Rev. 01 - 10/2016

EN USE AND MAINTENANCE MANUAL

ASSEMBLY INSTRUCTIONS

DOUBLE GAS PLASTIC WELDER

MWM Italy

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1. GENERAL WARNINGS

MWM wishes to thank you for purchasing the Gas Plastic Welder, one of the most effective pieces of equipment designed for bodywork operations and to repair all plastic parts.
The nitrogen protects the material from the bad effects of oxygen.
By welding with nitrogen, the material is heated uniformly and does not release noxious or unhealthy fumes.

Do not use the Double Gas Plastic Welder for other purposes and/or applications that are not described in this manual.
Before using the Double Gas Plastic Welder, read this manual carefully and follow the simple instructions contained. Before carrying out any operation on the machine, operators and qualified technicians must carefully read the instructions contained in this publication. In case of doubts as to the correct interpretation of the instructions, consult MWM offices to obtain the necessary clarifications.

This manual has the purpose of providing the user all the information necessary to ensure that, in addition to adequate usage of the equipment, he is able to manage the same as independently and safely as possible. The manual includes information about technical features, operation and safety.

This manual is an integral part of the Double Gas Plastic Welder supply and should be kept with the utmost care by the buyer, placed close to the machine inside a special container and, above all, sheltered from liquids and whatever else might jeopardize its readability.

This manual should always be supplied with the equipment even in the event of a sale of the same.

MWM disclaims any liability for an improper use of the equipment and for failure to follow procedures outlined in this manual.
The equipment is made in accordance with the relevant EC directives and applicable at the time of its placing on the market.

Do not use the Gas Plastic Welder if its efficiency is in doubt.

The equipment must be used in a well-ventilated room, appropriately protected from bad weather and with temperatures ranging from +10 °C to +40 °C.

It is PROHIBITED for anyone to copy, modify, or use this manual for personal purposes.
MWM reserves the right to make changes to this manual without any fore-notice required

2. SAFETY

2.1 GENERAL SAFETY RULES

Failure to follow the safety rules and basic safety precautions of the manual may cause damage to persons and things.
It is prohibited to tamper with the equipment or to modify any of its parts, as this may lead to dangerous situations for the user and involve the immediate break of the warranty, releasing the manufacturer of any liability.

- The operator must wear suitable protective clothing such as: safety shoes, gloves, goggles, ear muffs, etc.; do not wear loose clothing that could get caught up during the operation.
- Disconnect the equipment from the AC mains when not in use.
- Take care not to come into direct contact with the gun's heating tube during operation or before the post-operation cooling phase has been completed.
- Keep the area of work clear; the work area should allow safe movements to the operator and, more specifically, avoid the presence of slippery or corrosive substances on the floor.
- Only qualified personnel older than 18 and familiar with the operation of the equipment is allowed to use it.
- Do not drop the equipment or parts of it.
- Do not use the equipment except as intended and described herein; this will not only will damage the equipment, but can cause damage to things and people.
- Do not use the equipment with defective parts.
- Do not remove or tamper with the equipment, only qualified staff is allowed to perform repairs.
- Use only accessories that are supplied by the manufacturer so not to create damage to the equipment.
- For spare parts and repairs, please contact the manufacturer or the distributor where you have purchased the equipment.
- Make sure, after any replacement of damaged parts, that the equipment works properly.

⚠ WARNING

Read and understand all instructions.
Failure to follow the instructions below may cause an electrical short circuit, fire and/or serious personal injury.

⚠ WARNING

Keep the work area clean and well lit.
Failure to follow the instructions below may cause an electrical short circuit, fire and/or serious personal injury.

⚠ WARNING

Work indoors.
Keep the work area well ventilated and dry.

⚠ WARNING

Keep a full fire extinguisher within reach whenever using Double Gas Plastic Welder.

2.2 PERSONAL SAFETY RULES

⚠ WARNING

Do not operate Double Gas Plastic Welder while under the influence of drugs, alcohol or any type of medication.

⚠ WARNING

Keep the balance: always maintain a stable position and appropriate balance.

A stable position and appropriate balance allow a better control of Double Gas Plastic Welder in unexpected situations.

⚠ WARNING

It is advisable to wear suitable safety welding gloves.

Both Double Gas Plastic Welder and the handpiece may reach very high temperatures during operation.

⚠ WARNING

Always wear safety glasses when using Double Gas Plastic Welder.

