

## Precision dowels

500

peg of steel, bush of brass (also individually available)

1) grooved dowel

2) threaded dowel

3) grooved dowel w/collar

4) threaded dowel w/collar

Dowel size	Inner dia.	???dia. (version 3&4)	Design/Item No.				Qty. per package
			1)	2)	3)	4)	
0	3 mm	-	500.100	-	-	-	100
1	4,5 mm	6 mm	500.110	-	500.310	500.410	100
2	6 mm	9 mm	500.120	500.220	500.320	500.420	100
3	8 mm	10 mm	500.130	500.230	-	500.430	100
4	10 mm	13 mm	500.140	500.240	500.340	-	100
5	12 mm	15 mm	500.150	-	-	500.450	100
5 A	14 mm	-	500.155	-	-	-	100
6	15 mm	-	500.160	-	-	-	100
6 A	16 mm	-	500.165	-	-	-	50
7	18 mm	22 mm	500.170	-	500.370	500.470	50
7 A	20 mm	-	500.175	-	-	-	25
8	22 mm	25 mm	500.180	-	-	-	25



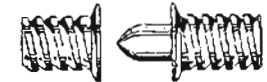
1) grooved dowel



2) threaded dowel



3) grooved dowel w/collar



4) threaded dowel w/collar

Version 2 - 4 are being phased out; available in limited quantities only!

## Pattern dowel drills (with undersize) for dowel No. 500

501

for machine: with point, pre-cutters and cylindrical shank

For dowel size	Drill dia.	Shank dia.	Total length	Item No.	
				HSS	HM
0	2,8 mm	2,8 mm	60 mm	501.200	501.300
1	4,25 mm	4,25 mm	80 mm	501.210	501.310
2	5,75 mm	5,75 mm	100 mm	501.220	501.320
3	7,5 mm	7,5 mm	110 mm	501.230	501.330
4	9,5 mm	9,5 mm	120 mm	501.240	501.340
5	11,5 mm	11,5 mm	135 mm	501.250	501.350
5 A	13,5 mm	13,0 mm	180 mm	501.255	501.355
6	14,5 mm	13,0 mm	180 mm	501.260	501.360
6 A	15,5 mm	13,0 mm	190 mm	501.285	501.365
7	17,5 mm	16,0 mm	200 mm	501.270	501.370
7 A	19,5 mm	16,0 mm	210 mm	501.275	501.375
8	21,3 mm	16,0 mm	220 mm	501.280	501.380



## Center point markers for pattern dowels No. 500

502

Item No.	502.010	502.020	502.030	502.040	502.050
for dowel no.	1	2	3	4	5

Item No.	502.055	502.060	502.065	502.070	502.075	502.080
for dowel no.	5 A	6	6 A	7	7 A	8



## Cylindrical pins, fit m 6

503

1) DIN 7, of 9 S 20 K, unhardened

Length mm	Diameter/Item No.					
	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm
10	503.310	503.410	-	-	-	-
15	503.315	-	-	-	-	-
20	503.320	503.420	503.520	503.620	503.820	-
25	-	-	503.525	503.625	-	-
30	503.330	503.430	503.530	503.630	503.830	503.103
35	503.335	-	503.535	-	-	-
40	503.340	503.440	503.540	503.640	503.840	503.104
50	-	503.450	503.550	503.650	503.850	-
60	-	-	503.560	503.660	503.860	-

Other sizes upon request!

2) DIN 6325, of alloyed special steel, hardened

Length mm	Diameter/Item No.					
	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm
10	503.310G	503.410G	-	-	-	-
15	503.315G	-	-	-	-	-
20	503.320G	503.420G	503.520G	503.620G	503.820G	-
25	-	-	503.525G	503.625G	-	-
30	503.330G	503.430G	503.530G	503.630G	503.830G	503.103G
35	503.335G	-	503.535G	-	-	-
40	503.340G	503.440G	503.540G	503.640G	503.840G	503.104G
50	-	503.450G	503.550G	503.650G	503.850G	-
60	-	-	503.560G	503.660G	503.860G	-

## Slotted pin taper pin in accordance with DIN 1471

504

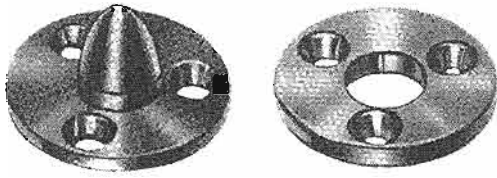


Diameter mm	1,5	2	2,5	3	4	5	6	8	10	12	13	14	16
Min. length mm	4	5	6	6	8	8	10	12	14	16	20	22	26
Max. length mm	20	30	30	40	60	60	80	100	120	120	120	120	120

Not stocked!

Minimum quantity: 500 - 1000 pieces per size

**505**



**Pattern disk-type dowels**

with counterdisks (also individually available)

Dowel size	Outside dia.	Hole dia. counter disk	Design/Item No.		Qty. per package
			brass	mild steel	
1	16 mm	5 mm	505.001	505.101	100
2	19 mm	6 mm	505.002	505.102	100
3	22 mm	7 mm	505.003	505.103	100
4	25 mm	8 mm	505.004	505.104	100
5	32 mm	12 mm	505.005	-	50
6	38 mm	14,5 mm	505.006	-	50
7	41 mm	17 mm	505.007	-	25
8	51 mm	19 mm	505.008	-	20
9	63 mm	24,5 mm	505.009	-	15

Steel dowels are being phased out; available in limited quantities only!

**506**

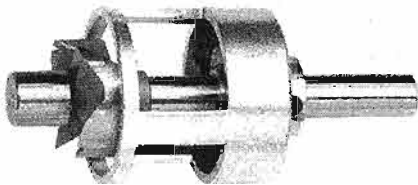


**Disk-type dowel drills**

for machine, with point, 2 broaching edges, 2 pre-cutters and straight shank

For dowel size	Drill dia.	Shank dia.	Design/Item No.		
			WS	HSS	HM
1	16 mm	13 mm	514.116	514.216	514.316
2	19 mm		514.119	514.219	514.319
3	22 mm		514.122	514.222	514.322
4	25 mm		514.125	514.225	514.325
5	32 mm	16 mm	514.132	514.232	514.332
6	38 mm		514.138	514.238	514.338
7	41 mm		514.141	514.241	514.341
8	51 mm		514.151	514.251	514.351
9	63 mm		20 mm	514.163	514.263

**507**



**ZOBO-disk-type dowel drill bits**

complete with depth setter and replaceable guide bush

For dowel size	Drill dia.	Guide pilot dia.	Shank dia.	Item No.	
				cpt. drill	spare pilot
1	16 mm	5 mm	9 mm	507.001	507.101
2	19 mm	6 mm		507.002	507.102
3	22 mm	7 mm		507.003	507.103
4	25 mm	8 mm		507.004	507.104
5	32 mm	13 mm	12 mm	507.005	507.105
6	38 mm	15 mm		507.006	507.106
7	41 mm	17 mm		507.007	507.107
8	51 mm	19 mm		507.008	507.108
9	63 mm	25 mm		507.009	507.109

**508**



Design 1)

**Guide pilot drill**

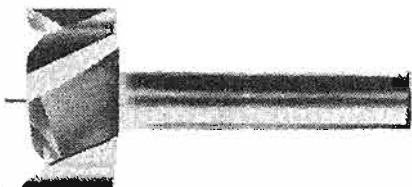
suitable for the above ZOBO-drills

Design 1) wood twist drill (for size 1 & 2)

cylindrical with center point and pre-cutters (HSS-quality)

Design 2) ZOBO-drill (for size 3 - 8)

with center point and 9 mm shank, of hardened steel



Design 2)

For dowel size	Drill dia. guide bush dia.	Item No.
1	5 mm	517.205
2	6 mm	517.206
3	7 mm	522.007
4	8 mm	522.008
5	13 mm	522.013
6	15 mm	522.015
7	17 mm	522.017
8	19 mm	522.019
9	25 mm	522.025

**509**



**Center point markers for disk-type dowels No. 505**

Item No.	509.001	509.002	509.003	509.004	509.005
for dowel size	1	2	3	4	5
Item No.	509.006	509.007	509.008	509.009	
for dowel size	6	7	8	9	

## Krauss-dowels for wood patterns

of brass, with wood thread peg and bush, also individually available

Item-No.	Size	Outside dia. mm	Peg			Bush length mm	Length of fitted dowel mm	Drill dia. mm	Package size
			Peg dia. mm	Peg length mm	Total length mm				
510.001	1	7,0	4,0	7,0	15,0	8,0	16,0	5,0	100
510.002	2	9,5	4,5	8,5	19,0	10,5	21,0	6,6	100
510.003	3	10,5	5,5	11,0	23,0	12,0	24,0	8,0	100
510.004	4	15,5	7,5	14,0	29,0	15,0	30,0	11,5	50
510.005	5	18,5	10,0	16,0	34,0	18,0	36,0	14,2	50
510.006	6	25,0	14,0	20,0	41,0	21,0	42,0	19,0	75

### Item Nos. of accessories

For dowel size	1	2	3	4	5	6
HSS-dowel twist-drill	510.101	510.102	510.103	510.104	510.105	510.106
Screw-in key	510.111	510.112	510.113	510.114	510.115	510.116



510



Drill



Screw-in key

## Krauss-dowels for metal patterns (case-hardened)

of steel, bright galvanized, for metal and plastic core boxes, with centering cone and neck.

Peg and bush are also individually available!

Item-No.	Size	Outside dia. mm	Peg			Bush length mm	Length of fitted dowel mm	Thread	Package size
			Peg dia. mm	Peg length mm	Total length mm				
511.100	0	11	5	12	27	15	30	M 8 x 0,75	100
511.105	0a	11	5	24	39	15	39	M 8 x 0,75	100
511.110	1	15	8	16	35	19	38	M 12 x 1,0	50
511.115	1a	15	8	32	51	19	51	M 12 x 1,0	50
511.120	2	21	12	20	43	23	46	M 18 x 1,5	75
511.125	2a	21	12	40	63	23	63	M 18 x 1,5	75
511.130	3	30	18	35	60	25	60	M 26 x 1,5	25
511.135	3a	30	18	76	100	25	100	M 26 x 1,5	25

### Item Nos. of accessories:

For dowel size	0 u. 0 a	1 u. 1a	2 u. 2a	3 u. 3a
Screw-in key	511.400	511.401	511.402	511.403
Reamer	511.500	511.501	511.502	511.503
SS tap drill	511.600	511.601	511.602	511.603
Countersink	511.700	511.701	511.702	511.703
Compl. set	511.800	511.801	511.802	511.803



511



Screw-in key



SS tap drill



Reamer



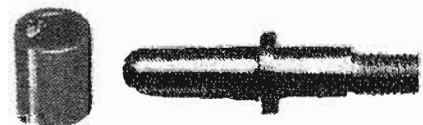
Countersink

## Core box and ingot mould dowels of steel

Pegs and bush are also individually available!

Size	Length mm		dia. mm		thread	Item No.	
	Peg	Total	Peg	Bush		hardened	unhardened
1	14	46	10	14	M 8	512.010	512.110
1a	24	56	10	14	M 8	512.015	512.115
2	19	56	12	17	M 10	512.020	512.120
2a	31	68	12	17	M 10	512.025	512.125
3	26	70	15	22	M 12	512.030	512.130
3a	40	84	15	22	M 12	512.035	512.135
4	34	87	22	28	M 20	512.040	512.140
4a	49	102	22	28	M 20	512.045	512.145

512



## Core box dowels 'Sonnenberg'-system

for round and oblong holes

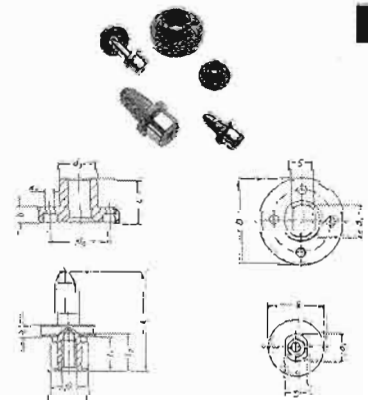
All dimensions in mm

1) Bush size					with round hole			with oblong hole		
Size	D	d <sub>1</sub>	L	b	d <sub>1</sub>	Item No.	d <sub>2</sub>	S	Item No.	
1	38	17	20	7	12	513.111	-	-	-	
2	45	26	25	8	16	513.112	20	16	513.122	
3	56	33	30	8	23	513.113	28	23	513.123	
4	78	41	40	15	30	513.114	35	30	513.124	

2) Dowel					for round hole			for oblong hole			
Size	D	d <sub>1</sub>	L	b	G	I <sub>1</sub>	d <sub>1</sub>	Item No.	d <sub>2</sub>	S	Item No.
1	25	17	45	5	M 6	15	12	513.211	-	-	-
2	34	26	60	6	M 8	19	16	513.212	18	16	513.222
3	40	33	70	8	M 10	22	23	513.213	25	23	513.223
4	51	41	90	10	M 12	28	30	513.214	32	30	513.224

Special designs available upon request!

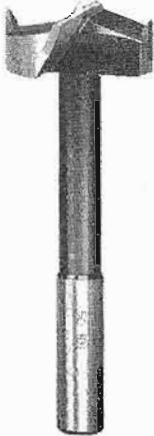
513



# 514

## Drilling bits

with straight shank, broaching edges, 2 pre-cutters and center point



Drill dia.	Shank dia.	Total length	Design/Item No.			Drill dia.	Shank dia.	Total length	Design/Item No.		
			WS	HSS	HM				WS	HSS	HM
10 mm	13 mm	120 mm	514.110	514.210	514.310	38 mm	16 mm	140 mm	514.138	514.238	514.338
12 mm			514.112	514.212	514.312	40 mm			514.140	514.240	514.340
14 mm			514.114	514.214	514.314	42 mm			514.141	514.241	514.341
15 mm		130 mm	514.115	514.215	514.315	45 mm		514.145	514.245	514.345	
16 mm			514.116	514.216	514.316	50 mm		514.150	514.250	514.350	
18 mm			514.118	514.218	514.318	51 mm		514.151	514.251	514.351	
19 mm		140 mm	514.119	514.219	514.319	55 mm		514.155	514.255	514.355	
20 mm			514.120	514.220	514.320	60 mm		514.160	514.260	514.360	
22 mm			514.122	514.222	514.322	63 mm		514.163	514.263	514.363	
24 mm			514.124	514.224	514.324	65 mm		514.165	514.265	514.365	
25 mm			514.125	514.225	514.325	70 mm		514.170	514.270	514.370	
26 mm			514.126	514.226	514.326	75 mm		514.175	514.275	514.375	
28 mm			514.128	514.228	514.328	80 mm		514.180	514.280	514.380	
30 mm			514.130	514.230	514.330	90 mm		514.190	514.290	514.390	
32 mm			514.132	514.232	514.332	100 mm		514.200	514.300	514.400	
35 mm			514.135	514.235	514.335	24 mm		160 mm			

Other dimensions upon request!

# 515

## Drill bits with exchangeable carbide tips

Three bit holder sizes fit all drill sizes (dia. 15 to 40 mm).

No resharpening - thanks to exchangeable carbide tips!

Considerable savings already with the use of two different diameters in comparison to two separate drills.

Adjustable broacher enables the drilling of intermediate sizes. Higher feeding rates on automatic boring machines and easy and accurate free-hand drilling.



### 1) Holders

Size	For dia. mm	Exch. carbide broacher	Item No.
1	15 - 22	-	515.201
2	22,5 - 31	2	515.212
3	31,5 - 40	2	515.213

Int. sizes by means of setting gauges (see 4).

### 2) Shanks

fitting all holders

Dia. mm	Total length mm	Item No.
10	90	515.221
13	140	515.222

### 3) Carbide tips

with centering tip and broachers

Dia. mm	For holder	Item No.
15	Size 1	515.015
16	Size 1	515.016
18	Size 1	515.018
19	Size 1	515.019
20	Size 1	515.020
22	Size 1	515.022
23	Size 2	515.023
24	Size 2	515.024
25	Size 2	515.025
26	Size 2	515.026
28	Size 2	515.028
30	Size 2	515.030
32	Size 3	515.032
34	Size 3	515.034
35	Size 3	515.035
36	Size 3	515.038
40	Size 3	515.040

### 4) Setting gauges for Int. sizes holder size 2 and 3

Type	Dia. increase	Item No.
01*	nominal dia.	515.261
02	+ 0,2 mm	515.262
05	+ 0,5 mm	515.263
08	+ 0,8 mm	515.264
10	+ 1,0 mm	515.265

\* included in holder size 2 and 3

### 5) Spares

Description	Size	Item No.
Exch.-tip broacher	2	515.232
Exch.-tip broacher	3	515.233
Tonx-screw M 2,5	1	515.241
Tonx-screw M4	2/3	515.242
Key	1	515.251
Key	2/3	515.252

### 6) Sets in a wooden box

Item No.	515.104	515.105
Holders	on in size 1, 2, 3	on in size 1, 2, 3
Carbide tip. dia.	15-20 25-30-35	15-16-18-20-22-23-25 26-30-34-35-40
Shanks	3 10 x 90 mm	3 10 x 90 mm

# 516

## Forstner-drills

with straight shank, center point, 2 broaching edges & peripheral cutter

in WS-quality; HSS or carbide metal-type are not available!



Drill dia.	Shank dia.	Total length	Item No.	Drill dia.	Shank dia.	Total length	Item No.	Drill dia.	Shank dia.	Total length	Item No.
10 mm	13 mm	120 mm	516.010	24 mm	13 mm	140 mm	516.024	36 mm	16 mm	140 mm	516.036
12 mm			516.012	25 mm			516.025	38 mm			516.038
14 mm			516.014	26 mm			516.026	40 mm			516.040
15 mm		130 mm	516.015	28 mm			516.028	45 mm		516.045	
16 mm			516.016	30 mm			516.030	50 mm		516.050	
18 mm			516.018	32 mm			516.032	55 mm		516.055	
20 mm		140 mm	516.020	34 mm			516.034	150 mm		516.060	
22 mm			516.022	35 mm			516.035				

Other sizes upon request!

## Wood twist drills No. 303

with stepped straight shank, pre-cutter and center point

517

Drill dia.	Total length	Item No.		Drill dia.	Total length	Item No.	
		HSS	HM			HSS	HM
3 mm	70 mm	517.203	517.303	8 mm	115 mm	517.208	517.308
4 mm	80 mm	517.204	517.304	9 mm	125 mm	517.209	517.309
5 mm	90 mm	517.205	517.305	10 mm	130 mm	517.210	517.310
6 mm	100 mm	517.206	517.306	11 mm	140 mm	517.211	517.311
7 mm	110 mm	517.207	517.307	12 mm	140 mm	517.212	517.312
				13 mm	175 mm	517.213	517.313



Other sizes upon request!

## Wood twist drills No. 304

with stepped straight shank, pre-cutter and center point

518

Drill dia.	Shank dia.	Total length	Item No.		Drill dia.	Shank dia.	Total length	Item No.	
			HSS	HM				HSS	HM
14 mm	13 mm	180 mm	518.214	518.314	25 mm	20 mm	240 mm	518.225	518.325
15 mm		185 mm	518.215	518.315	26 mm		250 mm	518.226	518.326
16 mm		190 mm	518.216	518.316	28 mm		260 mm	518.228	518.328
18 mm	16 mm	200 mm	518.218	518.318	30 mm		270 mm	518.230	518.330
20 mm		210 mm	518.220	518.320	35 mm		290 mm	518.235	518.335
22 mm		220 mm	518.222	518.322	40 mm		300 mm	518.240	518.340
24 mm		235 mm	518.224	518.324					



Other sizes upon request!

## HSS twist-drills

with cylindrical shank, for metals

Type N, right-hand drill, DIN 338, in all standardized sizes from 0,20 to 20,0 mm dia. Also available with Morse taper or with longer shank (DIN 340 and 1869).

Upon request!

519



## 90°-shell HSS-countersink (No. 06000)

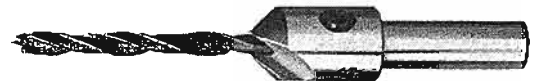
for two-cutting edges, M 5-hollow screw, 16 mm long, for Item Nos. 517+ 519.

Can be used as drill depth setter if turned 180°.

Item No.	520.003	520.004	520.005	520.006	520.007	520.008	520.010	520.012
Inside dia.	3 mm	4 mm	5 mm	6 mm	7 mm	8 mm	10 mm	12 mm
Outside dia.	16 mm	16 mm	16 mm	16 mm	16 mm	18 mm	20 mm	20 mm

Other dimensions upon request!

520



## HSS-countersink attachment (No. 06100)

for flat countersinks, with M5-hollow screw, 2 broachers and 2 pre-cutters; for Item Nos. 517 + 519.

Item No.	Inside dia.	Outside dia.	Length	Item No.	Inside dia.	Outside dia.	Length
521.151	5 mm	12 mm	22 mm	521.201	10 mm	20 mm	25 mm
521.152		15 mm	22 mm	521.202		25 mm	25 mm
521.161		15 mm	22 mm	521.203		30 mm	25 mm
521.162	6 mm	10 mm	22 mm	521.221	12 mm	25 mm	25 mm
521.163		20 mm	22 mm	521.222		30 mm	25 mm
521.181		16 mm	22 mm	521.223		35 mm	25 mm
521.182	8 mm	20 mm	22 mm				
521.183		25 mm	25 mm				



521

# 522

## ZOBO-drills with replaceable center point

Types: 1) high-alloyed chrome steel (CS), hardened  
2) carbide-tipped

dia. 7 – 100 mm, 1 mm increments!

Can be resharpened down, to 1/3 of thickness!



Drill dia.	Shank dia.	Total length	Internal thread	Center point	Item No.	
					CS	HM
7 mm	8 mm	80 mm	-	522.320	522.607	-
8 mm					522.008	-
9 mm					522.009	-
10 mm					522.010	522.210
11 mm					522.011	522.211
12 mm					522.012	522.212
13 mm					522.013	522.213
14 mm	9 mm	100 mm	M 6	522.320	522.014	522.214
15 mm					522.015	522.215
16 mm					522.016	522.216
17 mm					522.017	522.217
18 mm					522.018	522.218
19 mm					522.019	522.219
20 mm					522.020	522.220
21 mm					522.021	522.221
22 mm					522.022	522.222
23 mm					522.023	522.223
24 mm	12 mm	M 8	522.320	522.320	522.024	522.224
25 mm					522.025	522.225
26 mm					522.026	522.226
27 mm					522.027	522.227
28 mm					522.028	522.228
29 mm					522.029	522.229

Drill dia.	Shank dia.	Total length	Internal thread	Center point	Item No.	
					CS	HM
30 mm	12 mm	100 mm	M 8	522.320	522.030	522.230
31 mm					522.031	522.231
32 mm					522.032	522.232
33 mm					522.033	522.233
34 mm					522.034	522.234
35 mm					522.035	522.235
36 mm					522.036	522.236
37 mm					522.037	522.237
38 mm					522.038	522.238
39 mm					522.039	522.239
40 mm					522.040	522.240
41 mm					522.041	522.241
42 mm					522.042	522.242
44 mm					522.044	522.244
45 mm					522.045	522.245
48 mm					522.048	522.248
50 mm					522.050	522.250
51 mm	16 mm	105 mm	-	522.322	522.051	522.251
52 mm					522.052	522.252
55 mm					522.055	522.255
60 mm					522.060	522.260
63 mm					522.063	522.263
65 mm					522.065	522.265
70 mm					522.070	522.270
75 mm					522.075	522.275
80 mm					522.080	522.280
85 mm					522.085	522.285
90 mm	522.090	522.290				
95 mm	522.095	522.295				
100 mm	522.100	522.300				

Hollow shank (up to 65 mm) with internal thread for fitting extensions or reducers.

**Important: never chuck ZOBO-drills with the hollow shaft, a reducer should always be used to avoid the risk of breaking the drill.**

Diameter 66 mm and larger: holder can be screwed off and fitted with other shanks and extensions (M 12-thread).

These drills are available in 1-mm increments!

# 522A

## ZOBO-accessories

1) Reducers, recommended for chucking the drill, length 60 mm

Item No.	Reduction	Thread
522.300	9/ 8 mm	M 6
522.301	12/10 mm	M 8

2) Extensions, several extension rods can be screwed together

Item No.	Dia. x length	Thread
522.302	9 x 150 mm	M 6
522.303	12 x 150 mm	M 8
522.304	9 x 400 mm	M 6
522.305	12 x 400 mm	M 8
522.366	20 x 300 mm	M 12
	for drill dia. from 66 mm	



1)



2)



3)

3) Center points

Item No.	Dia. x length mm	For drill dia.
522.320	2/2,5 x 24,5	7 – 50 mm
522.321	2/2,5 x 30	7 – 50 mm
522.322	3/3,5 x 28	51 – 65 mm
522.325	4/4,5 x 28	66 – 75 mm
522.326	5/5,5 x 30	76 – 85 mm
522.327	6/6,5 x 32	86 – 100 mm
522.319	Set of 2 points 522.320 & 522.321	

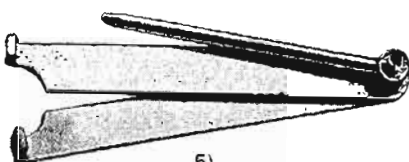
4) Depth setters, key

Item No.	Hole dia.	For drill dia.
522.305	9 mm	15 – 25 mm
522.307	12 mm	26 – 40 mm
522.308	12 mm	35 – 46 mm
522.316	16 mm	47 – 65 mm
522.317	20 mm	60 – 80 mm
522.318	20 mm	75 – 100 mm

4)

5) Tool for undoing reducers/extensions Item No. 522.332

consisting of:  
device for undoing reducer or extensions by means of a fork key and expeller for expelling exchangeable center points.

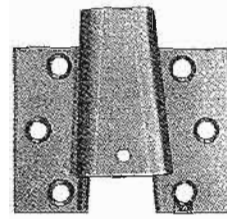


5)

## Core box fasteners, three pieces

of bright steel, punched, in boxes containing 20 sets

Length	Narrow wedge				Wide wedge		
	Item No.	inside width		Item No.	inside width		
		bottom	top		bottom	top	
40 mm	523.140	28 mm	23.5 mm	523.240	36.5 mm	34 mm	
60 mm	523.160	32 mm	25 mm	523.260	44 mm	38 mm	
90 mm	523.190	38 mm	27 mm	523.290	45.5 mm	34.5 mm	



523

## Wedges for No. 523

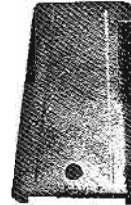
Length	Item No.	
	narrow	wide
40 mm	524.140	524.240
60 mm	524.160	524.260
90 mm	524.190	524.290

Wedge width see item 523

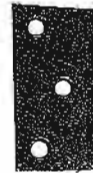
## Side plates for No. 523

Length	Item No.		
	paarweise	right	left
40 mm	525.140	525.240	525.340
60 mm	525.160	525.260	525.360
90 mm	525.190	525.290	525.390

524



525



**Chains** with lug, hook and eyebolt, for core box wedges Item No. 523 length 133 mm Item No. 526.001



526

## Core box locks, two pieces

locks with hook, primarily for core box bottoms, of galvanized sheet metal.

Item No.	Total length	Width	Package each
527.075	75 mm	18 mm	25 St.
527.077	105 mm	25 mm	25 St.
527.079	130 mm	30 mm	25 St.



527

## Core box and ingot mould locks

galvanized, complete with screw adjustment feature and fixing holes

Kind	Adjustable length	Thread	Max. width	Design	Item No.
530S-00	60 - 100 mm	M6	27 mm	punched	528.000
1042-10	100 - 125 mm	M6	34 mm	punched	528.001
420-00	200 - 225 mm	M6	65 mm	punched	528.002
101 C	72 - 78 mm	M5	35 mm	forged	528.003
102 C	100 - 115 mm	M6	50 mm	forged	528.004
103 C	120 - 140 mm	M8	70 mm	forged	528.005



1042-10  
530S-00



420-00



101-103C

528

Suitable lock hook:

### Typ C

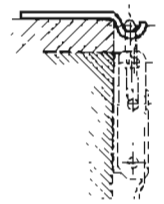
Kind	Width x length mm	Suitable for locks	Item No.
C 15-01	15 x 45	530S-00	528.100
C 18-01	18 x 45	1042-10	528.101
C 28-01	28 x 40	420-00	528.103
30 C	25/15 x 20	101 C	528.105
31 C	30/18 x 20	102 C	528.107
41 C	45/22 x 30	103 C	528.109

### Typ D

Kind	Width x length mm	Suitable for locks	Item No.
D 15-00	15 x 25	530S-00	528.100A
D 18-00	18 x 50	1042-10	528.102
D 28-01	28 x 85	420-00	528.104
50 C	15 x 53	101 C	528.106
10 C	30 x 55	102 C	528.108
20 C	40 x 70	103 C	528.110



Type C



Type D

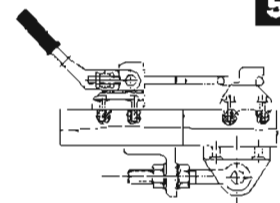
Remark: Order locks and hooks separately!

## Foam-mould locks

ready to be fitted

heavy-duty design of spheroidal graphite iron, extremely high locking force: 3800 daN, overall length appr. 500 mm, ergonomic shape, facilitates mould opening, no interference of function by foam leakages, adjustable screw-adjustment feature.

Item No.	Description
528.201	locking fixture complete with hook
528.202	hinge bearing with eye-bolt and angle
528.203	boning template for locking fixture and hinge bearing

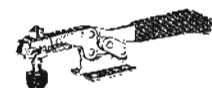


528A

## Quick locking fixture

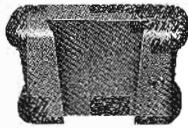
various design of locking fixtures and accessories

available upon request!



528B

529

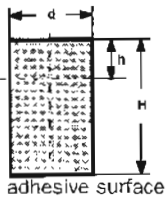
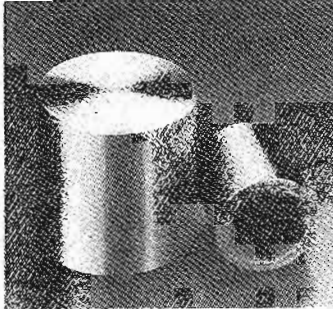


**Metal core box fasteners** of malleable iron

Item No.	Size	Total		Dovetail	
		length mm	width mm	size mm	depth mm
529 002	2	70	40	38 x 35	10

This item is being phased out; available in limited quantities only!

529A



**Holding magnets**

**I) Bar magnets, round**

useable for steel or iron

**1) Normal type with round AlNiCo-magnetic-core**

straight, with fitting tolerances; magnetic screening. Max. operation temperature 450°C.

Item No.	Dimensions mm			Weight gr.	Holding force N
	d	H	h*		
529.106	6	10	2	2	1,7
529.108	8	12	3	4	4
529.110	10	16	6	9	8,5
529.113	13	18	6	17	12
529.116	16	20	6	29	20
529.120	20	25	6	57	50
529.125	25	30	10	110	115
529.132	32	35	5	200	200
529.140	40	45	5	420	240
529.150	50	50	2	720	420
529.163	63	60	5	1340	600

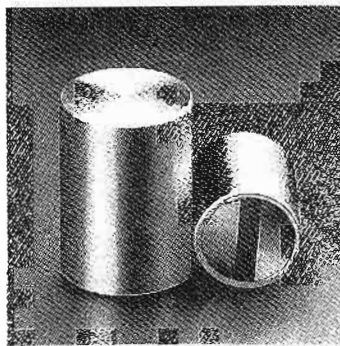
Tolerances: for d: h6; for H: ± 0,2 mm

\* Dim. h gives the length which can be reduced from the opposite side of the bar magnet's adhesive surface without affecting the adhesive power.

The adhesive surface shouldn't be shortened more than 2 mm to avoid loss of the holding force.

**2) of SmCo (SECOLIT) with a holding force which is five times stronger than the normal type.**

The magnet bars are fitted with a brass casing. Max. operation temperature 200°C.



Item No.	Dimensions mm			Weight gr.	Holding force N	Distance to iron mm**
	d	H	h*			
529.206	6	20	10	4	6	1,5
529.208	8	20	10	8	10	1,5
529.210	10	20	8	12	40	2
529.213	13	20	6	20	60	2,5
529.216	16	20	2	32	125	3
529.220	20	25	5	60	250	4
529.225	25	35	7	140	400	5
529.232	32	35	5	265	600	6

Tolerances: for d: h9; for H: ± 0,2 mm

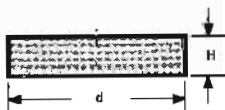
\* Dim. h gives the length which can be reduced from the opposite side of the bar magnet's adhesive surface without affecting the adhesive power.

\*\* These distances are valid for the casing and the reverse in case dim. h is cut from the bar magnet, but not for the magnetic base.

**Mounting devices:**

To avoid magnetic short circuits it is very important to maintain the above mentioned determined distances between the coat of the magnet and a iron surrounding.

**II) Flat magnets, without thread liner**



Item No.	Dimensions mm		Weight gr.	Holding force N
	d	H		
529.310	10	4,5	3	5
529.313	13	4,5	5	12
529.316	16	4,5	6	30
529.320	20	6	10	40
529.325	25	7	17	49
529.332	32	7	28	90
529.340	40	8	52	130
529.350	50	10	100	220
529.363	63	14	220	300
529.380	80	18	460	550

Flat magnets with thread liner on special demand.



## Threaded rod, DIN 975, galvanized

for screwing core boxes together, length 1000 mm (other lengths upon request)

Item No.	530.005	530.006	530.008	530.010	530.012	530.016	530.020
Thread	M 5	M 6	M 8	M 10	M 12	M 16	M 20



530

## Washers for No. 530, in acc. with DIN 126, galvanized

Item No.	530.105	530.106	530.108	530.110	530.112	530.116	530.120
For thread	M 5	M 6	M 8	M 10	M 12	M 16	M 20
Hole dia.	6,5 mm	6,6 mm	9,0 mm	11,0 mm	14,0 mm	18,0 mm	22,0 mm
Outside dia.	10,0 mm	12,5 mm	17,0 mm	21,0 mm	24,0 mm	28,0 mm	34,0 mm



530A

## Wing nuts for No. 530, similar to DIN 315, galvanized

Item No.	530.205	530.206	530.208	530.210	530.212	530.216	530.220
For thread	M 5	M 6	M 8	M 10	M 12	M 16	M 20
Length	26 mm	33 mm	39 mm	51 mm	65 mm	73 mm	90 mm



530B

## Guide bushes for mould plates

of die cast aluminium, fit H 7

top diameter 65 mm, bottom diameter 38 mm, with three countersunk holes (diameter 5 mm)

Item No.	199.016	199.017	199.018	199.019	199.020	199.021
Center hole	16 mm	17 mm	18 mm	19 mm	20 mm	21 mm
Item No.	199.022	199.023	199.024	199.025	199.026	199.028
Center hole	22 mm	23 mm	24 mm	25 mm	26 mm	30 mm

Upon request also turned bushes available.



531

## Cylindrical boring kits for Item No. 531

38 mm dia., shank 16 x 50 mm, 140 mm long

Design	HSS	HM
Item No.	514.238	514.338



531A

## Cylindrical boring bits Item No. 199.101 (for Item No. 531)

carbide tipped, dia. 65 mm, with MK 3, however 115 mm long, total length 165 mm, with exchangeable pilot 38 x 21 mm, with collar 22 x 4 mm and SW 32 x 9 mm, with thread M 16 x 1,5 x 15 mm.

At extra price also available in CNC-design! (Item No. 199.102)



531B

## Drilling template

- collar drilling template acc. to DIN 172
- cyl. drilling template acc. to DIN 179

Drill dia.	Outside dia.	Collar dia.	Length	Item No.	
				DIN 172	DIN 179
4 mm	7 mm	10 mm	8 mm	532.104	532.204
5 mm	8 mm	11 mm	8 mm	532.105	532.205
6 mm	10 mm	13 mm	10 mm	532.106	532.206
8 mm	12 mm	15 mm	10 mm	532.108	532.208
10 mm	15 mm	18 mm	12 mm	532.110	532.210
12 mm	18 mm	22 mm	12 mm	532.112	532.212
14 mm	22 mm	26 mm	16 mm	532.114	532.214
15 mm	22 mm	26 mm	16 mm	532.115	532.215
16 mm	26 mm	30 mm	16 mm	532.116	532.216
18 mm	26 mm	30 mm	16 mm	532.118	532.218
20 mm	30 mm	34 mm	20 mm	532.120	532.220
22 mm	30 mm	34 mm	20 mm	532.122	532.222
24 mm	35 mm	39 mm	20 mm	532.124	532.224



1) DIN 172



2) DIN 179

Other sizes and designs upon request!

532

## Pullers of flat steel

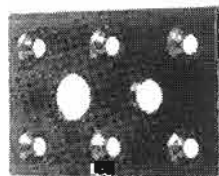
Item No.	533.100	533.120	533.150	533.200	533.250	533.300	533.400	533.500
Length	100 mm	120 mm	150 mm	200 mm	250 mm	300 mm	400 mm	500 mm
Screw holes	4 à 6 mm			5 à 6 mm		7 à 6 mm		8 à 6 mm
Cross section	40 x 5 mm			50 x 5 mm				
Leg	16 mm			24 mm				
Eye	round hole dia. 25 mm			long hole 50 x 25 mm				



533

## Lifting plates, rectangular, of forged iron

Item No.	534.002	534.003	534.004	534.005	534.006
Length x width	50 x 25 mm	60 x 40 mm	75 x 50 mm	100 x 70 mm	120 x 100 mm
Thickness	4 mm	5 mm	6 mm	8 mm	8 mm
Thread	M 8	M 10	M 12	M 12	M 12
Detaching hole dia.	12 mm	16 mm	20 mm	20 mm	26 mm
Screw holes	4 à 5 mm	6 à 6 mm	6 à 6,5 mm	6 à 7,5 mm	6 à 8,5 mm

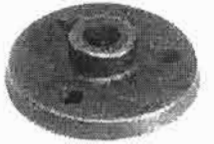


534

**535****Lifting disks, of forged iron**

Item No.	535.001	535.002	535.003	535.004	535.005	535.006	535.008	535.009	535.010	535.011
Dia. x thickness	30 x 4 mm	35 x 4 mm	40 x 5 mm	50 x 6 mm	50 x 6 mm	50 x 8 mm	60 x 8 mm	60 x 8 mm	80 x 10 mm	80 x 10 mm
Thread	M 8	M 8	M 8	M 10	M 12	M 16	M 16	M 20	M 16	M 20
Detaching hole dia.				1 x 8,5 mm						
Screw holes	2 x 4 mm	2 x 4 mm	3 x 5,5 mm	3 x 5,5 mm	3 x 6 mm	3 x 6 mm	3 x 6 mm	3 x 6 mm	3 x 6 mm	3 x 6 mm

Other sizes, thicknesses and designs upon request!

**536****Lifting disks, of malleable cast iron**

with countersunk threaded screw hole and threaded stud

Item No.	Dia. x thickness	Thread	Thread length	Screw holes
536.050	50 x 6 mm	M 12	15 mm	3 x 6 mm
536.075	75 x 9 mm	M 16	24 mm	3 x 6 mm

**537****Lifting key, of forged iron, 200 mm long**

for lifting plates and disks No. 534 to 536

Item No.	537.008	537.010	537.012	537.016	537.020
Thread	M 8	M 10	M 12	M 16	M 20

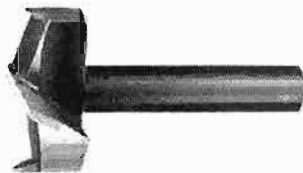
**538****Reinforcing disks, round**

of forged iron

for moulding plates and core boxes with countersunk holes

Item No.	538.001	538.002	538.003	538.004	538.005
Dia. x thickness	30 x 5 mm	32 x 5 mm	50 x 5 mm	50 x 8 mm	60 x 6 mm
Center hole				20 mm	20 mm
Screw holes	1 x 6 mm	1 x 6 mm	1 x 6 mm	3 x 6 mm	3 x 6 mm

Other sizes and designs also available; please specify quantity.

**538A****Boring bits**

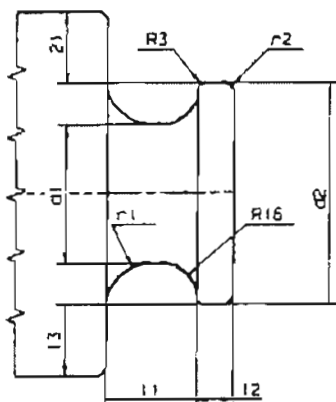
for lifting and reinforcing disks

with straight shank, centering tip, 2 broachers and 2 pre-cutters

Drill dia.	Shank dia.	Item No.		
		WS	HSS	HM
30 mm	13 mm	514.150	514.230	514.330
32 mm		514.132	514.232	514.332
35 mm		514.135	514.235	514.335
40 mm	16 mm	514.140	514.240	514.340
50 mm		514.150	514.250	514.350
60 mm		514.160	514.260	514.360
75 mm	20 mm	514.175	514.275	514.375
80 mm		514.180	514.280	514.380

**539****Pivot for moulding plates and core boxes**

Item No.	Material	Total length	Total width	Max. depth	Pivot dia.	Weight
539.001	GGG-40	180 mm	40 mm	80 mm	28 mm	1 kg
539.050	GGG-50	200 mm	100 mm	115 mm	50 mm	4 kg

**539A****Lifting lugs of PORESTA-styrene**

for cast iron and steel as well as spheroidal graphite iron castings

The pivots are dimensioned so that - with the help of a minimum of two pivots castings weighing up to 20.000 kg can be lifted (max. straddle angle at hook 90 degrees).

Item No.	d1	d2	i1	i2	i3	r1	r2
539.104	40	70	36	13	32	20	5
539.105	50	80	36	13	32	20	
539.106	63	100	40	16	32	20	
539.108	80	140	50	20	40	32	10
539.110	100	160	56	25	40	32	
539.112	125	185	63	25	63	32	
539.114	140	200	71	30	63	40	

## Recco-bushes

of steel, specially designed for mould plates, core boxes etc., also for embedding in resin patterns, with collar and taper wood thread, bush can be flush fitted thanks to the hexagonal recess.

Can also be used as lifting bush.

**Galvanized bushes** are also available at extra charge. Matching wood drills see Item Nos. 517 - 518.

Item No.	540.040	540.041	540.042	540.043	540.044	540.051	540.052	540.053
Internal thread	M 4			M 5				
Collar dia.	6,5 mm	8 mm			10 mm			
Total length	8 mm	8 mm	10 mm	12 mm	15 mm	10 mm	12 mm	15 mm
Drill dia.	5 mm	6,5 mm			8,5 mm			

Item No.	540.061	540.062	540.063	540.064	540.065	540.081	540.082
Internal thread	M 6			M 8			
Collar dia.	12 mm			14 mm			
Total length	10 mm	12 mm	15 mm	18 mm	20 mm	15 mm	18 mm
Drill dia.	10,5 mm	10 mm			12 mm		

Item No.	540.083	540.084	540.085	540.101	540.102	540.121	540.161	540.162
Internal thread	M 8			M 10		M 12	M 16	
Collar dia.	16 mm			18,5 mm		22 mm	25 mm	
Total length	14 mm	18 mm	23 mm	20 mm	25 mm	25 mm	25 mm	30 mm
Drill dia.	14 mm			16 mm		19,5 mm	22,5 mm	



## RAMPA-bushes

1) **Type A:** external wood thread, with slot and recess for shavings  
Made of steel, bright; at extra charge also galvanized

Item No.	541.412	541.520	541.630	541.830	541.140	541.235	541.653	541.930	541.940
Internal thread	M 4	M 5	M 6	M 8	M 10	M 12	M 16	M 20	M 20
Outside dia.	8 mm	10 mm	12 mm	16 mm	18,5 mm	22 mm	25 mm	30 mm	30 mm
Length	12 mm	20 mm	30 mm	30 mm	40 mm	35 mm	35 mm	30 mm	40 mm

Other sizes upon request.

2) **Type ES:** with metric external thread; a wide slot at the conical end enables firm cutting into hardwood, resin or metal; made of steel, bright; at extra charge also of hardened steel and galvanized.

Item No.	541.306	541.408	541.508	541.510	541.608	541.610	541.612	541.614
Internal thread	M 3	M 4	M 5			M 6		
External thread	M 5 x 0,5	M 6,5 x 0,75	M 8 x 1			M 9 x 1		
Length	6 mm	8 mm	8 mm	10 mm	8 mm	10 mm	12 mm	14 mm

Item No.	541.812	541.815	541.916	541.918	541.928	541.922	541.924	541.925	
Internal thread	M 8		M 10			M 10	M 12	M 14	M 16
External thread	M 12 x 1,5		M 14 x 1,5			M 16 x 1,5	M 16 x 1,5	M 18 x 1,5	M 20 x 1,5
Length	12 mm	15 mm	15 mm	18 mm	18 mm	22 mm	24 mm	25 mm	

Min. quantity: up to M 10 int. thread = 100 p., M 12 and larger = 50 p.  
Other types of RAMPA-bushes upon request.



Type A

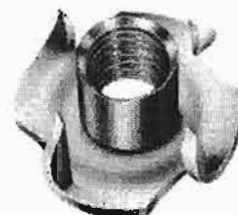


Type ES

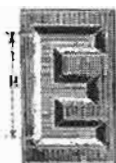
## Nuts with 4 points, galvanized

These nuts are driven in with a hammer

Item No.	542.004	542.005	542.006	542.008	542.010	542.012
Thread	M 4	M 5	M 6	M 8	M 10	M 12
Height	6 mm	8 mm	9 mm	11 mm	13 mm	14,5 mm
Max. dia.	15 mm	17 mm	19 mm	22 mm	25 mm	27 mm



## Important notice with regard to Pattern Signs:



- 1) Height of the pattern sign is always measured at the outer edges (see illustration), i.e. at the narrowest width.
- 2) Each package of pattern signs contains **100 pieces of each type**. Smaller quantities or text compositions can be supplied at extra charge (see price-list).
- 3) **No return of text compositions** supplied in accordance with the order or smaller quantities.

**543**



### Pattern signs of blue plastic

without holes, suitable for gluing to the patterns

- 1) **block letters**  
A-Z, 0-9, a-z, &, point, comma, +
- 2) **mirror image letters**  
A-Z, 0-9 only

Height	4 mm	5 mm	6 mm	8 mm	10 mm	13 mm	16 mm	20 mm	25 mm	32 mm	40 mm
Type	Item No.										
Block	543.104	543.105	543.106	543.108	543.110	543.113	543.116	543.120	543.125	543.132	543.140
Mir. image	543.204	543.205	543.206	543.208	543.210	543.213	543.216	543.220	543.225	543.232	543.240

**543A**



### Pattern signs of black plastic

(the right-price alternative)

- 1) **block letters**  
A-Z, 0-9, a-z, &, point, comma, +
- 2) **mirror image letters**  
A-Z, 0-9 only

Height	4 mm	5 mm	6 mm	8 mm	10 mm	13 mm	16 mm	20 mm	25 mm	32 mm	40 mm
Type	Item No.										
Block	543.304	543.305	543.306	543.308	543.310	543.313	543.316	543.320	543.325	543.332	543.340
Mir. image	543.404	543.405	543.406	543.408	543.410	543.413	543.416	543.420	543.425	543.432	543.440

**543B**



### Center signs of blue plastic, half-round

Height	20 mm	30 mm
Item No.	543.620	543.630

**544**



### Special adhesives for pattern signs

for pattern signs Item Nos. 543 - 543B  
1-component adhesive

Type	Viscosity	Bottle size	Item No.
HC 1	thin	25 gr	937.125
		50 gr	937.150
HC 2	viscous	25 gr	937.225
		50 gr	937.250

**545**



### Pattern signs of red plastic

with holes, suitable for nailing to the patterns  
**block letters** A-Z, 0-9, point, comma, +, &

Height	13 mm	16 mm	20 mm	25 mm	32 mm	40 mm	50 mm
Item No.	545.113	545.116	545.120	545.125	545.132	545.140	545.150

Remark: Fastening nails see Item No. 563

**546**



### Pattern signs of yellow plastic

flexible, size 8 mm and up with holes, suitable for nailing  
**block letters** A-Z, 0-9, point, comma, +, &

Height	6 mm	8 mm	10 mm	13 mm	16 mm	20 mm	25 mm	32 mm	40 mm
Item No.	546.106	546.108	546.110	546.113	546.116	546.120	546.125	546.132	546.140

Remark: Fastening nails see Item No. 563

**547**



### Pattern signs, self-adhesive

of yellow plastic, flexible, size 8 and up with holes  
**block letters** A-Z, 0-9

Height	6 mm	8 mm	10 mm	13 mm	16 mm	20 mm	25 mm	32 mm	40 mm
Item No.	547.106	547.108	547.110	547.113	547.116	547.120	547.125	547.132	547.140

Remark: Other self-adhesive pattern signs are available upon request!

**547A**



### Pattern signs - special letters

f. ex. roman, gothic etc. of bronze or aluminium upon request.

## Pattern signs of babbit-metal

548

- 1) block letters, with holes  
A-Z, 0-9, a-z, &, point
- 2) narrow block letters, without holes  
A-Z, 0-9, &
- 3) mirror image letters with holes  
A-Z, 0-9, &
- 4) acute taper block letters, size 8 mm and up with holes  
A-Z, 0-9, &  
minuscules a-z of size 4, 5 and 6 mm
- 5) narrow, acute taper block letters, without holes  
A-Z, 0-9, &
- 6) half round block letters,  
up to size 20 mm without holes, size 25 mm and up  
A-Z, 0-9

Height mm	Design/Item No.					
	1)	2)	3)	4)	5)	6)
3	-	-	-	548.403	-	-
4	-	-	-	548.404	-	-
5	-	-	-	548.405	548.505	-
6	548.106	-	548.306	548.406	548.506	-
8	548.108	548.208	548.308	548.408	548.508	-
10	548.110	548.210	548.310	548.410	548.510	548.610
13	548.113	548.213	548.313	548.413	-	548.613
16	548.116	548.216	548.316	548.416	-	548.616
18	548.118	-	548.318	-	-	-
20	548.120	548.220	548.320	548.420	-	548.620
25	548.125	548.225	548.325	-	-	548.625
32	548.132	-	548.332	-	-	-
40	548.140	-	548.340	-	-	-
50	548.150	-	-	-	-	548.650
60	548.160	-	-	-	-	-
80	548.180	-	-	-	-	-
100	548.200	-	-	-	-	548.700



Design 1)



Design 4)



Design 2)



Design 5)



Design 3)



Design 6)

Remark: for suitable nails for the above pattern signs see Item No. 563

## Pattern signs with cramps

of brass, block letters A-Z, 0-9, &

Height	4 mm	6 mm	8 mm	10 mm	13 mm	16 mm	20 mm	25 mm
Item No.	549.104	549.106	549.108	549.110	549.113	549.116	549.120	549.125



549

## Pattern signs with base, block letters

1) of brass

Height	Capitals A-Z, 0-9, &, point		Minuscules a-z		Mirror image letters A-Z (only 16 a, 18 mm), 0-9	
	without holes	with holes*	without holes	with holes*	without holes	with holes*
5	-	-	-	-	550.505	550.605
6	550.106	550.206	550.306	550.406	-	-
8	550.108	550.208	550.308	550.408	-	-
10	550.110	550.210	550.310	550.410	550.510	550.610
13	550.113	550.213	550.313	550.413	-	-
16	550.116	550.216	550.316	550.416	550.516	550.616
18	550.118	550.218	-	-	550.518	550.618
20	550.120	550.220	550.320	550.420	-	-
25	550.125	550.225	-	-	-	-

\*holes: 2 holes 5 - 18 mm; 4 holes 20 - 25 mm

2) of steel, without holes, magnetic:

Height	6 mm	8 mm	10 mm	13 mm	16 mm	18 mm	20 mm
Item No.	550.806	550.808	550.810	550.813	550.816	550.818	550.820



550

## Roman numerals I - V

with base, of brass, without holes

Height	4 mm	6 mm	8 mm	10 mm	13 mm	16 mm
Item No.	550.704	550.706	550.708	550.710	550.713	550.716



550A

## Symbols for earth and conductive conductor

1) Symbol for earth  
of brass sheet metal, without holes

2) symbol for cond. conductor  
of blue plastic, without holes

Nom. size	6 mm	8 mm	10 mm	12 mm	16 mm	20 mm	25 mm	32 mm
Outside dia.	8 mm	10 mm	12 mm	16 mm	20 mm	25 mm	32 mm	40 mm
Design	Item No.							
Brass	551.106	551.108	551.110	551.112	551.116	551.120	551.125	551.132
Plastic	551.206	551.208	551.210	551.212	-	-	-	-



551

## 552

S

Type 1)

O

Type 3)

Я

Type 2)

B

Type 4)

## Pattern signs of solid brass

without holes, copy milled, A-Z, 0-9

- 1) block letters
- 2) mirror image block letters

- 3) acute taper block letters
- 4) roman type

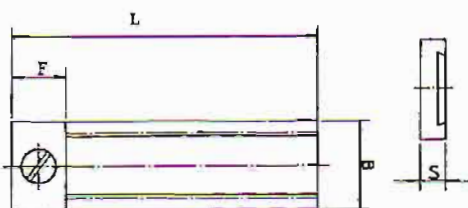
Height mm	Type/Item No.			
	1)	2)	3)	4)
4	-	-	552.304	-
5	552.105	552.205	552.305	-
6	552.106	552.206	552.306	-
8	552.108	552.208	552.308	-
9	552.109	552.209	552.309	-
10	552.110	552.210	552.310	552.410
11	552.111	552.211	552.311	-

Height mm	Type/Item No.			
	1)	2)	3)	4)
13	552.113	552.213	552.313	552.413
16	552.116	552.216	552.316	552.416
18	552.118	552.218	-	-
20	552.120	552.220	-	552.420
25	552.125	552.225	-	552.425
30	552.130	552.230	-	552.430
40	552.140	552.240	-	-

## 553

### Date plates, showing the casting date

- I) Slide-in frame of brass, with dovetail groove and screw, 5 mm thick



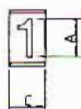
Letter size A mm	4	6	8	10	13	20
Frame width B mm	10	15	20	20	25	30
suitable	Length L mm					
for 4 letters/figures	26	34	42	48	58	92
Item No.	553.041	553.061	553.081	553.101	553.131	553.191
for 5 letters/figures	30	40	50	57,7	69,5	110
Item No.	553.042	553.062	553.082	553.102	553.132	553.192
for 6 letters/figures	34	46	58	67	81	128
Item No.	553.043	553.063	553.083	553.103	553.133	553.193
for 7 letters/figures	38	52	66	76,5	92,5	146
Item No.	553.044	553.064	553.084	553.104	553.134	553.194
for 8 letters/figures	42	58	74	86	104	164
Item No.	553.045	553.065	553.085	553.105	553.135	553.195
for 10 letters/figures	50	70	90	105	127	200
Item No.	553.046	553.066	553.086	553.106	553.136	553.196
Platelet complete with screw						
Width F mm	10	10	10	10	12	20
Item No.	553.048	553.068	553.088	553.108	553.138	553.197

Other sizes upon request.

- II) Letters & figures: 0-9, A-Z, point, double point, blank, slash, hyphen (other characters upon request)

- 1) cast of babbitt metal, raised characters
- 2) milled of brass, sunk characters
- 3) milled of brass, raised characters

- available:
- a) block letters
  - b) mirror image letters



Letter height A mm	4	6	8	10	13	20
Design	Item No.					
1a) babbitt metal, raised	553.204	553.206	553.208	553.210	553.213	553.220
1b) babbitt metal, raised	553.224	553.226	553.228	553.230	553.233	553.240
2a) brass, sunk	553.304	553.306	553.308	553.310	553.313	553.320
2b) brass, sunk	553.324	553.326	553.328	553.330	553.333	553.340
3a) brass, raised	553.344	553.346	553.348	553.350	553.353	553.360
3b) brass, raised	553.364	553.366	553.368	553.370	553.373	553.380
plate width C mm	4	6	8	9,5	11,5	18
plate thickness mm	1,5	2	2	2	2	2
height of babbitt metal mm	1,0	1,0	1,2	1,4	1,8	2,0
raised char.: brass mm	1,0	1,0	1,0	1,0	1,0	1,0
depth of characters: brass mm	0,9	1,0	1,2	1,2	1,2	1,3

## 554



### Pattern clocks of blue plastic

showing the casting date on wood and artificial resin patterns. Fix clock by means of a screw and set month so that the year marker points to the appropriate month.

Item No.	554.001	Clock, dia. 20 mm
Item No.	554.002	year arrow 8 mm

## 555



### Ingot mould clocks of steel

showing the casting date on ingot moulds. Fix clock to ingot mould and set to the appropriate month.

Item No.	555.001	clock, dia. 20 mm
Item No.	555.002	year insert 8 mm

Other sizes and designs upon request!

## 556



### Logos

Can be supplied in any design in accordance with sample or drawing:

- 1) of plastic, also self-adhesive
  - 2) of babbitt metal, cast
  - 3) as slide-in characters for date plates
  - 4) of brass sheet metal, with base (with or without holes)
  - 5) of brass sheet metal with pins
  - 6) of plywood (for individual logos)
- Upon request!

## Company's logos 'Mercedes-Star'

of blue plastic, to be glued to the mould

557

Item No.	Star without base	Star with round base
Size mm	31	dia. 5, 6, 8, 10, 12, 15, 20



## Company's logos 'Opel'

of blue plastic, to be glued to the mould

558

Item No.	Flash	Flash-K	Flash-W	Flash-S-15	Flash-S-16
Size mm	9 Ø	10, 13	13	13, 16, 25, 32, 40	13, 16, 25, 32



## Company's logos 'VW-Audi'

of blue plastic, to be glued to the mould, with raised or sunk characters

559

Nom. size = dia. of VW-logo	mm	4	5	6	8	10	12	16
Dia. of Audi-rings (dazu passend)	mm	2,7	3,35	4	5,35	6,7	8	10,7



## Company's logos 'Ford, Porsche, BMW'

of blue plastic, to be glued to the mould

559A

Type	Ford-oval	Porsche-triangle	BMW-circle
Nom. size	13, 19, 25, 38 mm length	8, 10, 16 mm edge length	8 mm dia.



## Material quality plates

of blue plastic, to be glued to the mould, with rectangular base

560

Item No.	0.2091	0.2601	0.6015	0.6020	0.6025	0.6025C	0.6025CM	
Size mm	16, 25	13, 16, 25	13	13, 20, 25, 32, 40	13, 16, 20, 25, 32, 40	13, 20	20	
Item No.	0.7038	0.7040	0.7042	0.7045	0.7050	0.7060	0.7070	
Size mm	20, 25	13	13, 20, 25, 40	13, 16, 20, 32	16, 20, 25, 40	13, 20, 25, 40	25	
Item No.	1.0416	1.0443	1.0553	1.2363	1.2379	1.2601	1.2769	1.2769P
Size mm	13, 20	13, 16, 20	13, 20	10, 13, 16, 20, 25	13, 16, 25	13, 16, 20	10, 13, 16, 20, 25	20
Item No.	1.6020	1.6025C	1.7050	1.7225	CrMo	DN	PN	CrNiMo
Size mm	20	20	13	20	13, 16, 20, 25, 40	4, 5, 10, 13	4, 5, 10, 13	10

Other characters and sizes upon request!



## Special signs for cast quality

of blue plastic, to be glued to the mould

561

Item No.	GG or GGG	GGL	GG 20, GG 25 or GG 30	GGG 40, GGG 50 or GGG 60	GGG 70
Size mm	4, 5, 10, 13, 16	10	6, 8, 10, 13, 16, 20, 25	4, 6, 8, 10, 13, 16, 20, 25	6, 10, 16

Also in accordance with new EC-standards!

Sign type	Meehanite cast iron	Meehanite sph. graph. iron	Vacuum cast iron
Character size mm	8, 10, 13, 15, 17, 20, 22, 26, 30, 34	10, 15, 20, 25, 30	20, 25, 30

Other characters and sizes upon request!



## Pattern arrows

1) of babbitt metal, with two holes, for nailing to patterns

2) of blue plastic, without holes, to be glued to patterns

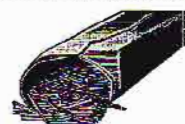
562

Length	6 mm	8 mm	10 mm	12 mm	15 mm	20 mm	25 mm	30 mm	35 mm
Design	Item No.								
Babbitt metal	562.006	562.008	562.010	562.012	562.015	562.020	562.025	562.030	562.035
Plastic	562.206	562.208	562.210	562.212	562.215	562.220	562.225	562.230	562.235
Length	40 mm	45 mm	50 mm	60 mm	70 mm	80 mm	90 mm	100 mm	130 mm
Design	Item No.								
Babbitt metal	562.040	562.045	562.050	562.060	562.070	562.080	562.090	562.100	562.130
Plastic	562.240	562.245	562.250	562.260	-	562.280	-	562.300	562.330



## Nails for pattern signs, min. qty.: 100 grammes

Item No.	862.011	862.021	862.022	862.031	862.041	862.051
Thickn./length	0,6/7 mm	0,7/7 mm	0,7/9 mm	0,8/11 mm	0,9/13 mm	1,0/15 mm
For heights	4 - 8 mm	10 - 16 mm	18 - 22 mm	25 - 40 mm	50 - 60 mm	60 - 100 mm



563

## Pattern sign boxes Item No. 564.001

of white plastic with transparent top, size: 40 x 40 cm, height 5 cm, with 36 compartments (5 x 5 x 4 cm)



564

**565**

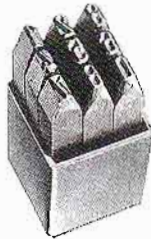


**Lettering sets**

of galvanized sheet metal, block letters 0-9, A-Z, a-z

Height	10 mm	20 mm	30 mm	40 mm	50 mm	60 mm	80 mm	100 mm
Design	Item No.							
0-9	565.010	565.020	565.030	565.040	565.050	565.060	565.080	565.100
A-Z	565.110	565.120	565.130	565.140	565.150	565.160	565.180	565.200
a-z	565.210	565.220	565.230	565.240	565.250	565.260	565.280	565.300

**566**



**Die sets Type SE, standard quality**

set of letters and numbers in plastic boxes, precise lettering or materials up to a strength of appr. 800 N/mm<sup>2</sup>

Height	1 mm	2 mm	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm	12 mm	15 mm
(□) x length	6 x 65 mm	6 x 65 mm	6 x 65 mm	7 x 65 mm	8 x 65 mm	9 x 75 mm	11 x 76 mm	12 x 80 mm	14 x 80 mm	18 x 85 mm
Design	Item No.									
0-9	566.001	566.002	566.003	566.004	566.005	566.006	566.008	566.010	566.012	566.015
A-Z, &	566.101	566.102	566.103	566.104	566.105	566.106	566.108	566.110	566.112	566.115
a-z, +	566.201	566.202	566.203	566.204	566.205	566.206	566.208	566.220	566.212	566.215

Other heights upon request. Mirror image characters also available at extra price. (Individual dies also available)

**567**

**Precision stamps Type TB, tiefenbegrenzt**

for materials up to appr. 1600 N/mm<sup>2</sup>. Hardness 58-60 HRC, in plastic boxes



Individual dies also available.

Height	1 mm	1,5 mm	2 mm	2,5 mm	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm
(□) x length	7 x 75 mm	7 x 75 mm	7 x 75 mm	7 x 75 mm	7 x 75 mm	8 x 78 mm	9 x 80 mm	11 x 80 mm	12 x 85 mm	14 x 90 mm
Design	Item No.									
1) normal character stamps										
0-9	567.010	567.015	567.020	567.025	567.030	567.040	567.050	567.060	567.080	567.100
A-Z, &	567.110	567.115	567.120	567.125	567.130	567.140	567.150	567.160	567.180	567.200
2) stamps for mirror image characters										
0-9	567.310	567.315	567.320	567.325	567.330	567.340	567.350	567.360	567.380	567.400
A-Z, &	567.410	567.415	567.420	567.425	567.430	567.440	567.450	567.460	567.480	567.500

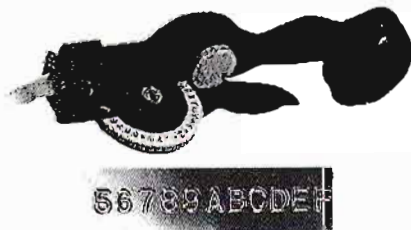
**567A**



**Special stamps**

in a variety of versions upon request!

**568**



**Type stamps M 11 Item No. 568.001**

Strong, heavy-duty stamps for typing characters of copper, aluminium or stainless steel, also for plastic stripes (12 mm), with leather bag.

Strips available:

Item No.	568.101	568.102	568.103	568.104	568.105	568.106	568.107	568.108
Material	Alu	Alu	Steel	Copper	Plastic			
Colour	silver	silver	silver	reddish	red	green	blue	black
Adh. coat	with	without	without	without	with			
Strip length	3,65 m	4,80 m	6,40 m	6,40 m	3,00 m			

**568A**



**ROOVER-letter embosser**

Ideal for numbering patterns and core boxes. high raised characters, robust design, simple to operate

Embosser			Aluminium embossing strips			
Item No.	Type	Character height	Item No.	Strip width	Thickness	Length
568.201	Y 10 A	6,35 mm (1/4")	568.111	12,7 mm (1/2")	0,35 mm	36,5 mtr.
568.202	T 20	9,55 mm (3/8")	568.222	22,2 mm (7/8")	0,55 mm	24,5 mtr.

**569**



**Inventory labels**

of aluminium, steel, stainless steel, brass, copper or galvanized metal, with or without holes, in all sizes and with all inscriptions; please specify quantity!

**570**



**Pattern contour signs**

of anodised aluminium, background silver, lettering black, size 80 x 40 x 1,0 mm, acute corners, 4 holes, available in 4 designs:

Design	Item No.
Stamp outside contour (see ill.)	570.001
Stamp inside contour	570.002
Die outside contour	570.003
Die inside contour	570.004



**Core box vents**

with concave bottom and knurling

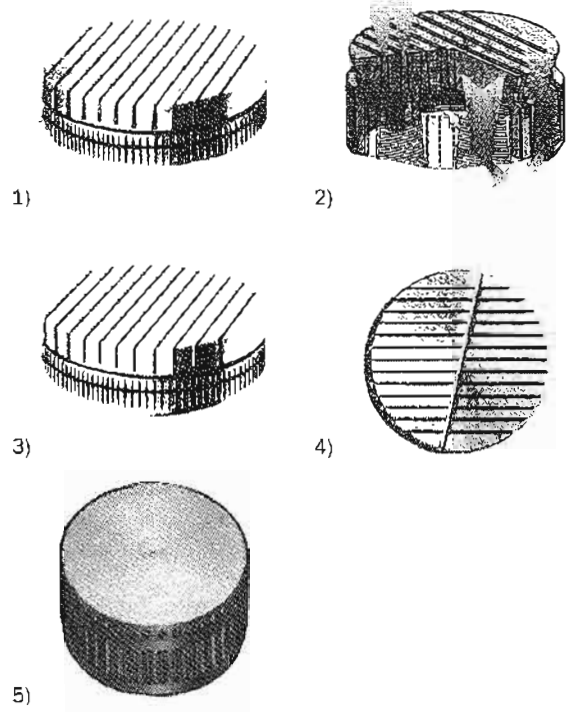
- 1) with 0,3 mm conical slots, self cleaning, 6 mm dia. and up, with 1, 18 mm dia. and up with reinforced rings
- 2) super-ring-vents for improved air escape, up to 68 % larger vent surface, with conical slots and vent channels, other features as mentioned under 1)
- 3) with 0,3 mm straight slots and reinforcing rings (10 mm dia.)
- 4) with 0,3 mm conical slots and reinforced front
- 5) blind vents (without slots)

Package size: 100 p. per diameter!

Diameter	3 mm	4 mm	5 mm	6 mm	7 mm	8 mm	9 mm	10 mm	12 mm
Height	7 mm								
Bottom thickn.	2 mm								2,5 mm
Design	Item No.								
1)	571.103	571.104	571.105	571.106	571.107	571.108	571.109	571.110	571.112
2)	-	-	-	-	-	571.208	-	571.210	571.212
3)	571.303	571.304	571.305	571.306	571.307	571.308	571.309	571.310	571.312
4)	-	-	-	-	-	571.408	-	571.410	571.412
5)	571.503	571.504	571.505	571.506	571.507	571.508	571.509	571.510	571.512

Diameter	13 mm	14 mm	15 mm	16 mm	18 mm	20 mm	25 mm	26 mm	30 mm
Height	7 mm						8 mm		
Bottom thickn.	2,5 mm								
Design	Item No.								
1)	571.113	571.114	571.115	571.116	571.118	571.120	571.125	571.126	571.130
2)	-	571.214	571.215	571.216	571.218	571.220	571.225	-	-
3)	571.313	571.314	571.315	571.316	571.318	571.320	571.325	571.326	571.330
4)	-	571.414	571.415	571.416	571.418	571.420	571.425	-	571.430
5)	571.513	571.514	571.515	571.516	571.518	571.520	571.525	571.526	571.530

Remark: These vents are also available at extra charge with different slot widths (min. 0,2 mm) and different bottom thicknesses or with a center hole.



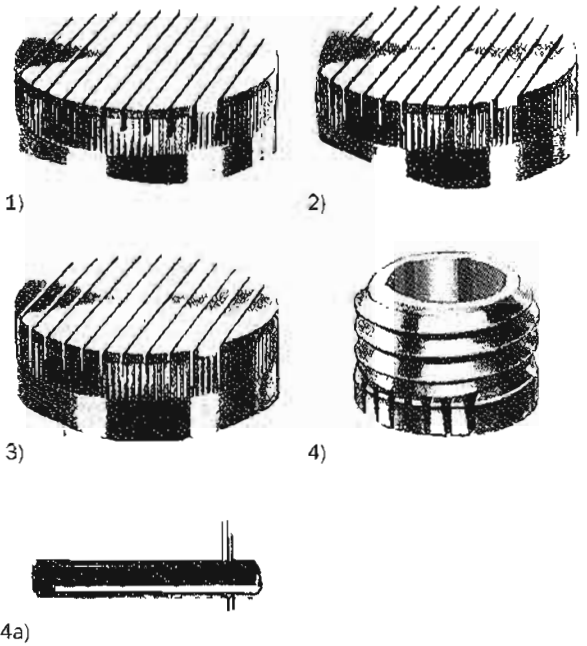
**Steel vents**

for Croning and hotbox core boxes, bottom thickness 2 mm, height 10 mm  
Package size: 100 p. per diameter!

- 1) with conical slots (0,3 mm) self cleaning
- 2) with straight slots (0,3 mm) for light duties
- 3) with straight slots (0,2 mm) (for chill casting)
- 4) with conical slots (0,3 mm), external thread & hex. recess screw
- 4 a) key for screwing in the vents

Diameter	3 mm	4 mm	5 mm	6 mm	7 mm	8 mm	9 mm	10 mm	12 mm
Design	Item No.								
1)	572.103	572.104	572.105	572.106	572.107	572.108	572.109	572.110	572.112
2)	572.203	572.204	572.205	572.206	572.207	572.208	572.209	572.210	572.212
3)	572.303	572.304	572.305	572.306	572.307	572.308	572.309	572.310	572.312
4)	-	572.404	-	572.406	-	572.408	-	572.410	572.412
Key	-	572.504	-	572.506	-	572.508	-	572.510	572.512

Diameter	14 mm	15 mm	16 mm	18 mm	20 mm	25 mm	26 mm	30 mm
Design	Item No.							
1)	572.114	572.115	572.116	572.118	572.120	572.125	572.126	572.130
2)	572.214	572.215	572.216	572.218	572.220	572.225	-	-
3)	572.314	572.315	572.316	572.318	572.320	572.325	572.326	-
4)	572.414	-	572.416	572.418	572.420	-	-	-
Key	572.514	-	572.516	572.518	572.520	-	-	-



**Deep slot vents of steel**

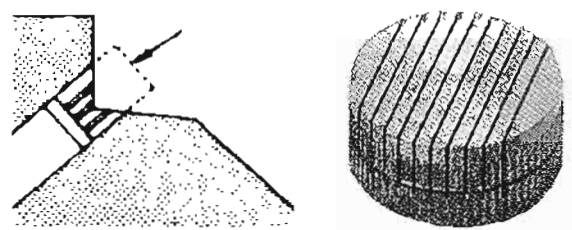
with a bottom thickness of 6 mm, slot width 0,3 or 0,2 mm, height 10 mm, for ingot mould and low-pressure casting method.

These vents can also be placed in corners, radii or grooves (vents can be ground or cut off).

Diameter	10 mm	12 mm	14 mm	15 mm	16 mm	18 mm	20 mm
Slot width	Item No.						
0,3 mm	572.710	572.712	572.714	572.715	572.716	572.718	572.720
0,2 mm	572.730	572.732	572.734	572.735	572.736	572.738	572.740

Package contains 100 p. per diameter.

Vents with a different height and bottom thickness upon request.



**572B**

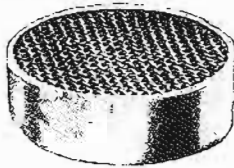


**Sintered steel vents**

for extreme requirements (ingot mould and low-pressure casting method). A variety of straight and parallel pores of equal size guarantee **maximum of ventilation**. Pore dia.: 0.3 or 0.5 mm (for plastics injection die-casting also 0,1, 0,05 and 0,03 mm dia.)

Dia. mm	Pore dia. 0,5 mm				Pore dia. 0,3 mm			
	No. of pores	Item No.		No. of pores	Item No.			
		height 10 mm	height 15 mm		height 10 mm	height 15 mm		
3	37	572.823	-	-	-	-		
4	37	572.824	-	-	-	-		
5	61	572.825	-	89	572.805	572.845		
6	61	572.826	572.866	89	572.806	572.846		
8	96	572.828	572.868	200	572.808	572.848		
10	200	572.830	572.870	340	572.810	572.850		
12	200	572.832	572.872	340	572.812	572.852		
14	341	-	572.874	550	-	572.854		
16	341	-	572.876	-	-	-		
18	553	-	572.878	-	-	-		
20	550	-	572.880	-	-	-		
28	970	-	572.888	-	-	-		

**573**

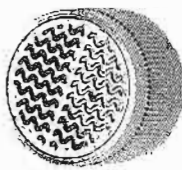


**Brass screen vents**

with mesh of stainless steel wires (Monel-metal) with a particularly high venting capacity, height 8 mm, mesh width 0,4 mm. Package size: 100 p. per diameter.

Diameter	6 mm	8 mm	10 mm	12 mm	14 mm	16 mm	18 mm	20 mm	25 mm
Item No.	573.006	573.008	573.010	573.012	573.014	573.016	573.018	573.020	573.025

**574**

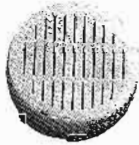


**Screen vents 'Super Vent' of stainless steel**

self-cleaning thanks to undulated wire openings: The air can escape through more than 43 % of the surface area. Mesh width: 0,25 mm. Package size: 100 p. per diameter.

