

TAYLOR STUDWELDING SYSTEMS LIMITED.



OPERATING GUIDE

FOR

CD-MULTIGUN

COMPACT CAPACITOR DISCHARGE STUDWELDING EQUIPMENT



A TAYLORMADE CAPACITOR DISCHARGE PRODUCT

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GENERAL INFORMATION



MANUFACTURERS DETAILS

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

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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 3) 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 Taylor Studwelding Systems 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 6 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 a weld.

Lift gap welding differs from contact welding in that the initial spring pressure on the stud at rest is much less. When the trigger is pressed however an electrical lift coil in the pistol lifts the stud away from the work-piece to a user settable height and then releases. The stud then returns to the work-piece with much higher acceleration than that of the static start in contact welding giving a much faster weld (typically 1.5 - 2 ms). This is a great advantage when welding non-ferrous metals e.g. Aluminium where heat is dissipated rapidly and the high initial spring pressures required in contact welding can often mechanically damage the stud pip before the weld initiates.

EQUIPMENT SCHEDULE

EQUIPMENT

No.	OFF DESCRIPTION	PART No.
1	SYSTEM CD MULTIGUN CONTROLLER	99-100-194

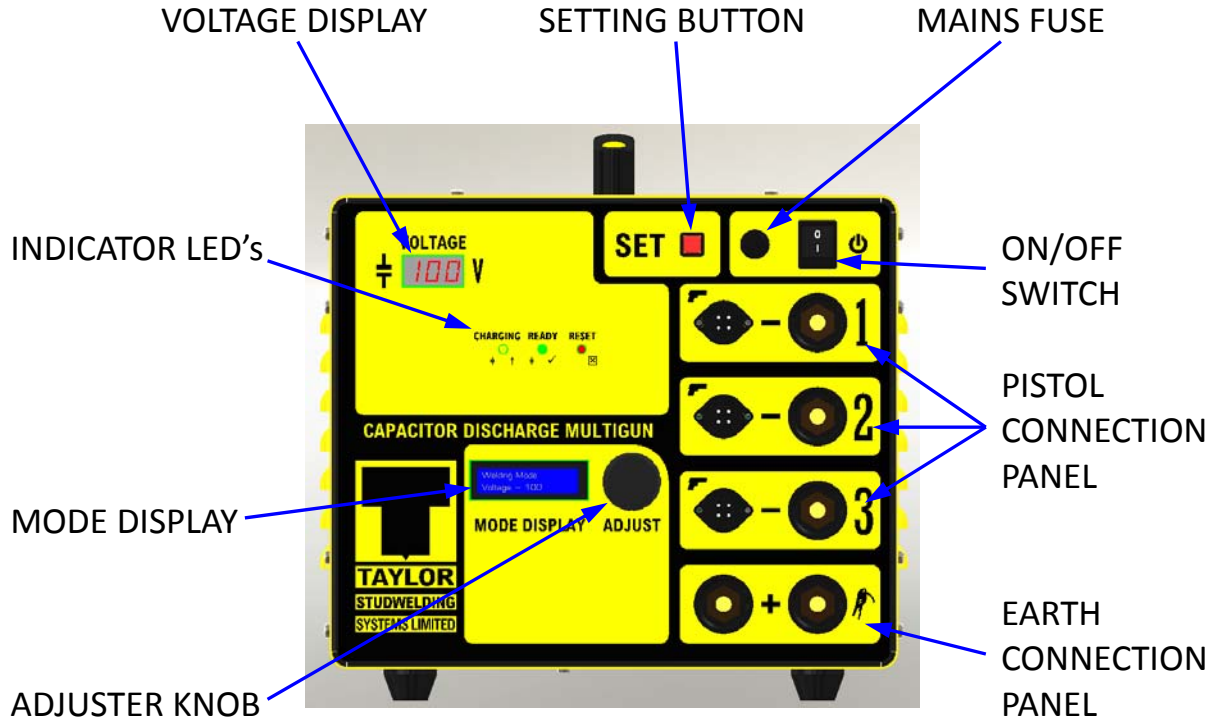
ACCESSORIES (NOT SUPPLIED WITH EQUIPMENT)

No.	OFF DESCRIPTION	PART No.
1-3	CHUCK KEY	79-101-111
1-3	CD CONTACT PISTOL	99-100-020
or	CD LIFT GAP PISTOL	99-100-023
1	EARTH CABLE ASSEMBLY	99-100-125

See pages 34 to 40 of this manual for a selection of accessories available from either your local stockist or the manufacturer.

EXTERIOR FEATURES

FRONT PANEL



INDICATOR LEDs

READY (GREEN)

Indicates that the capacitor bank is charged to the pre-selected Value and is ready to weld.

CHARGING (YELLOW)

Indicates that the unit is in the process of charging the capacitors to the pre-selected voltage.

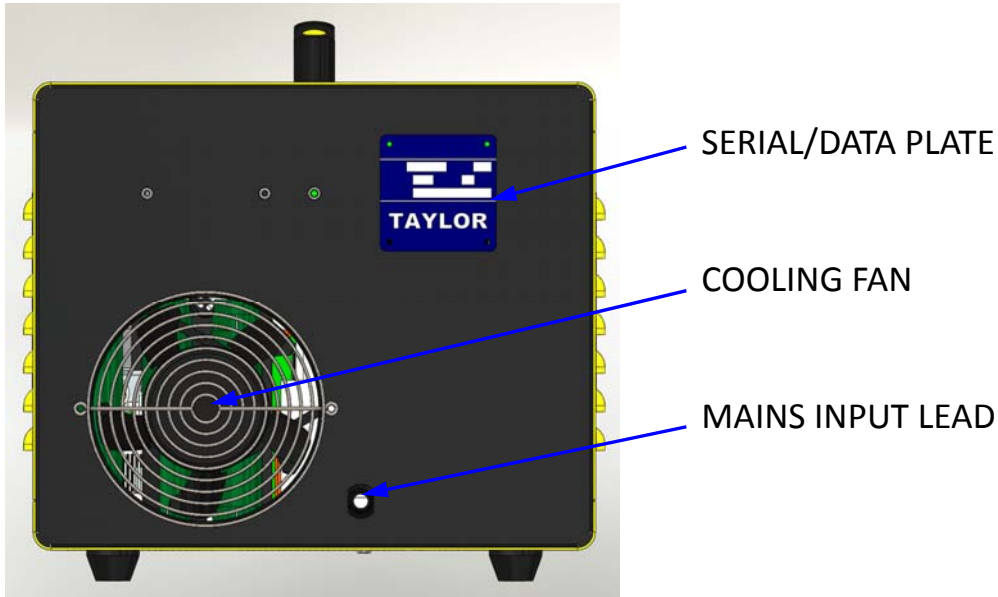
RESET (RED)

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.

EXTERIOR FEATURES

REAR PANEL

ON / OFF SWITCH



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 ! 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 12 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 all times. Further copies of this manual may be purchased from the manufacturer. Measures must be taken to prevent the use of this equipment by unauthorised personnel.

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 and these may interfere with other sensitive electronic equipment.

As previously mentioned, all personnel wearing heart pacemakers or other electronically controlled medical devices must be kept well away from any welding operations.

The welding equipment should be installed at least 5 metres away from any computer equipment to minimise any possible interaction. Note that cables carrying signals between electronic devices are also capable of picking up interference which may modify the way in which those devices function and therefore should be sited outside the 5 metre zone.

Do not place objects which are sensitive to magnetism near the welding area, wristwatches, credit cards, computer disks etc. may all be rendered useless.

The welding equipment, like all other welding equipment, is itself electronically sensitive and its position relative to other radiation emitting equipment (mobile phones, remote controls, motor speed controllers etc.) must be considered.

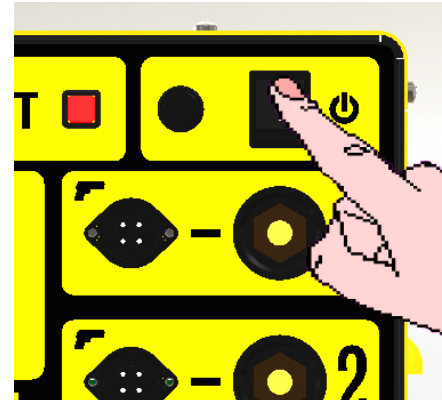
8. DISPOSAL

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.

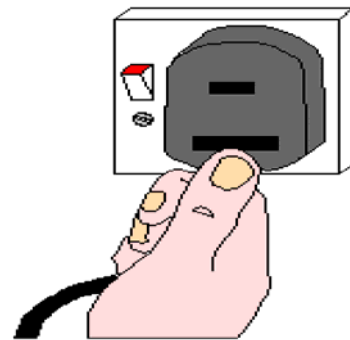
SETTING UP & WELDING

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 9 through 11 of this manual.

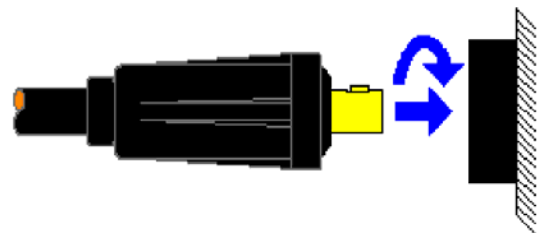


Plug the controller into the correct mains AC supply. The controller is rated for either 230V or 115V, check the rating plate and ensure that the controller is plugged into the correct supply before turning the power on.

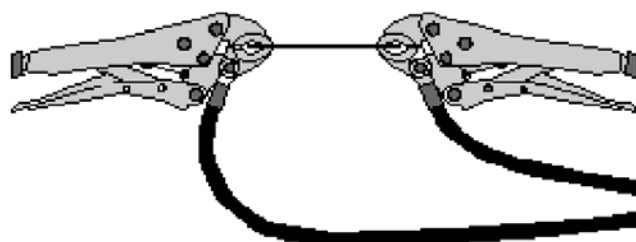


Connect the welding earth cables to the controller socket marked +. Note that the cable end plug has a peg which mates with a key slot in the panel mounted socket.

