

Translation of the original Operating Manual

Manual Application Unit with Radio Control HB910 Bead / Spray



Specific safety instructions

1 Specific safety instructions

1.1 Potential hazards



Burn Hazard

due to hot metal parts, hot melt material, and hot melt material vapors. Therefore, always wear heat protection gloves.

1.2 Scope of use

The manual application unit is for the melting and metered discharge of melts (thermoplastic substances such as hot-melt adhesives, waxes, etc.) as a bead or spray-on coating.

When processing reactive hot melt adhesives, such as polyurethane (PU) hot melt adhesives, we recommend placing the nozzle in a paraffin oil bath during longer work breaks.



Attention!

The HB 910 manual application units are only approved for operation with heatable hoses of the type BÜHNEN HP... and NS....

Separation from and connection to heatable hoses may only be implemented by competent personnel with electrical skills.

1.3 Notes on safe operation

 Never point the operational application unit towards yourself or at other persons.



Danger!

Before every maintenance or repair work on the heatable hose, remove the mains plug from the tank system.

Otherwise, an adjacent radio control could accidentally activate the pump during the maintenance or repair work.

Danger of burning caused by hot melt adhesive!

Specific safety instructions

Technical data

2 Technical data

Model	HB 910 for bead application	HB 910 for spray application
Power supply	230 VAC / 50 to 60 Hz	
Weight	approx. 760 g	approx. 870 g
Heating capacity	120	0 W
Protection (in acc. with DIN IEC 34 T5)	IP30	
Protection class (in acc. with DIN VDE 0720)	(Protectiv conductor terminal)	
Max. operating temperature	210 °C	
Type of heating	High-performance heating cartridge	
Temperature sensor	Pt100, Ni120, FeKo, NTC	
Max. adhesive pressure	40 bar	
Max. spray air pressure	-	3.0 bar
Nozzle	Paste nozzle with UNF 3/8" thread	Spray nozzle, consisting of: air cap, retainer ring, swirl nozzle
available nozzle Ø	0.8 / 1.0 / 1.2 / 1.5 / 2.0 / 3.0 mm	0.8 / 1.0 / 1.5 / 2.0 mm
Adapter for bead application		FDH 0423

Technical data

2.1 Product identification

These operating instructions apply to all manual application units with the following illustrated type plate.

The type plate is located on the side of the grip casing. The type and serial number are punched into the right hand grip casing.

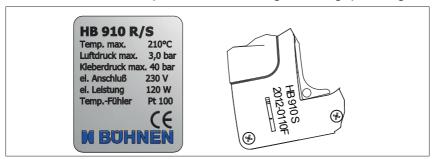


Fig. 2/1: Type plate on unit (left, example) and serial number (right, example)

2.2 Circuit diagram

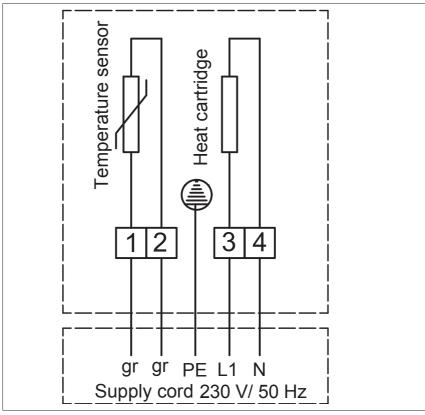


Fig. 2/2: Circuit diagram

Technical data

3 Construction and function

3.1 Construction bead version

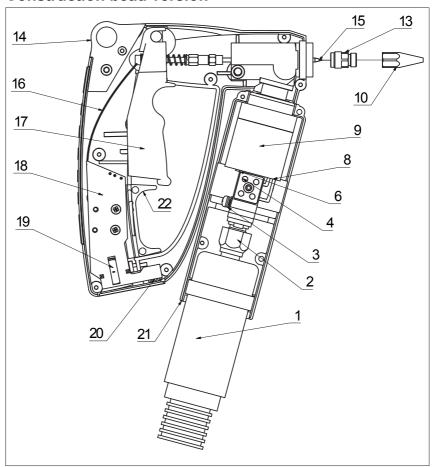


Fig. 3/1: Mechanical construction of the manual application unit bead version

No.	Designation
1	Heatable hose, type HP standard
2	Connection fittings
3	Protective earth terminal
4	Connection terminal
6	Temperature sensor
8	Heating cartridge
9	Heating cylinder
10	Nozzle UNF 3/8
13	Nozzle holder
14	Suspension eye
15	Nozzle needle
16	Transmitting antenna
17	Trigger
18	Sender
19	Battery holder with lithium battery
20	Coding switch for device address
21	Heat protection
22	Triggering safeguard

