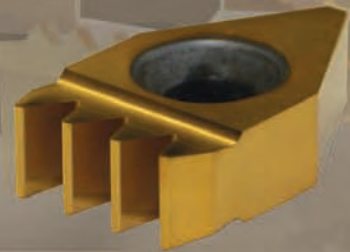
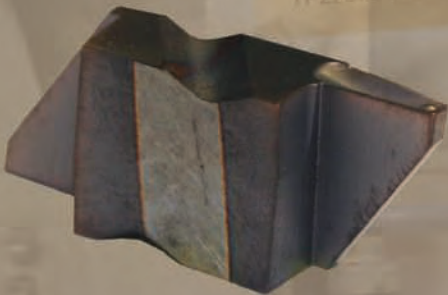
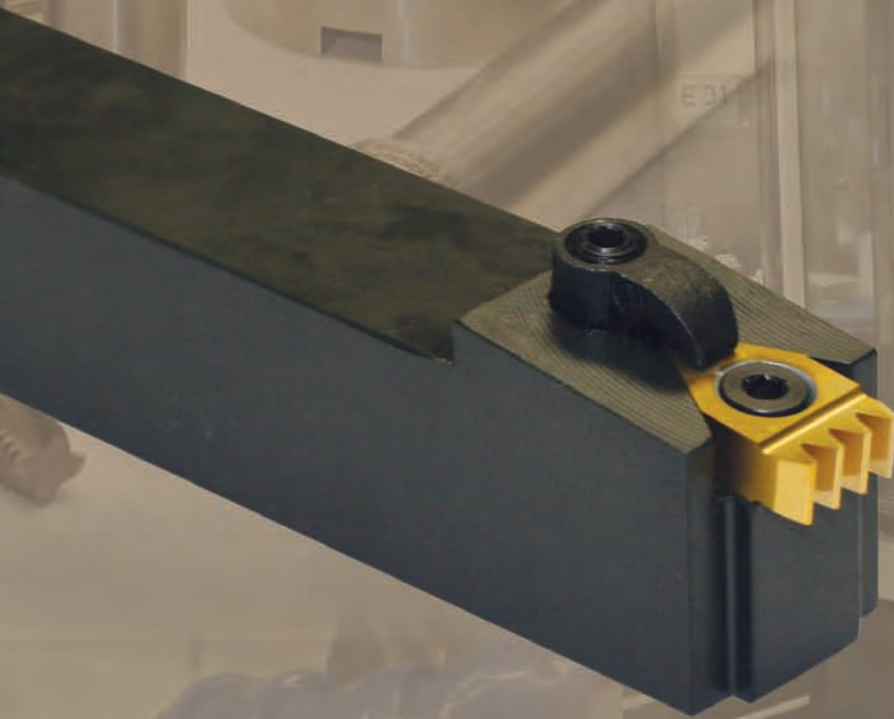




