13851307	7,8	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892890	13851308	7,9	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes
892891	13851309	8,0	79,0	29,0	30°	m7	3xD	Right hand	8	Cross-grinding	Yes

Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
892892	13851310	8,1	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892893	13851311	8,2	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892894	13851312	8,3	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892895	13851313	8,4	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892896	13851314	8,5	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892897	13851315	8,6	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892898	13851316	8,7	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892899	13851317	8,8	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892900	13851318	8,9	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892901	13851319	9,0	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892902	13851320	9,1	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892903	13851321	9,2	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892904	13851322	9,3	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892905	13851323	9,4	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892906	13851324	9,5	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892907	13851325	9,6	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892908	13851326	9,7	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892909	13851327	9,8	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892910	13851328	9,9	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892911	13851329	10,0	89,0	35,0	30°	m7	3xD	Right hand	10	Cross-grinding	Yes
892912	13851330	10,1	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	Yes
892913	13851331	10,2	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	Yes
892914	13851332	10,3	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	Yes
892915	13851333	10,5	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	Yes
892916	13851334	10,8	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	Yes
892917	13851335	11,0	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	Yes
892918	13851336	11,2	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	Yes
892919	13851337	11,5	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	Yes
892920	13851338	11,8	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	Yes
892921	13851339	12,0	102,0	40,0	30°	m7	3xD	Right hand	12	Cross-grinding	Yes
892922	13851340	12,2	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	Yes
892923	13851341	12,5	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	Yes

SOLID CARBIDE DRILL 3XD INTERNAL COOLANT



Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
892924	13851342	12,8	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	Yes
892925	13851343	13,0	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	Yes
892926	13851344	13,2	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	Yes
892927	13851345	13,5	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	Yes
892928	13851346	13,8	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	Yes
892929	13851347	14,0	107,0	43,0	30°	m7	3xD	Right hand	14	Cross-grinding	Yes
892930	13851348	14,2	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	Yes
892931	13851349	14,5	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	Yes
892932	13851350	14,8	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	Yes
892933	13851351	15,0	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	Yes
892934	13851352	15,2	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	Yes
892935	13851353	15,5	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	Yes
892936	13851354	15,8	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	Yes
892937	13851355	16,0	115,0	45,0	30°	m7	3xD	Right hand	16	Cross-grinding	Yes
892938	13851356	16,5	123,0	51,0	30°	m7	3xD	Right hand	18	Cross-grinding	Yes
892939	13851357	17,0	123,0	51,0	30°	m7	3xD	Right hand	18	Cross-grinding	Yes
892940	13851358	17,5	123,0	51,0	30°	m7	3xD	Right hand	18	Cross-grinding	Yes
892941	13851359	18,0	123,0	51,0	30°	m7	3xD	Right hand	18	Cross-grinding	Yes
892942	13851360	18,5	131,0	55,0	30°	m7	3xD	Right hand	20	Cross-grinding	Yes
892943	13851361	19,0	131,0	55,0	30°	m7	3xD	Right hand	20	Cross-grinding	Yes
892944	13851362	19,5	131,0	55,0	30°	m7	3xD	Right hand	20	Cross-grinding	Yes
892945	13851363	20,0	131,0	55,0	30°	m7	3xD	Right hand	20	Cross-grinding	Yes

SOLID CARBIDE DRILL 3XD – INTERNAL COOLANT

Material	Vc (m/min)	fn (mm)							
		Ø 3 to 5	Ø 5 to 7	Ø 7 to 9	Ø 9 to 11	Ø 11 to 13	Ø 13 to 15	Ø 15 to 17	Ø 17 to 20
Steel <500 N/mm ² (<150 HB)	170	0,06	0,09	0,12	0,15	0,18	0,21	0,24	0,27
Steel <1000 N/mm ² (<32 HRC)	150	0,05	0,08	0,1	0,13	0,15	0,18	0,2	0,23
Steel <1400 N/mm ² (<44 HRC)	110	0,04	0,06	0,09	0,11	0,13	0,15	0,17	0,19
H Steel <2000 N/mm ² (<54 HRC)	50	0,04	0,05	0,07	0,09	0,11	0,13	0,14	0,16
Stainless Steel <700 N/mm ² (<205 HB)	90	0,05	0,07	0,09	0,12	0,14	0,17	0,19	0,21
Stainless Steel >700 N/mm ² (>205 HB)	70	0,04	0,06	0,08	0,1	0,12	0,14	0,16	0,18
Cast Iron <180HB	240	0,07	0,1	0,14	0,17	0,2	0,24	0,27	0,3
Cast Iron with Graphite >180HB	180	0,06	0,08	0,11	0,14	0,17	0,2	0,22	0,25
Aluminium <8% Si	360	0,08	0,12	0,16	0,2	0,24	0,28	0,32	0,36
Aluminium >8% Si	300	0,08	0,12	0,16	0,2	0,24	0,28	0,32	0,36
Titanium & HRSA	35	0,03	0,04	0,06	0,07	0,08	0,1	0,11	0,13

Recommended	P	M	K
Usable	N	S	H

SOLID CARBIDE DRILL 5XD – INTERNAL COOLANT



- Solid carbide drill 5xD with internal coolant – SCD range
- Tip angle: 140°–30° helix angle – split point
- Cylindrical shank DIN 6535 HA with h6 tolerance
- Internal coolant to ease chips evacuation, reduce heat, increase lifetime and performance of the drill
- CUPMM coating for universal and multi-material application
- Extra fine AlCr based multilayer coating for high thermal resistance, stability at high cutting speed and increased lifetime
- Drill conception studied for high stability during the drilling operations: guiding chamfers, sicle cut technology, self-stabilisation and special geometry reducing friction
- m7 drilling tolerance
- Quality of holes: H8-H9
- High thermal stability thanks to PVD multilayer coating technology



Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
892947	13851364	3,0	66,0	23,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892948	13851365	3,1	66,0	23,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892949	13851366	3,2	66,0	23,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892950	13851367	3,3	66,0	23,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892951	13851368	3,4	66,0	23,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892952	13851369	3,5	66,0	23,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892953	13851370	3,6	66,0	23,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892954	13851371	3,7	66,0	23,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892955	13851372	3,8	74,0	29,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892956	13851373	3,9	74,0	29,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892957	13851374	4,0	74,0	29,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892958	13851375	4,1	74,0	29,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892959	13851376	4,2	74,0	29,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892960	13851377	4,3	74,0	29,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892961	13851378	4,4	74,0	29,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892962	13851379	4,5	74,0	29,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892963	13851380	4,6	74,0	29,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892964	13851381	4,7	74,0	29,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892965	13851382	4,8	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892966	13851383	4,9	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes

Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
892967	13851384	5,0	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892968	13851385	5,1	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892969	13851386	5,2	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892970	13851387	5,3	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892971	13851388	5,4	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892972	13851389	5,5	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892973	13851390	5,6	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892974	13851391	5,7	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892975	13851392	5,8	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892976	13851394	5,9	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892977	13851395	6,0	82,0	35,0	30°	m7	5xD	Right hand	6	Cross-grinding	Yes
892978	13851396	6,1	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892979	13851397	6,2	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892980	13851398	6,3	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892981	13851399	6,4	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892982	13851400	6,5	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892983	13851401	6,6	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892984	13851402	6,7	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892985	13851403	6,8	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892986	13851404	6,9	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892987	13851405	7,0	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892988	13851406	7,1	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892989	13851407	7,2	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892990	13851408	7,3	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892991	13851409	7,4	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892992	13851410	7,5	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892993	13851411	7,6	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892994	13851412	7,7	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892995	13851413	7,8	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892996	13851414	7,9	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892997	13851415	8,0	91,0	43,0	30°	m7	5xD	Right hand	8	Cross-grinding	Yes
892998	13851416	8,1	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes

SOLID CARBIDE DRILL 5XD INTERNAL COOLANT



Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
892999	13851417	8,2	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893000	13851418	8,3	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893001	13851419	8,4	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893002	13851420	8,5	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893003	13851421	8,6	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893004	13851422	8,7	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893005	13851423	8,8	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893006	13851424	8,9	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893007	13851425	9,0	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893008	13851426	9,1	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893009	13851427	9,2	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893010	13851428	9,3	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893011	13851429	9,4	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893012	13851430	9,5	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893013	13851431	9,6	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893014	13851432	9,7	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893015	13851433	9,8	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893016	13851434	9,9	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893017	13851435	10,0	103,0	49,0	30°	m7	5xD	Right hand	10	Cross-grinding	Yes
893018	13851436	10,1	118,0	56,0	30°	m7	5xD	Right hand	12	Cross-grinding	Yes
893019	13851437	10,2	118,0	56,0	30°	m7	5xD	Right hand	12	Cross-grinding	Yes
893020	13851438	10,3	118,0	56,0	30°	m7	5xD	Right hand	12	Cross-grinding	Yes
893021	13851439	10,5	118,0	56,0	30°	m7	5xD	Right hand	12	Cross-grinding	Yes
893022	13851440	10,8	118,0	56,0	30°	m7	5xD	Right hand	12	Cross-grinding	Yes
893023	13851441	11,0	118,0	56,0	30°	m7	5xD	Right hand	12	Cross-grinding	Yes
893024	13851442	11,2	118,0	56,0	30°	m7	5xD	Right hand	12	Cross-grinding	Yes
893025	13851443	11,5	118,0	56,0	30°	m7	5xD	Right hand	12	Cross-grinding	Yes
893026	13851444	11,8	118,0	56,0	30°	m7	5xD	Right hand	12	Cross-grinding	Yes
893027	13851445	12,0	118,0	56,0	30°	m7	5xD	Right hand	12	Cross-grinding	Yes
893028	13851446	12,2	124,0	60,0	30°	m7	5xD	Right hand	14	Cross-grinding	Yes
893029	13851447	12,5	124,0	60,0	30°	m7	5xD	Right hand	14	Cross-grinding	Yes
893030	13851448	12,8	124,0	60,0	30°	m7	5xD	Right hand	14	Cross-grinding	Yes

Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
893031	13851449	13,0	124,0	60,0	30°	m7	5xD	Right hand	14	Cross-grinding	Yes
893032	13851450	13,2	124,0	60,0	30°	m7	5xD	Right hand	14	Cross-grinding	Yes
893033	13851451	13,5	124,0	60,0	30°	m7	5xD	Right hand	14	Cross-grinding	Yes
893034	13851452	13,8	124,0	60,0	30°	m7	5xD	Right hand	14	Cross-grinding	Yes
893035	13851453	14,0	124,0	60,0	30°	m7	5xD	Right hand	14	Cross-grinding	Yes
893036	13851454	14,2	133,0	63,0	30°	m7	5xD	Right hand	16	Cross-grinding	Yes
893037	13851455	14,5	133,0	63,0	30°	m7	5xD	Right hand	16	Cross-grinding	Yes
893038	13851456	14,8	133,0	63,0	30°	m7	5xD	Right hand	16	Cross-grinding	Yes
893039	13851457	15,0	133,0	63,0	30°	m7	5xD	Right hand	16	Cross-grinding	Yes
893040	13851458	15,2	133,0	63,0	30°	m7	5xD	Right hand	16	Cross-grinding	Yes
893041	13851459	15,5	133,0	63,0	30°	m7	5xD	Right hand	16	Cross-grinding	Yes
893042	13851460	15,8	133,0	63,0	30°	m7	5xD	Right hand	16	Cross-grinding	Yes
893043	13851461	16,0	133,0	63,0	30°	m7	5xD	Right hand	16	Cross-grinding	Yes
893044	13851462	16,5	143,0	71,0	30°	m7	5xD	Right hand	18	Cross-grinding	Yes
893045	13851463	17,0	143,0	71,0	30°	m7	5xD	Right hand	18	Cross-grinding	Yes
893046	13851464	17,5	143,0	71,0	30°	m7	5xD	Right hand	18	Cross-grinding	Yes
893047	13851465	18,0	143,0	71,0	30°	m7	5xD	Right hand	18	Cross-grinding	Yes
893048	13851466	18,5	153,0	77,0	30°	m7	5xD	Right hand	20	Cross-grinding	Yes
893049	13851467	19,0	153,0	77,0	30°	m7	5xD	Right hand	20	Cross-grinding	Yes
893050	13851468	19,5	153,0	77,0	30°	m7	5xD	Right hand	20	Cross-grinding	Yes
893051	13851469	20,0	153,0	77,0	30°	m7	5xD	Right hand	20	Cross-grinding	Yes

