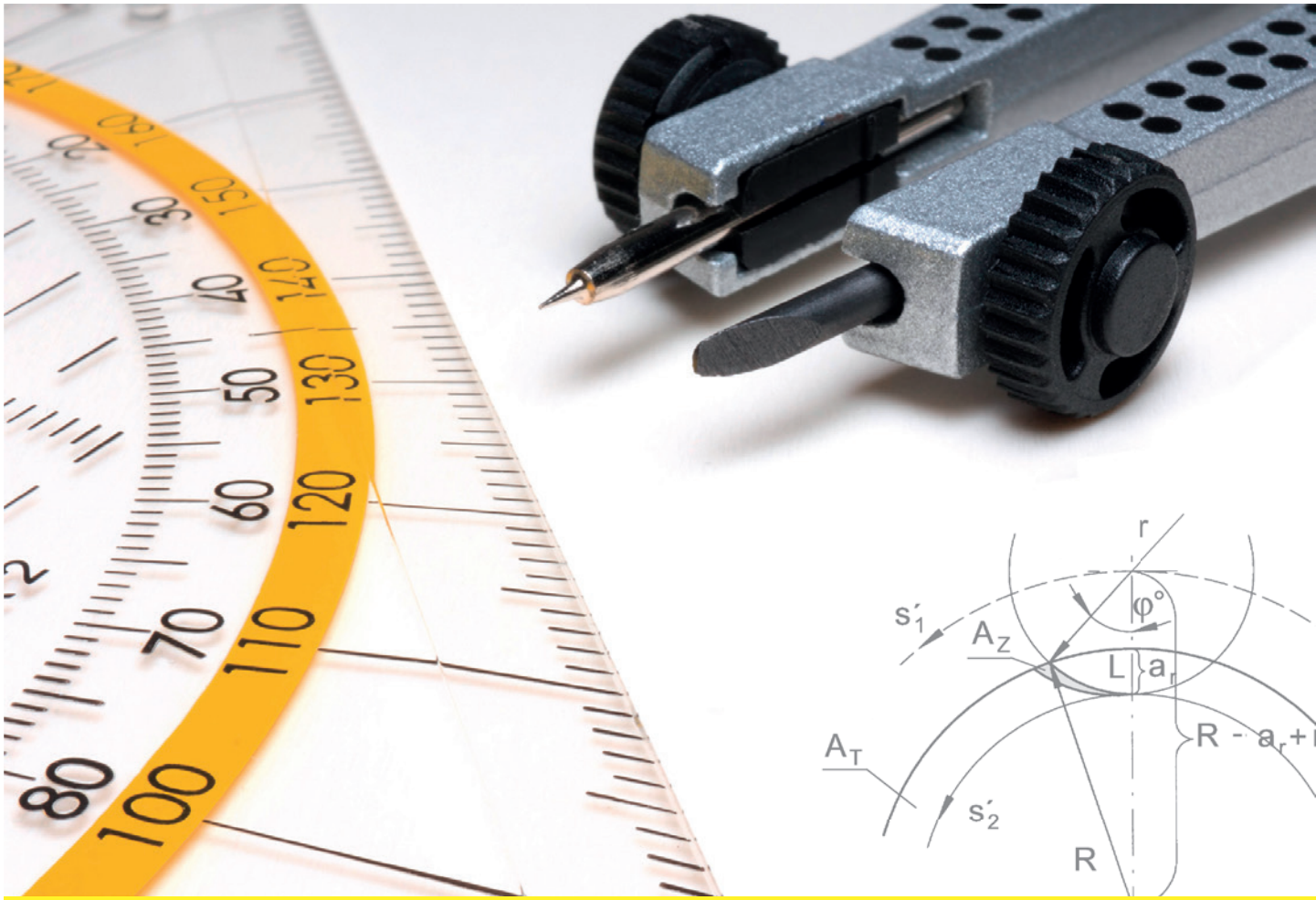
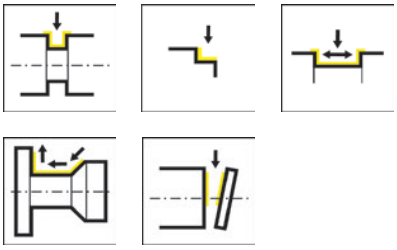
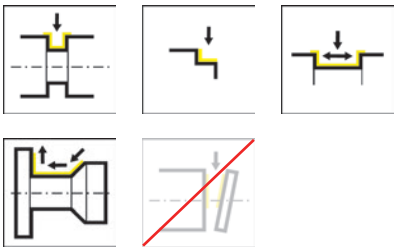
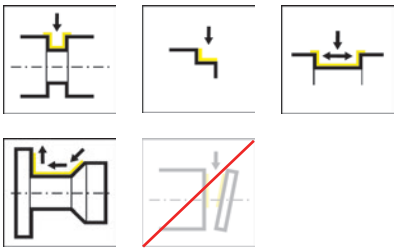
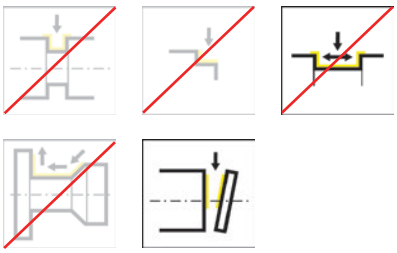
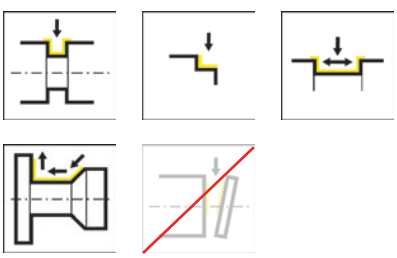
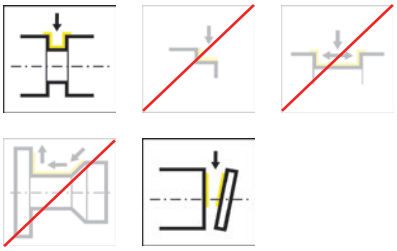
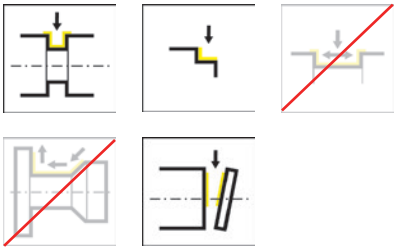
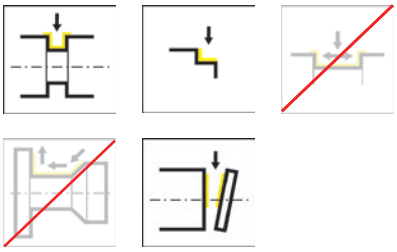
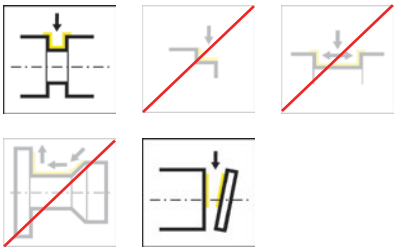
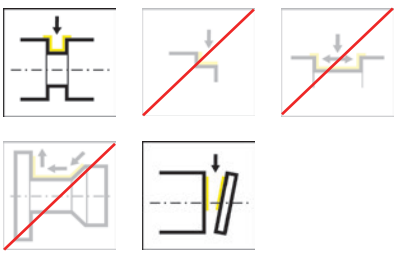
Schnittdaten Stechdrehen und Nutstoßen
Cutting Data Grooving and Broaching