TOOL FLO



TOOL-FLO
CR-5B75-4E
TF22675 G50

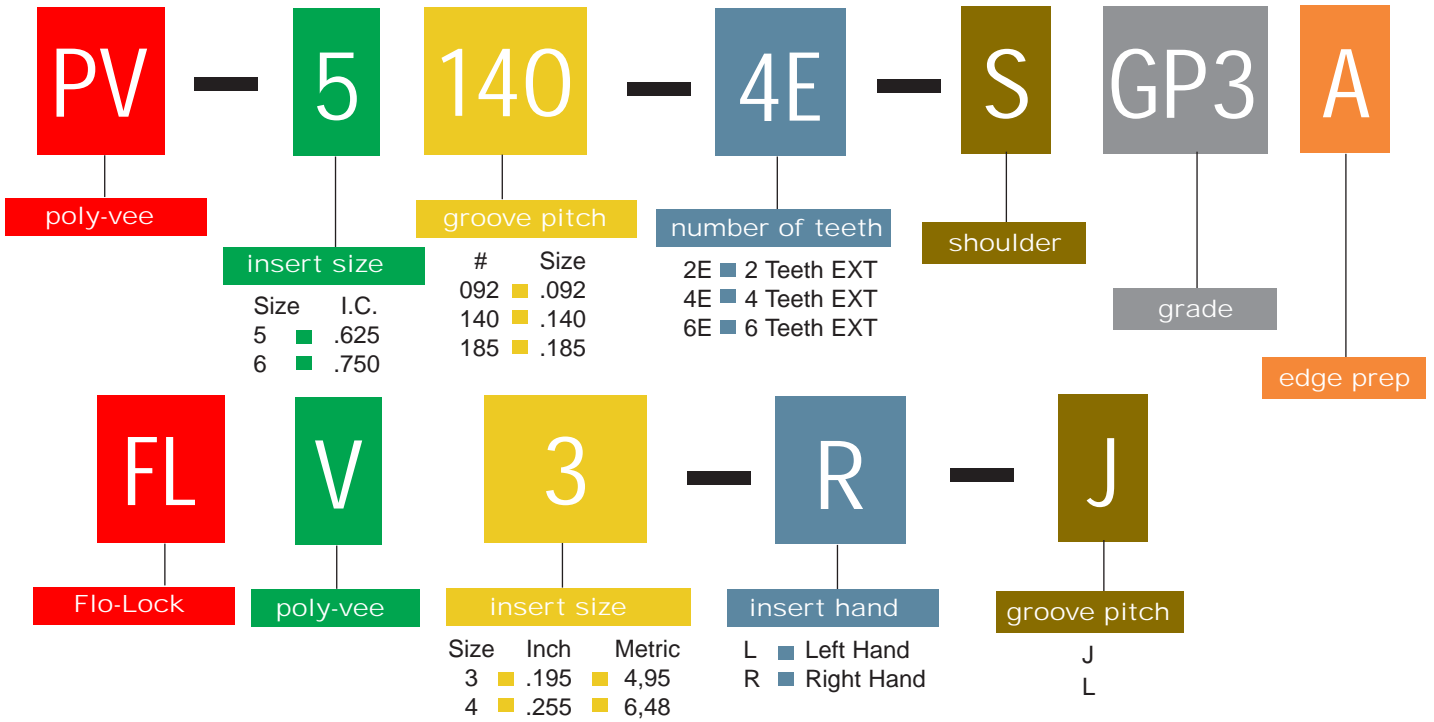
TOOL-FLO
CR-6R-71
TF14928 AT50

TOOL-FLO
CR-5B75-4E
TF22675 G50

AUTOMOTIVE



Poly-Vee Insert Identification Chart



- PV**
- Multi-tooth inserts for faster cycle times
 - Inserts are precision ground for premium tolerance
 - Strong cutting edge able to withstand moderate interruption
- PV-S**
- Multi-tooth inserts for faster cycle times
 - Inserts are precision ground for premium tolerance
 - Strong cutting edge able to withstand moderate interruption
 - Shoulder configuration produces more finished grooves per plunge

- FLV**
- Single-point insert for flexible programming
 - Inserts are precision ground for premium tolerance
 - Strong cutting edge able to withstand moderate interruption
 - Fits into industry standard holders

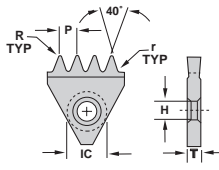
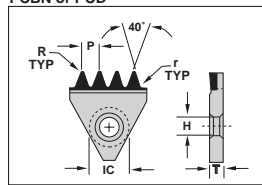
POLY-VEE