Height	Diameter / Item No.															
	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm	12 mm	14 mm	15 mm	16 mm	18 mm	20 mm	25 mm			
6 mm	574.103	574.104	574.105	574.106	574.108	574.110	574.112	-	-	-	-	-	-			
8 mm	-	-	-	574.206	574.208	574.210	574.212	574.214	574.215	574.216	574.218	574.220	574.220			
10 mm	-	-	-	574.306	574.308	574.310	574.312	574.314	574.315	574.316	574.318	574.320	574.320			

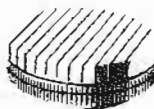
**575**



**Plastic vents, height 8 mm**

Slot width	Diameter / Item No.								
	6 mm	8 mm	10 mm	12 mm	15 mm	20 mm	25 mm	30 mm	
0,3 mm	575.106	575.108	575.110	575.112	575.115	575.120	575.125	575.130	
0,6 mm	575.206	575.208	575.210	575.212	575.215	575.220	575.225	575.230	

**576**



**Vents for polystyrene moulds**

of brass or aluminium, with 0,3 mm straight slots, knurled rim, without reinforcing rings, bottom thickness 2,0 mm Height: 3 - 20 mm dia. = 7 mm, 25 - 26 mm dia. = 8 mm Package size: 100 p. per diameter

Material	Diameter / Item No.																
	3 mm	4 mm	5 mm	6 mm	7 mm	8 mm	9 mm	10 mm	12 mm	13 mm	14 mm	15 mm	16 mm	18 mm	20 mm	25 mm	26 mm
Brass	576.103	576.104	576.105	576.106	576.107	576.108	576.109	576.110	576.112	576.113	576.114	576.115	576.116	576.118	576.120	576.125	576.126
Aluminium	576.203	576.204	576.205	576.206	576.207	576.208	576.209	576.210	576.212	576.213	576.214	576.215	576.216	576.218	576.220	576.225	576.226

**577**



**Aluminium vents with holes**

and knurled rim, hole 8 mm diameter

Diameter	Height	No. of holes	Item No.	Qty. per package
4 mm (sq.)	6,5 mm	4	577.104	1.000 St.
5 mm	6,0 mm	5	577.105	1.000 St.
6 mm	7,0 mm	6	577.106	1.000 St.
8 mm	6,0 mm	12	577.108	1.000 St.
10 mm	6,0 mm	22	577.110	1.000 St.
		28	577.210	1.000 St.
12 mm	6,0 mm	21	577.112	1.000 St.
		36	577.212	1.000 St.
13 mm	6,0 mm	36	577.113	1.000 St.
15 mm	6,0 mm	30	577.115	500 St.

**578**



**Perforated vents 'Regitz System' of plastic**

for cold box, CO<sub>2</sub> and vacuum method. Max. temperature 80° C. self-cleaning (conical holes widening from 0,4 to 0,8 mm), height 6 mm.

Diameter	6 mm	10 mm
Item No.	578.006	578.010

**579****Vent cleaner**

Item No. 579.001

for slotted vents of all kinds

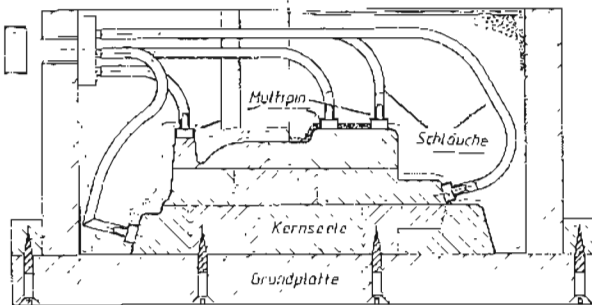
a) suitable spare blade are available

Item No. 579.002

**580****Special HSS-step drills**

for drilling vent holes in wood, metal, cast iron &amp; steel

For vent dia.	Step dia.	Step length	Total length	Shank dia.	Item No.
3 mm	2,5 mm	15 mm	100 mm	3 mm	580.003
4 mm	3,5 mm	20 mm	120 mm	4 mm	580.004
5 mm	4,0 mm	30 mm	132 mm	5 mm	580.005
6 mm	5,0 mm	30 mm	139 mm	6 mm	580.006
7 mm	6,0 mm	30 mm	156 mm	7 mm	580.007
8 mm	6,0 mm	30 mm	165 mm	8 mm	580.008
9 mm	7,0 mm	30 mm	175 mm	9 mm	580.009
10 mm	8,0 mm	30 mm	185 mm	10 mm	580.010
12 mm	10,0 mm	30 mm	205 mm	12 mm	580.012
13 mm	11,0 mm	30 mm	205 mm	13 mm	580.013
14 mm	12,0 mm	30 mm	215 mm	14 mm	580.014
15 mm	13,0 mm	30 mm	220 mm	15 mm	580.015
16 mm	14,0 mm	30 mm	227 mm	16 mm	580.016
18 mm	16,0 mm	30 mm	240 mm	16 mm	580.018
20 mm	18,0 mm	30 mm	254 mm	16 mm	580.020
25 mm	23,0 mm	30 mm	230 mm	16 mm	580.025
30 mm	28,0 mm	30 mm	240 mm	16 mm	580.030

**580A****Multipin**

The Multipin-system allows to get places for vents and degassing-systems during production and **before** using resins. There's no more need for drilling the finished core-box.

**Advantages:** Benefit of time up to 80%, saving of tools. Vents may be placed in an optimal position.

The system is available as follows:

**1) Multipin-system-box, complete (Item No. 580.101)**

containing all accessories:

25 pcs. Multipin each of vents-diameter 4, 6, 8, 10, 12, 15, 18, 20, 25, 30 mm

15 pcs. Multifill (to close not used holes)

each of the same diameter as Multipin

2 mtr. tubes, each of diameter 2, 4, 6, 8 mm

1,5 mtr. plastic wire each of diameter 2 and 3 mm (to eject Multipin)

1 pc. cutting gauge (for tubes)

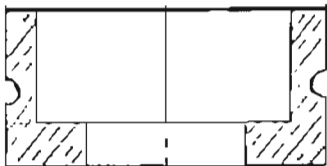
1 pc. cutter (for tubes)

1 tube rapid glue (for tubes)

1 pc. screw each of long, medium and short type

**2) Spare parts:**

For vents dia	4 mm	6 mm	8 mm	10 mm	12 mm	15 mm	18 mm	20 mm	25 mm	30 mm
Item No. MULTIPIN	580.104	580.106	580.108	580.110	580.112	580.115	580.118	580.120	580.125	580.130
MULTIFILL	580.304	580.306	580.308	580.310	580.312	580.315	580.318	580.320	580.325	580.330
Tube	580.202	580.204		580.206				580.208		

**580B****Supports for core-box vents**

These supports for the core-box vents will be placed during the production of resin core-boxes where the vents shall be placed later on.

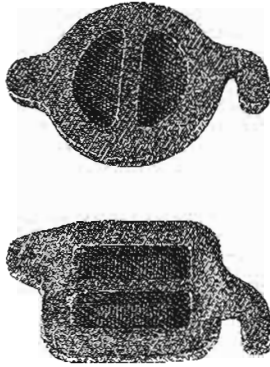
So later boring is no longer necessary and the vents may be placed on **optimal** positions (also on positions where it would be very difficult to place borings).

Besides this gain of time and facilitation of work the supports will render possible a **quick and simple change of vents** when these will be damaged.

The dimension of the supports are fitting perfectly to the core-box vents made of brass with conical slots.

Fitting **tubes** are also available.

For vent dia.	6 mm	8 mm	10 mm	12 mm	14 mm	15 mm	16 mm	18 mm	20 mm
Boring back-side	4 mm	5 mm	7 mm	8 mm	10 mm	10 mm	10 mm	13 mm	16 mm
Item No.	580.506	580.508	580.510	580.512	580.514	580.515	580.516	580.518	580.520
Ref. No. of tube	580.604	580.605	580.607	580.608		580.610		580.613	580.616

**581****Core box clamps**

of light metal and perforated Conidur perforated sheet  
for sealing lateral core box openings

**1) gooseneck-shape**

Diameter	36 mm	48 mm	60 mm	70 mm	80 mm	110 mm	125 mm	160 mm
Item No.	581.001	581.002	581.003	581.004	581.005	581.006	581.007	581.008

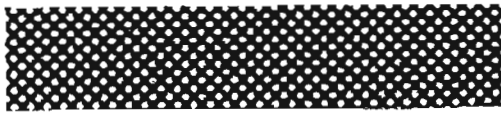
(dia. from c/l hole to c/l recess on the opposite side)

**2) rectangular shape**

Length x width	50 x 40 mm	60 x 50 mm	70 x 60 mm	100 x 80 mm	110 x 90 mm
Item No.	581.021	581.022	581.023	581.024	581.025

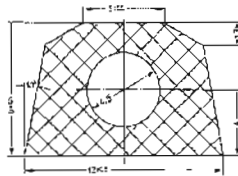
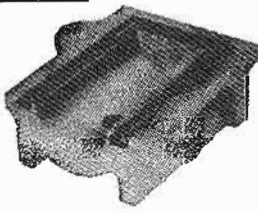
(net body length **without** lateral projections)

The rectangular shape will be discontinued, available in limited quantities only!

**581A****Perforated brass sheet metal**

pickled and straightened

Thickness	Hole dia.	Sheet size / Item No.		
		440 x 310 mm	1000 x 500 mm	2000 x 600 mm
0,6 mm	0,8 mm	-	-	581.101
3 mm	0,3 mm	581.201	581.205	-
	0,5 mm	581.202	581.206	-
4 mm	0,3 mm	581.203	581.207	-
	0,5 mm	581.204	581.208	-
Remark:		no cuts available		cuts available

**582****Special sealing rope for gassing plates**

(for cold and thermo-setting method), of silicon, trapezoidal shape (for insertion into the milled groove)

Item No. 181.001

Size: 12 x 10 x 5 mm; 10 degrees, 8 mm hoch, 4,5 mm hole dia.

**582A****Dovetail cutter**

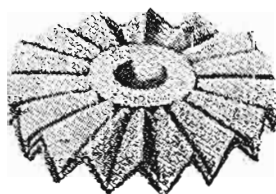
for sealing ropes No. 582

Item No. 181.101, carbide tipped, shank dia. 12 mm

**583****Truing devices** Item No. 583.001

for grinding wheels, with guard and steel handle, length 39 mm, with four 50 mm dia. wheels, holes 10 mm and two spacers

a) compl. set of spare wheels, Item No. 583.002

**583A****Truing wheels**

1) of prime-quality special cast metal, deburred, corrugated

2) of prime-quality steel, hardened, with 16 to 20 teeth

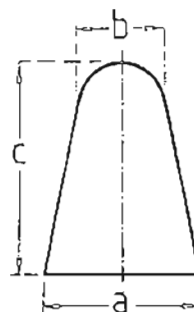
Diameter	30 mm	40 mm	50 mm	50 mm	60 mm
Hole dia.	7 mm	10 mm	10 mm	13 mm	10 mm
Material	Item No.				
Cast iron	-	-	583.101	-	583.102
Cast steel	583.201	583.202	583.203	583.204	-

## Casting ducts

of soft PVC

sold by the meter, max. temperature 100° C, durable and reusable. The ducts can easily be fixed on moulding plates; they can easily be removed from the mould thanks to its smooth, wear-resistant surfaces. Bending these ducts does not produce creases.

Item No.	Base (a) mm	Radius (b) mm	Height (c) mm	Cross section mm <sup>2</sup>
205.001	10	3,5	10	75
205.002	12	4,0	13	116
205.003	14	4,0	17	168
205.004	20	5,0	22	294
205.005	22	6,0	23	346
205.006	24	7,0	26	438
205.007	30	10,0	35	782



584

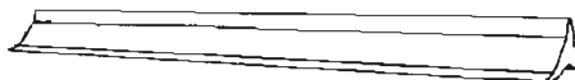
## Leather fillets

of prime neat leather, sharp edges. flexible

Item No.	585.010	585.020	585.025	585.030	585.040	585.050	585.060	585.070
Radius	2 mm	3 mm	4 mm	5 mm	6,5 mm	8 mm	10 mm	11,5 mm
Width	3 mm	5 mm	6,5 mm	8 mm	10 mm	12,5 mm	15 mm	17,5 mm

Item No.	585.080	585.100	585.120	585.140	585.160	585.180	585.200	585.220	585.240
Radius	13 mm	16 mm	20 mm	22 mm	25 mm	28 mm	30 mm	34 mm	38 mm
Width	20 mm	25 mm	30 mm	35 mm	40 mm	44 mm	48 mm	55 mm	60 mm

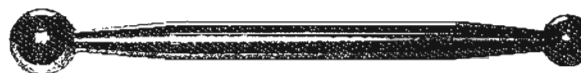
Wax fillets available upon request!



585

## Filled pressing rods of nickel-plated steel

Item No.	586.000	586.001	586.002	586.003	586.004	586.005	586.006	586.007	586.100
Size	0	1	2	3	4	5	6	7	compl. set
Ball dia.	1 + 2 mm	3 + 5 mm	4 + 6 mm	8 + 10 mm	12 + 14 mm	16 + 20 mm	25 + 30 mm	40 + 50 mm	

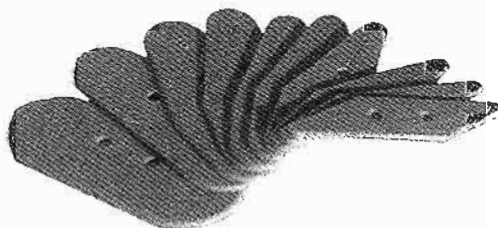


586

## Set of radius fillet trowels of plastic Item No. 586.200

trowel thickness appr. 2 mm. for drawing and smoothing fillets, one set consists of trowels for R 2, 3, 4, 5, 6, 8, 10, 12, 15, 20 mm (individual trowels are not available).

**Note:** Fillet mastics see page 117/118.



586A

## Wooden pegs, smooth or grooved

of beech wood, round bars

1 m long or in other lengths upon request

Dia.	4 mm	5 mm	6 mm	8 mm	10 mm	12 mm
Design	Item No.					
smooth	587.004	587.005	587.006	587.008	587.010	587.012
grooved	-	-	587.106	587.108	587.110	587.112

Other diameters upon request!



587

## Wooden disks

of pine wood, round. for filling branch holes, available in all diameters and thicknesses.

Upon request!



588

## Disk cutters (No. 02213) of tool steel

with 2 cutting edges, periph. edges and straight shank, total length 140 mm, for cutting disks

Item No.	589.008	589.010	589.012	589.015	589.020	589.025	589.030	589.035	589.040	589.050	
Inner dia.	8 mm	10 mm	12 mm	15 mm	20 mm	25 mm	30 mm	35 mm	40 mm	50 mm	
Shank dia.	13 mm							16 mm			



589

**590**



**Hook nails, galvanized**

for fastening loose pattern parts

Item No.	590.001	590.002	590.003	590.004	590.005	590.006
Size	1	2	3	4	5	6
Length	40 mm	55 mm	82 mm	105 mm	128 mm	155 mm
Height	17 mm	23 mm	27 mm	30 mm	32 mm	35 mm
Dia.	2,3 mm	3 mm	3,4 mm	4 mm	5 mm	5,4 mm

**591**



**Pattern clamps of steel, punched**

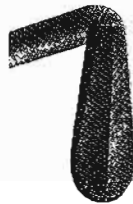
Span thick. Thickness	30 mm	40 mm	50 mm	60 mm	70 mm	80 mm	100 mm
	Item No.						
6 - 7 mm	591.030	591.040	591.050	591.060	591.070	591.080	591.100
3,5 mm	-	-	-	-	591.270	591.280	591.300

Thickness 3,5 mm is being phased out!

**592**



Pointed shape



Drop-shaped

**Scrapers of silver steel**

hardened and ground, with wooden handle, angle 90°

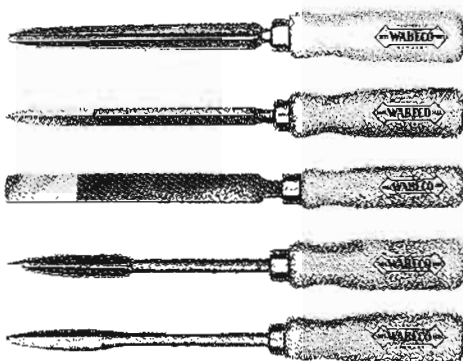
Item No.	Shape	Size L x W	Shank dia.	Length without handle
592.008	pointed shape 50°	33 x 17 mm	10 mm	280 mm
592.012	shell-shaped	38 x 18 mm	10 mm	280 mm
592.015	drop-shaped	34 x 16 mm	8 mm	260 mm
592.016		40 x 18 mm	10 mm	280 mm

This item is being phased out, available in limited quantities only!



Shell-shaped

**593**



**Scraper of special steel**

forged, with bright edges and varnished wooden handle

Blade length	100 mm	125 mm	150 mm	175 mm	200 mm	250 mm	300 mm
Design	Item No.						
Triangular hollow scraper		593.110	593.112	593.115	593.117	593.120	593.125
593.130							
triangular solid scraper	593.210	593.212	593.215	593.217	593.220	593.225	593.230
flat scraper	593.310	593.312	593.315	593.317	593.320	593.325	593.330
triangular spoon scraper	593.410	593.412	593.415	593.417	593.420	593.425	593.430
american spoon scraper	593.510	593.512	593.515	593.517	593.520	593.525	593.530

## Certificates of calibration for measuring instruments

QM-systems acc. to ISO 9000 a.s.o. demand for regular calibration and controlling of measuring instruments. They have to be calibrated within fixed intervals by licenced testing instruments. As a supplier of tools and measuring instruments we offer the possibilities to get either new measuring tools with certificates of calibration or to re-calibrate **used** tools. The certificates are issued by the producer of the tools.

- 1) Certificates for **new measuring tools**: Please mark in your orders clearly "**with certificate**". The costs of calibration will be invoiced separately. Please regard some delivery time because the certificates must be issued each time new.

a) for calipers gauges, depth gauges and height gauges

Measuring range	up to 300 mm	400 - 1000 mm
Item No.	594.081	594.082

b) for squares acc. to DIN 875

Measuring range	up to 150 mm	150 - 300 mm	300 - 500 mm	over 500 mm
Item No.	594.084	594.085	594.086	594.080

c) for rules

Measuring range	up to 300 mm	400 - 1000 mm	over 1000 mm
Item No.	594.087	594.088	594.089

Certificates for other measuring tools on request.

- 2) Certificates for **used tools** (subsequent calibration):

Please send us the tools convenient packed and free of transport-charges. The costs will depend on the necessary operations.

## Pattern maker's slide gauges No. 020

**of stainless steel or dull chrome-plated stainless steel** accuracy in accordance with DIN 862

with exchangeable, hardened steel points, open slider, measuring faces hardened, graduated rail and measuring jaw of one piece, 1/20 mm vernier

Design				stainl. steel		stainless steel		stainl. steel, dull chr.-plated		
shrinkage graduation				measuring range mm						
front		back		250	300	600	1000	300	600	1000
top	bottom	top	bottom	Item No.						
1,0 %	1,25 %	1,5 %	2,0 %	595.001	-	-	-	-	-	-
1,0 %	mm	1,5 %	2,0 %	595.000	595.002	595.004	595.006	595.102	595.104	595.106
1,0 %	mm	1,25 %	2,0 %	-	595.003	595.005	595.007	595.103	595.105	595.107

Other shrinkage graduations upon request!

Measuring ranges and spares:

Measuring range	Jaw length	Jaw tip	Item No.			
			Tip dia.	Locking screw slider	Setscrew tips	Brass spring
250 mm	80 mm	10 mm	595.201 (2,5 mm)	595.211	595.221	595.231
300 mm	100 mm	10 mm	595.202 (3,0 mm)	595.212	595.222	595.232
600 mm	150 mm	20 mm	595.203 (3,5 mm)	595.213	595.223	595.233
1000 mm	200 mm	20 mm	595.204 (4,0 mm)	595.214	595.224	595.234

## Pattern maker's slide gauges No. 250 RC

**of stainless steel-dullchrome-plated**, accuracy in accordance with DIN 862

with exchangeable, hardened steel points, open slider, measuring faces hardened, graduated rail and measuring jaw of one piece, 1/10 mm vernier, precise lasers graduation

Shrinkage graduation				Measuring range mm				
front		back		300	500	800	1000	
bottom	top	bottom	top	Item No.				
1,0 %	1,5 %	2,0 %	mm	596.511	596.512	596.513	596.514	596.515
0,5 %	0,8 %	1,0 %	mm	596.521	596.522	596.523	596.524	596.525
1,0 %	1,25 %	1,5 %	mm	596.531	596.532	596.533	596.534	596.535
1,75 %	2,0 %	2,5 %	mm	596.541	596.542	596.543	596.544	596.545
1,0 %	1,25 %	2,0 %	mm	596.551	596.552	596.553	596.554	596.555
0,3 %	0,4 %	0,6 %	mm	596.561	596.562	596.563	596.564	596.565
1,0 %	1,25 %	1,5 %	2,0 %	596.571	596.572	596.573	596.574	596.575

Other shrinkage graduations upon request!

Measuring ranges and spares:

Measuring range	Jaw length	Jaw tip	Item No.			
			Tip dia.	Locking screw slider	Setscrew tips	Brass spring
300 mm	90 mm	10 mm	596.631 (3,0 mm)	596.611	596.621	596.641
500 mm	150 mm	20 mm	596.632 (3,0 mm)	596.612	596.622	596.642
600 mm	150 mm	20 mm	596.632 (3,0 mm)	596.613	596.623	596.643
800 mm	150 mm	20 mm	596.633 (4,0 mm)	596.614	596.624	596.644
1000 mm	150 mm	20 mm	596.633 (4,0 mm)	596.615	596.625	596.645

594

Prüfzertifikat

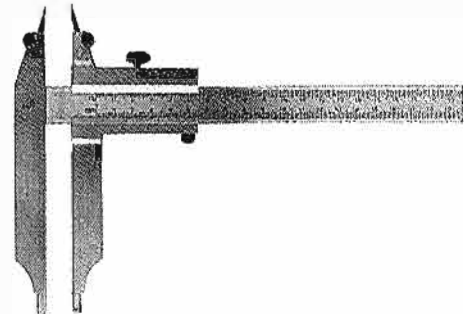


Prüfnummer: 01010220025350  
 Gegeben am: 14. September 1999  
 Hersteller: Präzision Messtechnik, D-7361 Gontzensteig  
 Artikelnummer: 632001  
 Maßstab/mm: 1:10  
 Abbildung: 1111 mm  
 Die Prüfung erfolgte in Anlehnung an die Fachnorm DIN VDE 0203 20.6 unter folgenden Bedingungen:  
 Artprobe: Einzelst., Einzelst.  
 Messumgebung: 20 °C ± 0,5K  
 Prüfer: [Signature]  
 Prüfer: [Signature]

Merkmal	Sollmaß	Istmaß	Abweichung	Fehl-/grenze	Beurteilung
Leitfähigkeit	0,03	0,03	0	0	in Ordnung
Leitfähigkeit	41,71	41,29	-0,42	0	in Ordnung
Leitfähigkeit	0,148	0,146	-0,002	0	in Ordnung

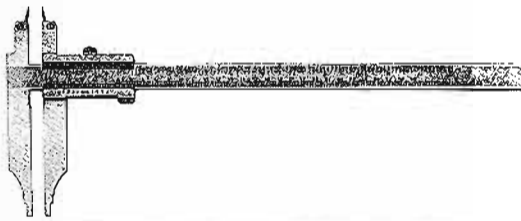
Prüfung: 14. September 1999  
 Prüfer: [Signature]  
 Datum: 14. September 1999  
 Prüfer: [Signature]

595



596



**597**

### Pattern maker's slide gauges without shrinkage graduation of dull chrome-plated stainless steel

1/20 vernier, as described under No. 596 (p. 23)

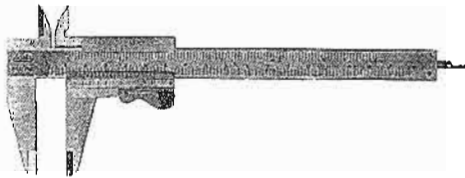
Graduation		Measuring range mm				
front	top	300	500	600	800	1000
bottom	inch	Item No.				
mm	inch	597.501	-	-	-	-
mm	-	-	597.502	597.503	597.504	597.505

Spares as mentioned under Item No. 596

**598**

### Wall thickness calipers Item No. 598.001

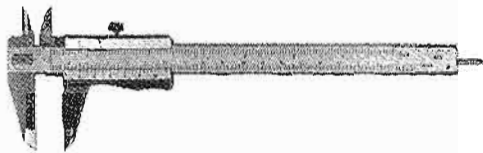
fits all pattern maker's slide gauges with 250 and 300 mm measuring range; for internal and external measurements

**599**

### Pattern maker's pocket slide gauges with shrinkage graduation

of dull chrome-plated stainless steel, accuracy in accordance with DIN 862, 1/20 vernier, with locking screw, measuring range 150 mm, jaw length 40 mm

Item No.	599.001	599.002	599.003	599.004
Grad. front	top	1,0 % SM	1,25 % SM	1,5 % SM
	bottom	mm-graduation		
back		mm-depth gauge		

**600**

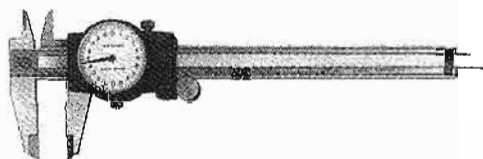
### Precision pocket slide gauges

without shrinkage graduations, of dull chrome-plated stainless steel, accuracy in accordance with DIN 862, precise laser graduation, measuring faces hardened and lapped

Measuring range 150 mm, jaw length 40 mm

Four applications: ext., int. and depth measurements as well as marking.

Graduation			Item No.	
front top	front bottom	back	with locking screw	with quick level
inch with 1/128 vernier	mm with 1/20 vernier	mm-depth	600.001	600.002

**601**

### Precision dial slide gauges No. 216 RC

stainless steel dull chrome-plated, measuring accuracy better than DIN 862, with measuring edges for internal gauging, in a case.

One dial rev. = 5 mm; dial numbers indicate full mm, one grad. = 1/2 or 0,5 mm.

Measuring range mm	Reading precision mm	Jaw length mm	Item No.
160	1/20	40	601.501

Dial slide gauges with larger measuring ranges upon request.

**602**

### Workshop slide gauges marking gauges etc.

in all sizes and designs available upon request.

**603**

### Pattern-makers slide gauges with digital indicator

with steel points, without shrinkage, with TOP electronic unit with the following characteristics: LCD display 6 mm, on/off switch, long-life 3V Lithium battery (Type CT 2032) easy exchangeable, Hold function, Zero setting at any position, data output opto RS 232 for direct connection to PC or printer without interface.

Accuracy acc. to DIN 862: up to 600 mm measuring range: 0,03 mm, for 600 - 1000 mm: 0,04 mm.

Made of best qualified stainless steel, carefully hardened.

Measuring range mm	Jaw length mm	Stepped jaws mm	Item No.
300 mm	90 mm	10 mm	603.201
500 mm	125 mm	20 mm	603.202

For calibration see page 23, Item No. 594

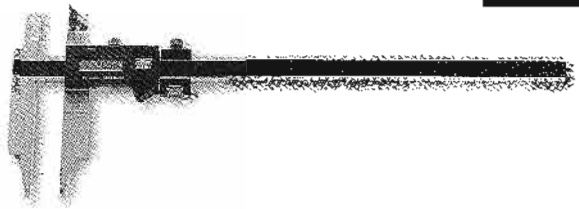


## Workshop slide gauges with digital indicator

with TOP electronic unit (as described under Item No. 603), all parts of best qualified stainless steel, measuring parts carefully hardened and smoothed.

Measuring range	300 mm	500 mm	800 mm	1000 mm
Jaw length	90 mm	125 mm	150 mm	150 mm
Stepped jaws	10 mm	20 mm	20 mm	20 mm
Design	Item No.			
with knife points, w/o fine adjustment	604.201	604.202	604.203	604.204
with knife points, with fine adjustment	604.301	604.302	604.303	604.304
without knife points, w/o fine adjustment	604.401	604.402	604.403	604.404
without knife points, with fine adjustment	604.501	604.502	604.503	604.504

Larger measuring ranges upon request!



604

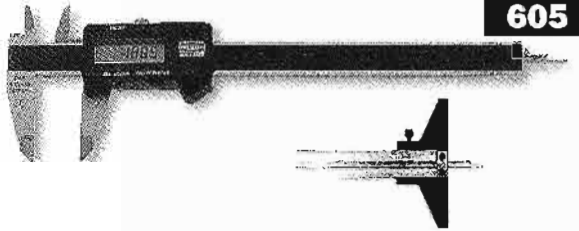
## Workshop slide gauges with digital indicator

with TOP electronic unit (as described under Item No. 603), all parts of best qualified stainless steel, measuring parts carefully hardened and smoothed.

**Four measuring functions:** outside, inside or depth measuring and marking operations

For depth measuring a convenient **measuring bridge** is available!  
(Bridge length 75 mm)

Measuring range	Jaw length	Item No.	Measuring bridge
150 mm	40 mm	605.201	605.203



605

## Measuring slider with digital indicator

with electronic unit as described under Item No. 603. Can be fitted to various measuring and checking tools, machines and devices.

With preset, resolution 0,1 mm: cross section for bar 20 x 5 mm

a) horizontal

Item No.	606.731	606.732	606.735	606.738	606.741
Measuring range	150 mm	200 mm	300 mm	450 mm	600 mm

b) vertical

Item No.	606.751	606.752	606.755	606.758	606.761
Measuring range	150 mm	200 mm	300 mm	450 mm	600 mm

Larger measuring ranges upon request!

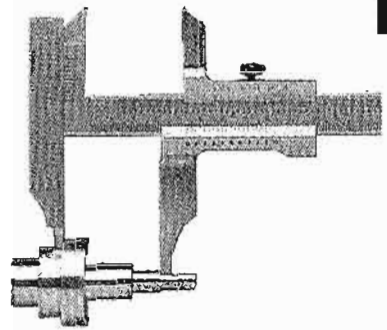


606

## 'MULTIPRE'-slide gauges with sliding cross jaw for

- a) step measurements
- b) spacing between holes (with addl. measuring tips)
- c) scribing and punch-marking

Design	Measuring range/Item No.	
	250 mm	500 mm
Measuring gauge	607.302	607.305
Pair of meas. points	607.201	607.202
Scribing jaw	607.223	607.227

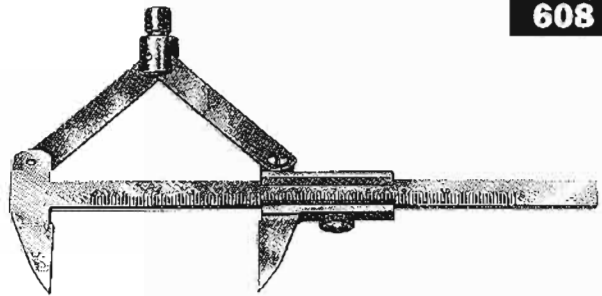


607

## Precision compass-type slide gauges

Accuracy in accordance with DIN 862, vernier 1/10 mm, with precise laser graduation, components of stainless steel, measuring rail and jaw of one piece, vernier milled of a solid piece, jaws (measuring faces) hardened, superfinished and lapped; parallel marking legs guarantee accurate marking.

Measuring range mm	Dia. mm	Jaw length mm	Item No.	
			without carbide	carbide tipped
150	300	40	608.002	608.102
200	400	40	608.003	608.103
250	500	40	608.004	608.104
300	600	40	608.005	608.105



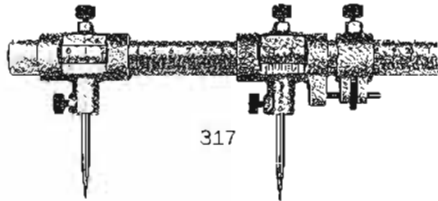
608

For calibration see page 23, Item No. 594

**609**



316

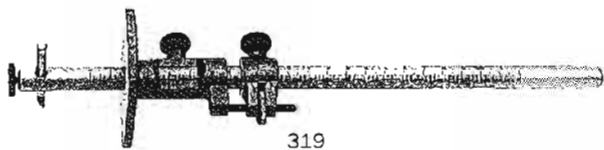


317

**610**



**611**

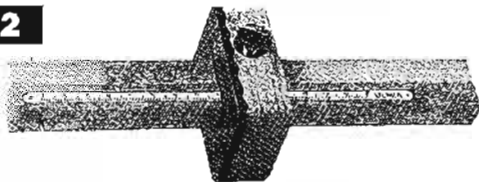


319

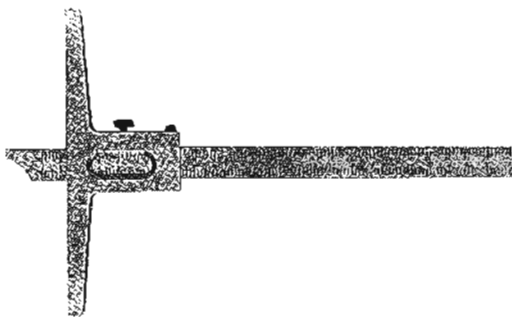


322

**612**



**613**



**Remark:** Do not reverse the measuring bar as the verniers for the front and back graduations would otherwise not correspond.

**Beam compass**

1) No. 316 flat beam, of stainless steel, with mm-graduation and micrometer slide and locking screw, replaceable steel points, 1/10 mm vernier

Measuring range	Beam cross section	Item No.	Item No. of a pair of spare points
500 mm	25 x 6 mm	609.2201	609.2210
1000 mm	25 x 6 mm	609.2202	

2) No. 317 round beam of special steel with malleable iron slider, without fine setting, replaceable steel points, measuring rod steel tube with guide groove and mm-graduation. 1/10 mm vernier

Measuring range	Beam cross section dia.	Item No.		Pair of spare points
		without fine setting	with fine setting	
500 mm	20 mm	609.1001	609.1101	609.1010
1000 mm	20 mm	609.1002	609.1102	
1500 mm	20 mm	609.1003	609.1103	
2000 mm	20 mm	609.1004	609.1104	609.1012
3000 mm	28 mm	609.1005	609.1105	
4000 mm	28 mm	609.1006	609.1106	

The beam can also be equipped with shrinkage graduation upon request.

**Compass points 'E' Item No. 610.001**

with hardened and ground points, without wooden beam, for dia. 20 to 40 mm, points can be set vertically and at 45°.

These points can also be used for gauging on two different levels.

**Scratch gauges**

1) No. 319 of special steel, with round bar, guide groove and mm-graduation. 1/10 mm vernier, slider of malleable iron, with or without micrometer adjustment, with back stop and locking screw, scriber hardened and replaceable.

Measuring range mm	Bar dia mm	Item No.		Spare needle
		without microadj	with microadj	
200	11	611.001	611.101	611.010
300	11	611.002	611.102	
400	11	611.003	611.103	
500	11	611.004	611.104	

2) No. 322 with roller of stainless steel, slider with locking screw, hardened roller as back stop, lightweight and handy design, measuring beam hardened with mm-graduation, scriber of hardened steel is replaceable

Measuring range	Vernier	Item No.	Spare scriber
200 mm	bottom 1/10 mm top 1/128"	611.501	611.521

**'ULMIA' - Scratch gauges** of white beech wood with embedded white graduation and lockable marking tips

Measuring range mm	Head size l x b mm	Total length mm	Item No.	
			without curve stop	with curve stop
150	66 x 50	220	612.001	612.002

**Pattern maker's depth gauges No. 040**

of stainless steel or dull chrome-plated stainless steel, accuracy in accordance with DIN 862 open slider front, back of slider, with oval vernier bezel, milled of a solid piece, measuring faces hardened, 1/20 mm vernier.

Design Measuring				Stainless steel		Dull chrome-plated	
front		back		Measuring range		Measuring range	
top	bottom	top	bottom	300 mm	500 mm	300 mm	500 mm
±0.0 %	mm	1.5 %	2.0 %	613.001	613.003	613.101	613.103
±0.0 %	mm	1.25 %	2.0 %	613.002	613.004	613.102	613.104

Other shrinkage graduations upon request!

**Measuring ranges and spare parts**

Measuring range	Crossbar length	Bar cross section	Item No.	
			locking screw	brass spring
300 mm	160 mm	17 x 4 mm	613.201	613.301
500 mm	160 mm	17 x 4 mm	613.202	613.302

For calibration see page 23, Item No. 594

## Pattern maker's depth gauges No. 289 RC

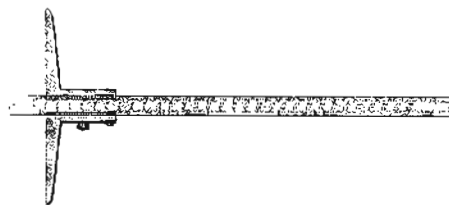
**of stainless steel, dull chrome-plated** accuracy in accordance with DIN 862, open slider front, back of slider with oval vernier bezel, milled of a solid piece, measuring faces hardened, 1/10 mm vernier (over 19 mm), high-precision laser graduation

**614**

Shrinkage graduation				Measuring range	
front		back		300 mm	500 mm
bottom	top	bottom	top	Item No.	
1,0 %	1,5 %	2,0 %	mm	614.511	614.512
0,5 %	0,8 %	1,0 %	mm	614.521	614.522
1,0 %	1,25 %	1,5 %	mm	614.531	614.532
1,75 %	2,0 %	2,5 %	mm	614.541	614.542
1,0 %	1,25 %	2,0 %	mm	614.551	614.552
0,3 %	0,4 %	0,6 %	mm	614.561	614.562
1,0 %	1,25 %	1,5 %	2,0 %	614.571	614.572

### Measuring ranges and spare parts:

Measuring range	crossbar length	bar cross section	Item No.	
			locking screw	brass screw
300 mm	150 mm	16 x 3,5 mm	614.601	614.611
500 mm	150 mm	16 x 3,5 mm	614.602	614.612



Other shrinkage graduations upon request!

**Remark: Do not reverse** the measuring bars as the verniers for the front and back graduations would otherwise not correspond.

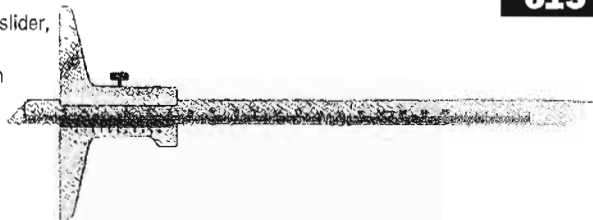
## Pattern maker's depth gauge with shrinkage graduation

**dull chrome-plated stainless steel**, accuracy in accordance with DIN 862, open front slider, back of slider closed, measuring faces hardened, 1/20 mm vernier

Measuring range 200 mm, cross bar length 100 mm, bar cross section-∅ 10 x 3 mm

Item No.	615.112		615.122		615.132		615.142		
Graduation front	bottom		1,0 % SM		1,25 % SM		1,5 % SM		
back				mm graduation					

Other shrinkage graduations upon request.



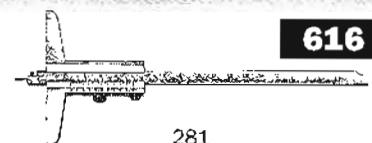
**615**

## Depth gauge, of stainless steel or dull chrome-plated stainless-steel

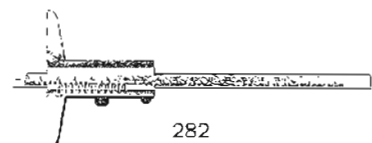
without shrinking graduation. Accuracy according to DIN 862. Measuring faces inductive-hardened, with adjustable phosphor-bronze slide spring and captive screw; vernier dull chrome-plated. all measuring faces superfinished and lapped; mm-graduation. high-precise laser graduation

- 1) No. 281 with replaceable hardened pin; division on both sides of the bar
- 2) No. 282 with straight bar and graduation on one side
- 3) No. 286 with 90° rod butt: double-sided graduation

Measuring range	Design	Cross bar length	Bar cross section	stainless steel		stainless steel dull chrome-plated			
				Item No.					
				No. 281	No. 282	No. 281	No. 282	No. 286	No. 286
150 mm	100 mm	8 x 3 mm	616.1201	616.2201	616.3201	616.1501	616.2501	616.3501	
200 mm	100 mm	8 x 3 mm	616.1202	616.2202	616.3202	616.1502	616.2502	616.3502	
250 mm	130 mm	12 x 4 mm	616.1204	616.2204	616.3204	616.1504	616.2504	616.3504	
300 mm	150 mm	12 x 4 mm	616.1205	616.2205	616.3205	616.1505	616.2505	616.3505	
400 mm	150 mm	12 x 4 mm	-	616.2206	616.3206	-	616.2506	616.3506	
500 mm	150 mm	12 x 4 mm	-	616.2207	616.3207	-	616.2507	616.3507	



281



282



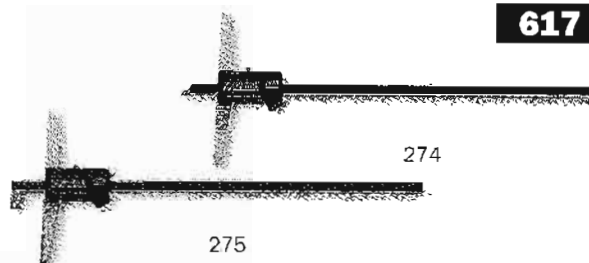
286

## Depth gauges with digital indicator

with TOP-electronic (as described under Item No. 603), of stainless steel, box hardened, surfaces inductive-hardened

- 1) No. 274 with straight bar
- 2) No. 275 with 90° shank bar

Measuring range	Cross bar length	Bar cross section	Item No.	
			No. 274	No. 275
300 mm	150 mm	12 x 3,5 mm	617.101	617.111
500 mm	150 mm	12 x 3,5 mm	617.102	617.112



274

275

**617**

## High-power spare batteries for digital measuring tools

Item No.	Voltage	Type	Dia.	for
618.001	1,5 V	button	11 mm	older electronic
618.704	3,0 V	Lithium	20 mm	TOP-electronic (▶ 1994)



**618**

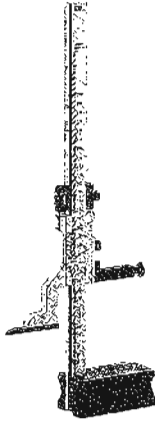
## Connecting cable for digital measuring tools

for directly connecting tools to a PC or printer, with RS 232-interface and opto-coupling, for all digital measuring tools with TOP-electronic unit, length 2 m Item No. 618.901



**618A**

**619**



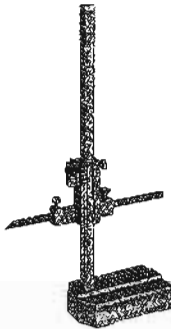
**Precision vernier height gauge No. 336**

Hardened steel base, dust grooves, foot upper face surface ground, special steel measuring rule, vernier and scale satin chromed, parallax-free reading, manufacturers standard, with locking screw, dial holder 8H7, **replaceable, carbide tipped scriber**, protective cover, with fine adjustment.

Supplied: individually packed.

Item No.	Meas. range mm	Reading mm	Beam sect. ∇ mm	Foot-∇ mm	Carb.tip.scriber, short		Carb.tip.scriber, long		Item No. Dial holder
					length	Item No.	length	Item No.	
619.301	300	0,02	25 x 6	60 x 40 x 100	65 mm	619.101	120 mm	619.105	619.110
619.302	600	0,02	30 x 12	±10 x 50 x 160	75 mm	619.102	150 mm	619.106	
619.304	1000	0,02	30 x 12	±10 x 50 x 160					

**620**



**Precision height measuring and marking instrument No. 331**

with adjustable scribers

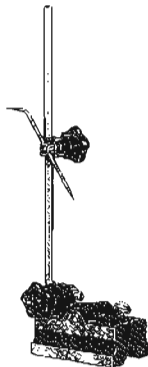
accuracy in accordance with DIN 862, 1/20 mm vernier

Slider and scriber mount of one piece, square rail with precision graduation, the square scriber is precisely guided by two hardened screws.

Basic model: with straight scriber, without hard-metal equipment

Meas. range mm	Bar cross section ∇ mm	Foot size ∇ mm	Item No. Model	Spare scribes				Dial gauge holder
				straight		cranked		
				without HM	with HM	without HM	with HM	
300	14 x 14	120 x 75	620.301	620.011	620.111	620.030	620.130	620.032
500	14 x 14	120 x 75	620.302					
750	20 x 20	180 x 100	620.303					
1000	20 x 20	180 x 100	620.304					

**621**

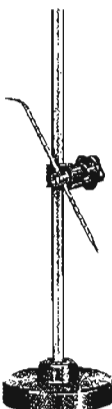


**Precision parallel scribing block No. 329**

with prismatic base, with micrometer adjustment, prisma ground, finished base bar can be set and locked at any angle, scriber tiltable and rotatable, 45° cranked off

Marking height mm	Bar dia. mm	Foot size mm	Block size mm	Item No.	
				model	spare needle
300	8	100 x 70 x 50	4 dia x 200	621.001	621.110
400	10	100 x 70 x 50	4 dia x 200	621.002	621.110
500	10	100 x 70 x 50	4 dia x 250	621.003	621.111

**622**

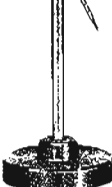


**Scribing block No. 325**

with round bar, scriber rotatable and tiltable, scriber and scriber mount clamped simultaneously, scriber 45° cranked off

Marking height mm	Bar dia. mm	Foot dia. mm	Item No.
300	8	80	622.001
500	10	110	622.002

**623**



**Height rule No. 327**

for setting scribing blocks, with round cast-iron base and square-bar rule

Height mm	Bar cross section ∇ mm	Base dia. mm	Item No.
300	12 x 12	80	623.001
500	12 x 12	120	623.002

325

327

For calibration see page 23, Item No. 594

## Scribing tool ALINOX 431 of aluminium

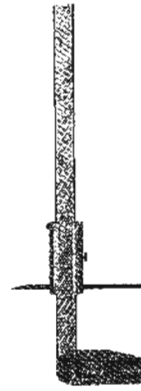
with mm-graduation, accuracy acc. with DIN 862, measuring beam of aluminium, with straight, slidable hm-scriber 250 x 8 x 8 mm  
vernier 1/20 mm

Measuring range	Meas. beam cross section	Foot size	Item No.
500 mm	36 x 9 mm	135x 90x30 mm	624.605
1000 mm	36 x 9 mm	196x120x30 mm	624.610

Tool with wider measuring range upon request.

Spare scribers available:

Item No.	Design	Length
624.615	straight	250 mm
624.620	cranked	250 mm



624

## Height gauge and marking instrument

No. 1814

with exchangeable rule with mm- or shrinkage graduation, chromed.

Rules with two numbers for straight and stepped scribers.

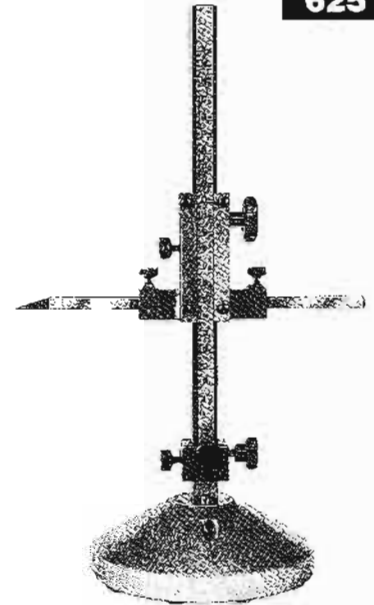
Accuracy acc. to DIN 862, vernier 1/10 mm, dazzling-free reading, reading parts stain chromed. The verniers are screwed on and adjustable. Sliding adjustment over gearwheel and gearrod. The base with hardened pins guarantees a work free of vibrations on the marking plate. Rule height adjustment.

Supply schedule: 1 straight scriber point (not carbide tipped) and 1 rule with mm graduation.

Meas. range mm	Item No.							
	Instrument w. basic equipm.	Shrinkage rules						
		0,5 %	0,8 %	1,0 %	1,25 %	1,5 %	1,75 %	2,0%
600	625.001	625.105	625.108	625.110	625.112	625.115	625.117	625.120
1000	625.002	625.205	625.208	625.210	625.212	625.215	625.217	625.220
1500	625.003	625.305	625.308	625.310	625.312	625.315	625.317	625.320
2000	625.004	625.405	625.408	625.410	625.412	625.415	625.417	625.420

Dimensions and accessories

Meas. range mm	Cross sect. of beam [7] mm	Base Ø mm	Cross sect. of rule [7] mm	Dimension mm	Scriber points / Item No.				Dial gauge holder
					straight		stepped		
					not carb.tip.	carb.tip.	not carb.tip.	carb.tip.	
600/1000	20 x 20	160	12 x 4	8 x 8 x 270	625.531	625.501	625.511	625.521	625.551
1500/2000	40 x 20	280	25 x 5	12 x 10 x 350	625.533	625.503	625.513	625.523	



625

## Digital height measuring and marking instrument

with built-in shrinkage calculator from 0 to 9,99 %  
(for two different shrinkage degrees)

Technical data:

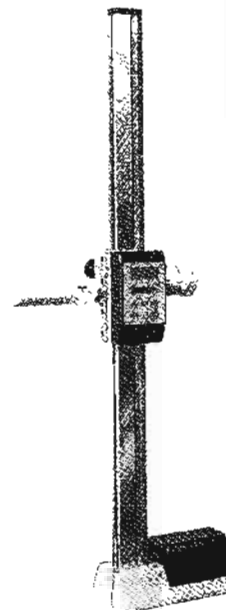
Measuring range:	750 mm
Working range:	870 mm
Increment:	0,005 mm
Uncertainty of measurement:	+/- 0,015 mm
Power supply:	NC-accumulator, 4,8 V, 500 mA (for abt. 10 h. op.)

The measuring head has a coarse and fine adjustment and locking feature for marking and is equipped with two dovetail guides.

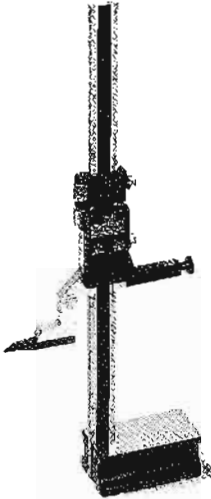
Scope of supply: Instrument with holder for a long scriber, hard metal scriber (250 mm long), charger and hood. **Item No. 626.001**

Accessories:

Item No.	Description
626.100	universal holder <b>suitable accessories:</b>
626.101	hard metal scribers 68 x 10 x 7 mm
626.102	hard metal scribers 150 x 10 x 12 mm
626.110	standard holder <b>suitable accessories:</b>
626.103	hard metal scribers 250 x 10 x 12 mm
626.104	scriber 300 mm, cranked
626.109	scriber clip for parallel clamping two scribers
626.111	spare charger
626.113	spare protective hood



626

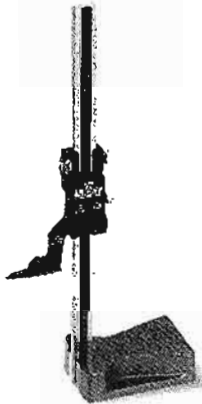
**627**

### Digital height measuring and marking instrument No. 342

These tools are of high precision and final tested. All blank surfaces are hard chrome-plated, foot hardened, black finish. base superfinished with dirt grooves. With TOP-electronic (see Item No. 603).

Hardened guide bar, micrometer adjustment, locking screw, mm- and Inch-display, can be set to „zero“ in any position, preset feature, Carbide-tipped scribe, display, display can be switched off, with RD 232 C port, increment 0,01 mm, accuracy 0,05 mm.

Measuring range	Bar cross section	Foot size	Item No.
300 mm	25 x 6 mm	60 x 40 x 100 mm	627.301
600 mm	30 x 12 mm	110 x 50 x 160 mm	627.302
1000 mm	30 x 12 mm	110 x 50 x 160 mm	627.304

**628**

### Digital height measuring and marking instrument No. 340

#### Specification:

Cast iron base, LCD display, manufacturers standard, with locking screw, replaceable carbide tipped scriber, protective cover, fine adjustment. Supplied: individually packed. Reading = 0,01 mm.

#### Electronic functions:

On/off switch, Zero setting at any point, mm/Inch, data output opto RS 232, Hold-function, +/- Preset function

Measuring range	Beam section	Foot dimension	Item No.
300 mm	25 x 10 mm	150 x 90 x 40 mm	628.201
600 mm	25 x 10 mm	150 x 90 x 40 mm	628.202

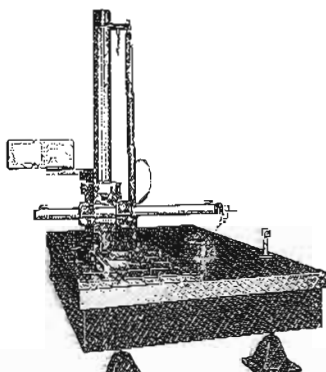
For this instrument will also fit the scribers of instrument no. 336 (see Item No. 619)

**629**

### Digital height marking instrument No. 437

Inexpensive imported instrument, chrome-plated, with hm-scriber, fine adjustment, reading 0,1 mm, supplied in a wooden case, with exchangeable, slidable scriber, about 75 mm long

Measuring range	Measuring beam cross section	Foot size	Item No.
300 mm	20 x 6 mm	115 x 65 x 30 mm	629.130
500 mm	28 x 8 mm	150 x 110 x 40 mm	629.131

**630**

### 3-Coordinate measuring machines

allow to measure and mark cast pieces, patterns, dies or welded constructions simply, fast, exactly and free of faults. May be equipped with a sliding scale, magnetically fixed. digital display or with computer controlled screen. Additionally, an electronic scanning probe may be connected. Easy-to-handle software expands the range of making and checking possibilities. The described measuring systems may also be retrofitted.

Further available: CNC- and portal measuring machines.

For these machines we will provide quotations on request!

## Measuring machine MDF JUNIOR

Completely new developed for pattern making and/or design. This instrument replaces the common 1-dim. measuring and marking instruments.

- As always working in three axis no other devices are necessary.
- Extremely light duty, nearly completely made of aluminium.
- Electr. digital display and a lot of functions included.
- Connection to PC and use of extensive software via RS 232 interface.
- Easy to transport and useable everywhere and quickly because of a basis plate of its own.

Designed for manual working.

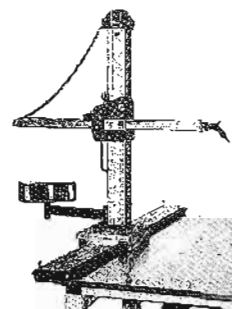
The machines are available in the following dimensions (special sizes on request):

Range of height measurement: 800, 1000, 1200 mm

Range of width measurement: 600, 800, 1000 mm

Range of length measurement: 1550, 2050, 2550 mm

On request!



## Universal dividing and marking machine AT 32 WS

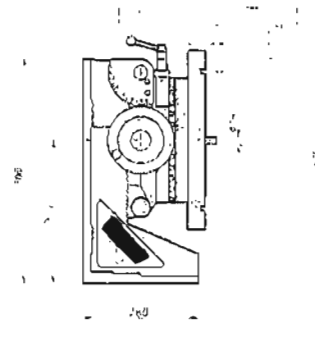
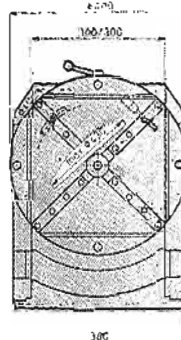
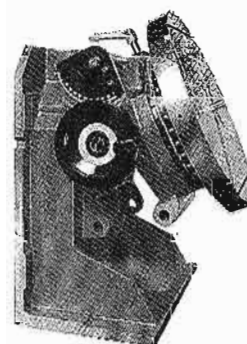
This dividing and marking machine has been developed especially for pattern- and mould makers. It is indispensable for a wider variety of marking and checking operations. All tasks are performed accurately, easily and quickly.

48 index positions are milled in the table. The selected position is locked by means of a lever. Thanks to an engraved graduation with vernier (10') the workpiece may be adjusted exactly and locked in this position by means of a lever.

Four 6 x 10 mm grooves for fitting stop rules are milled in the clamping table at 90° angles. The grooves milled in the table are aligned horizontally and vertically in '0'-position. Outside the grooves four 1.8 mm dia. holes for fitting clamping arms are provided. Four clamping jaws can be fitted additionally; adjustment of the clamping jaws over four ranges by means of a tubular socket wrench.

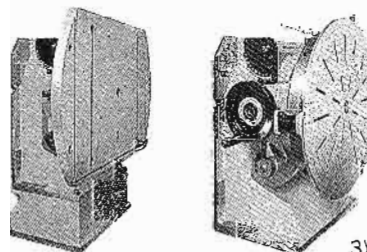
### Technical data

Height of centers	320 mm
Depth of the machine	275 mm
Maximum clamping capacity	380 x 500 mm
	380 x 260 mm
Clamping table dia.	400 mm
Centering bolt dia.	16 mm
No. of Index positions	48 (7.5°)
Graduation	360°
Vernier division	10'
Maximum clamp capacity with clamping jaws	dia. 60 – 430 mm
Clamping arm holes	dia. 18 mm
<b>Tilting feature</b>	
Tilting range	0° – 90°
Vernier division	5'
Weight	130 kg

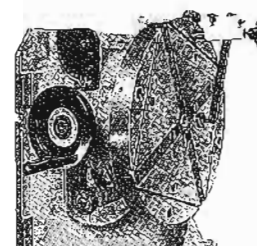


## Accessories for model AT 32 WS

- 1) Pedestal **Item No. 633.104**  
The height of centers can be increased by 150 mm by means of this pedestal.
- 2) Clamping plate **Item No. 633.101**  
Clamping plate of aluminium, size 750 x 480 mm, for clamping mould plates and larger workpieces; plate with one 6 x 10 mm groove in longitudinal direction and two grooves 6 x 10 mm in cross direction for fitting a stop rule, plus T-grooves 12 mm; the workpiece can also be chucked by means of clamping arms (four holes outside the grooves). The plate is attached to the machine by four fixing elements and the centering bolt.
- 3) 460 mm dia. clamping table **Item No. 633.102**  
Table of aluminium, for clamping large workpieces. The ball and socket joint with 16 mm diameter bolt serves two purposes:  
- centering the workpiece on the table  
- centering the table with workpiece on the machine.  
The workpiece can be fixed to the table by means of bolts put through slots in the table. The table is fitted to the machine by three fixing elements.
- 4) Clamping arm **Item No. 633.105**  
Workpieces up to 150 mm can be chucked on the tables by means of these clamping arms. The arm is 200 mm long; the bars are hardened and ground. Workpieces from 0 to 150 mm can be chucked.  
Each arm with bar, dia. 18 x 105 mm and 18 x 155 mm.

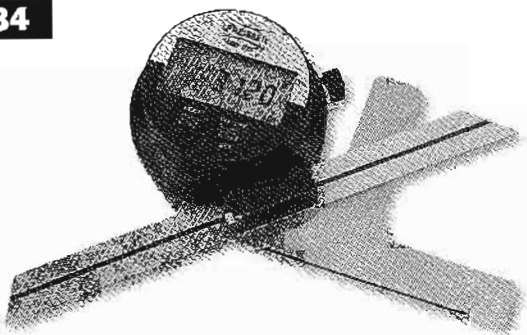


1) u. 2)



4)

**634**



**Protractors with digital display**

of stainless steel, gauge hardened

Accuracy 1 angle minute or decimals 0.01 degree. Display difference ± 0.5 angle minute or decimals ± 0.005 degree.

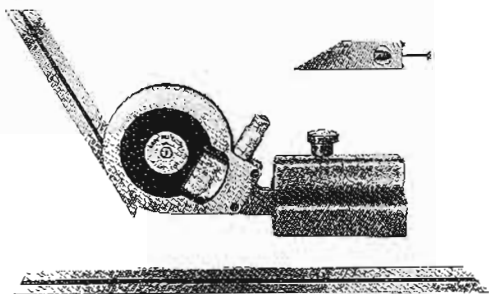
Measuring range can be switched to 1 x 360°, 2 x 180° or 4 x 90°. Display of degrees/minutes or decimals optional.

Zero at stop or any other Position.

Item No.	634.702	634.703
Rail length	200 mm	300 mm

Upon request!

**635**



**Protractors with Micrometer adjustment**

of stainless steel, hardened. Reading accuracy 1 angle minute (1')

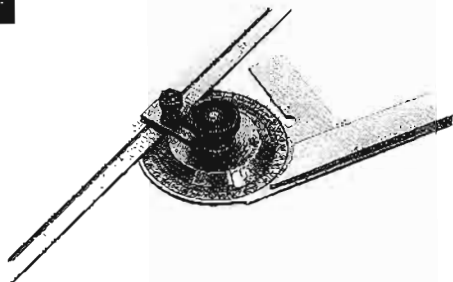
High accuracy, easily readable graduation: 1 angle minute on the micrometer dial, 1 degree on the 4 x 90°-graduation with magnifier. Quick adjustment by pressing a button. Automatic 1° locking feature.

Accessories:

- 1) prismatic base for setting the protractor;
- 2) square for measuring small acute angles;
- 3) spare magnifier

Bar length mm	Item No.			
	Protractors	Base	Acute angle sq.	Spare magnifier
300	635.001	635.002	635.003	635.004

**636**



**Protractors (No. 420)**

of stainless steel or dull chrome-plated stainless steel

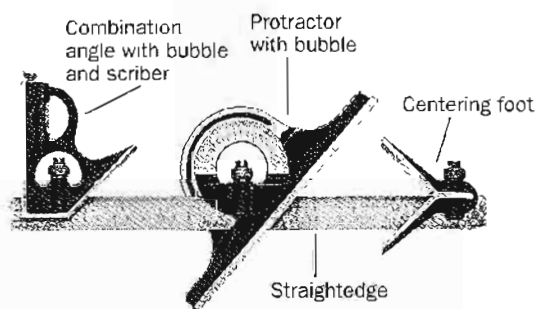
The instrument can easily be read and set thanks to a 4 x 90° graduation. Vernier division allows an even more precise reading of 1/12° = 5'.

Accessories:

- 1) magnifier which allows an even more precise reading outside dia. 23 mm, slewable;
- 2) backsquare for measuring even the smallest acute angles;
- 3) prismatic foot (90 x 25 mm). especially for measuring angles on surface plates

Bar length mm	Item No.					
	protractor stainl. steel	stainl. steel dull chr.-plated	spare bar	magnifier	back square	foot
150	636.201	636.501	636.206	636.121	636.122	636.124
200	636.202	636.502	636.207			
300	636.203	636.503	636.208			

**637**



**Combination protractors**

comprising combination angle, protractor and straightedge with centering foot.

Graduation on both sides mm- 1/2 mm

Other graduations upon request.

Straight- edge length mm	Item No.				
	compl. tool	spare straightedge	protractor w/bubble	combi- angle	foot
300	637.112	637.132	637.151	637.152	637.153
500	637.115	637.135			

For calibration see page 23, Item No. 594



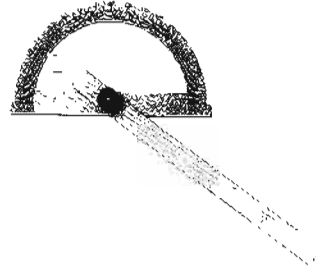
**Bevels No. 411 with locking screw**

measuring range 0 – 180°, with single rail

Pointer and graduated arc are connected with a locking screw. Thus a fixation is possible at any position.

Size	1	2	3	4	5	6	7
Grad. arc diameter	80 mm	120 mm	150 mm	200 mm	300 mm	300 mm	300 mm
Pointer length	120 mm	150 mm	200 mm	300 mm	500 mm	600 mm	800 mm
Design	Item No.						
bright	638.101	638.102	638.103	638.104	638.105	638.106	638.107
chrome-plated	638.301	638.302	638.303	638.304	638.305	638.306	638.307
stainless steel	638.201	638.202	638.203	638.204	-	-	-

Other sizes available upon request.



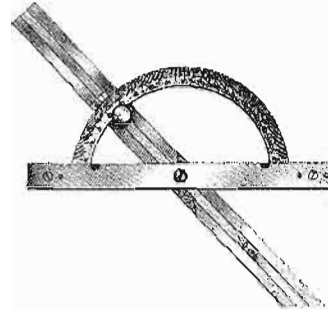
**Bevels No. 416 with twin rail, adjustable**

measuring range 10 – 170°

The twin rail guarantees that the graduation is always on the upper side.

Size	1	2	3	4	5
Grad. arc diameters	100 mm	150 mm	200 mm	250 mm	300 mm
Pointer length	150 mm	300 mm	400 mm	500 mm	600 mm
Design	Item No.				
chrome-plated	639.301	639.302	639.303	639.304	639.305
Spares:					
Center guide	639.901	639.902	639.902	639.904	639.905
Vernier	639.911	639.912	639.913	639.914	639.915

**Remark:** Spares are delivered with oversize and must be adapted accordingly!



**Graduator and protractor 'PERNUMETER'**

of stainless material Item No. 640.001

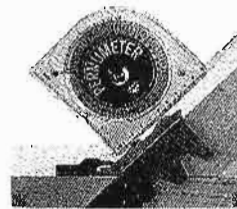
Guiding edges, both horizontal and vertical, each of them 100 mm long. One of them with a linear division of 100 mm and the other one with a linear division of 3 1/2".

Diameter of the dividing disk: 85 mm.

The tool has a graduation of 2 times 90° and another one with 2 times 0 – 150 %.

The graduation by angular degrees is equipped with a vernier scale reading to 1/4°. The centre knob is used to lock the dividing disk.

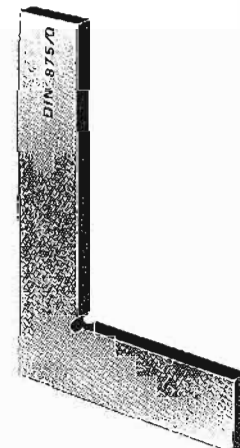
Each piece supplied in a plastic box and with directions for use.



**Solid steel square, unhardened**

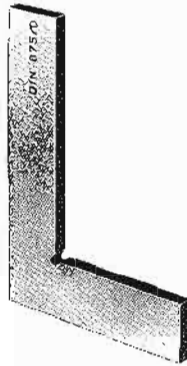
- 1) highly accurate in acc. DIN 875-0      2) highly accurate in acc. DIN 875-I      3) machined in acc. with DIN 875-II
- No. 369 = standard quality steel      No. 371 = standard quality steel      No. 373 = standard quality steel
- No. 369 R = stainless steel      No. 371 R = stainless steel

Leg length mm	Width x thickness mm	Item No.				
		No. 369	No. 369 R	No. 371	No. 371 R	No. 373
75 x 50	15 x 5	641.1102	641.1202	641.2102	641.2202	641.3102
100 x 70	20 x 5	641.1103	641.1203	641.2103	641.2203	641.3103
150 x 100	28 x 6	641.1104	641.1204	641.2104	641.2204	-
150 x 100	25 x 6	-	-	-	-	641.3104
200 x 130	32 x 7	641.1105	641.1205	641.2105	641.2205	-
200 x 130	28 x 7	-	-	-	-	641.3105
250 x 165	35 x 8	641.1106	641.1206	641.2106	641.2206	-
250 x 165	30 x 7	-	-	-	-	641.3106
300 x 200	40 x 8	641.1107	641.1207	641.2107	641.2207	-
300 x 175	32 x 7	-	-	-	-	641.3107
400 x 265	45 x 10	641.1108	641.1208	641.2108	641.2208	-
400 x 200	35 x 8	-	-	-	-	641.3108
500 x 330	50 x 10	641.1109	641.1209	641.2109	641.2209	-
500 x 250	40 x 8	-	-	-	-	641.3109
600 x 400	55 x 12	-	-	641.2110	641.2210	-
600 x 300	40 x 8	-	-	-	-	641.3110
750 x 500	60 x 12	-	-	641.2111	641.2211	-
750 x 375	45 x 10	-	-	-	-	641.3111
1000 x 660	70 x 14	-	-	641.2112	641.2212	-
1000 x 500	50 x 10	-	-	-	-	641.3112



For calibration see page 23, Item No. 594

**642**



**Solid steel square, fully hardened**

testing surfaces superfinished and lapped, highly accurate in acc. with DIN 875-0

No. 386 = standard quality steel

No. 386 R = stainless steel

Leg length mm	Width x thickn. mm	Item No.	
		No. 386	No. 386 R
50 x 40	15 x 4	642.102	642.202
75 x 50	15 x 4	642.103	642.203
100 x 70	20 x 5	642.104	642.204
150 x 100	30 x 6	642.105	642.205
200 x 130	30 x 7	642.106	642.206
300 x 200	40 x 8	642.108	642.208

**643**



**Super-Accurate steel square, fully hardened**

accuracy in acc. with DIN 875-00, upright edges lapped, with 2 superfinished edges in acc. with DIN 875

No. 388 = of wear-resistant special steel

No. 388 R = of stainless wear-resistant special steel

Leg length mm	Width x thickn. mm	Item No.	
		No. 388	No. 388 R
50 x 40	15 x 4	643.102	643.202
75 x 50	16 x 4	643.103	643.203
100 x 70	20 x 5	643.104	643.204
150 x 100	28 x 5	643.105	643.205
200 x 130	30 x 6	643.106	643.206
300 x 200	40 x 8	643.108	643.208

**644**

**Backsquares of steel, unhardened**

1) highly accurate in acc. DIN 875-0

2) highly accurate in acc. DIN 875-I

3) machined in acc. with DIN 875-II

No. 368 = of standard quality steel

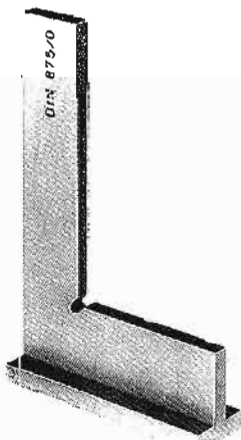
No. 370 = of standard quality steel

accurate square

No. 368 R = stainless steel

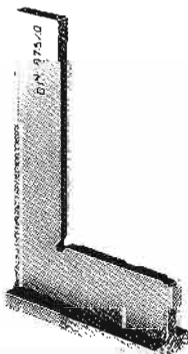
No. 370 R = stainless steel

No. 372 = stand. quality steel



Leg length mm	Width x thickn. mm	Item No.				
		No. 368	No. 368 R	No. 370	No. 370 R	No. 372
75 x 50	15 x 5	644.1102	644.1202	644.2102	644.2202	644.3102
100 x 70	20 x 5	644.1103	644.1203	644.2103	644.2203	644.3103
150 x 100	28 x 6	644.1104	644.1204	644.2104	644.2204	-
150 x 100	25 x 6	-	-	-	-	644.3104
200 x 130	32 x 7	644.1105	644.1205	644.2105	644.2205	-
200 x 130	28 x 7	-	-	-	-	644.3105
250 x 165	35 x 8	644.1106	644.1206	644.2106	644.2206	-
250 x 165	30 x 7	-	-	-	-	644.3106
300 x 200	40 x 8	644.1107	644.1207	644.2107	644.2207	-
300 x 175	32 x 7	-	-	-	-	644.3107
400 x 265	45 x 10	644.1108	644.1208	644.2108	644.2208	-
400 x 200	35 x 8	-	-	-	-	644.3108
500 x 330	50 x 10	644.1109	644.1209	644.2109	644.2209	-
500 x 250	40 x 8	-	-	-	-	644.3109
600 x 400	55 x 12	-	-	644.2110	644.2210	-
600 x 300	40 x 8	-	-	-	-	644.3110
750 x 500	60 x 12	-	-	644.2111	644.2211	-
750 x 375	45 x 10	-	-	-	-	644.3111
1000 x 660	70 x 14	-	-	644.2112	644.2212	-
1000 x 500	50 x 10	-	-	-	-	644.3112

**645**



**Backsquare of steel, fully hardened**

testing surfaces super finished and lapped, highly accurate in acc. with DIN 875-0

No. 385 = standard quality steel

No. 385 R = stainless steel

Leg length mm	Width x thickn. mm	Item No.	
		No. 385	No. 385 R
50 x 40	15 x 4	645.102	645.202
75 x 50	15 x 4	645.103	645.203
100 x 70	20 x 5	645.104	645.204
150 x 100	30 x 6	645.105	645.205
200 x 130	30 x 7	645.106	645.206
300 x 200	40 x 8	645.108	645.208

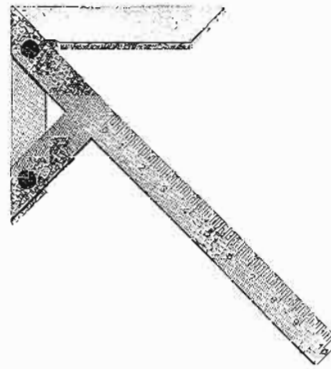
## Centering square of steel, unhardened

Accuracy in acc. with DIN 875-1, with mm-graduation.

For centering shafts and disks, all surfaces chrome-plated, graduation dulled, thus rust proofed

No. 380 = standard quality steel

Leg length mm	for dia. up to mm	Item No.
100 x 70	90	646.103
150 x 130	190	646.104
200 x 150	220	646.105
250 x 160	230	646.106
300 x 180	280	646.107
400 x 250	380	646.108
500 x 330	530	646.109

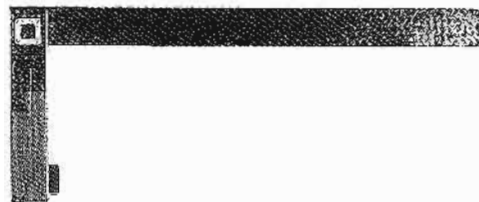


646

## Precision squares 'Ulmia' (No. 600)

leg of rose wood. with cavetto, spring hard, blue steel rail, with brass sheathing fixed with four rivets

Rail length	150 mm	250 mm	350 mm	600 mm	750 mm
Item No.	647.150	647.250	647.350	647.600	647.750

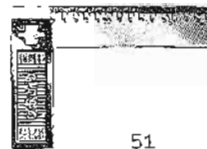


647

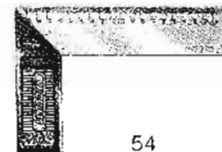
## Carpenter's square 'Angulus'

with nickel-coloured cast steel leg and bright, hardened steel rail

Design	Rail length / Item No.			
	150 mm	200 mm	250 mm	300 mm
without division, without miter division (No. 50)	-	648.020	648.025	648.030
with miter division (No. 51)	648.115	648.120	648.125	648.130
with division, without miter division (No. 53)	-	648.320	648.325	648.330
with miter division (No. 54)	648.415	648.420	648.425	648.430



51



54

648

## Precision miter gauges 'Ulmia' (No. 603)

of varnished rose wood, with spring hard, blue steel rail and brass sheathing on both sides, leg with cavetto

Rail length	350 mm
Item No.	649.350

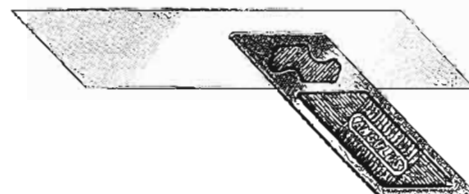


649

## Miter gauge 'Angulus' (No. 56)

with nickel-coloured cast steel leg and bright, hardened steel rail

Rail length	250 mm	300 mm	350 mm
Item No.	650.250	650.300	650.350

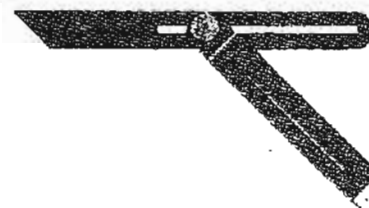


650

## Precision bevels 'Ulmia' (No. 604)

of varnished rose wood, with spring hard, blue steel rail and brass sheathing on both sides, leg with cavetto

Rail length	250 mm	330 mm
Item No.	651.250	651.330

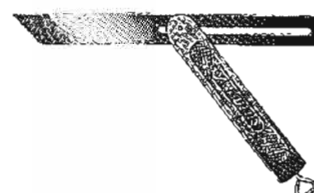


651

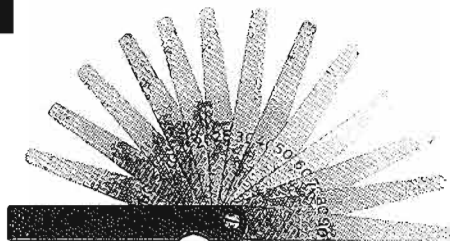
## Bevel 'Angulus' (No. 57)

with galvanized cast steel leg and bright, hardened steel rail

Rail length	150 mm	200 mm	250 mm	300 mm
Item No.	652.150	652.200	652.250	652.300



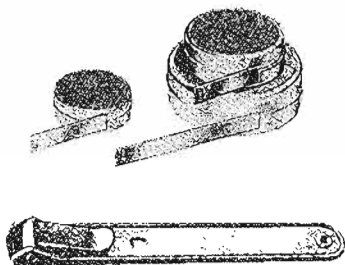
652

**653****Feeler gauges (No. 606), 100 mm long**

Spring hard, exchangeable steel gauges; gauges can also be supplied individually

No. of gaug.	Thickness mm	Item No.
8	0,05 0,10 0,15 0,20 0,25 0,30 0,40 0,50	653.123
13	0,05 0,10 0,15 0,20 0,25 0,30 0,40 0,50 0,60 0,70 0,80 0,90 1,00	653.127
20	0,05 0,10 0,15 0,20 0,25 0,30 0,35 0,40 0,45 0,50 0,55 0,60 0,65 0,70 0,75 0,80 0,85 0,90 0,95 1,00	653.130

Other assortments can be supplied upon request!

