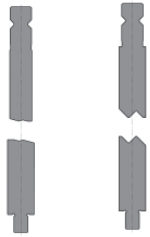


# CUSTOM MADE TOOLING

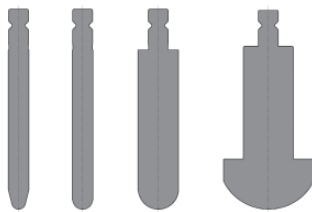
Aside from the standard tools and accessories, we can supply Custom Made tools which can be manufactured completely according to the customer's needs. These tools can be made in any of the tooling style executions and to the specific length required, as well as with different methods of hardening.



*Offset Tooling*

It is also possible to segment the tools into the lengths desired by the customer, to allow, for example, the bending of box-shaped products. For top tools it is possible to provide tooling sets including horn sections (sections with a cut-out to accommodate parts with a reverse flange).

A number of possibilities are on this page.



*Radius Tooling*



*Horn*



*Box Bending*



*Heavy Duty*



*Radius Bending*



*Special Application*

## TOOLING

# ADJUSTABLE BOTTOM TOOLS (MVM AND MULTI-V)

Custom Made Tooling also include bottom tools with an adjustable opening width. The opening width (V-opening) can be adjusted as necessary (Fig. 4.1). The primary advantage offered by these adjustable bottom tools is that the bottom tool does not need to be changed with the sheet thickness: the opening width can simply be adjusted as necessary. This results in substantial time savings especially when large dimensions are involved.

The WILA range of products includes two models of adjustable bottom tools:

- Automatically adjustable bottom tool, type MVM, designed for bending precision sheet material
- Manually adjustable bottom tool, type Multi-V, designed for bending plate material

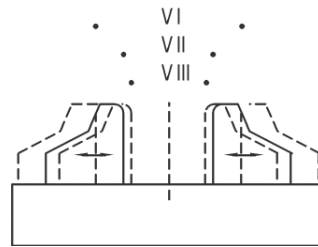
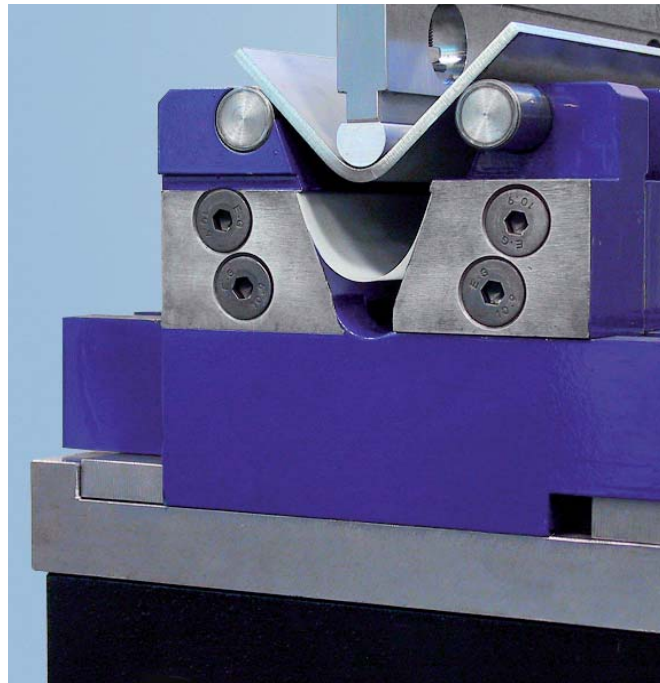


Fig. 4.1

*Multi-V-MATIC (MVM).*

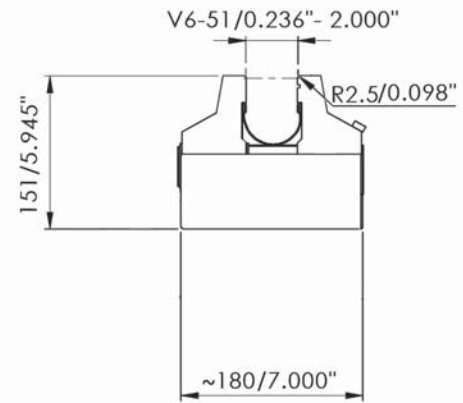


*Multi-V.*

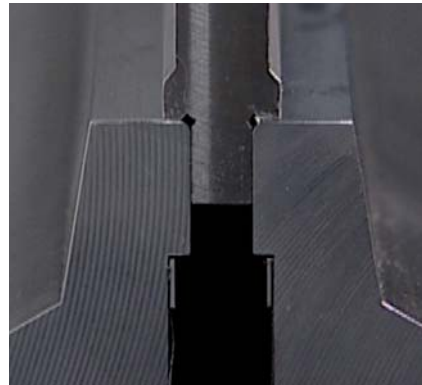


### MVM TYPE I-1

The automatically adjustable bottom tool MVM Type I.1 offers a number of specific advantages. Thanks to the interval-free adjustment possibilities, the optimum V-opening can always be selected. Changing the V-opening is ultra-fast as there are no bottom tools to change out and no spacer bars are required. The V-opening can be changed using a CNC Drive Motor which can be tied into the press brake control allowing the V-opening to be programmed in automatically. Or the MVM can be supplied with a manual hand crank assembly and digital counter to select and display the desired V-opening. Thanks to the compact construction, the user has optimum bending freedom. Moreover, the construction is extremely stable because it was designed based on the vise principle. It is even possible to combine the system with a hemming tool (e.g. type BIU-051) to pre-bend and to flatten. At the same time, the MVM can be used as a tool holder for other bottom tools with a 13 mm/0.511" adaption, for example OZU bottom tools from the New Standard or American Style programs.



