

Slot, Profile and Semi-Finish With Onsrud's 5 Flute High-Performance End Mills

- Increase feed rates 20% over 4 flute tools
- Variable flute indexing reduces chatter
- Largest selection of aerospace specific corner radii
- Produced with the highest transverse rupture strength nano-grain carbide
- **Available coated and uncoated**
- **Custom tools built and coated to order and shipped in 7 business days**
- Combine Onsrud's 5 Flute TV series with 10 Flute finishers and watch your profits SOAR!



CHIP LOAD PER TOOTH

Material/Grade		Titanium Variable Index						
		SFPM	1/4	3/8	1/2	5/8	3/4	1
Titanium								
5553	Slotting	60 - 220	.0014	.0021	.0028	.0035	.0042	.0056
6Al-4V	Profiling 33% RDoC		.0018	.0027	.0036	.0044	.0053	.0072
Commercially Pure								
Cobalt Base								
Haynes 21/26	Slotting	40 - 100	.001	.0014	.002	.0026	.0031	.004
NASA CO-W-RE	Profiling 33% RDoC		.0012	.0018	.0026	.0031	.0038	.005
Stellite								
Iron Base								
A-286, Discoly	Slotting	50 -100	.0012	.0021	.0025	.0031	.0038	.005
Incoly, Multimet	Profiling 33% RDoC		.0014	.0025	.003	.0038	.0045	.006
Timken 16-25-6								
Nickel Base								
Hastalloy, Waspalloy	Slotting	40 - 100	.001	.0014	.002	.0026	.0031	.004
Rene 41-95, Monel	Profiling 33% RDoC		.0012	.0018	.0026	.0031	.0038	.005
Inconel 625, 718								
Austenitic								
304, 310, 314	Slotting	100 - 350	.0013	.0021	.0028	.0035	.0042	.0056
316L	Profiling 33% RDoC		.0017	.0027	.0036	.0044	.0053	.0072
302, 304L								
Precipitation								
13-8PH, 15-5PH	Slotting	90 - 250	.0014	.0021	.0028	.0035	.0042	.0056
17-4PH	Profiling 33% RDoC		.0018	.0027	.0036	.0044	.0053	.0072
Martensitic								
420, 430F, 440	Slotting	100 - 250	.0014	.0021	.0028	.0035	.0042	.0056
403, 410, 416	Profiling 33% RDoC		.0018	.0027	.0036	.0044	.0053	.0072



Titanium Variable Index Standard Length

Description	Cutting DIA	SHK DIA	Flute LGTH	OAL	No of Flutes	Corner Radius	Uncoated	AITIN
TVS-50250	1/4	1/4	3/8	2	5	Square	EMC604001	EMC604000
						.015	EMC604003	EMC604002
						.030	EMC604005	EMC604004
						.060	EMC604007	EMC604006
						.090	EMC604009	EMC604008
						Ball	EMC604011	EMC604010
TVS-50375	3/8	3/8	1/2	2	5	Square	EMC604013	EMC604012
						.015	EMC604015	EMC604014
						.030	EMC604017	EMC604016
						.060	EMC604019	EMC604018
						.090	EMC604021	EMC604020
						.120	EMC604023	EMC604022
TVS-50500	1/2	1/2	5/8	2 1/2	5	Square	EMC604027	EMC604026
						.015	EMC604029	EMC604028
						.030	EMC604031	EMC604030
						.060	EMC604033	EMC604032
						.090	EMC604035	EMC604034
						.120	EMC604037	EMC604036
TVS-50625	5/8	5/8	3/4	3	5	Square	EMC604045	EMC604044
						.030	EMC604047	EMC604046
						.060	EMC604049	EMC604048
						.090	EMC604051	EMC604050
						.120	EMC604053	EMC604052
						.156	EMC604055	EMC604054
TVS-50750	3/4	3/4	1 1/8	3	5	Square	EMC604063	EMC604062
						.030	EMC604065	EMC604064
						.060	EMC604067	EMC604066
						.090	EMC604069	EMC604068
						.120	EMC604071	EMC604070
						.156	EMC604073	EMC604072
TVS-51000	1	1	1 1/4	4	5	Square	EMC604081	EMC604080
						.030	EMC604083	EMC604082
						.060	EMC604085	EMC604084
						.090	EMC604087	EMC604086
						.120	EMC604089	EMC604088
						.156	EMC604091	EMC604090
						.190	EMC604093	EMC604092
						.250	EMC604095	EMC604094
						Ball	EMC604097	EMC604096