⚠ WARNING

Fumes and smoke from glues or overheated plastics are toxic, wear a breathing mask with dual filter (dust and smoke).

2.3 ELECTRICAL SAFETY

DANGER Do not use Single Gas Plastic Welder in the presence of liquids.

WARNING Disconnect the cable of Single Gas Plastic Welder from the AC mains electric current before performing any operation on it.

2.4 FIRE SAFETY

WARNING Single Gas Plastic Welder dissipates a lot of heat during the operation. Flammable materials must be kept at proper distance.

2.5 SAFETY STANDARDS DURING USE

CAUTION Before you connect Single Gas Plastic Welder to AC mains, make sure that the output voltage supplied differs by no more than 10% of the voltage indicated in this manual.
Output voltage different from the one specified on the label can cause risks and serious damage to the Single Gas Plastic Welder.

CAUTION Do not disconnect the cable connector for connection to the AC mains.
Single Gas Plastic Welder must not be opened.

3. TECHNICAL SPECIFICATIONS

Input voltage	230V - 16 A 50 / 60Hz
Power absorbed	210W
Air flow (standard)	15 ÷ 20 l / min
Nitrogen flow (standard)	15 ÷ 20 l / min
Compressed air inlet pressure	6 ÷ 8 bar (87 ÷ 114 Psi)
Nitrogen pressure inlet	4 ÷ 6 bar (58 ÷ 87 Psi)

4. OPERATING PRINCIPLES

4.1 GENERAL DESCRIPTION

Double Gas Plastic Welder allows you to weld filler material onto plastic parts by heating them up using nitrogen.
Using the welding gun it is possible to perform repair work by inserting staples between the two parts to be welded in order to create an embedded reinforcement.

4.2 PUTTING INTO SERVICE

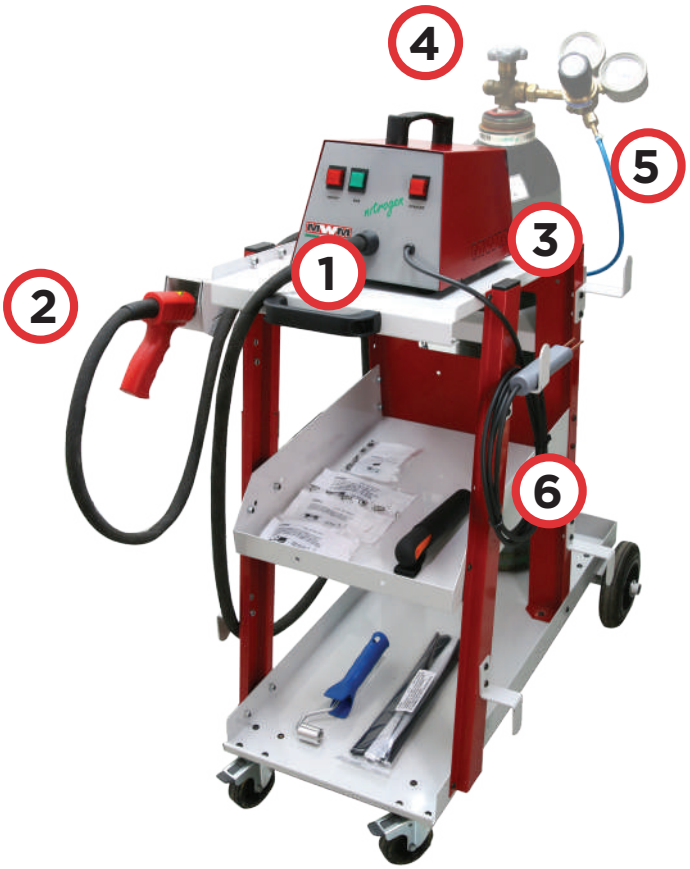
Before using the equipment for the first time, make sure that it has not been damaged during transportation; in the case of visible damage please notify the carrier immediately, do not use the equipment and contact MWM for information and instructions.

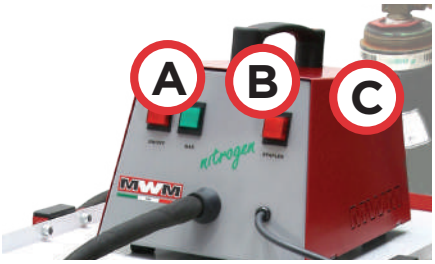
4.3 MAINTENANCE AND CLEANING

Double Gas Plastic Welder has no parts subject to maintenance.
Any unauthorized intervention on the equipment will lead to the automatic revocation of the warranty.
Periodically clean the equipment, remove dirt, dust and any slippery substance, use self-cleaning cloths, do not use water, flammable liquids or corrosives.

