

MANUAL BS310



DABOTEK

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The specification and illustrations of these Operating Instructions shall not be reproduced or circulated nor shall they be used by unauthorized persons or parties or communicated to others for purposes of competition.

DABOTEK Trading ApS reserve the right to make any technical modifications, without prior notice, from the statements and specifications in these Operating Instructions if and when such modifications become necessary in order to improve our product.
These Operating Instructions were written and edited very carefully. Should you find errors or mistakes, though, we will appreciate if you let us know.

General

Who should read these instructions?

These instructions are meant for

- the operators of the stud welding equipment
- the ultimate customer.s personnel operating and connecting the equipment
- the field engineer of DABOTEK Trading ApS.

What is included in these instructions?

In these instructions you find information on

- Operation
- Maintenance and service
- Transport, installation and connection
- Technical specifications
- Spare parts

What is not included in these instructions?

Repair documentation is not included in these instructions.

Further information

Additional technical information beyond these instructions, if needed, is available from our agents or immediately from headquarters.

These instructions convey important information prerequisite for safe working with the stud welding equipment.

Operating personnel must be able to refer to these instructions if necessary.

Therefore, make sure the instructions are available to them at the appropriate time.

If you sell the equipment pass these instructions on to the new owners. Please immediately send us the name and address of the new owners in case it becomes necessary unexpectedly to contact them about the safety of the equipment.

Hinweis: Study these instructions carefully before installing the equipment. In particular, pay attention to the safety hints.

Customer Service

DABOTEK Trading ApS

Birkedam 10C.

DK-6000 Kolding

To contact our Customer Service use

Phone no. +45 7930 7500

Fax no. +45 7930 7505

You will need the .Bolzenschweißen. (stud welding) department.

Please specify the details of the fault or malfunction:

Machine or article number

Welding equipment type and serial numbers

Welding head type

Description of the faults that have occurred.

Please confirm every service request in writing.

For any welding problems, or if you are interested in sample weldings, do not hesitate to contact us. Our welding laboratory is there ready to help you.

Safety

- This stud welding equipment is a **state-of-the-art** product and operationally reliable. Hazards may, however, be caused by unskilled personnel connecting and operating the equipment improperly or using it in any other than the intended manner.
- Everybody concerned with connecting, operating and maintaining this equipment must have read and understood the appropriate instructions and in particular the section on "Safety".
- The equipment components may only be connected, operated and maintained by personnel familiar with those tasks and aware of the hazards.
- All relevant regulations and any other generally accepted rules must be complied with.
- Should you still be in doubt about some detail or other make sure to consult your superiors or the manufacturers.
- Never work or operate in any way that might adversely affect the safety of the equipment, equipment components, or machine.
- Safety devices must never be dismantled or put out of operation. Safety devices are there to protect from severe damage.
- Equipment components to be completed into functional machines or systems at the operator's must be equipped with **state-of-the-art** safety devices by the operator.
- For any apparent damages and defects impairing the safety and for any unusual noise or smell, switch off the equipment or machine and notify your superiors..
- If recognizable faults or shortcomings occur which reduce safety, as well as unusual noises and smells, switch the appliances or machine off and inform your supervisor
- Have the equipment and in particular connection lines with plugs checked for proper condition by an expert; this should be done every six months or earlier.
- Do not allow the connection leads to hang over sharp edges.
- Do not lay the connection leads across traffic lanes or near heat sources.
- All connection, operation and maintenance of the equipment components or machines must be done in accordance with local safety and accident prevention regulations.

Warning against unauthorized alteration or modification.

Any intended alterations and modifications must be brought to the manufacturer's notice. For reasons of safety, unauthorized alterations or modifications cannot be allowed. Any unauthorized alterations or modifications cause forfeiture of warranty.

Precautions for using the stud welding equipment and its components

Remark: *All maintenance and repair work must only be carried out by trained technical personnel. Protective arrangements must not be removed.*



Make sure to switch off the equipment before replacing wear parts (electrical, pneumatic, mechanical).



*ALWAYS pull the mains plug out of the mains socket!
MORTAL DANGER !!!*

Hinweis: *Wait for 10 seconds after switching off the welding equipment because the capacitor battery is discharged.*

Remark: *IMPORTANT! A residual charging voltage is present !*



DO NOT USE ANY liquids when cleaning the appliance! Liquids can enter the electrical system.

Remark: Do not look into the arc while welding is in progress !

Remark: Protect your skin, eyes and clothing against weld splashes.

Remark: Make sure that there are no combustible objects in the vicinity of the welding area or the weld spark area.

Remark: Protect your ears against noise!

Do not move magnetizable objects into the vicinity of the welding set.

The welding process releases electromagnetic fields and, for example, watches, magnetic cards of all kinds can be rendered useless through this.



Persons who carry a heart pacemaker must be made aware of these electromagnetic fields. The possibility of the heart pacemaker being affected cannot be excluded.

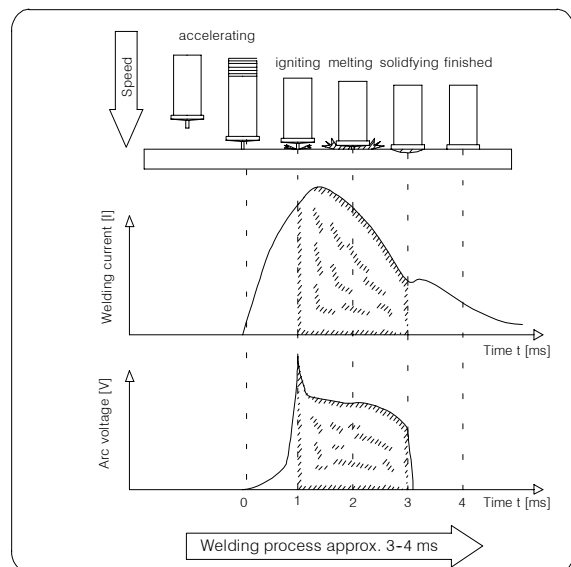


Do not touch or put a hand into moving or live parts.

Description

Welding method

The welding method is capacitor discharge welding with tip ignition. No shielding gas is used, not even for the welding of aluminium.



- The welding stud is accelerated by the welding head to move at a speed of 0.5- 1 m/sec in the direction of the base material. At the same time, the capacitor battery is switched on.
- The ignition tip touches the base material and discharge current begins to flow. The ignition tip is heated up by high discharge current and evaporates all of a sudden.
- The arc is ignited. It burns for some 1 or 2 milliseconds and melts on the base material.
- The welding stud dips into the weld pool.
- Heat absorption by the base material causes the weld pool to solidify.
- The welding process is finished, leaving the stud firmly attached to the base material.

Intended purpose

The BS304/306/308/310 line of stud welding equipment is intended to weld studs under DIN32501 or special-purpose welding elements, manufactured DABOTEK, onto appropriate materials.

Welding method: Capacitor discharge welding with tip ignition.

You can attach DABOTEK handguns, semi-automatic or automatic welding heads to the welding equipment. Anything going beyond that is considered outside the intended (contractual) use. The manufacturer cannot be held responsible for any damages resulting from such use. The operator bears the risk.

