



TOOL-FLO



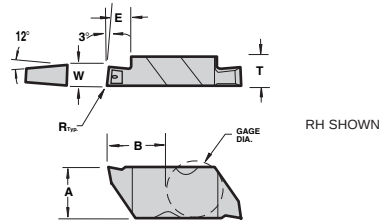
FACE BROODING



FACE GROOVING

FLF-CB-W/PATENTED CHIPBREAKER

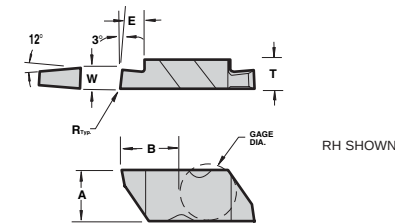
Exclusive patented design!



Insert Description	W	R	T	E	A	B	Dia	Gage	Coating					
									C3	C6H	GP3	GP50	AT3	AT50
FLF-3125R-CB	.125	.005/.010	.195	.180	.344	.4050	.3750					●	●	
FLF-3125L-CB	.125	.005/.010	.195	.180	.344	.4050	.3750					●	●	
FLF-3156R-CB	.156	.005/.010	.195	.180	.344	.4050	.3750					●	●	
FLF-3156L-CB	.156	.005/.010	.195	.180	.344	.4050	.3750					●	●	
FLF-3188R-CB	.188	.020/.025	.195	.180	.344	.4050	.3750					●	●	
FLF-3188L-CB	.188	.020/.025	.195	.180	.344	.4050	.3750					●	●	

FACE GROOVING

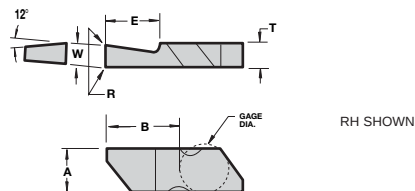
FLF



Insert Description	W	R	T	E	A	B	Dia	Gage	C3	C6H	GP3	GP50	AT3	AT50
FLF-3125R	.125	.005/.010	.195	.180	.344	.4050	.3750				●	●		
FLF-3125L	.125	.005/.010	.195	.180	.344	.4050	.3750				●	●		
FLF-3156R	.156	.005/.010	.195	.180	.344	.4050	.3750				●	●		
FLF-3156L	.156	.005/.010	.195	.180	.344	.4050	.3750				●	●		
FLF-3188R	.188	.020/.025	.195	.180	.344	.4050	.3750				●	●		
FLF-3188L	.188	.020/.025	.195	.180	.344	.4050	.3750				●	●		
FLF-4250R	.250	.020/.025	.255	.250	.453	.6360	.3750				●	●		
FLF-4250L	.250	.020/.025	.255	.250	.453	.6360	.3750				●	●		
FLF-6218R	.218	.030/.035	.383	.250	.453	.6360	.3750							
FLF-6218L	.218	.030/.035	.383	.250	.453	.6360	.3750							
FLF-6250R	.250	.030/.035	.383	.250	.453	.6360	.3750							
FLF-6250L	.250	.030/.035	.383	.250	.453	.6360	.3750							
FLF-6375R	.375	.030/.035	.383	.250	.453	.6360	.3750							
FLF-6375L	.375	.030/.035	.383	.250	.453	.6360	.3750							

FACE GROOVING

FLFD-SINGLE-ENDED DEEP GROOVING



Insert Description	W	R	T	E	A	B	Dia	Gage	Coating					
									C3	C6H	GP3	GP50	AT3	AT50
FLFD-3125R	.125	.005/.010	.195	.250	.344	.4050	.3750					●	●	
FLFD-3125L	.125	.005/.010	.195	.250	.344	.4050	.3750					●	●	
FLFD-4189R	.189	.020/.025	.255	.375	.453	.7610	.3750					●	●	
FLFD-4189L	.189	.020/.025	.255	.375	.453	.7610	.3750					●	●	
FLFD-4250R	.250	.020/.025	.255	.500	.453	.8860	.3750					●	●	
FLFD-4250L	.250	.020/.025	.255	.500	.453	.8860	.3750					●	●	

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			▲	●

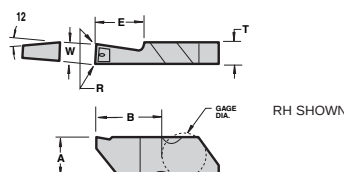


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FACE GROOVING

Exclusive patented design!

