

DABOTEK ApS

OPERATING MANUAL FOR
BS1XX and BS2XX RANGE -
COMPACT CAPACITOR DISCHARGE
STUDWELDING EQUIPMENT
MODELS BS108, BS110, BS112 &
BS208, BS210, BS212



VERSION : 2C

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GENERAL INFORMATION



MANUFACTURERS DETAILS

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PURPOSE AND CONTENT OF THIS MANUAL

This manual has been written for :

-  The operator of the welding machine.
-  The personnel of the final customer responsible for the installation and operation of the machine.

This manual contains information on :

-  Installation and connection
-  Operation.
-  Technical data.
-  Spare parts.
-  Accessories.

GENERAL INFORMATION

FURTHER INFORMATION

Should you require additional technical information, please contact us directly (details on page 1) or our local agent / distributor (details of agents etc. can be obtained from us).

This manual contains important information which is a pre-requisite for safe operation of the equipment. The operating personnel must be able to consult this manual. In the interests of safety, make this manual available to your personnel in good time.

If the equipment is sold / passed on, please hand over this manual to the new owner. Please immediately inform us of the name and address of the new owner, in case we need to contact him regarding the safety of the device.



Please read this manual carefully before installation of the machine.



Please especially observe the safety instructions.

INTRODUCTION

INTRODUCTION

The complete range of DABOTEK ApS Capacitor Discharge units are compact, portable Stud Welding equipment's. The units are specifically designed to enable a small diameter range of ferrous and non-ferrous weld studs to be welded to light gauge, self-finish or pre-coated materials, in most cases with little or no reverse marking.

The equipment consists of a control unit, a welding pistol and the necessary interconnecting cables and accessories (see page 4 for the equipment schedule).

THE PROCESS

Capacitor Discharge stud welding is a form of welding in which the energy required for the welding process is derived from a bank of charged capacitors. This stored energy is discharged across the gap between the two surfaces to be welded as they are propelled towards each other. The arc produced heats the two surfaces, melting a thin film of metal on each surface and the propelling force closes the gap between the two faces, thus forming a weld.

In contact welding the stud to be welded is forced by spring pressure on to the plate. At this point the arc gap between the two components is maintained by a small pip on the welding face of the stud. On initiation of the high current pulse from the capacitors, this pip vaporises and an arc is drawn between the work piece and the stud. The heat from this arc melts the base of the stud and the area of the work piece directly beneath the stud, whilst the spring pressure from the pistol accelerates the towards the work piece. Within 3 to 4 milliseconds the stud hits the work piece and the arc is extinguished. The kinetic energy contained in the moving stud and the remaining spring pressure, forge the molten parts together to form

EQUIPMENT SCHEDULE

EQUIPMENT

No. OFF	DESCRIPTION	PART No.
1	SYSTEM BS108 CONTACT COMPLETE WITH CONTACT PISTOL & EARTH CABLE ASSEMBLY	SDTBS108-CDK1
or	SYSTEM BS110 CONTACT COMPLETE WITH CONTACT PISTOL & EARTH CABLE ASSEMBLY	SDTBS110-CDK1
or	SYSTEM BS112 CONTACT COMPLETE WITH CONTACT PISTOL & EARTH CABLE ASSEMBLY	SDTBS110-CDK1

ACCESSORIES (SUPPLIED WITH EQUIPMENT)

No. OFF	DESCRIPTION	PART No.
1	CHUCK KEY	79-101-111
1	CD CONTACT PISTOL	99-100-020
or	CD LIFT GAP PISTOL	99-100-023
2	EARTH CABLE ASSEMBLY	99-100-125

ACCESSORIES (NOT SUPPLIED WITH EQUIPMENT)

See pages 36 to 42 of this manual for a selection of accessories available from either your local stockist or the manufacturer.

EXTERNAL FEATURES

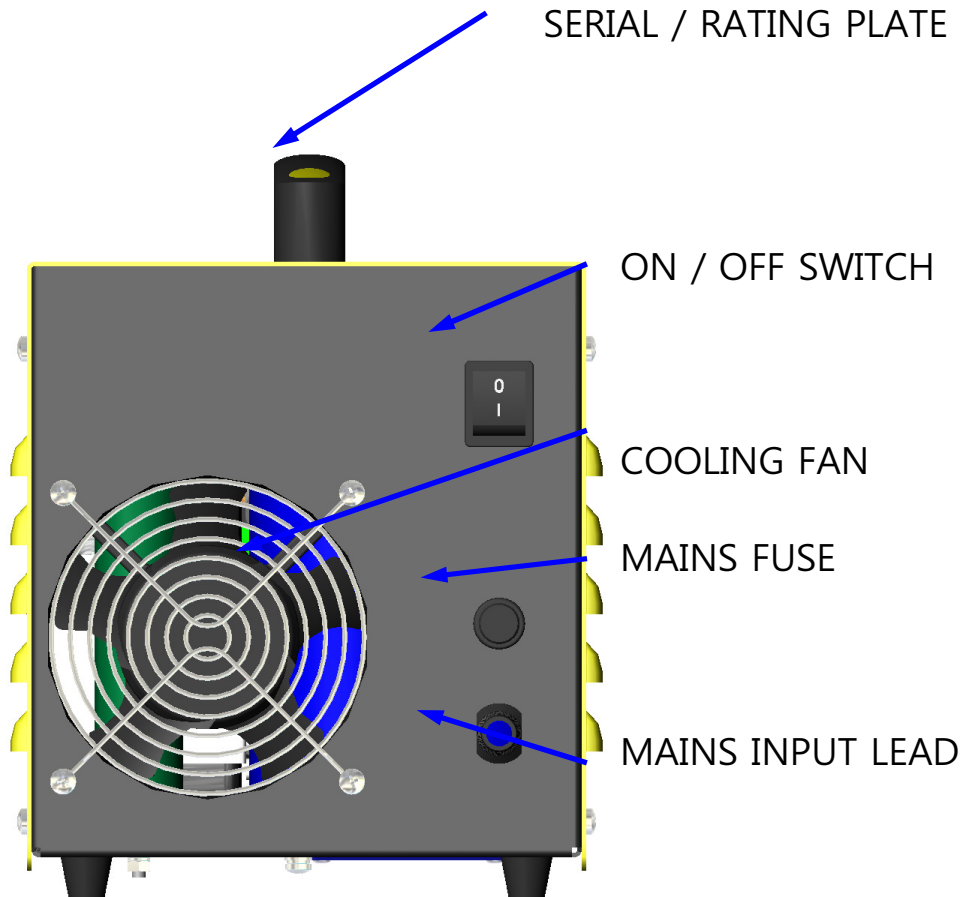
FRONT PANEL

- 1 Welding voltage selector knob
- 2 Welding voltage digital display.
- 3 Charging (Yellow) - Indicates that the unit is in the process of charging the capacitors to the pre-selected voltage.
- 4 Ready (Green) - Indicates that the capacitor bank is charged to the pre-selected value and is ready to weld.
- 5 Reset (Red) - Indicates that the unit safety circuit has tripped. To reset the unit, switch off the mains switch, wait between 5 and 30 seconds then switch back on.
- 6 Welding Earth panel connections
- 7 Welding pistol control socket.
- 8 Welding pistol panel connection



EXTERNAL FEATURES

REAR PANEL



IMPORTANT NOTES !



Due to the power requirements and Electromagnetic emissions produced during normal use, this machine must only be operated in an industrial environment.



This machine is set up to operate on either 115 Volts AC, or 230 Volts AC. Check the serial plate before plugging into the correct supply.



Never obstruct the ventral or rear panel ventilation holes as this may cause the unit to overheat during operation.



Never remove any portion of the unit housing without first isolating the unit from the mains electrical supply.

SAFETY

PROTECT YOURSELF AND OTHERS !

Read and understand these safety notices.

1. ELECTRICAL

No portion of the outer cover of the welding controller should be removed by anyone other than suitably qualified personnel and never whilst mains power is connected. ALWAYS disconnect the mains plug from the socket.



RISK TO LIFE !!!

BE AWARE ! This equipment contains a sealed power supply module which operates on high frequency inverter principles. Due to the potentially fatal voltages in this module we do not recommend tampering with the module. It can be safely removed and replaced via our factory exchange system.

BE AWARE ! Capacitors store electrical energy. Check for residual charge before carrying out any internal maintenance.

DO NOT ! Use any fluids to clean electrical components as these may penetrate into the electrical system

Installation must be according to the setting up procedure detailed on page 10 of this manual and must be in line with national, regional and local safety codes.

2. FIRE

During welding small particles of very hot metal are expelled. Ensure that no combustible materials can be ignited by these.

SAFETY

3. PERSONNEL SAFETY

Arc rays can burn your eyes and skin and noise can damage your hearing.

Operators and personnel working in close proximity must wear suitable eye, ear and body protection.

Fumes and gases can seriously harm your health. Use the equipment only in a suitably ventilated area. If ventilation is inadequate, then appropriate fume extraction equipment must be used.

Hot metal spatter can cause fire and burns. Appropriate clothing must be worn.

Clothing made from, or soiled with, combustible materials must NOT be worn. Have a fire extinguisher nearby and know how to use it.

Magnetic fields from high currents can affect heart pacemakers or other

electronically controlled medical devices. It is imperative that all personnel likely to come into the vicinity of any welding plant are warned of the possible RISK TO LIFE before entering the area.

4. MAINTENANCE

All cables must be inspected regularly to ensure that no danger exists from worn or damaged insulation or from unsound electrical connections. Special note should be made of the cables close to the pistol, where maximum wear occurs.