**653A****Feeler gauge tape (No. 611) in a plastic box**

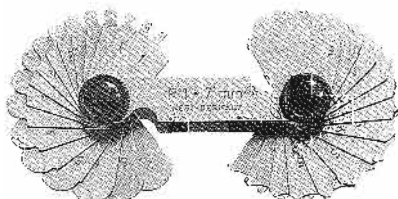
length 5,0 m. width 13 mm, for checking the workpiece backlash and for use as installation aid

Item No.	653.101	653.102	653.103	653.104	653.105	653.110	653.111	653.112
Thickness	0,01 mm	0,02 mm	0,03 mm	0,04 mm	0,05 mm	0,10 mm	0,15 mm	0,20 mm

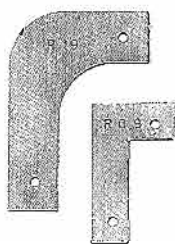
Item No.	653.113	653.114	653.115	653.116	653.117	653.118	653.120	653.122
Thickness	0,25 mm	0,30 mm	0,35 mm	0,40 mm	0,45 mm	0,50 mm	0,60 mm	0,70 mm

Tape clip: Item No. 653.150

**654****Radius gauges (No. 603), concave and convex**

milled design with locking screw, steel gauges 40 mm long

Size	Measrg. range	No. of radii						Item No.		
		standard	st. steel							
1	1 - 7 mm	1,0	1,25	1,5	1,75	2,25	2,5	2,75	654.101	654.201
		3,0	3,5	4,0	4,5	5,0	5,5	6,0		
2	7,5 - 15 mm	7,5	8,0	8,5	9,0	9,5	10,0	10,5	654.102	654.202
		11,0	11,5	12,0	12,5	13,0	13,5			
		14,0	14,5	15,0						
3	15,5 - 25 mm	15,5	16,0	16,5	17,0	17,5	18,0	654.103	654.203	
		18,5	19,0	19,5	20,0	21,0	22,0			
		23,0	24,0	25,0						

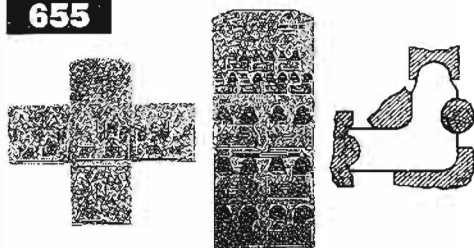
**654A****Radius gauges, individually available, with inside and outside radius**

unhardened, measuring range 0.3 to 100 mm

Radius mm	0,3 - 0,9	1,0 - 10	10,5 - 15	15,5 - 20	21 - 25	26 - 30	31 - 35	36 - 40
Increment mm	0,1	0,5	0,5	0,5	1,0	1,0	1,0	1,0
Item No.r.	654.001	654.010	654.015	654.020	654.025	654.030	654.035	654.040

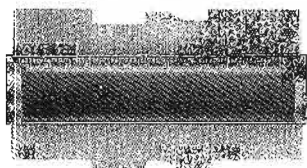
Radius mm	41 - 45	46 - 50	55	60	70	80	90	100
Increment mm	1,0	1,0	-	-	-	-	-	-
Item No.	654.045	654.050	654.055	654.060	654.070	654.080	654.090	654.100

Other sizes and hardened design upon request!

**655****Set of radius gauges L 300**

with 5 different measuring features for concave and convex radii (see ill.) of stainless steel, hardened and chrome-plated, complete with sheath, radius is given on each gauge. Spare gauges are also available!

Type	MX	MC	MD	ME	MF	MG	MH
Measrg. range mm	0,5 - 13	13,5 - 17	17,5 - 21	21,5 - 25	25,5 - 30	31,0 - 38	39,0 - 50
Increment mm	0,5	0,5	0,5	0,5	0,5	1,0	1,0
Tolerance	± 0,03 mm					± 0,05 mm	
No. of gauges	26 (-1 holder)	8	8	8	10	9	12
Item No.	655.001	655.002	655.003	655.004	655.005	655.006	655.007

**656****Radii and profile gauges**

of steel, with enameled housing, for measuring all kinds of radii and profiles on tools, workpieces etc.

Useful length	Useful depth	Pin dia.	Item No.	Wooden case
150 mm	40 mm	1,0 mm	656.001	656.002
300 mm	105 mm	1,0 mm	656.003	-

**657****HOCO-Profile master (extendable profile template)**

The 20 cm long basic profile master elements can be combined to form any length, thus ideal for long and uneven shapes.

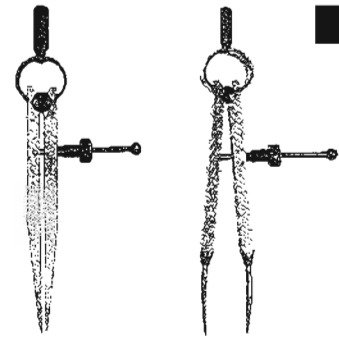
Design	Useful length	Useful depth	No. of templates	Bevel rule	Pin dia.	Item No.
large case	1000 mm	50 mm	5 à 200 mm	1	0,8 mm	657.101
small case	400 mm	50 mm	2 à 200 mm	1	0,8 mm	657.102

## Precision spring compasses

with quick adjustment nut and full-length spindle  
sturdy design with square legs, points hardened

1) No. 409 fixed points 2) No. 409a replaceable points

Length - point to spring	100 mm	150 mm	200 mm	250 mm	300 mm	400 mm	500 mm	600 mm
Distance between points	80 mm	120 mm	160 mm	200 mm	240 mm	320 mm	400 mm	500 mm
Design:	Item No.							
No. 409, standard steel	658.010	658.015	658.020	658.025	658.030	658.040	658.050	658.060
nickel plated	658.110	658.115	658.120	658.125	658.130	658.140	658.150	658.160
No. 409a, steel points	658.210	658.215	658.220	658.225	658.230	-	-	-
hrr-points	658.310	658.315	658.320	658.325	658.330	-	-	-
Spare nuts (thread)	658.501 (M 3.5)		658.503 (M 4)					



No. 409

No. 409a

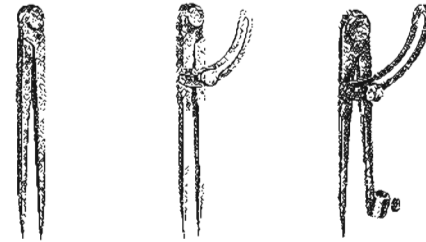
658

## Precision rivet compasses

sturdy design with square legs

1) No. 90 without adj. rail 2) No. 92 with adj. rail

Length	150 mm	200 mm	250 mm	300 mm	400 mm	500 mm
Design:	Item No.					
No. 90, without pencil holder	659.015	659.020	659.025	659.030	659.040	659.050
with pencil holder	659.115	659.120	659.125	659.130	659.140	659.150
No. 92, without pencil holder	659.215	659.220	659.225	659.230	659.240	659.250
with pencil holder	659.315	659.320	659.325	659.330	659.340	659.350



No. 90

No. 92

No. 92  
with pencil holder

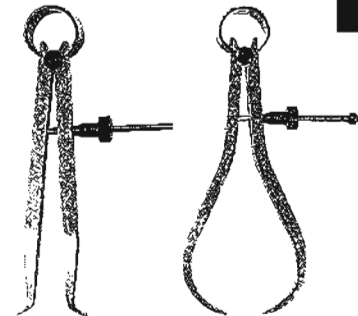
659

## Precision spring calipers

with quick adjustment nut and full-length spindle  
sturdy design with square legs

1) No. 410 inside spring caliper 2) No. 411 outside spring caliper

Length - point to spring	100 mm	150 mm	200 mm	250 mm	300 mm	400 mm	500 mm	600 mm
Measuring width	70 mm	105 mm	140 mm	175 mm	210 mm	280 mm	350 mm	420 mm
Design:	Item No.							
No. 410, standard version	660.010	660.015	660.020	660.025	660.030	660.040	660.050	660.060
nickel-plated	660.110	660.115	660.120	660.125	660.130	660.140	660.150	660.160
No. 411, standard version	660.210	660.215	660.220	660.225	660.230	660.240	660.250	660.260
nickel-plated	660.310	660.315	660.320	660.325	660.330	660.340	660.350	660.360
Spare caliper nuts (thread)	658.501 (M 3.5)		658.503 (M 4)					



No. 410

No. 411

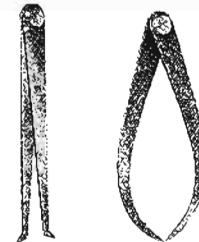
660

## Precision calipers

with sturdy flat legs, without graduation

1) No. 416 inside caliper 2) No. 417 outside caliper

Length	150 mm	200 mm	250 mm	300 mm	400 mm	500 mm	600 mm	750 mm	1000 mm
Measuring width	200 mm	260 mm	325 mm	390 mm	520 mm	650 mm	780 mm	975 mm	1300 mm
Design:	Item No.								
No. 416	661.015	661.020	661.025	661.030	661.040	661.050	661.060	661.075	661.100
No. 417	661.215	661.220	661.225	661.230	661.240	661.250	661.260	661.275	661.300



No. 416

No. 417

661

## Precision calipers No. 1080, chrome-plated

with sturdy flat legs, for inside and outside measurements

Measuring range	120 mm	160 mm	200 mm	250 mm	300 mm	400 mm	500 mm	600 mm
Total length	190 mm	250 mm	310 mm	380 mm	460 mm	610 mm	760 mm	920 mm
Item No.	662.112	662.116	662.120	662.125	662.130	662.140	662.150	662.160



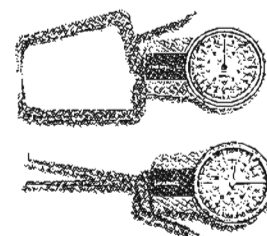
662

## Quick setting caliper with dial gauge

division 0,1 mm. with ball-shaped measuring points, dia. 2 mm

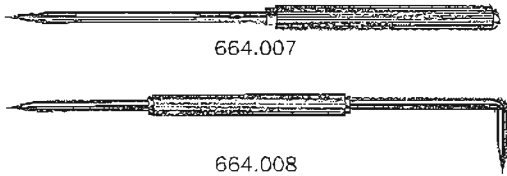
Type	OD 2050	OD 20100	ID 2015	ID 2040	ID 2070
Application	outside measuring		inside measuring		
Measuring range	0-50 mm	50-100 mm	15-65 mm	40-90 mm	70-120 mm
Measuring depth	170 mm	170 mm	170 mm	175 mm	175 mm
Item No.	663.201	663.202	663.301	663.302	663.303

Other designs and sizes upon request.



663

## 664



## Marking scribers for wood

with exchangeable points. 4 mm dia., with knurled handle, 8 mm dia.

Design	Length	Item No.
with 1 point, straight	180 mm	664.007
with 1 straight and 1 cranked needle	250 mm	664.008

## 664A



## Marking scribes of cv-steel for wood

Design	Dimensions	Item No.
with aluminium anodised hexagonal handle and fine slim needle (incl. 20 spare needles)	dia. 6 mm x 125 mm lg.	664.013
Spare needle (per package 50 p.)	dia. 1,5 mm	664.014

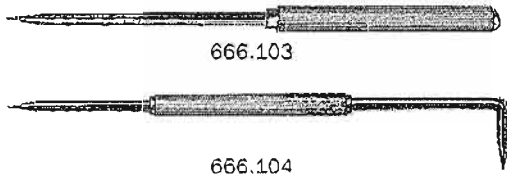
## 665



## Blade-type scribers for wood 'W'

Design	Length	Item No.
with blade, point and knurled round shaft, dia. 6 mm	175 mm	665.001

## 666



## Hard metal scribers

for hard materials, such as steel and cast metals, with replaceable tips, dia. of 4 mm, with knurled handle, dia. 8 mm

Design	Length	Item No.	Spare needle
1 straight needle	180 mm	666.103	666.105 (straight)
1 straight and 1 cranked needle	250 mm	666.104	666.105 (straight) 666.106 (cranked)

## 666A



## Hard-metal scribe for cast iron and steel

Design	Size	Item No.
with aluminium anodised hexagonal handle and fine, slim needle	dia. 6 mm x 125 mm lg.	666.107
spare needle	dia. 2,0 mm	666.108

## 667



## Hard metal scribers No. 3540, pencil shape

for hard materials, such as steel and cast metals

Design	Length	Item No.	Spare needle
hard metal needle	150 mm	667.001	667.002

## 668



## Folding rules with springs

Material	Length	Width	Elem.	Grad.	1% shrink.	1,5% shrink.	2% shrink.	mm/mm
Wood	1 m	16 mm	6	Item No.	668.110	668.115	668.120	668.100
Wood	2 m	16 mm	10		668.210	-	668.220	668.200
Plastic	1 m	13 mm	10		-	-	-	668.300

**Remark:** 1,5% shrinkage is being discontinued and therefore available in limited quantities only.

## 668A



## Roll-tape measures with shrinkage graduation length 2 mtrs.

Tape measure of hardened steel, built in an impact housing, auto-roll back and stop-key, shrinkage graduation at the lower edge, accuracy acc. to DIN 866, stop at the 0-position.

Graduation	1,0%	1,25%	1,5%	2,0%
Item No.	668.410	668.412	668.415	668.420

Other shrinkage graduations upon request!

**Pattern maker's shrinkage rules of stainless steel and dull chrome-plated**

of stainless steel, hardened and dull chrome-plated, with one precision shrinkage graduation, accuracy in acc. with DIN 866/2, edges ground straight, one end rounded, with hole

Shrinkage graduation	Dimensions in mm / Item No.			
	300 x 13 x 0,5	500 x 30 x 1,0	1000 x 35 x 1,2	2000 x 35 x 1,2
0.5 %	669.509	669.510	669.511	669.512
0.8 %	669.525	669.526	669.527	669.528
1.0 %	669.533	669.534	669.535	669.536
1.25 %	669.537	669.538	669.539	669.540
1.5 %	669.541	669.542	669.543	669.544
1.75 %	669.545	669.546	669.547	669.548
2.0 %	669.549	669.550	669.551	669.552
2.25 %	669.553	669.554	669.555	669.556
2.5 %	669.557	669.558	669.559	669.560
3.0 %	669.561	669.562	669.563	669.564



**Pattern maker's shrinkage and growth rule Nr. 92S / 92W**

of stainless spring strip steel, with etched graduation on the lower edge

Available shrinkage grad.:	0.2 %	0.3 %	0.4 %	0.6 %	0.7 %	0.75 %	1.3 %	1.4 %	1.6 %	1.65 %
	1.7 %	1.8 %	2.2 %	2.4 %	2.6 %	2.7 %	2.75 %	3.25 %	3.5 %	4.0 %
	4.2 %	4.5 %	5.0 %	6.0 %	7.0 %	8.0 %	9.0 %	10.0 %	12.0 %	

Available growth grad.:	0.5 %	1.0 %	2.0 %	2.5 %	3.0 %	3.5 %	4.0 %	4.25 %	4.5 %	5.0 %
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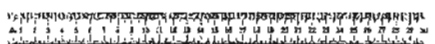
Dimensions	300 x 20 x 0,5 mm	500 x 30 x 1,0 mm	1000 x 30 x 1,0 mm
Design	Item No.		
w/shrinkage grad.	669.601	669.602	669.603
w/growth grad.	669.801	669.802	669.803



Please specify the required shrinkage or growth graduation.

**Hardened steel rules, No. 175 RV of stainless steel, dull chrome-plated**

Make Stiefelmayer, without shrinkage graduation, with two 1/1-mm-graduations



Length mm	150	200	300	300	500	500	1000	1000	1500	2000	3000
Cross section mm	13 x 0,5	13 x 0,5	15 x 0,5	25 x 0,8	19 x 0,5	30 x 0,8	20 x 0,5	35 x 1,3	35 x 1,3	35 x 1,3	35 x 1,3
Item No.	670.201	670.202	670.203	670.204	670.205	670.206	670.207	670.208	670.209	670.210	670.211

**Workshop steel rules with mm-graduation**

1) **No. 451** accuracy in acc. with DIN 866-I flat sides superfinished, narrow sides precision ground, division ending 5 mm from both ends

Length mm	500	1000	1500	2000	3000	4000
Cross section mm	30 x 6	40 x 8	40 x 8	50 x 10	50 x 10	60 x 12
Design	Item No.					
Standard steel	671.1101	671.1102	671.1103	671.1104	671.1105	671.1106
Stainless steel	671.1201	671.1202	671.1203	671.1204	671.1205	671.1206



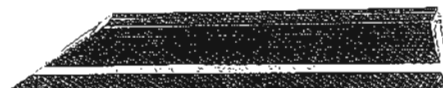
2) **No. 452** accuracy in acc. with DIN 866-II flat side superfinished, narrow sides ground, full length graduation

Length mm	500	1000	1500	2000	2500	3000	4000
Cross section mm	25 x 6	30 x 6	30 x 6	40 x 8	40 x 8	40 x 8	50 x 10
Design	Item No.						
Standard steel	671.2101	671.2103	671.2104	671.2105	671.2106	671.2107	671.2108
Stainless steel	671.2201	671.2203	671.2204	671.2205	671.2206	671.2207	671.2208

Rules can also be provided with shrinkage graduation at extra charge

**Super precise rules, No. 512, hardened**

Accuracy in acc. with DIN 874/00, with insulated grip, fully hardened, all surfaces superfinished, measuring edge additional lapped. Corners and grooves can be checked with the point on one side of the instrument



Length mm	75	100	125	150	200	300	400	500	600	800	1000
Cross section mm	22 x 6	22 x 6	22 x 6	22 x 6	22 x 6	30 x 7	30 x 7	30 x 7	40 x 7	45 x 10	45 x 10
Design	Item No.										
Standard steel	672.101	672.102	672.103	672.104	672.105	672.106	-	-	-	-	-
Stainless steel	672.201	672.202	672.203	672.204	672.205	672.206	672.207	672.208	672.209	672.210	672.211
Wooden case	672.601	672.602	672.603	672.604	672.605	672.606	672.607	672.608	672.609	672.610	672.611

For calibration see page 23, Item No. 594

**673****Workshop steel rules** without mm-division1) **No. 465** accuracy in acc. with DIN 874-I

flat and narrow sides are superfinished up to 2000 mm with square cross section, 2000 mm and longer rules with I-shaped cross section and two slots

Length mm	500	750	1000	1500	2000	2500	3000	4000
Cross section mm	40 x 8	50 x 10	50 x 10	60 x 12	70 x 15	80 x 15	100 x 16	120 x 18
Design	Item No.							
Standard steel	673.1101	673.1102	673.1103	673.1104	673.1105	673.1106	673.1107	673.1108

2) **No. 466** accuracy in acc. with DIN 874-II

flat sides superfinished, narrow sides precision ground, up to 3000 mm with square cross section, 4000 mm and longer rules with I-shaped cross section and two slots

Length mm	500	750	1000	1500	2000	2500	3000	4000
Cross section mm	40 x 8	40 x 8	40 x 8	50 x 10	60 x 12	70 x 15	80 x 15	100 x 16
Design	Item No.							
Standard steel	673.2101	673.2102	673.2103	673.2104	673.2105	673.2106	673.2107	673.2108



For calibration see page 23, Item No. 594

**674****Lightmetal rules Type 418**

accuracy in acc. with DIN 866-II

**Description:**

of drawn aluminium, anodised, glare-free reading with black mm-graduation



Length mm	Cross section mm	Item No.
300	50 x 5	674.307
600	50 x 5	674.310
1000	50 x 5	674.312

**675****Parallel blocks of cast iron**

machined in pairs, with four recesses



Length x width x height	60 x 120 x 100 mm	75 x 150 x 130 mm	90 x 200 x 170 mm
Weight/pair	6 kg	10 kg	20 kg
Design:	Item No.		
milled	675.101	675.102	675.103
scraped	675.201	675.202	675.203

**676****Prisms of tight special cast iron**

for use on marking plates for marking, levelling and checking round workpieces



Length x width x height	100 x 40 x 30 mm	150 x 50 x 40 mm	200 x 70 x 50 mm	250 x 85 x 60 mm	300 x 100 x 65 mm
Weight/piece	0,6 kg	1,4 kg	2,7 kg	6,5 kg	7,3 kg
for dia	7 - 35 mm	8 - 45 mm	10 - 70 mm	10 - 80 mm	10 - 90 mm
Design:	Item No.				
milled	676.110	676.120	676.130	676.135	676.140
scraped	676.210	676.220	676.230	676.235	676.240

**677****Finishing plates**

of special cast iron with a close-grained, non-porous structure, high precision, no warping

Accuracy of the surface (tolerances see page 43)

DIN 876 III = planed

DIN 876 II = scraped or lapped

DIN 876 I = fine-scraped or lapped

Lateral edges machined at precise angularity. Underside with supporting cams.

Wooden cover and handles available at extra charge.



Size mm	Height mm	Weight kg
200 x 200	65	7
300 x 200	65	10
300 x 300	85	19
400 x 300	85	25
400 x 400	85	27
500 x 400	95	37
500 x 500	100	50
600 x 400	100	55
600 x 500	100	59

Size mm	Height mm	Weight kg
600 x 600	125	81
700 x 500	125	88
800 x 500	125	100
800 x 600	145	127
800 x 800	150	176
1000 x 600	150	164
1000 x 800	175	236
1000 x 1000	175	290
1200 x 800	175	287



## Marking plates

of prime special cast iron with a close-grained, non-porous structure in the standard design

Sturdy structure with reinforcing ribs; if correctly supported on the recommended number of supports, no warping of the marking plate will occur.

Accuracy of the surface: in accordance with

DIN 876 III = planed

DIN 876 II = scraped

DIN 876 I = fine-scraped

Allowances see p. 43

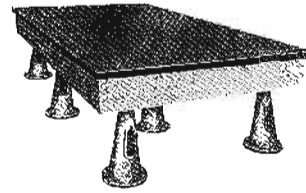


Plate size	Plate thickness	Rib height	Plate height	Weight	No. of supports reqd.	Plate size	Plate thickness	Rib height	Plate height	Weight	No. of supports reqd.
mm	mm	mm	mm	kg		mm	mm	mm	mm	kg	
1500 x 1000	30	180	210	690	4	3500 x 2500	60	240	300	5900	12
1500 x 1500	30	180	210	1185	5	4000 x 1000	50	200	250	2480	8
1800 x 1200	40	180	220	1100	4	4000 x 1500	50	200	250	3960	11
2000 x 1000	40	180	220	900	4	4000 x 2000	50	250	300	4800	11
2000 x 1250	40	210	250	1420	6	4000 x 2500	60	240	300	6800	12
2000 x 1500	40	210	250	1670	5	4500 x 1500	50	200	250	4410	11
2000 x 2000	40	210	250	2115	5	4500 x 2000	50	250	300	5400	11
2500 x 1000	40	210	250	1425	6	4500 x 2500	60	240	300	7700	12
2500 x 1250	40	210	250	1680	6	5000 x 1000	50	250	300	3300	10
2500 x 1500	40	210	250	1980	8	5000 x 1500	50	250	300	4800	14
2500 x 2000	50	200	250	2830	8	5000 x 2000	50	250	300	6100	14
3000 x 1000	40	210	250	1680	6	5000 x 2500	60	240	300	8700	15
3000 x 1500	40	210	250	2475	8	6000 x 1500	50	250	300	5800	14
3000 x 2000	50	250	300	3300	8	6000 x 2000	50	250	300	7200	14
3000 x 2500	60	240	300	5100	9	6000 x 2500	60	240	300	10500	15
3500 x 1000	50	200	250	2000	8	7000 x 1500	50	250	300	6780	17
3500 x 1500	50	200	250	3100	11	7000 x 2000	60	240	300	9300	17
3500 x 2000	50	250	300	4060	11	7000 x 2500	60	240	300	11800	18

Other sizes upon request!

All the above mentioned plates are cast, machined and supplied in one piece. Larger marking plates are assembled out of several smaller plates which are screwed together. We can also supply marking plates with marking lines or dust groove in accordance to customer's specifications. Plates with milled T-grooves in accordance with DIN 650 in longitudinal direction as well as across can also be supplied.

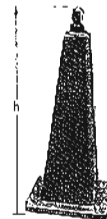
**Note:** Supports and stands are not included in the support and must be ordered separately!

## Marking plate supports of cast iron

with height adjustment screws (ball head), sturdy and stable. Support height (h) + plate height = working height

Size	1	2	3	4	5	6	7
h ca. mm	270 - 320	345 - 395	420 - 470	500 - 550	570 - 620	620 - 670	700 - 750
Weight ca. kg	21	27	32	38	43	43	44
Item No.	679.001	679.002	679.003	679.004	679.005	679.006	679.007

Supports with ball bearing support (VSK) or vibration absorption (VSD) available at extra price.



## Steel stands for marking and measuring plates

Sturdy and stable stand of rolled angles.

At an extra charge the stands can also be equipped with setscrews.

For a working height of 800 mm.

Item No.	for plates up to mm	Weight appr. kg
680.001	400 x 400	15
680.002	500 x 500	24
680.003	600 x 600	27
680.004	800 x 800	44
680.005	1000 x 800	49
680.006	1000 x 1000	52
680.007	1200 x 800	52
680.009	1500 x 1000	70
680.010	2000 x 1000	82

Intermediate sizes also available.



## Leveling plate, ripped

of top-quality special cast iron with the addition of steel.

This proven alloy guarantees unparalleled close-grained structure and strength.

- 1) surface shaped (no surface  
2) surface and acc. to DIN 876)  
4 sides shaped



Size appr. mm	Thickness appr. mm	Rib height appr. mm	Weight appr. kg
200 x 200	20	40	9
300 x 300	20	40	16
	40	40	30
400 x 400	30	50	42
	40	50	54
500 x 500	40	40	84
	50	50	102
600 x 600	40	40	120
	50	50	148
700 x 700	40	40	165
	60	60	240
800 x 800	40	40	216
	60	60	315
1000 x 800	40	60	270
	60	60	390
1000 x 1000	40	60	340
	60	60	450
1200 x 800	40	60	325
	60	60	470
1200 x 1000	40	60	410
	60	60	590
1500 x 1000	40	60	510
	60	60	735
2000 x 1000	40	60	680
	60	60	980
2000 x 1500	50	100	1300
	75	70	1700
2500 x 1000	60	60	1350
2500 x 1500	70	70	2340
3000 x 1000	70	70	1800
3000 x 1500	70	70	2700
	80	120	3250
3000 x 2000	70	90	4100
	80	120	4370
4000 x 1500	80	120	4850
4000 x 2000	80	120	6100

Other sizes upon request.

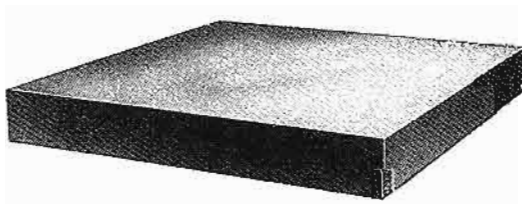
**Remark:** Supports and stands not included in supply; please refer to p. 41/43, Item Nos. 679/682.

## 681A

## Leveling plates, solid

of top-quality special cast iron with the addition of steel.

This proven alloy guarantees unparalleled close-grained structure and strength. Surface and 4 sides shaped (no surface acc. to DIN 876)



Size appr. mm	Thickness appr. mm	Weight appr. kg	Size appr. mm	Thickness appr. mm	Weight appr. kg
200 x 200	20	6	2000 x 1500	100	2250
	40	12		120	2700
300 x 300	30	21	2500 x 1000	140	3150
	50	34		100	1830
400 x 400	40	47	2500 x 1500	120	2200
	50	60		140	2600
500 x 500	50	94	3000 x 1000	110	3050
	60	112		130	3600
500 x 600	60	160	3000 x 1500	150	4150
	70	189		120	2660
700 x 700	80	294	4000 x 1500	140	3100
	60	288		160	3550
800 x 800	100	480	4000 x 2000	120	4000
	80	480		140	4660
1000 x 800	100	600	4000 x 2000	160	5350
	100	750		120	5330
1000 x 1000	100	720	4000 x 2000	140	6220
	100	1125		160	7100
1200 x 800	120	1350	4000 x 2000	120	5330
	140	1575		140	6220
1500 x 1000	100	1500	4000 x 2000	160	7100
	120	1800		120	7100
2000 x 1000	140	2100	4000 x 2000	140	8300
	140	2100		160	9500

**Remark:** Supports and stands not included in supply; please refer to p. 41/43, Item Nos. 679/682.

The plates can also be supplied with cast integral or drilled holes or with grooves.

Other sizes upon request.

## Stands for leveling plates, ribbed or solid

682

The stands have 4 or more feet of sturdy rolled angles with flat iron reinforcements.

Height including plate is always app. 800 mm from the floor.

Larger plates should be placed on supports (see p. 41).

For plate size	appr. mm	400 x 400	500 x 500	600 x 600	700 x 700	800 x 800	1000 x 800	1000 x 1000	1200 x 800
Weight	appr. kg	16	27	29	42	46	50	54	54
No. of legs		4	4	4	4	4	4	4	4

For plate size	appr. mm	1200 x 1000	1500 x 1000	2000 x 1000	2000 x 1500	2500 x 1000	2500 x 1500	3000 x 1000
Weight	appr. kg	65	72	86	105	100	180	160
No. of legs		4	4	4	6	6	6	6



## Check plate of dark hardrock (Item No. 5001)

683

of selected close and fine grained granite of prime quality, absolutely free of flaws.

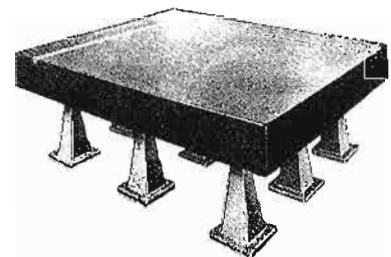
The top surface of the plate is superfinished in accordance with DIN 876, DIN 876-0 or DIN 876-1.

All plates are designed for three-point support. For stands or supports **steel inserts** can be fitted on the underside at an extra price (3 inserts up to plate size 600 x 500 mm, larger plates with 5 inserts).

Plate length	appr. mm	250	400	400	500	630	630	600	630	800
Plate width	appr. mm	250	250	400	400	400	400	500	630	600
Plate thicken.	appr. mm	50	50	50	70	70	100	70	70	90
Weight	appr. kg	9	14	23	40	51	72	61	81	139

Plate length	appr. mm	1000	1000	1200	1200	1600	1600	2000	2000	2000	2000	2500
Plate width	appr. mm	630	630	800	800	1000	1000	1000	1000	1500	2000	1500
Plate thicken.	appr. mm	100	140	120	150	160	200	200	230	300	300	300
Weight	appr. kg	183	260	335	420	730	925	1150	1450	2560	3420	3200

Other sizes upon request!



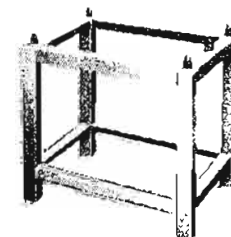
## Stands for hardrock check plates

684

Sturdy structure of square tubing;

height including plate is always around 850 mm from the floor.

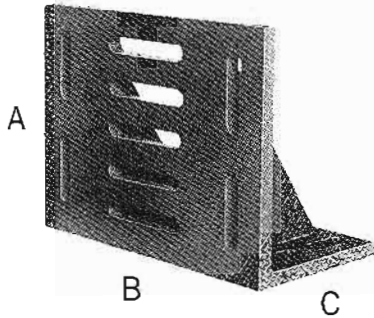
All sizes with adjusting spindle with fine thread M 27 x 1.5.



for plate size	appr. mm	400 x 400	500 x 400	630 x 400	600 x 500	630 x 630	800 x 600	1000 x 630	1200 x 800	1600 x 1000	2000 x 1000
Weight	appr. kg	13	14	15	16	17	20	23	25	31	36

## Surface accuracy DIN 876, applies to Items 677 – 686

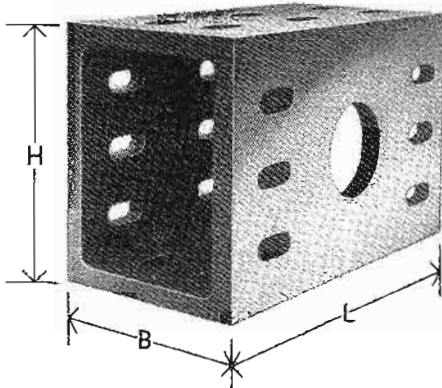
Total length of the longest edge in mm	adm. deviation from the plane at any point in mm				
	Class of accuracy 00	Class of accuracy 0	Class of accuracy I	Class of accuracy II	Class of accuracy III
100	0,002	0,004	0,011	0,022	0,044
200	0,002	0,004	0,012	0,024	0,048
300	0,003	0,005	0,013	0,026	0,052
400	0,003	0,006	0,014	0,028	0,056
500	0,003	0,006	0,015	0,030	0,060
600	0,003	0,007	0,016	0,033	0,065
800	0,004	0,007	0,018	0,036	0,072
1000	0,004	0,008	0,020	0,040	0,080
1200	0,004	0,009	0,022	0,044	0,088
1500	0,005	0,010	0,025	0,050	0,100
2000	0,006	0,012	0,030	0,060	0,120
2500	0,007	0,014	0,035	0,070	0,140
3000	0,008	0,016	0,040	0,080	0,160
3500	0,009	0,018	0,045	0,090	0,180

**685****Clamping angle 'WS' of cast iron**

all edges milled, accuracy of angles in acc. with DIN 875  
surface finish in acc. with DIN 876-III, DIN 876-II or DIN 876-I  
Tolerances see p. 43

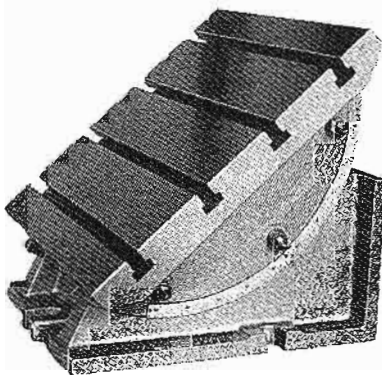
Size	Edge size appr. mm			Weight kg	Item No.		
	A	B	C		876-I	876-II	876-III
1	100	150	75	3	685.311	685.312	685.313
2	150	200	100	6	685.321	685.322	685.323
3	200	275	150	12	685.331	685.332	685.333
3A	250	300	150	16	685.331A	685.332A	685.333A
4	300	400	225	38	685.341	685.342	685.343
5	400	500	300	75	685.351	685.352	685.353
5A	500	600	350	146	685.351A	685.352A	685.353A
6	520	700	390	156	685.361	685.362	685.363
7	600	800	450	220	685.371	685.372	685.373
8	800	1000	600	430	685.381	685.382	685.383
9	1000	1200	700	850	685.391	685.392	685.393
10	1250	1500	900	1370	685.401	685.402	685.403

This angle has slots in the clamping and base surface and two reinforcing ribs on the back side.

**686****Box-type angle 'KW' of cast iron**

for clamping workpieces, with slots; can also be used as spacers.  
Angularity in acc. with DIN 875,  
surface accuracy acc. to DIN 876-III, DIN 876-II or DIN 876-I  
Tolerances see p. 43

Size	Edge size appr. mm			Weight kg	Item No.		
	L	W	H		876-I	876-II	876-III
1	250	150	100	10	686.101	686.102	686.103
2	300	200	150	20	686.201	686.202	686.203
3	400	250	200	50	686.301	686.302	686.303
4	500	300	250	85	686.401	686.402	686.403
5	600	350	250	120	686.501	686.502	686.503
6	800	500	400	400	686.601	686.602	686.603
7	1000	600	500	600	686.701	686.702	686.703

**687****Clamping device 'WA' of cast iron**

reduced physical dimensions.

Tiltable part positively guided in a prismatic guide; the device can be locked in any angle; with a precise scale; tiltable part with T-grooves in accordance with DIN 650. Clamping surface **shaped** or **scraped**.

At an extra charge a worm drive is also available.

Size	1	2	3	4
Adj. range	90°	90°	90°	90°
Size of clamping surface	250 x 250	300 x 300	390 x 400	480 x 500
Size of bottom surface*	220 x 250	270 x 300	300 x 270	380 x 450
Height of clamping plate	160	190	225	260
No. of grooves	3	3	4	4
T-groove size	14	14	14	18
Weight	28	45	65	150
Design	Item No.			
shaped	687.101	687.102	687.103	687.104
scraped	687.201	687.202	687.203	687.204

\* **Remarks** with regard to bottom surfaces:

- 1) if positioned as shown in the ill., the first given dimensions apply;
- 2) if tilted to the right, the second given dimensions apply.

## Clamping table 'WS 300'

Especially developed for the use in pattern shops. May be used as base for milling or on marking plates for marking, measuring and milling of inclined surfaces.

**Light duty version made of aluminium.**

**High rigidity**, two strong levers of cast iron.

**Exact adjustment** of inclination thanks to engraved graduation with vernier.

**Quick setting** and 100 % reproduction of the most common angles (0 – 6°) by means of a rotating height graduation disc made of stainless steel.

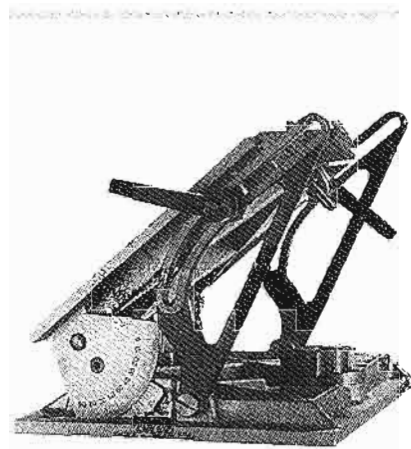
**Quick exchange** of the stopping bar thanks to two screws. The height of the bar may be varied until "0".

The smoothed table surface guarantees highly parallel workings.

### Technical data

Size:	300 x 200 mm
Height:	85 mm
Weight:	6 kg
Range of adjustment:	0° – 90°
Precision of adjustment:	15'
Pre-fixed Inclinations:	0°, 0,5°, 1°, 1,5°, 2°, 2,5°, 3°, 3,5°, 4°, 5°, 6°

Item No. 687.300



687A

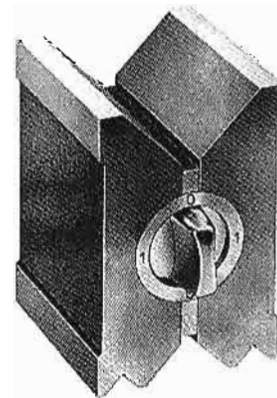
## Permanent magnet check and clamping prisms

suitable for clamping workpieces for marking; the prisms can also be used for cylindrical workpieces.

All surfaces and angles finely ground, face opposite the switch is the magnetic surface

accuracy 0,005 mm.

Item No.	688.001	688.002
Length x width x height mm	80 x 67 x 96	100 x 70 x 95
Cl. dia. mm	9 - 66	9 - 66
Adhesion - prisms kg appr.	40	50
Adhesion - face kg appr.	90	145



688

## Marking fluid

facilitates the marking of workpieces

Supplied in	contents	Colour / Item No.		
		blue	red	white
Plastic bottles	500 ml	689.101	689.102	689.103
Spray can	300 ml	689.201	689.202	689.203

**Solvent spray** for removing marking fluid

Supplied in	contents	Item No.
Spray cans	300 ml	689.301



689

## Marking paste

for checking the surface finish. The paste is applied to the workpieces to be checked and is then spread evenly. The surface finish can be judged by the uniformity of the paste layer.

Supplied in	contents	Colour / Item No.		
		blue	red	white
Tubes	80 ml	690.101	690.102	690.103

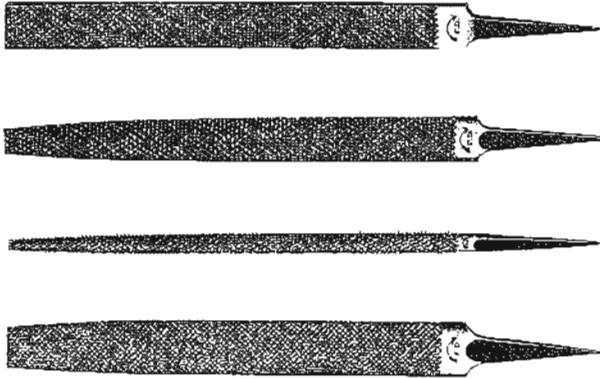


690

# Rasps for working wood and plastics

Cut 2 = coarse Cut 3 = medium Cut 4 = medium fine Cut 5 = fine Cut 6 = extra fine

**691**



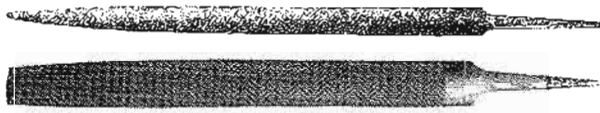
## Dick-Pattern maker's rasps

with extra sharp and deep cut teeth

Cuts: Cut 2 = coarse Cut 3 = medium Cut 5 = fine (most popular in pattern making)

Shape	Dimensions mm	Item No.		
		Cut 2	Cut 3	Cut 5
flat, blunt shape	150 x 15 x 4,0	691.112	-	691.115
	200 x 20 x 5,0	691.122	-	691.125
	250 x 25 x 6,3	691.132	-	-
	300 x 30 x 6,3	691.142	-	-
half-round shape	150 x 9 x 4,0	-	-	691.205
	150 x 12 x 5,3	-	-	691.215
	150 x 16 x 5,3	691.222	691.223	691.225
	200 x 20 x 5,5	691.232	691.233	691.235
	250 x 25 x 7,0	691.242	691.243	691.245
round shape	300 x 29 x 9,0	691.252	-	-
	150 x 8,3 dia.	691.312	-	691.315
	200 x 8,0 dia.	691.322	-	691.325
flat half-round shape	250 x 10,0 dia.	691.332	-	-
	150 x 25 x 4,2	-	-	691.415
	200 x 28 x 4,7	691.422	691.423	691.425
	250 x 31,5 x 5,3	691.432	691.433	691.435
	300 x 35,5 x 6,0	691.442	691.443	691.445

**692**



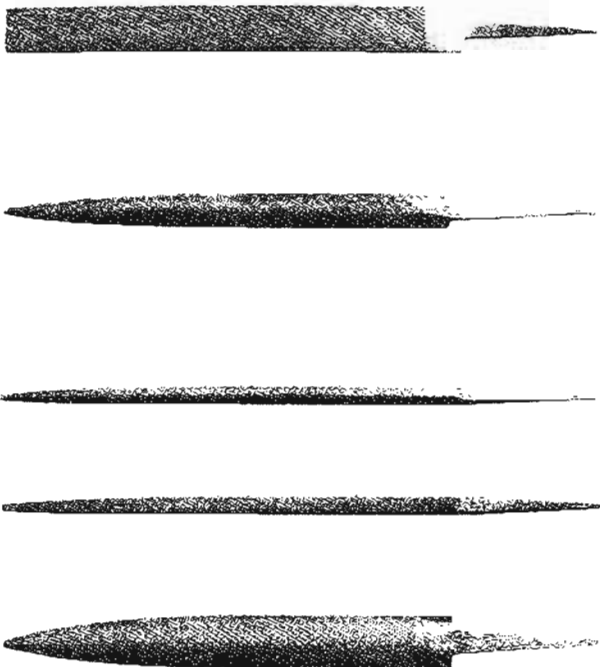
## Special pattern maker's rasps, narrow shape

with extra sharp and deep-cut teeth

Cut 5 = fine

Shape	Dimensions mm	Item No.
half-round	150 x 9 x 4	692.115
	200 x 15 x 4	692.125
flat, half-round	150 x 16 x 4	692.215
	200 x 22 x 4	692.225
	250 x 25 x 5	692.235

**693**



## Hand cut rasps

Cuts: Cut 3 = medium Cut 4 = medium fine Cut 5 = fine Cut 6 = extra fine

Shape	Dimensions mm	Item No.			
		Cut 3	Cut 4	Cut 5	Cut 6
flat, blunt shape	100 x 10 x 2,5	-	693.114	693.115	-
	125 x 12,5 x 3,2	-	693.124	693.125	-
	150 x 16 x 4,0	693.133	693.134	693.135	693.136
	200 x 12 x 3,0	693.153	693.154	693.155	693.156
	200 x 20 x 5,0	693.143	693.144	693.145	693.146
	250 x 25 x 6,3	693.163	693.164	693.165	-
	300 x 30 x 6,7	693.173	693.174	693.175	-
	half-round shape	100 x 10 x 3,3	-	693.214	693.215
125 x 12 x 4,0		-	693.224	693.225	-
150 x 9 x 3,0		693.233	693.234	693.235	693.236
150 x 12 x 4,0		693.243	693.244	693.245	693.246
150 x 16 x 5,0		693.253	693.254	693.255	693.256
200 x 12 x 4,0		693.263	693.264	693.265	693.266
200 x 20 x 6,7		693.273	693.274	693.275	693.276
250 x 25 x 8,3		693.283	693.284	693.285	-
300 x 31,5 x 10,5		693.293	693.294	693.295	-
round shape		100 x 4, dia.	-	693.314	693.315
	125 x 5,0 dia.	-	693.324	693.325	-
	150 x 6,3 dia.	693.333	693.334	693.335	693.336
	200 x 8,0 dia.	693.343	693.344	693.345	693.346
	250 x 10,0 dia.	693.353	693.354	693.355	-
	300 x 12,0 dia.	693.363	693.364	693.365	-
square shape	125 x 5 x 5	-	693.424	693.425	-
	250 x 6 x 6	693.433	693.434	693.435	693.436
	200 x 6 x 8	693.443	693.444	693.445	693.446
	250 x 10 x 10	693.453	693.454	693.455	-
	300 x 12 x 12	693.463	693.464	693.465	-
flat, half-round shape	150 x 18 x 4,2	693.533	693.534	693.535	693.536
	150 x 25 x 4,2	693.543	693.544	693.545	693.546
	200 x 28 x 4,7	693.553	693.554	693.555	693.556
	250 x 31,5 x 5,3	693.563	693.564	693.565	-
	300 x 35,5 x 6,0	693.573	693.574	693.575	-

Remarks: Item No. 691 - 693 supplied without handle; handles see No. 715.

# Rasps for working wood and plastics

Cut 3 = medium Cut 4 = medium fine Cut 5 = fine

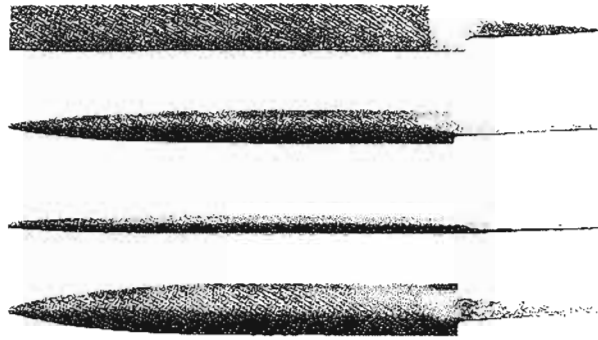
## Special hand-cut rasps

with superfine special cut, ideal for pattern making!  
(similar to cut 6)

Shape	Dimensions mm	Item No.
flat, blunt shape	150 x 15 x 3,5	694.131
half-round shape	150 x 11 x 3,5	694.251
round	150 x 6 dia.	694.331
	200 x 8 dia.	694.341
flat, half-round shape	200 x 23 x 4,5	694.551
	250 x 23 x 4,5	694.561

Other sizes upon request!

Remarks: Item No. 694 supplied without handle.  
Handles see No. 715.

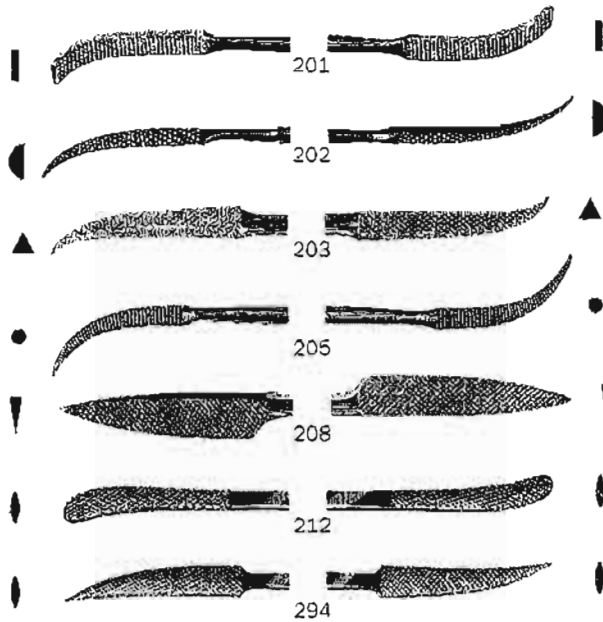


694

## Dick-Grooved rasps, standard model

Cuts: Cut 3 = medium Cut 5 = fine

Model No.	Total length	Shaft thickness	Item No.	
			Cut 3	Cut 6
G 201	200 mm	5 mm	695.301	695.501
G 202	200 mm	5 mm	695.302	695.502
G 203	200 mm	5 mm	695.303	695.503
G 205	200 mm	5 mm	695.305	695.505
G 208	200 mm	5 mm	695.308	695.508
G 212	200 mm	5 mm	695.312	695.512
G 294	200 mm	5 mm	695.394	695.594

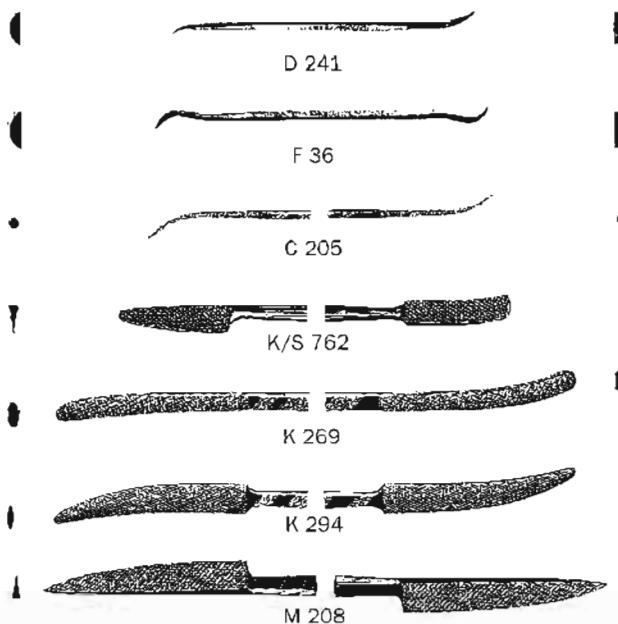


695

## Special Dick-grooved rasps

Model No.	Total length	Shaft thickness	Cut	Item No.
D 241	180 mm	3,5 mm	5	696.001
F 36	180 mm	4,0 mm	5	696.002
C 205	185 mm	3,0 mm	5	696.003
K/S 762	210 mm	6,0 mm	3	696.004
K 269	280 mm	6,5 mm	4	696.005
K 294	280 mm	6,5 mm	4	696.006
M 208	300 mm	7,0 mm	4	696.007

Other models upon request!

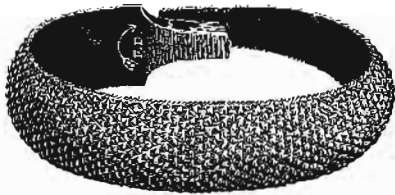


696

# Rasps for working wood and plastics

Cut 2 = coarse    Cut 6 = extra fine    Cut 0 = extra coarse    Cut 1 = coarse

**697**



T 301



T 302

## Rasps for staircase-makers

Item No.	Stretched length appr.	Cross section appr.	Cut	Item No.
T 301	250 mm	25 x 7 / 17 x 6 mm	cut 2	697.301
T 302	300 mm	20 x 10 mm	one side cut 1 one side cut 2	697.302

**698**

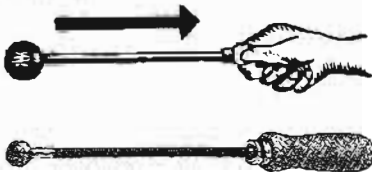


## Rasps, with handle

Types of cut: cut 2 = coarse    cut 6 = extra fine

Shape	Total length	Cut length	Cross section	Item No.	
				Cut 2	Cut 6
flat blunt	200 mm	100 mm	10 x 2,5 mm	698.102	698.106
half-round	200 mm	100 mm	12 x 3,5 mm	698.202	698.206
set of 5 rasps (flat, blunt, half-round, triang., sq.)				698.302	-

**699**



## Pattern maker's fillet rasps fine special cut

hand cut, with strong shank and wooden handle

For working fillets to the specified radius; in contrary to all other rasps, these fillet rasps are pulled to rasp material off.

1) Ball shape:

dia. mm	6	8	10	15	20	25	30	35	40	50
Item No.	699.106	699.108	699.110	699.115	699.120	699.125	699.130	699.135	699.140	699.150

2) Disk shape:

Thickness mm	Radius mm	Diameter mm / Item No.				
		10	15	20	25	30
6	3	699.211	699.212	699.213	699.214	699.215
8	4	699.221	699.222	699.223	699.224	699.225
12	6	-	-	699.233	699.234	699.235
14	7	-	-	699.243	699.244	699.245
16	8	-	-	-	699.254	699.255
18	9	-	-	-	699.264	699.265

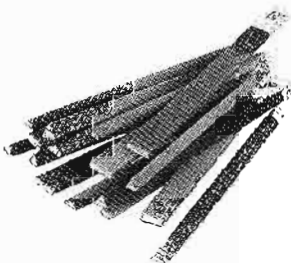
**700**



## Wood files, coarse cut

Shape	Dimensions	Cut	Item No.
half-round	200 x 22,4 x 5,6 mm	0	700.120
	250 x 25 x 8,3 mm	0	700.125
flat/half-round	250 x 31,5 x 5,3 mm	1	700.225
round	300 x 35,5 x 8 mm	1	700.230

**701**



## Abrasive paper files

multi-purpose abrasive paper glued to wooden strip, total length about 250 mm

Shape	Cross section	Item No.						
		grain 60	grain 80	grain 100	grain 120	grain 150	grain 180	
flat blunt		18 x 5 mm	701.106	701.108	701.110	701.112	701.115	701.118
half-round		12 x 5 mm	701.206	701.208	701.210	701.212	701.215	701.218
triangular		10 x 10 x 10 mm	701.306	701.308	701.310	701.312	701.315	701.318
square		9 x 9 mm	701.406	701.408	701.410	701.412	701.415	701.418
round		10 mm dia.	701.506	701.508	701.510	701.512	701.515	701.518

Other grains upon request!



## Special files for plastics

Shape	Dimensions	Cut	Item No.
flat blunt	150 x 16 x 4 mm	2	702.115
half-round	150 x 18 x 4,5 mm	2	702.215



702

## Small multi-purpose files (1102 MZ)

with PVC-coated steel handle

with special cut for working soft metals, plastic and wood

Shape	Total length	Cut length	Cross section	Item No.
flat blunt	200 mm	100 mm	10 x 4 mm	703.100

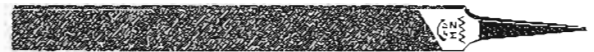


703

## Multi-purpose files (1104 MZ)

one side with coarse cut (roughing), one side with fine cut (smoothing); for working steel, non-ferrous metals, soft metals, plastic and wood

Shape	Dimensions	Item No.
flat blunt	200 x 20 x 5 mm	703.220
	250 x 25 x 6,3 mm	703.225



703A

## Saw files, triangular (sharpening files)

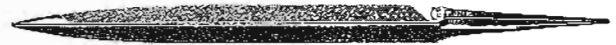
with blank tip, single cut, cut 2

1) No. 1232, most commonly used version

Length of cut x width mm	100 x 9	113 x 10	125 x 11	150 x 13	175 x 14	200 x 16
Item No.	704.110	704.111	704.112	704.115	704.117	704.120

2) No. 1237, small, thin shape

Length of cut x width mm	100 x 6,3	113 x 7,1	125 x 7,5	150 x 9	175 x 11,2	200 x 12
Item No.	704.210	704.211	704.212	704.215	704.217	704.220



704

## Fine saw files No. 1240, parallel, single cut, cut 3

Length of cut x cross section mm	100 x 9 x 4
Item No.	705.100



705

## Belt saw files, triangular

No. 1231, round edges, cut 2

Length of cut x width mm	125 x 13	150 x 15	175 x 16	200 x 17
Item No.	706.112	706.115	706.117	706.120



706

## 'ÖBERG'-Bandsaw files, triangular

No. 192, round edges, cut 2

Length of cut x width mm	150 x 11	200 x 14
Item No.	706.215	706.220



706A

Concerning Item No. 702 – 706A: supplied without handle. Handles see p. 51. Item No. 715.

## Machine bandsaw files, triangular

single cut, No. 3231

with rounded edges, cut 2, without tongue

Length of cut x width mm	215 x 15	215 x 10
Item No.	707.100	707.200



707

# Precision files for metalworking

Cut 1 = coarse - Cut 6 = extra fine

Packing unit contains 5 files, single files available at extra charge

## 708



### Flat, blunt precision files

#### 1) normal, width shape (1112 P)

Dimensions mm	Item No.					
	Cut 1	2	3	4	5	6
100 x 10 x 2,5	708.111	708.112	708.113	708.114	708.115	-
125 x 12,5 x 3,2	708.121	708.122	708.123	708.124	-	-
150 x 16 x 4	708.131	708.132	708.133	708.134	708.135	708.136
200 x 20 x 5	708.141	708.142	708.143	708.144	708.145	708.146
250 x 25 x 6,3	708.151	708.152	708.153	708.154	-	-
300 x 30 x 7	708.161	708.162	708.163	-	-	-

#### 2) semi-narrow shape (1113 P)

Dimensions mm	Item No.		
	Cut 1	2	3
150 x 12 x 4	708.231	708.232	708.233
200 x 15 x 5	708.241	708.242	708.243
250 x 18 x 5	708.251	708.252	708.253

#### 3) narrow shape (1114 P)

Dimensions mm	Item No.				Dimensions mm	Item No.		
	Cut 1	2	3	4		Cut 1	2	3
125 x 8 x 3	708.321	708.322	708.323	-	250 x 15 x 5	708.351	708.352	708.353
150 x 10 x 3,4	708.331	708.332	708.333	708.334	300 x 18 x 5	708.361	-	708.363
200 x 12 x 4	708.341	708.342	708.343	708.344				

## 709



### Triangular precision files

#### 1) normal, pointed shape (1136 P)

Dimensions mm	Item No.			
	Cut 1	2	3	4
100 x 5,5	709.111	709.112	709.113	-
125 x 8	709.121	709.122	709.123	-
150 x 9	709.131	709.132	709.133	709.134
200 x 13,0	709.141	709.142	709.143	-
250 x 16,0	709.151	709.152	709.153	-

#### 2) narrow shape (1135 P)

Dimensions mm	Item No.		
	Cut 1	2	3
150 x 5,5	-	709.232	709.233
200 x 7	709.241	709.242	709.243

## 710



### Square precision files (1146 P)

Dimensions mm	Item No.			Dimensions mm	Item No.		
	Cut 1	2	3		Cut 1	2	3
100 x 4	710.111	710.112	710.113	200 x 8	710.141	710.142	710.143
125 x 5	710.121	710.122	710.123	250 x 10	710.151	710.152	710.153
150 x 6,3	710.131	710.132	710.133				

## 711



### Knife-shaped precision files (1176 P) back without cut

Dimensions mm	Item No.			Dimensions mm	Item No.		
	Cut 1	2	3		Cut 1	2	3
100 x 10 x 3,5	-	711.112	-	200 x 20 x 6,4	711.141	711.142	711.143
150 x 16 x 5,2	711.131	711.132	711.133	250 x 25 x 6,5	-	711.152	-

## 712



### Birds tongue-shaped precision files (1196 P) unequally rounded

Dimensions mm	Item No.		Dimensions mm	Item No.			
	Cut 2	3		Cut 1	2	3	4
100 x 12 x 3,5	712.112	712.113	150 x 15 x 4,5	712.131	712.132	712.133	712.134
125 x 13 x 4	712.122	712.123	200 x 21 x 6	712.141	-	712.143	-

## 713



### Half-round precision files

#### 1) normal, pointed shape (1156 P)

Dimensions mm	Item No.				
	Cut 1	2	3	4	5
100 x 12 x 3,5	713.111	713.112	713.113	713.114	-
125 x 13 x 4	713.121	713.122	713.123	713.124	-
150 x 19 x 5,5	713.131	713.132	713.133	713.134	713.135
200 x 22 x 6,5	713.141	713.142	713.143	713.144	-
250 x 26 x 8	713.151	713.152	713.153	-	-

#### 2) narrow, pointed shape (1155 P)

Dimensions mm	Item No.			
	Cut 1	2	3	4
125 x 10 x 3	-	713.222	-	-
150 x 12 x 3,5	713.231	713.232	713.233	713.234
200 x 15 x 4,5	713.241	713.242	713.243	-
250 x 15 x 4,5	713.251	713.252	713.253	-

## 714



### Round precision files

#### 1) normal, pointed shape (1166 P)

Dimensions mm	Item No.				Dimensions mm	Item No.		
	Cut 1	2	3	4		Cut 1	2	3
100 x 4	714.111	714.112	714.113	-	200 x 7,5	714.141	714.142	714.143
125 x 5	714.121	714.122	714.123	-	250 x 9,5	714.151	714.152	714.153
150 x 6	714.131	714.132	714.133	714.134				

#### 2) cylindrical shape (1164 P)

Dimensions mm	Item No.
	Cut 2
150 x 6	714.332
200 x 7,5	714.342

Concerning Item No. 708 - 714: supplied without handle. Handles see p. 51 Item No. 715.

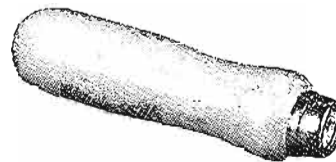
## File handles

- 1) **hardwood handle** in acc. with DIN 395, ground and waxed with clamp

Item No.	715.108	715.110	715.112	715.114	715.116
Length of handle	80 mm	100 mm	120 mm	140 mm	160 mm
for file length	100 mm	125 - 175 mm	200 mm	250 - 300 mm	400 mm

- 2) **plastic handle**, handy, impact resistant, excellent grip. Sizes 110 & 120 can be used on both sides.

Item No.	715.210	715.211	715.212
Length of handle	100 mm	110 mm	120 mm
for file length	100 - 150 mm	200 - 250 mm	250 - 300 mm



**715**



## File brushes

For easily cleaning files and for removing fillings, thus increasing the performance.

Item No.	716.034	716.134	716.334
Length mm	100	115	115
Width mm	25	40	55



**716**

## Files for metalworking (Cut 0 = extra coarse)

### Special files for light metals

(Aluminium files) cut 0

- 1) **flat, blunt (1312)**  
both flat sides and one narrow side with cut  
a) standard width shape



**717**

Dimensions mm	150 x 16 x 4	200 x 20 x 5	250 x 25 x 6,3	300 x 30 x 7
Item No.	717.130	717.140	717.150	717.160

- b) narrow shape

Dimensions mm	150 x 8 x 3	200 x 10 x 3,5
Item No.	717.230	717.240

- 2) **half-round, massive (1352)**

- a) standard width shape

Dimensions mm	150 x 18 x 5,5	200 x 22 x 6,5	250 x 26 x 8	300 x 29 x 10
Item No.	717.330	717.340	717.350	717.360

- b) narrow shape

Dimensions mm	150 x 10,3 x 3,3	200 x 12,5 x 4,2
Item No.	717.430	717.440

- 3) **round shape**

Dimensions mm	150 x 6 Ø	200 x 8 Ø
Item No.	717.530	717.540



### Special files for soft metals

(tin files) cut 0

- 1) **flat, blunt (1612 w)**  
both flat sides and one narrow side with cut



**718**

Dimensions mm	200 x 20 x 5	250 x 25 x 6,3	300 x 30 x 6,7
Item No.	718.140	718.150	718.160

- 2) **half-round (1652 w)**

Dimensions mm	200 x 20 x 6,7	250 x 24 x 7	300 x 29 x 10
Item No.	718.240	718.250	718.260



Concerning Item No. 717 - 718:  
supplied without handle. Handles see above.

# 719

## Milled hand files (milled cut)

Cut 1 = coarse Cut 2 = medium Cut 3 = fine

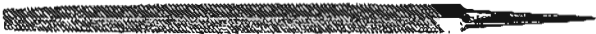
Package contains 5 files. Single files available at extra price.



610



611



630



640



650



660

### 1) No. 610 flat, blunt, diagonal tothing.

both flat sides and one narrow side toothed

Dimensions mm	Item No.			
	250 x 26 x 7	300 x 31 x 8	350 x 68 x 9	400 x 39 x 10
toothing 1	719.151	719.161	719.171	719.181
toothing 2	719.152	719.162	719.172	-
toothing 3	719.153	719.163	-	-

### 2) No. 611 flat, blunt, radial tothing.

both flat sides and one narrow side with radial tothing

Dimensions mm	Item No.		
	250 x 24 x 6,2	300 x 29 x 8	350 x 34 x 9,2
toothing 1	719.251	719.261	719.271
toothing 2	719.252	719.262	719.272

### 3) No. 630 triangular, all 3 sides toothed

Dimensions mm	Item No.	
	250 x 17	300 x 20
toothing 1	719.351	719.361
toothing 2	719.352	719.362
toothing 3	719.353	719.363

### 4) No. 640 square, all 4 sides toothed

Dimensions mm	Item No.	
	250 x 10	300 x 12
toothing 1	719.451	719.461
toothing 2	719.452	719.462
toothing 3	719.453	719.463

### 5) No. 650 half-round, concave, curved externally toothed only

Dimensions mm	Item No.		
	250 x 23	300 x 27	350 x 30
toothing 1	719.551	719.561	719.571
toothing 2	719.552	719.562	-

### 6) No. 660 round, tapered

Dimensions mm	Item No.	
	250 x 10	300 x 12
toothing 1	719.651	719.661
toothing 3	719.653	719.663

Concerning Item No. 719: supplied without handles. File handles see Item No. 715

# 719A



719.810/815



719.811



719.820/822



719.830



719.814



719.821



719.860

## Hand deburring tool Item No. 719.800

complete set with universal handle, tool holder and one tool No. 719.810 and 719.820

Tools available (Shaft dia. 2,6 mm. each package contains 10 pieces)

Item No.	Application
719.810	universal-hss-tool for steel and aluminium
719.815	tin-coated-hss-tool with greater hardness
719.814	hm-tool for long shavings materials
719.811	diamond-coated tool for hardened steel
719.820	light hss-tool for brass and plastics
719.822	tin-coated-hss-tool with incr. hardness
719.821	hm-tool for short shavings materials
719.830	light hss-tool for deburring holes in steel and aluminium
719.860	hss-tool for deburring places which are hard to reach

# Light duty files for metalworking

720

with high precision cuts

Type 1 – 74, in 2 different sizes:

Size B = 150 mm total length

Size E = 170 mm total length

Cut 1 = coarse (pref. for alu-working!)

Cut 2 = medium

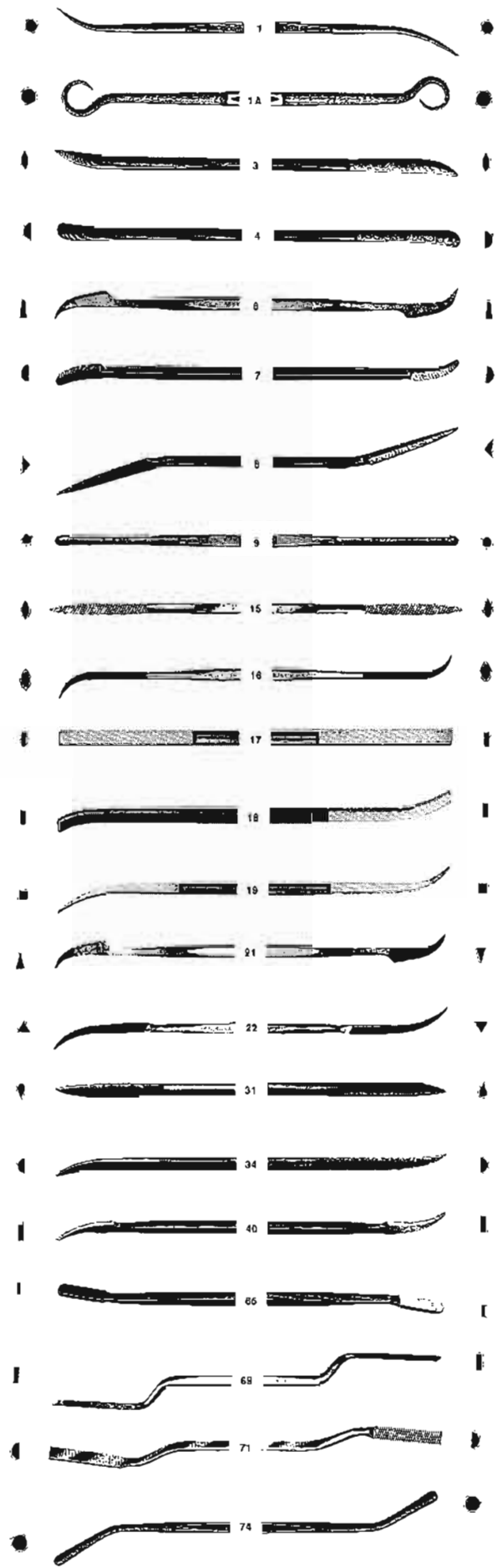
Cut 3 = fine

Cut is adapted to the size of the file;  
cut 1 of size B is for example finer than cut 1 of size E.

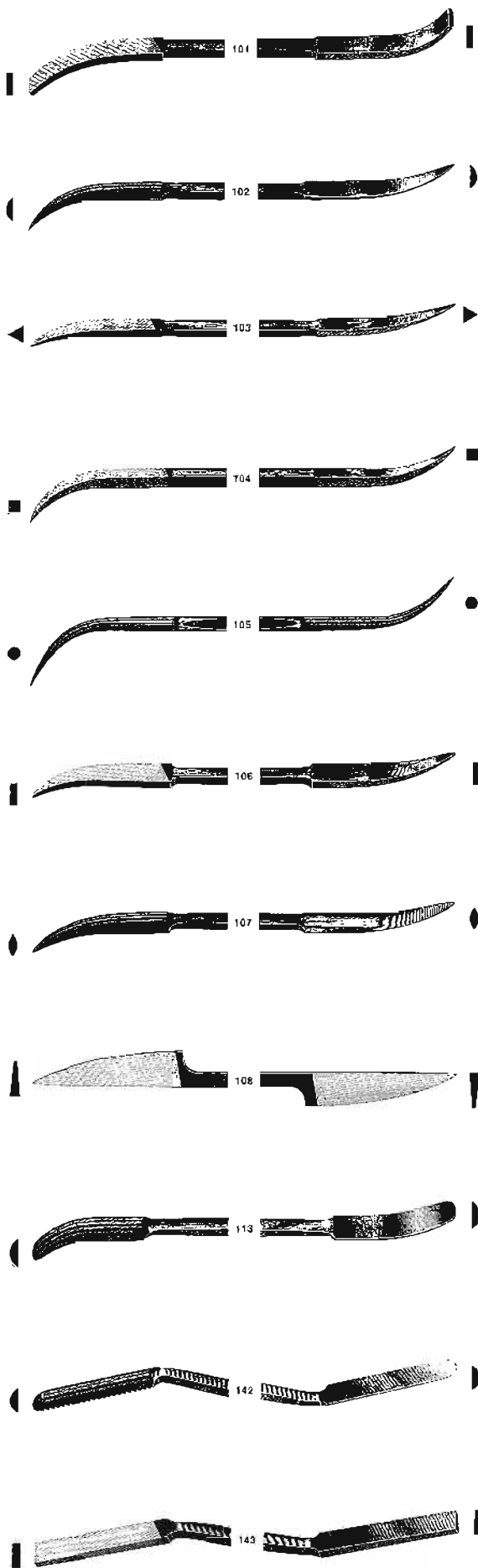
Type	Size	Item No.		
		Cut 1	Cut 2	Cut 3
1	B	720.01B1	720.01B2	720.01B3
	E	720.01E1	720.01E2	720.01E3
1A	B	720.1AB1	720.1AB2	720.1AB3
	E	720.1AE1	720.1AE2	720.1AE3
3	B	720.03B1	720.03B2	720.03B3
	E	720.03E1	720.03E2	720.03E3
4	B	720.04B1	720.04B2	720.04B3
	E	720.04E1	720.04E2	720.04E3
6	B	720.06B1	720.06B2	720.06B3
	E	-	720.06E2	-
7	B	720.07B1	720.07B2	720.07B3
	E	720.07E1	720.07E2	-
8	B	720.08B1	720.08B2	-
	E	720.08E1	720.08E2	-
9	B	720.09B1	720.09B2	720.09B3
	E	720.09E1	720.09E2	-
15	B	-	720.15B2	720.15B3
	E	720.15E1	720.15E2	720.15E3
16	B	-	720.16B2	720.16B3
	E	720.16E1	720.16E2	-
17	B	720.17B1	720.17B2	720.17B3
	E	720.17E1	720.17E2	720.17E3
18	B	720.18B1	720.18B2	720.18B3
	E	720.18E1	720.18E2	720.18E3
19	B	720.19B1	720.19B2	720.19B3
	E	720.19E1	720.19E2	-
21	B	720.21B1	720.21B2	720.21B3
	E	720.21E1	720.21E2	-
22	B	720.22B1	720.22B2	720.22B3
	E	720.22E1	720.22E2	720.22E3
31	B	-	720.31B2	720.31B3
	E	720.31E1	720.31E2	720.31E3
34	B	720.34B1	720.34B2	720.34B3
	E	720.34E1	720.34E2	720.34E3
40	B	720.40B1	720.40B2	720.40B3
	E	720.40E1	720.40E2	-
65	B	720.65B1	720.65B2	720.65B3
	E	720.65E1	720.65E2	720.65E3
69	B	-	720.69B2	-
	E	720.69E1	720.69E2	720.69E3
71	B	-	720.71B2	720.71B3
	E	720.71E1	720.71E2	-
74	B	-	720.74B2	720.74B3
	E	720.74E1	720.74E2	-

Files of size E, cut 1, are available from stock.

Min. quantity for all other types is 5 pieces per type.



# 720A



## Heavy duty files for metalworking

with high precision cuts

Types 101 – 143, in 3 different sizes:

**Size F** = 180 mm total length

**Size G** = 200 mm total length

**Size R** = 315 mm total length

Cut 1 = coarse (**pref. for alu-working!**)

Cut 2 = medium

Cut 3 = fine

**Cut** is adapted to the size of the file;

cut 1 of size F is for example finer than cut 1 of size R

Type	Size	Cut 1	Cut 2	Cut 3
		Item No.		
101	F	720.101F1	720.101F2	720.101F3
	G	720.101G1	-	720.101G3
	R	720.101R1	-	-
102	F	720.102F1	720.102F2	-
	G	720.102G1	-	720.102G3
	R	720.102R1	-	-
103	F	720.103F1	720.103F2	720.103F3
	G	720.103G1	-	720.103G3
	R	720.103R1	-	-
104	F	720.104F1	720.104F2	-
	G	720.104G1	-	720.104G3
	R	720.104R1	-	-
105	F	720.105F1	720.105F2	720.105F3
	G	720.105G1	-	720.105G3
	R	720.105R1	-	-
106	F	720.106F1	720.106F2	-
	G	720.106G1	-	720.106G3
	R	720.106R1	-	-
107	F	720.107F1	720.107F2	-
	G	720.107G1	-	720.107G3
108	F	720.108F1	720.108F2	720.108F3
	G	720.108G1	-	720.108G3
	R	720.108R1	-	-
113	F	720.113F1	720.113F2	-
	G	720.113G1	-	720.113G3
142	F	720.142F1	720.142F2	-
	G	720.142G1	-	-
143	F	720.143F1	720.143F2	720.143F3
	G	720.143G1	-	720.143G3
	R	720.143R1	-	-

Files of **size F, cut 1**, are available **from stock**.

