GB

DRAPER®

STUD WELDER

71106/76592(WITHOUT TROLLEY)

Trolley also available separately, Stock No.76593

CE

These instructions accompanying the product are the original instructions. This document is part of the product, keep it for the life of the product passing it on to any subsequent holder of the product. Read all these instructions before assembling, operating or maintaining this product.

This manual has been compiled by Draper Tools describing the purpose for which the product has been designed, and contains all the necessary information to ensure its correct and safe use. By following all the general safety instructions contained in this manual, it will ensure both product and operator safety, together with longer life of the product itself.

All photographs and drawings in this manual are supplied by Draper Tools to help illustrate the operation of the product.

Whilst every effort has been made to ensure the accuracy of information contained in this manual, the Draper Tools policy of continuous improvement determines the right to make modifications without prior warning.

1. TITLE PAGE

1.1 INTRODUCTION:

USER MANUAL FOR: Stud Welder
Stock No's: 71108/76592
Part No's: SW3100T/SW3100

1.2 REVISIONS:

Date first published June 2017.

As our user manuals are continually updated, users should make sure that they use the very latest version.

Downloads are available from: http://drapertools.com/manuals

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1.3 UNDERSTANDING THIS MANUALS SAFETY CONTENT:

WARNING! – Information that draws attention to the risk of injury or death.
CAUTION! – Information that draws attention to the risk of damage to the product or surroundings.

1.4 COPYRIGHT © NOTICE:

2. CONTENTS

3. GUARANTEE

3.1 GUARANTEE

Draper tools have been carefully tested and inspected before shipment and are guaranteed to be free from defective materials and workmanship.

Should the tool develop a fault, please return the complete tool to your nearest distributor or contact:

Draper Tools Limited, Chandler's Ford, Eastleigh, Hampshire, SO53 1YF. England.

Telephone Sales Desk: (023) 8049 4333 or:

Product Helpline (023) 8049 4344.

A proof of purchase must be provided.

If upon inspection it is found that the fault occurring is due to defective materials or workmanship, repairs will be carried out free of charge. This guarantee period covering parts/labour is 12 months from the date of purchase except where tools are hired out when the guarantee period is 90 days from the date of purchase. The guarantee is extended to 24 months for parts only. This guarantee does not apply to normal wear and tear, nor does it cover any damage caused by misuse, careless or unsafe handling, alterations, accidents, or repairs attempted or made by any personnel other than the authorised Draper warranty repair agent.

Note: If the tool is found not to be within the terms of warranty, repairs and carriage charges will be quoted and made accordingly.

This guarantee applies in lieu of any other guarantee expressed or implied and variations of its terms are not authorised.

Your Draper guarantee is not effective unless you can produce upon request a dated receipt or invoice to verify your proof of purchase within the guarantee period.

Please note that this guarantee is an additional benefit and does not affect your statutory rights.

Draper Tools Limited.

4. INTRODUCTION

4.1 SCOPE

This stud welding machine is designed for performing various welding and automotive repair functions on car bodywork panels.

4.2 SPECIFICATION

Stock no	71106	76592
Part no	SW3100T	SW3100
Input voltage	230V AC @ 50Hz	230V AC @ 50Hz
Rated input power	10kW	10kW
Input current	32A	32A
Max output amps	3100A	3100A
Output voltage	1-13V	1-13V
Welding time	0-99 seconds	0-99 seconds
For use on material thicknesses	0.8mm - 1.2mm	0.8mm - 1.2mm
Regulation type	stepless	stepless
Dimensions	350 x 220 x 280mm	350 x 220 x 280mm
Supplied with trolley	YES	NO
Weight (without trolley)	28kg	28kg

4.3 HANDLING AND STORAGE

Care must still be taken when handling and lifting. Dropping this machine will have an effect on the accuracy and may also result in personal injury. This machine is not a toy and must be respected.

The environment will have a negative result on its operation if you are not careful. If the air is damp, components will rust. If the machine is unprotected from dust and debris; components will become clogged: And if not cleaned and maintained correctly or regularly the machine will not perform at its best.

5. HEALTH AND SAFETY INFORMATION

5.1 GENERAL SAFETY INSTRUCTIONS

Warning: When using electric tools basic safety precautions should always be followed to reduce the risk of fire, electric shock and personal injury including the following.

Read all these instructions before attempting to operate this product and save these instructions.

