

## mould & die

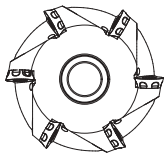
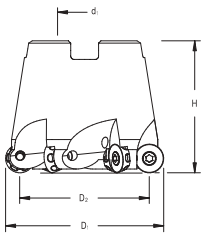
### 7712VRD – New Insert Location Design for RD 12 and RD 16 Inserts



#### PERFORMANCE FEATURES

- Anti-rotation system for maximum stability at high feed rates.
- Maximum number of teeth for heavy feed operations.
- Pocket design maximises swarf evacuation.
- New insert indexation (insert locking) for exact positioning, especially suited to unstable conditions.
- High feed rate capability.
- Ideal for cavity ramping and ramp milling.
- Up to 8 effective cutting edges.

# 7712VRD Milling Cutter



Shell Mill Fixation

7712VR12 Shell Mill Fixation Ø12mm inserts													
EDP #	Part Number	Dimensions mm						No. of inserts	Inserts	Spares			
		D <sub>1</sub>	D <sub>2</sub>	L/H	d <sub>1</sub>	a max.	EDP #			EDP #	EDP #	EDP #	
029054	7712VRD12-A052R	52	40	52	22	6	5	RD..12T3..-X6	015270	F4011T	015241	T20	
029055	7712VRD12-A066R	66	54	52	27	6	6	RD..12T3..-X6	015270	F4011T	015241	T20	
029056	7712VRD12-A080R	80	68	52	27	6	7	RD..12T3..-X6	015270	F4011T	015241	T20	

7712VR12 Shell Mill Fixation Ø16mm inserts													
EDP #	Part Number	Dimensions mm						No. of inserts	Inserts	Spares			
		D <sub>1</sub>	D <sub>2</sub>	L/H	d <sub>1</sub>	a max.	EDP #			EDP #	EDP #	EDP #	
029057	7712VRD16-A052R	52	36	52	22	8	4	RD..1604..-X8	015270	F4011T	015241	T20	
029058	7712VRD16-A066R	66	50	52	27	8	5	RD..1604..-X8	015270	F4011T	015241	T20	
029059	7712VRD16-A080R	80	64	52	27	8	6	RD..1604..-X8	015270	F4011T	015241	T20	
029060	7712VRD16-A100R	100	84	52	32	8	7	RD..1604..-X8	015270	F4011T	015241	T20	
029061	7712VRD16-A125R	125	109	52	40	8	8	RD..1604..-X8	015270	F4011T	015241	T20	

## 7712VR12 Technical Advice

Milling Cutter Order Example: **7712VRD12-A052R**

Milling Insert Order Example: **RDET 12T3M0E-701-X6 SP4036**

### Ramp Angle

Part Number	Diameter	Ramp Angle recommended
7712VRD12-A052R	52	5°
7712VRD12-A066R	66	3.7°
7712VRD12-A080R	80	2.8°

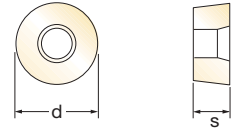
7712VRD16-A052R	52	11.5°
7712VRD16-A066R	66	7.5°
7712VRD16-A080R	80	6°
7712VRD16-A100R	100	4°
7712VRD16-A125R	125	3°

### Ramp Interpolation

Part Number	Diameter (mm)	Bore Diam.max (mm)	Bore Diam.min (mm)	Penetration angle max.
7712VRD12-A052R	52	102	82	3.9°
7712VRD12-A066R	66	130	110	3.1°
7712VRD12-A080R	80	158	138	2.5°

7712VRD16-A052R	52	102	74	5.2°
7712VRD16-A066R	66	130	102	4.1°
7712VRD16-A080R	80	158	130	3.35°
7712VRD16-A100R	100	198	170	2.65°
7712VRD16-A125R	125	248	220	2.1°

# Ø12mm Inserts for 7712VRD



EDP #	Part Number	Grade	Application & Material			Dimensions (mm)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h <sub>m</sub> min
<b>Ø12mm inserts</b>										
<b>RDET: Ground circumference one face pressed chip-breaker</b>										
029297	RDET 12T3M0E-701-X6	SP4036	◆	◆	◆◆◆◆◆	12,0	-	3,97	-	0,05

