



The new standard for milling

AE-VMS

Volume 4



KEY FEATURES: AE-VMS

1 Dularise coating

2 Positive rake angle

3 New flute form

4 High rigidity

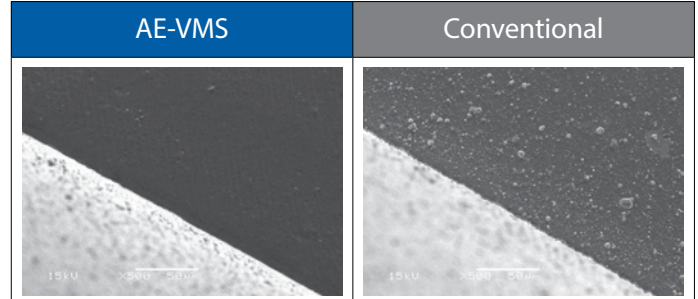
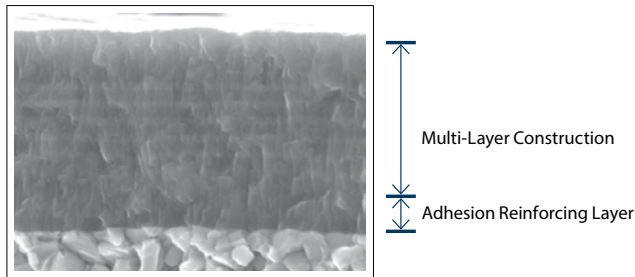
5 Solid carbide



AE-VMS: THE A-BRAND END MILL

Duarise coating

The new duarise coating provides excellent lubricity, superior friction-resistance and high oxidation temperature. Multi-layer construction minimizes the thermal cracks that often occurred while using water-soluble oil.



Smoothing surface coating treatment made an excellent quality of surface finishing.

Positive rake angle

A stable performance is gathered by reducing cutting forces as a result of a sharp and positive rake angle.

New flute form

The new flute form with its excellent chip evacuation properties enables stable milling and the suppression of burrs.

Figure 1. 10% lower cutting force versus the competitors

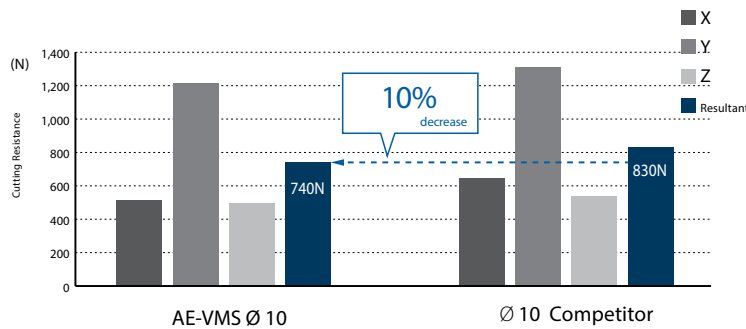
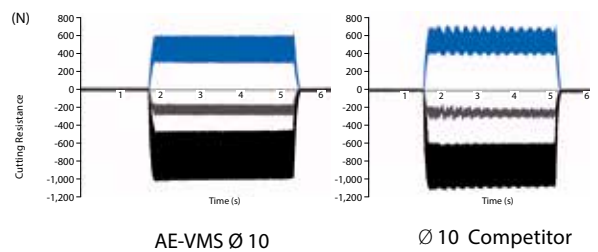
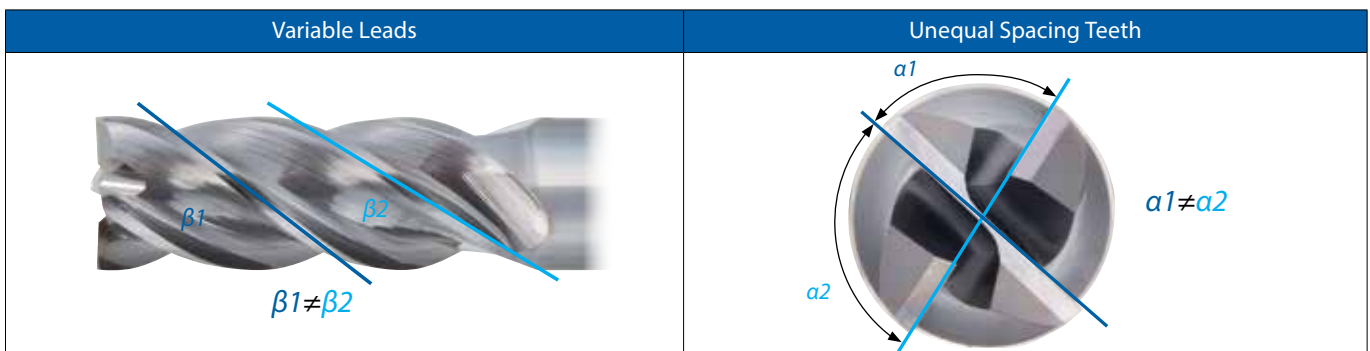