Min. quantity for all other types is 5 pieces per type.

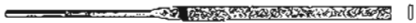











## Needle point files with round handle

Shaft dia. 2,25 mm

Cuts: 00 (coarse), 2 (medium) or 4 (fine)

(other cuts upon request)

Minimum quantity per shape and cut: 5 pieces

Type	Shape	Total length	100 mm	140 mm	160 mm	180 mm	200 mm	
		length of cut	50 mm	70 mm	80 mm	90 mm	100 mm	
<b>Item No.</b>								
2112	flat, blunt	Hieb 00	-	721.120	721.130	721.140	721.150	
		2	721.112	721.122	721.132	721.142	721.152	
		4	-	721.124	721.134	721.144	721.154	
2113	flat, blunt with rounded edges	Hieb 2	721.162	721.172	721.182	721.192	721.202	
		Hieb 00	-	-	721.230	-	-	
		2	721.212	721.222	721.232	721.242	721.252	
2122	flat, pointed	Hieb 2	-	-	722.234	-	-	
		4	-	-	-	-		
		Hieb 00	-	-	721.282	721.292	721.302	
2123	flat, pointed with rounded edges	Hieb 2	721.262	721.272	721.282	721.292	721.302	
		Hieb 00	-	-	721.330	721.340	721.350	
		2	721.312	721.322	721.332	721.342	721.352	
2132	triangular	Hieb 00	-	-	721.430	721.440	721.450	
		2	721.412	721.422	721.432	721.442	721.452	
		4	-	721.424	721.434	-	721.454	
2142	square	Hieb 00	-	-	721.530	721.540	721.550	
		2	721.412	721.422	721.432	721.442	721.452	
		4	-	721.424	721.434	-	721.454	
2152	half-round	Hieb 00	-	-	721.530	721.540	721.550	
		2	721.512	721.522	721.532	721.542	721.552	
		4	-	721.524	721.534	721.544	721.554	
2162	round	Hieb 00	-	721.620	721.630	721.640	721.650	
		2	721.612	721.622	721.632	721.642	721.652	
		4	-	721.624	721.634	721.644	721.654	
2172	knife	Hieb 00	-	-	721.730	721.740	721.750	
		2	721.712	721.722	721.732	721.742	721.752	
		4	-	721.724	721.734	-	-	
2182	sword	Hieb 2	721.812	721.822	721.832	721.842	721.852	
2192	birds tongue	Hieb 2	721.912	721.922	721.932	721.942	721.952	
2102	cant	Hieb 00	-	-	721.030	-	721.050	
		2	721.012	721.022	721.032	721.042	721.052	
		4	-	721.024	721.034	-	721.054	

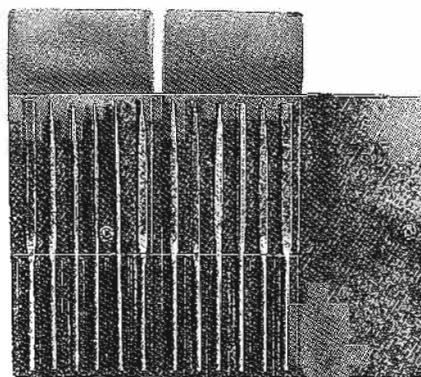
## Sets of needle point files

comprising 122 different shapes, shapes as listed under no. 721, Cut 2

1) in a plastic case, No. 2100

2) in a plastic box, No. 2101

Total length	Item No.				
	100 mm	140 mm	160 mm	180 mm	200 mm
Type 2100	721.960	721.964	721.968	721.968	721.970
Type 2101	-	721.974	721.976	-	-



## Plastic handles

with collet, total length 80 mm, for needle point files (total length 140 - 200 mm)

with one end capped Item No. 721.980



## 722



## Diamond files

for working hardened steel, hard metal, ceramic and other hard materials. Indispensable in tool and jig making. Just apply **light pressure** as high pressure increases the wear, but not the performance, clean files with a metal brush in petroleum.

### 1) Multi-purpose-diamond files

handle with comfortable **pvc-coating**

**Grain D 126 (medium** - for multi-purpose application)

**Lengths available:**

total length mm      **160**    **200**    **215**  
length with coating mm      50      80      80

Model	Length	160 mm	200 mm	215 mm
	Shape	Item No.		
2312	flat, blunt	722.011	722.012	722.013
2332	triangular	722.021	722.022	722.023
2342	square	722.031	722.032	722.033

Model	Length	160 mm	200 mm	215 mm
	Shape	Item No.		
2352	half-round	722.041	722.042	722.043
2362	round	722.051	722.052	722.053
2300	compl 5-p-set	722.061	722.062	722.063



### 2) Needle point diamond files

shapes as illustrated under needle point files, Item No. 721

**3 different grain sizes:**

**D 91 (fine, for fine filing);**

**D 126 (medium, for multi purposes);**

**D 151 (coarse, for rough filing)**

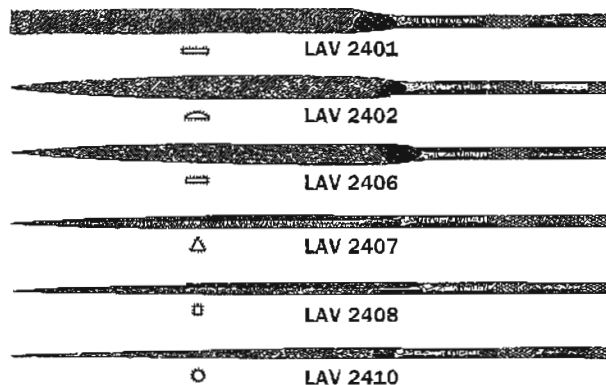
Model	Grain	D 91	D 126	D 151
	Shape	Item No.		
D 2112	flat, blunt	722.111	722.112	722.113
D 2113	flat, blunt w/rimmed edges	722.115	722.116	722.117
D 2122	flat, pointed	722.121	722.122	722.123
D 2123	flat, pointed w/rimmed edges	722.125	722.126	722.127
D 2132	triangular	722.131	722.132	722.133

**Total length 140 mm,**

length with diamond coating 70 mm, shaft dia. 3 mm

Model	Grain	D 91	D 126	D 151
	Shape	Item No.		
D 2142	square	722.141	722.142	722.143
D 2152	half-round	722.151	722.152	722.153
D 2162	round	722.161	722.162	722.163
D 2172	knife	722.171	722.172	722.173
D 2182	sword	722.181	722.182	722.183
D 2192	birds tongue	722.191	722.192	722.193
D 2202	cant	722.201	722.202	722.203

## 722A



LAV 2401

LAV 2402

LAV 2406

LAV 2407

LAV 2408

LAV 2410

## VALTITAN®-needle point files

with **yellow shaft** (Swiss made)

hardened (1200 HV), for working extremely hard materials such as titanium, molybdenum or polyester, acrylic or similar materials

Stainless, non-clogging, simply beat out to remove filings

**Cuts available: Swiss cut**

**0 2**

equal to German cut

**1 3**

**Total length 180 mm, shaft dia. 3,8 mm**

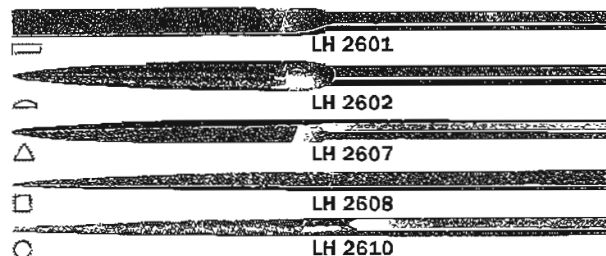
Model	Cut	0	2
	Shape	Item No.	
LAV 2401	flat, blunt	722.310	722.312
LAV 2402	half-round	722.320	722.322
LAV 2406	flat, pointed	722.330	722.332

Model	Cut	0	2
	Shape	Item No.	
LAV 2407	triangular	722.340	722.342
LAV 2408	square	722.350	722.352
LAV 2410	round	722.360	722.362

Package contains 12 pieces.

Individual files are available at extra charge.

## 722B



LH 2601

LH 2602

LH 2607

LH 2608

LH 2610

Package contains 12 pieces. Individual files are available at extra charge (with the exception of set 2630)

## HABILIS-files with integrated handle (Swiss made)

with cylindrical forged tongue which makes the use of a handle obsolete. Especially suitable for tool and jig making. Thanks to its narrow shape hard-to-reach-places can be worked. More robust than needle point files. therefore higher working pressure can be applied.

**Cuts available: Swiss cut**

**00 1**

equal to German Cut

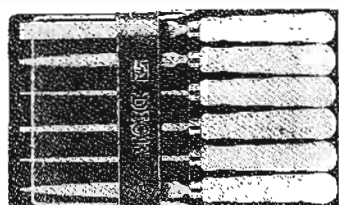
**0 2**

**Total length 215 mm, length of cut 105 mm**

Model	Cut	00	1
	Shape	Item No.	
LH 2601	flat, blunt	722.410	722.411
LH 2602	half-round	722.420	722.421
LH 2607	triangular	722.430	722.431

Model	Cut	00	1
	Shape	Item No.	
LH 2608	square	722.440	722.441
LH 2610	round	722.450	722.451
LH 2630	5-p.-set	722.460	722.461

## 723



## Sets of warding files Item No. 723.001 (1187 S)

assortm. of 6 shapes, w/wooden handle, in a plastic case. length of cut 100 mm, cut 2

Shapes						
	flat blunt	half-round	triangular	square	round	flat pointed
Width x thickness mm	10 x 1,4	9 x 2,5	5	3,2	3,2	10 x 1,4

All shapes are also available individually.



## DICKOFIL-files

for soft metals, wood, plastics, plaster etc. The tools cut like a plane without chamfers, several different blades are available, the shavings pass through the fine slots in the tool.

1) Straight holder No. 1526

2) Cranked holder No. 1527

3) Blades

a) No. 1522, especially suitable for working plastics such as formic or similar materials, edges without cut

b) No. 1523, coarser blade, edges also cut, thus corners can also be worked

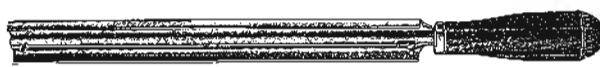
c) No. 1524, half-round, for rounding edges

4) Complete sets

a) No. 1529 (with straight holder and 1 blade No. 1522/1523/1524)

b) No. 1530 (with cranked holder and 1 blade No. 1522/1523/1524)

Length	Holder		Blades		Cpl. sets	
	1526	1527	1522	1523	1529	1530
280 mm	724.126	724.226	724.326	724.426	724.526	724.626
400 mm	724.140	-	724.340	724.440	-	-



1526



1527



1522



1523



1524

## Hard-metal-granule files

for working glass and carbon fiber reinforced plastics, rubber, leather, stone, ceramic etc., for fast and effective filing. If necessary, can easily be cleaned with a wire brush.

The granules are embedded in the file body by means of soldering.

Item No.	Shape	Dimensions	Grain size
725.111	flat, blunt	200 x 20 x 5,0 mm	0,5 - 0,8 mm
725.122		250 x 25 x 6,3 mm	1,2 - 1,8 mm
725.211	half-round	200 x 20 x 6,7 mm	0,5 - 0,8 mm
725.222		250 x 25 x 8,3 mm	1,2 - 1,8 mm
725.233		300 x 32 x 10,5 mm	1,5 - 2,0 mm
725.311	round	200 x 8,0 mm Ø	0,5 - 0,8 mm
725.322		250 x 10,0 mm Ø	1,2 - 1,8 mm
725.333		300 x 12,5 mm Ø	1,5 - 2,0 mm



Concerning Item No. 725: supplied without handle. File handles see Item No. 715

## 'Surform'-tools

for working hardwood and softwood as well as plastics of all kinds, soft metals and for smoothing fillers.

1) Multi-purpose plane

can be used as a plane with upright handle or otherwise as a file; red plastic handle, black metal body.

Item No. 726.122

2) Standard plane

with a plane handle of black plastic, black metal body

Item No. 726.296

3) Standard file

ideal file shape, black plastic handle, black metal body

Item No. 726.295

4) Round file

for enlarging holes and for working and smoothing round edges, ideal for turnery, strong plastic handle

Item No. 726.297

5) Block plane

handy tool for working corners and small surfaces, red metal body, with adjustable blade

Item No. 726.399

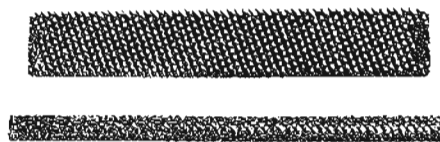
6) Scraper

handy plastic handle, increased cutting action by slightly curved blade, blade exchangeable within seconds

Item No. 726.115

7) Spare blades

Item No.	Description	Dimensions	suitable for Item No.
726.293	standard blade	250 x 42 mm	726.122, 726.296, 726.295
726.393	fine blade	250 x 42 mm	726.122, 726.296, 726.295
726.299	half-round blade	250 x 42 mm	726.122, 726.296, 726.295
726.291	round blade	250 x 15 mm	726.297
726.398	block plane blade	140 x 42 mm	726.399
726.515	scraper blade	60 x 42 mm	726.115



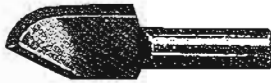
724

725

726

**Special milling tools of HSS, Shank dia. 8 x 25 mm, for pattern making**

1) HSS-shank cutter, with one cutting edge, length of cutting edge 30 mm



Shape	Radius mm	3	4	5	6	7	8
cylindrical	Item No.	727.003	727.004	727.005	727.006	727.007	727.008
		727.023	727.024	727.025	727.026	727.027	727.028
		727.053	727.054	727.055	727.056	727.057	727.058

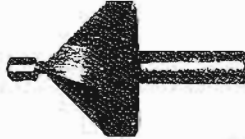
Note: These cutters are suitable for working industrial plasticine, see Item No. 916A

2) HSS-shank cutter, with two cutting edges, length of cutting edge 50 mm



Shape	Dia. mm	6	8	10	12	14	15
cylindrical	Item No.	727.106	727.108	727.110	727.112	727.114	727.115
		727.126	727.128	727.130	727.132	727.134	727.135
		727.156	727.158	727.160	727.162	727.164	727.165

3) HSS-rounding cutter with pilot, safe type



Radius mm	3	4	5	6	8	10	12	14	15
Item No.	727.203	727.204	727.205	727.206	727.208	727.210	727.212	727.214	727.215

4) HSS-cutter, ground, safe type



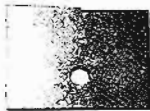
Size	45°, 36 mm dia.
Item No.	727.301

5) HSS-dovetail cutter, safe type



Size	30°, 15 mm dia.   20°, 25 mm dia.
Item No.	727.401   727.402

6) HSS-cutter, ground



Size	35 x 25 x 2 mm
Item No.	727.501

6a) Universal spindle for the cutter

Size	2 mm slot width
Item No.	727.502

7) HSS-round cutter, 3 mm thick

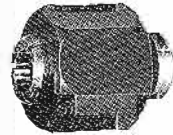
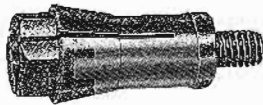


Radius mm	10	12	14	15	17	18	20
Item No.	727.610	727.612	727.614	727.615	727.617	727.618	727.620

7a) Round cutter spindle

Size	3 mm slot width
Item No.	727.630

8) Collet for Bosch-motor



old version

new version with cap screw

Design	Item No.		Cap screw
	for 6 mm shank dia.	for 8 mm shank dia.	
old version	727.806	727.808	-
new version	727.816	727.818	727.820

**Special milling tool of HSS, Shank dia. 12 x 25 mm, for pattern making**

1) HSS-shank cutter, with one cutting edge, length of cutting edge 50 mm



Shape	Radius mm	10	12	14	15	16	18
cylindrical	Item No.	728.010	728.012	728.014	728.015	728.016	728.018
		728.020	728.022	728.024	728.025	728.026	728.028
		728.030	728.032	728.034	728.035	728.036	728.038

2) HSS-shank cutter, with two cutting edges, length of cutting edge 50 mm



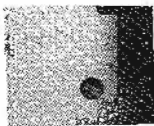
Shape	Dia. mm	16	20	22	25	28	30
cylindrical	Item No.	728.116	728.120	728.122	728.125	728.128	728.130
		728.136	728.140	728.142	728.145	728.148	728.150
		728.156	728.160	728.162	728.165	728.168	728.170

3) HSS-rounding cutter with pilot



Radius mm	20	25	30
Item No.	728.220	728.225	728.230

4) HSS-cutter, ground

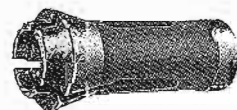


Size	50 x 35 x 3 mm
Item No.	728.301

4a) Universal-Spindle for the cutter

Size	slot width 3 mm
Item No.	728.302

5) Collet



Size	for 12 mm shank dia.
Item No.	728.401

**Cutters with internal thread**

for cutters manufactured by Strlffler, Elu, Scheer etc. upon request!



When using 12 mm-shank-dia. cutters and tools with cutting edge diameter over 16 mm always clamp workpieces!

## Cutter setting measuring device H 50

safe, precise, fast, simple, without trial cutting, for a wide variety of uses

### Technical data

Measuring range	0 – 50 mm
Housing	plastic
Mech. components	metal
Item No.	729.001



729

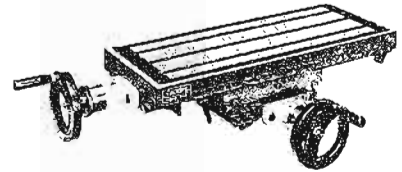
## Coordinate tables with dovetail guides

For milling and drilling. Made of first class iron, precision ground in guides and on the table surface. Parallelism = 0,03 mm, dovetail guides may be adjusted.

The feed screws are carried in axial bearings. The scales are made with adjustable "0"-position and are graduated in degree of 0,05 mm. Tables of size 450 x 240 mm or more are provided with cooling channel and locking devices for both axis.

### Technical data

Item No.	729.100	729.101	729.102	729.501	729.601	729.801
Clamping area max	300 x 160	450 x 240	580 x 240	650 x 270	645 x 350	800 x 270
No. of T-slots	3	3	3	3	4	3
Width of T-slots mm	10	14	14	14	14	14
Distance of T slots mm	50	60	60	70	75	70
Longitudinal feed mm	180	275	375	450	465	500
Cross feed mm	100	155	155	250	350	250



729A

## Motors for routing cutters Type GGS 27 LC (Bosch) Item No. 730.001

Rated no-load speed	12000 – 27000 rpm	Tool collet	max. shank dia. 8 mm
Rated power	600 W	Spindle neck dia.	35 mm
Actual output	360 W	Motor weight	1,6 kg



730

## Cutting bush

mounted on the motor spindle and for free-hand use with rounding-off cutters

Item No.	730.117	730.127	730.137
Diameter	17 mm	27 mm	37 mm
Suitable rounding-off cutter R	3/4/5 mm	6/8/10 mm	12/14/15 mm



730A

## Milling tools, carbide-tipped, for routing cutters (with soldered carbide tips)

tools with replaceable carbide tips see Item No. 732

### 1) HM-face milling cutter, closed shape

Item No.	731.124	731.130	731.155
Diameter	24 mm	30 mm	55 mm
Cutting edge length	10 mm	10 mm	12 mm
No. of cutting edges	2	2	3
Shank size	8 x 25 mm	8 x 25 mm	12 x 30 mm

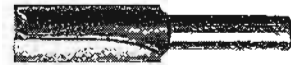


### 2) HM-slot cutter, with two cutting edges, shank dia. 8 x 25 mm

#### a) cylindrical

Item No.	731.206	731.208	731.210	731.212	731.215	731.216	731.216	731.220	731.222
Diameter	6,5 mm	8 mm	10 mm	12 mm	15 mm	16 mm	18 mm	20 mm	22 mm
Length of cutting edge	30 mm	30 mm	30 mm	30 mm	20 mm	20 mm	20 mm	20 mm	20 mm

Tools with larger shank dia. or cutter dia. upon request!



#### b) tapered: 1°, 2°, 3° or 5°

Dia meter	Length of cutting edge	Item No.			
		1° taper	2° taper	3° taper	5° taper
6,5 mm	30 mm	731.236	731.246	731.256	731.266
8,0 mm	30 mm	731.238	731.248	731.258	731.268
10,0 mm	30 mm	731.240	731.250	731.260	731.270
12,0 mm	30 mm	731.242	731.252	731.262	731.272



### 3) HM-rounding cutter with ball bearing pilot, with two cutting edges, shank size 8 x 25 mm, closed shape.

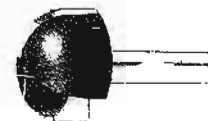
No more pressure marks on the patterns – thanks to the ball bearing

Item No.	731.302	731.303	731.304	731.305	731.306	731.308	731.310	731.312	731.314	731.315
Radius mm	2	3	4	5	6	8	10	12	14	15
Total length mm	57	57	57	57	57	57	62	62	62	62
Spare ball bearing	1/2" Item No. 731.390									



### 4) HM-fillet cutter (without stud), with two cutting edges, shank dia. 8 x 30 mm closed shape

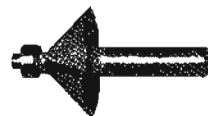
Item No.	731.402	731.403	731.404	731.405	731.406	731.408	731.410	731.412
Radius mm	2	3	4	5	6	8	10	12
Total length mm	52	52	52	52	52	52	57	57



### 5) HM-guide cutter with ball bearing stud, with two cutting edges, shank dia. 8 x 25 mm closed shape

No more pressure marks on the patterns – thanks to the ball bearing

Size	Total length	Item No.
45°, 27 mm dia.	57 mm	731.501
spare ball bearing	3/8"	731.590



### 6) HM-side milling cutter for slots, with two cutting edges dia. 40 mm, hole dia. 6 mm closed shape

Item No.	731.615	731.620	731.625	731.630	731.635	731.640	731.650	731.660
Slot width mm	1,5	2,0	2,5	3,0	3,5	4,0	5,0	6,0
Spindle	Item No. 731.680 (Shank dia. 8 mm)							



When using 12 mm-shank-dia. cutters and tools with cutting edge diameter over 16 mm always clamp workpieces!

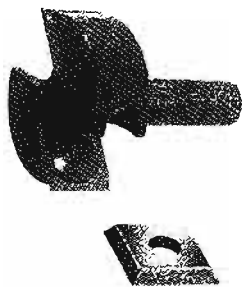
## 732

### Milling tools with replaceable carbide tips

for routing cutters

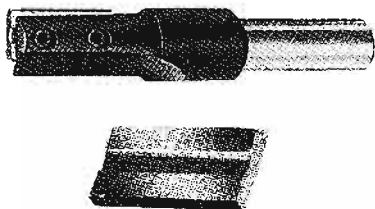
Maximal service life of the tools, for machining laminated wood, plastics and light metal.

#### 1) HM-face milling cutter, closed shape



Diameter	Carbide tips	Total length	No. of cutting edges	Shank size	Item No.
22 mm	12 x 12 x 1,5 mm	40 mm	2	6 x 25 mm	732.122
30 mm	12 x 12 x 1,5 mm	40 mm	2	8 x 25 mm	732.130
55 mm	12 x 12 x 1,5 mm	52 mm	3	12 x 30 mm	732.155
Spares:					732.191
HM-tips 12 x 12 x 1,5 mm					732.191
special screws (Torx) for HM-tips					732.192
special key (Torx)					732.193

#### 2) HM-slot-cutter, with one cutting edge, end and side cutting



##### a) cylindrical, shank dia. 8 x 30 mm, length of cutting edge 20 mm

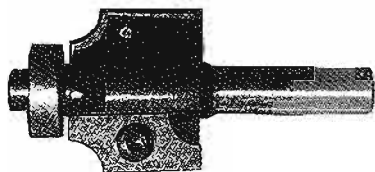
Item No.	732.308	732.310	732.312	732.314	732.315	732.316	732.318	732.320	732.322
Diameter	8 mm	10 mm	12 mm	14 mm	15 mm	16 mm	18 mm	20 mm	22 mm
Spare carbide tips	20 x 5,5 x 1,1 mm Nr. 732.391			20 x 10 x 1,5 mm Nr. 732.392					
Screw	M 2,5 x 2,5 mm Nr. 732.393				M 4 x 4 mm Nr. 732.395				
Key	SW 1,3 Nr. 732.396				SW 2 Nr. 732.397				

##### b) tapered: 2° or 5°, with replaceable tips 7 x 30 mm and flutes



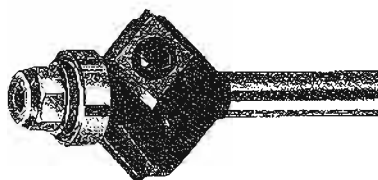
Dia- meter	Length of cutting edge	Shank size	Item No.		Spare tips	Torx- screws	Torx- wrench
			2° taper	5° taper			
10,0 mm	30 mm	8 x 25 mm	732.421	732.451	732.491	732.492	732.493
12,0 mm	30 mm	8 x 25 mm	732.422	732.452			

#### 3) Rounding-off cutters with replaceable carbide tips, with two cutting edges and ball bearing pilot ring



Item No.	732.502	732.503	732.504	732.505	732.506	732.508	732.510
Radius mm	2	3	4	5	6	8	10
Total length mm	80	60	60	60	60	60	70
Shank mm	8 x 25	8 x 25	8 x 25	8 x 25	8 x 25	8 x 25	8 x 25
Spares							
Item No.							
Replaceable tips	732.582	732.583	732.584	732.585	732.586	732.588	732.590
Torx-screws	732.591			732.592			
Torx-wrench	732.593						
Ball bearing	732.594				732.595	732.596	732.597

#### 4) Guide cutter with replaceable carbide tips, with two cutting edges and ball bearing pilot ring



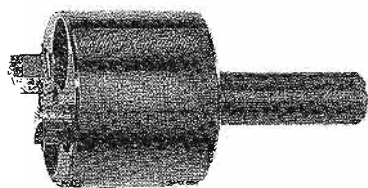
Angle	Diameter	Total length	Shank size	Item No.
45°	29 mm	64 mm	8 x 30 mm	732.601
Spares:				
replaceable tips				732.191
Torx-screws				732.192
Torx-wrench				732.193
ball bearing 1/2"				731.390

## 733

### Special-HM-face milling cutters

with replaceable cutting bits for routing cutters.

Maximal service life of the tools, for machining laminated wood



Dia- meter	Cutting bits	Total length	Shank size	Item No.	Spares	
					Cutting bits	Key
25 mm	2 à 7 mm dia.	52 mm	8 x 25 mm	733.025	733.125	733.225
50 mm	3 à 8 mm dia.	-	-	-	733.150	-
70 mm	3 à 10 mm dia.	-	-	-	733.170	-

For 50 & 70 mm dia. spare cutting bits are available only!

Use a mechanical feed mechanism!

When using 12 mm-shank-dia. cutters and tools with cutting edge diameter over 16 mm always clamp workpieces!

# Carbide-tipped cutters

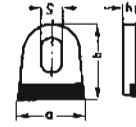
which can be fitted to pattern millers in various makes

(all dimensions in mm)

## 1.) FACE CUTTERS

Item No.	Cutter No.	s	a	b	h
734.001	36.001	9	20	35	5
734.002	36.002	9	30	30	5
734.003	36.003	13	40	45	8
734.004	36.004	17	50	55	10

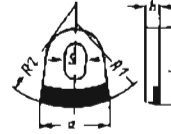
Type No. 36.001-004



## 2.) PROFILE CUTTER

Item No.	Cutter No.	s	a	b	h	R1	R2
734.005	36.005	13	40	45	8	25	30
734.006	36.006	17	50	55	10	40	50
734.007	36.007	17	50	55	10	60	80

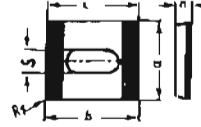
Type No. 36.005-007



## 3.) FLAT CUTTER, straight

Item No.	Cutter No.	s	a	b	c	h	R1
734.008	36.008	17	55	63	63	10	1

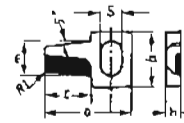
Type No. 36.008



## 4.) FINGER CUTTER, tapered

Item No.	Cutter No.	s	a	b	c	h	m
734.009	36.009	17	64	40	34	9	24

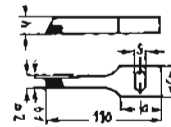
Type No. 36.009



## 5.) FINGER CUTTER, various shapes

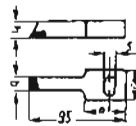
Item No.	Cutter No.	s	a	b1	b2	c	h
734.010	36.010	17	40	10	20	40	10
734.011	36.011	17	40	22	35	40	10

Type No. 36.010 + 11



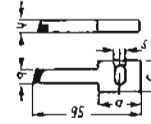
Item No.	Cutter No.	s	a	b	c	h
734.012	36.012	17	40	15	40	10

Type No. 36.012



Item No.	Cutter No.	s	a	b	c	h
734.013	36.013	17	40	22	40	10

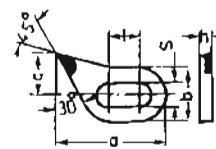
Type No. 36.013



## 6.) HOOK-SHAPED FACE CUTTER

Item No.	Cutter No.	s	a	b	c	h	l
734.014	36.014	17	86	40	26	10	29
734.015	36.015	17	143	45	32	10	63

Type No. 36.014 + 015



## 7.) COUNTERSINK CUTTER

Item No.	Cutter No.	s	a	b	c	e	h	m
734.016	36.016	13	60	85	30	45	8	18
734.017	36.017	17	80	100	40	60	10	30

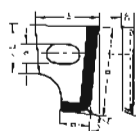
Type No. 36.016 + 017



## 8.) FLANK CUTTER

Item No.	Cutter No.	s	a	b	c	e	h	m	r
734.018	36.018	17	75	60	40	55	10	35	1
734.019	36.019	17	75	60	40	55	10	35	12

Type No. 36.018 + 019



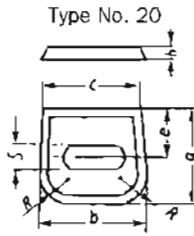
### Remark:

Cutter arbors and clamping screw diameter must match slot width and hole diameter given.

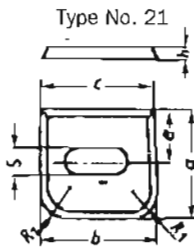
## Cutters of tool steel

which can be fitted to pattern maker's millers of various makes  
(all dimensions in mm)

### 1.) FLAT CUTTERS FOR FILLETS

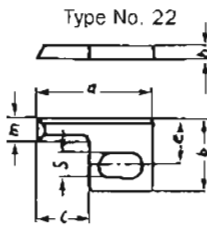


Item No.	Cutter No	S	a	b	c	e	h	R
735.001	20.004	9	40	40	36	20	5	4
735.002	20.006	9	40	40	36	20	5	6
735.003	20.008	13	45	45	41	22,5	6	8
735.004	20.010	13	45	45	41	22,5	6	10
735.005	20.012	13	50	55	51	25	7	12
735.006	20.014	13	50	55	51	25	7	14
735.007	20.016	13	50	55	51	25	7	16
735.008	20.018	13	50	55	51	25	7	18
735.009	20.020	17	70	65	59	35	7	20
735.010	20.025	17	70	65	59	35	7	25
735.011	20.030	17	70	75	69	35	7	30
735.012	20.040	17	80	115	109	40	7	40
735.013	20.050	17	80	115	109	40	7	50



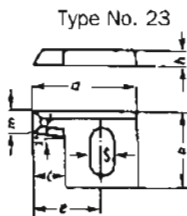
### 2.) ROUNDING-OFF CUTTER

Item No.	Cutter No	S	a	b	c	e	h	R1	R2
735.021	21.001	9	40	40	37	20	5	3	5
735.022	21.002	13	50	55	52	25	6	12	15
735.023	21.003	17	70	85	81	35	7	25	30
735.024	21.004	17	80	95	90	40	7	35	40



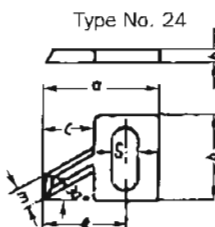
### 3.) BUSH CUTTER

Item No.	Cutter No.	S	a	b	c	e	h	m
735.031	22.001	9	50	27	25	16,5	5	6
735.032	22.002	9	50	27	25	16,5	5	8
735.033	22.003	9	50	27	25	16,5	5	10
735.034	22.004	9	50	27	25	16,5	5	12
735.035	22.005	13	55	35	25	21,5	6	8
735.036	22.006	13	55	35	25	21,5	6	10
735.037	22.007	13	55	35	25	21,5	6	12
735.038	22.008	13	55	35	25	21,5	6	15
735.039	22.009	17	75	47	35	28,5	6	8
735.040	22.010	17	75	47	35	28,5	6	10
735.041	22.011	17	75	47	35	28,5	6	12
735.042	22.012	17	75	47	35	28,5	6	15
735.043	22.013	17	95	47	40	28,5	7	12
735.044	22.014	17	95	47	40	28,5	7	15
735.045	22.015	17	95	47	40	28,5	7	18
735.046	22.016	17	95	47	40	28,5	7	20



### 4.) EYE CUTTER

Item No.	Cutter No	S	a	b	c	e	h	m
735.051	23.001	17	66	50	20	43	8	15
735.052	23.002	17	81	65	35	58	8	15
735.053	23.003	17	96	80	50	73	8	20
735.054	23.004	17	106	100	60	83	8	20



### 5.) DOVETAIL CUTTER

Item No.	Cutter No.	S	a	b	c	e	h	m
735.061	24.001	13	60	50	30	45	6	12
735.062	24.002	17	90	50	50	70	7	20

**Remark:**

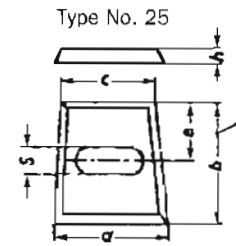
Cutter arbors and clamping screw diameter must match slot width and hole diameter given.

### Cutters of tool steel (continued)

(all dimensions in mm)

#### 6.) FLAT CUTTER, straight

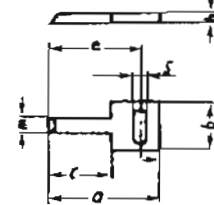
Item No.	Cutter No.	S	a	b	c	e	h
735.071	25.001	9	40	40	36	20	5
735.072	25.002	13	46	45	41	22,5	6
735.073	25.003	13	58	50	51	25	7
735.074	25.004	13	45	80	35	40	7
735.075	25.005	13	50	80	40	40	7
735.076	25.006	13	55	80	45	40	7
735.077	25.007	17	60	80	50	40	7
735.078	25.008	17	65	80	55	40	7
735.079	25.009	17	75	80	65	40	7
735.080	25.010	17	85	80	75	40	7
735.081	25.011	17	100	80	90	40	7
735.082	25.012	17	120	80	110	40	7



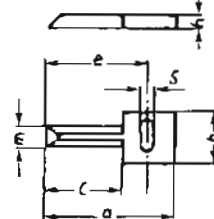
#### 7.) FINGER CUTTER, straight

Item No.	Cutter No.	S	a	b	c	e	h	m
735.091	26.005	9	47	24	25	37	5	5
735.092	26.006	9	47	24	25	37	5	6
735.093	26.007	9	52	24	30	42	5	7
735.094	26.008	9	57	24	35	47	6	8
735.095	26.009	9	57	24	35	47	6	9
735.096	26.010	9	62	24	40	52	6	10
735.097	26.012	13	75	30	45	60	7	12
735.098	26.014	13	80	30	50	65	7	14
735.099	26.016	13	85	30	55	70	7	16
735.100	26.018	13	90	30	60	75	7	18
735.101	26.020	13	90	30	60	75	7	20
735.102	26.022	17	105	40	65	85	7	22
735.103	26.024	17	105	40	65	85	7	24
735.104	26.026	17	110	40	70	90	7	26
735.105	26.028	17	110	40	70	90	7	28
735.106	26.030	17	110	40	70	90	7	30
735.107	26.032	17	115	46	75	95	7	32
735.108	26.034	17	115	46	75	95	7	34
735.109	26.036	17	120	46	80	100	7	36
735.110	26.038	17	125	46	85	105	7	38
735.111	26.040	17	125	46	85	105	7	40

Type No. 26.005-010



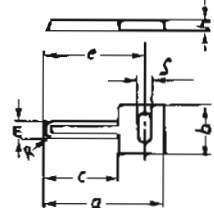
Type No. 26.012-040



#### 8.) FINGER CUTTER, half-round

Item No.	Cutter No.	S	a	b	c	e	h	m	R
735.121	27.003	9	47	24	25	37	5	6	3
735.122	27.004	9	57	24	35	47	5	8	4
735.123	27.005	9	67	24	45	57	6	10	5
735.124	27.006	13	80	30	50	65	7	12	6
735.125	27.007	13	80	30	50	65	7	14	7
735.126	27.008	13	85	30	55	70	7	16	8
735.127	27.009	13	90	30	60	75	7	18	9
735.128	27.010	13	90	30	60	75	7	20	10
735.129	27.011	17	105	40	65	85	7	22	11
735.130	27.012	17	105	40	65	85	7	24	12
735.131	27.013	17	110	40	70	90	7	26	13
735.132	27.014	17	110	40	70	90	7	28	14
735.133	27.015	17	110	40	70	90	7	30	15

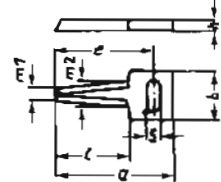
Type No. 27



#### 9.) FINGER CUTTER, tapered

Item No.	Cutter No.	S	a	b	c	e	h	m1	m2
735.141	28.001	9	58	24	36	48	5	6	12
735.142	28.002	13	75	30	45	60	6	10	16
735.143	28.003	17	105	40	65	85	7	15	22
735.144	28.004	17	105	40	65	85	7	20	30
735.145	28.005	17	105	40	65	85	7	25	30

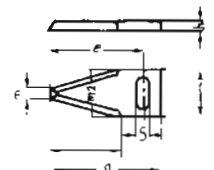
Type No. 28



#### 10.) FINGER CUTTER, acute tapered

Item No.	Cutter No.	S	a	b	c	e	h	m1	m2
735.151	29.001	9	58	24	36	48	5	6	24
735.152	29.002	13	75	30	45	60	6	10	30
735.153	29.003	17	105	40	65	85	7	15	50

Type No. 29



**Remark:**

Cutter arbors and clamping screw diameter must match slot width and hole diameter given.

## Tapered shank-type cutters for light metal, plywood and plastics

for use in the patternmaking shop, face cutting, 35° spiral-fluted cutter  
Material: HSS-E (5% Co.)

**1) with straight shank, 3 cutting edges, No. 2100**

Item	Item No.	Shank dia. h 8 mm	Angle	Sm. dia. (face dia.) mm	Max. dia. mm	Cutting length mm	Total length mm
1	737.101	8	0°	8,0	8,0	40	90
2	737.102	8	30'	7,3	8,0	40	90
3	737.103	8	1°	6,6	8,0	40	90
4	737.104	8	1° 30'	5,9	8,0	40	90
5	737.105	8	2°	5,2	8,0	40	90
6	737.106	8	3°	3,8	8,0	40	90
7	737.107	8	5°	4,0	11,0	40	90
8	737.108	10	0°	10,0	10,0	60	110
9	737.109	10	30'	8,95	10,0	60	110
10	737.110	10	1°	7,9	10,0	60	110
11	737.111	10	1° 30'	6,86	10,0	60	110
12	737.112	10	2°	5,81	10,0	60	110
13	737.113	10	3°	5,21	11,5	60	110
14	737.114	10	5°	5,21	15,7	60	110
15	737.115	12	0°	12,0	12,0	70	125
16	737.116	12	30'	10,78	12,0	70	125
17	737.117	12	1°	9,55	12,0	70	125
18	737.118	12	1° 30'	8,33	12,0	70	125
19	737.119	12	2°	7,11	12,0	70	125
20	737.120	12	3°	5,16	12,5	70	125
21	737.121	12	5°	5,16	17,4	70	125
22	737.122	14	0°	14,0	14,0	75	130
23	737.123	14	30'	12,7	14,0	75	130
24	737.124	14	1°	11,4	14,0	75	130
25	737.125	14	1° 30'	10,07	14,0	75	130
26	737.126	14	2°	8,7	14,0	75	130
27	737.127	14	3°	6,2	14,0	75	130
28	737.128	14	5°	6,2	19,3	75	130



We also supply cutters with different angles of taper:

**2, 5; 6; 7; 8; 10; 12; 15; 20; 25; 30; 45 degrees** in different diameters!  
(Also solid hard-metal cutters – see p. 68, Item No. 739)

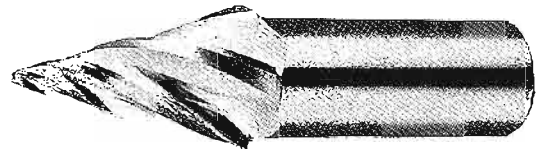
Please ask for special catalogue 'Tapered die-sinking cutters'!

**2) with Morse-taper and thread, No. 2110**

up to item 14 with 3 cutting edges, all other cutters with 4 edges.

Item	Item No.	Mk shank/ thread	Angle	Sm. dia. (face dia.) mm	Max. dia. mm	Cutting length mm	Total length mm
1	737.201	2/M10	0°	18,0	18,0	85	164
2	737.202	2/M10	30'	16,5	18,0	85	164
3	737.203	2/M10	1°	15,0	18,0	85	164
4	737.204	2/M10	1° 30'	13,55	18,0	85	164
5	737.205	2/M10	2°	12,0	18,0	85	164
6	737.206	2/M10	3°	10,0	19,0	85	164
7	737.207	2/M10	5°	10,0	25,0	85	164
8	737.208	3/M12	0°	24,0	24,0	115	216
9	737.209	3/M12	30'	22,0	24,0	115	216
10	737.210	3/M12	1°	20,0	24,0	115	216
11	737.211	3/M12	1° 30'	17,98	24,0	115	216
12	737.212	3/M12	2°	16,0	24,0	115	216
13	737.213	3/M12	3°	12,0	24,0	115	216
14	737.214	3/M12	5°	12,0	32,0	115	216
15	737.215	4/M16	0°	35,0	35,0	150	307
16	737.216	4/M16	30'	32,4	35,0	150	307
17	737.217	4/M16	1°	30,0	35,2	150	307
18	737.218	4/M16	1° 30'	27,64	35,5	150	307
19	737.219	4/M16	2°	25,0	35,5	150	307
20	737.220	4/M16	3°	20,0	35,7	150	307
21	737.221	4/M16	5°	20,0	46,2	150	307

Other sizes upon request!



**3) with steep angle, taper and thread, 4 cutting edges, No. 2140**

Item	Item No.	ISO shank/ thread	Angle	Sm. dia. (face dia.) mm	Max. dia. mm	Cutting length mm	Total length mm
1	737.501	40/M16	0°	35,0	35,0	150	275
2	737.502	40/M16	30'	32,4	35,0	150	275
3	737.503	40/M16	1°	30,0	35,2	150	275
4	737.504	40/M16	1° 30'	27,64	35,5	150	275
5	737.505	40/M16	2°	25,0	35,5	150	275
6	737.506	40/M16	3°	20,0	35,7	150	275
7	737.507	40/M16	5°	20,0	46,2	150	275



We also sharpen cutters!



**Tapered shank-type cutters for cast iron and steel**

for use in the patternmaking shop, face cutting, 30° spiral-fluted cutter  
Material: HSS-EM 42 (8% Co.)

**1) with straight shank, No. 2120**  
up to item 14 with 4 cutting edges, all other cutters with 5 edges



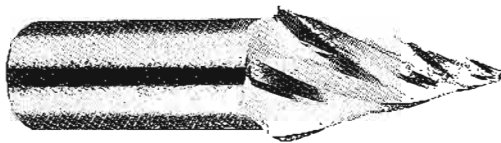
Item	Item No.	Shank dia. h 8 mm	Angle	Sm. dia. (face dia.) mm	Max. dia. mm	Cutting length mm	Total length mm
1	737.301	8	0°	8,0	8,0	30	80
2	737.302	8	30'	7,5	8,0	30	80
3	737.303	8	1°	7,0	8,0	30	80
4	737.304	8	1° 30'	6,43	8,0	30	80
5	737.305	8	2°	5,9	8,0	30	80
6	737.306	8	3°	4,9	8,0	30	80
7	737.307	8	5°	5,9	11,0	30	80
8	737.308	10	0°	10,0	10,0	40	90
9	737.309	10	30'	9,3	10,0	40	90
10	737.310	10	1°	8,6	10,0	40	90
11	737.311	10	1° 30'	7,9	10,0	40	90
12	737.312	10	2°	7,2	10,0	40	90
13	737.313	10	3°	5,8	10,0	40	90
14	737.314	10	5°	6,0	13,0	40	90
15	737.315	14	0°	14,0	14,0	50	105
16	737.316	14	30'	13,1	14,0	50	105
17	737.317	14	1°	12,3	14,0	50	105
18	737.318	14	1° 30'	11,38	14,0	50	105
19	737.319	14	2°	10,5	14,0	50	105
20	737.320	14	3°	8,8	14,0	50	105
21	737.321	14	5°	9,0	17,6	50	105

Other sizes upon request!

We also supply cutters with different angles of taper:

**2,5; 6; 7; 8; 10; 12; 15; 20; 25; 30; 45 degrees** in different diameters (also solid hard-metal cutters – see page 68, Item 739)

Please ask for special catalogue 'Tapered die-sinking cutters'!



**2) with Morse-taper and thread, No. 2130**  
5 cutting edges



Item	Item No.	MK shank/thread	Angle	Sm. dia. (face dia.) mm	Max. dia. mm	Cutting length mm	Total length mm
1	737.401	2/M10	0°	18,0	18,0	65	144
2	737.402	2/M10	30'	16,9	18,0	65	144
3	737.403	2/M10	1°	15,7	18,0	65	144
4	737.404	2/M10	1° 30'	14,6	18,0	65	144
5	737.405	2/M10	2°	13,5	18,0	65	144
6	737.406	2/M10	3°	12,3	19,0	65	144
7	737.407	2/M10	5°	13,6	25,0	65	144
8	737.408	3/M12	0°	24,0	24,0	90	191
9	737.409	3/M12	30'	22,4	24,0	90	191
10	737.410	3/M12	1°	20,9	24,0	90	191
11	737.411	3/M12	1° 30'	19,29	24,0	90	191
12	737.412	3/M12	2°	17,7	24,0	90	191
13	737.413	3/M12	3°	14,6	24,0	90	191
14	737.414	3/M12	5°	16,6	32,0	90	191
15	737.415	4/M16	0°	35,0	35,0	120	277
16	737.416	4/M16	30'	32,4	35,0	120	277
17	737.417	4/M16	1°	31,0	35,2	120	277
18	737.418	4/M16	1° 30'	29,22	35,5	120	277
19	737.419	4/M16	2°	27,1	35,5	120	277
20	737.420	4/M16	3°	23,1	35,7	120	277
21	737.421	4/M16	5°	24,7	45,7	120	277

**3) with steep-angle taper and thread 5 cutting edges, No. 2140**



Item	Item No.	ISO shank/thread	Angle	Sm. dia. (face dia.) mm	Max. dia. mm	Cutting length mm	Total length mm
8	737.508	40/M16	0°	35,0	35,0	120	245
9	737.509	40/M16	30'	32,4	35,0	120	245
10	737.510	40/M16	1°	31,0	35,2	120	245
11	737.511	40/M16	1° 30'	29,22	35,5	120	245
12	737.512	40/M16	2°	27,1	35,5	120	245
13	737.513	40/M16	3°	23,1	35,7	120	245
14	737.514	40/M16	5°	24,7	44,2	120	245

We also sharpen cutters!

# Taper profile cutters for cast iron and steel

Material: HSS-EW9Co10

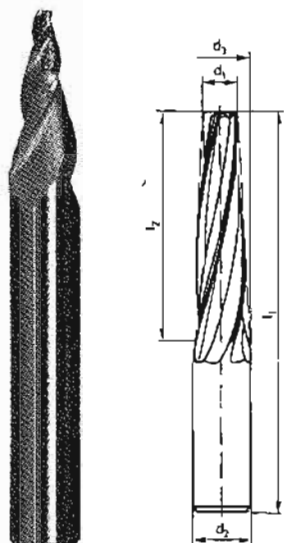
with straight shank, straight face, 4 cutting edges

direction of cut and twist: c.w.

Angle	d <sub>1</sub> mm	d <sub>3</sub> mm	l <sub>1</sub> mm	d <sub>2</sub> mm	Normal toothling		Roughing toothling	
					f <sub>1</sub> mm	Item No.	f <sub>1</sub> mm	Item No.
1°	6	7,8	50	8	100	738.107	95	738.601
2°	6	9,5	50	8	100	738.108	95	738.602
3°	6	11,2	50	10	105	738.109	100	738.603
4°	6	13,0	50	12	110	738.110	105	738.604
5°	6	14,8	50	12	110	738.111	105	738.605
6°	6	16,5	50	16	115	738.112	110	738.606
1°	6	8,1	60	8	110	738.113	105	738.607
2°	6	10,2	60	10	115	738.114	110	738.608
3°	6	12,3	60	12	120	738.115	115	738.609
4°	6	14,4	60	12	120	738.116	115	738.610
5°	6	16,5	60	16	125	738.117	120	738.611
6°	6	18,6	60	16	125	738.118	120	738.612
1°	8	9,8	50	10	105	738.207	100	738.701
2°	8	11,5	50	10	105	738.208	100	738.702
3°	8	13,2	50	12	110	738.209	105	738.703
4°	8	15,0	50	16	115	738.210	110	738.704
5°	8	16,8	50	16	115	738.211	110	738.705
6°	8	18,5	50	16	115	738.212	110	738.706
1°	8	10,5	70	10	125	738.213	120	738.707
2°	8	12,9	70	12	130	738.214	125	738.708
3°	8	15,3	70	16	135	738.215	130	738.709
4°	8	17,8	70	16	135	738.216	130	738.710
5°	8	20,3	70	20	135	738.217	130	738.711
6°	8	22,7	70	20	135	738.218	130	738.712
1°	10	12,1	60	12	120	738.307	115	738.801
2°	10	14,2	60	12	120	738.308	115	738.802
3°	10	16,3	60	16	125	738.309	120	738.803
4°	10	18,4	60	16	125	738.310	120	738.804
5°	10	20,5	60	20	125	738.311	120	738.805
6°	10	22,6	60	20	125	738.312	120	738.806
1°	10	12,6	80	12	140	738.313	135	738.807
2°	10	15,7	80	16	145	738.314	140	738.808
3°	10	18,4	80	16	145	738.315	140	738.809
4°	10	21,2	80	20	145	738.316	140	738.810
5°	10	24,0	80	25	150	738.317	145	738.811
6°	10	26,8	80	25	150	738.318	145	738.812
1°	12	14,1	60	12	120	738.407	115	738.901
2°	12	16,2	60	16	125	738.408	120	738.902
3°	12	18,3	60	16	125	738.409	120	738.903
4°	12	20,4	60	20	125	738.410	120	738.904
5°	12	22,5	60	20	125	738.411	120	738.905
6°	12	24,6	60	25	130	738.412	125	738.906
1°	12	14,8	80	12	140	738.413	135	738.907
2°	12	17,7	80	16	145	738.414	140	738.908
3°	12	20,4	80	20	145	738.415	140	738.909
4°	12	23,2	80	20	145	738.416	140	738.910
5°	12	26,0	80	25	150	738.417	145	738.911
6°	12	28,8	80	25	150	738.418	145	738.912
1°	16	18,1	60	16	125	738.507	120	738.001
2°	16	20,2	60	20	125	738.508	120	738.002
3°	16	22,3	60	20	125	738.509	120	738.003
4°	16	24,4	60	25	130	738.510	125	738.004
5°	16	26,5	60	25	130	738.511	125	738.005
6°	16	28,5	60	25	130	738.512	125	738.006
1°	16	19,5	100	20	165	738.513	165	738.007
2°	16	23,0	100	20	165	738.514	165	738.008
3°	16	26,5	100	25	170	738.515	170	738.009
4°	16	30,0	100	25	170	738.516	170	738.010
5°	16	32,5	100	32	175	738.517	175	738.011
6°	16	37,0	100	32	175	738.518	175	738.012



**739**



**Tapered shank cutters of solid hard metal**

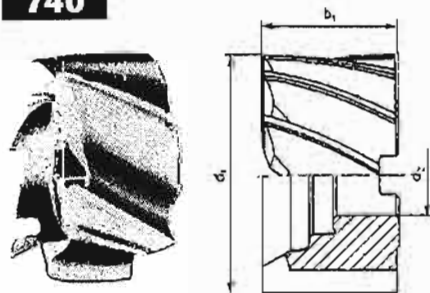
for highest precision  
 35° spiral-fluted cutter, with center-cutting, cutting edge tolerance  $d_1 = h11$   
 shank tolerance  $d_2 = h6$ , angle specifies the angle to the center line

Angle	d <sub>1</sub> mm	l <sub>2</sub> mm	d <sub>2</sub> mm	l <sub>1</sub> mm	No. of cuttg. edges	Item No.
1/2 degree	6	60	8	105	3	739.301
	8	60	10	110	4	739.302
	12	50	14	105	4	739.303
1 degree	6	57	8	100	3	739.311
	8	57	10	110	4	739.312
	12	50	14	105	4	739.313
1 1/2 degree	5	57	8	100	3	739.316
	6	60	10	110	3	739.317
	12	35	14	90	4	739.318
2 degree	6	30	8	75	3	739.321
	6	57	10	110	3	739.322
	8	57	12	110	4	739.323
2 1/2 degree	5	30	8	75	3	739.326
	6	30	10	80	3	739.327
	10	40	14	90	4	739.328
3 degree	3	40	8	85	3	739.331
	5	40	10	90	3	739.332
	5	60	12	115	3	739.333
4 degree	3,5	32	8	75	3	739.341
	4	30	10	80	3	739.342
	5	45	12	100	3	739.343

Angle	d <sub>1</sub> mm	l <sub>2</sub> mm	d <sub>2</sub> mm	l <sub>1</sub> mm	No. of cuttg. edges	Item No.
5 degree	3	28	8	70	3	739.351
	3	40	10	90	3	739.352
	3,5	48	12	110	3	739.353
7 degree	2,5	22	8	65	3	739.371
	5	28	12	80	3	739.372
8 degree	8	35	18	90	4	739.381
10 degree	2,5	20	10	75	3	739.401
	3	30	14	90	3	739.402
	5	30	16	90	3	739.403
11 degree	2	20	10	75	3	739.411
	2,5	24	12	75	3	739.412
	4,5	24	14	80	3	739.413
15 degree	2,5	20	14	80	3	739.451
	4	15	12	65	3	739.452
	6,5	25	20	95	3	739.453
20 degree	2,5	10	10	75	3	739.501
	4,5	15	16	90	4	739.502
30 degree	2,5	10	10	75	3	739.601
	4,5	16	16	90	4	739.602
45 degree	2,5	10	12	75	3	739.751
	4,5	16	16	90	4	739.752

All cutters also available with Weldon-clamping surface and radii.  
 Extra price upon request!  
 Other sizes upon request!

**740**

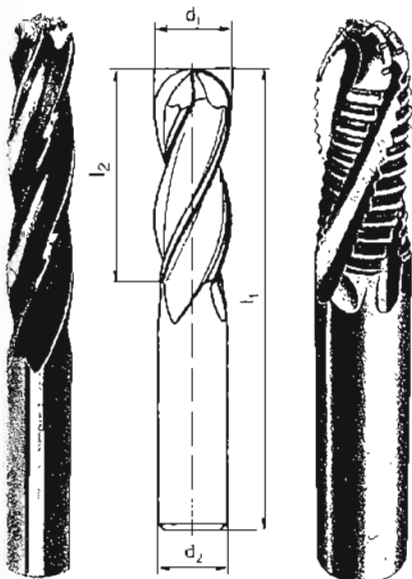


**Face milling cutters for NC-machines** Material: HSS-EMo5Co5

for metal, plywood and plastics  
 with grooves in acc. to DIN 138, direction of cut and twist: c.w. 30°

d <sub>1</sub> mm	b <sub>1</sub> mm	d <sub>2</sub> mm	No. 8100 Type N		No. 8120 Type H		No. 8130 Type W	
			No. of cuttg. edges	Type No.	No. of cuttg. edges	Type No.	No. of cuttg. edges	Item No.
40	32	16	10	740.101	12	740.201	6	740.301
50	36	22	10	740.102	14	740.202	6	740.302
63	40	27	10	740.103	14	740.203	6	740.303
80	45	27	12	740.104	16	740.204	6	740.304
100	50	32	14	740.105	20	740.205	8	740.305
125	56	40	16	740.106	22	740.206	8	740.306
160	63	50	18	740.107	24	740.207	10	740.307

**741**



**Die sinking cutters for duplicating milling machines**, with round face

with straight shank, DIN 1889/1, Material: HSS-EW9Co10

direction of cut: c.w.; direction of twist: c.w.

d <sub>2</sub> min	l <sub>2</sub> mm	d <sub>1</sub> mm	l <sub>1</sub> mm	No. of cutting edges	Normal toothing	Roughing toothing
					Item No.	Item No.
6	13	6	57	4	741.001	741.101
6	24	6	68	4	741.002	741.102
8	19	10	69	4	741.003	741.103
8	38	10	88	4	741.004	741.104
10	22	10	72	4	741.005	741.105
10	45	10	95	4	741.006	741.106
12	26	12	83	4	741.007	741.107
12	53	12	110	4	741.008	741.108
14	26	12	83	4	741.009	741.109
14	53	12	110	4	741.010	741.110
16	32	16	92	4	741.011	741.111
16	63	16	123	4	741.012	741.112
18	32	16	92	4	741.013	741.113
18	63	16	123	4	741.014	741.114
20	38	20	104	4	741.015	741.115
20	75	20	141	4	741.016	741.116
25	45	25	121	6	741.017	741.117
25	90	25	166	6	741.018	741.118
32	53	32	133	5	741.019	741.119
32	105	32	186	6	741.020	741.120
40	63	32	155	6	741.023	741.123
40	125	32	217	6	741.024	741.124

# Turbo-cutters of HSS with straight shank 6 mm

Types of serration and applications

### Serration 1



light metals (long chips),  
light metal alloys,  
lead, tin, plastics

### Serration 2



light metals (short chips),  
brass, copper alloys

### Serration 3



steel and cast steel,  
alloyed and unalloyed,  
cast iron and malleable  
cast iron

### Serration 5



steel and cast steel,  
alloyed and  
unalloyed

### Cyl. shape AS with face serration



Type	AS 0304	AS 0607	AS 0616	AS 0820	AS 1013	AS 1225	AS 1625
Head size	3 x 4 mm	6 x 7 mm	6 x 16 mm	8 x 20 mm	10 x 13 mm	12 x 25 mm	16 x 25 mm
Serration/ 1	-	-	742.031	-	-	742.061	742.071
Item No. 2	-	-	742.032	-	742.052	742.062	742.072
3	-	-	742.033	742.043	742.053	742.063	742.073
5	742.015	742.025	742.035	-	742.055	-	-

### Rounded cylinder shape C



Type	C 0304	C 0620	C 0850	C 1020	C 1225
Head size	3 x 4 mm	6 x 20 mm	8 x 50 mm	10 x 20 mm	12 x 25 mm
Serration/ 1	-	742.121	742.131	-	742.151
Item No. 2	-	742.122	742.132	-	742.152
3	-	742.123	-	742.143	742.153
5	742.115	742.125	-	-	742.155

### Pointed arch shape G



Type	G 0618	G 1220	G 1225	G 1230	G 1630
Head size	6 x 18 mm	12 x 20 mm	12 x 25 mm	12 x 30 mm	16 x 30 mm
Serration/ 1	742.211	742.221	-	742.241	742.251
Item No. 2	742.212	742.222	-	742.242	742.252
3	742.213	742.223	742.233	742.243	742.253
5	742.215	-	-	742.245	742.255

### Drop shape E



Type	E 0607	E 1220	E 1625
Head size	6 x 7 mm	12 x 20 mm	16 x 25 mm
Serration/ 1	-	742.321	742.331
Item No. 2	-	742.322	742.332
3	-	742.323	742.333
5	742.315	-	-

### Spherical shape D



Type	D 0302	D 0403	D 0504	D 0605	D 0807	D 1009	D 1210	D 1614
Head dia.	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm	12 mm	16 mm
Serration/ 1	-	-	-	-	742.451	-	742.471	742.481
Item No. 2	-	-	-	742.442	742.452	742.462	742.472	742.482
3	742.413	742.423	742.433	742.443	742.453	742.463	742.473	742.483
5	-	-	-	-	742.455	742.465	-	-

### Club shape K



Type	K 0620	K 1230
Head size	6 x 18 mm	12 x 20 mm
Serration/ 2	742.612	742.622
Item No. 3	742.613	742.623

### Flame shape H



Type	H 0305	H 0608	H 0820	H 1230	H 1635	H 1750
Head size	3 x 5 mm	6 x 8 mm	8 x 20 mm	12 x 30 mm	16 x 35 mm	17 x 50 mm
Serration/ 1	-	-	-	-	-	742.551
Item No. 3	-	-	742.523	742.533	742.543	-
5	742.505	742.515	-	-	-	-

### Round taper shape L



Type	L 1020	L 1230	L 1630
Head size	10 x 20 mm	12 x 30 mm	16 x 30 mm
Serration/ 1	-	-	742.731
Item No. 2	742.712	-	742.732
3	742.713	742.723	742.733
5	-	-	742.735

### Acute taper shape M



Type	M 0304	M 0607	M 0618	M 0820	M 1020	M 1225	M 1230
Head size	3 x 4 mm	6 x 7 mm	6 x 18 mm	8 x 20 mm	10 x 20 mm	12 x 25 mm	12 x 30 mm
Serration/ 1	-	-	742.831	-	-	742.861	742.871
Item No. 2	-	-	742.832	-	742.852	742.862	742.872
3	-	-	742.833	742.843	742.853	742.863	742.873
5	742.815	742.825	742.835	-	742.855	-	742.875

### Angle taper shape N

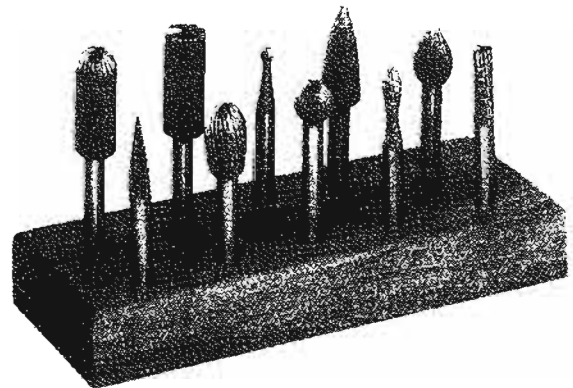


Type	N 0303	N 0606	N 1213	N 1230
Head size	3 x 3 mm	6 x 6 mm	12 x 13 mm	12 x 30 mm
Serration/ 1	-	-	742.931	-
Item No. 2	-	-	742.932	-
3	-	-	742.933	742.943
5	742.915	742.925	-	-

# Turbo-cutter sets of HSS

with straight shank, 6 x 40 mm, serration 3 (see above)

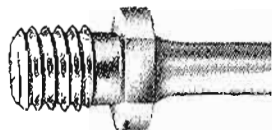
Item No.	Each set comprises one of the following cutters:					
743.203	A 1225	D 0807	M 0618	M 1020	M 1230	N 1213
743.303	A 0616	A 1225	C 1225	D 0403	D 1210	
	E 1220	G 1230	H 1230	K 0620	M 0618	



We also resharpen cutters!

	Cyl. shape AS with face serration				Pointed arch shape G		Rounded taper shape L	
Type	AS 2215		AS 3030		G 2045		G 3555	
Head size	22 x 15 mm		30 x 30 mm		20 x 45 mm		35 x 55 mm	
Intern. thread	M 8		M 10		M 10		M 12	
Serration/ 1	-		-		-		744.221	
Item No. 2	-		744.122		744.212		-	
3	744.113		-		-		-	
	Spherical shape D				Drop shape E		Flame shape H	Ac. taper shape M
Type	D 2018		D 2522		D 3027		D 3532	
Head size	20 mm dia.		25 mm dia.		30 mm dia.		35 mm dia.	
Intern. thread	M 8		M 10		M 12		M 12	
Serration/ 1	744.411		744.421		-		-	
Item No. 2	-		744.422		-		744.511	
3	744.413		-		744.433		744.443	
Type	E 2535		H 2055		M 2540			
Head size	25 x 35 mm		20 x 55 mm		25 x 40 mm			
Intern. thread	M 12		M 12		M 10			
Serration/ 1	-		744.511		-			
Item No. 2	-		744.512		-			
3	-		-		744.313		744.713	

744A



**Cutter bolts for internal-thread cutters**

Item No.	744.801	744.802	744.803	744.811	744.812	744.821
Shank dia.	6 mm			8 mm		10 mm
Thread	M 10	M 12	M 8	M 10	M 12	M 10
Total length	52 mm	54 mm	50 mm	52 mm	54 mm	52 mm

745

**Turbo-files of HSS**

Cuts and applications



**Cut 1**  
steel, cast iron, malleable cast iron



**Cut 2**  
steel and cast steel, alloyed and unalloyed



**Cut 3**  
steel and cast steel, alloyed and unalloyed

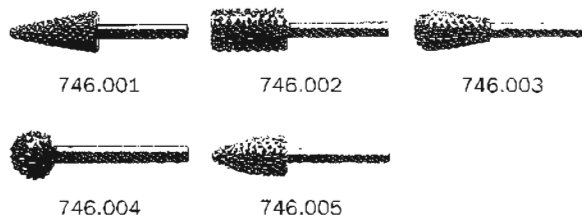
	Cyl. shape A			Rounded cyl. shape C		Spherical shape D		
Type	A 0616FH		A 1225FH		A 1625FH		C 0620FH	
Head size	6 x 16 mm		12 x 25 mm		16 x 25 mm		6 x 20 mm	
Cut/ 1	745.111		745.121		745.131		-	
Item No. 2	745.112		745.122		-		745.221	
3	745.113		-		745.213		-	
Type	C 1225FH		D 0807FH		D 1009FH			
Head size	12 x 25 mm		8 mm Ø		10 mm Ø			
Cut/ 1	745.221		-		-			
Item No. 2	745.222		745.312		745.322			
3	-		745.313		-			
	Drop shape E	Pointed arch shape G			Round taper shape L	Acute taper shape M		
Type	E 1220FH	G 0618FH			G 1230FH	G 1630FH		
Head size	12 x 20 mm	6 x 18 mm			12 x 30 mm	16 x 30 mm		
Cut/ 1	745.411	745.511			745.521	745.531		
Item No. 2	-	745.512			745.522	-		
3	-	745.513			745.523	-		
Type	L 1535FH		M 0618FH		M 1230FH			
Head size	15 x 35 mm		6 x 18 mm		12 x 30 mm			
Cut/ 1	745.611		-		-			
Item No. 2	-		745.712		745.722			
3	-		-		-			

We also sharpen cutters!

## Turbo-rasps HSS-Quality

746

Item No.	746.001	746.002	746.003	746.004	746.005
Head dia. x length mm	15 x 30	15 x 30	15 x 30	15 dia.	15 x 30
Shank dia. x length mm	6 x 40	6 x 40	6 x 40	6 x 40	6 x 40
Rasp cut	medium	medium	medium	medium	medium

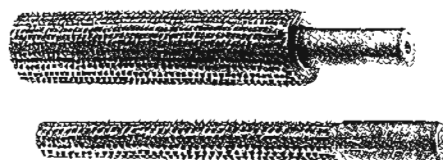


## Cylindrical rasps

747

of prime special steel  
with medium-coarse, inclined serration

Item No.	747.010	747.015	747.020	747.025	747.030
Dia. mm	10	15	20	25	30
Serration length mm	150	150	150	150	150
Shank dia. x length mm	16 x 50	16 x 50	16 x 50	16 x 50	16 x 50



## Engraving cutters of HSS with straight shanks

748

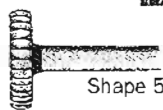
Serration 5 (see ill.) Shaft: 3 x 40 mm



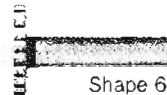
Shape 1



Shape 3



Shape 5



Shape 6

Item No.	Head dia. x length mm
748.827	4 x 2,8
748.828	5 x 3,5
748.829	6 x 4,2
748.830	7 x 5
748.831	8 x 5,5
748.837	6 x 6
748.839	8 x 8

Item No.	Head dia mm
748.848	1,6
748.849	2,3
748.850	3,2
748.851	4,0
748.852	5,0
748.853	6,0
748.854	7,0
748.855	8,0

Item No.	Head dia. x St. mm
748.868	8 x 2
748.869	10 x 2,3
748.870	12 x 2,6
748.871	14 x 3

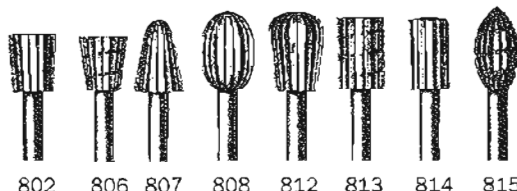
Item No.	Kopf- ∅ x St. mm
748.872	6 x 1
748.873	8 x 1
748.874	10 x 1



Shape 2



Shape 4



802 806 807 808 812 813 814 815

Item No.	Head dia. x length mm
748.840	1,6 x 2,8
748.841	2,3 x 4
748.842	3,2 x 5,6
748.843	4 x 7
748.844	5 x 8,7
748.845	6 x 10,5
748.846	7 x 12,5
748.847	8 x 14

Item No.	Head dia. x St. mm
748.864	8 x 2
748.865	10 x 2,5
748.866	12 x 3
748.867	14 x 3,5

Item No.	Head dia. x length mm
748.802	7 x 6
748.806	7 x 7,5
748.807	7 x 10
748.808	8 x 11

Item No.	Head dia. x length mm
748.812	8 x 11
748.813	7 x 10
748.814	6 x 10
748.815	7 x 12

The above engraving millers cannot be resharpened!

## Reducers (adapters)

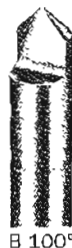
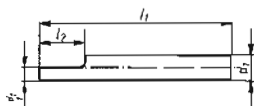
749

The above reducers are required when using 3-mm shank tools on machines with 6-mm chucks.



Item No.	749.001
Outside dia. mm	6
Inside dia. mm	3
Total length mm	25

**750**



A

B 100°



D 60°

F Blank tool round

**Engraving cutters** in different profiles (see opposite ill.)

1) made of tungsten carbide (K10)  
for steel, iron, non-ferrous metals and plastics

Dimensions mm			Profile/Item No.		
d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	A	D	F
2	40	6	750.011	750.012	750.013
3	40	6	750.021	750.022	750.023
3	100	6	750.031	-	-
4	40	6	750.041	750.042	750.043
4	60	6	750.051	750.052	750.053
4	100	6	750.061	750.062	750.063
5	50	8	750.071	-	-
5	100	8	750.081	-	-
6	70	8	750.091	750.092	750.093
6	100	8	750.101	750.102	750.103
8	80	12	750.111	750.112	-
8	100	12	750.121	-	-
8	150	12	750.131	-	-
10	80	14	750.141	-	-
10	100	14	750.151	750.152	-
10	150	14	750.161	-	-
12	80	16	750.171	-	-
12	100	16	750.181	-	-
12	150	16	750.191	-	-

Packing unit: 1 pc.

2) made of HSS-50  
for steel, iron, non-ferrous metals and plastics

Dimensions mm			Profile/Item No.		
d <sub>1</sub>	l <sub>1</sub>	l <sub>2</sub>	A	B	F
2,5	40	6	750.211	750.212	-
3	40	6	750.221	-	-
4	60	10	750.231	750.232	750.233
4	100	10	750.241	-	750.243
5	60	10	750.251	750.252	-
6	80	14	750.261	750.262	750.263
6	100	14	750.271	-	750.273
6	160	14	-	750.282	750.283
8	90	16	750.291	750.292	-
8	125	16	750.301	-	750.303
8	160	16	-	750.312	-
10	125	18	750.321	-	750.323
10	160	18	750.331	-	-
12	125	18	750.341	-	750.343
12	160	18	750.351	-	-
14	140	20	750.361	-	750.363
16	160	20	750.371	-	-
16	200	20	750.381	750.382	750.383
20	200	26	750.391	-	-

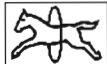
Packing unit: 5 pcs. up to 10 mm dia.  
others: 2 pcs.

Other profiles and qualities are also available! Quantities should be specified.

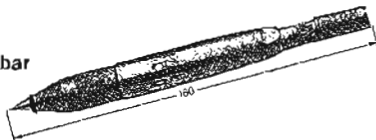
Remark: The cutting edges are semi-finished on length l<sub>2</sub> for the half of the shank diameter (does not apply to profile F = blank tool round)

**750A**

**PFERD**



Front exhaust  
Air consumption 25 – 30 m<sup>3</sup>/min  
For 4 mm ID air supply hose  
Frequency: 500 – 600 strokes/sec.  
Hose length 3000 mm  
Operating pressure 6 – 7 bar  
Supplied complete with air supply



**Marking pen MST 31, compressed-air operated**

Item No. 285.001

Patented pneumatic engraving pen working on a new principle at about three times the frequency of existing similar products.

For engraving markings in metal, glass, plastics and even heat-treated tool steel (with fine needle). Does not transmit harmful vibrations to the hand.

Delivery contains tungsten carbide engraving needle medium.

Additional needles:

Needle type	Coarse	Medium	Fine
Item No.	285.101	285.102	285.103

**751**

**PFERD**



**Cut 3 PLUS (3P)**



- Universal use on ferrous and non-ferrous metals and plastics.
- Fetting of castings.
- Surface machining.
- No loading problems.
- Produces even, smooth surfaces.

**Cut 5**



- For hardened and high-strength materials, die steels and steel castings.
- For tough welded claddings, weld seam dressing.
- Deburring and chamfering.
- Cut 5 produces smoother surface than cut 3.

**Tungsten carbide miniature burrs with 3 mm shank**

A high stock removal capability over the entire tool life ensures maximum results within a minimum of time. Thus, PFERD quality burrs and rotary cutters will help you to reduce labour costs.

	Cylindrical AS with end				Flame shape B		Cylindrical radius end C			Ball shape D			
Type	AS 0210	AS 0313	AS 0607	AS 0613	3B 0307	3B 0613	C 0210	C 0313	C 0613	D 0302	D 0403	D 0605	
Head dim.	2 x 10 mm	3 x 13 mm	6 x 7 mm	6 x 13 mm	3 x 7 mm	6 x 13 mm	2 x 10 mm	3 x 13 mm	6 x 13 mm	3 mm dia.	4 mm dia.	6 mm dia.	
Cut	3P	751.002	751.012	751.022	751.032	-	-	751.062	751.072	751.082	751.122	751.132	751.142
	5	751.005	751.015	751.025	751.035	751.045	751.055	751.065	751.075	751.085	751.125	751.135	751.145
	Oval shape E		Tree shape F		Pointed tree shape G		Conical M			Inverted cone shape KN			
Type	E 0307	E 6010	F 0307	F 0613	G 0307	G 0313	G 0613	M 0307	M 0311	M 0613	KN 0307	KN 0607	
Head dim.	3 x 7 mm	6 x 10 mm	3 x 7 mm	6 x 13 mm	3 x 7 mm	3 x 13 mm	6 x 13 mm	3 x 7 mm	3 x 11 mm	6 x 13 mm	3 x 7 mm	6 x 7 mm	
Cut	3P	751.112	751.232	751.182	751.222	751.192	751.202	751.212	751.152	751.162	751.172	751.092	751.102
	5	751.115	751.235	751.185	751.225	751.195	751.205	751.215	751.155	751.165	751.175	751.095	751.105

Remark: 6-mm dia. reducers for 3-mm shank tools see page 84, item no. 284 A

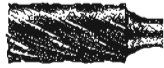
## Tungsten Carbide Burrs with straight shank

A high stock removal capability over the entire tool life ensures maximum results within a minimum of time. Thus, PFERD quality burrs and rotary cutters will help you to reduce labour costs.