RDET 12\_ -701



<b>RDHW: Ground circumference without chip-breaker</b>										
029299	RDHW 12T3M0T-20-X6	SP4036	◆	◆		12,0	-	3,97	-	0,20
029301	RDHW 12T3M0T-20-X6	SP5464	◆			12,0	-	3,97	-	0,20
029302	RDHW 12T3M0T-X6	SP4036	◆◆	◆◆		12,0	-	3,97	-	0,15
029303	RDHW 12T3M0T-X6	SP5464		◆◆		12,0	-	3,97	-	0,15

RDHW 12\_



<b>RDMW: As pressed circumference without chip-breaker</b>										
029313	RDMW12T3M0T-20-X6	SP5464	◆◆			12,0	-	3,97	-	0,20
029314	RDMW12T3M0T-X6	SP5464		◆◆		12,0	-	3,97	-	0,15

RDMW 12\_



## Recommended Cutting Data for 12mm Inserts

Material	▼ Roughing			▼▼ Semi-finishing			▼▼▼ Finishing		
	Speed V <sub>C</sub> (m/min)	Feed f <sub>Z</sub> (mm/tooth)	D.O.C a <sub>p</sub> (mm)	Speed V <sub>C</sub> (m/min)	Feed f <sub>Z</sub> (mm/tooth)	D.O.C a <sub>p</sub> (mm)	Speed V <sub>C</sub> (m/min)	Feed f <sub>Z</sub> (mm/tooth)	D.O.C a <sub>p</sub> (mm)
◆ Unalloyed Steels	180 - 220	0,25 - 0,60	1,5 - 4,0	220 - 260	0,17 - 0,45	1,0 - 3,5	220 - 300	0,10 - 0,18	0,1 - 1,0
◆ Alloyed Steels	70 - 110	0,22 - 0,50	1,5 - 4,0	100 - 150	0,17 - 0,40	1,0 - 3,5	100 - 195	0,10 - 0,16	0,1 - 1,0
◆ Stainless Steels	120 - 140	0,22 - 0,35	1,5 - 3,0	140 - 180	0,17 - 0,30	1,0 - 2,5	180 - 230	0,08 - 0,12	0,1 - 1,0
◆ PH Stainless	-	-	-	-	-	-	80 - 100	0,08 - 0,12	0,1 - 1,0
◆ Cast Irons	140 - 280	0,22 - 0,50	1,5 - 4,0	180 - 300	0,17 - 0,40	1,0 - 3,5	200 - 350	0,10 - 0,16	0,1 - 1,0
◆ Aluminium & Alloys	275 - 450	0,06 - 0,12	1,5 - 4,0	400 - 750	0,06 - 0,12	1,0 - 3,5	700 - 1000	0,06 - 0,12	0,1 - 1,0
◆ High Temp. Alloys	-	-	-	-	-	-	45 - 60	0,08 - 0,12	0,1 - 1,0
◆ Hard Steels (52-56 HRC)	-	-	-	50 - 85	0,05 - 0,10	0,5 - 1,0	50 - 100	0,03 - 0,06	0,1 - 1,0

## Chip Thickness

With round inserts, the thickness of the chip varies depending on the depth of cut. For best tool-life it is important to maintain the proper chip thickness as the table below.

Insert	a <sub>p</sub> D.O.C mm	F <sub>Z</sub> mm/tooth min.	Average Chip thickness h <sub>m</sub> (mm)
RD..12T3	1,00	0,70	0,20
RD..12T3	1,50	0,60	0,21
RD..12T3	2,00	0,50	0,20
RD..12T3	2,50	0,45	0,21
RD..12T3	3,00	0,40	0,20

**Formulae:**

$$h_m = \sqrt{a_p/D * f_z}$$

h<sub>m</sub> = Average chip thickness

a<sub>p</sub> = Depth of cut

f<sub>Z</sub> = feed per tooth

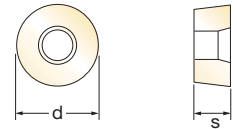
D = inserts diameter

## Star Guide Key to Recommended Inserts

Material Designations					
	<b>P</b> ◆ Unalloyed Steels	<b>M</b> ◆ Stainless Steels	<b>K</b> ◆ Cast Irons	<b>S</b> ◆ High Temp. Alloys	
	<b>P</b> ◆ Alloyed Steels	<b>M</b> ◆ PH Stainless	<b>N</b> ◆ Aluminium & Alloys	<b>H</b> ◆ Hard Materials	



