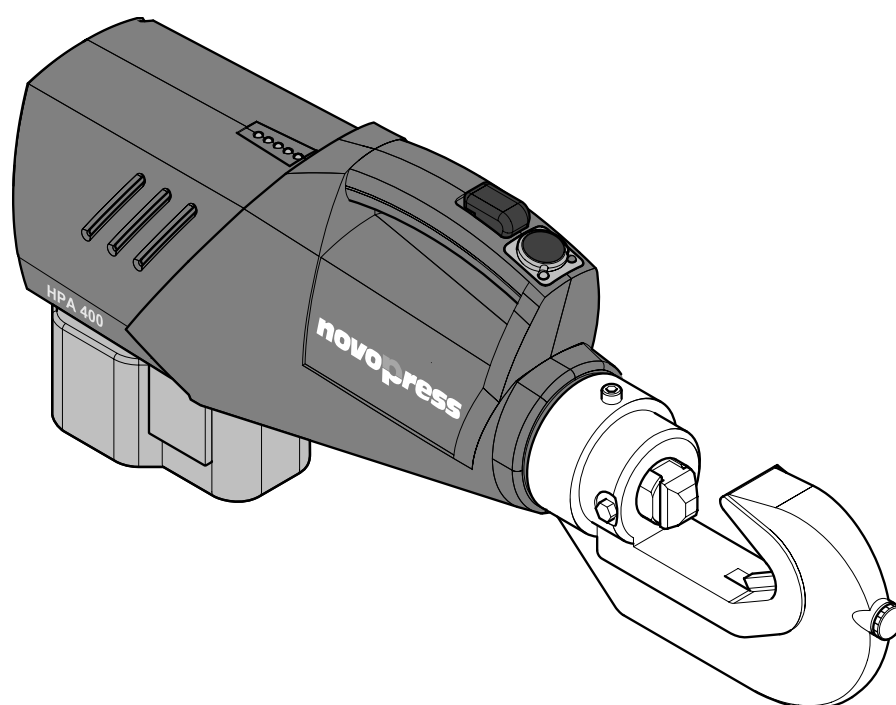




Repair Manual

For

HPA 400



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BASIC SAFETY INFORMATION

The following pictograms will be used to highlight sections of text. Please observe these instructions and act with special caution in these cases. All working safety instructions are also to be passed on to other users/ technical staff!



Note!

Observe these instructions!

You will then ensure that the correct procedure is adhered to and will prevent damage to/ destruction of the machine and/ or other parts of the system.



Danger!

Describes a situation with a direct risk of danger. Avoid this situation to prevent death or extremely serious injuries from resulting.



Note!

This information is directly linked to the description of a function or an operating sequence.

GENERAL SAFETY REGULATIONS

1. Keep the working area clean.
Untidy working areas and work benches cause accidents.
Ensure that the area is well-lit.
2. Keep children away.
Do not allow unauthorised persons to touch the device or the cable.
Keep unauthorised persons away from your working area.
3. Wear suitable working clothes.
Do not wear loose clothing or jewellery. They could get caught up in moveable parts.
We advise wearing rubber gloves and non-slip footwear when working in the open air.
Wear a hair net if you have long hair.
4. Be observant at all times.
Only use the device if you have received instruction on its operation.
Concentrate on your work. Conduct yourself in a sensible manner. Do not use the device if your concentration is diverted.
5. Do not lean too far forward.
Remain in a normal posture.
Ensure that you have a firm stance and maintain your balance at all times.
6. Leave protective equipment in place.
7. Hand-held devices are not to be used as stationary equipment.
8. Repair and maintenance -
only use original, identical NOVOPRESS replacement parts.

Component overview HPA400 base device

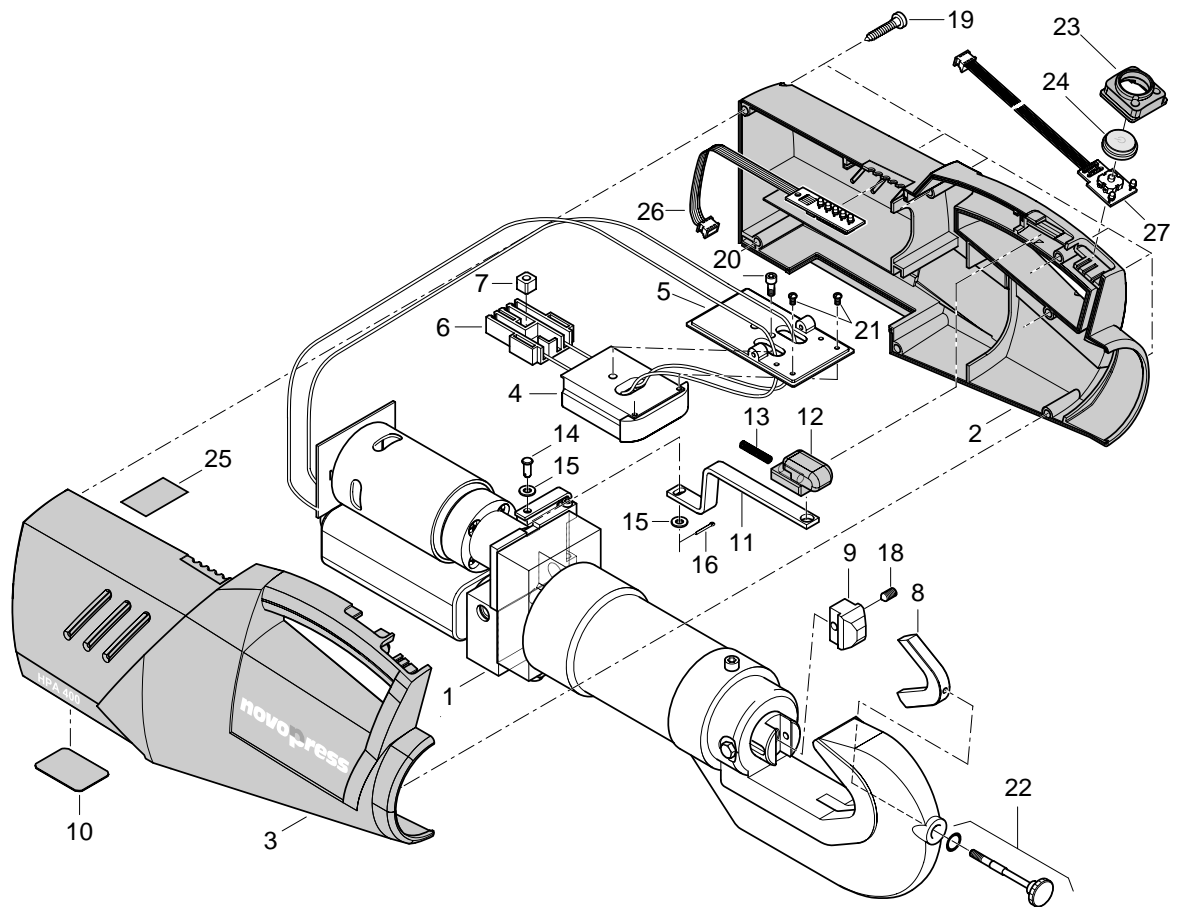
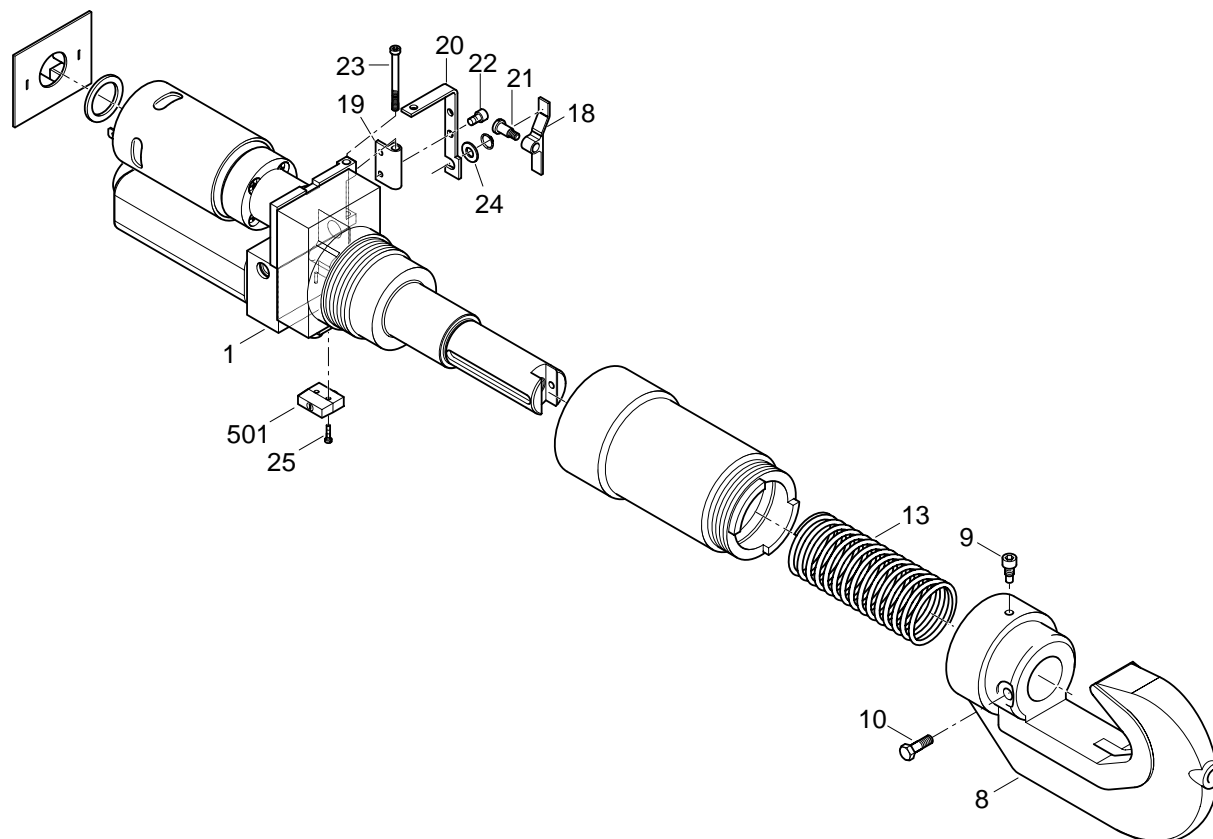


