Stellram®

Cutting Tool Systems

SOLUTIONS FOR
DIFFICULT-TO-MACHINE MATERIALS

MILLING PRODUCTS FOR POWER GENERATION AND AEROSPACE APPLICATIONS

ATI Stellram

ATI Stellram

Solutions For Difficult-To-Machine Materials

Stellram® Cutting Tool Systems for All Your Milling Requirements

ATI Stellram's Milling Systems are specifically designed and manufactured for machining high performance, difficult-to-machine materials.

This brochure introduces the portfolio of ATI Stellram products used in such market sectors as Aerospace, Defense, Power Generation, Oil and Gas and Medical/Precision where the common materials are stainless steels and high temperature alloys.

This Milling Products Catalog contains specific cutting information based on our experience and knowledge of these industry.

All ATI Stellram's products are supported by a highly technical sales team backed by an extensive customer care policy.

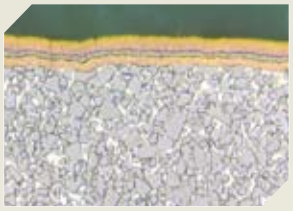
Please contact us for additional information on any of the products illustrated in this catalog or any other part of ATI Stellram's comprehensive tooling program.




Contents

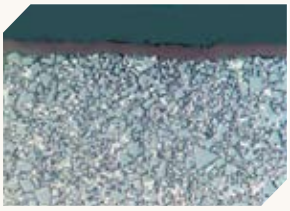
Grades

X500



High performance grade with exceptional resistance to shock and the effects of large metal removal rates. First choice for stainless steel and high temperature alloys or where conditions are unstable. ISO applications: M20 - M40, S20 – S30.

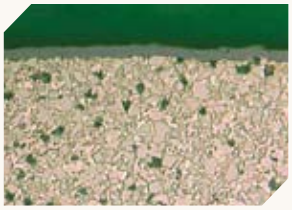
X700



US Patent # 7,244,519

This high performance premium carbide grade is the latest in the X-Grade™ Technology program of coated milling inserts. It is designed for the toughest of applications in Nickel based alloys, Cobalt based alloys, Titanium and Titanium alloys, as well as Stainless Steels. It is a combination of a highly durable TiAlN PVD coat and specially developed carbide substrate what gives an excellent tool life during long contact times of the cutting edge.

SP6519



The combination of a tough substrate with a new generation of TiAlN super nano coating, makes this new PVD coat virtually free of residual stress and extremely hard for unmatched performance. To use in stainless steel, High temp. alloys & Titanium on stable conditions.

SP6519 obsoletes and supersedes grade SP6564. Please refer to EDP-Cross-Reference Chart on page 61.

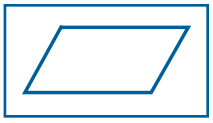
Geometries

 **-41**	A positive cutting action and reinforced cutting edge for roughing applications.
 **-421**	A positive geometry with high accuracy periphery grinding. For use on roughing and finishing applications. Precise control of the cutting edge makes this geometry the first choice for high temperature alloys.
 **-422**	A positive geometry with a 11° chip angle and an “E” edge preparation for roughing and semi finishing applications in stainless steels and high temperature alloys.
 **-44**	A positive geometry with high accuracy periphery grinding. For finishing applications on stainless steel and high temperature alloys.
 **-42**	The -42 geometry withstand the high cutting forces generated by 90° milling. This geometry in combination with the AD..09 inserts can be used in Titanium, high temperature alloys and stainless steel with excellent results.
 **-46**	A positive geometry with high accuracy periphery grinding. The positive cutting action and precise treatment of the cutting edge ensures effective machining in 90-degree approach (square shoulder) applications.
 **-48**	The geometry design of this insert provides a smooth cutting action with excellent chip control. Once positioned in the cutter body the combined effective cutting geometry produces lower radial forces, specifically in the direction of the feed, leading to a more stable cutting environment. To use in Titanium & high temperature alloys.
 **-701**	A high positive geometry with a full precision grind of periphery and chip groove. For finish machining of high temperature alloys and difficult to machine stainless steels, where work hardening or highly ductile materials are problematic.
 **-412**	The new -412 geometry is slightly more positive than the -41. This is improving tool life on several applications by machining stainless steel & high temperature alloys.
 **-D41**	A positive high feed geometry to machine stainless steel, high temperature alloys & Titanium.
 **-D411**	New D-411 with larger corner radius 0.047” (1.2mm) and positive geometry for less cutting energy and better edge protection by low radial engagement in Titanium, high temperature alloys and stainless steel.

Manufacturing Process Examples

Steam Blade Application

1 Roughing of the Rhomboid



2 Finishing of the Holding Section

3 Roof Milling

4 Roughing/Finishing of the Airfoil

5 Roughing of the slots in the Holding Section

Forging Blade Application

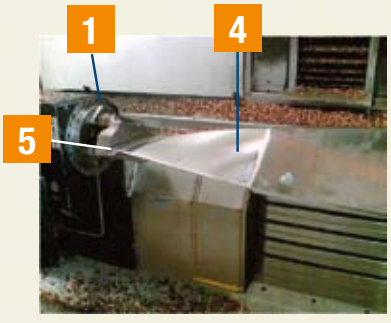
1 Open the inside shoulder

2 Width of the Airfoil

3 Snapper profile and bottom area machining (Roughing and Finishing)

4 Airfoil machining (Roughing and Finishing)

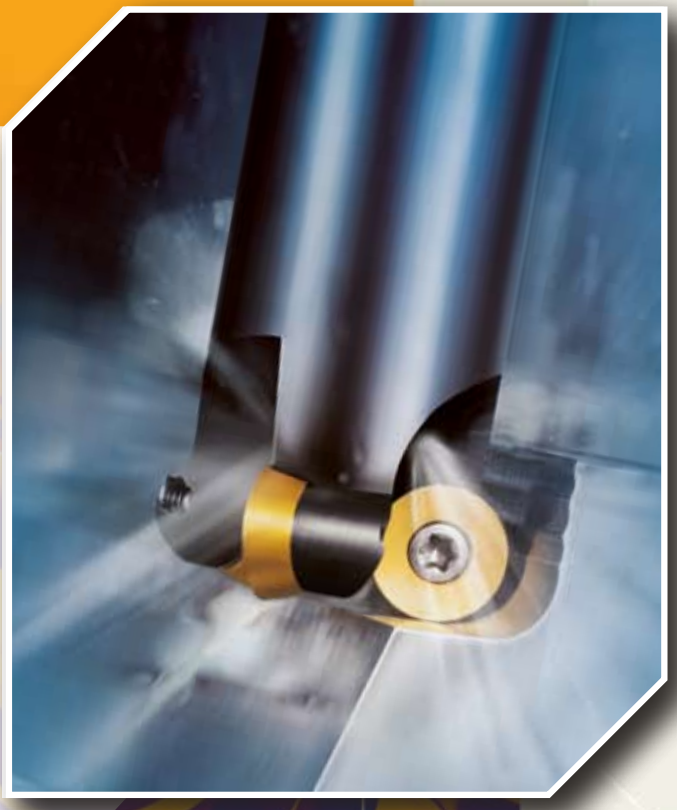
5 Inside shoulder - Airfoil radius connection



ATI Stellram

SOLUTIONS FOR
DIFFICULT-TO-MACHINE MATERIALS

7700 VR 08
CONTOUR MILLING CUTTER



- Positive cutting action for Semi-Finish and Finish applications
- Low cutting forces
- Tough grades for less stable applications
- Wear-resistant grades for longer tool life
- RP..08 Round button insert for maximum strength

MATERIAL APPLICATIONS

- Stainless Steels
- High Temperature Alloys

7700 VR 08

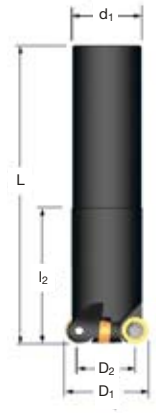
7700 VR 08 Cylindrical Shank

EDP #	Part Number	Dimensions (Inch) D_1	D_2	L/H	l_2	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031138	**C7700VR 08 CA0.75Z3R1.5**	0.750	0.44	7.00	1.57	0.750	0.157	3	015062	F3006T	013214	T9	12.4
031139	**C7700VR 08 CA1.00Z3R1.9**	1.00	0.69	8.00	1.96	1.00	0.157	3	015062	F3006T	013214	T9	12.4
031140	**C7700VR 08 CA1.00Z4R1.9**	1.00	0.69	8.00	1.96	1.00	0.157	4	015062	F3006T	013214	T9	12.4
031141	**C7700VR 08 CA1.25Z4R2.7**	1.25	0.94	10.00	2.75	1.25	0.157	4	015062	F3006T	013214	T9	12.4
031142	**C7700VR 08 CA1.25Z5R2.7**	1.25	0.94	10.00	2.75	1.25	0.157	5	015062	F3006T	013214	T9	12.4

7700 VR 08 Modular Head/Screw-on

EDP #	Part Number	Dimensions (Inch) D_1	D_2	L/H	M	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031128	**A7700VR 08 SA.625Z2R1.0**	0.625	0.31	1.00	M8	0.33	0.157	2	015062	F3006T	013214	T9	12.4
031129	**A7700VR 08 SA.750Z3R1.0**	0.750	0.44	1.00	M10	0.41	0.157	3	015062	F3006T	013214	T9	12.4
031130	**A7700VR 08 SA1.00Z3R1.4**	1.00	0.69	1.40	M12	0.49	0.157	3	015062	F3006T	013214	T9	12.4
031131	**A7700VR 08 SA1.00Z4R1.4**	1.00	0.69	1.40	M12	0.49	0.157	4	015062	F3006T	013214	T9	12.4
031132	**A7700VR 08 SA1.25Z5R1.4**	1.25	0.94	1.40	M16	0.67	0.157	5	015062	F3006T	013214	T9	12.4

Note: For cylindrical shanks in high density alloy for modular heads refer to page 57.



Cylindrical Shank

Modular Head

Depth of Cut (a_p)

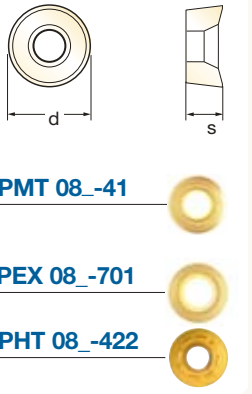
Blade Application

Airfoil: Semi-Finishing and Finishing

Material in blue to be machined

Inserts for 7700 VR 08

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h_m min
015220	RPMT 08 03M3E-41	X500		♦♦	♦♦	0.315	-	0.125	-	0.0024
031473	RPMT 08 03M3E-41	SP6519		♦	♦	0.315	-	0.125	-	0.0024
031312	RPEX 08 03M3E-701	X500		♦♦	♦♦	0.315	-	0.125	-	0.0016
031185	RPHT 08 03M3E-422	X700		♦♦	♦♦	0.315	-	0.125	-	0.0024
031187	RPHT 08 03M3E-422	SP6519		♦♦	♦♦	0.315	-	0.125	-	0.0024
031186	RPHT 08 03M3E-422	X500		♦♦	♦♦	0.315	-	0.125	-	0.0024



Note: Insert grade SP6519 obsoletes and supersedes grade SP6564. EDP-cross-reference chart found on page 61.

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 shown below.

Insert	a_p D.O.C inch	f_z Inch/tooth min.	Average Chip Thickness h_m (Inch)
RPMT08-41	0.020	0.0095	0.0024
RPMT08-41	0.040	0.0067	0.0024
RPMT08-41	0.060	0.0055	0.0024
RPEX08-701	0.020	0.0064	0.0016
RPEX08-701	0.040	0.0045	0.0016
RPEX08-701	0.060	0.0037	0.0016
RPHT08-422	0.020	0.0095	0.0024
RPHT08-422	0.040	0.0067	0.0024
RPHT08-422	0.060	0.0055	0.0024

The feed per tooth recommended is the minimum value to be used for an optimum result.

Formulae:

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

h_m = Average chip thickness

a_p = Depth of cut

f_z = feed per tooth

d = inserts diameter

Key to Recommended Tools

Material Designations

P	Unalloyed Steels	M	Stainless Steels	K	Cast Irons	S	High Temp. Alloys
P	Alloyed Steels	M	PH Stainless	N	Aluminium & Alloys	H	Hard Materials

ATI Stellram

RP_08 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼▼ Semi-Finishing/ ▼▼▼ Finishing				
							RPMT08-41		
					Vc (feet/min)		Feed (Inch/tooth)		D.O.C a_p (Inch)
					X500/X700	SP6519(SP6564)	X500/X700	SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	780-1245	820-1245	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.	ATI 420™	420	X20Cr13	655-1015	720-1015	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.			X22CrMoV12-1	655-1015	720-1015	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.	ATI 410™	410	X10Cr13	655-1015	720-1015	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.			X12CrNiMoV 12.3	460-655	525-655	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.	ATI 416™	416	X12CrS13	460-655	525-655	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.	ATI 316™	316	X5CrNiMo18 10	460-655	525-655	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.			X19CrMoVbN11-1	460-655	525-655	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.	ATI 301™	301	X12CrNi17 7	460-655	525-655	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	295-570	310-570	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.		CA 6 NM	X5CrNi13-4	390-590	425-590	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.	ATI 309™	309	X15CrNiSi20 12	260-425	330-425	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.	ATI 316L™	316L	X2CrNiMo18 12	210-280	230-280	0.0024-0.0039	0.0024-0.0032	0.020-0.050
	St.	ATI A286™	A638	X5NiCrTi2615	130-260	150-260	0.0024-0.0039	0.0024-0.0032	0.020-0.050
S	Ni			Rene 80	40-65		-	-	0.020-0.040
	Ni			Rene 95	30-50		-	-	0.020-0.040
	Ni			Udimet 710	65-80	65-80	-	-	0.020-0.040
	Ni	ATI 80A™		Nimonic 80A	95-130	95-130	-	-	0.020-0.040
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	95-130	-	-	0.020-0.040
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	130-180	-	-	0.020-0.040
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	-	-	0.020-0.040
	Ni			Inconel 738	65-115	65-115	-	-	0.020-0.040
	Ni			Inconel 939	40-65	40-65	-	-	0.020-0.040
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	-	-	0.020-0.040
	Fe		5533	X40CoCrNi2020	80-165	80-165	-	-	0.020-0.040
	Ti	ATI 6-4™	4906,4920	TiAl6V4	165-250	210-265	0.0024-0.0032	0.0024-0.0032	0.020-0.050

		ATI Designation	USA AMS Designation	Industry Designation	▼▼ Semi-Finishing/ ▼▼▼ Finishing				
					RPHT08-422			RPEX08-701	
					Feed (Inch/tooth)		D.O.C	Feed (Inch/tooth)	D.O.C a_p (Inch)
					X500/X700	SP6519(SP6564)	X500/X700	SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.	ATI 420™	420	X20Cr13	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.		-	X22CrMoV12-1	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.	ATI 410™	410	X10Cr13	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.		-	X12CrNiMoV 12.3	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.	ATI 416™	416	X12CrS13	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.		-	X19CrMoVbN11-1	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.	ATI 301™	301	X12CrNi17 7	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.		CA 6 NM	X5CrNi13-4	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.	ATI 309™	309	X15CrNiSi20 12	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.	ATI 316L™	316L	X2CrNiMo18 12	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
	St.	ATI A286™	A638	X5NiCrTi2615	0.0024-0.0047	0.0024-0.0039	0.020-0.050	0.0016-0.0032	0.020-0.040
S	Ni		-	Rene 80	0.0024-0.0032	-	0.020-0.040	0.0016-0.0024	0.020-0.040
	Ni		-	Rene 95	0.0024-0.0032	-	0.020-0.040	0.0016-0.0024	0.020-0.040
	Ni		-	Udimet 710	0.0024-0.0032	-	0.020-0.040	0.0016-0.0024	0.020-0.040
	Ni	ATI 80A™	-	Nimonic 80A	0.0024-0.0032	-	0.020-0.040	0.0016-0.0024	0.020-0.040
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	0.0024-0.0032	-	0.020-0.040	0.0016-0.0024	0.020-0.040
	Ni		Hastelloy C	NiCr17Mo17FeW	0.0024-0.0032	-	0.020-0.040	0.0016-0.0024	0.020-0.040
	Ni	ATI 718™	5383	Inconel 718	0.0024-0.0032	-	0.020-0.040	0.0016-0.0024	0.020-0.040
	Ni		-	Inconel 738	0.0024-0.0032	-	0.020-0.040	0.0016-0.0024	0.020-0.040
	Ni		-	Inconel 939	0.0024-0.0032	-	0.020-0.040	0.0016-0.0024	0.020-0.040
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	0.0024-0.0032	-	0.020-0.040	0.0016-0.0024	0.020-0.040
	Fe		5533	X40CoCrNi2020	0.0024-0.0032	-	0.020-0.040	0.0016-0.0024	0.020-0.040
	Ti	ATI 6-4™	4906,4920	TiAl6V4	0.0024-0.0032	0.0024-0.0032	0.020-0.050	0.0016-0.0024	0.020-0.040

ATI Stellram

SOLUTIONS FOR
DIFFICULT-TO-MACHINE MATERIALS

7700 VR 10
CONTOUR MILLING CUTTER WITHOUT INDEXATION

- Positive cutting action for Semi-Finish and Finish applications
- Low cutting forces
- Tough grades for less stable applications
- Wear-resistant grades for longer tool life
- RP..10 Round button insert for maximum strength

MATERIAL APPLICATIONS

- Stainless Steels
- High Temperature Alloys

7700 VR 10

Contour Milling Cutter without Indexation

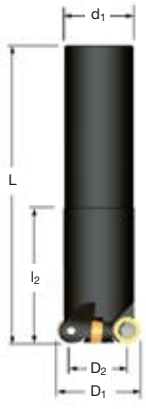
C7700 VR 10 Cylindrical Shank

EDP #	Part Number	Dimensions (Inch) D_1	D_2	L/H	l_2	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031207	**C7700VR 10 CA1.00Z3R2.0**	1.00	0.61	7.88	2.00	1.000	0.197	3	015260	D4008T	015240	T15	27.4
031208	**C7700VR 10 CA1.25Z3R2.7**	1.25	0.86	9.88	2.70	1.250	0.197	3	015260	D4008T	015240	T15	27.4
031209	**C7700VR 10 CA1.25Z4R2.7**	1.25	0.86	9.88	2.70	1.250	0.197	4	015260	D4008T	015240	T15	27.4

C7700 VR 10 Modular Head/Screw-on

EDP #	Part Number	Dimensions (Inch) D_1	D_2	L/H	M	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031214	**A7700VR 10 SA1.00Z3R1.4**	1.00	0.61	1.40	M12	0.49	0.197	3	015260	D4007T	015240	T15	27.4
031215	**A7700VR 10 SA1.25Z3R1.7**	1.25	0.86	1.40	M16	0.67	0.197	3	015260	D4008T	015240	T15	27.4
031216	**A7700VR 10 SA1.25Z4R1.7**	1.25	0.86	1.40	M16	0.67	0.197	4	015260	D4008T	015240	T15	27.4

Note: For cylindrical shanks in high density alloy for modular heads refer to page 57.



Cylindrical Shank

Modular Head

Depth of Cut (a_p)

Blade Application

Snapper machining on forging blades

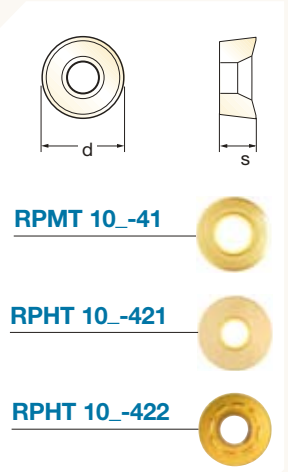
Airfoil: Semi-Finishing and Finishing

Material in blue to be machined

Solutions For Difficult-To-Machine Materials

Inserts for C7700 VR 10

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h_m min
030452	RPMT 10 T3M0E-41-X4	X500		♦♦	♦♦	0.394	-	0.156	-	0.0016
031539	RPMT 10 T3M0E-41-X4	SP6519		♦	♦	0.394	-	0.156	-	0.0016
030449	RPHT 10 T3M0E-421-X4	X500		♦♦	♦♦	0.394	-	0.156	-	0.0020
030410	RPHT 10 T3M0E-421-X4	X700		♦♦	♦♦	0.394	-	0.156	-	0.0020
030697	RPHT 10 T3M0E-422-X4	X500		♦♦	♦♦	0.394	-	0.156	-	0.0024
030767	RPHT 10 T3M0E-422-X4	SP6519		♦	♦	0.394	-	0.156	-	0.0024
030862	RPHT 10 T3M0E-422-X4	X700		♦♦	♦♦	0.394	-	0.156	-	0.0024



Note: Insert grade SP6519 obsoletes and supersedes grade SP6564. EDP-cross-reference chart found on page 61.

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 shown below.

Insert	a_p D.O.C Inch	f_z Inch/tooth min.	Average Chip Thickness h_m (Inch)
RPMT10-41	0.020	0.0071	0.0016
RPMT10-41	0.040	0.0051	0.0016
RPMT10-41	0.060	0.0041	0.0016
RPHT10-421	0.020	0.0089	0.0020
RPHT10-421	0.040	0.0063	0.0020
RPHT10-421	0.060	0.0051	0.0020
RPHT10-422	0.020	0.0107	0.0024
RPHT10-422	0.040	0.0075	0.0024
RPHT10-422	0.060	0.0062	0.0024

The feed per tooth recommended is the minimum value to be used for an optimum result.