As well as producing inconsistent welds, worn cables can overheat or spark, giving rise to the risk of fire.

5. TRAINING

Use of the equipment must be limited to authorised personnel only who must be suitably trained and must have read and understood this manual. This manual must be made available to all operators at

SAFETY

6. INSTALLATION

Ensure that the site chosen for the equipment is able to support the weight of the equipment and that it will not fall or cause a danger in the course of its normal operation. Do not hang connecting cables over sharp edges and do not install connecting cables near heat sources or via traffic routes where people may trip over them or they may be damaged by the passage of vehicles (forklifts etc.).

7. INTERFERENCE

During welding operations, intense magnetic and electrical fields are unavoidably produced which may interfere with other sensitive Electronic equipment.

All DABOTEK ApS. Studwelding equipment is designed, manufactured and tested to conform the current appropriate European standards and directives regarding electromagnetic emissions and immunity and as such is safe to use in any normal environment

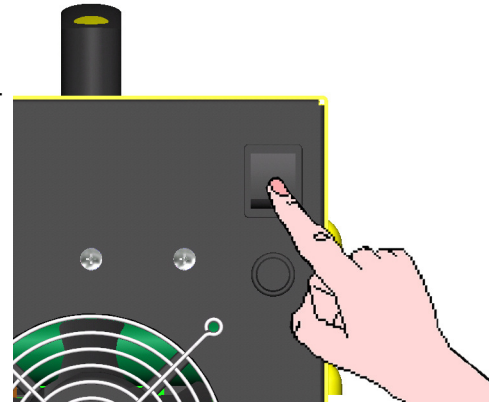
8. DISPOSAL

The equipment either wholly or any of its component parts may be disposed of as part of general industrial waste or passed to a scrap merchant. Non of the components used in the manufacture are toxic, carcinogenic or harmful to health.

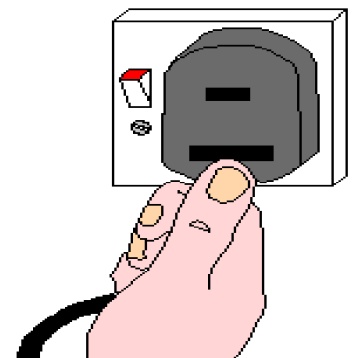
SETTING UP & WELDING

SETTING UP & WELDING

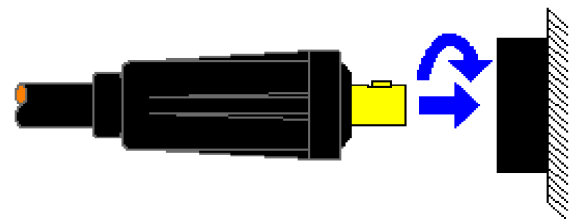
Set up the control unit at the place of work, ensuring that the mains switch is in the OFF position. Ensure that this is done in line with the notes and safety recommendations on pages 7 through 9 of this manual.



Plug the controller into the correct mains AC supply. The controller is rated for either 230V or 115V, check the rating plate and ensure that the controller is plugged into the correct supply before turning the power on.

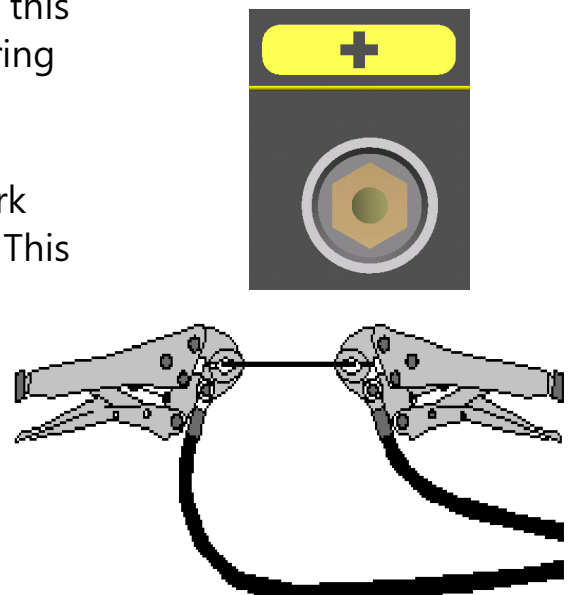


Connect the welding earth cables to the controller socket marked +-
Note that the cable end plug has a peg which mates with a key slot in the panel mounted socket.



IMPORTANT ! Secure the connectors with a clockwise turn until they lock. Failure to do this will result in damage to the connectors during welding.

Attach the welding earth clamps to the work piece at approximately 180° to each other. This will help to prevent "Arc blow" when welding takes place. Prior to fitting the clamps, ensure that the contact area of the work piece is free from rust, paint, grease etc. As this will result in a poor welding connection and poor results.

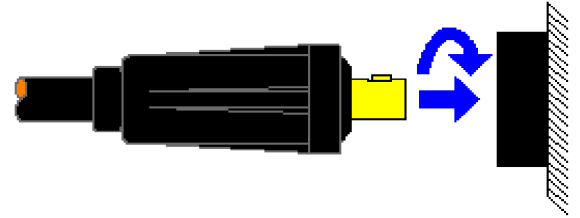


SETTING UP & WELDING

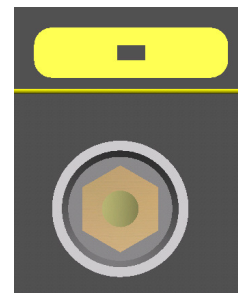
SETTING UP & WELDING

Connect the welding pistol cable to the controller socket marked -.

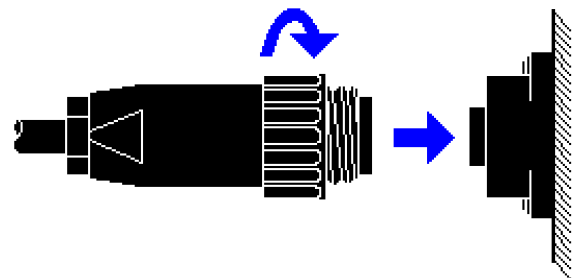
Note that the cable end plug has a peg which mates with a key slot in the panel mounted socket.



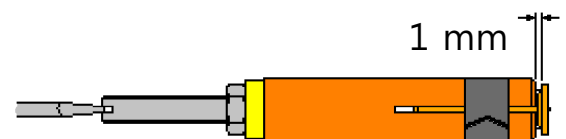
IMPORTANT ! Secure the connector with a clockwise turn until it locks. Failure to do this will result in damage to the connector during welding.



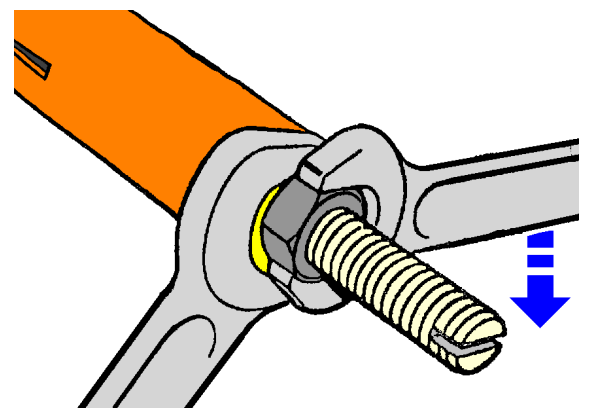
Connect the welding pistol control cable to the controller. Note that the cable end plug and panel mounting socket are keyed to prevent incorrect fitting. Push the plug firmly home and twist the locking ring clockwise to secure the plug in position.



Select the required weld stud on the basis of diameter, length and material. See our separate catalogue entitled "Capacitor Discharge Stock list" which is available on request from your local sales representative.



Select the required CD chuck for the chosen weld stud and set the stud protrusion to the dimension shown in the accompanying diagram by adjusting the backstop screw as shown.



SETTING UP & WELDING

SETTING UP & WELDING

After setting the chuck, insert it into the pistol chuck holder and push firmly home until it comes to a rest.



Tighten the chuck locking nut with the box spanner provided. A gentle pressure is all that is required. Over tightening may result in damage to your pistol.



SETTING THE PISTOL

STANDARD CONTACT PISTOL—CDK1

Set the pistol spring preload to the appropriate setting for the welding task to be performed. (See the tables on pages 16 - 22).



STANDARD LIFT GAP PISTOL—CDH1

Set the pistol lift to the appropriate setting for the welding to be performed (See the tables on pages 16 - 22).

(This works only for BS2XX series.)

This is achieved by placing the pistol in the welding position thereby pushing the tip of the weld stud back level with the end of the tripod legs / nosecone.

Whilst the pistol is being held firmly in this position twist the rear end cap of the pistol clockwise until the motion becomes stiff.



