

Champro®

weld



SPOT WELDER

MODEL NO: CSW6T & CSW13T

PART NO: 6030005 & 6030010

OPERATING & MAINTENANCE INSTRUCTIONS



ORIGINAL INSTRUCTIONS

GC0221 rev 5

INTRODUCTION

Thank you for selecting this Clarke Spot Welder. This portable resistance welding machine, featuring electronic spot welding time control, is suitable for many spot welding applications including vehicle body repairs, general metal fabrication and light industrial use. Robust and simple to operate, the welder delivers consistent results every time enabling the fast and efficient fusion of metal sheet.

Before attempting to operate the machine it is essential that you read this manual thoroughly and carefully follow all instructions given. In doing so you will ensure the safety of yourself and that of others around you, and you can also look forward to the product giving you long and satisfactory service.

Ensure the welder and its components suffered no damage during transit and that all components are present. Should any loss or damage be apparent, please contact your CLARKE dealer immediately.

GUARANTEE

This CLARKE product is guaranteed against faulty manufacture for a period of 12 months from the date of purchase. Please keep your receipt as proof of purchase. This guarantee is invalid if the product is found to have been abused or tampered with in any way, or not used for its intended purpose.

Faulty goods should be returned to their place of purchase, no product can be returned to us without prior permission. This guarantee does not effect your statutory rights.

ENVIRONMENTAL PROTECTION



Through purchase of this product, the customer is taking on the obligation to deal with the Waste Electrical and Electronic Equipment (WEEE in accordance with the WEEE regulations in relation to the treatment, recycling & recovery and environmentally sound disposal of the WEEE.

This means that this product must not be disposed of with general household waste. It must be disposed of according to the laws governing Waste Electrical and Electronic Equipment (WEEE) at a recognised disposal facility.

If disposing of this product or any damaged components, do not dispose of with general waste. This product contains valuable raw materials. Metal products should be taken to your local civic amenity site for recycling of metal products.

SAFETY WARNINGS



WARNING: WHEN USING ELECTRICAL TOOLS, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK AND PERSONAL INJURY

WARNING: READ ALL THESE INSTRUCTIONS BEFORE ATTEMPTING TO OPERATE THIS PRODUCT AND KEEP THESE INSTRUCTIONS IN A SAFE PLACE.

Please read these instructions carefully and retain for future reference.

ELECTRIC SHOCK

1. Isolate from the power supply and wait 5 minutes to allow the capacitors to discharge before carrying out any servicing or maintenance on this welder.
2. Do not touch live electrical parts.
3. Never use electrode holders or cables which are damaged.
4. Keep the working environment, equipment, cables and clothing free from grease, oil, moisture and dirt.
5. Ensure the welding machine has been correctly earthed.
6. The operator must be insulated from the floor and work bench using a dry insulation mat.
7. Always ensure a second person is present in case of accident.
8. Keep welding cables away from power cables.
9. Regularly inspect the condition of the cables for signs of damage.
10. Remove the plug from the mains socket when not in use.
11. Ensure the earth connector is secured to bare metal adjacent to the weld, and when not in use is insulated for safety.
12. The operator must prevent any gas cylinders in the vicinity of the work piece from becoming part of the welding circuit.

FUMES & GASES

1. The welding process generates hazardous fumes as a by-product. Inhalation of these fumes is hazardous to health.
2. Keep your head away from the weld to avoid breathing the fumes.
3. If welding in confined spaces ensure adequate ventilation and use a fume extractor.

By-products of welding can react to create a toxic/explosive environment

FIRE OR EXPLOSION

1. Welding can cause fire and explosions. Precautions should be taken to prevent these hazards.
2. Before starting work ensure the area is clear of flammable materials and move any combustible materials to a safe distance, especially substances likely to generate a dangerous vapours.
3. The welding arc can cause serious burns. Avoid contact with skin.
4. Sparks and molten metal may be ejected during welding. Take precautions to prevent fire.
5. Sparks and molten metal can pass through gaps. Be aware that fire can start out of sight.
6. Do not weld to pressurised containers, or containers containing flammable vapours e.g. fuel tanks.
7. Always have appropriate fire fighting equipment to hand suitable for use in electrical environments.
8. Avoid carrying any fuels with you e.g. cigarette lighters or matches.