Figure 2. Stable performance even when the overhang length is L/D=4



High rigidity

The unequal spacing of teeth and variable-lead geometry enables stable and high efficiency milling and the suppression of vibration.



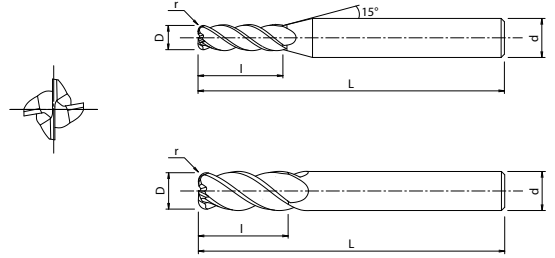
AE-VMS

Milling | Solid carbide

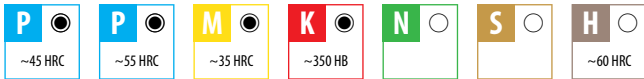


Type 1

Type 2



- First choice in quality and performance
- Carbide end mill with Duarise coating
- Wide variety in applications and work materials
- 4 flutes, variable helix and unequal spacing



EDP	D	R	L	l	d	Type	Price
8555830	3	-	60	8	6	1	
8556050	3	0,2	60	8	6	1	
8556060	3	0,5	60	8	6	1	
8555840	4	-	60	11	6	1	
8556070	4	0,2	60	11	6	1	
8556080	4	0,5	60	11	6	1	
8556090	4	1	60	11	6	1	
8555850	5	-	60	13	6	1	
8556100	5	0,2	60	13	6	1	
8556110	5	0,5	60	13	6	1	
8556120	5	1	60	13	6	1	
8555860	6	-	60	13	6	2	
8556130	6	0,3	60	13	6	2	
8556140	6	0,5	60	13	6	2	
8556150	6	1	60	13	6	2	
8555880	8	-	70	19	8	2	
8556160	8	0,3	70	19	8	2	
8556170	8	0,5	70	19	8	2	
8556180	8	1	70	19	8	2	
8556190	8	1,5	70	19	8	2	
8556200	8	2	70	19	8	2	
8555900	10	-	80	22	10	2	
8556210	10	0,3	80	22	10	2	
8556220	10	0,5	80	22	10	2	
8556230	10	1	80	22	10	2	
8556240	10	1,5	80	22	10	2	
8556250	10	2	80	22	10	2	
8556260	10	3	80	22	10	2	
8555920	12	-	90	26	12	2	
8556270	12	0,5	90	26	12	2	
8556280	12	1	90	26	12	2	
8556290	12	1,5	90	26	12	2	
8556300	12	2	90	26	12	2	
8556310	12	3	90	26	12	2	
8555960	16	-	100	32	16	2	
8556000	20	-	110	40	20	2	
8556010	25	-	120	50	25	2	

