



# CUTTING TOOLS

**Stellram® Cutting Tools**



**NEW HIGH FEED 7793VX012  
DOUBLE SIDED INSERT  
MILLING CUTTER SYSTEM**





## Double Sided High Feed Milling Cutters

### Silver satin plated surface & Improved heat treatment

Improved body strength  
Better core strength  
Enhanced wear resistance of the body surface

### High variability due to the different cutter bodies

Modular heads     $\varnothing$  32 mm  
Cylindrical shank     $\varnothing$  32 to 40 mm  
Shell mills     $\varnothing$  50 to 125 mm

### New chip flute design

Improved chip ejection

### Highest performance

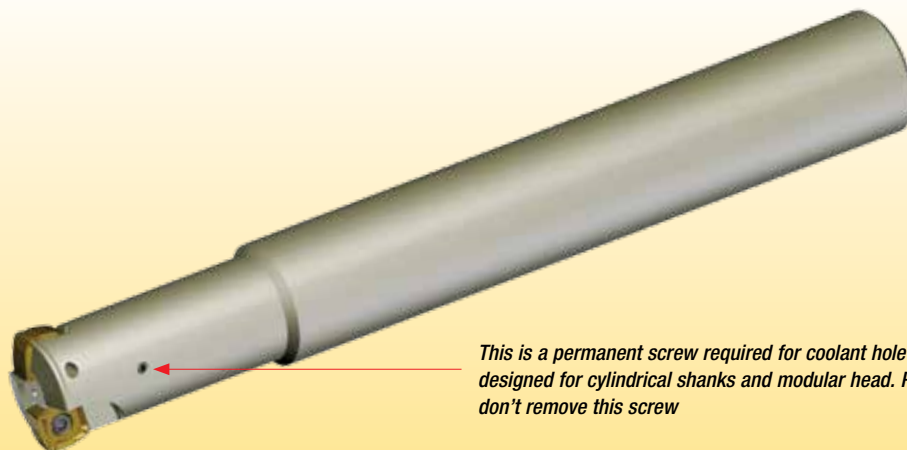
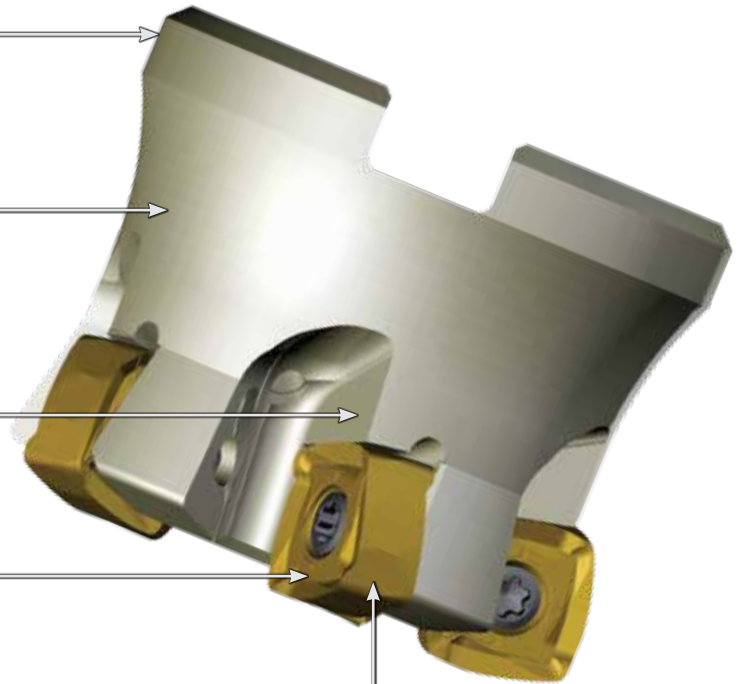
Due to Stellram patented X-grades  
Extremely powerful standard grades like SP6919

### Size and geometry

Newest geometrical High Feed concept XOGU12...-GU52  
Maximum metal removal rates  
Superior wall and floor surface finish capabilities

### 8 Double sided cutting edges

Maximum productivity with economical cost per edge  
Cost reduction per component  
ap max = 2,50 mm



*This is a permanent screw required for coolant hole flow designed for cylindrical shanks and modular head. Please don't remove this screw*



**HIGH FEED CUTTER WITH DOUBLE SIDED INSERTS**

**7793VXO12** is our newest, patented, high feed cutter range. Featuring double sided inserts with eight cutting edges, providing a cost effective machining and maximum efficiency.