Recommendation: The harder the material the finer the cut should be.



### Cut ALU



- Greasy aluminium alloys, all soft non-ferrous metals and structural thermoplastics.
- Deburring.
- No loading of flutes, even with greasy materials.
- Robotized use on aluminium castings.

### Cut Alu PLUS



- For aluminium, other soft non-ferrous metals, thermoplastics.
- High stock removal rate.
- Special tooth geometry designed for coarse machining applications.
- Optimum cutting performance at low r.p.m.

### Cut 1



- Easily machineable light metal alloys, non-ferrous alloys, soft stainless steels, plastics.
- Deburring.
- Weld dressing on light alloy parts.
- Coarse plastic fettling work.
- High cutting performance, suitable for high r.p.m.

### Cut 3



- For high-strength steels, die steels, steel castings, tough welded claddings, weld seams.
- Deburring work (including robotized).
- Without chip breaker, for scratch-free surfaces.

### Cut 3 PLUS (3P)



- Universal use on ferrous and non-ferrous metals and plastics.
- Fettling of castings.
- Surface machining.
- No loading problems.
- Produces even, smooth surfaces

### Cut 4



- For high-strength and ductile material, high-strength stainless steels, alloyed steel castings, fibre-reinforced plastics.
- Edge and surface work.
- Minimum axial forces due to short cutting.
- For enhanced surface qualities facilitating subsequent surface coating.

### Cut 5

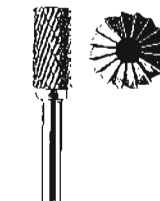


- For hardened and high strength materials, die steels and steel castings.
- For tough welded claddings, weld seam dressing.
- Deburring and chamfering.
- Cut 5 produces a smoother surface than cut 3.

Type/ shank	Head dim. mm	Cut/Item No.						
		Alu	Alu-plus	1	3	3Plus	4	5
<b>Cylindrical A (without end cut)</b>								
A 0413/6	4 x 13	-	-	-	751.243	751.242	751.244	751.245
A 0616/6	6 x 16	-	751.256	-	751.253	751.252	751.254	751.255
A 0820/6	8 x 20	-	-	-	751.263	751.262	751.264	751.265
A 1013/6	10 x 13	-	-	-	751.273	751.272	751.274	751.275
A 1020/8	10 x 20	-	-	751.281	751.283	751.282	751.284	751.285
A 1020/8	10 x 20	-	-	-	-	-	751.289	-
A 1025/6	10 x 25	-	-	-	-	751.292	751.294	-
A 1225/6	12 x 25	-	-	751.301	751.303	751.302	751.304	751.305
A 1225/8	12 x 25	-	751.310	-	751.308	751.307	751.309	-
A 1625/6	16 x 25	-	-	-	751.313	751.312	751.314	-
A 1625/8	16 x 25	-	-	-	-	751.317	-	-
<b>Cylindrical AS (with end cut)</b>								
AS0413/6	4 x 13	-	-	-	751.323	751.322	751.324	751.325
AS0616/6	6 x 16	-	-	-	751.333	751.332	751.334	751.335
AS0820/6	8 x 20	-	-	-	751.343	751.342	751.344	751.345
AS1013/6	10 x 13	-	-	-	-	751.352	751.354	751.355
AS1020/6	10 x 20	-	-	-	751.363	751.362	751.364	751.365
AS1020/8	10 x 20	751.370	-	-	-	-	-	-
AS1025/6	10 x 25	-	-	-	751.373	751.372	751.374	-
AS1225/6	12 x 25	-	-	-	751.383	751.382	751.384	751.385
AS1225/8	12 x 25	751.390	-	-	751.388	751.387	-	-
AS1625/6	16 x 25	-	-	-	751.393	751.392	751.394	751.395
<b>Cylindrical radius end C</b>								
C 0413/6	4 x 13	-	-	-	-	751.432	751.434	751.435
C 0616/6	6 x 16	751.440	751.446	751.441	751.443	751.442	751.444	751.445
C 0820/6	8 x 20	-	-	751.451	751.453	751.452	751.454	751.455
C 1020/6	10 x 20	-	-	751.461	751.463	751.462	751.464	751.465
C 1020/8	10 x 20	-	-	-	-	751.467	751.469	-
C 1025/6	10 x 25	-	-	-	751.473	751.472	751.474	751.475
C 1225/6	12 x 25	-	-	751.481	751.483	751.482	751.484	751.485
C 1225/8	12 x 25	751.486	751.488	-	-	751.487	751.489	-
C 1625/6	16 x 25	-	-	751.491	751.493	751.492	751.494	-
C 1625/8	16 x 25	-	-	-	-	751.497	-	-
<b>Ball shape D</b>								
D 0403/6	4 Ø	-	-	-	-	751.502	-	751.505
D 0605/6	6 Ø	-	-	751.511	751.513	751.512	751.514	751.515
D 0807/6	8 Ø	-	751.526	751.521	751.523	751.522	751.524	751.525
D 1009/6	10 Ø	-	-	751.531	751.533	751.532	751.534	751.535
D 1210/6	12 Ø	-	-	-	751.543	751.542	751.544	751.545
D 1210/8	12 Ø	751.546	751.549	-	-	751.547	-	-
D 1614/6	16 Ø	-	-	751.551	-	751.552	751.554	751.555
D 1614/8	16 Ø	-	-	-	-	751.557	-	-
D 2018/6	20 Ø	-	-	-	751.563	751.562	-	-
D 2018/8	20 Ø	-	-	-	-	751.567	-	751.569
<b>Tree shape F</b>								
F 0618/6	6 x 18	751.660	-	-	751.663	751.662	751.664	751.665
F 0820/6	8 x 20	-	-	-	751.673	751.672	751.674	-
F 1020/6	10 x 20	-	-	751.681	751.683	751.682	751.684	751.685
F 1225/6	12 x 25	-	-	751.691	751.693	751.692	751.694	751.695
F 1225/8	12 x 25	751.696	-	-	-	751.697	-	-
F 1630/6	16 x 30	-	-	-	751.703	751.702	751.704	-
F 1630/8	16 x 30	-	-	-	-	751.707	-	-



Shape A



Shape AS



Shape C



Shape D

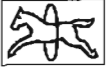


Shape F



**751A**

**PFERD**



Shape G



Shape L



Shape E



Shape M



Shape J/K



J 0605/K 0603

**Tungsten Carbide Burrs (continued)**

Toothing illustrated on page 73

Type/ Shank	Head dim. mm	Cut/Item No.						
		Alu	Alu-plus	1	3	3Plus	4	5
<b>Pointed tree shape G</b>								
G 0618/6	6 x 18	-	-	751.711	751.713	751.712	751.714	751.715
G 1020/6	10 x 20	-	-	751.721	751.723	751.722	751.724	751.725
G 1020/8	10 x 20	-	-	-	751.728	751.727	-	-
G 1225/6	12 x 25	-	-	751.731	751.733	751.732	751.734	751.735
G 1225/8	12 x 25	-	-	-	751.738	751.737	751.739	-
G 1230/6	12 x 30	-	-	751.741	751.743	751.742	751.744	751.745
G 1230/8	12 x 30	-	-	-	-	751.747	-	-
G 1630/6	16 x 30	-	-	751.751	751.753	751.752	751.754	-
G 1630/8	16 x 30	-	-	751.756	-	751.757	-	-
<b>Cone radius end L</b>								
L 1020/6	10 x 20	-	751.766	-	751.763	751.762	751.764	751.765
L 1225/6	12 x 25	-	-	-	751.773	751.772	751.774	-
L 1225/8	12 x 25	-	-	-	-	751.777	-	-
L 1230/6	12 x 30	-	-	751.781	751.783	751.782	751.784	751.785
L 1230/8	12 x 30	751.786	751.788	-	-	751.787	-	-
L 1630/6	16 x 30	-	-	-	751.793	751.792	751.794	-
L 1630/8	16 x 30	-	751.798	-	-	-	-	-
<b>Oval shape E</b>								
E 0610/6	6 x 10	-	-	-	-	751.822	751.824	751.825
E 0813/6	8 x 13	-	-	-	-	751.832	751.834	751.835
E 1016/6	10 x 16	-	-	-	-	751.842	751.844	751.845
E 1220/6	12 x 20	-	-	751.851	751.853	751.852	751.854	751.855
E 1220/8	12 x 20	-	-	-	751.858	751.857	751.859	-
E 1625/6	16 x 25	-	-	751.861	-	751.862	751.864	-
E 1625/8	16 x 25	-	-	-	-	751.867	-	-
<b>Conical M</b>								
M 0618/6	6 x 18	-	-	751.571	751.573	751.572	751.574	751.575
M 1020/6	10 x 20	-	-	751.581	751.583	751.582	751.584	751.585
M 1225/6	12 x 25	-	-	751.591	751.593	751.592	751.594	751.595
M 1225/8	12 x 25	-	-	-	-	751.597	-	-
<b>Conical cone J/K</b>								
J 0605/6*	6 x 5/60°	-	-	-	751.603	-	-	-
K 0603/6*	6 x 3/90°	-	-	-	751.613	-	-	-
J 1008/6	10 x 13/60°	-	-	-	751.623	-	-	-
K 1005/6	10 x 10/90°	-	-	-	751.633	-	-	-
J 1613/6	16 x 16/60°	-	-	-	751.643	-	-	751.645
K 1608/6	16 x 13/90°	-	-	751.651	751.653	-	-	751.655
K 1608/8	16 x 13/90°	-	-	-	751.658	-	-	-

\* J 0605 and K 0603 are toothed at both head ends.

Type/ Shank	Head dim. mm	Item- No.
<b>Miniatur burrs X</b>		
X 0204/3	2.5 x 4	751.964
X 0408/3	4 x 8	751.964
X 0610/6	6 x 10	751.974
X 0810/6	8 x 10	751.984
X 1010/6	10 x 10	751.994

Available only with diamond cut, similar to cut 4, but significantly finer



Shape X

Type/ Shank	Head dim. mm	Cut radius	Item- No.
<b>Radius burrs R</b>			
R 1618/8	16 x 18	6.0 mm	751.870
R 0615/6	n.a.	1.5 mm	751.871
R 0830/8	n.a.	3.0 mm	751.872

Special cut



R 1618



R 0615/0830

Type/ Shank	Head dim. mm	Cut/Item No.	
		3	3Plus
<b>Flame shape B</b>			
B 0820/6	8 x 20	751.403	751.402
B 1230/6	12 x 30	751.413	751.412
B 1635/8	16 x 35	-	751.422



Shape B

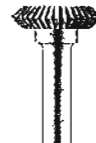
Type/ Shank	Head dim. mm	Item- No.
<b>Concave radius burrs V, cut 3</b>		
V 1015/6	10 x 15	751.883
V 1215/6	12 x 15	751.893
V 1315/6	13 x 15	751.903

With 10 mm cut radius.



Shape V

Type/ Shank	Head dim. mm	Item- No.
<b>Rim shape N, cut 3</b>		
N 2503/8	25 x 3/90°	751.803
N 2506/8	25 x 6/90°	751.813



Shape N

Type/ Shank	Head dim. mm	Item- No.
<b>Inverted cone shape KN, cut 3</b>		
KN 1013/6	10 x 13/10°	751.913
KN 1213/6	12 x 13/20°	751.923
KN 1613/6	16 x 13/20°	751.933
KN 2013/8	20 x 13/20°	751.943



Shape KN

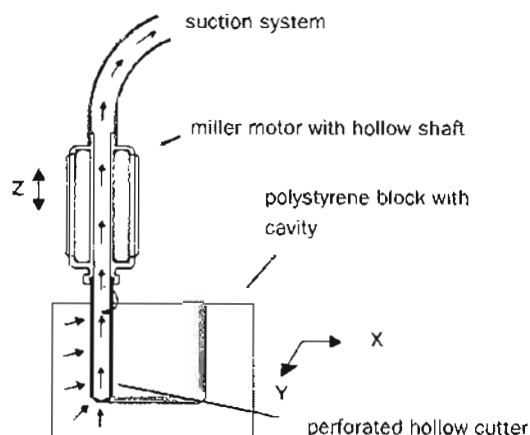
## Dust free polystyrene cutting with the unique dust exhaust system

- high performance
- neat and clean workpieces and workplace
- unhindered vision
- no health hazards
  - a) because no harmful gasses are generated by or during this milling process
  - b) the operator does not inhale polystyrene particles thanks to the constant and direct removal of plastic chips by means of the exhaust system

**Remark:** a sufficiently powerful suction system with filter (f. ex. a vacuum cleaner) is required for operating the system. We will be pleased to provide you with a detailed quotation upon request.

The exhaust system is **not** included in the scope of supply of the milling machines.

Diagram of the system



## Milling machine BW 900 Item No. 752.009

for production of models and packings made of rigid foam materials (polystyrene, polyurethane etc.)

### Mechanics:

- aluminium milling machine table plate, 2000 x 1300 mm
- milling table with motor elevation,  $s = 450$  mm
- milling table adjustable on all sides
- projection to the center of milling spindle 1040 mm, also after lowering milling table
- feeding unit with working gear, high-speed and low-speed gear,  $s = 750$  mm
- milling motor with hollow shaft,  $P = 1,1$  kW,  $n = 3000$  min<sup>-1</sup>
- linear guidings (free from backlash) and ball screw
- swivelling motor  $\pm 90^\circ$ , precise angle adjustment with large and accurate degree scale
- locking bolt for 0°-position
- dust-free expansion bellows
- stable, accurate and vibration-free mechanics

### Control:

- positioning controller for 40 positive and negative start-up positions
- zeropoint level adjustable at will
- shrinkage dimension input
- millimeter/inch input
- switching to higher position number (e.g. from position 4 to position 8) by multiple pushing of start key
- display of actual and set value

### Operation:

- workpiece height max. 1000 mm at 300 mm effective cutter length; hollow cutters up to 600 mm effective cutter length (including customized versions) may be utilized

**Large range of hollow cutters, see page 77.**

- ergonomic operation tableau, swivelling
- large and easy-to-operate keys

### Electrical connection data:

- main voltage: 230/400 V, 50 Hz
- control voltage: 24 V, 50 Hz or optional

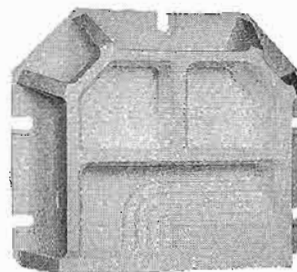
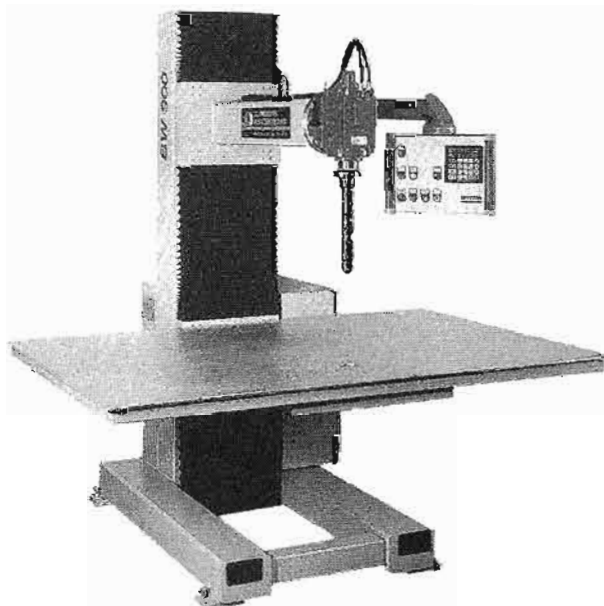
### Other features:

- with connection to one of our high-powered suction units (not included in BW 900 delivery scope, see next page), with three phase-motor (4 kW or 5,5 kW), the suction unit is switched on simultaneously via the milling motor
- lacquering: RAL 7036/3000 (platin grey / flame red) or optional
- machine weight: 900 kg

### Option:

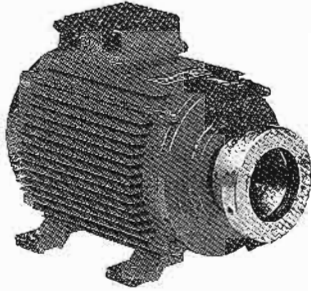
- infinitely-variable milling spindle revolutions, 1000 – 6000 min<sup>-1</sup>; milling motor with low operating temperature prevents melting on of foam material

752



## Dust-free polystyrene cutting with the unique dust exhaust system (continued)

**752A**



### Cutter motor with hollow shaft

which can be fitted to conventional cutters

Accessories: 1 clamping nut. 2 hook wrenches

Technical data	Item No.	
	752.002	752.005 **
Motor power	1,1	4,4
Voltage	230/400*	230/400*
Frequency	50	200
No. of revs. †	3000 - 6000	2000 - 12000

\* tube used with a suitable frequency converter (not included in the supply)

† or spec

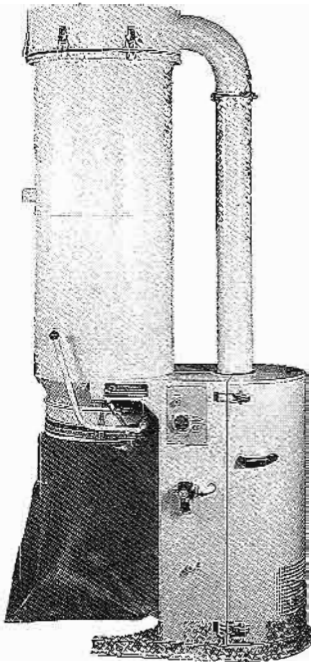
Suitable motor holders can be supplied upon request.

### Special switch

with brake for cutter motor and hollow shaft

Item No. 752.003

**752B**



752.006

### Highly effective suction systems

to be used with cutting machines BW 900 and cutter motors with hollow shafts

#### 1) Item No. 752.006

##### Contained parts:

- Separator of shavings, volume 250 ltrs.
- Compact sheet-filter
- Highly effective compressor
- trap to empty the separator during stillstand into a plastic bag or a main suction
- automatic filter-cleaning
- Suction hose dia. 50 mm, length 5 m

##### Optional:

- Set of 100 pieces plastic bags, 1000 x 1500 mm, volume ab. 400 ltrs. **Item No. 752.007**

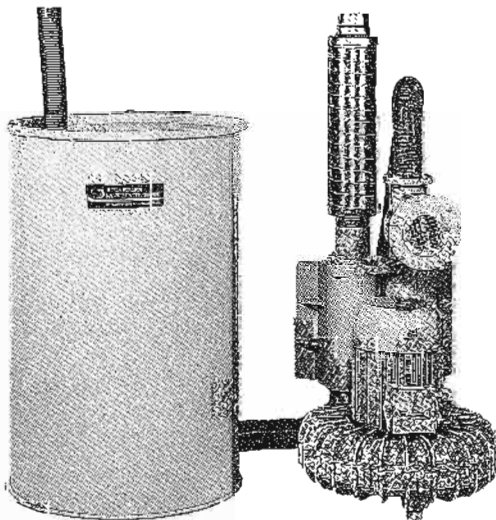
##### Technical data:

Power: 5,5 kW  
 Tension: 400V  
 Frequency: 50 Hz  
 Air consumption: max. 10.000 l/min  
 Underpressure: max. 300 mbar  
 Dimensions: 1100 x 600 x 2600 mm  
 (L x W x H)  
 Colour: RAL 7035 (light grey)

#### 2) Item No. 752.008

##### Contained parts:

- Highly effective suction
  - Power: 5,5 kW
  - Tension: 400 V
  - Frequency: 50 Hz
  - Air consumption: max. 10.000 l/min
  - Underpressure: max. 300 mbar
  - Colour: RAL 7035 (light grey)
- Separator for shavings
- Suction hose dia. 50 mm, length 6000 mm
- Suction hose dia. 70 mm, length 7000 mm
- Additional silencer

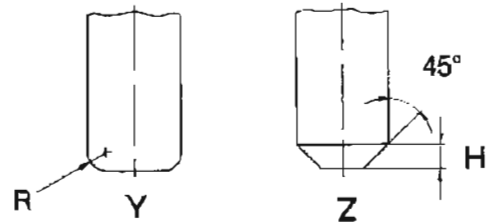
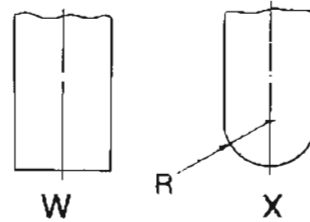


752.008

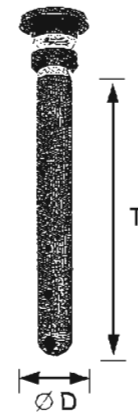
**Hollow cutters with rasp cut for milling machine BW 900 and motors with hollow shafts**

- quick clean-out of rigid foam material
- accurate, dimensionally precise milling results
- a polished, flow-optimized suction channel with suction openings ensures a clean work area
- composite hollow cutters enable exchange of milling cutter tips

Different head-types available



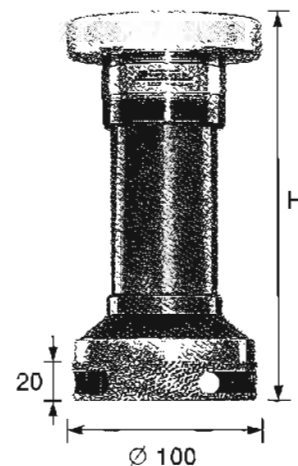
T = Useful cutting depth	Head type	D = Diameter / Item No.						
		15 mm	20 mm	30 mm	40 mm	45 mm	50 mm	60 mm
120 mm	W	752.011	-	-	-	-	-	-
	X	752.012	-	-	-	-	-	-
	Y	752.013	-	-	-	-	-	-
	Z	752.014	-	-	-	-	-	-
200 mm	W	-	752.021	752.031	752.041	752.051	752.061	752.071
	X	-	752.022	752.032	752.042	752.052	752.062	752.072
	Y	-	752.023	752.033	752.043	752.053	752.063	752.073
	Z	-	752.024	752.034	752.044	752.054	752.064	752.074
250 mm	W	-	752.081	752.091	752.101	752.111	752.121	752.131
	X	-	752.082	752.092	752.102	752.112	752.122	752.132
	Y	-	752.083	752.093	752.103	752.113	752.123	752.133
	Z	-	752.084	752.094	752.104	752.114	752.124	752.134
300 mm	W	-	-	752.141	752.151	752.161	752.171	752.181
	X	-	-	752.142	752.152	752.162	752.172	752.182
	Y	-	-	752.143	752.153	752.163	752.173	752.183
	Z	-	-	752.144	752.154	752.164	752.174	752.184
350 mm	W	-	-	752.191	752.201	752.211	752.221	752.231
	X	-	-	752.192	752.202	752.212	752.222	752.232
	Y	-	-	752.193	752.203	752.213	752.223	752.233
	Z	-	-	752.194	752.204	752.214	752.224	752.234
400 mm	W	-	-	-	752.241	752.251	752.261	752.271
	X	-	-	-	752.242	752.252	752.262	752.272
	Y	-	-	-	752.243	752.253	752.263	752.273
	Z	-	-	-	752.244	752.254	752.264	752.274
450 mm	W	-	-	-	752.281	752.291	752.301	752.311
	X	-	-	-	752.282	752.292	752.302	752.312
	Y	-	-	-	752.283	752.293	752.303	752.313
	Z	-	-	-	752.284	752.294	752.304	752.314
500 mm	W	-	-	-	-	752.321	752.331	752.341
	X	-	-	-	-	752.322	752.332	752.342
	Y	-	-	-	-	752.323	752.333	752.343
	Z	-	-	-	-	752.324	752.334	752.344
600 mm	W	-	-	-	-	-	-	752.351
	X	-	-	-	-	-	-	752.352
	Y	-	-	-	-	-	-	752.353
	Z	-	-	-	-	-	-	752.354



- Please state required head type (please indicate for type Y radius R and for type Z height H)
- Hollow cutters with tapered shape for pattern milling as well as other sizes and forms available on request.

**Surface cutter heads** (dia. 100 mm, toothed on the complete surface and 20 mm high on the periphery)

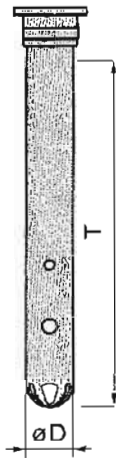
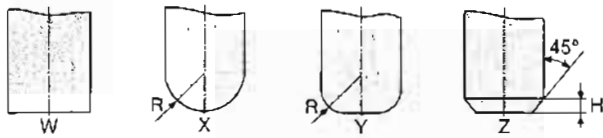
Item No.	752.391	752.392	752.393
H = Length mm	100	200	300



# Dust-free polystyrene cutting with the unique dust exhaust system (continued)

## 752D

Please state the required head type of the cutter top.



## HSC-Hollow cutters with special cut for CNC-milling and motors with hollow shafts

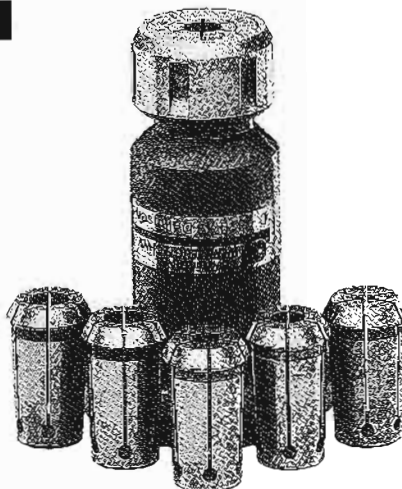
- for superfast clearing of pockets and 3D-contours
- for fine and accurate milling results
- for vertical immersion into the plastic material without melting effects
- super-long tool life due to special hardening

T = Effective cutter length	Head type	D = Diameter / Item No.							
		20 mm	25 mm	30 mm	35 mm	40 mm	45 mm	50 mm	60 mm
200 mm	W	752.401	752.411	752.421	-	-	-	-	-
	X	752.402	752.412	752.422	-	-	-	-	-
	Y	752.403	752.413	752.423	-	-	-	-	-
	Z	752.404	752.414	752.424	-	-	-	-	-
250 mm	W	752.431	752.441	752.451	-	-	-	-	-
	X	752.432	752.442	752.452	-	-	-	-	-
	Y	752.433	752.443	752.453	-	-	-	-	-
300 mm	Z	752.434	752.444	752.454	-	-	-	-	-
	W	-	752.461	752.471	752.481	752.491	752.501	752.511	-
	X	-	752.462	752.472	752.482	752.492	752.502	752.512	-
	Y	-	752.463	752.473	752.483	752.493	752.503	752.513	-
350 mm	Z	-	752.464	752.474	752.484	752.494	752.504	752.514	-
	W	-	-	752.521	752.531	752.541	752.551	752.561	752.571
	X	-	-	752.522	752.532	752.542	752.552	752.562	752.572
	Y	-	-	752.523	752.533	752.543	752.553	752.563	752.573
400 mm	Z	-	-	752.524	752.534	752.544	752.554	752.564	752.574
	W	-	-	-	752.581	752.591	752.601	752.611	752.621
	X	-	-	-	752.582	752.592	752.602	752.612	752.622
	Y	-	-	-	752.583	752.593	752.603	752.613	752.623
450 mm	Z	-	-	-	752.584	752.594	752.604	752.614	752.624
	W	-	-	-	-	752.631	752.641	752.651	752.661
	X	-	-	-	-	752.632	752.642	752.652	752.662
	Y	-	-	-	-	752.633	752.643	752.653	752.663
500 mm	Z	-	-	-	-	752.634	752.644	752.654	752.664
	W	-	-	-	-	-	-	752.671	752.681
	X	-	-	-	-	-	-	752.672	752.682
	Y	-	-	-	-	-	-	752.673	752.683
500 mm	Z	-	-	-	-	-	-	752.674	752.684

Other dimensions are available upon request.

- Please state required head type (please indicate for type Y radius R and for type Z height H)

## 752E



## Collets and casings for shank-type cutters

This item allows to use normal shank-type cutters in combination with cutter motors with hollow shafts (however without the dust-free effect)

Item No.	Item
752.701	Casing for collets with cooling slots for shank diameter 2 - 25 mm complete with fixing nut and wrench
752.704	Collet for diameter 4
752.706	Collet for diameter 6
752.708	Collet for diameter 8
752.710	Collet for diameter 10
752.712	Collet for diameter 12
752.716	Collet for diameter 16
752.720	Collet for diameter 20
752.725	Collet for diameter 25

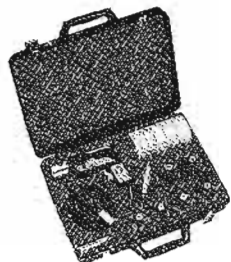
## APOLLO 2-pattern-making-set

**753**

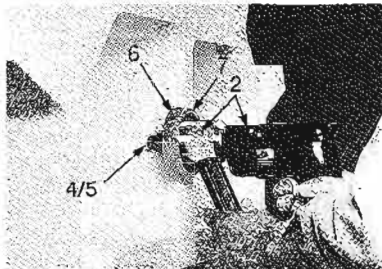
the ideal milling machine for model making mills rigid foams dust-free with minimum expenditure of time

- for fine and accurate milling results
- for rapid chamfering and grinding of model edges
- six different milling cutters are permanently available
- compatible **APOLLO 2** extension sets for bore cutting and 3D-milling are also available

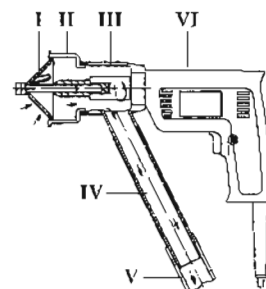
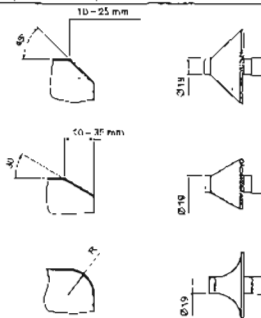
- **APOLLO 2** with electronic revolution control adapts optimally to all materials
- **APOLLO 2**-milling cutters with super-long tool life due to BW-special hardening
- convenient tool exchange



1



Ill. No.	Item No.	Item	Technical data
1	753.002	APOLLO 2-modelling-set, complete, 17 parts scope see underneath	230 V 50 - 60 Hz, 500 - 4.500 min or 110 V, 50 - 60 Hz, 500 - 4.500 min
2	753.460	APOLLO 2-drive incl. 2 socket wrenches	230 V 50 - 60 Hz, 500 - 4.500 min or 110 V, 50 - 60 Hz, 500 - 4.500 min
3	753.461	case with inserton	
4	753.465	chamfering cutter 45°	
4	753.466	chamfering cutter 30°	
5	753.467	rounding-off cutter R 10	
5	753.468	rounding-off cutter R 15	
5	753.469	rounding-off cutter R 20	
5	753.470	rounding-off cutter R 25	
6	753.471	depth limit H 10	
6	753.472	depth limit H 15	
6	753.473	depth limit H 20	
6	753.474	depth limit H 25	
6	753.475	depth limit H 30	
6	753.476	depth limit H 35	
7	753.477	connection piece	



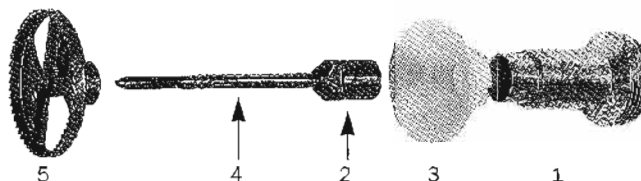
- I perforated hollow cutter
- II depth limit
- III suction device
- IV handle with suction channel
- V suction tube
- VI electrical power machine

### Additional accessories:

Ill. No.	Item No.	Item	Technical data
8	753.480	profile cutter	∅ 55 x 70 mm
9	753.481	engraving cutter	∅ 20 x 75 mm, R 5
10	753.482	cylindrical cutter	∅ 20 x 75 mm
11	753.483	suction nozzle	
-	753.039	suction hose	∅ 25 mm x 5 mtr long

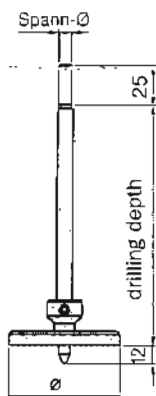
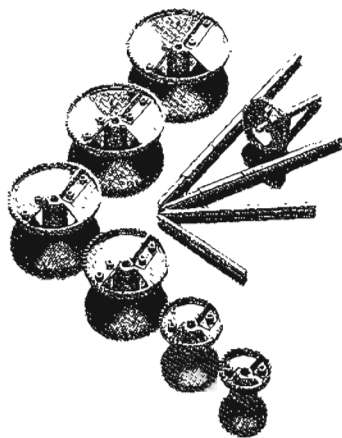
## APOLLO 2-extension set

**753A**



Ill. No.	Item No.	Item	Technical data
-	753.510	APOLLO 2-extension set, complete, 18 parts, scope see underneath	
1	753.490	suction tube	
2	753.491	connection piece	
3	753.492	suction funnel	for dia. 35 - 50 mm
3	753.493	suction funnel	for dia. 50 - 70 mm
3	753.494	suction funnel	for dia. 70 - 90 mm
3	753.495	suction funnel	for dia. 90 - 100 mm
4	753.371	drilling shaft	depth = 100 mm
5	753.350	TunnelCut	∅ 40 mm
5	753.351	TunnelCut	∅ 50 mm
5	753.343	TunnelCut	∅ 60 mm
5	753.345	TunnelCut	∅ 70 mm
5	753.352	TunnelCut	∅ 80 mm
5	753.353	TunnelCut	∅ 90 mm
5	753.354	TunnelCut	∅ 100 mm
-	753.464	case with inserts, acc. 2 socket wrenches, 1 screw wrench	

## 753B



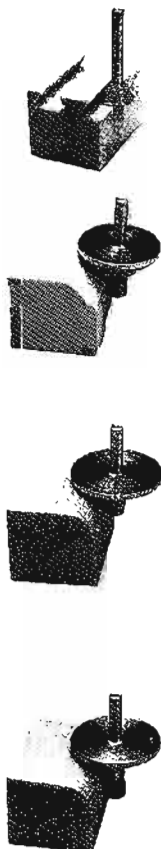
## TunnelCut

- the ideal tool for 'rigid foam model-makers'
- cuts bores (e.g. for cables and waterdrains) with minimum effort and time expenditure
- provides for smooth milling surfaces
- also handles bonded rigid foam plates
- can be used in angle drills, manual drills and APOLLO-handmilling machines (see page 79)

Item No.	Item
753.350	TunnelCut Ø 40 mm
753.351	TunnelCut Ø 50 mm
753.343	TunnelCut Ø 60 mm
753.345	TunnelCut Ø 70 mm
753.352	TunnelCut Ø 80 mm
753.353	TunnelCut Ø 90 mm
753.354	TunnelCut Ø 100 mm
753.370	drilling shafts for drilling depth 60 mm, d = 8 mm
753.371	drilling shafts for drilling depth 100 mm, d = 8 mm
753.372	drilling shafts for drilling depth 150 mm, d = 8 mm
753.373	drilling shafts for drilling depth 200 mm, d = 8 mm

Other sizes on request.

## 754



## Special shank cutters for hard polystyrene

Angle cutter (for undercuts)

Angle	Diameter/Item No.		
	15 mm	25 mm	35 mm
20°	-	754.102	754.104
30°	754.101	754.103	754.105
Shank-Ø	8 mm	8 mm	8 mm

Chamfer cutters with two ball bearings

Angle	Diameter/Item No.	
	35 mm	50 mm
30°	754.201	754.203
45°	754.202	754.204
Shank-Ø	8 mm	12 mm

Rounding-off cutters with two bevel angles

Item No.	754.303	754.304	754.305	754.306	754.308	754.310	754.312
Radius	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm	12 mm
Ø	17 mm	19 mm	21 mm	23 mm	29 mm	33 mm	37 mm
Shank-Ø	8 mm					12 mm	

Item No.	754.315	754.320	754.325	754.330	754.335	754.340
Radius	15 mm	20 mm	25 mm	30 mm	35 mm	40 mm
Ø	43 mm	55 mm	65 mm	77 mm	87 mm	97 mm
Shank-Ø	12 mm			16 mm		

Rounding-off cutters with two bevel angles and two ball bearings

Item No.	754.403	754.404	754.405	754.406	754.408	754.410	754.412
Radius	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm	12 mm
Ø	22 mm	24 mm	26 mm	28 mm	32 mm	36 mm	40 mm
Shank-Ø	8 mm						12 mm

Item No.	754.415	754.420	754.425	754.430	754.435	754.440
Radius	15 mm	20 mm	25 mm	30 mm	35 mm	40 mm
Ø	46 mm	56 mm	66 mm	77 mm	87 mm	97 mm
Shank-Ø	12 mm			16 mm		

Continued on page 81

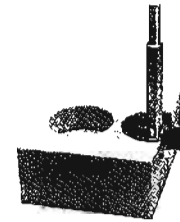
# Special shank cutters for hard polystyrene (continued)

754

Hole cutters, flat, standard length 70 mm

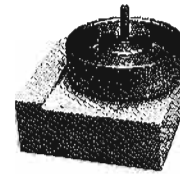
Item No.	754.500	754.501	754.502	754.503	754.504	754.505	754.506
∅	15 mm	20 mm	25 mm	30 mm	40 mm	50 mm	60 mm
Shank-∅	8 mm		10 mm			12 mm	

Item No.	754.507	754.508	754.509	754.510
∅	70 mm	80 mm	90 mm	100 mm
Shank-∅	12 mm			



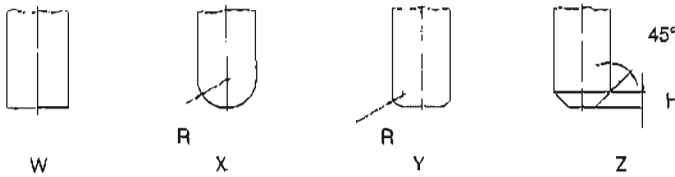
Facing cutters, full face toothing, standard height 30 mm

Item No.	754.520	754.523	754.524	754.529
∅	50 mm	100 mm	120 mm	150 mm
Shank-∅	10 mm	12 mm	16 mm	



## Cylindrical cutters

Choice of various cutter heads:



∅		Length														
		20 mm	25 mm	30 mm	35 mm	40 mm	50 mm	60 mm	80 mm	100 mm	120 mm	150 mm	180 mm	200 mm	230 mm	250 mm
8 mm	Item No.*	754.601	754.611	754.621	754.631	754.641	754.651	754.661	-	-	-	-	-	-	-	-
	Shank-∅ min.	6 mm	6 mm	6 mm	6 mm	6 mm	8 mm	8 mm	8 mm	-	-	-	-	-	-	-
10 mm	Item No.*	754.602	754.612	754.622	754.632	754.642	754.652	754.662	754.672	754.682	-	-	-	-	-	-
	Shank-∅ min.	6 mm	6 mm	6 mm	8 mm	8 mm	8 mm	8 mm	8 mm	10 mm	-	-	-	-	-	-
15 mm	Item No.*	754.603	754.613	754.623	754.633	754.643	754.653	754.663	754.673	754.683	754.693	754.703	-	-	-	-
	Shank-∅ min.	6 mm	6 mm	8 mm	8 mm	8 mm	8 mm	8 mm	10 mm	10 mm	16 mm	16 mm	-	-	-	-
20 mm	Item No.*	754.604	754.614	754.624	754.634	754.644	754.654	754.664	754.674	754.684	754.694	754.704	754.714	754.724	754.734	754.744
	Shank-∅ min.	6 mm	6 mm	8 mm	8 mm	8 mm	8 mm	8 mm	10 mm	10 mm	16 mm	16 mm	16 mm	20 mm	20 mm	20 mm
25 mm	Item No.*	754.605	754.615	754.625	754.635	754.645	754.655	754.665	754.675	754.685	754.695	754.705	754.715	754.725	754.735	754.745
	Shank-∅ min.	6 mm	6 mm	8 mm	8 mm	8 mm	8 mm	8 mm	10 mm	10 mm	16 mm	16 mm	16 mm	16 mm	20 mm	20 mm
30 mm	Item No.*	754.606	754.616	754.626	754.636	754.646	754.656	754.666	754.676	754.686	754.696	754.706	754.716	754.726	754.736	754.746
	Shank-∅ min.	8 mm	8 mm	8 mm	8 mm	8 mm	8 mm	10 mm	10 mm	12 mm	16 mm	16 mm	20 mm	20 mm	20 mm	25 mm
35 mm	Item No.*	754.607	754.617	754.627	754.637	754.647	754.657	754.667	754.677	754.687	754.697	754.707	754.717	754.727	754.737	754.747
	Shank-∅ min.	8 mm	8 mm	8 mm	8 mm	8 mm	10 mm	10 mm	12 mm	12 mm	16 mm	16 mm	20 mm	20 mm	25 mm	25 mm
40 mm	Item No.*	754.608	754.618	754.628	754.638	754.648	754.658	754.668	754.678	754.688	754.698	754.708	754.718	754.728	754.738	754.748
	Shank-∅ min.	8 mm	8 mm	8 mm	8 mm	8 mm	10 mm	10 mm	12 mm	12 mm	16 mm	16 mm	20 mm	25 mm	25 mm	25 mm
50 mm	Item No.*	754.609	754.619	754.629	754.639	754.649	754.659	754.669	754.679	754.689	754.699	754.709	754.719	754.729	754.739	754.749
	Shank-∅ min.	8 mm	8 mm	8 mm	8 mm	8 mm	10 mm	10 mm	12 mm	12 mm	16 mm	18 mm	20 mm	20 mm	25 mm	25 mm

\* Please complete the given item-nos. by

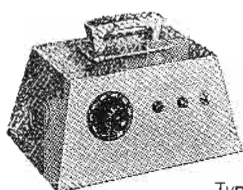
- a) the desired head type (W,X,Y or Z, see above)
- b) for head type Y radius R or for type Z height H
- c) the desired shank-diameter (please observe the above mentioned min. shank-diameters)

example for order: Item No. 754.635 X = cyl. cutter dia. 25 mm x 35 mm length, head type X, shank-diameter (min. 8 mm)

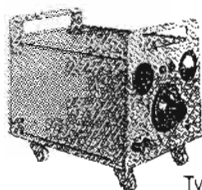
Item No. 754.728 Z = cyl. cutter dia. 40 mm x 200 mm length, head type Z, height H....., shank-diameter (min. 25 mm)

- The by marked cutters are **most common** types
- Other cutter types or sizes and cutters for soft foams on request!

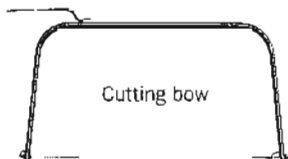


**755**

Type SfS



Type SfS/E



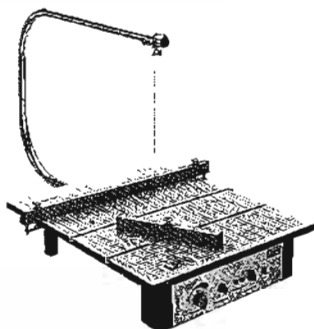
Cutting bow



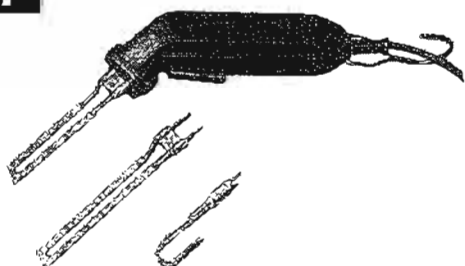
Handle-cutter SfS



Handle-cutter SfS/E

**756**

The above illustration shows the equipment with parallel square, cross cut gauge and circular cutting device.

**757**

## Electric cutting equipment for cutting and modelling foam plates and blocks

Sturdy unit, easy to operate, for cutting and modeling individual components or in series. Both units are equipped with a stepless controller; max. cutting wire length 180 cm; housing of light metal with hammer finish.

### TYPE SfS Item No. 755.001

220 V / 400 VA Weight: 16 kg

wire thickness: 0,8, 1,6 mm

Attachments can be connected to the unit with a special socket; comes complete with cutting bow 60 x 40 cm and handle-cutter.

### TYPE SfS/E Item No. 755.002

220 V / 1300 VA Weight: 45 kg

wire thickness: 0,8, 1,6, 2,2, 3,0 mm

As this unit is equipped with two special sockets, two light-duty attachments or one heavy-duty attachment can be operated simultaneously.

Complete with cutting bow 60 x 40 cm and handle-cutter.

### Accessories:

#### 1.) Cutting bow

Length x depth	60 x 40 cm	90 x 100 cm	100 x 90cm	120 x 80cm	130 x 75cm	160 x 70cm	180 x 60cm
Item No.	755.101	755.102	755.103	755.104	755.105	755.106	755.107

#### 2) Handle-cutter

For type	SfS	SfS/E
Item No.	755.201	755.202

#### 3) Cutting wire

Wire dia.	0,8 mm	1,6 mm	2,2 mm	3,0 mm
Item No.	755.408	755.415	755.422	755.430

#### 4) Tables upon request!

## Polystyrene electric cutting equipment Type 98 for cutting and modelling plates and blocks

Item No. 756.001

### Low-cost table model

**Design:** table of plastic-coated pressed chip-board with grid, angle and cm-scale, slots for circular cutter and cross cut gauge, bow tiltable to both sides, metal feet

**Controls:** on/off-switch, 3-stage selector switch, pilot lamp, fuse, plug for connecting cutters

**Technical data:** size of the table: 600 x 500 mm  
 passage between wire and bow: 600 mm  
 cutting height: 400 mm  
 bevel cutting feature

**Power source:** 220 V / 50 cps

**Standard:** 3 m spare cutting wire (0.5 mm dia.), operating instructions, 1,5 m long cable with plug

### Special accessories:

Item	Parallel square	Circular cut attachment	Cross cut-gauge	Modelling-pin	Back square	Cutting wire 0,5 mm dia.
Item No.	756.101	756.102	756.103	756.104	756.105	756.106

## Electrical cutting device Item No. 757.001 for hard polystyrene panels

for connection to 220 V via a 3-m-long cable with Euro-plug, speedy and clean cutting action, with standard blade with which panels up to a thickness of 70 mm can be cut, blade is heated as long as the switch lever is actuated; blade can easily be replaced. Max. wattage 110 W, max. cutting temperature 500 °C, with standard blade and suspension hook.

### Spare blades:

Item No.	Type
757.101	C 70 (standard blade), for straight cuts up to 70 mm
757.102	C 100, for straight cuts up to 100 mm
757.103	CN 14, round, for groove width 14 mm
757.104	CN 20, round, for groove width 20 mm
757.105	CN 26, round, for groove width 26 mm
757.106	CR 20, round, for groove width 20 mm (with depth limiter)
757.107	CS 20, square, for groove width 20 mm (with depth limiter)
757.108	CV 20, V-shape, for groove width 20 mm (with depth limiter)

**Note:** Polystyrene adhesive, adhesive tape and primer see page 118 & 119, Item Nos. 933/938/939

# Rotary grinding tools (suitable grinders see Item No. 758A)

5 elements per package

Item No.	Type	Dia. x height mm	Shank dia. mm	Max. speed min <sup>-1</sup>	Min speed min <sup>-1</sup>
<b>cylindrical</b>					
758.009	GK 0410/3	4 x 10	3	55000	30000
758.010	GK 0410/6	4 x 10	6	55000	30000
758.019	GK 0610/3	6 x 10	3	55000	30000
758.020	GK 0610/6	6 x 10	6	55000	30000
758.029	GK 0810/3	8 x 10	3	44000	30000
758.030	GK 0810/6	8 x 10	6	44000	30000
758.040	GK 1010/6	10 x 10	6	44000	30000
758.050	GK 1020/6	10 x 20	6	44000	30000
758.060	GK 1310/6	13 x 10	6	36000	30000
758.070	GK 1325/6	13 x 25	6	36000	30000
758.080	GK 1510/6	15 x 10	6	36000	25000
758.090	GK 1530/6	15 x 30	6	36000	25000
758.100	GK 1925/6	19 x 25	6	30000	20000
758.110	GK 2220/6	22 x 20	6	26000	18000
758.110H	GK 2220/6H	22 x 20	6	26000	18000
758.120	GK 2525/6	25 x 25	6	22900	16000
758.130	GK 3020/6	30 x 20	6	19100	13000
758.140	GK 3030/6	30 x 30	6	19100	13000
758.140H	GK 3030/6H	30 x 30	6	19100	13000
758.150	GK 3825/6	38 x 25	6	15100	10000
758.160	GK 4530/6	45 x 30	6	12700	9000
758.160H	GK 4530/6H	45 x 30	6	12700	9000
758.170	GK 5125/6	51 x 25	6	11200	8000
758.180	GK 6030/6	60 x 30	6	9500	6500
758.188	GK 6030/8	60 x 30	8	9500	6500
758.190	GK 7530/8	75 x 30	8	7600	5000
758.200	GK 10040/8	100 x 40	8	5700	4000
<b>tapered</b>					
758.210	GK 292230/6	29 / 22 x 30	6	19100	13000
758.220	GK 201463/6	20 / 14 x 63	6	22000	15000
758.230	GK 362260/6	36 / 22 x 60	6	15900	10000

The rotary grinders marked 'H' have a higher rubber hardness allowing for higher grinding pressure. The rotary grinders are less flexible and are thus better suitable for grinding edges.

Note: Reducers (dia. 6 mm) for 3-mm-shank tools see page 71, Item 749.

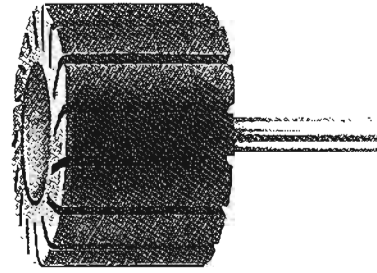
## Rotary grinders (for the above grinding tools)

**Design:** Backing of an artificial resin bonded material with high tearing strength guaranteeing a long service life.

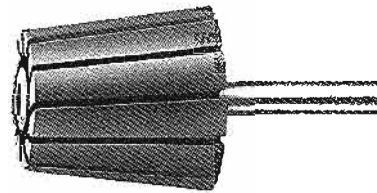
**Remark:** We recommend that grease or grinding oil should be added, especially when working light metals. Recommended circumferential speed: appr. 20 m/sec.

Type	suitable for tool	Grains/Item No.					Contents per package
		40	60	80	150	240	
<b>cylindrical</b>							
KSB 0410	GK 0410	-	-	-	758.014	-	25 St.
KSB 0610	GK 0610	-	-	-	758.024	-	25 St.
KSB 0810	GK 0810	-	-	-	758.034	-	25 St.
KSB 1010	GK 1010	-	-	758.043	758.044	-	25 St.
KSB 1020	GK 1020	-	-	758.053	758.054	758.055	25 St.
KSB 1310	GK 1310	-	-	758.063	758.064	-	25 St.
KSB 1325	GK 1325	-	-	758.073	758.074	-	25 St.
KSB 1510	GK 1510	-	758.082	758.083	758.084	-	25 St.
KSB 1530	GK 1530	-	758.092	758.093	758.094	758.095	25 St.
KSB 1925	GK 1925	-	758.102	758.103	758.104	758.105	25 St.
KSB 2220	GK 2220	-	758.112	758.113	758.114	758.115	25 St.
KSB 2525	GK 2525	-	758.122	758.123	758.124	758.125	25 St.
KSB 3020	GK 3020	758.131	758.132	758.133	758.134	-	25 St.
KSB 3030	GK 3030	758.141	758.142	758.143	758.144	758.145	25 St.
KSB 3825	GK 3825	758.151	758.152	758.153	758.154	-	25 St.
KSB 4530	GK 4530	758.161	758.162	758.163	758.164	758.165	10 St.
KSB 5125	GK 5125	758.171	758.172	758.173	758.174	-	10 St.
KSB 6030	GK 6030	758.181	758.182	758.183	758.184	-	10 St.
KSB 7530	GK 7530	758.191	758.192	758.193	758.194	-	10 St.
KSB 10040	GK 10040	758.201	758.202	758.203	758.204	-	10 St.
<b>tapered</b>							
KSB 292230	GK 292230	758.211	758.212	758.213	758.214	758.215	25 St.
KSB 201463	GK 201463	758.221	758.222	758.223	758.224	758.225	25 St.
KSB 362260	GK 362260	758.231	758.232	758.233	758.234	-	25 St.

Designs:



cylindrical



tapered

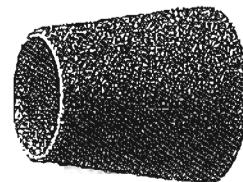
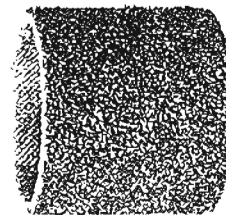
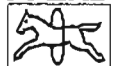
758

PFERD



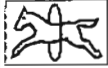
758A

PFERD



**759**

**PFERD**



Shape A



Shape C



Shape G



Shape L

**POLICAP-rotary grinding tools**

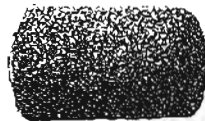
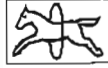
consisting of slotted rubber element and seamless grinder cap. Due to the centrifugal force the grinder sits firmly on the rubber element; easily exchangeable. **Each package contains 5 tools of each type.**

Item No.	Type	Dia. x height mm	Shank dia. mm	Rec. speed rpm <sup>1</sup>
<b>Shape A</b>				
759.010	PCT 0510 A	5 x 10	3	40000
759.020	PCT 0712 A	7 x 12	3	30000
759.030	PCT 1015 A	10 x 15	3	20000
759.040	PCT 1317 A	13 x 17	6	16000
759.050	PCT 1626 A	16 x 26	6	12000
<b>Shape C</b>				
759.060	PCT 0511 C	5 x 11	3	40000
759.070	PCT 0713 C	7 x 13	3	30000
759.080	PCT 1015 C	10 x 15	3	20000
759.090	PCT 1317 C	13 x 17	6	16000
759.100	PCT 1626 C	16 x 26	6	12000
<b>Shape G</b>				
759.110	PCT 0511 G	5 x 11	3	40000
759.120	PCT 0713 G	7 x 13	3	30000
759.130	PCT 1015 G	10 x 15	3	20000
759.140	PCT 1317 G	13 x 17	6	16000
759.150	PCT 1626 G	16 x 26	6	12000
<b>Shape L</b>				
759.160	PCT 0515 L	5 x 15	6	40000
759.170	PCT 1125 L	11 x 25	6	20000
759.180	PCT 1632 L	16 x 32	6	12000
759.190	PCT 2140 L	21 x 40	6	9500

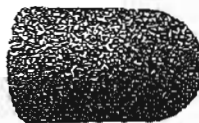
Remark: 6-mm-dia. reducers for 3-mm shank tools see p. 71. Item No. 749

**759A**

**PFERD**



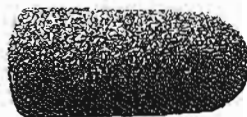
Shape A



Shape C



Shape G



Shape L

**POLICAP-grinder caps**

for the above grinding tools

Each package contains 50 caps per type

Type	Suitable for tool	Gram/Item No.		
		60	150	280
<b>Shape A</b>				
PC 05 A	PCT 0510 A	759.011*	759.012	759.013
PC 07 A	PCT 0712 A	759.021	759.022	759.023
PC 10 A	PCT 1015 A	759.031	759.032	759.033
PC 13 A	PCT 1317 A	759.041	759.042	759.043
PC 16 A	PCT 1626 A	759.051	759.052	759.053
<b>Shape C</b>				
PC 05 C	PCT 0511 C	759.061*	759.062	759.063
PC 07 C	PCT 0713 C	759.071	759.072	759.073
PC 10 C	PCT 1015 C	759.081	759.082	759.083
PC 13 C	PCT 1317 C	759.091	759.092	759.093
PC 16 C	PCT 1626 C	759.101	759.102	759.103
<b>Shape G</b>				
PC 05 G	PCT 0511 G	759.111*	759.112	759.113
PC 07 G	PCT 0713 G	759.121	759.122	759.123
PC 10 G	PCT 1015 G	759.131	759.132	759.133
PC 13 G	PCT 1317 G	759.141	759.142	759.143
PC 16 G	PCT 1626 G	759.151	759.152	759.153
<b>Shape L</b>				
PC 05 L	PCT 0510 L	759.161*	759.162	759.163
PC 11 L	PCT 1125 L	759.171	759.172	759.173
PC 16 L	PCT 1632 L	759.181	759.182	759.183
PC 21 L	PCT 2140 L	759.191	759.192	759.193

\* grain 80

**760**

**PFERD**



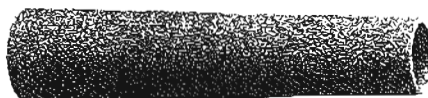
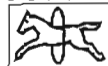
**POLICAP-rotary grinding sleeves**

Each package contains 5 tools

Item No.	Type	Dia. x height mm	Shank dia. mm	rec speed rpm <sup>1</sup>
760.010	PCT 0585 L	8 x 85	6	12000
760.020	PCT 1185 L	13 x 85	6	12000
760.030	PCT 1685 L	18 x 85	6	12000
760.040	PCT 2185 L	23 x 85	6	12000

**760A**

**PFERD**



**POLICAP-rotary grinding sleeves**

Each package contains 10 sleeves

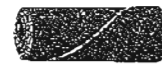
Type	Suitable for tool	Gram/Item No.		
		60	150	280
PCH05 L	PCT 0585L	760.011	760.012	760.013
PCH11 L	PCT 1185L	760.021	760.022	760.023
PCH16 L	PCT 1685L	760.031	760.032	760.033
PCH21 L	PCT 2185L	760.041	760.042	760.043

## POLIROLL-rotary grinding rolls

are used for grinding and equalising hard-to-reach areas. After the top layer is worn, the next layer is used to complete the grinding job. **Always grind with the tip and not with the shell area** to avoid heat damage to the adhesive coating. Cylindrical rolls become tapered rolls by grinding. POLIROLL-rolls are **easily replaced**.

Each package contains 20 pieces per type.

Type	Dia.x.height mm	Grain/Item No.			Suitable holder	Max. speed
		50	80	150		
cylindrical						
PR 0625	6 x 25	-	761.011	761.012	3 u. 6-18-3	25000
PR 0635	6 x 35	-	761.021	761.022	6-24-3	25000
PR 0925	9 x 25	-	761.031	761.032	6-18-3	23000
PR 0935	9 x 35	-	761.041	761.042	6-24-3	23000
PR 1225	12 x 25	761.050	761.051	761.052	6-18-3	17000
PR 1235	12 x 35	761.060	761.061	761.062	6-24-3	17000
PR 1835	18 x 35	761.070	761.071	761.072	6-25-5	12000
PR 1850	18 x 50	761.080	761.081	761.082	6-30-5	12000
tapered						
PRK 1025	10 x 25	-	761.091	761.092	3 u. 6-18-3	23000
PRK 1225	12 x 25	761.100	761.101	761.102	6-18-3	17000
PRK 1235	12 x 35	761.110	761.111	761.112	6-24-3	17000
PRK 1535	15 x 35	761.120	761.121	761.122	6-24-3	15000



Shape PR



Shape PRK

## POLICO-rotary grinding cones

for deburring bores or hard-to-reach places; self-chucking due to fluted conical holder.

Each package contains 20 cones per grain.

Type	Dia.x.height mm	Grain/Item No.		Suitable holder	Max. speed	Taper
		80	150			
PCO 1050	10 x 50	761.201	761.202	6-50-8	23000	5°



Shape PCO

## HOLDERS for POLIROLL- and POLICO-grinding tools

Item No.	762.318	762.618	762.624	762.625	762.630	762.650
Type	3-18-3	6-18-3	6-24-3	6-25-5	6-30-5	6-50-8
Shank dia. mm	3	6	6	6	6	6
Suitable for	PR 0625	PR 0625	PR 0635	PR 1835	PR 1850	PCO 1050
POLIROLL	PRK 1025	PR 0925	PR 0935			
PR = cylindrical		PR 1225	PR 1235			holder
PRK = tapered		PRK 1025	PRK 1235			taper
POLICO PCO		PRK 1225	PRK 1535			5°

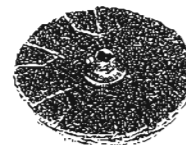


## Rotary grinding pads

tools are used for bores and grinding fillets

Each package contains 20 pieces

Item No.	Type	Dia. mm	Grains	Suitable holder	Max. speed rpm <sup>1</sup>
763.311	KS 30-4	30	80	6-50	12.000
763.321	KS 50-4	50	80	6-40	8.000



## HOLDERS for grinding pads

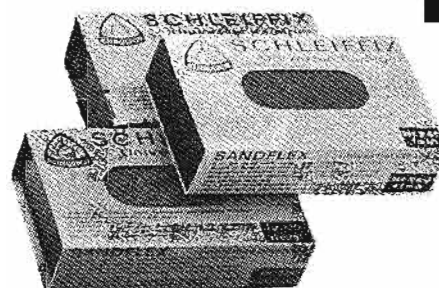
Item No.	Type	Shank dia.	Length	Thread	Suitable for
764.640	6-40	6 mm	40 mm	1/4"	KS 50-4
764.650	6-50	6 mm	40 mm	1/8"	KS 30-4



## Sandflex universal cleaners

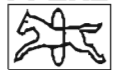
soft cleaning compound with abrasive; for polishing and matting; addition of water, soap, petroleum or other liquids or paste increases the effectiveness.

Size mm	Grain/Item No.		
	60	120	240
80 x 50 x 20	765.106	765.112	765.124
150 x 80 x 20	765.206	765.212	765.224



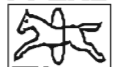
761

PFERD



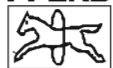
761A

PFERD



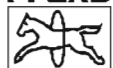
762

PFERD



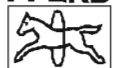
763

PFERD

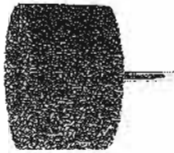


764

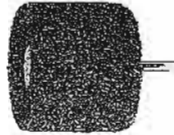
PFERD



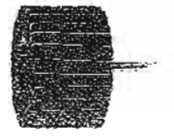
765

**766****PFERD**

PNL



PNR



PNZ

## POLINOX-grinding tools, Shank dia. 6 mm

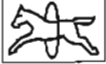
1) **Type PNL** The abrasive elements of type 'PNL' are aligned radially. The abrasive elements are available with abrasive **A (corundum)** or **C (silicon-carbide)**. For grinding surfaces.

2) **Type PNR** The abrasive elements of type 'PNR' are aligned axially, therefore good adaption to contours.

3) **Type PNZ** The abrasive elements of type 'PNZ' are radially aligned and they produce a coarser grinding pattern and increase the performance.

Each package contains 10 tools per type.

Type	Dia. x height mm	Grains (A = corundum; C = sil.-carb./Item No.				
		A 100	A 180	A 280	C 180	C 280
PNL 4020	40 x 20	766.110	766.111	766.112	766.114	766.115
PNL 5030	50 x 30	766.120	766.121	766.122	766.124	766.125
PNL 6050	60 x 50	766.130	766.131	766.132	766.134	766.135
PNL 8050	80 x 50	766.140	766.141	766.142	766.144	766.145
PNR 6050	60 x 50	766.210	766.211	766.212	-	-
PNR 8050	80 x 50	766.220	766.221	766.222	-	-
PNZ 4020	40 x 20	766.310	766.311	-	-	-
PNZ 6050	60 x 50	766.320	766.321	-	-	-
PNZ 8050	80 x 50	766.330	766.331	-	-	-
PNZ 10050	100 x 50	766.340	766.341	-	-	-

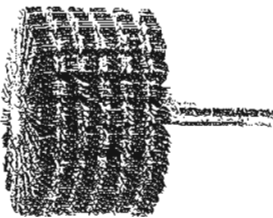
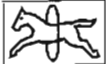
**767****PFERD**

## Rotary surface grinder tools F

for grinding; radii, smaller surfaces or hard-to-reach places.

Each package contains 10 tools per type.

Type	Dia. x height mm	Shank dia mm	Grain/Item No.						
			60	80	120	150	180	240	320
F2010/3	20 x 10	3	-	-	767.014	767.015	767.016	-	-
F2010/6	20 x 10	6	-	767.023	767.024	767.025	767.026	-	-
F2515/6	25 x 15	6	-	767.033	767.034	767.035	767.036	-	-
F2525/6	25 x 25	6	-	767.043	767.044	767.045	767.046	-	-
F3005/3	30 x 5	3	767.052	767.053	767.054	767.055	767.056	767.057	767.058
F3005/6	20 x 10	6	767.062	767.063	767.064	767.065	767.066	767.067	767.068
F3010/3	30 x 10	3	767.072	767.073	767.074	767.075	767.076	767.077	767.078
F3010/6	30 x 10	6	767.082	767.083	767.084	767.085	767.086	767.087	767.088
F3015/6	30 x 15	6	767.102	767.103	767.104	767.105	767.106	767.107	767.108
F3030/6	30 x 30	6	767.112	767.113	767.114	767.115	767.116	767.117	767.118
F4010/6	40 x 10	6	767.122	767.123	767.124	767.125	767.126	767.127	-
F4015/6	40 x 15	6	767.132	767.133	767.134	767.135	767.136	767.137	767.138
F4020/6	40 x 20	6	767.142	767.143	767.144	767.145	767.146	767.147	-
F5010/6	50 x 10	6	767.152	767.153	767.154	767.155	767.156	767.157	767.158
F5015/6	50 x 15	6	767.162	767.163	767.164	767.165	767.166	767.167	767.168
F5020/6	50 x 20	6	767.172	767.173	767.174	767.175	767.176	-	767.178
F5030/6	50 x 30	6	767.182	767.183	767.184	767.185	767.186	767.187	767.188
F6015/6	60 x 15	6	767.192	767.193	767.194	767.195	767.196	767.197	767.198
F6020/6	60 x 20	6	767.202	767.203	767.204	767.205	767.206	767.207	767.208
F6030/6	60 x 30	6	767.212	767.213	767.214	767.215	767.216	767.217	767.218
F6040/6	60 x 40	6	767.232	767.233	767.234	767.235	767.236	767.237	767.238
F6050/6	60 x 50	6	767.242	767.243	767.244	767.245	767.246	767.247	767.248
F8015/6	80 x 15	6	767.252	767.253	767.254	767.255	767.256	-	-
F8020/6	80 x 20	6	767.262	767.263	767.264	767.265	767.266	-	-
F8030/6	80 x 30	6	767.272	767.273	767.274	767.275	767.276	767.277	767.278
F8040/6	80 x 40	6	767.292	767.293	767.294	767.295	767.296	767.297	-
F8050/6	80 x 50	6	767.302	767.303	767.304	767.305	767.306	767.307	767.308

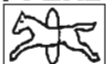
**768****PFERD**

## Rotary surface grinding brushes FB

slotted disk-shape arrangement of the abrasive elements, to increase flexibility, can also be used for circumferential grinding.

Each package contains 10 brushes per type.

Type	Dia. x height mm	Shank dia mm	Grain/Item No.		
			120	240	320
FB4020/3	40 x 20	3	768.010	768.011	-
FB5020/6	50 x 20	6	768.020	768.021	-
FB5030/6	50 x 30	6	768.030	768.031	768.032
FB6020/6	60 x 20	6	768.040	768.041	-
FB6030/6	60 x 30	6	768.050	768.051	-

**769****PFERD**

## Rotary surface grinding tools FT

(cup-shaped) for face grinding and circumferential grinding

Each package contains 10 tools per type.

Type	Dia. x height mm	Shank dia mm	Grain/Item No.				
			60	80	120	150	240
FT 6030/6	60 x 30	6	769.010	769.011	769.012	769.013	769.014

## ATADISC-grinding disk holders

Thanks to the patented chucking system, the grinding disks can be exchanged in a matter of seconds. No slipping of the grinding disk; no glueing.

**Types of supporting disks:** **Standard**, flexible,  
for arched surfaces  
**Inflexible** for surface grinding  
Shank dia. 6 mm

Complete holder			Surable components and spares			
Item No.	Type	suitable grinding disks AD	shank	chuck	supporting disk	
					flexible	inflexible
770.010	SH 2000	2005, 2505, 3505-2	770 130	770 210	-	-
770.020	SHT 2025	2505, 3505-2			770.320	770.420
770.030	SHT 2035	3505-2			770.330	770.430
770.040	SH 3500	3505, 5005, 7505	770 140	770 240	-	-
770.050	SHT 3550	5005, 7505			770.350	770.450
770.060	SHT 3575	7505			770.360	770.460

## ATADISC-grinding disks

disks in: **A - corundum** brown  
**Z - zirc.-corundum** blue

Each package contains 50 disks per type.

Type	Dia mm	Suitable chuck	Grain/Item No.						
			A 60	A120	A180	A320	Z60	Z80	
AD 2005	20	770 210	770.510	770.511	770.512	770.513	-	-	
AD 2505	25		770.520	770.521	770.522	770.523	-	-	
AD 3505-2	35		770.530	770.531	770.532	770.533	-	-	
AD 3505	35	770.240	770.540	770.541	770.542	770.543	-	-	
AD 5005	50		770.550	770.551	770.552	770.553	770.554	770.555	
AD 7505	75		770.560	770.561	770.562	770.563	770.564	770.565	

## COMBI-DISC-grinding tools

ideal composition of re-useable holder and grinding sheets or grinding disks by means of a metal screw connection, very easy to handle, quick tool change.

### 1) COMBI-DISC-holder in 3 degrees of hardness

**soft** for contours: **medium** for radii; **hard** for surfaces

Item No.	Type	Dia mm	Degree of hardn.	Shank dia. mm	Max. speed
770.601	SBH 38 W	38	soft	6	25 000
770.602	SBH 50 W	50		6	19 000
770.603	SBH 75 W	75		6	12 000
770.611	SBH 20 M	20	medium	6	40 000
770.612	SBH 25 M	25		6	40 000
770.613	SBH 38 M	38		6	30 000
770.614	SBH 50 M	50		6	24 000
770.615	SBH 75 M	75		6	16 000
770.621	SBH 38 H	38	hard	6	30 000
770.622	SBH 50 H	50		6	30 000
770.623	SBH 75 H	75		6	20 000

### 2) COMBI-DISC-grinding sheets of

**Corundum A**, dark brown, for normal use

**Zirc.-corundum Z**, blue, for excellent removal of metal

(make sure to use only hard or medium-hard holders)

Type	Dia. mm	Grain/Item No.								Pack. cont.
		A 60	A 80	A120	A180	A320	Z 36	Z 60	Z 80	
CD 20	20	770.631	770.632	770.633	770.634	770.635	-	-	-	100
CD 25	25	770.641	770.642	770.643	770.644	770.645	-	-	-	100
CD 38	38	770.651	770.652	770.653	770.654	770.655	-	-	-	100
CD 50	50	770.661	770.662	770.663	770.664	770.665	770.667	770.668	770.669	50
CD 75	75	770.671	770.672	770.673	770.674	770.675	770.677	770.678	770.679	50

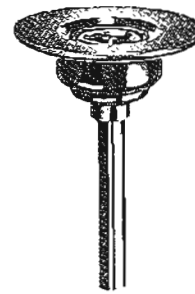
### 3) COMBI-DISC-grinding disks in two degrees of hardness

**hard**: for all kinds of surface working, open structure, flexibility determined by the degree of hardness of the holder

**soft**: for finely grinding surfaces and contours, very open structure

Type	Dia. mm	Degree of hardness	Grain/Item No.				Pack. cont.
			coarse	medium	fine	very fine	
VRH 20	20	hard	-	-	-	770.704	50
VRH 25	25		770.711	770.712	-	770.714	50
VRH 38	38		770.721	770.722	-	770.724	50
VRH 50	50		770.731	770.732	-	770.734	50
VRH 75	75		770.741	770.742	-	770.744	25
VRW 50	50	soft	-	770.752	770.753	770.754	50
VRW 75	75		-	770.762	770.763	770.764	25

**770**  
**PFERD**  

Complete holder shank



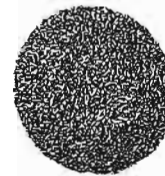
Chuck



Shank

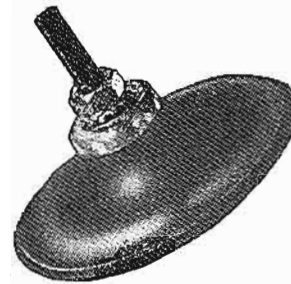


Supporting disk



Grinding disk

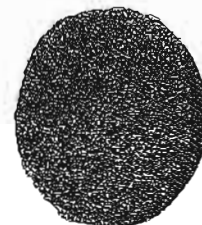
**770A**  
**PFERD**  

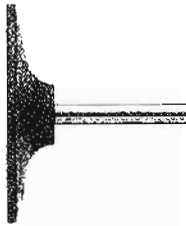
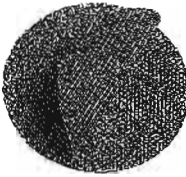
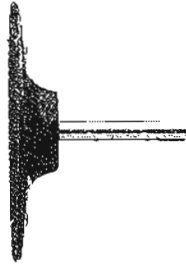
Holder



Grinding sheets



Grinding disks



## Rubber supporting disks and plane grinding disks 1) Self adhering

### a) Rubber supporting disk GTH

Item No.	Type	Dia. mm	Shank dia. x length mm	Max. speed min <sup>-1</sup>
771.110	GTH018.03	18	3 x 30	20.000
771.120	GTH030.03	30	3 x 30	12.500
771.130	GTH030.06	30	6 x 40	12.500
771.140	GTH045.06	45	6 x 40	10.000
771.150	GTH060.06	60	6 x 40	8.000
771.160	GTH075.06	75	6 x 40	6.000
771.170	GTH120.06	120	6 x 25	4.000
771.180	GTH120.08	120	8 x 25	4.000

5 per package (2 per package 7.5 mm dia. and up)

### b) Self-adhering plane grinding disks PSH

Type	Dia. mm	Grain/Item No.							
		60	80	120	150	180	240	320	
PSH018A	21	771.111	771.112	771.113	771.114	771.115	771.116	771.117	
PSH030A	33	771.121	771.122	771.123	771.124	771.125	771.126	771.127	
PSH045A	48	771.141	771.142	771.143	771.144	771.145	771.146	-	
PSH060A	63	771.151	771.152	771.153	771.154	771.155	771.156	771.157	
PSH075A	78	771.161	771.162	771.163	771.164	771.165	771.166	771.167	
PSH120A	125	771.171	771.172	-	-	-	-	-	

Package contains 100 pieces per type

## 2) Self adhesive

### a) Rubber disk GTK

Item No.	Type	Dia. mm	Shaft dia. x length mm	Max. speed min <sup>-1</sup>
771.210	GTK018.03	18	3 x 30	20.000
771.220	GTK030.03	30	3 x 30	12.500
771.230	GTK030.06	30	6 x 40	12.500
771.240	GTK045.06	45	6 x 40	10.000
771.250	GTK060.06	60	6 x 40	8.000
771.260	GTK075.06	75	6 x 40	6.000

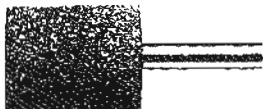
5 per package (2 per package 7,5 mm dia. and up)

### b) Self-adhesive plane grinding disks PSK

Type	Dia. mm	Grain/Item No.					
		60	80	120	150	180	240
PSK018A	21	771.211	771.212	771.213	771.214	771.215	771.216
PSK030A	33	771.221	771.222	771.223	771.224	771.225	771.226
PSK045A	48	771.241	771.242	771.243	771.244	771.245	771.246
PSK060A	63	771.251	771.252	771.253	771.254	-	-
PSK075A	78	771.261	771.262	771.263	771.264	-	-

Package contains 100 pieces per type

Remark: 6 mm dia. reducers for 3-mm shank tools see page 71 Item No. 749



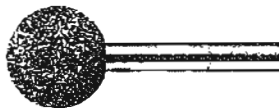
Cylinder



Disk



Cone



Ball

### 2) with straight shank, dia. 3 mm, length 25 mm

Cylinder		Disk	
Item No.	Head dia. x length	Item No.	Head dia. x length
772.201	1,5 x 4 mm	772.221	13 x 3 mm
772.202	2,5 x 5 mm	772.222	16 x 4 mm
772.203	3 x 6 mm	772.223	20 x 6 mm
772.204	4 x 8 mm	<b>Ball</b>	
772.205	5 x 10 mm		
772.206	6 x 10 mm	772.241	6 mm
772.207	8 x 10 mm	772.242	8 mm
772.208	8 x 16 mm	772.243	10 mm
772.209	10 x 10 mm	772.244	13 mm
772.210	10 x 13 mm		
772.211	13 x 13 mm		

Remark: 6 mm dia. reducers for 3-mm shank tools see page 71 Item No. 749

## Ceramic grinding tools

of electro-corundum, pink colour, hardness 'N'. for steel and cast iron. grinding speed appr. 30 to 50 m/sec.

