Cutting data recommendations for FixReam FXR

Feed and cutting speed

FXR510 | FXR505

Cutting material: HP145 | Lead: MF1M | MT0A

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cutting speed v_c (m/min)				Feed f_z (mm/z) with tool diameter						
					Internal cooling	External cooling	MQL		z 4	z 4	z 6	z 6	z 6	z 6	z 8
									< 5.000	> 5.000 - 6.200	> 6.200 - 8.000	> 8.000 - 12.000	> 12.000 - 16.000	> 16.000 - 16.200	> 16.200 - 20.200
P	P4	P4.1	Stainless steels, ferritic and martensitic		40	20	30		0.020	0.040	0.060	0.080	0.100	0.120	0.120
	P6	P6.1	Stainless cast steel, ferritic and martensitic		40	20	30		0.020	0.040	0.060	0.080	0.100	0.120	0.120
M	M1	M1.1	Stainless steels, austenitic	< 700	40	20	30		0.020	0.040	0.060	0.080	0.100	0.120	0.120
		M1.2	Stainless steels, ferritic/austenitic (duplex)	< 1000	30	15	20		0.020	0.040	0.060	0.080	0.100	0.120	0.120
	M2	M2.1	Stainless/heat-resistant cast steel, austenitic	< 700	40	20	30		0.020	0.040	0.060	0.080	0.100	0.120	0.120
	M3	M3.1	Stainless cast steel, ferritic/austenitic (duplex)	< 1000	30	15	20		0.020	0.040	0.060	0.080	0.100	0.120	0.120

FXR510 | FXR505

Cutting material: HP145 | Lead: MG1M | MV0A

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cutting speed v_c (m/min)				Feed f_z (mm/z) with tool diameter						
					Internal cooling	External cooling	MQL		z 4	z 4	z 6	z 6	z 6	z 6	z 8
									< 5.000	> 5.000 - 6.200	> 6.200 - 8.000	> 8.000 - 12.000	> 12.000 - 16.000	> 16.000 - 16.200	> 16.200 - 20.200
P	P1	P1.1	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 700	180	90	150		0.050	0.080	0.080	0.140	0.180	0.180	0.190
		P1.2	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 1200	140	70	115		0.050	0.080	0.080	0.140	0.180	0.180	0.190
	P2	P2.1	Nitrided, case hardened and heat-treated steels, alloy	< 900	180	90	150		0.050	0.080	0.080	0.140	0.180	0.180	0.190
		P2.2	Nitrided, case hardened and heat-treated steels, alloy	< 1400	140	70	115		0.050	0.080	0.080	0.140	0.180	0.180	0.190
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800	180	90	150		0.050	0.080	0.080	0.140	0.180	0.180	0.190
		P3.2	Tool, bearing, spring and high-speed steels**	< 1000	140	70	110		0.050	0.080	0.080	0.140	0.180	0.180	0.190
		P3.3	Tool, bearing, spring and high-speed steels**	< 1500	120	60	90		0.050	0.080	0.080	0.140	0.180	0.180	0.190
	P6	P5.1	Cast steel		140	75	100		0.050	0.080	0.080	0.140	0.180	0.180	0.190
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300	120	100	100		0.080	0.100	0.100	0.170	0.220	0.220	0.230
	K2	K2.1	Cast iron with spheroidal graphite, GJS	< 500	150	105	130		0.080	0.100	0.100	0.170	0.220	0.220	0.230
		K2.2	Cast iron with spheroidal graphite, GJS	≤ 800	120	85	98		0.080	0.100	0.100	0.170	0.220	0.220	0.230
		K2.3	Cast iron with spheroidal graphite, GJS	> 800	90	55	70		0.080	0.100	0.100	0.170	0.220	0.220	0.230
	K3	K3.1	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	< 500	90	55	70		0.080	0.100	0.100	0.170	0.220	0.220	0.230
		K3.2	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	> 500	90	55	70		0.080	0.100	0.100	0.170	0.220	0.220	0.230

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

The specified cutting values are guide values.

