Best choice.

Bystronic Tools
Our Tools 3-P

Laser | Bending | Waterjet
bystronic.com

Overview about the icons used in this catalogue


Material / Hardness


max. permitted load


method of tool loading


nature of load


max. box depth

weight

availability / delivery time


clamping type

drawing number (BOSbase reference)

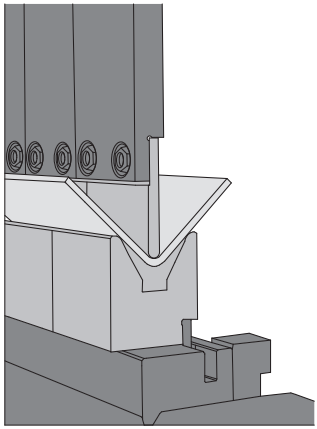

reversible tool


bottom tool support

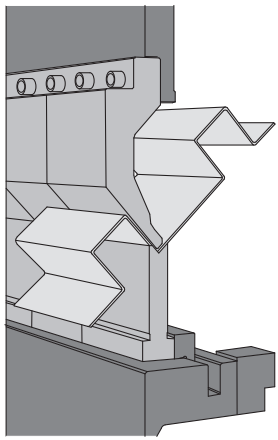
Content

Bystronic bending methods

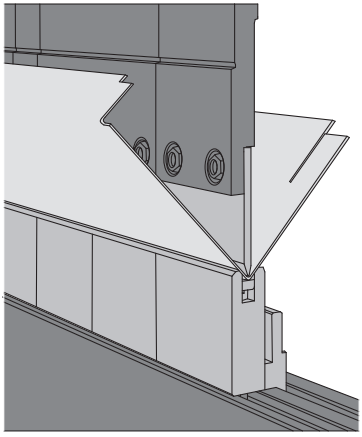
Air bending
For material thicknesses up to 50 mm mild steel



Coining
For material thickeneses-ses up to 3 mm mild steel



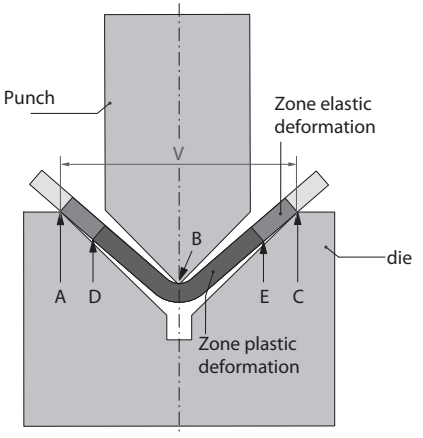
3-point-bending
Up to 12 mm mild steel



Bystronic bending methods

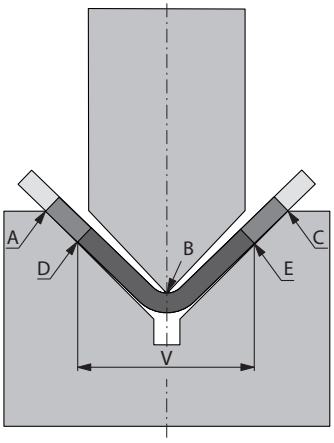
Principle of air bending

With the air bending method the bending angle is determined by the depth of penetration of the upper tool into the lower die. To that effect and amongst other factors the bending accuracy is mainly dependant upon the positional accuracy of the upper beam. Under load the material is stressed from A to C. After removal of the load the portions AD and EC spring back into thier original positions. In the case of ari bending without bottoming the vees of the bottom tool and the angle of the top tool must be smaller than 90°.

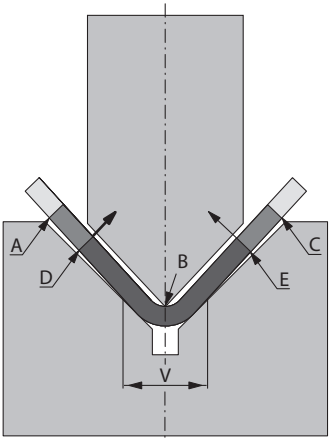


M = bottom tool
R = inner radius
V = buttom tool opening
S = upper tool

Principle of bottoming



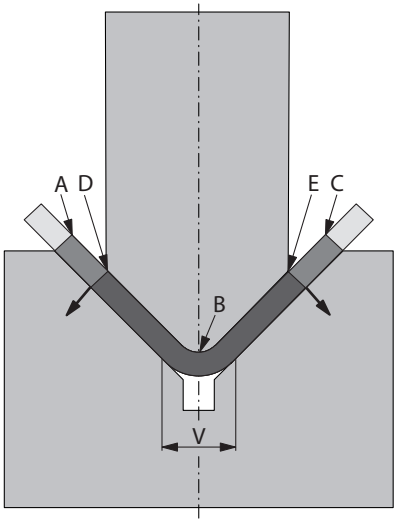
As soon as the areas AD and CE touch the sides of the vee in air bending with bottoming they will spring back into thier original position until the positions of contact have to move to D and E.



A still further penetration of the top tool will result in a disengagement of the points D and Efrom the lower die as the points of contact start to move in the overbending is larger than the spring back of the portion located underneath the points of contact the angle of the section after removal of the load will be smaller than the angle of the vee..

Principle of coining

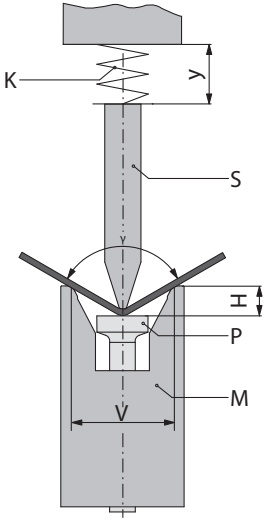
A further penetration of the top tool will result in a reopening of the section D and E until the top tool completely bottoms out on to the material. (start of the coining process).
The variation of the forces versus the travel of the top tool is a function of the material. The bottoming or coining process corresponds to a continous reduction of the die opening (V). The smaller the width of the vee during coining results in a corresponding reduction of spring back in comparison to airbending. The bending forces required are 4 to 8 times greater than those required for air bending.



Bystronic bending methods

Principle of 3-pont-bending

For the 3-point-bending the bottom tool groove depth (H) is accomplished with an accuracy of 1/1000 mm by means of a precise wedge system. With given sheet metal quality, sheet metal characteristics and plate thickness and taking resilience of the part into account, the bend angle to be produced is governed predictably and accurately by bottom tool depth (F). The top tool segments positionated along the bending line thereby adapts to the bending line of the bottom tools. The hydraulic cushion compensates for machine and material related factors.
The 3-point-bending process is something in between air bending and coining and delivers highest accuracy and flexibility. It opens new possibilities in designing and manufacturing of parts.



M = lower die
P = vee pin
H = vee depth
V = vee width
K = hydraulic cushion
S = upper tool

Calculation basics 3-point-bending

Pressing force table

Ri (mm)	1	1.2	1.2	1.4	1.6	2	2.2
B (mm)	4	5.5	5.5	6.5	8	9	10
Die	31.005.00	31.006.00	31.007.00	31.007.20	31.010.20	31.012.00	31.013.00
V (mm)	5.0	6.0	7.0	7.5	10.9	11.5	12
t (mm)	Approx. capacity required in kN/m for mild steel plates with a tensile strength of Rm = 450 N/mm²						
0.5	29	24					
0.8	75	62	53	50	34		
1.0	117	97	84	78	54	51	49
1.25		152	131	122	84	79	76
1.5			188	175	121	114	110
2.0					215	203	195
2.5					335	318	305
3.0						458	439
3.5							
4.0							
5.0							
6.0							
7.0							
8.0							
10.0							
12.0							

$F = 450 \times \frac{t^2}{V} \times f$ = ...kN/m [t (mm), V (mm)]							
Factor f	M.S.	1,3	S.S. 1,66	Alu 0,5			

Ri = approx. inner radius
B = smallest flange for 90° bends
V = die opening
t = material thickness

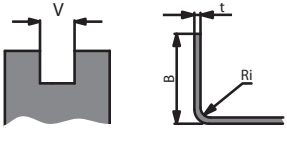
Calculation basics 3-point-bending

Pressing force table

2.7	3	3.9	4.1	6	9.5	15.5	18
12.5	16	19.5	23.5	30	45.5	70	85
31.016.00	31.021.00	31.024.00	31.032.10	31.040.10	31.060.00	31.090.00	31.110.00
16	21	25.6	32.1	39.2	60	90	110
Approx. capacity required in kN/m for mild steel plates with a tensile strength of Rm = 450 N/mm²							
82							
146	111	91					
229	174	143	114				
329	251	206	164				
448	341	280	223	183			
585	446	366	292	239	156		
		571	456	373	243	166	
			656	537	351	239	
				731	478	325	
					624	424	335
					975	663	523
						955	753

For Stainless Steel: Use next bigger size of bottom tool

Empirical rule:
For air bending the inner radius Ri is approx. 16% of the die opening V. The values Ri and B are valid for 90° bends.



Calculation basics 3-point-bending

Calculation of the hydrocushion - force

Calculation of the cushion-force for 1 top tool section of a length of 100 mm:

$$F_K = \frac{A_{1ST}\ (cm^2) \times P_K\ (bar)}{100}$$

F_K = capacity of the cushion

A_{1ST} = subjected surface of the hydrocushion (B x L)

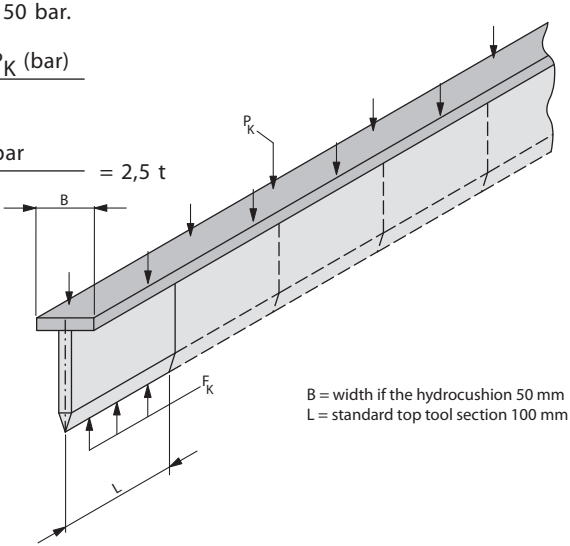
P_K = hydrocushion - force

Sample calculation:

Capacity of cushion FK for 1 top tool section of 100mm length by a cushion pressure of 50 bar.

$$F_K = \frac{B\ (cm) \times L\ (cm) \times P_K\ (bar)}{100}$$

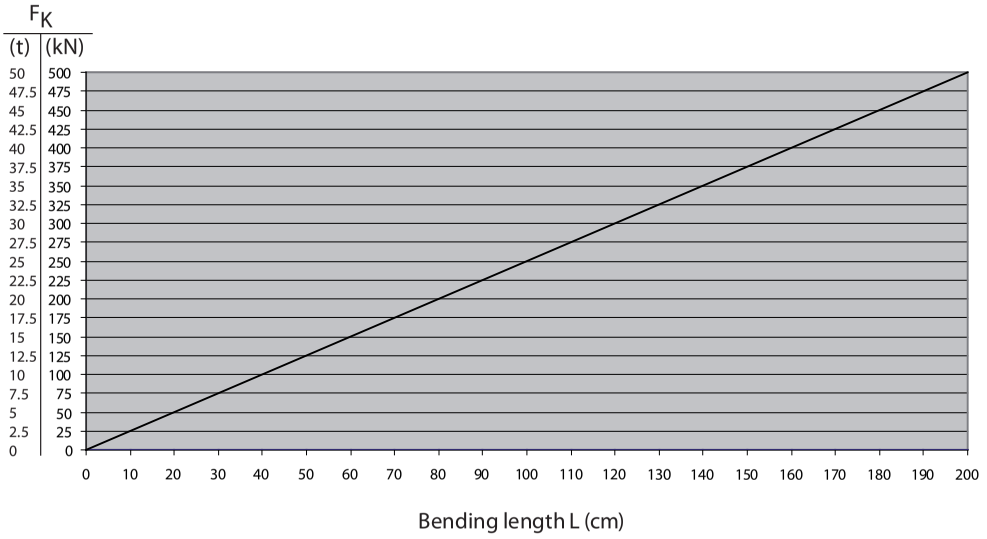
$$\frac{50\ cm^2 \times 50\ bar}{100} = 2{,}5\ t$$



B = width if the hydrocushion 50 mm
L = standard top tool section 100 mm

Maximum capacity of the hydrocushion 1000 kN/m (100 t/m)

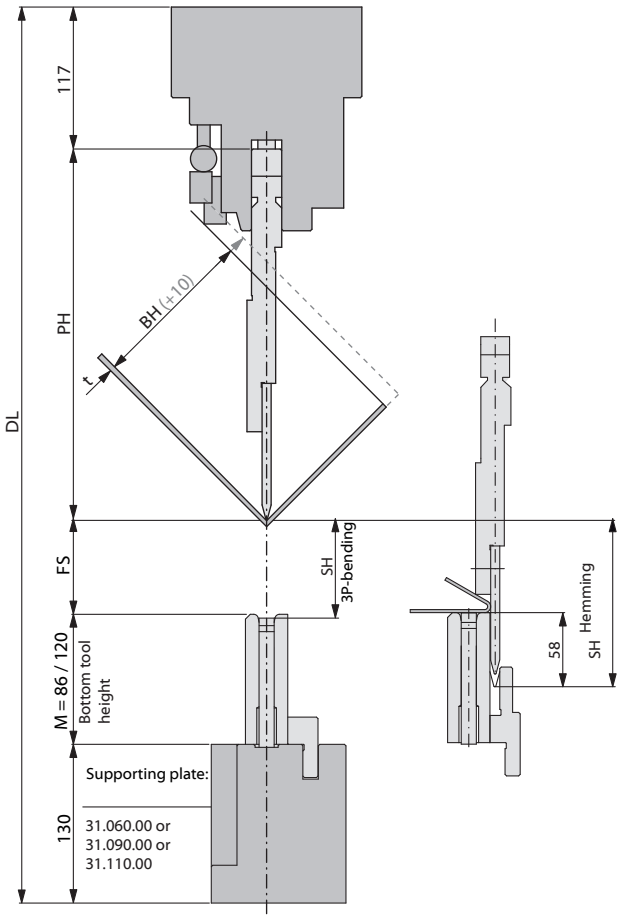
Capacity of the hydrocushion PK at a pressure of 50 bar



