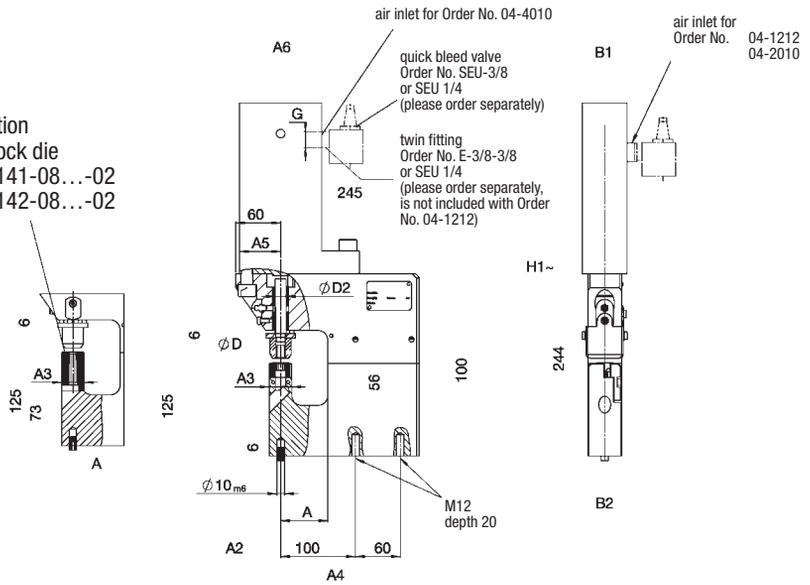
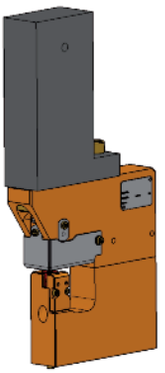
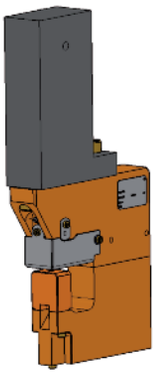
illustration
with block die
series 141-08…-02
series 142-08…-02







series: 141-08…-01
142-08…-01

series: 141-08…-02
142-08…-02

pneumatic single-action drive

Pneumatic profile punching units, single-action — without punching tools

Order No.	Hole ØD	Throat depth range A	Max. force with air supply pressure of 8 bar [kN]	Cylinder type	ØD2	A2	A3	A4	A5	A6	B1	B2	G	H1~
141-0812F-01	2-13	63	12	**04-1212**	15	15	30	200	55	110	60	45	1xG1/4	472
141-0820F-01	2-13	63	20	**04-2010**	15	15	30	200	60	120	60	45	1xG3/8	544
141-0840F-01	2-13	63	40	**04-4010**	15	15	30	200	72	147	108	45	1xG3/8	478
141-0812F-02	2-13	63	12	**04-1212**	15	15	30	200	55	110	60	45	1xG1/4	472
141-0820F-02	2-13	63	20	**04-2010**	15	15	30	200	60	120	60	45	1xG3/8	544
141-0840F-02	2-13	63	40	**04-4010**	15	15	30	200	72	147	108	45	1xG3/8	478
142-0820F-01	8-25	63	20	**04-2010**	28	25	50	210	60	120	60	70	1xG3/8	544
142-0840F-01	8-25	63	40	**04-4010**	28	25	50	210	72	139	108	70	1xG3/8	478
142-0880F-01	8-25	63	80	**04-8013**	28	25	50	210	77	154	122	70	1xG3/8	649
142-0820F-02	8-25	63	20	**04-2010**	28	25	50	210	60	120	60	70	1xG3/8	544
142-0840F-02	8-25	63	40	**04-4010**	28	25	50	210	72	139	108	70	1xG3/8	478
142-0880F-02	8-25	63	80	**04-8013**	28	25	50	210	77	154	122	70	1xG3/8	649

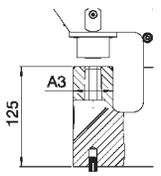
An obligatory stripping unit can be implemented on request. Order example: 141Z-08 ...

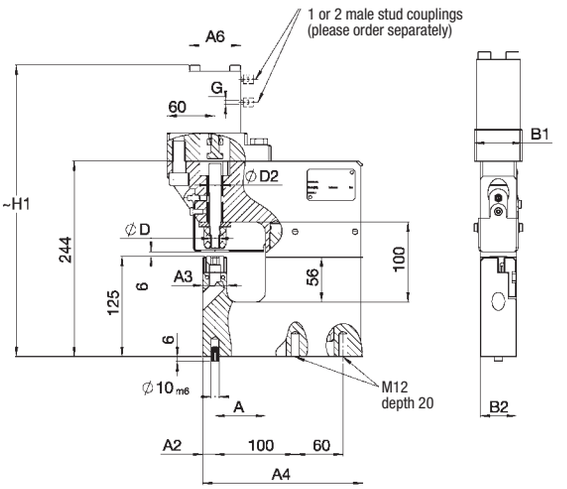
Punching tools suitable for the punching units above

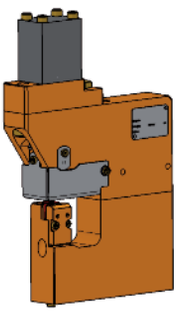
Punching unit without punching tools		**Punching tools** have to be ordered separately			
		Round punch			**Shaped punch**
Order No.	Hole diameter range ØD	Punch kit Order No.	Punch Order No.	Die Order No.	Punch kit Order No.
141-.... F	**2–13**	501-Ø-BL-ST	301-Ø	401-Ø-BL-ST	501-Formloch-BL-ST
142-.... F	**8–25**	502-Ø-BL-ST	302-Ø	402-Ø-BL-ST	502-Formloch-BL-ST

Insert in Order No.: **Ø** = hole Ø or »Formloch« (i.e. shaped hole), **BL** = material thickness, **ST** = material and strength. See also **punching tools**

illustration
with block die
series 141-08…-02
series 161-08…-02

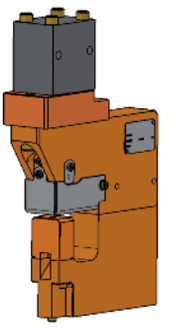






series: 161-08…-01
162-08…-01

hydraulic drive



series: 161-08…-02
162-08…-02
with block die

Hydraulic profile punching units — without punching tools

Order No.	Hole ØD	Throat depth range A	Max. force with oil supply pressure of 500 bar [kN]	Cylinder type [4] flange for combination	ØD2	A2	A3	A4	A6	B1	B2	G	H1~	
161-0824F-01	2-13	63	24	**722D25202-FL** [4]	15	15	30	200	65	45	45	2xG1/4	364	
161-0840F-01	2-13	63	40	**722D32252-FL** [4]	15	15	30	200	75	60	45	2xG1/4	381	
161-0863F-01	2-13	63	63	**722D40252-FL** [4]	15	15	30	200	85	70	45	2xG1/4	382	
161-0824F-02	2-13	63	24	**722D25202-FL** [4]	15	15	30	200	65	45	45	2xG1/4	364	
161-0840F-02	2-13	63	40	**722D32252-FL** [4]	15	15	30	200	75	60	45	2xG1/4	381	
161-0863F-02	2-13	63	63	**722D40252-FL** [4]	15	15	30	200	85	70	45	2xG1/4	382	
162-08068F-01	8-25	63	68	**725D50151-FL** [4]	28	25	50	210	Ø65	80	70	2xG1/4	405	
162-08109F-01	8-25	63	109	**725D63171-FL** [4]	28	25	50	210	Ø97	100	70	2xG1/4	405	
162-08175F-01	8-25	63	175	**725D80151-FL** [4]	28	25	50	210	Ø105	100	70	2xG3/8	440	
162-08068F-02	8-25	63	68	**725D50151-FL** [4]	28	25	50	210	Ø65	80	70	2xG1/4	405	
162-08109F-02	8-25	63	109	**725D63171-FL** [4]	28	25	50	210	Ø97	100	70	2xG1/4	405	
162-08175F-02	8-25	63	175	**725D80151-FL** [4]	28	25	50	210	Ø105	100	70	2xG3/8	440	

[4] If you require the cylinder without the mounting flange, omit the letters »FL« in the Order No. | An obligatory stripping unit can be implemented on request. Order example: 161Z-08 ...

