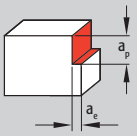
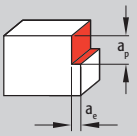
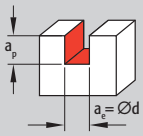
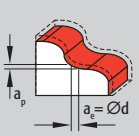
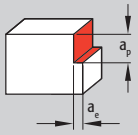
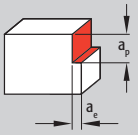
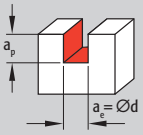
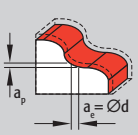
recommended cutting speeds

Material			Hardness Brinell (HB)	Shoulder milling a_p < 0.5 x Ds a_e < 0.3 x Ds 	Shoulder milling a_p < 0.5 x Ds a_e < 1.0 x Ds 	Groove milling a_p < 0.5 x Ds 	Copy milling a_p < 0.02 x Ds 
				v_c (ft/min)	v_c (ft/min)	v_c (ft/min)	v_c (ft/min)
P	Carbon steel	0.2% C	140	820	590	525	1150
		0.4% C	180	720	525	460	1050
		0.6% C	200	655	460	425	985
	Alloyed steel	annealed	180	655	490	425	920
		quenched	280				
	high alloyed steel(>5%)	annealed	200	460	330	295	590
		hardened	-				
	Cast steel	unalloyed	180	560	425	395	920
		alloyed	220				
M	Stainless steel	martensitic, ferritic	200	490	295	260	590
		austenitic	180				
K	Grey cast iron	low tensile strength	180	755	625	560	920
		high tensile strength	250				
	Spheroidal graphite cast iron	ferritic	160	720	525	460	985
		perlitic	250				
	Malleable cast iron	ferritic	125	720	525	460	1050
		perlitic	225				
N	Al-alloys	not heat treatable	30-80	up to max.	up to max.	up to max	up to max.
		heat treatable	80-120				
	Al-cast-alloy	not heat treatable	80	1970	655	590	1970
		heat treatable	100				
	Copper-alloys	not heat treatable	90	1970	655	590	1970
		heat treatable	100				
S	Heat resistant alloy (Fe)	annealed	200	260	200	164,04	260
		hardened	275				
	Heat resistant alloy (Ni, Co)	annealed	250	150	115	100	200
		hardened	350	82	82		

M

recommeded feed rate

Shoulder milling a_e < 0.5 x Ds a_e < 0.3 x Ds		Shoulder milling a_p < 0.5 x Ds a_e < 1.0 x Ds	Groove milling a_p < 0.5 x Ds	Copy milling a_p < 0.02 x Ds
				
Ds (inch)	f_z (inch)	f_z (inch)	f_z (inch)	f_z (inch)
.394"	.0024"	.0016"	.0012"	.0051"
.472"	.0035"	.002"	.0016"	.0055"
.630"	.0039"	.0028"	.0024"	.0063"
.787"	.0047"	.0032"	.0028"	.0075"

Torque for setting

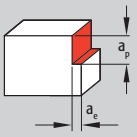
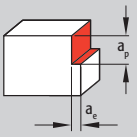
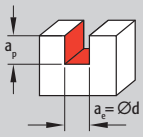
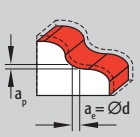
System	Torque for setting (Nm)	Wrench size **SW**	Combination wrench	Torque wrench		
				Application	Effective range	for small series
DG10	12	**8**	S.DG1012	D.DG1001	D0525VK 5 - 25 Nm	D1050VK 10 - 50 Nm
DG12	18	**10**		D.DG1201		
DG16	25	**13**	S.DG1620	D.DG1601	D20100VK 20 - 100 Nm	
DG20	50	**17**		D.DG2001		

Assembly instruction

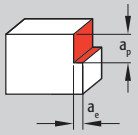
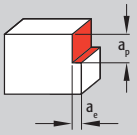
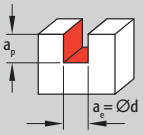
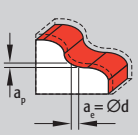
1. Remove any dirt from the interface and seating surface of the milling cutter shank and cutting insert.
2. Grip milling cutter shank in jig.
3. Apply lubricant sparingly to thread, taper and seat surface of cutting insert.
4. Insert cutting insert into shank and clamp it manually according to mark.
   Attention: risk of injury!
5. Tighten cutting insert in milling cutter shank with a torque wrench, using the recommended torque.

Note:
The use of lubricant reduces friction between cutting insert and tool holder. For optimum radial and axial run-out precision it is crucial that interfaces and seat surfaces are clean. Applying the recommended tightening torque for gripping cutting inserts guarantees the correct insert fit.

recommended cutting speeds

Material			Hardness Brinell (HB)	Shoulder milling a_p < 0.5 x Ds a_e < 0.3 x Ds 	Shoulder milling a_p < 0.5 x Ds a_e < 1.0 x Ds 	Groove milling a_p < 0.5 x Ds 	Copy milling a_p < 0.02 x Ds 
				v_c (m/min)	v_c (m/min)	v_c (m/min)	v_c (m/min)
P	Carbon steel	0.2% C	140	250	180	160	350
		0.4% C	180	220	160	140	320
		0.6% C	200	200	140	130	300
	Alloyed steel	annealed	180	200	150	130	280
		quenched	280				
	high alloyed steel(>5%)	annealed	200	140	100	90	180
		hardened	-				
	Cast steel	unalloyed	180	170	130	120	280
		alloyed	220				
M	Stainless steel	martensitic, ferritic	200	150	90	80	180
		austenitic	180				
K	Grey cast iron	low tensile strength	180	230	190	170	280
		high tensile strength	250				
	Spheroidal graphite cast iron	ferritic	160	220	160	140	300
		perlitic	250				
	Malleable cast iron	ferritic	125	220	160	140	320
		perlitic	225				
N	Al-alloys	not heat treatable	30-80	up to max.	up to max.	up to max	up to max.
		heat treatable	80-120				
	Al-cast-alloy	not heat treatable	80	600	200	180	600
		heat treatable	100				
	Copper-alloys	not heat treatable	90	600	200	180	600
		heat treatable	100				
S	Heat resistant alloy (Fe)	annealed	200	80	60	50	80
		hardened	275				
	Heat resistant alloy (Ni, Co)	annealed	250	45	35	30	60
		hardened	350	25	25		

recommeded feed rate

Shoulder milling a_e < 0.5 x Ds a_e < 0.3 x Ds		Shoulder milling a_p < 0.5 x Ds a_e < 1.0 x Ds	Groove milling a_p < 0.5 x Ds	Copy milling a_p < 0.02 x Ds
				
Ds (mm)	f_z (mm)	f_z (mm)	f_z (mm)	f_z (mm)
10	0,06	0,04	0,03	0,13
12	0,09	0,05	0,04	0,14
16	0,1	0,07	0,06	0,16
20	0,12	0,08	0,07	0,19

Torque for setting

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				Application	Effective range	for small series
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DG12	18	**10**		D.DG1201		
DG16	25	**13**	S.DG1620	D.DG1601	D20100VK 20 - 100 Nm	
DG20	50	**17**		D.DG2001		

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