Maximum capacity of the hydrocushion 1000 kN/m (100 t/m)

Calculation basics 3-point-bending

Working space on the Hämmerle 3-point-bending-machine



Maximum capacity of the hydrocushion 1000 kN/m (100 t/m)

Calculation basics 3-point-bending

Working space on the Hämmerle 3-point-bending-machine

SH	DL	Typ	Typ	PH	FS (M = 86)	BH	Operation
Stro-ke	Open height	Punch holder	Punch	Top tool height	Free space	max. box height	Hemming
265	780	21.002.00	11.001.00	245	204	110	ja
		21.004.00	11.003.00	245	204	110	nein
		21.004.00	22.006.00 11.010.00	367	82	196	nein
		21.005.00	11.007.00	320	129	163	nein
400	915	21.002.00	11.001.00	245	339	110	ja
		21.002.00	11.003.00	295	289	145	nein
		21.003.00	22.006.00 11.010.01	330	254	170	nein
		21.004.00	11.003.00	245	339	110	nein
		21.004.00	12.015.00	245	339	110	nein
		21.004.00	22.006.00 11.010.01	367	217	196	nein
		21.005.00	11.001.00	350	234	184	ja
		21.005.00	11.003.00	400	184	219	nein
		21.005.00	11.007.00	320	264	163	nein
		21.005.00	12.015.00	400	184	219	nein
		21.010.00 *	11.001.00	400	184	219	ja
		21.010.00 *	12.015.00	450	134	255	nein

* The top tool combinations are limited for sheet thickness up to max. of 3mm.

Formula

For calculation of the max. boc height: $BH\ (mm) = \frac{[PH\ (mm) - 90]}{\sqrt{2}}$

For calculation of the top tool height: $PH\ (mm) = BH\ (mm) \times \sqrt{2} + 90$

Recommendation starter kits Hämmerle 3P

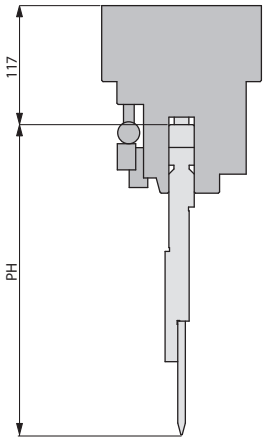
Bend length	Part number	Description	Piece	Unit
2100 mm	B8-10.0001.1	Punch + holder 11.028.00/21.002.00/100	17	pieces
	B8-10.0002.1	Punch + holder 11.028.00/21.002.00/200	2	pieces
	B8-10.0646	Die kpl.GS/Fld. 31.012.00/WL100	6	pieces
	B8-10.0647	Die kpl.GS/Fld. 31.012.00/WL500	3	pieces
3100 mm	B8-10.0001.1	Punch + holder 11.028.00/21.002.00/100	27	pieces
	B8-10.0002.1	Punch + holder 11.028.00/21.002.00/200	2	pieces
	B8-10.0646	Die kpl.GS/Fld. 31.012.00/WL100	6	pieces
	B8-10.0647	Die kpl.GS/Fld. 31.012.00/WL500	5	pieces
4100 mm	B8-10.0001.1	Punch + holder 11.028.00/21.002.00/100	37	pieces
	B8-10.0002.1	Punch + holder 11.028.00/21.002.00/200	2	pieces
	B8-10.0646	Die kpl.GS/Fld. 31.012.00/WL100	6	pieces
	B8-10.0647	Die kpl.GS/Fld. 31.012.00/WL500	7	pieces

Upper tools 3-point-bending

Description upper tools

Hydraulic fast clamping system of the upper tools.

Hydraulic fast clamping system of the upper tools
(Standard Hämmerle 3P)

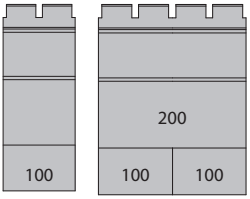


- 1000 kN/m
- vertical insertion
- head supported
- hydraulic
- tools are reversible

Automatic centering of the tool during clamping ensures quick set up times. The segmented tool system offers total flexibility with regard to different bending lengths.

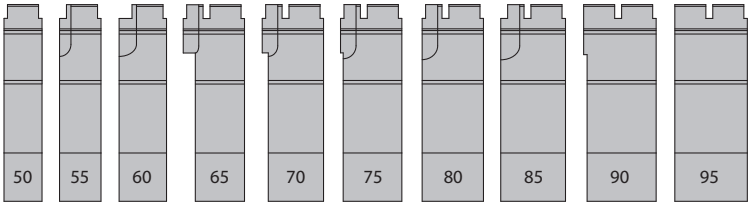
Segmentation of punches

1 set standard top tools

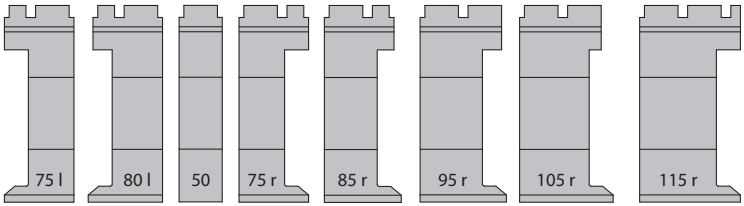


A top tool always consists of the punch and the punch holder.
The punch holder is available in a length of L = 100mm or 200mm.

Upper tools - intermediate pieces - Intermediate pieces with horn



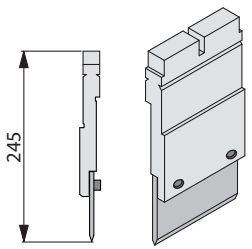
1 set of intermediate top tool sections without horn consists of 10 pieces.

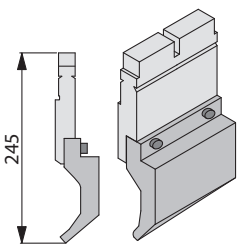


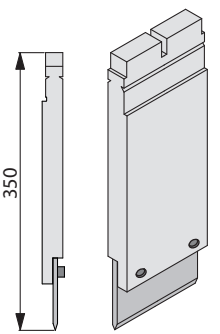
1 set of intermediate top tool sections with horn consists of 8 pieces.

Standard holder and 3 point upper tool combination

punch holder	21.002.00	21.004.00	21.005.00
punch	11.001.00	12.015.00	11.001.00



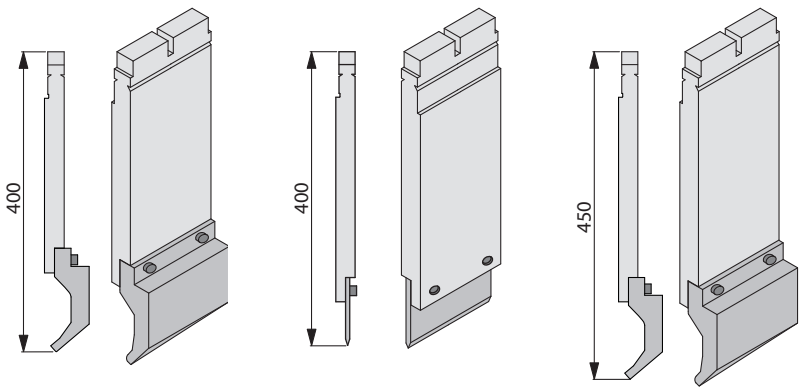




The max. permitted load of the tool combination is equal to the max. permitted load of the punch.

Standard holder and 3 point upper tool combination

punch holder	21.005.00	21.010.00 *	21.010.00 *
punch	12.015.00	11.001.00	12.015.00



* Top tool combinations with the punch holders 21.010.00 are limited for steel thickness up to max. 3mm.

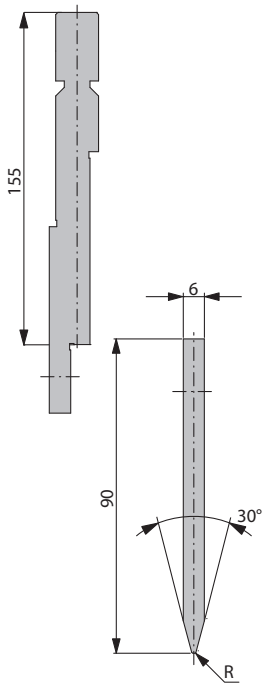
11.001.00

[R] Radius (mm)	1
Nose angle	30°
[H] Height (mm)	90
[B] Width (mm)	6

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 0.397 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH11001

Standard length	Part number
100 mm	B8-11.001.01.01
50 / 55 / 60 mm	B8-11.001.02.01 / 02 / 03
65 / 70 / 75 mm	B8-11.001.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.001.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-11.001.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-11.001.04.01 / 02 / 03 / 04 / 05

11.001.00 + 21.002.00



F = 1000 kN/m
R = 1 mm
H = 90 mm

Standard length	Part number
100 mm	B8-10.0001
200 mm	B8-10.0002
segmented 50 - 95	B8-10.0003
Horn set 50 - 115	B8-10.0014

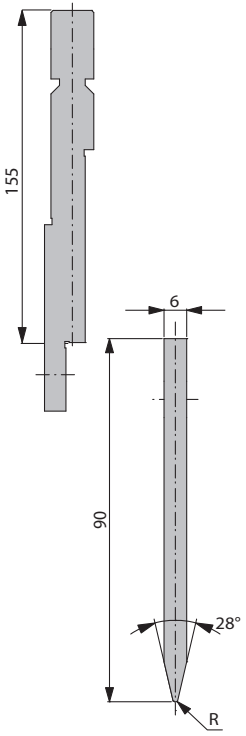
11.028.00

[R] Radius (mm)	1
Nose angle	28°
[H] Height (mm)	90
[B] Width (mm)	6

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 0.397 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BOS No. BH11028

Standard length	Part number
100 mm	B8-11.028.01.01
50 / 55 / 60 mm	B8-11.028.02.01 / 02 / 03
65 / 70 / 75 mm	B8-11.028.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.028.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-11.028.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-11.028.04.01 / 02 / 03 / 04 / 05

11.028.00 + 21.002.00



F = 1000 kN/m
R = 1 mm
H = 90 mm

Standard length	Part number
100 mm	B8-10.0001.1
200 mm	B8-10.0002.1
segmented 50 - 95	B8-10.0003.1
Horn set 50 - 115	B8-10.0014.1

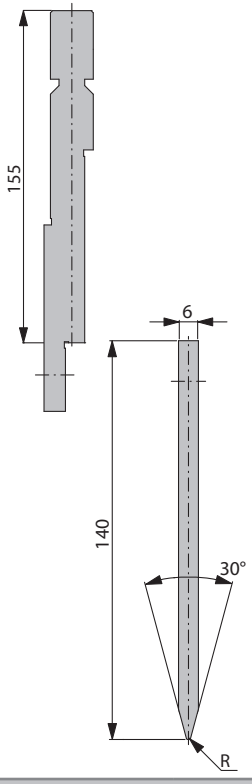
11.003.00

[R] Radius (mm)	1
Nose angle	30
[H] Height (mm)	140
[B] Width (mm)	6

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 0.627 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH11003

Standard length	Part number
100 mm	B8-11.003.01.01
50 / 55 / 60 mm	B8-11.003.02.01 / 02 / 03
65 / 70 / 75 mm	B8-11.003.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.003.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-11.003.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-11.003.04.01 / 02 / 03 / 04 / 05

11.003.00 + 21.002.00



F = 1000 kN/m
R = 1 mm
H = 140 mm

Standard length	Part number
100 mm	B8-10.1717
200 mm	B8-10.1721
segmented 50 - 95	B8-10.1347
Horn set 50 - 115	B8-10.1348

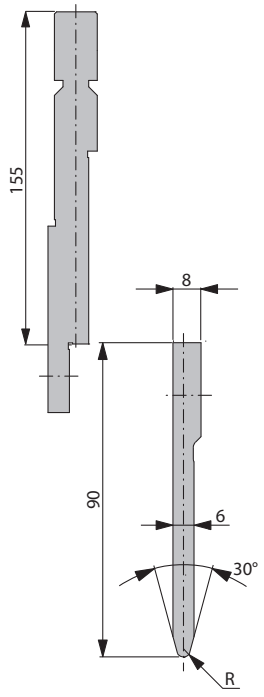
11.006.00

[R] Radius (mm)	2
Nose angle	30
[H] Height (mm)	90
[B] Width (mm)	8

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 0.448 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BOS No. BH11006

Standard length	Part number
100 mm	B8-11.006.01.01
50 / 55 / 60 mm	B8-11.006.02.01 / 02 / 03
65 / 70 / 75 mm	B8-11.006.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.006.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-11.006.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-11.006.04.01 / 02 / 03 / 04 / 05

11.006.00 + 21.002.00



F = 1000 kN/m
R = 2 mm
H = 90 mm

Standard length	Part number
100 mm	B8-10.0098
200 mm	B8-10.0099
segmented 50 - 95	B8-10.0100
Horn set 50 - 115	B8-10.0111