The term .intended use. includes compliance with the Operating Instructions and the specified maintenance conditions.

The welding equipment is intended primarily for use in industrial areas.

In other areas, we cannot always warrant electromagnetic compatibility.

General

The BS304/306/308/310 types of stud welding equipment belong to the same equipment family and are distinguished only by the amount of energy each of them uses for welding.

- All types in this line are equipped with processor control.
- Capacitor charging voltage can be entered directly in volts or indirectly by entering the stud diameter.

When entering the stud diameter, the appliance sets itself automatically to an empirical value. Corrections are possible.

- Different operating states are displayed by symbols in the display.

Field of application of the welding equipment

All DABOTEK welding heads can be attached.

Ever since 01.01.96, all welding heads come equipped with a 12-pole equipment plug.

If you want to connect older welding heads you need to change the equipment plug or use a suitable adapter. Such adapters are available from our delivery programme.

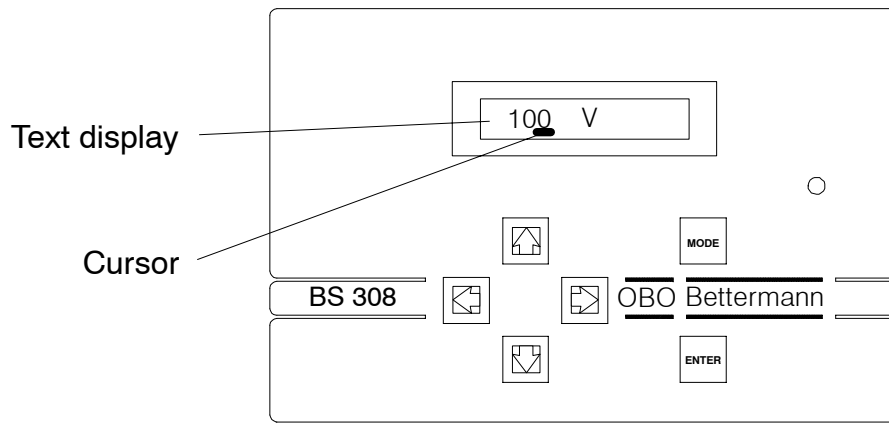
Standard stud dimensions

The standard studs according to DIN 32501 listed in the following table can be welded using the BS ... line of equipment. For our complete stud program, please refer to our stud catalogue.

Equipment type	Stud Ø	Material			
BS 304	1-4	St. 37-3	1.4303	AlMg3	CuZn37
BS 306	2.5-6	St. 37-3	1.4303	AlMg3	CuZn37
BS 308	3-6			AlMg3	CuZn37
	3-8	St. 37-3	1.4303		
BS 310	3-6			AlMg3	CuZn37
	3-8	St. 37-3	1.4303		
	10	St. 37-3	1.4303		

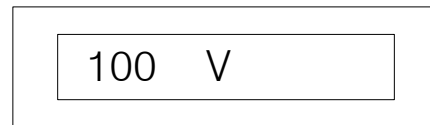
Hinweis: The values shown in the above table are approximate. Weldability will vary with the welding head, the material, and the surface condition of the workpiece. Specific cases may deviate from the values listed above. Most materials feature a strong decline of weldability for stud diameters of 6 mm and more. Make sure to trail-weld before you start production welding!

The control panel



Clear text display

The clear text display shows in normal operation the charging voltage of the capacitors in volts, or special operating conditions. An explanation of the symbols for the operating conditions is given on page 12.



MODE key

With the "MODE" key you can select various conditions(MENU POINTS).



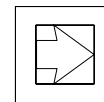
ENTER key

With the "ENTER" key you confirm the parameter values set at the appliance and return to the main menu (basic position).



RIGHT ARROW key

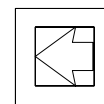
With the "RIGHT ARROW" key you change in the main menu to the menu options or move the CURSOR in the clear text display to the right.



right

LEFT ARROW key

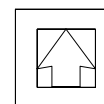
With the "LEFT ARROW" key you return to the menu options or move the CURSOR in the clear text display to the left.



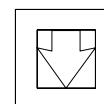
left

UP ARROW - DOWN ARROW key

With the "UP ARROW" and "DOWN ARROW" key you change in the menu options to the sub-menus or increase or decrease the charging voltage of the capacitors.

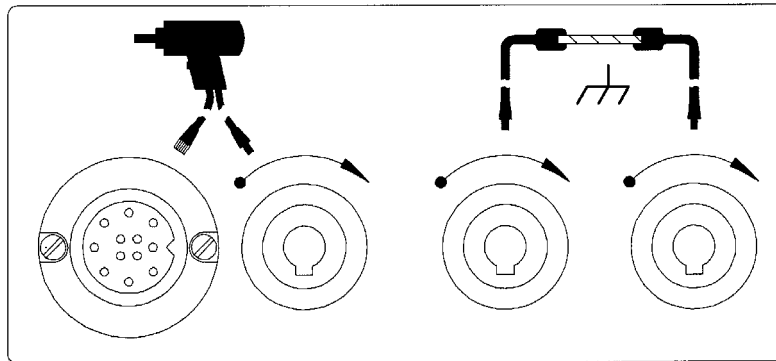


up



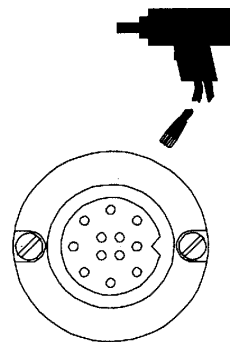
down

The connection panel

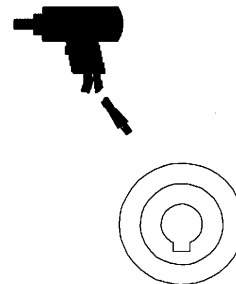


12-pin socket for the control cable of the welding gun.

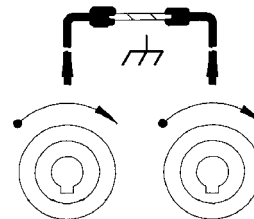
As from 1.1.1996 some DABOTEK Trading ApS welding guns and welding heads will have 12-pin appliance plugs. Older welding guns and welding heads can be connected by replacing the appliance plugs or by means of an adapter.