Formulae:

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

h_m = Average chip thickness

a_p = Depth of cut

f_z = feed per tooth

d = inserts diameter

Key to Recommended Tools

Material Designations

P ♦ Unalloyed Steels	M ♦ Stainless Steels	K ♦ Cast Irons	S ♦ High Temp. Alloys
P ♦ Alloyed Steels	M ♦ PH Stainless	N ♦ Aluminium & Alloys	H ♦ Hard Materials

ATI Stellram

RP_10 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼▼ Semi-Finishing/ ▼▼▼ Finishing				
							RPMT10-41		
					V_C (feet/min)		Feed (Inch/tooth)		D.O.C a_p (Inch)
					X500/X700	SP6519(SP6564)	X500/X700	SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	780-1245	820-1245	0.0016-0.0079	0.0016-0.0071	0.020-0.060
	St.	ATI 420™	420	X20Cr13	655-1015	720-1015	0.0016-0.0079	0.0016-0.0071	0.020-0.060
	St.		-	22CrMoV12-1	655-1015	720-1015	0.0016-0.0071	0.0016-0.0063	0.020-0.060
	St.	ATI 410™	410	X10Cr13	655-1015	720-1015	0.0016-0.0071	0.0016-0.0063	0.020-0.060
	St.		-	X12CrNiMoV 12.3	460-655	525-655	0.0016-0.0071	0.0016-0.0063	0.020-0.060
	St.	ATI 416™	416	X12CrS13	460-655	525-655	0.0016-0.0063	0.0016-0.0055	0.020-0.060
	St.	ATI 316™	316	X5CrNiMo18 10	460-655	525-655	0.0016-0.0063	0.0016-0.0055	0.020-0.060
	St.		-	X19CrMoVbN11-1	460-655	525-655	0.0016-0.0063	0.0016-0.0055	0.020-0.060
	St.	ATI 301™	301	X12CrNi17 7	460-655	525-655	0.0016-0.0063	0.0016-0.0055	0.020-0.060
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	295-570	310-570	0.0016-0.0063	0.0016-0.0055	0.020-0.060
	St.		CA 6 NM	X5CrNi13-4	390-590	425-590	0.0016-0.0063	0.0016-0.0055	0.020-0.060
	St.	ATI 309™	309	X12CrNiWTi16-13	260-425	300-425	0.0016-0.0063	-	0.020-0.060
	St.	ATI 316L™	316L	X2CrNiMo18 12	210-280	330-425	0.0016-0.0063	-	0.020-0.060
	St.	ATI A286™	A638	X5NiCrTi2615	130-260	230-280	0.0016-0.0063	-	0.020-0.060
S	Ni		-	Rene 80	30-65	-	-	-	-
	Ni		-	Rene 95	30-50	-	-	-	-
	Ni		-	Udimet 710	65-80	65-80	-	-	-
	Ni	ATI 80A™	-	Nimonic 80A	95-130	95-130	-	-	-
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	95-130	-	-	-
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	130-180	-	-	-
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	-	-	-
	Ni		-	Inconel 738	65-115	65-115	-	-	-
	Ni		-	Inconel 939	40-65	40-65	-	-	-
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	-	-	-
	Fe		5533	X40CoCrNi2020	80-165	80-165	0.0024-0.0047	-	0.020-0.060
	Ti	ATI 6-4™	4906,4920	TiAl6V4	165-250	210-265	-	-	-

		ATI Designation	USA AMS Designation	Industry Designation	▼▼ Semi-Finishing/ ▼▼▼ Finishing				
					RPHT10-421		RPHT10-422		
					Feed (Inch/tooth)	D.O.C a_p (Inch)	Feed (Inch/tooth)		D.O.C a_p (Inch)
					X500/X700		X500/X700	SP6519(SP6464)	
M	St.	ATI 403™	403	X6CR13	0.0016-0.0087	0.020-0.060	0.0020-0.0131	0.0020-0.0118	0.020-0.060
	St.	ATI 420™	420	X20CR13	0.0016-0.0087	0.020-0.060	0.0020-0.0131	0.0020-0.0118	0.020-0.060
	St.		-	22CrMoV12-1	0.0016-0.0079	0.020-0.060	0.0020-0.0111	0.0020-0.0102	0.020-0.060
	St.	ATI 410™	410	X10CR13	0.0016-0.0079	0.020-0.060	0.0020-0.0111	0.0020-0.0102	0.020-0.060
	St.		-	X12CrNiMoV 12.3	0.0016-0.0079	0.020-0.060	0.0020-0.0111	0.0020-0.0102	0.020-0.060
	St.	ATI 416™	416	X12CRS13	0.0016-0.0071	0.020-0.060	0.0020-0.0111	0.0020-0.0087	0.020-0.060
	St.	ATI 316™	316	X5CrNiMo18 10	0.0016-0.0071	0.020-0.060	0.0020-0.0111	0.0020-0.0087	0.020-0.060
	St.		-	X19CrMoVbN11-1	0.0016-0.0071	0.020-0.060	0.0020-0.0111	0.0020-0.0087	0.020-0.060
	St.	ATI 301™	301	X12CrNi17 7	0.0016-0.0071	0.020-0.060	0.0020-0.0111	0.0020-0.0087	0.020-0.060
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	0.0016-0.0047	0.020-0.060	0.0020-0.0111	0.0020-0.0087	0.020-0.060
	St.		CA 6 NM	X5CrNi13-4	0.0016-0.0071	0.020-0.060	0.0020-0.0111	0.0020-0.0087	0.020-0.060
	St.	ATI 309™	309	X15CrNiSi20 12	0.0016-0.0071	0.020-0.060	0.0020-0.0111	0.0020-0.0087	0.020-0.060
	St.	ATI 316L™	316L	X2CrNiMo18 12	0.0016-0.0071	0.020-0.060	0.0020-0.0079	0.0020-0.0071	0.020-0.060
	St.	ATI A286™	A638	X5NiCrTi2615	0.0016-0.0071	0.020-0.060	0.0020-0.0079	0.0020-0.0071	0.020-0.060
S	Ni		-	Rene 80	0.0016-0.0047	0.020-0.060	0.0020-0.0071	-	0.020-0.060
	Ni		-	Rene 95	0.0016-0.0047	0.020-0.060	0.0020-0.0071	-	0.020-0.060
	Ni		-	Udimet 710	0.0016-0.0047	0.020-0.060	0.0020-0.0079	0.0020-0.0063	0.020-0.060
	Ni	ATI 80A™	-	Nimonic 80A	0.0016-0.0047	0.020-0.060	0.0020-0.0079	0.0020-0.0063	0.020-0.060
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	0.0016-0.0047	0.020-0.060	0.0020-0.0079	0.0020-0.0063	0.020-0.060
	Ni		Hastelloy C	NiCr17Mo17FeW	0.0016-0.0047	0.020-0.060	0.0020-0.0079	0.0020-0.0063	0.020-0.060
	Ni	ATI 718™	5383	Inconel 718	0.0016-0.0047	0.020-0.060	0.0020-0.0079	0.0020-0.0063	0.020-0.060
	Ni		-	Inconel 738	0.0016-0.0047	0.020-0.060	0.0020-0.0079	0.0020-0.0063	0.020-0.060
	Ni		-	Inconel 939	0.0016-0.0047	0.020-0.060	0.0020-0.0079	0.0020-0.0063	0.020-0.060
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	0.0016-0.0047	0.020-0.060	0.0020-0.0079	0.0020-0.0063	0.020-0.060
	Fe		5533	X40CoCrNi2020	0.0016-0.0047	0.020-0.060	0.0020-0.0079	0.0020-0.0063	0.020-0.060
	Ti	ATI 6-4™	4906,4920	TiAl6V4	0.0016-0.0047	0.020-0.060	0.0020-0.0079	0.0020-0.0063	0.020-0.060

ATI Stellram

SOLUTIONS FOR DIFFICULT-TO-MACHINE MATERIALS

7710 VR 10
CONTOUR MILLING CUTTER WITH INDEXATION & NEW POCKET DESIGN FOR MAXIMUM STABILITY

- Anti-rotation system for maximum stability US patent #7,722,297
- Positive cutting action for Roughing and Semi-Finishing applications
- Low cutting forces
- Tough grades for less stable applications
- Wear resistant grades for longer tool life
- RP..10 Round button insert for maximum strength

MATERIAL APPLICATIONS

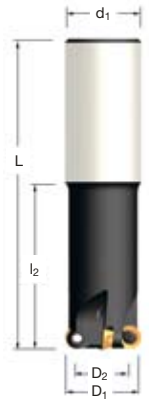
- Stainless Steels
- High Temperature Alloys

7710 VR 10

Contour Milling Cutter with Indexation

C7710 VR 10 Cylindrical Shank

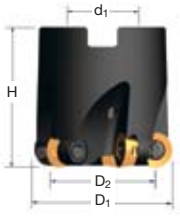
EDP #	Part Number	Dimensions (Inch) D1	D2	L/H	l2	d1	ap max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031147	C7710VR 10 CA1.00Z3R2.0	1.00	0.61	8	2.00	1.00	0.197	3	015260	D4008T	015240	T15	27.4
031148	C7710VR 10 CA1.25Z3R2.7	1.25	0.86	10	2.70	1.25	0.197	3	015260	D4008T	015240	T15	27.4
031149	C7710VR 10 CA1.25Z4R2.7	1.25	0.86	10	2.70	1.25	0.197	4	015260	D4008T	015240	T15	27.4



Cylindrical Shank

C7710 VR 10 Shell Mill

EDP #	Part Number	Dimensions (Inch) D1	D2	L/H	l2	d1	ap max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
030699	C7710VR 10 -A1.50Z5R	1.50	1.11	1.57	-	0.50	0.197	5	015260	D4008T	015240	T15	27.4
030698	C7710VR 10 -A2.00Z7R	2.00	1.61	1.57	-	0.70	0.197	7	018481	D4006T	015240	T15	27.4



Shell Mill Fixation

A7710 VR 10 Modular Head/Screw-on

EDP #	Part Number	Dimensions (Inch) D1	D2	L/H	M	d1	ap max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031253	A7710VR 10 SA1.00Z2R1.4	1.00	0.61	1.40	M10	0.41	0.197	2	015260	D4008T	015240	T15	27.4
031254	A7710VR 10 SA1.00Z3R1.4	1.00	0.61	1.40	M12	0.49	0.197	3	015260	D4008T	015240	T15	27.4
031255	A7710VR 10 SA1.25Z3R1.7	1.25	0.86	1.40	M16	0.67	0.197	3	015260	D4008T	015240	T15	27.4
031256	A7710VR 10 SA1.25Z4R1.7	1.25	0.86	1.40	M16	0.67	0.197	4	015260	D4008T	015240	T15	27.4

Modular Head

Note: For cylindrical shanks in high density alloy for modular heads refer to page 57.

Blade Application

Snapper and inside shoulder machining on forging blades

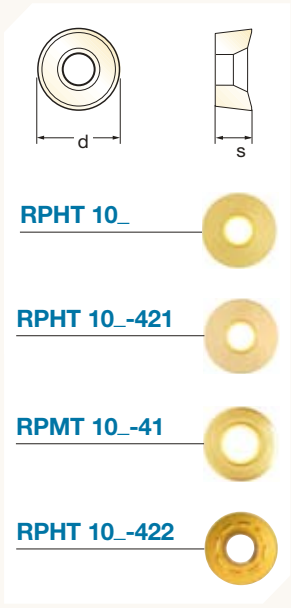
Rhomboid, Roof and Airfoil machining

Material in blue to be machined

Depth of Cut (a_p)

Inserts for C7710 VR 10

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h_m min
030329	RPHT 10 T3M0T-X4	X500	♦♦	♦♦		0.394	-	0.156	-	0.0032
031555	RPHT 10 T3M0T-X4	SP6519	♦	♦		0.394	-	0.156	-	0.0032
030411	RPHT 10 T3M0T-X4	X700	♦♦	♦♦		0.394	-	0.156	-	0.0032
030449	RPHT 10 T3M0E-421-X4	X500	♦♦	♦♦		0.394	-	0.156	-	0.0020
030410	RPHT 10 T3M0E-421-X4	X700	♦♦	♦♦		0.394	-	0.156	-	0.0020
030452	RPMT 10 T3M0E-41-X4	X500	♦♦	♦♦		0.394	-	0.156	-	0.0016
031539	RPMT 10 T3M0E-41-X4	SP6519	♦	♦		0.394	-	0.156	-	0.0016
030697	RPHT 10 T3MOE-422-X4	X500	♦♦	♦♦		0.394	-	0.156	-	0.0024
030767	RPHT 10 T3MOE-422-X4	X700	♦♦	♦♦		0.394	-	0.156	-	0.0024
030862	RPHT 10 T3MOE-422-X4	SP6519	♦	♦		0.394	-	0.156	-	0.0024



Note: Insert grade SP6519 obsoletes and supersedes grade SP6564. EDP-cross-reference chart found on page 61.

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 shown below.

Insert	a_p D.O.C Inch	f_z Inch/tooth min.	Average Chip Thickness h_m (Inch)
RPHT10-T	0.020	0.0142	0.0032
RPHT10-T	0.040	0.0100	0.0032
RPHT10-T	0.060	0.0082	0.0032
RPHT10-T	0.080	0.0071	0.0032
RPHT10-T	0.100	0.0064	0.0032
RPMT10-41	0.020	0.0071	0.0016
RPMT10-41	0.040	0.0051	0.0016
RPMT10-41	0.060	0.0041	0.0016
RPMT10-41	0.080	0.0036	0.0016
RPMT10-41	0.100	0.0032	0.0016
RPHT10-421	0.020	0.0089	0.0020
RPHT10-421	0.040	0.0063	0.0020
RPHT10-421	0.060	0.0051	0.0020
RPHT10-421	0.080	0.0044	0.0020
RPHT10-421	0.100	0.0040	0.0020
RPHT10-422	0.020	0.0107	0.0020
RPHT10-422	0.040	0.0075	0.0024
RPHT10-422	0.060	0.0062	0.0024
RPHT10-422	0.080	0.0053	0.0024
RPHT10-422	0.100	0.0048	0.0024

The feed per tooth recommended is the minimum value to be used for an optimum result.

Formulae:

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

h_m = Average chip thickness

a_p = Depth of cut

f_z = feed per tooth

d = inserts diameter

Key to Recommended Tools

Material Designations

P	Unalloyed Steels	M	Stainless Steels	K	Cast Irons	S	High Temp. Alloys
P	Alloyed Steels	M	PH Stainless	N	Aluminium & Alloys	H	Hard Materials

ATI Stellram

RP_10 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing/ ▼▼ Semi Finishing							
					V_C (feet/min)		RPHT10-T			RPMT10-41		
							Feed (Inch/tooth)		D.O.C a_p (Inch)	Feed (Inch/tooth)		D.O.C a_p (Inch)
					X500/X700	SP6519(SP6564)	X500/X700	SP6519(SP6564)		X500/X700	SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	780-1245	820-1245	0.0032-0.0138	0.0032-0.0110	0.020-0.100	0.0016-0.0079	0.0016-0.0071	0.020-0.080
	St.	ATI 420™	420	X20Cr13	655-1015	720-1015	0.0032-0.0138	0.0032-0.0110	0.020-0.100	0.0016-0.0079	0.0016-0.0071	0.020-0.080
	St.			X22CrMoV12-1	655-1015	720-1015	0.0032-0.0118	0.0032-0.0102	0.020-0.100	0.0016-0.0071	0.0016-0.0063	0.020-0.080
	St.	ATI 410™	410	X10Cr13	655-1015	720-1015	0.0032-0.0118	0.0032-0.0102	0.020-0.100	0.0016-0.0071	0.0016-0.0063	0.020-0.080
	St.			X12CrNiMoV 12.3	460-655	525-655	0.0032-0.0118	0.0032-0.0102	0.020-0.100	0.0016-0.0071	0.0016-0.0063	0.020-0.080
	St.	ATI 416™	416	X12CrS13	460-655	525-655	0.0032-0.0102	0.0032-0.0087	0.020-0.100	0.0016-0.0063	0.0016-0.0055	0.020-0.080
	St.	ATI 316™	316	X5CrNiMo18 10	460-655	525-655	0.0032-0.0102	0.0032-0.0087	0.020-0.100	0.0016-0.0063	0.0016-0.0055	0.020-0.080
	St.			X19CrMoVbN11-1	460-655	525-655	0.0032-0.0102	0.0032-0.0087	0.020-0.100	0.0016-0.0063	0.0016-0.0055	0.020-0.080
	St.	ATI 301™	301	X12CrNi17 7	460-655	525-655	0.0032-0.0102	0.0032-0.0087	0.020-0.100	0.0016-0.0063	0.0016-0.0055	0.020-0.080
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	295-575	310-575	0.0032-0.0102	0.0032-0.0087	0.020-0.100	0.0016-0.0063	0.0016-0.0055	0.020-0.080
	St.		CA 6 NM	X5CrNi13-4	395-590	425-590	0.0032-0.0102	0.0032-0.0087	0.020-0.100	0.0016-0.0063	0.0016-0.0055	0.020-0.080
	St.	ATI 309™	309	X15CrNiSi20 12	260-425	300-425	0.0032-0.0102	0.0032-0.0087	0.020-0.100	0.0016-0.0063	-	0.020-0.080
	St.	ATI 316L™	316L	X2CrNiMo18 12	210-280	230-280	-	-	-	0.0016-0.0063	-	0.020-0.080
	St.	ATI A286™	A638	X5NiCrTi2615	130-260	150-280	-	-	-	0.0016-0.0063	-	0.020-0.080
S	Ni		-	Rene 80	30-65	-	-	-	-	-	-	-
	Ni		-	Rene 95	30-50	-	-	-	-	-	-	-
	Ni		-	Udimet 710	65-80	65-80	-	-	-	-	-	-
	Ni	ATI 80A™	-	Nimonic 80A	95-130	95-130	-	-	-	-	-	-
	Ni	ATI M-252™	Jethete M252	G-GiCr19Co	95-130	95-130	-	-	-	-	-	-
	Ni		Hastelloy C	NiCr17Mo17Few	130-180	130-180	-	-	-	-	-	-
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	-	-	-	-	-	-
	Ni		-	Inconel 738	65-115	65-115	-	-	-	-	-	-
	Ni		-	Inconel 939	40-65	40-65	-	-	-	-	-	-
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	-	-	-	-	-	-
	Fe		5533	X40CoCrNi2020	80-165	80-165	0.0032-0.0102	0.0032-0.0087	0.020-0.100	0.0016-0.0047	-	0.020-0.060
	Ti	ATI 6-4™	4906,4920	TiAl6V4	165-250	210-265	-	-	-	-	-	-

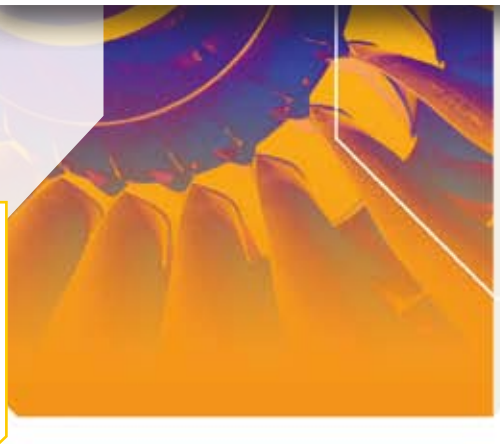
		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing/ ▼▼ Semi-Finishing				
					RPHT10-421		RPHT10-422		
					Feed (Inch/tooth)	D.O.C a_p (Inch)	Feed (Inch/tooth)		D.O.C a_p (Inch)
					X500/X700		X500/X700	SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	0.0020-0.0087	0.020-0.100	0.0024-0.0130	0.0024-0.0118	0.020-0.100
	St.	ATI 420™	420	X20Cr13	0.0020-0.0087	0.020-0.100	0.0024-0.0130	0.0024-0.0118	0.020-0.100
	St.			X22CrMoV12-1	0.0020-0.0079	0.020-0.100	0.0024-0.0110	0.0024-0.0102	0.020-0.100
	St.	ATI 410™	410	X10Cr13	0.0020-0.0079	0.020-0.100	0.0024-0.0110	0.0024-0.0102	0.020-0.100
	St.			X12CrNiMoV 12.3	0.0020-0.0079	0.020-0.080	0.0024-0.0110	0.0024-0.0102	0.020-0.100
	St.	ATI 416™	416	X12CrS13	0.0020-0.0071	0.020-0.080	0.0024-0.0098	0.0024-0.0087	0.020-0.100
	St.	ATI 316™	316	X5CrNiMo18 10	0.0020-0.0071	0.020-0.080	0.0024-0.0098	0.0024-0.0087	0.020-0.100
	St.			X19CrMoVbN11-1	0.0020-0.0071	0.020-0.080	0.0024-0.0098	0.0024-0.0087	0.020-0.100
	St.	ATI 301™	301	X12CrNi17 7	0.0020-0.0071	0.020-0.080	0.0024-0.0098	0.0024-0.0087	0.020-0.100
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	0.0020-0.0071	0.020-0.080	0.0024-0.0098	0.0024-0.0087	0.020-0.100
	St.		CA 6 NM	X5CrNi13-4	0.0020-0.0071	0.020-0.080	0.0024-0.0098	0.0024-0.0087	0.020-0.100
	St.	ATI 309™	309	X15CrNiSi20 12	0.0020-0.0071	0.020-0.080	0.0024-0.0079	0.0024-0.0071	0.020-0.080
	St.	ATI 316L™	316L	X2CrNiMo18 12	0.0020-0.0071	0.020-0.080	0.0024-0.0079	0.0024-0.0071	0.020-0.080
	St.	ATI A286™	A638	X5NiCrTi2615	0.0020-0.0071	0.020-0.080	0.0024-0.0079	0.0024-0.0071	0.020-0.080
S	Ni			Rene 80	0.0020-0.0042	0.020-0.060	0.0024-0.0071	-	0.020-0.080
	Ni			Rene 95	0.0020-0.0042	0.020-0.060	0.0024-0.0071	-	0.020-0.080
	Ni			Udimet 710	0.0020-0.0042	0.020-0.060	0.0024-0.0079	0.0024-0.0063	0.020-0.080
	Ni	ATI 80A™		Nimonic 80A	0.0020-0.0042	0.020-0.060	0.0024-0.0079	0.0024-0.0063	0.020-0.080
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	0.0020-0.0042	0.020-0.060	0.0024-0.0079	0.0024-0.0063	0.020-0.080
	Ni		Hastelloy C	NiCr17Mo17FeW	0.0020-0.0042	0.020-0.060	0.0024-0.0079	0.0024-0.0063	0.020-0.080
	Ni	ATI 718™	5383	Inconel 718	0.0020-0.0042	0.020-0.060	0.0024-0.0079	0.0024-0.0063	0.020-0.080
	Ni			Inconel 738	0.0020-0.0042	0.020-0.060	0.0024-0.0079	0.0024-0.0063	0.020-0.080
	Ni			Inconel 939	0.0020-0.0042	0.020-0.060	0.0024-0.0079	0.0024-0.0063	0.020-0.080
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	0.0020-0.0042	0.020-0.060	0.0024-0.0079	0.0024-0.0063	0.020-0.080
	Fe		5533	X40CoCrNi2020	0.0020-0.0042	0.020-0.060	0.0024-0.0079	0.0024-0.0063	0.020-0.080
	Ti	ATI 6-4™	4906,4920	TiAl6V4	0.0020-0.0042	0.020-0.060	0.0024-0.0079	0.0024-0.0063	0.020-0.080

ATI Stellram

SOLUTIONS FOR
DIFFICULT-TO-MACHINE MATERIALS

7710 VR 12
ANTI-ROTATION SYSTEM WITH NEW POCKET DESIGN FOR MAXIMUM STABILITY

- Anti-rotation system for maximum stability at high feed rates
  US patent #7,722,297
- Maximum number of teeth for heavy feed operations
- Flute design maximises swarf evacuation
- Tough grades for less stable applications
- Medium and close pitch cutters available



MATERIAL APPLICATIONS

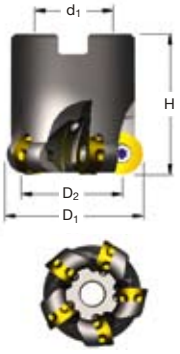
- Stainless Steels
- High Temperature Alloys

7710 VR 12

Contour Milling Cutter with Indexation

C7710 VR 12 Shell Mill Fixation

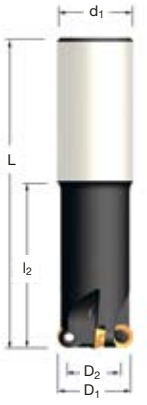
EDP #	Part Number	Dimensions (Inch) D_1	D_2	L/H	l_2	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
030796	**C7710VR 12 -A1.50Z4R**	1.50	1.02	1.57	-	0.50	0.240	4	015262	D4010T	015240	T15	27.4
030611	**C7710VR 12 -A2.00Z4R**	2.00	1.52	1.57	-	0.75	0.240	4	015262	D4010T	015240	T15	27.4
030665	**C7710VR 12 -A2.00Z5R**	2.00	1.52	1.57	-	0.75	0.240	5	015262	D4010T	015240	T15	27.4
031453	**C7710VR 12 -A2.00Z6R**	2.00	1.52	1.57	-	0.75	0.240	6	015262	D4010T	015240	T15	27.4
030944	**C7710VR 12 -A2.50Z6R**	2.50	2.03	1.97	-	1.00	0.240	6	015262	D4010T	015240	T15	27.4
030669	**C7710VR 12 -A3.00Z8R**	3.00	2.53	1.97	-	1.00	0.240	8	015262	D4010T	015240	T15	27.4



Shell Mill Fixation

C7710 VR 12 Cylindrical Shank

EDP #	Part Number	Dimensions (Inch) D_1	D_2	L/H	l_2	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031162	**C7710VR 12 CA1.00Z2R2.0**	1.00	0.52	7.87	2.00	1.00	0.240	2	015262	D4010T	015240	T15	27.4
031163	**C7710VR 12 CA1.25Z3R2.7**	1.25	0.86	9.84	2.70	1.25	0.240	3	015262	D4010T	015240	T15	27.4



Cylindrical Shank

A7710 VR 12 Modular Head/Screw-on

EDP #	Part Number	Dimensions (Inch) D_1	D_2	L/H	M	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031166	**A7710VR 12 SA1.00Z2R1.4**	1.00	0.52	1.40	M12	0.49	0.240	2	015260	D4008T	015240	T15	27.4
031167	**A7710VR 12 SA1.25Z3R1.7**	1.25	0.86	1.70	M16	0.67	0.240	3	015260	D4008T	015240	T15	27.4

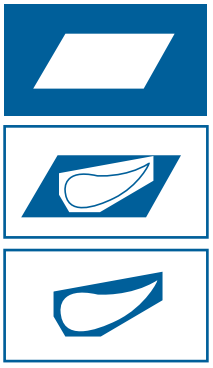
Note: For cylindrical shanks in high density alloy for modular heads refer to page 57.

Modular Head

Blade Application

Pre-machining the width of the airfoil on forging blades

Rhomboid, Roof and Airfoil machining on larger sized blades



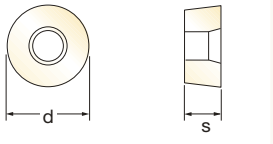
Material in blue to be machined

Depth of Cut (a_p)

Solutions For Difficult-To-Machine Materials

Inserts for C7710 VR 12

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h_m min
029282	RPEX 12 04M0E-701-X4	X500	◆◆	◆◆		0.472	-	0.187	-	0.0016
029034	RPHT 12 04M0T-X4	X500	◆◆	◆◆		0.472	-	0.187	-	0.0059
031516	RPHT 12 04M0T-X4	SP6519	◆	◆		0.472	-	0.187	-	0.0059
029699	RPHT 12 04M0T-X4	X700	◆◆	◆◆		0.472	-	0.187	-	0.0059
029286	RPHT 12 04M0E-421-X4	X500	◆◆	◆◆		0.472	-	0.187	-	0.0024
029700	RPHT 12 04M0E-421-X4	X700	◆◆	◆◆		0.472	-	0.187	-	0.0024
030399	RPHT 12 04MOE-422-X4	X500	◆◆	◆◆		0.472	-	0.187	-	0.0035
030600	RPHT 12 04MOE-422-X4	X700	◆◆	◆◆		0.472	-	0.187	-	0.0035
031359	RPHT 12 04MOE-422-X4	SP6519	◆◆	◆◆		0.472	-	0.187	-	0.0035



RPEX 12_-701

RPHT 12_-T

RPHT 12_-421

RPHT 12_-422

Note: Insert grade SP6519 obsoletes and supersedes grade SP6564. EDP-cross-reference chart found on page 61.