PV-S

Multi-Tooth w/ Shoulder

■ For holder STCNR see next page

PCBN or PCD



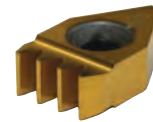
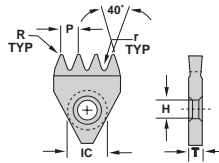
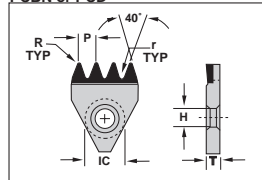
Insert Description	EDP Code	Cross Section*	IC	H	T	P	r	R	# of teeth	Coatings						
										C25	GP25	AC25	AC3	AC50	CB200	PC33
PV-5092-4E-S	PV50924ES	J	.625	.203	.252	.092	.008	.012	4	●	●	●	●	●	●	●
PV-5092-6E-S	PV50926ES	J	.625	.203	.252	.092	.008	.012	6	●	●	●	●	●	●	●
PV-5140-2E-S	PV51402ES	K	.625	.203	.252	.140	.013	.016	2	●	●	●	●	●	●	●
PV-5140-4E-S	PV51404ES	K	.625	.203	.252	.140	.013	.016	4	●	●	●	●	●	●	●
PV-6140-6E-S	PV61406ES	K	.750	.203	.250	.140	.013	.016	6	●	●	●	●	●	●	●
PV-6185-4E-S	PV61854ES	L	.750	.203	.250	.185	.021	.013	4	●	●	●	●	●	●	●

PV

Multi-Tooth w/o Shoulder

■ For holder STCNR see next page

PCBN or PCD



Insert Description	EDP Code	Cross Section*	IC	H	T	P	r	R	# of teeth	Coatings						
										C25	GP25	AC25	AC3	AC50	CB200	PC33
PV-5092-4E	PV50924E	J	.625	.203	.252	.092	.008	.012	4	●	●	●	●	●	●	●
PV-5092-6E	PV50926E	J	.625	.203	.252	.092	.008	.012	6	●	●	●	●	●	●	●
PV-5140-2E	PV51402E	K	.625	.203	.252	.140	.013	.016	2	●	●	●	●	●	●	●
PV-5140-4E	PV51404E	K	.625	.203	.252	.140	.013	.016	4	●	●	●	●	●	●	●
PV-6140-6E	PV61406E	K	.750	.203	.250	.140	.013	.016	6	●	●	●	●	●	●	●
PV-6185-4E	PV61854E	L	.750	.203	.250	.185	.021	.013	4	●	●	●	●	●	●	●

*See table on page.

In an effort to improve our stock standard grade offering, there are periodic changes. Please see current price list for up-to-date grade offering.

● High performance choice in optimal conditions.
 ▲ Recommended grade under general conditions.

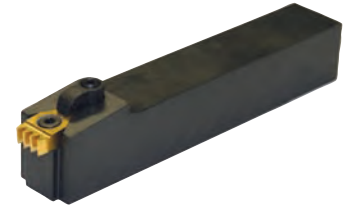
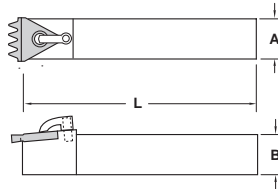
Material	Cast Iron	Non-Ferrous	Stainless/High Temp	Steel
Coatings	●	●	●	●
Coatings	●	●	●	●
Coatings	●	●	●	●
Coatings	●	●	●	●



AUTOMOTIVE

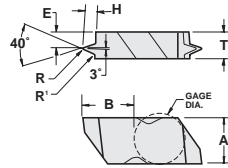
POLY-VEE STCNR

Most holders available with coolant port
(ie: Add CP to end of description)

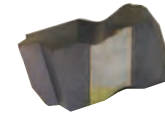


Description	EDP Code	A	B	L	Insert	Insert Screw	Clamp	Clamp Screw
STCNR-165	977064641	1.000	1.000	6.000	PV-5	SD-2	TC-250	STC-11
STCNR-205	9770206641	1.250	1.250	6.000	PV-5	SD-2	TC-250	STC-11
STCNR-206	9770206761	1.250	1.250	6.000	PV-6	SD-2	TC-251	STC-11