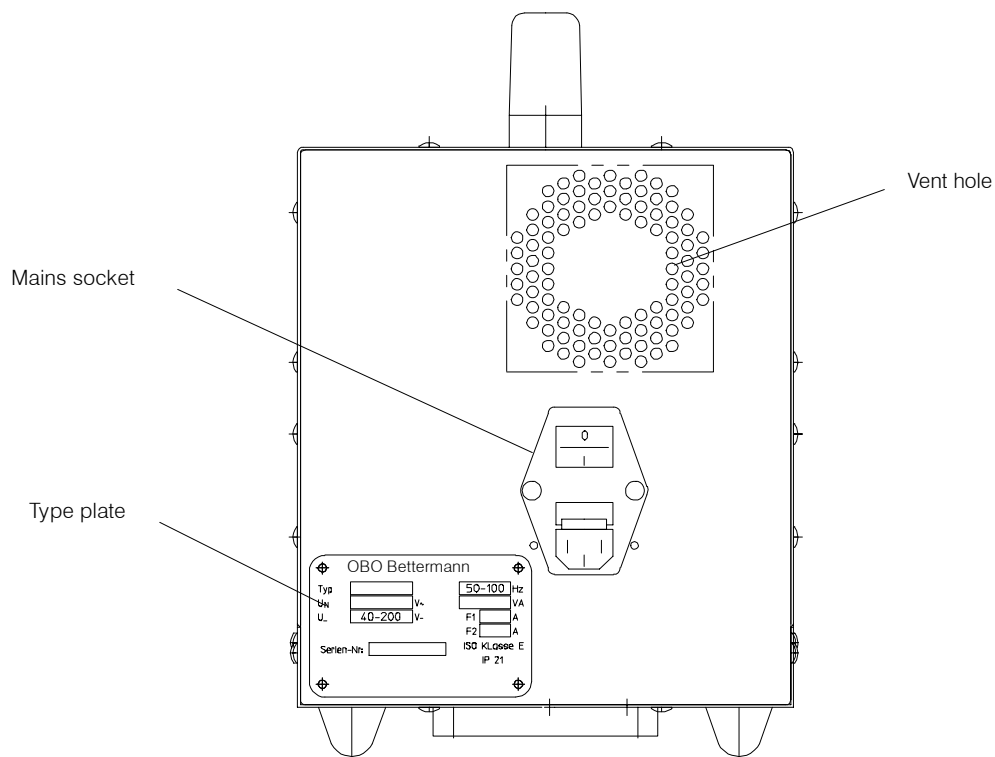
Socket for welding cable of the welding gun (welding head).



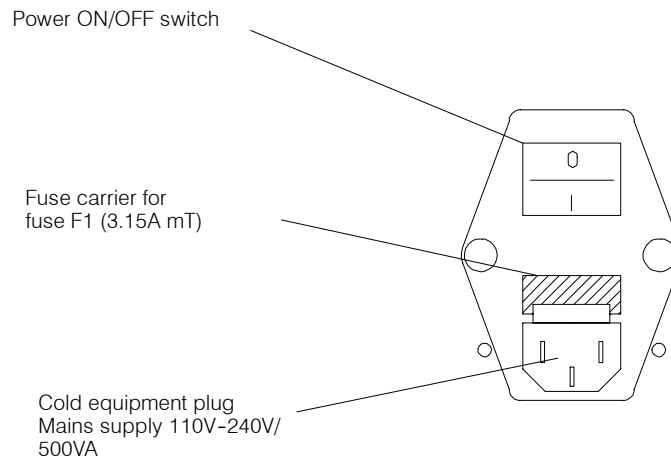
Socket for welding cable of the grounding connections.



The back panel



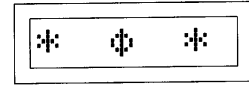
Mains connection



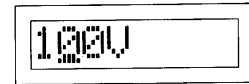
Symbols in the display

The main menu items

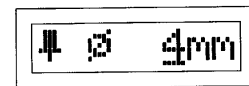
With this menu item you can
* switch the welding set to normal operation.



With this menu item you can
* set the charging voltage.

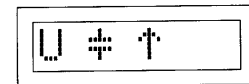


With this menu item you can
* set the stud diameter.

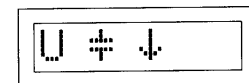


Notes for the operator

Welding capacitors are charged.
Set is not ready for welding while charging is in process.



Welding capacitors are discharged.
Set is not ready for welding while discharging is in process.



Turn off signal.

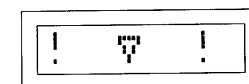


Fault signals

The temperature in the appliance is too high.
The appliance is during this display not operational.



Appliance faulty!
Switch appliance off immediately and contact the aftersales service of DABOTEK Trading ApS.
Phone: Denmark: +45 7930 7500





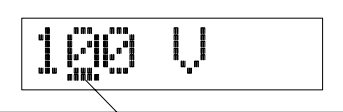
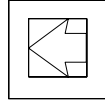
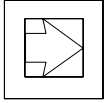
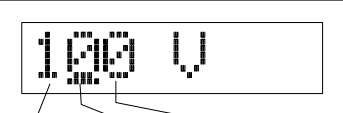
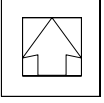
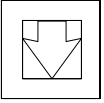




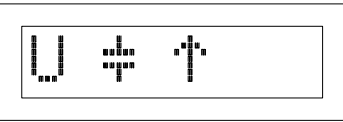
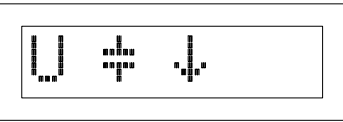
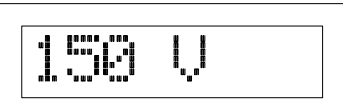
Operating modes

You can operate the set in two different ways.

- * Input of the charging voltage "QUICK MENU"
- * Input of the stud diameter "MAIN MENU"



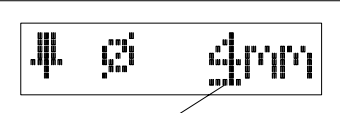
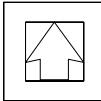
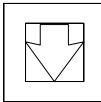
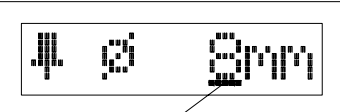

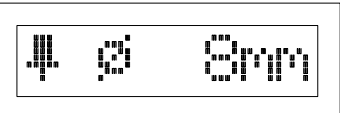

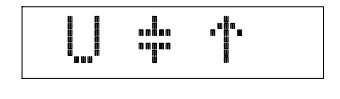
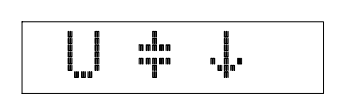
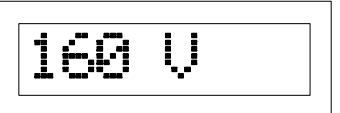
Quick menu

If you quickly want to carry out a charge in the capacitor voltage, proceed as follows:

Action	Switch	Display
Switch the welding set on. The display shows the last selected charging voltage, e.g. 100V.		
Briefly hit the "MODE" key (less than 2sec.) The CURSOR starts to blink.		 cursor blinks
Place the CURSOR with the "RIGHT ARROW" or "LEFT ARROW" key in the appropriate units: "ONES", "TENS" or "HUNDREDS" position.	 left  right	 hundreds tens ones
Set the new value at the preselected position with the "UP ARROW" or "DOWN ARROW" key. Example: change from 100V to 150V.	 up  down	
Have you set the value? Now confirm with the "ENTER" key. When a "BEEP" is sounded, the welding set has accepted the new value.		  beep
The welding capacitors are charged or discharged to the selected value.		 or 
The display shows the newly set value. The welding unit is now ready for operation.		

