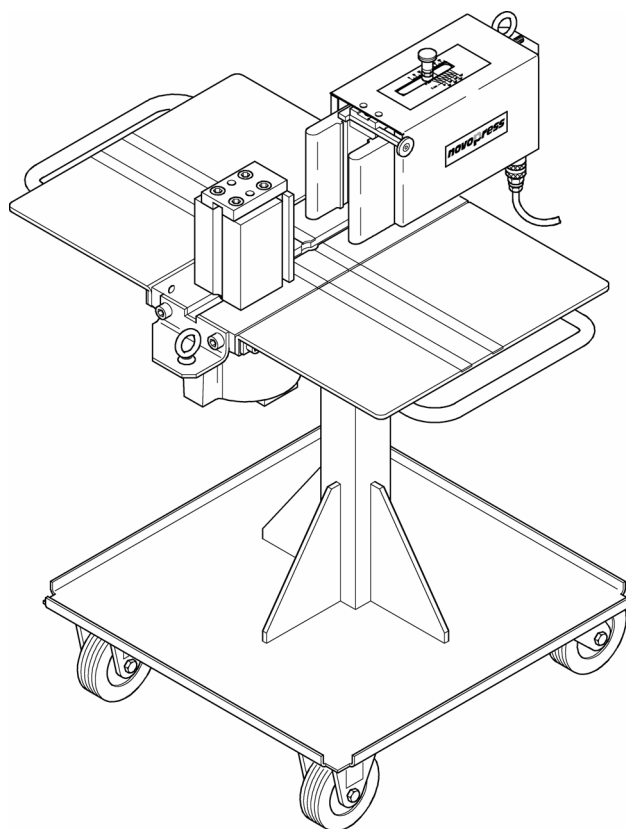
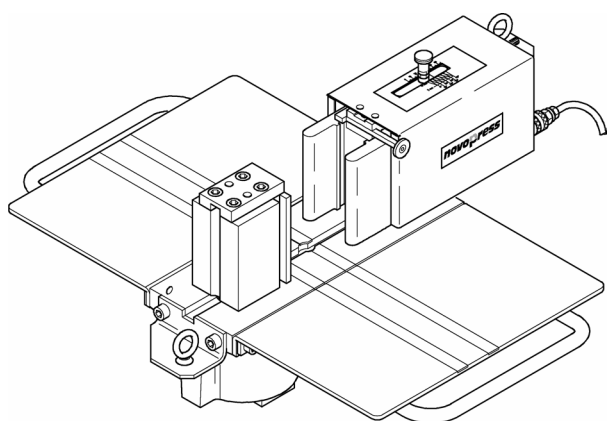


# Operating Manual

for

# **novopress**

## **CUTTING, PERFORATING, BENDING SLB 125**



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## CE - KONFORMITÄTSERKLÄRUNG

### entsprechend EG-Maschinenrichtlinie 98/37/EG

Novopress GmbH & Co KG  
Scharnhorststr. 1  
D-41460 Neuss

**Schneiden, Lochen, Biegen**  
**SLB 125**

Ser-nr: .....

1. EN 294, EN 349, EN ISO 12100-1, EN ISO 12100-2
2. VDE 0100

Hiermit erklären wir, daß die nachfolgend bezeichnete Maschine aufgrund Ihrer Konzipierung und Bauart sowie der von uns in Verkehr gebrachten Ausführung den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen entspricht.  
Bei einer nicht bestimmungsgemäßen Anwendung der Maschine oder bei einer nicht mit uns abgestimmten Änderung der Maschine verliert diese Erklärung ihre Gültigkeit.  
Die Konformitätserklärung ist nur gültig, wenn die Maschine mit dem Hydraulikaggregat HA1ES oder HA3 betrieben wird.

**Angewandte harmonisierte Normen, insbesondere:**  
siehe Punkt 1

**Angewandte nationale Normen, insbesondere:**  
siehe Punkt 2

We hereby declare that with respect to its design and construction the machine stated below and the model thereof which we have brought into circulation conform with the applicable basic requirements on health and safety.

Any use of the machine other than that for which it is intended and any modification made thereto without our consent shall render this declaration null and void.

This declaration of conformity shall only be valid if the machine is operated with hydraulic unit HA1ES or HA3.

**Applied harmonized standards, in particular:**  
see Item 1 above

**Applied national standards, in particular:**  
see Item 2 above

Nous déclarons par la présente que par sa conception et son type ainsi que par l'exécution que nous avons mise sur le marché, la machine désignée ci-après répond aux exigences de sécurité et de prévention de la santé applicables.

La présente déclaration perd sa validité si la machine n'est pas utilisée conformément aux instructions ou dans le cas d'une modification de la machine à laquelle nous n'avons pas donné notre accord.

La déclaration de conformité n'est valable que si la machine est utilisée avec le groupe hydraulique HA1ES ou HA3.

**Normes harmonisées utilisées, en particulier :**  
voir point 1

**Normes nationales utilisées, en particulier :**  
voir point 2

Hiermede verklaren wij, dat de hierna genoemde machine op grond van haar constructie en type alsmede de door ons in de handel gebrachte uitvoering aan de desbetreffende fundamentele eisen ten aanzien van de veiligheid en de gezondheid voldoet.

Wordt de machine niet overeenkomstig haar bestemming gebruikt of worden hieraan niet met ons overeengekomen wijzigingen aangebracht, dan verliest deze verklaring haar geldigheid.

De conformiteitsverklaring is slechts geldig, indien de machine met het hydraulische aggregaat HA1ES of HA3 wordt aangedreven.

**Toegepaste geharmoniseerde normen, in het bijzonder:**

zie punt 1

**Toegepaste nationale normen, in het bijzonder:**  
zie punt 2

Datum / Herstellerunterschrift: 10.01.05  
Angaben zum Unterzeichner:



Geschäftsführer

Con la presente declaramos que la máquina denominada a continuación, por su concepto y por su construcción, cumple con los requisitos fundamentales de seguridad y sanidad en vigor. Lo dicho aplica exclusivamente a la máquina en su versión original, tal y cual ha sido fabricada por nosotros.

El empleo inapropiado de la misma, así como cualquier modificación ejecutada sin nuestra intervención hace que esta declaración pierda su validez.

Para que esta declaración de conformidad tenga validez, la máquina se habrá de operar categóricamente con un grupo hidráulico tipo HA1ES o tipo HA3.

