

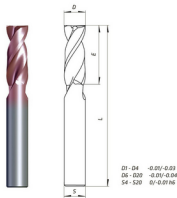
RAM | A.P.
mechanics

2013

MILLING

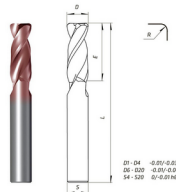


GPSF2



EDP NO.	D	S	E	L	B	PRICE
GPSF2-D1.0	1	4	3	50		
GPSF2-D1.5	1.5	4	4	50		
GPSF2-D2.0	2	4	6	50		
GPSF2-D2.5	2.5	4	8	50		
GPSF2-D3.0	3	4	8	50		
GPSF2-D4.0	4	4	11	50		
GPSF2-D5.0	5	5	13	50		
GPSF2-D6.0	6	6	15	50		
GPSF2-D8.0	8	8	20	50		
GPSF2-D10.0	10	10	25	75		
GPSF2-D12.0	12	12	30	75		
GPSF2-D14.0	14	14	45	100		
GPSF2-D16.0	16	16	45	100		
GPSF2-D20.0	20	20	45	100		

GPRF2



EDP NO.	D	S	E	L	B	PRICE
GPRF2-D2.0xR0.5	2	4	4	50	0.5	
GPRF2-D3.0xR0.5	3	4	5	50	1.5	
GPRF2-D4.0xR0.5	4	4	8	50	0.5	
GPRF2-D4.0xR1.0	4	4	8	50	1.0	
GPRF2-D6.0xR0.5	6	6	12	50	0.5	
GPRF2-D6.0xR1.0	6	6	12	50	1.0	
GPRF2-D8.0xR0.5	8	8	16	60	0.5	
GPRF2-D8.0xR1.0	8	8	16	60	1.0	
GPRF2-D8.0xR1.5	8	8	16	60	1.5	
GPRF2-D10.0xR0.5	10	10	20	75	0.5	
GPRF2-D10.0xR1.0	10	10	20	75	1.0	
GPRF2-D10.0xR1.5	10	10	20	75	1.5	

EDP NO.	D	S	E	L	B	PRICE
GPRF2-D12.0xR0.5	12	12	24	75	0.5	
GPRF2-D12.0xR1.0	12	12	24	75	1.0	
GPRF2-D12.0xR1.5	12	12	24	75	1.5	
GPRF2-D12.0xR2.0	12	12	24	75	2.0	

GPBF2



R0.5-R3 ± 0.01
 R4-R10 ± 0.02
 D1-D4 $-0.01/-0.03$
 D5-D20 $-0.01/-0.04$
 S4-S20 $0/-0.01 h6$

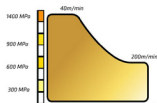
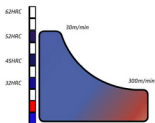
EDP NO.	D	S	E	L	B	PRICE
GPBF2-D1.0xR0.5	1	4	2	50	R0.5	
GPBF2-D1.5xR0.75	1.5	4	3	50	R0.75	
GPBF2-D2.0xR1.0	2	4	4	50	R1.0	
GPBF2-D2.5xR1.25	2.5	4	5	50	R1.25	
GPBF2-D3.0xR1.5	3	4	6	50	R1.5	
GPBF2-D4.0xR2.0	4	4	8	50	R2.0	
GPBF2-D5.0xR2.5	5	5	10	50	R2.5	
GPBF2-D6.0xR3.0	6	6	12	50	R3.0	
GPBF2-D8.0xR4.0	8	8	16	60	R4.0	
GPBF2-D10.0xR5.0	10	10	20	75	R5.0	
GPBF2-D12.0xR6.0	12	12	25	75	R6.0	
GPBF2-D16.0xR8.0	16	16	30	100	R8.0	
GPBF2-D20.0xR10.0	20	20	30	100	R10.0	