Main menu

If you want to determine the charging voltage of the capacitors by entering the stud diameter, proceed as follows:

Action	Switch	Display
Switch on the appliance. The display shows the last selected value, e.g. 100V.		
Press the "MODE" key at least 2sec. The display shows the last diameter		 <p>cursor blinks</p>
Set the new value with the "UP ARROW" or "DOWN ARROW" key. Example: change from 4mm to 8mm.	 up  down	 <p>cursor blinks</p>
Have you set the value? Now confirm with the "ENTER" key. When a BEEP is sounded, the appliance has accepted the new value		  beep
The processor sets the correct charging voltage for the selected diameter. During setting, the symbols appearing in the display indicate whether the charging voltage is being increased or reduced.		 or 
When the setting has been made, the value of the charging voltage appears in the display. The appliance is now ready for operation.		

Installation

This chapter describes how to set up the welding equipment.

Hinweis: *The equipment may only be installed and connected by personnel familiar with those tasks and made aware of the hazards involved.*

Setting up the stud welding equipment

Unpacking

- First remove the accompanying materials and accessories from the package. Keep the transport package in a safe place.
- Always use this original package for transporting or shipping the equipment.
- If you do not want to keep the packaging materials make sure they are disposed of in a non-polluting manner.

Setting up

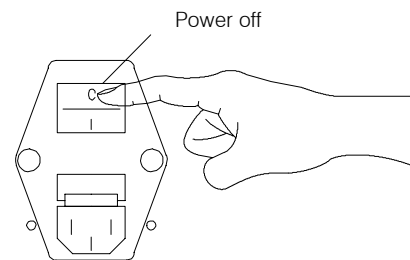
Choose a suitable location. Such location should meet the following requirements:

- sufficient distance from refrigerating sets and heat sources,
- no extreme temperature variations,
- no direct solar radiations,
- no excessive accumulation of dust, aggressive chemicals or vapours,
- ambient temperature between 10°and 40°C,
- relative humidity between 20% and 80%.

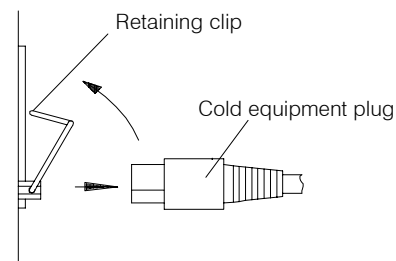
Connection

Connecting the power cable to the welding equipment

Remark: *Make sure the equipment is turned off.*

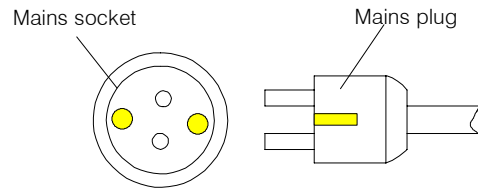


- At the back panel of the equipment, insert the cold equipment plug into the cold equipment socket. Make sure the mains voltage is correct: 110V-240V.
- Use the retaining clip to secure the cold equipment plug.



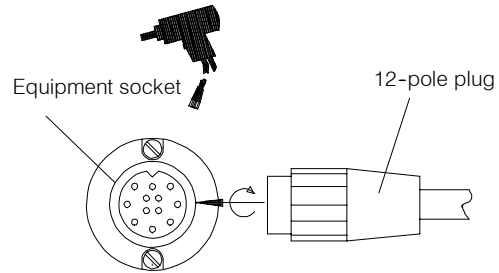
Connecting to the mains supply

Make sure the supply voltage is correct: 110V-240V 50-100Hz. The equipment automatically adjusts to your voltage setting. Insert the plug into the mains socket.

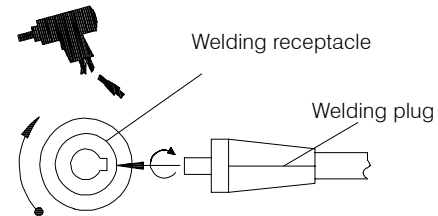


Connecting the welding head

Insert the 12-pole plug into the equipment socket. There can be no mistake about the plug contacts because the plug is protected against twisting. To secure the plug-and-socket connection turn the plug bushing clockwise until it stops.



Insert the welding cable plug of the gun into the welding socket. To secure the plug-and-socket connection firmly turn the plug clockwise until it stops.



Remark: Loose welding current connection will scorch the plug-and-socket connection. If this happens constant welding results are no longer ensured!

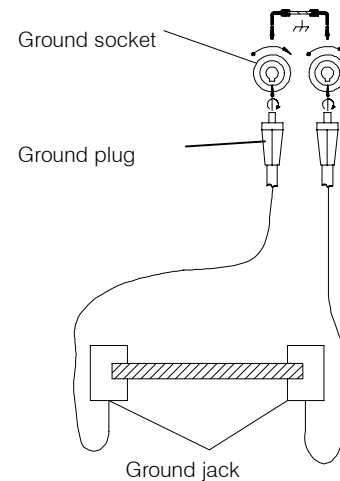
Connecting the ground cables

Insert the plugs of the ground cables into the ground sockets.

To secure the plug-and-socket connection firmly turn clockwise until it stops.

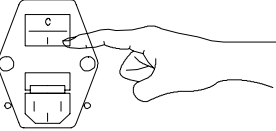
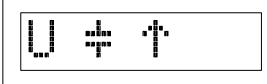

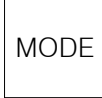



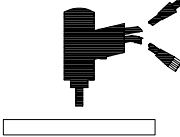



Connect the ground terminals or ground jacks to the workpiece.

Make sure that the welding cables are laid out long.



Startup

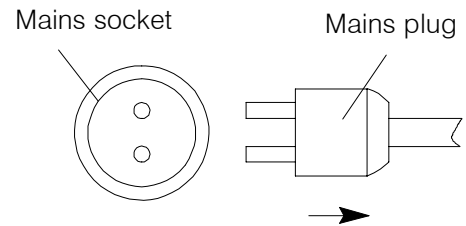
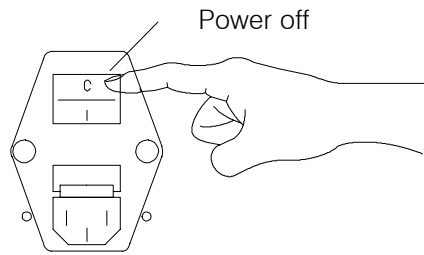
- Has the set been correctly connected?
- Has the welding gun been correctly connected?
- Have the ground cables been correctly connected?

Procedure	Function element	Display
Switch on the welding set.		
The Capacitors are automatically charged to the last selected voltage value. During the process the charging symbol appears in the display. After the charging the display shows the voltage, e.g. 100V.		 
<p>Now select your required parameters.</p> <p>a. Entering the charging voltage see "Quick menu".</p> <p>b. Entering the stud diameter see "Main menu".</p>	 	 <p>cursor blinks</p> 
To start welding, place the welding gun vertically on the workpiece. Firmly push the welding gun down. The three support feet or the support tube must lean fully on the workpiece. Trigger the welding gun steadily and without shaking. The equipment starts welding. Welding can only be started when the contact symbol appears in the display.		 <p>or</p> 
Check your welding for strength. If the strength is inadequate verify the equipment settings and make sure that the base material and the welding stud are suitable for welding.		
Refer to the appropriate operating manual for information on how to set and handle the welding gun (welding head).		