Titanium Variable Index Medium Length

Description	Cutting DIA	SHK DIA	Flute LGTH	OAL	No of Flutes	Corner Radius	Uncoated	AlTiN
TVM-50250	1/4	1/4	3/4	2 1/2	5	Square	EMC604101	EMC604100
						.015	EMC604103	EMC604102
						.030	EMC604105	EMC604104
						.060	EMC604107	EMC604106
						.090	EMC604109	EMC604108
						Ball	EMC604111	EMC604110
TVM-50375	3/8	3/8	1 1/8	2 1/2	5	Square	EMC604113	EMC604112
						.015	EMC604115	EMC604114
						.030	EMC604117	EMC604116
						.060	EMC604119	EMC604118
						.090	EMC604121	EMC604120
						.120	EMC604123	EMC604122
TVM-50500	1/2	1/2	1 1/4	3	5	Square	EMC604127	EMC604126
						.015	EMC604129	EMC604128
						.030	EMC604131	EMC604130
						.060	EMC604133	EMC604132
						.090	EMC604135	EMC604134
						.120	EMC604137	EMC604136
TVM-50625	5/8	5/8	1 5/8	3 1/2	5	Square	EMC604145	EMC604144
						.030	EMC604147	EMC604146
						.060	EMC604149	EMC604148
						.090	EMC604151	EMC604150
						.120	EMC604153	EMC604152
						.156	EMC604155	EMC604154
TVM-50750	3/4	3/4	1 5/8	4	5	Square	EMC604163	EMC604162
						.030	EMC604165	EMC604164
						.060	EMC604167	EMC604166
						.090	EMC604169	EMC604168
						.120	EMC604171	EMC604170
						.156	EMC604173	EMC604172
TVM-51000	1	1	2	5	5	Square	EMC604181	EMC604180
						.030	EMC604183	EMC604182
						.060	EMC604185	EMC604184
						.090	EMC604187	EMC604186
						.120	EMC604189	EMC604188
						.156	EMC604191	EMC604190
TVM-51000	1	1	2	5	5	.190	EMC604193	EMC604192
						.250	EMC604195	EMC604194
						Ball	EMC604197	EMC604196



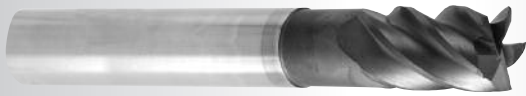
Titanium Variable Index - Necked Standard Length

Description	Cutting DIA	SHK DIA	Flute LGTH	OAL	No of Flutes	Neck LGTH	Neck DIA	Corner Radius	Uncoated	AITIN
TVNS-50250	1/4	1/4	3/8	3	5	1 3/8	.236	Square	EMC604201	EMC604200
								.015	EMC604203	EMC604202
								.030	EMC604205	EMC604204
								.060	EMC604207	EMC604206
								.090	EMC604209	EMC604208
								Ball	EMC604211	EMC604210
TVNS-50375	3/8	3/8	1/2	3	5	1 5/8	.355	Square	EMC604213	EMC604212
								.015	EMC604215	EMC604214
								.030	EMC604217	EMC604216
								.060	EMC604219	EMC604218
								.090	EMC604221	EMC604220
								.120	EMC604223	EMC604222
TVNS-50500	1/2	1/2	5/8	4	5	2 1/8	.470	Square	EMC604227	EMC604226
								.015	EMC604229	EMC604228
								.030	EMC604231	EMC604230
								.060	EMC604233	EMC604232
								.090	EMC604235	EMC604234
								.120	EMC604237	EMC604236
TVNS-50625	5/8	5/8	3/4	5	5	2 3/8	0.593	Square	EMC604245	EMC604244
								.030	EMC604247	EMC604246
								.060	EMC604249	EMC604248
								.090	EMC604251	EMC604250
								.120	EMC604253	EMC604252
								.156	EMC604255	EMC604254
TVNS-50750	3/4	3/4	1 1/8	5	5	2 5/8	.715	Square	EMC604263	EMC604262
								.030	EMC604265	EMC604264
								.060	EMC604267	EMC604266
								.090	EMC604269	EMC604268
								.120	EMC604271	EMC604270
								.156	EMC604273	EMC604272
TVNS-51000	1	1	1 1/4	5	5	2 5/8	.955	Square	EMC604281	EMC604280
								.030	EMC604283	EMC604282
								.060	EMC604285	EMC604284
								.090	EMC604287	EMC604286
								.120	EMC604289	EMC604288
								.156	EMC604291	EMC604290
								.190	EMC604293	EMC604292
								.250	EMC604295	EMC604294
								Ball	EMC604297	EMC604296