Fig.: Explosion drawing HPA 400 base device

**Parts list HPA 400 base device**

No.	Country code	Quantity	Name	Order no.
1		1	Pump, complete HPA400	38953
2		1	Side part, left	38559
3		1	Side part, right	38560
4		1	Battery holder ACO1	35503
5		1	Base plate	37901
6		1	Contact chamber	15001
7		1	Sliding block	34238
8		1	Upper tool section	4520
9		1	Lower tool section	5429
9	41	1	Lower tool section	4510
10		1	Identification plate HPA400	38696
10	41	1	Identification plate T&B	39119
11		1	Slide rod HPA400	38607
12		1	Retract button HPA400	38608
13		1	Pressure spring	16388
14		1	Pin	16222
15		2	Washer	12311
16		1	Split-pin	16223
17		1	Cylinder screw	11268
18		1	Headless pin	16376
19		7	Sheet metal screw	15249
20		1	Cylinder screw	12376
21		2	Sheet metal screw	15291
22		1	Locking screw	1694
23		1	Pushbutton housing ECO1 / ACO1	37825
24		1	Pushbutton guide	33302
25	41	1	Warning sign	38553
26		1	Bar graph board, complete HPA400	38636
27		1	Start button board, complete HPA400	38583

Component overview pump, complete



Parts list pump complete

No.	Country code	Quantity	Name	Order no.
1		1	Pump HPA400	38958
8		1	Crimping head HPA400	38860
9		1	Trunnion screw	5494
10		1	Screw	38679
13		1	Pressure spring HPA400	16266
18		1	Rocker	38944
19		1	Hinge	38945
20		1	Lever	38946
21		1	Pan-head screw	16220
22		2	Cylinder screw	11268
23		1	Cylinder screw	15588
24		1	Shim ring	16221
25		2	Cylinder screw	18267
501		1	Micro switch	39477

**Note!**

When assembling the HPA 400 it is very important that the cables are routed exactly as they were before it was dismantled. Otherwise the cables could be pinched - this could cause the device to malfunction.

In this case there is a higher risk of injury.

Therefore always pay attention to how the cables have been routed when you disassemble the HPA 400.

Pin assignment on the main board

1. Start button
2. Bar graph board
3. Micro switch

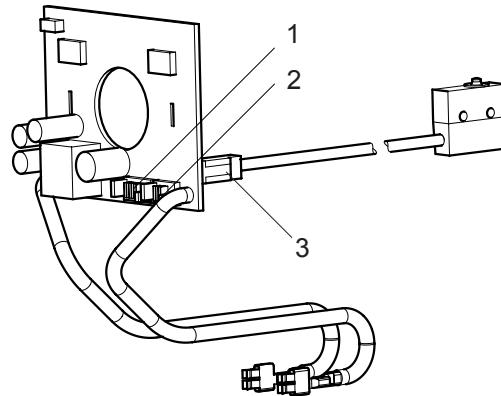


Fig.: Pin assignment, main board

1 Replacing the tools



Note:

The replacement of the upper tool section must be carried out in moveable position.

- 1.1 Extend the upper tool section a small distance so that the headless pin (18) can be accessed.

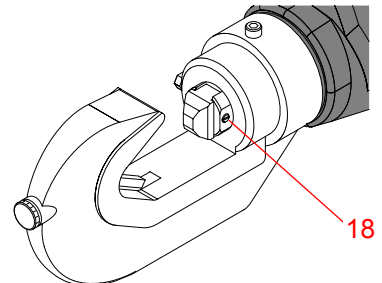


Fig.: Tool

- 1.2 Remove the battery. Press the two grey buttons on the battery inwards and then remove the battery from the device.

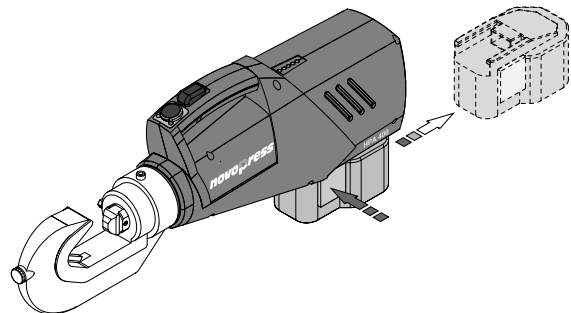


Fig.: HPA400 incl. battery

- 1.3 Unscrew the headless screw (18) completely and remove the upper tool section (8).

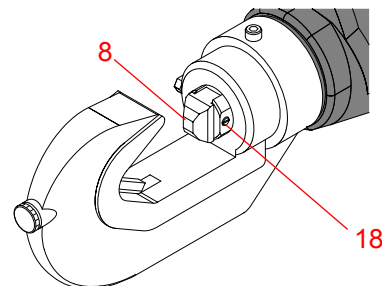


Fig.: Upper tool section

- 1.4 The lower tool section can be removed after the locking screw (22) has been unscrewed.