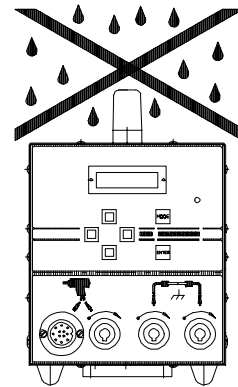
Maintenance and service



Before any maintenance work on the equipment, make sure to switch off and disconnect the mains plug from the socket.

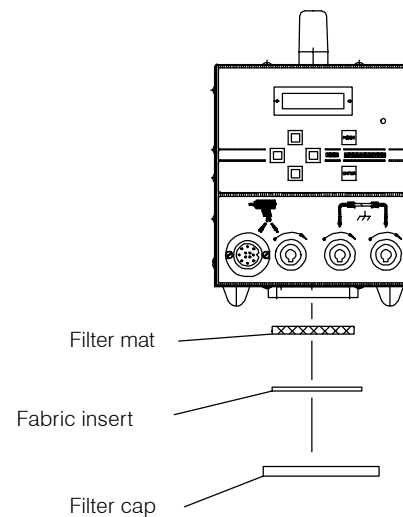


Remark: To clean the equipment do not use any liquids. Liquids might penetrate into the equipment.
DANGER OF LIFE!

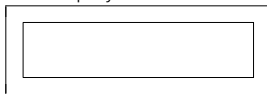
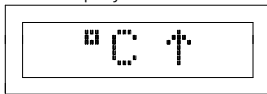
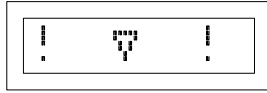


Replacing the Filter

Check the dust filter at regular intervals. Replace the dust filter when it is heavily contaminated. A heavily contaminated dust filter will affect the ventilation of the equipment. The filter is accessible from the bottom of the equipment.

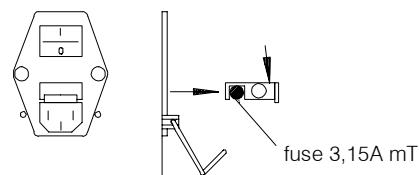
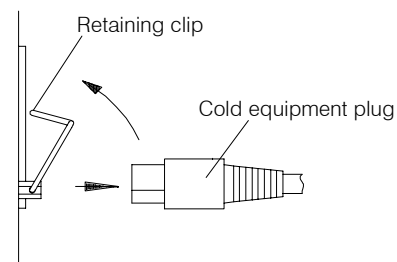


Troubleshooting

Stud welding set	Possible faults	Remedy
No display 	No mains connection.	Check mains connection.
	Mains switch set to off	Set mains switch on the back of the welding set to on.
	Fuse blow.	Check mains fuse on the back of the set. Disconnect the set from the mains. Dismount fuse carrier and replace fuse.
The display shows 	Equipment temperature too high.	Keep equipment turned on and wait a few minutes.
	Filter contaminated.	Replace filter mat.
	Defective fan.	Replace fan by service engineer.
The display shows 	Main thyristor (SCR) or controller defective:	Turn off the set. Wait a few seconds and turn on again. If the malfunction persists, turn off the set and call the OBO BETTERMANN service department or our local agents.
If none of the actions above is successful, contact our service department.		

Replacing the fuse

- Turn off the equipment.
- Disconnect the mains plug from the socket.
- Release the retaining clip and remove the cold equipment plug from the equipment socket.
- Dismount the fuse carrier and remove the blown fuse.
- Insert a new fuse (3,15 A mT).
- Reconnect the cold equipment plug to the equipment socket.
- Fasten the retaining clip.
- Insert the mains plug.
- Turn on the equipment.



Transport

The equipment is shipped using suitable means of transportation and appropriate packaging. Take care to keep the transport package in a safe place. Always use this original package when you need to carry or ship the equipment. If you do not want to keep the packaging materials make sure they are disposed of in a non-polluting manner.

Transport damages

- If you detect any transport damage please contact our distribution or shipping departments before returning the shipment.
- Never return equipment unsolicitedly.
- Make sure to keep the deadlines for reporting the damages; otherwise the carriers are no longer liable.

Package damaged		
on transport by		
Railways		Carriers
Unpack the equipment in the presence of an employee of the railways. Have the damage inspected and file an application for appraisal with the goods office.		Unpack the equipment in the presence of the driver. Have the damage attested by the driver.
Reporting deadline: 1 week		Reporting deadline: 4 days

Package o.k., contents damaged on transport		
on transport by		
Railways		Carriers
Notify the competent goods office. Have the damage inspected and file an application for appraisal.		Notify the carriers. Have the damage inspected and file an application for appraisal.
Reporting deadline: 1 week		Reporting deadline: 4 days

Spare parts

The term .spare parts. includes:

Designation	Material No.
Filter insert for stud welding equipment	
Mains connection line	37036475
Visible type fuse, 3.15A mT 5x20mm	37095358

All other repairs must be carried out by DABOTEK Trading ApS or their authorized agents.

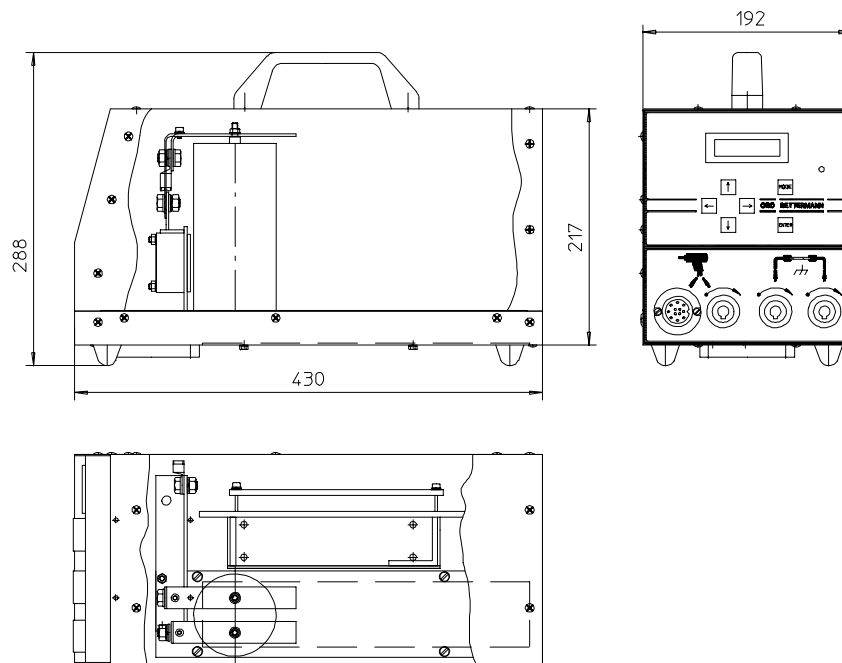
To order spare parts please use the following address:

DABOTEK Trading ApS
Birkedam 10 C
DK-6000 Kolding
Phone: +45 7930 7500
Fax: +45 7930 7505

Hinweis: We expressly point out to you that any spare parts not supplied by DABOTEK Trading ApS have not checked and released by DABOTEK Trading ApS. Therefore, the use of such spare parts from any source other than DABOTEK Trading ApS may adversely alter some constructional features of the equipment and impair its safety characteristics.