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 shown below.

Insert	a_p D.O.C Inch	f_z Inch/tooth min.	Average Chip Thickness h_m (Inch)
RPEX12-701	0.020	0.0078	0.0016
RPEX12-701	0.040	0.0055	0.0016
RPEX12-701	0.060	0.0045	0.0016
RPHT12-T	0.040	0.0203	0.0059
RPHT12-T	0.060	0.0166	0.0059
RPHT12-T	0.080	0.0143	0.0059
RPHT12-T	0.100	0.0128	0.0059
RPHT12-T	0.118	0.0118	0.0059
RPHT12-T	0.125	0.0115	0.0059
RPHT12-T	0.150	0.0105	0.0059
RPHT12-T	0.180	0.0096	0.0059
RPHT12-421	0.040	0.0082	0.0024
RPHT12-421	0.060	0.0067	0.0024
RPHT12-421	0.080	0.0058	0.0024
RPHT12-421	0.100	0.0052	0.0024
RPHT12-421	0.125	0.0047	0.0024
RPHT12-422	0.040	0.0120	0.0035
RPHT12-422	0.060	0.0098	0.0035
RPHT12-422	0.080	0.0085	0.0035
RPHT12-422	0.100	0.0076	0.0035
RPHT12-422	0.125	0.0068	0.0035
RPHT12-422	0.130	0.0067	0.0035
RPHT12-422	0.150	0.0062	0.0035

Formulae:

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

h_m = Average chip thickness

a_p = Depth of cut

f_z = feed per tooth

d = inserts diameter

The feed per tooth recommended is the minimum value to be used for an optimum result.

Key to Recommended Tools

Material Designations

P ◆ Unalloyed Steels	M ◆ Stainless Steels	K ◆ Cast Irons	S ◆ High Temp. Alloys
P ◆ Alloyed Steels	M ◆ PH Stainless	N ◆ Aluminium & Alloys	H ◆ Hard Materials

ATI Stellram

RP_12 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing/ ▼▼ Semi Finishing					
					V_C (feet/min)		RPHT12-422			
							Feed (Inch/tooth)	D.O.C a_p (Inch)	Feed (Inch/tooth)	D.O.C a_p (Inch)
					X500/X700	SP6519(SP6564)	X500/X700		SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	780-1245	820-1245	0.0035-0.0158	0.040-0.160	0.0035-0.0138	0.040-0.160
	St.	ATI 420™	420	X20Cr13	656-1015	720-1015	0.0035-0.0158	0.040-0.160	0.0035-0.0138	0.040-0.160
	St.			X22CrMoV12-1	656-1015	720-1015	0.0035-0.0158	0.040-0.120	0.0035-0.0138	0.040-0.120
	St.	ATI 410™	410	X10Cr13	656-1015	720-1015	0.0035-0.0158	0.040-0.120	0.0035-0.0138	0.040-0.120
	St.			X12CrNiMoV 12.3	460-655	525-655	0.0035-0.0138	0.040-0.120	0.0035-0.0118	0.040-0.120
	St.	ATI 416™	416	X12CrS13	460-655	525-655	0.0035-0.0138	0.040-0.120	0.0035-0.0118	0.040-0.120
	St.	ATI 316™	316	X5CrNiMo18 10	460-655	525-655	0.0035-0.0138	0.040-0.120	0.0035-0.0118	0.040-0.120
	St.			X19CrMoVbN11-1	460-655	525-655	0.0035-0.0138	0.040-0.120	0.0035-0.0118	0.040-0.120
	St.	ATI 301™	301	X12CrNi17 7	460-655	525-655	0.0035-0.0106	0.040-0.120	0.0035-0.0087	0.040-0.120
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	295-575	310-575	0.0035-0.0106	0.040-0.120	0.0035-0.0087	0.040-0.120
	St.		CA 6 NM	X5CrNi13-4	390-590	425-590	0.0035-0.0106	0.040-0.120	0.0035-0.0087	0.040-0.120
	St.	ATI 309™	309	X15CrNiSi20 12	260-425	325-425	0.0035-0.0106	0.040-0.120	0.0035-0.0087	0.040-0.120
	St.	ATI 316L™	316L	X2CrNiMo18 12	210-280	230-280	0.0035-0.0106	0.040-0.120	0.0035-0.0087	0.040-0.120
	St.	ATI A286™	A638	X5NiCrTi2615	130-260	145-265	0.0035-0.0106	0.040-0.120	0.0035-0.0087	0.040-0.120
S	Ni			Rene 80	40-65	-	0.0035-0.0106	0.040-0.120	-	-
	Ni			Rene 95	30-50	-	0.0035-0.0106	0.040-0.120	-	
	Ni			Udimet 710	65-80	65-80	0.0035-0.0106	0.040-0.120	-	-
	Ni	ATI 80A™		Nimonic 80A	95-130	95-130	0.0035-0.0106	0.040-0.120	-	-
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	95-130	0.0035-0.0106	0.040-0.120	-	-
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	130-180	0.0035-0.0106	0.040-0.120	-	-
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	0.0035-0.0106	0.040-0.120	-	-
	Ni			Inconel 738	65-115	65-115	0.0035-0.0106	0.040-0.120	-	-
	Ni			Inconel 939	40-65	40-65	0.0035-0.0106	0.040-0.120	-	-
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	0.0035-0.0106	0.040-0.120	-	-
	Fe		5533	X40CoCrNi2020	80-165	80-165	0.0035-0.0106	0.040-0.120	-	-
	Ti	ATI 6-4™	4906,4920	TiAl6V4	165-250	210-265	0.0035-0.0106	0.040-0.120	0.0035-0.0098	0.040-0.120

		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing/ ▼▼ Semi Finishing							
					RPHT12-T			RPHT12-421		RPEX12-701		
					Feed (Inch/tooth)		D.O.C a_p (Inch)	Feed (Inch/tooth)	D.O.C a_p (Inch)	Feed (Inch/tooth)	D.O.C a_p (Inch)	
					X500/X700	SP6519(SP6564)		X500/X700		X500/X700		
M	St.	ATI 403™	403	X6Cr13	0.0059-0.0165	0.0047-0.0130	0.040-0.180	0.0039-0.0098	0.040-0.120	0.0016-0.0071	0.020-0.080	
	St.	ATI 420™	420	X20Cr13	0.0059-0.0165	0.0047-0.0130	0.040-0.180	0.0039-0.0098	0.040-0.120	0.0016-0.0071	0.020-0.080	
	St.			X22CrMoV12-1	0.0059-0.0165	0.0047-0.0130	0.040-0.140	0.0039-0.0098	0.040-0.120	0.0016-0.0071	0.020-0.080	
	St.	ATI 410™	410	X10Cr13	0.0059-0.0165	0.0047-0.0130	0.040-0.140	0.0039-0.0098	0.040-0.120	0.0016-0.0071	0.020-0.080	
	St.			X12CrNiMoV 12.3	0.0059-0.0138	0.0047-0.0130	0.040-0.140	0.0039-0.0098	0.040-0.120	0.0016-0.0071	0.020-0.080	
	St.	ATI 416™	416	X12CrS13	0.0059-0.0138	0.0047-0.0130	0.040-0.140	0.0039-0.0098	0.040-0.120	0.0016-0.0071	0.020-0.080	
	St.	ATI 316™	316	X5CrNiMo18 10	0.0059-0.0138	0.0047-0.0130	0.040-0.140	0.0039-0.0098	0.040-0.120	0.0016-0.0071	0.020-0.080	
	St.			X19CrMoVbN11-1	0.0059-0.0138	0.0047-0.0130	0.040-0.140	0.0039-0.0098	0.040-0.120	0.0016-0.0071	0.020-0.080	
	St.	ATI 301™	301	X12CrNi17 7	-	-	-	0.0032-0.0087	0.040-0.120	0.0016-0.0071	0.020-0.080	
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	-	-	-	0.0032-0.0087	0.040-0.120	0.0016-0.0071	0.020-0.080	
	St.		CA 6 NM	X5CrNi13-4		-	-	0.0032-0.0087	0.040-0.120	0.0016-0.0055	0.020-0.080	
	St.	ATI 309™	309	X15CrNiSi20 12	-	-	-	0.0032-0.0087	0.040-0.120	0.0016-0.0055	0.020-0.080	
	St.	ATI 316L™	316L	X2CrNiMo18 12	-	-	-	0.0032-0.0087	0.040-0.120	0.0016-0.0055	0.020-0.080	
	St.	ATI A286™	A638	X5NiCrTi2615	-	-	-	0.0032-0.0087	0.040-0.120	0.0016-0.0055	0.020-0.080	
S	Ni			Rene 80	-	-	-	0.0024-0.0087	0.040-0.100	0.0016-0.0055	0.020-0.080	
	Ni			Rene 95	-	-	-	0.0024-0.0087	0.040-0.100	0.0016-0.0055	0.020-0.080	
	Ni			Udimet 710	-	-	-	0.0024-0.0087	0.040-0.100	0.0016-0.0055	0.020-0.080	
	Ni	ATI 80A™		Nimonic 80A	-	-	-	0.0024-0.0087	0.040-0.100	0.0016-0.0055	0.020-0.080	
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	-	-	-	0.0024-0.0087	0.040-0.100	0.0016-0.0055	0.020-0.080	
	Ni		Hastelloy C	NiCr17Mo17FeW	-	-	-	0.0024-0.0087	0.040-0.100	0.0016-0.0055	0.020-0.080	
	Ni	ATI 718™	5383	Inconel 718	-	-	-	0.0024-0.0087	0.040-0.100	0.0016-0.0055	0.020-0.080	
	Ni			Inconel 738	-	-	-	0.0024-0.0087	0.040-0.100	0.0016-0.0055	0.020-0.080	
	Ni			Inconel 939	-	-	-	0.0024-0.0098	0.040-0.100	0.0016-0.0055	0.020-0.080	
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	-	-	-	0.0024-0.0098	0.040-0.100	0.0016-0.0055	0.020-0.080	
	Fe		5533	X40CoCrNi2020	-	-	-	0.0024-0.0098	0.040-0.100	0.0016-0.0055	0.020-0.080	
	Ti	ATI 6-4™	4906,4920	TiAl6V4	-	-	-	0.0024-0.0098	0.040-0.100	0.0016-0.0055	0.020-0.080	

ATI Stellram

SOLUTIONS FOR
DIFFICULT-TO-MACHINE MATERIALS

7745 VOD 04

8 ECONOMICAL CUTTING EDGES PER INSERT BY D.O.C 0.155”

- 1 tool, multiple operations: face milling, ramp milling, pocket milling and chamfering
- Thick and strong inserts for greater machining security
- Standard and close pitch cutter range from 1.00” up to 6.00” diameter
- Close pitch cutters allow high feed rates with improved surface finish in stable conditions

MATERIAL APPLICATIONS

- Stainless Steels
- High Temperature Alloys

7745 VOD 04 Milling Cutter

C7745 VOD 04 Weldon Shank

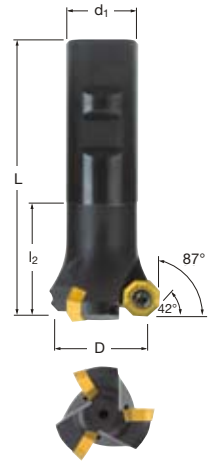
EDP #	Part Number	Dimensions (Inch) D	L/H	l_1	d_1	$a_{1\ max.}$	a_p	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
014897	**C7745VOD 04 WA1.00R**	1.00	3.54	1.57	0.75	0.300	0.155	2	015270	F4011T	015241	T20	27.4
014898	**C7745VOD 04 WA1.25R**	1.25	3.77	1.57	1.00	0.300	0.155	3	015270	F4011T	015241	T20	27.4
014899	**C7745VOD 04 WA1.50R***	1.50	4.33	2.00	1.25	0.300	0.155	4	015270	F4011T	015241	T20	27.4

C7745 VOD 04 Shell Mill Fixation

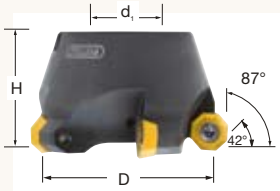
015421	**C7745VOD 04 -A1.50R**	1.50	1.37	-	0.50	0.300	0.155	4	015270	F4011T	015241	T20	27.4
014893	**C7745VOD 04 -A2.00R**	2.00	1.57	-	0.75	0.300	0.155	4	015270	F4011T	015241	T20	27.4
026571	**C7745VOD 04 -A2.00Z06R**	2.00	1.57	-	0.75	0.300	0.155	6	015270	F4011T	015241	T20	27.4
014894	**C7745VOD 04 -A2.50R**	2.50	1.57	-	0.75	0.300	0.155	5	015270	F4011T	015241	T20	27.4
026572	**C7745VOD 04 -A2.50Z07R**	2.50	1.57	-	0.75	0.300	0.155	7	015270	F4011T	015241	T20	27.4
014895	**C7745VOD 04 -A3.00R**	3.00	1.96	-	1.00	0.300	0.155	6	015270	F4011T	015241	T20	27.4
026573	**C7745VOD 04 -A3.00Z09R**	3.00	1.96	-	1.00	0.300	0.155	9	015270	F4011T	015241	T20	27.4
014896	**C7745VOD 04 -A4.00R***	4.00	2.16	-	1.25	0.300	0.155	7	015270	F4011T	015241	T20	27.4
026574	**C7745VOD 04 -A4.00Z11R**	4.00	2.16	-	1.25	0.300	0.155	11	015270	F4011T	015241	T20	27.4
026578	**C7745VOD 04 -A5.00R***	5.00	2.48	-	1.50	0.300	0.155	8	015270	F4011T	015241	T20	27.4
026575	**C7745VOD 04 -A5.00Z12R***	5.00	2.48	-	1.50	0.300	0.155	12	015270	F4011T	015241	T20	27.4
026576	**C7745VOD 04 -A6.00R**	6.00	2.48	-	1.50	0.300	0.155	10	015270	F4011T	015241	T20	27.4
026577	**C7745VOD 04 -A6.00Z15R***	6.00	2.48	-	1.50	0.300	0.155	15	015270	F4011T	015241	T20	27.4

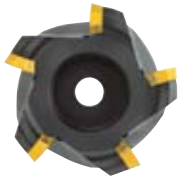
*Non-stock made to order with 4 week delivery.

All milling cutters have through the tool coolant except for the 6.0” diameter cutters.

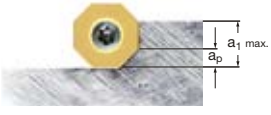


Weldon Shank





Shell Mill Fixation



Depth of Cut (a_p)

Blade Application

Remove forging or rolled skin material with ODMW04..INSERTS

Rhomboid, Roof

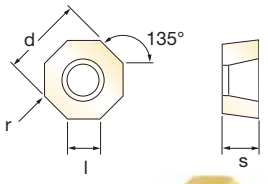
Finishing of the Holding Section with ODET04..-44. If axial pressure is too high (surface quality) use ODMT04..-41 with FZ 0.0012 - 0.0019 Inch/tooth.

Material in blue to be machined

Solutions For Difficult-To-Machine Materials

Inserts for C7745 VOD 04

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h_m min
022198	ODET 04 04APEN-44	X500		◆◆	◆◆	0.500	0.157	0.187	Facet	0.0016
031470	ODET 04 04APEN-44	SP6519		◆	◆	0.500	0.157	0.187	Facet	0.0016
015143	ODMT 04 0408EN-41	X500	◆◆	◆◆	◆◆	0.500	0.157	0.187	0.031	0.0016
031471	ODMT 04 0408EN-41	SP6519	◆	◆	◆	0.500	0.157	0.187	0.031	0.0016
030330	ODMT 04 0408EN-41	X700	◆◆	◆◆	◆◆	0.500	0.157	0.187	0.031	0.0016
017672	ODMW 04 0408SN	X500	◆			0.500	0.157	0.187	0.031	0.0106
031462	ODMW 04 0408SN	SP6519	◆			0.500	0.157	0.187	0.031	0.0106
030768	ODMT 04 0408EN-412	X500	◆◆	◆◆		0.500	0.157	0.187	0.031	0.0016
030769	ODMT 04 0408EN-412	X700	◆◆	◆◆		0.500	0.157	0.187	0.031	0.0016
031540	ODMT 04 0408EN-412	SP6519	◆	◆		0.500	0.157	0.187	0.031	0.0016

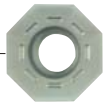


ODET 04_-44

ODMT 04_-41

ODMW 04_-SN

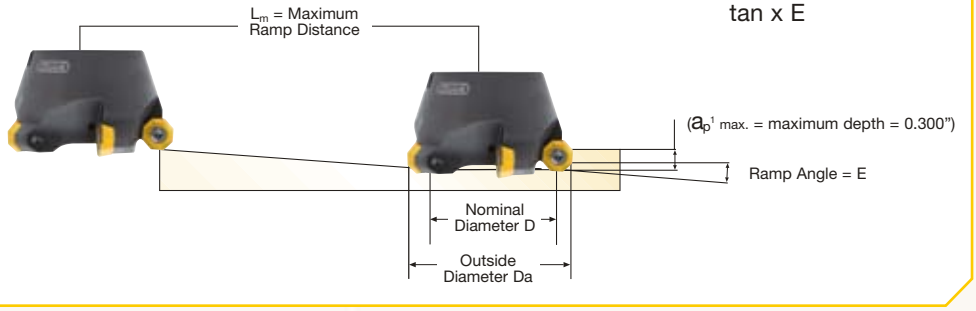
ODMT 04_-412



Note: Insert grade SP6519 obsoletes and supersedes grade SP6564. EDP-cross-reference chart found on page 61.

Linear Ramp Milling Method

$$L_m = \frac{a_p{}^1}{\tan x\ E}$$



Outside Dia.	Nominal Dia.	Ramp Angle
Ø 1.31	Ø 1.00	17.0°
Ø 1.56	Ø 1.25	12.1°
Ø 1.81	Ø 1.50	8.5°
Ø 2.31	Ø 2.00	6.1°
Ø 2.81	Ø 2.50	4.3°
Ø 3.31	Ø 3.00	3.0°
Ø 4.31	Ø 4.00	2.4°
Ø 5.31	Ø 5.00	2.0°
Ø 6.31	Ø 6.00	1.5°

Feedrate compensation: For 45° cutting, divide the h_m value by the sine of the approach angle (the sine of 45° = 0.707)

ie: $\frac{h_m}{0.707}$ or $\frac{0.004}{0.707}$ = 0.0056 in. programmed feed rate

Key to Recommended Tools

Material Designations

P ◆ Unalloyed Steels	M ◆ Stainless Steels	K ◆ Cast Irons	S ◆ High Temp. Alloys
P ◆ Alloyed Steels	M ◆ PH Stainless	N ◆ Aluminium & Alloys	H ◆ Hard Materials

ATI Stellram

OD_04 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing/ ▼▼ Semi Finishing						
							ODMW04-SN		ODMT04-41		
					V_C (feet/min)		Feed (Inch/tooth)	D.O.C a_p (Inch)	Feed (Inch/tooth)	Feed (Inch/tooth)	D.O.C a_p (Inch)
					X500/X700	SP6519(SP6564)	X500/X700		X500/X700	SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	780-1245	820-1245	0.0138-0.0177	0.040-0.140	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.	ATI 420™	420	X20Cr13	655-1015	720-1015	0.0138-0.0177	0.040-0.140	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.			X22CrMoV12-1	655-1015	720-1015	0.0138-0.0177	0.040-0.140	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.	ATI 410™	410	X10Cr13	655-1015	720-1015	0.0118-0.0158	0.040-0.140	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.			X12CrNiMoV 12.3	460-655	525-655	0.0118-0.0158	0.040-0.140	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.	ATI 416™	416	X12CrS13	460-655	525-655	0.0118-0.0158	0.040-0.140	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.	ATI 316™	316	X5CrNiMo18 10	460-655	525-655	0.0118-0.0158	0.040-0.140	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.			X19CrMoVbN11-1	460-655	525-655	-	-	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.	ATI 301™	301	X12CrNi17 7	460-655	525-655	-	-	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	295-575	310-575	-	-	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.		CA 6 NM	X5CrNi13-4	395-590	425-590	-	-	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.	ATI 309™	309	X15CrNiSi20 12	260-425	325-425	-	-	0.0063-0.0126	0.0047-0.0118	0.040-0.140
	St.	ATI 316L™	316L	X2CrNiMo18 12	210-280	230-280	-	-	-	-	-
	St.	ATI A286™	A638	X5NiCrTi2615	130-260	145-260	-	-	-	-	-
S	Ni			Rene 80	40-65	-	-	-	-	-	-
	Ni			Rene 95	30-50	-	-	-	-	-	-
	Ni			Udimet 710	65-80	65-80	-	-	-	-	-
	Ni	ATI 80A™		Nimonic 80A	95-130	95-130	-	-	-	-	-
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	95-130	-	-	-	-	-
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	130-180	-	-	-	-	-
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	-	-	-	-	-
	Ni			Inconel 738	65-115	65-115	-	-	-	-	-
	Ni			Inconel 939	40-65	40-65	-	-	-	-	-
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	-	-	-	-	-
	Fe		5533	X40CoCrNi2020	80-165	80-165	-	-	-	-	-
	Ti	ATI 6-4™	4906,4920	TiAl6V4	165-250	210-265	-	-	-	-	-

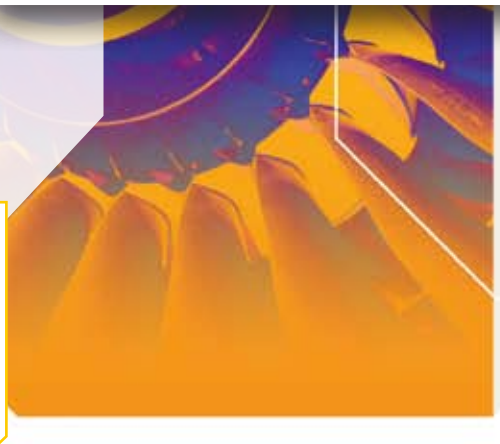
		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing/▼▼ Semi Finishing/ ▼▼▼ Finishing					
					ODMT04-412			ODET04-44		
					Feed (Inch/tooth)		D.O.C a_p (Inch)	Feed (Inch/tooth)		D.O.C a_p (Inch)
					X500/X700	SP6519(SP6564)		X500/X700	SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	0.0032-0.0079	0.004-0.010
	St.	ATI 420™	420	X20Cr13	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	0.0032-0.0079	0.004-0.010
	St.			X22CrMoV12-1	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	0.0032-0.0079	0.004-0.010
	St.	ATI 410™	410	X10Cr13	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	0.0032-0.0079	0.004-0.010
	St.			X12CrNiMoV 12.3	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	0.0032-0.0079	0.004-0.010
	St.	ATI 416™	416	X12CrS13	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	0.0032-0.0079	0.004-0.010
	St.	ATI 316™	316	X5CrNiMo18 10	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	0.0032-0.0079	0.004-0.010
	St.			X19CrMoVbN11-1	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	0.0032-0.0079	0.004-0.010
	St.	ATI 301™	301	X12CrNi17 7	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	0.0032-0.0079	0.004-0.010
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	0.0032-0.0079	0.004-0.010
	St.		CA 6 NM	X5CrNi13-4	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	-	0.004-0.010
	St.	ATI 309™	309	X15CrNiSi20 12	0.0047-0.0126	0.0039-0.0118	0.040-0.140	0.0039-0.0087	-	0.004-0.010
	St.	ATI 316L™	316L	X2CrNiMo18 12	0.0039-0.0102	-	0.040-0.100	0.0032-0.0079	-	0.004-0.010
	St.	ATI A286™	A638	X5NiCrTi2615	0.0039-0.0102	-	0.040-0.100	0.0032-0.0079	-	0.004-0.010
S	Ni			Rene 80	-	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060
	Ni			Rene 95	-	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060
	Ni			Udimet 710	0.0024-0.0055	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060
	Ni	ATI 80A™		Nimonic 80A	0.0024-0.0055	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	0.0024-0.0055	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060
	Ni		Hastelloy C	NiCr17Mo17FeW	0.0024-0.0055	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060
	Ni	ATI 718™	5383	Inconel 718	0.0024-0.0055	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060
	Ni			Inconel 738	0.0024-0.0055	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060
	Ni			Inconel 939	0.0024-0.0055	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	0.0032-0.0079	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060
	Fe		5533	X40CoCrNi2020	0.0032-0.0079	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060
	Ti	ATI 6-4™	4906,4920	TiAl6V4	0.0032-0.0067	-	0.040-0.100	0.0024-0.0060	-	0.004-0.060

ATI Stellram

SOLUTIONS FOR DIFFICULT-TO-MACHINE MATERIALS

7745 VOD 06
8 CUTTING EDGES PER INSERT AT 0.173 D.O.C

- 1 tool, multiple operations: face milling, ramp milling, pocket milling and chamfering
- Thick and strong inserts for greater machining security
- Standard and close pitch cutter range from 2.00” up to 6.00” diameter
- Close pitch cutters allow high feed rates with improved surface finish in stable conditions



MATERIAL APPLICATIONS

- Stainless Steels
- High Temperature Alloys

7745 VOD 06 Milling Cutter

C7745 VOD 06 Shell Mill Fixation Coarse Pitch

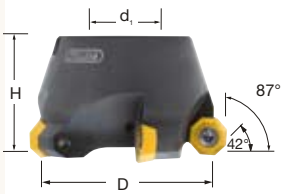
EDP #	Part Number	Dimensions (Inch) D	L/H	l_1	d_1	$a_{1\ max.}$	a_p	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs
026561	C7745VOD 06 -A2.00R	2.00	1.57	-	0.75	0.445	0.173	4	015270	F4011T	015241	T20	27.4
026562	C7745VOD 06 -A2.50R	2.50	1.57	-	0.75	0.445	0.173	5	015270	F4011T	015241	T20	27.4
026563	C7745VOD 06 -A3.00R	3.00	1.96	-	1.00	0.445	0.173	6	015270	F4011T	015241	T20	27.4
026564	C7745VOD 06 -A4.00R	4.00	2.16	-	1.25	0.445	0.173	7	015270	F4011T	015241	T20	27.4
026565	C7745VOD 06 -A5.00R	5.00	2.48	-	1.50	0.445	0.173	8	015270	F4011T	015241	T20	27.4
026566	C7745VOD 06 -6.00R	6.00	2.48	-	1.50	0.445	0.173	10	015270	F4011T	015241	T20	27.4

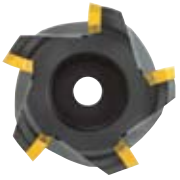
C7745 VOD 06 Shell Mill Fixation Fine Pitch

027879	C7745VOD 06 -A3.00Z07R	3.00	1.96	-	1.00	0.445	0.173	7	015270	F4011T	015241	T20	27.4
027880	C7745VOD 06 -A4.00Z09R*	4.00	2.16	-	1.25	0.445	0.173	9	015270	F4011T	015241	T20	27.4
027881	C7745VOD 06 -A5.00Z11R	5.00	2.48	-	1.50	0.445	0.173	11	015270	F4011T	015241	T20	27.4
027882	C7745VOD 06 -6.00Z13	6.00	2.48	-	1.50	0.445	0.173	13	015270	F4011T	015241	T20	27.4

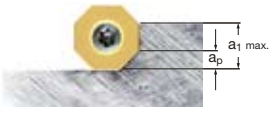
*Non-stock made to order with 4 week delivery.

