



Svasatori in metallo duro  
Carbide countersinks

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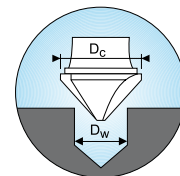
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**Velocità di taglio  $V_c$  (m/min) - velocità di avanzamento  $f$  (mm)**  
**Cutting speed  $V_c$  (m/min) - Feed rate  $f$  (mm)**

Gruppo Materiale	Denominazione Materiale	Resistenza N/mm <sup>2</sup>	$V_c$ (m/min)	$f$ (mm)	Raffreddamento
Material Group	Material Description	Strength N/mm <sup>2</sup>	$V_c$ (m/min)	$f$ (mm)	Cooling system
A 1	Leghe di alluminio fucinato <i>Wrought Aluminium alloys</i>	< 705	25 - 30	0,08 - 0,3	Emulsione <i>Emulsion</i>
	Leghe di alluminio fuse Si < 12% <i>Cast aluminium alloys</i>	< 400	30 - 35	0,1 - 0,3	Emulsione <i>Emulsion</i>
A 2	Rame - Leghe di rame <i>Copper - Copper alloys</i>	< 400	30 - 35	0,1 - 0,3	Emulsione <i>Emulsion</i>
	Rame - Leghe di rame <i>Copper - Copper alloys</i>	< 850	20 - 25	0,05 - 0,20	Emulsione <i>Emulsion</i>
A 4	Leghe di magnesio <i>Magnesium alloys</i>	< 705	25 - 30	0,05 - 0,25	A secco <i>Dry</i>
B 1	Termoplastiche - Termoidurenti <i>Thermoset - Thermoplastic</i>	< 250	30 - 35	0,08 - 0,35	A secco / con aria <i>Dry / Air</i>
B 2	Materiali non ferrosi <i>Non ferrous materials</i>	< 250	20 - 30	0,08 - 0,15	A secco / con aria <i>Dry / Air</i>
C 1	Acciai - Leghe di acciaio <i>Steel - Steel alloys</i>	< 400	20 - 25	0,1 - 0,3	Emulsione <i>Emulsion</i>
	Acciai - Leghe di acciaio <i>Steel - Steel alloys</i>	< 705	15 - 20	0,05 - 0,25	Emulsione <i>Emulsion</i>
	Acciai - Leghe di acciaio <i>Steel - Steel alloys</i>	< 1125	12 - 18	0,05 - 0,20	Emulsione <i>Emulsion</i>
	Acciai - Leghe di acciaio <i>Steel - Steel alloys</i>	< 1420	10 - 15	0,03 - 0,15	Olio <i>Oil</i>
C 2	Acciai temprati <i>Hardned steels</i>	< 56 HRC	8 - 12	0,02 - 0,01	Olio <i>Oil</i>
C 3	Acciai speciali <i>Special steels</i>	< 1420	10 - 15	0,03 - 0,15	Olio <i>Oil</i>
D 1	Acciai anticorrosione <i>Stainless steels</i>	< 850	10 - 15	0,06 - 0,25	Emulsione <i>Emulsion</i>
	Acciai resistenti agli acidi <i>Stainless steels</i>	< 1420	8 - 12		Olio <i>Oil</i>
E 1	Titanio puro <i>Pure titanium</i>	< 705	20 - 25	0,05 - 0,20	Emulsione <i>Emulsion</i>
	Leghe di titanio <i>Titanium alloys</i>	< 1125	15 - 20	0,05 - 0,20	Emulsione <i>Emulsion</i>
E 2	Leghe nichel-cobalto <i>Nickel-cobalt alloys</i>	< 705	20 - 25	0,05 - 0,20	Emulsione <i>Emulsion</i>
	Leghe nichel-cobalto <i>Nickel-cobalt alloys</i>	< 1420	8 - 12	0,03 - 0,15	Olio <i>Oil</i>
F 1	Ghisa grigia <i>Grey cast irons</i>	< 333 HB	15 - 20	0,05 - 0,3	A secco <i>Dry</i>
	Ghisa dura <i>Hard cast irons</i>	< 418 HB	8 - 12	0,03 - 0,15	A secco / MQL <i>Dry / Min.q.ty lubr.</i>
	Ghisa temperata <i>Malleable cast irons</i>	< 705	15 - 20	0,05 - 0,25	A secco <i>Dry</i>
F 2	Ghisa grafitica nodulare <i>Nodular graphite cast irons</i>	< 400	20 - 25	0,05 - 0,3	A secco / MQL <i>Dry / Min.q.ty lubr.</i>
	Ghisa grafitica nodulare <i>Nodular graphite cast irons</i>	< 1125	15 - 20	0,03 - 0,2	A secco / MQL <i>Dry / Min.q.ty lubr.</i>
	Ghisa grafitica vermicolare <i>Vermicular graphite cast irons</i>	< 333 HB	15 - 20	0,03 - 0,2	A secco / MQL <i>Dry / Min.q.ty lubr.</i>