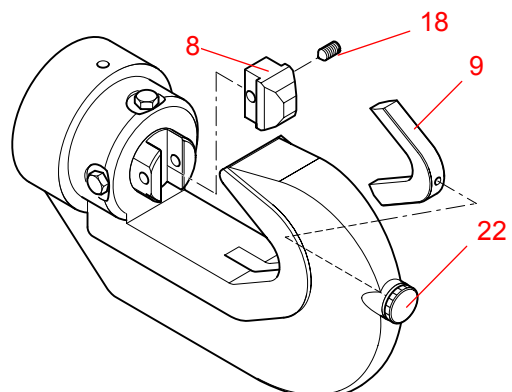


Fig.: Upper and lower tool sections

- 1.5 Replace the modules.
Reassemble in reverse order.

2 Replacing the crimping head or the pressure spring



Note:
In the event of problems with assembly or dismantling also consult the explosion drawings on page 4 and 6.



Note:
When clamping the housing please protect it from damage e.g. wrap it in a cloth or disassemble it.

2.1 Remove upper and lower tool section as described under 1.1 to 1.4.

2.2 Retract the upper tool section completely in order to reduce the pre-stress of the integrated pressure spring. Press the retract button (12) in order to do this.

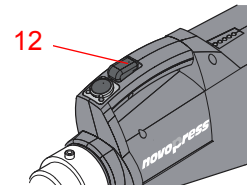


Fig.: Retract button

2.3 Remove the battery. Press the two grey buttons on the battery inwards and then remove the battery from the device.

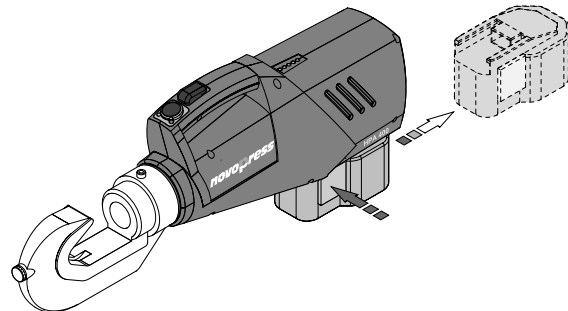


Fig.: HPA 400 incl. battery

2.4 Unscrew screws (9) and (10).
(Also see explosion drawing on page 6)

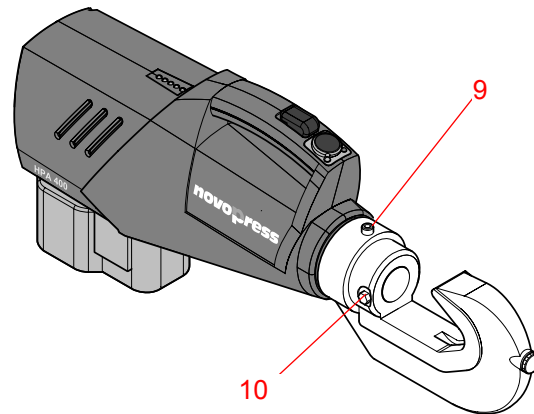


Fig.: Replacing the crimping head



Warning:

The pressure spring (13) under the crimping head is still under tension. The crimping head will spring forwards when the end of the thread is reached.

- 2.5 Unscrew the crimping head (8) from the thread (A).
- 2.6 Remove the pressure spring (13).

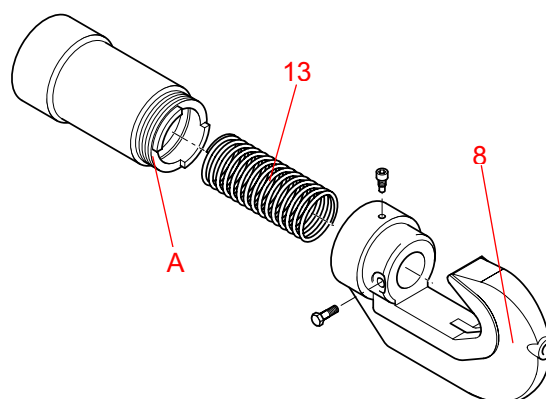


Fig.: Crimping head with spring



Note:

Before assembling the new crimping head determine the position where the internal thread of the crimping head begins and then align it appropriately to the external thread when assembling it.

- 2.7 Insert (new) pressure spring (13).
- 2.8 Compress the pressure spring (13) with the (new) crimping head (8) and screw the crimping head (8) onto the thread (A) as far as the limit stop, then unscrew it until it is possible to mount the screw (9).



Warning:

Considerable force must be applied to assemble the crimping head. Please ensure that the fitter's head is not directly over the crimping head. Otherwise there is a risk of danger if the crimping head slips out of the fitter's hand.

- 2.9 Tighten screw (10). Screw the crimping head a little way back if required until the screw (10) will reach the guide notch on the plunger after it has been completely screwed into the crimping head.

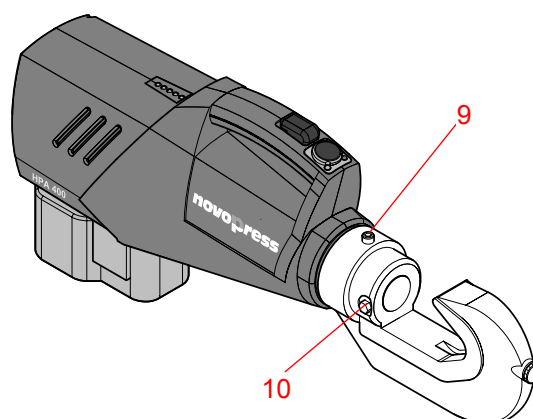


Fig.: Replacing the crimping head

- 2.10 Insert the upper and lower tool sections as described in Section 1.


Note:

Every time a crimping head has been removed from the device the crimping depth must be checked after assembly and be reset if necessary.

A sheet containing the values to be set can be found with the test piece.

- 2.11 Carry out a sample crimping with the fully-assembled device and check the crimping depth. Use the test piece (Order no.: 4104)! If the value measured is different from the value specified in the test instructions for cable lug crimping the crimping depth has to be reset.
- 2.12 Remove upper and lower tool section as described under 1.1 to 1.4.
- 2.13 To set the crimping depth remove the locking screw (22) from the crimping head (8). Pay attention to the O-ring!

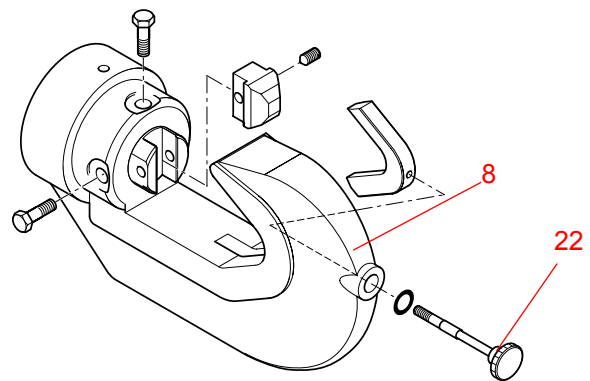


Fig.: Remove the locking screw

- 2.14 Reset the crimping depth using a long, narrow slotted-head screw driver by turning the adjustment screw.

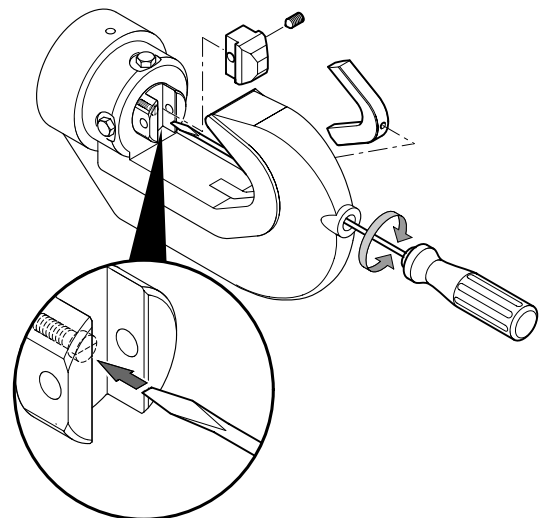


Fig.: Set the crimping depth


Note:

The follow applies when adjusting:

Unscrewing the adjustment screw increases the crimping depth.