# Ø16mm Inserts for 7712VRD



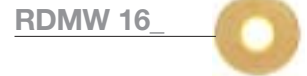
EDP #	Part Number	Grade	Application & Material			Dimensions (mm)				
			Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h <sub>m</sub> min
<b>Ø16mm inserts</b>										
<b>RDET: Ground circumference one face pressed chip-breaker</b>										
029298	RDET 1604M0E-701-X8	SP4036	◆	◆	◆◆◆◆◆	16,0	-	4,76	-	0,02



<b>RDHW: Ground circumference without chip-breaker</b>										
029304	RDHW 1604M0T-X8	SP4036		◆◆		16,0	-	4,76	-	0,15
029305	RDHW 1604M0T-X8	SP5464	◆	◆◆		16,0	-	4,76	-	0,15
029306	RDHW 1604M0T-30-X8	SP4036	◆◆	◆◆		16,0	-	4,76	-	0,30
029308	RDHW 1604M0T-30-X8	SP5464		◆◆		16,0	-	4,76	-	0,30



<b>RDMW: As pressed circumference without chip-breaker</b>										
029311	RDMW 1604M0T-X8	SP5464		◆◆		16,0	-	6,35	-	0,15
029312	RDMW 1604M0T-30-X8	SP5464	◆◆			16,0	-	6,35	-	0,30



## Recommended Cutting Data for 16mm Inserts

Material	▼ Roughing			▼▼ Semi-finishing			▼▼▼ Finishing		
	Speed V <sub>C</sub> (m/min)	Feed fz (mm/tooth)	D.O.C a <sub>p</sub> (mm)	Speed V <sub>C</sub> (m/min)	Feed fz (mm/tooth)	D.O.C a <sub>p</sub> (mm)	Speed V <sub>C</sub> (m/min)	Feed fz (mm/tooth)	D.O.C a <sub>p</sub> (mm)
◆ Unalloyed Steels	180 - 220	0,32 - 0,80	1,5 - 5,3	220 - 260	0,17 - 0,50	1,0 - 4,5	220 - 300	0,10 - 0,18	0,1 - 1,5
◆ Alloyed Steels	70 - 110	0,32 - 0,60	1,5 - 5,3	100 - 150	0,17 - 0,45	1,0 - 4,5	100 - 195	0,10 - 0,16	0,1 - 1,5
◆ Stainless Steels	120 - 140	0,32 - 0,40	1,5 - 4,0	140 - 180	0,17 - 0,35	1,0 - 3,5	180 - 230	0,08 - 0,12	0,1 - 1,5
◆ PH Stainless	-	-	-	-	-	-	80 - 100	0,08 - 0,12	0,1 - 1,5
◆ Cast Irons	140 - 280	0,32 - 0,60	1,5 - 5,3	180 - 300	0,17 - 0,45	1,0 - 4,5	200 - 350	0,10 - 0,16	0,1 - 1,5
◆ Aluminium & Alloys	275 - 450	0,06 - 0,16	1,5 - 5,3	400 - 750	0,06 - 0,14	1,0 - 4,5	700 - 1000	0,06 - 0,12	0,1 - 1,5
◆ High Temp. Alloys	-	-	-	-	-	-	45 - 60	0,08 - 0,12	0,1 - 1,5
◆ Hard Steels (52-56 HRC)	-	-	-	50 - 85	0,05 - 0,10	0,5 - 1,5	50 - 100	0,03 - 0,06	0,1 - 1,5

## Chip Thickness

With round inserts, the thickness of the chip varies depending on the depth of cut. For best tool-life it is important to maintain the proper chip thickness as the table below.

Insert	a <sub>p</sub> D.O.C mm	F <sub>z</sub> mm/tooth min.	Average Chip thickness h <sub>m</sub> (mm)
RD..1604	1,50	1,00	0,310
RD..1604	2,00	0,85	0,300
RD..1604	2,50	0,80	0,316
RD..1604	3,00	0,70	0,303
RD..1604	3,50	0,65	0,304
RD..1604	4,00	0,60	0,300

### Formulae:

$$h_m = \sqrt{a_p / D * f_z}$$

h<sub>m</sub> = Average chip thickness

a<sub>p</sub> = Depth of cut

f<sub>z</sub> = feed per tooth

D = inserts diameter