**Svasatori - Formule di calcolo per numero giri n (min<sup>-1</sup>)**  
**Calculation formula for revolution per minute n (min<sup>-1</sup>)**

Numero di giri n (min <sup>-1</sup> ) Revolution per minute n (min <sup>-1</sup> )	Velocità di taglio V <sub>c</sub> (m/min) Cutting speed V <sub>c</sub> (m/min)
$n \text{ (min}^{-1}\text{)} = \frac{V_c \times 1000}{D_w \times 3,14}$	$V_c \text{ (m/min)} = \frac{D_w \times 3,14 \times n \text{ (min}^{-1}\text{)}}{1000}$



**Tabella del numero di giri n (min<sup>-1</sup>)**  
**Survey of revolutions per minute n (min<sup>-1</sup>)**

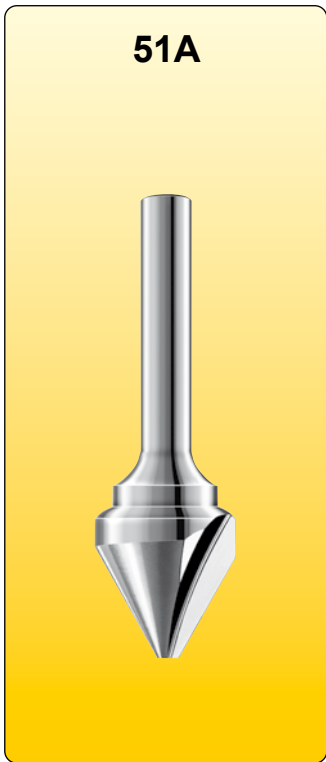
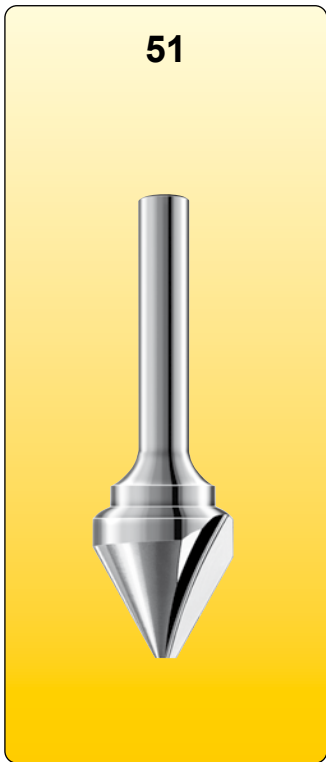
D <sub>w</sub> (mm)	V <sub>c</sub> (m/min)											
	5	8	10	12	15	18	20	25	30	35	40	50
Numero giri n (min <sup>-1</sup> ) / Revolution or minute (min <sup>-1</sup> )												
2,5	39	63	79	94	118	141	157	196	236	275	314	393
3,0	47	75	94	113	141	170	188	236	283	330	377	471
3,5	55	88	110	132	165	198	220	275	330	385	440	550
4,0	63	100	126	151	188	226	251	314	377	440	502	628
5,0	79	126	157	188	236	283	314	393	471	550	628	785
5,5	86	138	173	207	259	311	345	432	518	604	691	864
6,0	94	151	188	226	283	339	377	471	565	659	754	942
6,5	102	163	204	245	306	367	408	510	612	714	816	1021
7,0	110	176	220	264	330	396	440	550	659	769	879	1099
7,5	118	188	236	283	353	424	471	589	707	824	942	1178
8,0	126	201	251	301	377	452	502	628	754	879	1005	1256
8,5	133	214	267	320	400	480	534	667	801	934	1068	1335
9,0	141	226	283	339	424	509	565	707	848	989	1130	1413
9,5	149	239	299	358	448	538	597	747	896	1045	1194	1493
10,0	157	251	314	377	471	565	628	785	942	1099	1256	1570
11,0	173	276	345	414	518	622	691	864	1036	1209	1382	1727
12,0	188	301	377	452	565	678	754	942	1130	1319	1507	1884
13,0	204	327	408	490	612	735	816	1021	1225	1429	1633	2041
14,0	220	352	440	528	659	791	879	1099	1319	1539	1758	2198
15,0	236	377	471	565	707	848	942	1178	1413	1649	1884	2355
16,0	251	402	502	603	754	904	1005	1256	1507	1758	2010	2512
17,0	267	427	534	641	801	961	1068	1335	1601	1868	2135	2669
18,0	283	452	565	678	848	1017	1130	1413	1696	1978	2261	2826
9,0	141	226	283	339	424	509	565	707	848	989	1130	1413
20,0	314	502	628	754	942	1130	1256	1570	1884	2198	2512	3140
22,0	345	553	691	829	1036	1243	1382	1727	2072	2418	2763	3454
24,0	377	603	754	904	1130	1356	1507	1884	2261	2638	3014	3768
26,0	408	653	816	980	1225	1470	1633	2041	2449	2857	3266	4082
28,0	440	703	879	1055	1319	1583	1758	2198	2638	3077	3517	4396
30,0	471	754	942	1130	1413	1696	1884	2355	2826	3297	3768	4710
31,5	495	791	989	1187	1484	1780	1978	2473	2967	3462	3956	4946