PERSONAL PROTECTION

1. The body should be protected by suitable clothing.
2. The use of neck protection may be necessary against reflected radiation.
3. Arc welding machines generate a magnetic field which is detrimental to pacemakers. Consult your doctor before going near active welding equipment/operations.
4. The UV and IR radiation generated by welding is highly damaging to the eyes, causing burns. This can also affect the skin.
5. Always use suitable welding shields equipped with appropriate protection filters.
6. Where there are pedestrians and traffic ensure a protective screen is used to avoid accidental arc glare.
7. Do not weld in the vicinity of children or animals and ensure no one is looking before striking an arc.
8. Wear hearing protection if required.
9. Allow the weld to cool. Hot metal should never be handled without gloves.
10. Take care when adjusting or maintaining the electrode/holder, that it has had time to cool sufficiently and the welder is disconnected from the mains supply.

11. First aid facilities and a qualified first aid person should be available unless medical facilities are close by, for immediate treatment of flash burns of the eyes and skin burns.
12. Flammable hair sprays/gels should not be used by persons welding.

PROTECTIVE CLOTHING

1. Wear gauntlet type gloves designed for use when welding.
2. Wear an apron, and protective shoes.
3. Wear cuffless trousers (not turned up) to avoid catching sparks and slag.
4. Avoid wearing oily or greasy clothing.
5. Wear protective head and shoulder coverings if welding overhead.
6. Wear a helmet with safety goggles or glasses with side shields underneath, appropriate filter lenses or plates (protected by clear glass). This is a **MUST** for welding (and chipping) to protect the eyes from radiant energy and spatter. Replace cover glass when broken, pitted, or spattered.

NOTE: All protective wear inc. masks & head shields **MUST** comply with Personal Protective Equipment Directive 89/686/EEC.

ADDITIONAL SAFETY PRECAUTIONS FOR SPOT WELDING

1. Always ensure that there is ample free air circulating around the outer casing of the machine and that any louvres are unobstructed.
2. Always inspect the cable before use to ensure it is in good condition.
3. Always remove all flammable materials from the welding area.
4. Always keep a fire extinguisher handy; -Dry Powder, CO² or BCF, **NOT** Water.
5. Never attempt any electrical or mechanical repair unless you are a qualified technician. If you have a problem with the machine contact your local CLARKE dealer.
6. Never use or store in a wet/damp environment.
7. Never continue to weld, if, at any time, you feel even the smallest electric shock. Stop welding **IMMEDIATELY**, and **DO NOT** attempt to use the machine until the fault is diagnosed and corrected.
8. Never change electrodes with bare hands or damp gloves.

ELECTRICAL CONNECTION



WARNING: THE INSTALLATION OF THIS APPLIANCE SHOULD BE CARRIED OUT BY A COMPETENT ELECTRICIAN AND BE IN ACCORDANCE WITH THE CURRENT IEE WIRING REGULATIONS (BS7671-2:2008).

The power cable of this machine **MUST be connected to a 230 Volt- 50Hz supply** through a suitably fused isolator switch.

A standard 13amp plug **MUST NOT BE USED** with this machine.

Fuses required are;

- CSW6T - 16 Amp
- CSW13T - 25 Amp

We strongly recommend that this machine is connected to the mains supply via a Residual Current Device (RCD).

If in any doubt, consult a qualified electrician. **DO NOT** attempt any repairs yourself.

MACHINE FEATURES

MODEL CSW6T

This 230V 50Hz, portable Spot Welder is provided with an electronic timer which allows precise control of welding time. The control knob is arrowed in Fig 1. Electrode pressure may be mechanically adjusted from 40 to 120kg, to spot weld low carbon sheet steel up to 1 + 1 mm in thickness.