GPS

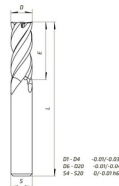


X-Multiple/X-Supper

- ▲ 3500HV
- ▲ 0.35
- ▲ 900-1200°C



GPSF4



EDP NO.	D	S	E	L	B	PRICE
GPSF4-01.0	1	4	3	50		
GPSF4-02.0	2	4	6	50		
GPSF4-02.5	2.5	4	8	50		
GPSF4-03.0	3	4	8	50		
GPSF4-04.0	4	4	11	50		
GPSF4-05.0	5	5	13	50		
GPSF4-06.0	6	6	16	50		
GPSF4-08.0	8	8	20	60		
GPSF4-010.0	10	10	25	75		
GPSF4-012.0	12	12	30	75		
GPSF4-014.0	14	14	45	100		
GPSF4-016.0	16	16	45	100		
GPSF4-020.0	20	20	45	100		
GPSF4-06.0-L100	6	6	15	100		
GPSF4-08.0-L100	8	8	20	100		
GPSF4-010.0-L100	10	10	25	100		
GPSF4-012.0-L100	12	12	30	100		

GPRF4



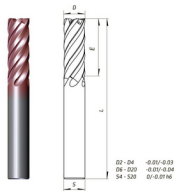
EDP NO.	D	S	E	L	B	PRICE
GPRF4-D2.0xR0.5	2	4	4	50	0.5	
GPRF4-D3.0xR0.5	3	4	5	50	0.5	
GPRF4-D4.0xR1.0	4	4	8	50	1.0	
GPRF4-D6.0xR0.5	6	6	12	50	0.5	
GPRF4-D6.0xR1.0	6	6	12	50	1.0	
GPRF4-D8.0xR0.5	8	8	16	60	0.5	
GPRF4-D8.0xR1.0	8	8	16	60	1.0	
GPRF4-D8.0xR1.5	8	8	16	60	1.5	
GPRF4-D10.0xR0.5	10	10	20	75	0.5	
GPRF4-D10.0xR1.0	10	10	20	75	1.0	
GPRF4-D10.0xR1.5	10	10	20	75	1.5	

EDP NO.	D	S	E	L	B	PRICE
GPRF4-D12.0xR0.5	12	12	24	75	0.5	
GPRF4-D12.0xR1.0	12	12	24	75	1.0	
GPRF4-D12.0xR1.5	12	12	24	75	1.5	
GPRF4-D12.0xR2.0	12	12	24	75	2.0	
GPRF4-D14.0xR1.0	14	14	32	100	1.0	
GPRF4-D14.0xR2.0	14	14	32	100	2.0	
GPRF4-D16.0xR1.0	16	16	38	100	1.0	
GPRF4-D16.0xR2.0	16	16	38	100	2.0	
GPRF4-D20.0xR1.0	20	20	38	100	1.0	
GPRF4-D20.0xR2.0	20	20	38	100	2.0	



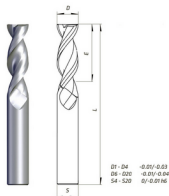


GPSF5



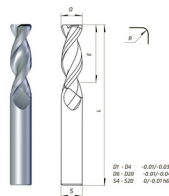
EDP NO.	D	S	E	L	B	PRICE
GPSF5-D2.0	2	4	6	50		
GPSF5-D2.5	2.5	4	8	50		
GPSF5-D3.0	3	4	8	50		
GPSF5-D4.0	4	4	11	50		
GPSF5-D5.0	5	5	13	50		
GPSF5-D6.0	6	6	16	50		
GPSF5-D8.0	8	8	20	50		
GPSF5-D10.0	10	10	25	75		
GPSF5-D12.0	12	12	30	75		
GPSF5-D14.0	14	14	45	100		
GPSF5-D16.0	16	16	45	100		
GPSF5-D20.0	20	20	45	100		