This range is specifically developed for face milling applications providing high feed rates for maximum productivity.

The unique geometrical design concept and insert positioning is ideal for achieving maximum metal removal. This combined with our premium grade and positive geometries, these cutters are an ideal solution for face milling applications when used on 'high performance' materials.

Additionally, due to the wiper facet incorporated in the insert geometry, we are able to provide superior wall and floor surface finished capabilities through roughing operations in comparison with other high feed solutions.

**Applications:**

7793VXO cutters are particularly qualified to machine all known metals such as Unalloyed Steels, Alloyed Steels, Tool Steels, Stainless Steels, High Temperature Alloys and Titanium, when utilising our GU52 double sided insert with 8 cutting edges. Due to its positive geometry design and reinforced edge, this geometry provides a smooth cutting action and longer tool life in all challenging machining applications. The 8 effective cutting edges result in lower cost per edge and maximum efficiency.

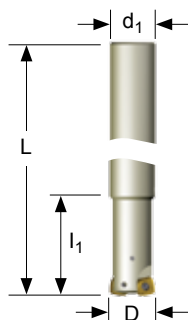
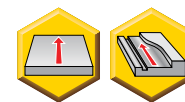
**7793VXO**

**7790VXO12:**

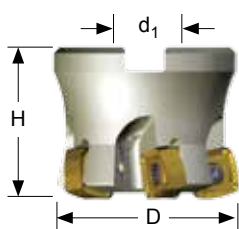
**Diameter Range Shell Mill Cutters:**  
Dia. 50mm – 125mm

**Cylindrical Shank Cutters:**  
Dia. 32mm – 40-mm

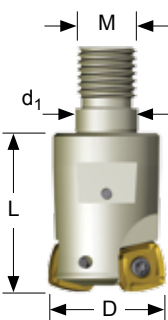
**Modular Head Cutters:**  
Dia. 32mm



**Cylindrical Shank**



**Shell Mill Fixation**



**Modular Head**

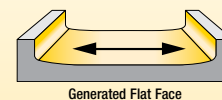
Product		Dimensions (mm)						Spares				
Order Number	Item Description	D	L/H	l <sub>1</sub>	d <sub>1</sub>	a <sub>p</sub> max	No. of Teeth	Order Number		Order Number		Screw Tightening Nm
<b>7793VXO12 Cylindrical Shank</b>												
5675962	7793VXO12CA032Z02R070	32	250	70	32	2,50	2	5672417	DP4012T	5673344	TP15	3,10
5675992	7793VXO12CA040Z03R070	40	250	70	32	2,50	3	5672417	DP4012T	5673344	TP15	3,10
<b>7793VXO12 Shell Mill Fixation - Medium and Fine Pitch</b>												
5675961	7793VXO12-A050Z04R	50	40	-	22	2,50	4	5672417	DP4012T	5673344	TP15	3,10
5675988	7793VXO12-A050Z05R	50	40	-	22	2,50	5	5672417	DP4012T	5673344	TP15	3,10
5676119	7793VXO12-A063Z05R	63	40	-	22	2,50	5	5672417	DP4012T	5673344	TP15	3,10
5676150	7793VXO12-A063Z07R	63	40	-	22	2,50	7	5672417	DP4012T	5673344	TP15	3,10
5676105	7793VXO12-A080Z06R	80	50	-	27	2,50	6	5672417	DP4012T	5673344	TP15	3,10
5676151	7793VXO12-A080Z09R	80	50	-	27	2,50	9	5672417	DP4012T	5673344	TP15	3,10
5676142	7793VXO12-A100Z06R	100	50	-	32	2,50	6	5672417	DP4012T	5673344	TP15	3,10
5675989	7793VXO12-A100Z10R	100	50	-	32	2,50	10	5672417	DP4012T	5673344	TP15	3,10
5675990	7793VXO12-A125Z08R	125	63	-	40	2,50	8	5672417	DP4012T	5673344	TP15	3,10

Product		Dimensions (mm)						Spares				
Order Number	Item Description	D	L/H	M	d <sub>1</sub>	a <sub>p</sub> max	No. of Teeth	Order Number		Order Number		Screw Tightening Nm
<b>7793VXO12 Modular Head</b>												
5675991	7793VXO12SA032Z2R43	32	43	M16	17,00	2,50	2	5672417	DP4012T	5673344	TP15	3,10

Note: For cylindrical shank extensions in high density alloy with through coolant, refer to page 5.