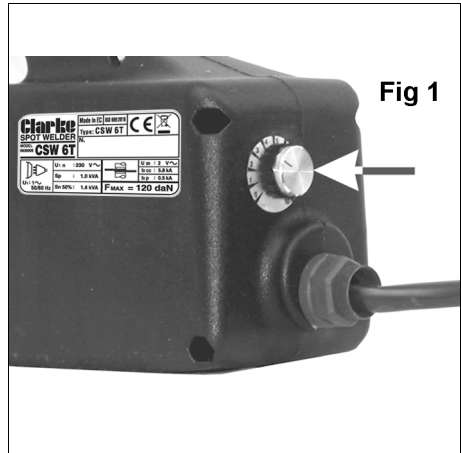


Fig 1

MODEL CSW13T

The most important features of this 230V 50Hz Portable Spot Welder are controlled by a microprocessor, managed from the control panel shown in Fig. 2. These features are:

1. Welding time, set according to the thickness of metal to be welded.
2. Changing selection for welding thickness.
3. Changing resistance welding machine operating mode... normal or pulse.

Selecting 'PULSE' mode improves welding capacity on material with high yield points or materials with protective coatings. The pulsation period is preset and does not require adjustment.

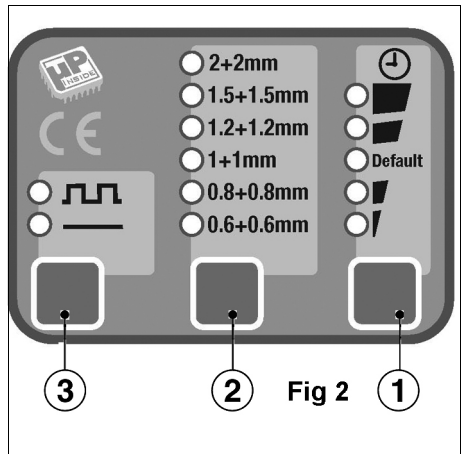


Fig 2

4. Electrode pressure may be mechanically adjusted from 40 to 120kg, to spot weld low carbon sheet steel up to 2 + 2 mm in thickness.

BOTH MODELS

Both 120mm electrode arms and standard electrodes are provided.

- An eye bolt may be fitted to the machine (see your Clarke dealer), for use in supporting the machines weight when repetitive welds are required (see your Clarke dealer. **IMPORTANT! When using the Eye Bolt, take care NOT to screw it more than 8mm into the screw hole.**

PARTS IDENTIFICATION

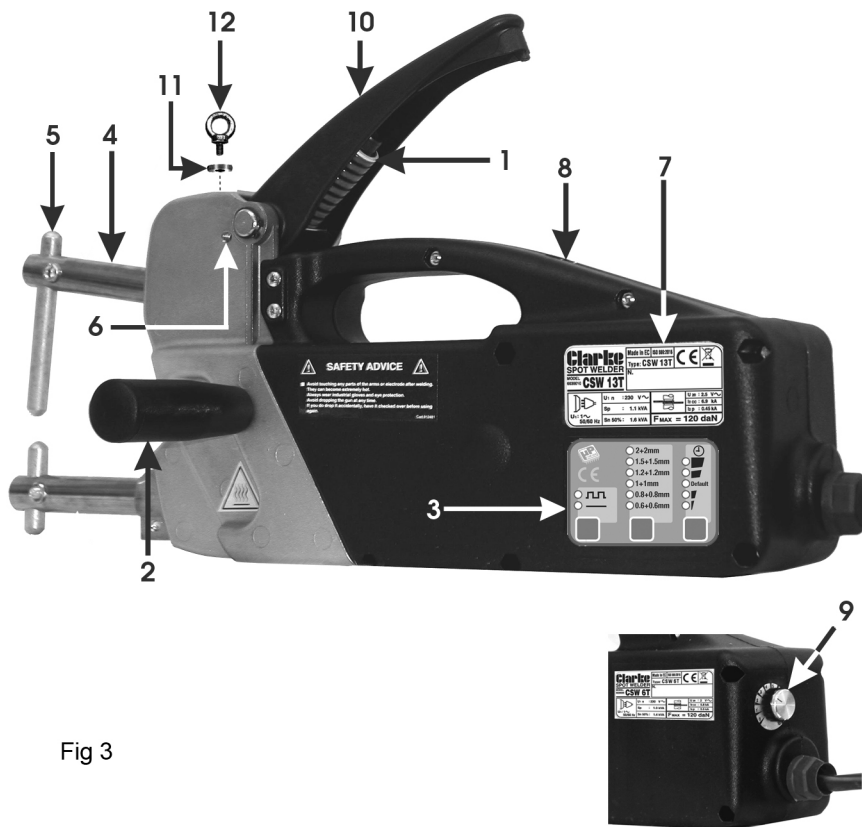
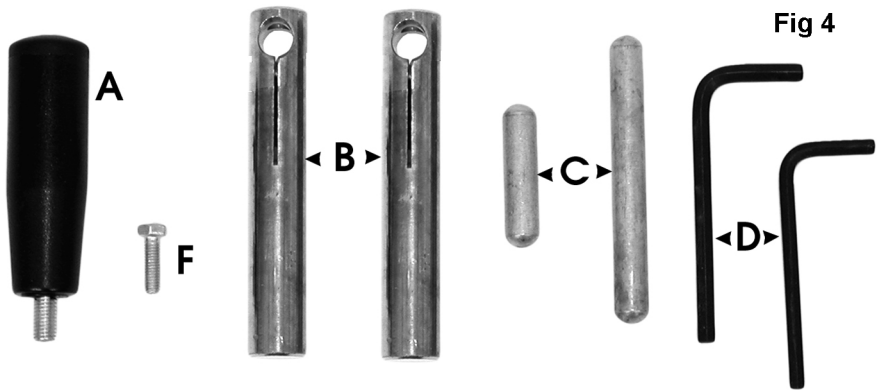