CUTTING PARAMETERS

SOLID CARBIDE DRILL 5XD – INTERNAL COOLANT

Material	Vc (m/min)	fn (mm)							
		Ø 3 to 5	Ø 5 to 7	Ø 7 to 9	Ø 9 to 11	Ø 11 to 13	Ø 13 to 15	Ø 15 to 17	Ø 17 to 20
Steel <500 N/mm ² (<150 HB)	170	0,06	0,09	0,12	0,15	0,18	0,21	0,24	0,27
Steel <1000 N/mm ² (<32 HRC)	150	0,05	0,08	0,1	0,13	0,15	0,18	0,2	0,23
Steel <1400 N/mm ² (<44 HRC)	110	0,04	0,06	0,09	0,11	0,13	0,15	0,17	0,19
H Steel <2000 N/mm ² (<54 HRC)	50	0,04	0,05	0,07	0,09	0,11	0,13	0,14	0,16
Stainless Steel <700 N/mm ² (<205 HB)	90	0,05	0,07	0,09	0,12	0,14	0,17	0,19	0,21
Stainless Steel >700 N/mm ² (>205 HB)	70	0,04	0,06	0,08	0,1	0,12	0,14	0,16	0,18
Cast Iron <180HB	240	0,07	0,1	0,14	0,17	0,2	0,24	0,27	0,3
Cast Iron with Graphite >180HB	180	0,06	0,08	0,11	0,14	0,17	0,2	0,22	0,25
Aluminium <8% Si	360	0,08	0,12	0,16	0,2	0,24	0,28	0,32	0,36
Aluminium >8% Si	300	0,08	0,12	0,16	0,2	0,24	0,28	0,32	0,36
Titanium and HRSA	35	0,03	0,04	0,06	0,07	0,08	0,1	0,11	0,13

Recommended	P	M	K
Usable	N	S	H

SOLID CARBIDE DRILL 8xD – INTERNAL COOLANT



- Solid carbide drill 8xD with internal coolant – SCD range
- Tip angle: 140°- 30° helix angle – split point
- Cylindrical shank DIN 6535 HA with h6 tolerance
- Internal coolant to ease chips evacuation, reduce heat, increase lifetime and performance of the drill
- CUPMM coating for universal and multi-material application
- Extra fine AlCr based multilayer coating for high thermal resistance, stability at high cutting speed and increased lifetime
- Drill conception studied for high stability during the drilling operations: guiding chamfers, sicle cut technology, self-stabilisation and special geometry reducing friction
- m7 drilling tolerance
- Quality of holes: H8-H9
- Peck drilling highly recommended!
- High thermal stability thanks to PVD multilayer coating technology



Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
893053	13851470	3,0	72,0	29,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893054	13851471	3,1	72,0	29,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893055	13851472	3,2	72,0	29,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893056	13851473	3,3	72,0	29,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893057	13851474	3,4	72,0	29,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893058	13851475	3,5	72,0	29,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893059	13851476	3,6	72,0	29,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893060	13851477	3,7	72,0	29,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893061	13851478	3,8	81,0	36,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893062	13851479	3,9	81,0	36,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893063	13851480	4,0	81,0	36,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893064	13851481	4,1	81,0	36,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893065	13851482	4,2	81,0	36,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893066	13851483	4,3	81,0	36,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893067	13851484	4,4	81,0	36,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893068	13851485	4,5	81,0	36,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893069	13851486	4,6	81,0	36,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893070	13851487	4,7	81,0	36,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893071	13851488	4,8	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes

SOLID CARBIDE DRILL 8XD INTERNAL COOLANT



Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
893072	13851489	4,9	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893073	13851490	5,0	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893074	13851491	5,1	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893075	13851492	5,2	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893076	13851493	5,3	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893077	13851494	5,4	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893078	13851495	5,5	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893079	13851496	5,6	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893080	13851497	5,7	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893081	13851498	5,8	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893082	13851499	5,9	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893083	13851500	6,0	95,0	48,0	30°	m7	8xD	Right hand	6	Cross-grinding	Yes
893084	13851501	6,1	114,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893085	13851502	6,2	114,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893086	13851503	6,3	114,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893087	13851504	6,4	114,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893088	13851505	6,5	114,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893089	13851506	6,6	114,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893090	13851507	6,7	114,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893091	13851508	6,8	114,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893092	13851509	6,9	114,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893093	13851510	7,0	116,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893094	13851511	7,1	116,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893095	13851512	7,2	116,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893096	13851513	7,3	116,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893097	13851514	7,4	116,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893098	13851515	7,5	116,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893099	13851516	7,6	116,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893100	13851517	7,7	116,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893101	13851518	7,8	116,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893102	13851519	7,9	116,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes
893103	13851520	8,0	116,0	66,0	30°	m7	8xD	Right hand	8	Cross-grinding	Yes

Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
893104	13851521	8,1	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893105	13851522	8,2	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893106	13851523	8,3	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893107	13851524	8,4	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893108	13851525	8,5	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893109	13851526	8,6	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893110	13851527	8,7	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893111	13851528	8,8	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893112	13851529	8,9	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893113	13851530	9,0	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893114	13851531	9,1	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893115	13851532	9,2	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893116	13851533	9,3	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893117	13851534	9,4	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893118	13851535	9,5	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893119	13851536	9,6	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893120	13851537	9,7	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893121	13851538	9,8	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893122	13851539	9,9	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893123	13851540	10,0	142,0	83,0	30°	m7	8xD	Right hand	10	Cross-grinding	Yes
893124	13851541	10,1	162,0	99,0	30°	m7	8xD	Right hand	12	Cross-grinding	Yes
893125	13851542	10,2	162,0	99,0	30°	m7	8xD	Right hand	12	Cross-grinding	Yes
893126	13851543	10,3	162,0	99,0	30°	m7	8xD	Right hand	12	Cross-grinding	Yes
893127	13851545	10,5	162,0	99,0	30°	m7	8xD	Right hand	12	Cross-grinding	Yes
893128	13851546	10,8	162,0	99,0	30°	m7	8xD	Right hand	12	Cross-grinding	Yes
893129	13851547	11,0	162,0	99,0	30°	m7	8xD	Right hand	12	Cross-grinding	Yes
893130	13851548	11,2	162,0	99,0	30°	m7	8xD	Right hand	12	Cross-grinding	Yes
893131	13851549	11,5	162,0	99,0	30°	m7	8xD	Right hand	12	Cross-grinding	Yes
893132	13851550	11,8	162,0	99,0	30°	m7	8xD	Right hand	12	Cross-grinding	Yes
893133	13851551	12,0	162,0	99,0	30°	m7	8xD	Right hand	12	Cross-grinding	Yes
893134	13851552	12,2	178,0	116,0	30°	m7	8xD	Right hand	14	Cross-grinding	Yes
893135	13851553	12,5	178,0	116,0	30°	m7	8xD	Right hand	14	Cross-grinding	Yes

SOLID CARBIDE DRILL 8XD INTERNAL COOLANT



Ref	MDM Code	Drilling Diameter mm	Total Length mm	Length of Cut mm	Angle of Helix °	Tolerance	Ratio of Diameter to Length of Drill Hole	Direction of Cutting	Tail Diameter mm	Sharpening	Internal Cooling
893136	13851554	12,8	178,0	116,0	30°	m7	8xD	Right hand	14	Cross-grinding	Yes
893137	13851555	13,0	178,0	116,0	30°	m7	8xD	Right hand	14	Cross-grinding	Yes
893138	13851556	13,2	178,0	116,0	30°	m7	8xD	Right hand	14	Cross-grinding	Yes
893139	13851557	13,5	178,0	116,0	30°	m7	8xD	Right hand	14	Cross-grinding	Yes
893140	13851558	13,8	178,0	116,0	30°	m7	8xD	Right hand	14	Cross-grinding	Yes
893141	13851559	14,0	178,0	116,0	30°	m7	8xD	Right hand	14	Cross-grinding	Yes
893142	13851560	14,2	204,0	132,0	30°	m7	8xD	Right hand	16	Cross-grinding	Yes
893143	13851561	14,5	204,0	132,0	30°	m7	8xD	Right hand	16	Cross-grinding	Yes
893144	13851562	14,8	204,0	132,0	30°	m7	8xD	Right hand	16	Cross-grinding	Yes
893145	13851564	15,0	204,0	132,0	30°	m7	8xD	Right hand	16	Cross-grinding	Yes
893146	13851565	15,2	204,0	132,0	30°	m7	8xD	Right hand	16	Cross-grinding	Yes
893147	13851566	15,5	204,0	132,0	30°	m7	8xD	Right hand	16	Cross-grinding	Yes
893148	13851567	15,8	204,0	132,0	30°	m7	8xD	Right hand	16	Cross-grinding	Yes
893149	13851568	16,0	204,0	132,0	30°	m7	8xD	Right hand	16	Cross-grinding	Yes
893150	13851569	16,5	223,0	149,0	30°	m7	8xD	Right hand	18	Cross-grinding	Yes
893151	13851570	17,0	223,0	149,0	30°	m7	8xD	Right hand	18	Cross-grinding	Yes
893152	13851571	17,5	223,0	149,0	30°	m7	8xD	Right hand	18	Cross-grinding	Yes
893153	13851572	18,0	223,0	149,0	30°	m7	8xD	Right hand	18	Cross-grinding	Yes

SOLID CARBIDE DRILL 8XD – INTERNAL COOLANT

Material	Vc (m/min)	fn (mm)							
		Ø 3 to 5	Ø 5 to 7	Ø 7 to 9	Ø 9 to 11	Ø 11 to 13	Ø 13 to 15	Ø 15 to 17	Ø 17 to 20
Steel <500 N/mm ² (<150 HB)	130	0,04	0,06	0,08	0,11	0,13	0,15	0,17	0,19
Steel <1000 N/mm ² (<32 HRC)	115	0,04	0,06	0,07	0,09	0,11	0,13	0,14	0,16
Steel <1400 N/mm ² (<44 HRC)	85	0,03	0,04	0,06	0,08	0,09	0,11	0,12	0,13
H Steel <2000 N/mm ² (<54 HRC)	40	0,03	0,04	0,05	0,06	0,08	0,09	0,10	0,11
Stainless Steel <700 N/mm ² (<205 HB)	70	0,04	0,05	0,06	0,08	0,10	0,12	0,13	0,15
Stainless Steel >700 N/mm ² (>205 HB)	55	0,03	0,04	0,06	0,07	0,08	0,10	0,11	0,13
Cast Iron <180HB	180	0,05	0,07	0,10	0,12	0,14	0,17	0,19	0,21
Cast Iron with Graphite >180HB	135	0,04	0,06	0,08	0,10	0,12	0,14	0,15	0,18
Aluminium <8% Si	270	0,06	0,08	0,11	0,14	0,17	0,20	0,22	0,25
Aluminium >8% Si	225	0,06	0,08	0,11	0,14	0,17	0,20	0,22	0,25
Titanium & HRSA	30	0,02	0,03	0,04	0,05	0,06	0,07	0,08	0,09