Pre-bend and flattening in the same tool.



Acts as a tool holder for OZU bottom tools.



MVM Type I-1.

MVM I.1 CENTRALLY ADJUSTABLE BOTTOM TOOL		
V-opening continuously adjustable from 6-51 mm/0.236-2.0".		
Delivery	Standard	Optional
CNC drive unit	●	
Manual adjustment with digital read-out		○
No tool changes required	●	
Always the ideal V-opening	●	
Bending radii are CNC-Deephardened®	●	
Pre-bend and flattening in the same tool	●	
Will act as Tool Holder for OZU-tooling	●	
Practically Unlimited bend angles (e.g. 30° at S=6 mm/0.236")	●	

Length	Weight		Max load
	kg	lbs	
1785 mm/6 ft	179	394	100 t/m 34 t/ft α= 90°
2040 mm	204	450	
2380 mm/8 ft	238	525	
2550 mm	255	562	
3060 mm/10 ft	306	675	
3655 mm/12 ft	366	806	
4080 mm	408	900	
4250 mm/14 ft	425	937	
4845 mm	481	1060	
6120 mm	601	1325	

Note: Other lengths available on request.

### MULTI-V

The fully modular adjustable bottom tool type Multi-V offers a number of advantages. The Multi-V main structure is simple; it consists of multiple elements of the same type which are built together into one tool. In case of damage it is simple and cost effective to replace one or more modules. It is possible to quickly change the desired V-openings by sliding in spacer bars on the front and rear side of the saddle and then lock the Multi-V section in place with two set screws. The spacer bars can be supplied by us or procured locally by the customer. This gives you the possibility to choose the V-opening that best fits the characteristics of the material to be processed; this is particularly useful when bending high tensile strength materials which have a great amount of spring back. The Multi-V is equipped with low friction, hardened roller bars which reduce marking on the outside of the part and also reduces the required bending force by 10% to 30% versus conventional bottom tools.

The Multi-V is manufactured in lengths ranging from 500 mm/19.7" to 1050 mm/41.3" and the Multi-V lengths can be combined to make any required length.

There are 4 standard Multi-V models available: Models B, D, E, and F ranging from a minimum opening of 24 mm/0.95" to a maximum opening of 400 mm/15.75". See fig. 4.2 and the table. The Bottom Tool Holder (saddle) for the Multi-V is 40 mm/1.575" thick as standard configuration and can be supplied as a flat bottom, with a tang or as a bolt-down.

Semi-automatic Multi-V versions are also available for the larger models E and F, whereby a chain drive mechanism is built into the bottom holders to open and close the Multi-V jaws via an electric drill, rather than manually.

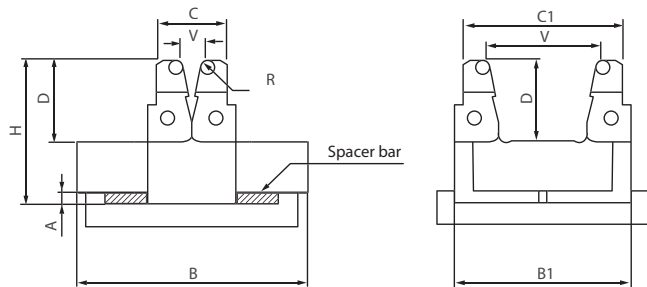


Fig. 4.2

MULTI-V										
Model	V-opening	Max load at 90°	A	B	B1	C	C1	D	H	R
B	24-124 mm	125 t/m	15	254	197	77	177	90	160	8
	0.95-4.88"	42 t/ft	0.591"	10"	7.756'	3.031'	6.968'	3.543'	6.299'	0.315"
D	65-180 mm	200 t/m	15	324	277	160	277	90	160	125
	2.56-7.09"	67 t/ft	0.591"	12.756'	10.905'	6.299'	10.906'	3.543'	6.299'	0.492"
E	120-300 mm	400 t/m	20	510	447	267	447	130	250	20
	4.72-11.81"	133 t/ft	0.787"	20.079'	17.598'	10.511'	17.598'	5.118"	9.842"	0.787"
F	150-400 mm	600 t/m	25	680	585	335	585	190	350	25
	5.90-15.75"	200 t/ft	0.984"	26.771'	23.031'	13.188'	23.031'	7.480"	13.780"	0.984"



# TOOLING FLATTENING TOOLS (DD)

Flattening tools (often called Hemming or Dutch bending tools) are used to pre-bend the sheet and then press it closed (Fig. 4.3). This technique is used, for example, to finish the sharp edges of the ends of a sheet or to reinforce the sheet and thus strengthen the bent product.