Punching tools suitable for the punching units above

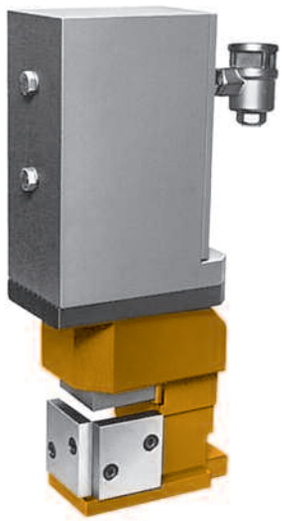
Punching unit without punching tools		**Punching tools** have to be ordered separately			
		Round punch			**Shaped punch**
Order No.	Hole diameter range ØD	Punch kit Order No.	Punch Order No.	Die Order No.	Punch kit Order No.
161-.... F	**2–13**	501-Ø-BL-ST	301-Ø	401-Ø-BL-ST	501-Formloch-BL-ST
162-.... F	**8–25**	502-Ø-BL-ST	302-Ø	402-Ø-BL-ST	502-Formloch-BL-ST

Insert in Order No.: **Ø** = hole Ø or »Formloch« (i.e. shaped hole), **BL** = material thickness, **ST** = material and strength. See also **punching tools**

Pneumatic and hydraulic 90°-notch units, 63x63 mm

Examples

660-063-068 R
Cylinder force 68 kN



640-063-040 R
Cylinder force 40 kN

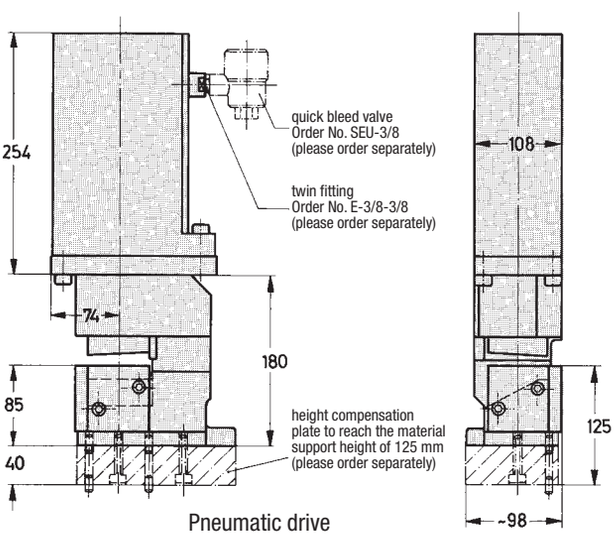
Driven by
pneumatic power cylinder, single-action,
hydraulic cylinder, double-action

Notching angle	**90°**
max. notch size	**63x63 mm**
material thickness	
with steel	**0.3–3 mm***
with aluminium and plastics	**0.3–5 mm***

*The cylinder force has to exceed the required cutting force.

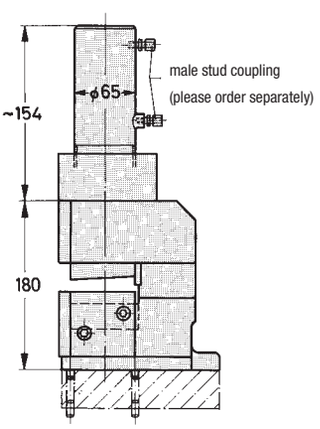
In addition to the extremely successful press-operated 90° notch units with a notch size of 63 x 63 mm, the corresponding notch units with pneumatic and hydraulic operation are presented on this page.
Limits on the use of these units are determined by the cutting force required.
The cutting force, which results from the effective cut length and the material thickness, may not exceed the maximum power of the cylinder.
The material support height is **85 mm.**

To combine these notch units with other pneumatic or hydraulic punching it is necessary to install a height compensation plate (see chart) to reach the material support height of 125 mm.



Pneumatic drive
Series **640-063-..**

For missing sizes see unit 600 – 063



Hydraulic double-action drive
Series **660-063-..**

[2] Combination of cylinder and flange

Notch units with cutting tools **pneumatic** Order No.	**hydraulic, double-action** Order No.	**Notch size**	**Max. force with air supply pressure of 8 bar** [kN]	**with oil supply pressure of 350 bar** [kN]	**Cylinder type** / **Flange type** Order No.	**Weight** ~ [kg]	**Gauging table, adjustable,** please order separately Order No.	**Height compensation plate,** please order separately Order No.
640-063-040 L	–	63x63	**40**	–	04-4010-05[2]	23	800-063 S	815-063
640-063-040 R	–				F004-0018-0000			
–	**660-063-068 L**	63x63	–	**68**	725D50151-1	21		
–	**660-063-068 R**				F004-0019-0000			

Pneumatic and hydraulic rectangle notch units

Examples

641-050-040
Cylinder force 40 kN

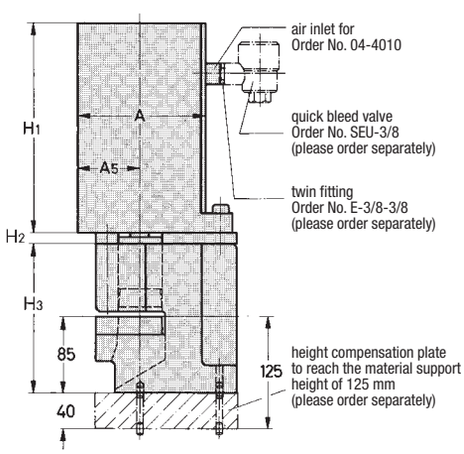
661-100-109
Cylinder force 109 kN

Driven by
pneumatic power cylinder, single-action,
hydraulic cylinder, double-action

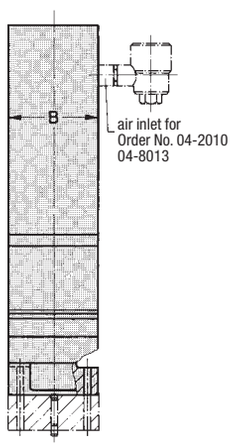
Notch shape	**rectangle**
for 641-050…, 661-050-…	**50x50 mm**
for 641-050…, 661-100-…	**100x75 mm**
material thickness	**0.3–3 mm***

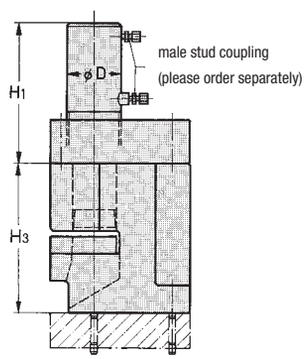
*The cylinder force has to exceed the required cutting force.