**Normas armonizadas aplicadas, en particular:**

véase bajo el punto 1

**Normas nacionales aplicadas, en particular:**

véase bajo el punto 2.

Si dichiara che la macchina appresso descritta soddisfa, per concetto, tipo e modello messo in commercio, le esigenze di base di sicurezza e sanità relative a tali apparecchiature.

In caso di uso non appropriato della macchina o in caso di una sua modifica eseguita senza il nostro accordo, questa dichiarazione non ha più effetto.

La dichiarazione di conformità è valida solo se la macchina è messa in funzione con il gruppo idraulico HA1ES o HA3.

**Norme armonizzate applicate, in particolare**

vedi punto 1

**Norme nazionali applicate, in particolare**

vedi punto 2

Härmed försäkrar vi att nedan nämnd maskin motsvarar de tillämpliga och principiella säkerhets- och hälsoföreskrifterna både gällande koncipieringen och konstruktionen samt gällande den av oss sålda modellen.

Används denna maskin inte enligt anvisningarna eller förändras maskinen på ett sätt som vi inte har godkänt, gäller denna försäkran ej.

Konformitetsförsäkran gäller endast om maskinen drivs med hydraulikaggregat HA1ES eller HA3.

**Tillämpade harmoniserade normer, i synnerhet:**

se punkt 1

**Tillämpade nationella normer, i synnerhet:**

se punkt 2

Täten vakuutamme, että seuraavassa nimetty kone vastaa suunnittelunsa, rakenteensa sekä meidän taholtamme liikenteeseen päästetyn mallinsa puolesta asiaankuuluvia perustavaa laatua olevia turvallisuus- ja terveystämääräyksiä.

Jos konetta ei käytetä määräysten mukaisesti tai jos koneeseen tehdään muutos ilman meidän suostumustamme ei tämä selvitys enää päde.

Standardinmukaisuusselvitys on vain silloin voimassa, kun konetta käytetään hydraulisen yksikön HA1ES tai HA3 kanssa.

**Käytetyt harmonisoidut standardit, varsinkin:**

katso Kohta 1

**Käytetyt kansalliset standardit, varsinkin:**

katso Kohta 2

Herved erklærer vi at den i det følgende betegnede maskinen på grunn av dens konsipering og konstruksjon samt utførelsen som vi har brakt på markedet tilsvarende de respektive grunnleggende krav til sikkerhet og helse.

Ved en bruk av maskinen som ikke er formålstjenlig eller ved en endring av maskinen som ikke er avstemt med oss mister denne erklæringen sin gyldighet.

Konformitetserklæringen er bare gyldig hvis maskinen drives med hydraulikkaggregatet HA1ES eller HA3.

**Benyttede harmoniserte standarder, særlig:**

se punkt 1

**Benyttede nasjonale standarder, særlig:**

se punkt 2

Declaramos pelo presente, que a máquina a seguir designada, na sua planificação e construção, assim como no modelo por nós comercializado, obedece às respectivas exigências fundamentais de segurança e de saúde.

A presente declaração perde a validade em caso de uso impróprio da máquina ou em caso de modificações na máquina, que não tenham sido acordadas antecipadamente conosco.

A declaração de conformidade é válida somente quando a máquina é accionada com o agregado hidráulico HA1ES ou HA3.

**Normas harmonizadas aplicadas, especialmente:**

vide parágrafo 1

**Normas nacionais aplicadas, especialmente:**

vide parágrafo 2

## GENERAL SAFETY REGULATIONS

### Read all safety regulations and instructions!

1. Keep the place of work clean.  
Disorderly work-places and work-benches invite accidents.  
Ensure that lighting is good.
2. Keep children away.  
Do not allow unauthorised persons to touch the device or the cable.  
Keep unauthorised persons away from your place of work.
3. Wear suitable working clothing.  
Do not wear any wide clothes nor jewellery - they may get caught up in moving parts.  
When working in the open it is recommended that you wear rubber gloves and non-slip footwear. Wear a hair- net if you have long hair.
4. Always be alert.  
Only use a device after having been instructed in its operation.  
Concentrate on your work. Proceed sensibly.  
Do not use the device when you are distracted.
5. Do not lean too far forward. Avoid abnormal stance.  
Make sure that you have a secure standing position, and maintain balance at all times.
6. Leave safety devices where they belong.
7. Hand tools may not be installed as fixtures.
8. Repair and maintenance.  
Have repairs and maintenance work carried out in an authorised NOVOPRESS specialist workshop.  
Only use original and identical NOVOPRESS spare parts.  
We reject all responsibility and liability for work carried out by third- party personnel.

## SAFETY INSTRUCTIONS FOR HYDRAULIC EQUIPMENT

1. Please read the operating instructions.  
Acquaint yourself with the hydraulic equipment.
2. Provide the equipment with the necessary care.  
Always keep the equipment in operational condition.  
Cleanness is an essential requirement for good and safe working.
3. Switch off the electric power supply to the hydraulic equipment,
  - when the equipment is not in use
  - when maintenance work is to be carried out.
4. Avoid unintentional switching - on.  
Keep hands and feet away from the switch when the equipment is not being used.
5. Do not use the equipment in a manner in contravention of the instructions.  
Never carry the equipment by the pipe or pull on the pipe.  
Protect the piping from heat, oil, sharp edges and high levels of weight strain.
6. Use only piping, fittings and accessories which have been designed for the operating pressure of the hydraulic unit.  
**BURSTING PRESSURE OR TEST PRESSURE IS NOT OPERATING PRESSURE!**  
Avoid squashing or bending of the piping.  
Piping must not be painted over.
7. Replace the hydraulic piping
  - when cracks, squashed or bent points are to be seen
  - when blistering is established
  - when hydraulic fluid escapes
  - when pipe fittings are damaged
  - when discolouration is established on the outer layer, e.g. due to the influence of solvents.
8. The hydraulic fluid used in the system is kerosene-based.  
This requires particular care and attention.
  - Avoid continuous contact with the skin
  - ensure that the hydraulic fluid does not get into the eyes or mouth.Hydraulic pipes have to be replaced after 5 years of usage, despite of the circumstance that no damages should be remarkable.
9. The equipment must not be operated, if it has leaks and there is a danger of hydraulic fluid coming into contact with persons, open fire, heating equipment, electric cabling, ground water, foods and other substances which are intended for human consumption.
10. Hydraulic units with petrol engines
  - must not be operated in closed rooms, due to the **DANGER OF INTOXICATION!**
  - do not pour in petrol while the motor is running or in the vicinity of open fire. **DANGER OF EXPLOSION!**