POLY-VEE FLO-LOCK FLV



RH Shown

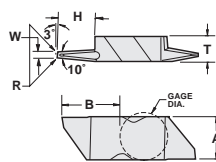


Insert Description	EDP Code	R	R1	T	E	H	A	B	Coatings				
									C25	GP3	GP50	AC3	AC50
FLV-3RJ	623800R	.012	.008	.195	.125	.087	.344	.4013	●	●	●	●	●
FLV-3RK	623900R	.016	.013	.195	.100	.136	.344	.4000	●	●	●	●	●
FLV-4RL	624800R	.012	.015	.255	.118	.201	.453	.6288	●	●	●	●	●
FLV-3LJ	623800L	.012	.008	.195	.125	.087	.344	.4013	●	●	●	●	●
FLV-3LK	623900L	.016	.013	.195	.100	.136	.344	.4000	●	●	●	●	●
FLV-4LL	624800L	.012	.015	.255	.118	.201	.453	.6288	●	●	●	●	●

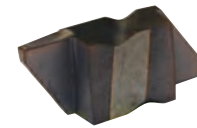
PISTON GROOVING KEYSTONE FLG

Chipbreaker

Exclusive patented design!



RH Shown



Insert Description	EDP Code	W	R	H	T	A	B	Coatings				
								C25	GP3	GP50	AC3	AC50
FLG-4R W.059 TF19908	TF19908	.059	.012	.275	.255	.453	.6288	●	●	●	●	●

Available in PCD!
Any width or configuration!
Call us with your piston grooving needs!

TNMA
TNMC
FLG

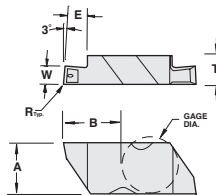
GROOVING CHIP-FLO FLG-CB

Chipbreaker

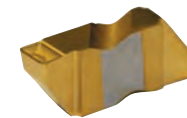
Exclusive patented design!
 See page 92 for a complete listing!

Features:

- Patented chipbreaker - Patent No. 6,146,064
- Maximum chip control
- Industry standard widths



RH Shown



Insert Description	EDP Code	W		R	E		T	A	B	Gage Dia.	Coatings				
		Metric	Inch		Metric	Inch					C3	GP3	GP50	AC3	AC50
FLG-2M100R-CB	562M100PR	1,00	.039	.005/.010	1,90	.075	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M100L-CB	562M100PL	1,00	.039	.005/.010	1,90	.075	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M150R-CB	562M150PR	1,50	.059	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M150L-CB	562M150PL	1,50	.059	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M170R-CB	562M170PR	1,70	.067	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M170L-CB	562M170PL	1,70	.067	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M195R-CB	562M195PR	1,95	.077	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M195L-CB	562M195PL	1,95	.077	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M200R-CB	562M200PR	2,00	.079	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M200L-CB	562M200PL	2,00	.079	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M220R-CB	562M220PR	2,20	.087	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M220L-CB	562M220PL	2,20	.087	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M225R-CB	562M225PR	2,25	.089	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M225L-CB	562M225PL	2,25	.089	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M250R-CB	562M250PR	2,50	.098	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●
FLG-2M250L-CB	562M250PL	2,50	.098	.005/.010	2,79	.110	.150	.219	.2700	.1875	●	●	●	●	●

In an effort to improve our stock standard grade offering, there are periodic changes. Please see current price list for up to date grade offering.

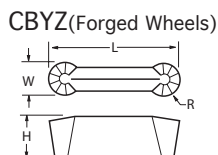
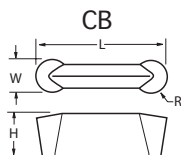
- High performance choice in optimal conditions.
- ▲ Recommended grade under general conditions.