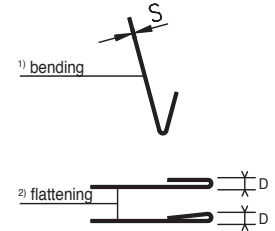


Fig. 4.3

Depending on the available tonnage and the sheet to be bent (material type and thickness), the sheet can be pressed closed to a greater or lesser extent. The force table on page 133 lists the tonnages required for closing the sheet for mild steel 42 kN/cm<sup>2</sup> and for stainless steel 70 kN/cm<sup>2</sup>. The values as indicated may deviate slightly in actual practice.

A variety of tools in the WILA program can be used to perform this bending operation. If hemming is done only occasionally, a two step operation is often used with the first operation bending to 30° using standard 30° top and bottom tools. The second operation uses top and bottom flattening tools to close the hem (Fig. 4.4). When flattening the sheet, we advise that these tools be used on sheets that are no more than 2 mm/0.079”.

Using the New Standard top tool type BIU-051, for example, combined with bottom tool type OZU-083, a flattening combination can be created that can be used for both pre-bending and flattening (Fig. 4.5). An advantage is that this tool can also be used for universal bending. Because the design configuration is centric, no sliding mechanism is required. We advise a maximum sheet thickness of 1.5 mm/0.059” with this tool combination.

The spring-action flattening tool, consisting of a holder with a spring-action flattening part, is another option (Fig. 4.6). When combined with a 30° top tool, the sheet can be pre-bent and then hemmed. Because the V opening can be adjusted to suit the sheet thickness, short flange lengths can be bent. This combination however cannot be used for universal bending. The range of products includes a number of standard designs, type DDU (page 102), with different V-openings.

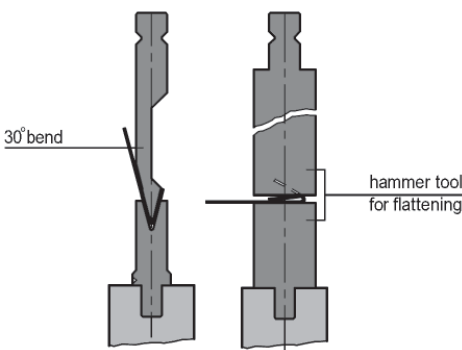


Fig. 4.4

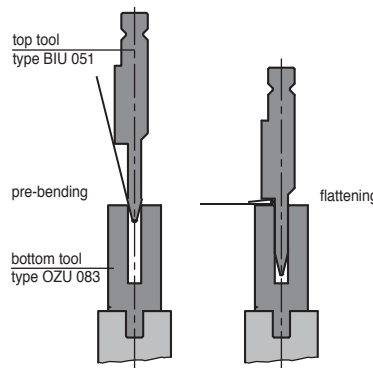


Fig. 4.5

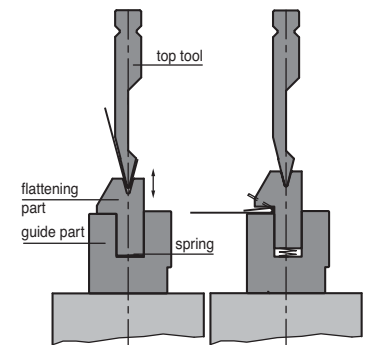


Fig. 4.6

As a modern version of the spring-action bending tool, WILA offers the hydraulic Dutch bending tool (Fig. 4.7). The pressing part is powered by hydraulic cylinders incorporated in the tool. When the tool is inactive, it is in a closed position, and simultaneously serves as a tool holder. Interchangeable bottom tools can be placed in the top of the flattening part, making it possible to adjust the size of the V-opening as desired. WILA offers a modified Hydraulic Power Pack (90 Bar max. pressure) for this purpose. Information available on request.

The spring-action and hydraulic flattening tools can be mounted on the machine in a number of ways:

- separately on the press brake's table.
- in the clamping slot in the table or lower beam using a tang on the bottom (Fig. 4.8).
- directly bolted on to the lower beam (Fig. 4.9).

The hole pattern is available upon request. Here too, the hole pattern can be modified to suit the customer's needs. Both models can be standardly equipped with additional M16 holes 200 mm/8" center to center, so that support arms and such can be attached.

The bottom tools used with the hydraulic flattening tool can be clamped in the tool in one of two ways:

- mechanically, using standard clamping bolts. These bolts are located in the middle of 1000 mm/40" at 25 mm/1" intervals, and in intervals of 100 mm/4" towards each end.
- hydraulically, using built in Clamping-Pins.