Minimum quantity 20 per type

We can also supply ceramic grinding tools in different degrees of hardness and of different materials and different shapes, provided that at least 100 per type are ordered.

### 1) with straight shank, dia. 6 mm, length 40 mm

Cylinder		Disk	
Item No.	Head dia. x length	Item No.	Head dia. x length
772.101	3 x 6 mm	772.121	20 x 6 mm
772.102	4 x 8 mm	772.122	25 x 6 mm
772.103	5 x 10 mm	772.123	40 x 10 mm
772.104	6 x 10 mm	<b>Cone</b>	
772.105	8 x 10 mm		
772.106	10 x 10 mm	772.131	20 x 32 mm
772.107	13 x 13 mm	772.132	20 x 40 mm
772.108	16 x 16 mm	<b>Ball</b>	
772.109	10 x 40 mm		
772.110	13 x 32 mm	772.141	16 mm
772.111	16 x 40 mm	772.142	32 mm
772.112	20 x 40 mm		
772.113	32 x 20 mm		
772.114	40 x 20 mm		

**Polishing tools, rubber bonded**

**Quality P1 rubber bonded polishing tools, grain 100**  
for fine polishing cast metals, hardened and unhardened, alloyed and unalloyed steels; max. circumferential speed 50 m/sec.

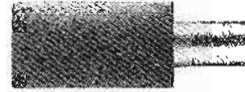
**Quality P2 soft rubber-bonded flexible polishing tools, grain 120**  
for fine and high polishing prefinished surfaces: very fine finish, max. circumferential speed 15 m/sec.

**Minimum quantity 20 per type**

**Cylinder**

Head dia x-Lg. mm	Shaft dia. mm	Item No.		Head dia. x-Lg. mm	Shaft dia. mm	Item No.	
		Qual. P1	Qual. P2			Qual. P1	Qual. P2
4 x 8	3	773.101	773.201	13 x 20	6	773.109	773.209
5 x 10	3	773.102	773.202	16 x 16	3	773.110	773.210
6 x 10	3	773.103	773.203	16 x 20	6	773.111	773.211
8 x 10	3	773.104	773.204	16 x 32	6	773.112	773.212
8 x 16	6	773.105	773.205	20 x 20	6	773.113	773.213
10 x 10	3	773.106	773.206	20 x 32	6	773.114	773.214
10 x 20	6	773.107	773.207	32 x 10	6	773.115	773.215
13 x 13	3	773.108	773.208	40 x 20	6	773.116	773.216

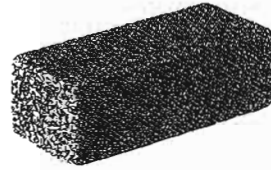
Remark: 6 mm dia. reducers for 3-mm shank tools see page 71 Item No. 749



**Trimming stones of carborundum for trimming and profiling polishing tools**

Item No.	Width mm	Height mm	Length mm
303.001	25	15	50
303.002	30	15	100
303.003	50	25	100
303.004	50	25	150

Package contains 5 pieces per type



**Flexible shaft power tools 'Mammut'**

powerful tools, multi-purpose application for milling, grinding and polishing

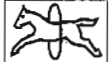
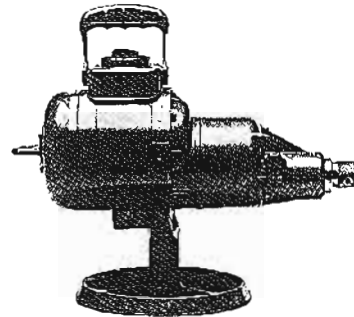
**7 ranges:** 12.000; 8.000; 5.700; 3.200; 2100; 1.600; 850 min<sup>-1</sup>

**2 motor types:** three-phase-motor 220/380 V or ac 110/220 V (see below)

Motor design	Three phase current 50 Hz 220/380 V	Weight kg	Alternating current 50 Hz 110/220 V	Weight kg
<b>Mammut</b>	<b>Item No.</b>		<b>Item No.</b>	
- Motor with base (see ill.)	774.100	16,5	774.200*	16,9
- Suspension-type mounting	774.101	16,0	-	-
- Suspension-type I mobile mounting	774.102	17,0	-	-
- Mobile-carnage-type mounting	774.103	44,5	-	-
Wattage/horsepower (output)	736 / 1		552 / 0,75	
Wattage/horsepower (input)	1000 / 1,36		800 / 1,1	
Dimensions L x W x H mm	460 x 160 / 240 x 460			
Insulation coupling	DIN 10			
Tool holder	6 mm collet			
Shaft connector	DIN 10			
Standard shaft	10 ZG DIN 10 (see item 776)			
Addl. shafts				
a) for light duty	4 ZG DIN 10, 7 ZG DIN 10 (see item 776)			
b) for heavy duty	12 ZG DIN 10 (see item 776)			

The machines are supplied **without** plug and shaft.

\* can immediately commence load-operation by means of centrifugal switch, starting and operating condenser



**Universal drive motor for flexible shafts (RUER 10/250S)**

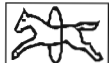
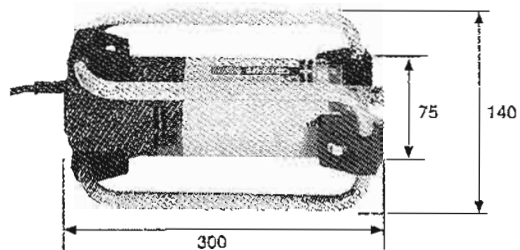
**Electronic tacho-controller** ensures constant speed, even under load.

Flexible application as motor can be connected to 230 V alternating current or 230 V 50 cps generators.

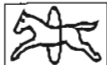
High performance for cutting, grinding and polishing. Smooth start for protecting mechanic and electronic components. Sturdy tubular frame protects the machine in any position. Drive motor is used in tool and pattern making, in precision mechanics as well as in DIY and hobby applications.

**Item No. 775.101**

Speed	25.000 - 11.000 min <sup>-1</sup>
Voltage	230 Volt
Wattage	1050 Watt
Dimensions L x W x H	300 x 75 x 140 mm
Shaft connector	DIN 10
Standard shaft	7 ZGU DIN 10 (see item 776)
Addl. shaft for light working	4 ZG DIN 10 (see item 776)





**776****PFERD**

## Accessory tools for Item Nos. 774 – 775

### 1) Flexible shafts (connector to motor acc. to DIN 10) cpl. with handle

Core of piano wire, core coupling M 10, protective hose of oil-resistant rubber, solid rubber coupling, 30 mm dia.

Core or protective hose cannot be repaired.

Item No.	776.101	776.102	776.103	776.104	776.105
Type	4 ZG DIN 10	7 ZG DIN 10	7 ZGU DIN 10	10 ZG DIN 10	12 ZGA DIN 10
Core dia. x length mm	4 x 1250	7 x 1500	7 x 2000	10 x 1500	12 x 2000
Protective hose dia. mm	13	18	18	22	25
Handle Item No.	4 ZGB	7 ZGA	7 ZGA	10 ZGE	12 ZGA
Handle coupling dia. x length mm	19,5 x 110	27 x 130	27 x 130	33 x 170	33 x 162
Handle connector	G 16	G 22	G 22	G 28	G 28
Handle coupling dia. mm	16	22	22	28	28
Standard collet mm	6	6	6	6	12
Optional available collets mm	1/1,5/2/2,5/3/3,5/4/5		1/2;2,5/3/3,5/4/5/7/8/9		3/4/5/6/7/8/9/10
Max. speed revs./min.	40.000	25.000	25.000	18.000	12.000
Weight kg	0,6	1,5	2,0	2,5	4,25

Rigid or flexible extensions available upon request!

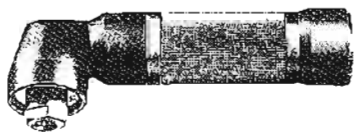
### 2) Ready-to-be-installed cores

Item No.	776.601	776.602	776.603	776.604	776.605
For shaft	4 ZG	7 ZG	7 ZGU	10 ZG	12 ZGA



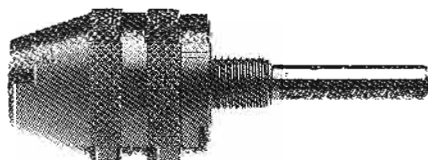
### 3) Angle tool holder

Item No.	776.201	776.202	776.204
Type	WZ 4A	WZ 7B	WZ 10B
For shaft	4 ZG	7 ZG / 7 ZGU	10 ZG / 12Z GA
Head height x length mm	43 x 112	55 x 157	55 x 166
Max. speed revs./min.	20.000	17.000	17.000
Weight kg	0,27	0,60	0,58



### 4) Chuck

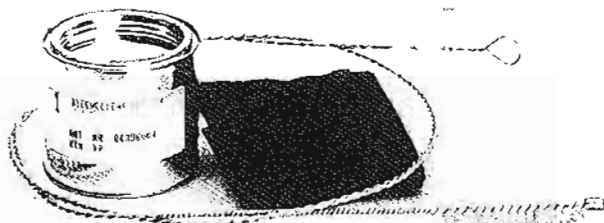
Item No.	776.301	776.302
Type	207	208 A
Shaft dia. mm	6	12
Chuck range mm	0 - 6	0 - 13
Weight kg	0,14	0,40



### 5) Flexible shaft grease

- a) Hose brushes for the shafts
- b) Non-fuzzing cleaning towels (package contains 2)
- c) Shaft grease FT 4 (appr. 450 gr. tin)

Item No.	776.402	776.403	776.404
For shaft	4 ZG	7 ZG / 7 ZGU	10 ZG / 12 ZGA



## Malleable cast iron screw clamps

up to 300 mm

Profile rail fluted on both sides, spindle galvanized, with plastic protectors up to 400 mm clamping with **Firm grip**, with wooden handle.

Item No.	Type	Clamping width mm	Reach mm	Steel rail mm	Weight kg
777.010	U 10-5	100	50	15 x 5	0,24
777.012	U 12-6	120	60	20 x 5	0,46
777.016	U 16-8	160	80	25 x 6	0,72
777.020	U 20-10	200	100	27 x 7	1,10
777.025	U 25-12	250	120	29 x 9	1,57
777.030	U 30-14	300	140	32 x 10	2,17
777.040	U 40-17,5	400	175	32 x 10	2,74
777.050	UK 50-12	500	120	35 x 11	2,90
777.060	UK 60-12	600	120	35 x 11	3,15
777.080	UK 80-12	800	120	35 x 11	3,67
777.100	UK 100-12	1000	120	35 x 11	4,18
777.125	UK 125-12	1250	120	35 x 11	4,83
777.150	UK 150-12	1500	120	35 x 11	5,47
777.180	UK 180-12	1800	120	35 x 11	6,24
777.200	UK 200-12	2000	120	35 x 11	6,75
777.220	UK 220-12	2200	120	35 x 11	7,27
777.250	UK 250-12	2500	120	35 x 11	8,04
777.300	UK 300-12	3000	120	35 x 11	9,32

Intermediate sizes or clamps with tommy also available (see ill.)

## Extra wide screw clamps

With rail fluted on both sides, spindle galvanized, with red varnish handle.

Item No.	Type	Clamping width mm	Reach mm	Steel rail mm	Weight kg
778.030	D 30-20	300	200	35 x 11	3,15
778.040	D 40-20	400	200	35 x 11	3,45
778.050	D 50-20	500	200	35 x 11	3,80
778.060	D 60-20	600	200	35 x 11	4,15
778.080	D 80-20	800	200	35 x 11	4,75
778.100	D 100-20	1000	200	35 x 11	5,40
778.130	D 30-25	300	250	45 x 12	3,55
778.140	D 40-25	400	250	45 x 12	3,95
778.150	D 50-25	500	250	45 x 12	4,25
778.160	D 60-25	600	250	45 x 12	4,55
778.180	D 80-25	800	250	45 x 12	5,25
778.200	D 100-25	1000	250	45 x 12	5,85

Clamps with larger reach and tommy as well as intermediate sizes also available!

## Clamp carts

**Heavy duty design** holds about 100 clamps  
Length x Width 80 x 65 cm Total height 155 cm

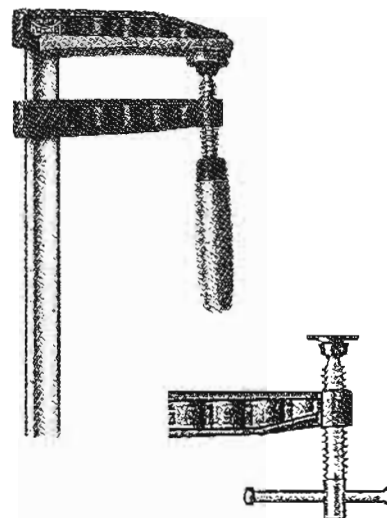
Item No.	Type	Lateral clamp holder without	Weight kg
779.070	TW 70		31
779.701	TW 701	1	32
779.702	TW 702	2	33

## Full-steel screw clamps

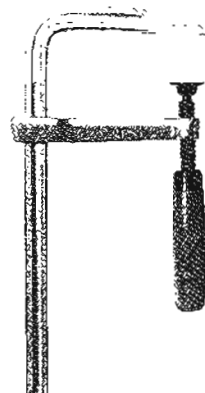
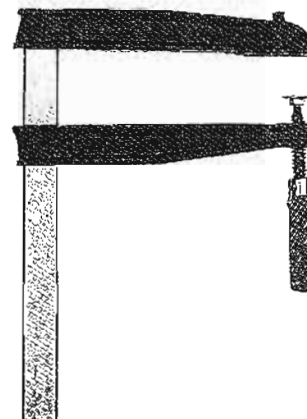
**annealed and high-polish galvanized**

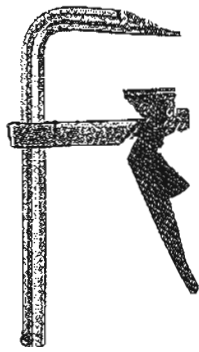
forged slider, spindle black finished, with wooden handle

Item No.	Type	Clamping width mm	Reach mm	Steel rail mm	Weight kg
780.010	GV 10-5	100	50	11,5 x 5,7	0,20
780.012	GV 12-6	120	60	13,5 x 6,5	0,32
780.016	GV 16-8	160	80	16 x 7,5	0,53
780.020	GV 20-10	200	100	19,5 x 9,5	0,95
780.025	GV 25-12	250	120	22 x 10,5	1,30
780.030	GV 30-14	300	140	25 x 12	1,90
780.040	GV 40-12	400	120	25 x 12	2,00
780.050	GV 50-12	500	120	25 x 12	2,20
780.060	GV 60-12	600	120	25 x 12	2,45
780.080	GV 80-12	800	120	27 x 13	3,10
780.100	GV 100-12	1000	120	27 x 13	3,60
780.125	GV 125-12	1250	120	27 x 13	4,30



(clamp w/tommy 777.400)

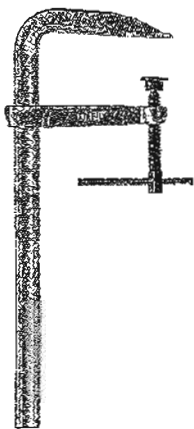


**781**

### Full-steel lever clamp annealed and high-polish galvanized

Bow and slider of special steel. lever with plastic coating. large steel pressure plate, galvanized.

Item No.	Type	Clamping width mm	Reach mm	Steel rail mm	Weight kg
781.016	GZH 16-8	160	80	16 x 7,5	0,68
781.020	GZH 20-10	200	100	19,5 x 9,5	0,98
781.025	GZH 25-12	250	120	27 x 13	1,50
781.030	GZH 30-12	300	120	27 x 13	2,03
781.040	GZH 40-12	400	120	27 x 13	2,25
781.050	GZH 50-12	500	120	27 x 13	2,49
781.060	GZH 60-12	600	120	27 x 13	2,75
781.080	GZH 80-12	800	120	27 x 13	3,23
781.100	GZH 100-12	1000	120	27 x 13	3,65

**782**

### Full-steel clamps extra heavy duty design

annealed, high-polish galvanized, strength and breakage tested. special pressure plate, easily moveable and replaceable, spindle hardened, clamping force about 2200 kp at 150 mm clamping width.

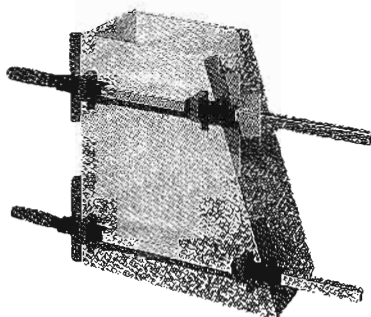
Item No.	Type	Clamping width mm	Reach mm	Steel rail mm	Weight kg
782.130	GVB 30-17,5	300	175	40 x 20	5,53
782.140	GVB 40-17,5	400	175	40 x 20	6,04
782.150	GVB 50-17,5	500	175	40 x 20	6,53
782.160	GVB 60-17,5	600	175	40 x 20	7,05
782.180	GVB 80-17,5	800	175	40 x 20	8,05
782.200	GVB 100-17,5	1000	175	40 x 20	9,05
782.225	GVB 125-17,5	1250	175	40 x 20	10,30
782.250	GVB 150-17,5	1500	175	40 x 20	11,50

**783**

### Eccentric clamps

of white beech. steel rail galvanized, with eccentric clamping area with cork lining.

Item No.	Type	Clamping width mm	Reach mm	Weight kg
783.020	HZ 20	200	110	0,45
783.030	HZ 30	300	110	0,50
783.040	HZ 40	400	110	0,60
783.060	HZ 60	600	110	0,75
783.080	HZ 80	800	110	0,90

**783A**

### Body clamps

with fixed and moveable jaws, stepless adjustability, of square steel tubing 25 x 25 x 2 mm, galvanized. Fittings of black-coated steel. Pressure surfaces with protective plastic coating, red-varnished wooden handle.

Item No.	Type	Clamping width mm	Weight kg
783.170	KS 70	700	1,9
783.200	KS 100	1000	2,1
783.250	KS 150	1500	2,4
783.300	KSV	1000	0,7
Extension			

## Chisels, make 'Kirschen'

784

No. 1001: flat, with flat wooden handle and lateral chamfers, in acc. with B DIN 5139

No. 1002: flat, with octagonal wooden handle and striking butt, in acc. with B DIN 5139

No. 1431: hollow, with flat wooden handle, without lateral chamfers, in acc. with DIN 5142

No. 1432: hollow, with octagonal wooden handle and striking butt, in acc. with DIN 5142

Width mm	Item No.			
	Nr. 1001	Nr. 1002	Nr. 1431	Nr. 1432
2	784.102	784.202	-	-
4	784.104	784.204	-	-
6	784.106	784.206	784.306	784.406
8	784.108	784.208	784.308	784.408
10	784.110	784.210	784.310	784.410
12	784.112	784.212	784.312	784.412
14	784.114	784.214	784.314	784.414
16	784.116	784.216	784.316	784.416
18	784.118	784.218	784.318	784.418
20	784.120	784.220	784.320	784.420

Width mm	Item No.			
	Nr. 1001	Nr. 1002	Nr. 1431	Nr. 1432
22	784.122	784.222	784.322	784.422
24	784.124	784.224	784.324	784.424
26	784.126	784.226	784.326	784.426
28	784.128	784.228	784.328	784.428
30	784.130	784.230	784.330	784.430
32	784.132	784.232	784.332	784.432
35	784.135	784.235	784.335	784.435
40	784.140	784.240	784.340	784.440
45	784.145	784.245	784.345	784.445
50	784.150	784.250	784.350	784.450



No. 1001



No. 1431

## Wooden handles for item No. 784

No. 1901 = suitable for No. 1001 & 1431

No. 1902 = suitable for No. 1002 & 1432

Item No.	Handle length	For chisel width
785.101	120 mm	2 - 10 mm
785.102	125 mm	12 - 16 mm
785.103	130 mm	18 - 26 mm
785.104	140 mm	28 - 32 mm
785.105	150 mm	35 - 50 mm

Item No.	Handle length	For chisel width
785.201	130 mm	2 - 20 mm
785.203	145 mm	22 - 30 mm
785.204	152 mm	32 - 35 mm
785.205	160 mm	40 - 50 mm



No. 1901



No. 1902

## Chisel, make 'Bahco' of genuine Swedish steel

786

No. 33/1031: flat, with lateral chamfers and impact resistant red plastic handle.

Two thirds of the chisel blade are annealed and hardened; the blade can be resharpened several times.

Width	4 mm	6 mm	8 mm	10 mm	12 mm	14 mm	16 mm	18 mm
Item No.	786.104	786.106	786.108	786.110	786.112	786.114	786.116	786.118

Width	20 mm	22 mm	25 mm	28 mm	30 mm	32 mm	40 mm
Item No.	786.120	786.122	786.125	786.128	786.130	786.132	786.140



No. 33/1031

## Set of chisels, flat

787

Item No. 787.002: make 'Kirschen' comprising chisels No. 1001, in lid box

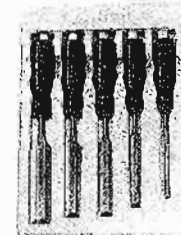
Contents: one of size 6, 10, 12, 16, 20, 26 mm

Item No. 787.003: make 'Bahco' comprising chisels No. 33/1031, in display box

Contents: one of size 6, 12, 16, 20, 25 mm



787.002



787.003

## 'Dastra'-Pattern chisels, cranked with ash handle

788

Hollow chisel					
Radius	Width	Item No.	Radius	Width	Item No.
2 mm	4 mm	788.102	20 mm	35 mm	788.120
4 mm	8 mm	788.104	25 mm	30 mm	788.125
5 mm	10 mm	788.105	30 mm	40 mm	788.130
8 mm	16 mm	788.108	35 mm	35 mm	788.135
10 mm	18 mm	788.110	40 mm	40 mm	788.140
12 mm	21 mm	788.112	60 mm	40 mm	788.160
15 mm	25 mm	788.115	80 mm	30 mm	788.180

Straight chisel	
Width	Item No.
10 mm	788.210
16 mm	788.216
25 mm	788.225
40 mm	788.240



Hollow chisel



Straight chisel

**789**



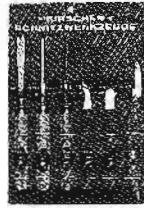
**Modeling tools**

for modeling soft materials such as plaster or clay.

- a) Scraper
- b) Smoother
- c) Modelling slings
- d) Gouge
- e) Dressing iron

Your inquiry should specify type, size and quantity!

**790**



790.406

**Carving tools, make 'Kirschen'**

set on cardboard display

Item No.	Contents (see Item Nos 791 & 792): 1 each
790.406	carving knife type 3351, 3354 & 3358
set of 6	carving chisel type 3201 (10 mm), 3206 (6 mm) & 3239 (4 mm)
790.410	carving knife type 3351, 3353, 3354, 3356, 3358
set of 10	carving chisel type 3201 (10 mm), 3202 (10 mm), 3208 (6 + 8 mm), 3239 (6 mm)

**791**



3351

3354

3352

3356

3353

3358

**Carving knives, make 'Kirschen'**

with round wooden handle, total length abt. 130 mm

Item No.	Type	Description
791.351	3351	with short, oblique knife
791.352	3352	with long, oblique knife
791.353	3353	with curved knife and cutting edges on both sides
791.354	3354	with straight knife and oblique edge
791.356	3356	with narrow knife and straight edge
791.358	3358	with rounded back and straight edge

**791A**



**HOCO-multiple purposes knives** Item No. 791.401

renew knife edge by breaking off 5 mm long portions, total length appr. 145 mm, with clip.

**792**

**Carving tools, make 'Kirschen'**

with octagonal white beech handle

Type **3201** straight, with straight edge

Item No.	792.011	792.012	792.013	792.014	792.015
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3202** straight, with oblique edge

Item No.	792.021	792.022	792.023	792.024	792.025
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3206** straight, with slightly hollow blade

Item No.	792.061	792.062	792.063	792.064	792.065
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3208** straight, with medium cavity

Item No.	792.081	792.082	792.083	792.084	792.085
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3210** straight, with deep cavity

Item No.	792.101	792.102	792.103	792.104	792.105
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3215** curved, with slightly hollow blade

Item No.	792.151	792.152	792.153	792.154	792.155
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3217** curved, with medium cavity

Item No.	792.171	792.172	792.173	792.174	792.175
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3219** curved, with deep cavity

Item No.	792.191	792.192	792.193	792.194	792.195
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3221** cranked, with flat straight blade

Item No.	792.211	792.212	792.213	792.214	792.215
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3227** cranked, with slightly hollow blade

Item No.	792.271	792.272	792.273	792.274	792.275
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3229** cranked, with medium cavity

Item No.	792.291	792.292	792.293	792.294	792.295
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3231** cranked, with deep cavity

Item No.	792.311	792.312	792.313	792.314	792.315
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3239** straight, with V-shape blade

Item No.	792.391	792.392	792.393	792.394	792.395
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3240** curved, with V-shape blade

Item No.	792.401	792.402	792.403	792.404	792.405
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3243** cranked, with V-shape blade

Item No.	792.431	792.432	792.433	792.434	792.435
Width	2 mm	4 mm	6 mm	8 mm	10 mm

Type **3247** straight, with deep cavity

Item No.	792.471	792.472	792.473	792.474	792.475
Width	2 mm	4 mm	6 mm	8 mm	10 mm

## Sculptor's tools, make 'Kirschen'

available in a wide variety of shapes and widths.  
Please ask for our special leaflet.



793

## Turning chisels, make 'Kirschen'

No. 1607: flat, with short wooden handle, total length appr. 300 mm, in acc. with A DIN 5144

No. 1609: flat, with long wooden handle, total length appr. 400 mm, in acc. with A DIN 5144

No. 1617: hollow, with short wooden handle, total length appr. 300 mm, in acc. with B DIN 5144

No. 1619: hollow, with long wooden handle, total length appr. 400 mm, in acc. with B DIN 5144

Width mm	Item No.			
	No. 1607	No. 1609	No. 1617	No. 1619
4	794.204	794.304	794.504	794.604
6	794.206	794.306	794.506	794.606
8	794.208	794.308	794.508	794.608
10	794.210	794.310	794.510	794.610
12	794.212	794.312	794.512	794.612
14	794.214	794.314	794.514	794.614
16	794.216	794.316	794.516	794.616
18	794.218	794.318	794.518	794.618
20	794.220	794.320	794.520	794.620

Width mm	Item No.			
	No. 1607	No. 1609	No. 1617	No. 1619
22	794.222	794.322	794.522	794.622
24	794.224	794.324	794.524	794.624
26	794.226	794.326	794.526	794.626
28	794.228	794.328	794.528	794.628
30	794.230	794.330	794.530	794.630
32	794.232	794.332	794.532	794.632
33	794.235	794.335	794.535	794.635
40	794.240	794.340	794.540	794.640



No. 1607



No. 1617

794

## Cutting-off chisels (turner's cross-cutting chisel) make 'Kirschen'

No. 1627 with short wooden handle, total length appr. 300 mm

No. 1629 with long wooden handle, total length appr. 400 mm

Type	Width	Item No.				
		4 mm	6 mm	8 mm	10 mm	12 mm
Type 1627	Item No.	795.204	795.206	795.208	795.210	795.212
Type 1629	Item No.	795.304	795.306	795.308	795.310	795.312



No. 1627

795

## Boring chisels, make 'Kirschen'

No. 1637 oblique, with short wooden handle, total length appr. 300 mm

No. 1639 oblique, with long wooden handle, total length appr. 400 mm

No. 1647 round, with short wooden handle, total length appr. 300 mm

No. 1649 round, with long wooden handle, total length appr. 400 mm

Width mm	Item No.			
	No. 1637	No. 1639	No. 1647	No. 1649
20	796.120	796.220	796.320	796.420
26	-	-	796.326	796.426



No. 1639



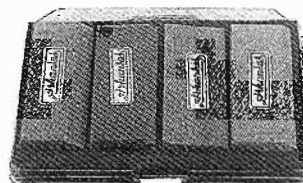
No. 1649

796

## Oil stones (No. 3704)

Genuine oil stones, size appr. 60 x 25 x 5 mm, 4 different shapes available

Item No. 797.001



797

## Goliath whet stones

for use with water (not oil)

Item No.	798.004	798.005	798.006	798.008
Dimensions mm	100 x 50 x 20	105 x 65 x 20	150 x 50 x 20	200 x 50 x 20



798

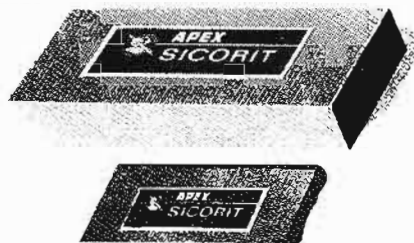
## Sicorit oil stones

1) Rectangular stones in a wooden case

Item No.	799.781	799.782	799.783
Dimensions mm	100 x 40 x 12	125 x 40 x 12	150 x 40 x 12

2) Hollow chisel stones, in a cardboard box, tapered, with rounded edges

Item No.	799.791
Dimensions mm	100 x 40 x 8 x 12



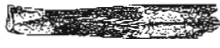
799

## 800

Diagrammatic representation of the variety of uses of turning tools listed below:



Shape A



Shape B



Shape C



Shape D



Shape E



Shape F

## Turning tools, forged for woodworking

(excellent tool life also when working plywood) can be resharpened over the entire length

**Shape A: square**

tapered tool – for tapered slots and flanges.

**Shape B: square**

dovetail-shaped tool – for slots. both flanks can be employed simultaneously.

**Shape C: square or round**

left corner tool for turning outside diameters.

**Shape D: square or round**

right corner tool for turning inside diameters.

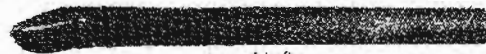
**Shape E: square or round**

small right corner tool for turning small diameters (holes).

**Shape F: square**

Cross section	Length	Shape A Item No.	Shape B Item No.	Length	Shape C Item No.	Shape D Item No.	Shape E Item No.	Length	Shape F Item No.
10 x 10 mm	200 mm	800.110	800.210	200 mm	800.310	800.510	800.710	-	-
12 x 12 mm	200 mm	800.112	800.212	230 mm	800.312	800.512	800.712	-	-
15 x 15 mm	250 mm	800.115	800.215	270 mm	800.315	800.515	-	-	-
20 x 20 mm	-	-	-	340 mm	800.320	800.520	-	350 mm	800.919
25 x 25 mm	-	-	-	380 mm	800.325	800.525	-	400 mm	800.925
30 x 30 mm	-	-	-	400 mm	800.330	800.530	-	400 mm	800.930
10 mm dia.	-	-	-	200 mm	800.410	800.610	800.810	-	-
12 mm dia.	-	-	-	230 mm	800.412	800.612	800.812	-	-
15 mm dia.	-	-	-	270 mm	800.415	800.615	-	-	-
19 mm dia.	-	-	-	340 mm	800.419	800.619	-	-	-
25 mm dia.	-	-	-	380 mm	800.425	800.625	-	-	-
30 mm dia.	-	-	-	400 mm	800.430	800.630	-	-	-

## 801



curved left



straight



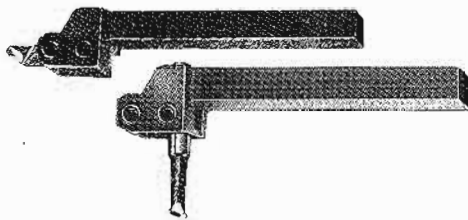
## Turning tools of HSS

round, for woodworking

Item No.	801.002	801.003	801.101
Design	curved left	straight	tool clamp
Dimensions	dia. 24 x 315 mm		32 x 32 x 120 mm

With the tool clamp the tool can be clamped in any position; the cutting angle can also be varied by turning the tool (item will be discontinued).

## 802



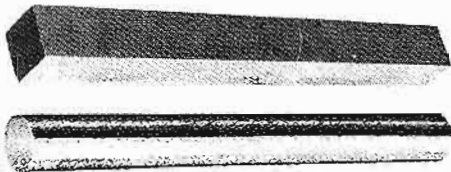
## Tool holders No. 17150

for working inside and outside surfaces, right and left turning.

Holder can be clamped in two positions (see ill.).

Item No.	802.008	802.010	802.012
Dimensions mm	21 x 12 x 120	21 x 12 x 120	25 x 13 x 140
Cutting edge height mm	10,5	10,5	12,5
For blanks mm	8 x 8 / 8 dia.	10 x 10 / 10 dia.	12 x 12 / 12 dia.

## 803



## Blank tools of HSS

for woodworking, length 160 mm (other dimensions upon request!)

Square, cross section	8 x 8 mm	10 x 10 mm	12 x 12 mm	16 x 16 mm	20 x 20 mm
Item No.	803.108	803.110	803.112	803.116	803.120
Round, dia.	8 mm	10 mm	12 mm	16 mm	20 mm
Item No.	803.208	803.210	803.212	803.216	803.220

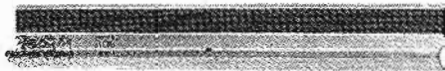
## 804



## Hard-metal turning tools

straight or curved, right or left cutting edge, cross sections 10q to 40q, in different HM-qualities, upon request!

## 805



## Tool shims, prismatic for round turning tools

Item No.	805.001
Dimensions	20 x 10 x 150 mm

## 806



## Tool shims, adjustable for turning tools of all kinds

**Adjustment:** in long direction = fine adjustment  
in lateral direction = coarse adjustment

Item No.	806.001
Dimensions (conical)	11/16 x 40 x 150 mm

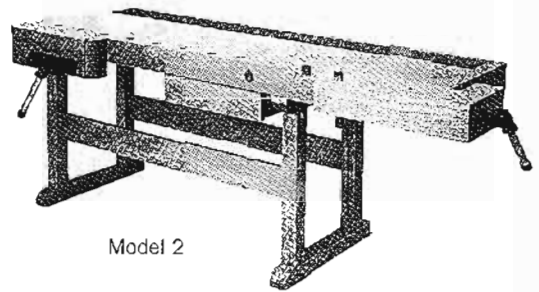
## Ulmia carpenter's benches No. 2

**Very sturdy design**, bench equipped with iron spindles with patented, parallel front vise and patented rear vise guide way of iron, with drawer, equipped with two bench dogs with lateral leaf springs as well as two vise spanners.

**Top of solid red beech**, joggled and glued, smooth and impregnated.

**Frame** completely of solid red beech, with full-length through-bolts between the legs, excellent stability.

Length (without rear vise head)	1850 mm	2000 mm	2150 mm	2300 mm
Max. width	640 mm	640 mm	640 mm	640 mm
Height of the bench	900 mm	900 mm	900 mm	900 mm
Item No.	807.018	807.020	807.021	807.023



Model 2

807

## Ulmia carpenter's benches

**Very sturdy design**, with iron spindle and patented parallel front vise as well as patented rear vise guide way of iron. The tiltable drawer features two iron frames which allow the drawer with the entire contents to be swung in and out easily with one hand.

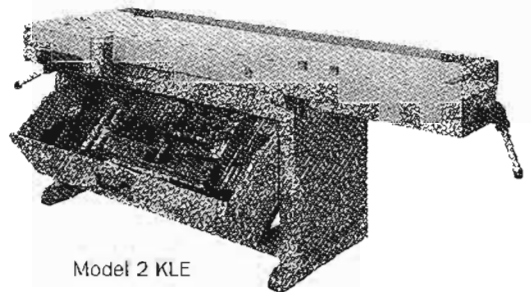
**Strong tiltable drawer** of solid red beech with plywood bottom; drawer inside with tool holders of solid red beech; drawer can be equipped with mortise dead-lock or optionally with a mortise cylinder lock.

No. 2 KL without tool holders

No. 2 KLE with tool holders for a 55 piece set of tools. No. 216, however, **without** tools

The No. 216 set of tools corresponds to the contents of tool chest No. 215 (see Item No. 812).

Length (without rear vise head)	2000 mm	2150 mm	2300 mm
Max. width	640 mm	640 mm	640 mm
Height of the bench	900 mm	900 mm	900 mm
Item No.	Model 2 KL	808.020	808.021
	Model 2 KLE	808.120	808.121
		808.121	808.123



Model 2 KLE

808

## Ulmia carpenter's benches No. 1830

for light duties

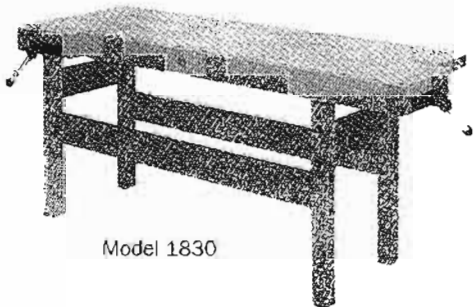
**Top** of solid red beech, joggled and glued, smooth and impregnated.

**Frame** of solid red beech, sturdy design.

Bench with parallel vise, one pair of bench dogs and two vise spanners.

Length (without rear vise)	1500 mm	1700 mm
Max. width	900 mm	900 mm
Height	850 mm	850 mm
Item No.	809.015	809.017

Other benches upon request!



Model 1830

809

## Ulmia bench dogs No. 160

of malleable iron for clamping bulky workpieces, for bench No. 2 & 2 KL

Item No.	Length	Height	Weight
810.160	110 mm	110 mm	1 kg



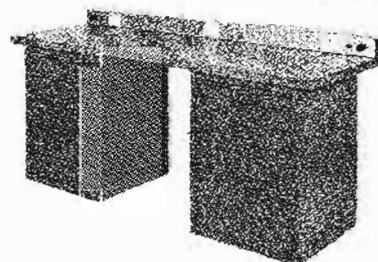
Model 160

810

## Multi-purpose workbenches

We can supply **workbenches** of various designs **upon request**.

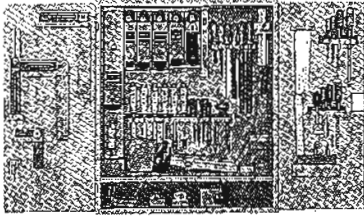
Please ask for our special leaflet!



811



## 812



## Ulmia tool chests No. 215 for woodworking

of solid red beech, varnished, with veneer wood backwall, two lockable doors, with one open shelf and two suspension lugs.

Overall dimensions: height 820 mm, width 705 mm, depth 230 mm.

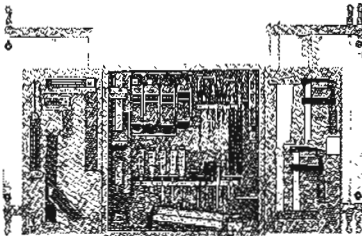
**Item No. 812.001:** chest with 55 piece set of tools No. 216  
(Contents see below)

**Item No. 812.002:** as described before, however, **without** tools, with tool holder

### Set of tools No. 216 / 55 pieces

1 Roughing plane 60 mm	HW1-60	1 Half-round file 250 mm, cut 1	1078/250-1	1 Chisel 20 mm	164-20
1 Double plane 48 mm	HW2-48	1 Half-round rasp 250 mm, cut 2	1088/250-2	1 Chisel 26 mm	164-26
1 Dressing plane 48 mm	HW3-48	1 Round file 200 mm, cut 2	1080/200-2	1 Wooden mallet, size 2	300-2
1 Smoothing plane 48 mm	HW4-48	1 Flat file 200 mm, cut 2	1082/200-2	1 Screw-driver 3.5 mm	1109-035
1 Jack plane 33 mm	HW5-33	1 Cork block	814	1 Screw-driver 4.5 mm	1109-045
1 Double rabbet plane 30 mm	HW8-30	1 Grinding block without scraper	635	1 Screw-driver 7.0 mm	1109-070
1 Reform-dressing plane 48 mm	25-48	1 Precision square 150 mm	600-150	1 Screw-driver 10.0 mm	1109-100
1 Oilstone	2015	1 Precision square 350 mm	600-350	1 Cross-slotted screw-driver PZ 1	1102-1
1 Sq. scraper, 0.8 mm	1062	1 Special marking square 300 mm	602	1 Cross-slotted screw-driver PZ 2	1102-2
1 Scraper steel	1067	1 Precision level 330 mm	604-330	1 Cross-slotted screw-driver PZ 3	1102-5
1 Edge cutter	732	1 Scratch gauge	0029	1 Counter sink 16 mm with handle	1011
1 Carpenter's hammer 22 mm	1025-22	1 Stainless steel rule 400 mm	1116-2	1 Trimmer for veneers	740
1 Carpenter's hammer 28 mm	1025-28	1 Auger round	1046	1 Sheeting knife	746
1 Punch 2 mm	1071-2	1 Auger square	1047	1 Vise	1812
1 Punch 4 mm	1071-4	1 Compass 200 mm	1110-3	1 Hand bow-saw 290 mm	714
1 Cutting pliers 210 mm	2564-210	1 Chisel 6 mm	164-6	1 Spare saw blade (wood) for the above saw	712
1 Combination pliers 180 mm	2388	1 Chisel 10 mm	164-10	1 Spare saw blade (metal) for the above saw	713
1 Handsaw "DOZUKI-Universal" blade length 240 mm	261-240	1 Chisel 17 mm	164-12	1 Wooden folding rule 2 m	802
		1 Chisel 16 mm	164-16		

## 813



## Ulmia tool chests No. 205 for vocational training

of solid red beech, varnished, with veneer wood backwall, two lockable doors and two suspension lugs.

Overall dimensions: height 650 mm, width 615 mm, depth 230 mm

**Item No. 813.001:** containing a set of 42 tools:

1 Short roughing plane 54 mm	HW1-54	1 Precision miter rule 350 mm	603	1 Combination pliers 180 mm	2388
1 Double plane 48 mm	HW2-48	1 Precision level 330 mm	604-330	1 Handsaw 1, 600 mm	270-600
1 Dressing plane 48 mm	HW3-48	1 Scratch gauge	0029	1 Handsaw 2, 600 mm	271-600
1 Smoothing plane 48 mm	HW4-48	1 Porcelain square	1047	1 Bow saw 600 mm	272-600
1 Jack plane 33 mm	HW5-33	1 Compass 200 mm	1110-3	1 Hand saw "DOZUKI-Universal" blade length 240 mm	261-240
1 Double rabbet plane 30 mm	HW8-30	1 Chisel 6 mm	164-6	1 Screw-driver 4.5 mm	1109-045
1 Oil stone	2015	1 Chisel 10 mm	164-10	1 Screw-driver 7.0 mm	1109-070
1 Sq. scraper, 0.8 mm	1062	1 Chisel 16 mm	164-16	1 Screw-driver 10.0 mm	1109-100
1 Half-round file 250 mm, cut 1	1078/250-1	1 Chisel 20 mm	164-20	1 Cross-slotted screw-driver PZ-1	1102-1
1 Half-round rasp 250 mm, cut 2	1088/250-2	1 Chisel 26 mm	164-26	1 Cross-slotted screw-driver PZ-2	1102-2
1 Cork block	814	1 Wooden mallet, size 2	300-2	1 Counter sink 16 mm, with handle	1011
1 Grinding block without scraper	635	1 Carpenter's hammer 22 mm	1025-22	1 Cross-slotted screw-driver PZ-2	1102-2
1 Precision square 150 mm	600-150	1 Punch 2 mm	1071-2	1 Counter sink 16 mm, with handle	1011
1 Precision square 350 mm	600-350	1 Cutting pliers 210 mm	2564-210	2 Screw clamps 160 mm	222
				1 Wooden folding rule 2 m	802

## 814



Planes Types 1 - 4



Dressing plane (iron fine adjustment)  
(814.204)



Tooth plane



Rabbet plane

## Ulmia planes

1) **Double plane**, length 240 mm, iron width 48 mm

Item No.	814.102	814.103
Base with	white beech	lignum vitae
Spare iron	814.111	

2) **Dressing plane**, length 220 mm, iron width 48 mm

Item No.	814.202	814.203	814.204
Base with	white beech	lignum vitae	white beech (iron fine adjustment)
Spare iron	814.211		814.212

3) **Smoothing plane**, length 240 mm, iron width 48 mm

Item No.	814.302	814.303
Base with	white beech	lignum vitae
Spare iron	814.311	

4) **Jack plane**, length 240 mm, iron width 33 mm

Item No.	814.401	814.402	814.403
Base with	white beech	lignum vitae	white beech
Plane iron	single	single	double
Spare iron	814.411		814.412

5) **Tooth plane**, length 220 mm, iron width 48 mm

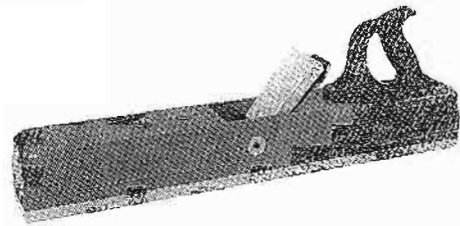
Item No.	814.501	814.502
Base with	white beech	lignum vitae
Spare iron	814.511	

6) **Rabbet plane**, length 270 mm, iron width 30 mm

Item No.	814.604	814.605	814.606	814.607
Plane iron	single		double	
Base with	white beech	lignum vitae	white beech	lignum vitae
Spare iron	814.611		814.612	

## Ulmia roughing planes

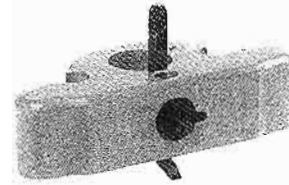
Item No.	814.701	814.702	814.703
Base with	white beech	figum vitae	white beech
Length	600 mm	600 mm	480 mm
Iron width	60 mm	60 mm	54 mm
Spare iron	814.711		814.712



**814A**

**Ulmia base planes No. 500 E**, adjustable, of red beech for planing grooves and edges

Item No.	815.001
Length	235 mm
Iron width	10, 15, 20 mm (set)
Spare iron	815.101 (set)

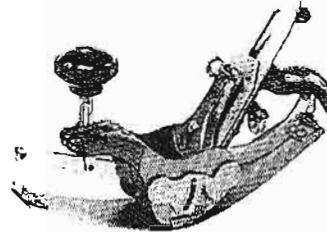


**815**

## Ulmia shipwright's plane of iron No. 546

for planing concave or convex surfaces and curved parts of hardwood or plastics

Item No.	816.001
Length	260 mm
Iron width	44 mm
Spare iron	816.101



**816**

## Ulmia scraper planes of cast Iron

Item No.	817.001	817.002
Iron	straight	curved
Length	250 mm	
Iron width	52 mm	
Spare Iron No.	817.101	817.102

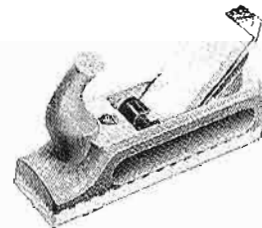


**817**

## Fillet planes No. 515

hand plane with white beech base, hand protector, striking butt

Item No.	818.101	818.102	818.103
Iron width	33 mm	39 mm	48 mm
Length	240 mm		

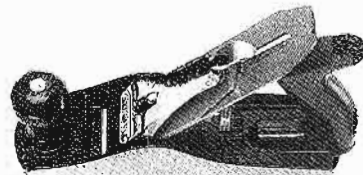


**818**

## Special planes of iron

for working plastic, soft metal etc.

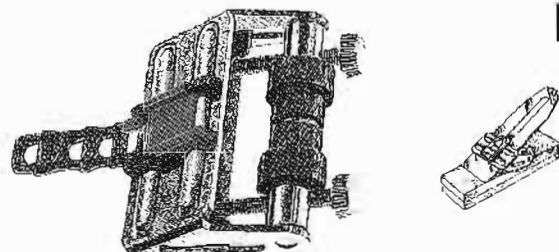
Item No.	819.003	819.004	819.005	819.006	819.007
Design	stressing plane	double plane		roughing plane	
Length	240 mm	245 mm	335 mm	460 mm	560 mm
Iron width	45 mm	50 mm	50 mm	60 mm	60 mm
Spare iron	819.103	819.104		819.106	



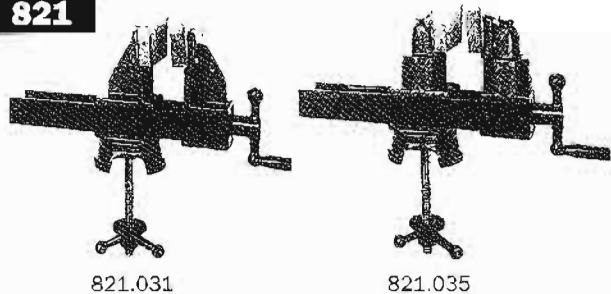
**819**

## Grinding gauge Item No. 820.301

for all type of plane irons and chisels from 3 – 60 mm width, angle adj. to 25°, 30° and 35°.



**820**

**821**

821.031

821.035

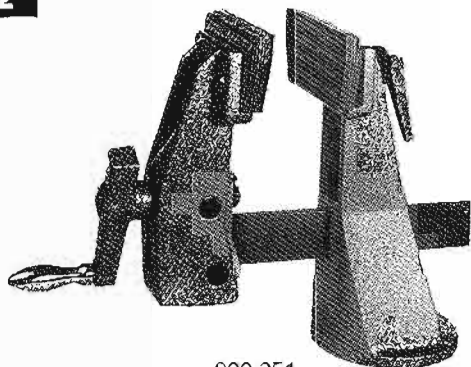
**Ulmia parallel vices**

of iron, with replaceable wooden jaws, rotatable, can be set in any position

**Item No. 821.031:** with rigid jaws, parallel chucking

**Item No. 821.035:** with rotatable jaws (360°) for chucking workpieces internally and externally as well as conically shaped workpieces

Item No.	821.031	821.035
Chucking width outside	150 mm	160 mm
Chucking width inside	-	185 - 340 mm
Chucking depth	150 mm	130 mm
Jaw width	135 mm	135 mm
Weight	12 kg	12,5 kg

**822**

822.351

**Quick-release vices**

of cast iron, with replaceable wooden jaws, rotatable

The adjustable front section which is guided by a hardened flat steel bar can easily be extended to 350 mm and then pressed against the workpiece. The workpiece is securely chucked by means of a self-locking trapezoidal spindle.

**Item No. 822.350:** with rigid jaws, parallel chucking

**Item No. 822.351:** front jaw rigid, rear jaw horizontally and vertically, adjustable 12° to both sides, therefore also for conically workpieces

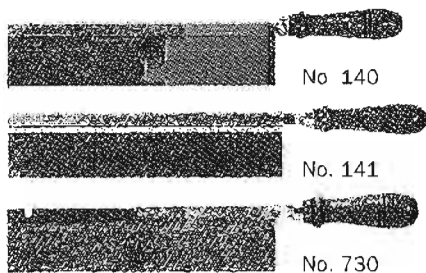
Chucking width	Chucking depth	Jaw width	Weight
350 mm	180 mm	140 mm	15 kg

**823****Spherical joint vices**

of special cast steel, with replaceable steel jaws, rotating, and swiveling jaws, can be set in any position

**Item No. 823.001:**

Chucking width	Chucking depth	Jaw width	Weight
165 mm	120 mm	120 mm	29 kg

**824**

No. 140

No. 141

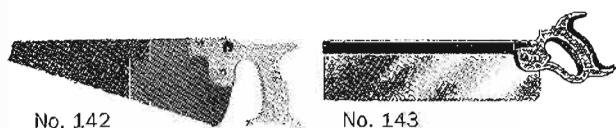
No. 730

**Ulmia sash saws**

with steel back, sharpened and set

**No. 140:** straight **No. 141:** cranked **No. 730:** cranked, with reversible handle

Design	Blade length / Item No.		
	200 mm	250 mm	300 mm
No. 140	824.120	824.125	-
No. 141	824.220	824.225	-
No. 730	-	824.325	824.330

**825**

No. 142

No. 143

**Ulmia fox saws**

sharpened and set

**No. 142:** without back **No. 143:** with back

Design	Blade length / Item No.				
	250 mm	300 mm	350 mm	400 mm	500 mm
No. 142	-	825.130	825.135	825.140	825.150
No. 143	825.225	825.230	-	-	-

**826**

No. 144

No. 145

**Ulmia compass saws**

**No. 144:** with wooden handle **No. 145:** with metal handle

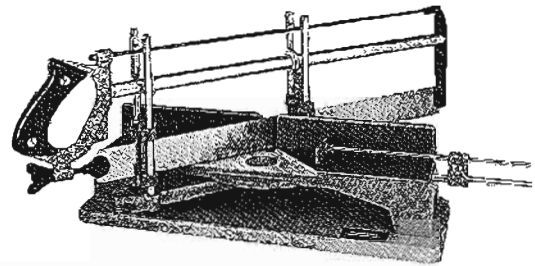
Design	Blade length	Item No.
No. 144	300 mm	826.144
No. 145	150 mm	826.145

## Ulmia miter-box saws

complete with saw blade for wood (blades for plastics or metals also available), also available with or without backstop

827

Item No.	Back-stop	Cutting width	Cutting height	Table length	Table width
827.005	without	100 mm	100 mm	450 mm	71 mm
827.006	with	100 mm	100 mm	450 mm	71 mm
827.007	without	160 mm	120 mm	630 mm	115 mm
827.008	with	160 mm	120 mm	630 mm	115 mm



## Hole saws of HSS or HM

Safe working as maximum concentricity is ensured, for cutting out circular holes in steel, cast metals, aluminium, copper, bronze, brass, wood, plastic and similar materials, fast and easy. Maximum cutting depth for all sizes 28 mm.

828

Die.	19 mm	22 mm	29 mm	32 mm	35 mm	38 mm	44 mm	51 mm	57 mm	64 mm	76 mm	89 mm
Design	Item No.											
HSS	828.019	828.022	828.029	828.032	828.035	828.038	828.044	828.051	828.057	828.064	828.076	828.089
HM	828.219	828.222	828.229	828.232	828.235	828.238	828.244	828.251	828.257	828.264	828.276	828.289

Other diameters upon request!

Suitable saw holders (dia. 11 mm hexagonal):  
(with center drill, dia. 6,35 mm)

Item No.	Type	for diameter
828.301	LSS 1	16 - 30 mm
828.302	LSS 2	32 - 114 mm



## Metal band saw blades of genuine Swedish steel

Tooth shape A, sharpened and set, can be resharpened

829

Blades available:

- 1) in 50 or 100 m rolls
- 2) cut-to-size, also ready-soldered blades  
(min. quantity 2 blades per size)

Width x thickness mm	Tooth spacing appr. mm	Item No.	
		Roll	Endless*
6 x 0,6	5	829.006	829.106
8 x 0,6	5	829.008	829.108
10 x 0,6	6	829.010	829.110
16 x 0,6	7	829.016	829.116
20 x 0,7	8	829.020	829.120
25 x 0,7	9	829.025	829.125
30 x 0,7	9	829.030	829.130
35 x 0,8	10	829.035	829.135
40 x 0,8	12	829.040	829.140

\* Please specify length!

The thickness of the band saw blades should be 1/1000 of the wheel diameter minus 1/10 mm.

Example: 700 mm wheel dia. = 0,7 minus 0,1 mm = 0,6 mm blade thickn.  
For smaller wheel dia. use one of these blades:

Width x thickness mm	Tooth spacing appr. mm	Item No.	
		Roll	Endless*
6 x 0,4	3	829.206	829.306
8 x 0,4	4	829.208	829.308
10 x 0,4	4	829.210	829.310
16 x 0,4	5	829.216	829.316
20 x 0,4	6	829.220	829.320
25 x 0,4	6	829.225	829.325

\* Please specify length!

## Metal band saw blades for plastic

of genuine Swedish steel

Tooth shape H, sharpened and set, can be resharpened

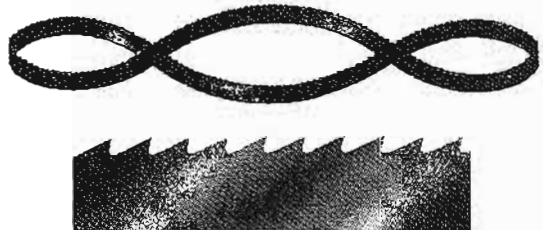
830

Blades available:

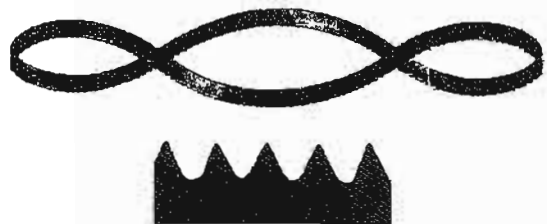
- 1) in 50 or 100 m rolls
- 2) cut-to-size, also ready-soldered blades  
(min. quantity 2 blades per size)

Width x thickness mm	Tooth spacing appr. mm	Item No.	
		Roll	Endless*
20 x 0,5	3	830.020	830.120
20 x 0,6	3	830.021	830.121

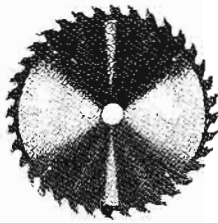
\* Please specify length!



Tooth shape A



Tooth shape H

**831**

## Hard metal circular saw blade

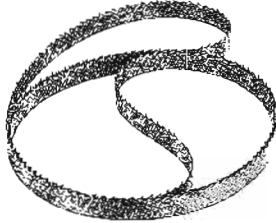
for solid and laminated wood, center hole = 30 mm dia.

### 1) hard metal blade (No. 251)

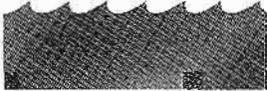
Item No.	831.100	831.110	831.120	831.130	831.140
Dia.	250 mm	300 mm	350 mm	400 mm	450 mm
Kerf mm	3,2 mm	3,2 mm	3,5 mm	3,8 mm	3,8 mm
No. of teeth	18	20	24	28	36

### 2) hard metal multi-purpose blade (No. 252)

Item No.	831.201	831.203	831.204	831.211	831.213	831.214	831.221	831.223	831.224	831.231	831.233	831.234	831.241	831.251
Dia.	250 mm			300 mm			350 mm			400 mm			450 mm	500 mm
Kerf mm	3,2 mm			3,2 mm			3,5 mm			3,5 mm			3,8 mm	4,0 mm
No. of teeth	40	60	80	48	72	96	54	84	108	60	96	120	66	72

**832**

Tooth shape S



Tooth shape K

## High performance metal band saw blades

with flexible back

ready for use, sharpened and set

**Saw blades available:**

- 30 or 100 m rolls
- cut-to-size, also ready-welded blades  
(min. quantity 5 blades per size).

**A) Type 510** of tungsten-silicon ally steel with annealed back, cannot be resharpened

Width x thickness mm	Item No.		No./teeth per inch	
	Roll	Endless	Tooth shape S	Tooth shape K
2,5 x 0,65	832.302	832.402	14,18	-
3 x 0,65	832.303	832.403	10,14,18	-
4 x 0,65	832.304	832.404	10,14,18	-
6 x 0,65	832.306	832.406	6,8,10,14,18	6
8 x 0,65	832.308	832.408	4,6,8,10,14,18	4,6
10 x 0,65	832.310	832.410	4,6,8,10,14,18	3,4,6
13 x 0,65	832.313	832.413	4,6,8,10,14,18	3,4,6
16 x 0,65	832.316	832.416	4,6,8,10	3,4,6
16 x 0,80	832.317	832.417	3,4,6,8,10	3,4,6
20 x 0,80	832.320	832.420	3,4,6,8,10	3,4,6
25 x 0,90	832.325	832.425	3,4,6,8,10	2,3,4,6
32 x 1,10	832.332	832.432	3,4,6,8,10	2,3,4

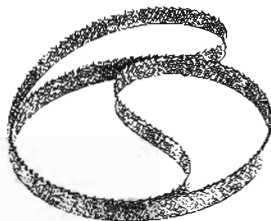
Please specify tooth shape and tpi as well as length (for **endless** blades).

**B) Type 526** of cobalt-bi-metal, tooth of HSS, band of flexible steel, for highest requirements, can be resharpened up to 10 tpi.

Width x thickness mm	Item No.		No./teeth per inch	
	Roll	Endless	Tooth shape S	Tooth shape K
4 x 0,90	832.504	832.604	10,14	-
6 x 0,65	832.506	832.606	14	6
6 x 0,90	832.507	832.607	8,10,14	4,6
10 x 0,90	832.510	832.610	8,10,14	4,6
13 x 0,65	832.513	832.613	10,14	4,6
13 x 0,90	832.514	832.614	6,8,10,14	3,4,6
20 x 0,90	832.520	832.620	4,6,8,10,14	3,4,6
27 x 0,90	832.527	832.627	3,4,6,8,10	2,3,4,6
34 x 1,10	832.534	832.634	3,4,6,8,10	2,3,4

Please specify tooth shape and tpi as well as length (for **endless** blades)

**C) Carbide tipped** blades upon request!

**833**

Tooth shape A

## Metal band saw blades

of genuine Swedish steel

Tooth shape A, ready for use, set and sharpened, can be resharpened

**Saw blades available:**

- 50 or 100 m rolls
- cut-to-size, also ready-welded blades  
(min. quantity 2 blades per size).

Width x thickness mm	Item No.		Tooth spacing appr. mm
	Roll	Endless*	
10 x 0,60	833.010	833.110	4
25 x 0,80	833.025	833.125	6

\* Please specify length!

**834**

Rest dimensions: 440 x 260 mm  
Height: 100 mm

## Saw rests for band saws

Item No. 834.001

tiltable by 40° to both sides, can also be used on grinding machines, very strong, easy to install and fast to remove, can be set at any angle, protects the blade.

## Band saw blade guide (1055)

lateral and rear roller bearings lubricated for life, lateral roller with micro-adjustment.

For wood saws

Size	0	I	II	III	IV	VI
Wheel dia	200 - 250	300 - 400	400 - 500	600 - 800	800 - 900	900 - 1000
Top guide	Item No.					
	835.000	835.001	835.004	835.007	835.010	835.013
Bottom right	-	835.002	835.005	835.008	835.011	835.014
Bottom left	-	835.003	835.006	835.009	835.012	-

## Band saw blade guides (1057)

with ball bearing rear roller, with replaceable wear resistant tread, lateral rollers with microadjustment and lubrication for life.

For metal as well as wood band saws

Size	III	IV	VI
Wheel dia.	600 - 800	800 - 900	900 - 1000
Top guide	Item No.		
	836.018	836.120	836.222
Bottom right	836.019	836.121	836.223
Bottom left	836.020	836.122	-

## Twin guides (1040)

with ball bearing rear roller with replaceable, wear resistant tread, **two lateral rollers** with microadjustment and lubrication for life; special design for very accurate cuts and heavy-duty operation; especially recommended for use with feed devices and for cutting thick materials.

Size	III	IV	VI
Wheel dia.	600 - 800	800 - 900	900 - 1000
Top guide	Item No.		
	837.024	837.025	837.026

Use normal bearing grease for the rear roller ball bearings whereas special oil (1059) should be used for the lateral rollers (see Item No. 840)

(Twin guides can only be supplied for the top guide, see No. 1057)

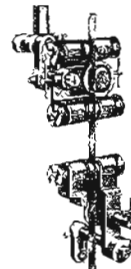
Illustrations 836 to 837 show 'r.h.' guides (the saw wheels are located on the left of the saw blade).



835



836



837

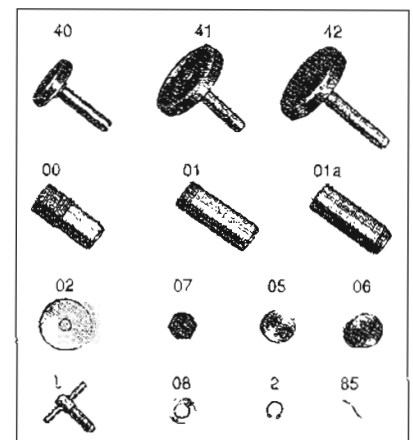
Two lateral rollers

Bottom guide

## Spares for saw blade guides (1055)

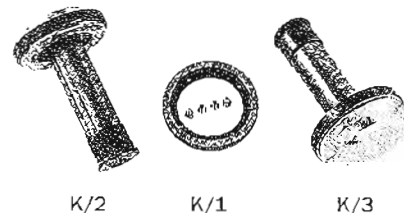
Part No.	Size	0	I	II	III	IV	VI
	Dia. of rear roller	28 mm	35 mm	40 mm	58 mm	65 mm	78 mm
	Dia. of lateral roller	22 mm	26 mm	35 mm	40 mm	48 mm	65 mm
	Description	Item No.					
41	top rear roller	838.016	838.032	838.033	838.034	838.035	838.036
42	bottom rear roller	-	838.036	838.039	838.040	838.041	838.042
41a	top rear roller with bearing sleeve and cap	838.044	838.045	838.046	838.047	838.048	838.049
42a	bottom rear roller with bearing sleeve and cap	-	838.051	838.052	838.053	838.054	838.055
40	lateral roller	838.057	838.058	838.059	838.060	838.061	838.062
40a	lateral roller with bearing sleeve and screw	838.064	838.065	838.066	838.067	838.068	838.069
01	top rear roller bearing	838.071	838.072	838.074	838.075	838.076	
01a	bottom rear roller bearing	-	838.078	838.080	838.081	838.082	
00	lateral bearing sleeve	838.084	838.085	838.087	838.088	838.089	
02/07	lateral screw	-	838.091	838.093	838.094	838.095	
05/06	top & bottom screw	-	838.097	838.099	838.100	838.101	
08	thrust washer for bottom rear roller	-	838.103	838.105	838.106	838.107	
2	circlip	838.027	838.109	838.111	838.112	838.113	
85	pressure spring f.lateral bearing sleeve	-	838.115		838.117		
L	capst.-head screw (long)	838.181					
La	capst.-head screw (short)	838.182					

838

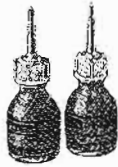


## Spares for saw blade guides (1057 & 1040)

Part No.	Size	III	IV	VI
	Dia. of rear roller	58 mm	65 mm	78 mm
	Description	Item No.		
K/2	ball bearing rear roller (top) with sleeve & cap	839.168	839.169	839.170
K/3	ball bearing rear roller (bottom) with sleeve & cap	839.171	839.172	839.173
K/1	spare treads with screws	839.174	839.175	839.176



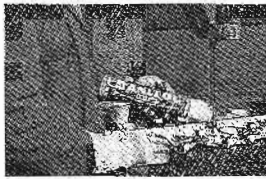
839

**840**

### Special oil 1059 for band saw guides

Only this oil should be used for lubricating lateral and rear roller bearings. A different oil or ball bearing grease influences the smooth motion of the rollers and the special oil extends the life of the saw guides.

Item No. 840.059 in 20-ml-bottles

**840A**

### Cooling lubricating stick 'Manitou Easy Cut'

used in metal-cutting and metal forming. Reduces friction between tool and workpiece, excellent adhesion, economical in use for sawing, grinding and thread-cutting.

Item No. 840.100 in sticks of appr. 350 gr.

**841**

### Rubber cork lining for band saw wheels

of a special flexible quality, thickness 5 mm

Item No.	841.020	841.025	841.030	841.035	841.040	841.045
Width	20 mm	25 mm	30 mm	35 mm	40 mm	45 mm
Item No.	841.050	841.055	841.060	841.065	841.070	841.080
Width	50 mm	55 mm	60 mm	65 mm	70 mm	80 mm

Can also be supplied in the following lengths:

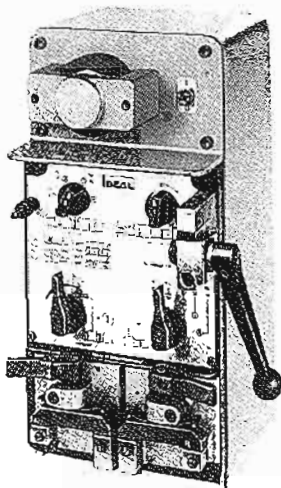
Wheel dia mm	300	400	500	600	700	800	900	1000
Length mm	1000	1320	1620	1950	2280	2600	2900	3200

**842**

### Cork lining cement Type 1014

for gluing cork linings to band saw wheels

Item No.	842.250	842.500
Contents	250 gr.	650 gr.

**843**

### Band saw welding device

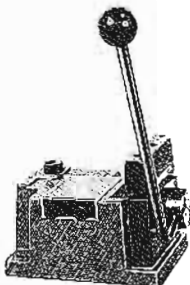
for blunt-welding of band saw blades and knives without solder and flux; fast welding of saw blades, lasting and high-strength joints, simple to operate, minimum of maintenance required.

For welding bimetal saw blades, welding devices can be equipped with an electronic heating attachment.

Available for voltages from 110 to 380 V, 50/60 cps, with additional transformer also up to 500 V, 50/60 cps.

Welding devices BSS 040 to BSS 060 must be equipped with water-cooled electrodes for welding tungsten-alloy saw blades.

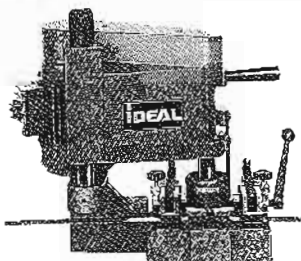
Type	Saw blades for		Wattage	Item No.			
	metal mm	wood mm		basic device	device w/shears	w/shears & grindg. attachmt.	w/heatg. attachmt.
BSS 016	6-12	3-16	2	-	843.016	843.017	843.018
BSS 025	6-19	4-25	3	-	843.025	843.026	843.027
BSS 040	6-27	6-40	4	843.040	843.041	843.042	843.043
BSS 050	6-34	6-50	8	843.050	-	-	843.051
BSS 060	6-34	6-60	8	843.060	-	-	843.061

**844**

### Shears for Item No. 843

The band shears have been especially developed for burless, straight and rectangular cuts guarantee clean cuts and no twisting. A clean and rectangular end is a prerequisite for immaculate butt welding.

Item No.	Type	For band width	For welding machine
844.025	AHM 025	up to 25 mm	BSS 016/025 (incl.)
844.040	AHM 040	up to 40 mm	BSS 040 (f. attachmt.)
844.050	AHE 050	up to 50 mm	BSS 050 (separate)
844.060	AHE 060	up to 60 mm	BSS 060 (separate)

**845**

### Grinding machines for Item No. 843

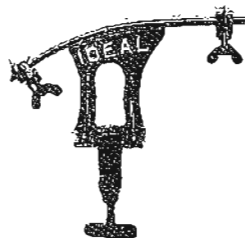
Filing devices and grinding machines are used for redressing blade welds. The grinding machine grinds the welds of butt welded blades or facets the blade ends for overlap soldering.

Item No.	Type	For band width	For welding machine
845.025	ESM 025	bis 25 mm	BSS 016/025 (available built-in)
845.040	ESM 040	bis 40 mm	BSS 040 (available built-in)
845.060	SMH 060	bis 60 mm	BSS 050/060 (separate available)

## Filing devices

for filing welds of butt welded blades and for faceting blade ends for overlap soldering.

Item No.	Type	For blade width
846.035	FAE 035	up to 35 mm
846.060	FAE 060	up to 60 mm



846

## Blade solder

Item No.	Description
847.089	Solder with flux 10 mm (1.4 mtr.)
847.270	Silver solder 10 mm (3 mtr)
847.280	Silver solder 15 mm (3 mtr)
847.290	Flux, 100 gr tin
847.295	Flux, 500 gr tin



847

## Setting device for band saw blades

### Type 1026

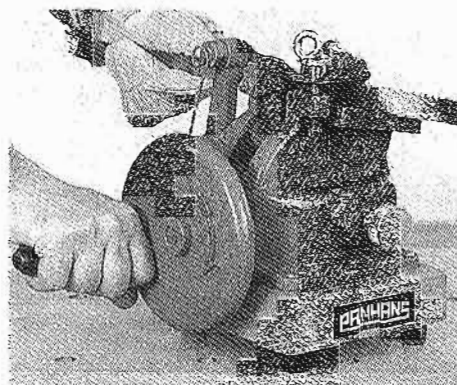
Item No. 848.001

For manual operation, for setting band saw blades with a width of 6 to 50 mm and tooth spacing of 2 to 24 mm.

Up to a tooth spacing of 12 mm, any second tooth can remain as a broaching tooth.

Accurate setting as the guide jaws automatically clamp the blade during setting. Any setting depth and width can be adjusted.

Net weight appr. 9.3 kg



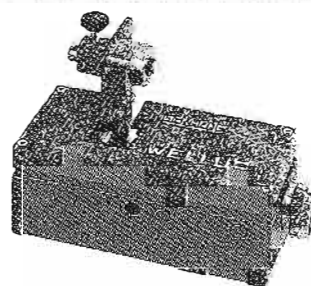
848

## Band saw blade setting and levelling device 'WELLUS'

for setting and resetting band saw blades (width 10 to 45 mm) on the sawing machine

Item No.	Type	Teeth spacing	Item No.	Spares
849.500	1500	up to 3 mm	849.504	1 Pair of rollers for No. 1500
849.501	1501	3 - 6 mm	849.505	1 Pair of rollers for No. 1501
849.502	1502 *	7 - 11 mm	849.506	1 Pair of rollers for No. 1502
849.503	1503	10 - 13 mm	849.507	1 Pair of rollers for No. 1503
			849.508	Roller holder w/2 knurled head screws
			849.510	Back roller with pin

\* standard version



849

## Band saw sharpening equipment

Item No. 850.001

### Type EL-R/B, table machine

Easy to adjust and operate: the machine passes over broken-off teeth, the device is fully enclosed, thus preventing the ingress of metal particles and dust.

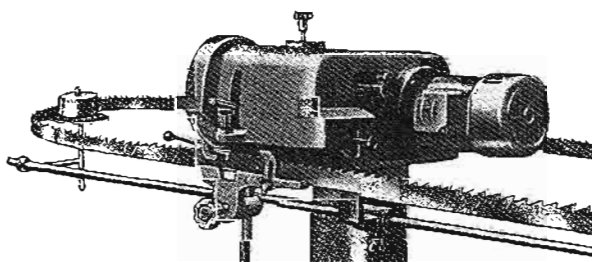
The machine is equipped with a three-phase motor in the standard-version. It can also be equipped with an AC motor at extra charge.

#### Technical data:

Band blades	up to 40 mm wide	Grinding disc dia.	150 mm
Tooth spacing	up to 30 mm	Power	0.37 kW-0.5 HP
Tooth height	up to 25 mm	Net weight	appr. 50 kg
Sharpening speed	65 teeth per min.		

#### Accessories available:

Item No.	Description
850.101	Fixing device for circular saw blades, dia. 100 to 600 mm, center hole dia. 15 to 45 mm
850.103	Machine stand with tool shelf, lockable main switch and band saw blade supports
850.104	Exhaustor compl.
850.105	Grinding disk, dia. 150 mm



850



**851****Plane blades in accordance with DIN 8828**

Uniformly hardened and annealed, all sides ground, straightened and perfectly straight cutting edge.