Screwing in the adjustment screw decreases the crimping depth.

One turn of the adjustment screw changes the value of the crimping depth by approx. 0.5 mm.

- 2.15** Insert the locking screw (22) with the O-ring back into the crimping head (8).

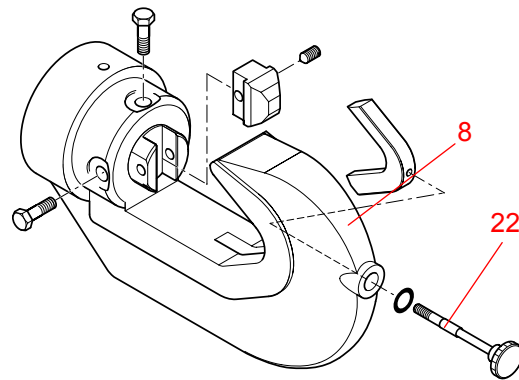


Fig.: Insert the locking screw

- 2.16** Insert the upper and lower tool sections as described in Section 1.
- 2.17** Carry out a sample crimping with the test piece and check the crimping depth.
- 2.18** If the value still does not correspond to the value specified in the test instructions repeat steps 2.11 to 2.16.

3 Replacing the entire housing



Note:
In the event of problems with assembly or dismantling also consult the explosion drawings on page 4 and 6.

- 3.1 Remove the battery. Press the **two** grey buttons on the battery inwards and then remove the battery from the device.

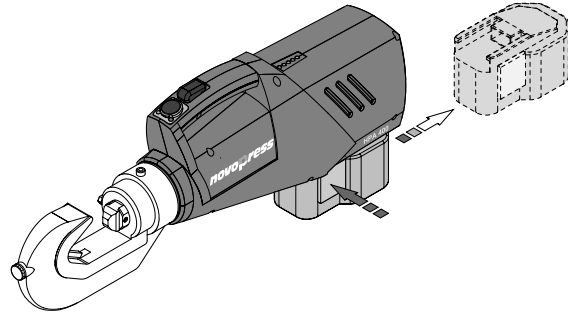


Fig.: HPA 400 incl. battery



Note:
To dismantle/ assemble the device in further stages clamp the device into the vice with the crimping head pointing downwards. Rechuck if needed in further stages.

- 3.2 Unscrew all 7 screws from the housing.

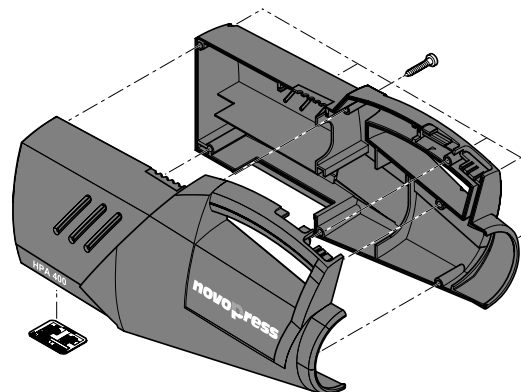


Fig.: Housing

- 3.3 Carefully pull the housing sections apart by the battery holder.

- 3.4 Remove the battery holder from the grooves in the housing sections.

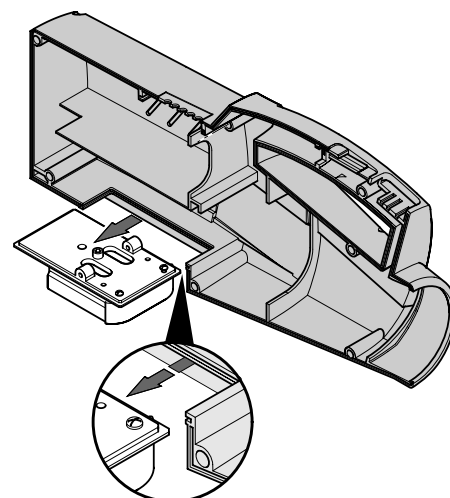


Fig.: Schematic drawing: Remove battery holder

- 3.5 Remove the adhesive tape which is used to attach the flat cable from the start button (S) and the bar graph board (B) to the internal wall of the right-hand housing section.

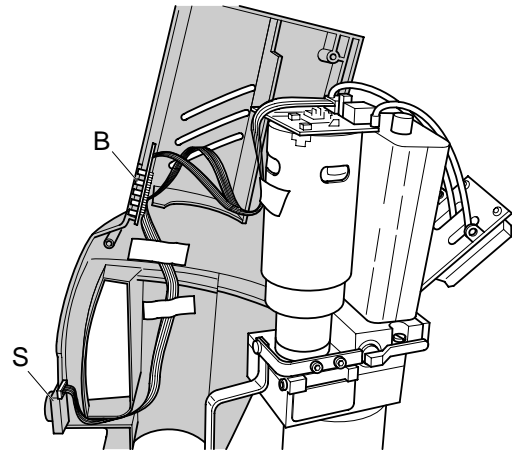


Fig.: Cable routing in the housing section



Note:

On assembly, route the cables in exactly the same way as before dismantling.

- 3.6 Remove the start button (S) from the housing section.
- 3.7 Remove the bar graph board from the housing section.
- 3.8 Remove the retract button (12) with the pressure spring (13) from the housing section.

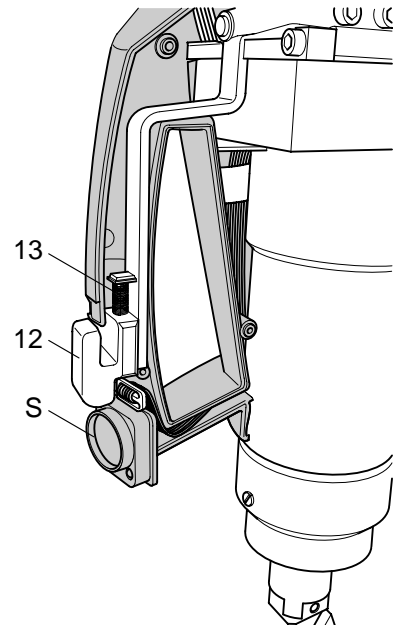


Fig.: Start button, retract button, bar graph board

- 3.9 Remove both housing sections completely.
- 3.10 Replace the module.

- 3.11 Insert the start button (S) into the appropriate groove in the right-hand housing section (housing section without counter-sinking) and route the flat cable through the cable duct.
- 3.12 Insert the bar graph board (B) into the appropriate groove in the right-hand housing section.
- 3.13 Fix the flat cable of the start button into the housing section using adhesive tape as illustrated.
- 3.14 Ensure that the cable (K) from the micro switch is routed correctly. Route the cable (K) in an arch in front of the pump.