## SAFETY TIPS FOR ELECTRIC TOOLS

**ATTENTION: In order to avoid electric shock, danger of injury and burning the following basic safety measures are always to be taken when using electric tools. Read and observe the notes before using the device. Keep the safety tips in a safe place.**

1. Take influences of the surroundings into account.  
Do not expose electric devices to rain.  
Do not use electric devices in damp or wet surroundings.  
Do not use electric devices in the vicinity of flammable liquids or gases.
2. Protect yourself from electric shock.  
Do not fix additional rating plates or symbols with rivets or screws.  
Use adhesive signs. When working with electric devices avoid body contact with earthed objects such as pipes, heating appliances, refrigerators etc.
3. Use the correct tools.  
Only use the tools and accessories outlined in the operating instructions.  
Do not use the electric device to do work for which it is not intended.
4. Secure the work piece.  
Use gripping devices or vice grips to hold the work piece steady.  
It is more securely held than by hand and you can operate the device with two hands.
5. Do not overload your electric device.  
You can work better and more securely in the indicated power range.
6. Do not use the cable for purposes for which it is not intended.  
Do not carry the electric device by the cable.  
Do not use the cable in order to pull the plug out of the socket. Protect the cable from heat, oil, acids and sharp edges.  
For working in wet rooms or in the open only use the authorised extension cables with the corresponding marking.
7. Avoid unintentional starting.  
Ensure that the electric device is switched off before connecting the mains plug.  
Do not carry the electric device in such a way as that your finger is on the switch.  
Do not use the electric device if the ON/OFF switch does not work perfectly.
8. Disconnect the mains plug:
  - if the device is not in use
  - before maintenance of the electric device
  - when changing tools
9. Carefully maintain the electric device. The best and most secure work is guaranteed if you:
  - keep the electric device clean
  - observe the instructions for greasing, changing the tools and ancillary equipment
  - regularly check the connection cable and the extension cable
  - have damaged cables repaired by a specialist
  - keep hand grips dry, clean and free from oil and fat
  - have the electric device examined and cleaned by a specialist after 900 operating hours.

10. Keep electric devices in a safe place.  
Store electric tools and accessories out of the reach of children, in dry, high-lying places or in locked rooms.
11. Electric devices are often used by more than one person. Therefore before beginning to work you should check:
  - the socket to ensure it is securely fixed and is not damaged in such a way as can be seen from the outside
  - the connection cable for outward damage to the insulation and for sharp kinks
  - that the cable is securely fixed to the device and whether the insulating plastic tube is damaged
  - that the switch is secure and shows no outward signs of damage
  - whether protective appliances or damaged parts function properly
  - whether movable parts jam or are damaged
  - do not use the device in the event of finding defects
  - only allow the device to be repaired by a specialist or in an authorised NOVOPRESS specialist work-shop
  - only use original and identical NOVOPRESS spare parts.



## 1. Range of Equipment Supplied

SLB 125, table model Order no. 40200

### Attachments:

Cutting tool	Order no. 31242
Perforating tool	Order no. 30980
Bending tool	Order no. 31243
Carriage	Order no. 31130
Hydraulic unit HA1ES	Order no. 31070
Or hydraulic unit HA3	Order no. 33340
Hole template 40/80	Order no. 31138
Hole template 50/100	Order no. 31156
Hole template 60/120	Order no. 31184
Lamella cutting set	Order no. 31681
Swan-neck bending tool (small)	Order no. 31425
Swan-neck bending tool (large)	Order no. 31646
Additional bending tool for small lug lengths	Order no. 31636

## 2. Technical data

Operating pressure:	Max. 150 bar
Force:	180 kN
Stroke:	Max. 65 mm

### Dimensions:

SLB 125 with carriage:	
Table height:	910 mm
Total height:	1145 mm
Width:	750 mm
Depth:	750 mm

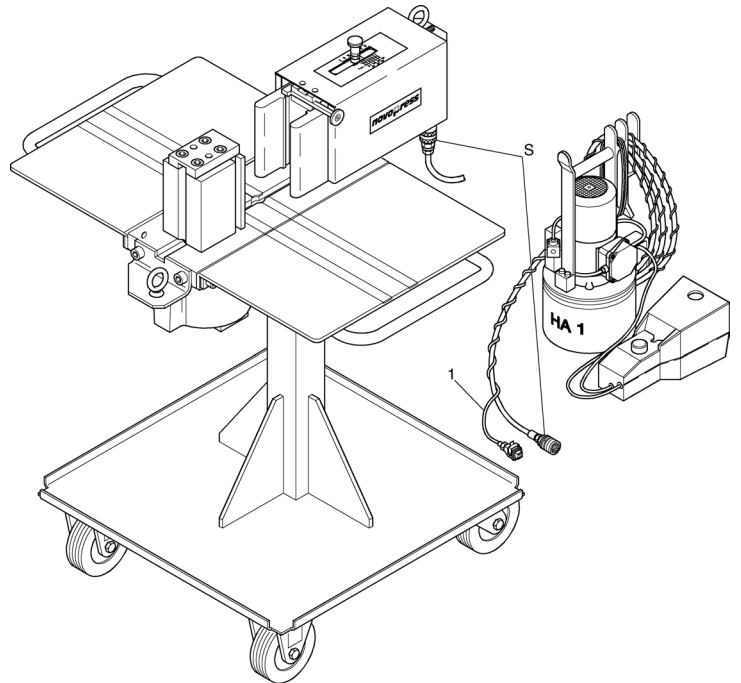
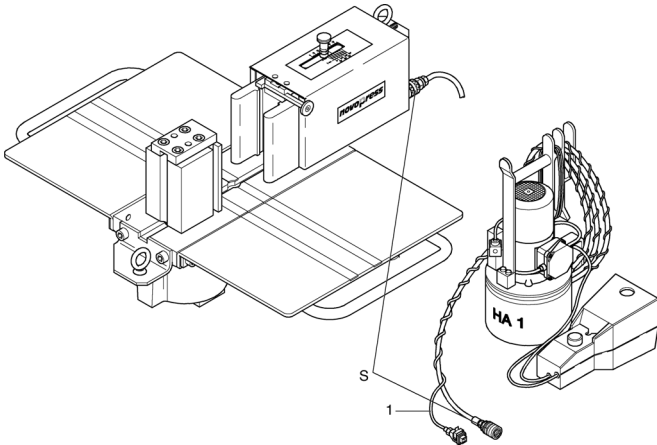
SLB 125 with table stand	
Total height:	415 mm
Width:	500 mm
Depth:	677 mm