3.2 Construction spray version

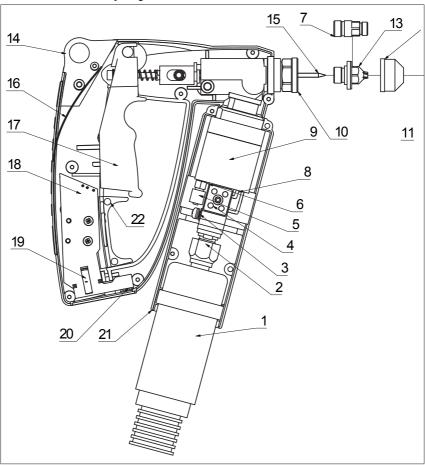


Fig. 3/2: Mechanical construction of the manual application unit spray version

No.	Designation
1	Heatable hose type HP standard
2	Connection fittings
3	Protective earth terminal
4	Connection terminal
5	Spray air hose with connection
6	Temperature sensor
7	Nozzle adapter
8	Heating cartridge
9	Heating cylinder
10	Spray adapter
11	Retainer ring
12	Air cap
13	Swirl nozzle
14	Suspension eye
15	Nozzle needle
16	Transmitting antenna
17	Trigger
18	Sender
19	Battery holder with lithium battery
20	Coding switch for device address
21	Heat protection
22	Triggering safeguard

3.3 Function

The manual application unit consists of a rigid part permanently connected with the heat- able hose and a rotating part.

The part connected with the heatable hose contains

- the heater,
- · the temperature sensor, and
- all electrical connections.

The rotating part has

- the nozzle system,
- the trigger,
- · the sender,
- the triggering safeguard
- the removable battery (lithium cell) for the power supply of the transmission electronics and
- the coding switch for setting up the device address.

The hot melt material flows through the connection fitting (2) of the heatable hose into the heating cylinder (9) that is heated by the heating cartridge (8).

The hot melt material flows into the nozzle head from there. In its idle state, the nozzle needle (15) closes the nozzle holder (13), or the swirl nozzle.

When the trigger is activated, the nozzle needle opens the nozzle holder/swirl nozzle and the hot melt material is discharged. The transmitter is activated at the same time and transmits the activation of the trigger to the basic unit so that the pump can be controlled as needed. A non-contacting and therefore wear-free magnet activates the transmitter.

The temperature of the heating element is constantly monitored by the temperature sen- sor (6) and transferred to the control electronics in the basic unit. The control electronics use the information to control the heating cartridge.

3.4 Special features

General

- The rotating part can be turned endlessly around the stationary part.
- No obstructing cables on the outside of the manual application unit due to wireless transmission of the trigger signal.
- The triggering safeguard (22) locks the trigger by moving up and down.

Spray version

- The spray air is pre-heated in the heating hose/cylinder (1 resp.
 9) and is discharged time-shifted (preliminary and secondary air). This ensures an optimal, drip-free spraying pattern.
- The spray application can be converted to extrusion application at any time by using an adapter.

4 Initial operation



Attention!

Initial operation may only be implemented by competent personnel.

4.1 Installation

The manual application unit is permanently connected with a heatable hose upon delivery.

After the heatable hose has been assembled to the basic unit, the manual application unit is immediately operational without requiring additional measures.

4.2 Setting the temperature

The temperature of the hot melt material is set using the control electronics of the tank system.



Info

Please do not set the temperature higher than the processing temperature prescribed/ recommended by the manufacturer.

This prevents thermal damage to the hot melt adhesive.

The manual application unit has its own heater only used to retain the temperature of the hot melt material. It is not possible to additionally heat up the hot melt material in the manual application unit. In normal operation, the hot melt material flows through the heating element too quickly for that.

Initial operation

5 Operation



Attention!

Operation may only be implemented by competent personnel.

5.1 General notes



Wear safety gloves!