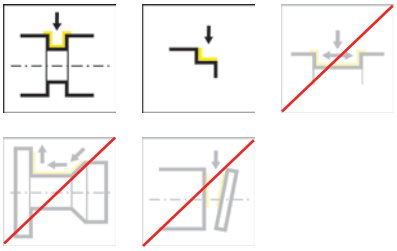
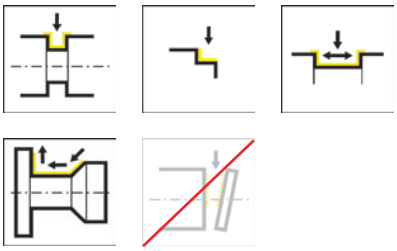
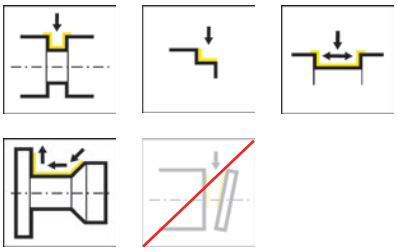
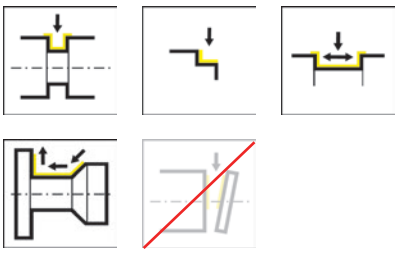
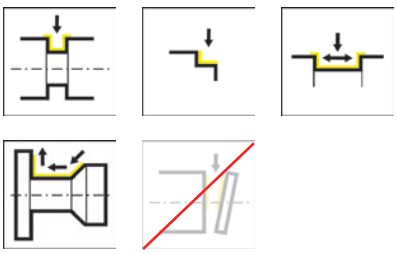
Geometrien und Vorschübe - Stechdrehen
Geometries and feed rates - Grooving