## 3. Operative range

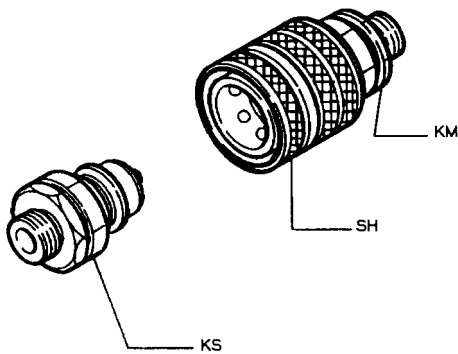
The following types of busbars can be cut, perforated and bent using the SLB125:

Busbars made of	Cu:	up to a max. of 125 x 13 and up to 250 N/mm <sup>2</sup>
	Al:	up to a max. of 125 x 13 and up to 250 N/mm <sup>2</sup>

## 4. Commissioning



### Snap coupling



### Coupling

Hold the coupling body (**KM**) against the sliding sleeve (**SH**) and push onto the coupling plug (**KS**).

### Uncoupling

Hold the coupling body (**KM**) against the sliding sleeve (**SH**) and pull from the coupling plug (**KS**).

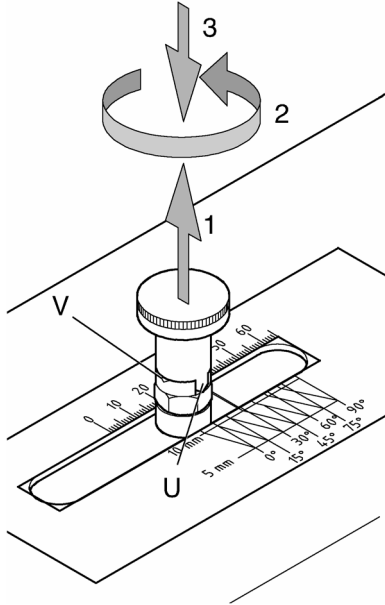
- Connect the SLB to the hydraulic unit using the plug connector (1).
- In order to bleed the hydraulic system, allow the unit to run for a few strokes free of load. During the bleeding operation, the hydraulic unit must be above the working cylinder.

## 5. Stroke Limiter (required for bending)

For bending, the bending angle can be adjusted using the stroke limiter.

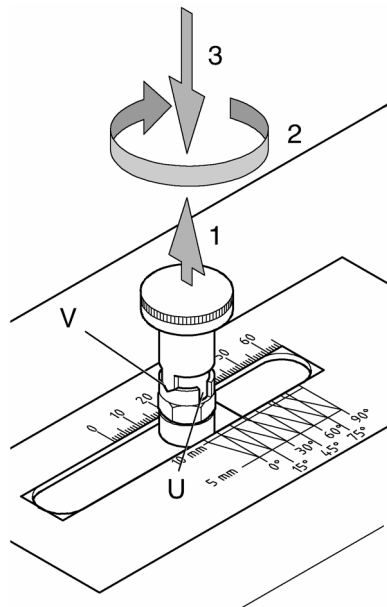
A larger stroke is required for cutting and perforating than for bending. To ensure that the adjusted bending angle is retained, the stroke limiter can be switched On and Off for cutting and perforating using an indexing bolt.

### Switching from bending to cutting/perforating (stroke limiter Off; from U to V)



- Pull up indexing bolt
- Rotate indexing bolt through 90°.
- Allow indexing bolt to lock into V groove.

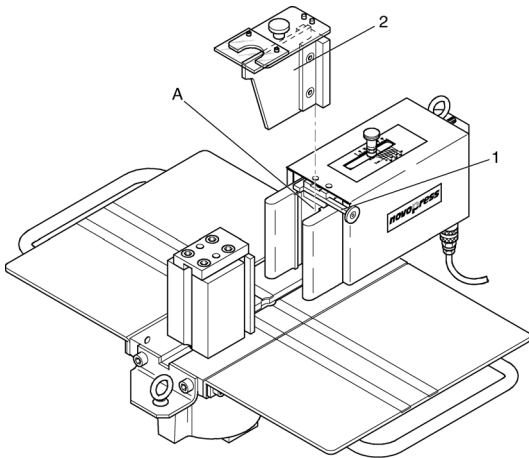
### Switching from cutting/perforating to bending (stroke limiter On; from V to U)



- Pull up indexing bolt
- Rotate indexing bolt through 90°.
- Allow indexing bolt to lock into U groove.

## 6. Cutting

### Installing the blade

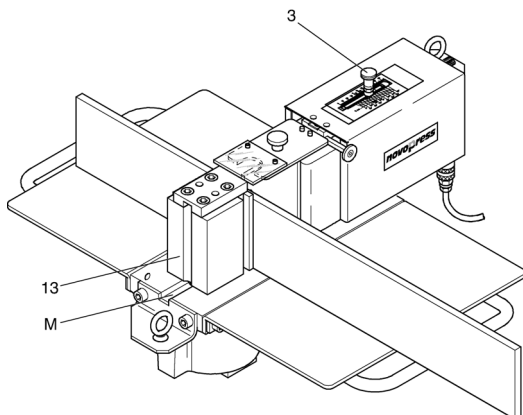


- Press the lock (1) and hold.
- Insert the blade (2) in guide (A).
- Release the lock (1) and pull back to the starting position if necessary.

#### **Warning!**

*The lock (1) must be in the starting position; otherwise, the hydraulic unit cannot be switched on.*

### Cutting



#### **Warning!**

**The blade guide (M) in the table plate must be kept free of swarf and cutting debris.**

- In order to cut, the indexing bolt (3) must be locked into the V groove. If this is not the case, pull up the indexing bolt (3), rotate through 90° and lock into the V groove (see page 3).
- Insert busbar.
- Operate the foot-switch and hold until the hydraulic unit switches itself off.