FLFD-SINGLE-ENDED DEEP GROOVING
-W/PATENTED CHIPBREAKER



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.

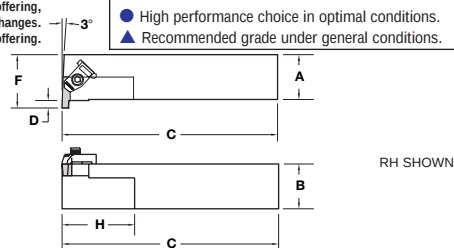
▲ Recommended grade under general conditions.

3°

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

EXTERNAL HOLDERS

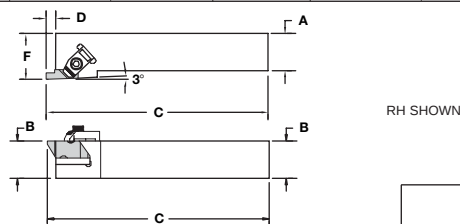
FLER/L 90° HOLDERS FOR FLF/FLFD INSERTS



Holder Description	Insert								Clamp	
		A	B	C	D	F	H	Clamp	Screw	
FLER-123B	FL-3L	.750	.750	4.500	.210	1.125	2.000	TF-73	S-412	
FLEL-123B	FL-3R	.750	.750	4.500	.210	1.125	2.000	TF-72	S-412	
FLER-163D	FL-3L	1.000	1.000	6.000	.210	1.250	2.000	TF-73	S-412	
FLEL-163D	FL-3R	1.000	1.000	6.000	.210	1.250	2.000	TF-72	S-412	
FLER-203D	FL-3L	1.250	1.250	6.000	.210	1.500	2.000	TF-73	S-412	
FLEL-203D	FL-3R	1.250	1.250	6.000	.210	1.500	2.000	TF-72	S-412	
FLER-164D	FL-4L	1.000	1.000	6.000	.290	1.375	2.000	TF-73	S-412	
FLEL-164D	FL-4R	1.000	1.000	6.000	.290	1.375	2.000	TF-72	S-412	
FLER-204D	FL-4L	1.250	1.250	6.000	.290	1.625	2.000	TF-73	S-412	
FLEL-204D	FL-4R	1.250	1.250	6.000	.290	1.625	2.000	TF-72	S-412	
FLER-206D	FL-6L	1.250	1.250	6.000	.290	1.625	2.000	TF-121	S-412	
FLEL-206D	FL-6R	1.250	1.250	6.000	.290	1.625	2.000	TF-120	S-412	