Electric shock can kill:

– Remove the plug from the socket before carrying out adjustment, servicing or maintenance.
– Allow 5 minutes waiting time for the capacitors to discharge before removing the panels for any maintenance operations
– Do not touch live electrical parts.
– Never use electrode holders or cables with damaged or deteriorated insulation.
– Keep working environment, equipment, cables and clothing free from grease, oil, moisture and dirt.
– Ensure welding machine has been correctly earthed and all panels are fitted securely.
– The operator must be insulated from the floor and work bench using a dry insulation mat.
– Wear isolating footwear and gloves that are in good condition, i.e. without holes.
– In hazardous conditions of increased electric shock always ensure a second person is present in case of accident.
– Never change electrodes with bare hands or damp gloves.
– Keep welding cables away from power cables.
– Regularly inspect the condition of the welding, earth, and power cables for signs of damage.
– Do leave machine unattended and remove plug from socket when not in use.
– Do not use welding cables unsuitable for the amperage.
– Ensure earth clamp is adjacent to weld seam, secured to bare metal and when not in use is insulated for safety.
– Keep all equipment well maintained.
– The operator shall prevent gas cylinders in the vicinity of the work piece from becoming part of the welding circuit.

Fumes & gases can be harmful:

– The welding process generates hazardous fumes as a by-product. Inhalation of these fumes is hazardous to health.
– Keep your head away from the weld to avoid breathing the fumes.
– If welding in confined spaces ensure adequate ventilation and use a fume extractor.
– Welding fumes displace oxygen. Danger of suffocation.
– By-products of welding can react with other chemical vapours to produce a toxic/explosive environment.

Welding can cause fire or explosion:

– Arc welding and allied processes can cause fire and explosions and precautions shall be taken to prevent these hazards.
– Before starting a weld ensure the area is clear of flammable materials.
– Remove any inflammables to a safe distance, especially substances likely to generate a dangerous vapour.
– The welding arc can cause serious burns. Avoid contact with skin.
– Sparks and molten metal are cast out during welding. Take precautions to prevent fire igniting and wear protective clothing.

5. HEALTH AND SAFETY INFORMATION

– Sparks and molten metal can pass through gaps. Be aware that fire can start out of sight. Flammables in a locked cabinet may not be safe.
– Do not weld pressurised containers.
– Do not weld tanks, drums or other vessels until they have been correctly cleaned/prepared for welding.
– Always have appropriate and fully maintained fire fighting equipment suitable for the materials used and for use in electrical environments available in close proximity at all times.
– Keep clothing free from oil and grease.
– Wear hat, flame-proof apron, woollen clothing, gloves, long sleeve tops with closed neck, trousers (without turn-ups) to cover non-slip boots.
– Protective head and shoulder coverings should be worn when overhead welding.
– Avoid taking any fuels with you e.g. cigarette lighters or matches.
– Hot spots and their immediate surroundings should be observed until their temperature has dropped to normal.

Personal Protection:

– The body should be protected by suitable clothing.
– The use of neck protection may be necessary against reflected radiation.
– Wear safety glasses when chipping, wire brushing, grinding or when near cooling welds as metal filings or slag can be thrown up. Fully enclosed goggles are advisable.
– Arc machines generate a magnetic field which is detrimental to pacemaker recipients. Consult your doctor before going near welding equipment/operations.
– The UV and IR radiation generated by welding is highly damaging to the eye, causing burns. This can also affect the skin. Protect the eyes and face.
– The face and eyes shall be protected by suitable welding shields equipped with appropriate ocular protection filters.
– Where environments are subject to pedestrians and traffic ensure a protective screen is used to avoid accidental arc glare.
- Do not weld in the vicinity or children or animals and ensure no one is looking before striking up.
– In the welding environment, damaging levels of noise can exist. Wear hearing protection if the process dictates.
– Do not touch hot equipment or metal. Allow the weld time to cool, use the correct tool and wear protective welding gauntlets.
– Wear flame retardant clothing (leather, wool, etc.).
– Take care when adjusting or maintaining the torch that it has had time to cool sufficiently and is disconnected.
– The arc generates
  • ultra-violet radiation (can damage skin and eyes);
  • visible light (can dazzle eyes and impair vision);
  • infra-red (heat) radiation (can damage skin and eyes);
– Such radiation can be direct or reflected from surfaces such as bright metals and light coloured objects.

Limitations:

– Do not use for;
  - operations in severe conditions (e.g. extreme climates, freezer applications, strong magnetic fields etc).
  - operations subject to special rules (e.g. potentially explosive atmospheres, mines etc).
  - operations that require ingress protection greater than IPX0, e.g. in rain or snow etc.

General:

– Training should be sought out in
  - the safe use of this equipment;
  - the processes;
  - the emergency procedures;

– Welding power sources are not to be used for pipe thawing.

– Take precautions against toppling over, if the power source shall be placed on a tilted plane.

– All equipment should be kept in good working condition, inspected and, when defective, promptly repaired or withdrawn from service - All equipment should be placed so that it does not present a hazard in passageways, on ladders or stairways, and should be operated in accordance with the manufacturer's instructions.

– In the vicinity of an arc, non-reflective curtains or screens shall be used to isolate persons from the arc radiation. A warning, e.g. a symbol for eye protection, should refer to the hazard of arc radiation.