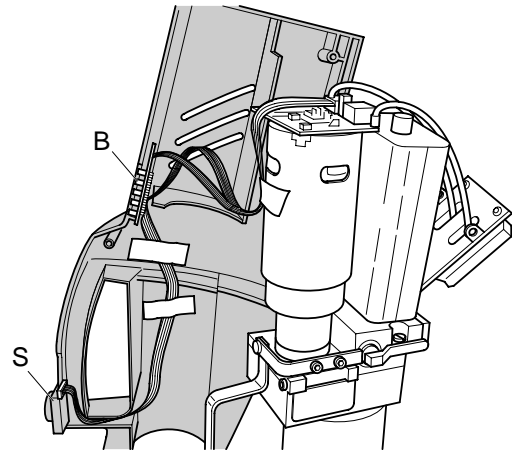


Fig.: Cable routing in the housing section

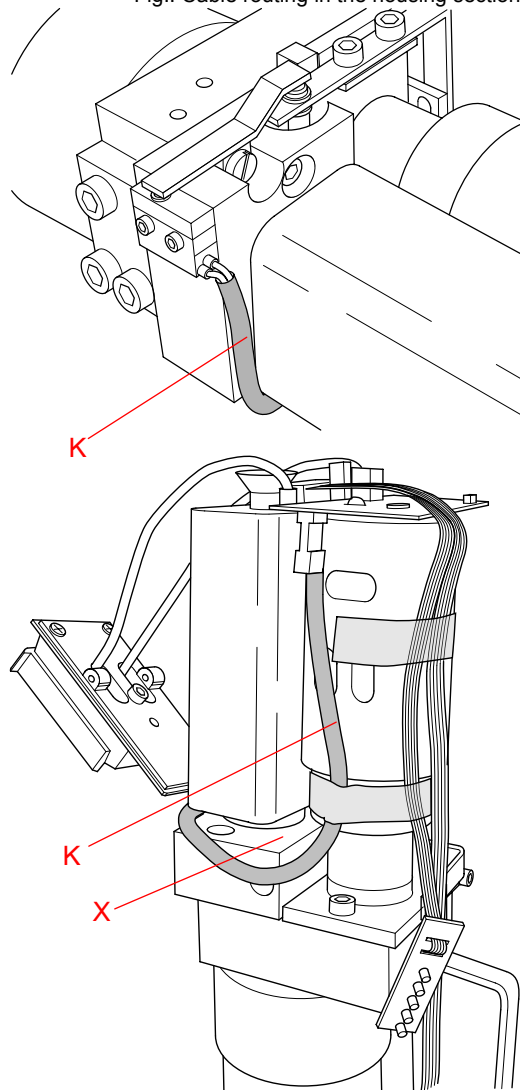


Fig.: Micro switch cabling



Warning:

Cable (K) should not be permitted to rest on the supporting area (X). The housing supports itself on this supporting area with a stay and the cable would be pinched. This could result in malfunctioning.

- 3.15** Push the battery holder into the appropriate groove in the right-hand housing section.

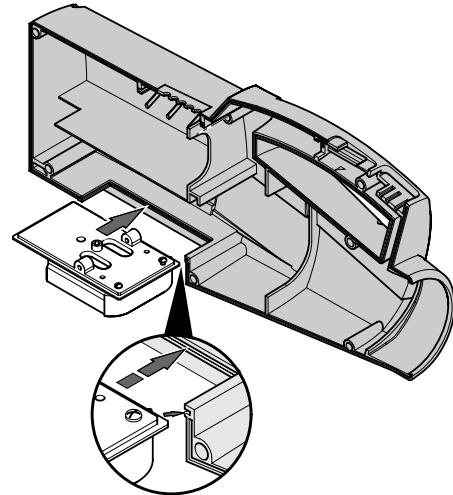


Fig.: Schematic drawing: Push the battery into the groove

- 3.16** Press the right-hand housing section on. In doing so please ensure that the stay (S) is supported on the supporting area (X) of the pump.
- 3.17** Position the slide rod (11), retract button with the pressure spring in the groove provided on the right-hand housing section.

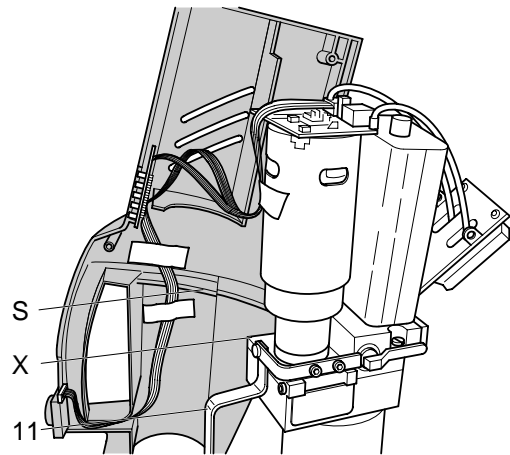


Fig.: Insertion of start button, slide rod, retract button

- 3.18** Position the left-hand housing section and insert the battery holder into its grooves as well.
- 3.19** Press both housing sections together.

- 3.20 Align both housing sections so that the gap between the housing sections is positioned exactly above the pin (14).

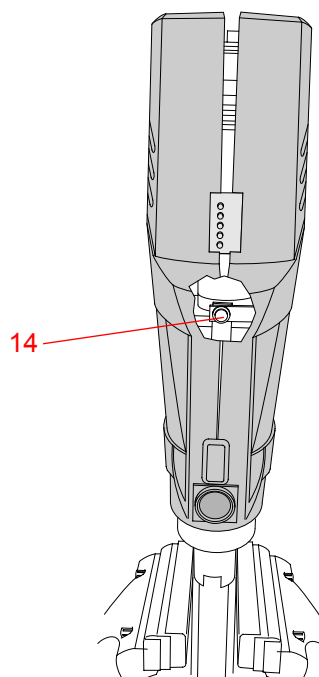


Fig.: Aligning the housing



Note:

The housing sections are fitted with a tongue and groove system all the way round.

Please ensure that the tongue is positioned in the groove all the way round.

- 3.21 Screw all 7 screws on and tighten them.

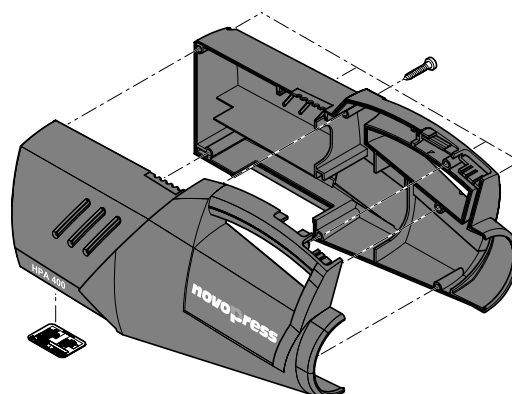



Fig.: Housing

- 3.22 Insert the battery.

4 Replacing the battery holder

 **Note:**
In the event of problems with assembly or dismantling also consult the explosion drawings on page 4 and 6.

- 4.1 Remove the battery. Press the two grey buttons on the battery inwards and then remove the battery from the device.

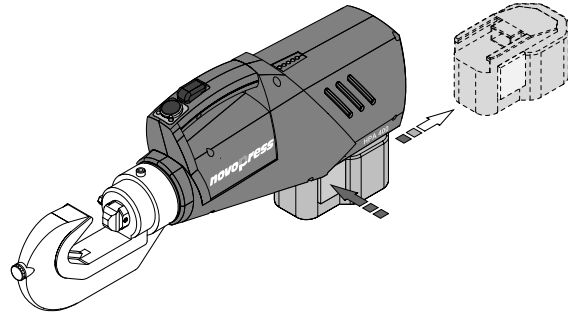



Fig.: HPA 400 incl. battery

 **Note:**
To dismantle/ assemble the device in further stages clamp the device into the vice with the crimping head pointing downwards. Rechuck if needed in further stages.

- 4.2 Unscrew all 7 screws from the housing.