4.4 COMPONENTS AND CONTROL

4.4.1 DOUBLE GAS PLASTIC WELDER





1	Panel to switch the machine on
2	Gun with nozzle
3	Nitrogen bottle (Not supplied)
4	Nitrogen pressure regulator (Not supplied)
5	Clip
6	Handpiece
7	Cable for connection to the external AC power mains
8	Compressed air inlet pressure
9	Pressurized Nitrogen inlet

Pannello comandi macchina:

A	Pulsante di ON/OFF pistola saldatura
B	Pilot light: indicates switching to Nitrogen and it is lit when the trigger is pulled
C	Handpiece ON/OFF switch (Staples) The handpiece is operated by pressing the switch on it

4.5 HOW TO USE DOUBLE GAS PLASTIC WELDER

Double Gas Plastic Welder allow to weld all plastic parts by blowing suitable heated Nitrogen of the parts to be welded.
Nitrogen is an inert gas which allows plastic to be welded uniformly, avoiding any oxidation and significantly limiting the fumes created during welding.

To work properly the Double Gas Plastic Weldermust be supplied with compressed air and pressurized Nitrogen. The Nitrogen required for the process is provided by a gas bottle. It is used only when the trigger switch on the gun is pulled.

Double Gas Plastic Welder isl pre-calibrated during the assembly in MWM factory and do not need to be regulated in any way.

It include a post-operation cooling phase which takes the gun resistance back down to ambient temperature to avoid any risk of thermal shock caused by thermal inertia.

CAUTION
When turning off the machine, please use the relevant ON/OFF switch but do not disconnect from the electricity network and compressed air supply until the flow to the gun is cut off automatically (this phase usually takes around 5 minutes).

4.5.1 TYPES OF PLASTIC

There are many types of plastic and the main ones, with the related acronyms, are the following:

ACRONYM	NAME
PP	Polypropylene
PU / PUR	Polyurethane
PE	Polyetylene
PC	Polycarbonate
ABS	ABS
TPO	TPO
PA / Nylon	Polyamide/ Nylon
GTX	GTX

Generally, each plastic part shows an indication of the type of composition printed on it. Before performing any repair, check that the welding material is the same type as the material to repair. About 80% of plastics used in the automotive field are PP (polypropylene), so the set of plastics provided together with the equipment is PP.
The plastic filling materials can be supplied in many different profiles and sizes, and the most commonly used are in the form of strips with a circular segment and a straight side and rounded.

Below you can see some of the profiles supplied by MWM:

Wider strips are more appropriate in the reconstruction of missing parts, while the narrower ones in the closure of cuts or holes.
If your filling material is not of the same type of plastic as the part to be repaired, or you need a profile shape and/or size different to those provided please contact MWM.

4.5 HOW TO USE THE HANDPIECE

To weld together separate parts use the handpiece (supplied with both versions) as indicated below:

1. Select the desired staple and insert it into one of the two possible locations in the terminals of the handpiece.
2. Join the two plastic parts, place the staple over them and press the operation button. After a few seconds, with a slight pressure, the staple warming up will let it sink in the plastic. Persist as long as the staple is sunk at about half the thickness of the plastic and not more than 1.0 - 1.5 mm, taking care not to pass the plastic on the other side.
3. Release the operation button and motionless wait for a few seconds to allow the staple to cool down. Remove the handpiece allowing the release of the staple from the handpiece terminals.

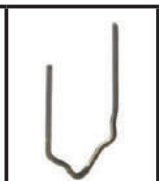
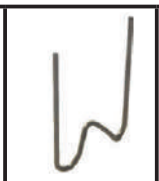
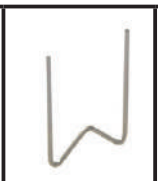
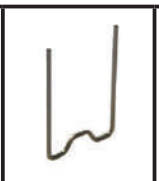
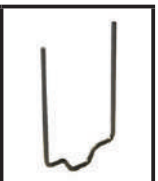
   Exceeding parts of staples can then be cut away by pressing them down with your fingers in one direction then in the other direction.