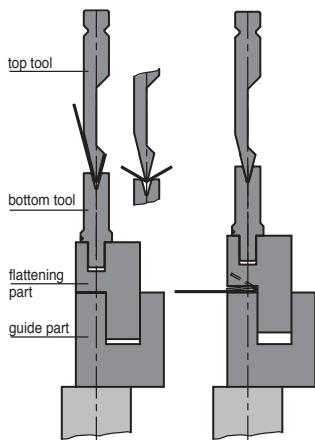


Fig. 4.7

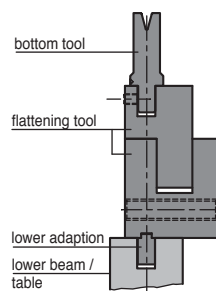


Fig. 4.8

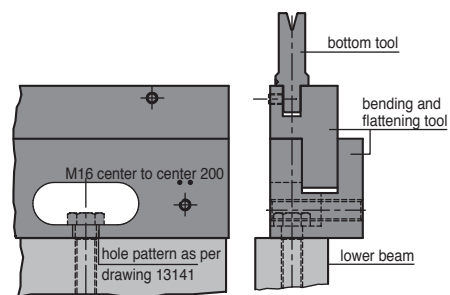
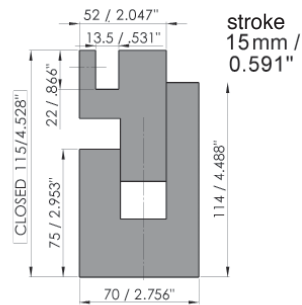


Fig. 4.9

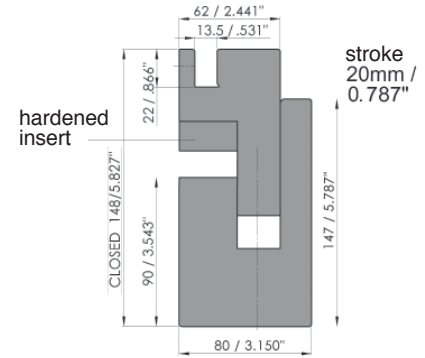
**DD-005** BENDING AND FLATTENING TOOL



Delivery	Standard	Optional
Manual Clamping	●	
Hydraulic lifting	●	
Hydraulic Power Pack		○
Mounting via bottom tang		○
Mounting via bolts directly to lower beam		○
<i>Usable for:</i>		
New Standard bottom tools	●	
American Style bottom tools	●	
Mild steel 0.5-2.0 mm	●	
Aluminum 0.5-2.5 mm	●	

Max. load 100 t/m - 34 t/ft

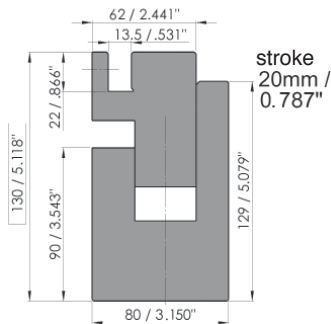
**DD-005 HI** BENDING AND FLATTENING TOOL



Delivery	Standard	Optional
Manual Clamping	●	
Hydraulic lifting	●	
Hydraulic Power Pack		○
Mounting via bottom tang		○
Mounting via bolts directly to lower beam		○
Hardened flattening inserts	●	
<i>Usable for:</i>		
New Standard bottom tools	●	
American Style bottom tools	●	
Mild steel 0.5-2.0 mm	●	
Aluminum 0.5-2.5 mm	●	
Stainless St. 0.5-2.0 mm	●	

Max. load 100 t/m - 34 t/ft

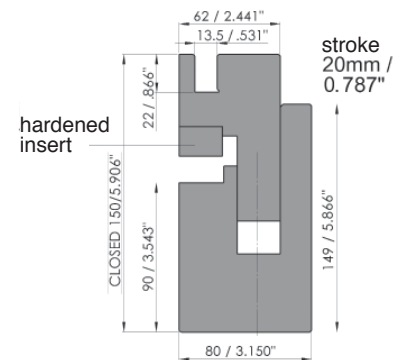
**DD-009** BENDING AND FLATTENING TOOL



Delivery	Standard	Optional
Hydraulic Clamping	●	
Hydraulic lifting	●	
Hydraulic Power Pack		○
Mounting via bottom tang		○
Mounting via bolts directly to lower beam		○
<i>Usable for:</i>		
New Standard bottom tools	●	
American Style bottom tools	●	
Mild steel 0.5-3.0 mm	●	
Aluminum 0.5-3.0 mm	●	

Max. load 100 t/m - 34 t/ft

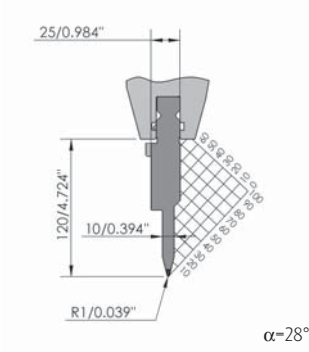
**DD-009 HI** BENDING AND FLATTENING TOOL