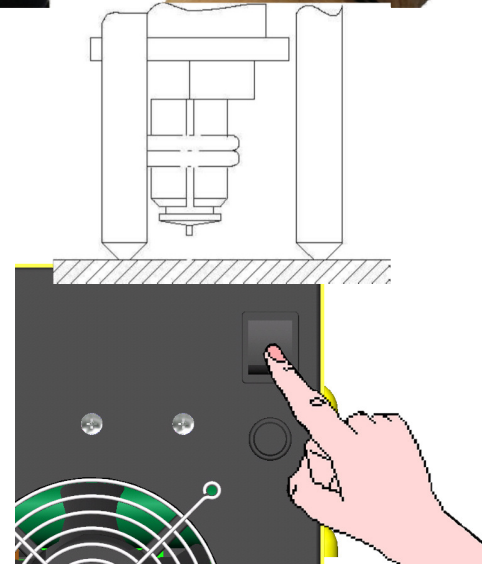
SETTING UP & WELDING

SETTING UP & WELDING

SETTING THE PISTOL (CDH1) LIFT GAP PISTOL (CONTINUED)

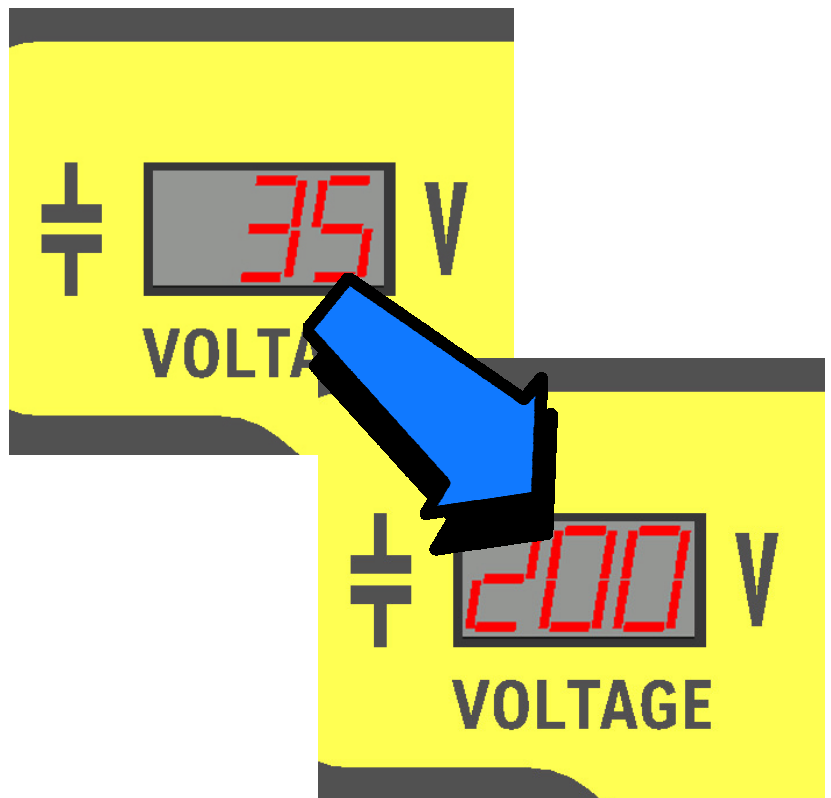
It is at this point that further twisting of the end cap begins to lift the tripod legs/nosecone away from the plate.

The pistol is now in the zero lift position and twisting the rear end cap anti-clockwise by one "click" at a time will increase the lift by 0.25 mm increments (see the tables on pages 16 - 22 for suggested settings).



Switch the controller ON.

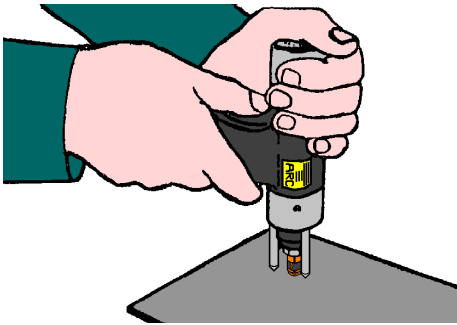
Select the required welding voltage by turning the selector knob. The voltage is adjustable between 35 and 200 volts in 1 volt steps.



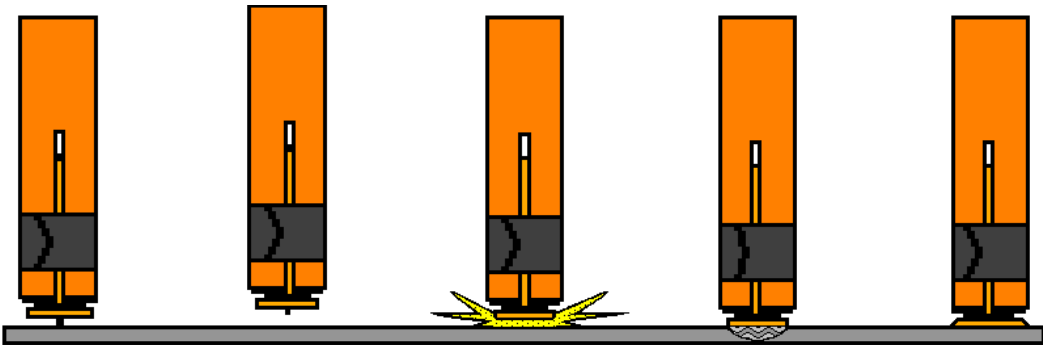
SETTING UP & WELDING

SETTING UP & WELDING

Place the pistol perpendicular to the work piece with the stud touching down at the desired location to be welded. Press down on the pistol until the legs come firmly into contact with the work piece. Press the trigger.

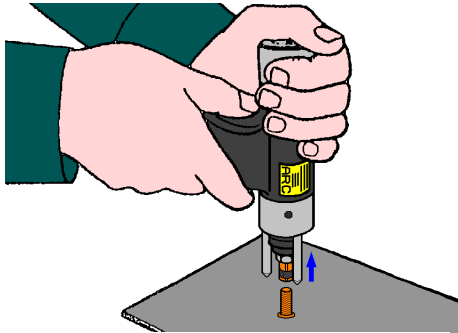


The welding process is as follows :-

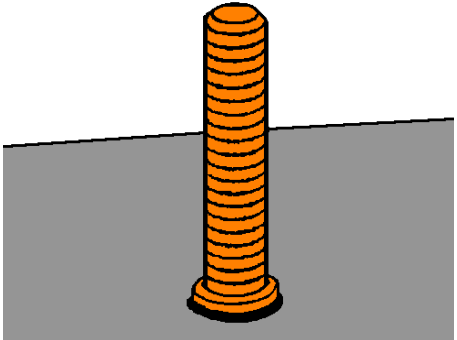


	INITIAL PRES-SURE	LIFT & RELEASE	STRIKE ARC	FUSION & IM-MERSION	COMPLETED WELD
LIFT GAP PROCESS, TIME TAKEN (s)	0.000	0.0005	0.001	0.0015	0.002
CONTACT PROCESS, TIME TAKEN (s)	0.000	⇒	0.001	0.002	0.003

Always lift the welding pistol vertically from the welded stud. Failure to do this may cause the tines of the chuck to splay outwards, which will result in the chuck and stud arcing together during subsequent welds.



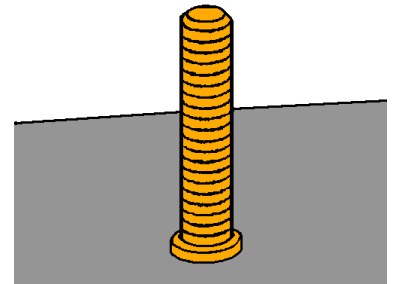
Visually inspect the weld. A good weld will result in an all round weld with a small visible witness of spatter surrounding the flange of the stud.



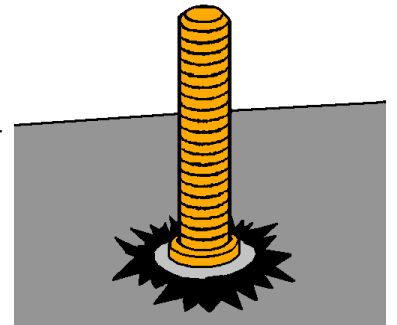
SETTING UP & WELDING

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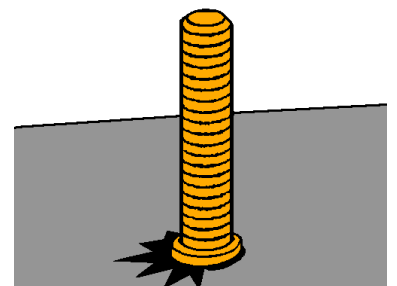
A cold stud weld is noticeable by undercutting of the flange and lack of / minimal formation of spatter. A cold weld is usually caused by too little energy and / or too high spring pressure.



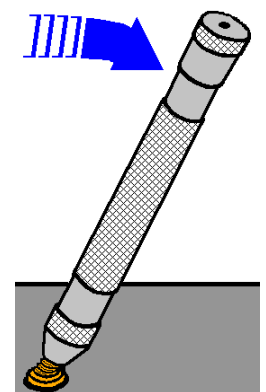
A hot stud weld is noticeable by excessive spatter formation and partial melting of the flange. A hot weld is usually by too much energy and / or too little spring pressure.



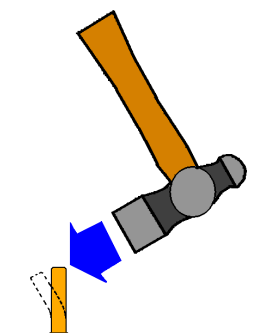
A one sided stud weld (arc blow) is usually caused by incorrect earthing of the work piece. This may be corrected by placing the welding earths opposite each other across the area where the weld is to occur.



Finished studs may be subjected to a bending test to ascertain the strength of the weld. This may be achieved by placing a bending bar assembly, fitted with the correct nozzle, over the stud and bending the stud through 30° and then back to the vertical. This test follows the specification of DVS 0905 part 2.



A simpler test may be achieved by bending the stud over 30° using a hide mallet.



