

## 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
<b>Titanium</b>								
5553	Slotting	60 - 220	.0014	.0021	.0028	.0035	.0042	.0056
6Al-4V	Profiling 33% RDoC		.0018	.0027	.0036	.0044	.0053	.0072
Commercially Pure								
<b>Cobalt Base</b>								
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								
<b>Iron Base</b>								
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								
<b>Nickel Base</b>								
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								
<b>Austenitic</b>								
304, 310, 314	Slotting	100 - 350	.0013	.0021	.0028	.0035	.0042	.0056
316L	Profiling 33% RDoC		.0017	.0027	.0036	.0044	.0053	.0072
302, 304L								
<b>Precipitation</b>								
13-8PH, 15-5PH	Slotting	90 - 250	.0014	.0021	.0028	.0035	.0042	.0056
17-4PH	Profiling 33% RDoC		.0018	.0027	.0036	.0044	.0053	.0072
<b>Martensitic</b>								
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
						Square	EMC604093	EMC604092
						.190	EMC604095	EMC604094
						.250	EMC604097	EMC604096
						Ball	EMC604099	EMC604098



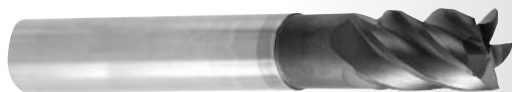
## Titanium Variable Index Medium Length

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



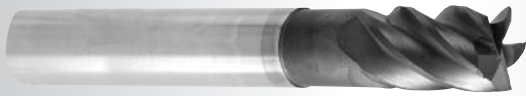
## Titanium Variable Index - Necked Standard Length

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

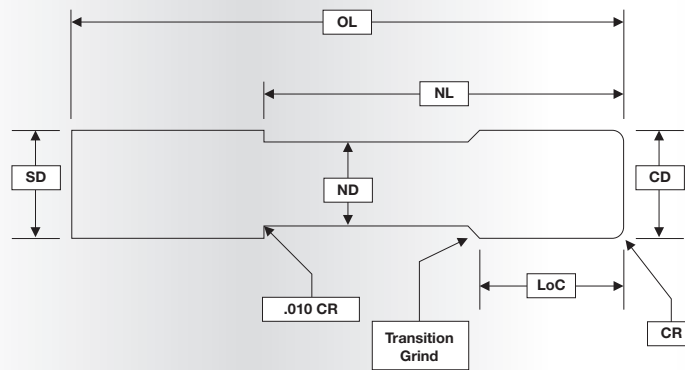
**Approval Drawings**  Not Necessary  Required

**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 \_\_\_\_\_