   The operation is easier when the direction in which the exceeding parts are pushed is perpendicular to the staple part sunk inside the plastic. If necessary, use a pair of pliers to facilitate movement.

4.5 TYPES OF STAPLES

Some of the types of staples supplied by MWM are shown below:

Standard Staples

								
3105001	3105002	3105003	3105004	3105005	3105006	3105007	3105008	3105009

Pre - cut staples (MWM patent)

31062	31063	31065

Plastic Smart Smoother

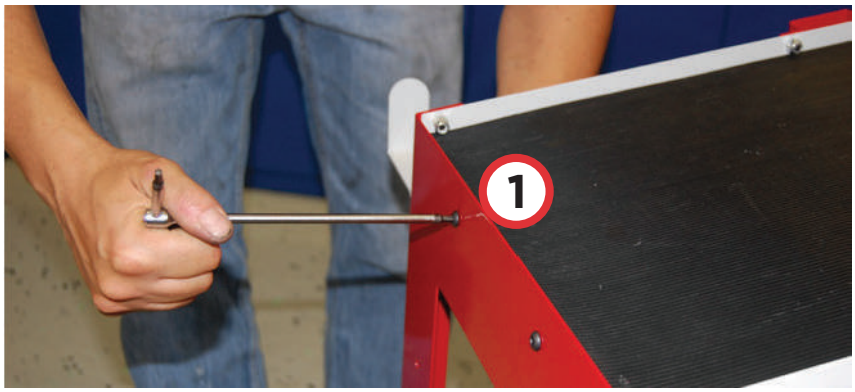
3105010

5. ASSEMBLING THE PARTS

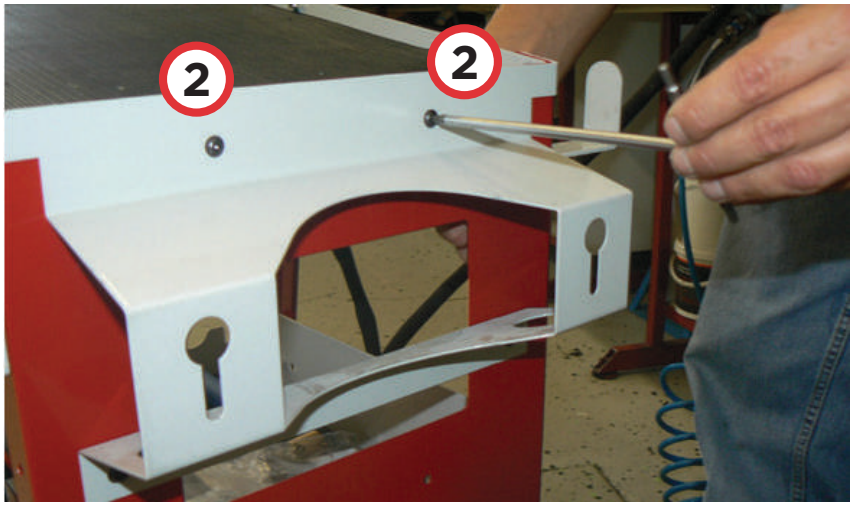
5.2 PREPARING THE TROLLEY FOR DOUBLE GAS PLASTIC WELDER

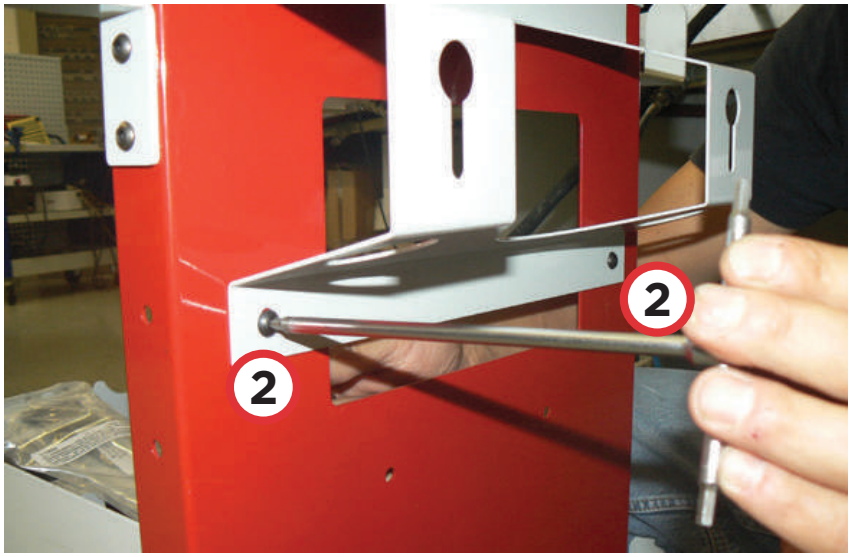
Double Gas Plastic Welder must be installed on a trolley (art. 31460). To do so follow the instructions provided below::