Fig 3

No	Description	No	Description
1	Pressure Adjusting Screw	7	Data Label
2	Handle	8	Micro-switch
3	Control Panel (13T)	9	Weld Time Adjuster (6T)
4	Electrode Arm	10	Operating Lever
5	Electrode (Large)	11	Spacer (optional)
6	Screw locating hole	12	Lifting Eye (optional)

LOOSE COMPONENTS



No	Description	No	Description
A	1 x Handle	D	2 X Hex Wrenches
B	2 x Electrode Holders	F	1 x M6 Bolt
C	2 x Electrodes (straight)		

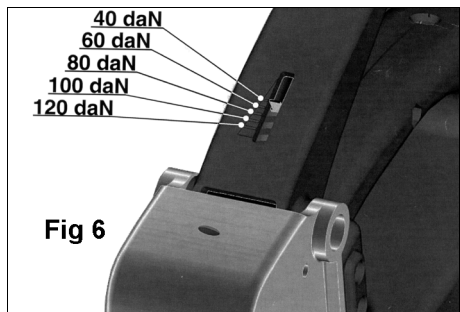
Unpack and lay out the components, checking against the following list. Please report any damage which may have occurred during transit, to your CLARKE dealer immediately.

PREPARATION FOR USE



WARNING: ENSURE THE WELDER IS DISCONNECTED FROM THE POWER SUPPLY BEFORE PROCEEDING

1. Fit the electrodes to the electrode arms. Whether or not the longer electrode is located in the upper or lower arm, depends upon the work in hand. It may be necessary for example to reach over a lip in a workpiece, necessitating the longer electrode to be positioned in one particular arm. Normally however, the longer electrode is located in the upper arm. Nip up the clamps but do not fully tighten.
2. Depress the operating lever fully and insert the M6 bolt provided, into the threaded hole as shown in Fig 5.
3. Screw in fully so that the lever is held in the fully down position as shown. This is the position used for adjusting the electrode gap.
4. Before setting the electrode gap however, it is important to ensure that the electrode arms are parallel to each other and the electrodes are perfectly in line, on the same axis, when the operating lever is fully depressed. This is achieved by slackening the respective arm clamp and rotating the arms within the receptacle until the electrodes meet exactly and are perfectly in line. When satisfied, tighten the clamps.
5. Slacken off the upper electrode clamp and move the electrode so that a piece of material of the same total thickness as that to be welded, can be inserted between the electrodes, then tighten the electrode clamp. The correct gap is now set.
6. Remove the M6 bolt and release the lever.
7. Adjust the pressure to be exerted by the electrodes by turning the adjuster screw (item 1, Fig.3), using the hex. wrench provided, (clockwise to increase, anticlockwise to decrease) according to the scale shown in Fig 6.