Recommended	P	M	K
Usable	N	S	H

END-MILLS

32

**SOLID CARBIDE ENDMILL
VARIABLE-HELIX**

37

SOLID CARBIDE ENDMILL STANDARD

46

SOLID CARBIDE ENDMILL BALL-NOSE

51

SOLID CARBIDE ENDMILL ROUGHING

54

**SOLID CARBIDE ENDMILL
ALUMINIUM RANGE**



CARBIDE END-MILL VARIABLE-HELIX



- Solid carbide endmill – 4 flutes
- Variable helix 39/42° for efficient roughing and semi-finishing applications
- Straight shank DIN 6535HA – centre cut
- CUPP coating – PVD ALCrN based coating for universal milling application – high wear resistance, tenacity and roughness for a wide range of material application
- Variable helix to increase polyvalence and performance
- Few vibrations to increase lifetime of the tool and finishing aspect
- High cutting parameters possible for roughing operations
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Free ground neck for high usable length



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance	Decalibration	Decalibration Diameter mm
893155	13851573	3	Cylindrical	6	4	6,5	57,0	39/42	Yes	e8	15	2,7
893156	13851574	4	Cylindrical	6	4	11,0	57,0	39/42	Yes	e8	19	3,7
893157	13851575	5	Cylindrical	6	4	13,0	57,0	39/42	Yes	e8	21	4,7
893158	13851576	6	Cylindrical	6	4	13,0	57,0	39/42	Yes	e8	21	5,7
893159	13851577	8	Cylindrical	8	4	19,0	63,0	39/42	Yes	e8	27	7,7
893160	13851578	10	Cylindrical	10	4	22,0	72,0	39/42	Yes	e8	32	9,5
893161	13851579	12	Cylindrical	12	4	26,0	83,0	39/42	Yes	e8	38	11,5
893162	13851580	16	Cylindrical	16	4	32,0	92,0	39/42	Yes	e8	44	15,5
893163	13851581	20	Cylindrical	20	4	38,0	104,0	39/42	Yes	e8	54	19,5

CARBIDE END-MILL VARIABLE-HELIX WELDON



- Solid carbide endmill – 4 flutes
- Variable helix 39/42° for efficient roughing and semi-finishing applications
- Weldon shank DIN 6535HB – centre cut
- CUPP coating – PVD ALCrN based coating for universal milling application – high wear resistance, tenacity and roughness for a wide range of material application
- Variable helix to increase polyvalence and performance – few vibrations to increase lifetime of the tool and finishing aspect
- High cutting parameters possible for roughing operations
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Free ground neck for high usable length



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance	Decalibration	Decalibration Diameter mm
893165	13851582	3	Weldon	6	4	6,5	57,0	39/42	Yes	e8	15	2,7
893166	13851583	4	Weldon	6	4	11,0	57,0	39/42	Yes	e8	19	3,7
893167	13851584	5	Weldon	6	4	13,0	57,0	39/42	Yes	e8	21	4,7
893168	13851585	6	Weldon	6	4	13,0	57,0	39/42	Yes	e8	21	5,7
893169	13851586	8	Weldon	8	4	19,0	63,0	39/42	Yes	e8	27	7,7
893170	13851587	10	Weldon	10	4	22,0	72,0	39/42	Yes	e8	32	9,5
893171	13851588	12	Weldon	12	4	26,0	83,0	39/42	Yes	e8	38	11,5
893172	13851589	16	Weldon	16	4	32,0	92,0	39/42	Yes	e8	44	15,5
893174	13851590	20	Weldon	20	4	38,0	104,0	39/42	Yes	e8	54	19,5

CARBIDE END-MILL VARIABLE-HELIX RADIUS CORNER



- Solid carbide endmill – 4 flutes
- Variable helix 39/42° for efficient roughing and semi-finishing applications – radius corner
- Straight shank DIN 6535HA – centre cut
- CUPP coating – PVD ALCrN based coating for universal milling application – high wear resistance, tenacity and roughness for a wide range of material application
- Variable helix to increase polyvalence and performance
- Few vibrations to increase lifetime of the tool and finishing aspect – high cutting parameters possible for roughing operations
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Free ground neck for high usable length



Ref	MDM Code	Diameter mm	Radius mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance	Decalibration	Decalibration Diameter mm
893175	13851591	4	0,5	Cylindrical	6	4	11,0	57,0	39/42	Yes	e8	19	3,7
893176	13851592	5	1,0	Cylindrical	6	4	13,0	57,0	39/42	Yes	e8	21	4,7
893177	13851593	6	0,5	Cylindrical	6	4	13,0	57,0	39/42	Yes	e8	21	5,7
893178	13851594	6	1,0	Cylindrical	6	4	13,0	57,0	39/42	Yes	e8	21	5,7
893179	13851595	6	2,0	Cylindrical	6	4	13,0	57,0	39/42	Yes	e8	21	5,7
893180	13851596	8	1,0	Cylindrical	8	4	19,0	63,0	39/42	Yes	e8	27	7,7
893181	13851597	8	1,5	Cylindrical	8	4	19,0	63,0	39/42	Yes	e8	27	7,7
893182	13851598	8	2,0	Cylindrical	8	4	19,0	63,0	39/42	Yes	e8	27	7,7
893183	13851599	10	1,0	Cylindrical	10	4	22,0	72,0	39/42	Yes	e8	32	9,5
893184	13851600	10	1,5	Cylindrical	10	4	22,0	72,0	39/42	Yes	e8	32	9,5
893185	13851601	10	2,0	Cylindrical	10	4	22,0	72,0	39/42	Yes	e8	32	9,5
893186	13851602	12	1,0	Cylindrical	12	4	26,0	83,0	39/42	Yes	e8	38	11,5
893187	13851603	12	2,0	Cylindrical	12	4	26,0	83,0	39/42	Yes	e8	38	11,5
893188	13851604	16	1,0	Cylindrical	16	4	32,0	92,0	39/42	Yes	e8	44	15,5
893189	13851605	16	2,0	Cylindrical	16	4	32,0	92,0	39/42	Yes	e8	44	15,5
893190	13851606	16	3,0	Cylindrical	16	4	32,0	92,0	39/42	Yes	e8	44	15,5
893191	13851609	16	4,0	Cylindrical	16	4	32,0	92,0	39/42	Yes	e8	44	15,5
893192	13851610	20	1,0	Cylindrical	20	4	38,0	104,0	39/42	Yes	e8	54	19,5
893193	13851611	20	2,0	Cylindrical	20	4	38,0	104,0	39/42	Yes	e8	54	19,5
893194	13851612	20	3,0	Cylindrical	20	4	38,0	104,0	39/42	Yes	e8	54	19,5

CARBIDE END-MILL VARIABLE-HELIX RADIUS CORNER WELDON



- Solid carbide endmill – 4 flutes
- Variable helix 39/42° for efficient roughing and semi-finishing applications – radius corner
- Weldon shank DIN 6535HB – centre cut
- CUPP coating – PVD ALCrN based coating for universal milling application – high wear resistance, tenacity and roughness for a wide range of material application
- Variable helix to increase polyvalence and performance
- Few vibrations to increase lifetime of the tool and finishing aspect – high cutting parameters possible for roughing operations
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Free ground neck for high usable length



Ref	MDM Code	Diameter mm	Radius mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance	Decalibration	Decalibration Diameter mm
893196	13851613	4	0,5	Weldon	6	4	11,0	57,0	39/42	Yes	e8	19	3,7
893197	13851614	5	1,0	Weldon	6	4	13,0	57,0	39/42	Yes	e8	21	4,7
893198	13851615	6	0,5	Weldon	6	4	13,0	57,0	39/42	Yes	e8	21	5,7
893199	13851616	6	1,0	Weldon	6	4	13,0	57,0	39/42	Yes	e8	21	5,7
893200	13851617	6	2,0	Weldon	6	4	13,0	57,0	39/42	Yes	e8	21	5,7
893201	13851618	8	1,0	Weldon	8	4	19,0	63,0	39/42	Yes	e8	27	7,7
893202	13851619	8	1,5	Weldon	8	4	19,0	63,0	39/42	Yes	e8	27	7,7
893203	13851620	8	2,0	Weldon	8	4	19,0	63,0	39/42	Yes	e8	27	7,7
893204	13851621	10	1,0	Weldon	10	4	22,0	72,0	39/42	Yes	e8	32	9,5
893205	13851622	10	1,5	Weldon	10	4	22,0	72,0	39/42	Yes	e8	32	9,5
893206	13851623	10	2,0	Weldon	10	4	22,0	72,0	39/42	Yes	e8	32	9,5
893207	13851624	12	1,0	Weldon	12	4	26,0	83,0	39/42	Yes	e8	38	11,5
893208	13851625	12	2,0	Weldon	12	4	26,0	83,0	39/42	Yes	e8	38	11,5
893209	13851626	16	1,0	Weldon	16	4	32,0	92,0	39/42	Yes	e8	44	15,5
893210	13851627	16	2,0	Weldon	16	4	32,0	92,0	39/42	Yes	e8	44	15,5
893211	13851628	16	3,0	Weldon	16	4	32,0	92,0	39/42	Yes	e8	44	15,5
893212	13851629	16	4,0	Weldon	16	4	32,0	92,0	39/42	Yes	e8	44	15,5
893213	13851630	20	1,0	Weldon	20	4	38,0	104,0	39/42	Yes	e8	54	19,5
893214	13851631	20	2,0	Weldon	20	4	38,0	104,0	39/42	Yes	e8	54	19,5
893215	13851632	20	3,0	Weldon	20	4	38,0	104,0	39/42	Yes	e8	54	19,5

CUTTING PARAMETERS

VARIABLE-HELIX CARBIDE ENDMILLS

Material	Application Ae (mm)	Vc (m/min)	ap (mm)	fz (mm)			
				Ø 3 to 5	Ø 6 to 8	Ø 10 to 12	Ø 16 to 20
Steel <500 N/mm ² (<150 HB)	Full slot	205	1xD	0,02	0,04	0,06	0,09
	0,1xD	315	2xD	0,04	0,08	0,13	0,18
Steel <1000 N/mm ² (<32 HRC)	Full slot	125	1xD	0,02	0,03	0,05	0,08
	0,1xD	190	2xD	0,03	0,07	0,11	0,16
Steel <1400 N/mm ² (<44 HRC)	Full slot	105	0,5xD	0,01	0,03	0,04	0,07
	0,1xD	170	2xD	0,02	0,06	0,1	0,14
H Steel <2000 N/mm ² (<54 HRC)	Full slot	75	0,5xD	0,01	0,03	0,04	0,07
	0,1xD	135	2xD	0,02	0,04	0,08	0,12
Stainless Steel <700 N/mm ² (<205 HB)	Full slot	75	0,5xD	0,02	0,03	0,05	0,08
	0,1xD	120	2xD	0,03	0,07	0,11	0,16
Stainless Steel >700 N/mm ² (>205 HB)	Full slot	60	0,5xD	0,01	0,03	0,04	0,07
	0,1xD	110	2xD	0,02	0,04	0,08	0,12
Cast Iron <180HB	Full slot	160	1,5xD	0,02	0,04	0,06	0,09
	0,1xD	224	2xD	0,04	0,08	0,13	0,18
Cast Iron with Graphite >180HB	Full slot	145	1xD	0,02	0,03	0,05	0,08
	0,1xD	225	2xD	0,03	0,07	0,11	0,16
Non ferrous / Aluminium	Full slot	200	2xD	0,03	0,06	0,08	0,12
Aluminium >8% Si	0,1xD	400	2xD	0,06	0,1	0,14	0,2
Titanium and HRSA	0,1xD	40	1,5xD	0,03	0,04	0,06	0,08