1. Unscrew the two screws (1) on the trolley and the relevant nuts illustrated in the figure



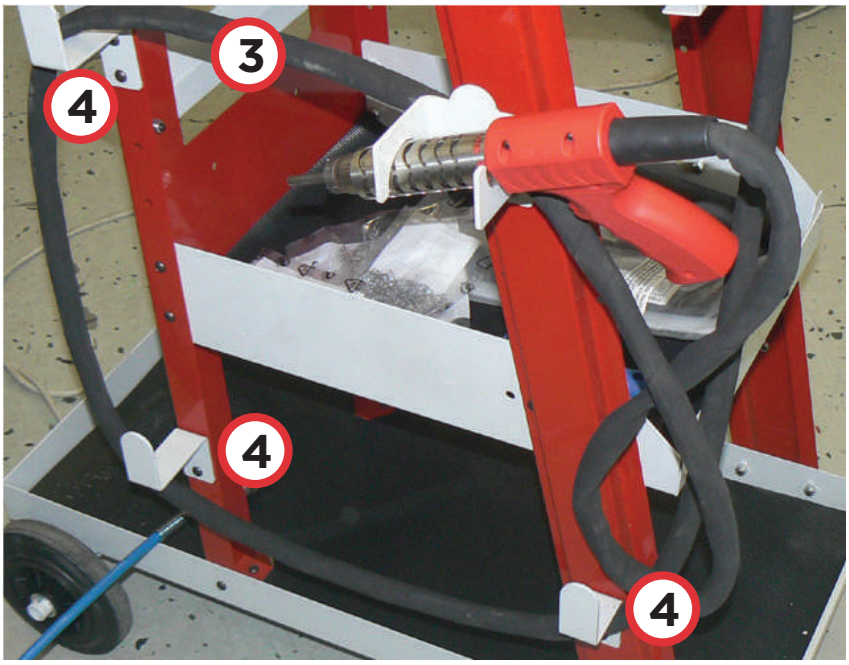
2. Insert the four top and bottom screws (2) and put the nuts on.