Danger of burn injuries due to hot metal parts, in the area of the heat insulation (21), and due to the discharged hot melt material.

To avoid burning yourself while operating the manual application unit, always wear heat protection gloves.



Danger of mucous membrane irritation due to vapors!

ven during prescribed processing, hot melt adhesives give off vapors that can have an annoying odorous effect.

Therefore, only operate the tank system in well ventilated rooms.

Observe the processing bulletin and the safety data sheet of the hot melt adhesive manufacturer.

While operating the manual application unit, always comply with the following notes:

- Hang up the manual application unit by the suspension eye
 (14) when interrupting work.
- Immediately turn off the tank system if the function is disrupted. Have qualified personnel check the tank system.

Operation

5.2 Discharging the hot melt material

To discharge the hot melt material, carry out the following work steps:

- 1. Make sure that the tank system with all components has been thoroughly heated (approx. 30 min after turning on).
- 2. Make sure that the triggering safeguard is always in the bottom position (yellow mar- king not visible).
- 3. Activate the trigger (17).
- Regulate the discharge amount by activating the trigger for longer/shorter periods. The discharge amount can be additionally varied by
 - · selecting another nozzle,
 - moving the nozzle more slowly or more quickly over the work piece, changing the processing temperature, or
 - changing the operating pressure (max. 40 bar).

5.3 Setting the spray pattern (spray version only)

The spray pattern depends on the operating pressure of the tank system and the setting of the spray air pressure.

Determine the optimum setting by turning the adjusting wheel at the spray air adapter kit and repeated trials.

To set the adjusting wheel, carry out the following work steps:

- Unlock the adjusting wheel by pulling it up as far as it will go. Implement the desired setting.
- Lock the adjusting wheel against unintentional re-adjustment by pressing it back down in the initial position.

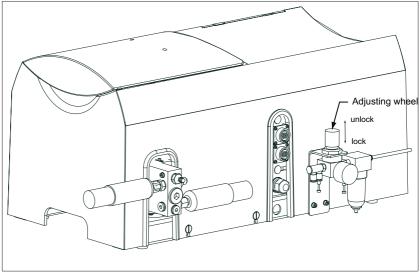


Fig. 5/1: Adjusting wheel for spray air setting (spray version)

Operation



Attention!

Setting up and retrofitting works may only be implemented by competent personnel.

6.1 Replacing the nozzle



Wear safety gloves!

Danger of burns due to hot metal parts and due to discharged hot melt material.

To avoid burning yourself while setting up/retrofitting the manual application unit, always wear heat protection gloves.

6.1.1 Nozzle UNF 3/8 (bead version)

Required tool:

1 open-end wrench size 11 1 box wrench size 11, offset

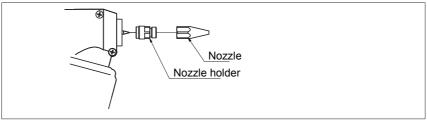


Fig. 6/1: Replacing the nozzle (bead version)

To replace the nozzle, carry out the following work steps:

- 1. Heat up the manual application unit to approx. 100 °C.
- 2. Turn off the tank system and disconnect the mains plug.
- 3. Secure the nozzle holder with box wrench size 11.
- 4. Unscrew the nozzle with open-end wrench size 11.
- 5. Screw on the new nozzle by hand first.

Wait about 2 minutes until the new nozzle has been thoroughly heated.

6. Tighten the new swirl nozzle without using force.

6.1.2 Swirl nozzle (spray version)

Required tool:

1 open-end wrench size 13 1 open-end wrench size 22

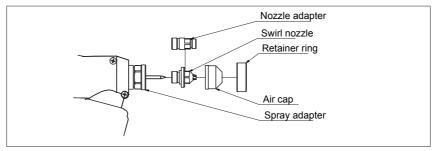


Fig. 6/2: Replacing the swirl nozzle (spray version)

To replace the swirl nozzle, carry out the following work steps:

- 1. Heat up the manual application unit to approx. 100 °C.
- 2. Turn off the tank system and disconnect the mains plug.
- 3. Unscrew the retainer ring.
- 4. Remove the air cap.
- 5. Unscrew the swirl nozzle.
- 6. Screw on the new swirl nozzle by hand first.
- 7. Wait about 2 minutes until the new swirl nozzle has been thoroughly heated.
- 8. Tighten the new swirl nozzle without using force.
- 9. Replace the air cap.
- 10. Tighten the retainer ring without using force.