In addition to the extremely successful press-operated rectangle notch units with a notch size of 50 x 50 mm and 100 x 75 mm, the corresponding notch units with pneumatic and hydraulic operation are presented on this page.
Limits on the use of these units are determined by the cutting force required, see chart. The cutting force, which results from the effective cut length and the material thickness, may not exceed the maximum power of the cylinder.
The material support height is **85 mm.**
To combine these notch units with other pneumatic or hydraulic punching units it is necessary to install a height compensation plate (see chart) to reach the material support height of 125 mm. **For the dimensions of the basic structure, see drawing for units 601 – 050 or 601 – 100.**



Pneumatic drive
Series **641**



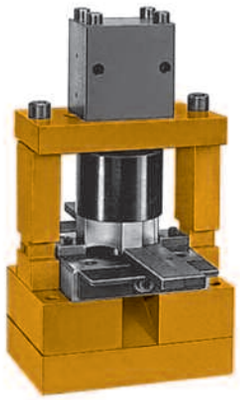


Hydraulic double-action drive
Series **661**

Notch units with cutting tools pneumatic Order No.	hydraulic, double-action Order No.	Notch size width x depth	Max. force with air supply pressure of 8 bar [kN]	with oil supply pressure of 350 bar [kN]	Cylinder type [2] Combination of cylinder and flange Order No.	Cylinder dimensions A	A_5	B	ØD	H_1 ~	H_2 ~	H_3 ~	Weight ~ [kg]	Height compensation plate, please order separately Order No.
641-050-040	**–**	50x50	40	–	04-4010-06 [2]	144	72	108	–	234	20	165	32	815-050
641-100-040	**–**	100x75	40	–	04-4010	144	72	108	–	234	40	182	39	815-100
641-100-080	**–**	100x75	80	–	04-8013	154	77	122	–	405	40	182	63	
–	**661-050-068**	50x50	–	68	725D50151-1	–	–	–	65	174	20	165	23	815-050
–	**661-100-109**	100x75	–	109	725D63171-1	–	–	–	97	189	40	182	37	815-100

Pneumatic and hydraulic 90° radii cutting units, R5-30mm

Examples



666-30-063
Cylinder force 63 kN

646-30-040
Cylinder force 40 kN

Driven by
pneumatic power cylinder, single-action
hydraulic cylinder, double-action

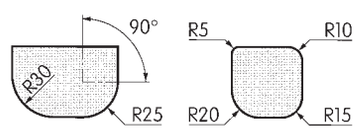
possible radii	**R 5,10,15,20,25,30 mm**
cutting angle α	**90°**
material thickness	
with steel	**0.3–3 mm***
with aluminium and plastics	**0.3–5 mm***

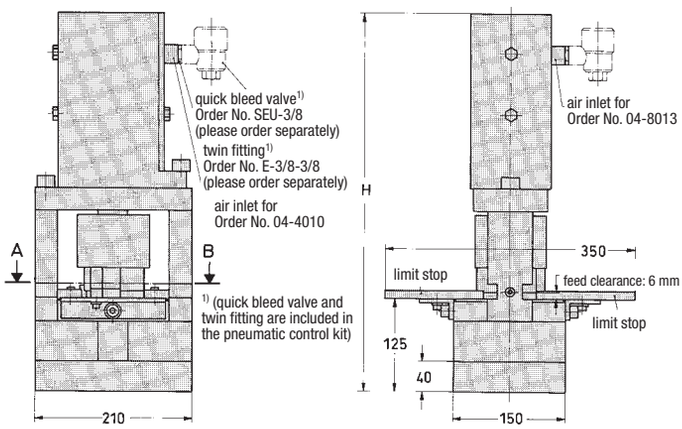
*The cylinder force has to exceed the required cutting force.

In addition to the press-operated radii cutting units, the corresponding hydraulic or pneumatic units are presented on this page.
With these units it is possible to notch 6 different 90° radii with only one tool. The radii are graduated in steps of 5 mm from R 5 mm up to R 30 mm.
Limits on the use of these units are determined by the cutting force required, see chart. The cutting force, which results from the effective cut length and the material strength, may not exceed the maximum power of the cylinder.
The material support height is **125 mm.**

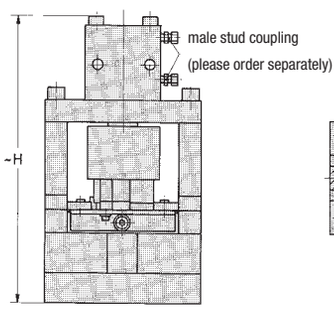
Recommended accessories (please order separately)
For connecting the pneumatic radii cutting units to the compressed air system, we recommend the following accessories:
Other radii sizes are available on request.

Examples

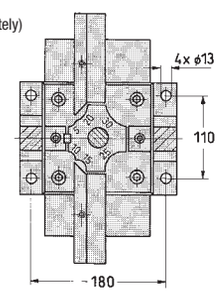




Pneumatic drive
Series **646**



Hydraulic double-action drive
Series **666-30-063**



Section A-B

Radii cutting units with cutting tools		Possible 90° radii in steps of 5 mm	Max. force		Cylinder Type	H ~	Weight ~
pneumatic Order No.	hydraulic, double-action Order No.		with air supply pressure of 8 bar [kN]	with oil supply pressure of 350 bar [kN]	Order No.		[kg]
646-30-040	**–**	R5, R10,	40	–	04-4010	504	58
646-30-080	**–**	R15, R20,	80	–	04-8013	675	79
–	**666-30-063**	R25, R30	–	63	722D50252-1	375	45

Pneumatic cut-off unit, 125 mm

Examples

649-125-040-N
Cylinder force 40 kN

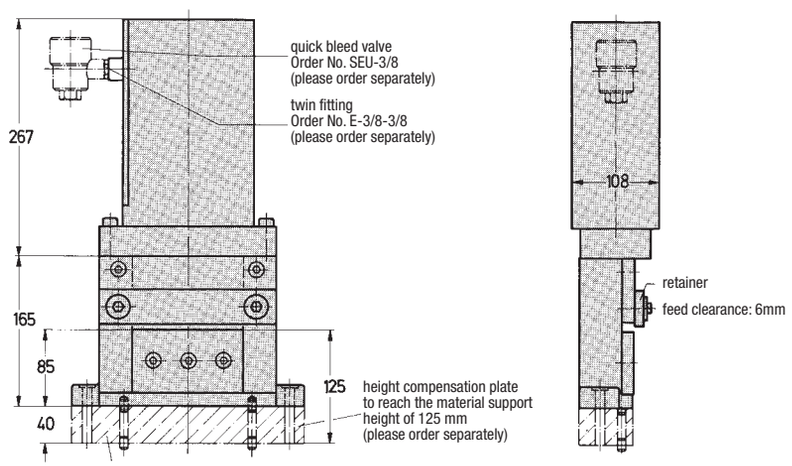
Driven by
pneumatic power cylinder, single-action

max. cutting width	**125 mm**
material thickness	
with steel	**0.3–3 mm***
with aluminium and plastics	**0.3–5 mm***

* The cylinder force has to exceed the required cutting force.

In addition to the extremely successful press-operated cut-off units with a cutting width of 125 mm, the corresponding cut-off unit with pneumatic operation is presented on this page.
The cutting force, which results from the effective cut length and the material strength, may not exceed the maximum power of the cylinder.
The material support height is **85 mm.**
To combine this cut-off unit with other pneumatic punching units it is necessary to install a height compensation plate (see chart) to reach the material support height of 125 mm. **For the dimensions of the basic structure, see drawing for unit 610 – 125 N.**

The retainer has been removed in the illustration!



Cut-off unit with cutting tools with retainer **pneumatic Order No.**	**Cutting width**	**Max. force with air supply pressure of 8 bar [kN]**	**Cylinder type** [2] **Combination of cylinder and flange [kN]**	**Weight [kg]**	**Height compensation plate,** please order separately **Order No.**
649-125-040-N	125	40	04-4010-03 [2]	32	815-125

Example

1421-0512L

Cylinder force: **12kN at 8 bar**
Weight: **6.5 kg**

For punching and notching of all punchable materials, such as steel, aluminium, plastics, wood, cardboard, etc. Tools can be changed quickly. The size of the maximum hole diameter or the maximum notch depends on the material thickness and the material strength. It has to be calculated on an individual basis. Recommended material thickness ranging from 1–3 mm, (see also the force / stroke chart below). Economical expansion possibilities are provided by conversion kits, see below.