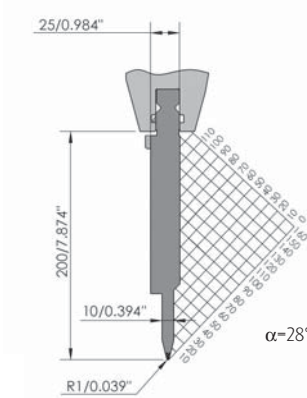
Delivery	Standard	Optional
Hydraulic Clamping	●	
Hydraulic lifting	●	
Hydraulic Power Pack		○
Mounting via bottom tang		○
Mounting via bolts directly to lower beam		○
Hardened Flattening Insert	●	
<i>Usable for:</i>		
New Standard bottom tools	●	
American Style bottom tools	●	
Mild steel 0.5-3.0 mm	●	
Aluminum 0.5-3.0 mm	●	
Stainless St. 0.5-2.0 mm	●	

Max. load 100 t/m - 34 t/ft

**BIU-051**



**BIU-053**

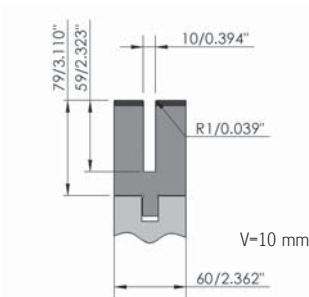


Type	Length	Weight		Max load
		kg	lbs	
BIU-051/1	515 mm	11.3	25.0	100 t/m 34 t/ft
BIU-051/2*	550 mm - sectioned	12.1	26.7	
BIU-051/3*	200 mm - sectioned	4.4	9.7	
BIU-051/6	200 mm	4.4	9.7	
BIU-051/12	255 mm	5.4	11.9	

Type	Length	Weight		Max load
		kg	lbs	
BIU-053/1**	515 mm	19.5	43.0	100 t/m 34 t/ft
BIU-E2M-053/1	515 mm	19.5	43.0	
BIU-053/2*	550 mm - sectioned	20.8	45.9	
BIU-053/3*	200 mm - sectioned	7.6	16.7	
BIU-053/6	200 mm	7.6	16.7	
BIU-053/12	255 mm	9.5	20.9	

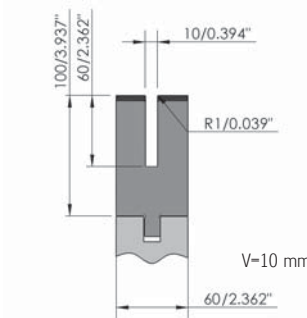
**OZU-083**

V=10 mm/0.394"  
16 Ga



**OZU-381**

V=10 mm/0.394"  
16 Ga

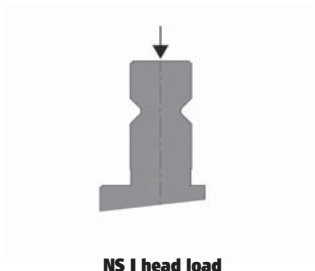


Type	Length	Weight		Max load
		kg	lbs	
OZU-083/1	515 mm	18.0	39.7	100 t/m 34 t/ft
OZU-083/6	200 mm	7.0	15.4	
OZU-083/12	255 mm	9.2	20.3	

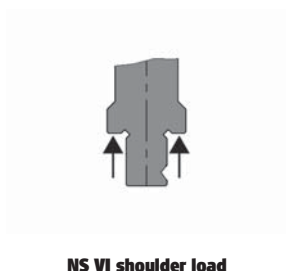
Type	Length	Weight		Max load
		kg	lbs	
OZU-381/1	515 mm	23.0	50.6	100 t/m 34 t/ft
OZU-381/6	200 mm	8.9	19.6	
OZU-381/12	255 mm	11.1	24.5	

\* Individual tool sections also available. \*\* Provided with fixed Safety-Pins (see page 36).

**ADAPTION**



NS I head load



NS VI shoulder load  
with V-Lock®

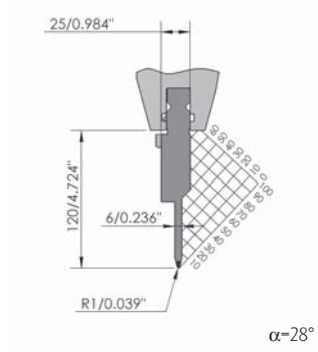
**V-LOCK®**



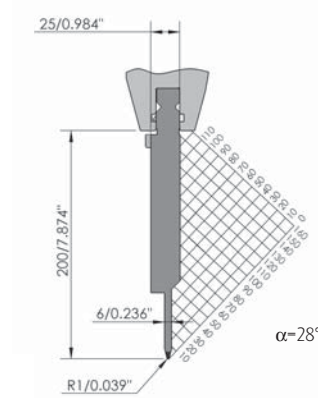
The V-Lock® improves the clamping and positioning of bottom tools. A groove in the tool tang allows specially designed clamping pins to automatically align and firmly clamp bottom tools in both X and Y directions.



