



The new standard for milling

# AE-VMS

Volume 5



# KEY FEATURES: AE-VMS

---

**1** Duarise coating

**2** Positive rake angle

**3** New flute form

**4** High rigidity

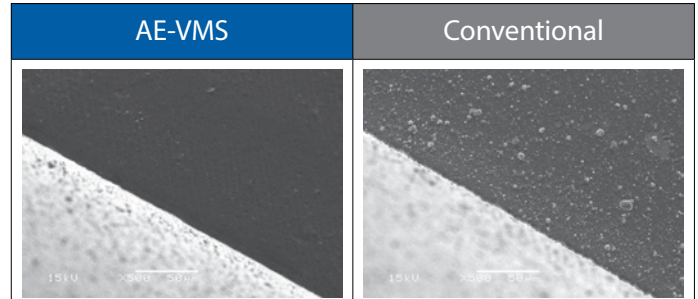
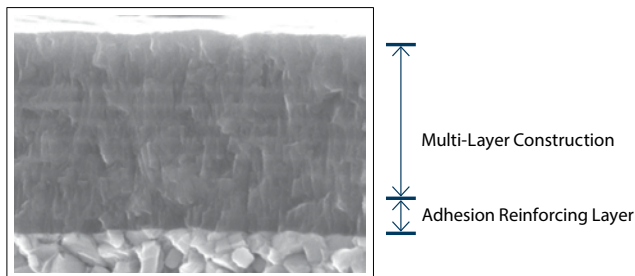
**5** Solid carbide



# 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

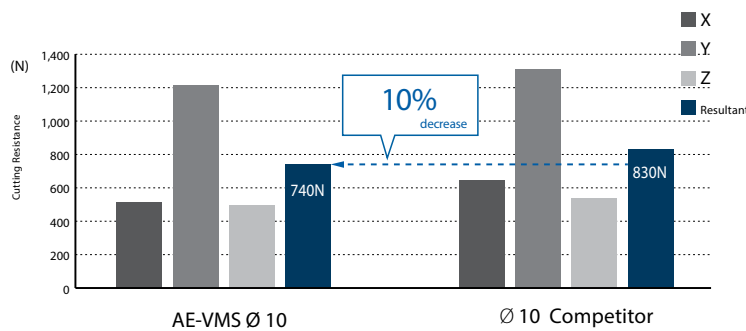
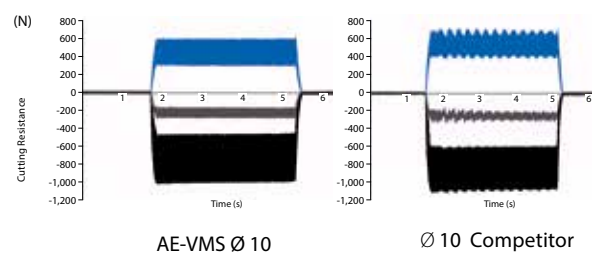
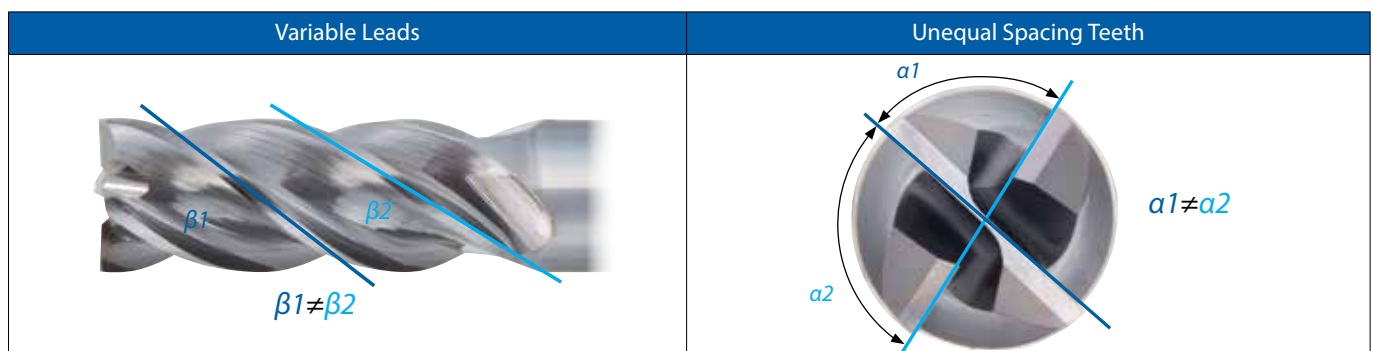


Figure 2. Stable performance even when the overhang length is L/D=4



## High rigidity

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



Milling | Solid carbide



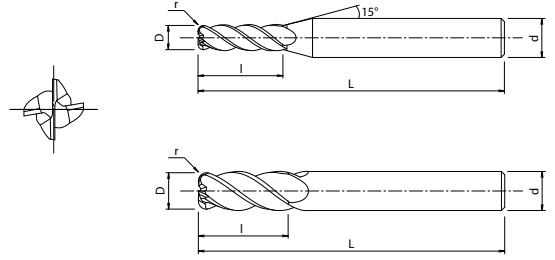
# AE-VMS

Milling | Solid carbide

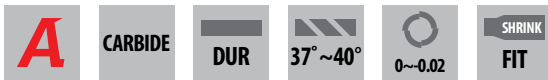
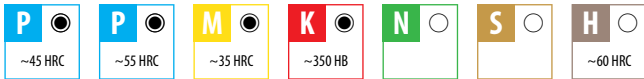