Milling | Solid carbide

CUTTING CONDITIONS

Milling | Endmills | Cutting conditions

AE-VMS & AE-VMSS

Square Type

Side milling

Cutting Speed	Mild Steel • Carbon Steel • Cast Iron SS400 • S55C • FC250 ~750N/mm ²		Alloy Steel • Tool Steel SCM • SKS • SKD ~30HRC		Prehardened Steel • Hardened Steel PX5 • NAK80 30~45HRC		Stainless Steel ≤200HB					
	130 (100-150) (m/min)		120 (100-150) (m/min)		100 (80-120) (m/min)		80 (60-100) (m/min)					
Ø	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)				
3	13.800	1.660	12.700	1.070	10.600	760	8.000	480				
4	10.400	1.830	9.600	1.150	8.000	800	6.000	530				
5	8.300	1.990	7.600	1.220	6.400	900	4.800	560				
6	6.900	2.070	6.400	1.540	5.300	1.060	4.200	640				
8	5.200	1.770	4.800	1.540	4.000	1.040	3.200	610				
10	4.100	1.640	3.800	1.370	3.200	900	2.500	580				
12	3.500	1.400	3.200	1.280	2.700	760	2.100	530				
16	2.600	1.250	2.400	1.060	2.000	640	1.400	450				
20	2.100	1.010	1.900	840	1.600	510	1.100	370				
25	1.700	820	1.500	660	1.300	420	900	310				
Depth of cut			<table border="1"> <tr><td>ap</td><td>ae</td></tr> <tr><td>1,5D</td><td>0,2D</td></tr> </table>		ap	ae	1,5D	0,2D				
ap	ae											
1,5D	0,2D											

Slotting

Cutting Speed	Mild Steel • Carbon Steel • Cast Iron SS400 • S55C • FC250 ~750N/mm ²		Alloy Steel • Tool Steel SCM • SKS • SKD ~30HRC		Prehardened Steel • Hardened Steel PX5 • NAK80 30~45HRC		Stainless Steel ≤200HB									
	100 (80-120) (m/min)		90 (70-110) (m/min)		80 (60-100) (m/min)		70 (50-80) (m/min)									
Ø	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)								
3	10.600	930	9.600	690	8.500	510	7.400	470								
4	8.000	960	7.200	720	6.400	510	5.600	490								
5	6.400	1.020	5.700	800	5.100	610	4.500	560								
6	5.300	1.060	4.800	900	4.200	670	3.700	370								
8	4.000	910	3.600	720	3.200	640	2.800	370								
10	3.200	840	2.900	700	2.500	550	2.200	350								
12	2.700	810	2.400	670	2.100	550	1.900	330								
16	2.000	600	1.800	500	1.600	420	1.200	310								
20	1.600	480	1.400	390	1.300	340	900	250								
25	1.300	390	1.100	310	1.000	260	600	170								
Depth of cut			<table border="1"> <tr><td>ap</td></tr> <tr><td>1D</td></tr> </table>		ap	1D			<table border="1"> <tr><td>Dc</td><td>ap</td></tr> <tr><td>Dc≤6</td><td>0,5D</td></tr> <tr><td>Dc>6</td><td>1D</td></tr> </table>		Dc	ap	Dc≤6	0,5D	Dc>6	1D
ap																
1D																
Dc	ap															
Dc≤6	0,5D															
Dc>6	1D															

1. The above milling condition is a guideline for the overhang length is 3xD.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
6. Please use water-soluble oil when machining stainless steel.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified.



CUTTING CONDITIONS

Milling | Endmills | Cutting conditions

AE-VMS & AE-VMSS

Radius Type

Side milling

Cutting Speed	Mild Steel • Carbon Steel • Cast Iron SS400 • S55C • FC250 ~750N/mm ²		Alloy Steel • Tool Steel SCM • SKS • SKD ~30HRC		Prehardened Steel • Hardened Steel PX5 • NAK80 30~45HRC		Stainless Steel ≤200HB					
	130 (100-150) (m/min)		120 (100-150) (m/min)		100 (80-120) (m/min)		80 (60-100) (m/min)					
∅	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)				
3	13.800	1.410	12.700	910	10.600	610	8.000	380				
4	10.400	1.560	9.600	980	8.000	640	6.000	480				
5	8.300	1.690	7.600	1.030	6.400	720	4.800	450				
6	6.900	1.970	6.400	1.460	5.300	950	4.200	570				
8	5.200	1.680	4.800	1.460	4.000	940	3.200	550				
10	4.100	1.560	3.800	1.300	3.200	810	2.500	520				
12	3.500	1.330	3.200	1.220	2.700	680	2.100	480				
Depth of cut			<table border="1"> <tr><td>ap</td><td>ae</td></tr> <tr><td>1,5D</td><td>0,2D</td></tr> </table>		ap	ae	1,5D	0,2D				
ap	ae											
1,5D	0,2D											