WELD SETTINGS

The following pages (17 to 22) detail the suggested settings for the following models:

BSXX8, BSX10 & BSX12 both Contact & Lift Gap

The setting charts were established with the performance of repetitive weld tests using the standard equipment's specified above, studs manufactured to the BS EN ISO 13918 standard, in the following materials :

Mild Steel, Grade St37-3

Stainless Steel, Grade 1.4303

Aluminium Alloy, Grade AlMg3

and sheet materials of the following types :

1.6 mm Thick, Mild Steel, Grade CR4

1.6 mm Thick, Stainless Steel, Type S304

1 mm Thick, ZINTEC Coated Mild Steel, Grade CR4

1.6 mm Thick, Aluminium Alloy, Grade HE3, Half Hard

The settings are given only as a general guide and it is recommended that sample welds be carried out on your own material, as quality of materials and site conditions may vary from user to user.

WELD SETTINGS BS108 & BS208

STUD DIAMETER	<u>BS108 M8 CONTACT</u>			<u>BS208 M8 GAP</u>		
	STUD MATERIAL	SHEET MATERIAL	VOLTAGE SETTING	SPRING SETTING	VOLTAGE SETTING	LIFT SETTING
M2.5	St37-3	CR4	60	8½	65	2½
		S304	60	8½	65	2½
		ZINTEC	80	8½	90	2
M3	St37-3	CR4	75	8½	80	2½
		S304	75	8½	80	2½
		ZINTEC	100	8½	110	2
	1.4303	CR4	75	8½	80	2½
		S304	75	8½	80	2½
		ZINTEC	100	8½	110	2
	AlMg3	HE3	80	10½	90	3
M4	St37-3	CR4	85	8½	90	2½
		S304	85	8½	90	2½
		ZINTEC	120	8½	130	2
	1.4303	CR4	90	8½	95	2½
		S304	90	8½	95	2½
		ZINTEC	120	8½	130	2
	AlMg3	HE3	90	10½	100	3
M5	St37-3	CR4	105	8½	110	2½
		S304	105	8½	110	2½
		ZINTEC	135	8½	145	2
	1.4303	CR4	110	8½	115	2½
		S304	110	8½	115	2½
		ZINTEC	135	8½	145	2
	AlMg3	HE3	105	10½	110	3

WELD SETTINGS BS108 & BS208

BS108 CONTACT

BS208 GAP

STUD DIAMETER	STUD MATERIAL	SHEET MATERIAL	VOLTAGE SETTING	SPRING SETTING	VOLTAGE SETTING	LIFT SETTING	
M6	St37-3	CR4	125	8½	135	2½	
		S304	125	8½	135	2½	
		ZINTEC	160	8½	175	2	
	1.4303	CR4	135	8½	145	2½	
		S304	135	8½	145	2½	
		ZINTEC	175	8½	180	2	
	AlMg3	HE3	180	10	135	4	
	M8	St37-3	CR4	180	8½		
			S304	180	8½		
ZINTEC			200	8½			
1.4303		CR4	190	8½			
		S304	190	8½			
		ZINTEC	200	8½			
AlMg3		HE3			195	4	
M10		St37-3	CR4				
			S304				
	ZINTEC						
EARTH TAG	St37-3	CR4	90	8½	85	2½	
		S304	95	8½	95	2½	
		ZINTEC					
	AlMg3	HE3	80	9½	80	3	
LARGE BRACKET	St37-3	CR4	110	8½	130	2½	
		S304	130	8½	135	2½	
		ZINTEC					

WELD SETTINGS BS110 & BS210

STUD DIAMETER	<u>BS110 CONTACT</u>			<u>BS210 GAP</u>		
	STUD MATERIAL	SHEET MATERIAL	VOLTAGE SETTING	SPRING SETTING	VOLTAGE SETTING	LIFT SETTING
M2.5	St37-3	CR4	40	8½	45	2½
		S304	40	8½	45	2½
		ZINTEC	60	8½	70	2
M3	St37-3	CR4	45	8½	50	2½
		S304	45	8½	50	2½
		ZINTEC	75	8½	85	2
	1.4303	CR4	45	8½	50	2½
		S304	45	8½	50	2½
		ZINTEC	90	8½	100	2
	AlMg3	HE3	50	8½	55	3
M4	St37-3	CR4	60	8½	65	2½
		S304	60	8½	65	2½
		ZINTEC	100	8½	110	2
	1.4303	CR4	60	8½	65	2½
		S304	60	8½	65	2½
		ZINTEC	100	8½	110	2
		AlMg3	HE3	65	10½	70
M5	St37-3	CR4	75	8½	90	2½
		S304	75	8½	90	2½
		ZINTEC	110	8½	125	2
	1.4303	CR4	85	8½	95	2½
		S304	85	8½	95	2½
		ZINTEC	110	8½	125	2
	AlMg3	HE3	80	10½	90	3

WELD SETTINGS BS110 & BS210

BS110 CONTACT

BS210 GAP

STUD DIAMETER	STUD MATERIAL	SHEET MATERIAL	VOLTAGE SETTING	SPRING SETTING	VOLTAGE SETTING	LIFT SETTING	
M6	St37-3	CR4	90	8½	120	2½	
		S304	90	8½	120	2½	
		ZINTEC	140	8½	160	2	
	1.4303	CR4	110	8½	120	2½	
		S304	110	8½	120	2½	
		ZINTEC	140	8½	160	2	
	AlMg3	HE3	120	12	140	4	
	M8	St37-3	CR4	130	8½	175	2½
			S304	130	8½	175	2½
ZINTEC			180	8½			
1.4303		CR4	160	8½			
		S304	160	8½			
		ZINTEC	180	8½			
AlMg3		HE3	150	12	190	4	
M10		St37-3	CR4	185	8½		
			S304	200	8½		
	ZINTEC		200	8½			
EARTH TAG	St37-3	CR4	80	8½	70	2½	
		S304	80	8½	70	2½	
		ZINTEC	95	8½	85	2½	
	AlMg3	HE3	85	12½	75	3	
LARGE BRACKET	St37-3	CR4	95	8½	85	2½	
		S304	95	8½	85	2½	
		ZINTEC	110	8½	95	2½	

WELD SETTINGS BS112 & BS212

STUD DIAMETER	STUD MATERIAL	SHEET MATERIAL	<u>BS112 CONTACT</u>		<u>BS212 GAP</u>			
			VOLTAGE SETTING	SPRING SETTING	VOLTAGE SETTING	LIFT SETTING		
M2.5	St37-3	CR4	25	8½	25	2½		
		S304	25	8½	25	2½		
		ZINTEC	40	8½	50	2		
M3	St37-3	CR4	25	8½	30	2½		
		S304	25	8½	30	2½		
		ZINTEC	55	8½	65	2		
	1.4303	CR4	25	8½	30	2½		
		S304	25	8½	30	2½		
		ZINTEC	70	8½	80	2		
	AlMg3	HE3	30	12½	35	3		
		M4	St37-3	CR4	40	8½	45	2½
				S304	40	8½	45	2½
ZINTEC	80			8½	90	2		
	1.4303	CR4	40	8½	65	2½		
		S304	40	8½	65	2½		
		ZINTEC	80	8½	90	2		
	AlMg3	HE3	45	12½	50	3		
		M5	St37-3	CR4	65	8½	75	2½
				S304	65	8½	75	2½
ZINTEC	90			8½	105	2		
	1.4303	CR4	65	8½	75	2½		
		S304	65	8½	75	2½		
		ZINTEC	90	8½	105	2		
	AlMg3	HE3	70	12½	80	3		

WELD SETTINGS BS112 & BS212

BS112 CONTACT

BS212 GAP

STUD DIAMETER	STUD MATERIAL	SHEET MATERIAL	VOLTAGE SETTING	SPRING SETTING	VOLTAGE SETTING	LIFT SETTING		
M6	St37-3	CR4	80	8½	90	2½		
		S304	80	8½	90	2½		
		ZINTEC	110	8½	130	2		
	1.4303	CR4	80	8½	90	2½		
		S304	80	8½	90	2½		
		ZINTEC	110	8½	130	2		
	AlMg3	HE3	120	12	120	4		
		M8	St37-3	CR4	130	8½	145	2½
				S304	130	8½	145	2½
ZINTEC	150			8½	185	3		
1.4303	CR4		130	8½	175	3		
	S304		130	8½	175	3		
	ZINTEC		150	8½	185	3		
AlMg3	HE3	160	12	195	4			
	M10	St37-3	CR4	155	8½	175	3	
			S304	170	8½	175	3	
ZINTEC			170	8½	195	3		
EARTH TAG	St37-3	CR4	65	8½	55	2½		
		S304	65	8½	55	2½		
		ZINTEC	80	8½	70	2½		
	AlMg3	HE3	70	12½	60	3		
LARGE BRACKET	St37-3	CR4	80	8½	70	2½		
		S304	80	8½	70	2½		
		ZINTEC	95	8½	80	2½		

METHODS OF STUD LOCATION

Economic stud location may be obtained using any one of the following methods, depending on the type of work involved :-

- ❶ Tripod leg assembly.
- ❷ Nose cone Ø20, Ø25, Ø30 mm Length 63-75mm.
- ❸ Extended leg assembly.

❶ TRIPOD LEG ASSEMBLY.

This is generally used for low volume production and one off components. The spacing of the tripod legs allow for ease of stud placement onto a scribed or pencilled mark. Centre punch indentations must not be used.

❷ NOSE CONE ASSEMBLY.

This is generally used for high volume and repetitive work, or where a greater level of accuracy is required. Simple jigs made from Tufnol (a thermo-setting plastic) or sheet metal can easily be made, allowing for speedy and accurate production. Advice on jig manufacture can be obtained from your sales representative.

❸ EXTENDED LEG ASSEMBLY.

This is used where a requirement for welding very long studs is necessary. The extended leg assembly allows studs up to 200 mm long to be welded.



IMPORTANT NOTE !