ACSF2



EDP NO.	D	S	E	L	B	PRICE
ACSF2-01.0	1	4	3	50		
ACSF2-02.0	2	4	6	50		
ACSF2-03.0	3	4	8	50		
ACSF2-04.0	4	4	11	50		
ACSF2-05.0	5	6	15	50		
ACSF2-06.0	6	6	15	50		
ACSF2-08.0	8	8	20	60		
ACSF2-010.0	10	10	25	75		
ACSF2-012.0	12	12	30	75		
ACSF2-014.0	14	14	45	100		
ACSF2-016.0	16	16	45	100		
ACSF2-018.0	18	18	45	100		
ACSF2-020.0	20	20	45	100		

ACRF2

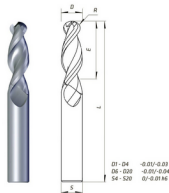


EDP NO.	D	S	E	L	B	PRICE
ACRF2-02.0xR0.5	2	4	4	50	0.5	
ACRF2-03.0xR0.5	3	4	5	50	1.5	
ACRF2-04.0xR0.5	4	4	8	50	0.5	
ACRF2-04.0xR1.0	4	4	8	50	1.0	
ACRF2-06.0xR0.5	6	6	12	50	0.5	
ACRF2-06.0xR1.0	6	6	12	50	1.0	
ACRF2-08.0xR0.5	8	8	16	60	0.5	
ACRF2-08.0xR1.0	8	8	16	60	1.0	
ACRF2-08.0xR1.5	8	8	16	60	1.5	
ACRF2-010.0xR0.5	10	10	20	75	0.5	
ACRF2-010.0xR1.0	10	10	20	75	1.0	
ACRF2-010.0xR1.5	10	10	20	75	1.5	

EDP NO.	D	S	E	L	B	PRICE
ACRF2-D12.0xR0.5	12	12	24	75	0.5	
ACRF2-D12.0xR1.0	12	12	24	75	1.0	
ACRF2-D12.0xR1.5	12	12	24	75	1.5	
ACRF2-D12.0xR2.0	12	12	24	75	2.0	

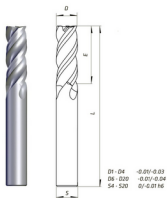


ACBF2



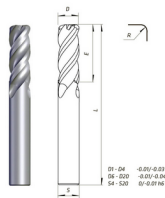
EDP NO.	D	S	E	L	B	PRICE
ACBF2-D1.0xR0.5	1	4	2	50	R0.5	
ACBF2-D1.5xR0.75	1.5	4	3	50	R0.75	
ACBF2-D2.0xR1.0	2	4	4	50	R1.0	
ACBF2-D2.5xR1.25	2.5	4	5	50	R1.25	
ACBF2-D3.0xR1.5	3	4	6	50	R1.5	
ACBF2-D4.0xR2.0	4	4	8	50	R2.0	
ACBF2-D5.0xR2.5	5	5	10	50	R2.5	
ACBF2-D6.0xR3.0	6	6	12	50	R3.0	
ACBF2-D8.0xR4.0	8	8	16	60	R4.0	
ACBF2-D10.0xR5.0	10	10	20	75	R5.0	
ACBF2-D12.0xR6.0	12	12	25	75	R6.0	
ACBF2-D16.0xR8.0	16	16	30	100	R8.0	
ACBF2-D20.0xR10.0	20	20	30	100	R10.0	

ACSF3



EDP NO.	D	S	E	L	B	PRICE
ACSF3-01.0	1	4	3	50		
ACSF3-02.0	2	4	6	50		
ACSF3-03.0	3	4	8	50		
ACSF3-04.0	4	4	11	50		
ACSF3-05.0	5	6	15	50		
ACSF3-06.0	6	6	15	50		
ACSF3-08.0	8	8	20	60		
ACSF3-010.0	10	10	25	75		
ACSF3-012.0	12	12	30	75		
ACSF3-014.0	14	14	45	100		
ACSF3-016.0	16	16	45	100		
ACSF3-018.0	18	18	45	100		
ACSF3-020.0	20	20	45	100		