Slotting

Cutting Speed	Mild Steel • Carbon Steel • Cast Iron SS400 • S55C • FC250 ~750N/mm ²		Alloy Steel • Tool Steel SCM • SKS • SKD ~30HRC		Prehardened Steel • Hardened Steel PX5 • NAK80 30~45HRC		Stainless Steel ≤200HB									
	100 (80-120) (m/min)		90 (70-110) (m/min)		80 (60-100) (m/min)		70 (50-80) (m/min)									
∅	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)								
3	10.600	790	9.600	590	8.500	410	7.400	380								
4	8.000	820	7.200	610	6.400	410	5.600	390								
5	6.400	870	5.700	680	5.100	490	4.500	450								
6	5.300	1.010	4.800	860	4.200	600	3.700	330								
8	4.000	870	3.600	680	3.200	580	2.800	330								
10	3.200	800	2.900	660	2.500	500	2.200	320								
12	2.700	770	2.400	640	2.100	490	1.900	300								
Depth of cut			<table border="1"> <tr><td>ap</td></tr> <tr><td>1D</td></tr> </table>		ap	1D			<table border="1"> <tr><td>Dc</td><td>ap</td></tr> <tr><td>Dc≤6</td><td>0,5D</td></tr> <tr><td>Dc>6</td><td>1D</td></tr> </table>		Dc	ap	Dc≤6	0,5D	Dc>6	1D
ap																
1D																
Dc	ap															
Dc≤6	0,5D															
Dc>6	1D															

1. The above milling condition is a guideline for the overhang length is 3xD.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustment may be necessary depending on the rigidity of the workpiece fixture and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
6. Please use water-soluble oil when machining stainless steel.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified.

Fix rate cutting condition

Work material	L/D	Mild Steel - Carbon Steel Cast Iron SS400 • S55C • FC250		Alloy Steel Tool Steel SCM • SKS • SKD		Prehardened Steel Hardened Steel PX5 • NAK80 •		Stainless Steel (≤ 200HB)	
		S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)	S (min ⁻¹)	F (mm/min)
Side Milling	4	90%		90%		80%		70%	
	5	80%		80%		70%		70%	
Slotting	4	80%		70%		70%		60%	
	5	70%		60%		60%		50%	

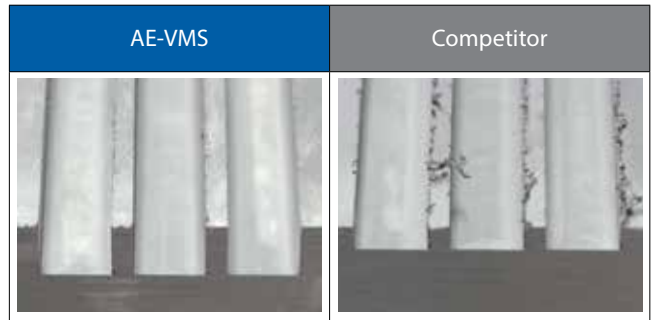
Milling | Solid carbide

CUTTING DATA

Suppression of Burrs

Great surface finish without vibration and minimal burrs.

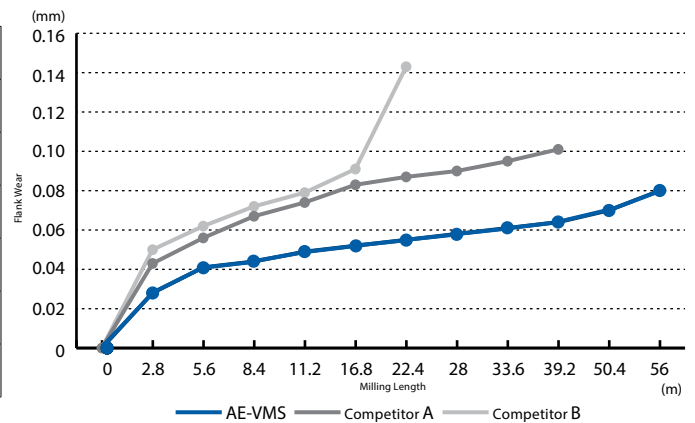
Tool	AE-VMS Ø 10	Competitor Ø 10
Work Material	SUS316	
Cutting Speed	69m/min (2.200 min ⁻¹)	
Feed Rate	350mm/min (0,04mm/t)	
Depth of Cut	ap = 10mm	ap=5mm
Coolant	Water Soluble	
Machine	Vertical Machining Center	
M.R.R.	35 cm ³ /min	17,5 cm ³ /min