Recommended	P	M	K
Usable	N	S	H

CARBIDE END-MILL 2 FLUTES



- Solid carbide endmill - 2 flutes - 30° helix angle
- Straight shank DIN 6535HA - centre cut
- CUPP coating - PVD ALCrN based coating for universal milling application - high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893217	13851633	3	Cylindrical	6	2	8,0	50,0	30	Yes	e8
893218	13851634	4	Cylindrical	6	2	11,0	50,0	30	Yes	e8
893219	13851635	5	Cylindrical	6	2	13,0	50,0	30	Yes	e8
893220	13851636	6	Cylindrical	6	2	16,0	50,0	30	Yes	e8
893221	13851637	8	Cylindrical	8	2	20,0	60,0	30	Yes	e8
893222	13851638	10	Cylindrical	10	2	25,0	75,0	30	Yes	e8
893223	13851639	12	Cylindrical	12	2	30,0	75,0	30	Yes	e8
893224	13851640	16	Cylindrical	16	2	45,0	100,0	30	Yes	e8
893225	13851641	20	Cylindrical	20	2	45,0	100,0	30	Yes	e8

CARBIDE END-MILL 2 FLUTES WELDON



- Solid carbide endmill - 2 flutes - 30° helix angle
- Weldon shank DIN 6535HB - centre cut
- CUPP coating - PVD ALCrN based coating for universal milling application - high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893227	13851642	3	Weldon	6	2	8,0	50,0	30	Yes	e8
893228	13851643	4	Weldon	6	2	11,0	50,0	30	Yes	e8
893229	13851644	5	Weldon	6	2	13,0	50,0	30	Yes	e8
893230	13851645	6	Weldon	6	2	16,0	50,0	30	Yes	e8
893231	13851646	8	Weldon	8	2	20,0	60,0	30	Yes	e8
893232	13851647	10	Weldon	10	2	25,0	75,0	30	Yes	e8
893233	13851648	12	Weldon	12	2	30,0	75,0	30	Yes	e8
893234	13851649	16	Weldon	16	2	45,0	100,0	30	Yes	e8
893235	13851650	20	Weldon	20	2	45,0	100,0	30	Yes	e8

CARBIDE END-MILL 3 FLUTES



- Solid carbide endmill - 3 flutes - 30° helix angle
- Straight shank DIN 6535HA - centre cut
- CUPP coating - PVD ALCrN based coating for universal milling application - high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893237	13851651	3	Cylindrical	6	3	8,0	50,0	30	Yes	e8
893238	13851652	4	Cylindrical	6	3	11,0	50,0	30	Yes	e8
893239	13851653	5	Cylindrical	6	3	13,0	50,0	30	Yes	e8
893240	13851654	6	Cylindrical	6	3	16,0	50,0	30	Yes	e8
893241	13851655	8	Cylindrical	8	3	20,0	60,0	30	Yes	e8
893242	13851656	10	Cylindrical	10	3	25,0	75,0	30	Yes	e8
893243	13851657	12	Cylindrical	12	3	30,0	75,0	30	Yes	e8
893244	13851658	16	Cylindrical	16	3	45,0	100,0	30	Yes	e8
893245	13851659	20	Cylindrical	20	3	45,0	100,0	30	Yes	e8

CARBIDE END-MILL 3 FLUTES WELDON



- Solid carbide endmill - 3 flutes - 30° helix angle
- Weldon shank DIN 6535HB - centre cut
- CUPP coating - PVD ALCrN based coating for universal milling application - high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893247	13851661	3	Weldon	6	3	8,0	50,0	30	Yes	e8
893248	13851662	4	Weldon	6	3	11,0	50,0	30	Yes	e8
893249	13851663	5	Weldon	6	3	13,0	50,0	30	Yes	e8
893250	13851664	6	Weldon	6	3	16,0	50,0	30	Yes	e8
893251	13851665	8	Weldon	8	3	20,0	60,0	30	Yes	e8
893252	13851666	10	Weldon	10	3	25,0	75,0	30	Yes	e8
893253	13851667	12	Weldon	12	3	30,0	75,0	30	Yes	e8
893254	13851668	16	Weldon	16	3	45,0	100,0	30	Yes	e8
893255	13851669	20	Weldon	20	3	45,0	100,0	30	Yes	e8

CARBIDE END-MILL 4 FLUTES



- Solid carbide endmill - 4 flutes - 45° helix angle
- Straight shank DIN 6535HA - centre cut
- CUPP coating - PVD ALCrN based coating for universal milling application - high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- High cutting performance and great finishing aspect
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability and high performance / lifetime ratio



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893257	13851670	3	Cylindrical	6	4	8,0	50,0	45	Yes	e8
893258	13851671	4	Cylindrical	6	4	11,0	50,0	45	Yes	e8
893259	13851672	5	Cylindrical	6	4	13,0	50,0	45	Yes	e8
893260	13851673	6	Cylindrical	6	4	16,0	50,0	45	Yes	e8
893261	13851674	8	Cylindrical	8	4	20,0	60,0	45	Yes	e8
893262	13851675	10	Cylindrical	10	4	25,0	75,0	45	Yes	e8
893263	13851676	12	Cylindrical	12	4	30,0	75,0	45	Yes	e8
893264	13851677	16	Cylindrical	16	4	45,0	100,0	45	Yes	e8
893265	13851678	20	Cylindrical	20	4	45,0	100,0	45	Yes	e8

CARBIDE END-MILL 4 FLUTES WELDON



- Solid carbide endmill - 4 flutes - 45° helix angle
- Weldon shank DIN 6535HB - centre cut
- CUPP coating - PVD ALCrN based coating for universal milling application - high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- High cutting performance and great finishing aspect
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability and high performance / lifetime ratio



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893267	13851679	3	Weldon	6	4	8,0	50,0	45	Yes	e8
893268	13851680	4	Weldon	6	4	11,0	50,0	45	Yes	e8
893269	13851681	5	Weldon	6	4	13,0	50,0	45	Yes	e8
893270	13851682	6	Weldon	6	4	16,0	50,0	45	Yes	e8
893271	13851683	8	Weldon	8	4	20,0	60,0	45	Yes	e8
893272	13851684	10	Weldon	10	4	25,0	75,0	45	Yes	e8
893273	13851685	12	Weldon	12	4	30,0	75,0	45	Yes	e8
893274	13851686	16	Weldon	16	4	45,0	100,0	45	Yes	e8
893275	13851687	20	Weldon	20	4	45,0	100,0	45	Yes	e8

CARBIDE END-MILL 4 FLUTES RADIUS CORNER



- Solid carbide endmill - 4 flutes - 45° helix angle - radius corner
- Straight shank DIN 6535HA - centre cut
- CUPP coating - PVD ALCrN based coating for universal milling application - high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- High cutting performance and great finishing aspect
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability and high performance / lifetime ratio



Ref	MDM Code	Diameter mm	Radius mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893277	13851688	3	0,2	Cylindrical	6	4	8,0	50,0	45	Yes	e8
893278	13851689	4	0,5	Cylindrical	6	4	11,0	50,0	45	Yes	e8
893279	13851690	5	1,0	Cylindrical	6	4	13,0	50,0	45	Yes	e8
893280	13851691	6	0,5	Cylindrical	6	4	16,0	50,0	45	Yes	e8
893281	13851692	6	1,0	Cylindrical	6	4	16,0	50,0	45	Yes	e8
893282	13851693	6	2,0	Cylindrical	6	4	16,0	50,0	45	Yes	e8
893283	13851694	8	1,0	Cylindrical	8	4	20,0	60,0	45	Yes	e8
893284	13851695	8	2,0	Cylindrical	8	4	20,0	60,0	45	Yes	e8
893285	13851696	10	1,0	Cylindrical	10	4	25,0	75,0	45	Yes	e8
893286	13851697	10	1,5	Cylindrical	10	4	25,0	75,0	45	Yes	e8
893287	13851698	10	2,0	Cylindrical	10	4	25,0	75,0	45	Yes	e8
893288	13851699	10	3,0	Cylindrical	10	4	25,0	75,0	45	Yes	e8
893289	13851700	12	1,0	Cylindrical	12	4	30,0	75,0	45	Yes	e8
893290	13851701	12	2,0	Cylindrical	12	4	30,0	75,0	45	Yes	e8
893291	13851702	16	1,0	Cylindrical	16	4	45,0	100,0	45	Yes	e8
893292	13851703	16	2,0	Cylindrical	16	4	45,0	100,0	45	Yes	e8
893293	13851704	16	3,0	Cylindrical	16	4	45,0	100,0	45	Yes	e8
893294	13851705	16	4,0	Cylindrical	16	4	45,0	100,0	45	Yes	e8
893295	13851706	20	1,0	Cylindrical	20	4	45,0	100,0	45	Yes	e8
893296	13851707	20	2,0	Cylindrical	20	4	45,0	100,0	45	Yes	e8
893297	13851708	20	3,0	Cylindrical	20	4	45,0	100,0	45	Yes	e8

CARBIDE END-MILL 4 FLUTES RADIUS CORNER WELDON



- Solid carbide endmill - 4 flutes - 45° helix angle - radius corner
- Weldon shank DIN 6535HB - centre cut
- CUPP coating - PVD ALCrN based coating for universal milling application - high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- High cutting performance and great finishing aspect
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability and high performance / lifetime ratio



Ref	MDM Code	Diameter mm	Radius mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893299	13851709	3	0,2	Weldon	6	4	8,0	50,0	45	Yes	e8
893300	13851710	4	0,5	Weldon	6	4	11,0	50,0	45	Yes	e8
893301	13851711	5	1,0	Weldon	6	4	13,0	50,0	45	Yes	e8
893302	13851712	6	0,5	Weldon	6	4	16,0	50,0	45	Yes	e8
893303	13851713	6	1,0	Weldon	6	4	16,0	50,0	45	Yes	e8
893304	13851714	6	2,0	Weldon	6	4	16,0	50,0	45	Yes	e8
893305	13851715	8	1,0	Weldon	8	4	20,0	60,0	45	Yes	e8
893306	13851716	8	2,0	Weldon	8	4	20,0	60,0	45	Yes	e8
893307	13851717	10	1,0	Weldon	10	4	25,0	75,0	45	Yes	e8
893308	13851718	10	1,5	Weldon	10	4	25,0	75,0	45	Yes	e8
893309	13851719	10	2,0	Weldon	10	4	25,0	75,0	45	Yes	e8
893310	13851720	10	3,0	Weldon	10	4	25,0	75,0	45	Yes	e8
893311	13851721	12	1,0	Weldon	12	4	30,0	75,0	45	Yes	e8
893312	13851722	12	2,0	Weldon	12	4	30,0	75,0	45	Yes	e8
893313	13851723	16	1,0	Weldon	16	4	45,0	100,0	45	Yes	e8
893314	13851724	16	2,0	Weldon	16	4	45,0	100,0	45	Yes	e8
893315	13851725	16	3,0	Weldon	16	4	45,0	100,0	45	Yes	e8
893316	13851726	16	4,0	Weldon	16	4	45,0	100,0	45	Yes	e8
893317	13851727	20	1,0	Weldon	20	4	45,0	100,0	45	Yes	e8
893318	13851728	20	2,0	Weldon	20	4	45,0	100,0	45	Yes	e8
893319	13851729	20	3,0	Weldon	20	4	45,0	100,0	45	Yes	e8