Tools suitable for the mobile units above (please order separately)

Notch unit:	1421-0512K
Punch kit:	521-Vierkant-21-BL-ST
Radius cutting unit:	1421-0512R
Punch kit:	521-Radius-BL-ST
Punching unit:	1421-0512L
Punch kit:	521-Ø-BL-ST
Punch:	321-Ø
Die:	421-Ø-BL-ST
Shaped hole:	521-Formloch-BL-ST

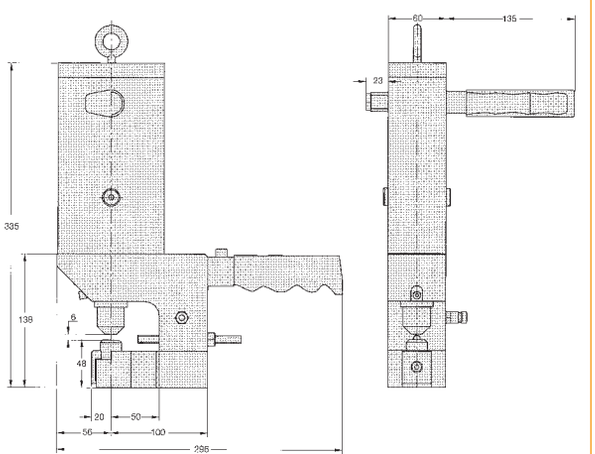
Insert in Order No.: **Ø** = hole Ø or »Formloch« (i.e. shaped hole; »Vierkant« = square), **BL** = material thickness, **ST** = material and strength.

Conversion module for punching unit 1421-05-LU
without punch kit

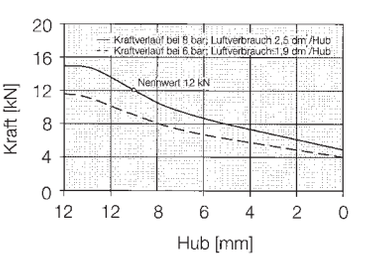
Conversion module for notch unit 1421-05-KU
without punch kit.
Adjustable limit stops are included in the delivery (see illustration below)

Adjustable limit stops

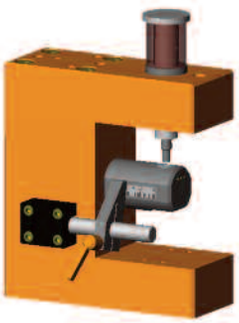
Conversion module for radius cutting unit 1421-05-RU
without punch kit.
Adjustable limit stops are included in the delivery (see illustration below)



Force/stroke chart for drive cylinder 04-1212

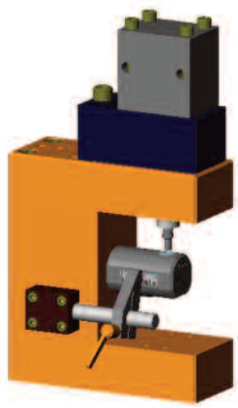


Examples



101-RLA-50
Press-operated
Throat depth range A = 50 mm

141-RLA-50
Pneumatic single-action unit
Throat depth range A = 50 mm
Cylinder force 80 kN
with air supply pressure of 8 bar



161-RLA-50
Hydraulic double-action unit
Throat depth range A = 50 mm
Cylinder force 68 kN
with oil supply pressure of 350 bar

Round and shaped cut

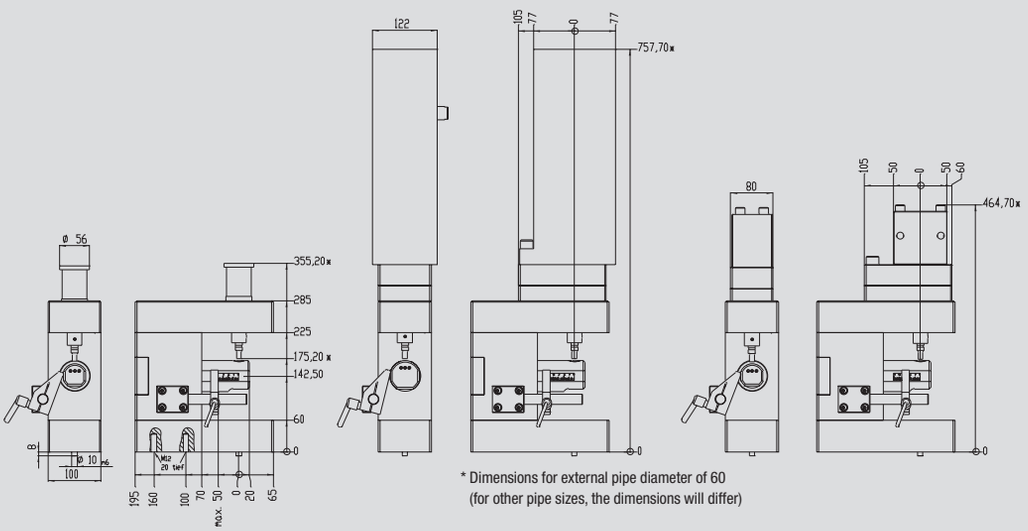
Hole diameter	D	2 – 13 mm
External pipe diameter	da	40 – 60 mm
Pipe thickness	s	1 – 5 mm*
Material with Rm_{max} <630 N/mm²		

* The cylinder force has to exceed the required cutting force.

The pipe punching unit has a modular construction. It is possible to equip a press-operated unit with a hydraulic or a pneumatic drive at a later date.

It is possible to punch a large variety of pipe dimensions and shapes. The punch kit and the mandrel can be exchanged easily which enables various pipe shapes and hole diameters to be punched with a single unit. The position of the hole can be set by means of an adjustable limit stop using a scale of 0-50 mm (centre of hole to pipe end).

To ensure correct dimensioning of the mandrel we need to know the DIN designation of the pipe. For welded pipes we assume that the welding is in the flat area of the mandrel. If there are any burrs due to sawing these have to be removed prior to punching. **Additional pipe dimensions and accessories are available on request.**



* Dimensions for external pipe diameter of 60
(for other pipe sizes, the dimensions will differ)

101-RLA-50 **141-RLA-50** **161-RLA-50**

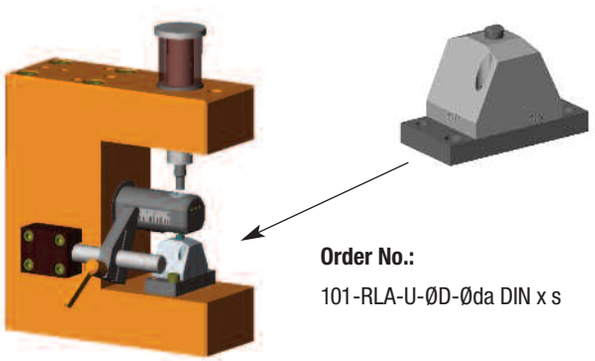
Punching unit without tools and die mandrel			**Hole diameter**	**External pipe diameter**	**Pipe thickness**	**Throat depth range**	**Max. force**		**Cylinder type** see pages 69+73	**Weight**
press-operated	**pneumatic single-action**	**hydraulic double-action**					**with air supply pressure of 8 bar**	**with oil supply pressure of 350 bar**		
Order No.	**Order No.**	**Order No.**	**D [mm]**	**da [mm]**	**s [mm]**	**A [mm]**	**[kN]**	**[kN]**		**[kg]**
101-RLA-50	–	–			1–5		–	–	–	44
–	141-RLA-50	–	2–13	40–60	1–3	50	80	–	04-8013	90
–	–	161-RLA-50			1–5		–	68	722D50252-1	55