Titanium Variable Index - Necked Medium Length

Description	Cutting DIA	SHK DIA	Flute LGTH	OAL	No of Flutes	Neck LGTH	Neck DIA	Corner Radius	Uncoated	AlTiN
TVNM-50250	1/4	1/4	3/8	4	5	1 3/4	.236	Square	EMC604301	EMC604300
								.015	EMC604303	EMC604302
								.030	EMC604305	EMC604304
								.060	EMC604307	EMC604306
								.090	EMC604309	EMC604308
								Ball	EMC604311	EMC604310
TVNM-50375	3/8	3/8	1/2	4	5	2 1/8	.355	Square	EMC604313	EMC604312
								.015	EMC604315	EMC604314
								.030	EMC604317	EMC604316
								.060	EMC604319	EMC604318
								.090	EMC604321	EMC604320
								.120	EMC604323	EMC604322
TVNM-50500	1/2	1/2	5/8	5	5	2 3/4	.470	Square	EMC604327	EMC604326
								.015	EMC604329	EMC604328
								.030	EMC604331	EMC604330
								.060	EMC604333	EMC604332
								.090	EMC604335	EMC604334
								.120	EMC604337	EMC604336
TVNM-50625	5/8	5/8	3/4	5	5	3 1/8	0.593	Square	EMC604345	EMC604344
								.030	EMC604347	EMC604346
								.060	EMC604349	EMC604348
								.090	EMC604351	EMC604350
								.120	EMC604353	EMC604352
								.156	EMC604355	EMC604354
TVNM-50750	3/4	3/4	1 1/8	6	5	3 1/8	.715	Square	EMC604363	EMC604362
								.030	EMC604365	EMC604364
								.060	EMC604367	EMC604366
								.090	EMC604369	EMC604368
								.120	EMC604371	EMC604370
								.156	EMC604373	EMC604372
TVNM-51000	1	1	1 1/4	6	5	3 1/8	.955	Square	EMC604381	EMC604380
								.030	EMC604383	EMC604382
								.060	EMC604385	EMC604384
								.090	EMC604387	EMC604386
								.120	EMC604389	EMC604388
								.156	EMC604391	EMC604390
								.190	EMC604393	EMC604392
								.250	EMC604395	EMC604394
								Ball	EMC604397	EMC604396