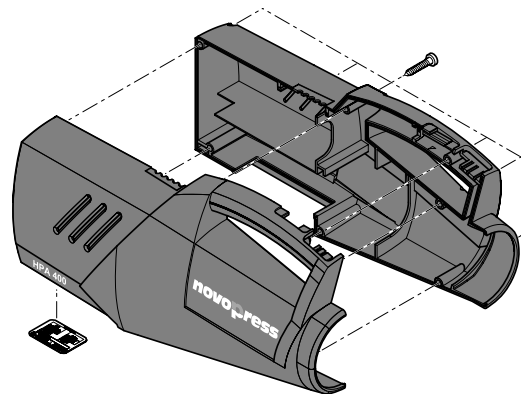


Fig.: Housing

- 4.3 Carefully pull the housing sections apart by the battery holder.
- 4.4 Remove the battery holder from the grooves in the housing sections.
- 4.5 Remove the adhesive tape which is used to attach the flat cable from the start button (S) and the bar graph board (B) to the internal wall of the right-hand housing section.

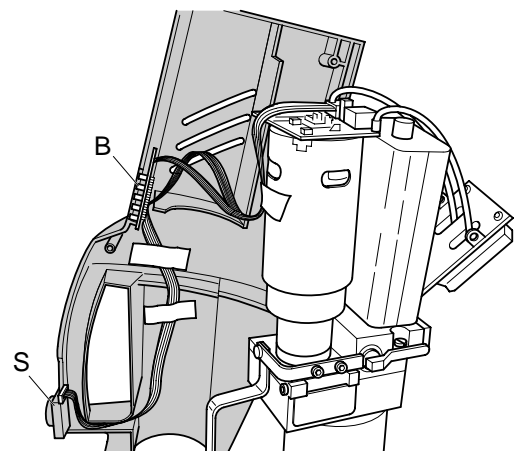



Fig.: Start button, retract button, bar graph board

 **Note:**
On assembly, route the cables in exactly the same way as before dismantling.

- 4.6 Remove the start button (S) from the housing section.
- 4.7 Remove the bar graph board from the housing section.
- 4.8 Remove the retract button (12) with the pressure spring (13) from the housing section.

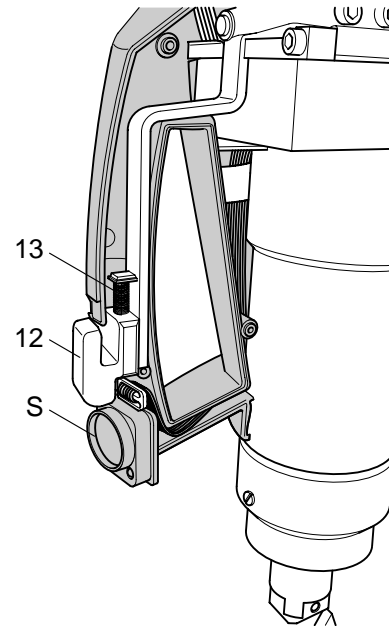


Fig.: Start button, retract button, bar graph board

- 4.9 Remove both housing sections completely.
- 4.10 Unscrew the hexagon socket screw (A) from the battery holder.
- 4.11 Press the screwdriver carefully between the battery holder (B) and the insert (C) and then carefully push the insert out of the battery holder (B).



Note:
When pushing the insert (C) out of the battery holder (B), guide the cable out.



Note:
The silicone casing on the cables mean that they are very flexible but also very sensitive.

- 4.12 Remove the cable lug of the red cable (phase) and the grey cable from the insert (C).

- 4.13 Pull off the battery holder (B) over the two cables.



Note:
If the sliding block (D) falls out during dismantling this must be replaced into the insert on assembly.



Note:
The installation position of the red cable can be identified on the stay on the rear side of the insert (C). This is located exactly opposite the red cable in the insert duct and has the number 356769.

- 4.14 Replace the module.
Reassemble in reverse order.



Note:
To assemble the housing follow the points from 3.11 on page 15.

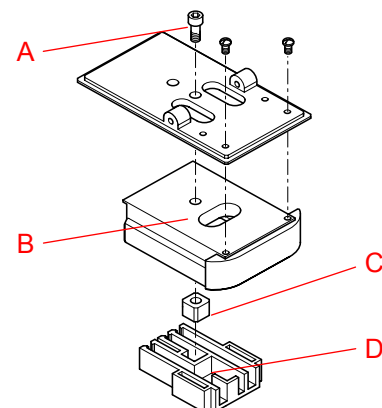


Fig.: Battery holder incl. insert and sliding block

5 Replacing the start button and bar graph board



Note:
In the event of problems with assembly or dismantling also consult the explosion drawings on page 4 and 6.

- 5.1 Remove the battery. Press the two grey buttons on the battery inwards and then remove the battery from the device.

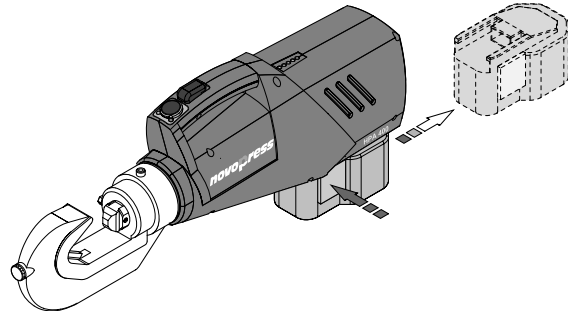


Fig.: HPA 400 incl. battery



Note
To dismantle/ assemble the device in further stages clamp the device into the vice with the crimping head pointing downwards. Rechuck if needed in further stages.

- 5.2 Unscrew all 7 screws from the housing.

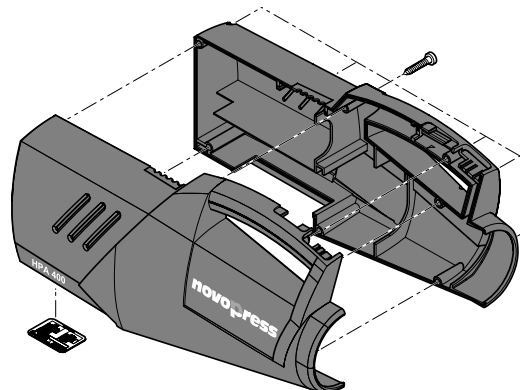


Fig.: Housing sections

- 5.3 Carefully pull the housing sections apart by the battery holder.
- 5.4 Remove the battery holder from the grooves in the housing section.

- 5.5 Remove the adhesive tape which is used to attach the flat cable from the start button (S) and the bar graph board (B) to the internal wall of the housing section.

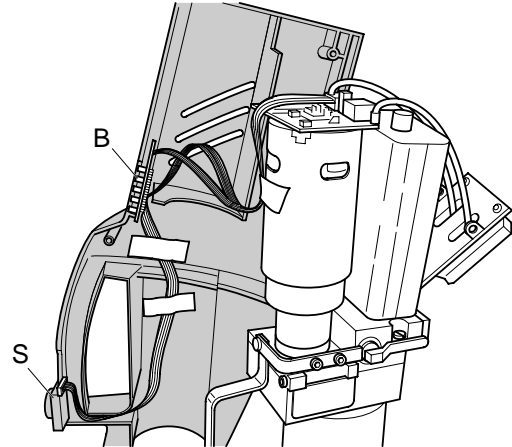


Fig.: Start button, retract button, bar graph board



Note:

Pay attention to the cable routing. On assembly, route the cables in exactly the same way as before dismantling.

- 5.6 Remove the start button (S) from the housing section.
- 5.7 Remove the bar graph board from the housing section.
- 5.8 Remove the retract button (12) with the pressure spring (13) from the housing section.