EXTERNAL HOLDERS

FLSR/L STRAIGHT HOLDERS FOR FLF/FLFD INSERTS



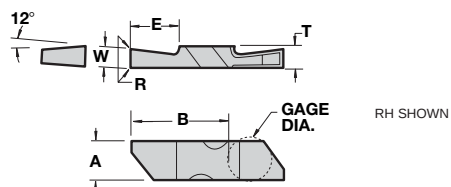
Holder Description	Insert	A	B	C	D	F*					
								Seat	Seat Screw	Clamp	Clamp Screw
FLSR-123B	FL-3R	.750	.750	4.500	.210	1.000		---	---	TF-72	S-412
FLSL-123B	FL-3L	.750	.750	4.500	.210	1.000		---	---	TF-73	S-412
FLSR-163C	FL-3R	1.000	1.000	5.000	.210	1.250		---	---	TF-72	S-412
FLSL-163C	FL-3L	1.000	1.000	5.000	.210	1.250		---	---	TF-73	S-412
FLSR-163D	FL-3R	1.000	1.000	6.000	.210	1.250		---	---	TF-72	S-412
FLSL-163D	FL-3L	1.000	1.000	6.000	.210	1.250		---	---	TF-73	S-412
FLSR-203D	FL-3R	1.250	1.250	6.000	.210	1.500		---	---	TF-72	S-412
FLSL-203D	FL-3L	1.250	1.250	6.000	.210	1.500		---	---	TF-73	S-412
FLSR-164D	FL-4R	1.000	1.000	6.000	.290	1.250		SM-420	SL-344	TF-72	S-412
FLSL-164D	FL-4L	1.000	1.000	6.000	.290	1.250		SM-420	SL-344	TF-73	S-412
FLSR-204D	FL-4R	1.250	1.250	6.000	.290	1.500		SM-420	SL-344	TF-72	S-412
FLSL-204D	FL-4L	1.250	1.250	6.000	.290	1.500		SM-420	SL-344	TF-73	S-412
FLSR-206D	FL-6R	1.250	1.250	6.000	.290	1.500		SM-416	SL-111	TF-120	S-412
FLSL-206D	FL-6L	1.250	1.250	6.000	.290	1.500		SM-416	SL-111	TF-121	S-412

TOOL FLO



FACE GROOVING

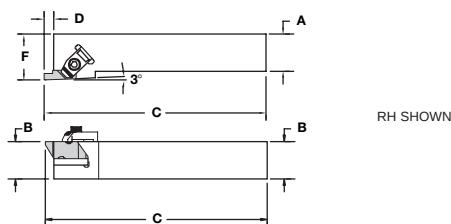
FLFT -DOUBLE-ENDED DEEP GROOVING



Insert Description	W	R	T	E	A	B	Dia	Gage									
									C3	C6H	GP3	GP50	AT3	AT50			
FLFT-3125R	.125	.005/.010	.195	.375	.344	.855	.3750				●	●	●				
FLFT-3125L	.125	.005/.010	.195	.375	.344	.855	.3750				●	●	●				
FLFT-4189R	.189	.020/.025	.255	.550	.453	1.136	.3750				●	●	●				
FLFT-4189L	.189	.020/.025	.255	.550	.453	1.136	.3750				●	●	●				
FLFT-4250R	.250	.020/.025	.255	.550	.453	1.136	.3750				●	●	●				
FLFT-4250L	.250	.020/.025	.255	.550	.453	1.136	.3750				●	●	●				
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						▲	

DEEP GROOVING

FLSRT/LT HOLDERS FOR FLFT INSERTS



Holder Description	Insert	A	B	C	D	F	Clamp	
							Clamp	Screw
FLSRT-163D	FLFT-3R	1.000	1.000	6.000	.440	1.250	TF-72	S-412
FLSLT-163D	FLFT-3L	1.000	1.000	6.000	.440	1.250	TF-73	S-412
FLSRT-203D	FLFT-3R	1.250	1.250	6.000	.440	1.500	TF-72	S-412
FLSLT-203D	FLFT-3L	1.250	1.250	6.000	.440	1.500	TF-73	S-412
FLSRT-164D	FLFT-4R	1.000	1.000	6.000	.560	1.250	TF-72	S-412
FLSLT-164D	FLFT-4L	1.000	1.000	6.000	.560	1.250	TF-73	S-412
FLSRT-204D	FLFT-4R	1.250	1.250	6.000	.560	1.500	TF-72	S-412
FLSLT-204D	FLFT-4L	1.250	1.250	6.000	.560	1.500	TF-73	S-412



FACE GROOVING

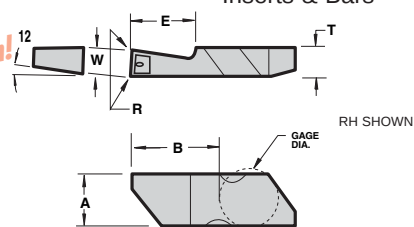
Inserts & Bars

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INTERNAL FACE GROOVING

FLFD-I - SINGLE-ENDED INTERNAL DEEP GROOVING

Exclusive patented design!