#### **Warning!**

*The cutting operation is not complete until the hydraulic unit has been switched off.*

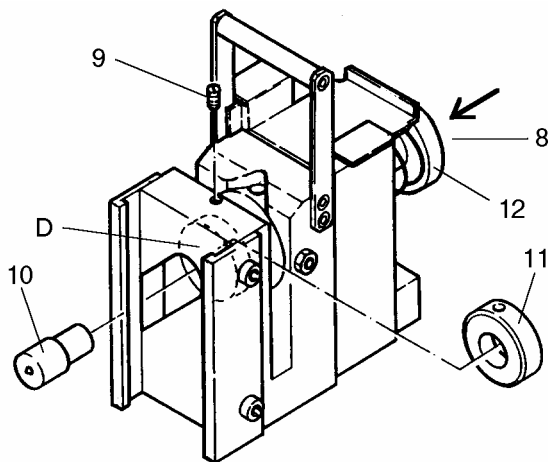
- Release the foot-switch.
- Remove the busbar.
- Remove any cutting debris from the mandrel (13).

## 7. Perforating

### Instructions for using the tools

- **The hole diameter must not be smaller than the thickness of the material.**  
Failure to observe this rule will result in damage to the tool.
- It is **impermissible** to enlarge holes using the **progressive die technique**.  
Similarly, the **minimum distance** between two holes or between a hole and the edge of the busbar must be **at least the thickness of the tool**.  
Failure to observe this rule will result in damage to the tool.
- **Change tools as soon as they become worn.**  
Excess wear on a tool may cause the upper tool to become caught in the workpiece, and it may not be possible to wipe off the workpiece. The tool may be damaged when it is released.
- **Keep tools cleaned and oiled** when not in use.  
The tool life is increased by wetting it with a few drops of oil from time to time.  
Storage of tools:  
The upper tool must **not** be inserted into the lower tool, as this may damage the cutting edges.

### Installing the upper and lower tools



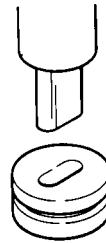
- Push the piston (12) in the direction of the arrow.
- Insert the upper tool (10) through the aperture (D) into the perforating tool.
- Tighten the upper tool (10) using the cheese head screw (8).
- Pull out the piston (12) in the opposite direction to the arrow.
- Insert the lower tool (11) into the aperture (D) as shown in the diagram.
- Secure with the grub screw (9).
- When removing, proceed in the reverse order.

### Profile tools

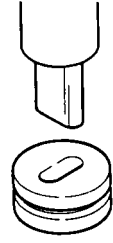
Upper tools have a straight pin on the outer diameter. To align the upper tool, there are 2 grooves in the upper tool holder.

Lower tools have two V grooves on the outer diameter arranged at 90° to one another. When fitting, each V groove (depending on the required perforation or the alignment of the upper tool) must be aligned with the grub screw (9).

**Warning!** When fitting profile tools, it is essential to ensure that the upper and lower tools are properly aligned.

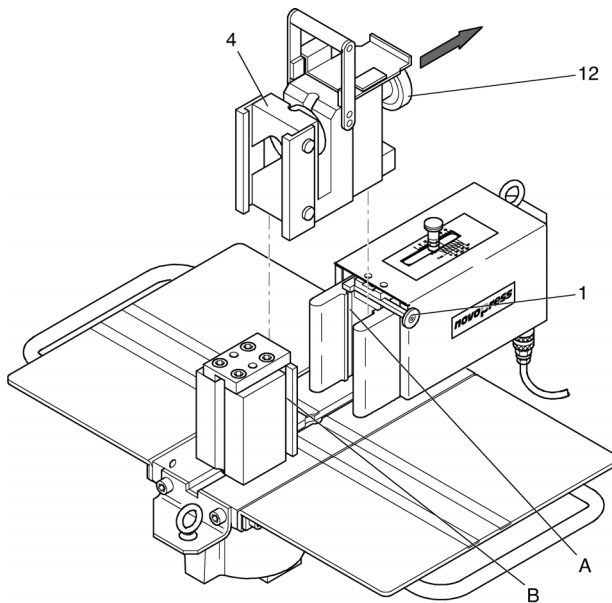


correct



wrong

### Installing the perforating tool

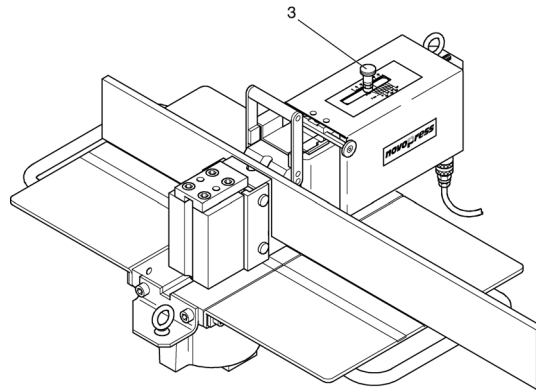


- Push the piston (12) in the direction of the arrow.
- Press the lock (1) and hold.
- Fit the perforating tool (4) into the guides (A) and (B).
- Release the lock (1).

### Warning!

*The lock (1) must be in the starting position; otherwise, the hydraulic unit cannot be switched on.*

## Perforating without the hole template



- In order to perforate, the indexing bolt (3) must be locked into the V groove. If this is not the case, pull up the indexing bolt (3), rotate through 90° and lock into the V groove (see page 3).
- Insert the busbar, which has been centre-marked in readiness.
- Line up the centre marks of the busbar with the centring point of the upper tool and hold in position.
- Operate the foot-switch and hold until the perforation process is complete.

### **Note!**

*After the second perforation, the debris produced should fall away from the perforating tool. If this is not the case, remove the perforating debris.*

- Release the foot-switch.
- Remove the busbar.

### **Note!**

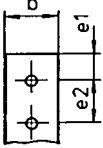
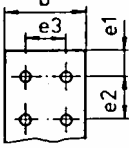
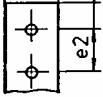
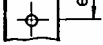
*When perforating aluminium, the upper tool may become caught in the workpiece. The workpiece is not wiped off.*

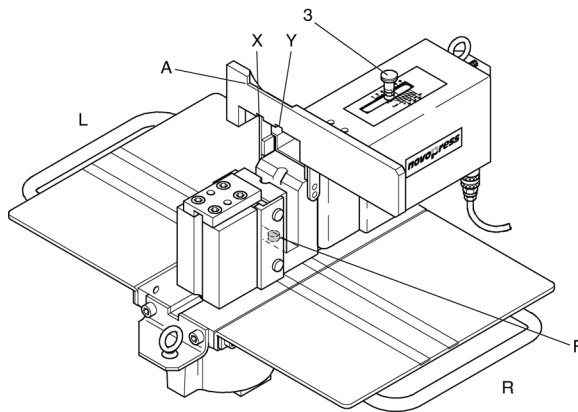
*To prevent this from happening, the upper tool should be greased or oiled.*

## Perforating with the hole template for DIN perforations

The hole patterns of the hole templates comply with DIN 43673.