STANDARD CARBIDE ENDMILLS

Material	Application Ae (mm)	Vc (m/min)	ap (mm)	fz (mm)			
				Ø 3 to 5	Ø 6 to 8	Ø 10 to 12	Ø 16 to 20
Steel <500 N/mm ² (<150 HB)	Full slot	185	1xD	0,02	0,04	0,05	0,08
	0,1xD	285	2xD	0,04	0,07	0,12	0,16
Steel <1000 N/mm ² (<32 HRC)	Full slot	115	1xD	0,02	0,03	0,05	0,07
	0,1xD	175	2xD	0,03	0,06	0,10	0,14
Steel <1400 N/mm ² (<44 HRC)	Full slot	95	0,5xD	0,01	0,03	0,04	0,06
	0,1xD	155	2xD	0,02	0,05	0,09	0,13
H Steel <2000 N/mm ² (<54 HRC)	Full slot	70	0,5xD	0,01	0,03	0,04	0,06
	0,1xD	125	2xD	0,02	0,04	0,07	0,11
Stainless Steel <700 N/mm ² (<205 HB)	Full slot	70	0,5xD	0,02	0,03	0,05	0,07
	0,1xD	110	2xD	0,03	0,06	0,10	0,14
Stainless Steel >700 N/mm ² (>205 HB)	Full slot	55	0,5xD	0,01	0,03	0,04	0,06
	0,1xD	100	2xD	0,02	0,04	0,07	0,11
Cast Iron <180HB	Full slot	145	1,5xD	0,02	0,04	0,05	0,08
	0,1xD	205	2xD	0,04	0,07	0,12	0,16
Cast Iron with Graphite >180HB	Full slot	135	1xD	0,02	0,03	0,05	0,07
	0,1xD	200	2xD	0,03	0,06	0,10	0,14
Non ferrous / Aluminium	Full slot	180	2xD	0,03	0,05	0,07	0,11
	0,1xD	360	2xD	0,05	0,09	0,13	0,18
Titanium and HRSA	0,1xD	35	1,5xD	0,03	0,04	0,05	0,07

Recommended	P	M	K
Usable	N	S	H

CARBIDE END-MILL BALL-NOSE 2 FLUTES



- Solid carbide endmill – ball-nose 2 flutes – 30° helix angle
- Straight shank DIN 6535HA – centre cut – ball-nose for copy and shape milling
- CUPP coating – PVD ALCrN based coating for universal milling application – high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability



Ref	MDM Code	Diameter mm	Radius mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893321	13851730	3	1,5	Cylindrical	6	2	6,0	50,0	30	Yes	e8
893322	13851731	4	2,0	Cylindrical	6	2	8,0	50,0	30	Yes	e8
893323	13851732	5	2,5	Cylindrical	6	2	10,0	50,0	30	Yes	e8
893324	13851733	6	3,0	Cylindrical	6	2	12,0	50,0	30	Yes	e8
893325	13851734	8	4,0	Cylindrical	8	2	16,0	60,0	30	Yes	e8
893326	13851735	10	5,0	Cylindrical	10	2	20,0	75,0	30	Yes	e8
893327	13851736	12	6,0	Cylindrical	12	2	24,0	75,0	30	Yes	e8
893328	13851737	16	8,0	Cylindrical	16	2	32,0	100,0	30	Yes	e8
893329	13851738	20	10,0	Cylindrical	20	2	40,0	100,0	30	Yes	e8

CARBIDE END-MILL BALL-NOSE 2 FLUTES WELDON



- Solid carbide endmill – ball-nose 2 flutes – 30° helix angle
- Weldon shank DIN 6535HB – centre cut – ball-nose for copy and shape milling
- CUPP coating – PVD ALCrN based coating for universal milling application – high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability



Ref	MDM Code	Diameter mm	Radius mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893331	13851739	3	1,5	Weldon	6	2	6,0	50,0	30	Yes	e8
893332	13851740	4	2,0	Weldon	6	2	8,0	50,0	30	Yes	e8
893333	13851741	5	2,5	Weldon	6	2	10,0	50,0	30	Yes	e8
893334	13851742	6	3,0	Weldon	6	2	12,0	50,0	30	Yes	e8
893335	13851743	8	4,0	Weldon	8	2	16,0	60,0	30	Yes	e8
893336	13851744	10	5,0	Weldon	10	2	20,0	75,0	30	Yes	e8
893337	13851745	12	6,0	Weldon	12	2	24,0	75,0	30	Yes	e8
893338	13851746	16	8,0	Weldon	16	2	32,0	100,0	30	Yes	e8
893339	13851747	20	10,0	Weldon	20	2	40,0	100,0	30	Yes	e8

CARBIDE END-MILL BALL-NOSE 4 FLUTES



- Solid carbide endmill – ball-nose 4 flutes – 30° helix angle
- Straight shank DIN 6535HA – centre cut – ball-nose for copy and shape milling
- For 5 axis CNC machine tools applications – no slotting operations
- CUPP coating – PVD ALCrN based coating for universal milling application – high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability



Ref	MDM Code	Diameter mm	Radius mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893341	13851748	3	1,5	Cylindrical	6	4	6,0	50,0	30	Yes	e8
893342	13851749	4	2,0	Cylindrical	6	4	8,0	50,0	30	Yes	e8
893343	13851750	5	2,5	Cylindrical	6	4	10,0	50,0	30	Yes	e8
893344	13851751	6	3,0	Cylindrical	6	4	12,0	50,0	30	Yes	e8
893345	13851752	8	4,0	Cylindrical	8	4	16,0	60,0	30	Yes	e8
893346	13851753	10	5,0	Cylindrical	10	4	20,0	75,0	30	Yes	e8
893347	13851754	12	6,0	Cylindrical	12	4	24,0	75,0	30	Yes	e8
893348	13851755	16	8,0	Cylindrical	16	4	32,0	100,0	30	Yes	e8
893350	13851756	20	10,0	Cylindrical	20	4	40,0	100,0	30	Yes	e8

CARBIDE END-MILL BALL-NOSE 4 FLUTES WELDON



- Solid carbide endmill – ball-nose 4 flutes – 30° helix angle
- Weldon shank DIN 6535HB – centre cut – ball-nose for copy and shape milling
- For 5 axis CNC machine tools applications – no slotting operations
- CUPP coating – PVD ALCrN based coating for universal milling application – high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- For finishing and light roughing operations
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Optimised cutting edge stability



Ref	MDM Code	Diameter mm	Radius mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893351	13851757	3	1,5	Weldon	6	4	6,0	50,0	30	Yes	e8
893352	13851758	4	2,0	Weldon	6	4	8,0	50,0	30	Yes	e8
893353	13851759	5	2,5	Weldon	6	4	10,0	50,0	30	Yes	e8
893354	13851760	6	3,0	Weldon	6	4	12,0	50,0	30	Yes	e8
893355	13851761	8	4,0	Weldon	8	4	16,0	60,0	30	Yes	e8
893356	13851762	10	5,0	Weldon	10	4	20,0	75,0	30	Yes	e8
893357	13851763	12	6,0	Weldon	12	4	24,0	75,0	30	Yes	e8
893358	13851764	16	8,0	Weldon	16	4	32,0	100,0	30	Yes	e8
893359	13851765	20	10,0	Weldon	20	4	40,0	100,0	30	Yes	e8

CUTTING PARAMETERS

BALL-NOSE CARBIDE ENDMILLS

Material	Application Ae (mm)	Vc (m/min)	fz (mm)			
			Ø 3 to 5	Ø 6 to 8	Ø 10 to 12	Ø 16 to 20
Steel <500 N/mm ² (<150 HB)	Full slot	285	0,02	0,04	0,05	0,08
	0,1xD	325	0,04	0,07	0,12	0,16
Steel <1000 N/mm ² (<32 HRC)	Full slot	175	0,02	0,03	0,05	0,07
	0,1xD	200	0,03	0,06	0,10	0,14
Steel <1400 N/mm ² (<44 HRC)	Full slot	155	0,01	0,03	0,04	0,06
	0,1xD	180	0,02	0,05	0,09	0,13
H Steel <2000 N/mm ² (<54 HRC)	Full slot	125	0,01	0,03	0,04	0,06
	0,1xD	145	0,02	0,04	0,07	0,11
Stainless Steel <700 N/mm ² (<205 HB)	Full slot	110	0,02	0,03	0,05	0,07
	0,1xD	125	0,03	0,06	0,10	0,14
Stainless Steel >700 N/mm ² (>205 HB)	Full slot	100	0,01	0,03	0,04	0,06
	0,1xD	115	0,02	0,04	0,07	0,11
Cast Iron <180HB	Full slot	205	0,02	0,04	0,05	0,08
	0,1xD	235	0,04	0,07	0,12	0,16
Cast Iron with Graphite >180HB	Full slot	205	0,02	0,03	0,05	0,07
	0,1xD	235	0,03	0,06	0,10	0,14
Non ferrous / Aluminium	Full slot	360	0,03	0,05	0,07	0,11
	0,1xD	410	0,05	0,09	0,13	0,18
Titanium and HRSA	0,1xD	40	0,03	0,04	0,05	0,07

Recommended	P	M	K
Usable	N	S	H

CARBIDE END-MILL ROUGHING



- Solid carbide endmill – roughing 4 flutes – 30° helix angle
- Straight shank DIN 6535HA – centre cut
- Roughing for high volume of material removal with higher cutting parameter
- CUPP coating – PVD AlCrN based coating for universal milling application – high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- Low risk of tool breakage even with high cutting forces thanks to waved cutting edges
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Big wedge angles for high cutting edge stability



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893361	13851766	3	Cylindrical	6	4	8,0	50,0	30	Yes	e8
893362	13851767	4	Cylindrical	6	4	11,0	50,0	30	Yes	e8
893363	13851768	6	Cylindrical	6	4	20,0	50,0	30	Yes	e8
893364	13851769	8	Cylindrical	8	4	20,0	60,0	30	Yes	e8
893365	13851770	10	Cylindrical	10	4	25,0	75,0	30	Yes	e8
893366	13851771	12	Cylindrical	12	4	30,0	75,0	30	Yes	e8
893367	13851772	16	Cylindrical	16	4	45,0	100,0	30	Yes	e8
893368	13851773	20	Cylindrical	20	4	45,0	100,0	30	Yes	e8