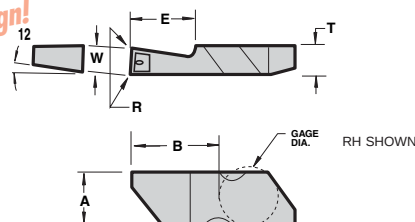


Insert Description	W	R	T	E	A	B	Dia	Gage	C3	C6H				
											GP3	GP50	AT3	AT50
FLFD-3125RI	.125	.005/.010	.195	.250	.344	.4050	.3750				●	●	●	
FLFD-3125LI	.125	.005/.010	.195	.250	.344	.4050	.3750				●	●	●	
FLFD-3189RI	.189	.020/.025	.195	.250	.344	.4050	.3750				●	●	●	
FLFD-3189LI	.189	.020/.025	.195	.250	.344	.4050	.3750				●	●	●	

INTERNAL FACE GROOVING

FLFD-I-CB - SINGLE-ENDED INTERNAL DEEP GROOVING
-W/PATENTED CHIPBREAKER

Exclusive patented design!



Insert Description	W	R	T	E	A	B	Dia	Gage	C3	C6H	GP3	GP50	AT3	AT50
FLFD-3125RI-CB	.125	.005/.010	.195	.250	.344	.4050	.3750				●	●	●	
FLFD-3125LI-CB	.125	.005/.010	.195	.250	.344	.4050	.3750				●	●	●	
FLFD-3189RI-CB	.189	.020/.025	.195	.250	.344	.4050	.3750				●	●	●	
FLFD-3189LI-CB	.189	.020/.025	.195	.250	.344	.4050	.3750				●	●	●	

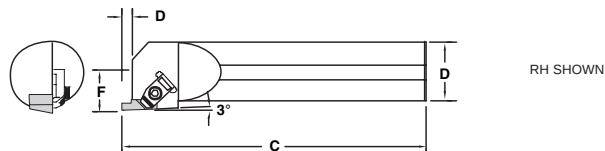
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- ▲ Recommended grade under general conditions.

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

INTERNAL BARS

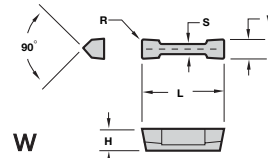
A-FLSR/L - INTERNAL BARS FOR FLFD-I INSERTS
-WITH COOLANT HOLE



Bar Description	Min.						Clamp	
	Insert	Bore	D	C	F	Clamp	Screw	
A16-FLSR3	FLFD-3RI	2.250	1.000	12.000	.640	TF-72	S-412	
A16-FLSL3	FLFD-3LI	2.250	1.000	12.000	.640	TF-73	S-412	
A20-FLSR3	FLFD-3RI	2.250	1.250	14.000	.765	TF-72	S-412	
A20-FLSL3	FLFD-3LI	2.250	1.250	14.000	.765	TF-73	S-412	
A24-FLSR3	FLFD-3RI	2.250	1.500	14.000	.890	TF-72	S-412	
A24-FLSL3	FLFD-3LI	2.250	1.500	14.000	.890	TF-73	S-412	
A28-FLSR3	FLFD-3RI	2.250	1.750	14.000	1.015	TF-72	S-412	
A28-FLSL3	FLFD-3LI	2.250	1.750	14.000	1.015	TF-73	S-412	
A32-FLSR3	FLFD-3RI	2.375	2.000	16.000	1.281	TF-72	S-412	
A32-FLSL3	FLFD-3LI	2.375	2.000	16.000	1.281	TF-73	S-412	