5.2 ADDITIONAL SAFETY INSTRUCTIONS

Read instructions

1. Read owner's Manual before using or servicing unit.
2. Use only manufacturer‘s supplied replacement.

Exploding parts can injure.

1. Always wear a face shield and long sleeves.
2. Wear approved face shield or safety goggles with side shields.
3. Wear proper body protection to protect skin.

Static can damage PC boards

1. Put on grounded wrist strap before handing boards or parts.
2. Use proper static-proof bags and boxes to store, move or ship PC boards.

Pacemaker wearers

1. Magnetic fields can affect pacemakers. Pacemaker wearers keep away.
2. Wearers should consult their doctor before going near plasma arc cutting operations.

Overuse can cause overheating

1. Allow cooling period, follow rated duty cycle before starting to weld again.

Do not weld in at height

Electric shock can kill

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Do not wrap electrical cable around your body.
4. Ground the workpiece with a good electrical ground.

5. HEALTH AND SAFETY INFORMATION

Fumes and gases can be hazardous:

1. Welding produces fumes and gases.
2. Breathing these fumes and gases can be hazardous to your health
3. If inside, ventilate the area.
4. Do not weld in a confined space only if it is well ventilated.

Eye protection for welding:

1. Current level in amperage Minimum shade Number
   30 - 150A..... #8
   150 - 300A..... #10
   300 - 500A..... #12

The heat from the workpiece can cause serious burns.

Remove all flammables of the welding area.

Falling unit can cause injury.

Fire or explosion hazard.

1. Do not locate unit on, over, or near combustible surfaces.
2. Do not install unit near flammables .
3. Never cut on pressurised cylinder.

5.3 CONNECTION TO THE POWER SUPPLY

Caution: Risk of electric shock. Do not open.

Make sure the power supply information on the machine's rating plate is compatible with the power supply you intend to connect it to.

Because it is constructed mostly of metal parts, it is a Class 1 machine; meaning, it must have an earth connection in the power supply. This is to prevent electrocution in the event of a failure.

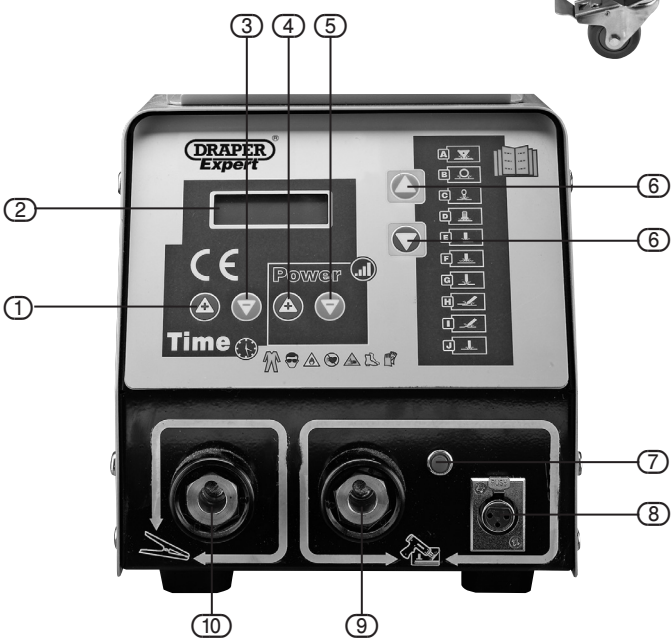
This machine requires a 32A supply, as such it is supplied without a plug fitted. A dedicated 32A individual plug must be fitted before use.

Apart from replacing the fuse in the plug, no other electrical work is recommended on this machine.

6. TECHNICAL DESCRIPTION

6.1 IDENTIFICATION

1. Time decrease
2. LCD display
3. Time increase
4. Current decrease
5. Current increase
6. Function selection UP/DOWN
7. Gun testing button
8. Trigger control cable
9. Gun cable
10. Earth cable



7. UNPACKING AND CHECKING

7.1 PACKAGING

Carefully remove the machine from the packaging and examine it for any sign of damage that may have happened during shipping. Lay the contents out and check them against the parts shown below. If any part is damaged or missing; please contact the Draper Helpline (the telephone number appears on the Title page) and do not attempt to use the machine.