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



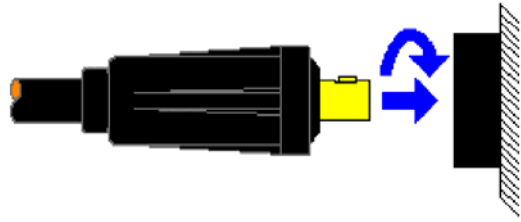
Attach the welding earth clamps to the work piece at approximately 180° to each other. This will help to prevent "Arc blow" when welding takes place. Prior to fitting the clamps, ensure that the contact area of the work piece is free from rust, paint, grease etc. As this will result in a poor welding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



SETTING UP & WELDING

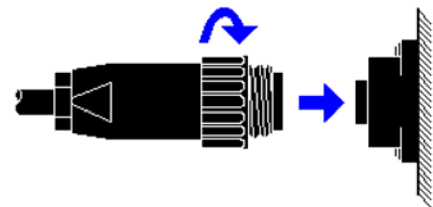
SETTING UP & WELDING

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.

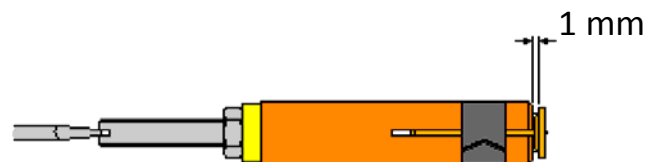


Connect up to three pistols to the appropriate panel connectors (numbered 1, 2 & 3).

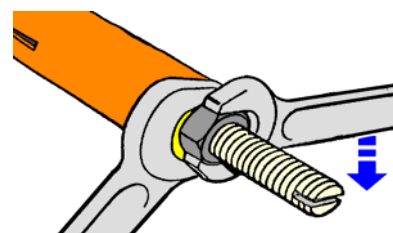
Select the required weld stud on the basis of diameter, length and material. See our separate catalogue entitled "Capacitor Discharge Stock list" which is available on request from your local sales representative.



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.



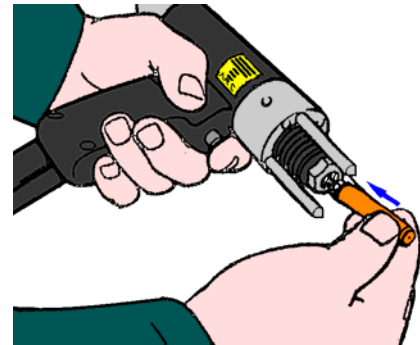
Securely tighten the chuck backstop locking nut to maintain the required protrusion.



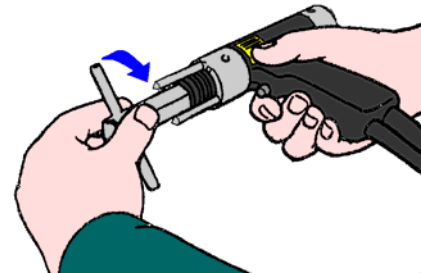
SETTING UP & WELDING

SETTING UP & WELDING

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



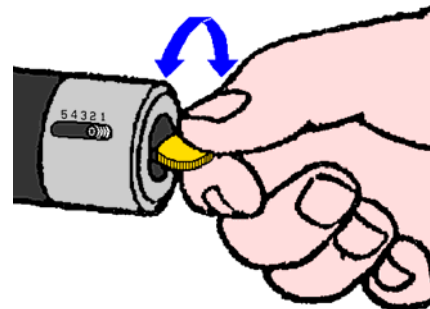
Tighten the chuck locking nut with the box spanner provided. A gentle pressure is all that is required. Over tightening may result in damage to your pistol.



SETTING THE PISTOL

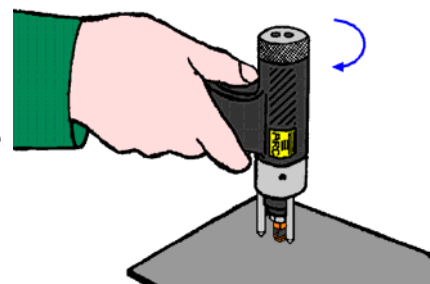
STANDARD CONTACT PISTOL

Set the pistol spring preload to the appropriate setting for the welding task to be performed. (See the tables on pages 18 - 20).



MKV LIFT GAP PISTOL

Set the pistol lift to the appropriate setting for the welding to be performed. 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.

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

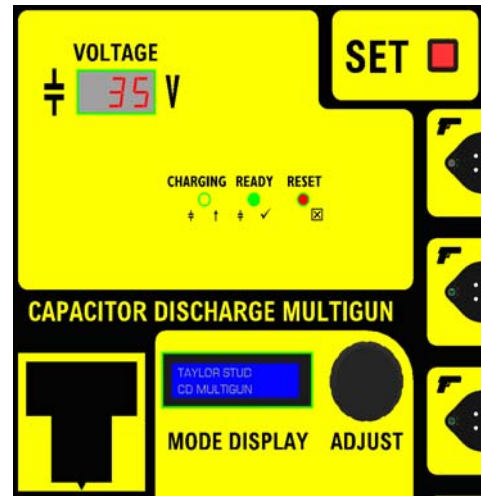
The pistol is now in the zero lift position and twisting the rear end cap anti-clockwise by one "click" at a time will increase the lift by 0.25 mm increments (see the tables on pages 18 - 20 for suggested settings).



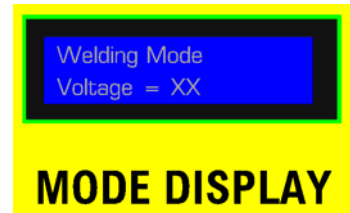
SETTING UP & WELDING

Switch the controller ON.

At switch ON the controller will briefly charge to 35V on the VOLTAGE display and the MODE display will read "TAYLOR STUD CD MULTIGUN"



Within 5 seconds the MODE display will change to "Welding Mode" and the VOLTAGE display will change to match the voltage shown in the MODE display. This is the lowest voltage that has been previously set for one of the pistols. The controller can operate up to three pistols independently. It does this by initially charging the capacitors to the lowest of the three pre-settable voltages and holding there.



PRE-SETTING THE VOLTAGES

Press and release the "SET" button once.



The MODE display will change to read "Settings Mode Voltage 1 = XX" (where XX = the last voltage set in the memory). Turn the ADJUST knob to change the value of XX to the required setting (see the tables on pages 18 - 20 for suggested settings).



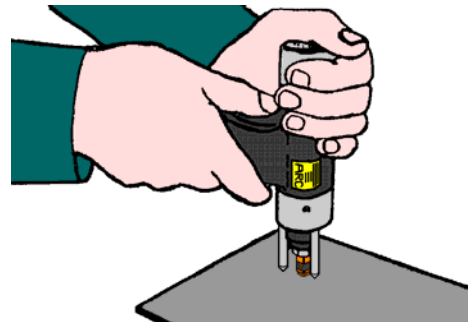
Repeat these two steps to set Voltages 2 & 3. After setting Voltage 3, press and release the "SET" button one more time. The MODE display will return to "Welding Mode Voltage = XX" (XX will now be the lowest number of the three voltages that have been pre-set above) and the VOLTAGE display will also show this value.

If you are using less than three pistols, it is a good idea to set the voltages of the unused pistol(s) to a value higher than the pistol(s) in use. This will ensure that the hold voltage at start-up is instantly available

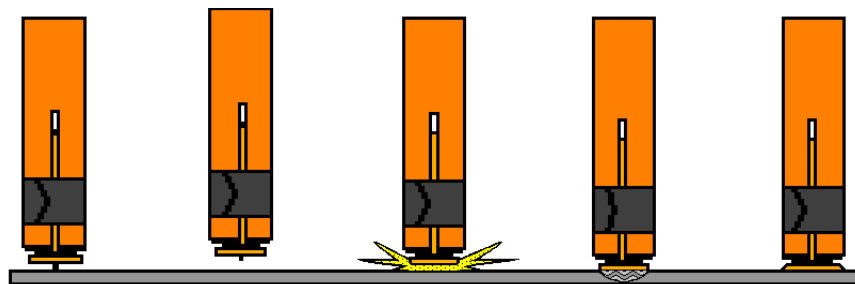
SETTING UP & WELDING

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.

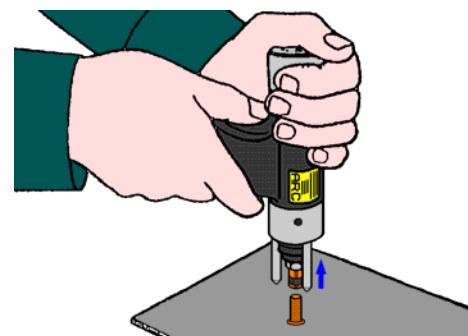


The welding process is as follows :-

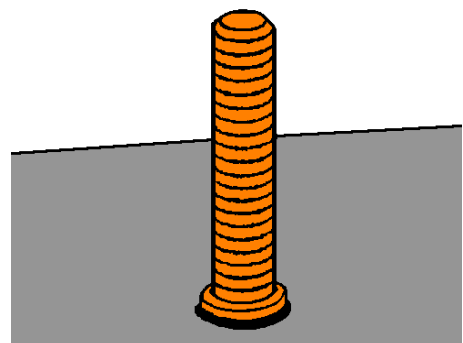


	INITIAL PRES-SURE	LIFT & RELEASE	STRIKE ARC	FUSION & IM-MERSION	COMPLETED WELD
LIFT GAP PROCESS, TIME TAKEN (s)	0.000	0.0005	0.001	0.0015	0.002
CONTACT PROCESS, TIME TAKEN (s)	0.000	0	0.001	0.002	0.003

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.



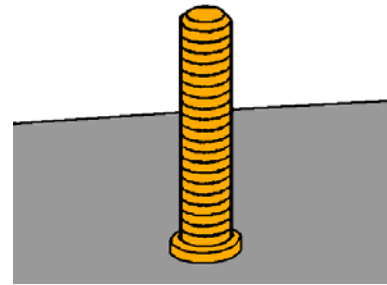
Visually inspect the weld. A good weld will result in an all round weld with a small visible witness of spatter surrounding the flange of the stud.