NOTE: Always remember that too high a pressure will result in damage to the electrode tips, whereas too little pressure will result in a poor weld. Pressure is also dependant upon the length of electrode arms....the longer the arms the lighter the pressure setting. This must be taken into account if/when replacing the electrode arms with any of those available from you Clarke dealer, (see Accessories).

8. Set the welding time by either turning the dial adjuster, shown in Fig 1, (model 6T), or pressing the button shown at 1 Fig 2 (model 13T). Generally the thicker the workpiece, the longer the welding time.

NOTE: The time scale shown on the control panel of the 13T is a general guide only. It is advisable to make a few test welds on material similar to the workpiece before commencing work, making adjustments of pressure and welding time, as necessary, until a perfect weld is achieved.

MODEL 13T only

1. Select the welding mode....normal or pulse, by pressing the appropriate button on the control panel accordingly. (Button 3, Fig 2)
2. Select the welding thickness by pressing the appropriate button on the control panel accordingly. (Button 2, Fig 2)

OPERATION



WARNING: BE AWARE THAT THE MACHINE PRODUCES VERY INTENSE ELECTROMAGNETIC FIELDS. THIS COULD SERIOUSLY EFFECT PEOPLE WEARING PACEMAKERS OR FITTED WITH PROSTHESES. THESE PEOPLE SHOULD NOT BE ALLOWED TO USE THE MACHINE OR BE IN ITS VICINITY. MALFUNCTIONS OR DAMAGE TO WATCHES, MAGNETIC CARDS, INSTRUMENTATION, DATA TRANSMISSIONS OR TELEPHONE RECEPTION COULD ALSO OCCUR. THESE POINTS MUST ALWAYS BE TAKEN INTO CONSIDERATION WHEN SITING THE WELDER

IMPORTANT: 1. Ensure the work surfaces are perfectly clean. There should be no rust or other contaminants which would seriously impair the quality of the weld. Ideally, the workpieces should be clamped together.

IMPORTANT: 2. Ensure the electrode tips are correctly formed. They should be checked regularly when welding to ensure they make perfect contact with the work. A Spot Welding Tip dresser is available from your Clarke dealer.

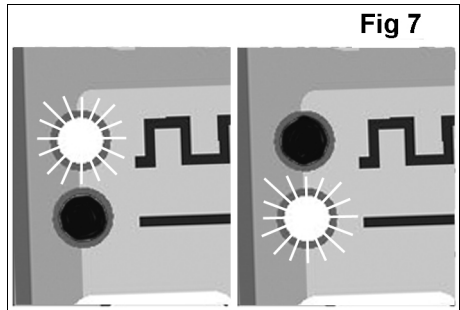
- With the machine correctly adjusted, connect to the mains supply.

- Bring the lower electrode up to the work so that it is positioned directly beneath the point to be welded.
- Depress the operating lever fully so that the microswitch is activated, and hold in this position for a short period. Current to the electrodes will automatically shut off after the welding time has been reached, at which time you may withdraw the welder. A short delay, from the end of the weld cycle to removing the electrodes, will improve the weld characteristics.

Should the welder not operate correctly or a particularly poor weld is produced, the following checks may determine the cause.

1. Ensure the work is perfectly clean.
2. Ensure the welding parameters are all correct.
3. Ensure the microswitch is actually pressed and held for the duration of the weld.
4. Ensure the thermal overload has not been activated.

NOTE: The thermal overload is a protection device which operates when the electrical circuits have overheated. This prevents the machine from operating until it has cooled down to satisfactory levels. The device will operate if the DUTY cycle has been exceeded or if the ambient temperature becomes too high. NEVER EXCEED THE DUTY CYCLE - See Specifications.



NOTE: On model 13T, if the thermal overload has intervened, the two lamps shown in Fig 7 will flash alternately.

MAINTENANCE



WARNING: ELECTRICITY CAN KILL. NEVER TOUCH LIVE ELECTRICAL COMPONENTS. DISCONNECT THE POWER SUPPLY BEFORE ALL INSPECTIONS AND MAINTENANCE OPERATIONS. BEWARE HOT SURFACES.....ALWAYS LET THE MACHINE COOL DOWN BEFORE ACCESSING INTERNAL COMPONENTS.