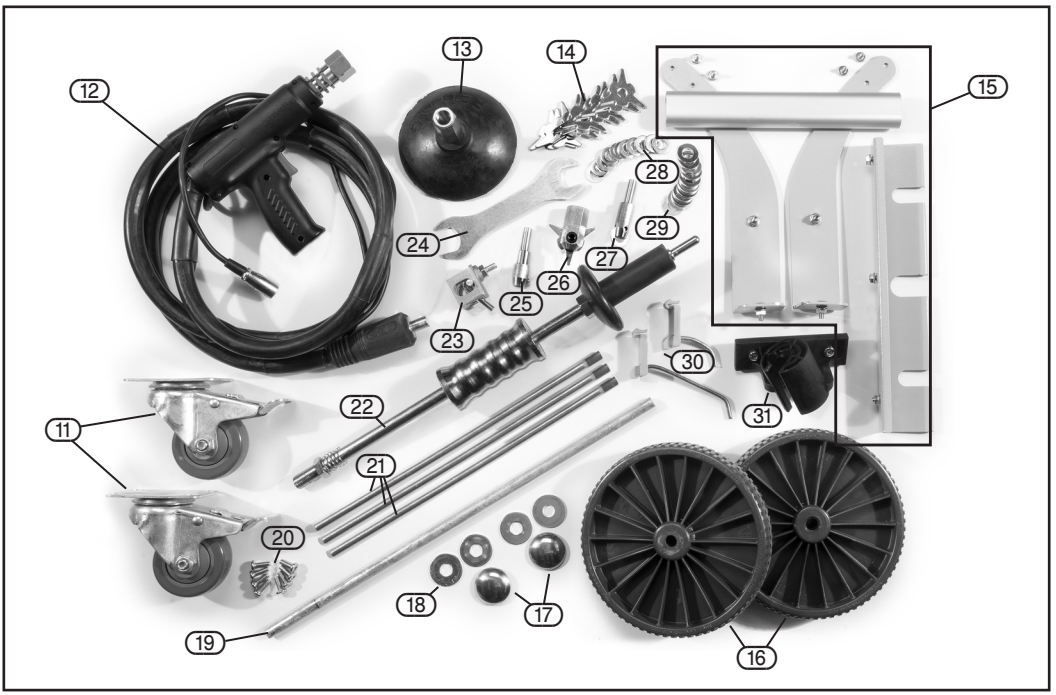
The packaging material should be retained at least during the guarantee period: in case the machine needs to be returned for repair.

Warning! Some of the packaging materials used may be harmful to children. Do not leave any of these materials in the reach of children.

If any of the packaging is to be thrown away, make sure they are disposed of correctly; according to local regulations.

7.2 WHAT´S IN THE BOX?

The packaging contains several parts and semi-assembled elements that require final assembly. Lay out the contents and check off the items against those featured below.



(11) Caster x2
(12) Stud gun
(13) Manual cupule
(14) Triangle washer x10
(15) Handle components + Screw for handle x4
(16) Wheel x2
(17) Axle caps x2
(18) Washer for wheel 4
(19) Wheel axle
(20) Screw for wheel x8
(21) Carbon rod x3
(22) Pulling hammer
(23) Earth clamp
(24) Wrench
(25) Carbon rod connector
(26) Triangle washer connector
(27) Washer connector
(28) Washer 12mm x15
(29) Washer 10mm x15
(30) Cable hooks
(31) Gun holster

8. ASSEMBLING THE STUD WELDER TROLLEY

There should be minor assembly required. Fitting of the front castors, rear wheels and transport handle is all that is required..

9. ASSEMBLING THE STUD WELDER

9.1 DUTY CYCLE AND OVERHEATING

Duty cycle is percentage of 10 minutes that unit can weld at rated load without overheating.

If unit overheat, output stops, and cooling fan runs.

Wait fifteen minutes for unit to cool.

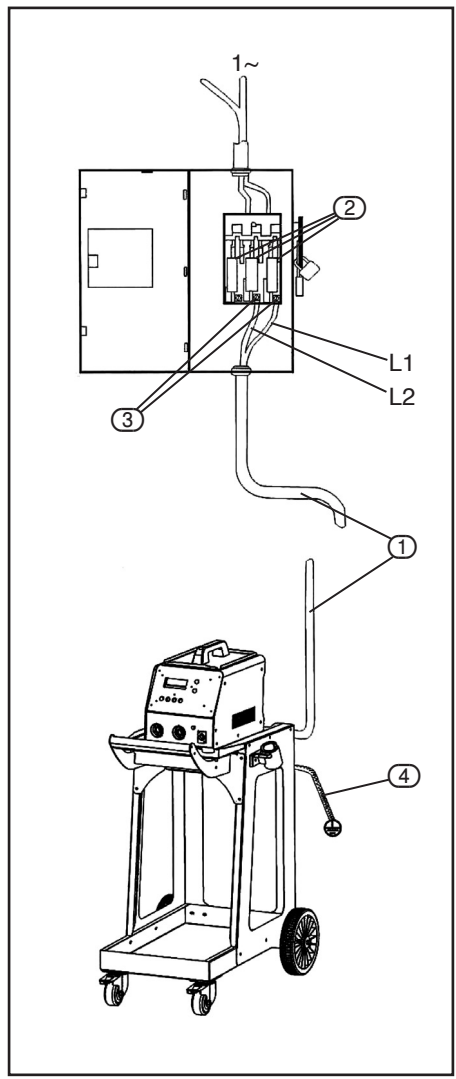
Reduce amperage or duty cycle before welding.