6.2 Assembling/dismantling the heatable hose



War safety gloves!

Danger of burns due to hot metal parts and due to discharged hot melt material.

To avoid burning yourself while assembling/dismantling the heated hose, always wear heat protection gloves.



Danger of electric shock!

Disconnect the power plug from the tank system before carrying out the following work.

Connecting and terminated electrical connections may only be implemented by competent electricians.

Required tool:

1 open-end wrench size 17

1 open-end wrench size 19

1 Phillips screwdriver

1 slotted screwdriver

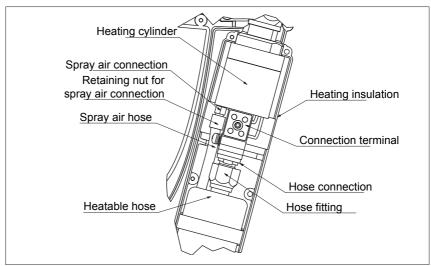


Fig. 6/3: Hose connection in detail (using spray version as an example)

To dismantle the heatable hose, carry out the following work steps:

- 1. Heat up the heatable hose and the manual application unit to approx. 100 °C.
- 2. Turn off the pump of the tank system.
- 3. Activate the trigger on the manual application unit to release the system pressure.
- 4. Disconnect the power plug from the tank system.
- 5. Spray version only:

Remove the spray air hose from the spray air adapter kit of the tank system.

- Release the fastening screws (4 pieces) of the heat insulation on with the Phillips screw- driver. Remove the heat insulation consisting of 2 half-shells.
- Release the electrical connections on the hose side as follows:
 - 2 conductors at connection terminal for heater (brown, blue)
 - 2 conductors at connection terminal for temperature sensor (2 x gray)
 - 1 conductor at screwed connection of protective conductor (green/yellow)
- 8. Spray version only:

Release the union nut of the spray air hose.

- 9. Release the nut of the heatable hose with open-end wrench size 17.
 - Secure the connection to the heating cylinder with open-end wrench size 19.
- 10. Remove the hose from the heating cylinder. Keep on hand a rag or similar to be able to wipe up discharged hot melt material right away before it can drip into the housing of the manual application unit.

For spray version, remove the spray air hose together with the heatable hose



Info

Assembling the heatable hose occurs in reverse order. Tighten the hose fitting only by hand first. Permit the heatable hose and the manual application unit to heat up to approx. 100 °C before finally tightening the screws.

While tightening the hose fitting, make sure that the spray hose does not become twisted. Refer to the circuit diagram in Chap. 2.2 when connecting the electrical lines.

When replacing the half shells, make sure that the flat portion of the arresting bars on the inside of the half shell are seated properly on the corresponding counter pieces at the heating cylinder.

6.3 Setting the preliminary / secondary air



Danger of electric shock!

Disconnect the power plug from the tank system before carrying out the following work:

Connecting and terminating electrical connections may only be implemented by competent electricians.

Required tool:

1 Phillips screwdriver

1 Allen wrench size 2.5

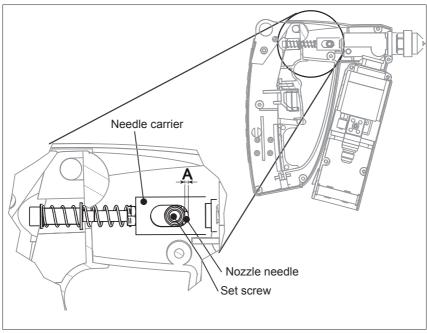


Fig. 6/4: Setting the preliminary / secondary air

The preliminary/secondary air provides a drip-free spray pattern. It has been pre-set by the factory. These factory settings should only be changed in exceptional cases.

When converting to extrusion application (see Chap. 9.1.1), the preliminary/secondary air must be shut off. This simultaneously increases the needle stroke.

Setting preliminary / secondary air (Measure A)		
Factory default:	A = approx. 1.0 mm	
Vor converting to bead application:	A = 0.2 mm	

To set the preliminary/secondary air, carry out the following work steps:

- 1. Dismantle the grip casing of the manual application unit (7 Phillips head screws).
- 2. Release the set screw with the Allen wrench size 2.5.
- Twist the needle carrier to change the preliminary/secondary air to the desired mea- sure.
 In doing so, make sure that the nozzle needle does not twist along.
- 4. Lightly retighten the set screw.
- 5. Assemble the grip casing.