CARBIDE END-MILL ROUGHING WELDON



- Solid carbide endmill – roughing 4 flutes – 30° helix angle
- Weldon shank DIN 6535HB – centre cut
- Roughing for high volume of material removal with higher cutting parameter
- CUPP coating – PVD AlCrN based coating for universal milling application – high wear resistance, tenacity and roughness for a wide range of material application
- Highly appropriate for steel, stainless steel and cast iron
- Can be used in non-ferrous materials, super-alloys and hard-materials
- Low risk of tool breakage even with high cutting forces thanks to waved cutting edges
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Big wedge angles for high cutting edge stability



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance
893370	13851774	3	Weldon	6	4	8,0	50,0	30	Yes	e8
893371	13851775	4	Weldon	6	4	11,0	50,0	30	Yes	e8
893372	13851776	6	Weldon	6	4	20,0	50,0	30	Yes	e8
893373	13851777	8	Weldon	8	4	20,0	60,0	30	Yes	e8
893374	13851778	10	Weldon	10	4	25,0	75,0	30	Yes	e8
893375	13851779	12	Weldon	12	4	30,0	75,0	30	Yes	e8
893376	13851780	16	Weldon	16	4	45,0	100,0	30	Yes	e8
893377	13851781	20	Weldon	20	4	45,0	100,0	30	Yes	e8

ROUGHING CARBIDE ENDMILLS

Material	Application Ae (mm)	Vc (m/min)	ap (mm)	fz (mm)			
				Ø 3 to 5	Ø 6 to 8	Ø 10 to 12	Ø 16 to 20
Steel <500 N/mm ² (<150 HB)	Full slot	185	1xD	0,02	0,04	0,05	0,08
	0,25xD	285	2xD	0,04	0,07	0,12	0,16
Steel <1000 N/mm ² (<32 HRC)	Full slot	115	1xD	0,02	0,03	0,05	0,07
	0,25xD	175	2xD	0,03	0,06	0,10	0,14
Steel <1400 N/mm ² (<44 HRC)	Full slot	95	0,5xD	0,01	0,03	0,04	0,06
	0,15xD	155	2xD	0,02	0,05	0,09	0,13
H Steel <2000 N/mm ² (<54 HRC)	Full slot	70	0,5xD	0,01	0,03	0,04	0,06
	0,15xD	125	2xD	0,02	0,04	0,07	0,11
Stainless Steel <700 N/mm ² (<205 HB)	Full slot	70	0,5xD	0,02	0,03	0,05	0,07
	0,15xD	110	2xD	0,03	0,06	0,10	0,14
Stainless Steel >700 N/mm ² (>205 HB)	Full slot	55	0,5xD	0,01	0,03	0,04	0,06
	0,15xD	100	2xD	0,02	0,04	0,07	0,11
Cast Iron <180HB	Full slot	145	1,5xD	0,02	0,04	0,05	0,08
	0,3xD	205	2xD	0,04	0,07	0,12	0,16
Cast Iron with Graphite >180HB	Full slot	135	1xD	0,02	0,03	0,05	0,07
	0,3xD	200	2xD	0,03	0,06	0,10	0,14
Non ferrous / Aluminium	Full slot	180	2xD	0,03	0,05	0,07	0,11
	0,25xD	360	2xD	0,05	0,09	0,13	0,18
Titanium and HRSA	0,1xD	35	1,5xD	0,03	0,04	0,05	0,07

Recommended	P	M	K
Usable	N	S	H

CARBIDE END-MILL FOR ALUMINIUM 1 FLUTE



- Solid carbide endmill – for aluminium and non-ferrous materials – 1 flute – 23° helix angle
- Straight shank DIN 6535HA – centre cut
- High positive cutting edge for smooth cutting and great finishing aspect
- Polished cutting edge and special design to avoid sticking material and ease chips evacuation
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- Full slots possible in aluminium and plastics



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance	Type
893379	13851782	2	Cylindrical	3	1	8,0	50,0	23	Yes	e8	Aluminium
893380	13851783	3	Cylindrical	6	1	12,4	50,0	23	Yes	e8	Aluminium
893381	13851784	4	Cylindrical	6	1	12,4	50,0	23	Yes	e8	Aluminium
893382	13851785	5	Cylindrical	6	1	15,0	50,0	23	Yes	e8	Aluminium
893383	13851786	6	Cylindrical	6	1	15,0	50,0	23	Yes	e8	Aluminium
893384	13851787	8	Cylindrical	8	1	20,0	75,0	23	Yes	e8	Aluminium
893385	13851788	10	Cylindrical	10	1	22,0	100,0	23	Yes	e8	Aluminium
893386	13851789	12	Cylindrical	12	1	28,0	100,0	23	Yes	e8	Aluminium

CARBIDE END-MILL FOR ALUMINIUM 2 FLUTES

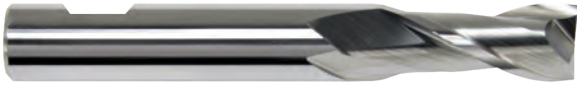


- Solid carbide endmill – for aluminium and Non-ferrous materials – 2 flutes – 35° helix angle
- Straight shank DIN 6535HA – centre cut
- High positive cutting edge for smooth cutting and great finishing aspect
- Polished cutting edge and special design to avoid sticking material and ease chips evacuation
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance	Type
893388	13851790	2	Cylindrical	4	2	3,0	50,0	35	Yes	e8	Aluminium
893389	13851791	3	Cylindrical	6	2	8,0	50,0	35	Yes	e8	Aluminium
893390	13851792	4	Cylindrical	6	2	11,0	50,0	35	Yes	e8	Aluminium
893391	13851793	5	Cylindrical	6	2	13,0	50,0	35	Yes	e8	Aluminium
893392	13851794	6	Cylindrical	6	2	16,0	50,0	35	Yes	e8	Aluminium
893393	13851795	8	Cylindrical	8	2	20,0	60,0	35	Yes	e8	Aluminium
893394	13851796	10	Cylindrical	10	2	25,0	75,0	35	Yes	e8	Aluminium
893395	13851797	12	Cylindrical	12	2	30,0	75,0	35	Yes	e8	Aluminium
893396	13851798	16	Cylindrical	16	2	45,0	100,0	35	Yes	e8	Aluminium
893397	13851799	20	Cylindrical	20	2	45,0	100,0	35	Yes	e8	Aluminium

CARBIDE END-MILL FOR ALUMINIUM 2 FLUTES WELDON



- Solid carbide endmill – for aluminium and non-ferrous materials – 2 flutes – 35° helix angle
- Weldon shank DIN 6535HB – centre cut
- High positive cutting edge for smooth cutting and great finishing aspect
- Polished cutting edge and special design to avoid sticking material and ease chips evacuation
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance	Type
893399	13851800	2	Weldon	4	2	3,0	50,0	35	Yes	e8	Aluminium
893400	13851801	3	Weldon	6	2	8,0	50,0	35	Yes	e8	Aluminium
893401	13851802	4	Weldon	6	2	11,0	50,0	35	Yes	e8	Aluminium
893402	13851803	5	Weldon	6	2	13,0	50,0	35	Yes	e8	Aluminium
893403	13851804	6	Weldon	6	2	16,0	50,0	35	Yes	e8	Aluminium
893404	13851805	8	Weldon	8	2	20,0	60,0	35	Yes	e8	Aluminium
893405	13851806	10	Weldon	10	2	25,0	75,0	35	Yes	e8	Aluminium
893406	13851807	12	Weldon	12	2	30,0	75,0	35	Yes	e8	Aluminium
893407	13851808	16	Weldon	16	2	45,0	100,0	35	Yes	e8	Aluminium
893408	13851809	20	Weldon	20	2	45,0	100,0	35	Yes	e8	Aluminium

CARBIDE END-MILL FOR ALUMINIUM 3 FLUTES

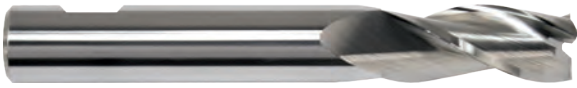


- Solid carbide endmill – for aluminium and non-ferrous materials – 3 flutes – 35° helix angle
- Straight shank DIN 6535HA – centre cut
- High cutting performance and great finishing aspect
- High positive cutting edge for smooth cutting and great finishing aspect
- Polished cutting edge and special design to avoid sticking material and ease chips evacuation
- Coolant mandatory for full slot operations!
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- 35° helix angle to give higher performance, lifetime and cutting parameter



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance	Type
893410	13851810	2	Cylindrical	4	3	3,0	50,0	35	Yes	e8	Aluminium
893411	13851811	3	Cylindrical	6	3	8,0	50,0	35	Yes	e8	Aluminium
893412	13851812	4	Cylindrical	6	3	11,0	50,0	35	Yes	e8	Aluminium
893413	13851813	5	Cylindrical	6	3	13,0	50,0	35	Yes	e8	Aluminium
893414	13851814	6	Cylindrical	6	3	16,0	50,0	35	Yes	e8	Aluminium
893415	13851815	8	Cylindrical	8	3	20,0	60,0	35	Yes	e8	Aluminium
893416	13851816	10	Cylindrical	10	3	25,0	75,0	35	Yes	e8	Aluminium
893417	13851817	12	Cylindrical	12	3	30,0	75,0	35	Yes	e8	Aluminium
893418	13851818	16	Cylindrical	16	3	45,0	100,0	35	Yes	e8	Aluminium
893419	13851819	20	Cylindrical	20	3	45,0	100,0	35	Yes	e8	Aluminium

CARBIDE END-MILL FOR ALUMINIUM 3 FLUTES WELDON



- Solid carbide endmill – for aluminium and Non-ferrous materials – 3 flutes – 35° helix angle
- Straight shank DIN 6535HA – centre cut
- High cutting performance and great finishing aspect
- High positive cutting edge for smooth cutting and great finishing aspect
- Polished cutting edge and special design to avoid sticking material and ease chips evacuation
- Coolant mandatory for full slot operations!
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- 35° helix angle to give higher performance, lifetime and cutting parameter



Ref	MDM Code	Diameter mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance	Type
893421	13851820	2	Weldon	4	3	3,0	50,0	35	Yes	e8	Aluminium
893422	13851821	3	Weldon	6	3	8,0	50,0	35	Yes	e8	Aluminium
893423	13851822	4	Weldon	6	3	11,0	50,0	35	Yes	e8	Aluminium
893424	13851823	5	Weldon	6	3	13,0	50,0	35	Yes	e8	Aluminium
893425	13851824	6	Weldon	6	3	16,0	50,0	35	Yes	e8	Aluminium
893426	13851825	8	Weldon	8	3	20,0	60,0	35	Yes	e8	Aluminium
893427	13851826	10	Weldon	10	3	25,0	75,0	35	Yes	e8	Aluminium
893428	13851827	12	Weldon	12	3	30,0	75,0	35	Yes	e8	Aluminium
893429	13851828	16	Weldon	16	3	45,0	100,0	35	Yes	e8	Aluminium
893430	13851829	20	Weldon	20	3	45,0	100,0	35	Yes	e8	Aluminium

CARBIDE END-MILL ALUMINIUM 3 FLUTES RADIUS CORNER



- Solid carbide endmill with radius corner – for aluminium and non-ferrous materials – 3 flutes – 35° helix angle
- Straight shank DIN 6535HA – centre cut
- High cutting performance and great finishing aspect
- High positive cutting edge for smooth cutting and great finishing aspect
- Polished cutting edge and special design to avoid sticking material and ease chips evacuation
- Coolant mandatory for full slot operations!
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime
- 35° helix angle to give higher performance, lifetime and cutting parameter