DABOTEK Trading ApS in any way be held liable or responsible for any damages caused by the use of spare parts supplied by third parties.

BS304 Welding equipment



This welding equipment incorporates microprocessor control. It automatically adapts itself to a supply voltage of 110V-240V and a supply frequency of 50Hz-100Hz. The charging time of the capacitors varies with the supply voltage and actual capacity.

Specifications:

Welding range:	Steel	M2.5-M4 (St.37)
		M2.5-M4 (1.4303)
	Non-ferrous metals	Diameter 1-4

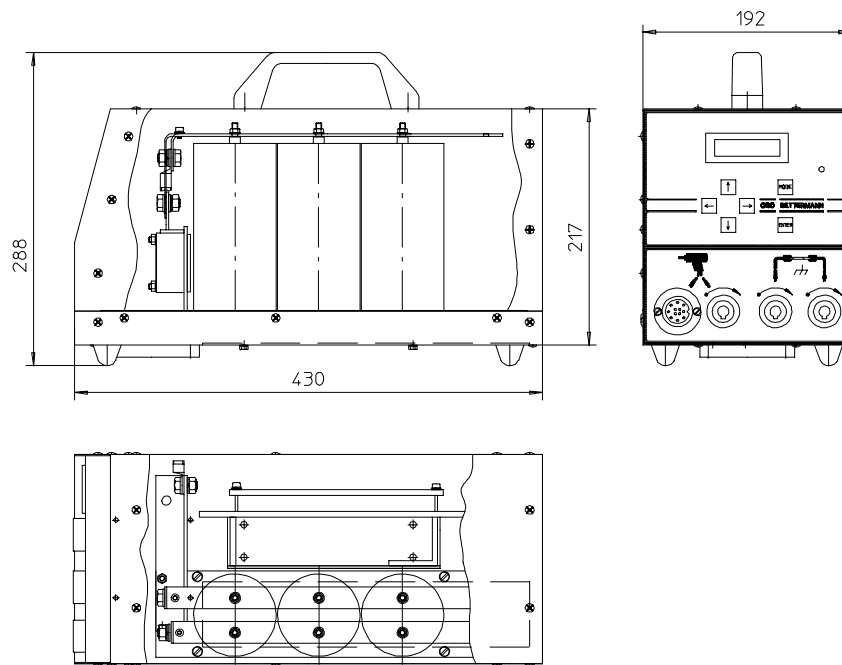
Charging voltage	Supply voltage (main voltage) U=115V	Supply voltage (main voltage) U=230V	Stud Ø	Charging voltage			
	Charging (time)	Charging (time)		Stud material			
				St. 37/3	1.4303	AlMg3	CuZn37
115 V	1.8 sec.	1.0 sec.	1 mm				70 V
125 V	2.5 sec.	1.5 sec.	2.5 mm	100 V	90 V	75 V	
150 V	3.6 sec.	2.1 sec.	3 mm	120 V	110 V	90 V	
175 V	5.0 sec.	3.0 sec.	4 mm	160 V	150 V	150 V	
200 V	7.0 sec.	4. sec.					

Capacity	22mF	Charging voltage	40 - 200V DC
Max. charging time to 200V	4 sec.		

Dimensions	DxWxH 430x192x217
Weight	9.0 Kp
Connection	110V-240V/50Hz-100Hz/500V A
System of protection	IP 21
Processor control	
Charging voltage display	digital

EMV Test according to	EN 50081-2	Technical Report	EK96/0320
	EN 50082-2		EK96/0320

BS308 Welding equipment



This welding equipment incorporates microprocessor control. It automatically adapts itself to supply voltages of 110V-240V and supply frequencies of 50Hz-100Hz. The charging time of the capacitors varies with supply voltage and actual capacity.

Specifications:

Welding range:	Steel	M3-M8 (St.37)
		M3-M6 (1.4303)
	Non-ferrous metals	M3-M6

Charging voltage	Supply voltage (main voltage) U=115V	Supply voltage (main voltage) U=230V	Stud Ø	Charging voltage		
	Charging (time)	Charging (time)		Stud material		
				St. 37/3	1.4303	AlMg3
115 V	1.8 sec.	1.0 sec.	3 mm	60 V	55 V	50 V
125 V	2.5 sec.	1.5 sec.	4 mm	80 V	80 V	80 V
150 V	3.6 sec.	2.1 sec.	5 mm	100 V	100 V	100 V
175 V	5.0 sec.	3.0 sec.	6 mm	125 V	125 V	125 V
200 V	7.0 sec.	4.0 sec.	7.1 mm	160 V		
			8 mm	160 V		

Capacity	66mF	Charging voltage	40V - 200V DC
Max. charging time to 200V	4 sec.		

Dimensions	DxWxH 430x192x217
Weight	10.0 Kp
Connection	110V-240V/50-100Hz/500V A
System of protection	IP 21
Processor control	
Charging voltage display	digital

EMV Test according to	EN 50081-2	Technical Report	EK96/0320
	EN 50082-2		EK96/0320

Appendix

EC Conformity Declaration

EMC Conformity Certificate

Herstelleradresse: DABOTEK Trading ApS
Birkedam 10C
DK-6000 Kolding

EG-Konformitätserklärung

Produkt: Bolzenschweißgerät
Typ BS 304 Best.-Nr. 4003470
Typ BS 306 Best.-Nr. 4003608
Typ BS 308 Best.-Nr. 4003500
Typ BS 310 Best.-Nr. 4003624