ACRF3

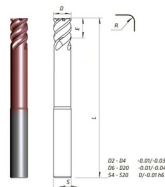


EDP NO.	D	S	E	L	B	PRICE
ACRF3-02.0xR0.5	2	4	4	50	0.5	
ACRF3-03.0xR0.5	3	4	5	50	1.5	
ACRF3-04.0xR0.5	4	4	8	50	0.5	
ACRF3-04.0xR1.0	4	4	8	50	1.0	
ACRF3-06.0xR0.5	6	6	12	50	0.5	
ACRF3-06.0xR1.0	6	6	12	50	1.0	
ACRF3-08.0xR0.5	8	8	16	60	0.5	
ACRF3-08.0xR1.0	8	8	16	60	1.0	
ACRF3-08.0xR1.5	8	8	16	60	1.5	
ACRF3-010.0xR0.5	10	10	20	75	0.5	
ACRF3-010.0xR1.0	10	10	20	75	1.0	
ACRF3-010.0xR1.5	10	10	20	75	1.5	

EDP NO.	D	S	E	L	B	PRICE
ACRF3-D12, 0xR0.5	12	12	24	75	0.5	
ACRF3-D12, 0xR1.0	12	12	24	75	1.0	
ACRF3-D12, 0xR1.5	12	12	24	75	1.5	
ACRF3-D12, 0xR2.0	12	12	24	75	2.0	



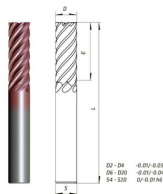
HMRF4



EDP NO.	D	S	E	L	B	PRICE
HMRF4-D2, 0xR0.5	2	4	4	50	0.5	
HMRF4-D3, 0xR0.5	3	4	5	50	0.5	
HMRF4-D4, 0xR1.0	4	4	8	50	1.0	
HMRF4-D6, 0xR0.5	6	6	12	50	0.5	
HMRF4-D6, 0xR1.0	6	6	12	50	1.0	
HMRF4-D8, 0xR0.5	8	8	16	60	0.5	
HMRF4-D8, 0xR1.0	8	8	16	60	1.0	
HMRF4-D8, 0xR1.5	8	8	16	60	1.5	
HMRF4-D10, 0xR0.5	10	10	20	75	0.5	
HMRF4-D10, 0xR1.0	10	10	20	75	1.0	
HMRF4-D10, 0xR1.5	10	10	20	75	1.5	

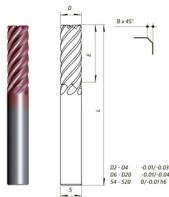
EDP NO.	D	S	E	L	B	PRICE
HMRF4-012.0xR0.5	12	12	24	75	0.5	
HMRF4-012.0xR1.0	12	12	24	75	1.0	
HMRF4-012.0xR1.5	12	12	24	75	1.5	
HMRF4-012.0xR2.0	12	12	24	75	2.0	
HMRF4-014.0xR1.0	14	14	32	100	1.0	
HMRF4-014.0xR2.0	14	14	32	100	2.0	
HMRF4-016.0xR1.0	16	16	38	100	1.0	
HMRF4-016.0xR2.0	16	16	38	100	2.0	
HMRF4-020.0xR1.0	20	20	38	100	1.0	
HMRF4-020.0xR2.0	20	20	38	100	2.0	

HMSF6



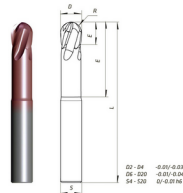
EDP NO.	D	S	E	L	B	PRICE
GPSF6-06.0	6	6	16	50		
GPSF6-08.0	8	8	20	50		
GPSF6-010.0	10	10	25	75		
GPSF6-012.0	12	12	30	75		
GPSF6-014.0	14	14	45	100		
GPSF6-016.0	16	16	45	100		
GPSF6-020.0	20	20	45	100		