8 8 FACE GROOVING VDB

FACE GROOVING Inserts



Insert Description

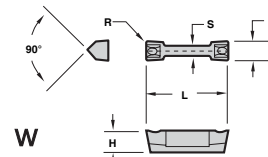
	W		R	L	H	S	Uncoated		TIN Coated		AlTiN Coated	
	Inch	mm					C3	C6H	GP3	GP50	AT3	AT50
VDB 125 A008	.125	3,18	.008	1.125	.250	.106						
VDB 125 A015	.125	3,18	.015	1.125	.250	.106			●	●	●	●
VDB 156 A008	.156	3,96	.008	1.125	.250	.106						
VDB 156 A015	.156	3,96	.015	1.125	.250	.106			●	●	●	●
VDB 188 A008	.188	4,78	.008	1.125	.250	.106						
VDB 188 A015	.188	4,78	.015	1.125	.250	.106			●	●	●	●
VDB 188 A031	.188	4,78	.031	1.125	.250	.106					●	
VDB 218-A015	.218	5,54	.015	1.125	.250	.144			●	●	●	●
VDB 250 A015	.250	6,35	.015	1.125	.250	.144			●	●	●	●
VDB 250 B015	.250	6,35	.015	1.125	.337	.144			●	●	●	●
VDB 250 B031	.250	6,35	.031	1.125	.337	.144					●	
VDB 281 B015	.281	7,14	.015	1.125	.337	.202				●	●	
VDB 312 B015	.312	7,92	.015	1.125	.337	.202				●		
VDB 312 B031	.312	7,92	.031	1.125	.337	.202					●	
VDB 344 B015	.344	8,74	.015	1.125	.337	.276						
VDB 344 B031	.344	8,74	.031	1.125	.337	.276						
VDB 375 B015	.375	9,53	.015	1.125	.337	.276			●	●	●	●
VDB 375 B031	.375	9,53	.031	1.125	.337	.276					●	

FACE GROOVING

VDB-CB

Exclusive patented design!

W/PATENTED CHIP BREAKER



Insert Description

	W		R	L	H	S	Uncoated		TIN Coated		AlTiN Coated	
	Inch	mm					C3	C6H	GP3	GP50	AT3	AT50
VDB 125 A008-CB	.125	3,18	.008	1.125	.250	.106						
VDB 125 A015-CB	.125	3,18	.015	1.125	.250	.106			●	●	●	●
VDB 156 A008-CB	.156	3,96	.008	1.125	.250	.106						
VDB 156 A015-CB	.156	3,96	.015	1.125	.250	.106			●	●	●	●
VDB 188 A008-CB	.188	4,78	.008	1.125	.250	.106						
VDB 188 A015-CB	.188	4,78	.015	1.125	.250	.106			●	●	●	●
VDB 188 A031-CB	.188	4,78	.031	1.125	.250	.106					●	
VDB 218-A015-CB	.218	5,54	.015	1.125	.250	.144			●	●	●	●
VDB 250 B015-CB	.250	6,35	.015	1.125	.337	.144			●	●	●	●
VDB 250 B031-CB	.250	6,35	.031	1.125	.337	.144					●	
VDB 312 B015-CB	.312	7,92	.015	1.125	.337	.202					●	
VDB 312 B031-CB	.312	7,92	.031	1.125	.337	.202					●	
VDB 375 B015-CB	.375	8,74	.015	1.125	.337	.276			●	●	●	●
VDB 375 B031-CB	.375	8,74	.031	1.125	.337	.276			●	●	●	●

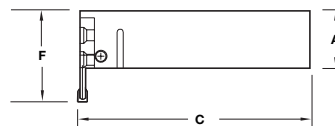
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- ▲ Recommended grade under general conditions.