Punching tools have to be ordered separately				**Die mandrel** has to be ordered separately	
Punch kit Order No.	**Round hole Punch Order No.**	**Die Order No.**	**Shaped hole Punch kit Order No.**	**Round pipe Order No.**	**Rectangular pipe Order No.**
551-ØD-Øda-DIN x s-ST	351-ØD	451-ØD-Øda-DIN x s-ST	551-Formloch-Øda-DIN x s-ST	461-Øda-DIN x s	471-axb-DIN x s

Insert in order no: **ØD =** diameter or »Formloch« (i.e. shaped hole), **Øda =** external pipe diameter, **DIN** = industrial standard reference for the pipe (e.g. DIN 2393)
s = pipe thickness, **ST =** material and strength, **a =** height of pipe, **b =** width of pipe

Accessories:

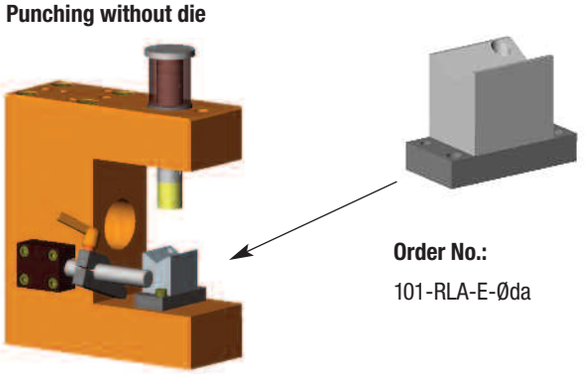
Punching on flap



Order No.:
101-RLA-U-ØD-Øda DIN x s

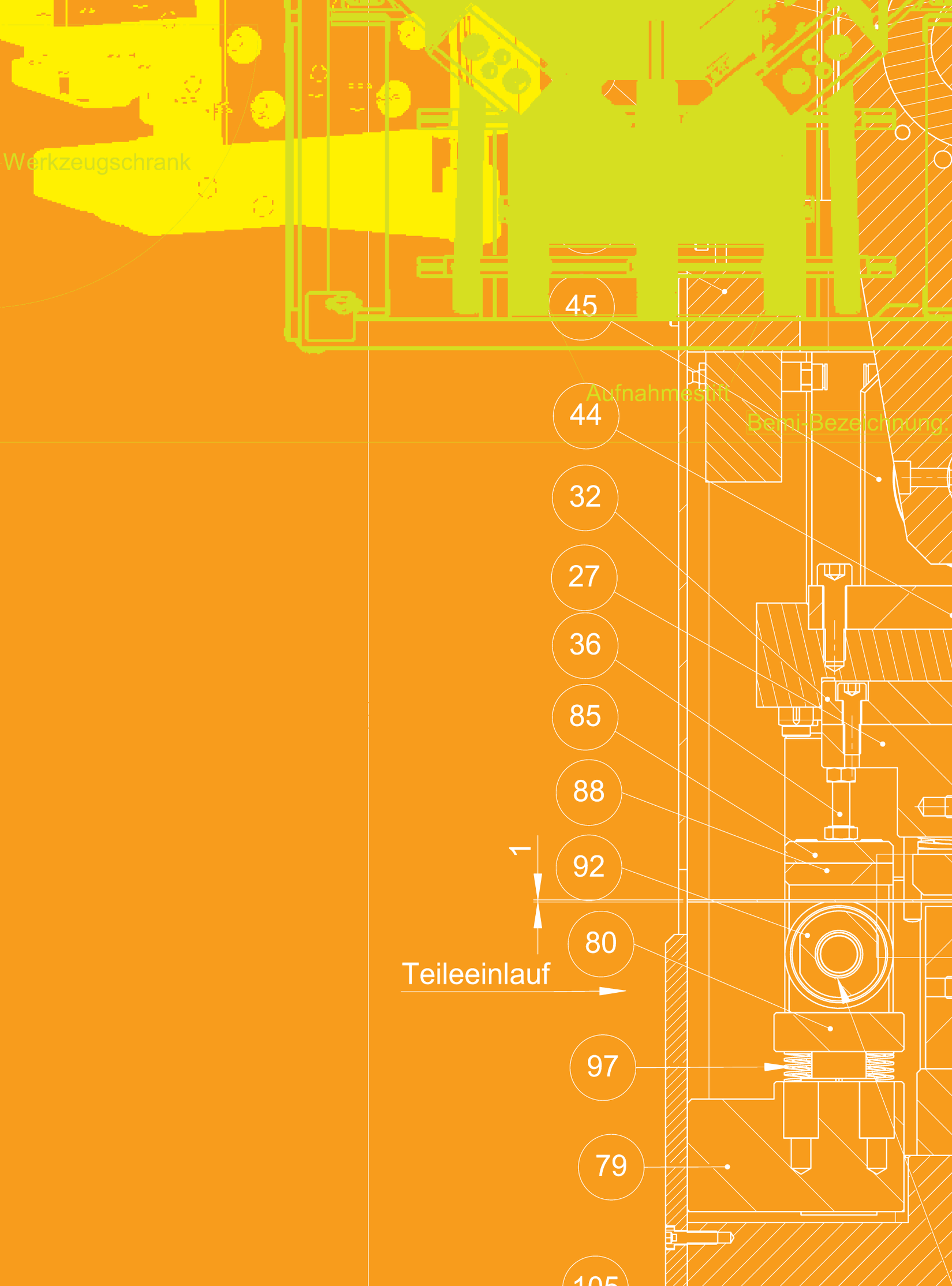
Example:
101-RLA-50 + 101-RLA-U-Ø9-Ø60 x DIN 2393 x 3

Punching without die



Order No.:
101-RLA-E-Øda

Example: 101-RLA-50 + 101-RLA-E-Ø60
(the die mandrel has to be removed)


Werkzeugschrank
45
Aufnahmestift
44
Bemi-Bezeichnung
32
27
36
85
88
1
92
80
Teileeinlauf
97
79

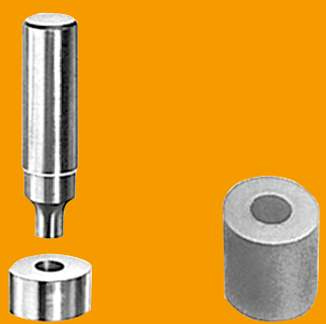
INTELLIGENT PUNCHING SOLUTIONS

Punches · Dies · Reduction Bushes · Strippers //

5

ips Werkzeugtechnik

Punches · Dies · Reduction Bushes · Strippers //

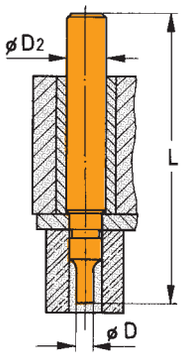


INTELLIGENT PUNCHING SOLUTIONS

ips-werkzeugtechnik gmbh // +49(0)7635/3155-800 // info@ips-werkzeugtechnik.de // www.ips-werkzeugtechnik.de

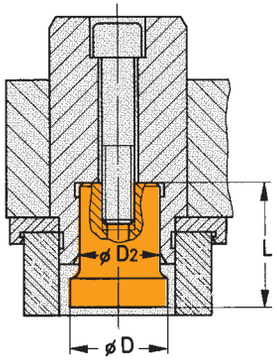
Round hole punching tools ● technical illustration of punches and dies

①



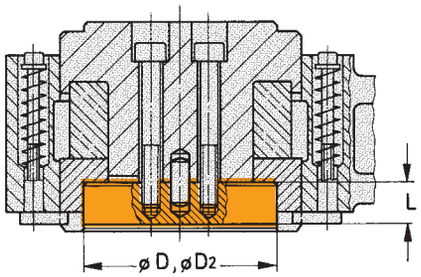
Punch shape for punching units of series 100, 101, 102, 111, 141, 142, 161, 162