HMRF6



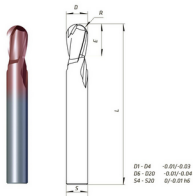
EDP NO.	D	S	E	L	B	PRICE
HMRF2-D2.DxR0.5	2	4	4	50	0.5	
HMRF2-D3.DxR0.5	3	4	5	50	1.5	
HMRF2-D4.DxR0.5	4	4	8	50	0.5	
HMRF2-D4.DxR1.0	4	4	8	50	1.0	
HMRF2-D6.DxR0.5	6	6	12	50	0.5	
HMRF2-D6.DxR1.0	6	6	12	50	1.0	
HMRF2-D8.DxR0.5	8	8	16	60	0.5	
HMRF2-D8.DxR1.0	8	8	16	60	1.0	
HMRF2-D8.DxR1.5	8	8	16	60	1.5	
HMRF2-D10.DxR0.5	10	10	20	75	0.5	
HMRF2-D10.DxR1.0	10	10	20	75	1.0	
HMRF2-D10.DxR1.5	10	10	20	75	1.5	

HMBF4



EDP NO.	D	S	E	L	B	PRICE
HMBF4-D2.DxR0.5	2	4	4	50	0.5	
HMBF4-D3.DxR0.5	3	4	5	50	1.5	
HMBF4-D4.DxR0.5	4	4	8	50	0.5	
HMBF4-D4.DxR1.0	4	4	8	50	1.0	
HMBF4-D6.DxR0.5	6	6	12	50	0.5	
HMBF4-D6.DxR1.0	6	6	12	50	1.0	
HMBF4-D8.DxR0.5	8	8	16	60	0.5	
HMBF4-D8.DxR1.0	8	8	16	60	1.0	
HMBF4-D8.DxR1.5	8	8	16	60	1.5	
HMBF4-D10.DxR0.5	10	10	20	75	0.5	
HMBF4-D10.DxR1.0	10	10	20	75	1.0	
HMBF4-D10.DxR1.5	10	10	20	75	1.5	

HMBF2



EDP NO.	D	S	E	L	B	PRICE
HMBF2-02.0xR0.5	2	4	4	50	0.5	
HMBF2-03.0xR0.5	3	4	5	50	1.5	
HMBF2-04.0xR0.5	4	4	8	50	0.5	
HMBF2-04.0xR1.0	4	4	8	50	1.0	
HMBF2-06.0xR0.5	6	6	12	50	0.5	
HMBF2-06.0xR1.0	6	6	12	50	1.0	
HMBF2-08.0xR0.5	8	8	16	60	0.5	
HMBF2-08.0xR1.0	8	8	16	60	1.0	
HMBF2-08.0xR1.5	8	8	16	60	1.5	
HMBF2-10.0xR0.5	10	10	20	75	0.5	
HMBF2-10.0xR1.0	10	10	20	75	1.0	
HMBF2-10.0xR1.5	10	10	20	75	1.5	



Materials		Vc m/min		Fz mm/tooth			
		GP902	GP904	D1-D3	D3-D5	D6-D12	D12-D20
Raw Material Cast Iron	A3, 20, 45 QT, HT	55-220	55-220	0.01-0.03	0.025-0.05	0.035-0.1	0.05-0.15
Hardened Steels <34HRC	40Cr, 42CrMo	55-120	55-120	0.01-0.03	0.025-0.05	0.035-0.1	0.05-0.15
Hardened Steels <45HRC	CrWMn, 38CrMoAl	35-105	35-105	0.01-0.03	0.02-0.05	0.03-0.08	0.05-0.10
High Strength Steels	38CrMoAlA	35-75	35-75	0.01-0.03	0.02-0.05	0.03-0.08	0.05-0.10
Hardened Steels <55HRC	Cr12MoV	35-75	35-75	0.01-0.03	0.02-0.05	0.03-0.08	0.05-0.10
Stainless Steels <850Mpa	1Cr18Ni9Ti 17-4, 15-5	40-90	40-90	0.015-0.035	0.025-0.065	0.035-0.10	0.075-0.125
Stainless Steels <850Mpa	304, 316	35-65	35-65	0.01-0.03	0.02-0.05	0.03-0.08	0.05-0.10
Ti-Alloy <350HRC	TA, TC	60-90	60-90	0.015-0.035	0.025-0.065	0.035-0.10	0.075-0.125
Ti-Alloy >35HRC	TB, T5553	50-65	50-65	0.01-0.03	0.02-0.05	0.03-0.08	0.05-0.10
Ni-Alloy <364HRC	GH4169	40-70	40-70	0.015-0.035	0.025-0.065	0.035-0.10	0.075-0.125
Ni-Alloy >364HRC		20-40	20-40	0.01-0.03	0.02-0.05	0.03-0.08	0.05-0.10