The busbar widths and hole patterns for each template can be taken from the following table.

Ord. no.	b (mm)	Hole pattern	b (mm)	Hole pattern	e1 (mm)	e2 (mm)	e3 (mm)
31138	40		80		20	40	40
31156	50		100		20	40	40
31184	60		120		20	40	40

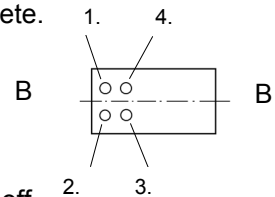


- In order to perforate, the indexing bolt (3) must be locked into the V groove. If this is not the case, pull up the indexing bolt (3), rotate through 90° and lock into the V groove (see page 3).
- Insert the hole template with groove (X) into the fixing point (F) of the perforating tool.

**Note!**

*The hole templates must be inserted as shown. The end stop (A) of the hole template must be located on the left-hand side (L).*

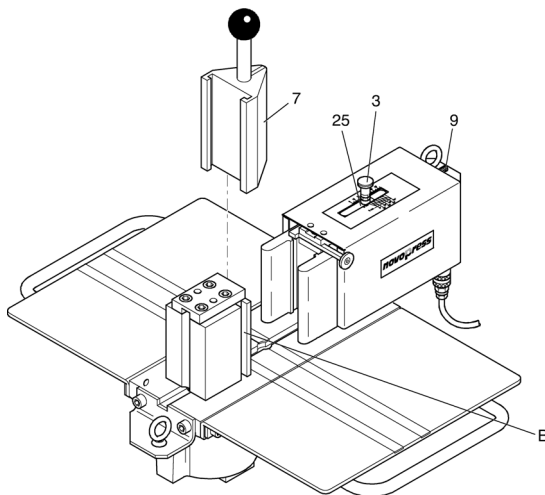
- Insert the busbar and push it against the template stop.
- Operate the foot-switch and hold until the perforation process is complete.
- Release the foot-switch.
- Take out the busbar and rotate it through 180° around the axis B-B.
- Insert the busbar and push it against the template stop (A).
- Operate the foot-switch and hold until the hydraulic unit switches itself off.



- Note!**  
*After the second perforation, the debris produced should fall away from the perforating tool. If this is not the case, remove the perforating debris.*
- Release the foot-switch.
  - Remove the busbar.
  - Fit the hole template with groove (Y) into the fixing point (F) of the perforating tool.
  - Repeat points 3 to 10.



## 8. Bending



### Installing the bending device

- Insert the bending device (7) into the guide (B).

### Bending

The bending angle is adjusted using the stroke limiter (25).

The millimetre scale indicates the amount of forward stroke.

The correct settings for the required bending angle should be determined by means of test bends (see table).

- Insert busbar.
- Determine the shank length.
- Adjust the stroke using the stroke limiter (25).  
Setting example for a stroke of 40 mm:
  - a) For bending, the indexing bolt (3) must be locked into the U groove. If this is not the case, rotate the indexing bolt (3) through 90° and lock into the U groove (see page 3).
  - b) Rotate the adjusting spindle (9) until the setting is 40 mm.
  - c) Press the foot-switch and hold until the hydraulic unit switches itself off.
  - d) Take the busbar out of the tool.
  - e) Measure the angle of bend.
  - f) If the required angle was not achieved, set a larger stroke.
  - g) Repeat the procedure for as long as necessary until the desired bend angle is attained.
  - h) From then on, all bent busbars made of the same material and with the same dimensions will have the same angle. The angle will not need to be adjusted for these particular busbars.

The following table shows the angle of bend depending on the set stroke.

<b>Copper busbars 120x10</b>		<b>Aluminium busbars 120x10</b>	
Bending Angles	Stroke in mm	Bending Angles	Stroke in mm
15°	approx. 24	15°	approx. 23.5
30°	approx. 28.5	30°	approx. 27.2
45°	approx. 33.5	45°	approx. 32
60°	approx. 38.5	60°	approx. 36.5
75°	approx. 43	75°	approx. 41.5
90°	approx. 48.5	90°	approx. 47

## 9. Perforating tools for laminated copper and flat bars less than 34 mm wide

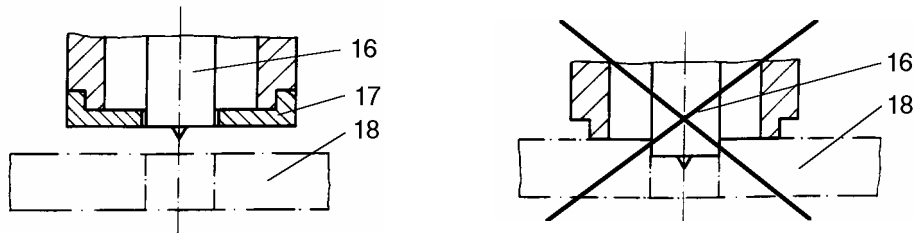
### Operative range

Perforating tools with extra wipers must be used for laminated copper and flat bars less than 34 mm wide.

Maximum busbar thickness (non-insulated): up to 10 mm

Each upper tool has a separate extra wiper.

### Long upper tool (bright)



The bright metallic upper tools (16) may only be used in conjunction with the extra wipers (17). These upper tools (16) are longer than the standard black upper tools (19).

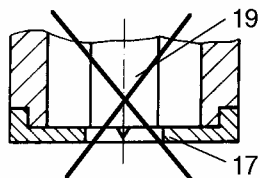
If the bright upper tools (16) are used without the extra wipers (17), the workpiece (18) will become caught on the upper tool and will not be wiped, i.e.

### **THE DIE MAY FRACTURE.**

It is essential that the material is stripped before punching.

The thickness of the material without insulation must not exceed a maximum of 10 mm.