The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for FixReam FXR

Feed and cutting speed

FXR503-short

Cutting material: HP145 | Lead: MC1F

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cutting speed v_c (m/min)				Feed f_z (mm/z) with tool diameter						
					Internal cooling	External cooling	MQL		z 4	z 4	z 6	z 6	z 6	z 8	z 8
									< 5.000	> 5.000 - 6.100	> 6.100 - 8.000	> 8.000 - 12.000	> 12.000 - 15.100	> 15.100 - 16.000	> 16.000 - 20.100
P	P1	P1.1	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 700	180	90	150		0.050	0.080	0.080	0.140	0.180	0.180	0.190
		P1.2	Structural, free-cutting, case hardened and heat-treated steels, non-alloy	< 1200	140	70	115		0.050	0.080	0.080	0.140	0.180	0.180	0.190
	P2	P2.1	Nitrided, case hardened and heat-treated steels, alloy	< 900	180	90	150		0.050	0.080	0.080	0.140	0.180	0.180	0.190
		P2.2	Nitrided, case hardened and heat-treated steels, alloy	< 1400	140	70	115		0.050	0.080	0.080	0.140	0.180	0.180	0.190
	P3	P3.1	Tool, bearing, spring and high-speed steels**	< 800	180	90	150		0.050	0.080	0.080	0.140	0.180	0.180	0.190
		P3.2	Tool, bearing, spring and high-speed steels**	< 1000	140	70	110		0.050	0.080	0.080	0.140	0.180	0.180	0.190
		P3.3	Tool, bearing, spring and high-speed steels**	< 1500	120	60	90		0.050	0.080	0.080	0.140	0.180	0.180	0.190
	P6	P5.1	Cast steel		140	75	100		0.050	0.080	0.080	0.140	0.180	0.180	0.190
K	K1	K1.1	Cast iron with lamellar graphite (grey cast iron), GJL	< 300	120	100	100		0.08	0.10	0.10	0.17	0.22	0.22	0.23
	K2	K2.1	Cast iron with spheroidal graphite, GJS	< 500	150	105	130		0.08	0.10	0.10	0.17	0.22	0.22	0.23
		K2.2	Cast iron with spheroidal graphite, GJS	≤ 800	120	85	98		0.08	0.10	0.10	0.17	0.22	0.22	0.23
		K2.3	Cast iron with spheroidal graphite, GJS	> 800	90	55	70		0.08	0.10	0.10	0.17	0.22	0.22	0.23
	K3	K3.1	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	< 500	90	55	70		0.08	0.10	0.10	0.17	0.22	0.22	0.23
		K3.2	Cast iron with spheroidal graphite, GJV; malleable cast iron, GJM	> 500	90	55	70		0.08	0.10	0.10	0.17	0.22	0.22	0.23

FXR505 | FXR500

Cutting material: HP622 | Lead: MV0A | MG0A

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cutting speed v_c (m/min)				Feed f_z (mm/z) with tool diameter						
					Internal cooling	External cooling	MQL		z 4	z 4	z 6	z 6	z 6	z 6	z 6
									< 5.000	> 5.000 - 6.200	> 6.200 - 8.000	> 8.000 - 12.000	> 12.000 - 16.000	> 16.000 - 16.200	> 16.200 - 20.200
N	N1	N1.1	Aluminium, non-alloy and alloy < 3 % Si		250	125	190		0.120	0.150	0.150	0.210	0.250	0.250	0.300
		N1.2	Aluminium, alloy ≤ 7 % Si		250	125	190		0.120	0.150	0.150	0.210	0.250	0.250	0.300
		N1.3	Aluminium, alloy > 7-12 % Si		250	125	190		0.120	0.150	0.150	0.210	0.250	0.250	0.300
		N1.4	Aluminium, alloy > 12 % Si		250	125	190		0.120	0.150	0.150	0.210	0.250	0.250	0.300

FXR505 | FXR510

Cutting material: HU612 | Lead: MV0A | MG1M

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cutting speed v_c (m/min)				Feed f_z (mm/z) with tool diameter						
					Internal cooling	External cooling	MQL		z 4	z 4	z 6	z 6	z 6	z 6	z 8
									< 5.000	> 5.000 - 6.200	> 6.200 - 8.000	> 8.000 - 12.000	> 12.000 - 16.000	> 16.000 - 16.200	> 16.200 - 20.200
	N2	N2.1	Copper, unalloyed and low-alloyed	< 300	50	25			0.040	0.050	0.050	0.060	0.100	0.100	0.100
		N2.2	Copper, alloy	> 300	50	25			0.040	0.050	0.050	0.060	0.100	0.100	0.100
		N2.3	Brass, bronze, gunmetal	< 1200	50	25	40		0.040	0.050	0.050	0.060	0.100	0.100	0.100