Geometrie Geometry	Werkstoff Material	Vorschubbereich f [mm/U] Feed rate f [mm/rev]	Bearbeitung Machining
.3	P M K N S H	↓ 0,15-0,25 ↔ 0,15-0,40	
.5	P M K N S H	↓ 0,10-0,45 ↔ 0,15-0,60	
.A	P M K N S H	↓ 0,05-0,30 ↔ 0,10-0,30	
.C	P M K N S H	↓ 0,02-0,10	
.D	P M K N S H	↓ 0,03-0,15 ↔ 0,05-0,20	

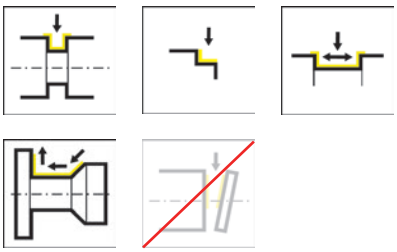
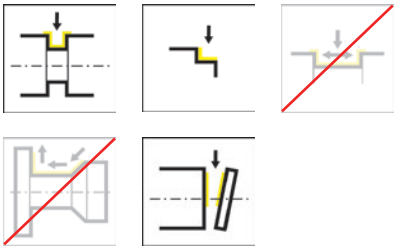
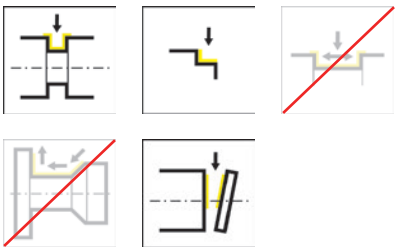
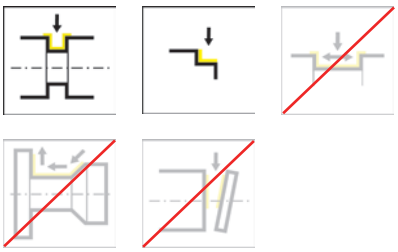
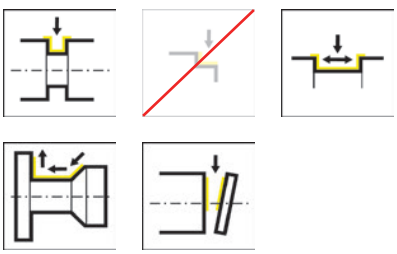
Geometrien und Vorschübe - Stechdrehen
Geometries and feed rates - Grooving

Geometrie Geometry	Werkstoff Material	Vorschubbereich f [mm/U] Feed rate f [mm/rev]	Bearbeitung Machining
.E	P M K N S H	0,08-0,30	
.EN	P M K N S H	0,10-0,45	
.EH	P M K N S H	0,25-0,4	
.F	P M K N S H	0,03-0,15	
.FY	P M K N S H	0,03-0,15	