Manual centre punch indentations must NOT be used for stud location as this will have the same effect as shortening the pip on the weld stud and could adversely affect the weld quality.

If practical considerations compel the use of indentations, then we would suggest the use of either an automatic centre punch or a punch press set only to produce the shallowest of indents consistent with the ease of stud location.

The setting chart parameters may have to be altered to achieve the optimum conditions detailed in the setting up and welding procedure. If in any doubt, please seek the advice of your local technical representative.

WELD ASSESSMENT / TESTING

Visual examination of weld quality can, even with limited experience, provide a useful quality assessment. In such a check the presence of a small even witness of weld material around the base of the stud flange after welding should be ensured. Poor welds are indicated by excess metal on one side of the welded flange and / or the presence of an undercut or non-fused area between the stud flange and the parent sheet or plate. Incorrect settings, adverse magnetic effects etc. such as those at edge welding positions or with unbalanced earths and studs welded to the work piece at an angle, the controller and pistol should be examined with a view to correcting such defects.

MECHANICAL TESTS :

① BENDING.

The most easily applied method of testing the quality of welded fasteners considered here, involves the use of a bending bar. This bending bar (available from your supplier, see the accessories section of this manual) fitted with the correct size of nozzle for the stud to be tested is used to bend over the stud in accordance with the DVS0905 (German Welding Society Spec') specification .

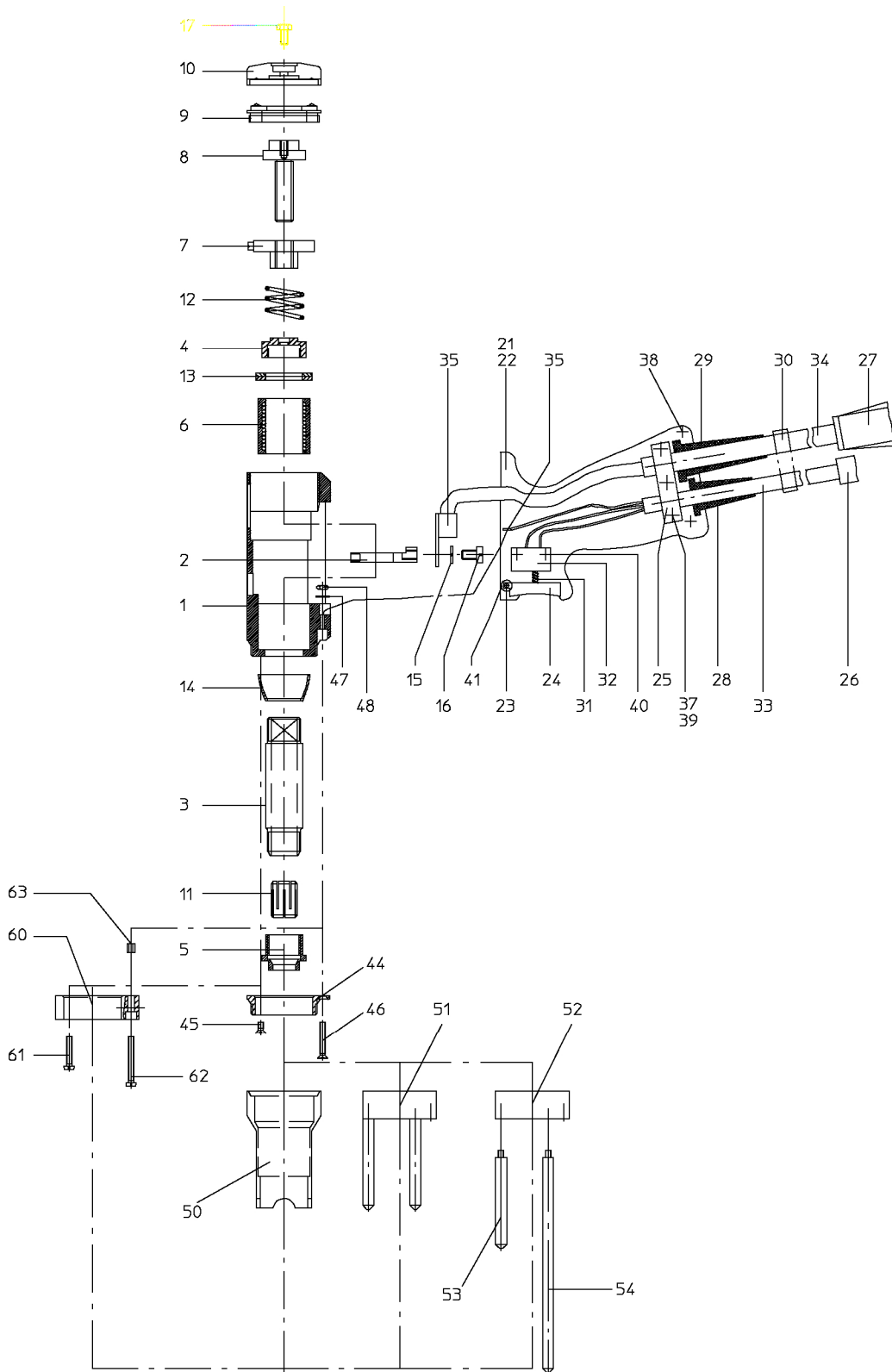
② TORSION.

A torsion test provides useful information for threaded fasteners. This involves tightening a nut on the stud against a spacer, suitably relieved to cater for the flange and weld spatter. For quantitative assessments a suitably calibrated torque wrench may be used, but at its simplest, a spanner will suffice.

In the above tests the performance of the welded joint should be considered in relation to the thickness of the material to which the stud is welded. On thicker materials, a full strength weld is denoted by deformation or failure of the stud shank. On lighter gauge material, severe "dimpling" or "dishing" at the reverse to the weld side normally indicates sufficient strength, whilst in most cases, the tearing of a slug of material from the parent sheet will occur.

COMPONENT EXPLOSION

STANDARD CONTACT PISTOL— CDK1 - (TSK310)



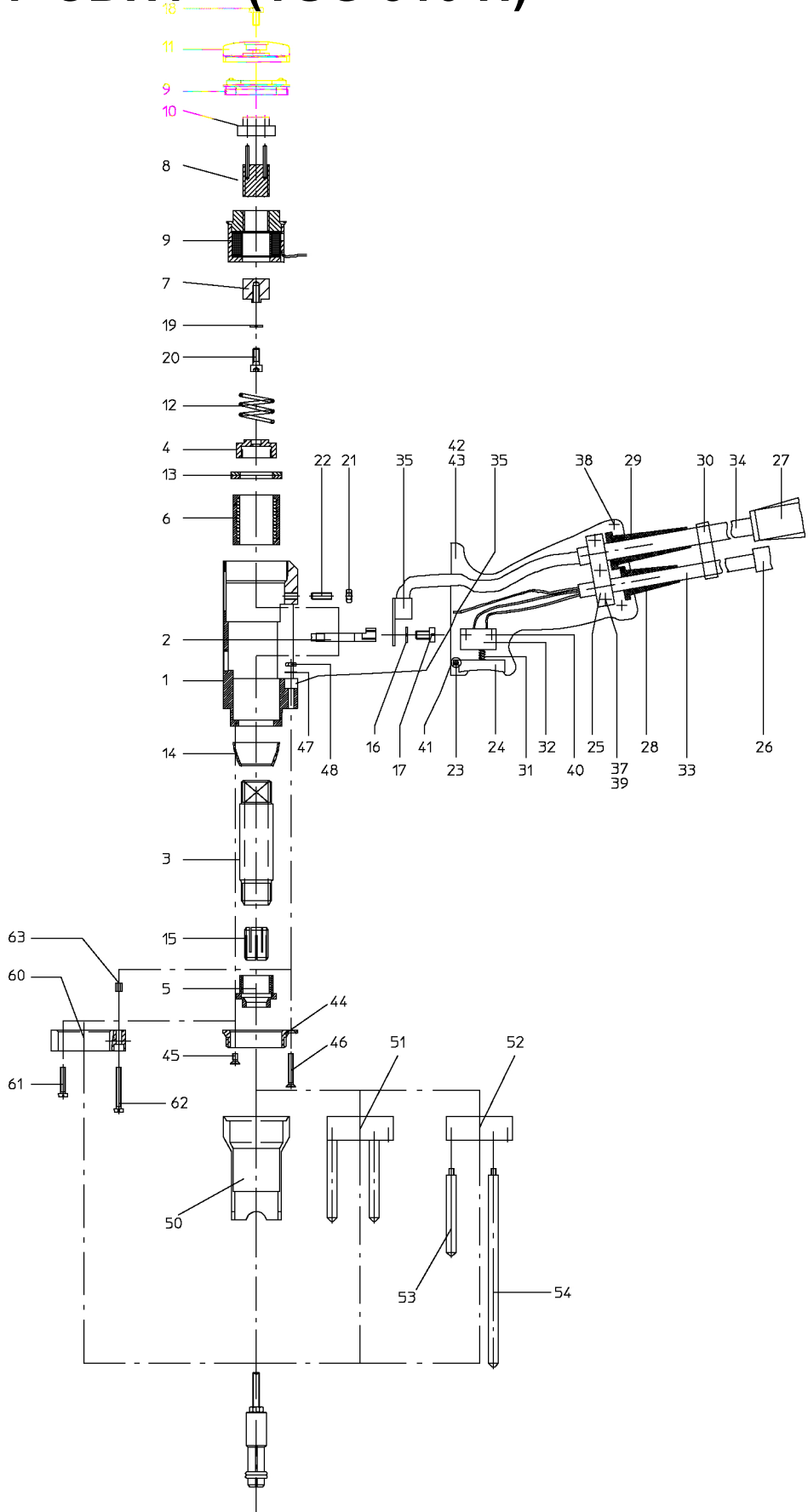
Parts number for CDK1

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 128-135		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 128-134		F3405044	F
38	Zylinderschraube DIN 912-M3x10		35000961	F
39	Zylinderschraube DIN 84-M4x6		35000279	F
40	Blechschrabe DIN 7971-82,2x9,5		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