**7793VXO12 Technical Information (mm)**

Product		Dimensions	Max RPM
Order Number	Item Description	Flat Face	
5675962	7793VXO12CA032Z2R070	17,53	32500
5675992	7793VXO12CA040Z3R070	25,53	26500
5675961	7793VXO12-A050Z04R	35,53	22500
5675988	7793VXO12-A050Z05R	35,53	22500
5676119	7793VXO12-A063Z05R	48,53	19000
5676150	7793VXO12-A063Z07R	48,53	19000
5676105	7793VXO12-A080Z06R	65,53	16000
5676151	7793VXO12-A080Z09R	65,53	16000
5676142	7793VXO12-A100Z06R	85,43	14000
5675989	7793VXO12-A100Z10R	85,43	14000
5675990	7793VXO12-A125Z08R	110,43	12500
5675991	7793VXO12SA032Z2R43	17,53	32500



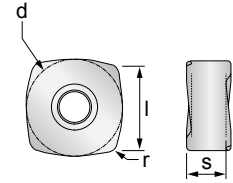
Generated Flat Face



**Depth of Cut (a<sub>p</sub>)**



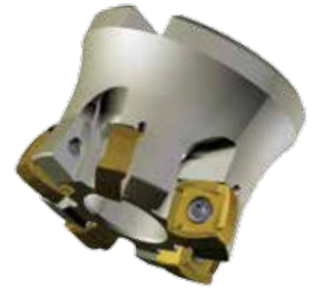
XOGU12-GU52



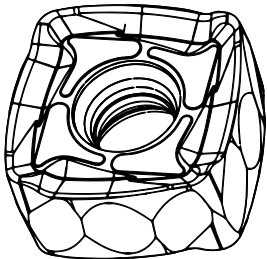
Product			Application & Material		Dimensions (mm)				
Order Number	Item Description	Grade	Facing	Slotting	d (IC)	l	s	r	h <sub>m</sub> min
			Depth of Cut (mm)						
			a <sub>p</sub> max. 2,50	a <sub>p</sub> max. 1,80					
5654090	XOGU120512ER-GU52	X500			12,70	12,70	5,56	1,20	0,05
5652817	XOGU120512ER-GU52	SP6519			12,70	12,70	5,56	1,20	0,05
5652818	XOGU120512ER-GU52	SC6525			12,70	12,70	5,56	1,20	0,05

Machining Choice: 1<sup>st</sup> Choice 2<sup>nd</sup> Choice 3<sup>rd</sup> Choice | Material Guide Key descriptions found below.

Note: Feed & Speed recommendations can be found on page 4.



## Geometry



## GU52

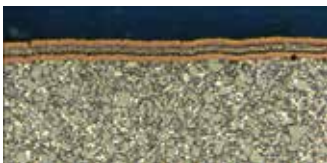
GU52: This NEW square style, double sided 8 cutting edges High Feed Geometry with positive rake face, is designed for rough face milling applications.

Due to its positive geometry design and reinforced edge, this geometry provides a smooth cutting action and longer tool life in all difficult machining applications.

The 8 effective cutting edges result in lower cost per edge and maximum efficiency.

This geometry is specifically designed for high feed machining in all materials such as High Temperature Alloys, Titanium, Stainless Steel, Steel, Steel Alloys and Cast Iron.

## High Feed Grades



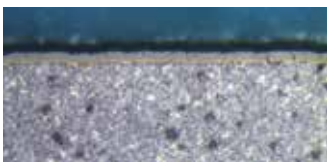
### X500 Premium Grade

Coating Type: CVD, TiN-TiC-TiN – High level of shock resistance; operates at low to medium cutting speeds; high metal removal rates.



### SP6519 Universal High Performance Grade

Coating Type: PVD, TiAlN – Super nano coating is extremely hard for unmatched performance and virtually eliminates residual stress.



### SC6525 Universal High Performance Grade

Coating Type: CVD, TiN-TiCN-Al<sub>2</sub>O<sub>3</sub> – High Performance Machining at elevated surface speeds.