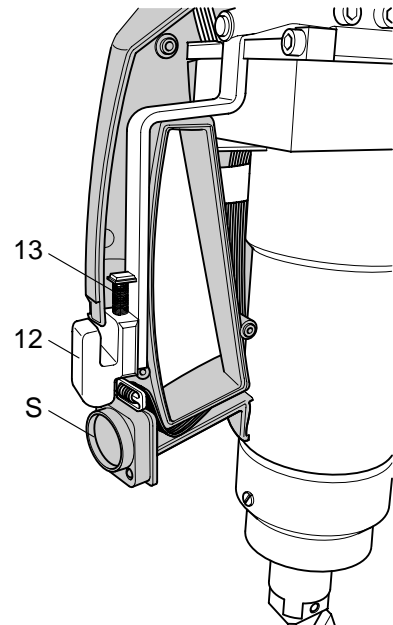


Fig.: Start button, retract button, bar graph board

- 5.9 Remove the adhesive tape which attaches the flat cables to the motor.

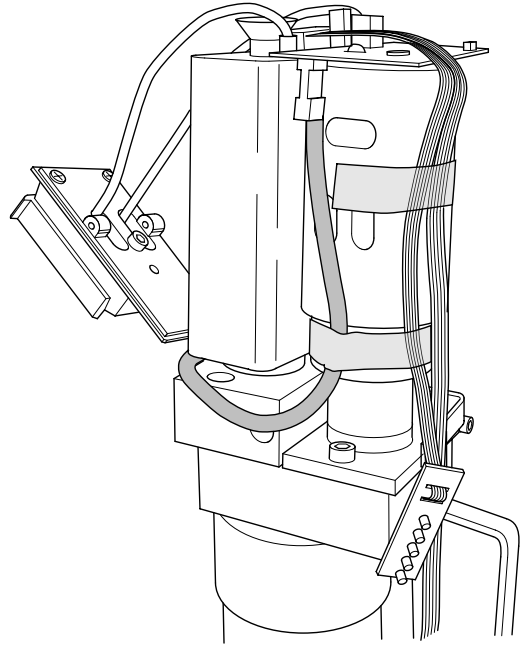


Fig.: Cable routing on the motor

- 5.10 Remove the start button/ bar graph board plug from the main board on the motor. Socket (1) and (2).

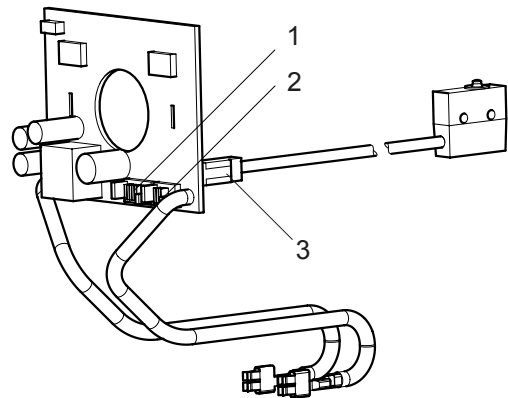


Fig.: Pin alignment

- 5.11 Remove the start button (23, 24, 27) and the bar graph board (26) completely, incl. cable.

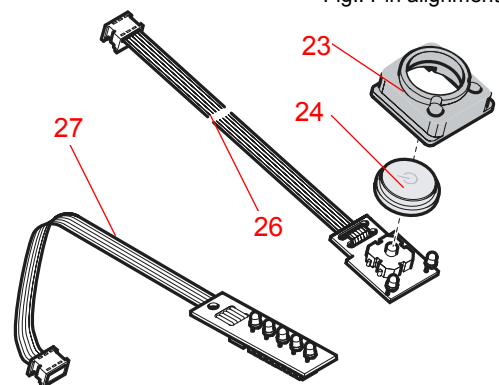


Fig.: Start button and bar graph board

- 5.12 Replace the module.
Reassemble in reverse order.



Note:
Reattach the flat cable of the start button and the bar graph board onto the motor using adhesive tape.



Note:
To assemble the housing follow the points from 3.11 on page 15.

6 Replacing the micro switch



Note:
In the event of problems with assembly or dismantling always also consult the explosion drawings on page 4 and 6.

- 6.1 Remove the battery. Press the two grey buttons on the battery inwards and then remove the battery from the device.

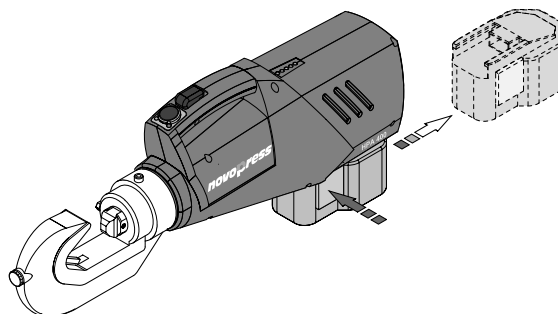


Fig.: HPA 400 incl. battery



Note:
To dismantle/ assemble the device in further stages clamp the device into the vice with the crimping head pointing downwards. Rechuck if needed in further stages.

- 6.2 Unscrew all 7 screws from the housing.

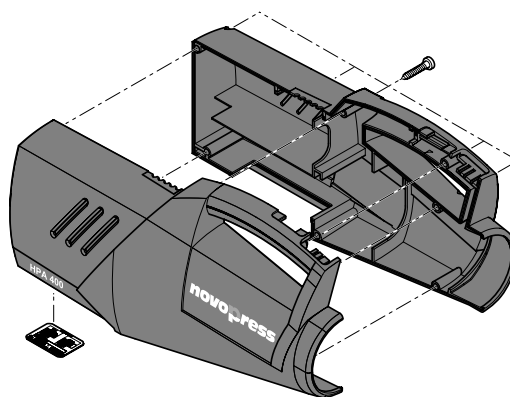


Fig.: Housing sections

- 6.3 Carefully pull the housing sections apart by the battery holder.

- 6.4 Remove the battery holder from the grooves in the housing sections.

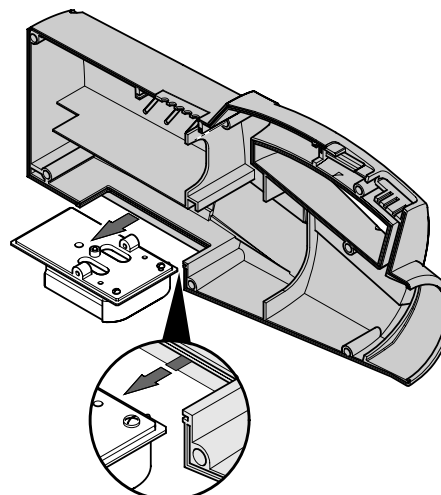


Fig.: Schematic drawing: Remove battery holder

- 6.5 Remove the adhesive tape which is used to attach the flat cable from the start button (S) and the bar graph board (B) to the internal wall of the housing section.

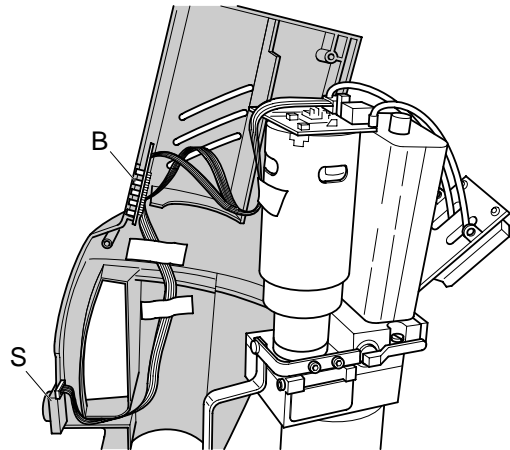


Fig.: Start button, retract button, bar graph board



Note:

Pay attention to the cable routing. Route them in exactly the same way on assembly.

- 6.6 Remove the start button from the housing section.
- 6.7 Remove the bar graph board from the housing section.
- 6.8 Remove the retract button with the pressure spring from the housing section.
- 6.9 Remove both housing sections completely.
- 6.10 The micro switch (501) is fixed with two screws (25). Unscrew both screws.
- 6.11 Remove the plug on the cable of the micro switch (501) from the socket (3).
- 6.12 Replace the module.
Reassemble in reverse order.