## SPIEGAZIONE DEI PITTOGRAMMI (SIMBOLI) ICONS DESCRIPTION

Qualità metallo duro <i>Carbide grade</i>		Lavorazione di smussatura <i>Face setting application</i>	
Esecuzione utensile secondo norma interna <i>Cutting edge design acc. to internal standard</i>		Lavorazione di svasatura <i>Countersinking application</i>	
Tre taglienti a 90° <i>90° three flute</i>		Lavorazione su plurimandrini <i>Multi-spindle application</i>	
Tre taglienti a 60° <i>60° three flute</i>		Lavorazione con emulsione <i>with emulsion</i>	
Un tagliente 90° <i>90° single flute</i>		Lavorazione con aria compressa <i>with compressed air</i>	
Un tagliente 60° <i>60° single flute</i>			
Lavorazione su plurimandrini <i>Multi-spindle application</i>			
Lavorazione di smussatura <i>Face setting application</i>			
Lavorazione di svasatura <i>Countersinking application</i>			
Lavorazione di smussatura <i>Face setting application</i>			
Lavorazione di svasatura <i>Countersinking application</i>			
Lavorazione di smussatura <i>Face setting application</i>			
Lavorazione di svasatura <i>Countersinking application</i>			

**Svasatori 60° a tagliente singolo**  
**60° single flute countersink**



**Settori d'impiego / Range of application**

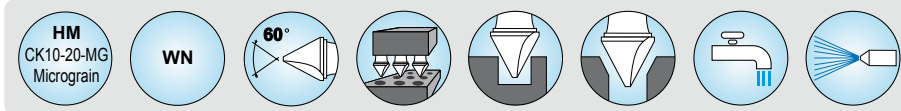
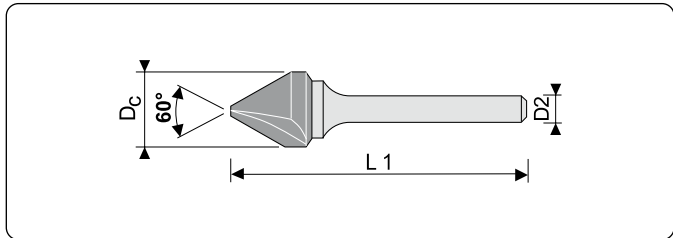
**A: Leghe Leggere / Light alloys**  
 A1.1-1.6 A2.1-2.7 A3.1-3.2 A4.1-4.2

**B: Plastiche - Plastiche rinforzate con fibre**  
 B: *Plastics - Reinforced plastic fibres*  
 B1.1-1.3 B1.5-1.6 B2.1-2.4