All milling cutters have through the tool coolant except for the 6.0" diameter cutters.





Shell Mill Fixation

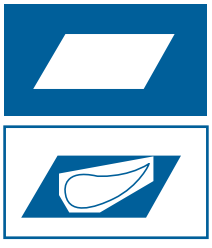


Depth of Cut (a_p)

Blade Application

Remove forging or rolled skin material with ODMW06..TN INSERTS

Rhomboid, Roof, Holding Section on large blades

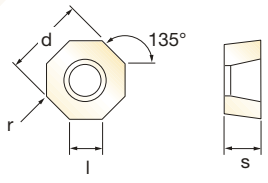


Material in blue to be machined

Solutions For Difficult-To-Machine Materials

Inserts for 7745 VOD 06

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h_m min
026590	ODMT 06 05APEN-41	X500	◆◆	◆◆		0.630	0.236	0.219	Facet	0.0016
031502	ODMT 06 05APEN-41	SP6519	◆	◆		0.630	0.236	0.219	Facet	0.0016
026596	ODMW 06 0512TN	X500	◆			0.630	0.236	0.219	0.047	0.0067
031503	ODMW 06 0512TN	SP6519	◆			0.630	0.236	0.219	0.047	0.0067



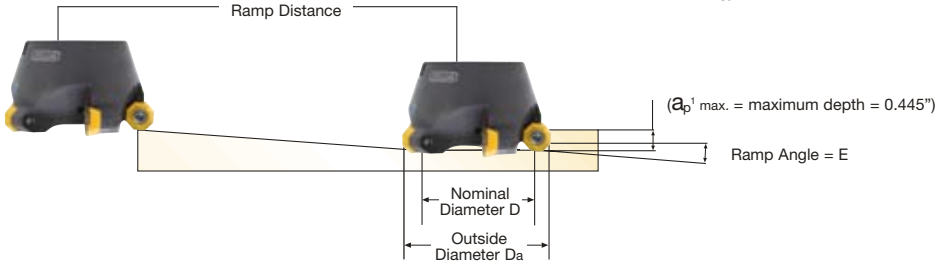
ODMT 06_-41

ODMW 06_-TN

Note: Insert grade SP6519 obsoletes and supersedes grade SP6564. EDP-cross-reference chart found on page 61.

Linear Ramp Milling Method

$$Lm = \frac{a_p{}^1}{\tan x\ E}$$



Outside Dia.	Nominal Dia.	Ramp Angle
Ø 2.39	Ø 2.00	6.0°
Ø 2.89	Ø 2.50	4.6°
Ø 3.39	Ø 3.00	3.3°
Ø 4.39	Ø 4.00	2.6°
Ø 5.39	Ø 5.00	2.0°
Ø 6.39	Ø 6.00	1.5°

Feedrate compensation: For 45° cutting, divide the h_m value by the sine of the approach angle (the sine of 45° = 0.707)

ie: $\frac{h_m}{0.707}$ or $\frac{0.004}{0.707}$ = 0.0056 in. programmed feed rate

Key to Recommended Tools

Material Designations

P ◆ Unalloyed Steels	M ◆ Stainless Steels	K ◆ Cast Irons	S ◆ High Temp. Alloys
P ◆ Alloyed Steels	M ◆ PH Stainless	N ◆ Aluminium & Alloys	H ◆ Hard Materials

ATI Stellram

Solutions For Difficult-To-Machine Materials

OD_06 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Material	▼ Roughing						
					V_C (feet/min)		ODMW06		ODMT06-41		
							Feed (Inch/tooth)	D.O.C a_p (Inch)	Feed (Inch/tooth)	Feed (Inch/tooth)	D.O.C a_p (Inch)
					X500/X700	SP6519(SP6564)	X500/X700		X500/X700	SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	780-1246	820-1245	0.0110-0.0189	0.040-0.173	0.0063-0.0142	0.0047-0.0126	0.040-0.173
	St.	ATI 420™	420	X20Cr13	655-1015	720-1015	0.0110-0.0189	0.040-0.173	0.0063-0.0142	0.0047-0.0126	0.040-0.173
	St.			X22CrMoV12-1	655-1015	720-1015	0.0110-0.0189	0.040-0.173	0.0063-0.0142	0.0047-0.0126	0.040-0.173
	St.	ATI 410™	410	X10Cr13	655-1015	720-1015	0.0110-0.0158	0.040-0.173	0.0063-0.0142	0.0047-0.0126	0.040-0.173
	St.			X12CrNiMoV 12.3	460-655	525-655	0.0110-0.0158	0.040-0.173	0.0063-0.0142	0.0047-0.0126	0.040-0.173
	St.	ATI 416™	416	X12CrS13	460-655	525-655	0.0110-0.0158	0.040-0.173	0.0063-0.0142	0.0047-0.0126	0.040-0.173
	St.	ATI 316™	316	X5CrNiMo18 10	460-655	525-655	0.0110-0.0158	0.040-0.173	0.0063-0.0142	0.0047-0.0126	0.040-0.173
	St.			X19CrMoVbN11-1	460-655	525-655	0.0110-0.0138	-	0.0063-0.0134	0.0047-0.0126	0.040-0.173
	St.	ATI 301™	301	X12CrNi17 7	460-655	525-655	0.0110-0.0138	-	0.0063-0.0134	0.0047-0.0126	0.040-0.173
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	295-575	310-575	0.0110-0.0138	-	0.0063-0.0134	0.0047-0.0126	0.040-0.173
	St.		CA 6 NM	X5CrNi13-4	390-590	425-590	-	-	0.0063-0.0134	-	0.040-0.173
	St.	ATI 309™	309	X15CrNiSi20 12	260-425	325-425	-	-	0.0063-0.0134	-	0.040-0.173
	St.	ATI 316L™	316L	X2CrNiMo18 12	210-280	230-280	-	-	0.0047-0.0118	-	0.040-0.150
	St.	ATI A286™	A638	X5NiCrTi2615	130-260	145-260	-	-	0.0047-0.0118	-	0.040-0.150
S	Ni			Rene 80	40-65	-	-	-	-	-	-
	Ni			Rene 95	30-50	-	-	-	-	-	-
	Ni			Udimet 710	65-80	65-80	-	-	-	-	-
	Ni	ATI 80A™		Nimonic 80A	95-130	95-130	-	-	-	-	-
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	95-130	-	-	-	-	-
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	130-180	-	-	-	-	-
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	-	-	-	-	-
	Ni			Inconel 738	65-115	65-115	-	-	-	-	-
	Ni			Inconel 939	40-65	40-65	-	-	-	-	-
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	-	-	-	-	-
	Fe		5533	X40CoCrNi2020	80-165	80-165	-	-	0.0047-0.0110	-	0.040-0.160
	Ti	ATI 6-4™	4906,4920	TiAl6V4	165-250	210-265	-	-	0.0047-0.0110	-	0.040-0.160

ATI Stellram

SOLUTIONS FOR DIFFICULT-TO-MACHINE MATERIALS

7690 VA 09
90° MILLING

- 90° approach angle for accurate shoulder, slot and pocket milling
- 0.335” cutting depth, compact cutter design
- Choice of body styles: coarse and medium pitch
- Complete radius range of inserts available
- Through coolant for optimum chip evacuation

MATERIAL APPLICATIONS

- Stainless Steels
- High Temperature Alloys

NEW 7690 VA 09 Milling Cutter

C7690 VA 09 Weldon Shank

EDP #	Part Number	Dimensions (Inch) D	L/H	l_2	d_1	$a_{p\,max.}$	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
014869	C7690VA 09 WA.375R	0.375	2.750	0.800	0.625	0.335	1	015267	F2505TP	018488	T7	7.08
014870	C7690VA 09 WA.500R	0.500	2.900	1.000	0.625	0.335	1	015267	F2505TP	018488	T7	7.08
014871	C7690VA 09 WA.625R	0.625	3.100	1.190	0.625	0.335	2	015267	F2505TP	018488	T7	7.08
014872	C7690VA 09 WA.750R	0.750	3.400	1.370	0.750	0.335	3	015267	F2505TP	018488	T7	7.08
014873	C7690VA 09 WA1.00R	1.000	3.900	1.600	1.000	0.335	4	015268	F2506TP	018488	T7	7.08
014874	C7690VA 09 WA1.25R	1.250	3.900	1.600	1.000	0.335	5	015268	F2506TP	018488	T7	7.08

Weldon Shank

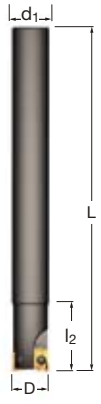
C7690 VA 09 Shell Mill Fixation

EDP #	Part Number	Dimensions (Inch) D	L/H	l_2	d_1	$a_{p\,max.}$	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
014866	C7690VA 09 -A1.50R*	1.50	1.26	-	0.50	0.335	6	015267	F2505TP	018488	T7	7.08
014867	C7690VA 09 -A2.00R*	2.00	1.57	-	0.75	0.335	7	015267	F2505TP	018488	T7	7.08
014868	C7690VA 09 -A2.50R*	2.50	1.57	-	0.75	0.335	8	015267	F2505TP	018488	T7	7.08

Shell Mill Fixation

C7690 VA 09 Cylindrical Shank

EDP #	Part Number	Dimensions (Inch) D	L/H	l_2	d_1	$a_{p\,max.}$	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031110	C7690VA 09 CA.625Z2R1.2	0.625	5.91	1.18	0.625	0.335	2	015268	F2506TP	018488	T7	7.08
031111	C7690VA 09 CA.75Z2R1.6	0.750	7.09	1.57	0.750	0.335	2	015268	F2506TP	018488	T7	7.08
031112	C7690VA 09 CA.75Z3R1.6	0.750	7.09	1.57	0.750	0.335	3	015268	F2506TP	018488	T7	7.08
031113	C7690VA 09 CA1.00Z3R2.0	1.000	7.87	1.96	1.000	0.335	3	015268	F2506TP	018488	T7	7.08



Cylindrical Shank

A7690 VA 09 Modular Head/Screw-on

EDP #	Part Number	Dimensions (Inch) D	L/H	M	d_1	$a_{p\,max.}$	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031119	A7690VA09SA.625Z2R1.0	0.625	1.00	M8	0.33	0.30	2	015268	F2506TP	018488	T7	7.08
031120	A7690VA09SA.750Z3R1.4	0.750	1.40	M10	0.41	0.30	3	015268	F2506TP	018488	T7	7.08
031121	A7690VA09SA1.00Z3R1.4	1.000	1.40	M12	0.49	0.30	3	015268	F2506TP	018488	T7	7.08
031122	A7690VA09SA1.00Z4R1.4	1.000	1.40	M12	0.49	0.30	4	015268	F2506TP	018488	T7	7.08
031123	A7690VA09SA1.25Z5R1.4	1.250	1.40	M16	0.67	0.30	5	015268	F2506TP	018488	T7	7.08

Modular Head

*Non-stock made to order with 4 week delivery.
Note: To use radius larger than 0.047 Inches the cutter body needs to be modified.
Note: For cylindrical shanks in high density alloy for modular heads refer to page 57.

Blade Application

Snapper machining (Finishing), Holding Section (Slotting)

Airfoil Machining

Material in blue to be machined

Depth of Cut (a_p)

Solutions For Difficult-To-Machine Materials

Inserts for C7690 VA 09

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	Dimensions (Inch): d	l	s	r	h_m min
031092	ADET 09 03PDSR-42	X500	♦♦	♦♦		0.250	0.362	0.125	Facet	0.0019
031093	ADET 09 03PDSR-42	SP6519	♦	♦		0.250	0.362	0.125	Facet	0.0019
031076	ADET 09 0308SR-42	X500	♦♦	♦♦		0.250	0.362	0.125	0.031	0.0019
031075	ADET 09 0308SR-42	SP6519	♦	♦		0.250	0.362	0.125	0.031	0.0019
024913	ADET 09 0310SR-42	X500	♦♦	♦♦		0.250	0.362	0.125	0.040	0.0019
031094	ADET 09 0310SR-42	SP6519	♦	♦		0.250	0.362	0.125	0.040	0.0019
031095	ADET 09 0312SR-42	X500	♦♦	♦♦		0.250	0.362	0.125	0.047	0.0019
031096	ADET 09 0312SR-42	SP6519	♦	♦		0.250	0.362	0.125	0.047	0.0019
030942	ADET 09 0316SR-42	X500	♦♦	♦♦		0.250	0.362	0.125	0.063	0.0019
030980	ADET 09 0316SR-42	SP6519	♦	♦		0.250	0.362	0.125	0.063	0.0019
031097	ADET 09 0320SR-42	X500	♦♦	♦♦		0.250	0.362	0.125	0.079	0.0019
031098	ADET 09 0320SR-42	SP6519	♦	♦		0.250	0.362	0.125	0.079	0.0019
031099	ADET 09 0324SR-42	X500	♦♦	♦♦		0.250	0.362	0.125	0.094	0.0019
031100	ADET 09 0324SR-42	SP6519	♦	♦		0.250	0.362	0.125	0.094	0.0019
031101	ADET 09 0330SR-42	X500	♦♦	♦♦		0.250	0.362	0.125	0.118	0.0019
031102	ADET 09 0330SR-42	SP6519	♦	♦		0.250	0.362	0.125	0.118	0.0019
031103	ADET 09 0332SR-42	X500	♦♦	♦♦		0.250	0.362	0.125	0.125	0.0019
031104	ADET 09 0332SR-42	SP6519	♦	♦		0.250	0.362	0.125	0.125	0.0019

ADET 09_-42

Key to Recommended Tools

Material Designations

P ♦ Unalloyed Steels	M ♦ Stainless Steels	K ♦ Cast Irons	S ♦ High Temp. Alloys
P ♦ Alloyed Steels	M ♦ PH Stainless	N ♦ Aluminium & Alloys	H ♦ Hard Materials

ATI Stellram

Solutions For Difficult-To-Machine Materials

AD_09 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing				
					V_C (feet/min)		AD..09-42		
							Feed (Inch/tooth)	Feed (Inch/tooth)	D.O.C a_p (Inch)
					X500/X700	SP6519(SP6564)	X500/X700	SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	780-1245	820-1245	0.0032-0.0071	0.0024-0.0063	0.040-0.200
	St.	ATI 420™	420	X20Cr13	655-1015	720-1015	0.0032-0.0071	0.0024-0.0063	0.040-0.200
	St.			X22CrMoV12-1	655-1015	720-1015	0.0032-0.0071	0.0024-0.0063	0.040-0.200
	St.	ATI 410™	410	X10Cr13	655-1015	720-1015	0.0032-0.0071	0.0024-0.0063	0.040-0.200
	St.			X12CrNiMoV 12.3	460-655	525-655	0.0032-0.0071	0.0024-0.0063	0.040-0.200
	St.	ATI 416™	416	X12CrS13	460-655	525-655	0.0032-0.0071	0.0024-0.0063	0.040-0.200
	St.	ATI 316™	316	X5CrNiMo18 10	460-655	525-655	0.0032-0.0071	0.0024-0.0063	0.040-0.200
	St.			X19CrMoVbN11-1	460-655	525-655	0.0032-0.0071	0.0024-0.0055	0.040-0.175
	St.	ATI 301™	301	X12CrNi17 7	460-655	525-655	0.0032-0.0071	0.0024-0.0055	0.040-0.175
	St.	ATI Jethete™ M152		X11CrNiMo12	295-575	310-575	0.0032-0.0071	0.0024-0.0055	0.040-0.175
	St.		CA 6 NM	X5CrNi13-4	390-590	425-590	0.0032-0.0071	0.0024-0.0055	0.040-0.175
	St.	ATI 309™	309	X15CrNiSi20 12	240-425	325-425	0.0032-0.0071	0.0024-0.0055	0.040-0.175
	St.	ATI 316L™	316L	X2CrNiMo18 12	210-280	230-280	0.0032-0.0071	0.0024-0.0055	0.040-0.175
	St.	ATI A286™	A638	X5NiCrTi2615	130-260	145-245	0.0032-0.0071	0.0024-0.0055	0.040-0.175
S	Ni			Rene 80	40-65	-	0.0020-0.0032	-	0.040-0.157
	Ni			Rene 95	30-50	-	0.0020-0.0032	-	0.040-0.157
	Ni			Udimet 710	65-80	65-80	0.0020-0.0039	0.0020-0.0039	0.040-0.157
	Ni	ATI 80A™		Nimonic 80A	95-130	95-130	0.0020-0.0039	0.0020-0.0039	0.040-0.157
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	95-130	0.0020-0.0039	0.0020-0.0039	0.040-0.157
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	130-180	0.0020-0.0039	0.0020-0.0039	0.040-0.157
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	0.0020-0.0039	0.0020-0.0039	0.040-0.157
	Ni			Inconel 738	65-115	65-115	0.0020-0.0039	0.0020-0.0039	0.040-0.157
	Ni			Inconel 939	40-65	40-65	0.0020-0.0039	0.0020-0.0039	0.040-0.157
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	0.0020-0.0039	0.0020-0.0039	0.040-0.157
	Fe		5533	X40CoCrNi2020	80-165	80-165	0.0032-0.0055	0.0024-0.0047	0.040-0.157
	Ti	ATI 6-4™	4906,4920	TiAl6V4	165-250	210-265	0.0032-0.0055	0.0024-0.0047	0.040-0.157

ATI Stellram

SOLUTIONS FOR DIFFICULT-TO-MACHINE MATERIALS

7690 VA 12
90° MILLING

- 90° approach angle for accurate shoulder, slot and pocket milling
- 0.433” cutting depth: high feed rate with a compact design
- Choice of two body styles: coarse and medium pitch
- High metal removal capability and excellent surface finish
- 0.156” thick inserts for greater security in difficult applications
- Through coolant for optimum chip evacuation

MATERIAL APPLICATIONS

- Stainless Steels
- High Temperature Alloys

7690 VA 12 Milling Cutter

7690 VA 12 Weldon Shank Coarse Pitch

EDP #	Part Number	Dimensions (Inch) D	L/H	l_1	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
027935	C7690VA 12 WA.750Z02R1.37	0.750	3.40	1.37	0.750	0.433	2	027860	F3007T	022157	T8	12.4
027936	C7690VA 12 WA1.00Z02R1.60	1.000	3.90	1.60	1.000	0.433	2	027860	F3007T	022157	T8	12.4
027937	C7690VA 12 WA1.25Z03R1.60	1.250	3.90	1.60	1.250	0.433	3	027860	F3007T	022157	T8	12.4
027938	C7690VA 12 WA1.50Z04R2.03	1.500	4.33	2.03	1.250	0.433	4	027860	F3007T	022157	T8	12.4

7690 VA 12 Weldon Shank Fine Pitch

027939	C7690VA 12 WA1.00Z03R1.60	1.00	3.90	1.60	1.00	0.433	3	027860	F3007T	022157	T8	12.4
027940	C7690VA 12 WA1.25Z04R1.60	1.25	3.90	1.60	1.250	0.433	4	027860	F3007T	022157	T8	12.4
027941	C7690VA 12 WA1.50Z05R2.03	1.50	4.33	2.03	1.250	0.433	5	027860	F3007T	022157	T8	12.4

7690 VA 12 Shell Mill Fixation Medium Pitch

027945	C7690VA 12 -A1.50Z04R	1.500	1.26	-	0.500	0.433	4	027860	F3007T	022157	T8	12.4
027946	C7690VA 12 -A2.00Z05R	2.000	1.57	-	0.750	0.433	5	027860	F3007T	022157	T8	12.4
027947	C7690VA 12 -A2.50Z06R	2.500	1.57	-	0.750	0.433	6	027860	F3007T	022157	T8	12.4
027948	C7690VA 12 -A2.50Z07R	2.500	1.97	-	1.000	0.433	7	027860	F3007T	022157	T8	12.4

7690 VA 12 Shell Mill Fixation Fine Pitch

027949	C7690VA 12 -A1.50Z05R	1.500	1.26	-	0.500	0.433	5	027860	F3007T	022157	T8	12.4
027950	C7690VA 12 -A2.00Z06R	2.000	1.57	-	0.750	0.433	6	027860	F3007T	022157	T8	12.4
027951	C7690VA 12 -A2.50Z08R	2.500	1.57	-	0.750	0.433	8	027860	F3007T	022157	T8	12.4
027952	C7690VA 12 -A3.00Z09R	2.500	1.97	-	1.000	0.433	9	027860	F3007T	022157	T8	12.4

7690 VA 12 Cylindrical Shank

031457	C7690VA 12 CA.75Z2R1.6	0.750	7.09	1.57	0.750	0.433	2	027860	F3007T	022157	T8	12.4
031458	C7690VA 12 CA1.00Z2R2.0	1.000	8.05	1.97	1.000	0.433	2	027860	F3007T	022157	T8	12.4
031459	C7690VA 12 CA1.00Z3R2.0	1.000	8.05	1.97	1.000	0.433	3	027860	F3007T	022157	T8	12.4
031460	C7690VA 12 CA1.25Z3R2.7	1.250	9.84	2.76	1.250	0.433	3	027860	F3007T	022157	T8	12.4
031461	C7690VA 12 CA1.25Z4R2.7	1.250	9.84	2.76	1.250	0.433	4	027860	F3007T	022157	T8	12.4

7690 VA 12 Modular Head/Screw-on

EDP #	Part Number	Dimensions (Inch) D	L/H	M	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
030996	A7690VA 12 SA.75Z2R1.4	0.750	1.377	M10	0.413	0.433	2	027860	F3007T	022157	T8	12.4
031200	A7690VA 12 SA1.00Z2R1.4	1.000	1.377	M12	0.492	0.433	2	027860	F3007T	022157	T8	12.4
031201	A7690VA 12 SA1.00Z3R1.4	1.000	1.377	M12	0.492	0.433	3	027860	F3007T	022157	T8	12.4
031202	A7690VA 12 SA1.25Z3R1.4	1.250	1.693	M16	0.669	0.433	3	027860	F3007T	022157	T8	12.4
031181	A7690VA 12 SA1.25Z4R1.7	1.250	1.693	M16	0.669	0.433	4	027860	F3007T	022157	T8	12.4

Note: To use radius larger than 0.063" the cutter body needs to be modified.
Note: For cylindrical shanks in high density alloy for modular heads refer to page 57.