COMPONENT EXPLOSION

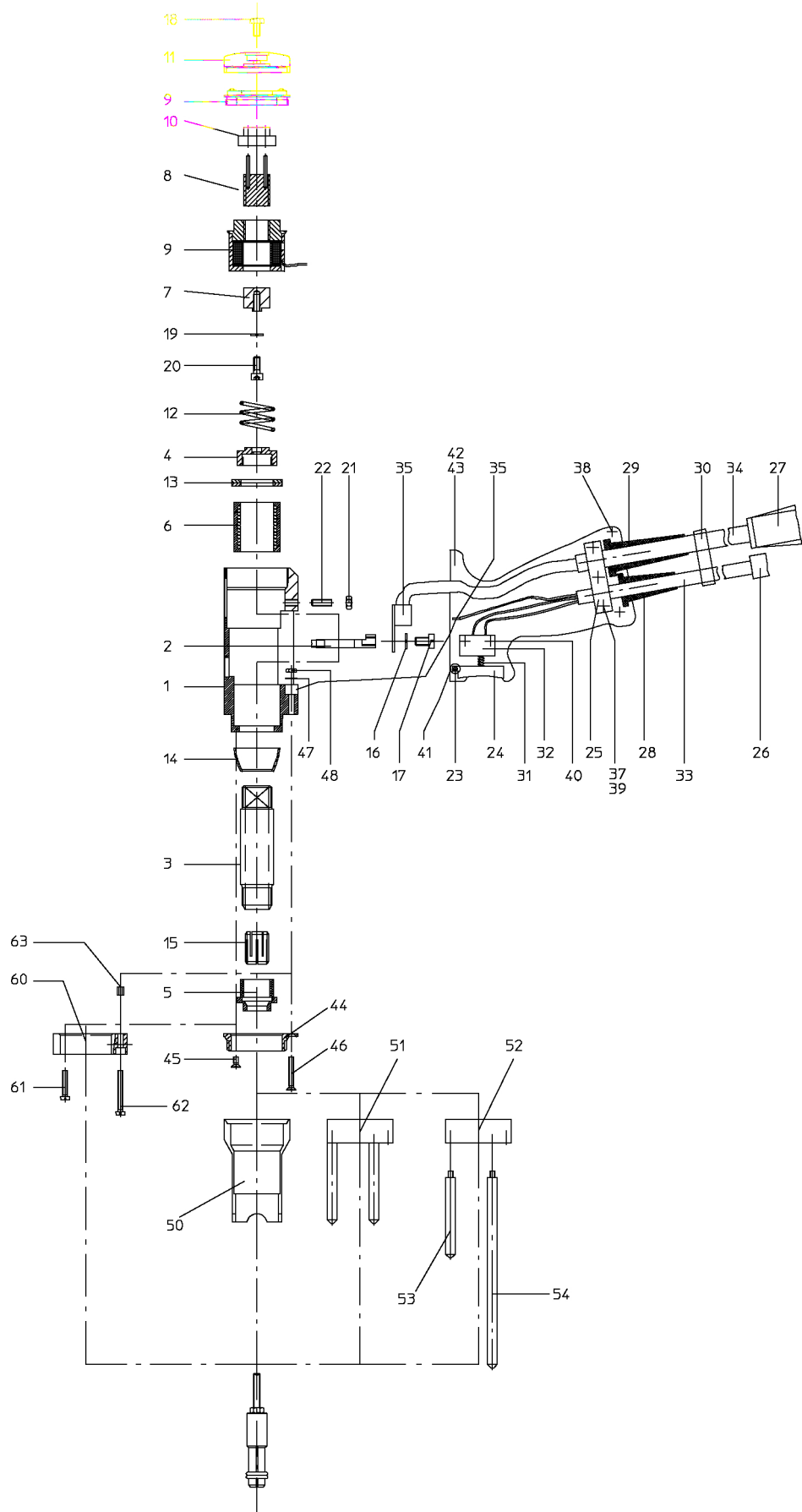
Parts of CDH1 - (TSG 310 H)



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	Nord lock washer 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 128-135		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 Lange 3,1m		37017373	F4112121

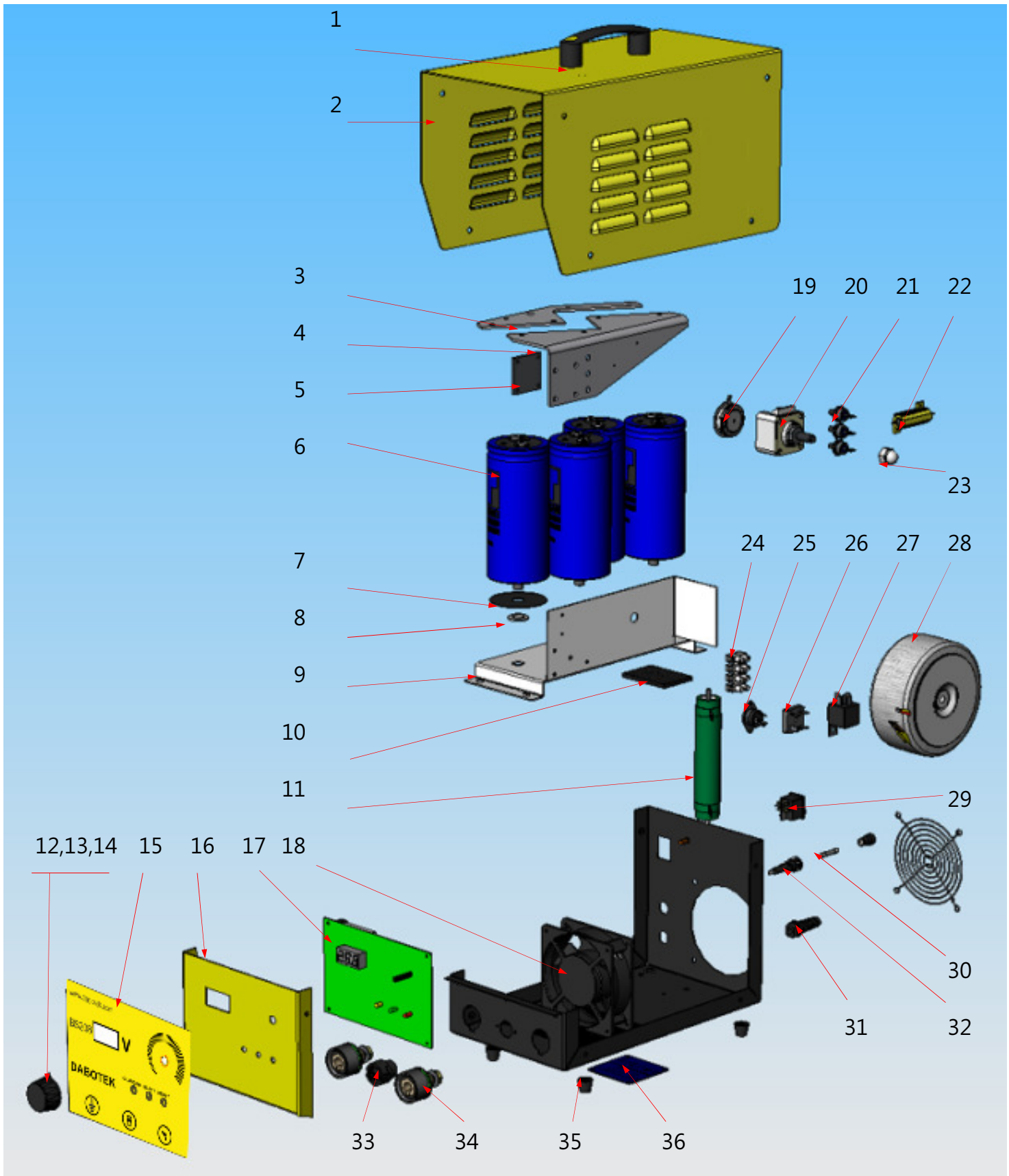
Pos.	Benennung	Z.-Nr:	Mat.-Nr:	Best.-Nr:
34	Welding cable Lange 3,13m		37007300	F4021460
35	Cable connector M3		37044990	F
36	Cable connector M5		37044982	F
37	Lock washer DIN 128-134		F3405044	F
38	Screw DIN 912-M3x10		35000961	F
39	Screw DIN 84-M4x6		35000279	F
40	Screw DIN 7971-62,2x9,5		35050217	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 11 ^{6m}	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

Parts of CDH1 - (TSG 310 H)



COMPONENT EXPLOSION

CD-M SERIES 2 CONTROLLER (M8, M9 & M10 MODEL)



COMPONENT EXPLOSION

BS1XX & BS2XX SERIES 2 CONTROLLER (BSXX8, BSX10 % BSX12)