6.4 Setting the switching code

Required tool: 1 Phillips screwdriver

1 small slotted screwdriver

Triggering the pump in the basic unit is controlled by a transmitter in the hand unit. So that the basic unit only responds to the manual application units that are connected to this basic unit, the transmitter and basic unit must be set to the same switch code.

This switch code can be set using four small switches ("dip switches") that can be accessed after removing a cover in the lower part of the hand grip.

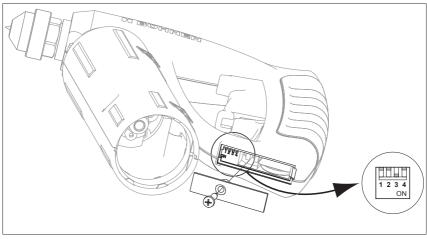


Fig. 6/5: Position of switches for setting the switch code

To set the switch code, carry out the following work steps:

- 1. Release and remove the Phillips head screw as illustrated in Figure 6/5.
- 2. Remove the cover.

- 3. The switches in the left part of the grip underside are now accessible. Set the desired switch code (see table). Use the small screwdriver to activate the switches.
- 4. Reinsert the cover.
- 5. Screw the Phillips head screw back in.

Switch code	Function	Manual unit coding
0	Pump responds to manual units of all tank systems	1 2 3 4 ON
1	Pump responds to manual units with switching code "1"	1 2 3 4 ON
2	Pump responds to manual units with switching code "2"	1 2 3 4 ON
3	Pump responds to manual units with switching code "3"	1 2 3 4 ON
4	Pump responds to manual units with switching code "4"	1 2 3 4 ON
5	Pump responds to manual units with switching code "5"	1 2 3 4 ON
6	Pump responds to manual units with switching code "6"	1 2 3 4 ON

Switch code	Function	Manual unit coding
7	Pump responds to manual units with switching code "7"	1 2 3 4 ON
8	Pump responds to manual units with switching code "8"	1 2 3 4 ON
9	Pump responds to manual units with switching code "9"	1 2 3 4 ON
10	Pump runs in continuous operation (e.g. exhausted sender battery in manual unit until replacement is procured)	1 2 3 4 ON



Attention!

Maintenance works may only be implemented by competent personnel.

7.1 Maintenance intervals

Interval	Activity
Daily	Check the manual application unit for leak tightness, the existence of all parts, and for firm seat of plug and screw connections.
	Remove hot melt material residues and other incrustations.

7.2 Cleaning



Attention!

Do not use any aggressive solvent or combustible cleaning agents to clean the manual application unit. Such substances can cause damage.

- Using a suitable tool (e.g. cloth, soft brush, wood spatula), mechanically remove hot melt material residue and other pollution.
- If the nozzle is clogged, insert a needle or wire with matching diameter into the (heated) nozzle hole.
- The manual application unit can also be cleaned by rinsing it with a suitable cleaning agent (see operating instructions of the basic unit).



Info

Have your hot melt manufacturer advise you about suitable cleaning agents.

Observe the processing spec sheet and the safety data sheet of the hot melt adhesive.

7.3 Replacing the transmitter battery

Required tool:1 Phillips screwdriver **Required material:**1 lithium battery 3 V,
design CR 2032

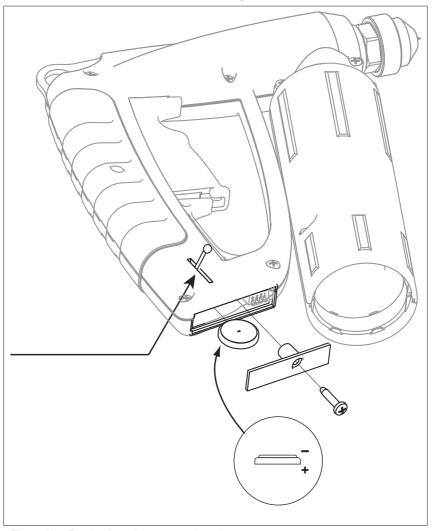


Fig. 7/1: Replacing the transmitter battery

To replace the transmitter battery, carry out the following work steps:

- 1. Release and remove the Phillips head screw as illustrated in Figure 7.1.
- 2. Remove the cover.
- 3. Push the battery out of the grip with a wooden or plastic pin as shown.
- 4. Slide the new battery into the end of the grip.