**Acciai / Steels**  
 C1.1-1.8 C2.1-2.3 C3.1 C4.1

**D: Acciaio inossidabile / Stainless steel**  
 D1.1-1.4

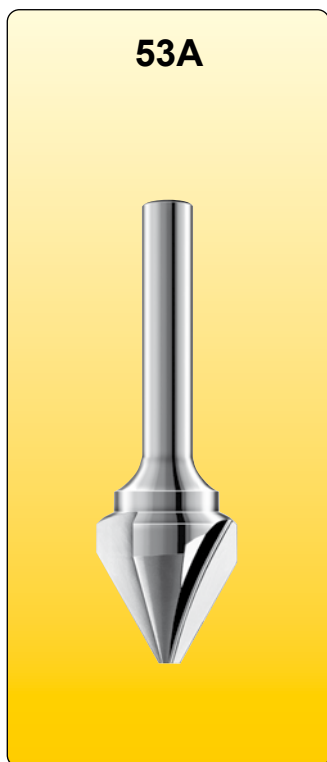
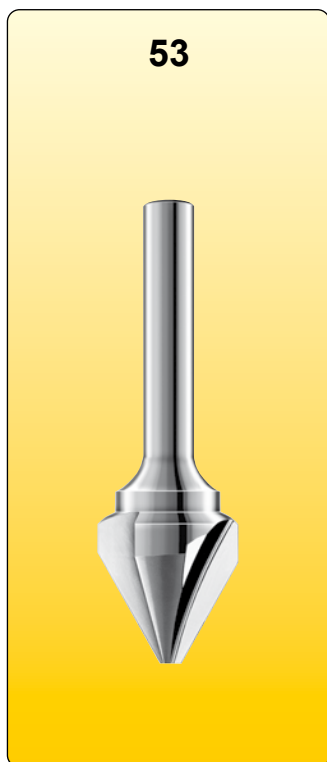
**F: Ghise / Cast irons**  
 F1.4-1.5 F2.1-2.4



**05**

D <sub>c</sub>	L <sub>1</sub>	D <sub>2</sub> h6	51	51A
				Rivestite / Coated
4,3	50	6	51.0406	51.0406A
6,3	51	6	51.0606	51.0606A
8,3	55	6	51.0806	51.0806A
10,4	56	6	51.1006	51.1006A
12,4	59	6	51.1206	51.1206A
12,4	59	8	51.1208	51.1208A
16,5	63	6	51.1606	51.1606A
16,5	63	8	51.1608	51.1608A
16,5	63	10	51.1610	51.1610A
20,5	67	6	51.2006	51.2006A
20,5	67	8	51.2008	51.2008A
20,5	67	10	51.2010	51.2010A
25,5	73	8	51.2508	51.2508A
25,5	73	10	51.2510	51.2510A
31,5	79	10	51.3110	51.3110A

## Svasatori 60° a 3 taglienti 60° three flute countersink



### Settori d'impiego / Range of application

A: Legierungen / Light alloys

A1.1-1.6 A2.1-2.7 A3.1-3.2 A4.1-4.2

B: Plastiche - Plastiche rinforzate con fibre

B: *Plastics - Reinforced plastic fibres*

B1.1-1.3 B1.5-1.6 B2.1-2.4

C: Acciai / Steels

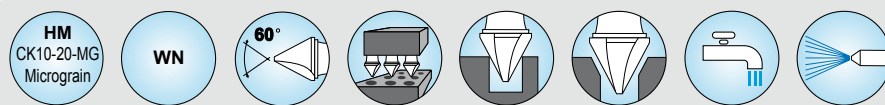
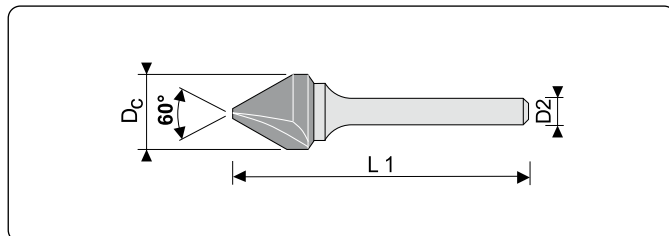
C1.1-1.8 C2.1-2.3 C3.1 C4.1