Type 1

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	

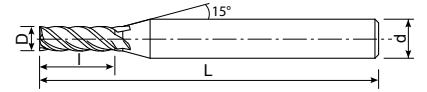
Milling | Solid carbide

# AE-VMSS NEW

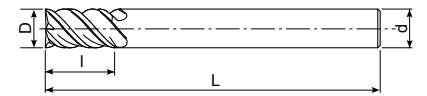
Milling | Solid carbide



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
- Anti-vibration stub carbide end-mill, square type, stub length



EDP	D	L	l	d	Type	Price
8556410	1	40	1,5	4	1	
8556415	1,5	40	2,3	4	1	
8556420	2	40	3	4	1	
8556425	2,5	40	3,8	4	1	
8556430	3	45	4,5	6	1	
8556435	3,5	45	5,3	6	1	
8556440	4	45	6	6	1	
8556445	4,5	45	6,8	6	1	
8556450	5	45	7,5	6	1	
8556455	5,5	45	8,3	6	1	
8556460	6	45	9	6	2	
8556465	6,5	60	9,8	8	1	
8556470	7	60	10,5	8	1	
8556475	7,5	60	11,3	8	1	
8556480	8	60	12	8	2	
8556485	8,5	70	12,8	10	1	
8556490	9	70	13,5	10	1	
8556495	9,5	70	14,3	10	1	
8556500	10	70	15	10	2	
8556505	10,5	75	15,8	12	1	
8556510	11	75	16,5	12	1	
8556515	11,5	75	17,3	12	1	
8556520	12	75	18	12	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 <sup>2</sup>		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 <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)
1	38.200	840	28.700	690	25.500	510	22.300	450
1,5	25.500	920	21.200	760	17.000	540	14.900	460
2	19.900	1.430	17.500	840	14.300	630	11.100	470
2,5	15.900	1.590	14.000	900	11.500	690	8.900	480
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	ap	ae
	1,5D	0,2D

### Slotting

Cutting Speed	Mild Steel • Carbon Steel • Cast Iron SS400 • S55C • FC250 ~750N/mm <sup>2</sup>		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 <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)
1	28.700	570	25.500	460	22.300	360	19.100	340
1,5	19.100	610	17.000	480	14.900	420	12.700	360
2	14.300	630	12.700	510	11.100	440	9.600	380
2,5	11.500	780	10.200	570	8.900	460	7.600	430
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	ap	
	1D	

Dc	ap
	0,5D
	1D

- The above milling condition is a guideline for the overhang length is 3xD.
- Use a rigid and precise machine and holder.
- 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.
- Please use a suitable fluid with high smoke retardant properties.
- During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
- Please use water-soluble oil when machining stainless steel.
- Reduce speed and feed as well as depth of cut when high precision is required.
- Adjust the speed and feed accordingly when the overhang length is longer than specified.

Milling | Solid carbide



# 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 <sup>2</sup>		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 <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	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			ap 1,5D		ae 0,2D			

### Slotting

Cutting Speed	Mild Steel • Carbon Steel • Cast Iron SS400 • S55C • FC250 ~750N/mm <sup>2</sup>		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 <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	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			ap 1D				Dc Dc≤6 0,5D Dc>6 1D	

- The above milling condition is a guideline for the overhang length is 3xD.
- Use a rigid and precise machine and holder.
- 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.
- Please use a suitable fluid with high smoke retardant properties.
- During dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.
- Please use water-soluble oil when machining stainless steel.
- Reduce speed and feed as well as depth of cut when high precision is required.
- 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 ~750N/mm <sup>2</sup>		Alloy Steel Tool Steel SCM • SKS • SKD ~30HRC		Prehardened Steel Hardened Steel PX5 • NAK80 • 30~45 HRC		Stainless Steel (≤ 200HB)	
		S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	F (mm/min)	S (min <sup>-1</sup> )	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

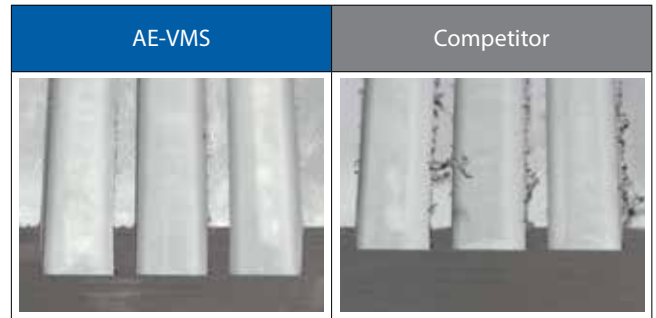


# CUTTING DATA

## Suppression of Burrs

Great surface finish without vibration and minimal burrs.