 Please observe correct polarity of the battery (see figure 7.1)!
- 5. Reinsert the cover.
- 6. Screw the Phillips head screw back in.
- 7. Dispose of the drained battery in an environment-friendly manner. Comply with the local laws and regulations.



8 What happens if...

For occurring malfunctions and faults, first check

- the power supply and all electrical connections
- whether the main switch and the pump switched have been turned on
- whether the temperature values for the utilized hot melt adhesive have been set correctly

Fault	Possible cause	Remedy
Temperature fluctuates strongly or application unit does not heat	Defective tempera- ture sensor	Replace
	Defective control unit	Replace
	Heating cartridge defective	Replace
	No power supply from the tank system	Check the tank system and/or the heatable hose.
No hot melt material is discharged	Depleted transmitter battery	Check whether the tank system pumps will start when the trigger is activated. If not:
		Check battery for correct position. If correct:
		• Replace transmitter battery (see Chap. 7.3).
No or insufficient hot melt material is discharged	Hot melt tank is empty	Fill up
	Hot melt material viscosity is too high	Observe processing notes of hot melt material manufacturer
	Clogged nozzle	Clean (see also Chap. 7.2)
	Hot melt material transport from tank system defective	Check the tank system and / or the heatable hose.

What happens if...

9 Accessories

9.1 Adapter for bead application (spray version only)

By installing this adapter (order no. FDH 0423) bead application is possible with the spray version manual application unit as well.

The adapter is designed for nozzles with UNF 3/8" threads.

9.1.1 Converting to bead application



Wear safety gloves!

Danger of burns due to hot metal parts and due to discharged hot melt material.

To avoid burning yourself while assembling the adapter, always wear heat protection gloves.

Required tool:

1 open-end wrench size 13 1 open-end wrench size 22

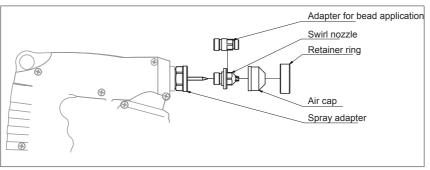


Fig. 9/1: Assembling the adapter for bead application

To assemble the adapter, carry out the following work steps:

- 1. Heat up the manual application unit to approx. 100 °C.
- 2. Turn off the pump of the tank system.
- 3. Activate the trigger on the manual application unit to release the system pressure.
- 4. Disconnect the power plug from the tank system.

Accessories

- 5. Remove the spray air hose from the spray air adapter kit of the tank system.
- 6. Secure the spray adapter with the open-end wrench size 22.
- 7. Remove the air cap.
- 8. Unscrew the swirl nozzle.
- 9. Screw on the adapter for extrusion application by hand first. Let the adapter thoroughly heat for about 2 minutes.
- 10. Tighten the adapter without using force.
- 11. Screw on the desired nozzle to the adapter by hand first. Let the nozzle also thoroughly heat for about 2 minutes.
- 12. Tighten the nozzle without using force.
- 13. Turn off the preliminary/secondary air (see Chap. 6.3).
- 14. Set the spray air pressure on the spray air adapter kit of the tank system to "0.".

10 Repairs

Repairs other than those described in these operating instructions may only be implemented by competent persons commissioned by the manufacturer or otherwise competent persons under utilization of original BÜHNEN spare parts.

11 Warranty

The unit was developed and manufactured according to the latest state of technology. The first purchaser receives warranty on function, material, and processing according to statutory regulations. Normal wear and tear is excepted.

The warranty is void if improper handling, use of violence, repairs by third parties and the installation of spare parts other than the original has been determined.

The warranty extends to servicing or replacing according to our choice. Warranty beyond our scope of delivery is excluded, as we do not have any influence on the competent and expert use of the unit.

Please observe our terms and conditions!

12 Disposal

Take the unit, packaging, and accessories to an environmentally friendly recycling center (in accordance with Directive 2002/96/EG of the European Parliament and the Council of January 27, 2003).