9.2 MACHINE INSTALLATION

1. Open the package and find out the owner's manual.
2. Check the supplied of accessories according to the “what’s in the box” section on page 11.
3. Properly install this equipment as per the following diagram. Inspect the unit for any problems . If so, contact your local distributor or service agency. To locate a distributor or service agency. See the back page of this manual.

9.3 SELECTING A LOCATION

1. Select a correct location to place the unit.
2. If you intend to hard wire this machine, determine input power cord length according to its actual operation requirement. Make sure that the supply cable is at least 6mm^2 in diameter
3. Do not move or operate unit where it could tip.
4. Use cart or unit handle to move unit . Do not pull the cords to move unit.



① Input power cord (not less than 6mm^2 copper cord) .

② Over-current protection.

③ Disconnect device line terminals.

④ Ground wire L1/L2 input conductors.

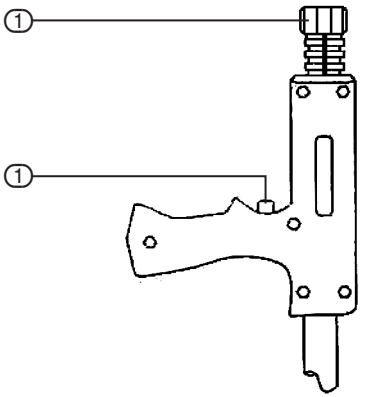
- Installation must meet all National and Local Codes, have only qualified persons make this installation.
- Disconnect and lockout/tagout input power before connecting input conductors from unit.
- Select type and size of over-current protection.
- Close and secure door on disconnect device. Remove lockout/tagout device, and place switch in the “on” position.

Note: Draper recommend the use of a 32A plug to power this product from your 32A wall mounted socket mains supply.

9. ASSEMBLING THE STUD WELDER

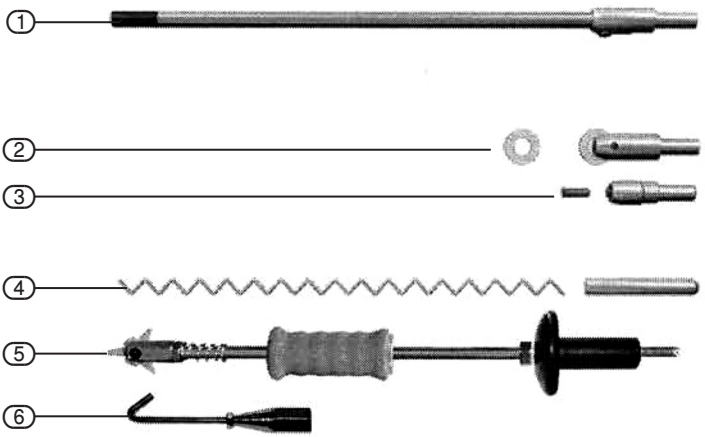
9.4 WELDING GUN

① Electrode holder
① Trigger



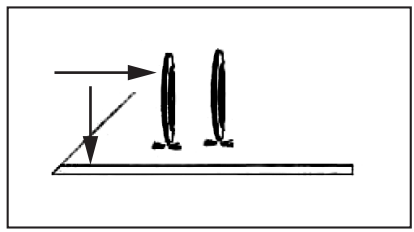
9.5 SINGLE-SIDED APPLICATIONS

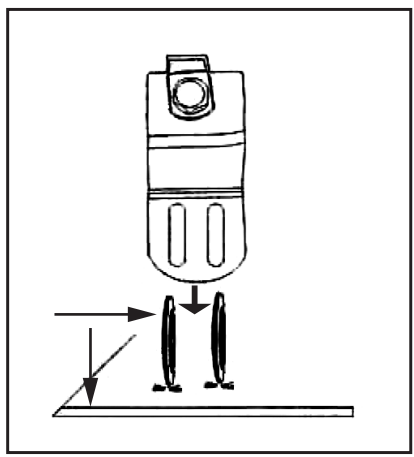
① Carbon rod shrinking
② Washer welding
③ Stud welding
④ Wave form wire welding
⑤ Pulling spot hammer
⑥ Hook for pulling on washers/wave form wire.