Ref	MDM Code	Diameter mm	Radius mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance	Type
893440	13851837	6	1,0	Cylindrical	6	3	16,0	50,0	35	Yes	e8	Aluminium radius corner
893441	13851838	8	2,0	Cylindrical	8	3	20,0	60,0	35	Yes	e8	Aluminium radius corner
893442	13851839	10	1,0	Cylindrical	10	3	25,0	75,0	35	Yes	e8	Aluminium radius corner
893443	13851840	10	2,0	Cylindrical	10	3	25,0	75,0	35	Yes	e8	Aluminium radius corner
893444	13851841	12	1,0	Cylindrical	12	3	30,0	75,0	35	Yes	e8	Aluminium radius corner
893445	13851842	12	2,0	Cylindrical	12	3	30,0	75,0	35	Yes	e8	Aluminium radius corner
893446	13851843	12	3,0	Cylindrical	12	3	30,0	75,0	35	Yes	e8	Aluminium radius corner
893447	13851844	16	1,0	Cylindrical	16	3	45,0	100,0	35	Yes	e8	Aluminium radius corner
893448	13851845	16	2,0	Cylindrical	16	3	45,0	100,0	35	Yes	e8	Aluminium radius corner
893449	13851846	16	3,0	Cylindrical	16	3	45,0	100,0	35	Yes	e8	Aluminium radius corner
893450	13851847	16	4,0	Cylindrical	16	3	45,0	100,0	35	Yes	e8	Aluminium radius corner

CUTTING PARAMETERS

CARBIDE ENDMILLS FOR ALUMINIUM

Material	Application Ae (mm)	Vc (m/min)	ap (mm)	fz (mm)			
				Ø 3 to 5	Ø 6 to 8	Ø 10 to 12	Ø 16 to 20
Aluminium <8% Si	Full slot	550	1,5xD	0,03	0,06	0,10	0,16
	0,25xD	720	2,5xD	0,05	0,09	0,15	0,22
Aluminium >8% Si	Full slot	440	1xD	0,03	0,06	0,10	0,16
	0,25xD	570	2,5xD	0,05	0,09	0,15	0,22
Copper	Full slot	240	1,5xD	0,02	0,05	0,09	0,14
	0,25xD	360	2,5xD	0,04	0,08	0,13	0,20
Thermoplast	Full slot	180	2xD	0,04	0,07	0,11	0,20
	0,25xD	260	2,5xD	0,09	0,12	0,17	0,25

Recommended	N
Usable	X

CARBIDE END-MILL ALUMINIUM BALL-NOSE



- Solid carbide endmill – ball-nose or aluminium and non-ferrous materials – 2 flutes – 35° helix angle
- Straight shank DIN 6535HA – centre cut
- Ball-nose for copy and shape milling
- High positive cutting edge for smooth cutting and great finishing aspect
- Polished cutting edge and special design to avoid sticking material and ease chips evacuation
- Coolant highly recommended to ease chips evacuation, reduce tool heat and increase lifetime



Ref	MDM Code	Diameter mm	Radius mm	Type of Tail	Tail Diameter mm	Number of Teeth	Length of Cut mm	Total Length mm	Angle of Helix °	Centre Cut	Tolerance	Type
893432	13851830	3	1,5	Cylindrical	6	2	6,0	60,0	35	Yes	e8	Aluminium ball-nose
893433	13851831	4	2,0	Cylindrical	6	2	8,0	60,0	35	Yes	e8	Aluminium ball-nose
893434	13851832	6	3,0	Cylindrical	6	2	12,0	60,0	35	Yes	e8	Aluminium ball-nose
893435	13851833	8	4,0	Cylindrical	8	2	16,0	75,0	35	Yes	e8	Aluminium ball-nose
893436	13851834	10	5,0	Cylindrical	10	2	20,0	75,0	35	Yes	e8	Aluminium ball-nose
893437	13851835	12	6,0	Cylindrical	12	2	24,0	75,0	35	Yes	e8	Aluminium ball-nose
893438	13851836	16	8,0	Cylindrical	16	2	32,0	100,0	35	Yes	e8	Aluminium ball-nose

CUTTING PARAMETERS

BALL-NOSE ENDMILLS FOR ALUMINIUM

Material	Application Ae (mm)	Vc (m/min)	fz (mm)			
			Ø 3 to 5	Ø 6 to 8	Ø 10 to 12	Ø 16 to 20
Aluminium <8% Si	0,15xD	550	0,03	0,06	0,10	0,16
	0,05xD	720	0,05	0,09	0,15	0,22
Aluminium >8% Si	0,15xD	440	0,03	0,06	0,10	0,16
	0,05xD	570	0,05	0,09	0,15	0,22
Copper	0,15xD	240	0,02	0,05	0,09	0,14
	0,05xD	360	0,04	0,08	0,13	0,20
Thermoplast	0,15xD	180	0,04	0,07	0,11	0,20
	0,05xD	260	0,09	0,12	0,17	0,25

Recommended	N
Usable	X

QUALITY

Our solid carbide products follow a rigorous quality process at all key stages of the development.

- Factories are audited on their quality management system and production process.
- Social audits are also conducted to ensure that products are manufactured in compliance with applicable laws regarding working conditions.
- Products are validated by our experts following our own specifications. They are also controlled at different stages of the manufacturing process and pre-shipment inspections are carried out by specialised independent organisations.



RUBIX CODE CONVERSION TABLE

Rubix Code	MDM Code	UK (GB)	Rubix Code	MDM Code	UK (GB)	Rubix Code	MDM Code	UK (GB)	Rubix Code	MDM Code	UK (GB)
892735	13851153	2518104	892833	13851252	2517993	892932	13851350	2517888	893031	13851449	2517787
892736	13851155	2518103	892834	13851253	2517992	892933	13851351	2517887	893032	13851450	2503612
892737	13851156	2518102	892835	13851254	2517991	892934	13851352	2517886	893033	13851451	2517786
892738	13851157	2518101	892836	13851255	2517990	892935	13851353	2517885	893034	13851452	2517785
892739	13851158	2518100	892837	13851256	2517989	892936	13851354	2517884	893035	13851453	2517784
892740	13851159	2518099	892838	13851257	2517988	892937	13851355	2517883	893036	13851454	2517783
892741	13851160	2518098	892839	13851258	2517987	892938	13851356	2517882	893037	13851455	2517782
892742	13851161	2518097	892841	13851259	2517986	892939	13851357	2517881	893038	13851456	2517781
892743	13851162	2518096	892842	13851260	2517985	892940	13851358	2517880	893039	13851457	2517780
892744	13851163	2518095	892843	13851261	2517984	892941	13851359	2517879	893040	13851458	2517779
892745	13851164	2518094	892844	13851262	2517983	892942	13851360	2517878	893041	13851459	2517778
892746	13851165	2518092	892845	13851263	2517982	892943	13851361	2517877	893042	13851460	2517776
892747	13851166	2518091	892846	13851264	2517981	892944	13851362	2517876	893043	13851461	2517775
892748	13851167	2518090	892847	13851265	2517980	892945	13851363	2517874	893044	13851462	2517774
892749	13851168	2518089	892848	13851266	2517979	892947	13851364	2517873	893045	13851463	2517773
892750	13851169	2518088	892849	13851267	2517978	892948	13851365	2517872	893046	13851464	2517772
892751	13851170	2518087	892850	13851268	2517977	892949	13851366	2517871	893047	13851465	2517771
892752	13851171	2518086	892851	13851269	2517976	892950	13851367	2517870	893048	13851466	2517770
892753	13851172	2518085	892852	13851270	2517975	892951	13851368	2517869	893049	13851467	2517769
892754	13851173	2518084	892853	13851271	2517974	892952	13851369	2517868	893050	13851468	2517768
892755	13851174	2518083	892854	13851272	2517973	892953	13851370	2517867	893051	13851469	2517767
892756	13851175	2518082	892855	13851273	2517972	892954	13851371	2517866	893053	13851470	2517766
892757	13851176	2518081	892856	13851274	2517971	892955	13851372	2517865	893054	13851471	2503611
892758	13851177	2518079	892857	13851275	2517970	892956	13851373	2517864	893055	13851472	2503610
892759	13851178	2518074	892858	13851276	2517969	892957	13851374	2517863	893056	13851473	2503609
892760	13851179	2518070	892859	13851277	2517968	892958	13851375	2517862	893057	13851474	2503608
892761	13851180	2518069	892860	13851278	2517967	892959	13851376	2517861	893058	13851475	2517765
892762	13851181	2518068	892861	13851279	2517966	892960	13851377	2517860	893059	13851476	2503607
892763	13851182	2518067	892862	13851280	2517965	892961	13851378	2517859	893060	13851477	2503606
892764	13851183	2518066	892863	13851281	2517964	892962	13851379	2517858	893061	13851478	2503605
892765	13851184	2518065	892864	13851282	2517962	892963	13851380	2517855	893062	13851479	2503603
892766	13851185	2518064	892865	13851283	2517961	892964	13851381	2517854	893063	13851480	2517764
892767	13851186	2518063	892866	13851284	2517960	892965	13851382	2517853	893064	13851481	2503602
892768	13851187	2518062	892867	13851285	2517959	892966	13851383	2517852	893065	13851482	2503601
892769	13851188	2518061	892868	13851286	2517957	892967	13851384	2517851	893066	13851483	2503600
892770	13851189	2518060	892869	13851287	2517956	892968	13851385	2517850	893067	13851484	2503599
892771	13851190	2518059	892870	13851288	2517955	892969	13851386	2517849	893068	13851485	2517763
892772	13851191	2518058	892871	13851289	2517954	892970	13851387	2517848	893069	13851486	2503598
892773	13851192	2518056	892872	13851290	2517953	892971	13851388	2517847	893070	13851487	2503597
892774	13851193	2518055	892873	13851291	2517952	892972	13851389	2517846	893071	13851488	2503596
892775	13851194	2518054	892874	13851292	2517951	892973	13851390	2517845	893072	13851489	2503595
892776	13851195	2518053	892875	13851293	2517950	892974	13851391	2517844	893073	13851490	2517762
892777	13851196	2518052	892876	13851294	2517949	892975	13851392	2517843	893074	13851491	2503594
892778	13851197	2518051	892877	13851295	2517948	892976	13851393	2517842	893075	13851492	2503593
892779	13851198	2518050	892878	13851296	2517947	892977	13851395	2517841	893076	13851493	2503592
892780	13851199	2518049	892879	13851297	2517946	892978	13851396	2517840	893077	13851494	2503591
892781	13851200	2518048	892880	13851298	2517945	892979	13851397	2517839	893078	13851495	2517761
892782	13851201	2518047	892881	13851299	2517940	892980	13851398	2517838	893079	13851496	2503589
892783	13851202	2518046	892882	13851300	2517939	892981	13851399	2517837	893080	13851497	2503586
892784	13851203	2518045	892883	13851301	2517938	892982	13851400	2517836	893081	13851498	2503585
892785	13851204	2518044	892884	13851302	2517937	892983	13851401	2517835	893082	13851499	2503584
892786	13851205	2518043	892885	13851303	2517936	892984	13851402	2517834	893083	13851500	2517760
892787	13851206	2518042	892886	13851304	2517935	892985	13851403	2517833	893084	13851501	2503583
892788	13851207	2518041	892887	13851305	2517934	892986	13851404	2517832	893085	13851502	2503582
892789	13851208	2518039	892888	13851306	2517932	892987	13851405	2517831	893086	13851503	2503581
892790	13851209	2518038	892889	13851307	2517931	892988	13851406	2517830	893087	13851504	2503580
892791	13851210	2518037	892890	13851308	2517930	892989	13851407	2517829	893088	13851505	2517759
892792	13851211	2518036	892891	13851309	2517929	892990	13851408	2517828	893089	13851506	2503579
892793	13851212	2518035	892892	13851310	2517928	892991	13851409	2517827	893090	13851507	2503578
892794	13851213	2518034	892893	13851311	2517927	892992	13851410	2517826	893091	13851508	2503577
892795	13851214	2518033	892894	13851312	2517926	892993	13851411	2517825	893092	13851509	2503576
892796	13851215	2518032	892895	13851313	2517925	892994	13851412	2517824	893093	13851510	2517758
892797	13851216	2518031	892896	13851314	2517924	892995	13851413	2517823	893094	13851511	2503575
892798	13851217	2518030	892897	13851315	2517923	892996	13851414	2517822	893095	13851512	2503574
892799	13851218	2518025	892898	13851316	2517922	892997	13851415	2517821	893096	13851513	2503572
892800	13851219	2518024	892899	13851317	2517921	892998	13851416	2517820	893097	13851514	2503570
892801	13851220	2518023	892900	13851318	2517920	892999	13851417	2517819	893098	13851515	2517757
892802	13851221	2518022	892901	13851319	2517919	893000	13851418	2517818	893099	13851516	2503569
892803	13851222	2518021	892902	13851320	2517918	893001	13851419	2517817	893100	13851517	2503568
892804	13851223	2518020	892903	13851321	2517917	893002	13851420	2517816	893101	13851518	2503567
892805	13851224	2518019	892904	13851322	2517916	893003	13851421	2517815	893102	13851519	2503566
892806	13851225	2503617	892905	13851323	2517915	893004	13851422	2517814	893103	13851520	2517756
892807	13851226	2518018	892906	13851324	2517913	893005	13851423	2517813	893104	13851521	2503565
892808	13851227	2518017	892907	13851325	2517912	893006	13851424	2517812	893105	13851522	2503564
892809	13851228	2518016	892908	13851326	2517911	893007	13851425	2517811	893106	13851523	2503563
892810	13851229	2518015	892909	13851327	2517910	893008	13851426	2517810	893107	13851524	2503562
892811	13851230	2518014	892910	13851328	2517909	893009	13851427	2517809	893108	13851525	2517755
892812	13851231	2518013	892911	13851329	2517908	893010	13851428	2517808	893109	13851526	2503561
892813	13851232	2518012	892912	13851330	2503615	893011	13851429	2517806	893110	13851527	2503560
892814	13851233	2518011	892913	13851331	2517907	893012	13851430	2517805	893111	13851528	2503559
892815	13851234	2518010	892914	13851332	2517906	893013	13851431	2517804	893112	13851529	2503558
892816	13851235	2518009	892915	13851333	2517905	893014	13851432	2517803			