Disposal

13 Declaration of Conformity



Conformity Declaration

We, the

Bühnen GmbH & Co. KG D-28277 Bremen

declare on our sole responsibility that the product

Manual application unit with radio control

Type HB 910

to which this declaration refers, complies with the following Standards or normative documents in its supplied condition:

EN ISO 12100-1, -2

EN 55011

EN 60204-1

EN61000-4-2/3/4/6/8

in accordance with the stipulations of guideline

2001/95/EC

2002/95/EC

2002/96/EC

2004/108/EC

2006/95/EC

2011/65/EC

Bremen, November 2012

Hermann Kruse
Technical Manager &
Documentation Representatve

Hanno Pünjer General Manager

Declaration of Conformity

14.1 Bead version

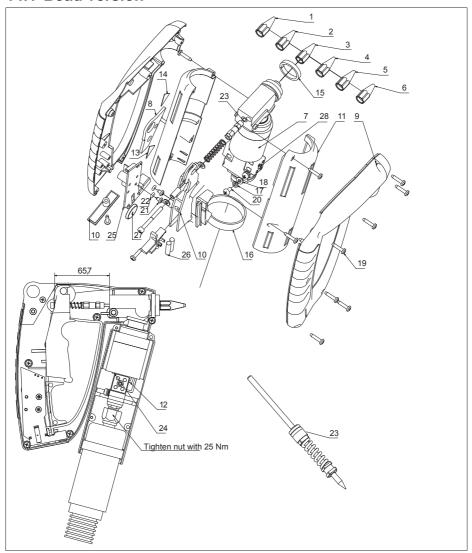


Fig. 14/1: Spare parts, manual application unit, bead version

Spare parts, manual application unit (bead version)

Item	Order No.	Quantity	Designation
1	FD0241	1	Nozzle, long, 0.8 mm
2	FD0242	1	Nozzle, long, 1.0 mm
3	FD0243	1	Nozzle, long, 1.2 mm
4	FD0244	1	Nozzle, long, 1.5 mm
5	FD0245	1	Nozzle, long, 2.0 mm
6	FD0246	1	Nozzle, long, 3.0 mm
7	H105420	1	Nozzle head with heating cylinder
8	H105505	1	Lug
9	H105523	1	Spare part grip casing set (see fig. 14/3, page 5)
10	H105524	1	Trigger and add-on parts (see fig. 14/5, page 4)
11	H105529	1	Heat protection half shell set (see fig. 14/4, p. 5)
12	H105540	1	Heating cartridge with cable
13	H105702	1	Warning decal
14	H105703	1	Warning decal
15	HDH0157	1	Spacer ring
16	HDH0158	1	Support ring
17	KD0267	1	Spring ring
18	KD0438	1	Fan-shaped washer
19	KD0495	7	Plastite screw
20	KDN0737	1	Screw
21	KDN1288	2	Sheet-metal screw DIN 7981
22	LDH0144	2	O ring
23	MDM0103	1	Needle set, complete
24	NCH0416	1	Temperature sensor Pt100
	NKT0190	1	Temperature sensor Ni120
	NCN0272	1	Temperature sensor FeKo
	NCN0434	1	Temperature sensor NTC
25	NCN0422	1	Radio transmitter for hand-operated pistol
26	NCN0429	2	Magnet for radio control
27	NCN0442	1	Battery CR 2032 LI-MN 3V
28	NDM0002	2	Terminal block

14.2 Spray version

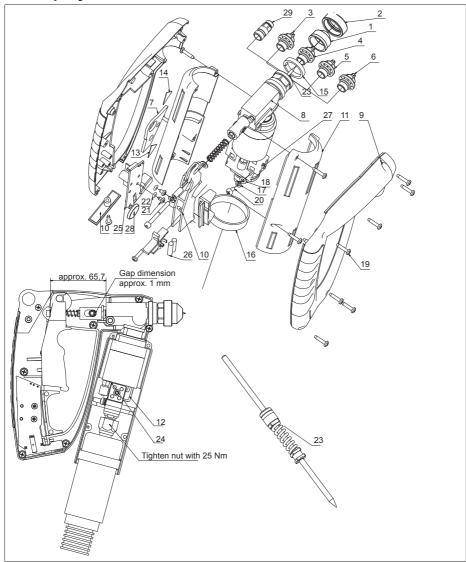


Fig. 14/2: Spare parts, manual application unit, spray version

Spare parts, manual application unit (spray version)