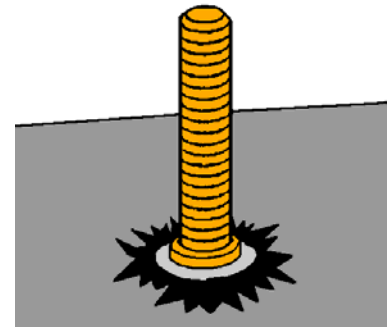
SETTING UP & WELDING

SETTING UP & WELDING

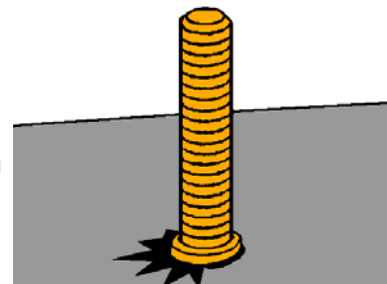
A cold stud weld is noticeable by undercutting of the flange and lack of / minimal formation of spatter. A cold weld is usually caused by too little energy and / or too high spring pressure.



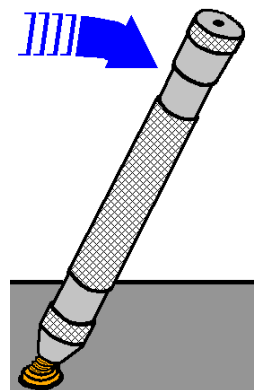
A hot stud weld is noticeable by excessive spatter formation and partial melting of the flange. A hot weld is usually by too much energy and / or too little spring pressure.



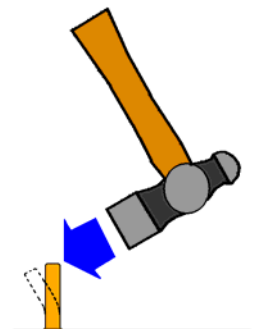
A one sided stud weld (arc blow) is usually caused by incorrect earthing of the work piece. This may be corrected by placing the welding earths opposite each other across the area where the weld is to occur.



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 BS EN ISO 13918.



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



WELD SETTINGS

The following pages (18 to 20) detail the suggested settings for the Multigun controller, 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

CONTACT

LIFT GAP

STUD DIAMETER	STUD MATERIAL	SHEET MATERIAL	VOLTAGE SETTING	SPRING SETTING	VOLTAGE SETTING	LIFT SETTING
M2.5	St37-3	CR4	40	2½	45	2½
		S304	40	2½	45	2½
		ZINTEC	60	2½	70	2
M3	St37-3	CR4	45	2½	50	2½
		S304	45	2½	50	2½
		ZINTEC	75	2½	85	2
	1.4303	CR4	45	2½	50	2½
		S304	45	2½	50	2½
		ZINTEC	90	2½	100	2
	AlMg3	HE3	50	3½	55	3
M4	St37-3	CR4	60	2½	65	2½
		S304	60	2½	65	2½
		ZINTEC	100	2½	110	2
	1.4303	CR4	60	2½	65	2½
		S304	60	2½	65	2½
		ZINTEC	100	2½	110	2
	AlMg3	HE3	65	3½	70	3
M5	St37-3	CR4	75	2½	90	2½
		S304	75	2½	90	2½
		ZINTEC	110	2½	125	2
	1.4303	CR4	85	2½	95	2½
		S304	85	2½	95	2½
		ZINTEC	110	2½	125	2
	AlMg3	HE3	80	3½	90	3

WELD SETTINGS

STUD DIAMETER	STUD MATERIAL	SHEET MATERIAL	<u>CONTACT</u>		<u>LIFT GAP</u>		
			VOLTAGE SETTING	SPRING SETTING	VOLTAGE SETTING	LIFT SETTING	
M6	St37-3	CR4	90	2½	120	2½	
		S304	90	2½	120	2½	
		ZINTEC	140	2½	160	2	
	1.4303	CR4	110	2½	120	2½	
		S304	110	2½	120	2½	
		ZINTEC	140	2½	160	2	
	AlMg3	HE3	120	4	140	4	
	M8	St37-3	CR4	130	2½	175	2½
			S304	130	2½	175	2½
ZINTEC			180	2½			
1.4303		CR4	160	2½			
		S304	160	2½			
		ZINTEC	180	2½			
AlMg3		HE3	150	4	190	4	
M10		St37-3	CR4	185	2½		
			S304	200	2½		
	ZINTEC		200	2½			
EARTH TAG	St37-3	CR4	80	2½	70	2½	
		S304	80	2½	70	2½	
		ZINTEC	95	2½	85	2½	
	AlMg3	HE3	85	3½	75	3	
LARGE BRACKET	St37-3	CR4	95	2½	85	2½	
		S304	95	2½	85	2½	
		ZINTEC	110	2½	95	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 assembly.
- 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 BS EN ISO 13918 specification .

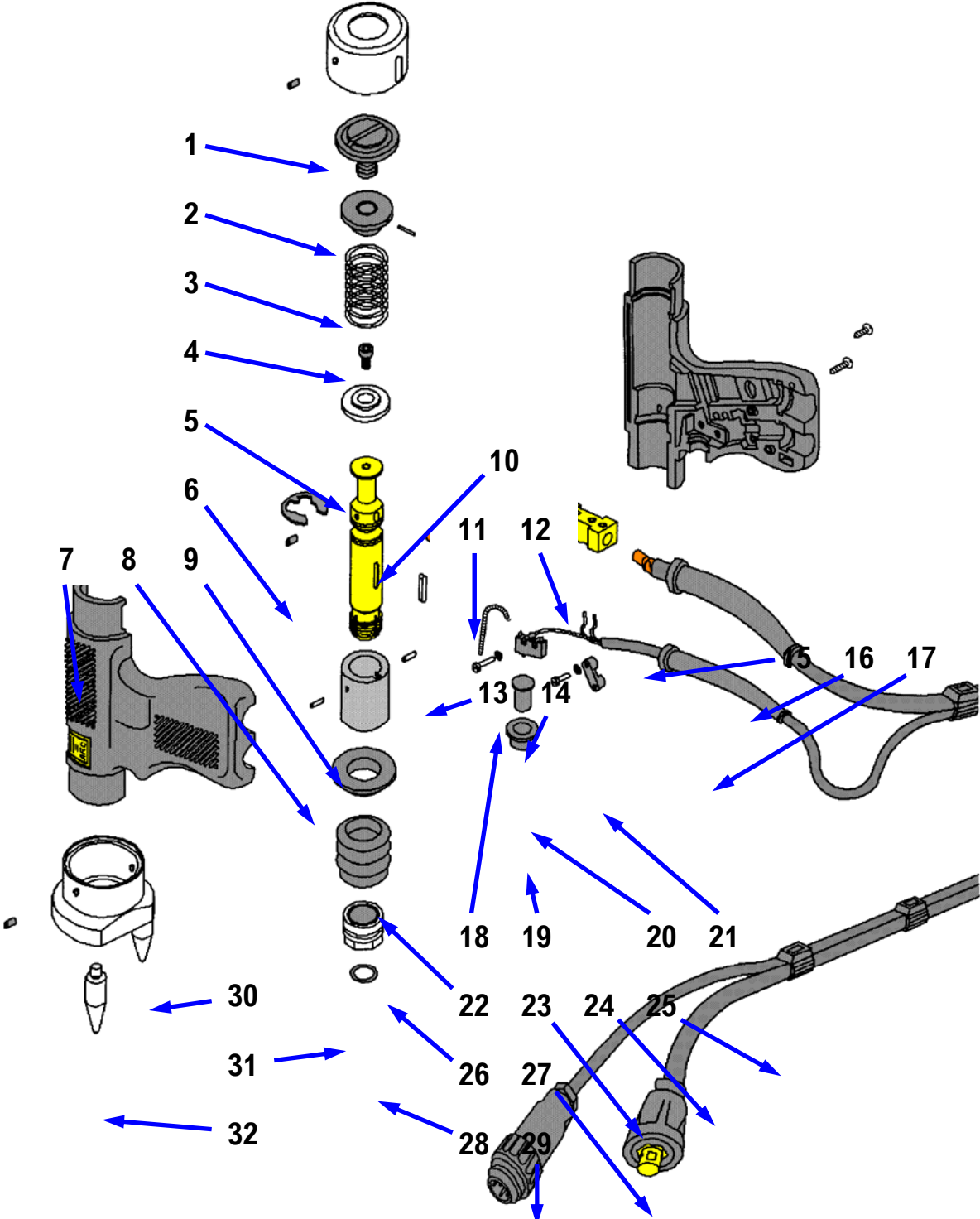
② TORSION.

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.