**Standard cross sections:** 30 x 3 mm or 35 x 3 mm

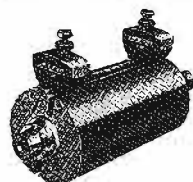
Available in **3 qualities:**

- 1) **DS:** of chrome-tungsten special steel
- 2) **HSS-18:** of HSS with 18 % tungsten
- 3) **HM:** carbide tipped blade



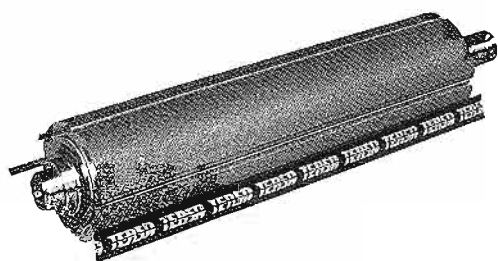
Length mm	Quality/Item No.						Length mm	Quality/Item No.					
	DS		HSS-18		HM			DS		HSS-18		HM	
	30 x 3 mm	35 x 3 mm	30 x 3 mm	35 x 3 mm	30 x 3 mm	35 x 3 mm		30 x 3 mm	35 x 3 mm	30 x 3 mm	35 x 3 mm	30 x 3 mm	35 x 3 mm
500	851.101	851.102	851.201	851.202	851.301	851.302	600	851.151	851.152	851.251	851.252	851.351	851.352
510	851.111	851.112	851.211	851.212	851.311	851.312	610	851.161	851.162	851.261	851.262	851.361	851.362
520	851.121	851.122	851.221	851.222	851.321	851.322	620	851.171	851.172	851.271	851.272	851.371	851.372
530	851.131	851.132	851.231	851.232	851.331	851.332	630	851.181	851.182	851.281	851.282	851.381	851.382
550	851.141	851.142	851.241	851.242	851.341	851.342	640	851.191	851.192	851.291	851.292	851.391	851.392

Other lengths and cross sections (25 x 3; 30 x 4, 35 x 4; 40 x 3; 40 x 4 mm) upon request!

**852****Magnetic quick-setting device for plane blades, adjustable**

Item No. 852.533

with strong magnets, blade projection can quickly be set to 1/10 mm thanks to a scale provided, suitable for all spindle diameters from 80 to 145 mm, two blade setters up to a total blade length of 610 mm are required; three setters should be used for blades over 620 mm long. 1 set comprises two setters in a wooden box.

**853****High-performance blade spindles 'TERSA'**

Swiss patent

diameter 125 mm, dynamically balanced, equipped with four blades and automatic setting, no tool is required.

The blades are exchanged within seconds - **without** setting/resetting or chucking.

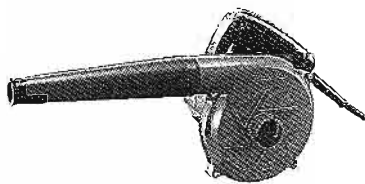
Planing width	410 mm	510 mm	520 mm	610 mm	630 mm	640 mm	810 mm
Item No.	853.013	853.014	853.015	853.016	853.024	853.017	853.018

Other widths upon request!

**Spare blades in 3 qualities:** standard, HSS & HM

Planing width	410 mm	510 mm	520 mm	610 mm	630 mm	640 mm	810 mm
Standard							
Item No.	853.113	853.114	853.115	853.116	853.124	853.117	853.118
HSS							
Item No.	853.213	853.214	853.215	853.216	853.224	853.217	853.218
HM							
Item No.	853.313	853.314	853.315	853.316	853.324	853.317	853.318

Other dimensions upon request!

**854****Electric blower/suction fan** Item No. 854.001

with 220 Volt motor, certified and fully insulated.

Current consumption of the motor 600 Watt

Speed 16000 rpm

Blower capacity 2.8 m<sup>3</sup>/min.

Weight 1.7 kg

The blower comes complete with rubber nozzle and dust catcher. The blower can be converted into a suction fan simply by attaching the nozzle to the other port.

**855****Wood moisture tester 'Aqua-Piccolo'**

Item No. 855.001

Measuring range: 6 to 28% wood moisture

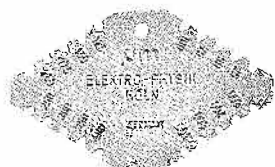
Electrodes: 4 needles with protective cap

Power source: 9 V battery

Size: length 12 cm, width 6,8 cm, height 3,4 cm

The needle-type electrodes which are protected by a cap are firmly attached to the instrument. When pressing the instrument against the piece to be measured, the cap automatically retracts into the housing, thus exposing the needles.

The measuring system with the electrodes are housed in a robust Novodur-housing. The instrument is controlled with a single knob and has a low battery indicator. **Also available with digital indicator!**

**856****Wet coating thickness measuring tool**

'Surfa-Test' Item No. 856.001

tools of stainless steel for fast and easy measurement of the thickness of wet paint coats. Tool is pressed to the base material, allowing the reading of the coat thickness at 16 different measuring points (between 25 and 800 µm (1 to 32 mils).

Other thickness measuring tools upon request!

## Cross-slotted wood screws (Spax-S screws)

wave cut

Flat head with Pozidriv-cross slots, hardened, electro-plated, self-tapping, easy to screw in (50 % less force is required), high tear-cut strength.

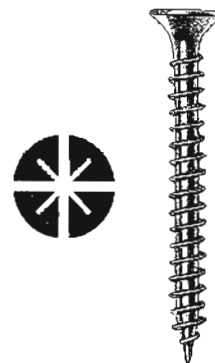
857

Length	Diameter/Item No.						
	2,5 mm	3,0 mm*	3,5 mm	4,0 mm	4,5 mm	5,0 mm	6,0 mm
PZ-size	1	1	2	2	2	2	3
12 mm	857.102	857.202	857.302	857.402	-	-	-
16 mm	857.105	857.205	857.305	857.405	857.505	-	-
20 mm	857.107	857.207	857.307	857.407	857.507	857.607	-
25 mm*	857.109	857.209	857.309	857.409	857.509	857.609	-
30 mm*	-	857.210	857.310	857.410	857.510	857.610	857.710
35 mm*	-	857.211	857.311	857.411	857.511	857.611	857.711
40 mm*	-	857.212	857.312	857.412	857.512	857.612	857.712
45 mm*	-	857.213	857.313	857.413	857.513	857.613	857.713
50 mm*	-	-	857.314	857.414	857.514	857.614	857.714
55 mm	-	-	-	857.415	857.515	857.615	857.715
60 mm	-	-	-	857.416	857.516	857.616	857.716
65 mm	-	-	-	857.417	-	857.617	-
70 mm	-	-	-	857.418	857.518	857.618	857.718
80 mm	-	-	-	857.419	857.519	857.619	857.719
Contains	1000 pcs.			500 pcs.		200 pcs.	

Length	Diameter/Item No.	
	5,0 mm	6,0 mm
PZ-size	2	3
90 mm	857.620	857.720
100 mm	857.621	857.721
110 mm	857.622	857.722
120 mm	857.623	857.723
130 mm	-	857.724
140 mm	-	857.725
150 mm	-	857.726
160 mm	-	857.727
180 mm	-	857.728
200 mm	-	857.729
220 mm	-	857.730
240 mm	-	857.731
260 mm	-	857.732
280 mm	-	857.733
300 mm	-	857.734
Contains	200 pcs.	100 pcs.

\* Upon request also with partial length thread; from 60 mm screws always with partial length thread!

Other designs, for example passivated, black finished, of brass or stainless steel, fillister head etc. are available upon request.



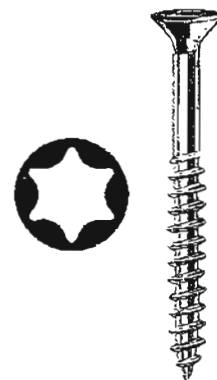
## TORX-wood screws

Flat-head wood screw with star-shaped Torx-head, galvanized, with partial thread, can be screwed in easily thanks to sharp thread and an anti-friction coating, the driving tool, even at high torques, will not tend to slip out of the screw head.

857A

Length	Diameter/Item No.					
	3,0 mm	3,5 mm	4,0 mm	4,5 mm	5,0 mm	6,0 mm
Torx-size	TX 10	TX 10	TX 20	TX 20	TX 25	TX 30
16 mm	857.911	857.921	857.931	-	-	-
20 mm	857.912	857.922	857.932	857.942	-	-
25 mm	857.913	857.923	857.933	857.943	-	-
30 mm	857.914	857.924	857.934	857.944	857.954	-
35 mm	857.915	857.925	857.935	857.945	857.955	-
40 mm	857.916	857.926	857.936	857.946	857.956	857.966
45 mm	-	857.927	857.937	857.947	857.957	857.967
50 mm	-	857.928	857.938	857.948	857.958	857.968
55 mm	-	-	-	-	857.959	-
60 mm	-	-	857.940	857.950	857.960	857.970
70 mm	-	-	857.941	857.951	857.961	857.971
Contains	1000 pcs.		500 pcs.		200 pcs.	

Length	Diameter/Item No.	
	5,0 mm	6,0 mm
Torx-size	TX 25	TX 30
80 mm	857.962	857.972
90 mm	857.963	857.973
100 mm	857.964	857.974
120 mm	857.965	857.975
140 mm	-	857.976
160 mm	-	857.977
180 mm	-	857.978
200 mm	-	857.979
220 mm	-	857.980
240 mm	-	857.981
Contains	200 pcs.	100 pcs.

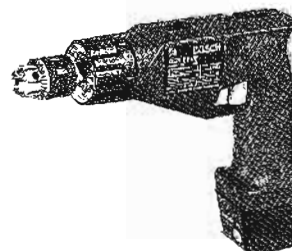


## Accumulator-powered screw-driver Item No. 858.001

Type GSR 9.6 VE-2 with charger, for screws up to 6 mm dia.

Nominal speed (speed 1) 0- 400 revs/min.  
 Nominal speed (speed 2) 0-1200 revs/min.  
 Torque setting 1-10 Nm (10 settings)  
 Holder 1/4" hex. recess  
 Accumulator voltage 9,6 V  
 Weight incl. accumulator 1.8 kg

With switch for changing the rotation (clockwise/anticlockwise), easy torque setting from outside, fully insulated.



858

## Accessory tools for electric screw drivers

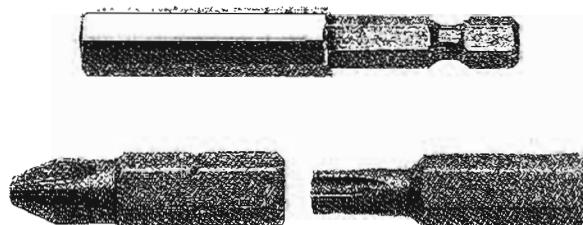
- 1) Universal holder with permanent magnet Item No. 859.001 with 1/4" hexagonal shank and 1/4" hexagonal recess
- 2) Screw-driver bits, 1/4" hexagonal shank

a) for SPAX Pozidriv screws

PZ-size	Item No.	
	25 mm long	50 mm long
1	859.101	859.201
2	859.102	859.202
3	859.103	859.203

b) for TORX-screws, length 25 mm

Torx-size	Item No.
TX 10	859.310
TX 20	859.320
TX 25	859.325
TX 30	859.330



859

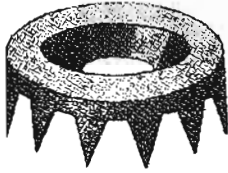
## Wood screws, with flat head in acc. with DIN 97

in all standard sizes.

Upon request!

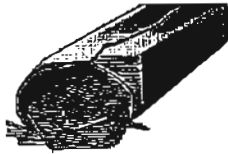
860



**861**

### Washers, toothed of steel

Item No.	861.005
Hole dia.	10 mm
Outside dia.	28 mm

**862**

### Jolted nails (wire nails)

Item No.	862.011	862.021	862.022	862.031	862.041	862.051	862.061	862.071	862.081	862.091
Thickness	0,6 mm	0,7 mm	0,7 mm	0,8 mm	0,9 mm	1,0 mm	1,2 mm	1,4 mm	1,6 mm	1,8 mm
Length	7 mm	7 mm	9 mm	11 mm	13 mm	15 mm	20 mm	25 mm	30 mm	35 mm
Package cont.	0,1 kg	0,5 kg	0,5 kg	0,5 kg	1,0 kg	1,0 kg	1,0 kg	1,0 kg	1,0 kg	2,5 kg

Item No.	862.101	862.111	862.112	862.121	862.131	862.132	862.141	862.151	862.152	862.161
Thickness	2,0 mm	2,2 mm	2,2 mm	2,5 mm	2,8 mm	2,8 mm	3,1 mm	3,4 mm	3,4 mm	3,8 mm
Length	40 mm	45 mm	50 mm	55 mm	60 mm	65 mm	70 mm	80 mm	90 mm	100 mm
Package cont.	2,5 kg	2,5 kg	2,5 kg	2,5 kg	2,5 kg	2,5 kg	5,0 kg	5,0 kg	5,0 kg	5,0 kg

**863**

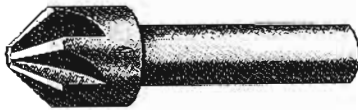
### Counter sinks 90° for woodworking with 8 mm straight shank and 7 cutting edges

Item No.	863.010	863.013	863.016	863.020	863.025	863.030
Diameter	10 mm	13 mm	16 mm	20 mm	25 mm	30 mm
Length	90 mm	100 mm	110 mm	120 mm	130 mm	140 mm

**864**

### Milling countersinks 90° for woodworking with 8 mm straight shank

Item No.	864.013	864.016	864.020
Diameter	13 mm	16 mm	20 mm
Length	90 mm	100 mm	105 mm

**865**

### Taper countersinks HSS 90° DIN 335 for iron and steel

Item No.	865.110	865.112	865.116	865.120	865.125	865.131
Diameter	10 mm	12,5 mm	16 mm	20 mm	25 mm	31,5 mm
Length	48 mm	48 mm	56 mm	60 mm	70 mm	80 mm
Shank dia.	8 mm	8 mm	10 mm	10 mm	12 mm	16 mm

**866**

### Countersinks SENKFIX HSS 90°

with straight shank and one cutting edge, for nearly all materials

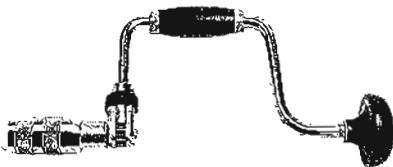
Item No.	866.106	866.108	866.110	866.112	866.116	866.120	866.125	866.130	866.140
Diameter	6 mm	8 mm	10 mm	12 mm	16 mm	20 mm	25 mm	30 mm	40 mm
Length	50 mm	50 mm	52 mm	60 mm	70 mm	85 mm	100 mm	100 mm	106 mm
Shank dia.	5 mm	6 mm	6 mm	8 mm	8 mm	10 mm	13 mm	13 mm	15 mm

**867**

### Countersinks TRISENKFIX HSS 90°

with straight shanks and three cutting edges, for nearly all materials

Item No.	867.106	867.108	867.110	867.111	867.115	867.119	867.125	867.130	867.140
Diameter	6 mm	8 mm	10 mm	11,5 mm	15 mm	19 mm	25 mm	30 mm	40 mm
Length	45 mm	50 mm	50 mm	56 mm	60 mm	63 mm	67 mm	71 mm	80 mm
Shank dia.	5 mm	6 mm	6 mm	8 mm	10 mm	10 mm	10 mm	12 mm	15 mm

**868**

### Braces with ball bearing and annular ratchet

Item No.	868.918	868.920
Chuck	2 jaws	4 jaws

Spare jaws are also available!

**869**

### Set of Alla wrenches with key ring

Item No. 869.001

angle-shaped shaft, fully hardened, chrome-vanadium steel, nickel-plated

Contents: Set comprises 1 key of size 2-2,5-3-4-5-6-8-10 mm

## Screw drivers

with hexagonal neck shank in accordance with DIN 5265, blade of special steel, fully hardened and nickel-plated, with extra large striking butt, wooden handle, brown varnished.

Item No.	870.075	870.100	870.125	870.150	870.175	870.200	870.250
Blade size mm	3,5 x 75	5,5 x 100	7 x 125	9 x 150	10 x 175	11 x 200	13 x 250
Total length mm	175	210	240	270	295	330	380



870

## Cross-slotted screw driver for Pozidriv cross-slotted screws

with hexagonal neck shank, wooden handle and extra large striking butt, handle green varnished.

Item No.	871.001	871.002	871.003
PZ-Size	1	2	3
For screw diameter	2 - 3 mm	3,5 - 5 mm	5,5 - 7 mm
Blade length	80 mm	100 mm	150 mm
Total length	185 mm	215 mm	270 mm



871

## Piercer

of chrome-vanadium steel, fine polished, with large striking butt, wooden handle varnished, riveted through collar.

Item No.	Piercer type	Piercer size
872.516	round	dia. 6 mm x 85 mm
872.520	square	7 x 7 x 110 mm



872

## Center punches Item No. 873.001

octagonal, extra quality, 120 mm long, 10 mm thick.



873

## Drift punches

octagonal, extra quality, 120 mm long, 10 mm thick.

Item No.	874.001	874.002	874.003	874.004	874.005	874.006
Diameter	1 mm	2 mm	3 mm	4 mm	5 mm	6 mm



874

## Pin punches

octagonal, of chrome-vanadium, 150 mm long, 10 mm thick.

Item No.	875.002	875.003	875.004	875.005	875.006	875.008	875.010
Diameter	2 mm	3 mm	4 mm	5 mm	6 mm	8 mm	10 mm



875

## Cutting pliers heavy-duty version, head-polished.

Item No.	094.001	094.002	094.003	094.004
Length	160 mm	180 mm	200 mm	230 mm

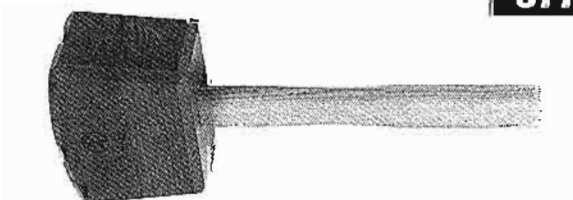


876

## Ulmia carpenter's mallets

of heavy beech, oval handle, glued and wedged up.

Item No.	877.001	877.002	877.003
Mallet size	105 x 65 mm	140 x 80 mm	160 x 85 mm
Head height	80 mm	110 mm	120 mm
Total length	300 mm	375 mm	385 mm

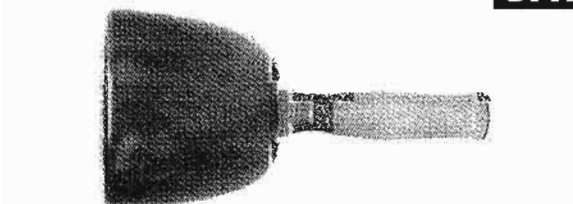


877

## Ulmia carving mallets

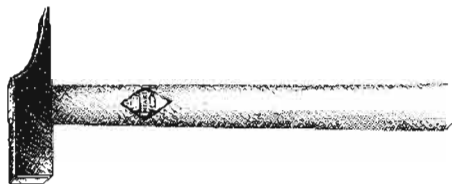
of hard white beech, oval handle, glued and wedged up.

Item No.	877.101	877.102	877.103
Diameter	100 mm	120 mm	140 mm
Head height	90 mm	100 mm	110 mm
Total length	225 mm	230 mm	235 mm



877A

**878**



**Carpenter's hammers** with ash handle

Item No.	878.016	878.018	878.020	878.022	878.025	878.028	878.030
Thickness	16 mm	18 mm	20 mm	22 mm	25 mm	28 mm	30 mm
Weight appr.	100 g	140 g	190 g	230 g	320 g	400 g	520 g

**879**



**Fitter's hammers** with ash handle

Item No.	131.020	131.030	131.040	131.050	131.060	131.080	131.100	131.150	131.200
Hammer weight gr.	200	300	400	500	600	800	1000	1500	2000
Handle length cm.	28	30	32	32	33	35	36	38	40

**880**



**Metal wedges SFIX (hammer wedges)**

for fast and firm attachment of hammer heads to handles

Item No.	150.001	150.002	150.003	150.004	150.005	150.006
Size	00	0	1	2	3	4
For handle length cm	28	30	31 - 33	35	36 - 38	40
Wedge width mm	13	16	20	23	26	29

**881**



**Hammer handles of ash**

Item No.	148.026	148.028	148.030	148.032	148.035	148.036	148.038	148.040
Length cm	26	28	30	32	35	36	38	40
For hammer weight gr.	100	200	300	500	800	1000	1500	2000
Head size mm	17 x 10	19 x 11	21 x 12	26 x 15	29 x 17	31 x 18	33 x 20	37 x 22

**882**



**THURA flexible handles, DIN 5111/12**

nearly unbreakable, durability 15 to 20 times of conventional handles

Item No.	149.026	149.028	149.030	149.032	149.033	149.035	149.036	149.038	149.040
Length cm	26	28	30	32	33	35	36	38	40
For hammer gr.	100	200	300	500	600	800	1000	1500	2000
Head size mm.	17 x 10	19 x 11	21 x 12	26 x 15	28 x 16	29 x 17	31 x 18	33 x 20	37 x 22

**883**



**Simplex soft headed hammers with malleable cast-iron housing,**

replaceable hammer elements and amazonas wood handle

The following elements are available in all combinations:

- TPE-soft rubber, blue (soft)
- Rubber compound, black (medium hard)
- Super plastic, white (medium hard)
- Plastic, red (hard)
- Nylon, white (extremely hard)
- Soft metal, silver (high inertia)

Size = Head dia.	Head length	Hammer length	Type/Item No.											
			TPE-soft		Rubber compound		Super plastic		Plastic		Nylon		Soft metal	
			compl.	insert	compl.	insert	compl.	insert	compl.	insert	compl.	insert	compl.	insert
30 mm	90	300 mm	124.003	124.030	124.203	124.230	124.403	124.430	124.503	124.530	124.603	124.630	124.703	124.730
40 mm	110	310 mm	124.004	124.040	124.204	124.240	124.404	124.440	124.504	124.540	124.604	124.640	124.704	124.740
50 mm	135	350 mm	124.005	124.050	124.205	124.250	124.405	124.450	124.505	124.550	124.605	124.650	124.705	124.750
60 mm	145	405 mm	124.006	124.060	124.206	124.260	124.406	124.460	124.506	124.560	124.606	124.660	124.706	124.760
80 mm	175	490 mm	-	-	124.208	124.280	124.408	124.480	-	-	124.608	124.680	124.708	124.780

**884**



**Hand brooms**

with wood handle

Item No.	105.001	105.002
Material	horsehair	coco fibers

**885**

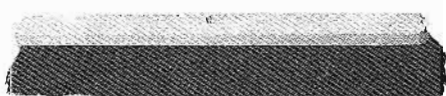


**Workshop broom**

square shape. bristle length 90 mm. 5 rows. wood base 310 x 65 mm

Item No.	106.001	106.002
Material	horsehair	coco fibers

**886**



**Workshop broom, narrow shape**

- 1) with fine, black-grey fibers (Arenga), similar to coco fibers
- 2) with bright red, smooth plastic bristles (Elaston)

Width	40	50	60	80	100 cm
Material	Item No.				
Arenga	106.201	106.202	106.203	106.204	106.205
Elaston	106.301	106.302	106.303	-	-

## Broom handles

1400 x 24 mm, ash, with round head

Item No. 147.001

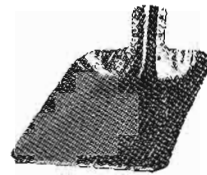
887

## Lightweight rim shovels

of hard aluminium, stainless, very light, strong as steel. with or without protective edge of steel.

888

Item No.	Description	Size	Shovel size	Steel prot edge	Weight		
140.201	Rim shovel	5	340 x 270 mm	without	0,70 kg		
140.202				with	0,75 kg		
140.203	Halle-rim shovel	7	340 x 325 mm	without	0,80 kg		
140.204				with	0,85 kg		
140.205				9	380 x 380 mm	without	0,95 kg
140.206						with	1,00 kg



### Spares available:

steel protective edges, galvanized, with holes and rivets

## Shovel handles (long handle)

130 cm long, curved beech, with round head

Item No. 142.001

889



## D-shovel handles

85 cm long, curved, beech

Item No. 143.001

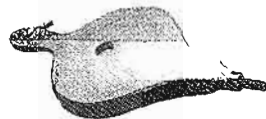
890



## Bellows

Design	Pear-shaped, of hard wood, covered w./calf leather			cyl. shape
Size	200 x 280 mm	220 x 320 mm	250 x 360 mm	∅ 80 x 500 mm lg.
Item No.	115.101	115.102	115.103	115.201

891



Pear-shaped



cyl. shape

## Steel wire hand brushes

round wire, dia. 0,30 - 0,35 mm, length of steel wires 25 mm, area of steel wires 150 mm, wood slightly curved

892

Item No.	244.592	244.593	244.594	244.595	244.596
No. of rows	2	3	4	5	6
Width mm	22	30	35	40	45



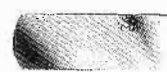
## Scrapers, in a special quality

Item No.	893.106	893.108	893.110	893.208	893.308
Shape		square		hollow/round	gooseneckshape
Size		150 x 60 mm		150 x 50 mm	120 x 70 mm
Thickness	0,6 mm	0,8 mm	1,0 mm	0,8 mm	0,8 mm

893



893.108



893.208



893.308

## Scraper steels with polished handle, steel length 120 mm

Item No.	894.914	894.915	894.916
Shape	oval	round	triangular

894



894.916

**895****Smothers (No. 602) of hardened steel**

with flat, oval wooden handles

Item No.	895.002	895.004	895.006	895.008	895.010	895.012
Width	2 cm	4 cm	6 cm	8 cm	10 cm	12 cm

**896****Smothers** of thin spring steel

Design	Compl. set	Individual smothers			
	5, 8, 10, 12 cm	5 cm	8 cm	10 cm	12 cm
Item No.	896.001	896.005	896.008	896.010	896.012

**897****Smothers No. 591**

with flexible blades

Item No.	897.00E	897.010	897.014	897.020
Width	6 mm	10 mm	14 mm	20 mm

**898****Sleekers of steel with strong blades**  
(Length L = overall length)**1) Spoon-type sleekers**

Item No.	Sleeker size mm	L = mm	Spoon size mm
082.113	90 x 37	275	85 x 30
082.115	80 x 32	250	75 x 25
082.117	70 x 27	230	70 x 23
082.117A	70 x 27	230	65 x 23
082.119	65 x 25	220	65 x 21
082.119A	55 x 19	205	55 x 18
082.121	50 x 18	190	55 x 17
082.121A	50 x 18	190	33 x 23
069.024	30 x 12	150	30 x 12
069.024A	30 x 13	150	35 x 11
089.025	45 x 15	160	30 x 14

**2) Showel-type sleekers**

Item No.	Sleeker size mm	L = mm	Spoon size mm
082.112	90 x 37	275	75 x 35
082.114	80 x 32	250	65 x 31
082.116	70 x 27	230	60 x 27
082.118	65 x 25	230	57 x 25
082.118A	55 x 20	205	55 x 18
082.120	50 x 18	190	45 x 12
082.120A	50 x 18	190	40 x 16

**899****Ulmia glue scrapers** Item No. 899.001

with adjustable blade, red beech handle with tension bolt, blade width 80 mm, total length 350 mm.

Spare blade: Item No. 899.100

**900****Halogen magnetic lamps**

with flexible arm, Item No. 109.001

with prot. glass, special reflectors, total length 600 mm, reflector dia. 70 mm with a 12 Volt/20 Watt halogen bulb, built-in transformer and clamping attachment. Can be connected to the mains (230 Volt. 50 cps).

**902****Carpenter's lead pencil** Item No. 902.001

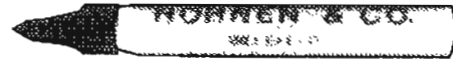
red varnished, for writing on dry wood, oval shape, medium-hardness graphite lead, length 18 cm.

## Felt-tip pens

1) Uni Prockey with wedge, shaped for 3 lettering widths (3 – 6 mm), **water-based ink**, for nearly all surfaces. intensive colour, waterproof, odorless

Item No.	903.001	903.002	903.003	903.004
Colour	black	red	blue	green

2) Type 'hocobie' **Item No. 903.010** with metal housing and plastic cap, fast to wiping, with round fine tip, colour: black



903

## Oil marking crayon

One box contains 12 crayons of each colour  
High **oil content**, in non-fading bright colours.  
Especially suitable for writing on **cold** and **hot iron**, on dry and wet wood and rough surfaces.

Item No.	904.001	904.002	904.003	904.004
Colour	blue	yellow	red	white



904

## Varnish pens UNI-Paint

package contains 6 pens fully covering, also white on black, adheres to nearly all materials, even to glass and china, fast drying, **resistant to water**, can only be attacked by leaches and spirit, nonfading

Type	Line width	Colour/Item No.				
		white	black	yellow	green	red
PX 20	2-3 mm	905.101	905.102	905.103	905.104	905.105
PX 21	1-1.5 mm	905.201	905.202	905.203	905.204	905.205



905

## Pen for writing on metal surfaces

**Item No. 906.001**

Plastic pen with two refills containing etching ink, with protective cap and clip. The etching ink begin to flow as soon as the point of the pen touches the metal surface; it immediately turns black, leaving an indelible mark on the metal (can be removed by means of grinding cloth). For writing on steel, copper, nickel, tin, lead, non-ferrous metal alloys (with the exception of aluminium) and stainless steels. Especially suitable for hardened materials and thinwalled sensitive metal surfaces, for example foils.

Spare refill **(Item No. 906.002)**



906

## Protective footwear 'Atlas' (acc. EN 345)

### Ergotex: functional lining



All items marked by 'Ergotex' have a new, breathing lining. It doesn't store humidity and will dry very quickly.

#### 1. Nevada 450

acc. DIN EN 345 S2, very lightweight, brown, trekking-design, oiled Bukleather. Power Point-system, **new Ergotex-lining**, for comfortable wearing, sole of PU

heat resistant up to 100°C

#### 2. Ergotex 400

acc. DIN EN 345 S1, solid neat-leather, petrol, velcro-fastening, ring and tongue stuffed, leather-lining, leather sole, steel cap, orthopaedic insole, round heel. Power Point-system, sole of PU

heat resistant up to 100°C

#### 3. Ergotex 450

acc. DIN EN 345 S2, waterproof-leather, black, ring and tongue stuffed, leather-lining, leather sole, steel cap, orthopaedic insole, **new Ergotex-lining**, round heel, Power Point-system, sole of PU

heat resistant up to 100°C

#### 4. Ergotex 480

acc. DIN EN 345 S2, **this shoe is similar to Ergotex 450, but has the cut- and metal-chip-resisting DUOSOFT sole**

heat resistant up to 200°C

### Power Point



All models have the articulation-save 'Power Point'-damping system. The step will be calmed effectfully and this guarantees a comfortable work all the day.



Nevada 450



Ergotex 400



Ergotex 450



Ergotex 480

907

Type	System of Item Nos.								
	Size 39	Size 40	Size 41	Size 42	Size 43	Size 44	Size 45	Size 46	Size 47
1)	396.139	396.140	396.141	396.142	396.143	396.144	396.145	396.146	396.147
2)	396.239	396.240	396.241	396.242	396.243	396.244	396.245	396.246	396.247
3)	396.339	396.340	396.341	396.342	396.343	396.344	396.345	396.346	396.347
4)	396.439	396.440	396.441	396.442	396.443	396.444	396.445	396.446	396.447

Other sizes and models on request!



**908**

### Protective goggles of plastic, Model Perlex

strong, indestructible, flexible, heat resistant, excellent protection against splatters and sparks, glass size 60 x 25 mm, with easily replaceable side protectors and glasses.

Model	Frame design	Glasses/Item No.	
		Polycarb. glasses 2 mm thick, colourless	shatterproof glasses colourless
1425	not adjustable	375.101	375.201
1427	length adjustable	375.301	375.401
Pair of spare glasses		375.501	375.601
Pair of side protectors		375.701	

Other glasses upon request!

**909**

5524

5527

### Swing-up protective shields

of crystal-clear plastic, flame-resistant, excellent protection against chips, splinters and splatters. Head band of vulcanized fiber with soft foam padding, shield easily exchangeable.

Shield 46 cm wide and 29 cm high, thickness 1 mm.

Item No.	Model	Description
389.001	5524	standard model
389.002	5527	with additional dust hood
389.101		spare shield (standard model)

**910**

8710 E

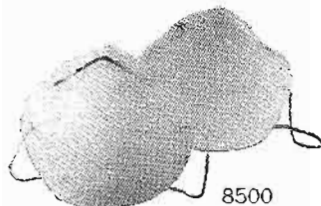
### Particle filter masks of fleecy

no protection against gasses and vapours

**Model 8710-E (Item No. 391.002)**

degree of protection: FFP1 (EN 149), very light (8 gr. only), comfortable, easy to use, no restriction of sight, hygienic, inexpensive.

Carton contains 20 masks

**910A**

8500

### Mouth protection mask Model 8500 Item No. 391.001

Protection against coarse dust only, no protection against gasses and vapours

**Model 8500 (Item No. 391.001)**

Superlight (4 gr. only), non-restricting, hygienic, kind to the skin, inexpensive.

**911**

### Rubber-5-finger gloves Type 720

medium-duty design, appr. 300 mm long, inner surface of glove velourized dark grey, resistant against many organic and inorganic acids, oils and grease

Good flexibility at low temperature, heat resistant up to appr. 120°C.

Item No.	366.307	366.308	366.309	366.310	366.311
Size	7	8	9	10	11

**912**

### Disposable gloves, transparent

men's size, appr. 29 cm long, package contains 100 pieces

a) Item No. 912.001 of polyethylene (light, thin)

b) Item No. 912.101 of latex (strong, op.-room quality, skin-tight)

**913**

### Disposable overall, Item No. 913.001

with zip, tough and strong quality, can be used several times

Other protective clothing upon request!

**914**

### Canvas aprons

red-brown, with bib, size 80 x 100 mm

Item No.	371.001	371.002
Design	standard	belly with leather patch

## Silver lubricant Item No. 915.001

lubricant for woodworking machinery.

Apply with a cloth, thin with petroleum (if required), in 1 kg tins.

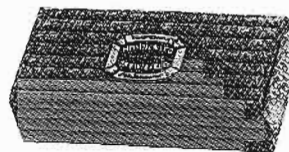


915

## Plasticine (modeling compound)

non-toxic, temperature resistant, non smearing, in 250 gr. bars (red also in 1 kg bars)

Item No.	916.001	916.002	916.003	916.004	916.005	916.006	916.007	916.008	916.009	916.101
Colour	green	brown	yellow	blue	red	grey	black	white	violet	red (a 1 kg)



916

## Industry plasticine (Design Clay) Item No. 916.201

inherently stable modeling compound. after heating to 50° – 60°C soft and pliable. between – 30° to + 40°C absolutely stable, surfaces can be smoothed after cooling, even plaster casts can be made from the original pattern, therefore also ideal for rapid prototyping, in 2,3 kg packages.



916A

## Super-plasticine

considerably softer and of greater plasticity than the standard plasticine, excellent workability, in 650 gr. bars (complete carton contains 32 bars)

Item No.	917.001	917.002
Colour	yellow	red



917

## Highly heat-resisting plasticine

beige modeling compound for use with silicones and elastomers which set at 105 to 115°C. Can be set to two different degrees of hardness (very soft/hard).

Item No.	917.101	917.102	917.103
Weight/stick	0,5	1,0	5,0 kg



917A

## Casting and modeling wax

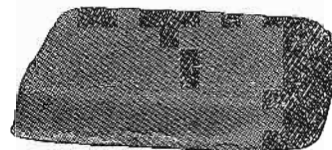
### 1) CARA-CM 6 Item No. 426.006

dark brown, ideal for fine and light modeling, does not stick to the fingers, molten wax settles easily and should thus be stirred constantly. Melting point 72,5 °C. processing temperature 40 to 45 °C. shrinkage 0,8 %

### 2) CARA-CUC 17 Item No. 426.017

dark brown, opaque, burns without residues. specially for fine details. Can be poured or sprayed. Selected raw materials guarantee constant toughness and plasticity even after long storage times, melting point 71,1 °C

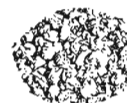
Other waxes upon request



918

## Beeswax Item No. 919.001

prime quality, refined for repairing and reconditioning patterns, granulated



919

## Aluminium paste Silver Ink T 1005

Parting compound for cold-box and CO<sub>2</sub>-method, easy mould removal, apply by dabbing or spraying

Product	Contents/Item No.			
	1 kg	5 kg	25 kg	50 kg
Silver Ink	447.001	447.002	-	447.003
Solvent	447.101	447.102	447.103	-



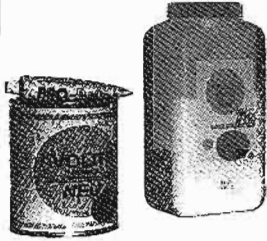
920

## Turner's pitch Item No. 921.001

brown, in pieces of 250 gr.



921

**922****Repair compound AVOLITH** 3-components

for repairing shrinkage holes or weldings, may be used as filler or primer.

The pourable or brushable AVOLITH liquids becomes pasty after adding max. 10 parts of AVOLITH-powder. Viscosity may be varied by changing the quantity of powder. To harden mixture 2 – 3 % catalyst paste must be added and mixed thoroughly – avoid air-inclusions – until the colour becomes homogenous. Working time 3 to 5 min., machinable after 20 or 30 min.

Item	Max. cp. = 3-comp.	Liquid (1,5 l)	Powder (0,2 kg)	Catalyst (35 gr.)
Item No.	433.001	433.002	433.003	433.004

**923****Aluminium soft solder** in rods

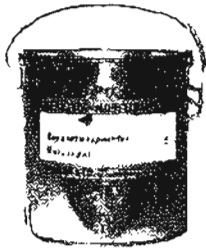
Item No. 432.001 melting point 190 to 320°

For filling holes and flaws in light metal castings; heat joint to over 300°, then ream to achieve a permanent joint. Tool diameter appr. 6 mm, length appr. 50 cm, weight appr. 100 gr.

**924****Filling compound Atlas S 476**

dark grey filling compound in paste form for the elimination of casting and surface defects on metal and plastic parts. Convenient processing, quick setting, strong adhesion to metal, excellent mechanical strength values after curing. By adding suitable colouring material the metal-like colour can be matched to the individual workpiece. Appr. processing time of mixture 5 to 10 min., mechanical processing possible after 10 to 20 min.

Item	Fill. comp. (1 kg without hardener)	Hardener paste (28 gr.)
Item No.	433.300	433.301

**925****Multi-purpose repair mastic 'Airo'**

2-component compound, excellent bond with metal, wood, plastic, can be applied in any layer thickness, pore-free, manufactured under vacuum, addition of setting agent appr. 2 %, pot time 4 to 6 min., polishable after appr. 20 min.

Item No.	Type	Prop.	Size
925.001	airo-elastic	grey filler	2,5 kg incl.hardener
925.002	airo-plastic	white filler	2,5 kg incl.hardener
925.004	airo-fix-Polyester	clear polyester-resin	2,5 kg incl.hardener
925.101	airo-hardener	red	50 gr.
925.102	airo-hardener	white	50 gr.

**926****Wood mastic 'MS/PK-L', colourless**

1-component mastic, for amending flaws and for fillets

(various types of wood are available) in 0,88 kg tins  
Thinner 'MS 50 C' in 1 l tin bottles

Item No. 926.001  
Item No. 926.002

**927****Aluminium plastic 'Superior'** Item No. 434.091

2-component mastic, metal powder with setting agent, pourable and smoothable in any layer thickness, polishable, metal content 96 %. for machined and unmachined aluminium, sets after 20 to 30 min., temperature-resistant up to appr. 200°C

Complete package of 1,5 kg (1,15 kg powder & 0,35 kg setting agent)

**928****Aluminium mastic 'Alu Superior'** Item No. 434.260

1-component mastic, ready for use

temperature-resistant up to 500°C, for repairing aluminium castings, well polishable, excellent matching to metal, metal content 90 %

in 1 kg tins

Special thinner: 0,5 l tins Item No. 434.270

**929****WOLEX plastic metal** 2-component mastic Type AL

Quick drying plastic metal for repairing cavities and flaws as well as for making small patterns, high compressive strength, temperature resistant up to appr. 150°C  
Can be worked as metal; depending on addition of powder, can be poured or worked with a spatula

Type AL – for aluminium Item No. 433.403

Complete package comprising 0,65 kg powder and 0,35 kg setting agent





**929A****Super-Metal silver**

2-component Plastic mastic containing aluminium, for repairing aluminium or iron castings, in body repair, welding seams can be covered and smoothed

In 1,4 kg packages incl. setting agent Item No. 929.001




**ELGO-fillet mastics**, 2-component compounds**930**

each packing complete with hardener


Product	Properties/Application	Packing
ELGO-Plastic (MB)	red-brown, for universal application as fillet mastic and for PU-plates <b>Item No. 930.001</b>	3 kg 
ELGO-Plastic (HP)	a little bit more bright and fine than type MB <b>Item No. 930.201</b>	3 kg 
ELGO-Lightplastic (LP)	cream-coloured mastic of high density and low weight; very easy machinable, tool saving <b>Item No. 930.203</b>	3 kg 
ELGO-filling plastic (FP)	very fine, easy to model material esp. fitting for large fillets, abrasion resistant surface <b>Item No. 930.204</b>	20 kg
ELGO-hardeners	red <b>Item No. 930.101</b> white <b>Item No. 930.102</b>	60 gr tubes 60 gr tubes 

**ELGO-quick-setting Polyester-mastics**, 2-component compounds**931**

each packing complete with hardener, for universal applications

Product	Properties/Applications	Packing
ELGO-Plastic soft/beige	compact material with easy machinable surface; for pattern-plates, mould-construction a.s.o. <b>Item No. 931.001</b>	2,5 kg 
ELGO-Plastic white	as the type soft/beige, but with a harder surface <b>Item No. 931.101</b>	2,5 kg 
ELGO-hardeners	red <b>Item No. 930.101</b> white <b>Item No. 930.102</b>	60 gr tubes 60 gr tubes 

**Combi mastics**, 1-component compound**932**

Colour	Properties/Application	Packing
reddish grey/green	fine mastic for small grooves or uneven areas on metal wood; drying on air depending on thickness after 30 – 60 minutes <b>Item No. 932.001</b> <b>Item No. 932.101</b>	2 kg 2 kg 

## 933 Pattern varnish VIETOR

Description	Properties	Colours	Container size/Item No.		
			1 ltr.	2,5 ltr.	5 ltr.
Vitolux-pattern varnish B 33	Quick-drying; excellent smoothing properties, easy removal of moulds, good protection of patterns and core boxes. First prime the pattern with primer 10.108 red or grey, then paint or spray twice with B 33. Please respect a drying time of 2 or 3 hours before painting the second time. For spraying use 5 to 10 % of dilution 10.009.	red	933.111	-	933.115
		blue	933.121	-	933.125
		colourless	933.131	933.135	-
		green	933.141	-	933.145
		yellow	933.151	-	933.155
		violet	933.161	-	933.165
		black	933.171	-	933.175
		grey	933.181	-	933.185
		white	933.191	-	933.195
Vitolux-pattern varnish B 33 G 10/A	Similar to B 33, with additional parting properties, esp. for cold-setting mould and core sand binders and batch production patterns.	silver-red silver-blue	933.311 933.321	- -	933.315 933.325
Vitolux-pattern varnish B 85 E	Additional layer giving high chemical resistance, f. ex. for Beta-Set, sodium-silicate/ester or similar processes; highly abrasion-proof.	colourless	933.201	-	-
Vitolux-primer 10.108	Quick-drying & setting, excellent smoothing properties, well polishable.	red	933.411	-	933.415
		grey	933.412	-	933.425
Vitolux-core box varnish 11.108	For unvarnished outside surfaces of patterns and core boxes, protection against moisture and dirt.	yellowish	-	933.602	-
Vitolux-core box varnish, water-based	as 11.108, but <b>water-soluble</b>	yellowish	-	933.603	-
Vitolux-foam primer	Quick-drying primer for closing pores and strengthening the surface. Painting then with B 33 will allow repeated demoulding.	yellow	-	933.702	-
Vitopal-pattern and sand hopper paint	Highly abrasion-proof 2-component paint (epoxy resin based)	red-brwn	0,50 l varnish (933.651) + 0,23 l harden (933.652)		
			0.73 l cpl. (933.650)		

## 933A VIETOR-mastics

Description	Properties	Colours	Container size/Item No.		
			1 kg	1,5 kg	1,5 ltr.
Vitolux-fillet mastic 11.401	1-component mastic, easy to use, excellent bond, no cracking, minimal shrinkage, quick drying (1 hr per 1 mm radius), suitable for wood, metal and resin patterns.	beige	933.002	-	933.001
Vitolux-surfacer 11.201	1-component mastic applied by drawing, quick drying, excell. bond, for small uneven areas. polishable after 10 to 20 min.	beige	-	-	933.010
Vitolux-2-compound-mastic	Suitable for filling uneven surfaces and for reparations of patterns, core-boxes made of wood, cast-iron, aluminium or resin.	beige	933.952	-	-
Vitolux-2-compound pattern paste	Suitable for filling uneven surfaces, for modelling and moulding, easy machinable.	brown	-	933.951	-

## 933B VIETOR-dilution

Description	Properties	Colour	Container size/Item No.			
			1 ltr.	5 ltr.	10 ltr.	25 ltr.
Vitolux-dilution 10.009	For Vitolux B 33 and B 33 G 10/A.	colourless	933.501	933.505	933.510	933.525

## 933C VIETOR-release agents

Description	Properties	Colours	Container size/Item No.			
			1 ltr.	5 ltr.	10 ltr.	25 ltr.
Vitofix-H parting & cleaning compound	Quick-drying parting & cleaning compound for easy removal and cleaning of patterns and core boxes.	reddish	933.751	933.755	933.760	933.775
Vitol-Silver 4/G parting & antifricition compound	Quick-drying parting & lubricating compound for easy removal of moulds, esp. of cold-setting (phenolic/furan resin) sands.	silver	-	933.805	933.810	933.825
Vitolux-release agent T	Release and cleaning compound for resins, moulding and core-making, highly heat resistant (ab. 115°C), outstanding polishable.	milky	933.900	-	-	-

## Grinding disk adhesive

should be applied thinly, quick-drying, abrasive paper sits smoothly on the grinding disk, can be removed like an adhesive plaster, so solvent required, metal disk does not have to be replaced.

- 1) **Standard quality:** Item No. 934.101 in 750 cc tins  
 Item No. 934.102 in 3,5 kg buckets

Thinner: Item No. 934.301 in 1 kg tins

- 2) **Super-quality:** Item No. 934.201 in 860 cc tins  
 only to be thinned with water



934

## Grinding disk adhesive spray

(No. 8054 E)

spray on a very thin layer, very economical

Item No. 935.001 in 200 ml spray tins

Item No. 935.101 adhesive remover 1 ltr.



935

## Cold glue for wood

in 10 kg buckets

white, quick-setting wood glue

Item No.	936.001	936.002	936.003
Type	Ponal-Expreß	Keimfix-S	Keimfix-Aqua (water proof)

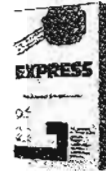


936

## Stabilit-Express quick-setting adhesive

two-component adhesive for metal, polystyrene, plastics, wood and other hard materials

Item No.	937.001	937.002
Contents	30 gr	80 gr



937

## HOCO-quick setting adhesive (Cyanacrylat)

Type	Viscosity	Contents	Item No.	Spare nozzle
HC 1	thin	25 gr	937.125	937.325
		50 gr	937.150	
HC 2	viscous	25 gr	937.225	
		30 gr	937.250	

For special cases other types of adhesives are available. Please inquire!

- a) **HOCO-activator-spray** for the above adhesive Item No. 937.300 accelerates setting, for example at low temperatures, large gaps or inactive surfaces (plastics, steel, aluminium) in spray tins containing 150 ml



937A

## Polystyrene adhesive 'technicoll' No. 8153

for foam models, ash content < 1 %

Item No.	938.006	938.080	938.220
Contents	650 gr	8 kg	22 kg

Adhesive remover = 'technicoll' No. 8363

Item No.	938.506	938.570	938.700
Contents	675 gr	7 kg	20 kg



938

## Polystyrene adhesive

tesa 57064

Item No. 938.901 in 500 cc spray tins



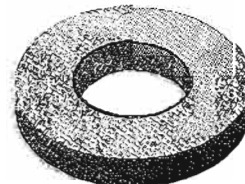
938A

## Adhesive tape for polystyrene pattern

for covering gaps, grooves and joints on polystyrene patterns of all kinds, vaporizes without residues, non absorbing coating, high tensile strength, 0,07 mm thick only.

Rolls with 18 m tape

Item No.	939.012	939.018	939.024
Width	12 mm	18 mm	24 mm



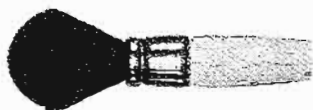
939

**940****Toothed scrapers** Item No. 940.001

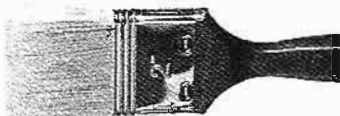
of high-quality polypropylene, unbreakable, especially for applying adhesive, 13.7 cm wide

**940A****Smoother** Item No. 940.101

made of high-quality PP, unbreakable, for smoothing and priming works, width 11,5 cm

**941**

665



910

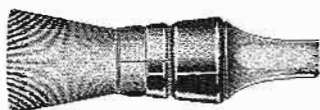
**Varnish brushes**

1) Type 665, prime dark neathair, round, nickel collar

Item No.	941.102	941.104	941.106	941.108	941.110	941.112	941.114	941.116	941.118
Size	2	4	6	8	10	12	14	16	18
Dia.	8.5 mm	10 mm	13 mm	17 mm	20 mm	23 mm	25 mm	29 mm	32 mm
Bristle lg.	22 mm	25 mm	31 mm	37 mm	43 mm	46 mm	51 mm	53 mm	56 mm

2) Type 910, white bristles, flat, raw handle

Item No.	941.210	941.215	941.220	941.225	941.230	941.235	941.240
Width	1"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"
Bristle len.	37 mm	45 mm	45 mm	52 mm	56 mm	60 mm	60 mm

**942****Glue brushes** Type 1420, pale yellow bristles

Item No.	942.108	942.110	942.112	942.114	942.116
Size	8	10	12	14	16
Dia.	17 mm	20 mm	23 mm	25 mm	29 mm
Bristle len.	45 mm	47 mm	50 mm	55 mm	60 mm

**943****Annular brushes** Type 1040

standard bristles, with plastic collar

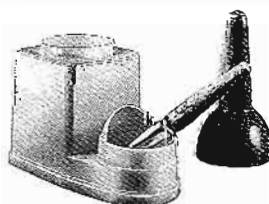
Item No.	100.102	100.104	100.106	100.108	100.110	100.112	100.114	100.116
Size	2	4	6	8	10	12	14	16
Dia.	20	25	30	35	40	45	50	55 mm
Bristle lgth.	60	65	65	70	75	80	85	85 mm

**944****Glue or paint pots**

galvanized pot with lugs and handle

Item No.	Diameter	Height	Capacity
117.001	120 mm	120 mm	1,0ltr.
117.002	140 mm	140 mm	2,0 ltr.
117.003	170 mm	155 mm	3,0 ltr.
117.005	200 mm	200 mm	6,0 ltr.

Other sizes upon request!

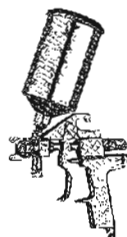
**945****Glue pot 'TS-Boy'**

of plastic, for glue, adhesive, varnish or paint, liquids do not dry out, enables economical use, easy to clean, with tight-sealing lid, brush wiper and brush

Cap.	Size	Item No.	Spare brush.
0.45 l	127 x 87 x 86 mm	945.045	945.245
0.90 l	180 x 115 x 100 mm	945.090	945.290
1.50 l	210 x 125 x 110 mm	945.150	945.350

**946****Paint pots with special lid** Item No. 946.001

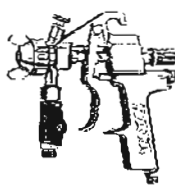
drawn of aluminium, holding appr. 0.7 l, total height 275 mm, bottom diameter 90 mm

**947**

LM/B-92



LM/H-92



LM/K-92

**Compressed air spraying pistols 'SATA'**

for blackings and parting agents

stepless round and broad spray adjustment as well as volume regulator, air connectors R 1/4" a.

SATA LM/B-92 0,75 l pot, al.-res.

SATA LM/H-92 1 l pot

SATA LM/K-92 for sep. reservoirs, with valve

Nozzle dia.	0,8 mm	1,0 mm	1,3 mm	1,6 mm	1,8 mm	2,0 mm	2,5 mm	3,0 mm
Item No.	B-92	229.001	229.002	229.003	229.004	229.005	229.006	229.007
	H-92	-	-	229.103	229.104	229.105	229.106	-
	K-92	-	-	229.203	229.204	229.205	229.206	-
								229.208

Extensions available for round, broad and skew spray and ang. head

**948****Ulmia grinding blocks**

of cork, size 120 x 60 x 35 mm Item No. 948.001

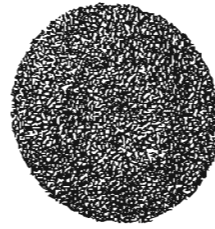
# Abrasives

## 1) Disks

a) **non self-adhesive**, without perforation  
Type EKMO, green electro-corundum paper, resin bonded

Grain	Diameter/Item No.								
	250 mm	300 mm	400 mm	500 mm	600 mm	700 mm	800 mm	900 mm	1000 mm
40	949.104	949.114	949.124	949.144	949.154	949.164	949.184	949.194	949.204
60	949.106	949.116	949.126	949.146	949.156	949.166	949.186	949.196	949.206
80	949.108	949.118	949.128	949.148	949.158	949.168	949.188	949.198	949.208
100	949.110	949.120	949.130	949.150	949.160	949.170	949.190	949.200	949.210

Available with center hole at extra charge.

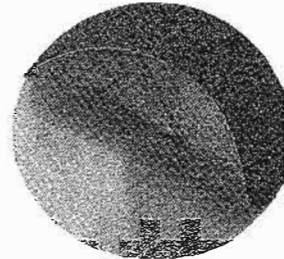


## b) self adhesive, without hole

Type 732E, brown electro-corundum paper, resin bonded

Grain	Diameter/Item No.					
	300 mm	400 mm	500 mm	600 mm	800 mm	900 mm
40	949.114K	949.124K	949.144K	949.154K	949.184K	949.194K
60	949.116K	949.126K	949.146K	949.156K	949.186K	949.196K

Other diameters and grains as well as **velcro-disks** upon request.



## 2) Sheets, sheet size 230 x 280 mm

a) **Flint paper Type KB**, light C-paper, part. resin bonded

Grain	40	60	80	100	120	150	180
Item No.	949.004	949.006	949.008	949.010	949.012	949.015	949.018

b) **Linen grinding sheets Type MKJFH**, fully resin bonded

Grain	60	80	100	120	150	180	240	320
Item No.	949.026	949.028	949.030	949.032	949.035	949.038	949.044	949.052



c) **Waterproof paper Type RSBN**, fully resin bonded

Grain	120	150	180	220	240	280	320	400
Item No.	949.062	949.065	949.068	949.072	949.074	949.078	949.082	949.090

## 3) In rolls, length 50 m

a) **Type RKEO**, strong paper for manual or machine grinding, fully resin bonded

Grain	Width/Item No.					
	100 mm	110 mm	115 mm	120 mm	150 mm	200 mm
40	949.304	949.314	949.324	949.334	949.344	949.354
60	949.306	949.316	949.326	949.336	949.346	949.356
80	949.308	949.318	949.328	949.338	949.348	949.358
100	949.310	949.320	949.330	949.340	949.350	949.360
120	949.312	949.322	949.332	949.342	949.352	949.362

b) **Type KB**, light paper for finishing, part. resin bonded

Grain	Width/Item No.					
	100 mm	110 mm	115 mm	120 mm	150 mm	200 mm
40	949.364	949.374	949.384	949.394	949.404	949.414
60	949.366	949.376	949.386	949.396	949.406	949.416
80	949.368	949.378	949.388	949.398	949.408	949.418
100	949.370	949.380	949.390	949.400	949.410	949.420
120	949.372	949.382	949.392	949.402	949.412	949.422



c) **Type MKJFH**, economic rolls, highly flexible grinding linen, fully resin bonded

Width	Grain/Item No.							
	60	80	100	120	150	180	240	320
40 mm	949.436	949.438	949.440	949.442	949.445	949.448	949.454	949.462
50 mm	949.466	949.468	949.470	949.472	949.475	949.478	949.484	949.492

Other widths upon request!



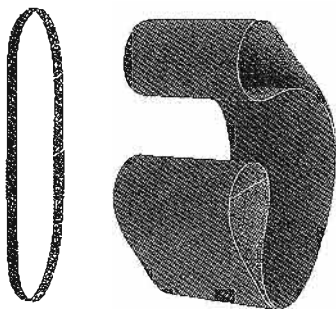
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### Abrasives (continued)

4) In endless belts, highly flexible fabric, fully resin bonded  
(min. quantity: 10 p. per type)

a) narrow belts for profile belt grinders



Width	1985 mm long: Item No.				2370 mm long: Item No.			
	grain 40	grain 60	grain 80	grain 100	grain 40	grain 60	grain 80	grain 100
15 mm	949.504	949.506	949.508	949.510	949.554	949.556	949.558	949.560
25 mm	-	-	-	-	949.564	949.566	949.568	949.570
30 mm	949.524	949.526	949.528	949.530	949.574	949.576	949.578	949.580
40 mm	949.534	949.536	949.538	949.540	949.584	949.586	949.588	949.590
50 mm	-	-	-	-	949.594	949.596	949.598	949.600

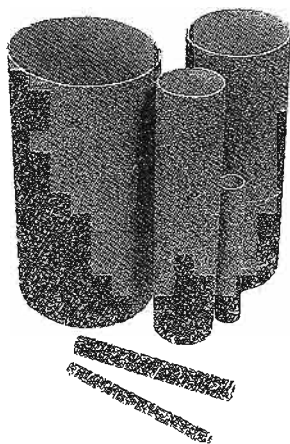
Width	2710 mm long: Item No.				3200 mm long: Item No.			
	grain 40	grain 60	grain 80	grain 100	grain 40	grain 60	grain 80	grain 100
15 mm	949.604	949.606	949.608	949.610	949.644	949.646	949.648	949.650
30 mm	949.614	949.616	949.618	949.620	949.654	949.656	949.658	949.660
40 mm	949.624	949.626	949.628	949.630	949.664	949.666	949.668	949.670
50 mm	949.634	949.636	949.638	949.640	949.674	949.676	949.678	949.680

b) wide belts for vertical belt grinders  
250 mm wide x 2400 mm long

Grain	40	60	80	100
Item No.	949.694	949.696	949.698	949.700

Other sizes and grains upon request!

5) Abrasive sleeves for oscillating cam grinders  
(min. quantity: 25 p. per type)



Dia- meter	70 mm lg.: Item No.				Dia- meter	160 mm lg.: Item No.			185 mm lg. grain 60
	grain 60	grain 40	grain 60	grain 80		grain 40	grain 60	grain 80	
15 mm	949.701	-	-	-	40 mm	-	-	-	949.734
18 mm	949.702	-	-	-	50 mm	-	-	-	949.735
20/21 mm	949.703	949.710	949.711	949.712	60 mm	949.722	949.723	949.724	949.736
25 mm	949.704	-	-	-	70 mm	-	-	-	949.737
30 mm	949.705	949.713	949.714	949.715	80 mm	949.725	949.726	949.727	949.738
35 mm	949.706	-	-	-	90 mm	-	-	-	949.739
40 mm	949.707	949.716	949.717	949.718	100 mm	949.728	949.729	949.730	949.740
45 mm	949.708	-	-	-	110 mm	-	-	-	949.741
50 mm	949.709	949.719	949.720	949.721	120 mm	949.731	949.732	949.733	949.742
					130 mm	-	-	-	949.743
					140 mm	-	-	-	949.744
					150 mm	-	-	-	949.745
					160 mm	-	-	-	949.746

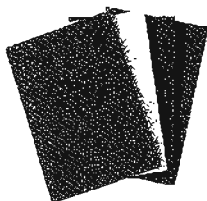
Dia- meter	200 mm lg.: Item No.			Dia- meter	300 mm lg.: Item No.	
	grain 40	grain 60	grain 80		grain 40	grain 60
30 mm	949.747	949.748	949.750	150 mm	949.757	949.758
50 mm	949.751	949.752	949.753	200 mm	949.759	949.760
100 mm	949.754	949.755	949.756	250 mm	949.761	949.762

Other sizes and grains upon request. Min. quantity: 100 p.

6) Abrasive fleece: nylon fabric fleece with resin bonded grinding grains

a) In rolls 115 mm wide, 10 m long

b) Handpads 140 x 230 mm (each package contains 10 p.)



Design	Grain/Item No.			
	80	120	180	280
Rolls	949.808	949.812	949.818	949.828
Handpads	949.858	949.862	949.868	949.878

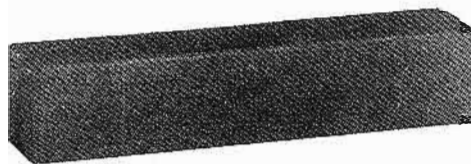
Other sizes and grains upon request!

## Cleaner for abrasives

Item No. 950.001

Elastic cleaner for abrasives, removes grinding residues which are stuck among the grains and rend difficult the grinding. No grooves, no vibrations of machines. Uniform grinding results and long-life of abrasives.

Dimensions 41 x 41 x 209 mm

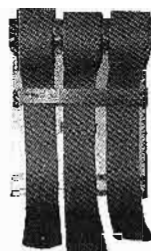


950

## Dispenser for abrasive rolls

Item No. 950.101

For 3 rolls of abrasives up to 120 mm width, with tear-off edge and measure for sander's width (230 or 280 mm), for wall-fitting, made of strong wood.



950A

## Aluminium grinding cylinders for oscillating grinders

1) self-clamping, for abrasive sleeves, Item No. 949/5

Dia-meter	Length/Item No.	
	70 mm	120 mm
18 mm	951.002	-
20/21 mm	951.003	951.101
25 mm	951.004	-
30 mm	951.005	951.102
40 mm	-	951.103
45 mm	951.007	-
50 mm	951.008	951.104

Dia-meter	Length/Item No.			
	160 mm	185 mm*	200 mm	300 mm
30 mm	-	-	951.401	-
40 mm	-	951.301	-	-
50 mm	-	-	951.402	-
60 mm	951.201	-	-	-
80 mm	951.202	951.302	-	-
100 mm	951.203	-	951.403	-
110 mm	-	951.303	-	-
120 mm	951.204	-	-	-
150 mm	-	951.303	-	951.501
200 mm	-	-	-	951.502
250 mm	-	-	-	951.503

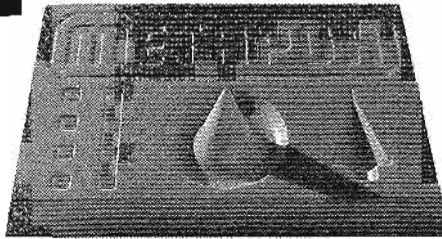
\* Length 185 mm is being discontinued and will be available in limited quantities.



951

2) for abrasive paper (paper on rolls)

Length	Diameter/Item No.								
	40 mm	50 mm	60 mm	70 mm	90 mm	100 mm	120 mm	150 mm	180 mm
220 mm	951.601	951.602	951.603	951.604	951.605	951.606	951.607	951.608	951.609
300 mm	951.701	-	951.703	-	951.705	951.708	951.707	951.708	951.709



## METAPOR

micro-porous, air permeable aluminium composite material

Made of aluminium granules and epoxy resin. The material is **air-permeable over the entire surface**. In contrast to sintered materials, the pores are not closed off after machining.

The surface may be polished dry and without any polishing paste as smooth as a mirror.

### Main fields of application:

#### 1) Thermofforming moulds

Highly detailed moulds, engraved inserts and other intricate features are quickly produced since there is no need to drill vacuum holes. Even porosity on all surfaces results in extremely sharp definition and accuracy of formed components without deformation. Elimination of trapped air and related waviness f.e. at large flat surfaces or bottom inserts.

#### 2) Vacuum clamping systems

METAPOR offers new possibilities as a result of its easy machining properties. A constant decompression within the material allows a strong holding force, even when the damping surface is partially covered. METAPOR vacuum damping device permits holding of parts without deformation. Since there are no drill holes or channels, even sensitive parts show no deformation. Static jam while ejecting can be eliminated using compressed air, which creates a smooth and even air cushion.

For completely covering of the damping surface the use of METAPOR-MACRO is recommended because of its higher permeability and surface hardness (technical data see below).

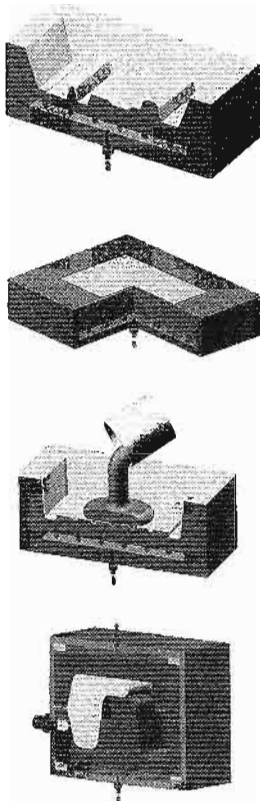
#### 3) Pouring and laminating

Pouring and laminating with METAPOR-moulds is done by using a separating foil, which serves as surface-protection. The parts are produced without any deformation and with a top-quality surface. The negative remains clean, needs no releasing agent and may be re-used at once.

#### 4) Die-casting and pressing process

Use of METAPOR moulds results in complete de-airiation of pouring products with high viscosity.

De-moulding is free of grooves and very easy by means of compressed air. METAPOR is an excellent substitute for plaster for ceramic-production with much longer life and much more exactness.



Four METADOR products exist for different applications. The products are different in permeability, size of pores and heat resistance.

### Applications / Properties:

Product	Thermoforming Standard	Transparent	Vacuum-clamping	Air cushion systems	Heat resistance	Permeability*
BF 100 AL	X		X	X	108°C	100%
HD 100 AL		X			108°C	50%
BF 210 AL	X		X	X	210°C	100%
MACRO			X		102°C	300%

\* The percentage refer to the permeability of BF 100 AL.

METAPOR is manufactured in **blocks of 500 x 500 mm** according to index below. Other sizes may be produced according to your desire.

Properties/Product	BF 100 AL	HD 100 AL	BF 210 AL	MACRO
Density g/cm <sup>3</sup>	1,8	1,9	1,8	1,7
Hardness shore D	81	81	82	80
Flexural strength N/mm <sup>2</sup>	56	43,6	45,3	38,4
E-module N/mm <sup>2</sup>	9000	9200	10500	9700
Impact strength kJ/m <sup>2</sup>	14	11	12,5	12,5
Coefficient of thermal expansion at 25 - 125°C °C <sup>-1</sup> × 10 <sup>-6</sup>	30,4	36	31	42,9
Heat conductivity at 100°C Wm <sup>-1</sup> °C <sup>-1</sup>	19,1	20,5	18	9,9
Dim stability acc. Martens °C	108	108	210	102
Mean pore diameter µm	15	12	15	70
Total porosity %	15	16	15	31

Thickness	10 mm	15 mm	20 mm	25 mm	30 mm	40 mm	50 mm	60 mm	70 mm	80 mm	100 mm	150 mm	200 mm	250 mm	300 mm
Product	Item No.														
BF 100 AL	953.010	953.015	953.020	953.025	953.030	953.040	953.050	953.060	953.070	953.080	953.100	953.150	953.200	953.250	953.300
HD 100 AL	953.010HD	953.015HD	953.020HD	953.025HD	953.030HD	953.040HD	953.050HD	953.060HD	953.070HD	953.080HD	953.100HD	953.150HD	953.200HD	953.250HD	953.300HD
BF 210 AL	953.010HT	953.015HT	953.020HT	953.025HT	953.030HT	953.040HT	953.050HT	953.060HT	953.070HT	953.080HT	953.100HT	953.150HT	953.200HT	953.250HT	953.300HT
MACRO	953.010M	953.015M	953.020M	953.025M	953.030M	953.040M	953.050M	953.060M	953.070M	953.080M	953.100M	953.150M	953.200M	953.250M	953.300M

Other thicknesses may also be delivered.

For glueing we recommend:

**Item No. 953.400:** 2-component adhesive AV 138 with hardener HV 998 in packings of 1,4 kg, **heat resisting up to 120 °C**.

Please ask for further information and handling guidelines for METAPOR!

Upon request: **air permeable casting material ESPOR** and moulds or tools of this product.

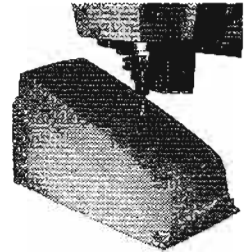
## NECURON blockmaterials

PUR-based, for production of master patterns and copies. Convenient machinability with standard tools, physiologically harmless, no dust emission, high edge stability and surface quality, absolutely homogeneous structure.

Use allowed for patterns, fixtures and tooling jigs in automotive industries!

### Board- and blockmaterial for modelling purposes

Material	Necupur 100	Necupur 250	Necupur 301	Necuron 480	Necuron 600	Necuron 651	
Colour	beige	beige	beige	apricot	white	red brown	
Applications	styling, trial, conceptual and architectural models, drawing assemblies			styling & master mod., wind channel & architectural mod.	architectural or design models	master-, cubing & trial models, patterns	
	milling program tests, back filling, substructures for hard-styling-clay		wind channel and design models				
Properties	Especially easy processing			finer structure – homogeneous surface	may be varnished	fine structure, good edge stability	
Heat deflection temperature (°C)	80	80	80	65 – 75	75	80	
Coefficient of thermal expansion (10 <sup>-6</sup> )	30 – 40	30 – 40	50 – 55	45 – 50	55	45 – 48	
Shore D	n. a.	n. a.	35 – 40	48 – 53	50	50 – 60	
Compr.stgrth. (N/mm <sup>2</sup> )	2	4,5	5	16	25	33	
Flexural stgrth. (N/mm <sup>2</sup> )	1,5	4	6	13	25	30	
Density (g/cm <sup>3</sup> )	0,1	0,23	0,3	0,48	0,67	0,7	
Dimensions (mm)/ Item No.	1000 x 1000 x 50 954.301	1000 x 1000 x 50 954.401	1000 x 1000 x 50 954.501	1500 x 400 x 100 954.601	1500 x 500 x 50 954.701	1500 x 400 x 25 954.004	1500 x 500 x 50 954.010
	1000 x 1000 x 100 954.303	1000 x 1000 x 100 954.402	1500 x 400 x 100 954.503	1500 x 500 x 50 954.602	1500 x 500 x 75 954.702	1500 x 400 x 50 954.005	1500 x 500 x 75 954.011
	2000 x 1000 x 100 954.302	1000 x 1000 x 350 954.403	1500 x 500 x 50 954.505	1500 x 500 x 100 954.603	–	1500 x 400 x 75 954.006	1500 x 500 x 100 954.012
	–	2000 x 1000 x 100 954.404	1500 x 500 x 100 954.504	–	–	1500 x 400 x 100 954.007	–
Remarks	Adhesive K8	Adhesive K8	Adhesive K8	Adhesive K8 Putty S-11	Adhesive K8	Adhesive K8 Putty S8	



### Board- and blockmaterial for tooling applications, fixtures and jigs

Material	Necuron 700	Necuron 900	Necuron 1001	Necuron 1007	Necuron 1300
Colour	light grey	brown	grey	ivory	red
Applications	Laminating models & laminating tools, draw dies	Master models, foundry models, cores, fixtures (jigs)	Tooling jigs, fixtures, trial models, flanging tools, foundry models, bath models for galvano	Laminating models, tools for serial production of small batch sizes, trial models, draw die moulds, fixtures & jigs	Foundry assemblies for hand & machine forming, sheet metal forming & drawing tools, hammer form tools
Properties	high heat resistance	very fine structure, high edge stability		high heat deflection temperature, high edge stability, very fine structure	very high abrasive resistance, high compressive & flexural strength
Heat deflection temperature (°C)	110	85	80	85 – 90	75
Coefficient of thermal expansion (10 <sup>-6</sup> )	40	42	45 – 55	45	55 – 65
Shore D	65 – 70	73	82	82	80
Compr.stgrth. (N/mm <sup>2</sup> )	32 – 35	55	65 – 70	75 – 80	85 – 90
Flexural stgrth. (N/mm <sup>2</sup> )	25 – 30	60	80 – 85	65 – 70	100 – 105
Density (g/cm <sup>3</sup> )	0,57	0,85	1,10	1,2	1,15
Dimensions (mm)/ Item No.	1520 x 600 x 50 954.051	1200 x 400 x 50 954.101	1200 x 400 x 50 954.201	1200 x 400 x 50 954.231	800 x 400 x 50 954.221
	1520 x 600 x 100 954.052	1200 x 400 x 75 954.102	1200 x 400 x 75 954.202	1200 x 400 x 75 954.232	800 x 400 x 75 954.222
	–	1200 x 200 x 100 954.103	1200 x 200 x 100 954.203	800 x 400 x 100 954.233	800 x 400 x 100 954.223
Remarks	Adhesive K 8T	Adhesive K8 Putty S8	Adhesive K8	Adhesive K8 T	Adhesive K8

## Adhesive NECURON

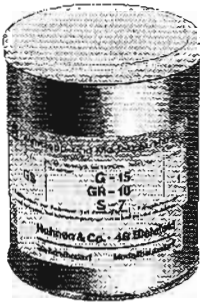
2-comp. adhesive, epoxy based for NECURON and NECUPUR materials. Pot life ab. 10 min., clamping time for fundamental formulation ab. 5 hours, may be reduced by heating.

Item No.	Type	Colour	Remark	Cont.
954.801	K 8	transparent	for all NECUPUR and NECURON materials	2 kg
954.802	K 8T	transparent	esp. for NECURON 700 and 1007, for production of laminating models and draw dies	1,2 kg

## Putty NECURON

2-comp. hard-putty, epoxy based for NECURON and NECUPUR materials. Pot life ab. 20 min., clamping time for fundamental formulation ab. 3 to 4 hours, which may be reduced by heating.

Item No.	Type	Colour	Remark	Cont.
954.851	S 8	redbrown	for all NECURON and NECUPUR materials	1,6 kg
954.852	S 11	yellow orange	esp. for NECURON 480	1,6 kg



## DPC-Resins for tooling and pattern-making

The DPC company has an experience of over 20 years in technology and production of synthetic duroplastic resins, especially epoxies, for industrial use. So the product range offers also a complete choice of resin systems for the tooling and patternmaking business. Tailor made proposals can be provided for any requirements, based on outstanding materials, practical, safe and reliable in handling and performance.

Additionally to the proven standards some new special types are also presented, which may cover technical needs in particular application fields.

### 1) EPOXY-SYSTEMS

#### DPC-SURFACE RESINS

<b>OW</b>	white, good polishable and machinable
<b>OAG</b>	grey, filled with silicon carbide, very high abrasion resistance
<b>OS</b>	black, filled with steel powder, good slip characteristics, good machinable
<b>OTG</b>	grey, aluminium filled, good thermal resistance
<b>VPM 1063</b>	grey, aluminium filled, very high thermal resistance (TG 160 °C)

#### DPC-LAMINATING AND MULTI-PURPOSE RESINS

These DPC-Resins, unfilled or only containing a small amount of fillers, are primarily used for fiberglass laminates or – thanks to their low viscosity and excellent wetting properties – as binder, for example in low-cost backing sand (resin-bonded ramming sand).