D: Acciaio inossidabile / Stainless steel

D1.1-1.4

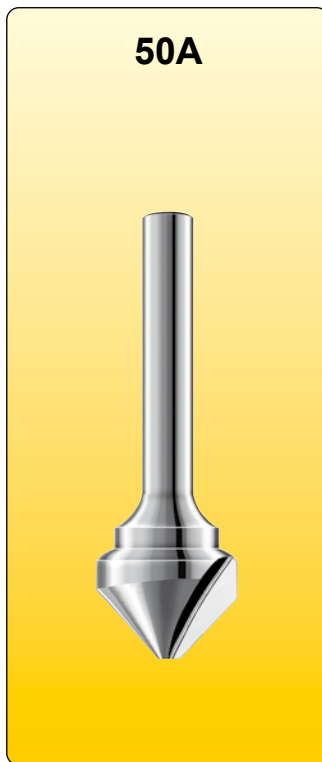
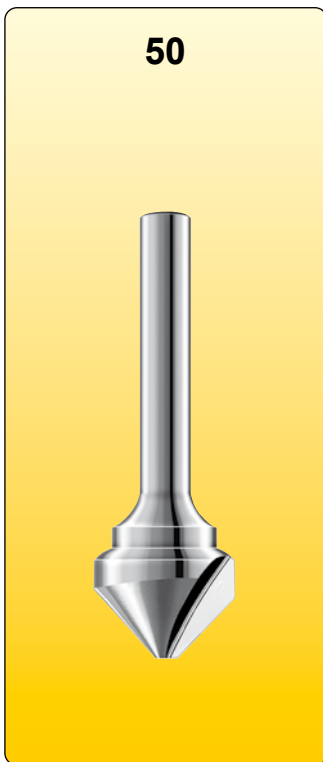
F: Ghise / Cast irons

F1.4-1.5 F2.1-2.4



D <sub>c</sub>	L1	D2 h6	53	53A
				Rivestite / Coated
4,3	50	6	53.0406	53.0406A
6,3	51	6	53.0606	53.0606A
8,3	55	6	53.0806	53.0806A
10,4	56	6	53.1006	53.1006A
12,4	59	6	53.1206	53.1206A
12,4	59	8	53.1208	53.1208A
16,5	63	6	53.1606	53.1606A
16,5	63	8	53.1608	53.1608A
16,5	63	10	53.1610	53.1610A
20,5	67	6	53.2006	53.2006A
20,5	67	8	53.2008	53.2008A
20,5	67	10	53.2010	53.2010A
25,5	73	8	53.2508	53.2508A
25,5	73	10	53.2510	53.2510A
31,5	79	10	53.3110	53.3110A

## Svasatori 90° a tagliente singolo 90° single flute countersink



### Settori d'impiego / Range of application

**A: Leghe Leggere / Light alloys**

A1.1-1.6 A2.1-2.7 A3.1-3.2 A4.1-4.2

**B: Plastiche - Plastiche rinforzate con fibre**

B: *Plastics - Reinforced plastic fibres*

B1.1-1.3 B1.5-1.6 B2.1-2.4

**C: Acciai / Steels**

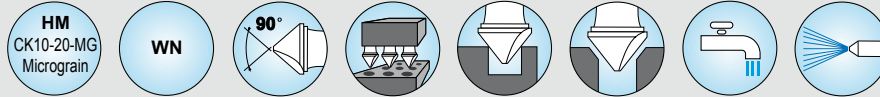
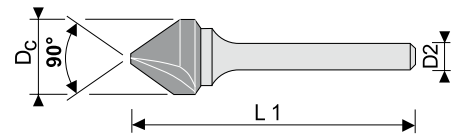
C1.1-1.8 C2.1-2.3 C3.1 C4.1