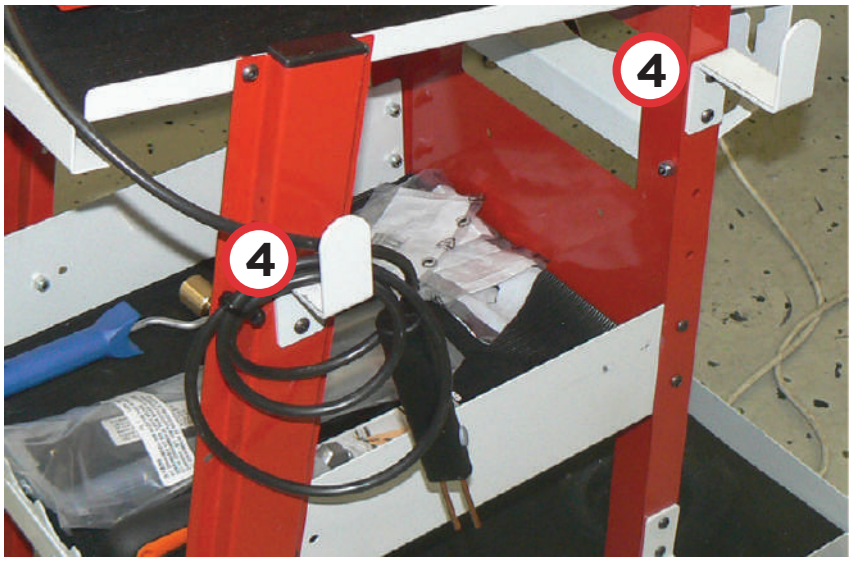


3. Tighten all four nuts.

4. Position the gun hose (3) in the left-hand side of the trolley, using the special supports (4).



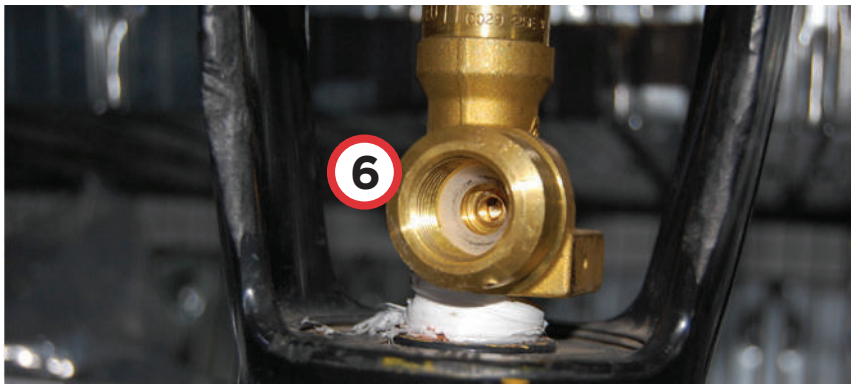
5. Position the electric power cable and the handpiece in the left-hand side of the trolley, using the special supports (4).



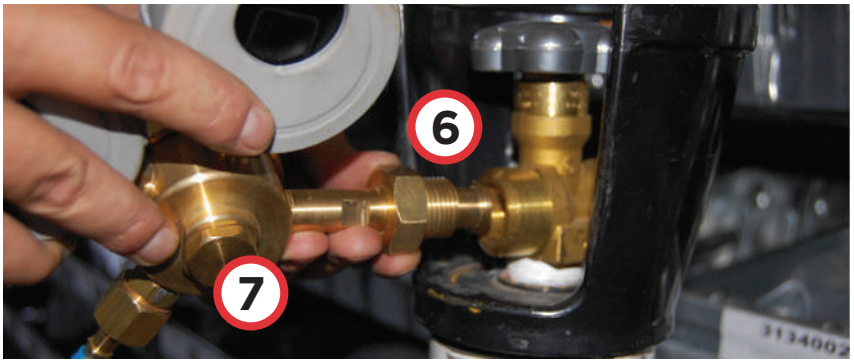
6. Place the gas bottle on the trolley.
7. Hold the bottle (not supplied) in place using the chain which must be locked by inserting a link in the special slot (5).

8. Connect the main nitrogen pressure regulator (Not supplied).

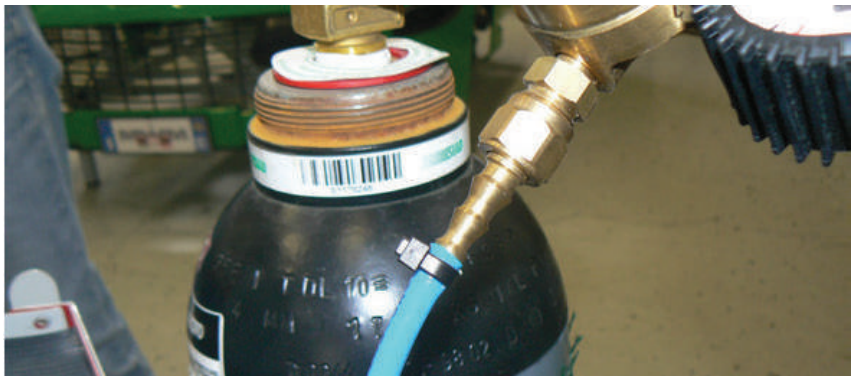
9. Position the nylon washer in the groove on the outlet valve on the nitrogen bottle (6).



10. Screw the pressure reduction valve (7) into the outlet valve on the nitrogen bottle (6).



11. Insert one end of the nitrogen hose into the pressure reduction valve (7) outlet, securing it in place with a hose clip.



12. Install the connector on the machine and connect the rilsan hose to the gas inlet.
13. Connect the air supply to the machine to the relevant inlet.

14. Connect the electrical AC mains power supply

Double Gas Plastic Welder is now ready to operate.

Should the machine fail to work correctly do not hesitate to contact MWM After Sales Service.

5. EXAMPLES OF OPERATION

5.1 USING THE SCRAPER

In case you wish to work on both sides of the support to be repaired, begin first with the part not in view.
The material to be repaired, before welding new plastic, should be cleaned by using the scraper supplied.

In case of reconstruction of missing parts use the scraper on the contact surfaces.
In case of cuts or holes, clean the profile with the angle of the blade of the scraper, so to make it uniform to the profile.
Once prepared, the material must be clean and without grease or oil traces; if any, use a degreaser to thoroughly clean the surfaces to be worked with the scraper.