**BIU-061**



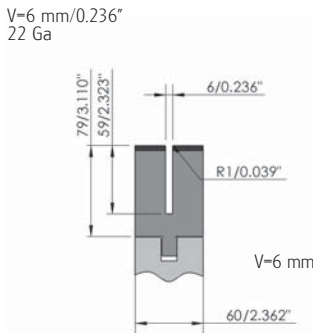
**BIU-063**



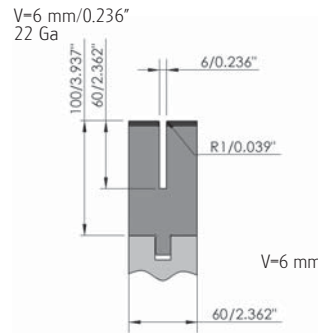
Type	Length	Weight		Max load
		kg	lbs	
BIU-061/1	515 mm	10.4	22.8	50 t/m 17 t/ft
BIU-061/2*	550 mm - sectioned	11.1	24.4	
BIU-061/3*	200 mm - sectioned	4.0	8.9	
BIU-061/6	200 mm	4.0	8.9	
BIU-061/12	255 mm	5.0	11.0	

Type	Length	Weight		Max load
		kg	lbs	
BIU-063/1**	515 mm	19.5	43.0	50 t/m 17 t/ft
BIU-E2M-063/1	515 mm	19.5	43.0	
BIU-063/2*	550 mm - sectioned	20.8	45.9	
BIU-063/3*	200 mm - sectioned	7.6	16.7	
BIU-063/6	200 mm	7.6	16.7	
BIU-063/12	255 mm	9.1	20.1	

**OZU-082**



**OZU-382**

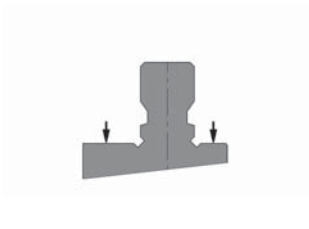


Type	Length	Weight		Max load
		kg	lbs	
OZU-082/1	515 mm	18.5	40.8	100 t/m 34 t/ft
OZU-082/6	200 mm	7.2	15.9	
OZU-082/12	255 mm	9.2	20.3	

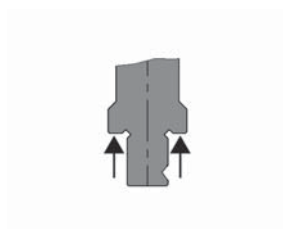
Type	Length	Weight		Max load
		kg	lbs	
OZU-382/1	515 mm	23.2	51.2	100 t/m 34 t/ft
OZU-382/6	200 mm	9.0	19.9	
OZU-382/12	255 mm	11.1	24.5	

\* Individual tool sections also available. \*\* Provided with fixed Safety-Pins (see page 36).

**ADAPTION**



AS I shoulder load



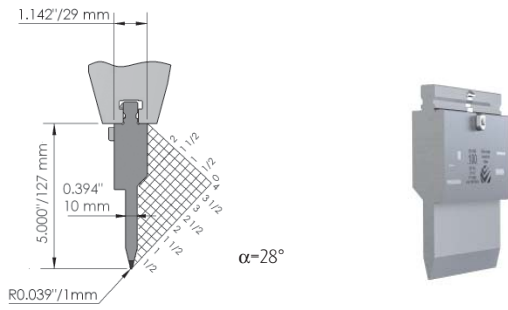
NS VI shoulder load with V-Lock®

**TOOLADVISOR**

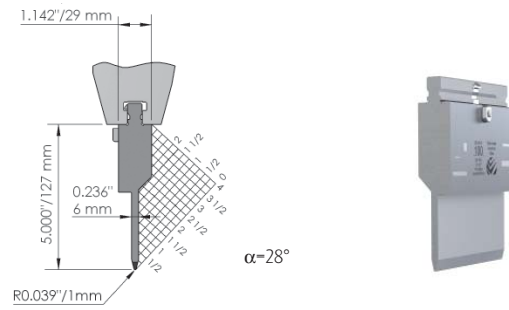


The ToolAdvisor offers clear advice about which tools will suit your needs. It also offers information about, for example, the required tonnage, the resulting inside radius, and the minimum flange length. The WILA ToolAdvisor can be downloaded as a free App from the App Store and Google Play.