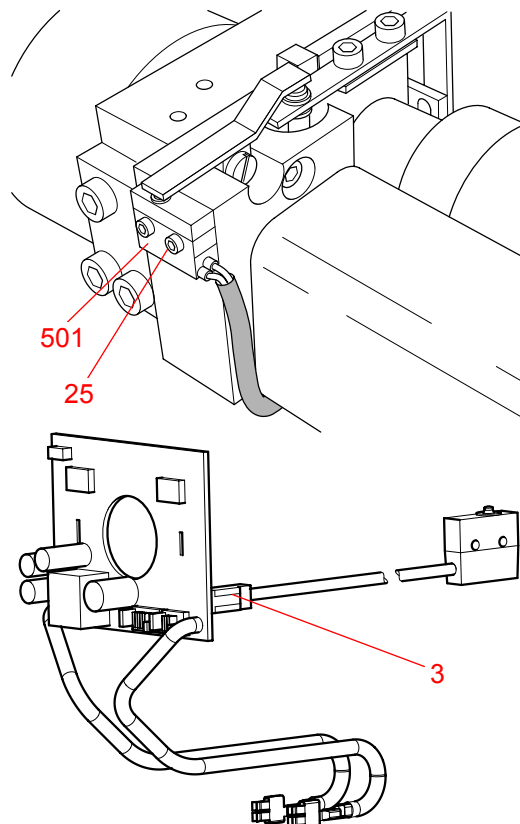


Fig.: Micro switch



Note:

To assemble the housing follow the points from 3.11 on page 15.

7 Replacing the retracting rod and the retract button



Note:

In the event of problems with assembly or dismantling always also consult the explosion drawings on page 4 and 6.

- 7.1 Remove the battery. Press the two grey buttons on the battery inwards and then remove the battery from the device.

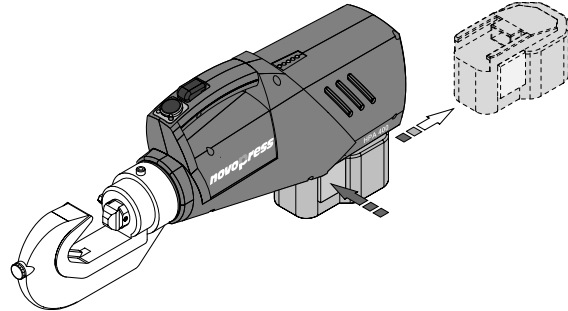


Fig.: HPA 400 incl. battery



Note:

To dismantle/ assemble the device in further stages clamp the device into the vice with the crimping head pointing downwards. Rechuck if needed in further stages.

- 7.2 Unscrew all 7 screws from the housing.

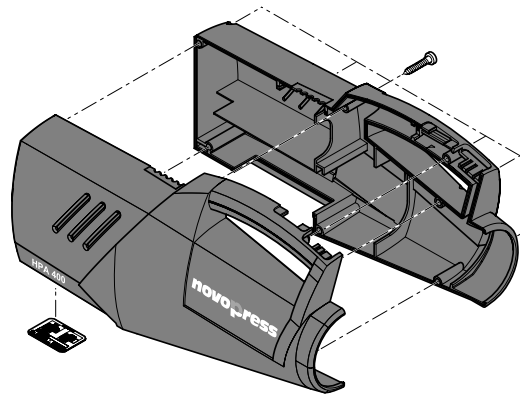


Fig.: Housing sections

- 7.3 Carefully pull the housing sections apart by the battery holder.

- 7.4 Remove the battery holder from the grooves in the housing sections.

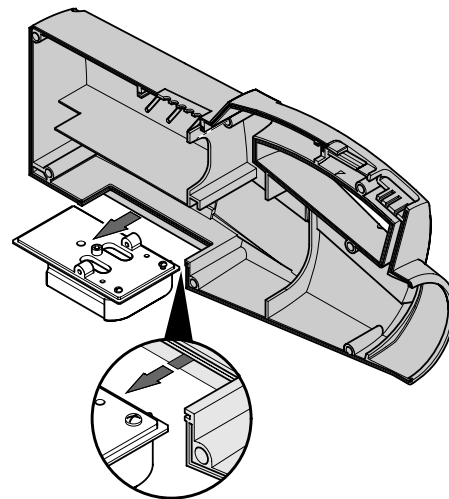


Fig.: Schematic drawing: Remove battery holder

- 7.5 Remove the adhesive tape which is used to attach the flat cable from the start button (S) and the bar graph board (B) to the internal wall of the housing section.

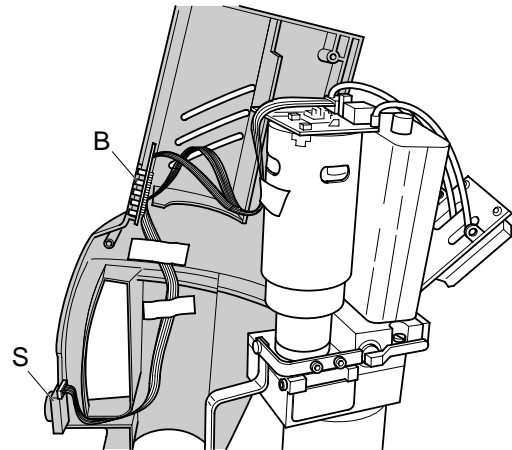


Fig.: Start button, retract button, bar graph board



Note:
Pay attention to the cable routing. When assembling, route them in exactly the same way as before the assembly.

- 7.6 Remove the start button from the housing section.
- 7.7 Remove the bar graph board from the housing section.
- 7.8 Remove the retract button with the pressure spring from the housing section.
- 7.9 Remove both housing sections completely.
- 7.10 Unscrew the pan-head screw (21) and the rocker (18).
- 7.11 Remove the retaining washer.
- 7.12 Remove the shim rings (24) for the tappet clearance.



Note:
On disassembling, exactly the same shim rings are to be installed.

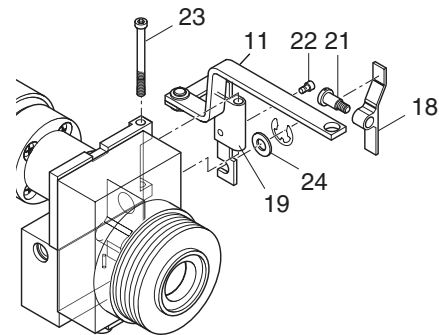


Fig.: Retracting rod

- 7.13 Undo the cylinder screw (23).
- 7.14 Remove the entire rod including hinge (19).
- 7.15 The hinge (19) can be removed after the two locking screws (22) have been removed.

- 7.16 Pull out the split-pin (16) in order to remove the slide rod (11) from the lever (20). Pay attention to the lower washer (15)!
- 7.17 Remove the pin (14).
- 7.18 Lift off the slide rod (11).

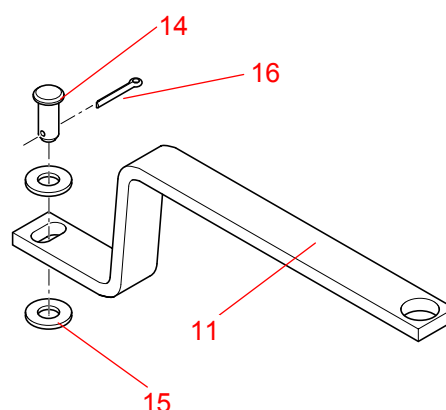


Fig.: Slide rod

- 7.19 Replace the modules.
Reassemble in reverse order.



Note:
To assemble the housing follow the points from 3.11 on page 15.