### Standard upper tool (black)

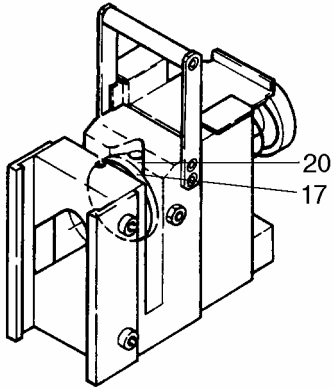


The standard black upper tools (19) should not be used in conjunction with the extra wipers (17) because:

- the centring point is not visible.

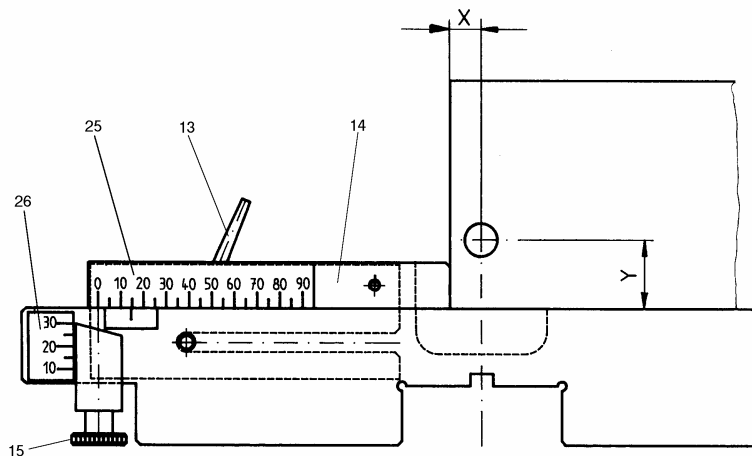
**Assembly**

Mount the extra wiper (17) on the holder (20) and press down firmly by hand (caution with the centring point!).

**Disassembly**

Pull the extra wiper (17) from the holder (20).

## 10. Adjustable template, order no.: 31890, for perforating tool



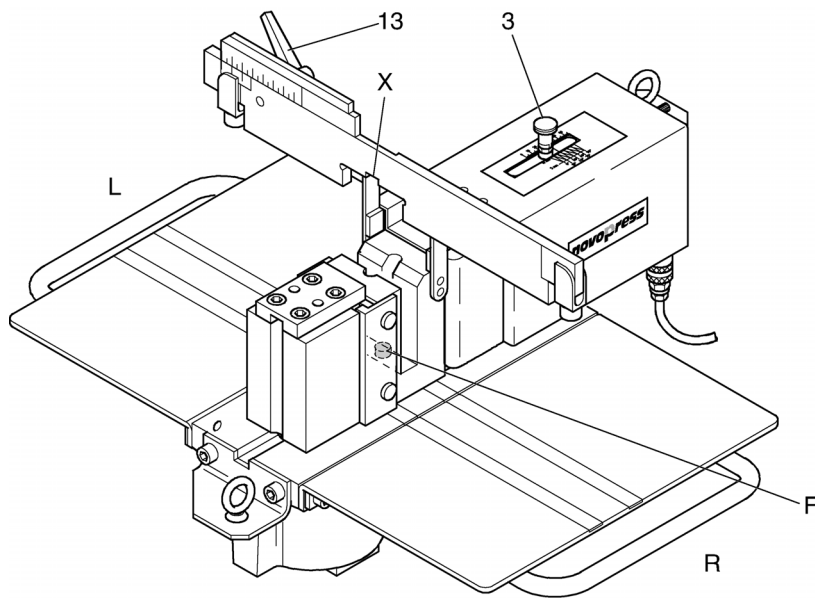
### Adjusting the hole template

The scale on the x axis (25) indicates the distance (X) between the template stop and the centre of the hole to be punched.

The scales on the y axis (26) indicate the distance (Y) between the supporting surface of the busbar on the template and the centre of the hole to be punched.

- Release the clamping lever (13).
- Adjust the slide (14) to the required size.
- Tighten the clamping lever (13).
- Twist the knurled screws (15) until the required size has been set.

## Inserting the hole template



- In order to perforate, the indexing bolt (3) must be locked into the V groove. If this is not the case, pull up the indexing bolt (3), rotate through 90° and lock into the V groove (see page 3).
- Insert the hole template with groove (X) into the fixing point (F) of the perforating tool.

### **Note!**

*The hole templates must be inserted as shown. The clamping lever (13) must be located on the left-hand side (L).*

- Insert the busbar and push it against the template stop.
- Operate the foot-switch and hold until the perforation process is complete.
- Release the foot-switch.
- Remove the busbar.

## Perforating

See chapter 6 "Perforating"

## 11. Swan-neck Bending Tools

### Operative range

Copper and aluminium busbars can be bent using the swan-neck bending tools.  
The maximum cross-section is as follows:

**for swan-neck bending tool (small), order no.: 31425**

for aluminium:	120 x 10
for copper:	120 x 6
	80 x 10

**for swan-neck bending tool (large), order no.: 31646**

for aluminium:	120 x 10
for copper:	120 x 10

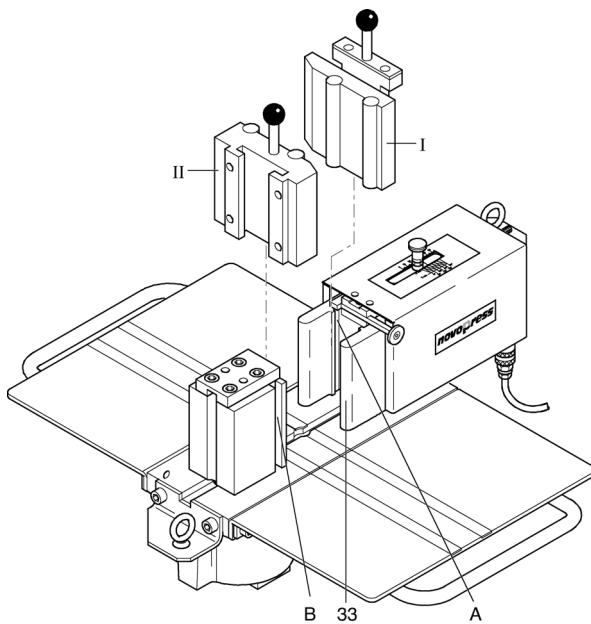
The maximum swan-neck height for the relevant cross-sections can be taken from the table.  
Smaller swan-neck heights can also be achieved by limiting the stroke accordingly.  
The stroke settings for:

**swan-neck height = material thickness**

are likewise listed in the table.