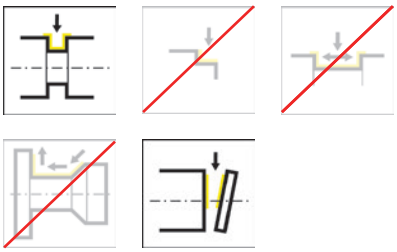
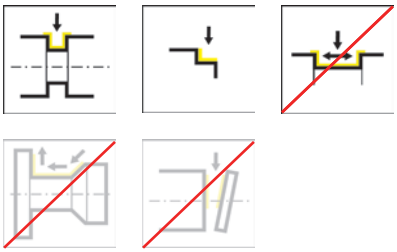
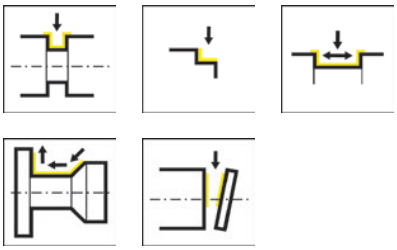
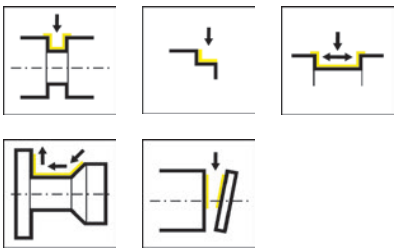
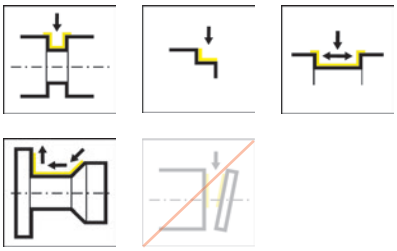
Geometrien und Vorschübe - Stechdrehen
Geometries and feed rates - Grooving

Geometrie Geometry	Werkstoff Material	Vorschubbereich f [mm/U] Feed rate f [mm/rev]	Bearbeitung Machining
.H	P M K N S H	↓ 0,15-0,25 ↔ 0,10-0,25	
.K	P M K N S H	↓ 0,05-0,25 ↔ 0,05-0,25	
.KF	P M K N S H	↓ 0,10-0,45 ↔ 0,05-0,25	
.KR	P M K N S H	↓ 0,25-0,5 ↔ 0,25-0,5	
.L	P M K N S H	↓ 0,10-0,22 ↔ 0,05-0,20	

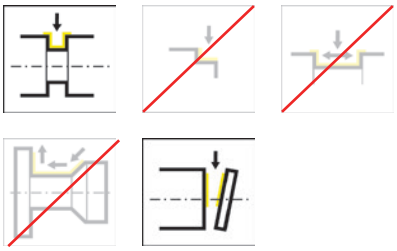
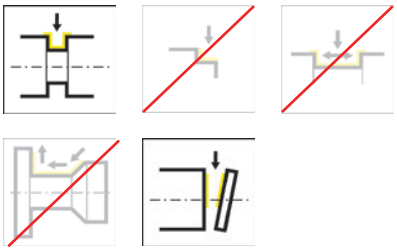
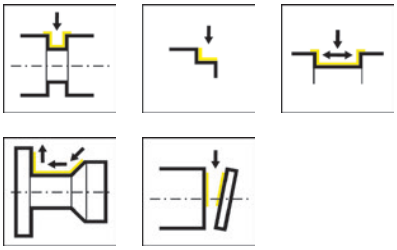
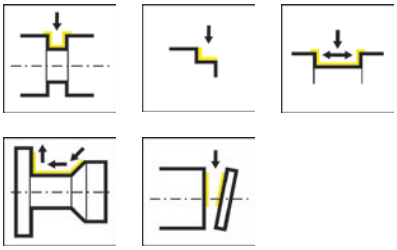
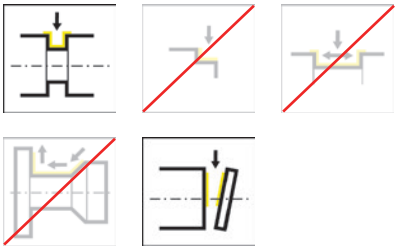
Geometrien und Vorschübe - Stechdrehen
Geometries and feed rates - Grooving

Geometrie Geometry	Werkstoff Material	Vorschubbereich f [mm/U] Feed rate f [mm/rev]	Bearbeitung Machining
.ZG	P M K N S H	↓ 0,10-0,22 ↔ 0,05-0,20	
.10	P M K N S H	↓ 0,05-0,15	
.20	P M K N S H	↓ 0,07-0,25	
.HR	P M K N S H	↓ 0,20-0,30	
.N	P M K N S H	↓ 0,05-0,25 ↔ 0,05-0,25	