②



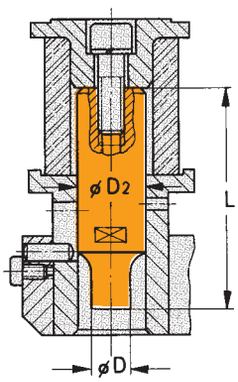
Punch shape for punching units of series 103, 104, 143, 163

③



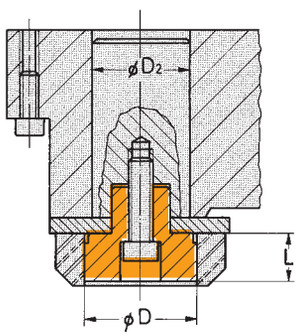
Punch shape for punching units of series 105

④



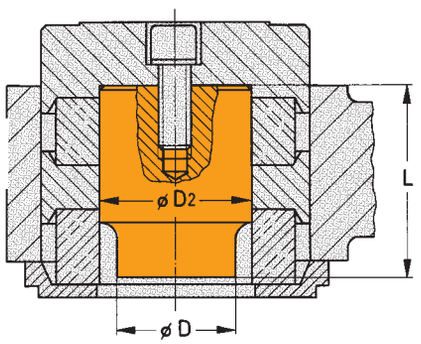
Punch shape for punching units of series 112 and 113

⑤



Punch shape for punching units of series 144 and 164

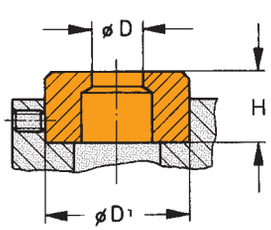
⑥



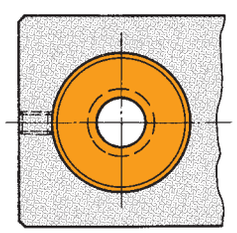
Punch shape for punching units of series 114

Die shape applies to all series

⑦



View »X«



ips Werkzeugtechnik

Round hole punching tools

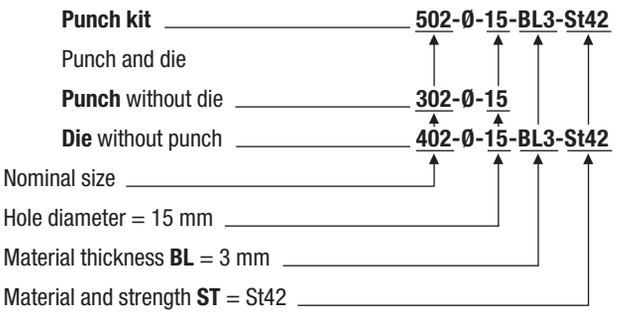
The required die clearance is preset in the factory in accordance with the desired hole size, while considering the specified material thickness and material strength.

By using reduction bushes and sockets holes can be punched with a smaller hole diameter than specified for the particular series for some of the punching units.

Punching units for round cuts can easily and quickly be converted to shaped hole punching units, using a shaped cut conversion kit.

Order example

Round hole punching tool for punching unit order no. 102-200F



(for nonferrous material, e.g.: Al F22)

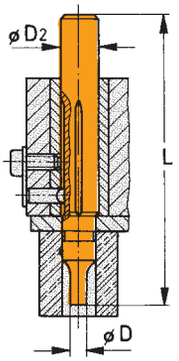
Round hole punching tools ● punch kits, punches, dies, **sizes on stock**

for punching units of series	Sizes on stock: Punch kit Order No.	Punch Order No.	Die Order No.	Available hole diameters: Range ØD	Graduation [mm]	Dimensions (Drawings on the left): $ØD_2$	L	$ØD_1$	H	Corresponding drawings (page before)
100-	**500-Ø-BL-ST**	**300-Ø**	**400-Ø-BL-ST**	2-7	0.5	8	105	15	16	① + ⑦
101- 111- 141- 161-	**501-Ø-BL-ST**	**301-Ø**	**401-Ø-BL-ST**	2-13	0.5	15	105	22	20	
102- 142- 162-	**502-Ø-BL-ST**	**302-Ø**	**402-Ø-BL-ST**	8-25	1	28	105	42	20	
103- 143- 163-	**503-Ø-BL-ST**	**303-Ø**	**403-Ø-BL-ST**	25-40 special size 20-25 available	1	30	45	63	25	② + ⑦
104-	**504-Ø-BL-ST**	**304-Ø**	**404-Ø-BL-ST**	40-63	only hole diameter 40, 42, 45, 50 55, 60, 63	50	45	90	25	
105-	**505-Ø-BL-ST**	**305-Ø**	**405-Ø-BL-ST**	63-100	all sizes available as special size	63 bis 100	22	145	25	③ + ⑦
112-	**512-Ø-BL-ST**	**312-Ø**	**402-Ø-BL-ST**	8-22	1	25	80	42	20	④ + ⑦
113-	**513-Ø-BL-ST**	**313-Ø**	**403-Ø-BL-ST**	22-38	1	40	80	63	25	
114-	**514-Ø-BL-ST**	**314-Ø**	**404-Ø-BL-ST**	35-63	all sizes available as special size	63	80	90	25	⑥ + ⑦
144- 164-	**524-Ø-BL-ST**	**324-Ø**	**404-Ø-BL-ST**	40-63		50	24	90	25	⑤ + ⑦

Special sizes are available for each size within the diameter range

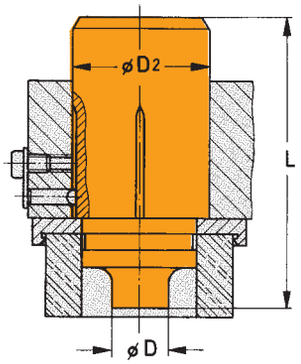
Shaped hole punching tools punch kits, **sizes on stock and special sizes**

①



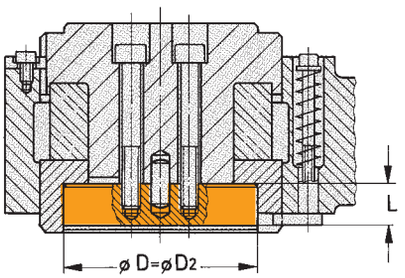
Punch shape for punching units of series 100, 101, 102, 111, 141, 142, 161, 162

②



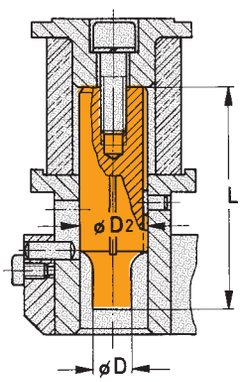
Punch shape for punching units of series 103, 104, 143, 163

③



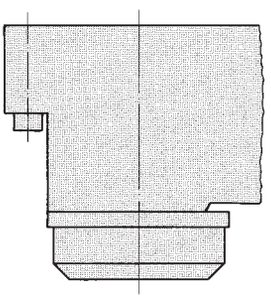
Punch shape for punching units of series 105

④



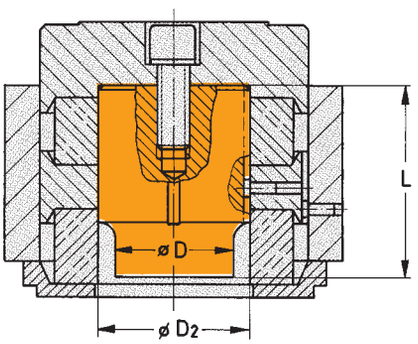
Punch shape for punching units of series 112 and 113

⑤



Shaped hole punching tools for series 144 and 164 are available only on request.