## Material Guide – Key to Recommended Inserts

### Material Designation

Unalloyed Steels Alloyed Steels Stainless Steels PH Stainless Cast Irons Aluminum & Alloys High Temp. Alloys Hard Materials

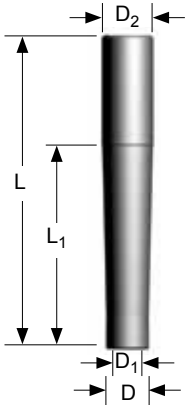


7793VX012 Feeds  $f_z$  (mm/tooth)

Geometry	Grade	Operation	Unalloyed Steel	Alloyed Steel	Stainless Steel	Stainless Steel Refractory PH	Grey Iron	Spheroidal-Ductile Iron	Malleable Iron	Aluminium & Alloys <16% Si 116 HBN	Aluminium & Silicon >16% Si 92 HBN	HTA Iron Based Alloys	HTA Cobalt Based Alloys	HTA Nickel Based Alloys	HTA Titanium Based Alloys	Hard Steel >1400 N/mm <sup>2</sup> >415 HBN	Chilled Cast Iron >1400 N/mm <sup>2</sup> >400 HBN
			Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.	Min. - Max.
ER-GU52	X500	Facing	0,50 - 2,10	0,50 - 1,80	0,50 - 1,40	0,50 - 1,00	0,50 - 1,80	0,50 - 1,70	0,50 - 1,70	-	-	0,40 - 0,80	0,40 - 0,80	0,40 - 0,80	0,40 - 1,00	-	-
ER-GU52	X500	Slotting	0,50 - 1,80	0,50 - 1,60	0,50 - 1,10	0,50 - 0,80	0,50 - 1,60	0,50 - 1,50	0,50 - 1,50	-	-	0,30 - 0,60	0,30 - 0,60	0,30 - 0,60	0,30 - 0,80	-	-
ER-GU52	SP6519	Facing	0,50 - 2,00	0,50 - 1,70	0,50 - 1,30	0,50 - 0,80	0,50 - 1,70	0,50 - 1,60	0,50 - 1,60	-	-	0,40 - 0,70	0,40 - 0,70	0,40 - 0,70	0,40 - 0,80	-	-
ER-GU52	SP6519	Slotting	0,50 - 1,70	0,50 - 1,50	0,50 - 1,00	0,50 - 0,60	0,50 - 1,50	0,50 - 1,40	0,50 - 1,40	-	-	0,30 - 0,50	0,30 - 0,50	0,30 - 0,50	0,30 - 0,60	-	-
ER-GU52	SC6525	Facing	0,50 - 2,00	0,50 - 1,70	0,50 - 1,30	-	0,50 - 1,70	0,50 - 1,60	-	-	-	-	-	-	-	-	-
ER-GU52	SC6525	Slotting	0,50 - 1,70	0,50 - 1,50	0,50 - 1,00	-	0,50 - 1,50	0,50 - 1,40	-	-	-	-	-	-	-	-	-

Speed  $v_c$  (m/min)

7793VXO Series		Wear Resistance					
		- ← → +					
		Speed min. - max.					
Coolant Recommendation		Recommended ● Possible ○		CVD X Grade	PVD Standard	CVD Standard	
ISO	Materials	Rm and Hardness	Water	X500	SP6519	SC6525	
P	Unalloyed Steel	<600 N/mm <sup>2</sup> <180 HBN	○ ●	130 - 270	○ ●	130 - 295	○ ●
		<950 N/mm <sup>2</sup> <280 HBN	○ ●	115 - 240	○ ●	115 - 260	○ ●
	Alloyed Steel	700-950 N/mm <sup>2</sup> 200-280 HBN	○ ●	100 - 210	○ ●	100 - 230	○ ●
		950-1200 N/mm <sup>2</sup> 280-355 HBN	○ ●	75 - 160	○ ●	75 - 175	○ ●
M	Stainless Steel	Austenitic + Ferritic 300 series	○ ●	115 - 250	○ ●	115 - 270	○ ●
		Martensitic 400 series	○ ●	100 - 220	○ ●	105 - 235	○ ●
	PH Stainless	Refractory P.H.	●	50 - 110	●	50 - 120	
K	Cast Iron	Grey GG-Ft		120 - 280		140 - 295	
		Spheroidal-Ductile GGG-FGS	○ ●	105 - 205	○ ●	110 - 240	○ ●
		Malleable GTS - MN/MP		95 - 170		100 - 220	
N	Aluminium & Alloys	Aluminium & Alloys < 16% Si 116 HBN					
		Aluminium + Silicon > 16% Si 92 HBN					
S	High Temperature Alloys	Iron Based		23 - 48		23 - 55	
		Cobalt Based	●	21 - 44	●	22 - 48	
		Nickel Based		24 - 51		25 - 55	
		Titanium Based		35 - 73		36 - 79	
H	Hard Materials	Hard Steel >1400 N/mm <sup>2</sup> >415 HBN					
		Chilled Cast Iron >1400 N/mm <sup>2</sup> > 400 HBN					