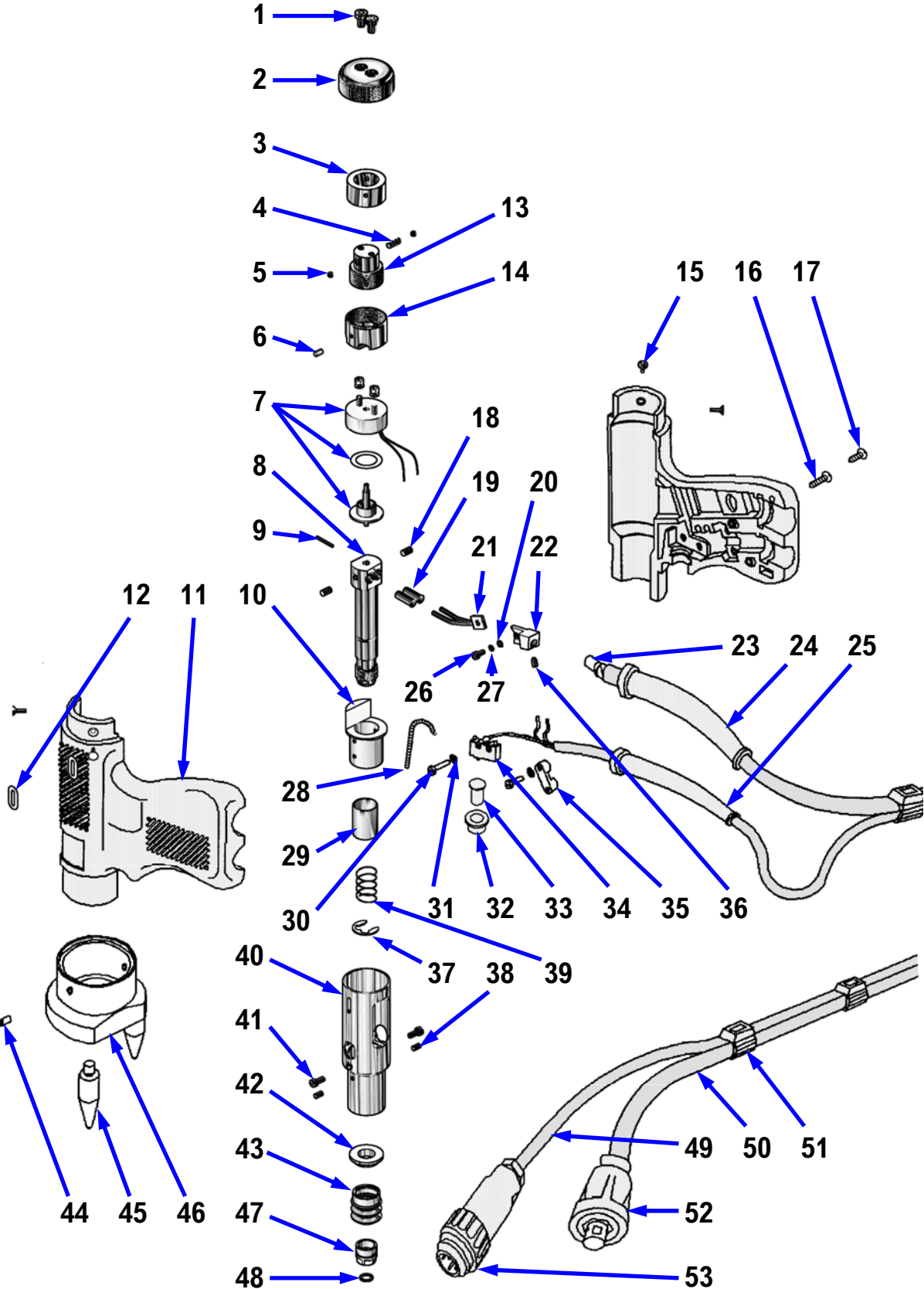


PARTS LIST - STANDARD CONTACT PISTOL

ITEM	QTY	PART No.	DESCRIPTION
1	1	71-101-018	REAR END CAP
2	1	71-101-017	SPRING PRELOAD ADJUSTOR
3	1	71-101-016	ADJUSTABLE SPRING SEAT
4	1	71-101-014	SPRING
5	1	71-101-012	FIXED SPRING SEAT
6	1	71-101-011	SHAFT CIRCLIP
7	1	71-101-005	PISTOL BODY MOULDING (2 PARTS)
8	2	71-101-007	DOWEL PIN
9	1	71-101-006	BEARING BUSH
10	1	71-101-008	WELDSHAFT
11	1	71-101-029	FLEXIBLE BRAID ASSEMBLY
12	1	71-101-038	CABLE SPLICING BLOCK
13	1	71-101-024	SHAFT KEY
14	1	71-101-028	TRIGGER MICRO SWITCH
15	1	71-101-042	COPPER FERRULE
16	1	71-101-034	WELD CABLE SUPPORT SLEEVE
17	1	71-101-033	CONTROL CABLE SUPPORT SLEEVE
18	1	71-101-009	SPRING CONTACT
19	1	71-101-036	TRIGGER BEZEL
20	1	71-101-035	TRIGGER PUSH BUTTON
21	1	71-101-027	CABLE SECURING CLIP
22	1	71-101-004	BELLOWS RETAINING RING
23	3.5	71-300-010	CONTROL CABLE (m)
24	3	71-300-002	WELD CABLE (m)
25	6	71-101-032	CABLE TIE CLIP
26	1	71-101-003	DUST PROTECTION BELLOWS
27	1	81-101-051	CABLE END WELD PLUG
28	1	71-101-001	"O" RING
29	1	71-101-030	CABLE END CONTROL PLUG
30	1	79-101-051	FRONT END CAP
31	1	71-101-002	CHUCK/COLLET NUT
32	3	79-101-052	TRIPOD LEG

COMPONENT EXPLOSION

MARK V LIFT GAP PISTOL.



PARTS LIST

MARK V LIFT GAP PISTOL.

ITEM	QTY	PART No.	DESCRIPTION
1	2	Z115-04-010	END CAP SCREW
2	1	71-102-067	REAR END CAP
3	1	71-102-066	REAR BUSH
4	1	71-102-073	DETENT SPRING
5	2	71-102-090	DETENT BALL
6	1	71-102-075	INDICATOR PIN
7	1	71-102-056	SOLENOID COIL COMPLETE
8	1	71-102-061	WELDSHAFT
9	1	71-102-015	SPIROL PIN
10	1	71-102-062	SHAFT BUSH
11	1	71-102-069	PISTOL BODY MOULDING (2 PARTS)
12	1	71-102-070	LIFT INDICATION DECAL
13	1	71-102-065	COIL ADJUSTOR
14	1	71-102-064	COIL MOUNTING CUP
15	4	Z205-03-006	BUSH RETAINING SCREW
16	2	Z230-06-958	PISTOL BODY SCREW (LONG)
17	1	Z230-06-912	PISTOL BODY SCREW (SHORT)
18	2	Z400-05-006	GRUB SCREW
19	2	71-101-041	FERRULE (SMALL)
20	1	Z600-04-000	WASHER
21	1	71-102-058	FLEXIBLE BRAID ASSEMBLY
22	1	71-102-030	CABLE TERMINATOR
23	1	71-101-042	FERRULE (LARGE)
24	1	71-101-034	WELD CABLE SUPPORT SLEEVE
25	1	71-101-033	CONTROL CABLE SUPPORT SLEEVE
26	1	Z100-04-010	SCREW
27	1	Z615-04-000	LOCK WASHER

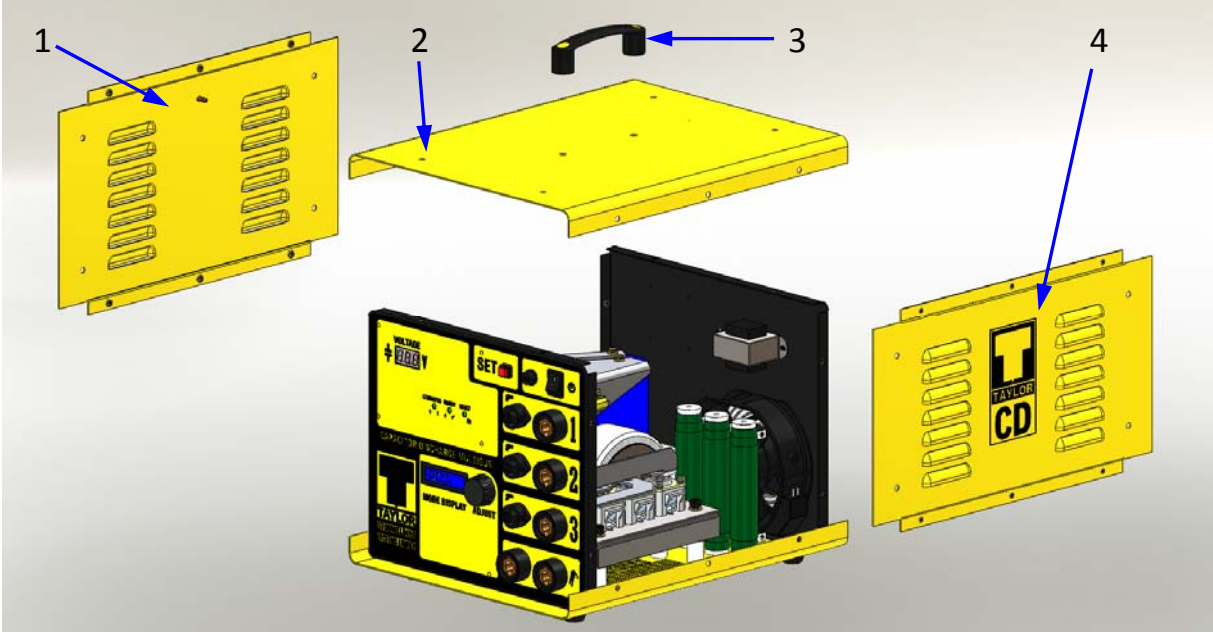
PARTS LIST

MARK V LIFT GAP PISTOL.

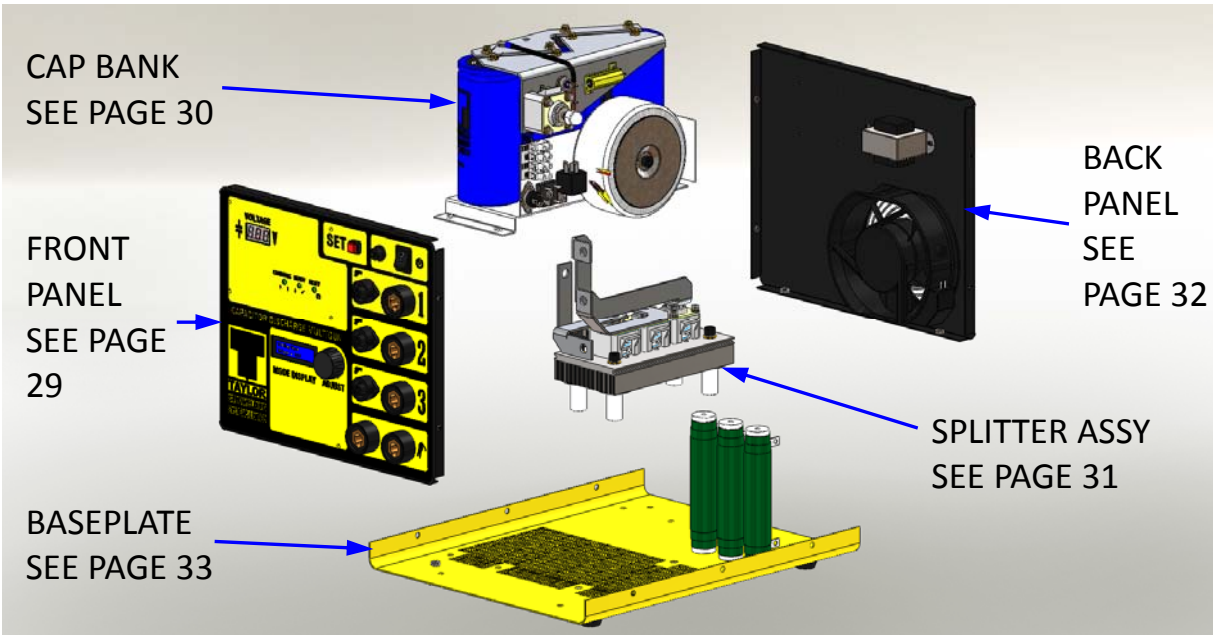
ITEM	QTY	PART No.	DESCRIPTION
28	1	71-101-009	CONTACT SPRING
29	1	71-102-071	SHAFT BEARING
30	4	Z210-02-010	SCREW (SWITCH / CABLE GRIP)
31	4	Z600-02-000	WASHER (SWITCH / CABLE GRIP)
32	1	71-101-036	TRIGGER BEZEL
33	1	71-101-035	TRIGGER PUSH BUTTON
34	1	71-101-028	TRIGGER MICRO SWITCH
35	1	71-101-027	CABLE GRIP
36	1	71-102-029	CABLE DOWEL
37	1	71-101-011	SHAFT CIRCLIP
38	2	71-101-007	LINER DOWEL
39	1	71-102-074	SPRING
40	1	71-102-068	LINER SLEEVE
41	2	ZZ100-03-004	SCREW
42	1	71-101-004	BELLOWS RETAINER
43	1	71-101-003	DUST PROTECTION BELLOWS
44	2	Z400-05-004	GRUB SCREW
45	3	79-101-052	TRIPOD LEG
46	1	79-101-051	FRONT END CAP
47	1	71-101-002	CHUCK / COLLET NUT
48	1	71-101-001	"O" RING
49	3.5	71-300-010	CONTROL CABLE (m)
50	3	71-300-002	WELD CABLE (m)
51	6	71-101-032	CABLE TIE CLIP
52	1	81-101-051	CABLE END WELD PLUG
53	1	71-101-030	CABLE END CONTROL PLUG