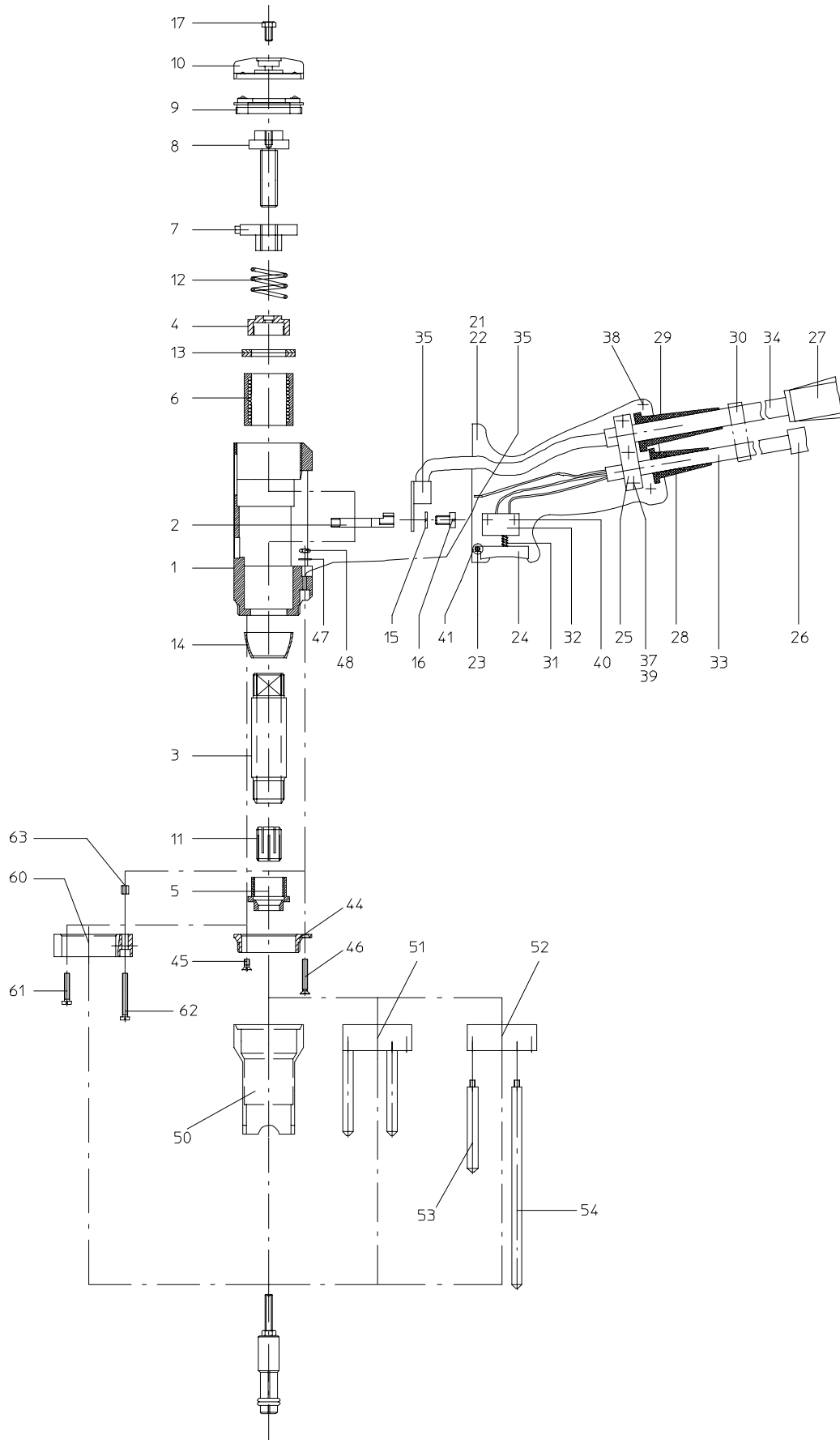
Die oben genannten Produkte erfüllen die Bestimmungen der
EMV-Richtlinie 89/336/EWG
und der Niederspannungsrichtlinie 73/23/EWG

EMV-Richtlinie 89/336/EWG: EN 50081-2 Störaussendung
EN 50082-2 Störfestigkeit

Niederspannungsrichtlinie 73/23/EWG: EN 60974-1 Sicherheitsanforderungen
Kolding, den