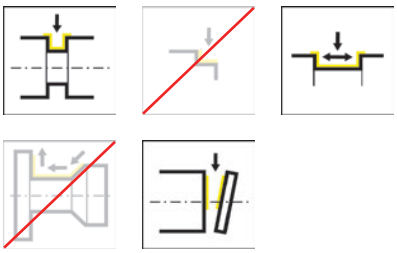
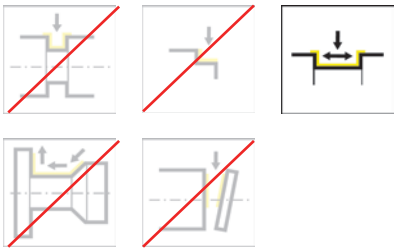
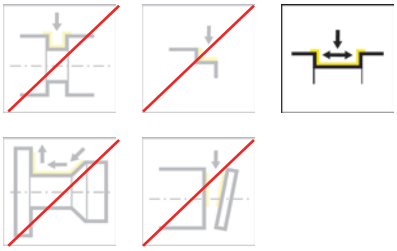
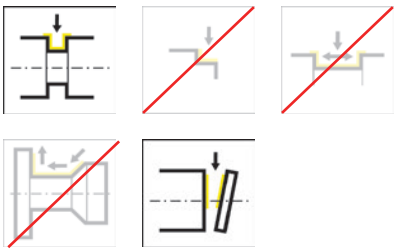
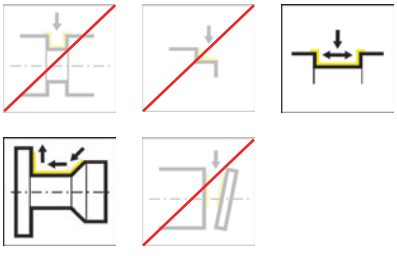
Geometrien und Vorschübe - Stechdrehen
Geometries and feed rates - Grooving

Geometrie Geometry	Werkstoff Material	Vorschubbereich f [mm/U] Feed rate f [mm/rev]	Bearbeitung Machining
.00	P M K N S H	↓ 0,02-0,12	
.1A	P M K N S H	↓ 0,03-0,12	
.M0	P M K N S H	↓ 0,02-0,10 ↔ 0,02-0,15	
.M	P M K N S H	↓ 0,02-0,12	
.P	P M K N S H	↓ 0,02-0,08 ↔ 0,02-0,04	

Geometrien und Vorschübe - Stechdrehen
Geometries and feed rates - Grooving

Geometrie Geometry	Werkstoff Material	Vorschubbereich f [mm/U] Feed rate f [mm/rev]	Bearbeitung Machining
.V	**P** M K N S H	↓ 0,04-0,15	
.3V	P **M** K **N** **S** H	↓ 0,05-0,20	
.FL	**P** M K N S H	↓ 0,03-0,15	
.DL	**P** M K N S H	↓ 0,05-0,15 ↔ 0,05-0,20	
.WA	P M K **N** S H	↓ 0,07-0,25	

Geometrien und Vorschübe - Stechdrehen
Geometries and feed rates - Grooving

Geometrie Geometry	Werkstoff Material	Vorschubbereich f [mm/U] Feed rate f [mm/rev]	Bearbeitung Machining
.WT	P M K N S H	↓ 0,06-0,08 ↔ 0,06-0,08	
.NC	P M K N S H	↓ 0,02-0,10 ↔ 0,02-0,15	
.FB	P M K N S H	↓ 0,02-0,10 ↔ 0,0015-0,07	
.S	P M K N S H	↓ 0,02-0,08	
.PT	P M K N S H	↔ 0,05-0,2	

Geometrien und Vorschübe - Nutstoßen
Geometries and feed rates - Broaching

Geometrie Geometry	Werkstoff Material	Bearbeitung Machining
.A	P M K N S H	Empfohlen für: Nutstoßaggregate Recommended for: Broaching units ap = 0,02 - 0,15 mm
.B	P M K N S H	Empfohlen für: konventionelles Stoßen Recommended for: Conventional broaching ap = 0,02 - 0,15 mm