Blade Application

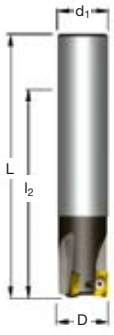
Inside shoulder and pre-machining the width of the Airfoil on Forging Blades, Holding Section (Slotting).

Airfoil Machining

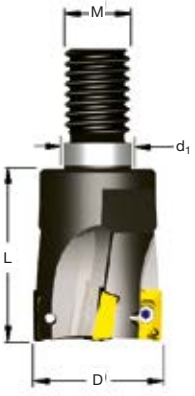
Material in blue to be machined

Weldon Shank

Shell Mill Fixation



Cylindrical Shank



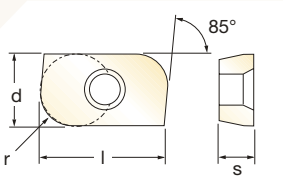
Modular Head

Depth of Cut (a_p)

Solutions For Difficult-To-Machine Materials

Inserts for 7690 VA 12

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h_m min
031525	ADHT 12 T3PDER-46	SP6519	♦	♦		0.309	0.500	0.156	Facet	0.0020
029327	ADHT 12 T3PDER-46	X500	♦♦	♦♦		0.309	0.500	0.156	Facet	0.0020
031526	ADHT 12 T308ER-46	SP6519	♦	♦		0.309	0.500	0.156	0.031	0.0020
029329	ADHT 12 T308ER-46	X500	♦♦	♦♦		0.309	0.500	0.156	0.031	0.0020
030406	ADHT 12 T308ER-46	X700	♦♦	♦♦		0.309	0.500	0.156	0.031	0.0020
031527	ADHT 12 T316ER-46	SP6519	♦♦	♦♦		0.309	0.500	0.156	0.063	0.0020
029331	ADHT 12 T316ER-46	X500	♦	♦		0.309	0.500	0.156	0.063	0.0020
030407	ADHT 12 T316ER-46	X700	♦♦	♦♦		0.309	0.500	0.156	0.063	0.0020
031530	ADHT 12 T320ER-46	SP6519	♦♦	♦♦		0.309	0.500	0.156	0.079	0.0020
029337	ADHT 12 T320ER-46	X500	♦♦	♦♦		0.309	0.500	0.156	0.079	0.0020
030408	ADHT 12 T320ER-46	X700	♦	♦		0.309	0.500	0.156	0.079	0.0020
031528	ADHT 12 T324ER-46	SP6519	♦	♦		0.309	0.500	0.156	0.094	0.0020
029333	ADHT 12 T324ER-46	X500	♦♦	♦♦		0.309	0.500	0.156	0.094	0.0020
031531	ADHT 12 T330ER-46	SP6519	♦♦	♦♦		0.309	0.500	0.156	0.118	0.0020
029339	ADHT 12 T330ER-46	X500	♦	♦		0.309	0.500	0.156	0.118	0.0020
031515	ADHT 12 T332ER-46	SP6519	♦♦	♦♦		0.309	0.500	0.156	0.125	0.0020
029036	ADHT 12 T332ER-46	X500	♦	♦		0.309	0.500	0.156	0.125	0.0020
030409	ADHT 12 T332ER-46	X700	♦♦	♦♦		0.309	0.500	0.156	0.125	0.0020
031529	ADHT 12 T340ER-46	SP6519	♦♦	♦♦		0.309	0.500	0.156	0.157	0.0020
029335	ADHT 12 T340ER-46	X500	♦	♦		0.309	0.500	0.156	0.157	0.0020
030770	ADET 12 T3PDER-48	SP6519	♦	♦		0.309	0.500	0.156	Facet	0.0016
030807	ADET 12 T3PDER-48	X500	♦♦	♦♦		0.309	0.500	0.156	Facet	0.0016
030857	ADET 12 T308ER-48	SP6519	♦	♦		0.309	0.500	0.156	0.031	0.0016
030856	ADET 12 T308ER-48	X500	♦♦	♦♦		0.309	0.500	0.156	0.031	0.0016
030800	ADET 12 T312ER-48	SP6519	♦	♦		0.309	0.500	0.156	0.047	0.0016
030808	ADET 12 T312ER-48	X500	♦♦	♦♦		0.309	0.500	0.156	0.047	0.0016
030771	ADET 12 T316ER-48	SP6519	♦	♦		0.309	0.500	0.156	0.063	0.0016
030809	ADET 12 T316ER-48	X500	♦♦	♦♦		0.309	0.500	0.156	0.063	0.0016
030909	ADET 12 T320ER-48	SP6519	♦	♦		0.309	0.500	0.156	0.079	0.0016
030908	ADET 12 T320ER-48	X500	♦♦	♦♦		0.309	0.500	0.156	0.079	0.0016
030859	ADET 12 T324ER-48	SP6519	♦	♦		0.309	0.500	0.156	0.094	0.0016
030858	ADET 12 T324ER-48	X500	♦♦	♦♦		0.309	0.500	0.156	0.094	0.0016
030911	ADET 12 T330ER-48	SP6519	♦	♦		0.309	0.500	0.156	0.118	0.0016
030910	ADET 12 T330ER-48	X500	♦♦	♦♦		0.309	0.500	0.156	0.118	0.0016
030772	ADET 12 T332ER-48	SP6519	♦	♦		0.309	0.500	0.156	0.125	0.0016
030810	ADET 12 T332ER-48	X500	♦♦	♦♦		0.309	0.500	0.156	0.125	0.0016
030913	ADET 12 T340ER-48	SP6519	♦	♦		0.309	0.500	0.156	0.157	0.0016
030912	ADET 12 T340ER-48	X500	♦♦	♦♦		0.309	0.500	0.156	0.157	0.0016

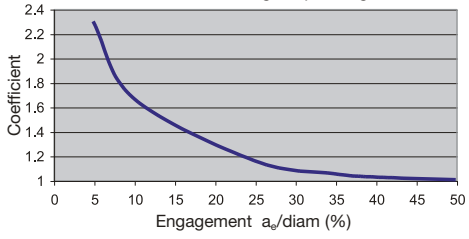


ADHT 12_-46

ADET 12_-48

Note: Insert grade SP6519 obsoletes and supersedes grade SP6564. EDP-cross-reference chart found on page 61.

Feed correcting for profiling



The chart left shows the multiplication factor for the feed rate based on the percentage of radial engagement of the cutter diameter.

Example: C7690VA12 WA1.00Z02 R1.60 using a 0.100" radial engagement (a_e) = 10% ofthe cutter diameter

At 10%, your coefficient is 1.6 (see chart); therefore you must multiply your feed rate by 1.6 for correcting the feed for profiling.

Key to Recommended Tools

Material Designations

P	Unalloyed Steels	M	Stainless Steels	K	Cast Irons	S	High Temp. Alloys
P	Alloyed Steels	M	PH Stainless	N	Aluminium & Alloys	H	Hard Materials

ATI Stellram

Solutions For Difficult-To-Machine Materials

VA_12 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing/ ▼▼ Semi Finishing							
					V_C (feet/min)		ADHT12..-46			ADHT12..-48		
							Feed (Inch/tooth)	Feed (Inch/tooth)	D.O.C a_p (Inch)	Feed (Inch/tooth)	Feed (Inch/tooth)	D.O.C a_p (Inch)
					X500/X700	SP6519(SP6564)	X500/X700	SP6519(SP6564)		X500/X700	SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	780-1245	820-1245	0.0040-0.0071	0.0032-0.0063	0.040-0.275	-	-	-
	St.	ATI 420™	420	X20Cr13	655-1015	720-1015	0.0040-0.0071	0.0032-0.0063	0.040-0.275	-	-	-
	St.			X22CrMoV12-1	655-1015	720-1015	0.0040-0.0071	0.0032-0.0063	0.040-0.275	-	-	-
	St.	ATI 410™	410	X10Cr13	655-1015	720-1015	0.0040-0.0071	0.0032-0.0063	0.040-0.275	-	-	-
	St.			X12CrNiMoV 12.3	460-656	525-655	0.0040-0.0071	0.0032-0.0063	0.040-0.275	-	-	-
	St.	ATI 416™	416	X12CrS13	460-655	525-655	0.0040-0.0071	0.0032-0.0063	0.040-0.275	-	-	-
	St.	ATI 316™	316	X5CrNiMo18 10	460-655	525-655	0.0040-0.0071	0.0032-0.0063	0.040-0.275	-	-	-
	St.			X19CrMoVbN11-1	460-655	525-655	0.0040-0.0071	0.0032-0.0063	0.040-0.275	-	-	-
	St.	ATI 301™	301	X12CrNi17 7	460-655	525-655	0.0032-0.0063	0.0032-0.0063	0.040-0.275	-	-	-
	St.	ATI Jethete™ M152		X11CrNiMo12	295-575	310-575	0.0032-0.0063	0.0032-0.0063	0.040-0.275	-	-	-
	St.		CA 6 NM	X5CrNi13-4	395-590	425-590	0.0032-0.0063	0.0032-0.0063	0.040-0.275	-	-	-
	St.	ATI 309™	309	X15CrNiSi20 12	260-425	325-425	0.0032-0.0063	-	0.040-0.236	0.0024-0.0063	0.0019-0.0059	0.040-0.236
	St.	ATI 316L™	316L	X2CrNiMo18 12	210-280	230-280	0.0032-0.0063	-	0.040-0.236	0.0024-0.0063	0.0019-0.0059	0.040-0.236
	St.	ATI A286™	A638	X5NiCrTi2615	130-260	145-260	0.0032-0.0063	-	0.040-0.236	0.0024-0.0063	0.0019-0.0059	0.040-0.236
S	Ni			Rene 80	40-65	-	-	-	-	0.0019-0.0055	-	0.040-0.236
	Ni			Rene 95	30-50	-	-	-	-	0.0019-0.0055	-	0.040-0.236
	Ni			Udimet 710	65-80	65-80	-	-	-	0.0024-0.0063	0.0019-0.0059	0.040-0.236
	Ni	ATI 80A™		Nimonic 80A	95-130	95-130	-	-	-	0.0024-0.0063	0.0019-0.0059	0.040-0.236
	Ni	AT M-252™	Jethete M252	G-NiCr19Co	95-130	95-130	-	-	-	0.0024-0.0063	0.0019-0.0059	0.040-0.236
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	130-180	-	-	-	0.0024-0.0063	0.0019-0.0059	0.040-0.236
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	-	-	-	0.0024-0.0063	0.0019-0.0059	0.040-0.236
	Ni			Inconel 738	65-115	65-115	-	-	-	0.0024-0.0063	0.0019-0.0059	0.040-0.236
	Ni			Inconel 939	40-65	40-65	-	-	-	0.0024-0.0063	0.0019-0.0059	0.040-0.236
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	-	-	-	0.0024-0.0063	0.0019-0.0059	0.040-0.236
	Fe		5533	X40CoCrNi2020	80-165	80-165	0.0024-0.0063	-	0.040-0.236	0.0024-0.0063	0.0019-0.0059	0.040-0.275
	Ti	ATI 6-4™	4906,4920	TiAl6V4	165-250	210-265	-	-	-	0.0024-0.0071	0.0019-0.0059	0.040-0.275

ATI Stellram

SOLUTIONS FOR DIFFICULT-TO-MACHINE MATERIALS

5315 VA 12

- Long edge milling cutter for profiling, slotting and face milling
- Full effective flutes allowing higher feed rates
- Through tool coolant for optimum swarf evacuation

MATERIAL APPLICATIONS

- Stainless Steels
- High Temperature Alloys

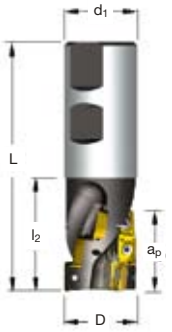
5315 VA 12

Long Edge Milling Cutter

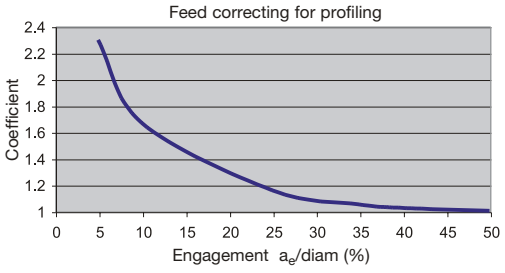
5315VA12 Weldon Shank

EDP #	Part Number	Dimensions (Inch) D	L/H	a_p max. Profiling	a_p max. Slotting	l_2	d_1	No. of flutes	No. of inserts	Spares EDP #		EDP #		Screw tightening in.lbs.
029349	**C5315VA 12 WA1.00R0.9***	1.000	3.85	0.900	0.591	1.570	1.000	2	4	027860	F3007T	022157	T8	12.4
029350	**C5315VA 12 WA1.00R1.37**	1.000	4.28	1.370	0.276	2.000	1.000	2	6	027860	F3007T	022157	T8	12.4
029351	**C5315VA 12 WA1.25R1.37**	1.250	4.28	1.370	0.787	2.000	1.250	3	9	027860	F3007T	022157	T8	12.4
029352	**C5315VA 12 WA1.50R1.77**	1.500	5.04	1.770	0.787	2.350	1.500	3	12	027860	F3007T	022157	T8	12.4

*Non-stock made to order with 4 week delivery.



5315VA12 Weldon Shank



The chart left shows the multiplication factor for the feed rate based on the percentage of radial engagement of the cutter diameter.

Example: C5315VA12-WA1.50R1.77 using a 0.150" radial engagement (a_e) = 10% of the cutter diameter

At 10%, your coefficient is 1.6 (see chart); therefore you must multiply your feed rate by 1.6 for correcting the feed for profiling.

Blade Application

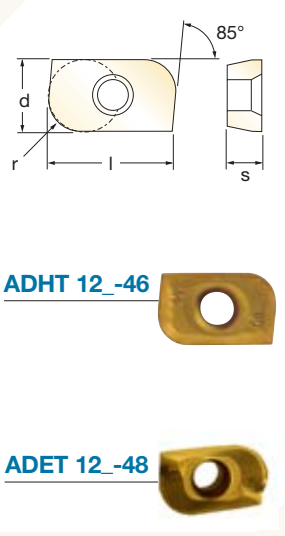
5315VA12 Airfoil Machining, Shoulder Milling

Material in blue to be machined

Solutions For Difficult-To-Machine Materials

Inserts for 5315 VA 12

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h_m min
031525	**ADHT 12 T3PDER-46**	**SP6519**	♦			0.31	0.500	0.156	Facet	0.0020
029327	**ADHT 12 T3PDER-46**	**X500**	♦♦			0.31	0.500	0.156	Facet	0.0020
031526	**ADHT 12 T308ER-46**	**SP6519**	♦			0.31	0.500	0.156	0.031	0.0020
029309	**ADHT 12 T308ER-46**	**X500**	♦♦			0.31	0.500	0.156	0.031	0.0020
030406	**ADHT 12 T308ER-46**	**X700**	♦♦			0.31	0.500	0.156	0.031	0.0020
030770	**ADET 12 T3PDER-48**	**SP6519**	♦			0.31	0.500	0.156	Facet	0.0016
030807	**ADET 12 T3PDER-48**	**X500**	♦♦			0.31	0.500	0.156	Facet	0.0016
030857	**ADET 12 T308ER-48**	**SP6519**	♦			0.31	0.500	0.156	0.031	0.0016
030856	**ADET 12 T308ER-48**	**X500**	♦♦			0.31	0.500	0.156	0.031	0.0016



Please note that for the 5315 range, only a maximum 0.031" radius is allowed.
Note: Insert grade SP6519 obsoletes and supersedes grade SP6564. EDP-cross-reference chart found on page 61.

Key to Recommended Tools

Material Designations

P ♦ Unalloyed Steels	M ♦ Stainless Steels	K ♦ Cast Irons	S ♦ High Temp. Alloys
P ♦ Alloyed Steels	M ♦ PH Stainless	N ♦ Aluminium & Alloys	H ♦ Hard Materials

ATI Stellram

Solutions For Difficult-To-Machine Materials

VA_12 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	5315VA12 ▼ Roughing							
					V_C (feet/min)		ADHT12-46			ADHT12-48		
							Feed (Inch/tooth)	Feed (Inch/tooth)	D.O.C a_p (Inch)	Feed (Inch/tooth)	Feed (Inch/tooth)	D.O.C a_p (Inch)
					X500/X700	SP6519(SP6564)	X500/X700	SP6519(SP6564)		X500/X700	SP6519(SP6564)	
M	St.	ATI 403™	403	X6Cr13	820-1245	820-1245	0.0039-0.0071	0.0032-0.0063	see ap max	-	-	see ap max
	St.	ATI 420™	420	X20Cr13	720-1015	720-1015	0.0039-0.0071	0.0032-0.0063	see ap max	-	-	see ap max
	St.			X22CrMoV12-1	720-1015	720-1015	0.0039-0.0071	0.0032-0.0063	see ap max	-	-	see ap max
	St.	ATI 410™	410	X10Cr13	720-1015	720-1015	0.0039-0.0071	0.0032-0.0063	see ap max	-	-	see ap max
	St.			X12CrNiMoV 12.3	525-655	525-655	0.0039-0.0071	0.0032-0.0063	see ap max	-	-	see ap max
	St.	ATI 416™	416	X12CrS13	525-655	525-655	0.0039-0.0071	0.0032-0.0063	see ap max	-	-	see ap max
	St.	ATI 316™	316	X5CrNiMo18 10	525-655	525-655	0.0039-0.0071	0.0032-0.0063	see ap max	-	-	see ap max
	St.			X19CrMoVbN11-1	525-655	525-655	0.0039-0.0071	0.0032-0.0063	see ap max	-	-	see ap max
	St.	ATI 301™	301	X12CrNi17 7	525-655	525-655	0.0032-0.0063	0.0032-0.0063	see ap max	-	-	see ap max
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	310-575	310-575	0.0032-0.0063	0.0032-0.0063	see ap max	-	-	see ap max
	St.		CA 6 NM	X5CrNi13-4	425-590	425-590	0.0032-0.0063	0.0032-0.0063	see ap max	-	-	see ap max
	St.	ATI 309™	309	X15CrNiSi20 12	325-425	325-425	0.0032-0.0063	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
	St.	ATI 316L™	316L	X2CrNiMo18 12	230-280	230-280	0.0032-0.0063	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
S	St.	ATI A286™	A638	X5NiCrTi2615	145-265	145-260	0.0032-0.0063	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
	Ni			Rene 80	-	-	-	-	see ap max	0.0024-0.0055	-	see ap max
	Ni			Rene 95	-	-	-	-	see ap max	0.0019-0.0055	-	see ap max
	Ni			Udimet 710	65-80	65-80	-	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
	Ni	ATI 80A™		Nimonic 80A	95-130	95-130	-	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	95-130	-	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	130-180	-	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	-	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
	Ni			Inconel 738	65-115	65-115	-	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
	Ni			Inconel 939	40-65	40-65	-	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	-	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
	Fe		5533	X40CoCrNi2020	80-165	80-165	0.0024-0.0063	-	see ap max	0.0024-0.0063	0.0019-0.0059	see ap max
	Ti	ATI 6-4™	4906,4920	TiAl6V4	210-250	210-265	-	-	see ap max	0.0024-0.0071	0.0019-0.0059	see ap max

ATI Stellram

SOLUTIONS FOR DIFFICULT-TO-MACHINE MATERIALS

5505 VX
BALLNOSE CUTTER

- Cutters from Dia. 0.500” - 2.00”
- One geometry to machine all high temperature alloys
- All cutters with internal coolant

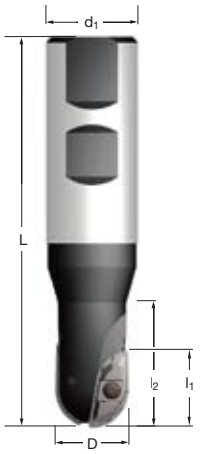
MATERIAL APPLICATIONS

- Stainless Steels
- High Temperature Alloys

5505 VX Milling Cutter

5505VX Weldon Shank

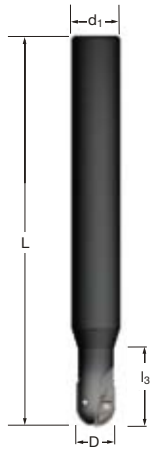
EDP #	Part Number	Dimensions (Inch) D	L/H	l_1	l_2	d_1	No. of Inserts	Insert size	Spares EDP #		EDP #		Screw tightening in.lbs.
030823	C5505VX06WA.750R2.00	0.750	4.282	0.750	2.00	1.000	2	XP..06	030672	FP3007T	031451	TP8	12.4
030824	C5505VX08WA1.00R2.37	1.000	4.650	1.000	2.37	1.000	2	XP..08	015262	D4010T	015240	T15	27.4
030825	C5505VX08WA1.00R3.55	1.000	5.830	1.000	3.55	1.250	2	XP..08	015262	D4010T	015240	T15	27.4
030826	C5505VX10WA1.25R3.00	1.250	5.280	1.250	3.00	1.250	2	XP..10	015266	D5013T	015241	T20	53.1
030827	C5505VX10WA1.25R4.00	1.250	6.280	1.250	4.00	1.250	2	XP..10	015266	D5013T	015241	T20	53.1
030828	C5505VX12WA1.50R4.00	1.500	6.687	1.500	4.00	1.500	2	XP..12	029640	D6014T	015241	T20	92
030829	C5505VX12WA1.50R6.00	1.500	8.687	1.500	6.00	1.500	2	XP..12	029640	D6014T	015241	T20	92
030830	C5505VX16WA2.00R4.00	2.000	6.687	2.00	4.00	1.500	2	XP..16	029641	F8017S	018288	KH5005	216
030831	C5505VX16WA2.00R6.00	2.000	9.250	2.00	6.00	2.000	2	XP..16	029641	F8017S	018288	KH5005	216



Weldon Shank

5505VX Cylindrical Shank

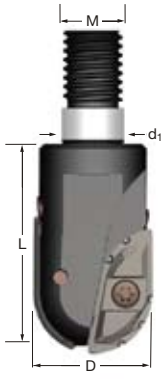
EDP #	Part Number	Dimensions (Inch) D	L/H	l_2	d_1	No. of Inserts	Insert size	Spares EDP #		EDP #		Screw tightening in.lbs.
030987	C5505VX04C.62/.50R.8	0.500	6.00	0.787	0.625	2	XP..04	031456	FP2504T	031452	TP7	7.08
031088	C5505VX05CA.62R1.6	0.625	5.50	1.575	0.625	2	XP..05	031448	FP3006T	031451	TP8	12.4
030988	C5505VX05CA.75/.62R1	0.625	7.00	1.181	0.750	2	XP..05	031448	FP3006T	031451	TP8	12.4
030989	C5505VX06CA.75R1.7	0.750	5.00	2.00	0.750	2	XP..06	030672	FP3007T	015240	TP8	12.4
030990	C5505VX06CA1/.75R1.5	0.750	8.00	1.574	1.00	2	XP..06	030672	FP3007T	015240	TP8	12.4
030991	C5505VX08CA1.00R2.2	1.000	10.00	2.165	1.00	2	XP..08	015262	D4010T	015240	T15	27.4
030992	C5505VX10CA1.25R2.2	1.250	10.00	2.165	1.250	2	XP..10	015266	D5013T	015241	T20	53.1



Cylindrical Shank

5505VX Modular Head/Screw-on

EDP #	Part Number	Dimensions (Inch) D	L/H	M	d_1	No. of Inserts	Insert size	Spares EDP #		EDP #		Screw tightening in.lbs.
030832	A5505VX04S.500R.787	0.500	0.787	M6	0.256	2	XP..04	031456	FP2504T	031452	TP7	7.08
030833	A5505VX05SA.625R1.00	0.625	1.000	M8	0.335	2	XP..05	031448	FP3006T	031451	TP8	12.4
030834	A5505VX06SA.750R1.377	0.750	1.377	M10	0.413	2	XP..06	030672	FP3007T	031451	TP8	12.4
030835	A5505VX08SA1.00R1.575	1.00	1.575	M12	0.492	2	XP..08	015262	D4010T	015240	T15	27.4
030836	A5505VX10SA1.25R1.968	1.25	1.986	M16	0.669	2	XP..10	015266	D5013T	015241	T20	53.1



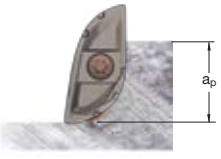
Modular Head

Note: Do not remove the radial screw; this is a fixed location for the insert.
Note: For cylindrical shanks in high density alloy for modular heads refer to page 57.
Note: Part numbers C5505VX04C... (EDP# 030987) and A5505VX04S... (EDP# 030832) are supplied without through coolant.