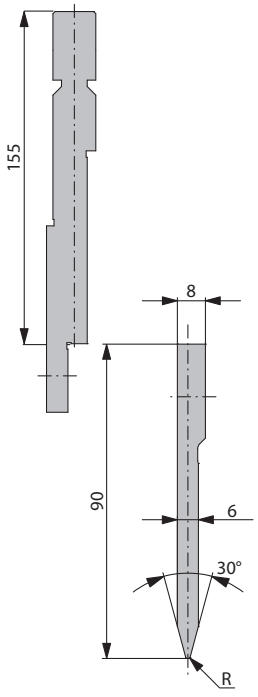
11.008.00

[R] Radius (mm)	1
Nose angle	30
[H] Height (mm)	90
[B] Width (mm)	8

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 0.438 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stocki / 24 h
- BH11008

Standard length	Part number
100 mm	B8-11.008.01.01
50 / 55 / 60 mm	B8-11.008.02.01 / 02 / 03
65 / 70 / 75 mm	B8-11.008.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.008.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-11.008.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-11.008.04.01 / 02 / 03 / 04 / 05

11.008.00 + 21.002.00



F = 1000 kN/m
R = 1 mm
H = 90 mm

Standard length	Part number
100 mm	B8-10.0160
200 mm	B8-10.0161
segmented 50 - 95	B8-10.0162
Horn set 50 - 115	B8-10.0173

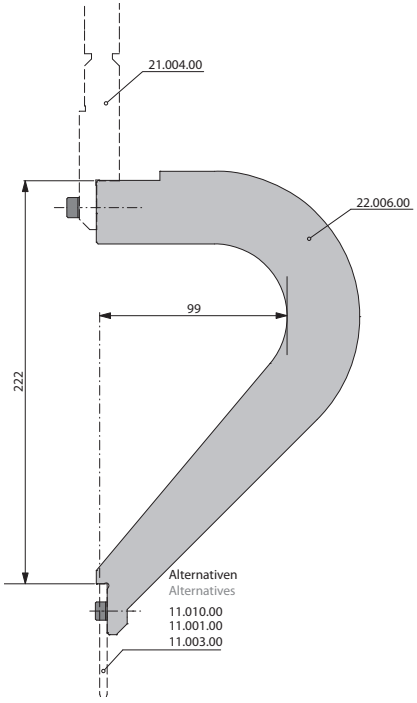
11.010.00

[R] Radius (mm)	1
Nose angle	30
[H] Height (mm)	40
[B] Width (mm)	6

- 42 CrMo4
- 58 - 62 HRC
- Fmax = 600 kN/m
- Operator side
- Head supported
- 0.165 kg/100 mm
- Hämmerle 3P
- 195.0 mm
- Ex stock / 24 h
- BOS No. BH11010

Standard length	Part number
100 mm	B8-11.010.01.01
50 / 55 / 60 mm	B8-11.010.02.01 / 02 / 03
65 / 70 / 75 mm	B8-11.010.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.010.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-11.010.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-11.010.04.01 / 02 / 03 / 04 / 05

11.010.00 + 22.006.00 + 21.004.00



F = 600 kN/m
R = 1 mm
H = 40 mm

Standard length	Part number
100 mm	B8-10.1162
segmented 50 - 95	B8-10.1301

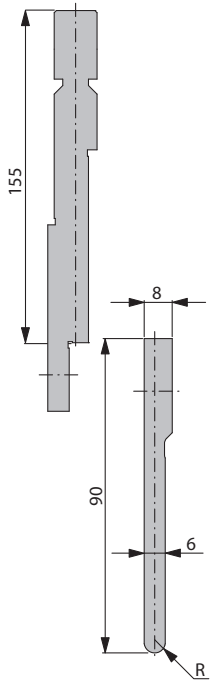
11.033.10

[R] Radius (mm)	3
Nose angle	-
[H] Height (mm)	90
[B] Width (mm)	8

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 0.451 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH11033

Standard length	Part number
100 mm	B8-11.033.11.01
50 / 55 / 60 mm	B8-11.033.12.01 / 02 / 03
65 / 70 / 75 mm	B8-11.033.12.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.033.12.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-11.033.15.01 / 14.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-11.033.14.01 / 02 / 03 / 04 / 05

11.033.10 + 21.002.00



F = 1000 kN/m
R = 3 mm
H = 90 mm

Standard length	Part number
100 mm	B8-10.0424
200 mm	B8-10.0425
segmented 50 - 95	B8-10.0426
Horn set 50 - 115	B8-10.0437

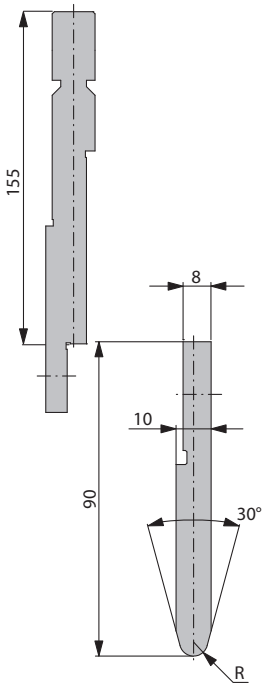
11.034.00

[R] Radius (mm)	4
Nose angle	30
[H] Height (mm)	90
[B] Width (mm)	8

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 0.620 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH11034

Standard length	Part number
100 mm	B8-11.034.01.01
50 / 55 / 60 mm	B8-11.034.02.01 / 02 / 03
65 / 70 / 75 mm	B8-11.034.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.034.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-11.034.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-11.034.04.01 / 02 / 03 / 04 / 05

11.034.00 + 21.002.00



F = 1000 kN/m
R = 4 mm
H = 90 mm

Standard length	Part number
100 mm	B8-10.0445
200 mm	B8-10.0446
segmented 50 - 95	B8-10.0447
Horn set 50 - 115	B8-10.1926

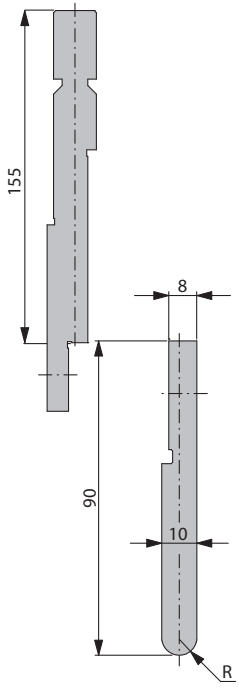
11.035.00

[R] Radius (mm)	5
Nose angle	-
[H] Height (mm)	90
[B] Width (mm)	8

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 0.628 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH11035

Standard length	Part number
100 mm	B8-11.035.01.01
50 / 55 / 60 mm	B8-11.035.02.01 / 02 / 03
65 / 70 / 75 mm	B8-11.035.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.035.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-11.035.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-11.035.04.01 / 02 / 03 / 04 / 05

11.035.00 + 21.002.00



F = 1000 kN/m
R = 5 mm
H = 90 mm

Standard length	Part number
100 mm	B8-10.0458
200 mm	B8-10.0459
segmented 50 - 95	B8-10.0460
Horn set 50 - 115	B8-10.0471

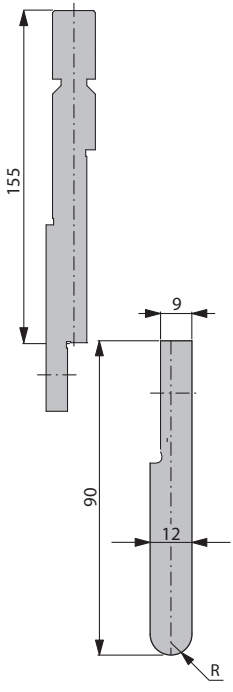
11.036.00

[R] Radius (mm)	6
Nose angle	-
[H] Height (mm)	90
[B] Width (mm)	9

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 0.733 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH11036

Standard length	Part number
100 mm	B8-11.036.01.01
50 / 55 / 60 mm	B8-11.036.02.01 / 02 / 03
65 / 70 / 75 mm	B8-11.036.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.036.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-11.036.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-11.036.04.01 / 02 / 03 / 04 / 05

11.036.00 + 21.002.00



F = 1000 kN/m
R = 6 mm
H = 90 mm

Standard length	Part number
100 mm	B8-10.1240
200 mm	B8-10.1335
segmented 50 - 95	B8-10.1912
Horn set 50 - 115	B8-10.1927

12.014.00

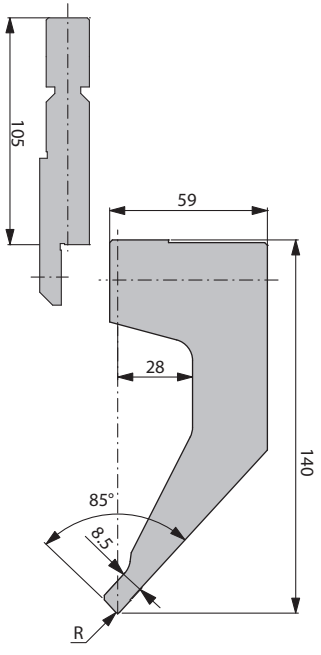
[R] Radius (mm)	1
Nose angle	85
[H] Height (mm)	140
[B] Width (mm)	59

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 975 kN/m
- Operator side
- Head supported
- 3.358 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH12014

Standard length	Part number
100 mm	B8-12.014.01.01
50 / 55 / 60 mm	B8-12.014.02.01 / 02 / 03
65 / 70 / 75 mm	B8-12.014.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-12.014.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-12.014.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-12.014.04.01 / 02 / 03 / 04 / 05

12.014.00 + 21.004.00

F = 975 kN/m
R = 1 mm
H = 140 mm



Standard length	Part number
100 mm	B8-10.0243
200 mm	B8-10.0244
segmented 50 - 95	B8-10.0245
Horn set 50 - 115	B8-10.0256

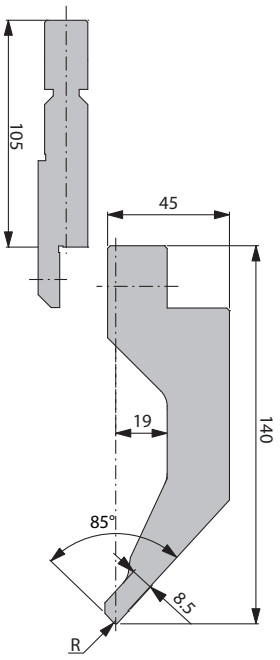
12.015.00

[R] Radius (mm)	1
Nose angle	85
[H] Height (mm)	140
[B] Width (mm)	45

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 975 kN/m
- Operator side
- Head supported
- 2.620 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH12015

Standard length	Part number
100 mm	B8-12.015.01.01
50 / 55 / 60 mm	B8-12.015.02.01 / 02 / 03
65 / 70 / 75 mm	B8-12.015.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-12.015.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-12.015.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-12.015.04.01 / 02 / 03 / 04 / 05

12.015.00 + 21.004.00



F = 975 kN/m
R = 1 mm
H = 140 mm

Standard length	Part number
100 mm	B8-10.0285
200 mm	B8-10.0286
segmented 50 - 95	B8-10.0287
Horn set 50 - 115	B8-10.0298

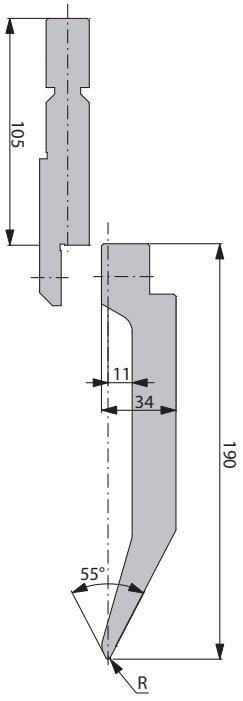
12.017.00

[R] Radius (mm)	1
Nose angle	55
[H] Height (mm)	190
[B] Width (mm)	34

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 750 kN/m
- Operator side
- Head supported
- 2.755 kg/100 mm
- Hämmerle 3P
- 145.0 mm
- Ex stock / 24 h
- BH12017

Standard length	Part number
100 mm	B8-12.017.01.01
50 / 55 / 60 mm	B8-12.017.02.01 / 02 / 03
65 / 70 / 75 mm	B8-12.017.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-12.017.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-12.017.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-12.017.04.01 / 02 / 03 / 04 / 05

12.017.00 + 21.004.00



F = 750 kN/m
R = 1 mm
H = 190 mm

Standard length	Part number
100 mm	B8-10.1400
200 mm	B8-10.1401
segmented 50 - 95	B8-10.1402
Horn set 50 - 115	B8-10.1928

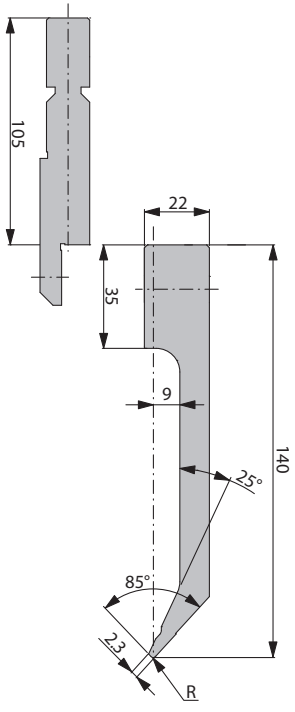
12.025.00

[R] Radius (mm)	1
Nose angle	85
[H] Height (mm)	140
[B] Width (mm)	22

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 250 kN/m
- Operator side
- Head supported
- 1.354 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BOS No. BH12025

Standard length	Part number
100 mm	B8-12.025.01.01
50 / 55 / 60 mm	B8-12.025.02.01 / 02 / 03
65 / 70 / 75 mm	B8-12.025.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-12.025.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-12.025.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-12.025.04.01 / 02 / 03 / 04 / 05

12.025.00 + 21.004.00



F = 250 kN/m
R = 1 mm
H = 140 mm

Standard length	Part number
100 mm	B8-10.1506
200 mm	B8-10.1507
segmented 50 - 95	B8-10.1929
Horn set 50 - 115	B8-10.1930