Materials	Slotting		Side	
	Ap mm	Ae mm	Ap mm	Ae mm
Raw Material Cast Iron	1.5°D	0.2°D	0.25°D	1°D
Hardened Steels <36HRC	1.5°D	0.2°D	0.25°D	1°D
Hardened Steels <45HRC	1.5°D	0.1°D	0.15°D	1°D
High Strength Steels	1.5°D	0.1°D	0.15°D	1°D
Hardened Steels <55HRC	1.5°D	0.2°D	0.25°D	1°D
Stainless Steels <850Mpa	1.5°D	0.2°D	0.25°D	1°D
Stainless Steels >850Mpa	1.5°D	0.2°D	0.25°D	1°D
Ti-Alloy <364HRC	1.5°D	0.2°D	0.25°D	1°D
Ti-Alloy >35HRC	1.5°D	0.2°D	0.25°D	1°D
Ni-Alloy <364HRC	1.5°D	0.2°D	0.25°D	1°D
Ni-Alloy >364HRC	1.5°D	0.2°D	0.25°D	1°D

HM

	Vc m/ min	Fz mm/tooth									Slotting		Side	
		3	4	6	8	10	12	16	18	20				
Hardened Steels 38 - 45 HRC	135	0.035	0.04	0.035	0.04	0.05	0.055	0.065	0.075	0.08	0.05°D	1°D	1°D	0.05°D
Hardened Steels 45 - 50 HRC	75	0.02	0.025	0.03	0.035	0.04	0.045	0.055	0.065	0.07	0.05°D	1°D	1°D	0.05°D
Hardened Steels 50 - 55 HRC	50	0.015	0.02	0.025	0.03	0.035	0.04	0.05	0.06	0.065	0.05°D	1°D	1°D	0.05°D
Hardened Steels 55 - 60 HRC	40	0.01	0.015	0.02	0.025	0.03	0.035	0.045	0.055	0.06	0.05°D	1°D	1°D	0.05°D
Hardened Steels 60 - 65 HRC	25	0.008	0.01	0.015	0.02	0.025	0.03	0.035	0.045	0.05	0.05°D	1°D	1°D	0.05°D
Hardened Steels 65 - 70 HRC	20	0.007	0.008	0.01	0.015	0.02	0.025	0.03	0.04	0.045	0.05°D	1°D	1°D	0.05°D

AC

Vc m/min	Fz mm/tooth										Slotting		Side	
	3	4	6	8	10	12	16	18	20	Ap mm	Ae mm	Ap mm	Ae mm	
AL-Alloy	200-max	0.03	0.04	0.06	0.08	0.1	0.12	0.16	0.18	0.2	1°D	1°D	1°D	0.75°D
Cu-Alloy	75-200	0.03	0.04	0.06	0.08	0.1	0.12	0.16	0.18	0.2	0.75°D	1°D	1°D	0.75°D
Plastic	200-max	0.03	0.04	0.06	0.08	0.1	0.12	0.16	0.18	0.2	1°D	1°D	1°D	0.75°D



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