Frequency of maintenance operations depends on the operating conditions: how intensively the welder is used, how clean or dirty the welding site is (aggressive atmospheres, etc).

Before use, always inspect the welder, checking for security and cleanliness of arms and electrodes to ensure they are in perfect condition. Ensure also that the power cable is in perfect condition at all times.

As a general rule the power supply should be inspected internally at least twice a year.

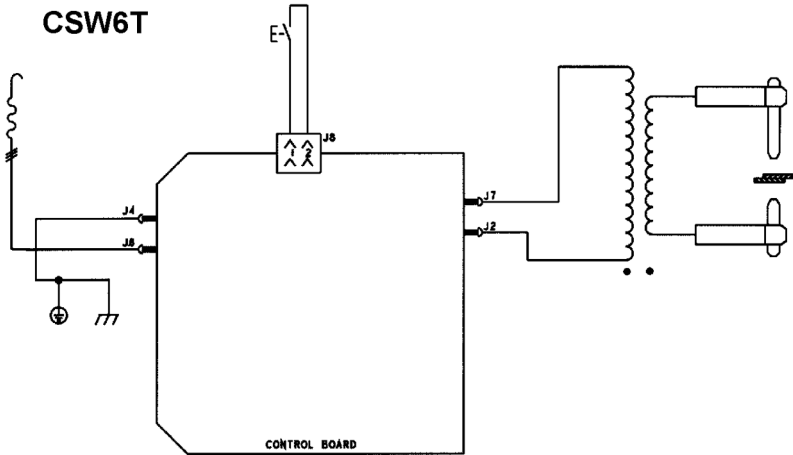
1. Access the inside of the machine by removing the screws securing the side cover and carefully hinge the cover down.
2. Clean the transformer using a blast of dry compressed air with a **maximum** pressure of 10 bar. **NEVER direct the compressed air jet on to the circuit boards.** These should be cleaned with a soft brush and vacuumed or blown with air at very low pressure. **ALWAYS use a face mask for these operations.**
3. Check all wiring for insulation damage or loose or oxidised connections. Repair/replace where necessary. Check all screws and connections are tight and there are no signs of oxidation or overheating.
4. Replace the cover.



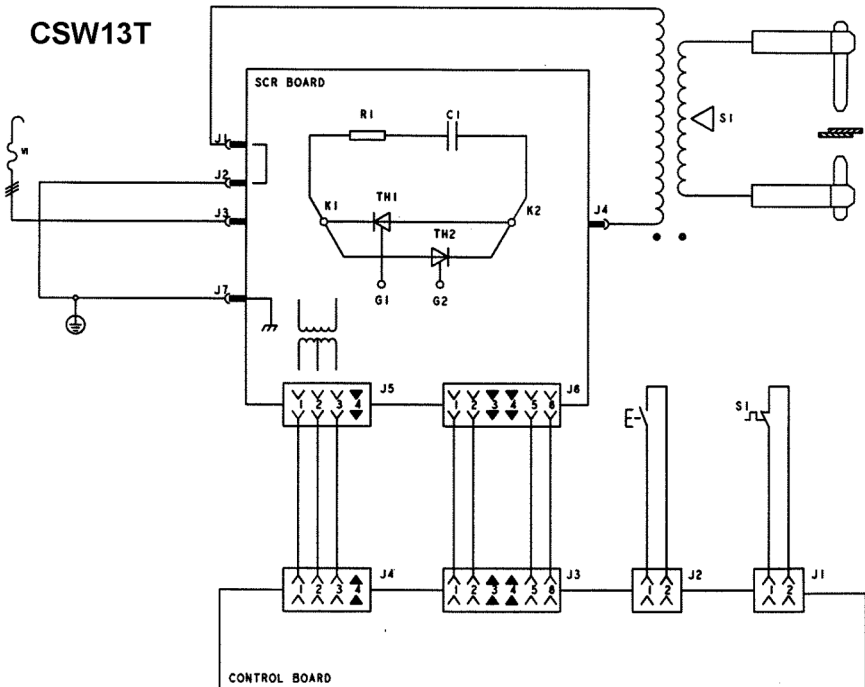
WARNING: NEVER CONNECT THE MACHINE UNLESS THE COVER IS REPLACED.