Shank Extension

Product		Dimensions (mm)					
Order Number	Item Description	L	L <sub>1</sub>	D <sub>2</sub>	D	D <sub>1</sub>	M
5672832	M-29-M16-CA32-160	160	100	32	29	17,00	M16
5672988	M-29-M16-CA32-210	210	150	32	29	17,00	M16
5673783	M-29-M16-CA32-260	260	200	32	29	17,00	M16
5672989	M-29-M16-CA32-310	310	250	32	29	17,00	M16

Note: Order example with cylindrical shank: M-29-M16-CA32-160

Cylindrical shank extensions can be used with all modular heads found in several product family series within the general milling catalogue.

These extensions have the industry standard of metric threads.

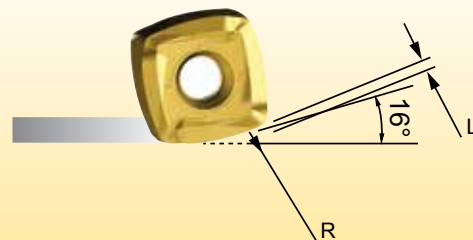
### Technical Advice

<b>M</b>	Modular adapter
<b>29</b>	Diameter in front of the modular shank (D)
<b>M16</b>	Metric Thread (M)
<b>CA32</b>	Cylindrical shank diameter 32mm with through coolant
<b>160</b>	Total length of the body



### CNC-Programming Data (mm) / insert definition

Insert size (mm)	Radius	R	L
12	1,20	3,15	0,95



Calculation of the average chip thickness in relation with the  $a_e$  (Radial Engagement) if  $a_e$  is less than 50% of dia.

Formula: Programme Feed Rate ( $f_z$ )

$$f_z = h_m \times \sqrt{\frac{d}{a_e}}$$

$h_m$  = Average chip thickness

$a_e$  = Radial engagement

$f_z$  = Feed per tooth

$d$  = Cutter diameter

Formula: Average Chip Thickness ( $h_m$ )

$$h_m = f_z \times \sqrt{\frac{a_e}{d}}$$

Calculation of the average chip thickness in relation with the D.O.C. (Axial)

Formula: Programme Feed Rate ( $f_z$ )

$$f_z = h_m \times \sqrt{\frac{d}{a_p}}$$

$h_m$  = Average chip thickness

$a_p$  = Depth of cut

$f_z$  = Feed per tooth

$d$  = Insert diameter 45mm

Theoretical Diameter for all high feed insert sizes = 45mm

Formula: Average Chip Thickness ( $h_m$ )

$$h_m = f_z \times \sqrt{\frac{a_p}{d}}$$

**WORLD HEADQUARTERS**

**Kennametal Inc.**

1600 Technology Way

Latrobe, PA 15650

USA

Tel: 800.446.7738 (United States and Canada)

E-mail: [ftmill.service@kennametal.com](mailto:ftmill.service@kennametal.com)

**EUROPEAN HEADQUARTERS**

**Kennametal Europe GmbH**

Rheingoldstrasse 50

CH 8212 Neuhausen am Rheinfall

Switzerland

Tel: +41 52 6750 100

E-mail: [neuhausen.info@kennametal.com](mailto:neuhausen.info@kennametal.com)

**ASIA-PACIFIC HEADQUARTERS**

**Kennametal Singapore Pte. Ltd.**

3A International Business Park

Unit #01-02/03/05, ICON@IBP

Singapore 609935

Tel: +65 6265 9222

E-mail: [k-sg.sales@kennametal.com](mailto:k-sg.sales@kennametal.com)

**INDIA HEADQUARTERS**

**Kennametal India Limited**

CIN: L27109KA1964PLC001546

8/9th Mile, Tumkur Road

Bangalore - 560 073

Tel: +91 80 2839 4321 or +91 080 43281444

E-mail: [bangalore.information@kennametal.com](mailto:bangalore.information@kennametal.com)



Kennametal Inc.

1600 Technology Way

Latrobe, PA 15650

USA

[www.kennametal.com](http://www.kennametal.com)