Blade Application

Snapper radius section and Airfoil radius section machining.

Material in blue to be machined

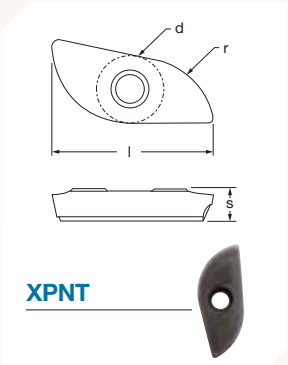


Depth of cut (a_p)

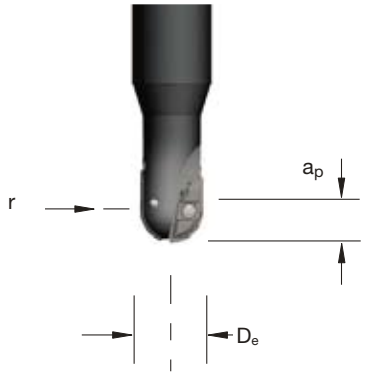
Solutions For Difficult-To-Machine Materials

Inserts for 5505VX

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	Dimensions (Inch): Tool Dia	d	l	s	r	h_m min
030734	**XPNT04/041.51.5R-F**	**SP6519**	◆◆	◆◆		0.500	0.224	0.539	0.125	0.250	0.0016
030737	**XPNT05/0522.R-F**	**SP6519**	◆◆	◆◆		0.625	0.291	0.685	0.125	0.312	0.0016
030740	**XPNT06/062.51.5R-F**	**SP6519**	◆◆	◆◆		0.750	0.336	0.783	0.156	0.375	0.0016
030746	**XPNT08/0832.R-F**	**SP6519**	◆◆	◆◆		1.00	0.433	1.023	0.187	0.500	0.0016
030749	**XPNT10/1043.R-F**	**SP6519**	◆◆	◆◆		1.25	0.555	1.315	0.249	0.625	0.0016
030752	**XPNT12/1254.R-F**	**SP6519**	◆◆	◆◆		1.50	0.669	1.575	0.312	0.750	0.0016
030758	**XPNT16/1654.R-F**	**SP6519**	◆◆	◆◆		2.00	0.875	2.081	0.336	1.00	0.0016



5505VX Technical Advice



Working Diameter:

$$D_e = 2 \times \sqrt{r^2 - (r - a_p)^2}$$

where:
- D_e = Working Diameter
- r = Cutter radius
- a_p = Axial Depth of Cut

To find programmed feedrate:

$$f_z = \frac{h_m}{\frac{\sqrt{r^2 - (r -)^2 a_e}}{r} \times \frac{\sqrt{r^2 - (r -)^2 a_p}}{r}}$$

Average chip thickness:

$$h_m = f_z \times \frac{\sqrt{r^2 - (r -)^2 a_e}}{r} \times \frac{\sqrt{r^2 - (r -)^2 a_p}}{r}$$

where:
- f_z = Feed per tooth
- h_m = Average chip thickness
- D = Cutter diameter (outside)
- a_e = Radial Depth of Cut
- D_e = Working Diameter
- a_p = Axial Depth of Cut

ATI Stellram

XPNT Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing/ ▼▼ Semi Finishing									
						(Ø 0.500") XP..04		(Ø 0.625") XP..05		(Ø 0.750") XP..06		(Ø 1.00") XP..08	
					V_C (feet/min)	h_m (min.-max)	D.O.C a_p (Inch)	h_m (min.-max)	D.O.C a_p (Inch)	h_m (min.-max)	D.O.C a_p (Inch)	h_m (min.-max)	D.O.C a_p (Inch)
					SP6519	SP6519		SP6519		SP6519		SP6519	
M	St.	ATI 403™	403	X6Cr13	700-900	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.	ATI 420™	420	X20Cr13	700-900	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.			X22CrMoV12-1	650-780	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.	ATI 410™	410	X10Cr13	650-780	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.			X12CrNiMoV 12.3	525-650	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.	ATI 416™	416	X12CrS13	525-650	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.	ATI 316™	316	X5CrNiMo18 10	525-650	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.			X19CrMoVbN11-1	525-650	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.		301	X12CrNi17 7	525-650	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	310-590	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.		CA 6 NM	X5CrNi13-4	425-590	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.	ATI 309™	309	X15CrNiSi20 12	325-490	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	St.	ATI 316L™	316L	X2CrNiMo18 12	230-280	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
S	St.	ATI A286™	A638	X5NiCrTi2615	145-260	0.0016-0.0040	0.020-0.250	0.0016-0.0070	0.020-0.3125	0.0016-0.0078	0.020-0.375	0.0016-0.0090	0.020-0.500
	Ni			Rene 80	40-65	0.0016-0.0040	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0060	0.020-0.375	0.0016-0.0078	0.020-0.500
	Ni			Rene 95	30-50	0.0016-0.0030	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0060	0.020-0.375	0.0016-0.0078	0.020-0.500
	Ni			Udimet 710	65-80	0.0016-0.0030	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0060	0.020-0.375	0.0016-0.0078	0.020-0.500
	Ni	ATI 80A™		Nimonic 80A	95-130	0.0016-0.0030	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0060	0.020-0.375	0.0016-0.0078	0.020-0.500
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	0.0016-0.0030	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0060	0.020-0.375	0.0016-0.0078	0.020-0.500
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	0.0016-0.0030	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0060	0.020-0.375	0.0016-0.0078	0.020-0.500
	Ni	ATI 718™	5383	Inconel 718	65-130	0.0016-0.0030	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0060	0.020-0.375	0.0016-0.0078	0.020-0.500
	Ni			Inconel 738	65-115	0.0016-0.0030	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0060	0.020-0.375	0.0016-0.0078	0.020-0.500
	Ni			Inconel 939	40-65	0.0016-0.0030	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0060	0.020-0.375	0.0016-0.0078	0.020-0.500
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	0.0016-0.0030	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0060	0.020-0.375	0.0016-0.0078	0.020-0.500
	Fe		5533	X40CoCrNi2020	80-165	0.0016-0.0030	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0060	0.020-0.375	0.0016-0.0078	0.020-0.500
	Ti	ATI 6-4™	4906,4920	TiAl6V4	210-265	0.0016-0.0035	0.020-0.250	0.0016-0.0040	0.020-0.3125	0.0016-0.0067	0.020-0.375	0.0016-0.008	0.020-0.500

		ATI Designation	USA AMS Designation	Industry Designation	(Ø 1.25") XP..10		(Ø 1.50") XP..12		(Ø 2.0") XP..16	
					h_m (min.-max)	D.O.C a_p (Inch)	h_m (min.-max)	D.O.C a_p (Inch)	h_m (min.-max)	D.O.C a_p (Inch)
					SP6519		SP6519		SP6519	
M	St.	ATI 403™	403	X6Cr13	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.	ATI 420™	420	X20Cr13	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.			X22CrMoV12-1	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.	ATI 410™	410	X10Cr13	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.			X12CrNiMoV 12.3	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.	ATI 416™	416	X12CrS13	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.		316	X5CrNiMo18 10	0.0016-0.0090	0.020-0. 625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.			X19CrMoVbN11-1	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.		301	X12CrNi17 7	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.		CA 6 NM	X5CrNi13-4	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.	ATI 309™	309	X15CrNiSi20 12	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	St.	ATI 316L™	316L	X2CrNiMo18 12	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
S	St.	ATI A286™	A638	X5NiCrTi2615	0.0016-0.0090	0.020-0.625	0.0016-0.0090	0.020-0.750	0.0016-0.0090	0.020-1.000
	Ni			Rene 80	0.0016-0.0078	0.020-0.625	0.0016-0.0078	0.020-0.750	0.0016-0.0078	0.020-1.000
	Ni			Rene 95	0.0016-0.0078	0.020-0.625	0.0016-0.0078	0.020-0.750	0.0016-0.0078	0.020-1.000
	Ni			Udimet 710	0.0016-0.0078	0.020-0.625	0.0016-0.0078	0.020-0.750	0.0016-0.0078	0.020-1.000
	Ni	ATI 80A™		Nimonic 80A	0.0016-0.0078	0.020-0.625	0.0016-0.0078	0.020-0.750	0.0016-0.0078	0.020-1.000
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	0.0016-0.0078	0.020-0.625	0.0016-0.0078	0.020-0.750	0.0016-0.0078	0.020-1.000
	Ni		Hastelloy C	NiCr17Mo17FeW	0.0016-0.0078	0.020-0.625	0.0016-0.0078	0.020-0.750	0.0016-0.0078	0.020-1.000
	Ni	ATI 718™	5383	Inconel 718	0.0016-0.0078	0.020-0.625	0.0016-0.0078	0.020-0.750	0.0016-0.0078	0.020-1.000
	Ni			Inconel 738	0.0016-0.0078	0.020-0.625	0.0016-0.0078	0.020-0.750	0.0016-0.0078	0.020-1.000
	Ni			Inconel 939	0.0016-0.0078	0.020-0.625	0.0016-0.0078	0.020-0.750	0.0016-0.0078	0.020-1.000
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	0.0016-0.0078	0.020-0.625	0.0016-0.0078	0.020-0.750	0.0016-0.0078	0.020-1.000
	Fe		5533	X40CoCrNi2020	0.0016-0.0078	0.020-0.625	0.0016-0.0078	0.020-0.750	0.0016-0.0078	0.020-1.000
	Ti	ATI 6-4™	4906,4920	TiAl6V4	0.0016-0.0080	0.020-0.625	0.0016-0.0080	0.020-0.750	0.0016-0.0080	0.020-1.000

ATI Stellram

SOLUTIONS FOR DIFFICULT-TO-MACHINE MATERIALS

5500 V

- High precision milling cutter
- For finishing applications in most materials
- Excellent surface finish
- Dia. Range 0.375” - 1.00”
- Cylindrical shank & modular head

MATERIAL APPLICATIONS

- Stainless Steels
- High Temperature Alloys

5500V Milling Cutter

5500V Cylindrical Shank

EDP #	Part Number	Dimensions (Inch) D	L/H	l_1	d_1	a	No. of Inserts	Insert size	Spares EDP #		EDP #		Screw tightening in.lbs.
014858	**C5500V.375CR**	0.375	6.000	1.000	0.500	0.188	1	RG.375S	015250	56.672	018488	T7	7.08
014293	**C5500V.500CR**	0.500	7.000	1.180	0.500	0.250	1	RG.500S	015251	55.674	013215	T10	18.6
023817	**C5500V.625CR**	0.625	8.000	1.575	0.625	0.312	1	RG.625S	022150	55.675	015240	T15	27.4
014294	**C5500V.750CR**	0.750	8.000	1.969	0.750	0.375	1	RG.750S	015252	55.676	015241	T20	53.1
014295	**C5500V1.00CR**	1.000	8.000	1.967	1.000	0.500	1	RG1.00S	015253	55.677	015241	T20	53.1

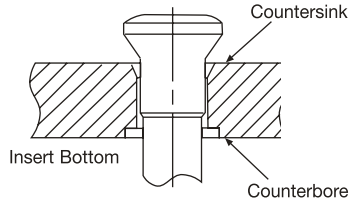
Cylindrical Shank

5500V Modular Head/Screw-on

EDP #	Part Number	Dimensions (Inch) D	L/H	M	d_1	a	No. of Inserts	Insert size	Spares EDP #		EDP #		Screw tightening in.lbs.
029129	**A5500V.375SR1.00**	0.375	1.000	M8	0.335	0.188	1	RG.375S	015250	56.672	018488	T7	7.08
029130	**A5500V.500SR1.377**	0.500	1.377	M8	0.335	0.250	1	RG.500S	015251	55.674	013215	T10	18.6
029131	**A5500V.625SR1.377**	0.625	1.377	M8	0.335	0.312	1	RG.625S	022150	55.675	015240	T15	27.4
029132	**A5500V.750SR1.377**	0.750	1.377	M10	0.413	0.375	1	RG.750S	015252	55.676	015241	T20	53.1
029133	**A5500V1.00SR1.693**	1.000	1.693	M12	0.492	0.500	1	RG1.00S	015253	55.677	015241	T20	53.1


Modular Head

Note: For cylindrical shanks in high density alloy for modular heads refer to page 57.



Insert through hole has a countersink on one side and a counterbore on the other side. Assemble as shown to create proper pull back against the cutter pocket.

Note: All the above cutter bodies can also use metric size inserts. Please refer to our general milling catalogue for item numbers of metric inserts.

To find programmed feedrate:

$$f_z = \frac{h_m}{\frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}}$$

Average chip thickness:

$$h_m = f_z \times \frac{\sqrt{r^2-(r-a_e)^2}}{r} \times \frac{\sqrt{r^2-(r-a_p)^2}}{r}$$

where:

f_z = Feed per tooth	a_e = Radial Depth of Cut
h_m = Average chip thickness	D_w = Working Diameter
D = Cutter diameter (outside)	a_p = Axial Depth of Cut

Blade Application

Snapper radius section and Airfoil radius section with Shoulder connection.

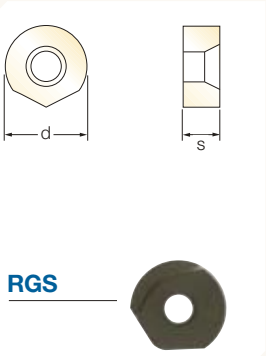
Material in blue to be machined

Depth of cut (a_p)

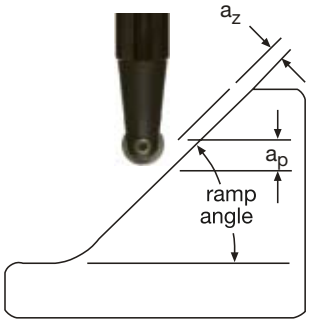
Solutions For Difficult-To-Machine Materials

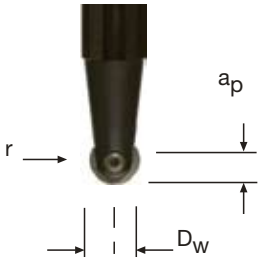
Inserts for 5500V

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h_m min
031490	RG.375S	SP1019			◆◆	0.375		0.078	0.188	0.0008
031491	RG.500S	SP1019			◆◆	0.500		0.098	0.250	0.0008
031492	RG.625S	SP1019			◆◆	0.625		0.118	0.312	0.0008
031493	RG.750S	SP1019			◆◆	0.750		0.138	0.375	0.0008
031494	RG1.00S	SP1019			◆◆	1.000		0.157	0.500	0.0008



Note: Insert grade SP1019 obsoletes and supersedes grade SP1064. EDP-cross-reference chart found on page 61.





Working Diameter:

$$D_w = 2 \times \sqrt{r^2 - (r - a_p)^2}$$

where:
- D_w = Working Diameter
- r = Cutter radius
- a_p = Axial Depth of Cut

Ramp up Data

Cutter Diameter 0.375		Ramp Angle
a_z (in)	a_p (in)	
0.140	0.181	15°
0.094	0.162	30°
0.055	0.133	45°
0.025	0.094	60°
0.006	0.049	75°
0.004	0.016	85°

Torque Limits 7.08 in.lbs.

Ramp up Data

Cutter Diameter 0.625		Ramp Angle
a_z (in)	a_p (in)	
0.236	0.303	15°
0.157	0.271	30°
0.094	0.220	45°
0.043	0.157	60°
0.012	0.078	75°
0.004	0.027	85°

Torque Limits 27.4 in.lbs.

Ramp up Data

Cutter Diameter 1.00		Ramp Angle
a_z (in)	a_p (in)	
0.375	0.490	15°
0.250	0.440	30°
0.146	0.354	45°
0.067	0.250	60°
0.017	0.130	75°
0.004	0.050	85°

Torque Limits 53.1 in.lbs.

Ramp up Data

Cutter Diameter 0.500		Ramp Angle
a_z (in)	a_p (in)	
0.185	0.250	15°
0.125	0.216	30°
0.073	0.177	45°
0.034	0.125	60°
0.010	0.065	75°
0.004	0.022	85°

Torque Limits 18.6 in.lbs.

Ramp up Data

Cutter Diameter 0.750		Ramp Angle
a_z (in)	a_p (in)	
0.278	0.362	15°
0.188	0.325	30°
0.110	0.265	45°
0.050	0.187	60°
0.013	0.100	75°
0.004	0.040	85°

Torque Limits 53.1 in.lbs.

ATI Stellram

RG-S Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼▼▼ Finishing						
						RG.375S		RG.500S		RG.625S	
					V_C (feet/min)	Feed (Inch/tooth)	D.O.C a_p (Inch)	Feed (Inch/tooth)	D.O.C a_p (Inch)	Feed (Inch/tooth)	D.O.C a_p (Inch)
					SP1019	SP1019		SP1019		SP1019	
M	St.	ATI 403™	403	X6Cr13	820-1245	0.0015-0.0035	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.060
	St.	ATI 420™	420	X20Cr13	720-1015	0.0015-0.0035	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.060
	St.			X22CrMoV12-1	720-1015	0.0015-0.0035	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.060
	St.	ATI 410™	410	X10Cr13	720-1015	0.0015-0.0035	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.060
	St.			X12CrNiMoV 12.3	525-655	0.0015-0.0035	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.060
	St.	ATI 416™	416	X12CrS13	525-655	0.0015-0.0035	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.060
	St.	ATI 316™	316	X5CrNiMo18 10	525-655	0.0015-0.0035	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.060
	St.			X19CrMoVbN11-1	525-655	0.0015-0.0035	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.060
	St.	ATI 301™	301	X12CrNi17 7	525-655	0.0015-0.0035	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.060
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	310-575	0.0015-0.0035	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.060
	St.		CA 6 NM	X5CrNi13-4	425-590	0.0015-0.0035	0.004-0.035	0.0015-0.0047	0.004-0.040	0.0015-0.0047	0.004-0.050
	St.	ATI 309™	309	X15CrNiSi20 12	325-425	0.0015-0.0035	0.004-0.035	0.0015-0.0047	0.004-0.040	0.0015-0.0047	0.004-0.050
	St.	ATI 316L™	316L	X2CrNiMo18 12	230-280	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
	St.	ATI A286™	A638	X5NiCrTi2615	145-260	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
S	Ni			Rene 80	40-65	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
	Ni			Rene 95	30-50	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
	Ni			Udimet 710	66-80	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
	Ni	ATI 80A™		Nimonic 80A	95-130	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
	Ni	ATI 718™	5383	Inconel 718	65-130	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
	Ni			Inconel 738	65-115	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
	Ni			Inconel 939	40-65	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	0.0015-0.0024	0.004-0.035	0.0015-0.0040	0.004-0.040	0.0015-0.0040	0.004-0.050
	Fe		5533	X40CoCrNi2020	80-165	0.0015-0.0024	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0040	0.004-0.060
	Ti	ATI 6-4™	4906,4920	TiAl6V4	210-265	0.0015-0.0032	0.004-0.050	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.060

		ATI Designation	USA AMS Designation	Industry Designation	▼▼▼ Finishing				
						RG.705S		RG1.00S	
					V_C (feet/min)	Feed (fpm)	D.O.C a_p (Inch)	Feed (ipt)	D.O.C a_p (Inch)
					SP1019	SP1019		SP1019	
M	St.	ATI 403™	403	X6Cr13	820-1246	0.0015-0.0055	0.004-0.060	0.0015-0.0055	0.004-0.060
	St.	ATI 420™	420	X20Cr13	720-1015	0.0015-0.0055	0.004-0.060	0.0015-0.0055	0.004-0.060
	St.			X22CrMoV12-1	720-1015	0.0015-0.0055	0.004-0.060	0.0015-0.0055	0.004-0.060
	St.	ATI 410™	410	X10Cr13	720-1015	0.0015-0.0055	0.004-0.060	0.0015-0.0055	0.004-0.060
	St.			X12CrNiMoV 12.3	525-655	0.0015-0.0055	0.004-0.060	0.0015-0.0055	0.004-0.060
	St.	ATI 416™	416	X12CrS13	525-655	0.0015-0.0055	0.004-0.060	0.0015-0.0055	0.004-0.060
	St.	ATI 316™	316	X5CrNiMo18 10	525-655	0.0015-0.0055	0.004-0.060	0.0015-0.0055	0.004-0.060
	St.			X19CrMoVbN11-1	525-655	0.0015-0.0055	0.004-0.060	0.0015-0.0055	0.004-0.060
	St.	ATI 301™	301	X12CrNi17 7	525-655	0.0015-0.0055	0.004-0.060	0.0015-0.0055	0.004-0.060
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	310-575	0.0015-0.0055	0.004-0.060	0.0015-0.0055	0.004-0.060
	St.		CA 6 NM	X5CrNi13-4	425-590	0.0015-0.0055	0.004-0.050	0.0015-0.0055	0.004-0.050
	St.	ATI 309™	309	X15CrNiSi20 12	325-425	0.0015-0.0055	0.004-0.050	0.0015-0.0055	0.004-0.050
	St.	ATI 316L™	316L	X2CrNiMo18 12	230-280	0.0015-0.0055	0.004-0.050	0.0015-0.0055	0.004-0.050
	St.	ATI A286™	A638	X5NiCrTi2615	145-260	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.050
S	Ni			Rene 80	40-65	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.050
	Ni			Rene 95	30-50	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.050
	Ni			Udimet 710	65-80	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.050
	Ni	ATI 80A™		Nimonic 80A	95-130	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.050
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.050
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.050
	Ni	ATI 718™	5383	Inconel 718	65-130	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.050
	Ni			Inconel 738	65-115	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.050
	Ni			Inconel 939	40-65	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.050
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	0.0015-0.0047	0.004-0.050	0.0015-0.0047	0.004-0.050
	Fe		5533	X40CoCrNi2020	80-165	0.0015-0.0047	0.004-0.060	0.0015-0.0047	0.004-0.060
	Ti	ATI 6-4™	4906,4920	TiAl6V4	210-265	0.0015-0.0055	0.004-0.060	0.0015-0.0055	0.004-0.060

ATI Stellram

SOLUTIONS FOR DIFFICULT-TO-MACHINE MATERIALS

7792 VX-06, 09, 12
HIGH FEED CUTTER RANGE FROM dia. 0.625”-6.00”

- Three insert sizes 06, 09 & 12mm with 4 cutting edges
- Cutters in coarse & fine pitch versions
- For use in all difficult to machine materials
- EU patent # EP 1689 548 BI/ # EP 1897 643 BI
- US patent #7,220,083/#7,600,952/ #7,806,634

MATERIAL APPLICATIONS

- Stainless Steels
- High Temperature Alloys

7792 VXP 06 High Feed Cutter Range

7792 VXP06 Cylindrical Shanks

EDP #	Part Number	Dimensions (Inch) D	L	l_2	a_p max.	d_1	No. of teeth	Spares EDP #		EDP #		Screw tightening in.lbs.
030487	C7792VXP 06 CA.62Z2R5.5	0.625	7.42	0.980	0.035	0.625	2	031449	FP2506T	031452	TP7	7.08
030412	C7792VXP 06 CA.75Z3R6.1	0.750	8.09	1.260	0.035	0.750	3	031449	FP2506T	031452	TP7	7.08
030413	C7792VXP 06 CA1.0Z4R6.1	1.000	8.34	1.575	0.035	1.000	4	031450	FP2507T	031452	TP7	7.08
030414	C7792VXP 06 CA1.25Z5R8	1.250	9.76	1.575	0.035	1.250	5	031450	FP2507T	031452	TP7	7.08

Cylinder Shanks

Note: The above steel cylindrical shanks can be cut to length as needed for maximum rigidity.

7792 VXP06 Modular Heads/Screw-on

EDP #	Part Number	Dimensions (Inch) D	L	M	a_p max.	d_1	No. of teeth	Spares EDP #		EDP #		Screw tightening in.lbs.
030415	A7792VXP 06 SA.625Z2R1	0.625	1.000	M8	0.035	0.335	2	031449	FP2506T	031452	TP7	7.08
030416	A7792VXP 06 SA.75Z2R1.4	0.750	1.377	M10	0.035	0.413	2	031449	FP2506T	031452	TP7	7.08
030417	A7792VXP 06 SA.75Z3R1.4	0.750	1.377	M10	0.035	0.413	3	031449	FP2506T	031452	TP7	7.08
030418	A7792VXP 06 SA1.0Z3R1.4	1.000	1.377	M12	0.035	0.492	3	031450	FP2507T	031452	TP7	7.08
030419	A7792VXP 06 SA1.0Z4R1.4	1.000	1.377	M12	0.035	0.492	4	031450	FP2507T	031452	TP7	7.08
030420	A7792VXP 06 SA1.25Z5R2	1.250	1.669	M16	0.035	0.669	5	031450	FP2507T	031452	TP7	7.08

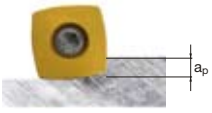
Modular Head

Note: For cylindrical shanks in high density alloy for modular heads refer to page 57.