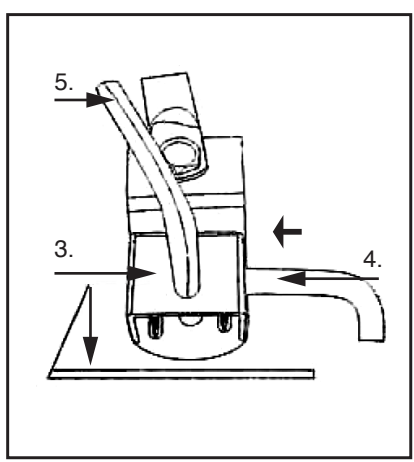
9.6 CONNECTION OF NEGATIVE WIRE

1. Weld 2 washers on metal workpiece, as close to welding area as possible.





3. Located the holder on the welded washer.
4. Install the fixed shank.
5. Tighten up the holder.



10. STUD WELDER INSTRUCTION

10.1 FUNCTIONS

Picture	Description	Time(s)	Power
	Triangle washer welding	0.01 - FFF	25 - FF
	Washer welding	0.01 - FFF	25 - FF
	OT washer welding	0.01 - FFF	25 - FF
	Stud welding	0.01 - FFF	25 - FF
	Single-sided spot welding	0.01 - FFF	25 - FF
	Wavy wire welding	0.01 - FFF	25 - FF
	Sheet metal flattening	FFF	25 - FF
	Carbon rod stitch welding	FFF	25 - FF
	Carbon rod heating and shrinking	FFF	25 - FF
	Carbon rod cutting	FFF	25 - FF

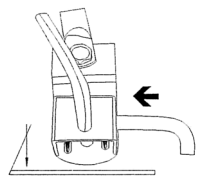
Note:

Time: FFF The welding time can be set from 0.01 second to FFF.
After 0.99, it will go to FFF, it is an automatic mode for the time between 0.01 - 0.99.
The welding will stop once the preset time has been reached.
When setting the time to 0.1, for example, the welding time will be only 0.1 second even the trigger has been pressed shorter or longer than 0.1second.
Power FFF is a manual mode.
The welding time depends on how long you have pressed the trigger.

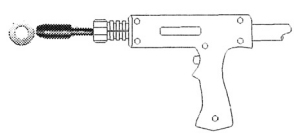
Power: FF FF means full power 100%.

10.2 WASHER WELDING

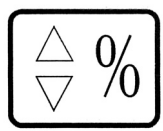
1. Connect earth wire to a clean, paint-free location on metal workpiece,as close to welding area as possible.



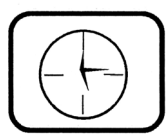
2. Connect washer adaptor with welding gun and tighten, install washer.



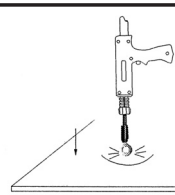
3. Set correct amperage.



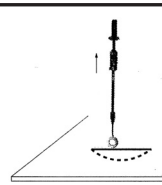
4. Set correct time.



5. Approximately a 90° angle to the dent. Put on pressure and press trigger.



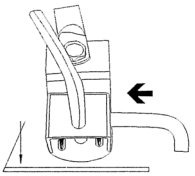
6. Remove welding gun. Hook the washer with pull hammer. Slide the hammer to opposite direction to pull out the dent.



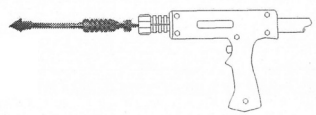
1. Setting amperage too high or time too long can cause workpiece surface (vehicle body) damage. Please weld other workpieces for practice before actual operations. Each panel may require different settings.
2. Setting correct amperage and time according to the workpiece thickness.
3. Continuing another operation is available after this procedure finished. if not, please shut off the main power supply and switch off the unit.

10.3 TRIANGLE WASHER WELDING

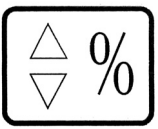
1. Connect earth wire to a clean, paint-free location on metal workpiece, as close to welding area as possible.



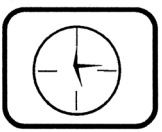
2. Connect triangle washer pull hammer with welding gun.



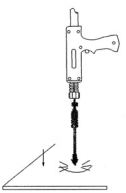
3. Set correct amperage



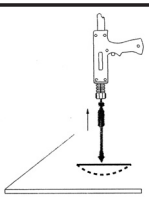
4. Set correct time.



5. Approximately a 90° angle to the dent, put on pressure and press trigger.



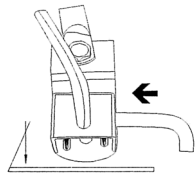
6. Slide the hammer to opposite direction to pull the dent out .



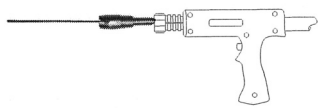
1. Setting amperage too high or time too long can cause workpiece surface (vehicle body) damage. Please weld other workpieces for practice before actual operations.
2. Setting correct amperage and time according to the workpiece thickness
3. Triangle washer welding can replace washer welding. It can pull out the dent directly after welded.
4. Continuing another operation is available after this procedure finished. If not, please shut off the main power supply and switch off the unit.