ITEM	QTY.	PART No.	DESCRIPTION.
1	1	70-105-014	HANDLE
2	1	70-105-135	COVER
3	1	70-105-133	POSITIVE BUSBAR
4	1	70-105-134	NEGATIVE BUSBAR
5	1	70-106-044	CLAMP PLATE
6	2	70-105-040	CAPACITOR (M8)
or	3	70-105-040	CAPACITOR (M9)
or	4	70-105-040	CAPACITOR (M10)
7	2	70-105-258	INSULATIVE MOUNT (M8)
or	3	70-105-258	INSULATIVE MOUNT (M9)
or	4	70-105-258	INSULATIVE MOUNT (M10)
8	2	70-105-259	INSULATIVE WASHER (M8)
or	3	70-105-259	INSULATIVE WASHER (M9)
or	4	70-105-259	INSULATIVE WASHER (M10)
9	1	70-105-131	MOUNTING BRACKET
10	1	50 x 70 x 5 mm	SPONGE PAD
11	1	70-105-116	RESISTOR
12	1	81-104-030	KNOB
13	1	81-104-031	POINTER
14	1	81-104-032	CAP
15	1	70-105-118	OVERLAY
16	1	70-105-132	FRONT PANEL
17	1	70-105-300	PCB (STANDARD CONTACT MODELS)
or	1	70-105-301	PCB (CNC MODELS)

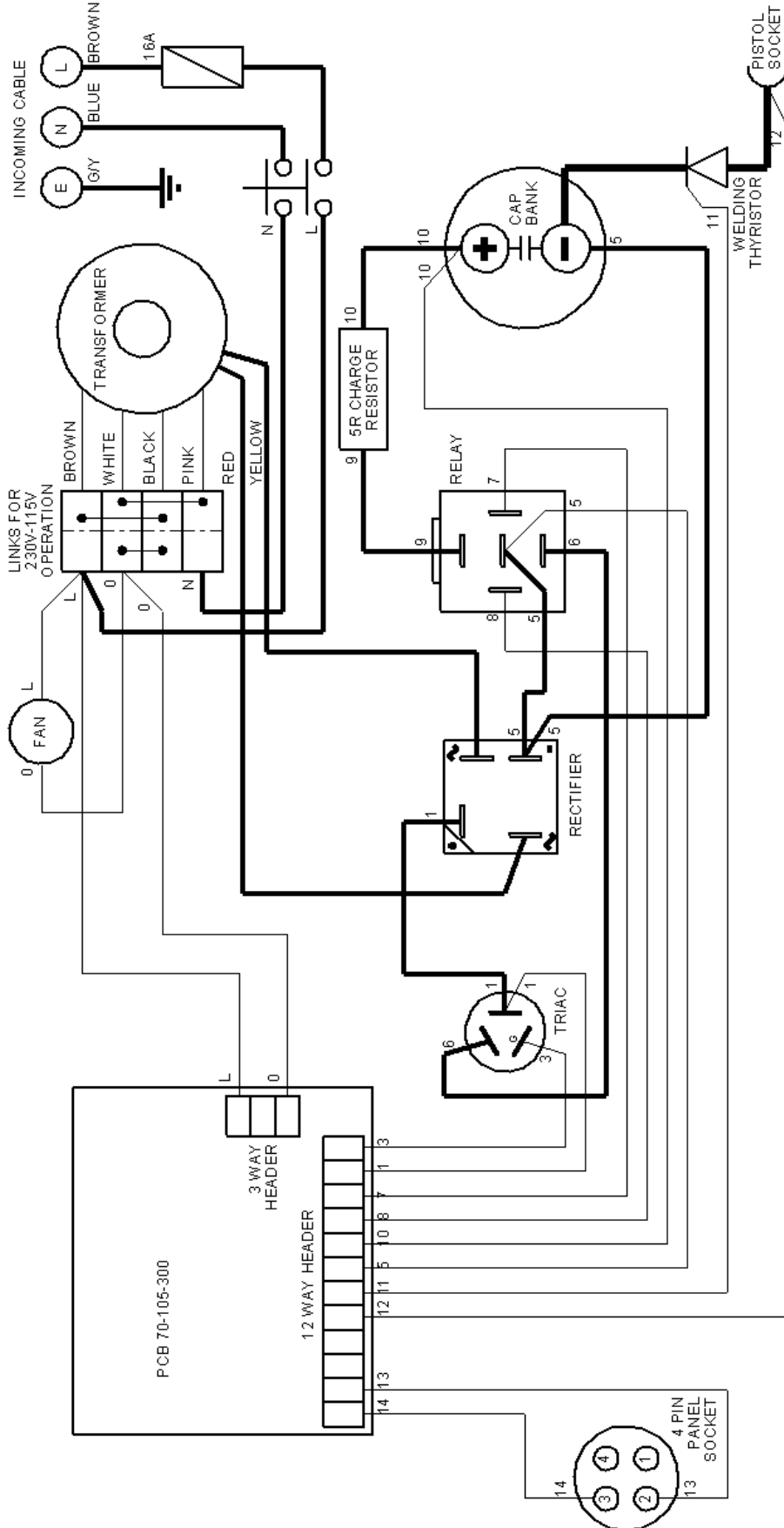
COMPONENT EXPLOSION

CD-M SERIES 2 CONTROLLER (M8, M9 & M10 MODEL)

ITEM	QTY.	PART No.	DESCRIPTION.
or	1	70-105-302	PCB (GAP MODELS)
18	1	70-105-124	FAN
19	1	70-102-046	THYRISTOR
20	1	70-102-047	THYRISTOR CLAMP
21	2	70-102-131	DIODE (M8)
or	3	70-102-131	DIODE (M9 & M10)
22	1	70-105-266	RESISTOR (GAP & CNC MODELS ONLY)
23	1	Z530-10-000	INSULATIVE PROTECTION CAPNUT
24	1	70-105-115	TERMINAL BLOCK
25	1	70-102-080	TRIAC
26	1	70-102-100	RECTIFIER
27	1	70-105-114	RELAY
28	1	70-105-113	TRANSFORMER
29	1	70-105-270	SWITCH
30	1	70-105-125	FUSE
31	1	70-102-075	CABLE GLAND
32	1	70-102-085	FUSEHOLDER
33	1	70-102-025	4 PIN PANEL SOCKET
34	2	81-106-031	PANEL WELD SOCKET
35	4	70-102-002	FOOT
36	1	70-102-225	SERIAL PLATE
37	1	70-105-136	WIRING HARNESS (NOT SHOWN)
38	1	70-105-137	INT. CABLE - EARTH (NOT SHOWN)
39	1	70-105-138	INT. CABLE - PISTOL (NOT SHOWN)

CIRCUIT SCHEMATIC - CONTACT

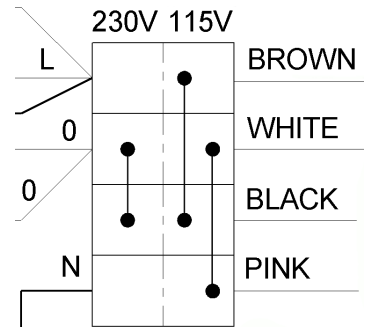
BS108 , BS110 & BS112 STANDARD CONTACT MODELS



TO CHANGE THE INPUT VOLTAGE BETWEEN 115 AND 230 VOLTS.

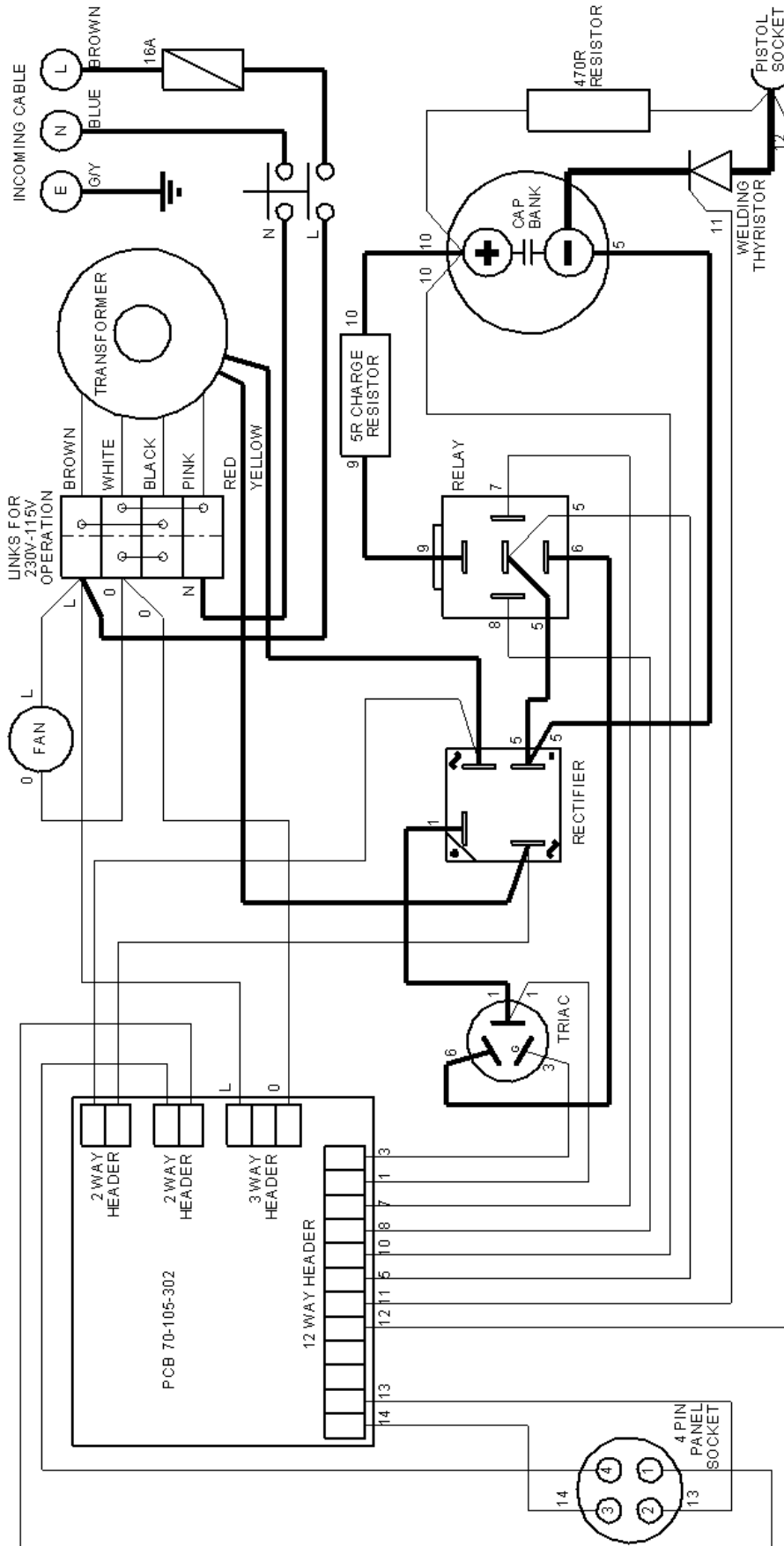
LINK THE TERMINALS IN TERMINAL BLOCK 70-105-115 (ITEM 24) AS SHOWN IN THIS SIDE PANE.