7792 VXP06 Technical Advice

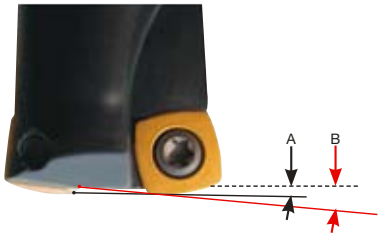
Maximum Ramping Angle

Item Description	Max Ramp Angle A	Max Ramp Angle B
C7792VXP 06 CA.62Z2R5.5	6.09°	8.02°
C7792VXP 06 CA.75Z3R6.1	3.86°	6.74°
C7792VXP 06 CA1.0Z4R6.1	2.11°	4.34°
C7792VXP 06 CA1.25Z5R8	1.43°	2.69°
A7792VXP 06 SA.625Z2R1	6.09°	8.2°
A7792VXP 06 SA.75Z2R1.4	3.86°	6.74°
A7792VXP 06 SA.75Z3R1.4	3.86°	6.74°
A7792VXP 06 SA1.0Z3R1.4	2.11°	4.34°
A7792VXP 06 SA1.0Z4R1.4	2.11°	4.34°
A7792VXP 06 SA1.25Z5R2	1.43°	2.69°



Depth of Cut (a_p)

Ramp angle A uses one outside cutting edge only.
Ramp angle B uses two cutting edges (one outside and one inside edge).

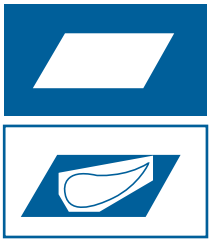


A = max ramp angle utilizing full face contact

B = max ramp angle utilizing full contact + internal corner radius

Blade Application

Rhomboid and Roof.

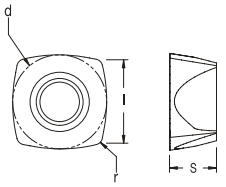


Material in blue to be machined

Solutions For Difficult-To-Machine Materials

Inserts for XP..06

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	d	l	s	r	h_m min
030402	XPLT 06 0308ER-D41	X500	♦♦			0.276	0.276	0.125	0.031	0.0016
031538	XPLT 06 0308ER-D41	SP6519	♦			0.276	0.276	0.125	0.031	0.0016



XPLT06-D41

Note: Insert grade SP6519 obsoletes and supersedes grade SP6564. EDP-cross-reference chart found on page 61.

XP..06 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing/ ▼▼ Semi Finishing: V_C (fpm) X500	V_C (fpm) SP6519(SP6564)	XP..06-41 Feed (ipt) X500	XP..06-41 Feed (ipt) SP6519(SP6564)	D.O.C
♦ M	St.	ATI 403™	403	X6Cr13	480-1200	820-1245	0.006-0.031	0.006-0.028	0.004-0.027
	St.	ATI 420™	420	X20Cr13	480-1015	720-1015	0.006-0.031	0.006-0.028	0.004-0.027
	St.			X22CrMoV12-1	480-1015	720-1015	0.006-0.031	0.006-0.028	0.004-0.027
	St.	ATI 410™	410	X10Cr13	480-1015	720-1015	0.006-0.031	0.006-0.028	0.004-0.027
	St.			X12CrNiMoV 12.3	360-760	425-760	0.006-0.031	0.006-0.028	0.004-0.027
	St.	ATI 416™	416	X12CrS13	360-760	425-760	0.006-0.031	0.006-0.028	0.004-0.027
	St.	ATI 316™	316	X5CrNiMo18 10	360-760	425-760	0.006-0.031	0.006-0.028	0.004-0.027
	St.			X19CrMoVbN11-1	360-760	425-760	0.006-0.031	0.006-0.028	0.004-0.027
	St.	ATI 301™	301	X12CrNi17 7	360-760	425-760	0.006-0.031	0.006-0.028	0.004-0.027
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	130-280	150-300	0.006-0.031	0.006-0.028	0.004-0.027
	St.		CA 6 NM	X5CrNi13-4	200-390	425-590	0.006-0.031	0.006-0.028	0.004-0.027
	St.	ATI 309™	309	X15CrNiSi20 12	150-400	200-400	0.006-0.031	0.006-0.028	0.004-0.027
	St.	ATI 316L™	316L	X2CrNiMo18 12	210-690	390-600	0.006-0.031	0.006-0.024	0.004-0.027
♦ S	Ni	ATI A286™	A638	X5NiCrTi2615	130-360	145-360	0.006-0.025	0.006-0.024	0.004-0.027
	Ni			Rene 80	40-65	-	0.006-0.020	-	0.004-0.020
	Ni			Rene 95	30-50	-	0.006-0.020	-	0.004-0.020
	Ni			Udimet 710	65-80	65-80	0.006-0.020	0.006-0.018	0.004-0.020
	Ni	ATI 80A™		Nimonic 80A	95-130	95-130	0.006-0.020	0.006-0.018	0.004-0.020
	Ni	ATI M-252™	Jethete M152	G-NiCr19Co	95-130	95-130	0.006-0.020	0.006-0.018	0.004-0.020
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	130-180	0.006-0.020	0.006-0.018	0.004-0.020
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	0.006-0.020	0.006-0.018	0.004-0.020
	Ni			Inconel 738	65-115	65-115	0.006-0.020	0.006-0.018	0.004-0.020
	Ni			Inconel 939	40-65	40-65	0.006-0.020	0.006-0.018	0.004-0.020
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	0.006-0.020	0.006-0.018	0.004-0.020
	Fe		5533	X40CoCrNi2020	80-165	80-165	0.006-0.020	0.006-0.018	0.004-0.020
	Ti	ATI 6-4™	4906,4920	TiAl6V4	165-250	210-265	0.006-0.025	0.006-0.024	0.004-0.027

7792 VXD 09 Milling Cutter

7792 VXD09 Weldon Shank

EDP #	Part Number	Dimensions (Inch) D	L/H	l_2	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
029474	C7792VXD 09 WA1.00Z2R	1.000	3.855	1.574	1.00	0.059	2	015269	F3508T	015240	T15	18.6
029475	C7792VXD 09 WA1.25Z3R	1.250	3.855	1.574	1.250	0.059	3	015064	F3510T	015240	T15	18.6

Weldon Shank

7792VXD09 Cylindrical Shank

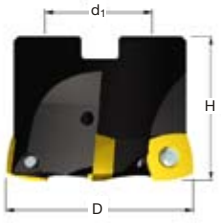
EDP #	Part Number	Dimensions (Inch) D	L/H	l_2	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031193	C7792VXD 09 CA1.00Z2R2	1.00	7.874	1.968	1.00	0.059	2	015269	F3508T	015240	T15	18.6
031194	C7792VXD 09 CA1.25Z3R3	1.25	9.842	2.755	1.250	0.059	3	015064	F3510T	015240	T15	18.6

Cylindrical Shank

Note: The above steel cylindrical shanks can be cut to length as needed for maximum rigidity.

7792 VXD09 Shell Mill Fixation

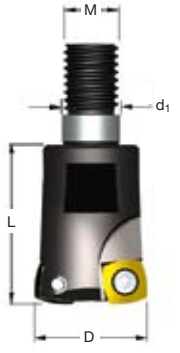
EDP #	Part Number	Dimensions (Inch) D	L/H	l_2	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
029476	C7792VXD 09 -A1.50Z3R	1.500	1.259	-	0.500	0.059	3	015064	F3510T	015240	T15	18.6
029477	C7792VXD 09 -A1.50Z4R	1.500	1.259	-	0.500	0.059	4	015064	F3510T	015240	T15	18.6
030431	C7792VXD 09 -A1.50Z5R	1.500	1.259	-	0.500	0.059	5	015064	F3510T	015240	T15	18.6
030432	C7792VXD 09 -A2.00Z5R	2.000	1.574	-	0.750	0.059	5	015064	F3510T	015240	T15	18.6
030433	C7792VXD 09 -A2.00Z6R	2.000	1.574	-	0.750	0.059	6	015064	F3510T	015240	T15	18.6



Shell Mill Fixation

7792 VXD09 Modular Head/Screw-on

EDP #	Part Number	Dimensions (Inch) D	L/H	M	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
030616	A7792VXD 09 SA1.0Z2R1.4	1.000	1.400	M12	0.492	0.059	2	015269	F3508T	015240	T15	18.6
030617	A7792VXD 09 SA1.25Z3R2	1.250	1.700	M16	0.669	0.059	3	015064	F3510T	015240	T15	18.6



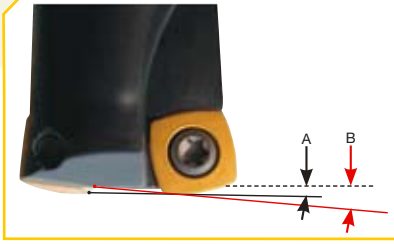
Modular Head

Note: For cylindrical shanks in high density alloy for modular heads refer to page 57.

7792 VXD09 Technical Advice

Maximum Ramping Angle

Item Description	Max Ramp Angle A	Max Ramp Angle B
C7792VXD 09 WA1.00Z2R	2.70°	8.00°
C7792VXD 09 WA1.25Z3R	1.50°	4.50°
C7792VXD 09 CA1.00Z2R2	2.70°	8.00°
C7792VXD 09 CA1.25Z3R3	1.50°	4.50°
C7792VXD 09 -A1.50Z3R	1.10°	2.70°
C7792VXD 09 -A1.50Z4R	1.10°	2.70°
C7792VXD 09 -A1.50Z5R	1.10°	2.70°
C7792VXD 09 -A2.00Z5R	0.70°	1.80°
C7792VXD 09 -A2.00Z6R	0.70°	1.80°
A7792VXD 09 SA1.0Z2R1.4	2.70°	8.10°
A7792VXD 09 SA1.25Z3R2	1.50°	4.50°



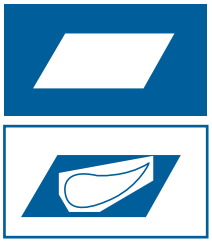
Ramp angle A uses one outside cutting edge only.
Ramp angle B uses two cutting edges (one outside and one inside edge).

A = max ramp angle utilizing full face contact

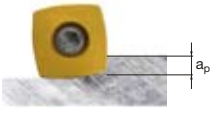
B = max ramp angle utilizing full contact + internal corner radius

Blade Application

Rhomboid, Roof.



Material in blue to be machined



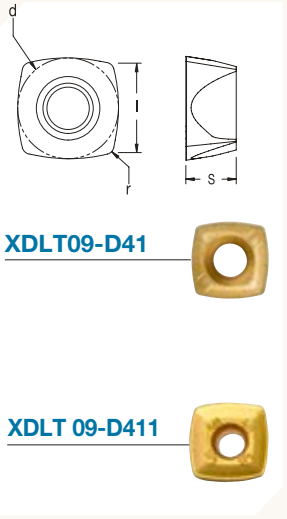
Depth of Cut (a_p)

Solutions For Difficult-To-Machine Materials

Inserts for XD..09

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	Dimensions (Inch): d	l	s	r	h_m min
029685	XDLT 09 0408ER-D41	X500	♦♦	♦♦		0.375	0.375	0.187	0.031	0.002
031535	XDLT 09 0408ER-D41	SP6519	♦	♦		0.375	0.375	0.187	0.031	0.002

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	Dimensions (Inch): d	l	s	r	h_m min
030853	XDLT 09 0412ER-D411	X500	♦♦	♦♦		0.375	0.375	0.187	0.047	0.002
030854	XDLT 09 0412ER-D411	SP6519	♦			0.375	0.375	0.187	0.047	0.002



The NEW -D411 Geometry with larger corner radius and positive geometry for less cutting energy and better edge protection when low radial engagement is required.

Note: Insert grade SP6519 obsoletes and supersedes grade SP6564. EDP-cross-reference chart found on page 61.

XD..09 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing/ ▼▼ Semi Finishing: V_C (fpm) X500	V_C (fpm) SP6519(SP6564)	XD..09-D41 Feed (ipt) X500	XD..09-D41 Feed (ipt) SP6519(SP6564)	XD..09-D411 Feed (ipt) X500	XD..09-D411 Feed (ipt) SP6519(SP6564)	D.O.C a_p (Inch)
♦ M	St.	ATI 403™	403	X6Cr13	430-1200	820-1200	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.059
	St.	ATI 420™	420	X20Cr13	480-1015	525-1015	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.059
	St.			X22CrMoV12-1	480-1015	525-1015	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.045
	St.	ATI 410™	410	X10Cr13	480-1015	525-1015	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.045
	St.			X12CrNiMoV 12.3	360-760	525-760	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.045
	St.	ATI 416™	416	X12CrS13	360-760	425-760	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.045
	St.	ATI 316™	316	X5CrNiMo18 10	360-760	425-760	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.045
	St.			X19CrMoVbN11-1	360-760	425-760	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.045
	St.	ATI 301™	301	X12CrNi17 7	360-760	425-760	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.045
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	130-280	150-300	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.030	0.020-0.045
	St.		CA 6 NM	X5CrNi13-4	200-400	300-590	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.045
	St.	ATI 309™	309	X15CrNiSi20 12	150-330	200-400	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.045
	St.	ATI 316L™	316L	X2CrNiMo18 12	330-690	350-690	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.045
♦ S	Ni	ATI A286™	A638	X5NiCrTi2615	130-260	150-260	0.008-0.037	0.0078-0.035	0.0078-0.037	0.0078-0.035	0.020-0.045
	Ni			Rene 80	40-65	-	0.0078-0.029	-	0.0078-0.029	-	0.020-0.045
	Ni			Rene 95	30-50	-	0.0078-0.029	-	0.0078-0.029	-	0.020-0.045
	Ni			Udimet 710	65-80	65-80	0.0078-0.031	0.0078-0.027	0.0078-0.031	0.0078-0.027	0.020-0.045
	Ni	ATI 80A™		Nimonic 80A	95-130	95-130	0.0078-0.031	0.0078-0.027	0.0078-0.031	0.0078-0.027	0.020-0.045
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	95-130	0.0078-0.031	0.0078-0.027	0.0078-0.031	0.0078-0.027	0.020-0.045
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	130-180	0.0078-0.031	0.0078-0.027	0.0078-0.031	0.0078-0.027	0.020-0.045
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	0.0078-0.031	0.0078-0.027	0.0078-0.031	0.0078-0.027	0.020-0.045
	Ni			Inconel 738	65-115	65-115	0.0078-0.031	0.0078-0.027	0.0078-0.031	0.0078-0.027	0.020-0.045
	Ni			Inconel 939	40-65	40-65	0.0078-0.031	0.0078-0.027	0.0078-0.031	0.0078-0.027	0.020-0.045
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	0.0078-0.031	0.0078-0.027	0.0078-0.031	0.0078-0.027	0.020-0.045
	Fe		5533	X40CoCrNi2020	80-165	80-165	0.0078-0.031	0.0078-0.027	0.0078-0.031	0.0078-0.027	0.020-0.045
	Ti	ATI 6-4™	4906,4920	TiAl6V4	165-250	210-265	0.0078-0.031	0.0078-0.027	0.0078-0.031	0.0078-0.027	0.020-0.045

7792 VXD 12 Milling Cutter

7792VXD12 with cylindrical shank and through coolant

EDP #	Part Number	Dimensions (Inch) D	L/H	l_2	d_1	a_p max.	No. of Inserts	Spares EDP#		EDP#		Screw tightening in.lbs.
031196	**C7792VXD 12 CA1.25Z2R3**	1.25	9.842	2.755	1.25	0.098	2	015262	D4010T	015240	T15	18.6

Note: The above steel cylindrical shank tool can be cut to length as needed for maximum rigidity.

7792 VXD12 Shell Mill Fixation

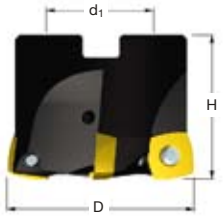
029480	**C7792VXD12-A2.00Z3R**	2.000	1.574	-	0.750	0.098	3	015262	D4010T	015240	T15	18.6
029481	**C7792VXD12-A2.00Z4R**	2.000	1.574	-	0.750	0.098	4	015262	D4010T	015240	T15	18.6
030485	**C7792VXD12-A2.00Z5R**	2.000	1.574	-	0.750	0.098	5	015262	D4010T	015240	T15	18.6
029482	**C7792VXD12-A2.50Z4R**	2.500	1.574	-	1.00	0.098	4	015262	D4010T	015240	T15	18.6
029483	**C7792VXD12-A2.50Z5R**	2.500	1.574	-	1.00	0.098	5	015262	D4010T	015240	T15	18.6
029484	**C7792VXD12-A3.00Z5R**	3.000	1.968	-	1.00	0.098	5	015262	D4010T	015240	T15	18.6
030486	**C7792VXD12-A3.00Z8R**	3.000	1.968	-	1.00	0.098	8	015262	D4010T	015240	T15	18.6
030437	**C7792VXD12-A4.00Z6R**	4.000	1.968	-	1.250	0.098	6	015262	D4010T	015240	T15	18.6
030438	**C7792VXD12-A4.00Z9R**	4.000	1.968	-	1.250	0.098	9	015262	D4010T	015240	T15	18.6
030439	**C7792VXD12-A5.00Z8R**	5.000	2.480	-	1.500	0.098	8	015262	D4010T	015240	T15	18.6
030440	**C7792VXD12-A5.00Z11R**	5.000	2.480	-	1.500	0.098	11	015262	D4010T	015240	T15	18.6
030441	**C7792VXD12-6.00Z8R**	6.000	2.480	-	1.500	0.098	8	015262	D4010T	015240	T15	18.6
030442	**C7792VXD12-6.00Z12R**	6.000	2.480	-	1.500	0.098	12	015262	D4010T	015240	T15	18.6

7792 VXD12 Modular Head/Screw-on

031086	**A7792VXD 12 SA1.25Z2R2**	1.250	1.75	M16	0.669	0.098	2	015262	D4010T	015240	T15	18.6
030727	**A7792VXD 12 SA1.5Z3R1.7**	1.500	1.75	M16	0.669	0.098	3	015262	D4010T	015240	T15	18.6

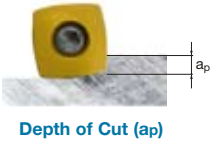
Note: For cylindrical shanks in high density alloy for modular heads refer to page 57.

Cylindrical Shank



Shell Mill Fixation

Modular Head



Depth of Cut (a_p)

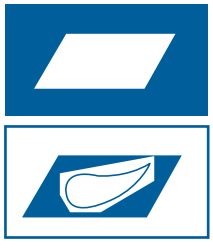
7792 VXD12 Technical Advice

Maximum Ramping Angle

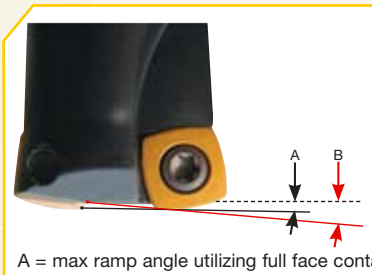
Item Description	Max Ramp Angle A	Max Ramp Angle B
C7792VXD 12 - CA1.25Z2R3	2.60°	3.90°
C7792VXD 12 -A2.00Z3R	0.90°	1.40°
C7792VXD 12 -A2.00Z4R	0.90°	1.40°
C7792VXD 12 -A2.00Z5R	0.90°	1.40°
C7792VXD 12 -A2.50Z4R	0.60°	0.90°
C7792VXD 12 -A2.50Z5R	0.60°	0.90°
C7792VXD 12 -A3.00Z5R	0.45°	0.90°
C7792VXD 12 -A3.00Z8R	0.45°	0.90°
C7792VXD 12 -A4.00Z6R	0.32°	1.42°
C7792VXD 12 -A4.00Z9R	0.32°	1.42°
C7792VXD 12 -A5.00Z8R	0.24°	1.04°
C7792VXD 12 -A5.00Z11R	0.24°	1.04°
C7792VXD 12 - 6.008R	0.19°	0.82°
C7792VXD 12 - 6.00212R	0.19°	0.82°
A7792VXD 12 - SA1.25Z2R2	2.60°	3.90°
A7792VXD 12 - SA1.5Z3R1.7	1.60°	2.30°

Blade Application

Rhomboid, Roof.



Material in blue to be machined



Ramp angle A uses one outside cutting edge only.
Ramp angle B uses two cutting edges (one outside and one inside edge).

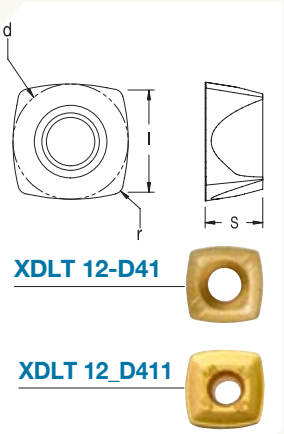
A = max ramp angle utilizing full face contact

B = max ramp angle utilizing full contact + internal corner radius

Solutions For Difficult-To-Machine Materials

Inserts for XD..12

EDP#	Part Number	Grade	Application & Material: Roughing ▼	Semi-Finishing ▼▼	Finishing ▼▼▼	Dimensions (Inch): d	l	s	r	h_m min
029682	XDLT 12 0508ER-D41	X500	♦♦	♦♦		0.500	0.500	0.219	0.031	0.002
031534	XDLT 12 0508ER-D41	SP6519	♦	♦		0.500	0.500	0.219	0.031	0.002
030783	XDLT 12 0512ER-D411	X500	♦♦	♦♦		0.500	0.500	0.219	0.047	0.002
030792	XDLT 12 0512ER-D411	SP6519	♦	♦		0.500	0.500	0.219	0.047	0.002



The NEW -D411 Geometry with larger corner radius and positive geometry for less cutting energy and better edge protection when low radial engagement is required.

Note: Insert grade SP6519 obsoletes and supersedes grade SP6564. EDP-cross-reference chart found on page 61.

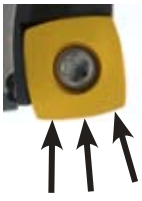
XD..12 Recommended Cutting Conditions

		ATI Designation	USA AMS Designation	Industry Designation	▼ Roughing/ ▼▼ Semi Finishing: V_C (fpm) X500	V_C (fpm) SP6519(SP6564)	XD..12-D41 Feed (ipt) X500	XD..12-D41 Feed (ipt) SP6519(SP6564)	XD..12-D411 Feed (ipt) X500	XD..12-D411 Feed (ipt) SP6519(SP6564)	D.O.C a_p (Inch)
♦ M	St.	ATI 403™	403	X6Cr13	480-1200	525-1200	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.	ATI 420™	420	X20Cr13	480-1015	525-1015	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.			X22CrMoV12-1	480-1015	525-1015	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.	ATI 410™	410	X10Cr13	480-1015	525-1015	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.			X12CrNiMoV 12.3	360-760	425-760	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.	ATI 416™	416	X12CrS13	360-760	425-760	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.	ATI 316™	316	X5CrNiMo18 10	360-760	425-760	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.			X19CrMoVbN11-1	360-760	425-760	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.	ATI 301™	301	X12CrNi17 7	360-760	425-760	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.	ATI Jethete™ M152	5719	X11CrNiMo12	130-280	150-300	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.		CA 6 NM	X5CrNi13-4	200-400	300-590	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.	ATI 309™	309	X15CrNiSi20 12	150-350	260-400	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	St.	ATI 316L™	316L	X2CrNiMo18 12	330-690	390-490	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
♦ S	St.	ATI A286™	A638	X5NiCrTi2615	150-360	150-260	0.008-.0430	0.008-0.039	0.008-.0430	0.008-0.039	0.020-0.078
	Ni			Rene 80	40-65	-	0.008-0.033	-	0.008-0.031	-	0.020-0.067
	Ni			Rene 95	30-50	-	0.008-0.033	-	0.008-0.031	-	0.020-0.067
	Ni			Udimet 710	65-80	65-80	0.009-0.035	0.008-0.031	0.008-0.035	0.008-0.031	0.020-0.067
	Ni	ATI 80A™		Nimonic 80A	95-130	95-130	0.009-0.035	0.008-0.031	0.008-0.035	0.008-0.031	0.020-0.067
	Ni	ATI M-252™	Jethete M252	G-NiCr19Co	95-130	95-130	0.009-0.035	0.008-0.031	0.008-0.035	0.008-0.031	0.020-0.067
	Ni		Hastelloy C	NiCr17Mo17FeW	130-180	130-180	0.009-0.035	0.008-0.031	0.008-0.035	0.008-0.031	0.020-0.067
	Ni	ATI 718™	5383	Inconel 718	65-130	65-130	0.009-0.035	0.008-0.031	0.008-0.035	0.008-0.031	0.020-0.067
	Ni			Inconel 738	65-115	65-115	0.009-0.035	0.008-0.031	0.008-0.035	0.008-0.031	0.020-0.067
	Ni			Inconel 939	40-65	40-65	0.009-0.035	0.008-0.031	0.008-0.035	0.008-0.031	0.020-0.067
	Ni	ATI Waspaloy	5544	NiCr20Co14MoTi	80-130	80-130	0.009-0.035	0.008-0.031	0.008-0.035	0.008-0.031	0.020-0.067
	Fe		5533	X40CoCrNi2020	80-165	80-165	0.009-0.035	0.008-0.031	0.008-0.035	0.008-0.031	0.020-0.067
	Ti	ATI 6-4™	4906,4920	TiAl6V4	165-250	210-265	0.009-0.039	0.008-0.035	0.008-0.039	0.008-0.035	0.020-0.079

Application Advantages

The advantages of facemilling and producing cavities with Stellram's high feed face mill are numerous.