**BIU-809**



**BIU-810**

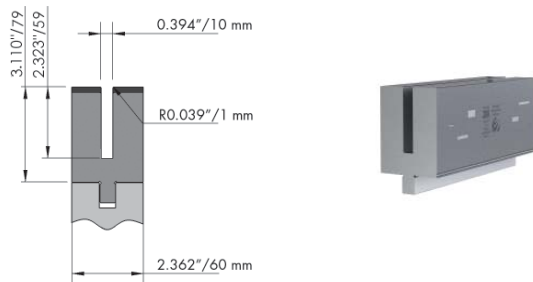


Type	Length	Weight		Max load
		kg	lbs	
BIU-809/1	515 mm	11.0	24.3	100 t/m 34 t/ft
BIU-809/2*	550 mm - sectioned	11.8	25.9	
BIU-809/3*	200 mm - sectioned	4.3	9.4	
BIU-809/6	200 mm	4.3	9.4	

Type	Length	Weight		Max load
		kg	lbs	
BIU-810/1	515 mm	10.1	22.2	50 t/m 17 t/ft
BIU-810/2*	550 mm - sectioned	10.8	23.7	
BIU-810/3*	200 mm - sectioned	3.9	8.6	
BIU-810/6	200 mm	3.9	8.6	

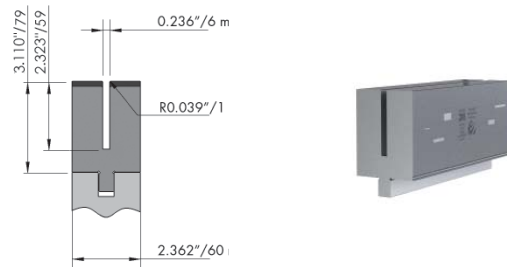
**OZU-815**

V=10 mm/0.394"  
16 Ga



**OZU-816**

V=6 mm/0.236"  
22 Ga



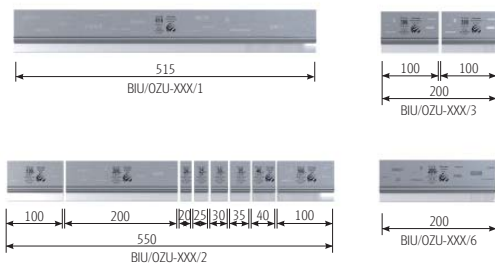
Type	Length	Weight		Max load	
		kg	lbs	Bending	Flattening
OZU-815/1	515 mm	18.0	39.7	50 t/m 17 t/ft α=90°	100 t/m 34 t/ft
OZU-815/6	200 mm	7.0	15.4		

Type	Length	Weight		Max load	
		kg	lbs	Bending	Flattening
OZU-816/1	515 mm	18.3	40.3	50 t/m 17 t/ft α=90°	100 t/m 34 t/ft
OZU-816/6	200 mm	7.1	15.6		

\* Individual tool sections also available.

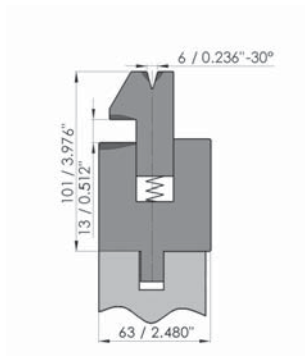
**SEGMENTED TOOLING PROVIDES COMPLETE FLEXIBILITY**

Create any desired tooling length from 20 mm/0.787" to machine length in 5 mm/0.197" increments by combining tool segments.

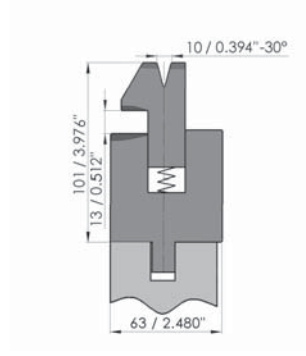


Examples of tool segments combined for various machine lengths			
550 mm/ 21.654" segmented set	200 mm 7.874"	515 mm 20.276"	Total length
1	1	1	1265 mm/49.8"
1	1	2	1780 mm/70.1"
1	2	3	2495 mm/98.2"
1		5	3125 mm/123"
1		6	3640 mm/143.3"
1	1	7	4355 mm/171.5"

**DDU-001 / DDU-801**



**DDU-002 / DDU-802**



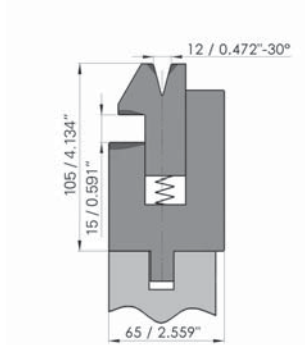
Type	Length	Weight		Max load	
		kg	lbs	Bending	Flattening
DDU-001/1	515 mm	20.0	44.0	60 t/m 20 t/ft	100 t/m 34 t/ft

Bending and flattening tool, provided with V=6 mm/0.236" - 30°. Max. sheet thickness 1 mm/0.039". Flattening part operated by spring action, stroke 13 mm/0.512". Closed working height 88 mm/3.465".