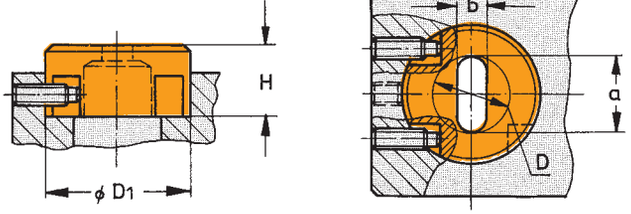
⑥



Punch shape for punching units of series 114

Die shape applies to all series

⑦



View »X«

Shaped hole punching tools

The max. outside profile of a shaped cut may not exceed the max. possible hole diameter.

The required die clearance for the die is preset in accordance with the desired hole size, while considering the specified material thickness and material strength.

Shaped hole punching tools can be used »lengthways« or »crosswise« to the punching unit.

Order example

Shaped hole punching tool »DSW-Form« (means DAF shape, with D = diameter and AF = width across flat) as special size for punching unit order no. 103-200 F

Punch kit, punch and die **503 - DSW-Form - Ø30 x SW20 - BL4 - St60**

Nominal size

Cutting shape

Dimensions, hole diameter = 30 mm

SW = 20 mm

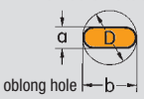
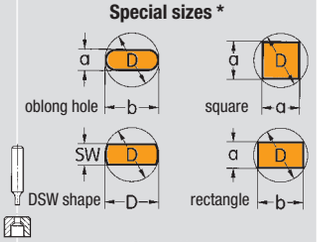
Material thickness **BL** = 4 mm

Material and strength **ST** = St60

(for nonferrous material, e.g.: Al F22)

Shaped hole punching tools

punch kits, **sizes on stock and special sizes**

for punching units of series	Sizes on stock  Order No.	Special sizes *  Order No.	Range ØD	Dimensions Drawings on the left $ØD_2$	L	$ØD_1$	H	Corresponding drawings page before	Shaped cut conversion kits only for punching units which have been ordered without shaped cut conversion kit Order No.
100-	–	–	2-7	–	–	–	–	–	–
101- 111- 141- 161-	**501-Langloch-4.5x10-BL-ST** **501-Langloch-5.5x12-BL-ST** **501-Langloch-7x12-BL-ST**	**501-Langloch-a x b-BL-ST** **501-DSW-Form-DxSW-BL-ST** **501-Quadrat-a x a-BL-ST** **501-Rechteck-a x b-BL-ST**	2-13	15	105	22	20	① + ⑦	805-101 805-111 805-141 805-161
102- 142- 162-	**502-Langloch-5,5x20-BL-ST** **502-Langloch-7x20-BL-ST** **502-Langloch-9x22-BL-ST** **502-Langloch-11x25-BL-ST** **502-Langloch-13x25-BL-ST**	**502-Langloch-a x b-BL-ST** **502-DSW-Form-DxSW-BL-ST** **502-Quadrat-a x a-BL-ST** **502-Rechteck-a x b-BL-ST**	8-25	28	105	42	20		805-102 805-142 805-162
103- 143- 163-	–	**503-Langloch-a x b-BL-ST** **503-DSW-Form-DxSW-BL-ST** **503-Quadrat-a x a-BL-ST** **503-Rechteck-a x b-BL-ST**	20-40	50	105	63	25	② + ⑦	805-103 805-143 805-163
104-	–	**504-Langloch-a x b-BL-ST** **504-DSW-Form-DxSW-BL-ST** **504-Quadrat-a x a-BL-ST** **504-Rechteck-a x b-BL-ST**	40-63	75	105	90	25		805-104
105-	–	**505-Langloch-a x b-BL-ST** **505-DSW-Form-DxSW-BL-ST** **505-Quadrat-a x a-BL-ST** **505-Rechteck-a x b-BL-ST**	63-100	63 to 100	22	145	25	③+ ⑦	805-105
112-	**512-Langloch-7x20-BL-ST** **512-Langloch-9x22-BL-ST** **512-Langloch-11x22-BL-ST** **512-Langloch-13x22-BL-ST**	**512-Langloch-a x b-BL-ST** **512-DSW-Form-DxSW-BL-ST** **512-Quadrat-a x a-BL-ST** **512-Rechteck-a x b-BL-ST**	8-22	25	80	42	20	④ + ⑦	805-112
113-	–	**513-Langloch-a x b-BL-ST** **513-DSW-Form-DxSW-BL-ST** **513-Quadrat-a x a-BL-ST** **513-Rechteck-a x b-BL-ST**	22-38	40	80	63	25		805-113
114-	–	**514-Langloch-a x b-BL-ST** **514-DSW-Form-DxSW-BL-ST** **514-Quadrat-a x a-BL-ST** **514-Rechteck-a x b-BL-ST**	35-63	63	80	90	25	⑥ + ⑦	805-114

* Special sizes / shapes: Langloch = oblong hole, DSW-Form = DSW shape, Quadrat = square, Rechteck = rectangle

Reduction Bushes

◀ Reduction bush

◀ Reduction socket

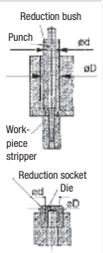
Reduction bushes and sockets

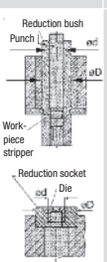
only for round hole punching tools

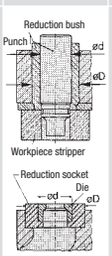
When using reduction bushes and sockets with the punching units of the series 101 to 163, the punch and die of the next smaller punching unit may be used.

This extends the application range of the listed punching units by the reduced diameter given in the table below.

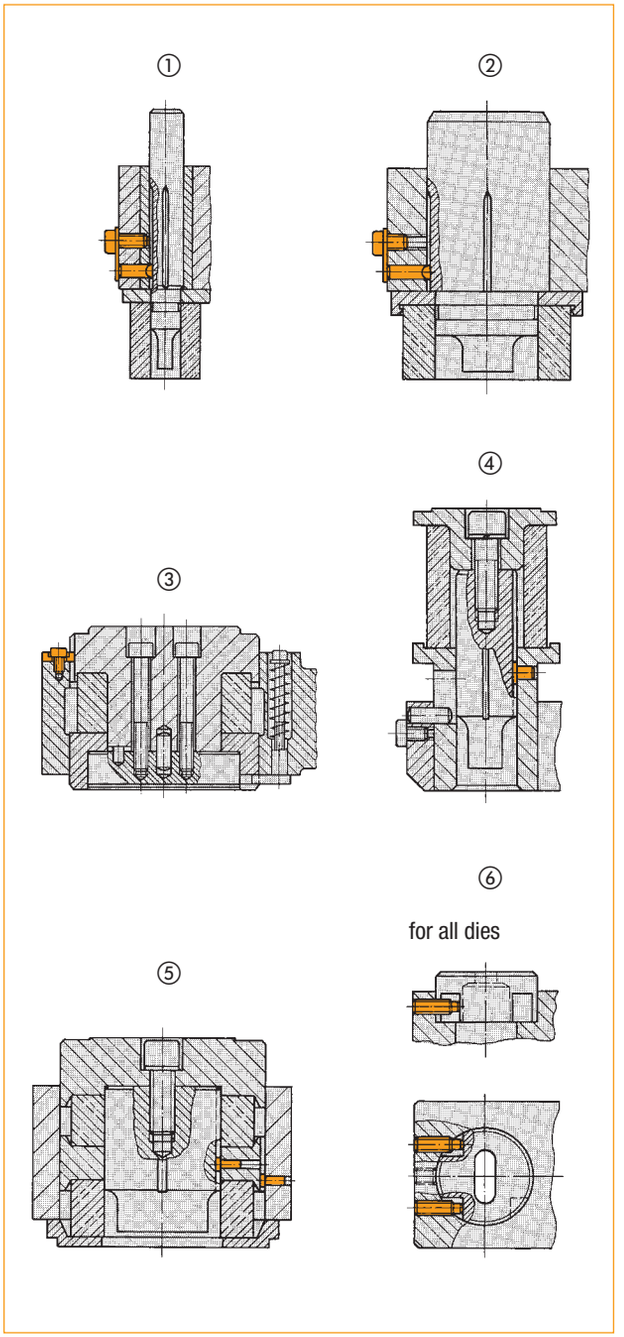
Due to the possibility of using the next smaller punching tool size, additional tool units are no longer required and, thereby, costs are reduced.