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

EXTERNAL 90° HOLDER

CDHOR/L (RH HOLDERS USE LH PARTS)



RH SHOWN



Holder Description

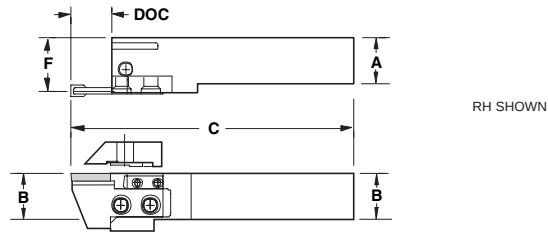
	A	B	C	.312(1)	.812(1)	F*	Clamp Screw	Stop Screw	Anvil Screw
CDHOR-16	1	1	6	1.312	1.812		SB90	SS20	SF95
CDHOL-16	1	1	6	1.312	1.812		SB90	SS20	SF95
CDHOR-20	1-1/4	1-1/4	6	1.562	2.062		SB90	SS20	SF95
CDHOL-20	1-1/4	1-1/4	6	1.562	2.062		SB90	SS20	SF95
CDHOR-24	1-1/2	1-1/2	6	1.812	2.312		SB90	SS20	SF95
CDHOL-24	1-1/2	1-1/2	6	1.812	2.312		SB90	SS20	SF95

*The "F" dimension is determined by the D.O.C. of the anvil.

TOOL FLO



EXTERNAL STRAIGHT HOLDER

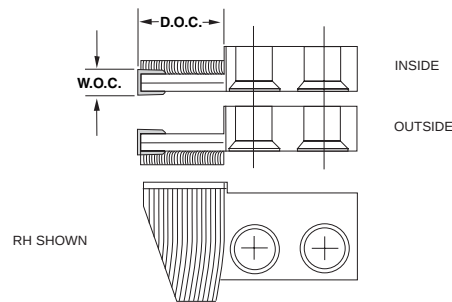


Holder Description

Holder Description	A	B	C	F	Clamp Screw	Stop Screw	Anvil Screw
CDVOR-16	1	1	*	1.150	SB90	SS20	SF95
CDVOL-16	1	1	*	1.150	SB90	SS20	SF95
CDVOR-20	1-1/4	1-1/4	*	1.400	SB90	SS20	SF95
CDVOL-20	1-1/4	1-1/4	*	1.400	SB90	SS20	SF95
CDVOR-24	1-1/2	1-1/2	*	1.650	SB90	SS20	SF95
CDVOL-24	1-1/2	1-1/2	*	1.650	SB90	SS20	SF95

*The "C" dimension is determined by the D.O.C. of the anvil.

FACE GROOVING COMPONENTS FOR CDHOR/L AND CDVOR/L



Description	Insert	Outside Dia. Range	DOC	WOC	Clamp	Stop Block
AFHR-113-I	DBP24/VDB125	2.000-2.250	.312	.105-.125	CHRF-132I	SBH-4
AFHR-113-O	DBP24/VDB125	2.000-2.250	.312	.105-.125	CHRF-132O	SBH-4
AFHL-113-I	DBP24/VDB125	2.000-2.250	.312	.105-.125	CHLF-132I	SBH-4
AFHL-113-O	DBP24/VDB125	2.000-2.250	.312	.105-.125	CHLF-132O	SBH-4
AFHR-128-I	DBP24/VDB125	2.000-2.250	.812	.105-.125	CHRF-282I	SBH-2
AFHR-128-O	DBP24/VDB125	2.000-2.250	.812	.105-.125	CHRF-282O	SBH-2
AFHL-128-I	DBP24/VDB125	2.000-2.250	.812	.105-.125	CHLF-282I	SBH-2
AFHL-128-O	DBP24/VDB125	2.000-2.250	.812	.105-.125	CHLF-282O	SBH-2
AFHR-138-I	DBP34/VDB188	3.000-4.000	.812	.170-.188	CHRF-382I	SBH-2
AFHR-138-O	DBP34/VDB188	3.000-4.000	.812	.170-.188	CHRF-382O	SBH-2
AFHL-138-I	DBP34/VDB188	3.000-4.000	.812	.170-.188	CHLF-382I	SBH-2
AFHL-138-O	DBP34/VDB188	3.000-4.000	.812	.170-.188	CHLF-382O	SBH-2
AFHR-148-I	VDB250A	3.000-4.000	.812	.220-.250	CHRF-482I	SBH-2
AFHR-148-O	VDB250A	3.000-4.000	.812	.220-.250	CHRF-482O	SBH-2
AFHL-148-I	VDB250A	3.000-4.000	.812	.220-.250	CHLF-482I	SBH-2
AFHL-148-O	VDB250A	3.000-4.000	.812	.220-.250	CHLF-482O	SBH-2
AFHR-248-I	DBP45/VDB250B	4.000-6.000	.812	.250-.312	CHRF-482I	SBH-2
AFHR-248-O	DBP45/VDB250B	4.000-6.000	.812	.250-.312	CHRF-482O	SBH-2
AFHL-248-I	DBP45/VDB250B	4.000-6.000	.812	.250-.312	CHLF-482I	SBH-2
AFHL-248-O	DBP45/VDB250B	4.000-6.000	.812	.250-.312	CHLF-482O	SBH-2
AFHR-268-I	DBP65/VDB375	6.000-12.000	.812	.350-.375	CHRF-582I	SBH-2
AFHR-268-O	DBP65/VDB375	6.000-12.000	.812	.350-.375	CHRF-582O	SBH-2
AFHL-268-I	DBP65/VDB375	6.000-12.000	.812	.350-.375	CHLF-582I	SBH-2
AFHL-268-O	DBP65/VDB375	6.000-12.000	.812	.350-.375	CHLF-582O	SBH-2