Cast Iron	▲	●	▲
Non-Ferrous	●		
Stainless/High Temp	▲	●	▲
Steel		▲	●



WHEEL TURNING

DBV
High Polish



	Uncoated	TiB ₂ Coated	AlTiN Coated
C2P	●	●	●
ALS2	●	●	●
AC3	●	●	●
AC50	●	●	●

Insert Description	EDP Code	W	R	L	H
DBV-315 FNR-CB	TF17420	.315	.157	1.180	.320
DBV-315 FNR-CBYZ	TF22487	.315	.157	1.180	.320

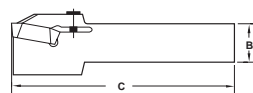
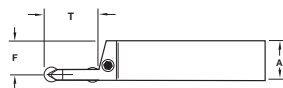
In an effort to improve our stock standard grade offering, there are periodic changes. Please see current price list for up to date grade offering.

- High performance choice in optimal conditions.
- ▲ Recommended grade under general conditions.

Aluminum
Steel

WHEEL TURNING

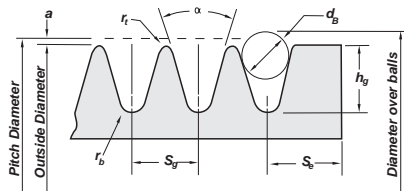
TFHDR/L



RH SHOWN

Description	EDP Code	Insert	T	A	B	C	F	Screw
TFHDR-25.4-8	9828168	DBV	1.000	1.000	1.000	6.000	.884	S-412
TFHDL-25.4-8	9827168	DBV	1.000	1.000	1.000	6.000	.884	S-412
TFHDR-31.7-8	9828208	DBV	1.000	1.250	1.250	6.700	1.133	S-412
TFHDL-31.7-8	9827208	DBV	1.000	1.250	1.250	6.700	1.133	S-412

POLY-VEE TECHNICAL INFORMATION



Face width = $S_e(N_g - 1) + 2S_e$, where N_g is number of grooves

Cross Section	Minimum Recommended Outside Diameter	Groove Angle ± 0.25 (deg)	S_g^a	r_f + 0.005 - 0.000	2_a	r_b	h_g (min)	d_b ± 0.0005	S_e
H	0.50	40	0.063 ± 0.001	0.005	0.020	0.013 + 0.000 - 0.005	0.041	0.0469	0.080 + 0.020 - 0.010
J	0.80	40	0.092 ± 0.001	0.008	0.030	0.015 + 0.000 - 0.005	0.071	0.0625	0.125 + 0.030 - 0.015
K	1.50	40	0.140 ± 0.002	0.010	0.038	0.020 + 0.000 - 0.005	0.122	0.1093	0.125 + 0.050 - 0.000
L	3.00	40	0.185 ± 0.002	0.015	0.058	0.015 + 0.000 - 0.005	0.183	0.1406	0.375 + 0.075 - 0.030
M	7.00	40	0.370 ± 0.003	0.030	0.116	0.030 + 0.000 - 0.010	0.377	0.2812	0.500 + 0.100 - 0.040

Other Sheave Tolerances

Outside Diameter	Radial Runout	Axial Runout
Up through 2.9 in. outside diameter ± 0.010 in.	Up through 2.9 in. outside diameter ± 0.005 in.	0.001 in. per inch of outside diameter
Over 2.9 in. to and including 8.0 in. outside diameter ± 0.020 in.	Over 2.9 in. to and including 10.0 in. outside diameter ± 0.010 in.	
For each additional inch of outside diameter over 8.0 in., add ± 0.025 in. add 0.0005 in.	For each additional inch of outside diameter over 10.0 in.,	

All dimensions in inches.

^aSummation of the deviations from S for all groovers in any one sheave shall not exceed ± 0.010 in.

^bVariations in pitch diameter between groovers in any one sheave must be within the following limits: Up through 2.9 in. outside diameter and up through 6 grooves, 0.002 in. (add 0.001 in. for each additional groove); over 2.9 in. to and including 19.9 in. and up through 10 grooves, 0.010 in. (add 0.0005 in. for each additional groove). This variation can be obtained by measuring the distance across two measuring balls or rods placed in the grooves diametrically opposite each other. Comparing this "diameter-over-balls or -rods" measurement between grooves will give the variation in pitch diameter.

^cTotal indicator reading.