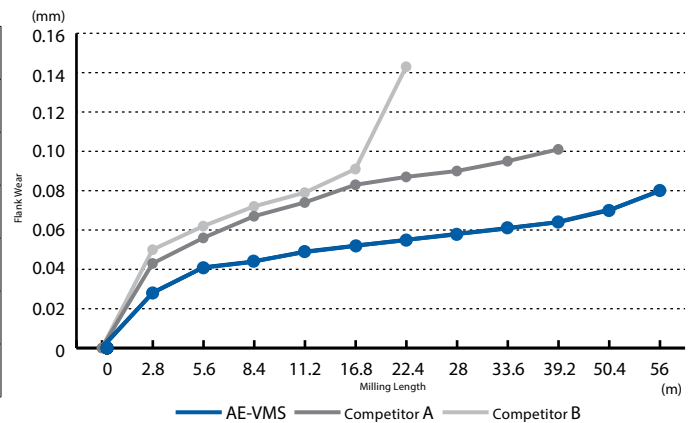
Tool	AE-VMS Ø 10	Competitor Ø 10
Work Material	SUS316	
Cutting Speed	69m/min (2.200 min <sup>-1</sup> )	
Feed Rate	350mm/min (0,04mm/t)	
Depth of Cut	ap = 10mm	ap=5mm
Coolant	Water Soluble	
Machine	Vertical Machining Center	
M.R.R.	35 cm <sup>3</sup> /min	17,5 cm <sup>3</sup> /min



## Stable Performance

Stable performance on stainless steel

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



## Cutting edge wear comparison

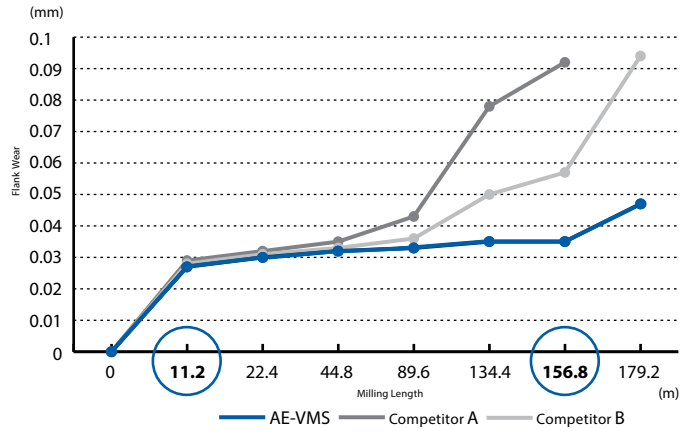


# CUTTING DATA

## Suppression of Burrs

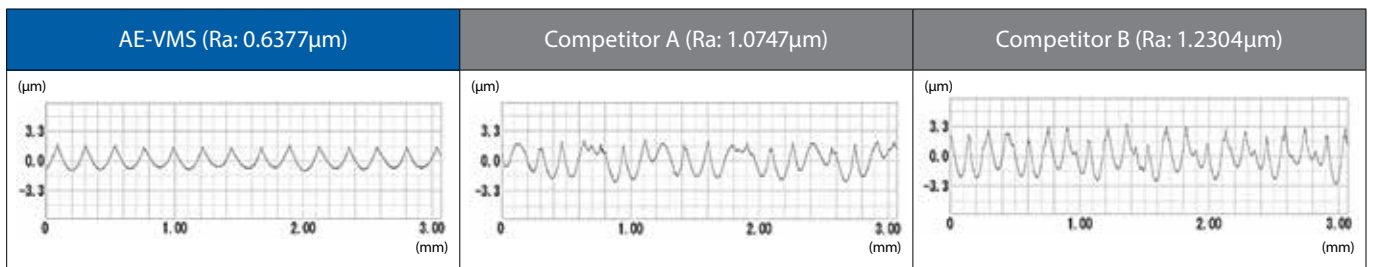
Suppression of cutting heat generation minimizes tool wear

<b>Tool</b>	AE-VMS Ø 6
<b>Work Material</b>	SCM440
<b>Cutting Speed</b>	140m/min (7.500 min <sup>-1</sup> )
<b>Feed Rate</b>	1.800mm/min (0,06mm/t)
<b>Depth of Cut</b>	ap = 9mm ae= 1,2mm
<b>Coolant</b>	Air Blow
<b>Machine</b>	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
<b>AE-VMS</b>	<p>Brown about 500°C</p>	<p>No Cutting Edge Recession</p>
<b>Competitor A</b>	<p>Purple about 600°C</p>	<p>Excessive Cutting Edge Recession</p>
<b>Competitor B</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

#### **Vischer & Bolli AG**

Im Schossacher 17  
CH-8600 Dübendorf  
Schweiz  
Tel.: +41 44 802 15 15  
Fax: +41 44 802 15 95  
info@vb-tools.com

#### **OSG EUROPE LOGISTICS S.A.**

08/2018 - 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](http://www.osgeurope.com)