<b>MZ3</b>	clear, low viscosity, universal laminating and back filling resin
<b>MZ2</b>	clear, medium viscosity, heavy duty universal resin
<b>LW</b>	white, slightly filled and thixotropic, good physical properties
<b>LT1</b>	clear, very low viscosity and very good wettability, universal use, also for back fillings
<b>LT2</b>	clear, medium viscosity, good mechanical and thermal properties
<b>LT3</b>	clear, low viscosity, excellent thermic, balanced mechanical properties
<b>LT4</b>	clear, low viscosity, excellent thermic and mechanical properties
<b>LTT</b>	clear, medium viscosity, high stiffness and thermal resistance
<b>VPM 1036</b>	clear, long pot life, good thermal resistance, glossy surface
<b>VPM 1062</b>	clear, very high thermal resistance (glastransition temperature TG 160 °C)
<b>VPM 1075</b>	clear, low viscosity, good thermic and excellent mechanical properties, brilliant
<b>LP 10</b>	grey, glasfiber filled laminating paste, for layers up to 15 mm

#### DPC-CASTING RESINS

DPC-Casting resins are easily pouring resins with filler; after complete curing they are very hard and wear-resistant, so that they allow the production of tools with one pour and without gelcoating.

DPC-Casting resins feature minimal shrinkage – thanks to prime quality resins and fillers.

<b>GG</b>	grey, silicon carbide filled, very high abrasion resistance, difficult to work
<b>GS</b>	black, steel powder filled, abrasion resistant, good slip characteristics and machinability
<b>GB</b>	blue, similar type to GS
<b>GW</b>	white, good mechanical and thermal resistance, universal type
<b>GHG</b>	blue, economical casting and back filling type, good workable
<b>GTG</b>	grey, aluminium filled, high mechanical and thermal properties

### 2) URESID-POLYURETHANE RESINS

Even though they do not attain the high strength and the low shrinkage characteristics of epoxy resins, polyurethane resins are completing the epoxy resins program in an ideal way. Among polyurethane resins are very fast curing systems and types which are very good machinable.

<b>25 R</b>	red, fast-curing casting resin, best mechanical properties, tough-hard, good machinability
<b>26 G</b>	green, universal very fast-curing casting resin
<b>28</b>	white, universal very fast-curing casting resin, tough, very good machinability
<b>28 G</b>	grey, coloured version of URESID 28

### 3) DPC-ADHESIVE RESIN

<b>KL</b>	without filler, thixotropic, 2-component epoxy resin adhesive
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Other types and resins for specific applications can be supplied upon request.

# DPC-Epoxy resins for tooling and patternmaking

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Handling data and final properties

## DPC-Surface resins

System	OW	OW	OAG	OAG	OS	OS	OTG	OTG	1063 A
DPC-Resin	S	TS	S	TS	S	TS	S	TS	1063 B
<b>Properties</b>	White, titaniumdioxide filled resin. Well polishable, good strength of edges workable		Grey, silicon-carbide filled (finely grained), particular high resistance to abrasion, not workable		Black, steel powder filled resin, not sagging, with excellent anti-friction properties, workable		Grey, aluminium filled resin, high heat resistance (with hardener 'S' 90°C, with hardener 'TS' up to 120°C), well workable		Gelcoat with outstanding thermic and mechanical properties, ideal complement for the highly heat resistant laminating resin VPM 1062. Resulting surfaces will be excellent and non-sticky
<b>Applications</b>	Foundry-patterns, negative-patterns, milling patterns, templates, fiberglass reinforced moulds		For heavy-duty foundry patterns, milling patterns, jigs etc., ideal for patterns for hand duplicating milling machines		Foundry patterns, moulding plates, core boxes, milling patterns etc., also suitable for filling shrink holes etc.		Heated moulds, foam moulds, vacuum deep drawing moulds, moulds for fiberglass reinforced plastics etc.		Deep drawing tools, moulds for foaming and RIM with highest mechanical and thermic claims

### Preparation/Processing

Mixing ratio	100 : X	parts b.w.	15	10	10	8	7	4	12	8	12
Mix viscosity	(25°C)	mPa.s	pasty	pasty	pasty	pasty	pasty	pasty	pasty	pasty	pasty
Pot life	(100g / 25°C)	min.	20	20	20	20	20	20	20 - 30	20 - 30	45 - 60
Curing		h / °C	24 / RT	24 / RT	24 / RT	24 / RT	24 / RT	24 / RT	24 / RT	24 / RT	24 / RT
Postcuring		h / °C	7d / RT	7d / RT	7d / RT	7d / RT	7d / RT	7d / RT	2 / 120	2 / 120	1/80 + 2/165

### Properties of cured material (24 h / RT + 2 h / 120°C)

Glass transition temperature	TG	°C	67	79	85	97	67	89	89	110	160
Modulus of elasticity (Flex.)	DIN EN ISO 178	MPa	5.330	5.660	6.920	8.870	8.410	9.080	6.740	6.400	5.420
Flexural strength	DIN EN ISO 178	MPa	98	93	107	108	61	82	81	74	73
Deflection (at break)	DIN EN ISO 178	mm	3.9	3.4	2.5	2.6	1.5	2.0	3.1	3.0	3.7
Tensile strength	DIN EN ISO 527-1,2	MPa	46	37	-	-	32	37	36	37	40
Elongation	DIN EN ISO 527-1,2	%	1.5	0.9	-	-	0.7	0.6	1.0	1.0	1.5
Impact strength	DIN ISO EN 179	kJ/mm <sup>2</sup>	6 - 8	6 - 8	7 - 10	7 - 10	4 - 6	5 - 8	9 - 11	7 - 9	7 - 10
Hardness	DIN 53505	Shore D	88 - 90	88 - 90	88 - 90	88 - 90	88 - 90	88 - 90	88 - 90	88 - 90	83 - 84

## DPC-Multipurpose resins

System	MZ 3	MZ 3	MZ 3	MZ 2	MZ 2
DPC-Resin	LN	GR	TS	LN	TS
<b>Properties</b>	Low viscosity epoxy resin, with hardener LN, a low cost binder for backings and laminations			Medium viscosity, for universal purpose. May be used with nearly all types of hardener and for heavy duty laminates and glueings	
<b>Applications</b>	Laminations, backings and glueings with normal claims			Laminations, moulds, glueings with higher mechanical and thermic claims	

### Preparation/Processing

Mixing ratio	100 : X	parts b.w.	20	35	20	20	20
Mix viscosity	(25°C)	mPa.s	800	500	1000	2000	3000
			-1500	-1000	-1800	-4000	-5000
Pot life	(100g / 25°C)	min.	30 - 40	120 - 150	15 - 20	25 - 35	12 - 15
Curing		h / °C	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT
Postcuring		h / °C	7 d / RT	7 d / RT	7 d / RT	7 d / RT	7 d / RT

### Properties of cured material (24 h / RT + 2 h / 120°C)

Glass transition temperature	TG	°C	87	77	98	105	127
Modulus of elasticity (Flex.)	DIN EN ISO 178	MPa	3250	2360	3360	3710	3150
Flexural strength	DIN EN ISO 178	MPa	121	92	125	148	114
Flexural strain	DIN EN ISO 178	MPa	104	73	103	114	87
Deflection (at break)	DIN EN ISO 178	mm	9.1	18.3	9.5	10.1	12.3
Tensile strength	DIN EN ISO 527-1,2	MPa	70	53	66	75	49
Elongation	DIN EN ISO 527-1,2	%	5.2	6.6	3.2	3.4	2.2
Impact strength	DIN ISO EN 179	kJ/mm <sup>2</sup>	24 - 31	23 - 27	17 - 22	18 - 24	19 - 23
Hardness	DIN 53505	Shore D	83 - 84	79 - 81	83 - 84	83 - 87	84 - 86

## DPC-Laminating resins and paste

System	LW		LT1		LT2		LT3	
DPC-Resin	LN	LG	LN	VPM 1065	LN	LG	T2	
<b>Properties</b>	White, low thixotropic resin with good wetting properties; multi-purpose resin, high strength resin, good heat resistance compared with other ambient temperature curing resins		Low viscosity, well wetting resin for laminates and backings; multi-purpose resin		Medium viscosity resin with good heat resistance compared with other cold-setting resins; well wetting, high mechanical strength		Cold setting system for highest mechanical and thermic claims Good setting at room temperature, should be tempered for 1 or 2 hours at 100 - 130 °C	
<b>Applications</b>	Foundry patterns and core boxes, pattern negatives, jigs, templates, deep drawing tools		For laminates and for use for multi-purpose backing compounds		For laminates and for multi-purpose backing compound, high-strength fiberglass reinforced laminates		Fiberglass reinforced parts with highest thermic and mechanical claims, which cannot be produced in hot setting processes	

## Preparation/Processing

Mixing ratio	100 : X	parts b.w.	15	30	20	40	20	40	20
Mix viscosity (25°C)		mPa.s	1000 - 2000	1500 - 2500	600 - 1500	600 - 900	800 - 1500	1500 - 2000	ca. 700
Pot life (100g/25°C)		min	30 - 40	50 - 60	30 - 40	50 - 60	30 - 40	90 - 120	40 - 50
Curing		h / °C	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 RT
Postcuring		h / °C	7 d / RT	7 d / RT	7 d / RT	7 d / RT	7 d / RT	7 d / RT	7 d / RT

## Properties of cured material (24 h / RT + 2 h / 120°C)

Glass transition temperature	TG	°C	78	69	80	72	82	78	120
Modulus of elasticity (Flex.)	DIN EN ISO 178	MPa	4150	3120	3500	3160	3540	2610	3020
Flexural strength	DIN EN ISO 178	MPa	127	103	133	115	133	93	117
Flexural strain	DIN EN ISO 178	MPa	114	90	109	97	104	75	91
Deflection (at break)	DIN EN ISO 178	mm	8,1	15,7	11,3	> 20	11,0	16,9	15,7
Tensile strength	DIN EN ISO 527-1,-2	MPa	63	49	69	64	74	60	58
Elongation	DIN EN ISO 527-1,-2	%	2,5	6,7	3,7	10,3	4,0	5,1	3,3
Impact strength	DIN ISO EN 179	kJ/mm <sup>2</sup>	15 - 21	19 - 23	30 - 35	48 - 56	25 - 30	25 - 29	13 - 20
Hardness	DIN 53505	Shore D	84 - 88	82 - 84	81 - 85	81 - 83	82 - 86	80 - 82	83 - 86

System	LT4		LTT		VPM 1075 A		VPM 1036		VPM 1062 A		LP 10	
DPC-Resin	T4		T		T2		VPM 1075 B		VP 763		VPM 1062 B	
DPC-Hardener	T4		T		T2		VPM 1075 B		VP 763		VPM 1062 B	
<b>Properties</b>	System with very high thermal resistance combined with balanced mechanical properties. Should be tempered for 1 or 2 hours at 80 - 120 °C		Low viscosity resin, quick-setting at room temperature with setting hardener 'T', for heat-resistant, high-strength laminates; temper material prior to initial-employment		Very low viscosity, excellent lamination system with outstanding strength, easy workable, for very complicated applications, excellent thermic properties, glossy and non-sticky surfaces		Low viscosity, heat resistant, long pot-life. Non-sticky surfaces, not yellow turning		Highly heat resistant, should be hot setted, at least tempered. Non-sticky surfaces, not yellow turning		A system of fiberglass paste, easy to handle and applicate, for quick building-up strong layers up to 15 mm	
<b>Preparation/Processing</b>	Fiberglass reinforced parts with higher thermal claims		For laminations as well as high-quality backing resin for heated moulds, vacuum deep drawing moulds, dies etc.		Fiber reinforced-parts for high mechanical and dynamic claims combined with high thermic claims and excellent surfaces i.e. motor-car, aircraft or ship-making		Difficult lamination parts with special requirements to heat resistance and surface quality, i.e. motor-car or shipbuilding and patterns		For highest claims in moulds for foam or RIM, pressure or deep drawing moulds, fiberglass reinforced parts of high dynamic and thermic requirements		Fiberglass reinforced layers and walls in negative or foundry patterns, core-boxes and jigs, reinforcements (edges a.s.o.) for fiberglass reinforced laminated constructions	

## Preparation/Processing

Mixing ratio	100 : X	parts b w	20	20	20	36	33	33	18
Mix viscosity (25°C)		mPa.s	ca. 700	500 - 1000	500 - 1000	450 - 500	700 - 1000	2000 - 3000	fasenge Paste
Pot life (100g/25°C)		min.	40 - 50	30 - 40	80 - 100	ca. 120	120 - 150	90 - 120	ca. 60
Curing		h / °C	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 / RT	24 / RT	24 - 48 / RT
Postcuring		h / °C	2 / 120	2 / 120	2 / 120	7 d / RT	2 / 120	1/80 ± 2/165	7 d / RT

## Properties of cured material (24 h / RT + 2 h / 120°C)

Glass transition temperature	TG	°C	121	119	123	99	120	160	80
Modulus of elasticity (Flex.)	DIN EN ISO 178	MPa	3580	3990	3740	3130	2810	2730	4000 - 5000
Flexural strength	DIN EN ISO 178	MPa	141	138	148	127	107	108	ca. 60
Flexural strain	DIN EN ISO 178	MPa	107	117	117	84	86	79	
Deflection (at break)	DIN EN ISO 178	mm	10,2	8,2	9,8	17,5	9,1	11,0	1,9
Tensile strength	DIN EN ISO 527-1,-2	MPa	70	80	86	74	61	55	
Elongation	DIN EN ISO 527-1,-2	%	3,2	3,2	3,9	5,9	3,9	3,5	
Impact strength	DIN ISO EN 179	kJ/mm <sup>2</sup>	10 - 13	9 - 12	12 - 15	20 - 27	10 - 12	9 - 13	3 - 5
Hardness	DIN 53505	Shore D	84 - 87	85 - 87	85 - 87	82 - 86	82 - 83	84 - 85	

# DPC-Epoxy resins for tooling and patternmaking

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Handling data and final properties

## DPC-Casting resins

System							
DPC-Resin		<b>GG</b>	<b>GG</b>	<b>GS</b>	<b>GS</b>	<b>GB</b>	<b>GB</b>
DPC-Hardener		<b>GR</b>	<b>GN</b>	<b>GR</b>	<b>S</b>	<b>GR</b>	<b>S</b>
Properties		Grey, silicon-carbide filled resin, with high resistance to abrasion, hardly workable, non setting		Black, steel filled resin, with good abrasion resistance and high mechanical strength, well workable, non settling even after extended storage		Blue, steel powder filled resin, with good abrasion resistance, and high mechanical strength, well workable, non settling	
Applications		Foundry patterns and plates, milling patterns, jigs, deep drawing tools etc.		Foundry patterns, core boxes, gauges, jigs, fiberglass reinforced tools		Foundry patterns, core boxes, gauges, jigs, fiberglass reinforced tools, moulds, ram guides etc. With hardener 'S' and 'Aerosil' suitable for application as gelcoat resin	

Preparation/Processing								
Mixing ratio	100 : X	parts b.w.	10	12	10	7	10	7
Mix viscosity (25°C)		mPa.s	5000 - 7000	15000 - 19000	6000 - 8000	19000 - 23000	5500 - 7500	19000 - 23000
Pot life (100g/25°C)		min.	50	50 - 60	50	15 - 20	50	15 - 20
Curing		h / °C	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT
Postcuring		h / °C	7 d / RT	7 d / RT	7 d / RT	7 d / RT	7 d / RT	7 d / RT

Properties of cured material (24 h / RT + 2 h / 120°C)								
Glass transition temperature	TG	°C	67	82	67	88	67	95
Modulus of elasticity (Flex.)	DIN EN ISO 178	MPa	8120	6580	6670	8630	7550	9150
Flexural strength	DIN EN ISO 178	MPa	105	96	95	103	105	88
Deflection (at break)	DIN EN ISO 178	mm	3,5	3,9	3,4	2,6	3,2	1,9
Tensile strength	DIN EN ISO 527-1,2	MPa	53	50	60	47	53	43
Elongation	DIN EN ISO 527-1,2	%	1,1	1,5	1,4	0,7	0,9	0,6
Impact strength	DIN ISO EN 179	kJ/mm <sup>2</sup>	10 - 12	10 - 14	8 - 12	7 - 10	7 - 11	7 - 9
Hardness	DIN 53505	Shore D	89 - 90	88 - 90	89 - 90	89 - 90	89 - 90	89 - 90

System							
DPC-Resin		<b>GW</b>	<b>GW</b>	<b>GHG</b>	<b>GHG</b>	<b>GTG</b>	
DPC-Hardener		<b>GR</b>	<b>TT</b>	<b>GR</b>	<b>GN</b>	<b>T</b>	
Properties		White, heavy duty resin for general purpose		Blue, low-cost casting and backing resin, well workable		Grey, aluminium filled resin, with high heat resistance, well workable	
Applications		Foundry patterns, core-boxes, milling patterns a.s.o.		Backings, pattern negatives, milling patterns etc.		Foundry patterns, milling patterns, moulds, fiberglass reinforced tools, vacuum deep drawing tools, jigs etc.	

Preparation/Processing							
Mixing ratio	100 · X	parts b.w	10	6	10	15	7
Mix viscosity (25°C)		mPa.s	5000 - 7000	13000 - 16000	5500 - 7500	15000 - 18000	10000 - 13000
Pot life (100g/25°C)		min.	50	40	70 - 80	70 - 80	50
Curing		h / °C	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT	24 - 48 / RT
Post curing		h / °C	7 d / RT	7 d / RT	7 d / RT	7 d / RT	2 / 120

Properties of cured material (24 h / RT + 2 h / 120°C)							
Glass transition temperature	TG	°C	76	97	62	63	121
Modulus of elasticity (Flex.)	DIN EN ISO 178	MPa	6920	8130	5070	4660	8360
Flexural strength	DIN EN ISO 178	MPa	93	95	80	76	97
Deflection (at break)	DIN EN ISO 178	mm	2,6	2,3	3,4	4,3	3,2
Tensile strength	DIN EN ISO 527-1,2	MPa	51	44	35	44	55
Elongation	DIN EN ISO 527-1,2	%	0,8	0,6	1,0	1,9	1,0
Impact strength	DIN ISO EN 179	kJ/mm <sup>2</sup>	5 - 7	6 - 8	7 - 9	8 - 10	11 - 14
Hardness	DIN 53505	Shore D	87 - 88	88 - 90	84 - 86	85 - 87	87 - 88

## URESID-Polyurethane casting resins

System					
URESID	Comp. A Comp. B	<b>25 R</b>	<b>26 G</b>	<b>28</b>	<b>28 G</b>
Properties		Red, solvent-free quick-setting resin, with excellent mechanical properties, low shrinkage; tough and well workable	Green, multi-purpose quick-setting casting resin, less sensitive to moisture	Multi-purpose quick-setting resin. The white type 28 may be coloured BLUE or GREEN with our colour concentrates	
Applications		Multi-purpose, quick-setting resin for high-precision patterns, negatives, prototypes etc.	Patterns and moulds of all kinds, especially for embedding wood	Foundry patterns and moulds of all kinds, negative patterns, prototypes a.s.o.	

Preparation/Processing						
Mix ratio	100 A : X B	parts b w	25	15	20	20
Pot life (100g/25°C)		min.	5 - 6	3 - 4	3 - 4	3 - 4
Demould time		min.	60 - 90	30 - 60	30 - 60	30 - 60
Curing		h / °C	5 / RT	2 - 3 / RT	2 - 3 / RT	2 - 3 / RT
Postcuring		h / °C	24 / RT	24 / RT	24 / RT	24 / RT

Properties of cured material (24 h / RT)						
Glass transition temperature	TG	°C	55 - 60	ab. 50	ab. 50	ab. 50
Modulus of elasticity (Flex.)	DIN EN ISO 178	MPa	4000 - 4500	4000 - 4500	3000 - 3500	3000 - 3500
Flexural strength	DIN EN ISO 178	MPa	70 - 80	40 - 50	40 - 50	40 - 50
Deflection (at break)	DIN EN ISO 178	mm	4 - 4	2 - 2,5	2,5 - 3	2,5 - 3
Impact strength	DIN ISO EN 179	kJ/mm <sup>2</sup>	7 - 9	4 - 5	5 - 6	5 - 6
Hardness	DIN 53505	Shore D	ca. 85	80 - 82	80 - 82	80 - 82



## DPC-Epoxy resins for tooling and patternmaking

Handling data and final properties

## DPC-Adhesive resin

System		
DPC-Resin		KL
DPC-Hardener		K
Properties	With hardener 'K' a multi-purpose 2-component epoxy-resin adhesive. for tough bonds with high peel and shear strength	
Applications	For various materials, such as metals, wood, plastics, concrete, glass etc.	
Preparation/Processing		
Mix ratio	100 : X	Gew Teile 80
Mix viscosity (25°C)		mPa.s pasty
Pot life (100g/25°C)		min. 120
Curing		h / °C 24 / RT
Postcuring		h / °C 7d / RT
Properties of cured material (24 h / RT + 2 h / 120°C)		
Glass transition temperature TG	°C	ca. 75

## COMPOSITION AND PACKAGE SIZES

TYPES		AP 1		AP 2		AP 3		AP 4	
Resin	Hardener	kg Resin + Hardener	Item No.	kg Resin + Hardener	Item No.	kg Resin + Hardener	Item No.	kg Resin + Hardener	Item No.
<b>Gelcoat resins</b>		6 tins resin 6 units hardener		2 tins resin 2 units hardener		1 drum resin 1 cont. hardener			
OW	S	3 + 0,45 = 3,45	955.111	5 + 0,75 = 5,75	955.112	30 + 4,6 = 34,6	955.113	-	-
OW	TS	3 + 0,30 = 3,30	955.111A	5 + 0,50 = 5,50	955.112A	30 + 3,0 = 33,0	955.113A	-	-
OAG	S	3 + 0,30 = 3,30	955.131	5 + 0,50 = 5,50	955.132	30 + 3,0 = 33,0	955.133	-	-
OAG	TS	3 + 0,24 = 3,24	955.131A	5 + 0,40 = 5,40	955.132A	30 + 2,4 = 32,4	955.133A	-	-
OS	S	3 + 0,21 = 3,21	955.141	5 + 0,35 = 5,35	955.142	30 + 2,1 = 32,1	955.143	-	-
OS	TS	3 + 0,12 = 3,12	955.141A	5 + 0,20 = 5,20	955.142A	30 + 1,2 = 31,2	955.143A	-	-
OTG	S	3 + 0,36 = 3,36	955.151	5 + 0,60 = 5,60	955.152	30 + 3,6 = 33,6	955.153	-	-
OTG	TS	3 + 0,24 = 3,24	955.151A	5 + 0,40 = 5,40	955.152A	30 + 2,4 = 32,4	955.153A	-	-
VPM 1063A	VPM 1063B	3 + 0,36 = 3,36	955.161	5 + 0,60 = 5,60	955.162	30 + 3,0 = 33,0	955.163	-	-
<b>Multi-purpose resins</b>		6 tins resin 6 units hardener		1 cont. resin 1 cont. hardener		1 drum resin 1 cont. hardener		1 drum resin 1 cont. hardener	
MZ3	LN	3,6 + 0,72 = 4,32	955.251	10 + 2,0 = 12,0	955.252	25 + 5,0 = 30,0	955.253	50 + 10,0 = 60,0	955.254
MZ3	GR	3,6 + 1,20 = 4,80	955.251A	10 + 3,3 = 13,3	955.252A	25 + 8,25 = 33,25	955.253A	50 + 16,5 = 66,5	955.254A
MZ3	TS	3,6 + 0,72 = 4,32	955.251B	10 + 2,0 = 12,0	955.252B	25 + 5,0 = 30,0	955.253B	50 + 10,0 = 60,0	955.254B
MZ 2	LN	3,6 + 0,79 = 4,39	955.261	10 + 2,2 = 12,2	955.262	25 + 5,5 = 30,5	955.263	50 + 11,0 = 61,0	955.264
MZ 2	TS	3,6 + 0,72 = 4,32	955.261A	10 + 2,0 = 12,0	955.262A	25 + 5,0 = 30,0	955.263A	50 + 10,0 = 60,0	955.264A
<b>Laminating resins</b>		6 tins resin		1 cont. resin		1 drum resin		1 drum resin	
<b>Laminating paste</b>		6 units hardener		1 cont. hardener		1 cont. hardener		1 cont. hardener	
LW	LN	3,6 - 0,54 = 4,14	955.211	10 + 1,5 = 11,5	955.212	30 + 4,5 = 34,5	955.213	-	-
LW	LG	3,6 + 1,08 = 4,68	955.211A	10 + 3,0 = 13,0	955.212A	30 + 9,0 = 39,0	955.213A	-	-
LT 1	LN	3,6 + 0,72 = 4,32	955.221	10 + 2,0 = 12,0	955.222	25 + 5,0 = 30,0	955.223	50 + 10,0 = 60,0	955.224
LT 1	VPM 1085	3,6 + 1,44 = 5,04	955.221A	10 + 4,0 = 14,0	955.222A	25 + 10,0 = 35,0	955.223A	50 + 20,0 = 70,0	955.224A
LT 2	LN	3,6 + 0,72 = 4,32	955.231	10 + 2,0 = 12,0	955.232	25 + 5,0 = 30,0	955.233	50 + 10,0 = 60,0	955.234
LT 2	LG	3,6 + 1,44 = 5,04	955.231A	10 + 4,0 = 14,0	955.232A	25 + 10,0 = 35,0	955.233A	50 + 20,0 = 70,0	955.234A
LT 3	T 2	3,6 + 0,72 = 4,32	955.241B	10 + 2,0 = 12,0	955.242B	25 + 5,0 = 30,0	955.243B	50 + 10,0 = 60,0	955.244B
LT 4	T 4	3,6 + 0,72 = 4,32	955.241C	10 + 2,0 = 12,0	955.242C	25 + 5,0 = 30,0	955.243C	50 + 10,0 = 60,0	955.244C
LTT	T	3,6 + 0,72 = 4,32	955.241	10 + 2,0 = 12,0	955.242	25 + 5,0 = 30,0	955.243	50 + 10,0 = 60,0	955.244
LTT	T 2	3,6 + 0,72 = 4,32	955.241A	10 + 2,0 = 12,0	955.242A	25 + 5,0 = 30,0	955.243A	50 + 10,0 = 60,0	955.244A
VPM 1075A	VPM 1075B	3,6 + 1,32 = 4,92	955.271	10 + 3,6 = 13,6	955.272	25 + 9,0 = 34,0	955.273	50 + 18,0 = 68,0	955.274
VPM 1036	VP 763	3,6 + 1,20 = 4,80	955.271A	10 + 3,3 = 13,3	955.272A	25 + 8,25 = 33,25	955.273A	50 + 16,5 = 66,5	955.274A
VPM 1062A	VPM 1062B	3,6 + 1,20 = 4,80	955.271B	10 + 3,3 = 13,3	955.272B	25 + 8,25 = 33,25	955.273B	50 + 16,5 = 66,5	955.274B
LP 10	H 10 B	-	-	10 + 1,8 = 11,8	955.532	-	-	-	-
<b>Casting resins</b>		6 tins resin 6 units hardener		1 cont. resin 1 cont. hardener		1 drum resin 1 cont. hardener			
GG	GR	6 + 0,6 = 6,6	955.311	15 + 1,5 = 16,5	955.312	30 + 3,0 = 33,0	955.313	-	-
GG	GN	6 + 0,72 = 6,72	955.311A	15 + 1,8 = 16,8	955.312A	30 + 3,6 = 33,6	955.313A	-	-
GS	GR	6 + 0,6 = 6,6	955.321	15 + 1,5 = 16,5	955.322	30 + 3,0 = 33,0	955.323	-	-
GS	S	6 + 0,42 = 6,42	955.321A	15 + 1,05 = 16,05	955.322A	30 + 2,1 = 32,1	955.323A	-	-
GB	GR	6 + 0,6 = 6,6	955.331	15 + 1,5 = 16,5	955.332	30 + 3,0 = 33,0	955.333	-	-
GB	S	6 + 0,42 = 6,42	955.331A	15 + 1,05 = 16,05	955.332A	30 + 2,1 = 32,1	955.333A	-	-
GW	GR	6 + 0,6 = 6,6	955.361	15 + 1,5 = 16,5	955.362	30 + 3,0 = 33,0	955.363	-	-
GW	TT	6 + 0,36 = 6,36	955.361A	10 + 0,6 = 10,6	955.362A	30 + 1,8 = 31,8	955.363A	-	-
GHG	GR	6 + 0,6 = 6,6	955.351	15 + 1,5 = 16,5	955.352	30 + 3,0 = 33,0	955.353	-	-
GHG	GN	6 + 0,9 = 6,9	955.351A	15 + 2,25 = 17,25	955.352A	30 + 4,5 = 34,5	955.353A	-	-
GTG	T	6 + 0,42 = 6,42	955.341	15 + 1,05 = 16,05	955.342	30 + 2,1 = 32,1	955.343	-	-
<b>URESID</b>		6 tins A-Comp. 6 units B-Comp.				1 drum A-Comp 1 cont. B-Comp			
25 R	B-Comp.	4,8 + 1,2 = 6,0	955.411	-	-	-	-	-	-
26 G	B-Comp.	5,22 + 0,78 = 6,0	955.421	-	-	-	-	-	-
28	B-Comp.	5,0 + 1,0 = 6,0	955.451	-	-	15 + 3,0 = 18,0	955.453	-	-
28 G	B-Comp.	5,0 + 1,0 = 6,0	955.451A	-	-	15 + 3,0 = 18,0	955.453A	-	-
<b>Adhesive resin</b>		4 tins resin 4 units hardener		1 tin resin 1 unit hardener		1 cont. resin 1 unit hardener			
KL	K	2,0 + 1,6 = 3,6	955.611	10,0 + 8,0 = 18,0	955.612	25,0 + 20,0 = 45,0	955.613	-	-

# Auxiliary materials and tools for resin working

## A) Auxiliary materials and tools

### Fillers (available either in the following package sizes or partial quantities)

956

Item No.	Product	Properties	Packing size
956.010	Aerosil	thickening compound	10 kg bags
956.020	Alu grt	grain 0 - 2 mm (spattered)	40 kg bags
956.025	Alu grt	grain 2 - 6 mm (spherical, small granules)	40 kg bags
956.030	Alu powder	45 $\mu$ , finely ground	50 kg bags
956.040	Cotton flakes	powdery, fibre length appr. 0,4 mm ouk density 135 kg/cbm, temp. res. appr 120 °C	20 kg bags
956.050	Micro balloons	red-brown, bulk density 48/80 kg/cbm	14 kg drum
956.060	Microdol	norwegian special chalk	50 kg bags
956.070	Nut shells, granulated	grain size appr. 2 mm, backing material	25 kg bags
956.090	Quartz powder	finely ground	50 kg bags
956.100	Quartz sand	grain 0,3 - 0,7 mm	50 kg bags
956.101	Quartz gravel	grain 1 - 3 mm	50 kg bags
956.110	Slate powder	acid resistant	50 kg bags
956.120	Polystyrene pearls	grain 1 - 2 mm, bulk density appr. 25 kg/cbm (hard foam)	7,5 kg bags
410.001	Talcum	finely ground, grey-green	50 kg bags



Fillers in large quantities upon request; please specify quantity!

### Fibreglass chips

Item No.	956.203	956.206
Length	3 mm	6 mm

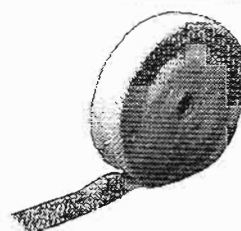
in 25 kg bags or partial quantities



956A

### Fibreglass fabrics for lamination in 50 m rolls

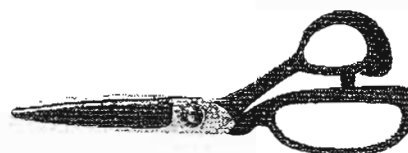
Quality	Weight	Backing per gm	Backing	Width/Item No.		
				50 mm	100 mm	1000 mm
thin	GL 1237	ca. 250 gr.	linen	957.101	957.102	957.103
thick	GL 1002	ca. 700 gr.	linen	957.201	957.202	957.203
extra thick	GL 1334	ca. 600 gr.	twill	957.301	957.302	957.303



957

### Scissors Item No. 958.001

for cutting fibreglass fabric etc., sturdy design, length 250 mm



958

### Colour pastes in 200 g tins

in aluminium tins, for colouring epoxy and polyurethane resins  
addition: appr. 1 to 5 parts by weight to 100 p.b.w. resin

Item No.	959.001	959.002	959.003	959.004	959.005	959.006
Colour	red	green	yellow	blue	black	white



959

### Polyethylene funnels Item No. 960.001

conical shape, for casting artificial resins, fits on polyethylene hoses,  
Item No. 960.119.

total height 175 mm

top dia. incl. rim 86 mm

downgate dia. 55 mm, spout outside dia. 19 mm



960

### Hoses of polyethylene, crystal-clear

Item No.	Inside dia.	Wall thickness	Outside dia.
960.107	7 mm	1 mm	9 mm
960.119	19 mm (fits to funnel 960.001)	2,5 mm	24 mm

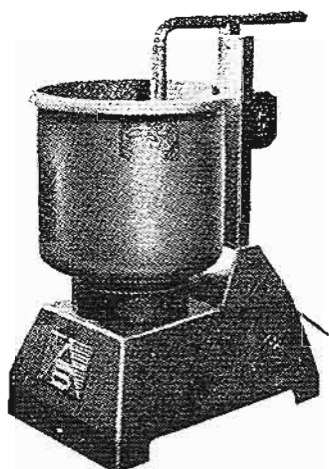


960A

# Auxiliary materials and tools for resin working

## B) Mixing tools

961



### Mixer for core sand Type M 35 F Item No. 341.001

multi-purpose mixer with two solid rubber wheels.

For resin bonded moulding masses and moulding and core sands with binders. Robust and reliable construction with aluminium base in which the drive and the electrical systems are incorporated. Push-button controlled, mixing bowl detachable, with mixing tool, smooth surfaces, facilitating cleaning, short mixing time, intensive mixing – the ideal mixer for small quantities!

Motor with overload protection.

The mixing bowl is firmly attached to the drive flange by means of a hook.

The mixing arm with blade is introduced into a square tube. After mixing the arm is removed and re-introduced at 90°. The mixing bowl can now be removed and emptied.

#### Technical data:

Dimensions:

length 650 mm, width 426 mm, height 850 mm, weight appr. 77 kg, motor 0,75 kW, 220 – 380 V, 3 m long cable with plug.

Mixing bowl:

height 400 mm, diameter 400 mm, 3 mm thick steel sheet, capacity appr. 35 l.

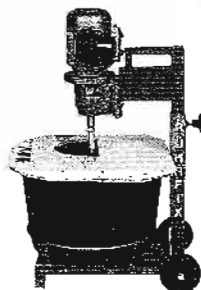
#### Separately available:

- a) Mixing bowl as described above
- b) Mixing tool as shown

Item No. 341.002

Item No. 341.003

961A



### Mixer 'Rührfix'

reasonable mixer for mixing 25 kg or 50 kg at one time, strong, solid, easy to handle, homogeneous mixtures, mixes thoroughly without residues. Complete with impeller, bucket and cover.

Item No.	Cont. max.	Motor			Weight	Spare parts	
		Voltage	Power	RpM		Bucket	Impeller
961.040	40 l	230 V	0,75 kW	68	57 kg	961 140	961.240
961.065	65 l	230 V	0,75 kW	68	44 kg	961 165	961.265

961B



### Mixer DHM 8 Item No. 961.301

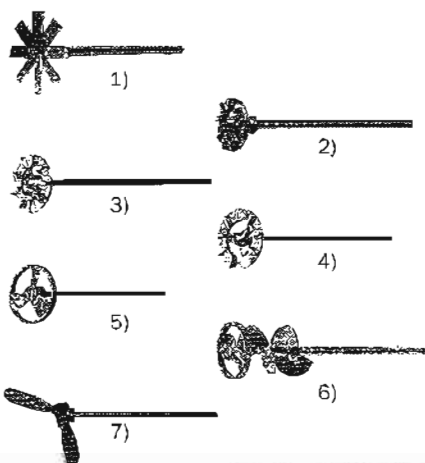
operated by hand and compressed air, light and handy, well considered, rigid construction, powerful, number of revolutions infinitely variable, reasonable.

Delivery contains: compressed-air operated motor with handle, impeller and mixer.

Weight	Pressure	RpM	Length of impeller	Mixer diameter
1,8 kg	3 – 8 bar	800/min	600 mm	120 mm

As usual a service-unit for compressed-air should be used.

962



### Mixing tools

1) Star mixer (of heavy metal)

a) Item No. 962.001  $\varnothing$  80 x 250 mm long, shaft dia. 10 mm

b) Item No. 962.001A  $\varnothing$  130 x 380 mm long, shaft dia. 10 mm

2) Friction mixer

Item No. 962.002 dia. 45 x 325 mm long, shaft dia. 8 mm

3) Friction mixer

Item No. 962.003 dia. 65 x 320 mm long, shaft dia. 8 mm

4) Friction mixer

Item No. 962.004 dia. 90 x 340 mm long, shaft dia. 10 mm

5) Mixing impeller

Item No. 962.005 dia. 100 x 400 mm long, shaft dia. 12 mm

6) Screw-type mixer

Item No. 962.006 dia. 75 x 380 mm long, shaft dia. 12 mm

7) Barrel impeller mixer

Item No. 962.007 dia. 230 mm, 110 cm long. Can be introduced through the 2"-barrel hole; folds out by centrifugal force.

# Auxiliary materials and tools for resin working

## B) Mixing tools (continued)

### Mixing pots of hard paper, PE-coated

Contents	Height	Top dia.	Bottom dia.	Item No.
530 ccm	83 mm	110 mm	90 mm	963.053
750 ccm	109 mm	111 mm	90 mm	963.075
1100 ccm	115 mm	132 mm	110 mm	963.110



963

### Mixing pots of polyethylene

reusable, resistant to solvents

Contents	Height	Top dia.	Bottom dia.	Item No.	
				Pot	Lid
180 ccm	72 mm	86 mm	57 mm	963.118	963.119
350 ccm	82 mm	85 mm	72 mm	963.135	963.136
500 ccm	89 mm	103 mm	88 mm	963.150	963.151
860 ccm	113 mm	107 mm	95 mm	963.186	963.187
1620 ccm	144 mm	136 mm	119 mm	963.262	963.263



963A

### Plastic buckets

without lid, with handle and scale, heavy-duty design

Cap. ltr.	2,5	5	10	12
Top dia. mm	170	200	270	280
Bottom dia. mm	130	150	185	205
Height mm	150	200	240	260
Item No.	137.102	137.105	137.110	137.112



964

### Stirrers

- 1) of beech, handle side rounded, 250 x 25 x 4 mm **Item No. 965.001**
- 2) of recycled plastics  
solvent-resistant, acid-resistant, can be recycled. reusable, with recesses for the tin rim  
255 x 25 x 4 mm **Item No. 965.002**



965

## C) Auxiliaries for mould mounting

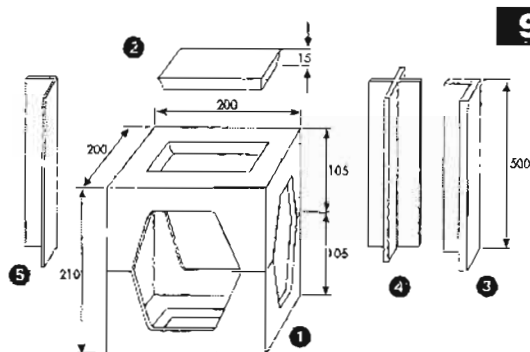
### Mould mounting elements of polystyrene

for easy production of basis-bodies for moulds or gauges (supporting cases).

Save a lot cost against manual production. May be glued with normal adhesive for polystyrene, may be combined in any way.

- 1) **Basic units** **Item No. 966.001**  
Each package contains:  
72 pcs. of basic elements (part 1) 200 x 200 x 105 mm  
100 pcs. of filling plates (part 2) 100 x 100 x 15 mm width
- 2) **Supplementary units** **Item No. 966.002**  
Each package contains:  
25 pcs. edge profiles, thick type (part 3), 40 x 40 x 500 mm length  
25 pcs. cross profiles (part 4), 30 x 30 x 500 mm length  
25 pcs. edge profiles, thin type (part 5), 30 x 30 x 500 mm length

We can also supply mounting elements made of aluminium, steel or cast-iron, ready to use.



966

### Aluminium-honeycomb boards (M-Boards)

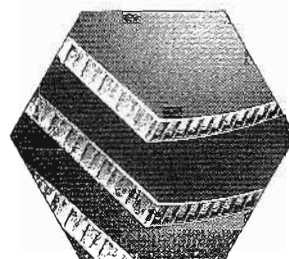
lightweight sandwich-boards, honeycombs and sheeting glued together, 0,55 mm thick aluminium sheeting, honeycombs aluminium (d = appr. 6 mm).

extremely lightweight, for tools and gauges  
board size 1220 x 2440 mm

Item No.	967.005	967.010	967.020
Thickness	1/2"	1"	2"
Weight (kg/m <sup>2</sup> )	4,6	5,8	8,1

Also available: Alu-U-channels for rims, length 3 m

Item No.	967.110	967.120	Item No.	967.200
Inside appr.	1"	2"	Alu-angles appr.	50 x 30 x 2 mm



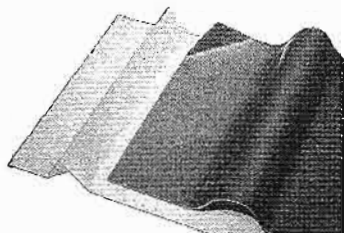
967

# Auxiliary materials and tools for resin working

## C) Auxiliaries for mould mounting (continued)

**968**

### Wax sheets



Type	STANDARD			TRANS	FLEX	HIGHTEMP	Packing
Colour	red			clear	brown	dark brown	
Melting point	50°C			60°C	130°C	150°C	
Application	wooden patterns			wooden patterns	resin patterns	metal patterns	
Size mm	305 x 610	305 x 610	450 x 1000	305 x 610	305 x 610	305 x 610	
Adhesive layer	without	with	without	with	with	with	
Thickness	Item No.						
0,5 mm	968.102	968.202	968.302	968.402	968.502	968.702	12 pc.
0,6 mm	968.103	968.203	968.303	968.403	968.503	968.703	12 pc.
0,7 mm	968.104	968.204	968.304	968.404	968.504	968.704	12 pc.
0,75 mm	968.105	968.205	968.305	968.405	968.505	968.705	12 pc.
0,8 mm	968.106	968.206	968.306	968.406	968.506	968.706	12 pc.
0,9 mm	968.107	968.207	968.307	968.407	968.507	968.707	12 pc.
1,0 mm	968.108	968.208	968.308	968.408	968.508	968.708	12 pc.
1,2 mm	968.109	968.209	968.309	968.409	968.509	968.709	8 pc.
1,4 mm	968.110	968.210	968.310	968.410	968.510	968.710	8 pc.
1,5 mm	968.111	968.211	968.311	968.411	968.511	968.711	8 pc.
1,6 mm	968.112	968.212	968.312	968.412	968.512	968.712	8 pc.
1,8 mm	968.113	968.213	968.313	968.413	968.513	968.713	8 pc.
2,0 mm	968.114	968.214	968.314	968.414	968.514	968.714	8 pc.
2,5 mm	968.115	968.215	968.315	968.415	968.515	968.715	6 pc.
3,0 mm	968.116	968.216	968.316	968.416	968.516	968.716	4 pc.
3,5 mm	968.117	968.217	968.317	-	-	968.717	4 pc.
4,0 mm	968.118	968.218	968.318	-	-	968.718	4 pc.
5,0 mm	968.119	968.219	968.319	-	-	968.719	3 pc.
6,0 mm	968.120	968.220	968.320	-	-	-	2 pc.
7,0 mm	968.121	968.221	-	-	-	-	2 pc.
8,0 mm	968.122	968.222	-	-	-	-	2 pc.

**969**

### Silicon rubber, condensation-curing

#### 1) CARA-506 with catalyst T 46

reasonable, pale grey, multi-purpose, pourable, good flow, hardness Shore A 25, linear shrinkage 0,5 %, outstanding resistance to casting resins, particularly to polyesters, especially suitable for reproducing models with extensive undercuts in casting resins. Other materials, such as wax and plaster, can be processed also without any problem. If the rubber is to be applied to vertical surfaces, it can be rendered non-sag by adding 1 - 2 % w/w of Thixotropic Add. M to the catalysed mass (rubber base plus catalyst).

#### 2) Elastosil M 1470 with catalyst T 40

kneadable, especially for making moulds from low structured surfaces, hardness Shore A 55, low shrinkage (0,2 %), therefore excellent moulding accuracy, high mechanical strength. Add 5 % catalyst, working time 20 min., demoulding may start after about 2 hrs., pink colour.



#### 3) Elastosil M 4470 with catalyst T 40

pourable, high heat resistance and thermal conductivity, for low melting point metals and alloys (tin), hardness Shore A 60, shrinkage 0,8 %, excellent flow, working time 20 - 40 min., demoulding may start after 2 or 4 hours (depending on the added quantity of catalyst, which should be between 2 and 3 % w/w), red-brown.

#### 4) Elastosil M 4440 with catalyst T

pourable, flexible, light grey, of medium hardness (Shore A 45), shrinkage 0,4 %, working time 20 - 40 min. (depending on the added quantity of catalyst which should be between 2 and 4 % w/w), demoulding may start after 2 or 4 hours.

#### 5) Elastosil M 2471 with catalyst T40

brushable, no flowing on vertical surfaces, light-grey, hardness Shore A 55, shrinkage 0,4 %, working time 20 - 50 min. (depending on the added quantity of catalyst which should be between 2 and 3 % w/w), demoulding may start after 2 or 4 hours.

Rubber type	Cont./Item No.	
	1 kg	5 kg
CARA-506	427.201	427.202
M 1470	427.001	427.002
M 4470	427.101	427.102
M 4440	427.401	427.402
M 2471	427.301	427.302

Catalyst type	Cont./Item No.		
	40 gr.	50 gr.	200 gr.
T 46	-	427.211	-
T 40	427.011	-	427.012
T	427.411	-	427.412
Thix. Add. M	20 gr.		40 gr.
Item No.	427.221		427.222

**970**



### Sealing cord Item No. 970.008

dia. 8 mm, flexible and reusable, excellent adhesion to practically all materials, temperature resistance (perm.) 60 to 120°C; max. temperature of 200°C (temporarily). 17,5 m on each roll

**971**



### Crepe adhesive tape 4321, white

special crepe paper, for taping corners and bends free from creases. 50 m on each roll

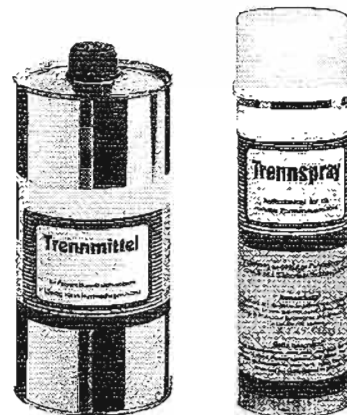
Item No.	971.012	971.015	971.019	971.025
Width	12 mm	15 mm	19 mm	25 mm

# Auxiliary materials and tools for resin working

## D) Insulating products

### Releasing agents

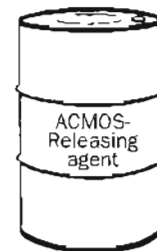
Product	Cont.	Item No.
<b>DPC-releasing agent '4' liquid</b> for brush application, quickly drying, free of silicone, excellent polishable	0.8 kg	972.010
	4,5 kg	972.011
<b>Releasing wax, pasty (NL 1)</b> apply a thin layer with a brush or cloth, polishable	1,0 kg	972.020
<b>Releasing film, water soluble (NL 2)</b> for waxed surfaces. forms forms a flexible, transparent film	1,0 kg	972.030
<b>Teflon-spray</b> excellent releasing properties, the film is heat-resistant up to 260°C	300 ml	972.040
<b>Releasing spray ALPA-SEP Super</b> releasing spray for universal use for PU-, Epoxy- or polyester-components esp. from Elastomer moulds	400 ml	972.050
<b>Releasing spray Baysilone-M</b> without solvents, therefore usable even for polystyrene	400 ml	972.060
<b>Vaseline, technical type, white</b>	1,0 kg	972.070



972

### Releasing agents ACMOS

Product	Cont.	Item No.
<b>ACMOSAN 82-99F</b> , liquid excellent releasing properties, low built-up in the mould, economic in use	5 kg	973.101
	20 kg	973.102
<b>ACMOSAN 82-177</b> , liquid film forming, water soluble, non-sag at vertical surfaces, excellent wetting power	5 kg	973.111
	20 kg	973.112
<b>ACMOSAN 82-4P</b> , pasty improves the wetting of film-forming releasing agents, excellent primer	5 kg	973.121
	20 kg	973.122
<b>ACMOSAN 82-2405</b> , parting spray free of silicones and CFC, wide range of application, excellent polishable, high quality of surface	400 ml	973.131
<b>ACMOSAN 82-203</b> , liquid especially for quick-setting PU-resins, free of CFC, low built-up in the mould, economic in use	5 kg	973.141
	20 kg	973.142



973

### DPC-Sealer K4, 1-comp. Item No. 974.001

solvent-based, set by air humidity, transparent, very good resistance to abrasion and very flexible. For sealing porous surfaces for the subsequent application of releasing agents (first application may be thinned) or as a very abrasion resistant coating for hard-wearing patterns.

In pots of 1 kg.



974

### Thinner for sealer K4 Item No. 974.101

In pots of 1 ltr.

974A

### Parting compound spraying cans SG

for liquids parting compounds

Without propellant, environmentally friendly, as compressed air is used, max. pressure 10 bar, optimum pressure 7,5 bar, volume up to 0,7 l parting compound. Different spray and jet nozzles are included in the scope of supply; can be refilled and reused.

Item No.	975.001	975.002
Cont.	0,7 ltr.	0,5 ltr.



975

Set of spares Item No. 975.101 comprises valve, 200 mm long extension tube as well as 4 different spray heads

# Auxiliary materials and tools for resin working

## E) Dosing tools

976



### Fine-coat dosing tool Item No. 976.001

With this dosing tool liquids can be dosed exactly, straight from the original container.

The glass cylinder of this wall-mounted tool has a 5-ml-graduation. With an additional quantity limiter it is possible to exactly dose any quantity between 25 and 500 ml.

976A



### Hardener dosing tool Item No. 976.101

The 1-ml-graduation enables the exact dosing of liquid hardener, straight from the original container. This device is for stationary use. With an additional quantity limiter it is possible to exactly dose any quantity between 5 and 100 ml.

Dosing devices for 2-component resins upon request!

977



### Measuring jugs

with handle, hard, natural coloured, with measuring scale, chemical resistant

Item No.	112.001	112.002	112.005	112.010	112.020	112.030	112.050
Cap. ltr.	0,1	0,25	0,5	1,0	2,0	3,0	5,0
Height mm	80	120	135	170	205	230	267
Scale ml	10	50	50	100	100	100	100
Material	PP	PP	PP	PE	PE	PE	PE

978



### Injectors of plastic

for injecting artificial resin into small crevices

Item No.	978.005	978.010	978.020
Contents	5 ml	10 ml	20 ml

979



### Balances with digital indication

for resin/hardener mixtures. One-key operated, easy to handle, clearly readable LCD-display, operated with 9V-battery, power saving switch-off, may not be gauged. Size of platform 310 x 275 mm.

Item No.	979.101	979.102	979.103
Balance range	5 kg	10 kg	20 kg
Weight steps	2 gr.	5 gr.	10 gr.

## F) Coating tools

980



### Brushes

#### 1) Flat brush, No. 820

for applying coating resins, with metal collar

Item No.	098.401	098.402	098.403	098.404	098.405	098.406
Size	00	0	1	2	3	4
Width	12 mm	13,5 mm	17 mm	19 mm	21 mm	23 mm

#### 2) Flat brush, No. 845M

ideal for applying resins, with metal collar, short, strong bristles

Item No.	980.275	980.280	980.285	980.290
Width	3/4"	1"	1 1/2"	2"
Bristle lgh.	23 mm	25 mm	27 mm	30 mm

#### 3) Flat brush, No. 845

multi-purpose brush with slightly longer bristles, with metal collar

Item No.	098.207	098.210	098.215	098.220
Width	3/4"	1"	1 1/2"	2"
Bristle lgh.	29 mm	31 mm	33 mm	35 mm

#### 4) Surface brush Item No. 980.400 size 3 x 10 cm

#### 5) Annular brush, No. 1040

Item No.	100.102	100.104	100.108	100.112
Size	2	4	8	12
Dia.	20 mm	25 mm	35 mm	45 mm

#### 6) Pointed brush, No. 705 flat brush for applying coating resins in narrow recesses, flat, with metal collar

Item No.	099.204	099.208	099.212	099.216	099.220	099.224
Size	4	8	12	16	20	24
Width	4,5 mm	8,3 mm	12 mm	16,8 mm	21 mm	26,8 mm

#### 7) Special brush, Item No. 980.700

special brush for applying thin layers of Gelcoats, width 10 cm



# Auxiliary materials and tools for resin working

## F) Coating (continued)

### Roller (Nylon-fur)

Item No.	Width
981.010	140 mm
981.020	100 mm
981.030	180 mm



981

## G) Venting tools

### Metal roller, flexible

The spring coil adapts to any concave or convex curvature, this roller is ideal for removing air inclusions, easy to clean, well-thought through design

Item No.	982.001	982.002
Dimensions	40 x 130 mm	26 x 90 mm



982

### Metal roller, rigid

#### 1) Metal disc roller

Item No.	983.101	983.102	983.103	983.104
Dimensions	40 x 120 mm	40 x 65 mm	15 x 85 mm	15 x 40 mm

#### 2) Metal disc corner roller

Item No.	983.201
Dimensions	45 x 8 mm

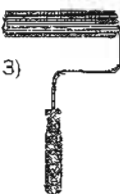
#### 3) Alu-transverse groove roller

Item No.	983.701	983.702	983.703	983.704	983.705
Dimensions	45 x 170 mm	45 x 135 mm	45 x 70 mm	21 x 135 mm	21 x 70 mm



1)

2)



3)

### Delrin-roller

#### 1) Grooved roller

Item No.	984.301	984.302	984.303	984.304	984.305
Dimensions	10 x 40 mm	10 x 80 mm	15 x 30 mm	15 x 40 mm	15 x 50 mm

Item No.	984.306	984.307	984.308	984.309	984.310
Dimensions	15 x 80 mm	15 x 100 mm	20 x 40 mm	20 x 80 mm	20 x 120 mm

Item No.	984.311	984.312	984.313	984.314
Dimensions	20 x 160 mm	25 x 135 mm	30 x 90 mm	30 x 195 mm

#### 2) Roller, curved

Item No.	984.401	984.402
Dimensions	25/30 x 90 mm	25/30 x 135 mm

#### 3) Hedgehog roller

Item No.	984.501	984.502
Dimensions	25 x 90 mm	25 x 135 mm

#### 4) Corner roller

Item No.	984.601
Dimensions	50 x 8 mm

1)

2)

3)

4)



984



# Auxiliary materials and tools for resin working

985



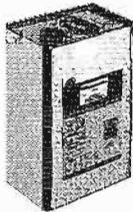
986



987



988



989



990



991



992



## H) Tools for barrels

### Barrel cocks of cast iron

Item No.	985.007	985.020
Thread	3/4"	2"

### Barrel cocks of polyethylene

Item No.	986.107	986.120
Thread	3/4"	2"

### Barrel key Best.-Nr. 987.001

fits in both barrel bung holes

## I) Cleaning agents

### Mould cleaning agents

Product	Cont.	Item No.
<b>ACMOSOL 130-167</b> (non-inflammable) for effectively removing of parting agent residues, without damaging the mould surfaces	5 kg	988.105
	20 kg	988.120
<b>Acetone</b> (inflammable, non-toxic) efficient solvent	20 l	988.220

### Cleaning concentrate PURFIX

Tools which got dirty from resins cannot cut exactly. The residues of resin complicates also sharpening, as the abrasives get sealed. Periodical cleaning of tools by PURFIX thus will save both tools and service-costs.

Item No.	Cont.	May be thinned to
989.301	1 ltr.	5 ltr.
989.305	5 ltr.	30 ltr.
989.330	30 ltr.	180 ltr.

### Cleaning rags cleaned and disinfected, in 25 kg bags

Item No.	990.001	990.002
Quality	coloured cotton	white linen

### Steel wool

long uniform shavings, tough  
in 200 gr. packages

Item No.	991.100	991.102
Quality	00 = fine	2 = medium

## Skin cleaning and skin-care products

### 1) Hand cleaning product

Product	Cont.	Item No.
<b>Gentilo</b> -hand cleaning and skin-care cream, apply before beginning the work, wash and rinse dirty hands with water	95 gr	992.110
<b>Cupran</b> -paint remover the mild, special skin cleaning agent	250 ml	992.120
	1000 ml	992.121

### 2) Skin-care products

Product	Cont.	Item No.
<b>Arretif-Qu</b> , water-soluble skin-care cream silicon-free, to be rubbed into the skin after washing	100 gr	992.210
<b>Silcoderm-F</b> , skin-care cream	35 gr	992.220

# Machines for pattern-makers

993

## Disc grinding machines

### 1) Type SM 30 T / SM 40 T

- Rotation clockwise and counterclockwise
- Inclineable desk
- Low noise level
- Key-bed for angel stop
- Dust exhaust:

Version A:  
with dust exhaust connecting piece for separate exhauster  
(on bottom or backside)

Version B:  
with integrated dust exhauster and removable  
drawer for dust.

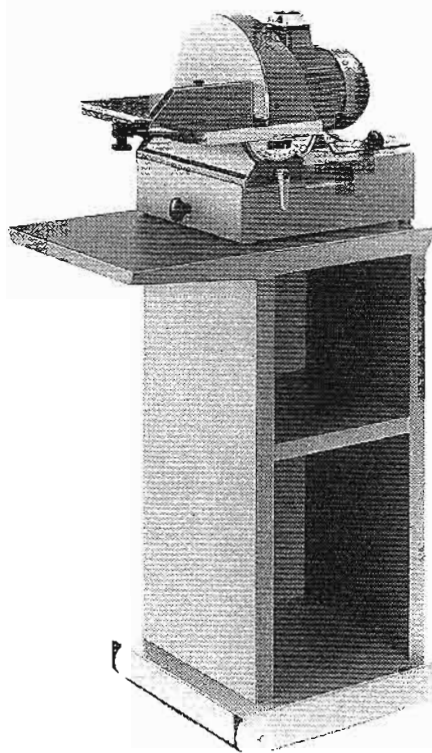
Technical data:	SM 30 T	SM 40 T
Disc diameter	300 mm	400 mm
Dimension of table	170 x 420 mm	225 x 550 mm
Inclination of table	+45° / -45°	-45° / -45°
Motor: - Power	0.75 kW	1.5 kW
- Rpm	1500 min <sup>-1</sup>	1500 min <sup>-1</sup>
- Voltage	3 x 380 V, 50 Hz	3 x 380 V, 50 Hz
Exhaust connection	∅ 60 mm	∅ 80 mm
Weight	27 kg	55 kg

#### Extra versions of motor

Capacitor 1ph 220V	0,55 kW	1,1 kW
Motorbrake (standstill after 5 sec.)	-	●

#### Extra accessories:

Guided angel stop	●	●
Top for angel stop	●	●
Circle grinding device	●	●
Movable machine stand	●	●



Type SM 30T with integrated exhauster, guided angle stop with top and movable machine stand

### 2) Type SM 60 S / SM 90 S

- Rotation clockwise and counterclockwise  
with optical indication of direction
- Grinding wheels inclineable
- Large working area
- Very low noise level

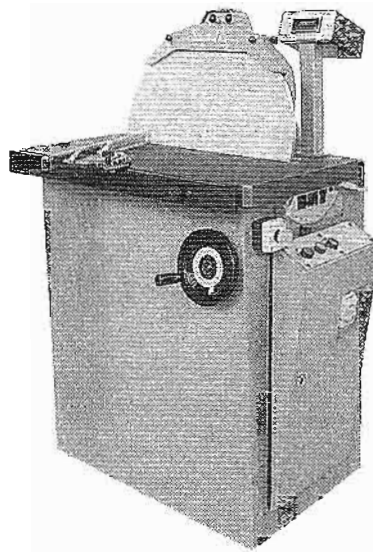
Technical data:	SM 60 S	SM 90 S
Disc diameter	600 mm	900 mm
Dimension of table	320 x 830 mm	450 x 1200 mm
Inclination of table	+30° / -30°	+30° / -30°
Motor: - Power	1.5 kW	4 kW
- Rpm	1000 min <sup>-1</sup>	1500 min <sup>-1</sup>
- Voltage	3 x 380 V, 50 Hz	3 x 380 V, 50 Hz
Exhaust connection	∅ 100 mm	∅ 150 mm
Weight	240 kg	460 kg

#### Extra versions of motor

Three phase curr. 3 x 380 V	2.2 kW	-
Motorbrake (standstill after 5 sec.)	●	●

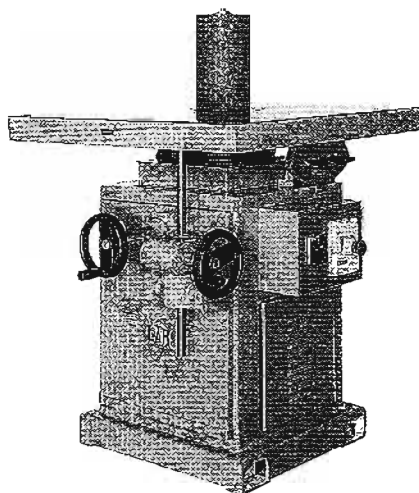
#### Extra accessories:

Integrated dust exhauster	14 m <sup>3</sup> /min	20 m <sup>3</sup> /min
Digital control of inclination	●	●
Computer aided adjustment	●	●
Expansion of table	●	●
Halogene machine lamp installed	●	●
Guided angel stop	●	●



Type SM 60 S with digital indication, guided angel stop and broadened table

Please ask for detailed offers for all machines!

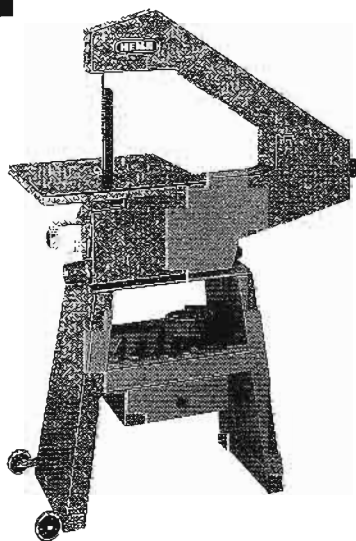


### Oscillating bobbin sanding machine Type 'PRN'

A very wide range of operations is possible with this machine as well as full utilization of the abrasive paper thanks to the machine's vast set of interchangeable smoothing rollers and provision for vertical adjustment of the oscillating roller with respect to the work table. The bed-inclineable by means of a flywheel and can be displaced thus allowing a best inclination, even if it remains adherent to the roller.

All shafts are made of heat-treated, chrome-plated and ground steel so as to ensure minimum coefficient of friction, improved working life and fault-free operation.

<b>Technical data:</b>	
Table size	810 x 810 mm
Table tilting range	+30° / -15°
Amplitude of roller oscillation	25 mm
Vertical adjustment of roller	120 mm
Driving motor power	1,5 / 1,8 kW
RpM	1400 / 2800 U/min
Motor-power of aspirator	0,40 kW
Air flow	600 m <sup>3</sup> /h
Diam. of aspirator's connection	80 mm
Roller height (standard)	220 mm
Rollers of aluminium	40 - 50 - 60 - 70 - 80 - 100 - 120 - 150 - 180 mm ∅
Net weight	320 kg
<b>Accessories upon request</b>	
Rollers of rubber	120 mm high: 20 - 25 - 30 - 35 - 40 - 45 - 50 mm ∅
Rollers of aluminium	300 mm high: 40 - 60 - 80 - 100 - 120 - 150 - 180 mm ∅
Aspirator	
Dust collector	
Machine lamp	24 V



### Contour belt sander PSM 300

With this machine all contour sanding jobs may be done perfectly, effective and reasonable.

- Automatic stretching of belts
- Very quick change of belts
- Sanding of interior contours with the same belt
- Quick-changing system of contour sticks

#### Technical data:

- Cast iron table. 480 x 480 mm, 45° inclineable, zero-stop with scale
- Motor 1.1 kW, 2800 RpM
- Very low noise level
- Sanding height max. 300 mm, height of contour sticks inside 170 mm, outside 245 mm
- Length of belts 2360 mm
- Relay to protect voltage drop
- Diameter of aspirator's connection 60 mm
- Connection for aspirator

#### Accessories:

- Contour sticks 25 mm width for inside and outside sanding; flat, round, convex, triangular
- Contour stick 50 mm width, flat, for outside sanding
- Belts 25 mm and 50 mm width
- Machine stand
- Driving device
- Drawer for tools
- Aspirator

**Please ask for detailed offers for all machines!**

## Combined grinding machines

### 1) Disc-, belt- and roller sanding machine PRC

- small dimensions
- movable
- inclineable grinding tables
- easy tool exchange

Technical data:	
Disc diameter	300 mm
Oscillation	12 mm
Roller's height	120 mm
Roller's diameter	15 - 45 mm
Belt length	830 mm
Belt width	20 - 40 mm
Motor power	1,47 kW
RpM	1.430 min <sup>-1</sup>

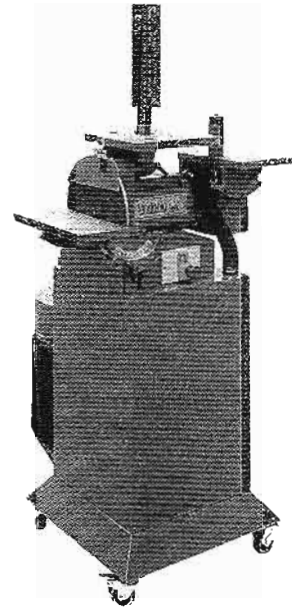
	Disc-	Belt	Roller-machine
Table dimension	350 x 150 mm	290 x 250 mm	290 x 200 mm
Table inclination	+45° / -30°	+25° / -30°	+35° / -30°

#### Standard equipment:

- 4 rollers, height 120 mm
- 3 belts, length 830 mm

#### Accessories:

- Goniometer square
- Rollers, height 120 mm hoch
- Bedplate with wheels, with electroaspirator inside
- Dust recoverer
- Machine lamp 24V



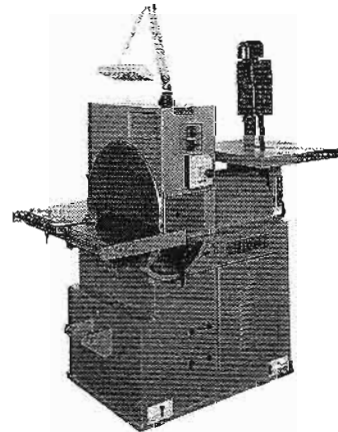
### 2) Disc- and belt sanding machine LGNV 600

- discs of aluminium
- rotation clockwise & counterclockwise
- tables inclineable
- exhaust connection

Technical data:		Inclination belt table	
Disc diameter	600 mm	+18° / -45°	
Size disc table	800 x 300 mm	Motor machine	
Inclination disc table	+35° / -45°	- power	1,5 kW
Belt length	1800 mm	- RpM	1140 min <sup>-1</sup>
Belts' width	40-60-80 mm	Exhausting motor	
Sanding height	400 mm	- power	0,5 kW
Size belt's table	700 x 600 mm	- airflow	600m <sup>3</sup> /h
		Exhaust conn. diameter	150 mm

#### Accessories upon request:

enforced motor	2,2 kW
steel disc	600 mm Ø
dust recoverer	
goniometer square	
machine lamp 24V	



### 3) Disc- and broad-belt sanding machine B 150

- heavy duty quality
  - low noise level
  - inclineable tables
- a) with 1 speed  
b) with 2 speeds

Technical data:			
Disc diameter	300 mm	Size belt table	375 x 190 mm
Size disc table	300 x 415 mm	Inclination belt table	+45° / -45°
Inclination disc table	+45° / -45°	Belt speed	1,8 m / sec.
Disc RpM	2400 min <sup>-1</sup>	Motor power	1,5 kW
Belt length x width	1220 x 150 mm	Net weight	120 kg



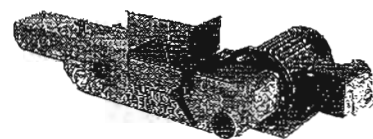
### 4) Table belt sander TBSM 75

may be used both horizontal and vertical

Technical data:			
Belt length	1000 mm	Motor 3 phase, curr. 400 V	0,55 kW
Belt width	75 mm	alternatively	
Sanding area	300 mm	Motor A.C. 230 V	0,55 kW
Belt speed	15 m/sec.		
Aspirator conn.	50 mm		
Weight	30 kg		

#### Delivery contains:

- Machine, one belt grain 80, aspirator connection, switch/plug-combination



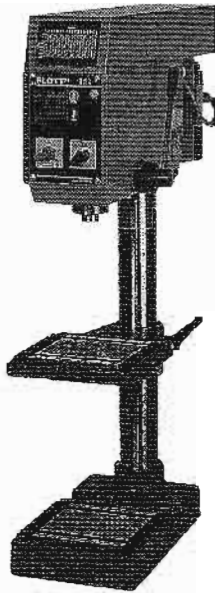
TBSM 75 in horizontal position

**Please ask for detailed offers for all machines!**

## Drilling machines

### 1) Table drilling machine TB P 18 ST R 1

Mandrel speed infinitely variable up to 2400 RpM



#### Standard equipment:

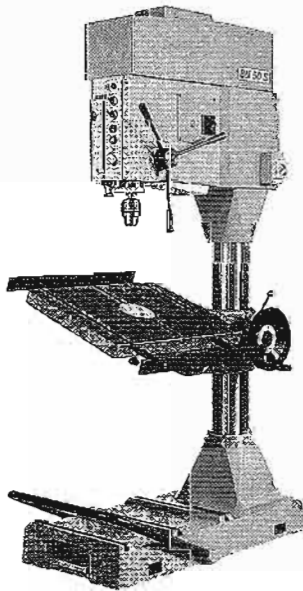
- Digital speed indication
- Digital drilling depth indication
- Quick setting depth stop
- Speed infinitely variable
- Cable length 1,5 m
- Relay to protect voltage drop
- Switch for rotation clockwise/counterclockwise

Technical data:	
Drill diam. permanent/standard	15 / 18 mm
Mandrel	MK II
Drilling depth	70 mm
Radial range	185 mm
Pillar diam.	70 mm
Table size	240 x 290 mm
Speed indication	digital
Drilling depth indication	digital
Depth stop	quick setting ring
Support	manual
Variation of table height	by rack
Weight	85 kg
Dist. mandrel/table	0 - 360 mm
Motor 3-phase curr. 400 V pole switchable	0,45 / 0,75 kW
Mandrel speed	500 - 2400 RpM infinitely

#### Accessories upon request:

- Machine lamp
- Quick setting drill-chuck B 16,1 - 13 mm
- Conical sticker MK II / B 16

### 2) Drilling machine Typ BM 50 S



Technical data:	
Depth	500 mm
Lifting of drill-mandrel	225 mm
Lifting of drill-mandrel by pedal	125 mm
Mandrel's speed infinitely variable	280 - 1900 min <sup>-1</sup> / 140 - 1900 min <sup>-1</sup>
Table size	650 x 500 mm
Table may be broadened for	200 mm
Table may be tilt away up to	90°
Table may be moved around the pillar	360°
Diam. of the pillar	∅ 150 mm
T-type slots in the table and bottom plate	12 mm
Chucking cone	MK 3
Drill chuck	3 - 16 mm oder 3 - 20 mm
Motor power	1,1 kW
Voltage standard	3 x 380 V, 50 Hz
Light	40 W
Weight	appr. 500 kg

#### Extra accessories:

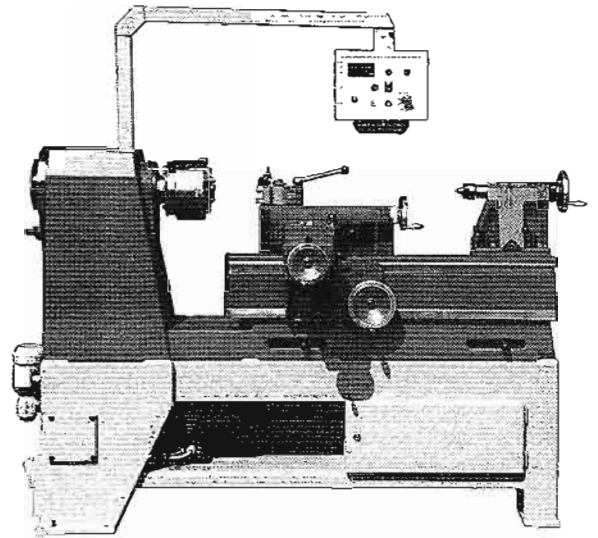
- Motor 1,5 kW, 750 RpM
- Mandrel's speed infinitely variable 140 - 1900 RpM, with Motor 1,0/1.6 kW, 750/1500 RpM
- Pedal
- Drill-chuck 3 - 16 mm with sticker
- Heavy-duty drill-chuck 3 - 20 mm, ball-bearing, incl. sticker
- Variation of table height by gearing motor and keyboard control

**Please ask for detailed offers for all machines!**

## Turning lathe Type DM 90 – 1000

- Big sized main mandrel
- Mandrel speed infinitely variable
- Big turning diameter within corner moulding
- Big sized working areas
- Bed may be moved towards the length-direction
- Easy to handle
- Useful dividing device

Technical data:		
Working areas	Turning length	1000 mm
	Turning diam. within corner moulding	900 mm
	Turning diam. over bed	430 mm
Tool carriages	In bed:	Movable 800 mm
	In between:	Movable 200 mm Turnable 360°
On top	Movable	220 mm
	Turnable	360°
	Transverse movable	220 mm
Main mandrel	Tool carriage	DIN 55027, size 6
	Internal cone	MK 5
	Speed	ca. 140 – 1900 rpm
	Motor-power	1,5 / 2,5 kW
Fixing end	Motor-speed	750 / 1500 rpm
	Pinole internal cone	MK 3
Weight		appr. 800 kg



### Extra accessories:

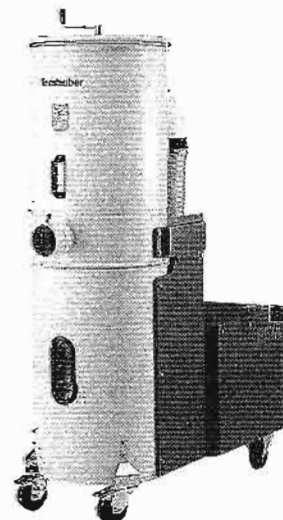
- automatical motor-brake incl. relay control
- speed variation by gearing motor with keyboard control
- digital indication of mandrel's speed (built-in into controlling unit)
- dividing device with 48 divisions
- chuck with three clamps, diam. 200 mm, graduated clamps for inside and outside
- chuck with four clamps, diam. 200 mm, graduated clamps for inside and outside
- aluminium-disc for planing with conical flange of steel, according to DIN 55027, size 6, diam. 400 or 600 mm
- Other accessories upon demand!

## Mobile extractor DUSTOMAT-10

Top selling compact extractor. It is mainly used for small woodworking machines with intake diameters of up to 100 mm. When the floor cleaning kit is attached, it can also be used for everyday cleaning jobs around the shopfloor.

Technical data:	
Motor (50 Hz)	1,1 kW
Voltage	230/400 V
Intake diam.	100 mm (80/63)
Filter surface	3,5 m <sup>2</sup>
Weight	98 kg
Air flow	720 m <sup>3</sup> /h
Max. negative pressure	2800 Pa
Sound level	67 dB(A)
Size	L 1150 mm W 515 mm H 1640 mm

Filter cleaning system manual



**Please ask for detailed offers for all machines!**