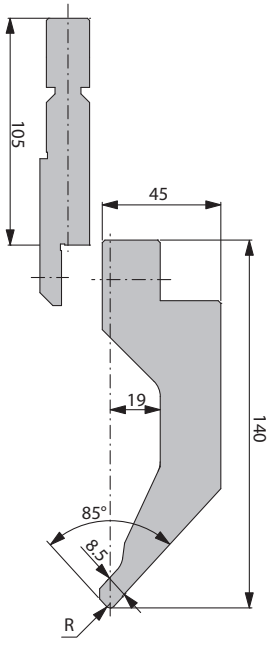
12.052.00

[R] Radius (mm)	2
Nose angle	85
[H] Height (mm)	140
[B] Width (mm)	45

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 975 kN/m
- Operator side
- Head supported
- 2.622 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH12052

Standard length	Part number
100 mm	B8-12.052.01.01
50 / 55 / 60 mm	B8-12.052.02.01 / 02 / 03
65 / 70 / 75 mm	B8-12.052.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-12.052.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-12.052.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-12.052.04.01 / 02 / 03 / 04 / 05

12.052.00 + 21.004.00



F = 975 kN/m
R = 2 mm
H = 140 mm

Standard length	Part number
100 mm	B8-10.0479
200 mm	B8-10.0480
segmented 50 - 95	B8-10.0481
Horn set 50 - 115	B8-10.0492

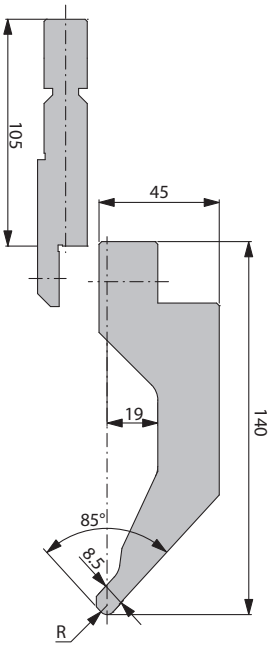
12.053.00

[R] Radius (mm)	3
Nose angle	85
[H] Height (mm)	140
[B] Width (mm)	45

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 975 kN/m
- Operator side
- Head supported
- 2.644 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH12053

Standard length	Part number
100 mm	B8-12.053.01.01
50 / 55 / 60 mm	B8-12.053.02.01 / 02 / 03
65 / 70 / 75 mm	B8-12.053.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-12.053.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-12.053.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-12.053.04.01 / 02 / 03 / 04 / 05

12.053.00 + 21.004.00



F = 975 kN/m
R = 3 mm
H = 140 mm

Standard length	Part number
100 mm	B8-10.0500
200 mm	B8-10.0501
segmented 50 - 95	B8-10.0502
Horn set 50 - 115	B8-10.0513

12.065.00

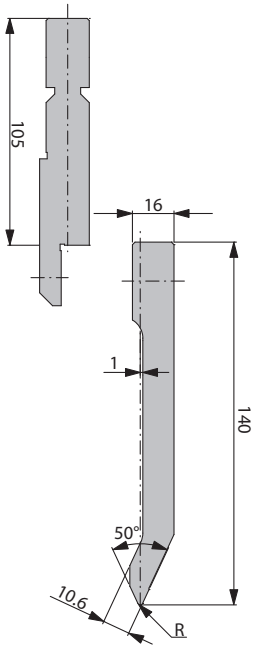
[R] Radius (mm)	1
Nose angle	50
[H] Height (mm)	140
[B] Width (mm)	16

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 1.360 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH12065

Standard length	Part number
100 mm	B8-12.065.01.01
50 / 55 / 60 mm	B8-12.065.02.01 / 02 / 03
65 / 70 / 75 mm	B8-12.065.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-12.065.02.07 / 08 / 09 / 10
Horns 75 l / 80 l	B8-12.065.05.01 / 04.06
75 r / 85 r / 95 r / 105 r / 115 r	B8-12.065.04.01 / 02 / 03 / 04 / 05

12.065.00 + 21.004.00

F = 1000 kN/m
R = 1 mm
H = 140 mm



Standard length	Part number
100 mm	B8-10.0521
200 mm	B8-10.0522
segmented 50 - 95	B8-10.0523
Horn set 50 - 115	B8-10.0534

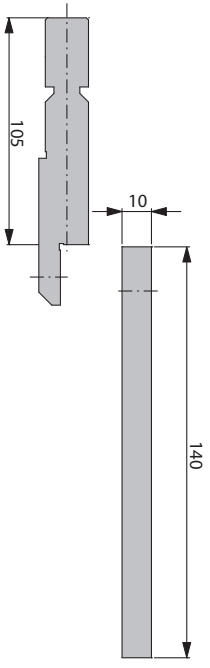
14.021.00

[R] Radius (mm)	-
Nose angle	-
[H] Height (mm)	140
[B] Width (mm)	10

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 1.085 kg/100 mm
- Hämmerle 3P
- ---
- Ex stock / 24 h
- BH14021

Standard length	Part number
100 mm	B8-14.021.01.01
50 / 55 / 60 mm	B8-14.021.02.01 / 02 / 03
65 / 70 / 75 mm	B8-14.021.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-14.021.02.07 / 08 / 09 / 10

14.021.00 + 21.004.00



F = 1000 kN/m
R = ---
H = 140 mm

Standard length	Part number
100 mm	B8-10.0369
200 mm	B8-10.0370
segmented 50 - 95	B8-10.0371

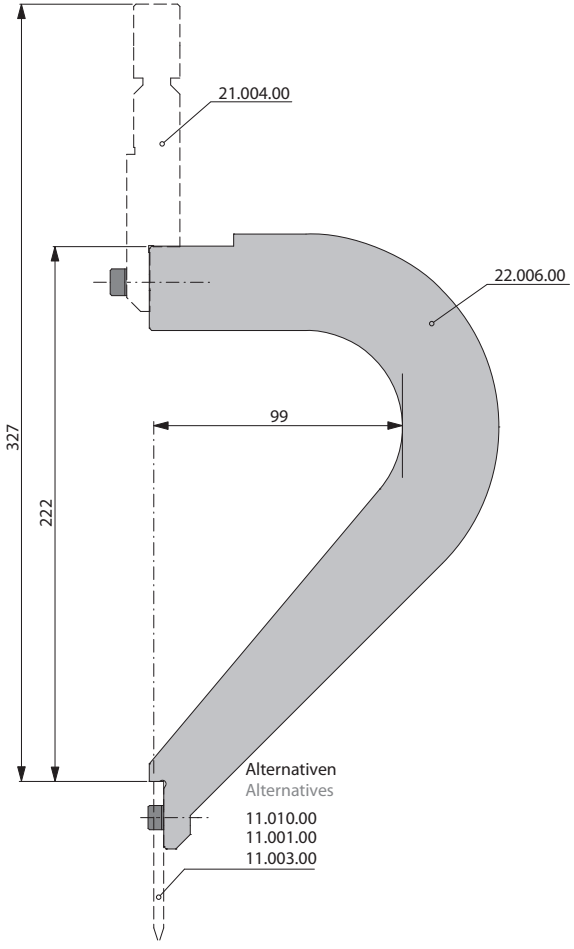
22.006.00

[R] Radius (mm)	-
Nose angle	-
[H] Height (mm)	222
[B] Width (mm)	99

- 42 CrMo 4
- ---
- Fmax = 600 kN/m
- Operator side
- Head supported
- 10.300 kg/100 mm
- Hämmerle 3P
- variable
- Ex stock / 24 h
- BH22006

Standard length	Part number
100 mm	B8-22.006.01.01
50 / 55 / 60 mm	B8-22.006.02.01 / 02 / 03
65 / 70 / 75 mm	B8-22.006.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-22.006.02.07 / 08 / 09 / 10

22.006.00 + 21.004.00



F = 600 kN/m
R = ---
H = 222

Radius punch holder 22.013.00

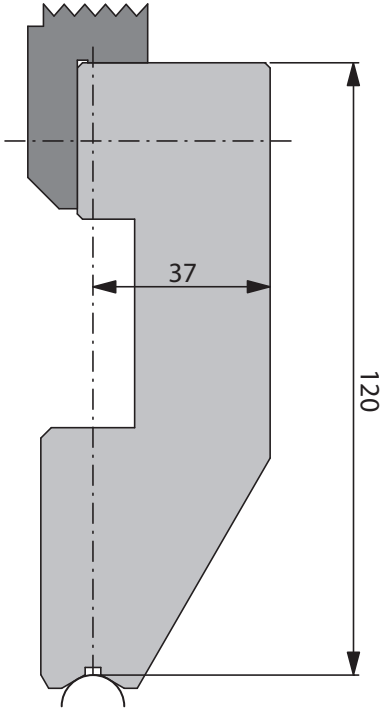
[R] Radius (mm)	6-12.5
Nose angle	-
[H] Height (mm)	120
[B] Width (mm)	37

- 42 CrMo 4
- ---
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 2.820 kg/100 mm
- Hämmerle 3P
- variable
- Ex stock / 24 h
- BH22013

Standard length	Part number
100 mm	B8-22.013.01.01
50 / 55 / 60 mm	B8-22.013.02.01 / 02 / 03
65 / 70 / 75 mm	B8-22.013.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-22.013.02.07 / 08 / 09 / 10

22.013.00

F = 1000 kN/m
R = ---
H = 120



Radius punch holder 22.014.00

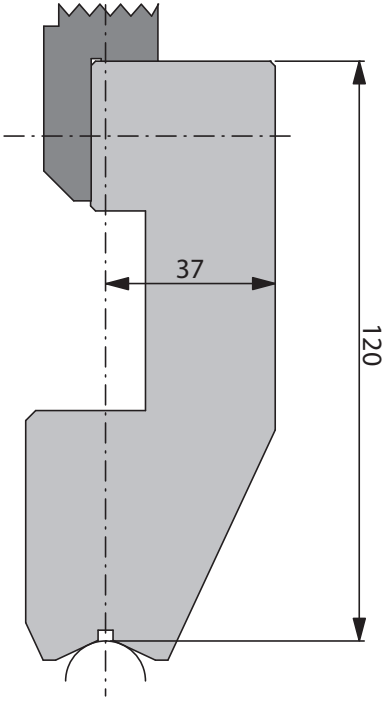
[R] Radius (mm)	8-20
Nose angle	-
[H] Height (mm)	120
[B] Width (mm)	37

- 42 CrMo 4
- ---
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 3.050 kg/100 mm
- Hämmerle 3P
- variable
- Ex stock / 24 h
- BH22014

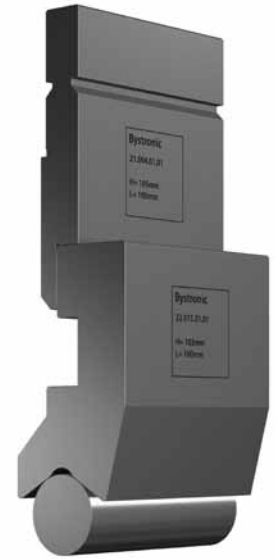
Standard length	Part number
100 mm	B8-22.014.01.01
50 / 55 / 60 mm	B8-22.014.02.01 / 02 / 03
65 / 70 / 75 mm	B8-22.014.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-22.014.02.07 / 08 / 09 / 10

22.014.00

F = 1000 kN/m
R = ----
H = 120 mm



Radius punch holder 22.015.00



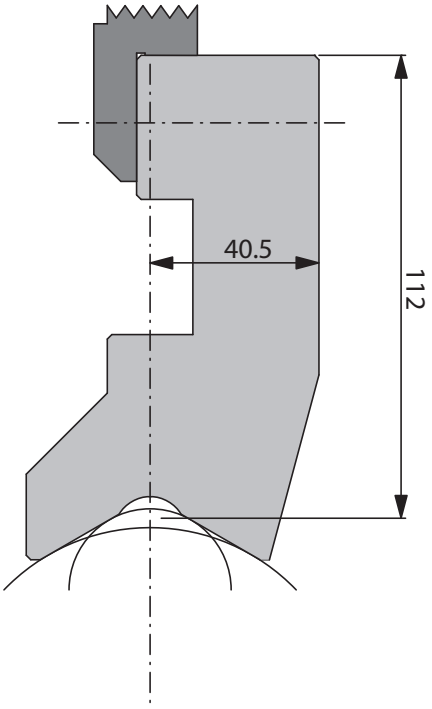
[R] Radius (mm)	18-45
Nose angle	-
[H] Height (mm)	112
[B] Width (mm)	40.5

- 42 CrMo 4
- ---
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 3.280 kg/100 mm
- Hämmerle 3P
- variable
- Ex stock / 24 h
- BH22015

Standard length	Part number
100 mm	B8-22.015.01.01
50 / 55 / 60 mm	B8-22.015.02.01 / 02 / 03
65 / 70 / 75 mm	B8-22.015.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-22.015.02.07 / 08 / 09 / 10

22.015.00

F = 1000 kN/m
R = ---
H = 112 mm



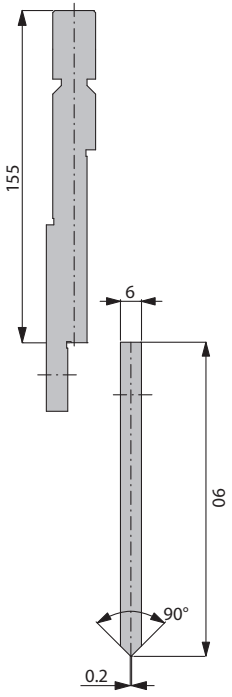
Coining upper tool 11.005.00

[R] Radius (mm)	-
Nose angle	90
[H] Height (mm)	90
[B] Width (mm)	6

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 0.42 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BOS No. BH11005

Standard length	Part number
100 mm	B8-11.005.01.01
50 / 55 / 60 mm	B8-11.005.02.01 / 02 / 03
65 / 70 / 75 mm	B8-11.005.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.005.02.07 / 08 / 09 / 10