Stable Performance

Stable performance on stainless steel

Tool	AE-VMS Ø 10
Work Material	SUS304
Cutting Speed	70m/min (2.250 min ⁻¹)
Feed Rate	475mm/min (0,053mm/t)
Depth of Cut	ap = 10mm
Coolant	Water Soluble
Machine	Vertical Machining Center



Cutting edge wear comparison

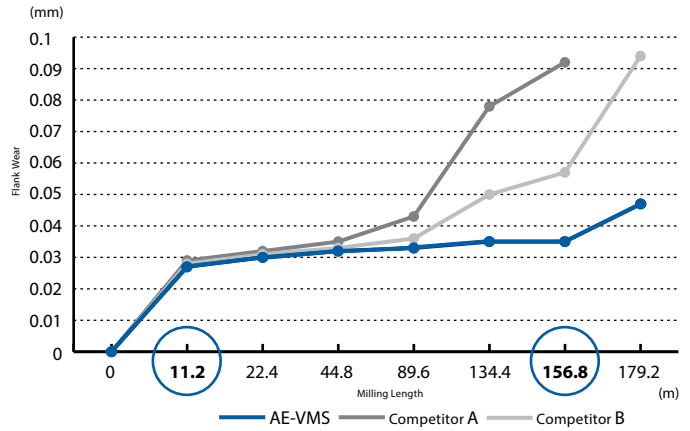


CUTTING DATA

Suppression of Burrs

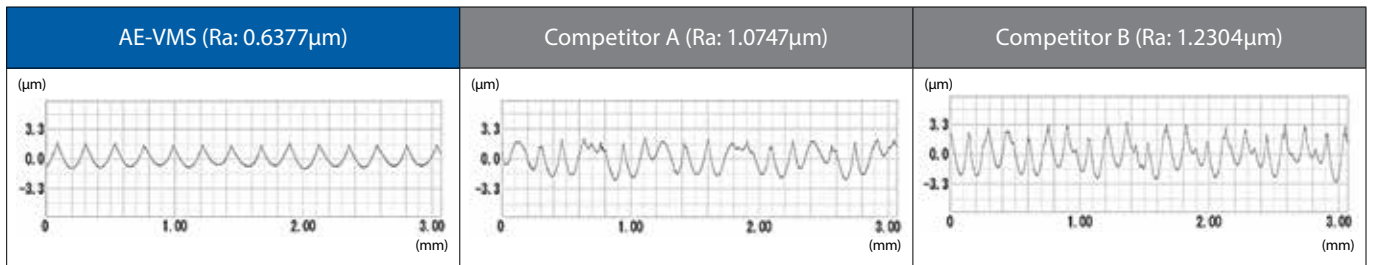
Suppression of cutting heat generation minimizes tool wear

Tool	AE-VMS Ø 6
Work Material	SCM440
Cutting Speed	140m/min (7.500 min ⁻¹)
Feed Rate	1.800mm/min (0,06mm/t)
Depth of Cut	ap = 9mm ae= 1,2mm
Coolant	Air Blow
Machine	Vertical Machining Center



Surface roughness comparison

Surface roughness after milling 11,2m



Tool condition comparison

Tool condition after milling 156,8m

	Cutting Chips	Wear Comparison
AE-VMS	<p>Brown about 500°C</p>	<p>No Cutting Edge Recession</p>
Competitor A	<p>Purple about 600°C</p>	<p>Excessive Cutting Edge Recession</p>
Competitor B	<p>Blue about 700°C</p>	<p>Minimal Cutting Edge Recession</p>

Milling | Solid carbide

OUT NOW!