SCHEMATIC WIRING DIAGRAMS

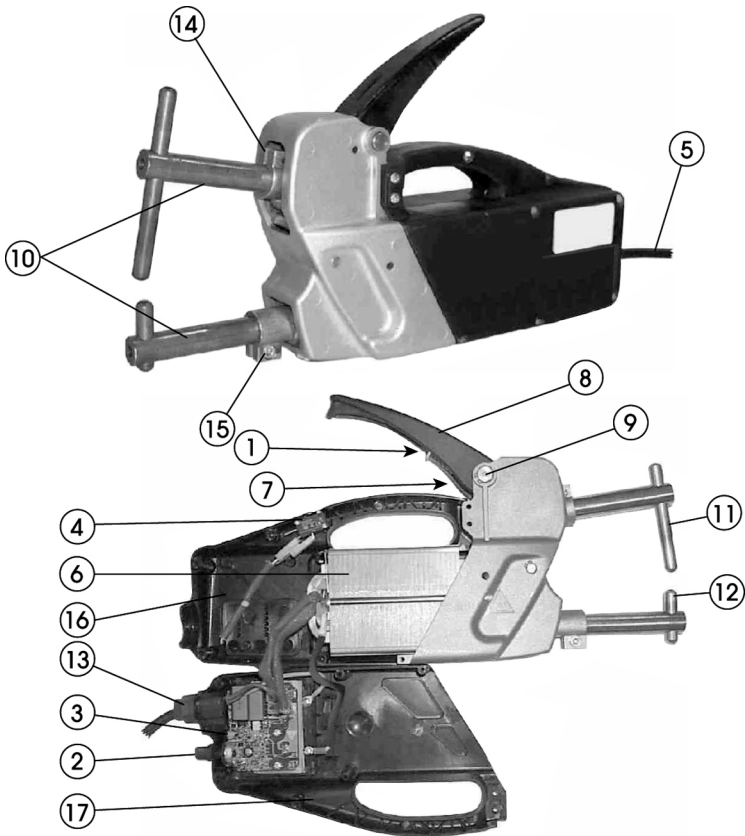
CSW6T



CSW13T



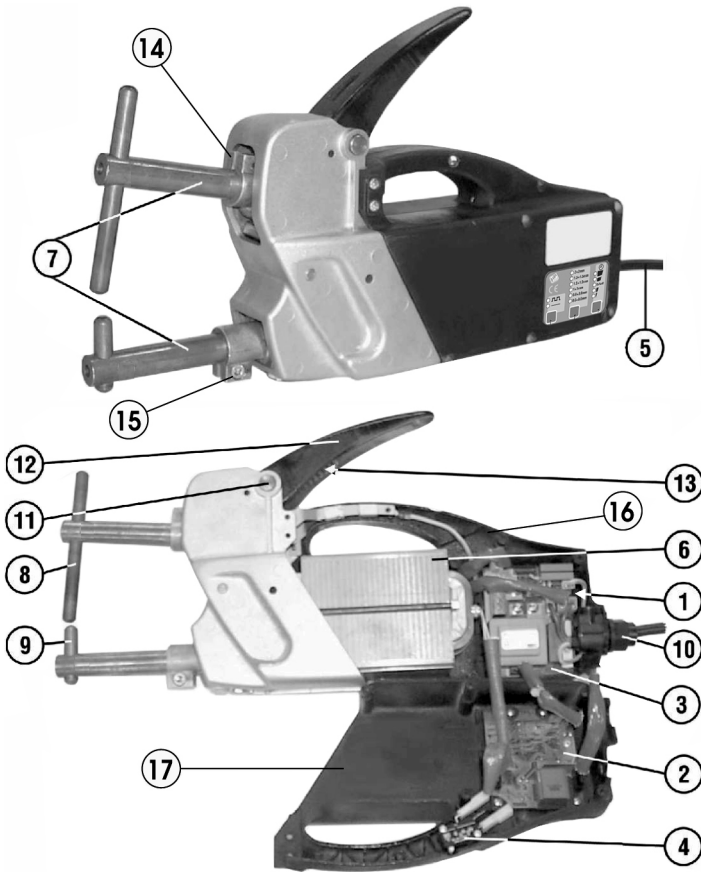
SPARE PARTS - CSW6



No	DESCRIPTION	PART NO
1	Bush	TT322518
2	Potentiometer Knob	TT112299
3	Timer PCB	TT114236
4	Microswitch	TT122393
5	Mains Cable	TT132104
6	Transformer	TT169152
7	Adjuster Screw	TT121263
8	Operating Lever	TT322512
9	Pivot Pin	TT482887