5.2 USING THE STRIPS

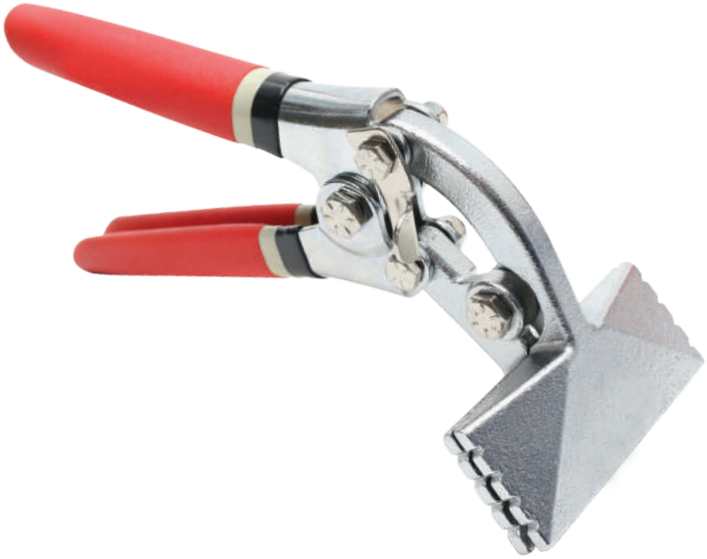
When using the strips, which have a rounded side and a flat one, the rounded side must be placed in direct contact with the plastic to be repaired.
The strip should be positioned by twisting it at an angle of about 90°, with the nozzle of the gun at an angle of about 45° with the plastics to repair.

The gun must be kept at 1.5 cm from the plastic to repair, avoiding that the nozzle of the gun comes into contact with the plastic parts as the heating must be supplied only by the gas.
When the strip begins to melt, move it slowly towards you.
The nitrogen flows from the nozzle of the gun must be directed on the material to be repaired and not on the welding material.
In case of cuts, allow the strip to bend slightly in order to allow a greater penetration of the welding material inside the slot.
Stop at the end of the part to be repaired, by cutting the excessive part of the strip with a pair of scissors or nipping it off with use of the same gun.
Proceed on the outer side as done on the inner side.

5.3 USE OF ROLLER AND THE GRIPPERS

The roller and the gripper should be used to easen the compression of the plastic.
The roller, suitable in the case of fillings of cuts or holes, must be used as soon as you have finished supplying welding material, by applying pressure on the handle and, if necessary, by heating the added material with the gun, the roller allows to spread any formed streaks.

The gripper, sold as **optional** and suitable in the case of reconstructions of missing parts, can be used after the welding material has been placed by exerting pressure on the handles and, if necessary, by heating with the gun the added material. The gripper allows you to squeeze the parts of added material to make it more uniform.

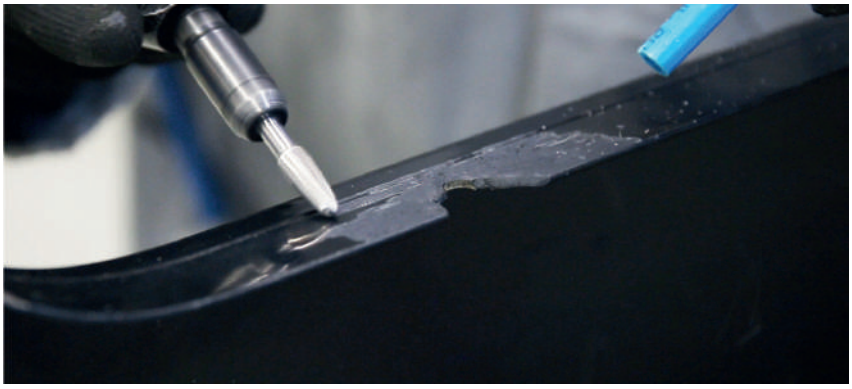


5.4 FINISHING THE SUPPORT

Once you have terminated the use of roller or gripper, the plastic can be trimmed.
Once cooled, the inner side not in view can be left in its raw state, while the outer side can be sanded down and then you can use a primer, stucco or paint.

5.5 RECONSTRUCTION OF MISSING PARTS

Example of reconstructing an eyelet that has been broken off a bumper:
1. Clean the surface to work with the scraper and then with a degreasing agent.