**D: Acciaio inossidabile / Stainless steel**

D1.1-1.4

**F: Ghise / Cast irons**

F1.4-1.5 F2.1-2.4



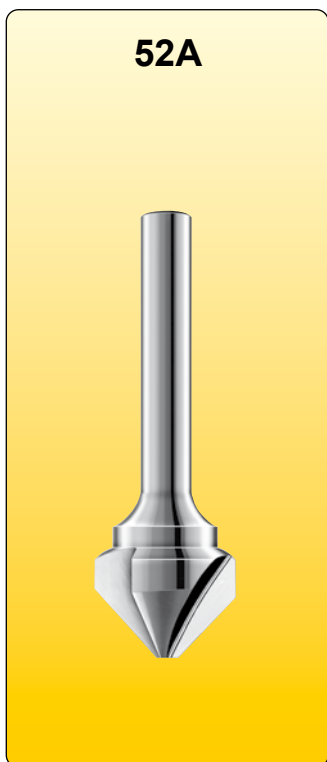
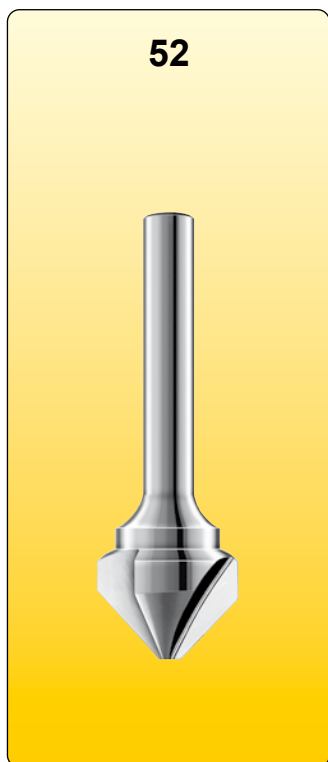
05

D <sub>c</sub>	L1	D2 h6	50	50A
				Rivestite / Coated
4,3	50	6	50.0406	50.0406A
6,3	51	6	50.0606	50.0606A
8,3	52	6	50.0806	50.0806A
10,4	53	6	50.1006	50.1006A
12,4	55	6	50.1206	50.1206A
12,4	55	8	50.1208	50.1208A
16,5	58	6	50.1606	50.1606A
16,5	58	8	50.1608	50.1608A
16,5	58	10	50.1610	50.1610A
20,5	61	6	50.2006	50.2006A
20,5	61	8	50.2008	50.2008A
20,5	61	10	50.2010	50.2010A
25,5	64	8	50.2508	50.2508A
25,5	64	10	50.2510	50.2510A
31,5	68	10	50.3110	50.3110A



# Svasatori 90° a 3 taglienti

## 90° three flute countersink



### Settori d'impiego / Range of application

**A: Leghe Leggere / Light alloys**

A1.1-1.6 A2.1-2.7 A3.1-3.2 A4.1-4.2

**B: Plastiche - Plastiche rinforzate con fibre**

B: *Plastics - Reinforced plastic fibres*

B1.1-1.3 B1.5-1.6 B2.1-2.4

**C: Acciai / Steels**

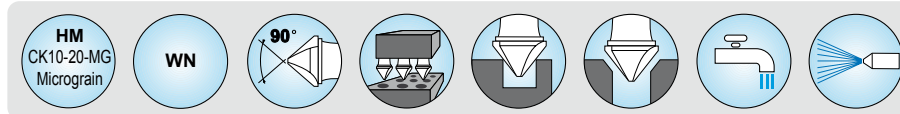
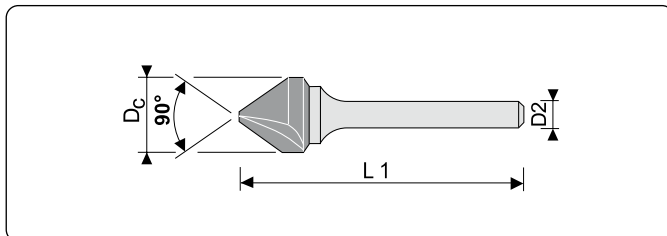
C1.1-1.8 C2.1-2.3 C3.1 C4.1

**D: Acciaio inossidabile / Stainless steel**

D1.1-1.4

**F: Ghise / Cast irons**

F1.4-1.5 F2.1-2.4



D <sub>c</sub>	L1	D2 h6	52	52A
				Rivestite / Coated
4,3	50	6	52.0406	52.0406A
6,3	51	6	52.0606	52.0606A
8,3	52	6	52.0806	52.0806A
10,4	53	6	52.1006	52.1006A
12,4	55	6	52.1206	52.1206A
12,4	55	8	52.1208	52.1208A
16,5	58	6	52.1606	52.1606A
16,5	58	8	52.1608	52.1608A
16,5	58	10	52.1610	52.1610A
20,5	61	6	52.2006	52.2006A
20,5	61	8	52.2008	52.2008A
20,5	61	10	52.2010	52.2010A
25,5	64	8	52.2508	52.2508A
25,5	64	10	52.2510	52.2510A
31,5	68	10	52.3110	52.3110A













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