The values shown in the table are only intended as guidelines. The precise settings depend on the individual material and must be determined by means of test bends.

### Installing the swan-neck bending tool

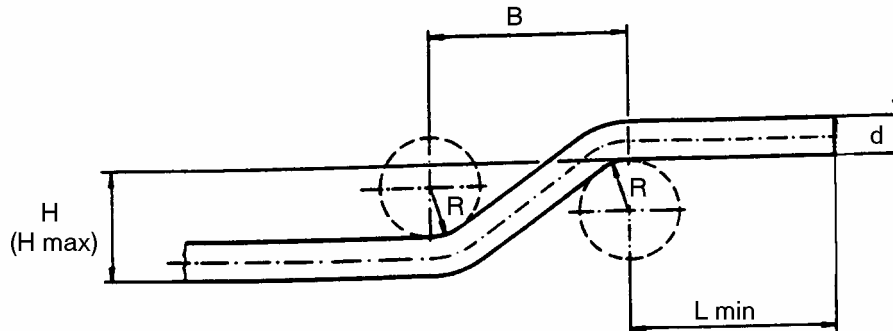


- Insert the swan-neck bending tool part II in the guide (B).
- Place the swan-neck bending tool part I in front of the channel iron (33).

### Bending

- Insert busbar.
- Determine the shank length.
- If necessary, adjust the stroke using the stroke limiter.
- Press the foot-switch and hold until the hydraulic unit switches itself off.
- Take the busbar out of the tool.

### Tables for swan-neck bending tools



#### Swan-neck bending tool (small), order no.: 31425

Min. length for insertion L min = 22 mm

Bending radius R = 7.5 mm

Width of swan-neck B = 20 mm

Material	Width x thickness	Max. swan-neck height Hmax, mm
Aluminium	50 x 4	18
	40 x 8	19
	40 x 10	19,5
	120 x 10	18,5
Copper	40 x 6	18,5
	40 x 8	19
	80 x 8	19
	40 x 10	19,5
	80 x 10	6,5



**Swan-neck bending tool (small), order no.: 31646**

Min. length for insertion L min = 42 mm

Bending radius R = 10 mm

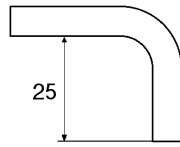
Width of swan-neck B = 40 mm

<b>Material</b>	<b>Width x thickness</b>	<b>Max. swan-neck height Hmax, mm</b>
Aluminium	50 x 4	22
	40 x 8	25
	80 x 8	25
	120 x 10	28
Copper	40 x 6	23,5
	80 x 6	23,5
	60 x 8	25
	80 x 8	25
	40 x 10	26
	120 x 10	25,5

## 12. Additional Bending Tool for Small Lug Lengths, Order No.: 31636

### Operative range

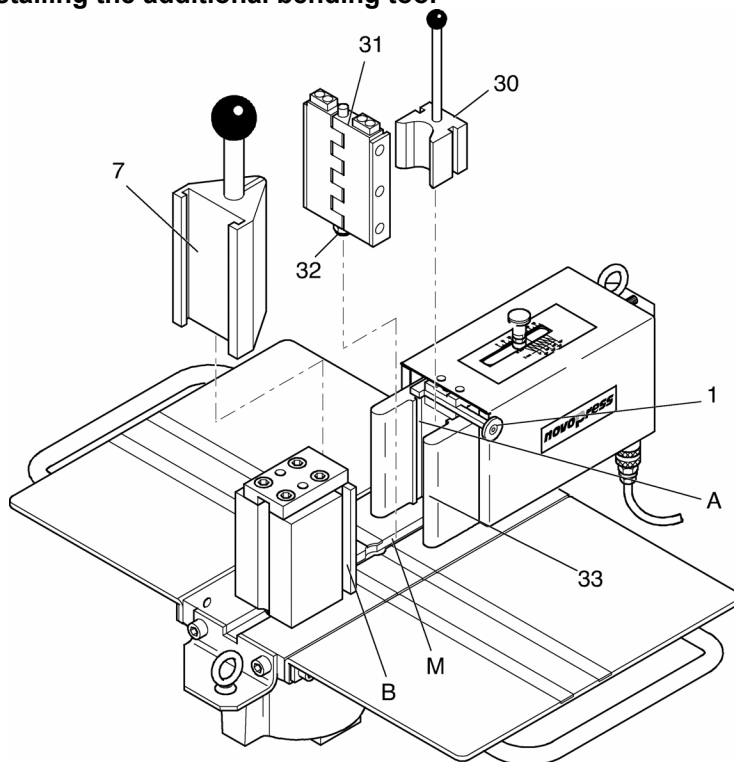
Using the standard bending tool, order no.: 31243, and the additional bending tool, order no.: 31636, small lug lengths up to 25 mm (0.984") can be bent.



The maximum cross-section is as follows:

for aluminium:	120 x 10
for copper	120 x 6
	80 x 8
	60 x 10

### Installing the additional bending tool



- Press the lock (1) and hold.
- Insert the end stop (30) in the guide (A).
- Release the lock (1) and pull back to the starting position if necessary.

#### **Note!**

*The lock (1) must be in the starting position; otherwise, the hydraulic unit cannot be switched on.*

- Place the bending hinge (31) in front of the channel iron (33). The guide pin (32) must engage with the guide groove (M) of the table plate.

**Installing the bending tool**

- Insert the bending tool (7) in the guide (B).

**Bending**

See chapter 7 “Bending”

## 13. Maintenance

**WARNING!**

BEFORE CONDUCTING ANY MAINTENANCE WORK, DISCONNECT THE HYDRAULIC UNIT OR PULL THE HYDRAULIC UNIT'S POWER CORD!

**SLB 125**

After each use:	Clean guides A and B to remove dirt, swarf etc. Clean blade guide M to remove swarf and cutting debris.
Every week:	Clean SLB 125.

**Perforating tool**

After 20 perforations:	Grease or oil the upper tool
Before each tool installation:	Clean the mounting hole for the lower tool. The supporting surface must be free from swarf, dirt etc.
When dirty:	Clean the supporting surfaces for the hole templates and busbars.
Every week:	Clean and oil the perforating tool.

Repairs / Service

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