11.005.00 + 21.002.00



F = 1000 kN/m
R = ---
H = 90 mm

Standard length	Part number
100 mm	B8-10.0077
200 mm	B8-10.0078
segmented 50 - 95	B8-10.0079

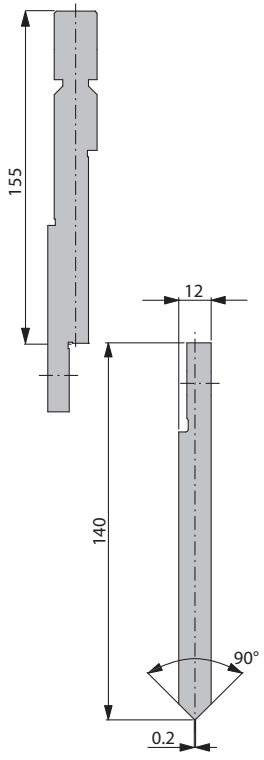
Coining upper tool 11.009.10

[R] Radius (mm)	-
Nose angle	90
[H] Height (mm)	140
[B] Width (mm)	12

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- Operator side
- Head supported
- 1.20 kg/100 mm
- Hämmerle 3P
- 150.0 mm
- Ex stock / 24 h
- BOS No. BH11009

Standard length	Part number
100 mm	B8-11.009.11.01
50 / 55 / 60 mm	B8-11.009.12.01 / 02 / 03
65 / 70 / 75 mm	B8-11.009.12.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-11.009.12.07 / 08 / 09 / 10

11.009.10 + 21.002.00



F = 1000 kN/m
R = ---
H = 140 mm

Standard length	Part number
100 mm	B8-10.1511
200 mm	B8-10.1931
segmented 50 - 95	B8-10.1512

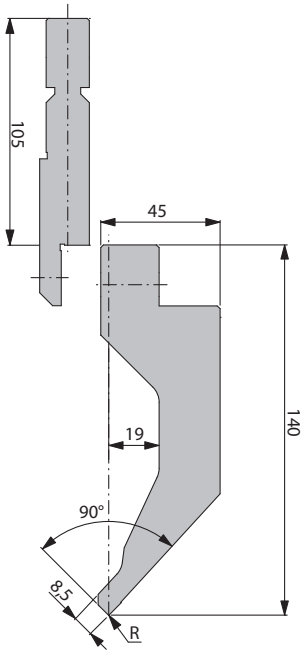
Coining upper tool 12.019.00

[R] Radius (mm)	1
Nose angle	90
[H] Height (mm)	140
[B] Width (mm)	45

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 975 kN/m
- Operator side
- Head supported
- 2.60 kg/100 mm
- Hämmerle 3P
- 110.0 mm
- Ex stock / 24 h
- BH12019

Standard length	Part number
100 mm	B8-12.019.01.01
50 / 55 / 60 mm	B8-12.019.02.01 / 02 / 03
65 / 70 / 75 mm	B8-12.019.02.04 / 05 / 06
80 / 85 / 90 / 95 mm	B8-12.019.02.07 / 08 / 09 / 10

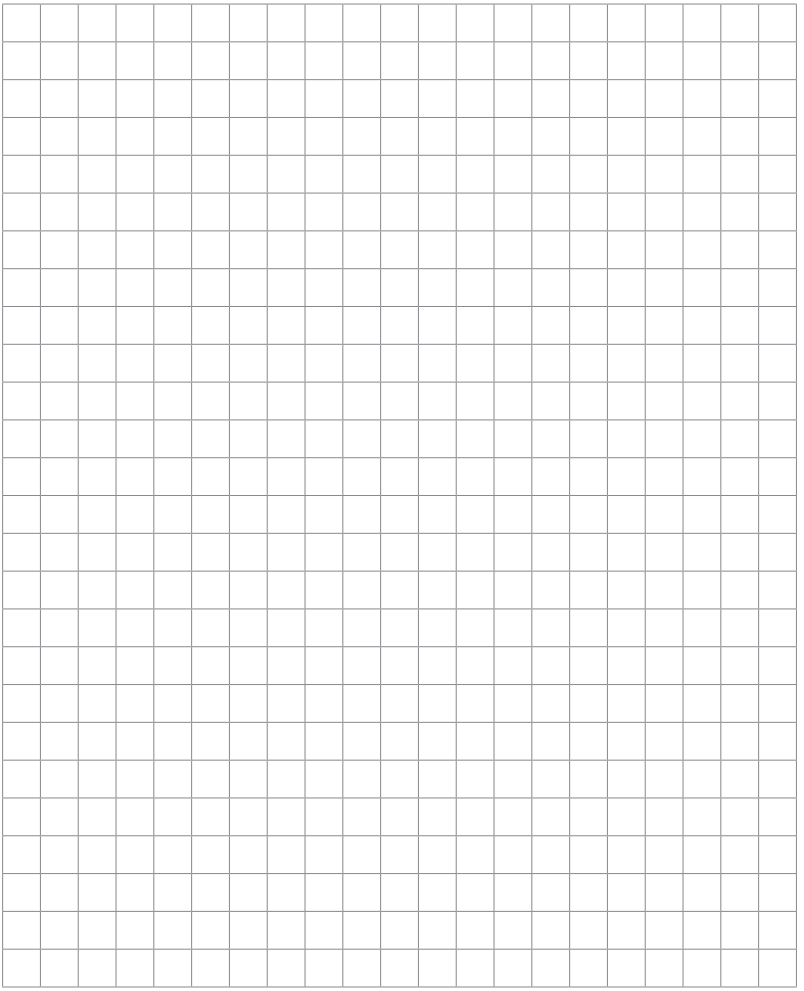
12.019.00 + 21.004.00



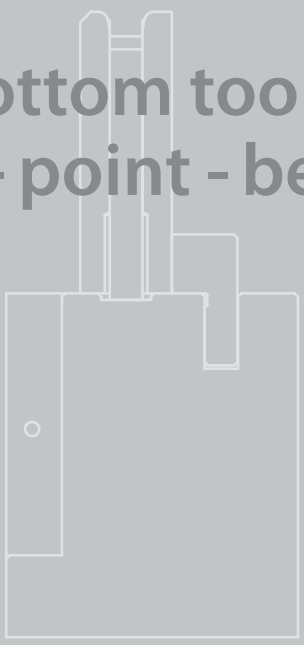
F = 975 kN/m
R = 1 mm
H = 140 mm

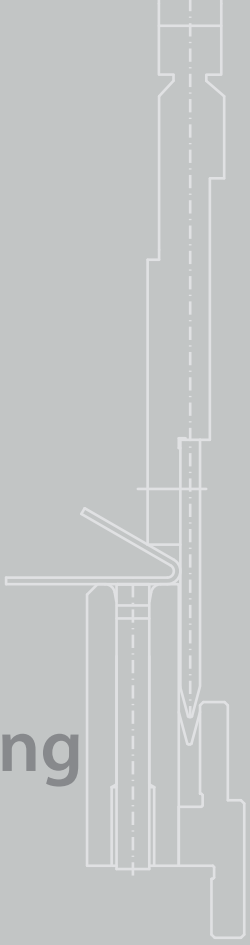
Standard length	Part number
100 mm	B8-10.0327
200 mm	B8-10.0328
segmented 50 - 95	B8-10.0329

Notes



Bottom tools
3 - point - bending

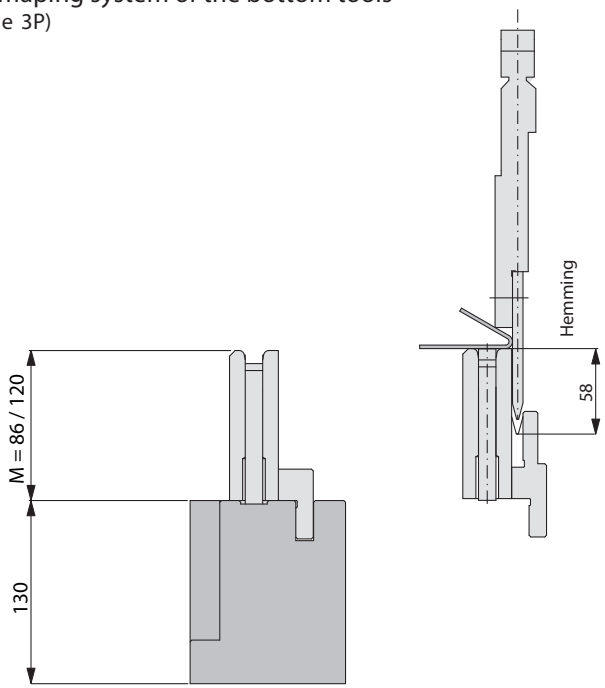




Description bottom tools

Hydraulic fast clamping system of the bottom tools

Hydraulic fast clamaping system of the bottom tools
(Standard Hämmerle 3P)



60-62 HRC

1000 kN/m

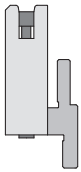
hydraulic

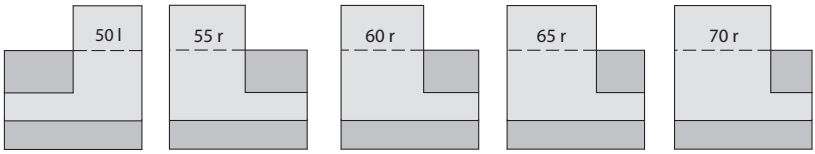
Shortest setup times are guaranteed by the hydraulic quick clamping system of the lower tools.

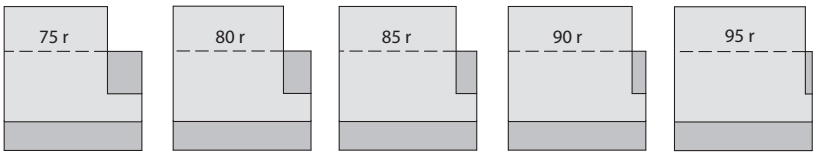
Segmentation of buttom tools

Bottom tool intermediate pieces

For bottom tools up to 60mm V-opening intermediate pieces are also available.
1 set consists of 10 intermediate pieces.



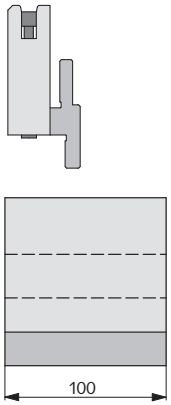




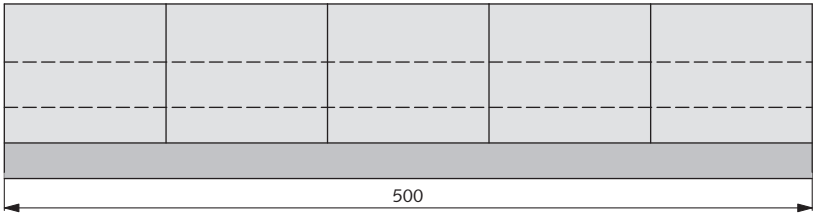
Standard pieces

Bottom tools

Indications with regards to material thickness and angle range refer to mild steel plates with a tensile strength of Rm = 450 N/mm^2.



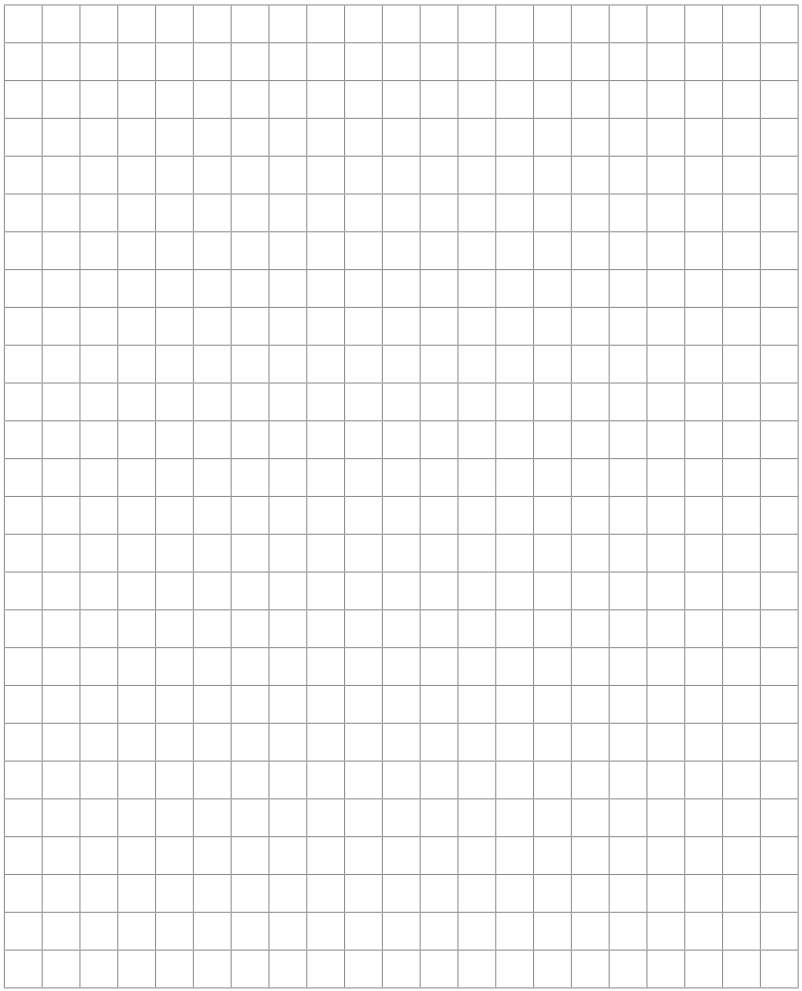
Standard bottom tool piece L = 100 mm with holding rail L = 100 mm.