Schnittdaten Stechdrehen
Cutting Data Grooving

Werkstoff Material			Materialgruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	
P	unlegierter Stahl Carbon steel	~ 0,2 % C	P1.1	125	430	CK15	
		~ 0,4% C geglüht annealed	P1.2	190	610	19Mn6	
		~ 0,4% C vergütet quenched	P1.3	210	640	36Mn5	
		~ 0,6% C geglüht annealed	P1.4	190	610	C55	
		~ 0,6% C vergütet quenched	P1.5	300	1000	CK60	
		Automatenstahl Free cutting steel	P1.6	220	750	9SMn28	
	niedrig legierter Stahl (<5%) Alloyed steel	geglüht annealed	P2.1	180	590	100Cr6	
		vergütet quenched	P2.2	280	960	14NiCr10	
		vergütet quenched	P2.3	350	1250	34CrMo4	
		vergütet quenched	P2.4	430	1450	55Cr3	
	hochlegierter Stahl (>5%) high alloyed steel	geglüht annealed	P3.1	200	680	X10CrAl18	
		gehärtet hardened	P3.2	350	1200	X210Cr2	
	Stahlguss Cast steel	unlegiert unalloyed	P4.1	180	590	GE200	
		legiert alloyed	P4.2	220	750	GX40CrSi28	
	Sinterstahl Sintered steel	weich soft	P5.1	220	570	Sint-D39	
M	Rostfreier Stahl Stainless steel	martensitisch ferritisch martensitic ferritic	M1.1	200	680	X16Cr13	
		austenitisch austenitic	M1.2	300	1000	X6CrNiMo-Ti17-12-2	
		austenitisch ferritisch austenitic ferritic	M1.3	230	780	X2CrNiMo-N17-13-3	

Schnittdaten Stechdrehen
Cutting Data Grooving

	Schnittgeschwindigkeit vc (m/min) / Startwerte Cutting speed vc (m/min) / Start values									
	K10 MG12	TN3_	TI2_	TH3_ TF4_ AS4_ AS6_	ES1_ AC2_	EG3_ EG5_ HP6_	IG3_ IG6_	DD2_	SG3_	H20 H54 IG6T
		200-130	260-160	280-180	280-180	280-180	340 - 220			400 - 300
		160-70	230 -120	250 -140	250 -140	250 -140	320 - 200			400 - 300
		160-70	230 -120	250 -140	250 -140	250 -140	320 - 200			400 - 300
		160-70	230 -120	250 -140	250 -140	250 -140	320 - 200			400 - 300
		150-60	190 - 70	210 - 90	210 - 90	210 - 90	280 - 150			400 - 300
		160-70	230 - 120	250 - 140	250 - 140	250 - 140	320 - 200			350 - 250
		150-80	200 - 80	220 - 100	220 - 100	220 - 100	300 - 180			400 - 300
		140-70	190 - 70	210 - 90	210 - 90	210 - 90	280 - 150			400 - 300
		130-50	170 - 60	190 - 80	190 - 80	190 - 80	250 - 140			350 - 250
		130-50	170 - 60	190 - 80	190 - 80	190 - 80	230 - 120			350 - 250
		140-60	180 - 60	200 - 80	200 - 80	200 - 80	260 - 140			250 -200
		130-50	170 - 60	190 - 80	190 - 80	190 - 80	250 - 120			250 -200
		140-100	180 - 120	200 - 140	200 - 140	200 - 140	250 - 200			250 - 200
		110-70	140 - 80	160 - 100	160 - 100	160 - 100	220 - 160			220 - 160
					120 - 80	120 - 80	150-90		150-90	250 - 200
					100 - 60	100 - 60	110-80		110-80	200 - 150
							120-90		120-90	200 - 150

Schnittdaten Stechdrehen
Cutting Data Grooving

Werkstoff Material			Materialgruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	
K	Grauguss Grey cast iron	niedrige Festigkeit low tensile strength	K1.1	180	250	GG-25	
		hohe Festigkeit high tensile strength	K1.2	250	350	GG-40	
	Kugelgraphitguss Spheroidal graphite cast iron	ferritisch ferritic	K2.1	160	400	GGG-40	
		perlitisch perlitic	K2.1	260	700	GGG-60	
	Temperguss Malleable cast iron	ferritisch ferritic	K3.1	200	400	GTW-45	
		perlitisch perlitic	K3.2	260	700	GTS-55-04	
	Ausferritisches Gussseisen / ADI Ausferritic spheroidal cast iron / ADI	vergütet quenched	K4.1	260	800		
		vergütet quenched	K4.2	350	1050		
		vergütet quenched	K4.3	450	1400		
N	Al-Legierungen Al-alloys	nicht vergütbar not heat treatable	N1.1	30		AlMg1	
		vergütbar heat treatable	N1.2	100	340	AlMgSi1	
	Al-Guss-Legierung Al-cast-alloy	< 6% Si	N2.1	80	300	AlMgSi6	
		6-10% Si	N2.2	100	320	AlSi7Mg	
		10-15 % Si	N2.3	130	450	AlSi12	
	Kupfer-Legierungen Copper-alloys	Reinkupfer Pure copper	N3.1	100	340	Cu	
		Messing, Bronze Brass	N3.2	90	310	CuZn40Pb	
		Messing bleifrei Lead-free brass	N3.3	110	430	CuZn40	
		hochfest high strength	N3.4	300	1000	CuZn25Al5-Mn4Fe3	
	Graphit Graphite		N4.1				