Titanium Variable Index - Necked Long Length

Description	Cutting DIA	SHK DIA	Flute LGTH	OAL	No of Flutes	Neck LGTH	Neck DIA	Corner Radius	Uncoated	AITIN
TVNL-50250	1/4	1/4	3/8	4	5	2 1/8	.236	Square	EMC604401	EMC604400
								.015	EMC604403	EMC604402
								.030	EMC604405	EMC604404
								.060	EMC604407	EMC604406
								.090	EMC604409	EMC604408
								Ball	EMC604411	EMC604410
TVNL-50375	3/8	3/8	1/2	4	5	2 5/8	.355	Square	EMC604413	EMC604412
								.015	EMC604415	EMC604414
								.030	EMC604417	EMC604416
								.060	EMC604419	EMC604418
								.090	EMC604421	EMC604420
								.120	EMC604423	EMC604422
TVNL-50500	1/2	1/2	5/8	5	5	3 3/8	.470	Square	EMC604427	EMC604426
								.015	EMC604429	EMC604428
								.030	EMC604431	EMC604430
								.060	EMC604433	EMC604432
								.090	EMC604435	EMC604434
								.120	EMC604437	EMC604436
TVNL-50625	5/8	5/8	3/4	6	5	4 1/8	.593	Square	EMC604445	EMC604444
								.030	EMC604447	EMC604446
								.060	EMC604449	EMC604448
								.090	EMC604451	EMC604450
								.120	EMC604453	EMC604452
								.156	EMC604455	EMC604454
TVNL-50750	3/4	3/4	1 1/8	6	5	4 1/8	.715	Square	EMC604463	EMC604462
								.030	EMC604465	EMC604464
								.060	EMC604467	EMC604466
								.090	EMC604469	EMC604468
								.120	EMC604471	EMC604470
								.156	EMC604473	EMC604472
TVNL-51000	1	1	1 1/4	7	5	4 1/8	.955	Square	EMC604481	EMC604480
								.030	EMC604483	EMC604482
								.060	EMC604485	EMC604484
								.090	EMC604487	EMC604486
								.120	EMC604489	EMC604488
								.156	EMC604491	EMC604490
								.190	EMC604493	EMC604492
								.250	EMC604495	EMC604494
								Ball	EMC604497	EMC604496



ONSRUD CUTTER LP CUSTOM END MILL REQUEST FORM

800 Liberty Drive • Libertyville, Illinois 60048 • Phone (847) 362-1560 • Fax (847) 362-5028 • www.onsrud.com

ITEMS IN BOLD REQUIRED

Distributor Reference Number _____

Distributor Name _____

Distributor Address _____

Contact _____

Telephone _____ **Fax** _____

End User Name _____

Customer Quote Number _____

End User Address _____

Contact _____

Telephone _____ **Fax** _____

Material Being Machined _____

Hardness _____

Machine Type Vertical Horizontal Multi Spindle Geared Head Belt Drive Other

Machine Make And Model _____

H.P. _____

Rigidity Of Set-Up _____

Max. Spindle Speed _____

Spindle Taper _____

Coolant Type _____

Though The Spindle Coolant Yes No

Style Of Milling Slotting Profiling Pocketing Multi-Axis

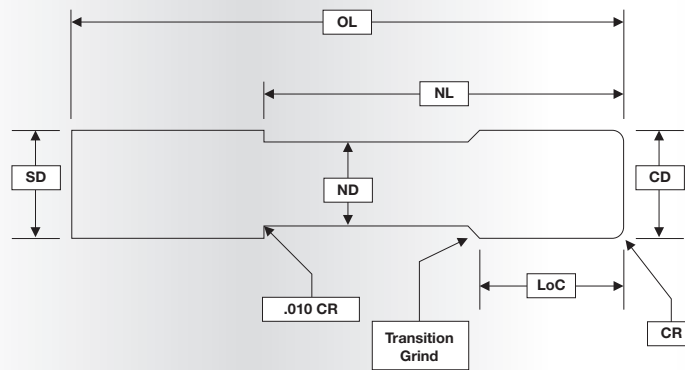
Approval Drawings Not Necessary Required

Tool Material (Specify If Other Than Carbide) _____

Tool Modification (Tool To Be Modified) _____

Corner Radius Chamfer Weldon Flat Whistle Notch

Quote Quantities _____ Yearly Quantities _____



Cutting Diameter (CD) _____

Number Of Flutes _____

Shank Diameter (SD) _____

Corner Radius (CR) _____

Length Of Cut (LoC) _____

Coating _____

Neck Diameter (ND) _____

Coolant Through _____

Neck length (NL) _____

Cylindrical Margin _____

Overall Length (OL) _____

Notes _____