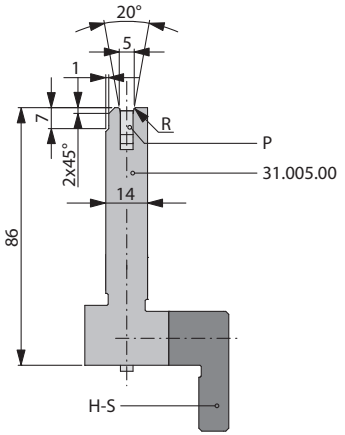
5 standard bottom tools with holding rail L = 500mm.

A bottom tool always consists of the basic bottom tool body, a holding rail and the bottom tool pins.

Notes



31.005.00 H-S



[R] Radius (mm)	0.6
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	14
Material thickness (mm)	0.5 - 1

Standard length	Part number
100 mm	B8-10.1250
500 mm	B8-10.1255
segmented 50 - 95	B8-10.1256

42 CrMo 4

58 - 62 HRC

Fmax = 250 kN/m

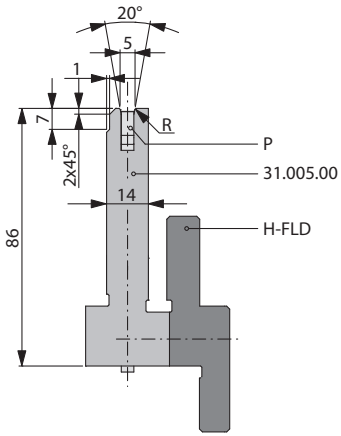
1.70 Kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 005.00-01

31.005.00 H-FLD



[R] Radius (mm)	0.6
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	14
Material thickness (mm)	0.5 - 1

Standard length	Part number
100 mm	B8-10.0946
500 mm	B8-10.0947
segmented 50 - 95	B8-10.0948

42 CrMo 4

58 - 62 HRC

Fmax = 250 kN/m

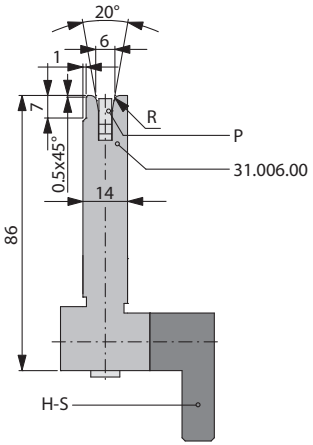
1.70 kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 005.00-08

31.006.00 H-S



[R] Radius (mm)	2
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	14
Material thickness (mm)	0.5 - 1.25

Standard length	Part number
100 mm	B8-10.1535
500 mm	B8-10.1536
segmented 50 - 95	B8-10.1537

42 CrMo 4

58 - 62 HRC

Fmax = 350 kN/m

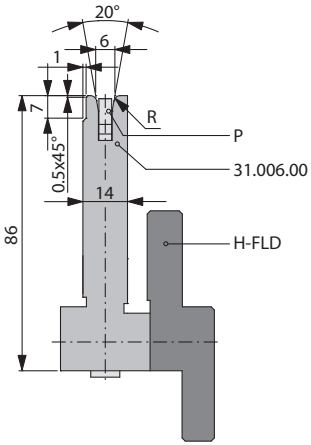
1.71 Kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 006.00-01

31.006.00 H-FLD



[R] Radius (mm)	2
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	14
Material thickness (mm)	0.5 - 1.25

Standard length	Part number
100 mm	B8-10.1420
500 mm	B8-10.1421
segmented 50 - 95	B8-10.1422

42 CrMo 4

56 - 62 HRC

Fmax = 350 kN/m

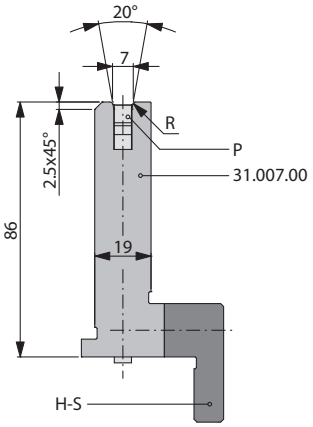
1.71 kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 006.00-08

31.007.00 H-S



[R] Radius (mm)	1
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	19
Material thickness (mm)	0.5 - 1.5

Standard length	Part number
100 mm	B8-10.0542
500 mm	B8-10.0543
segmented 50 - 95	B8-10.0544

42 CrMo 4

58 - 62 HRC

Fmax = 500 kN/m

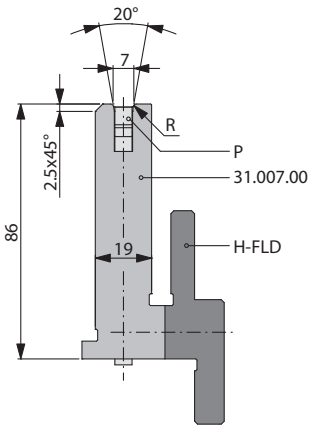
1.87 Kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 007.00-01

31.007.00 H-FLD



[R] Radius (mm)	1
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	19
Material thickness (mm)	0.5 - 1.5

Standard length	Part number
100 mm	B8-10.0555
500 mm	B8-10.0556
segmented 50 - 95	B8-10.0557

42 CrMo 4

58 - 62 HRC

Fmax = 500 kN/m

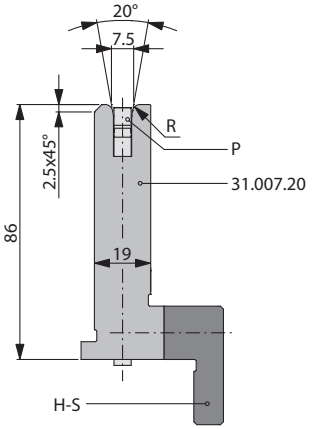
1.87 kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 007.00-02

31.007.20 H-S



[R] Radius (mm)	2.5
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	19
Material thickness (mm)	0.5 - 1.5

Standard length	Part number
100 mm	B8-10.0568
500 mm	B8-10.0569
segmented 50 - 95	B8-10.0570

42 CrMo 4

58 - 62 HRC

Fmax = 500 kN/m

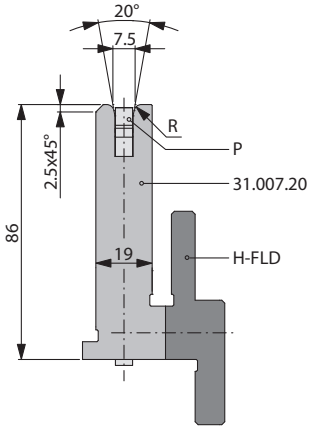
1.86 Kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 007.20-01

31.007.20 H-FLD



[R] Radius (mm)	2.5
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	19
Material thickness (mm)	0.5 - 1.5

Standard length	Part number
100 mm	B8-10.0581
500 mm	B8-10.0582
segmented 50 - 95	B8-10.0583

42 CrMo4

58 - 62 HRC

Fmax = 500 kN/m

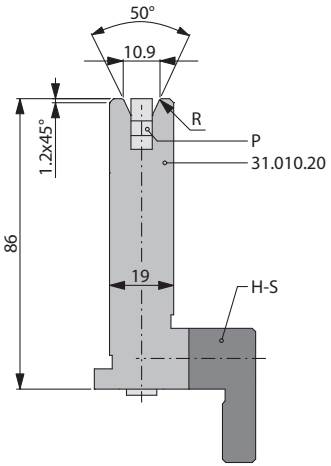
1.86 kg/100 mm

Hämmerle 3P

Ex Stock / 24 h

BOS No. 007.20-02

31.010.20 H-S

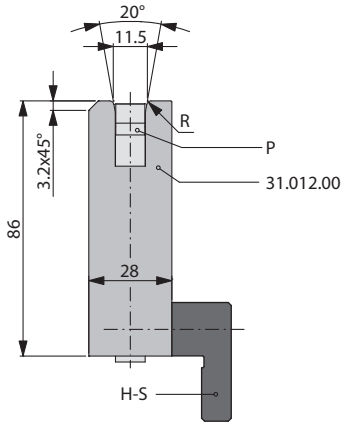


[R] Radius (mm)	1
V - Angle	85-180
[H] Height (mm)	86
[B] Width (mm)	19
Material thickness (mm)	0.7 - 2.5

Standard length	Part number
100 mm	B8-10.0620
500 mm	B8-10.0621
segmented 50 - 95	B8-10.0622

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 550 kN/m
- 1.70 Kg/100 mm
- Hämmerle 3P
- Ex stock / 24 h
- BOS No. 010.20-01

31.012.00 H-S



[R] Radius (mm)	1.5
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	28
Material thickness (mm)	0.7 - 3.0

Standard length	Part number
100 mm	B8-10.0633
500 mm	B8-10.0634
segmented 50 - 95	B8-10.0635

42 CrMo 4

58 - 62 HRC

Fmax = 500 kN/m

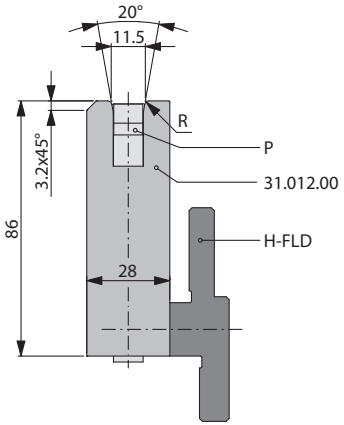
2.39 kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 012.00-01

31.012.00 H-FLD

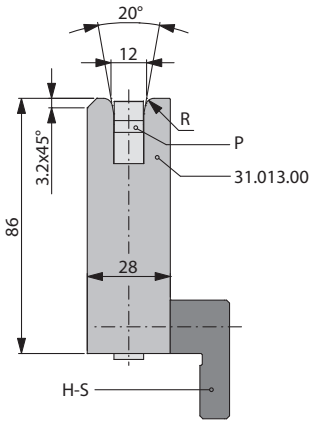


[R] Radius (mm)	1.5
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	28
Material thickness (mm)	0.7 - 3.0

Standard length	Part number
100 mm	B8-10.0646
500 mm	B8-10.0647
segmented 50 - 50	B8-10.0648

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 500 kN/m
- 2.39 Kg/100 mm
- Hämmerle 3P
- Ex Stock / 24 h
- BOS No. 012.00-03

31.013.00 H-S



[R] Radius (mm)	3
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	28
Material thickness (mm)	0.7 - 3.0

Standard length	Part number
100 mm	B8-10.0659
500 mm	B8-10.0660
segmented 50 - 95	B8-10.0661

42 CrMo 4

58 - 62 HRC

Fmax = 500 kN/m

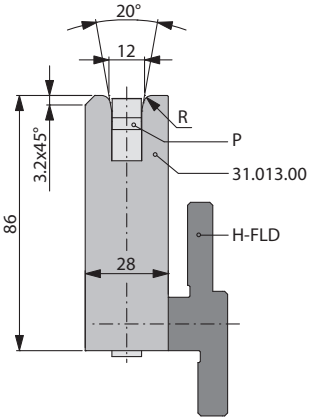
2.40 kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 013.00-01

31.013.00 H-FLD

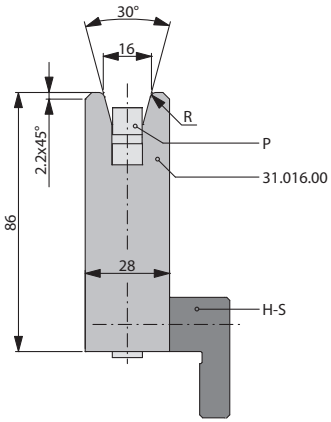


[R] Radius (mm)	3
V - Angle	30-180
[H] Height (mm)	86
[B] Width (mm)	28
Material thickness (mm)	0.7 - 3.0

Standard length	Part number
100 mm	B8-10.0672
500 mm	B8-10.0673
segmented 50 - 95	B8-10.0674

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 500 kN/m
- 2.40 Kg/100 mm
- Hämmerle 3P
- Ex stock / 24 h
- BOS No. 013.00-03

31.016.00 H-S



[R] Radius (mm)	2
V - Angle	45-150
[H] Height (mm)	86
[B] Width (mm)	28
Material thickness (mm)	1.5 - 4.0

Standard length	Part number
100 mm	B8-10.0685
500 mm	B8-10.0686
segmented 50 - 95	B8-10.0687

42 CrMo 4

58 - 62 HRC

Fmax = 500 kN/m

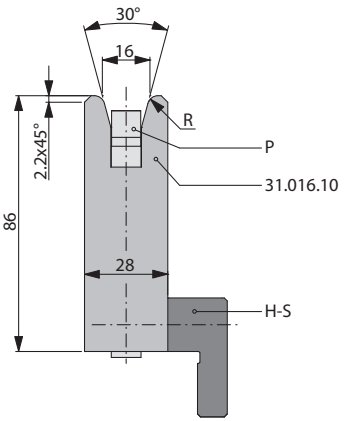
2.14 kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 016.00-01

31.016.10 H-S



[R] Radius (mm)	3.5
V - Angle	45-150
[H] Height (mm)	86
[B] Width (mm)	28
Material thickness (mm)	1.5 - 4.0

Standard length	Part number
100 mm	B8-10.0698
500 mm	B8-10.0699
segmented 50 - 95	B8-10.0700

42 CrMo 4

58 - 62 HRC

Fmax = 500 kN/m

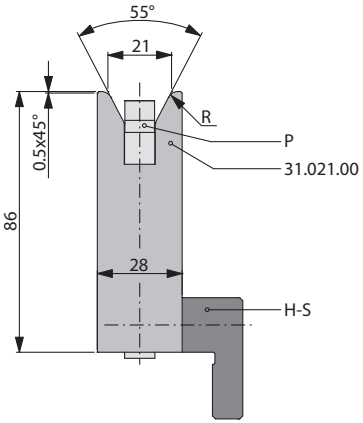
2.18 Kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 016.10-01