for punching units of series	Punch diameter range **without** reduction parts: standard Ø	Fig.	Punch diameter range **with** reduction parts: reduced Ø	Fig.	Reduction parts: Reduction bush complete with workpiece stripper Order No.	ØD	Ød	Reduction parts: Reduction socket Order No.	ØD	Ød	Required cutting tools: Punch Order No.	Die Order No.
101 111 141 161	2–13		2–7		**850-15x08**	15	8	**860-22x15**	22	15	300-Ø…	400-Ø-BL-ST

for punching units of series	Punch diameter range **without** reduction parts: standard Ø	Fig.	Punch diameter range **with** reduction parts: reduced Ø		Fig.	Reduction parts: Reduction bush complete with workpiece stripper Order No.	ØD	Ød	Reduction parts: Reduction socket Order No.	ØD	Ød	Required cutting tools: Punch Order No.	Die Order No.
102 142 162	8–25		2–13	from 2–8		**850-28x15**	28	15	**860-42x15**	42	15	301-Ø…	400-Ø-BL-ST
				from 8–13[1]									From hole diameters of 8 mm onwards, use die 402-Ø-BL-ST.

for punching units of series	Punch diameter range **without** reduction parts: standard Ø	Fig.	Punch diameter range **with** reduction parts: reduced Ø	Fig.	Reduction parts: Reduction bush complete with workpiece stripper Order No.	ØD	Ød	Reduction parts: Reduction socket Order No.	ØD	Ød	Required cutting tools: Punch Order No.	Die Order No.
103 143 163	25–40		8–25		**850-50x28**	50	28	**860-63x42**	63	42	302-Ø…	402-Ø-BL-ST

Insert in order no.: **Ø** = hole Ø or »Formloch« (i.e. shaped hole), **BL** = material thickness, **ST** = material and strength.

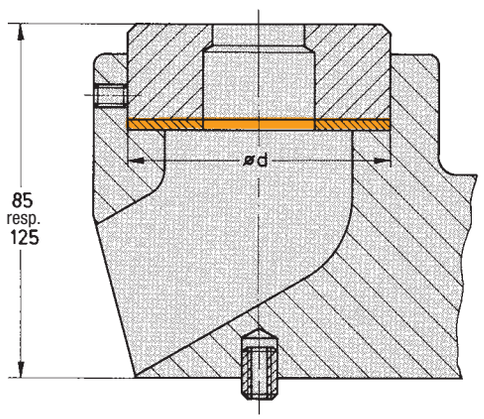


Shaped cut conversion kits

All punching units for round cuts (except for series 100) can easily and quickly be converted to shaped hole punching units, using a shaped cut conversion kit.

A shaped cut torsion lock is included in the standard delivery of all punching units (except for series 100).

for punching unit series	Corresponding figures	Order No.
101	① + ⑥	**805-101**
102	① + ⑥	**805-102**
103	② + ⑥	**805-103**
104	② + ⑥	**805-104**
105	③ + ⑥	**805-105**
111	① + ⑥	**805-111**
112	④ + ⑥	**805-112**
113	④ + ⑥	**805-113**
114	⑤ + ⑥	**805-114**
141	① + ⑥	**805-141**
142	① + ⑥	**805-142**
143	② + ⑥	**805-143**
161	① + ⑥	**805-161**
162	① + ⑥	**805-162**
163	② + ⑥	**805-163**



Compensating washers

Compensating washers are required to bring reworked dies to the working or material support height of 85 or 125 mm.

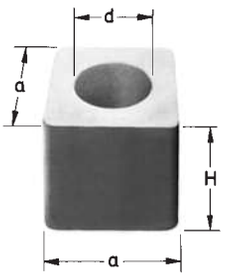
This height compensation is particularly important when several punching units are to be combined to a series punch installation. In this case, uniform working and material support height is essential.

Ød	for dies Series	for dies to be used for punching units of series	1 kit = 4 pieces thickness	Order No.
15	400	100		**806-15**
22	401	101, 111, 141, 161	0.1 0.3	**806-22**
42	402, 412	102, 112, 142, 162	0.5 1.0	**806-42**
63	403, 413	103, 113, 143, 163	mm	**806-63**
90	404, 414	104, 114		**806-90**

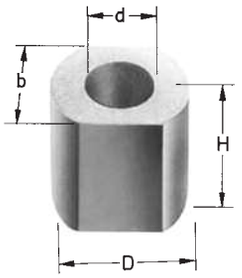
ips Werkzeugtechnik

Polyurethane workpiece stripper

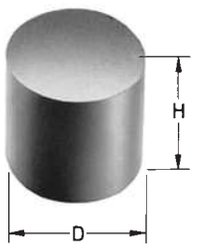
Shape **A**



Shape **B**

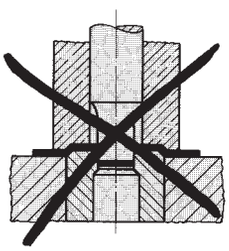


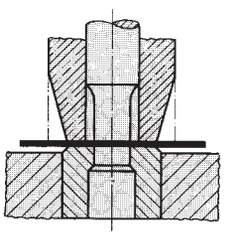
Shape **C**



Shape **D**

Note When punching in thin metal sheets, the outside diameter of the polyurethane stripper lying on the metal sheet should be skewed and adapted to the diameter of the die. This prevents undesirable deformation of the metal sheet caused by the stripper.





for punching units of series													Shape	Stripping force	Dimensions					Order No.
100	101 111	102	103	104	105	112	113	114 1 kit = 2 pieces	141 161	142 162	143 163	144 164			a	b	Ød	ØD	H	
●													A	medium	–	–	6,5	18	30	**801-018x30**
									●				A	small	–	–	12	28	27	**801-028x27**
	●												A	medium	–	–	12	28	30	**801-028x30**
										●			A	small	–	–	25	40	27	**801-040x27**
										●			A	medium	–	–	25	40	30	**801-040x30**
		●											A	large	–	–	25	50	30	**801-050x30**
											●		A	small	–	–	41	60	28	**801-060x28**
											●		A	medium	–	–	41	60	30	**801-060x30**
			●										A	large	–	–	41	70	30	**801-070x30**
								●					A	large	–	–	64	95	30	**801-095x30**[2]
												●	A	large	–	–	on request	100	27	**801-100x27**
				●									A	large	–	–	64	100	30	**801-100x30**
					●								A	large	–	–	76	112	40	**801-112x40**
●[1]													C	large	–	17	6.5	25	31	**802-025x31**[1]
	●[1]												B	large	28	–	12	–	31	**802-028x31**[1]
						●							B	large	50	–	29	–	50	**802-050x50**
							●						B	large	70	–	45	–	50	**802-070x50**
													D	–	–	–	–	28	*	**803-028xH***
													D	–	–	–	–	50	*	**803-050xH***
													D	–	–	–	–	70	*	**803-070xH***
													D	–	–	–	–	100	*	**803-100xH***

*** Polyurethane strippers, shape D** (full material), are provided for special applications and are supplied in the requested length. Add the requested length »H« to the order no. The hole (Ød) is provided by the customer.

[1] Reinforced version for higher retraction forces when punching thick materials

[2] 1 kit = 2 pieces


1,02
HGL-1/4
010
PUN-8x
591,50
509
525
548
426
22,50
30
40
98
5,25