LINKS FOR



CIRCUIT SCHEMATIC - GAP

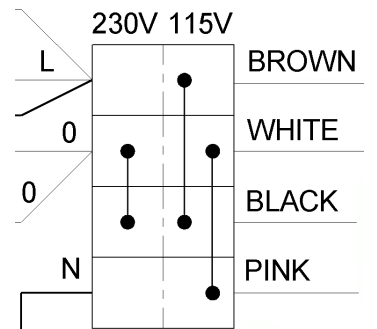
BS208, BS110 & BS212 - GAP MODELS



TO CHANGE THE INPUT VOLTAGE BETWEEN 115 AND 230 VOLTS.

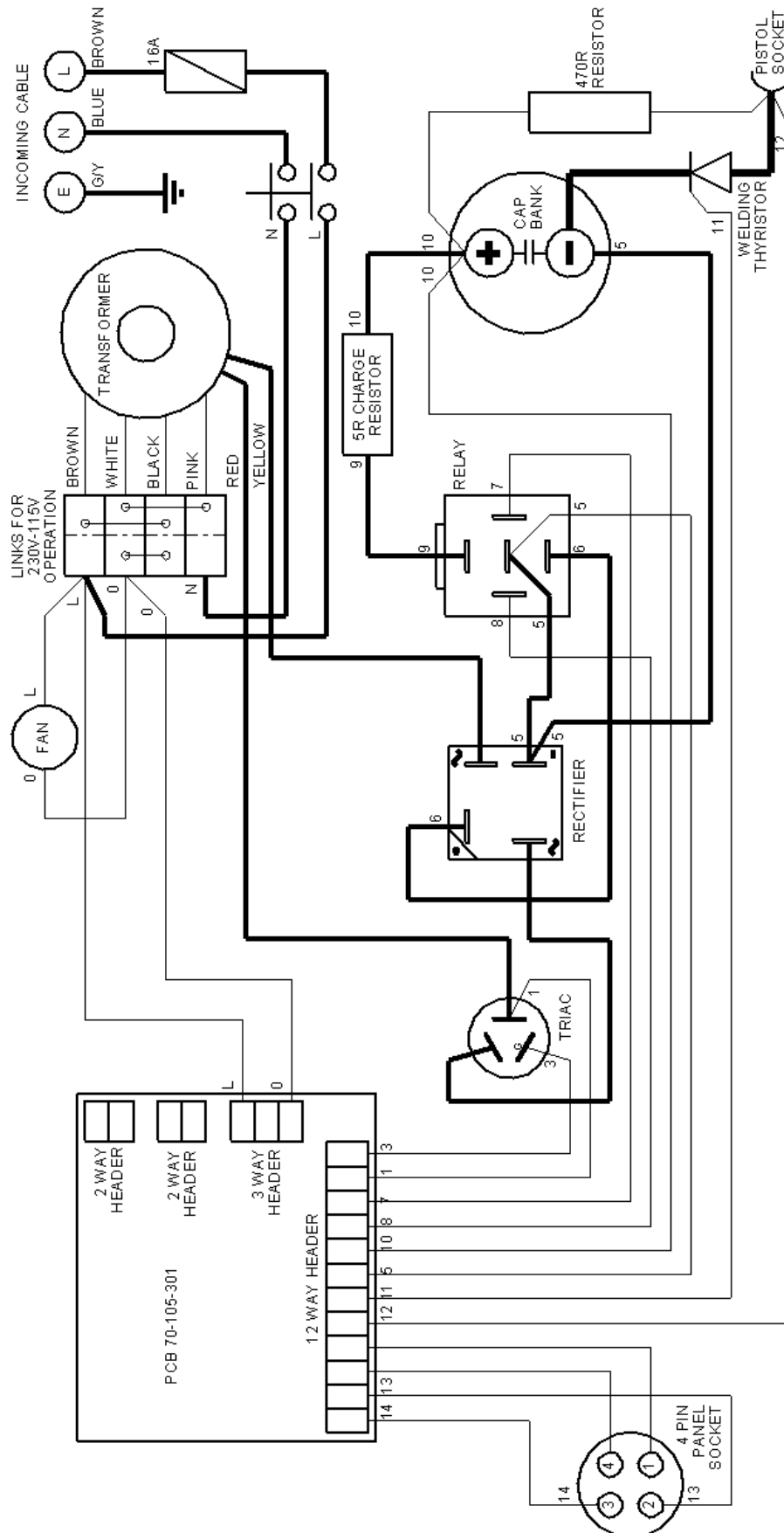
LINK THE TERMINALS IN TERMINAL BLOCK 70-105-115 (ITEM 24) AS SHOWN IN THIS SIDE PANE.

LINKS FOR



CIRCUIT SCHEMATIC - CNC

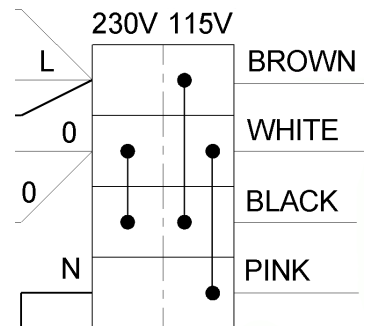
BS1XX or BS2XX— CNC MODELS



TO CHANGE THE INPUT VOLTAGE BETWEEN 115 AND 230 VOLTS.

LINK THE TERMINALS IN TERMINAL BLOCK 70-105-115 (ITEM 24) AS SHOWN IN THIS SIDE PANE.

LINKS FOR

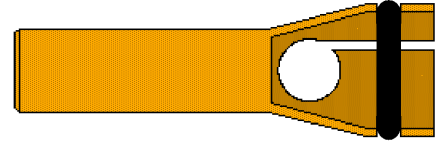


ACCESSORIES

⑨ CHUCKS / COLLETS

- ① EARTH TAG CHUCK

PART No. Ø10mm 8250050



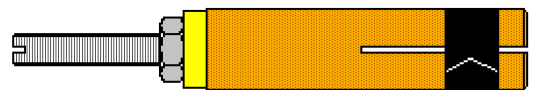
- ② LARGE BRACKET CHUCK (NOT ILLUSTRATED)

PART No. Ø12 mm 8350050

- ③ STANDARD CD CHUCK Ø 10 WITH BACKSTOP

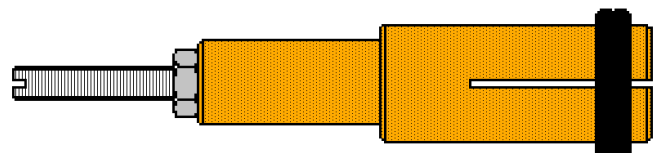
PART No. s :

M2.5	:	8250025
M3	:	8250003
M4	:	8250004
M5	:	8250005
M6	:	8250006
M7.1	:	8250071
M8	:	8250008



- ④ STANDARD M10 CHUCK WITH BACKSTOP

PART No. Ø10	8250010
Ø12	8250012



EC DECLARATION OF CONFORMITY

DABOTEK APS

BIRKEDAM 10 A / 12

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DENMARK

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FAX : +45 7550 4795

STATEMENT : This is to certify that the machinery listed below is designed and manufactured in conformance with all applicable health and safety regulations. This statement is invalid if any modifications are carried out on the machinery without the prior written approval of DABOTEK ApS

DESCRIPTION OF MACHINE : Capacitor Discharge Studwelding Equipment
TYPES & PART NUMBERS: BS108 CONTACT 600708
BS110 CONTACT 600710
BS112 CONTACT 600712
BS208 GAP 600808
BS210 GAP 600810
BS212 GAP 600812
BS1XX CNC 6007XX
BS2XX CNC 6008XX

Applicable EC directives and corresponding standards:

- Low voltage directive 2006/95/EC:

EN60204-1 Safety of machinery - Electrical equipment of machines.

- EMC directive 2004/108/EC (electromagnetic compatibility):

EN50081 Electromagnetic compatibility - Generic emission standard

EN50082 Electromagnetic compatibility - Generic immunity standard

EN50199 Electromagnetic compatibility (EMC) Product standard for Arc welding equipment

- Machine guidelines 2006/42/EC:

EN60974-1 Arc welding equipment : Electromagnetic compatibility

(EMC)

requirements