31.021.00 H-S

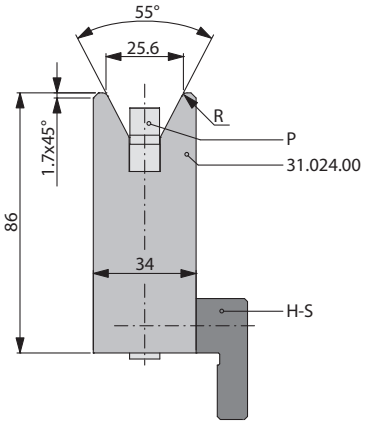


[R] Radius (mm)	3.5
V - Angle	60-160
[H] Height (mm)	86
[B] Width (mm)	28
Material thickness (mm)	2.0 - 4.0

Standard length	Part number
100 mm	B8-10.0724
500 mm	B8-10.0725
segmented 50 - 95	B8-10.0726

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 500 kN/m
- 2.14 kg/100 mm
- Hämmerle 3P
- Ex stock / 24 h
- BOS No. 021.00-01

31.024.00 H-S



[R] Radius (mm)	2
V - Angle	70-140
[H] Height (mm)	86
[B] Width (mm)	34
Material thickness (mm)	2.0 - 5.0

Standard length	Part number
100 mm	B8-10.0750
500 mm	B8-10.0751
segmented 50 - 95	B8-10.0752

42 CrMo 4

58 - 62 HRC

Fmax = 750 kN/m

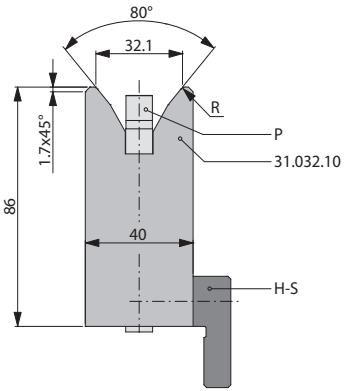
2.44 Kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 024.00-04

31.032.10 H-S

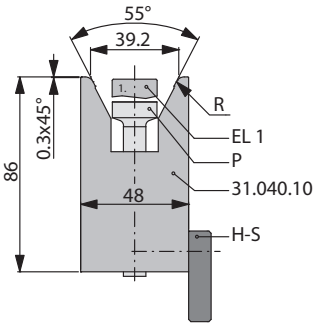


[R] Radius (mm)	2
V - Angle	85-160
[H] Height (mm)	86
[B] Width (mm)	40
Material thickness (mm)	3.5 - 6.0

Standard length	Part number
100 mm	B8-10.0763
500 mm	B8-10.0764
segmented 50 - 95	B8-10.0765

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1200 kN/m
- 2.80 kg/100 mm
- Hämmerle 3P
- Ex stock / 24 h
- BOS No. 032.00-06

31.040.10 H-S



[R] Radius (mm)	4
V - Angle	70-180
[H] Height (mm)	86
[B] Width (mm)	48
Material thickness (mm)	3.5 - 7.0

Standard length	Part number
100 mm	B8-10.0776
500 mm	B8-10.0777
segmented 50 - 95	B8-10.0778

42 CrMo 4

58 - 62 HRC

Fmax = 750 kN/m

2.96 Kg/100 mm

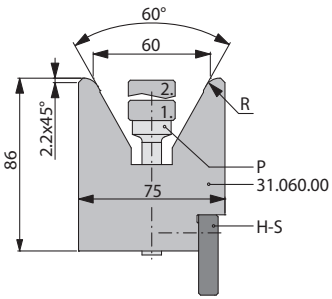
Hämmerle 3P

Ex stock / 24 h

BOS No. 040.10-05

31.060.00 H-S

Enlarged frontplates are necessary for the bottom tool 31.060.



[R] Radius (mm)	8
V - Angle	70-180
[H] Height (mm)	86
[B] Width (mm)	75
Material thickness (mm)	4.0 - 10.0

Standard length	Part number
100 mm	B8-10.0802
500 mm	B8-10.0803
segmented 50 - 95	B8-10.0804

42 CrMo 4

58 - 62 HRC

Fmax = 1500 kN/m

4.06 kg/100 mm

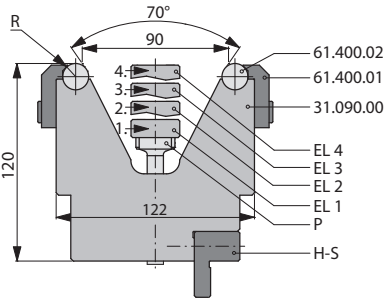
Hämmerle 3P

Ex stock / 24 h

BOS No. 060.00-05

31.090.00 H-S

Enlarged frontplates are necessary for the bottom tool 31.090.



[R] Radius (mm)	8
V - Angle	70-180
[H] Height (mm)	120
[B] Width (mm)	122
Material thickness (mm)	5.0 - 12.0

Standard length	Part number
100 mm	B8-10.0841
200 mm	B8-10.0843

42 CrMo 4

58 - 62 HRC

Fmax = 1500 kN/m

8.80 Kg/100 mm

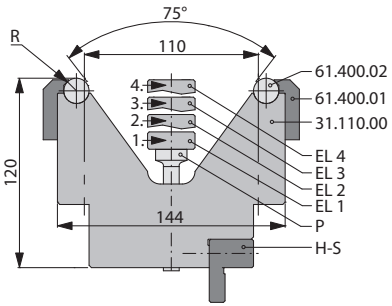
Hämmerle 3P

Ex stock / 24 h

BOS No. 090.00-07

31.110.00 H-S

Enlarged frontplates are necessary for the bottom tool 31.110.



[R] Radius (mm)	8
V - Angle	75-180
[H] Height (mm)	120
[B] Width (mm)	144
Material thickness (mm)	8.0 - 15.0

Standard length	Part number
100 mm	B8-10.0852
200 mm	B8-10.0854

42 CrMo 4

58 - 62 HRC

Fmax = 1500 kN/m

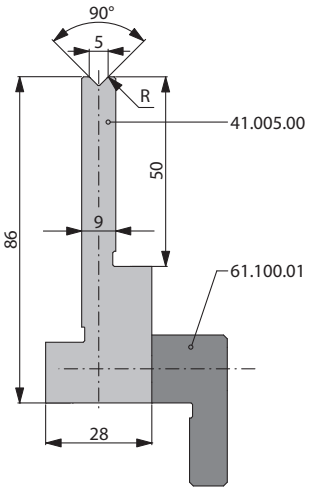
9.48 kg/100 mm

Hämmerle 3P

Ex stock / 24 h

BOS No. 110.00-07

Coining bottom tool 41.005.00

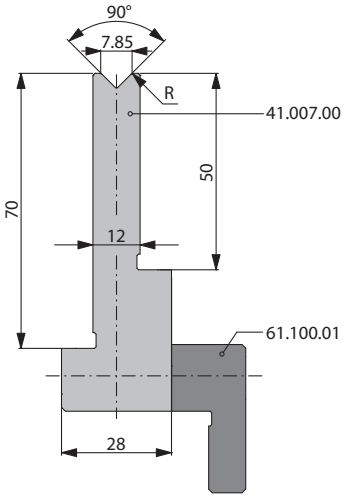


[R] Radius (mm)	1
V - Angle	90
[H] Height (mm)	86
[B] Width (mm)	28
Material thickness (mm)	0.5 - 1.0

Standard length	Part number
100 mm	B8-10.0855
500 mm	B8-10.0856
segmented 50 - 95	

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- 0.94 Kg/100 mm
- Hämmerle 3P
- Ex stock / 24 h
- BOS No. 41.005-01

Coining bottom tool 41.007.00



[R] Radius (mm)	1
V - Angle	90
[H] Height (mm)	86
[B] Width (mm)	28
Material thickness (mm)	0.4 - 1.5

Standard length	Part number
100 mm	B8-10.0868
500 mm	B8-10.0869
segmented 50 - 95	B8-10.0870

42 CrMo 4

58 - 62 HRC

Fmax = 1000 kN/m

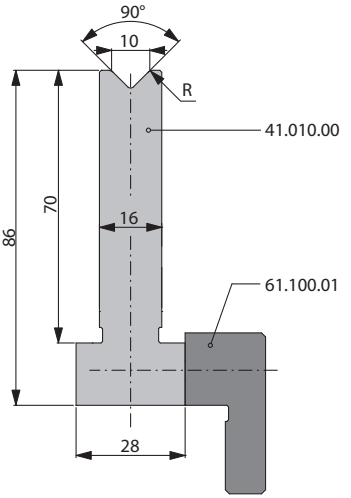
1.12 kg/100 mm

0.5 - 1.5 mm

Ex stock / 24 h

BOS No. 41.007-01

Coining bottom tool 41.010.00

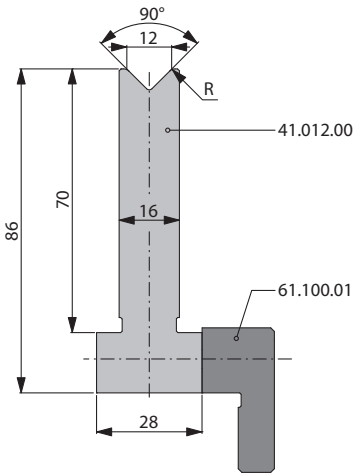


[R] Radius (mm)	2
V - Angle	90
[H] Height (mm)	86
[B] Width (mm)	28
Material thickness (mm)	1.0 - 2.0

Standard length	Part number
100 mm	B8-10.0881
500 mm	B8-10.0882
segmented 50 - 95	B8-10.0883

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- 1.22 Kg/100 mm
- Hämmerle 3P
- Ex stock / 24 h
- BOS No. 41.010-01

Coining bottom tool 41.012.00

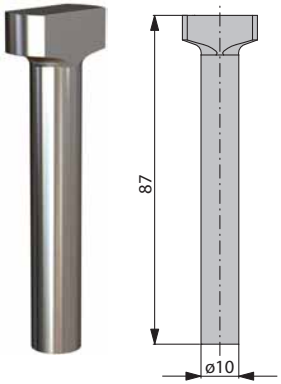


[R] Radius (mm)	2
V - Angle	90
[H] Height (mm)	86
[B] Width (mm)	28
Material thickness (mm)	1.0 -2.5

Standard length	Part number
100 mm	B8-10.0894
500 mm	B8-10.0895
segmented 50 - 95	B8-10.0896

- 42 CrMo 4
- 58 - 62 HRC
- Fmax = 1000 kN/m
- 1.20 kg/100 mm
- Hämmerle 3P
- Ex stock / 24 h
- BOS No. 41.012-01

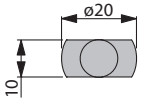
Bottom tool pins



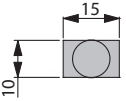
61.200.21

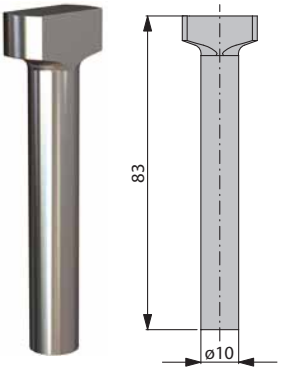
Part number	Size (mm)	Weight (Kg)
.01	20 x 87	0,06
.02	15 x 87	0,05

61.200.21.01



61.200.21.02

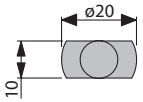




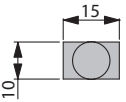
61.200.22

Part number	Size (mm)	Weight (Kg)
.01	20 x 83	0,06
.02	15 x 83	0,05

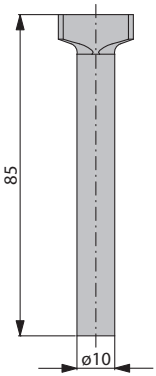
61.200.22.01



61.200.22.02



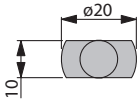
Bottom tool pins



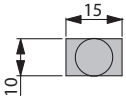
61.200.23

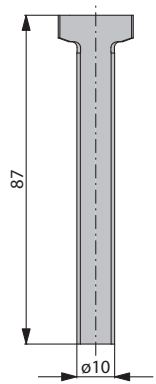
Part number	Size (mm)	Weight (Kg)
.01	20 x 85	0,06
.02	15 x 85	0,05

61.200.23.01



61.200.23.02

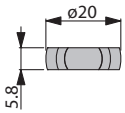




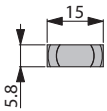
61.200.24

Part number	Size (mm)	Weight (Kg)
.01	20 x 87	0,06
.02	15 x 87	0,05

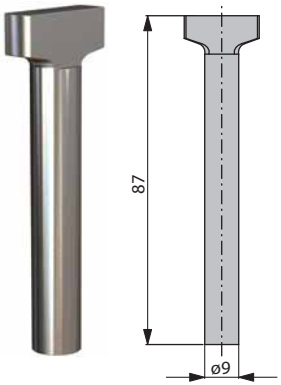
61.200.24.01



61.200.24.02



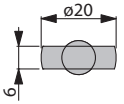
Bottom tool pins



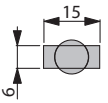
61.200.25

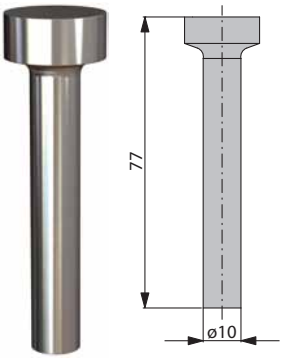
Part number	Size (mm)	Weight (Kg)
.01	20 x 87	0,06
.02	15 x 87	0,05