No	DESCRIPTION	PART NO
10	Arm (see page 17)	
11	Electrode (see page 17)	
12	Electrode (see page 17)	
13	Cable Kit-bush/ringnut	TT990046
14	Upper Arm Clamp	TT522020
15	Lower Arm Clamp	TT522023
16	Left Shell	TT322509
17	Right Shell	TT322526

SPARE PARTS - CSW13T







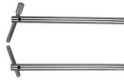
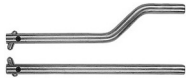



No	DESCRIPTION	PART NO
1	Screw	TT113908
2	Control PCB	TT114070
3	Power PCB	TT114085
4	Microswitch	TT122393
5	Mains Cable	TT132104
6	Transformer	TT169034

No	DESCRIPTION	PART NO
10	Cable Kit-bush/ringnut	TT990046
11	Pivot	TT482887
12	Operating Lever	TT322512
13	Adjuster Screw	TT212163
14	Upper Arm Clamp	TT522020
15	Lower Arm Clamp	TT522023
16	Right Shell	TT322510
17	Left Shell	TT322511

ACCESSORIES

The following accessories are available from your Clarke dealer.

Description	Throat	Part No	
Electrodes 'L'	120mm	6030105	
Electrodes 'L'	250mm	6030107	
Electrodes 'L'	500mm	6030109	
External Profile Electrodes		6030111	
Internal Profile Electrodes		6030113	
Electrodes	120mm	6030115	
Electrodes	350mm	6030117	
Electrodes	350mm	6030119	
Electrodes	120mm	6030121	

SPECIFICATION

MODEL	CSW6T	CSW13T
Part No	60300005	60300010
Weight	10.5 kg	11 kg
Dimensions (L x W x H) mm	440 x 110 x 185	
Arm Length	120 mm	
Arm pressure	40-120 kg	
Power Supply	230V 50Hz 1 Ph (hard wiring required)	
Max Absorbed Power	6 kW	13 kW
Power Rating	1.2 kW	2.3 kW
Mains Fuse	16 Amp	25 Amp
Spot Welding Current (Max)	3800 Amps	6900 Amps
Duty Cycle	3 spots/min with minimum downtime of 20 secs	
Max. Welding Thickness	1 + 1 mm	2 + 2 mm

Please note that the details and specifications contained herein, are correct at the time of going to print. However, CLARKE International reserve the right to change specifications at any time without prior notice.

DECLARATION OF CONFORMITY



Clarke[®]
INTERNATIONAL

Hemnall Street, Epping, Essex CM16 4LG

DECLARATION OF CONFORMITY

This is an important document and should be retained.

We hereby declare that this product(s) complies with the following directive(s):

2014/30/EU Electromagnetic Compatibility Directive.

2014/35/EU Low Voltage Equipment Directive.

2011/65/EU Restriction of Hazardous substances.

The following standards have been applied to the product(s):

EN 62135-1:2008, EN 62135-2:2008, EN 50445:2008, EN 50581:2012.

The technical documentation required to demonstrate that the product(s) meet(s) the requirement(s) of the aforementioned directive(s) has been compiled and is available for inspection by the relevant enforcement authorities.

The CE mark was first applied in: 2006

Product Description: Spot Welder- 1.2kW & Automatic Spot Welder- 2.3kW.
Model number(s): CSW6T /CSW13T.
Serial / batch Number: N/A
Date of Issue: 23/06/2016.

Signed:

J.A. Clarke
Director

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PARTS & SERVICE:

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Parts Enquiries

Parts@clarkeinternational.com

Servicing & Technical Enquiries

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