* MAPAL machining groups

** If the alloy parts Cr, Mo, Ni, V, W in total > 8% then select the next highest MAPAL machining group.

The specified cutting values are guide values.
The optimum data for the respective machining task should be determined during the test or machining.

Cutting data recommendations for FixReam FXR

Feed and cutting speed

FXR510 | FXR505

Cutting material: HP625 | Lead: MF1M | MT0A

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cutting speed v_c (m/min)				Feed f_z (mm/z) with tool diameter						
					Internal cooling	External cooling	MQL		z 4	z 4	z 6	z 6	z 6	z 6	z 8
									< 5.000	> 5.000 - 6.200	> 6.200 - 8.000	> 8.000 - 12.000	> 12.000 - 16.000	> 16.000 - 16.200	> 16.200 - 20.200
S	S1	S1.1	Titanium, titanium alloys	< 400	25	10	15		0.020	0.040	0.060	0.080	0.100	0.100	0.100
	S2	S2.1	Titanium, titanium alloys	< 1200	25	10	15		0.020	0.040	0.060	0.080	0.100	0.100	0.100
		S2.2	Titanium, titanium alloys	> 1200	25	10	15		0.020	0.040	0.060	0.080	0.100	0.100	0.100
	S3	S3.1	Nickel, non-alloy and alloy	< 900	25	10	15		0.020	0.040	0.060	0.080	0.100	0.100	0.100
		S3.2	Nickel, non-alloy and alloy	> 900	25	10	15		0.020	0.040	0.060	0.080	0.100	0.100	0.100
	S4	S4.1	High-temperature super alloy Ni, Co and Fe-based		25	10	15		0.020	0.040	0.060	0.080	0.100	0.100	0.100
	S5	S5.1	Tungsten and molybdenum alloys		25	10	15		0.020	0.040	0.060	0.080	0.100	0.100	0.100

FXR510 | FXR505

Cutting material: HC614 | Lead: MF1M | MV0A

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cutting speed v_c (m/min)				Feed f_z (mm/z) with tool diameter						
					Internal cooling	External cooling	MQL		z 4	z 4	z 6	z 6	z 6	z 6	z 8
									< 5.000	> 5.000 - 6.200	> 6.200 - 8.000	> 8.000 - 12.000	> 12.000 - 16.000	> 16.000 - 16.200	> 16.200 - 20.200
C	C1	C1.1	Plastic matrix, aramide fibre-reinforced (AFRP)		50	25	30		0.060	0.100	0.100	0.100	0.100	0.100	0.100
		C1.2	Plastic matrix (thermosetting), CFRP/GFRP		50	25	30		0.060	0.100	0.100	0.100	0.100	0.100	0.100
		C1.3	Plastic matrix (thermoplastic), CFRP/GFRP		50	25	30		0.060	0.100	0.100	0.100	0.100	0.100	0.100

FXR500 | FXR505

Cutting material: HP141 | Lead: MF0A | MT0A

MMG*			Workpiece material	Strength/hardness [N/mm²] [HRC]	Cutting speed v_c (m/min)				Feed f_z (mm/z) with tool diameter						
					Internal cooling	External cooling	MQL		z 4	z 4	z 6	z 6	z 6	z 6	z 6
									< 5.000	> 5.000 - 6.200	> 6.200 - 8.000	> 8.000 - 12.000	> 12.000 - 16.000	> 16.000 - 16.200	> 16.200 - 20.200
H	H1	H1.1	Hardened steel / cast steel	< 44	50	20	30		0.015	0.025	0.020	0.040	0.050	0.050	0.050
		H1.2	Hardened steel / cast steel	< 55	10	5	5		0.015	0.025	0.020	0.040	0.050	0.050	0.050

* MAPAL machining groups

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The optimum data for the respective machining task should be determined during the test or machining.