Schnittdaten Stechdrehen
Cutting Data Grooving

	Schnittgeschwindigkeit vc (m/min) / Startwerte Cutting speed vc (m/min) / Start values									
	K10 MG12	TN3_	TI2_	TH3_ TF4_ AS4_ AS6_	ES1_ AC2_	EG3_ EG5_ HP6_	IG3_ IG6_	DD2_	SG3_	H20 H54 IG6T
	90- 60	140-90		200 - 120	200 - 120	200 - 120	250 -140		250 -140	
	90 -60	110-90		160 - 120	160 - 120	160 - 120	220 - 150		220 - 150	
		110-80		180 - 130	180 - 130	180 - 130	240 - 160		240 - 160	
		110-80		160 - 120	160 - 120	160 - 120	200 - 160		200 - 160	
		150-90		220 - 120	220 - 120	220 - 120	280 - 180		280 - 180	
		130-60		190 - 100	190 - 100	190 - 100	250 - 160		250 - 160	
		110-60		180 - 90	180 - 90	180 - 90				
		110-60		160 - 80	160 - 80	160 - 80				
		80-50		120 - 60	120 - 60	120 - 60				
	600-400							1000 - 600		500 - 350
	400-200							600-300		350 - 300
	600 - 300							1000 -600		500 - 350
								400 - 220		350 - 300
	200 - 120							400 - 220		
	200 - 120							300 - 180		
	150 - 90							250 - 120		
	150 -90							200 - 80		

Schnittdaten Stechdrehen
Cutting Data Grooving

Werkstoff Material			Materialgruppe Material group	Härte (HB) Hardness Brinell	Zugfestigkeit R_m [N/mm²] Tensile Strength	Beispiel Werkstoff Example Material	
S	Warmfeste Legierung (Fe) Heat resistant alloy	geglüht annealed	S1.1	200	670		
		gehärtet hardened	S1.2	275	930		
	Warmfeste Legierung (Ni, Co) Heat resistant alloy	geglüht annealed	S2.1	250	840	Inconel 600	
		gehärtet hardened	S2.2	350	1200	Inconel 713	
	Titan	Titanlegierung α Titanium alloy α	S3.1	120	240		
		Titanlegierung α-ß Titanium alloy α- ß	S3.2	360	1200		
		Titanlegierung ß Titanium alloy ß	S3.3	410	1400		
H	Gehärtete Stähle Hardened steels	50-55 HRC	H1.1	-	-		
		55-60 HRC	H1.2	-	-		
		60-63 HRC	H1.3	-	-		
		> 63HRC	H1.4	-	-		
O	Thermoplaste Thermoplastics		O1.1				
	Duroplaste Duro plaste		O1.2				
	Kunststoffe glas-faserverstärkt Plastics glass fibre reinforced	GFK	O1.3				
	Kunststoffe kohle-faserverstärkt Plastics carbon fibre reinforced	CFK	O1.4				

Schnittdaten Stechdrehen
Cutting Data Grooving

	Schnittgeschwindigkeit vc (m/min) / Startwerte Cutting speed vc (m/min) / Start values									
	K10 MG12	TN3_	TI2_	TH3_ TF4_ AS4_ AS6_	ES1_ AC2_	EG3_ EG5_ HP6_	IG3_ IG6_	DD2_	SG3_	H20 H54 IG6T
	50-30						80 - 60		90-70	
	50-30						50 - 30		60-40	
	50-30						70 - 50		80-60	
	50-30						60 - 40		70-50	
	50-30						150 - 110		160-120	
	50-30						80 - 60		90-70	
	50-30						50 - 45		60-50	
							60 - 40		70-50	
							50 -30		60-40	
	150 - 50									
	150 - 100									
	150 - 100									
	300 - 150									