COMPONENT EXPLOSION

CD-MULTIGUN CONTROLLER

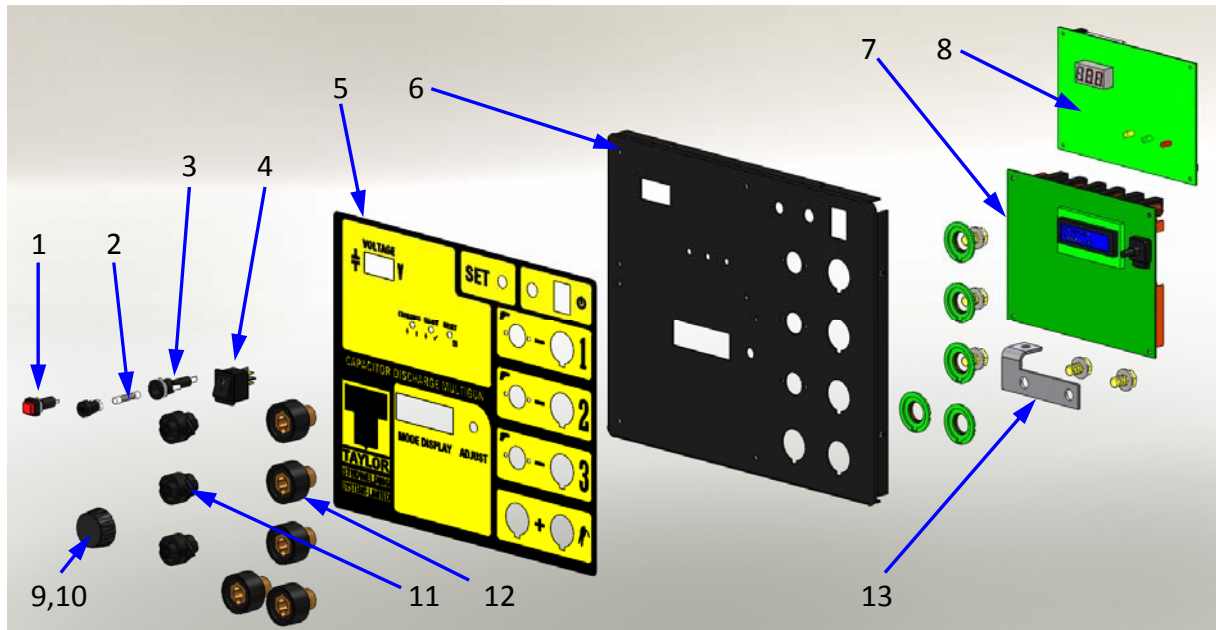


ITEM	QTY.	PART No.	DESCRIPTION
1	1	70-105-282	SIDE PANEL
2	1	70-105-281	TOP COVER
3	1	70-105-014	HANDLE
4	1	70-105-283	SIDE PANEL



COMPONENT EXPLOSION

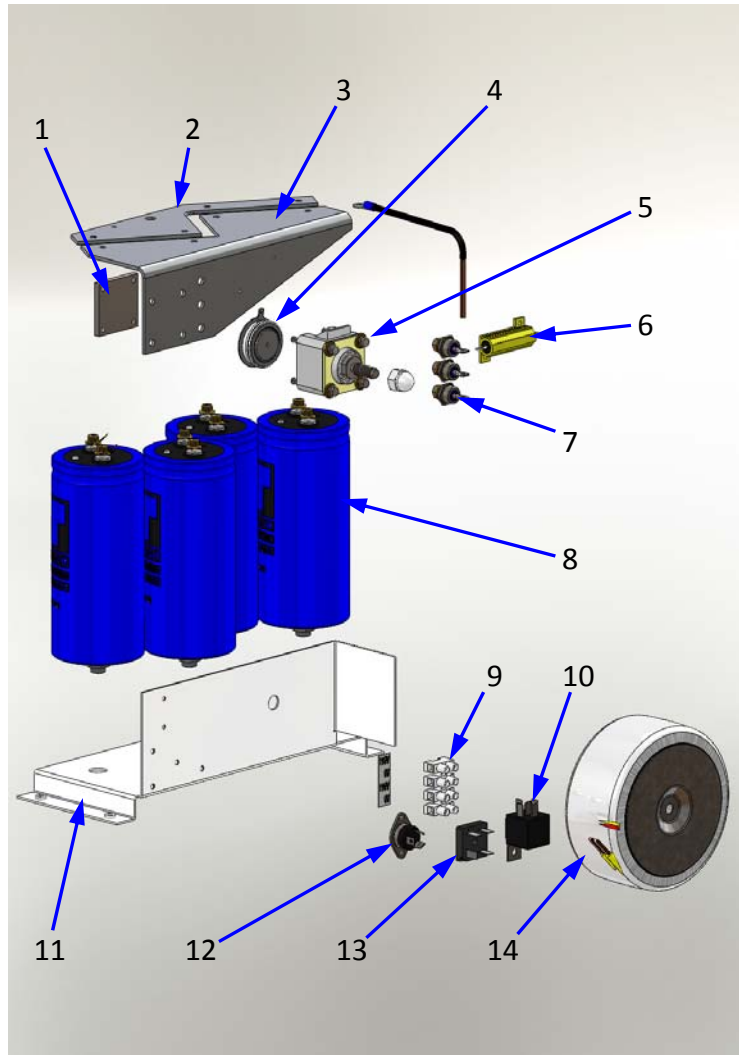
CD-MULTIGUN CONTROLLER - FRONT PANEL



ITEM	QTY.	PART No.	DESCRIPTION
1	1	81-113-010	PUSHBUTTON
2	1	70-105-125	FUSE
3	1	70-102-085	FUSEHOLDER
4	1	70-105-270	SWITCH
5	1	70-105-291	PANEL OVERLAY
6	1	70-105-284	FRONT PANEL
7	1	72-102-001	PCB
8	1	72-102-002	PCB
9	1	81-104-030	KNOB
10	1	81-104-032	KNOB CAP
11	3	70-102-025	CONTROL SOCKET
12	5	81-106-031	WELDING SOCKET
13	1	70-105-290	EARTH BUSBAR

COMPONENT EXPLOSION

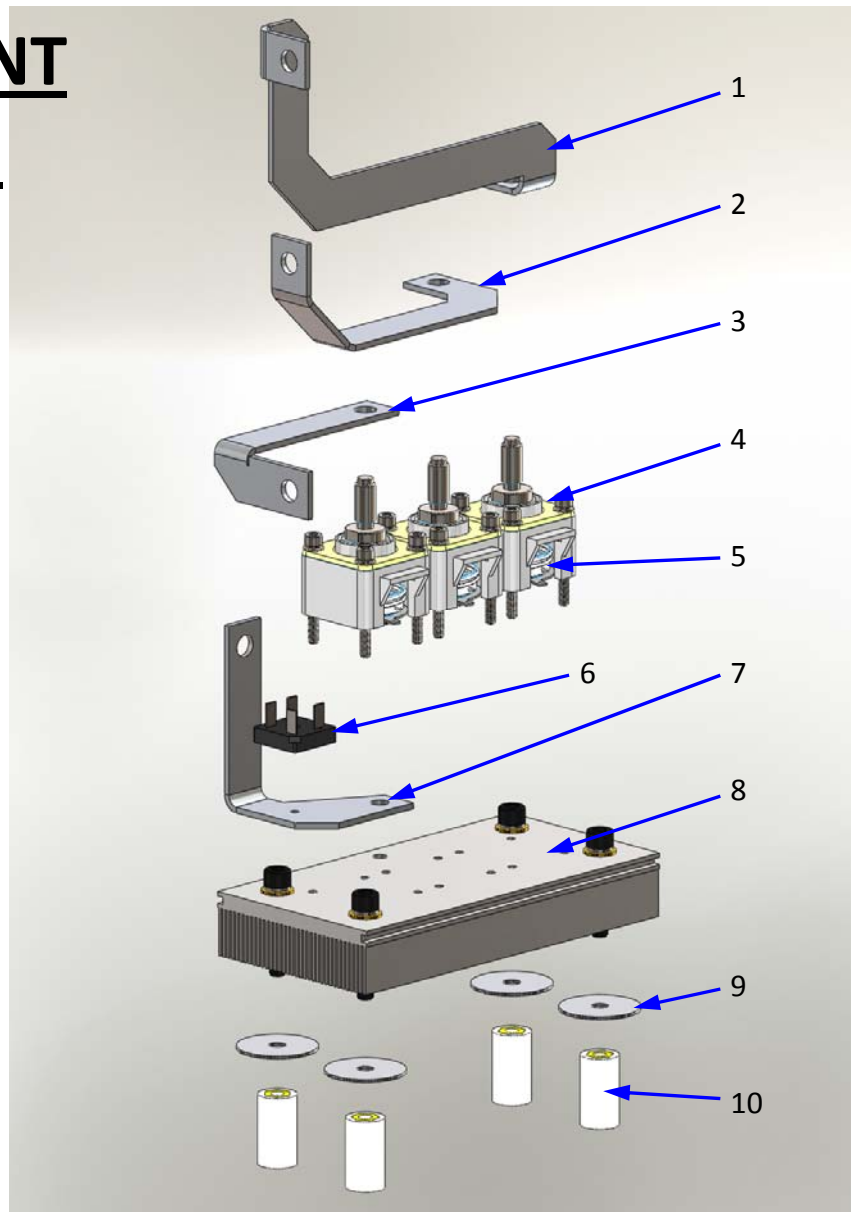
CD-MULTIGUN CONTROLLER CAPACITOR BANK ASSEMBLY