10.4 CARBON ROD HEATING

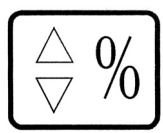
1. Connect negative outside wire to a clean, paint-free location on metal workpiece, as close to welding area as possible.



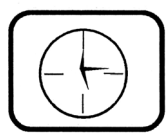
2. Connect carbon rod and carbon rod adaptor with welding gun.



3. Set correct amperage

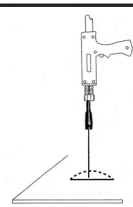


4. Set correct time.



5. Move carbon rod in clockwise circles to hear up the stretched panel.

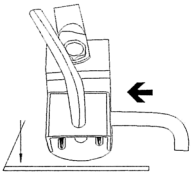
6. Use cold water or wet rag to cool down the heated area that makes the stretched panel shrunken as normal status.



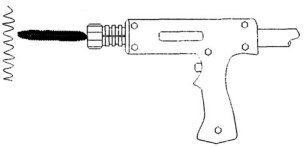
1. Setting amperage too high or time too long can cause workpiece surface (vehicle body) damage. Please weld other workpieces for practice before actual operations.
2. Setting correct amperage and time according to the workpiece thickness.
3. Continuing another operation is available after this procedure finished. If not, please shut off the main power supply and switch off the unit.

10.5 WRIGGLE FORM WIRE WELDING

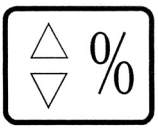
1. Connect earth wire to a clean, paint-free location on metal workpiece, as close to welding area as possible.



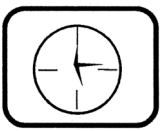
2. Connect wriggle wire electrode tip with welding gun.



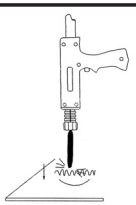
3. Set correct amperage



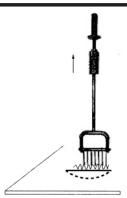
4. Set correct time.



5. Place a wave form wire horizontally on the dent. Approximately a 90° angle to wave form wire. Put on pressure and press trigger.

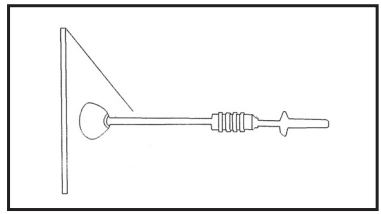


6. Connect hook puller with pull hammer. Hook wave form wire and slide the hammer to pull out the dent.



1. Setting amperage too high or time too long can cause workpiece surface (vehicle body) damage. Please weld other workpieces for practice before actual operations.
2. Setting correct amperage and time according to the workpiece thickness.
3. Continuing another operation is available after this procedure finished. If not, please shut off the main power supply and switch off the unit.