61.200.25.01



61.200.25.02

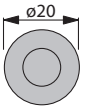




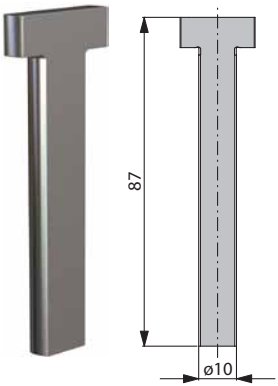
61.200.26

Part number	Size (mm)	Weight (Kg)
.01	20 x 87	0,06
.02	15 x 87	0,05

61.200.26.01



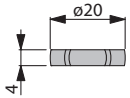
61.200.26.02



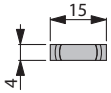
61.200.27

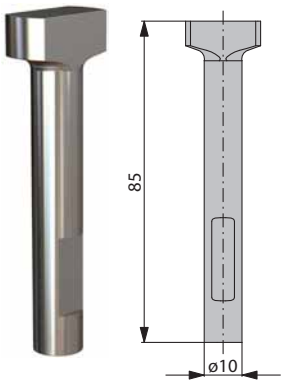
Part number	Size (mm)	Weight (Kg)
.01	20 x 87	0,02
.02	15 x 87	0,01

61.200.27.01



61.200.27.02

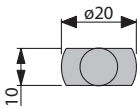




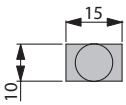
61.200.28

Part number	Size (mm)	Weight (Kg)
.01	20 x 85	0,06
.02	15 x 85	0,05

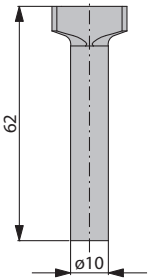
61.200.28.01



61.200.28.02



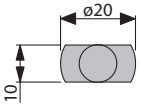
Bottom tool pins



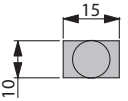
61.200.29

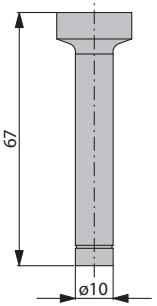
Part number	Size (mm)	Weight (Kg)
.01	20 x 62	0,06
.02	15 x 62	0,05

61.200.29.01



61.200.29.02

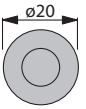




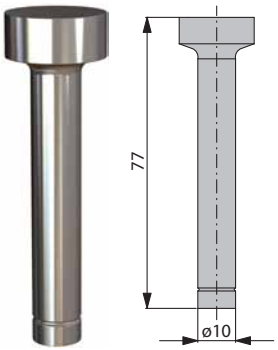
61.200.30

Part number	Size (mm)	Weight (Kg)
.01	20 x 67	0,06
.02	15 x 67	0,05

61.200.30.01



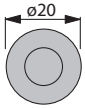
61.200.30.02



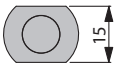
61.200.31

Part number	Size (mm)	Weight (Kg)
.01	20 x 77	0,06
.02	15 x 77	0,05

61.200.31.01



61.200.31.02



Insert rails

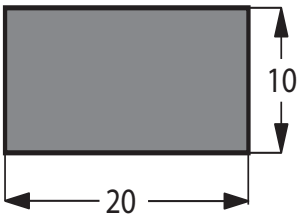
Who will need insert rails?

To provide maximum flexibility in the range of angle that can be formed using lower tools from 31.040.10 (V40) and larger, insert rails are available.

Details of the various insert rails available are provided on the following pages.

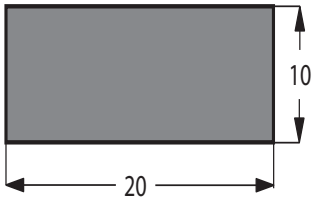
(All insert rails are manufactured from CK45 steel and have a hardness of 58 - 60 HRC.)

Insert rail 61.500.01



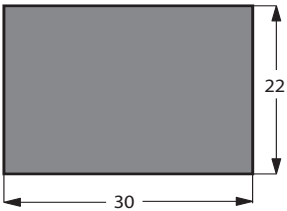
Part number	Length (mm)	Size (mm)	Weight (kg)
B8-61.500.01.01	100	20 x 10	0,16
B8-61.500.01.02	50	20 x 10	0,08
B8-61.500.01.03	55	20 x 10	0,088
B8-61.500.01.04	60	20 x 10	0,096
B8-61.500.01.05	65	20 x 10	0,104
B8-61.500.01.06	70	20 x 10	0,112
B8-61.500.01.07	75	20 x 10	0,120
B8-61.500.01.08	80	20 x 10	0,128
B8-61.500.01.09	85	20 x 10	1,136
B8-61.500.01.10	90	20 x 10	0,144
B8-61.500.01.11	95	20 x 10	0,152
B8-61.500.01.12	500	20 x 10	0,8

Insert rail 61.500.04



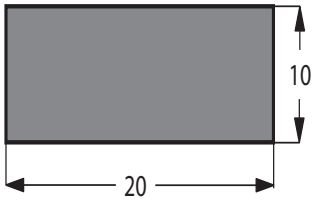
Part number	Length (mm)	Size (mm)	Weight (kg)
B8-61.500.04.01	100	30 x 11	0,26
B8-61.500.04.02	50	30 x 11	0,13
B8-61.500.04.03	55	30 x 11	0,143
B8-61.500.04.04	60	30 x 11	0,156
B8-61.500.04.05	65	30 x 11	0,169
B8-61.500.04.06	70	30 x 11	0,182
B8-61.500.04.07	75	30 x 11	0,195
B8-61.500.04.08	80	30 x 11	0,208
B8-61.500.04.09	85	30 x 11	0,221
B8-61.500.04.10	90	30 x 11	0,234
B8-61.500.04.11	95	30 x 11	0,247
B8-61.500.04.12	500	30 x 11	1,3

Insert rail 61.500.05



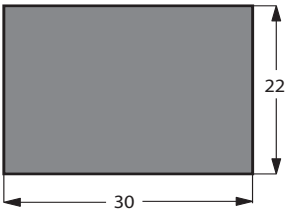
Part number	Length (mm)	Size (mm)	Weight (kg)
B8-61.500.05.01	100	20 x 10	0,5
B8-61.500.05.02	50	20 x 10	0,25
B8-61.500.05.03	55	20 x 10	0,275
B8-61.500.05.04	60	20 x 10	0,3
B8-61.500.05.05	65	20 x 10	0,325
B8-61.500.05.06	70	20 x 10	0,35
B8-61.500.05.07	75	20 x 10	0,375
B8-61.500.05.08	80	20 x 10	0,4
B8-61.500.05.09	85	20 x 10	0,425
B8-61.500.05.10	90	20 x 10	0,45
B8-61.500.05.11	95	20 x 10	0,475
B8-61.500.05.12	500	20 x 10	2,5

Insert rail 61.500.04



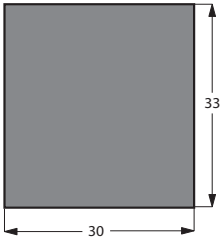
Part number	Length (mm)	Size (mm)	Weight (kg)
B8-61.500.04.01	100	30 x 11	0,26
B8-61.500.04.02	50	30 x 11	0,13
B8-61.500.04.03	55	30 x 11	0,143
B8-61.500.04.04	60	30 x 11	0,156
B8-61.500.04.05	65	30 x 11	0,169
B8-61.500.04.06	70	30 x 11	0,182
B8-61.500.04.07	75	30 x 11	0,195
B8-61.500.04.08	80	30 x 11	0,208
B8-61.500.04.09	85	30 x 11	0,221
B8-61.500.04.10	90	30 x 11	0,234
B8-61.500.04.11	95	30 x 11	0,247
B8-61.500.04.12	500	30 x 11	1,3

Insert rail 61.500.05



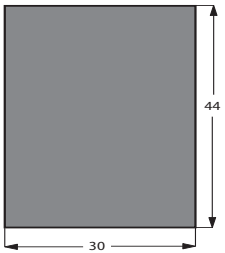
Part number	Length (mm)	Size (mm)	Weight (kg)
B8-61.500.05.01	100	20 x 10	0,5
B8-61.500.05.02	50	20 x 10	0,25
B8-61.500.05.03	55	20 x 10	0,275
B8-61.500.05.04	60	20 x 10	0,3
B8-61.500.05.05	65	20 x 10	0,325
B8-61.500.05.06	70	20 x 10	0,35
B8-61.500.05.07	75	20 x 10	0,375
B8-61.500.05.08	80	20 x 10	0,4
B8-61.500.05.09	85	20 x 10	0,425
B8-61.500.05.10	90	20 x 10	0,45
B8-61.500.05.11	95	20 x 10	0,475
B8-61.500.05.12	500	20 x 10	2,5

Insert rail 61.500.06



Part number	Length (mm)	Size (mm)	Weight (kg)
B8-61.500.06.01	100	30 x 33	0,78
B8-61.500.06.02	50	30 x 33	0,39
B8-61.500.06.03	55	30 x 33	0,429
B8-61.500.06.04	60	30 x 33	0,468
B8-61.500.06.05	65	30 x 33	0,507
B8-61.500.06.06	70	30 x 33	0,546
B8-61.500.06.07	75	30 x 33	0,585
B8-61.500.06.08	80	30 x 33	0,624
B8-61.500.06.09	85	30 x 33	0,663
B8-61.500.06.10	90	30 x 33	0,702
B8-61.500.06.11	95	30 x 33	0,741
B8-61.500.06.12	500	30 x 33	3,9

Insert rail 61.500.07



Part number	Length (mm)	Size (mm)	Weight (kg)
B8-61.500.07.01	100	33 x 44	1,04
B8-61.500.07.02	50	33 x 44	0,52
B8-61.500.07.03	55	33 x 44	0,572
B8-61.500.07.04	60	33 x 44	0,624
B8-61.500.07.05	65	33 x 44	0,676
B8-61.500.07.06	70	33 x 44	0,728
B8-61.500.07.07	75	33 x 44	0,78
B8-61.500.07.08	80	33 x 44	0,832
B8-61.500.07.09	85	33 x 44	0,884
B8-61.500.07.10	90	33 x 44	0,936
B8-61.500.07.11	95	33 x 44	0,988
B8-61.500.07.12	500	33 x 44	5,2

Workshop

Taking bending into design

Small bending radii?
Short flange length?
Too much welding, cleaning and flattening?
Bending marks?

What are the topics?

- Basics
- Software presentations
- Machine presentations
- Industial design expert talks
- Case studies
- Your questions

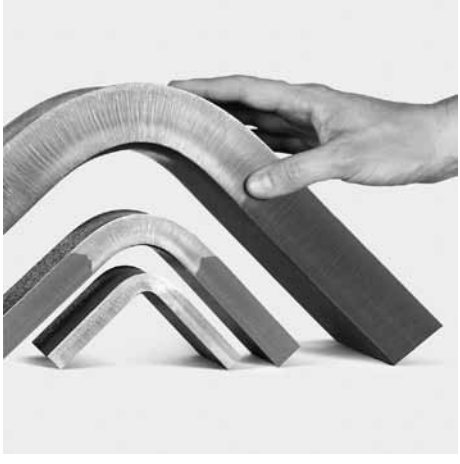
You can obtain date and further information from our consulting engineers, all contact dates you can be found on the last page.

Further information can be obtained at: www.bystronic.com

Workshop

Bending of high tensile strength materials

Material costs are too high?
Wear and tear resistance relevant?
Challenge light constuction?
Steel broken yet?



What are the topics?

- Basics
- Experts talks of steel producers
- How the software can help
- Bend case studies
- Specialist talks

You can obtain data and further information from our consulting engineers, all contact data can be found on the last page.

Further information can be obtained at: www.bystronic.com

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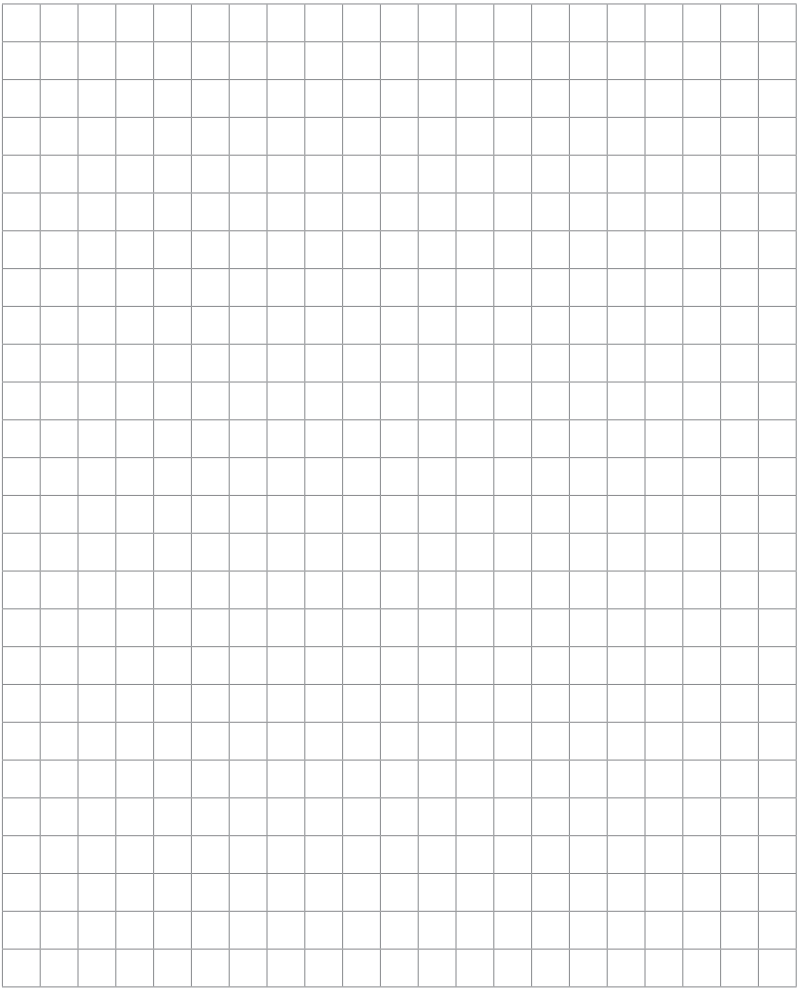
Notes



Notes