ITEM	QTY.	PART No.	DESCRIPTION
1	1	70-106-044	CLAMP PLATE
2	1	70-105-133	POSITIVE BUSBAR
3	1	70-105-134	NEGATIVE BUSBAR
4	1	70-102-046	THYRISTOR
5	1	70-102-047	THYRISTOR CLAMP
6	1	70-105-266	RESISTOR
7	3	70-102-131	DIODE
8	3	70-105-040	CAPACITOR
9	1	70-105-115	TERMINAL BLOCK
10	1	70-105-114	RELAY
11	1	70-105-131	MOUNTING BRACKET
12	1	70-102-080	TRIAC
13	1	70-102-100	RECTIFIER
14	1	70-105-113	TRANSFORMER

COMPONENT EXPLOSION

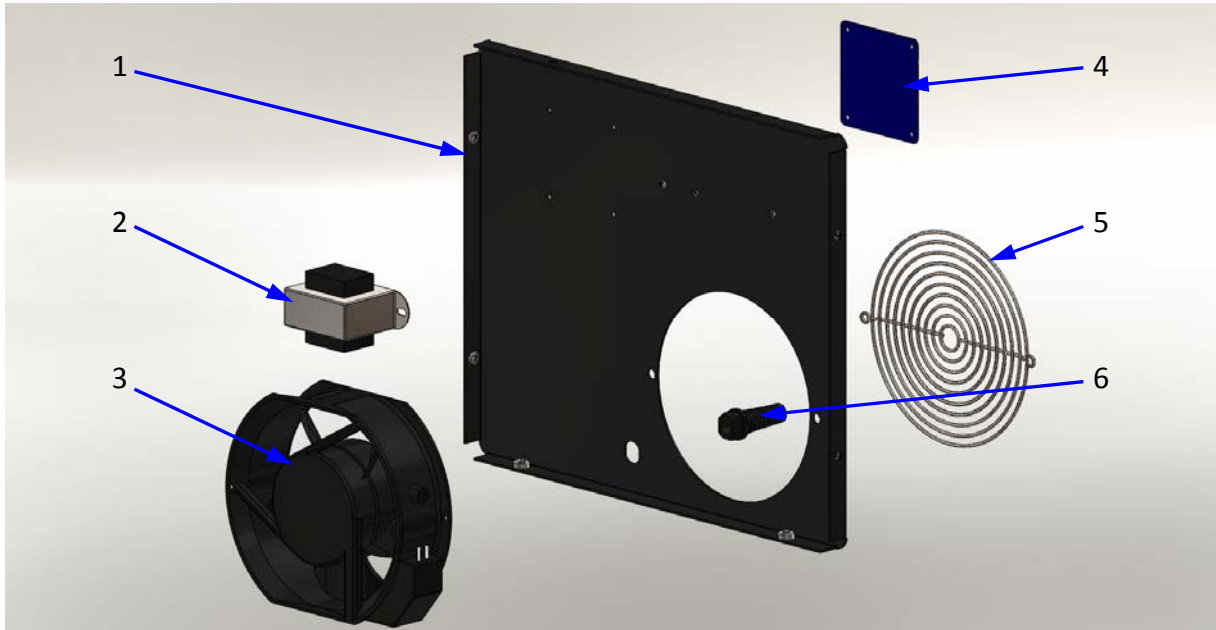
CD-MULTIGUN CONTROLLER - SPLITTER ASSEMBLY



ITEM	QTY.	PART No.	DESCRIPTION
1	1	70-105-287	BUSBAR
2	1	70-105-288	BUSBAR
3	1	70-105-289	BUSBAR
4	3	70-102-047	THYRISTOR CLAMP
5	3	70-102-046	THYRISTOR
6	1	70-102-100	RECTIFIER
7	1	70-105-286	BUSBAR
8	1	75-101-399	HEATSINK
9	4	Z600-08-040	WASHER
10	4	81-113-021	MOUNTING PILLAR

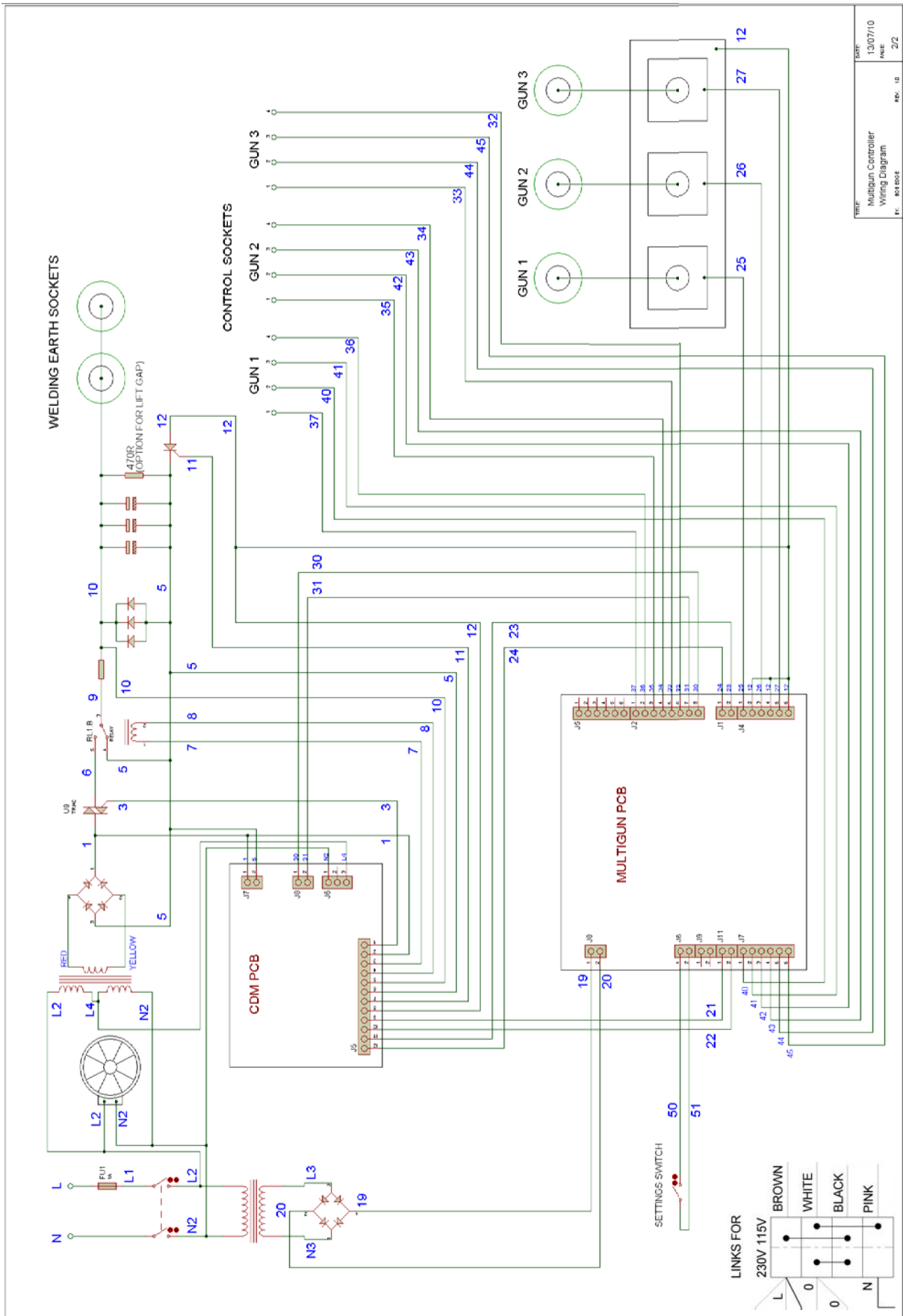
COMPONENT EXPLOSION

CD-MULTIGUN CONTROLLER - BACK PANEL



ITEM	QTY.	PART No.	DESCRIPTION
1	1	70-105-285	BACK PANEL
2	1	81-120-055	AUXILIARY TRANSFORMER
3	1	81-106-081	FAN
4	1	70-102-225	SERIAL/DATA LABEL
5	1	81-104-220	FAN GUARD
6	1	70-102-075	MAINS CABLE GLAND

CIRCUIT SCHEMATIC

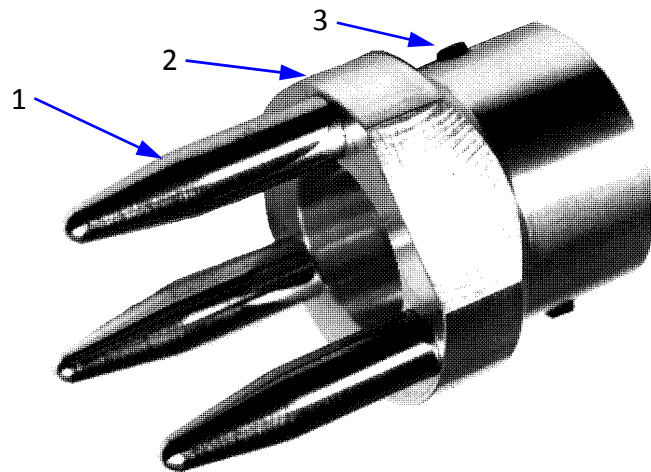


ACCESSORIES

① STANDARD TRIPOD LEG ASSEMBLY.

COMPLETE ASSEMBLY
AVAILABLE UNDER PART
NUMBER : 79-101-050 (STANDARD)

NOTE #
LONG LEGS ARE USED WHEN WELDING
STUD LENGTHS BETWEEN 35 AND 50,
OR WHEN WELDING M10 STUDS.