The unique design of the insert, approach angle and the cutter body ensure the cutting forces are predominantly directed in the axial direction. The example shown with a round insert tool shows complex forces which result in high levels of vibration and damage to the cutting edge.



7792VX

- Cutting forces predominantly axial
- Relationship between cutting edge and work piece is at its most stable.
- Results in high feed rates and consistent tool life.

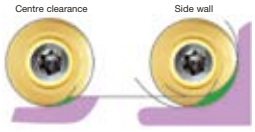
Round Insert Tools

- Tangential forces act around the radius
- Leads to vibration and damage of the cutting edge
- Leads to reduced feed and lower productivity

The 7792VX machines with a constant volume of chip throughout all aspects of producing cavities and produces a side wall that is close to profile. Round insert tools have increasing chip volume through the process.

7792VX

- Constant cutting section (chip volume) irrespective of position in cavity.
- Producing a close to profile side wall.
- Near-square side walls possible.

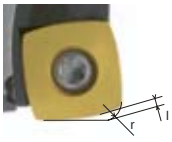


Round insert

- Greater surface contact.
- Increased chip section for side wall machining.
- Vibration in corners.
- Undulating side wall cusps.

CNC Programme - Corner Radius Definition

The use of common CAD / CAM systems requires a round insert dimension to be known for cavity machining. This is available with the Stellram 7792VX cutter as shown below and in the reference table.

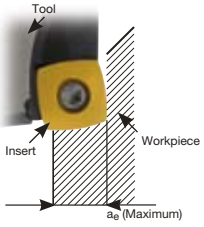


Insert Designation	Dimensions (mm) r	l
XP**060308***D41	0.054	0.016
XD**090408***D41	0.079	0.028
XD**090412***D411	0.089	0.026
XD**120508***D41	0.098	0.040
XD**120512***D411	0.107	0.038

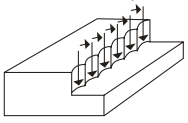
Technical Information Plunge Milling

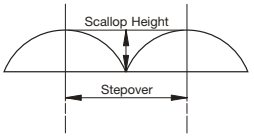
Tool definition-Scallop height and step over

Tool definition (inch)																
Diameter	0.625	0.075	1.00	1.25	1.00	1.25	1.5	2.00	1.25	1.50	2.00	2.50	3.00	4.00	5.00	6.00
Insert size	0.236	0.236	0.236	0.236	0.354	0.354	0.354	0.354	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
a_e max	0.118	0.118	0.118	0.118	0.236	0.236	0.236	0.236	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354
Scallop height	Step over (inch)															
0.010	0.156	0.175	0.196	0.222	0.196	0.222	0.248	0.283	0.222	0.242	0.283	0.312	0.352	0.393	0.440	0.486
0.020	0.219	0.246	0.276	0.312	0.276	0.312	0.350	0.400	0.312	0.341	0.400	0.440	0.496	0.555	0.621	0.686
0.030	0.266	0.299	0.336	0.381	0.336	0.381	0.427	0.488	0.381	0.417	0.488	0.538	0.607	0.679	0.760	0.840
0.039	0.305	0.343	0.386	0.438	0.386	0.438	0.492	0.562	0.438	0.480	0.562	0.620	0.700	0.783	0.877	0.969
0.079	0.417	0.472	0.534	0.610	0.534	0.610	0.686	0.789	0.610	0.669	0.789	0.870	0.983	1.102	1.235	1.366
0.118	**0.492**	**0.562**	**0.640**	**0.734**	0.640	0.734	0.830	0.955	0.734	0.808	0.955	1.056	1.197	1.343	1.506	1.667
0.157					0.722	0.833	0.945	10091	0.833	0.920	10091	1.210	1.373	1.543	1.732	1.918
0.197					0.787	0.915	1.042	1.207	0.915	1.012	1.207	1.341	1.525	1.716	1.929	2.138
0.236					**0.841**	**0.983**	**1.125**	**1.308**	0.983	1.093	1.308	1.456	1.659	1.870	2.104	2.334
0.276									1.042	1.162	1.397	1.559	1.780	2.009	2.263	2.512
0.315									1.091	1.222	1.477	1.652	1.890	2.136	2.409	2.676
0.354									**1.133**	**1.274**	**1.549**	**1.736**	**1.990**	**2.253**	**2.544**	**2.829**



The scallop height is calculated in relation to the step over.





The maximum radial engagement is directly in relation to insert cutting edge length.

For insert type: **XP...06 the a_e, max is 0.118"**

For insert type: **XD...09 the a_e, max is 0.236"**

For insert type: **XD...12 the a_e, max is 0.354"**

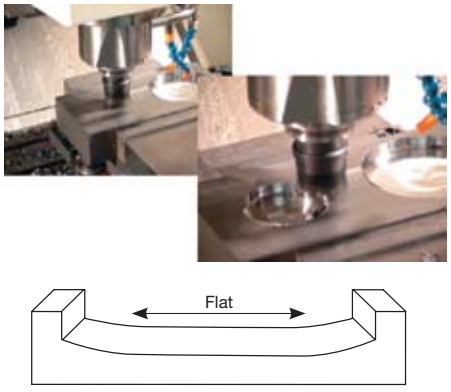
The cutting edge should not be in contact with the material face after machining to maintain the cutting edge quality.

Helical interpolation capacity for 7792VX product line

Helical interpolation Dia. min max (inch)			
Insert size	Cutter dia.	Hole min.	Hole max.
06	0.625	0.850	1.170
06	0.750	1.100	1.420
06	1.00	1.600	1.920
06	1.250	2.100	2.420
09	1.00	1.370	1.920
09	1.250	1.870	2.420
09	1.500	2.370	2.920
09	2.00	3.370	3.920
12	1.250	1.630	2.420
12	1.500	2.130	2.920
12	2.00	3.130	3.920
12	2.500	4.130	4.920
12	3.000	5.130	5.920
12	4.000	7.130	7.920
12	5.000	9.130	9.920
12	6.000	11.130	11.920

Facing operation maximum flat surface for 7792VX

Max flat surface (inch)		
Insert size	Cutter dia.	Pitch
06	0.625	0.255
06	0.750	0.380
06	1.000	0.630
06	1.250	0.880
09	1.000	0.480
09	1.250	0.730
09	1.500	0.980
09	2.000	1.480
12	1.250	0.520
12	1.500	0.770
12	2.000	1.270
12	2.500	1.770
12	3.000	2.270
12	4.000	3.270
12	5.000	4.270
12	6.000	5.270



Shanks - Cylindrical (with through coolant)

Cylindrical shank in anti vibration high density alloy

EDP #	Part Number	Dimensions (Inch) L	L_1	D_2	D	D_1	M
031318	**M-12-M6-C1/2-2.756**	2.756	0.984	0.500	0.464	0.256	M6
031319	**M-12-M6-C1/2-3.543**	3.543	1.771	0.500	0.464	0.256	M6
031320	**M-12-M6-C1/2-4.331**	4.331	2.559	0.500	0.464	0.256	M6
030641	**M-13-M8-CA5/8-3.543**	3.543	1.600	0.625	0.512	0.335	M8
030642	**M-13-M8-CA5/8-4.331**	4.331	2.500	0.625	0.512	0.335	M8
030643	**M-13-M8-CA5/8-5.118**	5.118	3.000	0.625	0.512	0.335	M8
030644	**M-13-M8-CA5/8-6.693**	6.693	4.750	0.625	0.512	0.335	M8
030645	**M-18-M10-CA3/4-4.331**	4.331	2.500	0.750	0.709	0.413	M10
030646	**M-18-M10-CA3/4-5.118**	5.118	3.000	0.750	0.709	0.413	M10
030647	**M-18-M10-CA3/4-6.693**	6.693	4.750	0.750	0.709	0.413	M10
030648	**M-21-M12-CA1-5.157**	5.157	3.000	1.000	0.827	0.492	M12
030649	**M-21-M12-CA1-6.142**	6.142	4.000	1.000	0.827	0.492	M12
030650	**M-21-M12-CA1-7.126**	7.126	5.000	1.000	0.827	0.492	M12
030651	**M-21-M12-CA1-8.110**	8.110	6.000	1.000	0.827	0.492	M12
030652	**M-21-M12-CA1-9.094**	9.094	7.000	1.000	0.827	0.492	M12
030653	**M29-M16-CA1.25-6.3**	6.300	4.000	1.250	1.141	0.669	M16
030654	**M29-M16-CA1.25-8.27**	8.268	6.000	1.250	1.141	0.669	M16
030655	**M29-M16-CA1.25-10.2**	10.236	8.000	1.250	1.141	0.669	M16
030656	**M29-M16-CA1.25-12.2**	12.205	10.000	1.250	1.141	0.669	M16

Order example with cylindrical shank: **M-13-M8-CA5/8-3.543.**
Note: Part numbers M-12-M6-C1/2... are supplied without through coolant.

Technical Advice

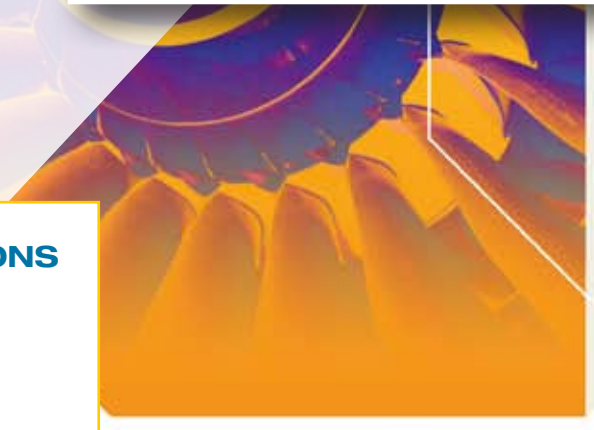
M: Modular shank
13: Diameter in front of the modular shank (D)
M8: Tapping in metric (M)
CA5/8: Cylindrical shank diameter 0.625” with through coolant
3.543: Total length of the body in inches

ATI Stellram

SOLUTIONS FOR DIFFICULT-TO-MACHINE MATERIALS

RAPIDE®
HIGH PERFORMANCE SOLID CARBIDE END MILLS

- High Precision End Mills
- Micro Grain substrate with the latest PVD coating technology
- To machine High Temperature Alloys & Stainless Steel
- Highest productivity for slotting & contour milling operations



MATERIAL APPLICATIONS

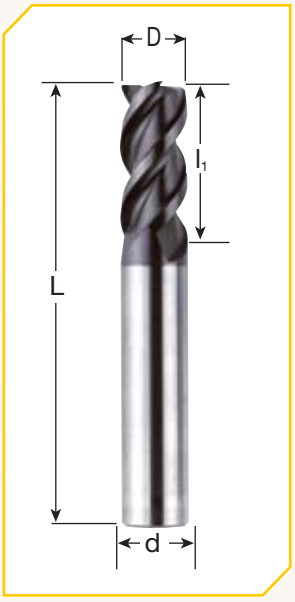
- Stainless Steels
- High Temperature Alloys

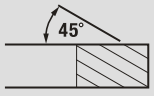
Solutions For Difficult-To-Machine Materials

RAPIDE® High Performance Solid Carbide Cutters

Series 163 with Corner Chamfer

D	d	L	l_1	Chamfer	Number of	Part Number
ins	ins	ins	ins	ins x 45°	teeth	Coated
1/8	1/4	2	1/2	0.004	3	16312500-LF
3/16	1/4	2	9/16	0.004	3	16318750-LF
1/4	1/4	2-1/2	3/8	0.006	3	16325000-SF
1/4	1/4	2-1/2	5/8	0.006	3	16325000-LF
5/16	5/16	2-1/2	13/16	0.008	3	16331250-LF
3/8	3/8	2-1/2	7/8	0.008	3	16337500-LF
1/2	1/2	3	1-1/4	0.010	3	16350000-LF
5/8	5/8	3-1/2	3/4	0.010	3	16342500-LF
5/8	5/8	3-1/2	1-5/8	0.010	3	16362500-LF

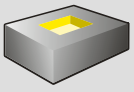


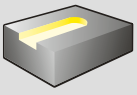


tol: D	tol: d
≥1/8" + 0/-0.00063" ≥1/4" + 0/-0.00079" ≥1/2" + 0/-0.00094"	h6

Micro Grain
K10/K30

Coating
TiAlN PVD





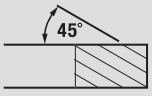
Series 163 Recommended Cutting Conditions

Material		Vc f(pm) min. - max.	Feed ipt/tooth min. - max. 1/8	3/16	1/4	5/16
Stainless	Austenitic + Ferritic	262-525	0.0004-0.0006	0.0005-0.0009	0.0007-0.0013	0.0009-0.0017
Stainless	Martensitic	180-394	0.0004-0.0005	0.0005-0.0008	0.0007-0.0011	0.0009-0.0014
Stainless	Refractory P.H	164-295	0.0003-0.0005	0.0005-0.0007	0.0006-0.0010	0.0008-0.0013
High Temp. Alloys	Iron based	164-295	0.0004-0.0006	0.0005-0.0010	0.0007-0.0015	0.0009-0.0021
High Temp. Alloys	Cobalt based	49-164	0.0003-0.0006	0.0005-0.0010	0.0007-0.0015	0.0008-0.0020
High Temp. Alloys	Nickel based	66-180	0.0003-0.0006	0.0005-0.0010	0.0007-0.0014	0.0008-0.0019
High Temp. Alloys	Titanium based	98-328	0.0004-0.0006	0.0005-0.0010	0.0007-0.0014	0.0009-0.0019

3/8	1/2	9/16	5/8	Slotting a_p. Max	Contour a_p. Max
0.0011-0.0021	0.0014-0.0030	0.0016-0.0034	0.0018-0.0039	1.5 x D	see l_1
0.0011-0.0017	0.0014-0.0024	0.0016-0.0027	0.0018-0.0030	1.5 x D	see l_1
0.0009-0.0016	0.0013-0.0022	0.0014-0.0025	0.0016-0.0028	1.5 x D	see l_1
0.0011-0.0026	0.0014-0.0038	0.0016-0.0045	0.0018-0.0052	1.5 x D	see l_1
0.0010-0.0025	0.0013-0.0036	0.0014-0.0042	0.0016-0.0048	1.5 x D	see l_1
0.0010-0.0023	0.0013-0.0034	0.0014-0.0039	0.0016-0.0045	1.5 x D	see l_1
0.0011-0.0024	0.0014-0.0035	0.0016-0.0040	0.0018-0.0046	1.5 x D	see l_1

Series 160 with Corner Radii

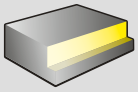
D	d	L	l_1	Radii	Number of	Part Number
ins	ins	ins	ins	ins	teeth	Coated
1/8	1/4	2	1/2	0.010	6	16012500-010
3/16	1/4	2	9/16	0.010	6	16018750-00
1/4	1/4	2-1/2	3/4	0.020	6	16025000-020
5/16	5/16	2-1/2	13/16	0.020	6	16031250-020
3/8	3/8	3	7/8	0.020	6	16037500-020
1/2	1/2	3	1	0.020	6	16050000-020
5/8	5/8	3-1/2	1-1/4	0.040	6	16062500-040
3/4	3/4	4	1-1/2	0.040	6	16075000-040



tol: D	tol: d
≥1/8" + 0/-0.00063" ≥1/4" + 0/-0.00079" ≥1/2" + 0/-0.00094"	h6

Micro Grain
K10/K30

Coating
TiAlN PVD



Series 160 Recommended Cutting Conditions

Material		Vc (fpm) min - max	Feed ipt min - max 1/8	3/16	1/4
Stainless	Austenitic + Ferritic	262-525	0.0004-0.0006	0.0005-0.0009	0.0007-0.0013
Stainless	Martensitic	180-394	0.0004-0.0005	0.0005-0.0008	0.0007-0.0011
Stainless	Refractory P.H	164-295	0.0003-0.0005	0.0005-0.0007	0.0006-0.0010
High Temp. Alloys	Iron based	164-361	0.0004-0.0006	0.0005-0.0010	0.0007-0.0015
High Temp. Alloys	Cobalt based	49-197	0.0003-0.0006	0.0005-0.0010	0.0007-0.0015
High Temp. Alloys	Nickel based	66-213	0.0003-0.0006	0.0005-0.0010	0.0007-0.0014
High Temp. Alloys	Titanium based	98-328	0.0004-0.0006	0.0005-0.0010	0.0007-0.0014

5/16	3/8	1/2	5/8	3/4	Slotting a_p. Max	Contour a_p. Max
0.0009-0.0017	0.0009-0.0017	0.0011-0.0021	0.0018-0.0039	0.0022-0.0049	0.05 XD	see l_1
0.0009-0.0014	0.0009-0.0014	0.0011-0.0017	0.0018-0.0030	0.0022-0.0037	0.05 XD	see l_1
0.0008-0.0013	0.0008-0.0013	0.0009-0.0016	0.0016-0.0028	0.0019-0.0035	0.05 XD	see l_1
0.0009-0.0021	0.0009-0.0021	0.0011-0.0026	0.0018-0.0052	0.0019-0.0066	0.05 XD	see l_1
0.0008-0.0020	0.0008-0.0020	0.0010-0.0025	0.0016-0.0048	0.0019-0.0061	0.05 XD	see l_1
0.0008-0.0019	0.0008-0.0019	0.0010-0.0023	0.0016-0.0045	0.0019-0.0057	0.05 XD	see l_1

EDP-Cross-Reference Chart

for SP6519 and *SP1019 Conversion.

Catalog - Milling Products for Power Generation and Aerospace Applications - Inch

EDP-Cross-Reference Chart for SP6519 and *SP1019 Conversion

Found on Page Number	Insert Description ISO	Insert Description ANSI	Obsolete SP6564 or *SP1064 EDP#	NEW Improved SP6519 or *SP1019 EDP#
35 & 39	ADHT12T308ER-46	ADHT12T308ER-46	029328	031526
35	ADHT12T316ER-46	ADHT12T316ER-46	029330	031527
35	ADHT12T320ER-46	ADHT12T320ER-46	029336	031530
35	ADHT12T324ER-46	ADHT12T324ER-46	029332	031528
35	ADHT12T330ER-46	ADHT12T330ER-46	029338	031531
35	ADHT12T332ER-46	ADHT12T332ER-46	029037	031515
35	ADHT12T340ER-46	ADHT12T340ER-46	029334	031529
35 & 39	ADHT12T3PDER-46	ADHT12T3PDER-46	029326	031525
23	ODET0404APEN-44	ODET0404APEN-44	027722	031470
23	ODMT040408EN-41	ODMT040408EN-41	027723	031471
23	ODMT040408EN-412	ODMT040408EN-412	030695	031540
27	ODMT0605APEN-41	ODMT0605APEN-41	027892	031502
23	ODMW040408SN	ODMW040408SN	027197	031462
27	ODMW060512TN	ODMW060512TN	027893	031503
47	*RG.375S	*RG.375S	027821	031490
47	*RG.500S	*RG.500S	027822	031491
47	*RG.625S	*RG.625S	027823	031492
47	*RG.750S	*RG.750S	027824	031493
47	*RG1.00S	*RG1.00S	027825	031494
19	RPHT1204M0E-422-X4	RPHT1204M0E-422-X4	030601	031359
19	RPHT1204M0T-X4	RPHT1204M0T-X4	029290	031516
7	RPMT0803M3E-41	RPMT0803M3E-41	027728	031473
15	RPHT10T3M0T-X4	RPHT10T3M0T-X4	030448	031555
11 & 15	RPMT10T3M0E-41-X4	RPMT10T3M0E-41-X4	030453	031539
51	XPLT060308ER-D41	XPLT060308ER-D41	030404	031538
53	XDLT090408ER-D41	XDLT090408ER-D41	029686	031535
55	XDLT120508ER-D41	XDLT120508ER-D41	029683	031534

Note: Insert grade SP6519 obsoletes and supersedes grade SP6564.
*Insert grade SP1019 obsoletes and supersedes grade SP1064.

Notes

www.atistellram.com

Global Affiliates


Canada

ATI STELLRAM
Tel: 800 668 6928
Fax: 800 432 6227


China

ATI STELLRAM
Room 21E, Huadu Mansion
No. 838 Zhangyang Road
Pudong, Shanghai 200122
Tel: +86.21.50815702
Fax: +86.21.50815703


France

ATI STELLRAM SAS
6, Rue du Parc,
Blue Business Building
74100 Annemasse
Tel: 0810 003131
Fax: 0810 005652


Germany

ATI STELLRAM GmbH
Seligenstädter Grund 11,
D-63150 Heusenstamm
Tel: (06104) 682-132, -133, -142
Fax: (06104) 682-140


Great Britain

ATI STELLRAM LTD
Hercules Way,
Bowerhill Industrial Estate,
Melksham, Wilts SN12 6TS
Tel: (0800) 731 6660
Fax: (0800) 731 6662

ATI STELLRAM GA LTD
GARRYSON® Products
Spring Rd,
Ibstock, Leicestershire LE67 6LR
Tel: +44 (0) 1530 261145
Fax: +44 (0) 1530 262801


Italy

ATI STELLRAM Srl
Strada Nazionale 71,
10020 Cambiano (TO)
Tel: 011 944 3111
Fax: 011 944 3100


Mexico

ATI STELLRAM
Tel: 011 877 756 0947
Fax: 011 877 285 2505


Spain

ATI STELLRAM IBERICA S.A.
Tel: 900 506 261
Fax: 900 506 263


Switzerland

ATI STELLRAM SA
Avenue du Mont-Blanc 24,
Case Postale 339
CH-1196 Gland
Suisse Romande Tel: 0800 807 778 Fax: 0800 807 701
Deutsche Schweiz Tel: 0800 807 721 Fax: 0800 807 701
Svizzera Italiana Tel: 0800 807 722 Fax: 0800 807 701


Taiwan

ALLEGHENY TECHNOLOGIES TAIWAN, INC.
Room 901, 9th Floor, No.54, Sec.4,
Mingshen East Road
Taipei 105
Tel: (2) 2713-8101
Fax: (2) 2545-0688


USA

ATI STELLRAM U.S.A.
One Teledyne Place,
LaVergne, Tennessee 37086

STELLRAM® Products
Tel: (800) 232 1200
Fax: (800) 223 2219

GARRYSON® Products
Tel: (800) 404 5364
Fax: (800) 404 5374

LANDIS® THREADING Products
360 South Church Street
Waynesboro, PA 17268
Tel: (717) 762 3151
Fax: (717) 762 7126

ATI Stellram, a metalcutting and metal finishing technology leader, is an operating unit within the Allegheny Technologies Incorporated (ATI) group of companies. Allegheny Technologies Incorporated is one of the largest and most diversified specialty metals producers in the world. ATI employees world-wide use innovative technologies to offer growing markets a wide range of specialty metals solutions. ATI major markets are aerospace and defense, oil and gas/chemical process industry, electrical energy, medical, automotive, food equipment and appliance, machine and cutting tools, construction and mining. ATI products include titanium and titanium alloys, nickel-based alloys and superalloys, stainless and specialty steels, zirconium, hafnium, and niobium, tungsten materials, grain-oriented silicon electrical steel and tool steels, and forgings and castings.

ATI Allegheny Ludlum-Shanghai STAL. **ATI Allvac**-Allvac Ltd. ATI Powdered metals. **ATI Engineered Products**-ATI Casting Service, ATI Firth Sterling, ATI Portland forge, ATI Precision finishing, ATI Stellram. **ATI Wah Chang.**

ATI Stellram

www.atistellram.com

LITERATURE RE-ORDER NUMBER
381CATUSA.V4
03/11 PRINTED IN USA