Item	Order No.	Quantity	Designation
1	FDH0405	1	Air cap
2	FDH0406	1	Retainer ring
3	FDH0407	1	Swirl nozzle
4	FDH0408	1	Swirl nozzle
5	FDH0409	1	Swirl nozzle
6	FDH0410	1	Swirl nozzle
7	H105505	1	Lug
8	H105520	1	Nozzle head with heating cylinder
9	H105523	1	Spare part grip casing set (see fig. 14/3, page 5)
10	H105524	1	Trigger and add-on parts (see fig. 14/5, page 4)
11	H105529	1	Heat protection half shell set (see fig. 14/4, page 5)
12	H105540	1	Heating cartridge with cable
13	H105702	1	Warning decal
14	H105703	1	Warning decal
15	HDH0157	1	Spacer ring
16	HDH0158	1	Support ring
17	KD0267	1	Spring ring
18	KD0438	1	Fan-shaped washer
19	KD0495	7	Plastite screw
20	KDN0737	1	Screw
21	KDN1288	2	Sheet-metal screw DIN 7981
22	LDH0144	2	O ring
23	MDM0112	1	Needle set, complete
24	NCH0416	1	Temperature sensor Pt100
	NKT0190	1	Temperature sensor Ni120
	NCN0272	1	Temperature sensor FeKo
	NCN0434	1	Temperature sensor NTC
25	NCN0422	1	Radio transmitter for hand-operated pistol
26	NCN0429	2	Magnet for radio control
27	NDM0002	2	Terminal block
28	NCN0442	1	Battery CR 2032 LI-MN 3V
29	FDH0423	1	Adapter UNF 3/8" - M12X1

14.3 Spare parts bead and spray

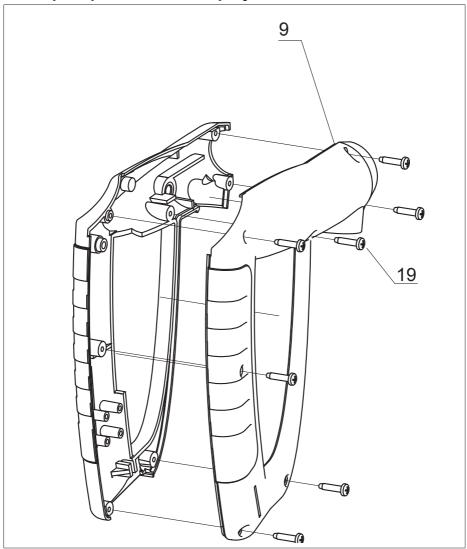


Fig. 14/3: Grip casing set, both versions

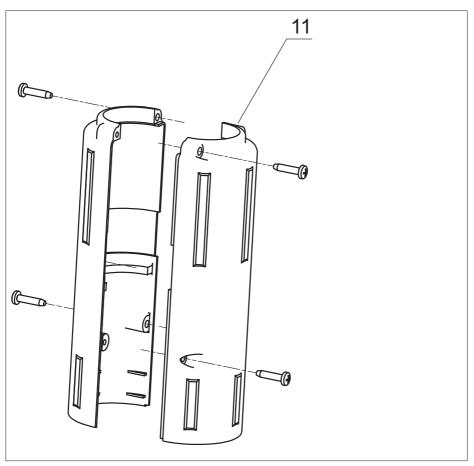


Fig. 14/4: Heat protection half shell set, both versions

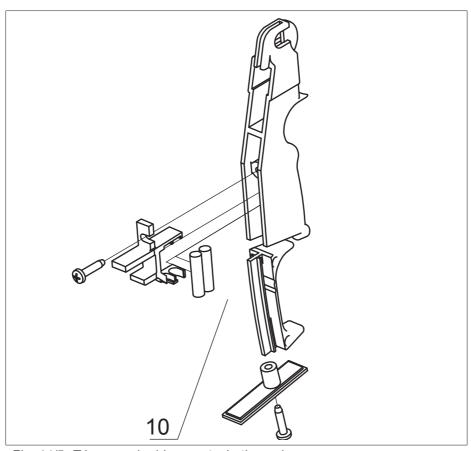


Fig. 14/5: Trigger and add-on parts, both versions

Notes

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