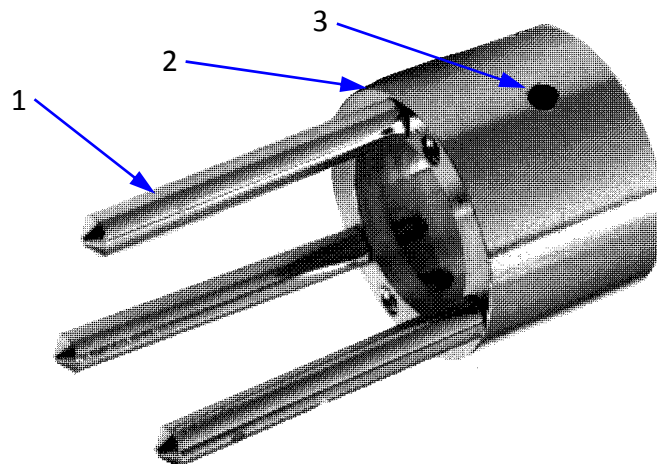


ITEM	QTY	DESCRIPTION	PART No.
1	3	TRIPOD LEG (STANDARD)	79-101-052
or	3	TRIPOD LEG (LONG. SEE NOTE #)	79-101-054
2	1	FRONT END CAP	79-101-051
3	2	GRUB SCREW	Z400-05-004

② SLIMLINE TRIPOD LEG ASSEMBLY.

COMPLETE ASSEMBLY
AVAILABLE UNDER PART
NUMBER : 79-101-060 (STANDARD)

NOTE #
FIT CHUCKS WITH 12 mm LONG
BACKSTOP 79-101-071



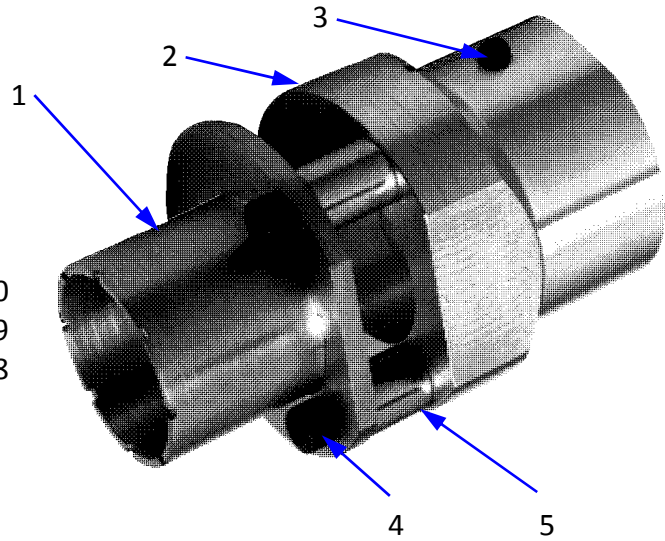
ITEM	QTY	DESCRIPTION	PART No.
1	3	TRIPOD LEG (STANDARD)	79-101-062
or	3	TRIPOD LEG (LONG. SEE NOTE #)	79-101-064
2	1	FRONT END CAP (SLIMLINE)	79-101-061
3	2	GRUB SCREW	Z400-05-004

ACCESSORIES

③ STANDARD NOSE CONE ASSEMBLY.

COMPLETE ASSEMBLY
AVAILABLE UNDER PART
NUMBERS :

Ø30 mm ASSY : 79-101-070
Ø25.4 mm (1") ASSY : 79-101-069
Ø22 mm ASSY : 79-101-068



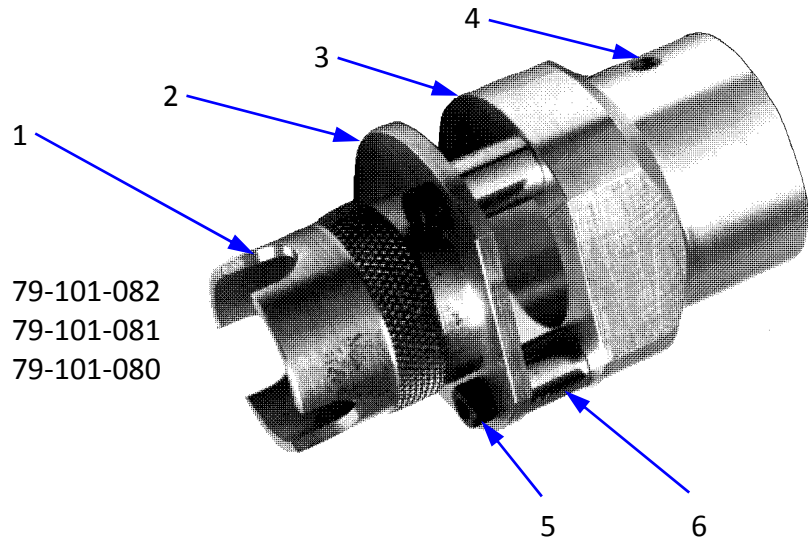
ITEM	QTY	DESCRIPTION	PART No.
1	1	Ø30 mm NOSE CONE	79-101-072
or	1	Ø22 mm NOSE CONE	79-101-078
or	1	Ø25.4 mm NOSE CONE	79-101-077
2	1	FRONT END CAP	79-101-051
3	2	GRUB SCREW	Z400-05-004
4	3	SOCKET CAP SCREW	Z100-04-010
5	3	12 mm SPACER (Ø30 NOSE CONE)	79-101-071
or	3	25 mm SPACER (Ø25.4 & Ø22 NOSE CONE)	79-101-076

ACCESSORIES

④ STANDARD SCREW-IN NOSE CONE ASSEMBLY.

COMPLETE ASSEMBLY
AVAILABLE UNDER PART
NUMBERS :

Ø30 mm ASSY : 79-101-082
 Ø25.4 mm (1") ASSY : 79-101-081
 Ø22 mm ASSY : 79-101-080

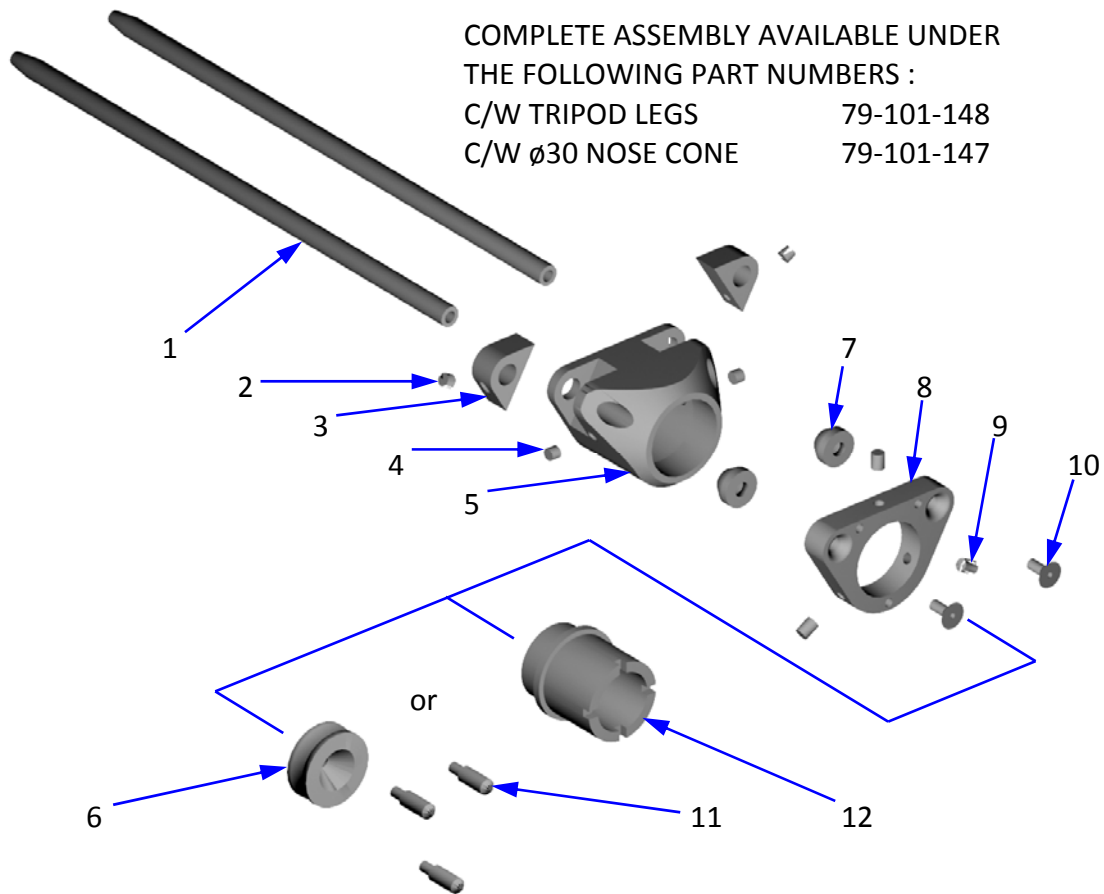


NOTE : STANDARD CD CHUCKS WILL NOT WORK WITH THE ASSEMBLIES SHOWN ON THIS PAGE. YOU WILL NEED TO EXCHANGE THE BRASS BACKSTOP IN THE STANDARD CHUCK WITH A 12 mm LONG BACKSTOP 79-101-071 & 2

ITEM	QTY	DESCRIPTION	PART No.
1	1	Ø30 mm SCREW-IN NOSE CONE	79-101-086
or	1	Ø22 mm SCREW-IN NOSE CONE	79-101-084
or	1	Ø25.4 mm SCREW-IN NOSE CONE	79-101-085
2	1	SCREW-IN BACKPLATE	79-101-083
3	1	FRONT END CAP	79-101-051
4	2	GRUB SCREW	Z400-05-004
5	3	SOCKET CAP SCREW	Z100-04-010
6	3	25 mm SPACER (Ø25.4 & Ø22 NOSE CONE)	79-101-076

ACCESSORIES

5 EXTENDED LEG ASSEMBLY.



COMPLETE ASSEMBLY AVAILABLE UNDER THE FOLLOWING PART NUMBERS :