BLT-Technical Service Departmen.- Ltg. BSS

Einzelteile HP-TSK310

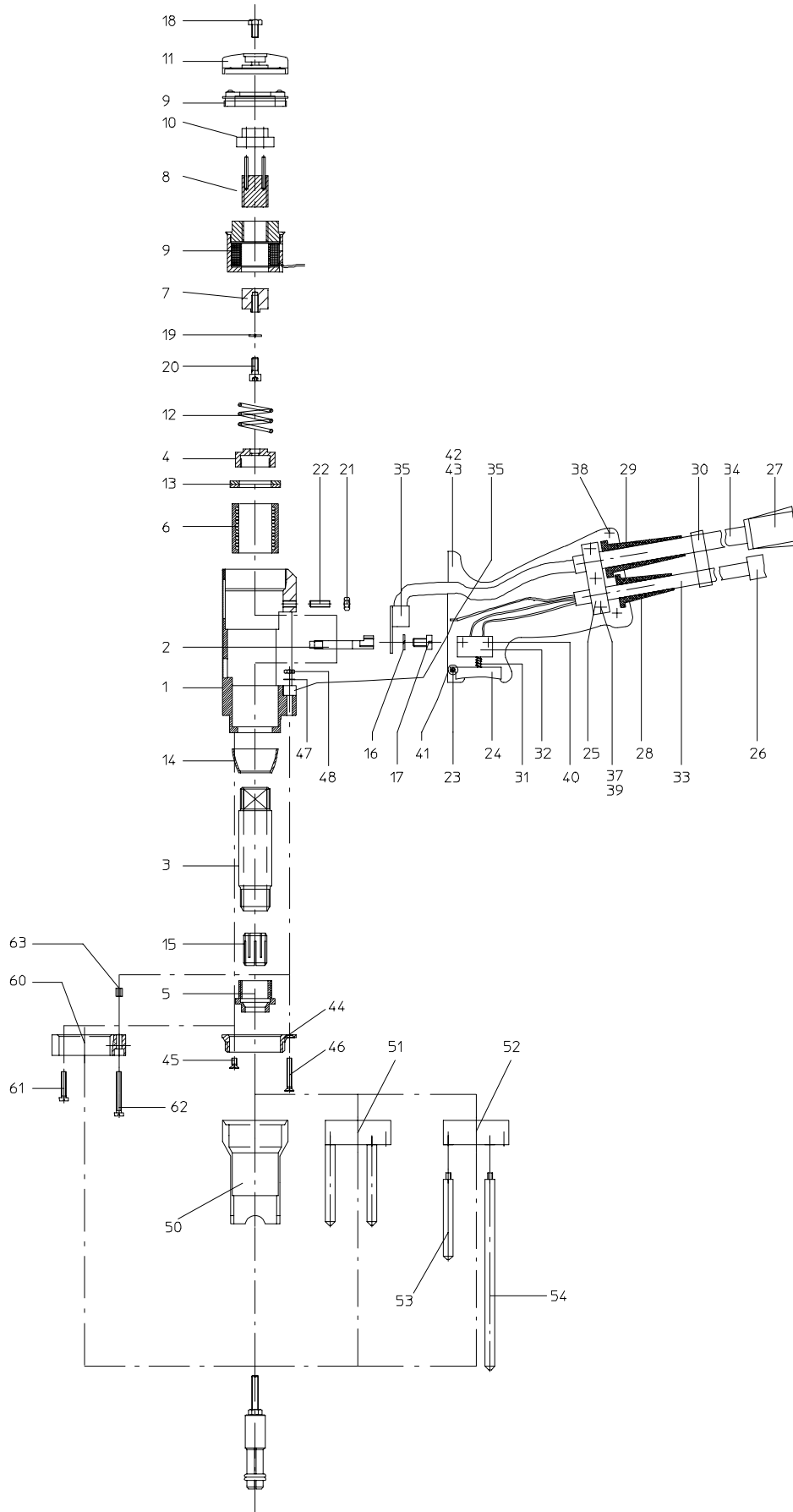


Teile Nummern

Pos.	Benennung	Z.-Nr:	Mat.-Nr:	Best.-Nr:
	Grundkörper			
1	Gehäuse	4000706-1001	37050672	F4112008
2	Kontaktstück	4000706-1002	07000022	F4002709
3	Welle mit Anschlag	4000706-1003 + 4001478-122-4	08811024 (37050737)	F4000676
4	Kontaktmutter	4000706-1004	07000049	F4002717
5	Spannmutter	4000706-1005	37047434	F4112016
6	Lager		37048155	F4112024
7	Stellstück mit Anzeigestift	4000706-1007 4000706-1011	37009559	F4112059
8	Stellschraube	4000706-1008	37009540	F4112067
9	Verschlußmutter mit 2 Druckstücken	4000706-1009	37028340	F4112083
10	Verstellknopf	4000706-1010	37023667	F4112091
11	Spannhülse	4001478-113-4	37050745	F4112113
12	Druckfeder D-245 Fa.Gutekunst		37047655	F4112245
13	Nordlockscheibe D18		37028308	F4112253
14	Schutzkappe	HP 308-01-14/4	37046004	F4112180
15	Federring M5 DIN 128-B5		F3405052	F3405052
16	Zylinderschraube DIN 84-M5x8		35011114	F
17	SK-Schraube DIN 933-M4x10			F
18				
19				
	Griff			
21	Griffhälfte Rechts	HP 308-01-01/2	37006355	F4019504
22	Griffhälfte Links	HP 308-01-02/2	37006347	F4019512
23	Bolzen	HP 308-01-04/4	37013009	F
24	Auslöser	HP 308-01-03/4	37006428	F4021649
25	Zugentlastungsschelle	HP 308-02-03/4	37013017	F4021703
26	Kabelstecker 12polig		37052640	F4112202
27	Schweißkabelstecker		37005669	F4112210
28	Steuerkabeltülle		37006568	F4021495
29	Kabeltülle	HP 308-02-04/4	37006614	F
30	OBO Bandschelle		F2330202	F2330202
31	Druckfeder		37006274	F4021622
32	Mikroschalter		37006576	F4019555
33	Datenleitung Länge 3,1m		37017373	F4112121

Pos.	Benennung	Z.-Nr:	Mat.-Nr:	Best.-Nr:
34	Schweißkabel Länge 3,13m		37007300	F4021460
35	Kabelschuh M3		37044990	F
36	Kabelschuh M5		37044982	F
37	Federring DIN 128-B4		F3405044	F
38	Zylinderschraube DIN 912-M3x10		35000961	F
39	Zylinderschraube DIN 84-M4x6		35000279	F
40	Blechschraube DIN 7971-B2,2x9,5		35050217	F
41	Sicherungsring DIN 6799-2,3		35002603	F4022149
42				
43				
	Anschluß			
44	Gewindeanschluß	4000706-0009	37028332	F4112156
45	Senkschraube DIN 963-M3x6		35000015	F
46	Senkschraube DIN 963-M3x20		35000325	F
47	Federring M3 DIN 128-A3		F3405036	F
48	Mutter M3 DIN 934-M3		35010002	F
49				
	Aufsätze			
50	Stützrohr	4000706-0004	37028618	F4019792
51	Aufsatz mit Stützfüßen	4019938-0000		F4019938
52	Aufsatz	4000714-0004	37028243	F4019369
53	Stützfuß		37028251	F4019946
54	Stützfuß lang 116mm	4000714-0007	37028278	F4019954
55				
56				
	USA			
60	Kopfplatte USA	4000692-0009	37028316	F4020537
61	Zylinderschraube DIN 84-M3x16		35000236	F
62	Zylinderschraube DIN 84-M3*25		35000252	F
63	Gewindeeinsatz M3		37049488	F
64				
	Zubehör			
70	Steckschlüssel SW 17		37007297	F4112172

Parts of HP-TSG 310



Pos.	Benennung	Z.-Nr:	Mat.-Nr:	Best.-Nr:
	Grundkörper			
1	Boddy	4000706-1001	37050672	F4112008
2	Contact piece	4000706-1002	07000022	F4002709
3	Guide shaft with stop	4000706-1003 + 4001478-122-4	08811024 (37050737)	F4000676
4	Lock nut	4000706-1004	07000049	F4002717
5	Clamping nut	4000706-1005		F4112016
6	Ball bushing		37048155	F4112024
7	Anker	4002806-1007		
8	Adjusting screw	4002806-1008		
9	Ring nut	4000706-1009	37028340	F4112083
10	Solonid complete Coil	4002806-1009 4002806-1010	37034901	
11	Adjusting knob	4000706-1010	37023667	F4112091
12	Spring D-207K-01 Fa.Gutekunst		37047671	F
13	Nordlock wsaher D18		37028308	F4112253
14	Protection cape	HP 308-01-14/4	37046004	F4112180
15	Spannhülse	4001478-113-4	37050745	F4112113
16	Lock washer M5 DIN 128-B5		F3405052	
17	Screw DIN 84-M5x8		35011114	
18	Screw DIN 933-M4x10			
19	Lock washer M4 DIN 127-A4			
20	Srew DIN 912-M4x10			
21	Nut DIN 934-M4			
22	Wormgear DIN 913-M4x12			
	Handgrip			
23	Pin	HP 308-01-04/4	37013009	
24	Trigger	HP 308-01-03/4	37006428	F4021649
25	Clamping part	HP 308-02-03/4	37013017	F4021703
26	Plug 12 pin		37052640	F4112202
27	Welding plug		37005669	F4112210
28	Cable protector		37006568	F4021495
29	Cable protector	HP 308-02-04/4	37006614	
30	OBO Bandschelle		F2330202	F2330202
31	Spring		37006274	F4021622
32	Micro switch		37006576	F4019555
33	Control cable Länge 3,1m		37017373	F4112121

Pos.	Benennung	Z.-Nr:	Mat.-Nr:	Best.-Nr:
34	Welding cable Länge 3,13m		37007300	F4021460
35	Cable connector M3		37044990	F
36	Cable connector M5		37044982	F
37	Lock washer DIN 128-B4		F3405044	F
38	Screw DIN 912-M3x10		35000961	F
39	Screw DIN 84-M4x6		35000279	F
40	Screw DIN 7971-B2,2x9,5		35050217	F
41	Lock washer DIN 6799-2,3		35002603	F4022149
42	Griffhälfte Rechts	HP 308-01-01/2	37006355	F4019504
43	Griffhälfte Links	HP 308-01-02/2	37006347	F4019512
	Anschluß			
44	Gewindeanschluß	4000706-0009	37028332	F4112156
45	Screw DIN 963-M3x6		35000015	F
46	Screw DIN 963-M3x20		35000325	F
47	Loch washer M3 DIN 128-A3		F3405036	F
48	Nut M3 DIN 934-M3		35010002	F
49				
50	Tube	4000706-0004	37028618	F4019792
51	Ring with foot	4019938-0000		F4019938
52	Ring	4000714-0004	37028243	F4019369
53	Foot		37028251	F4019946
54	Foot long 116mm	4000714-0007	37028278	F4019954
55				
56				
57				
58				
59				
	USA-type			
60	Head plate USA	4000692-0009	37028316	F4020537
61	Screw DIN 84-M3*25		35000236	F
62	Screw DIN 84-M3*25		35000252	F
63			37049488	F
64				
	Equipment			
70	Steckschlüssel SW 17		37007297	F4112172