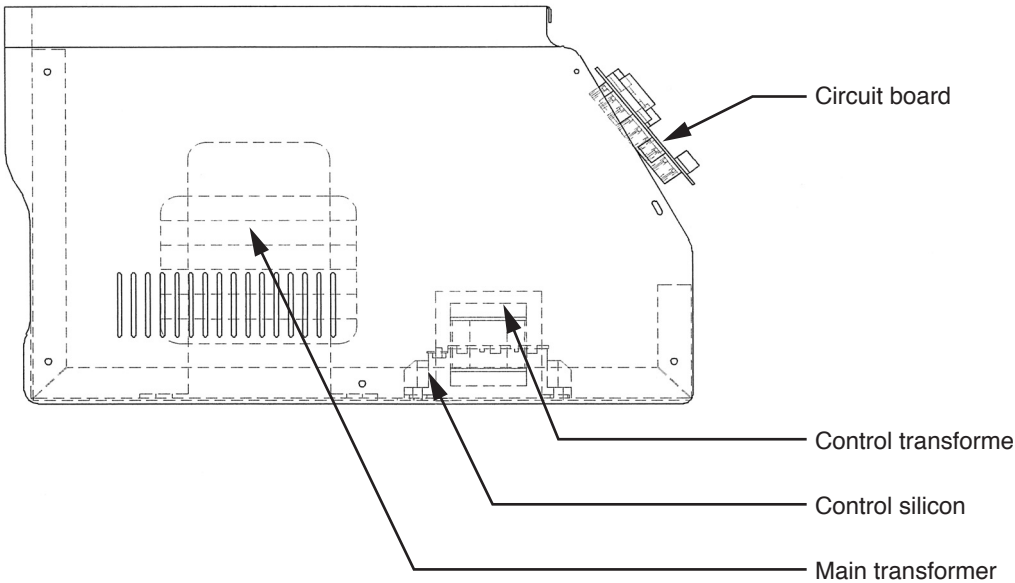
10.6 CUPULE

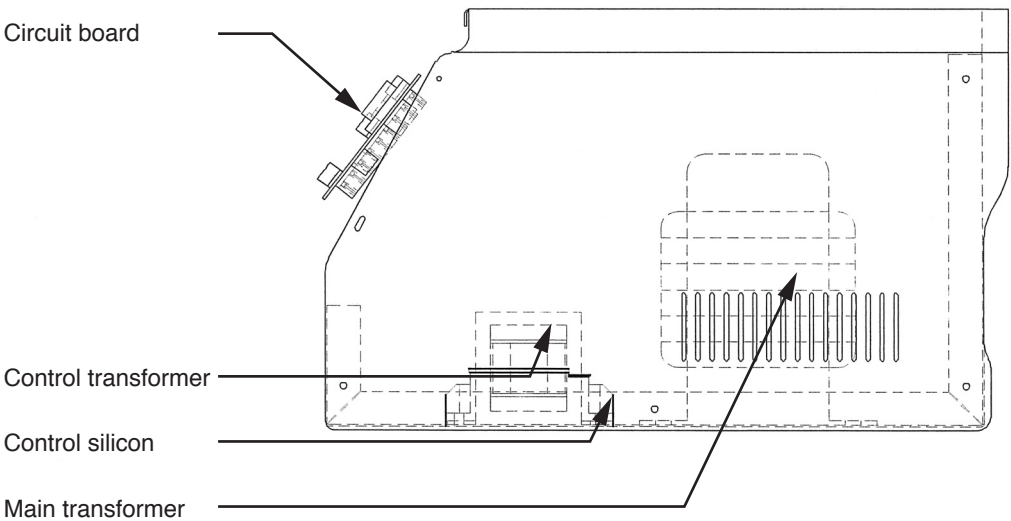


Manual operating cupule:

1. Connect manual cupule with pull hammer.
2. Push manual cupule in to lock the cupule on the dent.
3. Slide the hammer to opposite direction to pull the dent out.
4. Carefully peel edge of the cupule to release the vacuum and release the cupule from the panel

11. MAINTENANCE & TROUBLESHOOTING





11. MAINTENANCE & TROUBLESHOOTING

Trouble	Reason	Remedy
No welding output	1. Connected power supply incorrectly. 2. Power switch in off position.	1. Connect power supply according to manufacturer's instructions. 2. Place power switch in "on" position.
Trigger not working	1. Trigger damaged. 2. Gun control wire broken. 3. Control wire plug loosen. 4. Mode switch in incorrect position.	1. Replace trigger. 2. Connect again or replace if necessary. 3. Connect control wire plug again. 4. Place Mode switch in correct position.
Poor weld	1. Amperage too low 2. Weld time too short. 3. Input power cord did not meet the requirement. 4. Ground clamp bad contact.	1. Increase amperage setting. 2. Increase time setting. 3. Replace input power cord. 4. Change ground clamp location.
Piercing workpiece	1. Output amperage too high. 2. Weld time too long. 3. Bad contact of electrode tip or washer with workpiece .	1. Reduce amperage setting. 2. Reduce weld time. 3. Remove coating from material reduce added pressure.
Carbon rod working unstable	1. Carbon rod or workpiece is dirty. 2. Incorrect amperage and time setting.	1. Polish carbon rod and workpieces. 2. Set amperage and time according to workpiece thickness.
Unit stop working while opration	1. Trigger plug loosen. 2. Gun control wire broken. 3. Over heating .	1. Check gun control wire and trigger plug. 2. Wait for temperature cool down .

12. EXPLANATION OF SYMBOLS

12.1 EXPLANATION OF SYMBOLS

Warning!
Wear suitable eye/face protection.

Warning!
Read the instruction manual.

Warning!
Keep bystanders away.

Danger!
Risk of electrocution.

Class 1 device

13. DISPOSAL

13.1 DISPOSAL

– At the end of the machine's working life, or when it can no longer be repaired, ensure that it is disposed of according to national regulations.
– Contact your local authority for details of collection schemes in your area.

In all circumstances:

- Do not dispose of power tools with domestic waste.
- Do not incinerate.
- Do not abandon in the environment.
- Do not dispose of WEEE* as unsorted municipal waste.

* Waste Electrical & Electronic Equipment.

NOTES

NOTES

13. DISPOSAL

CONTACTS

Draper Tools Limited, Hursley Road,
Chandler's Ford, Eastleigh, Hampshire. SO53 1YF. U.K.

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Internet: drapertools.com

E-mail: sales@drapertools.com

General Enquiries: (023) 8026 6355

Service/Warranty Repair Agent:
For aftersales servicing or warranty repairs, please contact the Draper Tools Helpline for details of an agent in your local area.

YOUR DRAPER STOCKIST

KCKC0617