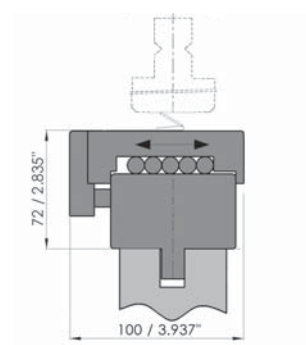
Type	Length	Weight		Max load	
		kg	lbs	Bending	Flattening
DDU-002/1	515 mm	19.7	43.4	70 t/m 24 t/ft	100 t/m 34 t/ft

Bending and flattening tool, provided with V=10 mm/0.394" - 30°. Max. sheet thickness 1.5 mm/0.059". Flattening part operated by spring action, stroke 13 mm/0.512". Closed working height 88 mm/3.465".

**DDU-004 / DDU-804**



**DDU-003 / DDU-803**



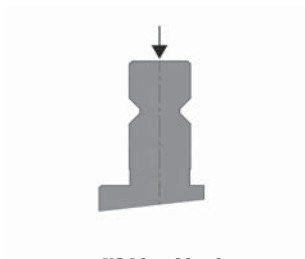
Type	Length	Weight		Max load	
		kg	lbs	Bending	Flattening
DDU-004/1	515 mm	22.3	49.2	70 t/m 24 t/ft	100 t/m 34 t/ft

Bending and flattening tool, provided with V=12 mm/0.472" - 30°. Max. sheet thickness 2 mm/0.079". Flattening part operated by spring action, stroke 15 mm/0.591". Closed working height 90 mm/3.543".

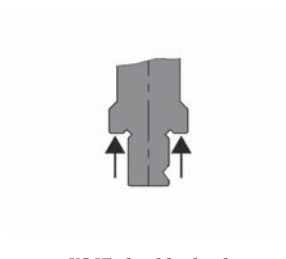
Type	Length	Weight		Max load
		kg	lbs	
DDU-003/1	515 mm	23.7	52.2	100 t/m 34 t/ft

Moving flattening bottom tool with rollers for material S=2-4 mm/0.079-0.157". Suitable for use in combination with flattening top tool. Working height 72 mm/2.835".

**ADAPTION**

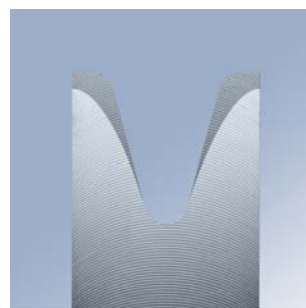


**NS I head load**



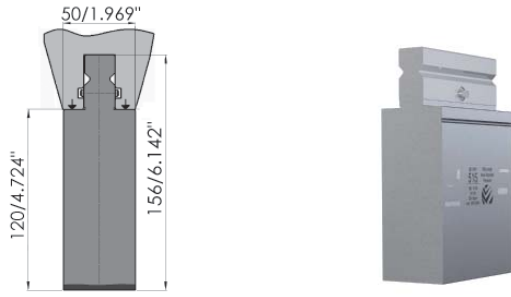
**NS VI shoulder load with V-Lock®**

**CNC-DEEPHARDENING®**

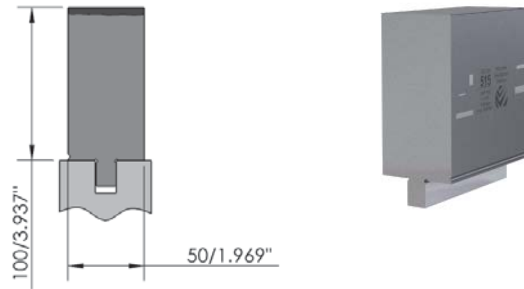


All press brake tools produced by WILA are CNC-Deepphardened®. The same applies to WILA's New Standard Premium Tool Holders. This makes them extremely robust and durable. Our New Standard Premium and American Style top and bottom tools are hardened as shown here.

**BIU-041**



**OZU-384**



Type	Length	Weight		Max load
		kg	lbs	
BIU-041/1**	515 mm	27.7	61.1	100 t/m
BIU-E2M-041/1	515 mm	27.7	61.1	34 t/ft
BIU-041/12	255 mm	13.4	29.5	

Flattening tool to be used in combination with bottom tools DDU-003 and OZU-384. Max. sheet thickness 2 mm/0.079\".

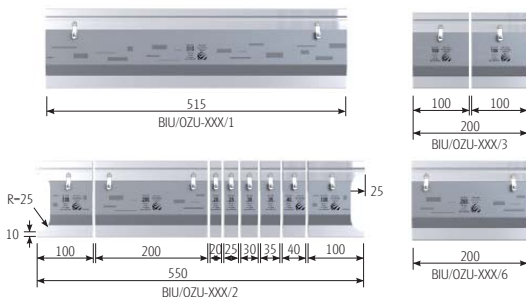
Type	Length	Weight		Max load
		kg	lbs	
OZU-384/1	515 mm	21.5	47.4	100 t/m
OZU-E2M-384/1	515 mm	21.5	47.4	34 t/ft

Flattening tool to be used in combination with top tool BIU-041. Max. sheet thickness 2 mm/0.079\".

\* Individual tool sections also available. \*\* Provided with fixed Safety-Pins (see page 36).

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