Rubix Code	MDM Code	UK (GB)
893130	13851548	2503545
893131	13851549	2517749
893132	13851550	2503544
893133	13851551	2517748
893134	13851552	2503543
893135	13851553	2517747
893136	13851554	2503542
893137	13851555	2517746
893138	13851556	2503541
893139	13851557	2503540
893140	13851558	2503539
893141	13851559	2503538
893142	13851560	2503537
893143	13851561	2503536
893144	13851562	2503535
893145	13851564	2503534
893146	13851565	2503533
893147	13851566	2503532
893148	13851567	2503531
893149	13851568	2503530
893150	13851569	2503529
893151	13851570	2503528
893152	13851571	2503527
893153	13851572	2503526
893155	13851573	2517745
893156	13851574	2517744
893157	13851575	2517743
893158	13851576	2517742
893159	13851577	2517741
893160	13851578	2517740
893161	13851579	2517739
893162	13851580	2517738
893163	13851581	2517737
893165	13851582	2517736
893166	13851583	2517735
893167	13851584	2517734
893168	13851585	2517733
893169	13851586	2517732
893170	13851587	2517731
893171	13851588	2517730
893172	13851589	2517729
893174	13851590	2517728
893175	13851591	2503525
893176	13851592	2503524
893177	13851593	2503523
893178	13851594	2503522
893179	13851595	2503521
893180	13851596	2503520
893181	13851597	2503519
893182	13851598	2503518
893183	13851599	2503517
893184	13851600	2503516
893185	13851601	2503515
893186	13851602	2503513
893187	13851603	2503512
893188	13851604	2503511
893189	13851605	2503509
893190	13851606	2503507
893191	13851609	2503506
893192	13851610	2503505
893193	13851611	2503504
893194	13851612	2503503
893196	13851613	2503502
893197	13851614	2503500
893198	13851615	2503499
893199	13851616	2503498
893200	13851617	2503497
893201	13851618	2503496
893202	13851619	2503495
893203	13851620	2503494
893204	13851621	2503493
893205	13851622	2503492
893206	13851623	2503491
893207	13851624	2503490
893208	13851625	2503489
893209	13851626	2503488
893210	13851627	2503487
893211	13851628	2503486
893212	13851629	2503485
893213	13851630	2503484
893214	13851631	2503483
893215	13851632	2503481
893217	13851633	2517726
893218	13851634	2517725
893219	13851635	2517724
893220	13851636	2517723
893221	13851637	2517722
893222	13851638	2517721
893223	13851639	2517720
893224	13851640	2517719
893225	13851641	2517718
893227	13851642	2517717
893228	13851643	2517716
893229	13851644	2517715
893230	13851645	2517714
893231	13851646	2517713
893232	13851647	2517712
893233	13851648	2517711

Rubix Code	MDM Code	UK (GB)
893234	13851649	2517710
893235	13851650	2517709
893237	13851651	2517708
893238	13851652	2517707
893239	13851653	2517706
893240	13851654	2517705
893241	13851655	2517704
893242	13851656	2517703
893243	13851657	2517702
893244	13851658	2517701
893245	13851659	2517700
893247	13851661	2517697
893248	13851662	2517696
893249	13851663	2517695
893250	13851664	2517694
893251	13851665	2517693
893252	13851666	2517692
893253	13851667	2517691
893254	13851668	2517690
893255	13851669	2517689
893257	13851670	2517688
893258	13851671	2517687
893259	13851672	2517686
893260	13851673	2517685
893261	13851674	2517683
893262	13851675	2517682
893263	13851676	2517681
893264	13851677	2517680
893265	13851678	2517679
893267	13851679	2517677
893268	13851680	2517676
893269	13851681	2517675
893270	13851682	2517674
893271	13851683	2517673
893272	13851684	2517672
893273	13851685	2517671
893274	13851686	2517670
893275	13851687	2517669
893277	13851688	2503480
893278	13851689	2503479
893279	13851690	2503478
893280	13851691	2503477
893281	13851692	2503476
893282	13851693	2503475
893283	13851694	2503473
893284	13851695	2503472
893285	13851696	2503471
893286	13851697	2503470
893287	13851698	2503469
893288	13851699	2503468
893289	13851700	2503467
893290	13851701	2503466
893291	13851702	2503465
893292	13851703	2503464
893293	13851704	2503463
893294	13851705	2503462
893295	13851706	2503461
893296	13851707	2503460
893297	13851708	2503459
893299	13851709	2503458
893300	13851710	2503457
893301	13851711	2503456
893302	13851712	2503455
893303	13851713	2503454
893304	13851714	2503453
893305	13851715	2503452
893306	13851716	2503451
893307	13851717	2503450
893308	13851718	2503449
893309	13851719	2503448
893310	13851720	2503447
893311	13851721	2503446
893312	13851722	2503445
893313	13851723	2503444
893314	13851724	2503443
893315	13851725	2503442
893316	13851726	2503441
893317	13851727	2503440
893318	13851728	2503436
893319	13851729	2503435
893321	13851730	2517667
893322	13851731	2517666
893323	13851732	2517665
893324	13851733	2517664
893325	13851734	2517663
893326	13851735	2517662
893327	13851736	2517661
893328	13851737	2517660
893329	13851738	2517658
893331	13851739	2517657
893332	13851740	2517656
893333	13851741	2517655
893334	13851742	2517654
893335	13851743	2517653
893336	13851744	2517652
893337	13851745	2517651
893338	13851746	2517650
893339	13851747	2517649

Rubix Code	MDM Code	UK (GB)
893341	13851748	2503434
893342	13851749	2503433
893343	13851750	2503432
893344	13851751	2503431
893345	13851752	2503430
893346	13851753	2503429
893347	13851754	2503428
893348	13851755	2503427
893350	13851756	2503426
893351	13851757	2503425
893352	13851758	2503424
893353	13851759	2503423
893354	13851760	2503422
893355	13851761	2503421
893356	13851762	2503420
893357	13851763	2503419
893358	13851764	2503418
893359	13851765	2503417
893361	13851766	2517648
893362	13851767	2517647
893363	13851768	2517646
893364	13851769	2517644
893365	13851770	2517643
893366	13851771	2517642
893367	13851772	2517641
893368	13851773	2517640
893370	13851774	2517639
893371	13851775	2517638
893372	13851776	2517637
893373	13851777	2517636
893374	13851778	2517635
893375	13851779	2517634
893376	13851780	2517633
893377	13851781	2517632
893379	13851782	2517631
893380	13851783	2517630
893381	13851784	2517629
893382	13851785	2517628
893383	13851786	2517627
893384	13851787	2517625
893385	13851788	2517624
893386	13851789	2517623
893388	13851790	2517622
893389	13851791	2517621
893390	13851792	2517620
893391	13851793	2517619
893392	13851794	2517618
893393	13851795	2517617
893394	13851796	2517616
893395	13851797	2517615
893396	13851798	2517614
893397	13851799	2517613
893399	13851800	2517612
893400	13851801	2517611
893401	13851802	2517610
893402	13851803	2517609
893403	13851804	2517607
893404	13851805	2517606
893405	13851806	2517605
893406	13851807	2517604
893407	13851808	2517603
893408	13851809	2517602
893410	13851810	2517601
893411	13851811	2517600
893412	13851812	2517599
893413	13851813	2517598
893414	13851814	2517597
893415	13851815	2517596
893416	13851816	2517595
893417	13851817	2517594
893418	13851818	2517593
893419	13851819	2517592
893421	13851820	2503416
893422	13851821	2517591
893423	13851822	2517590
893424	13851823	2517589
893425	13851824	2517588
893426	13851825	2517587
893427	13851826	2517586
893428	13851827	2517585
893429	13851828	2517584
893430	13851829	2517583
893432	13851830	2503415
893433	13851831	2503414
893434	13851832	2503413
893435	13851833	2503412
893436	13851834	2503410
893437	13851835	2503409
893438	13851836	2503408
893440	13851837	2503407
893441	13851838	2503406
893442	13851839	2503404
893443	13851840	2503403
893444	13851841	2503402
893445	13851842	2503401
893446	13851843	2503400
893447	13851844	2503399
893448	13851845	2503398
893449	13851846	2503397
893450	13851847	250339

Rubix Tooling & Metrology

Fabriekstraat 42

7005 AR Doetinchem

E: verkooptooling@rubix.com

T: +31 (0)314 34 30 00