C/W TRIPOD LEGS 79-101-148

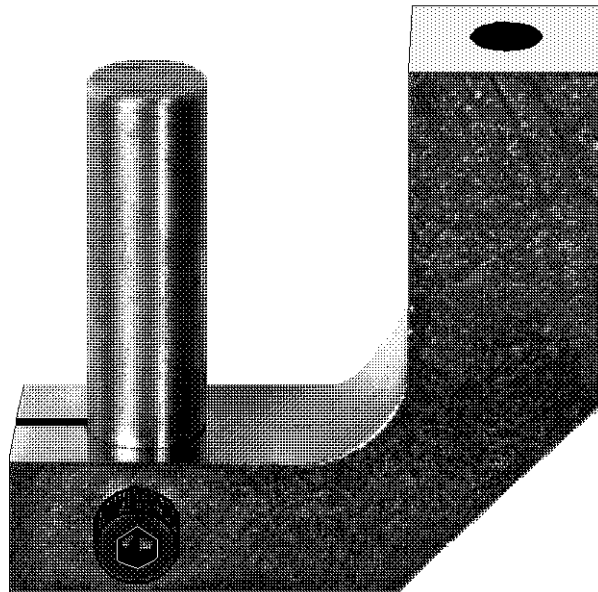
C/W Ø30 NOSE CONE 79-101-147

ITEM	QTY	DESCRIPTION	PART No.
1	2	EXTENDED LEG	81-101-004
2	2	GRUB SCREW	Z430-05-006
3	2	PIVOTAL GRIP INSERT	79-101-142
4	2	GRUB SCREW	Z400-05-004
5	1	FRONT END CAP	79-101-141
6	1	CENTRING GUIDE (3 mm +)	79-101-144
7	2	FOOT WASHER	81-101-001
8	1	FOOT ADAPTOR	79-101-143
9	3	GRUB SCREW	Z410-05-008
10	2	COUNTERSUNK SCREW	Z120-05-020
11	3	MINI TRIPOD LEG	79-101-106
12	1	Ø30 mm NOSE CONE	79-101-145

ACCESSORIES

⑥ OFFSET CHUCK ADAPTOR

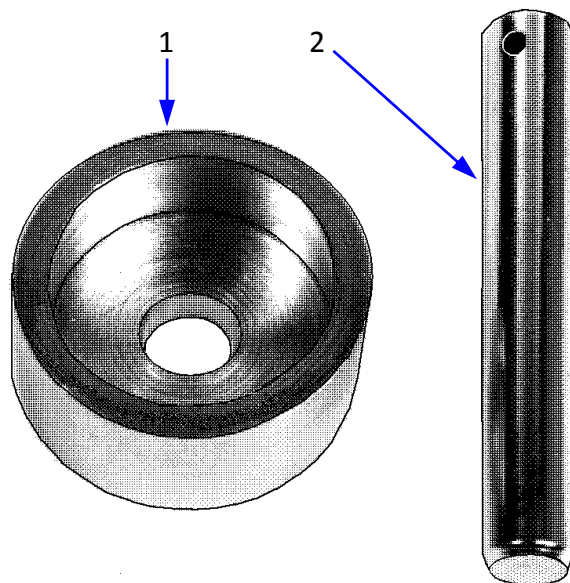
COMPLETE ASSEMBLY
AVAILABLE UNDER PART
NUMBER : 79-101-110



⑦ NOSE CONE CENTRING DEVICE

COMPLETE ASSEMBLIES
AVAILABLE UNDER PART
NUMBERS :

Ø22 CUP & ROD	79-101-112
Ø25.4 (1") CUP & ROD	79-101-113
Ø30 CUP & ROD	79-101-114

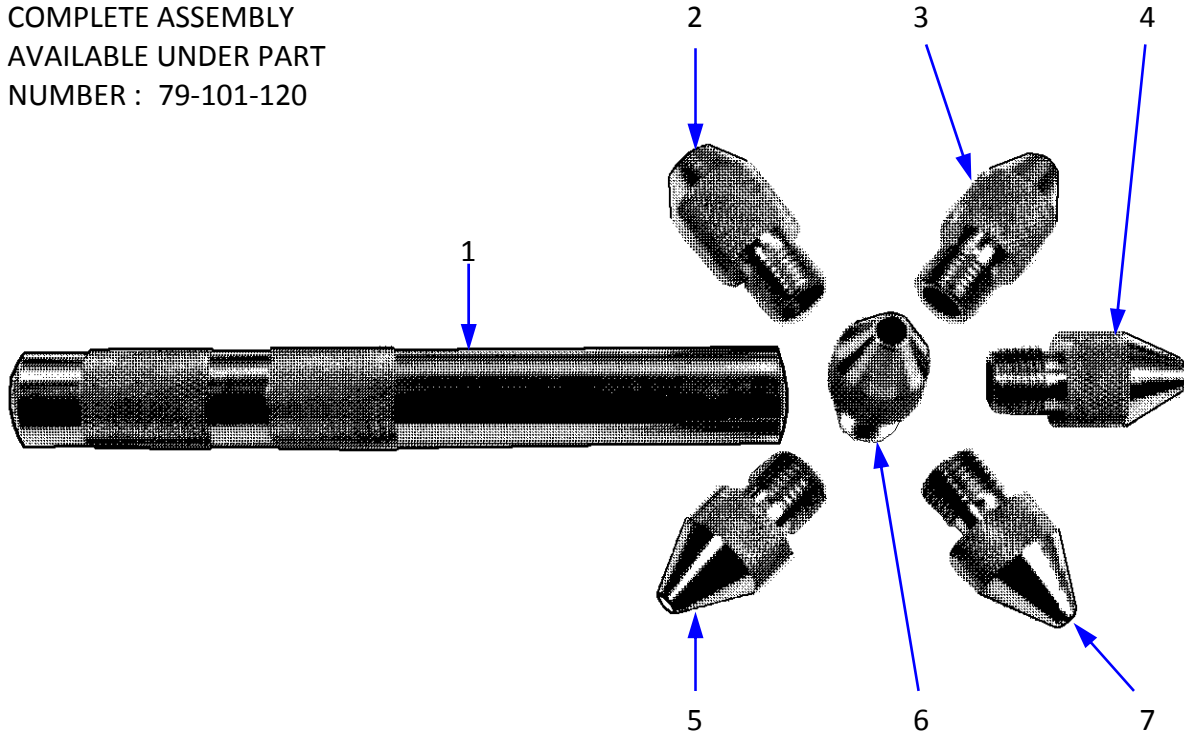


ITEM	QTY	DESCRIPTION	PART No.
1	1	Ø30 mm CENTRING CUP	79-101-118
or	1	Ø25.4 mm (1") CENTRING CUP	79-101-117
or	1	Ø22 mm CENTRING CUP	79-101-116
2	1	CENTRING ROD	79-101-115

ACCESSORIES

8 BENDING BAR ASSEMBLY

COMPLETE ASSEMBLY
AVAILABLE UNDER PART
NUMBER : 79-101-120



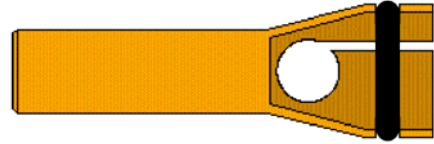
ITEM	QTY	DESCRIPTION	PART No.
1	1	BENDING BAR	79-101-121
2	1	M10 NOZZLE	79-101-128
3	1	M8 NOZZLE	79-101-127
4	1	M6 NOZZLE	79-101-126
5	1	M5 NOZZLE	79-101-125
6	1	M4 NOZZLE	79-101-124
7	1	M3 NOZZLE	79-101-123

ACCESSORIES

⑨ CHUCKS / COLLETS

- ① EARTH TAG CHUCK

PART No. 79-101-019



- ② LARGE BRACKET CHUCK (NOT ILLUSTRATED)

PART No. 79-101-022

- ③ STANDARD CD CHUCK WITH BACKSTOP

PART No. s :



M2.5 : 79-101-002

M3 : 79-101-003

M4 : 79-101-004

M5 : 79-101-005

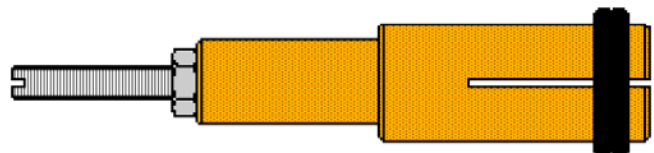
M6 : 79-101-006

M7.1 : 79-101-007

M8 : 79-101-008

- ④ STANDARD M10 CHUCK WITH BACKSTOP

PART No. 79-101-010



EC DECLARATION OF CONFORMITY



TAYLOR STUDWELDING SYSTEMS LIMITED

COMMERCIAL ROAD
DEWSBURY
WEST YORKSHIRE
ENGLAND
WF13 2BD

TEL : +44 (0)1924 452123
FAX : +44 (0)1924 430059
EMAIL : sales@taylor-studwelding.com

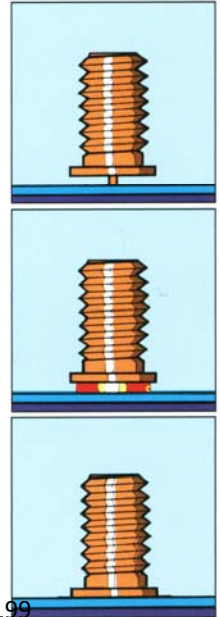
STATEMENT : This is to certify that the machinery listed below is designed and manufactured in conformance with all applicable health and safety regulations.

This statement is invalid if any modifications are carried out on the machinery without the prior written approval of Taylor Studwelding Systems Ltd.

DESCRIPTION OF MACHINE : Capacitor Discharge Studwelding Equipment
TYPE : CD-MULTIGUN
PART NUMBER : 99-101-194

Applicable EC guidelines and corresponding standards:

- Low voltage guideline 73/23/EEC:
EN60204-1 Safety of machinery - Electrical equipment of machines.
- EMC guidelines 89/336/EEC (electromagnetic compatibility):
EN50081 Electromagnetic compatibility - Generic emission standard
EN50082 Electromagnetic compatibility - Generic immunity standard
Electromagnetic compatibility (EMC) Product standard for Arc welding equipment EN50199
- Machine guidelines 89/392/EEC
EN60974-1 Arc welding equipment : Electromagnetic compatibility (EMC) requirements



DAVID TAYLOR - MANAGING DIRECTOR