shaping your dreams

OSG EUROPE LOGISTICS

Avenue Lavoisier 1
B-1300 Z.I. Wavre - Nord - Belgium
Tel: +32 10 23 05 07
Fax: +32 10 23 05 51
info@osgeurope.com

OSG BELUX

Avenue Lavoisier 1
B-1300 Z.I. Wavre - Nord - Belgium
Tel: +32 10 23 05 11
Fax: +32 10 23 05 31
info@osg-belgium.com

OSG FRANCE

Parc Icade, Paris Nord 2
Immeuble "Le Rimbaud"
22 Avenue des Nations
CS66191 - 93420 Villepinte - France
Tel: +33 1 49 90 10 10
Fax: +33 1 49 90 10 15
sales@osg-france.com

OSG NETHERLANDS

Bedrijfsweg 5 - 3481 MG Harmelen
Tel: +31 348 44 2764
Fax: +31 348 44 2144
info@osg-nl.com

OSG UK

Shelton house, 5 Bentalls
Pipps Hill Ind Est, Basildon Essex SS14 3BY
Tel: +44 845 305 1066
Fax: +44 845 305 1067
sales@osg-uk.com

SLOVAKIA

Branch office of OSG Europe Logistics s.a.
Tel (SK) +421 2 4329 1295
Tel (BE) +32 10 23 05 07
Fax (BE) +32 10 23 05 51
sales-osgsvk@osgeurope.com

OSG POLAND Sp. z.o.o.

Spółdzielcza 57
05-07 Halinów - Poland
Tel: +22 760 82 71
Fax: +22 760 82 71
osg@osg-poland.com

OSG GERMANY

Karl-Ehmann-Str. 25
D - 73037 Göppingen - Germany
Tel: +49 7161 6064 - 0
Fax: +49 7161 6064 - 444
info@osg-germany.de

OSG SCANDINAVIA

(For Scandinavian countries)
Langebjergvaenget 16
4000 Roskilde - Denmark
Tel: +45 46 75 65 55
Fax: +45 46 75 67 00
osg@osg-scandinavia.com

SWEDEN

Branch office of OSG SCANDINAVIA
Abrahams Gränd 8
295 35 Bromölla - Sweden
Tel: +46 40 41 22 55
Fax: +46 40 41 32 55
osg@osg-scandinavia.com

OSG IBERICA

Bekolarra 4
E - 01010 Vitoria-Gasteiz - Spain
Tel: +34 945 242 400
Fax: +34 945 228 883
osg.iberica@osg-ib.com

RUSSIA

Butlerova street, 17B, office 5069
117342 Moscow - Russia
Tel: +7 (495) 150 41 54
info@osg-russia.com

OSG TURKEY

Rami Kişla Cad.No:56 Eyüp
Istanbul 34056 - Turkey
Tel:+90 212 565 24 00
Fax: +90 212 565 44 00
info@osg-turkey.com

ROMSAN INTERNATIONAL CO. SRL

Reprezentant Exclusiv OSG
23-25, Nerva Traian Street
031044 Bucuresti - România
Tel: +40 021 322 07 47
Fax: +40 021 321 56 00
romsan.int@romsan.ro

AUSTRIA

Branch office of OSG GERMANY
Messestraße 11
A-6850 Dornbirn
Tel: +49 7161 6064-0
Fax: +49 7161 6064-444
info@osg-germany.de

OSG ITALIA

Via Cirenaiica n. 52 int. 61/63
I - 10142 Torino - Italy
Tel: +39 0117705211
Fax: +39 0117071402
info@osg-italia.it

WEXO PRÄZISIONSWERKZEUGE GmbH

Siemensstraße 13
D-61352 Bad Homburg
Tel: (06172) 10 62 06
Fax: (06172) 10 62 13
verkauf@wexo.com

OSG EUROPE LOGISTICS S.A.

05/2018 - All rights reserved. © OSG Europe 2018.

The contents of this catalogue are provided to you for viewing only. They are not intended for reproduction either in part or in whole in this or other medium. They cannot be copied, used to create derivation work or used for any reason, by means without the express, written permission of the copyright owner. If prices are stated, they are netto unit-prices and any eventual tax(es) have to be added. The company is not responsible for any printing error in technical, price and/or any other data.

Tool specifications subject to change without notice.

www.osgeurope.com