Guidelines for Face Grooving Operations

EXTERNAL

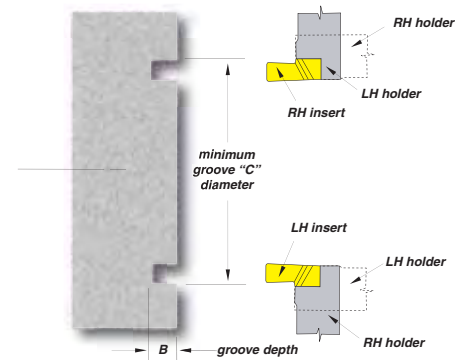
STANDARD FLF/FLFD INSERTS

insert type	maximum groove depth "B"	minimum groove diameter "C"
FLF-3	.060	.940
FLF-3	.090	1.200
FLF-3	.125	1.420
FLF-3	.150	1.625
FLFD-3	.250	1.875
FLF-4/6	.060	.940
FLF-4/6	.090	1.200
FLF-4/6	.125	1.420
FLF-4/6	.150	1.625
FLF-4/6	.188	1.875
FLF-4/6	.250	2.250
FLFD-4	.375	2.250
FLFD-4	.500	2.250

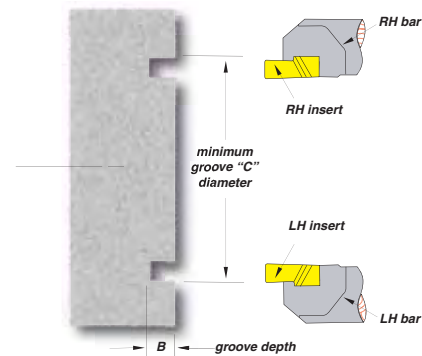
STANDARD FLG/FLGD INSERTS

insert type	maximum groove depth "B"	minimum groove diameter "C"
FLG-2	.060	2.125
FLG-2	.094	3.500
FLG-3	.094	4.000
FLG-3	.125	5.000
FLG-3	.150	5.500
FLGD-3	.250	6.875
FLG-4	.150	6.000
FLG-4	.250	8.250
FLGD-4	.375	8.750
FLGD-4	.500	8.750
FLG-5	.375	13.000

external toolholders



internal bars



INTERNAL

insert type	maximum groove depth "D"	minimum groove diameter "E"
FLFD-3-R	.250	2.250

Also check minimum bore diameter of boring bar.

internal bars