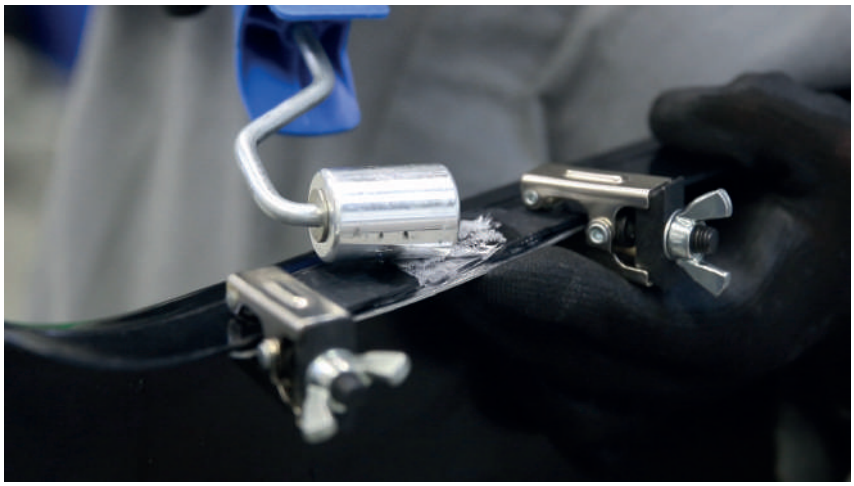


2. Before starting, take the alu plate and two clamps provided.
Fix the plate in the place where the repair work needs to be performed using the two clamps to keep in place.

3. Heat with the gun mainly the part on which to melt new plastic; move forward slowly with the gun and the plastic strip.
Check correct grip, including on the edges.

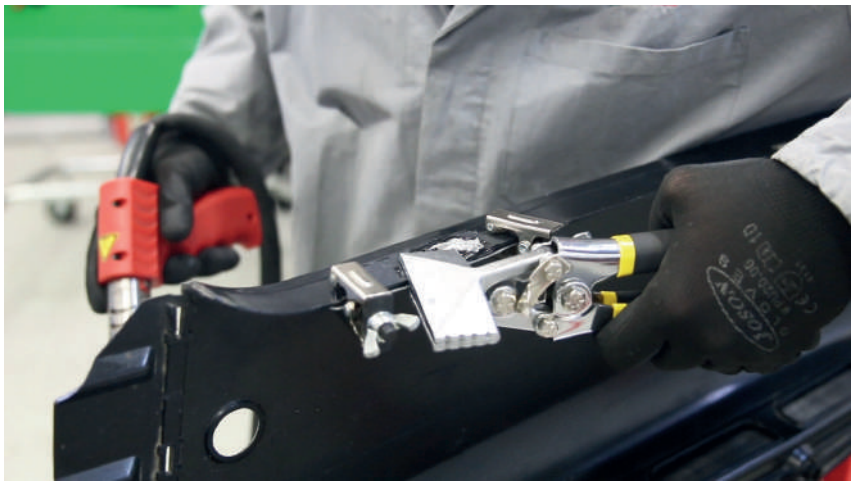
4. Apply any plastic part to do the finishing.

5. After uniformly heating up the filler material, use the roller to smooth it out



6. Turn the part over and repeat the same sequence of operations on reverse side.

7. Press with the optional gripper after uniformly heating up the filler material.



8. Use the roller to smooth out.

9. Finish with fine sandpaper or glass-paper.

5.6 CLOSING CUTS

To close an open crack along a bumper, proceed as follows:

1. Clean the surface to repair with the scraper, creating a V-shaped profile may be useful to achieve a hole of 5.5 mm in diameter at the end of the cutting itself, in order to prevent its enlargement and clean then the whole surface with a degreasing agent.

2. If necessary hold the ends of the opening still and apply a staple. Make an incision at the end using the handpiece (see heading 3.6 in this manual).

3. Proceed to move along slowly with the gun and filler rod.
Check the correct penetration of the plastic inside the slot.

4. Apply the roller to kindly spread the welded plastic and to help it penetrate deeper inside. Before using the roller, heat the plastic with the gun to make it more flexible and easy to shape.

5. Finish with fine sandpaper or glass-paper.

6. If necessary, you can carry out the same operation on the other side of the bumper.

6. WARRANTY

Double Gas Plastic Welder is covered by 12 months warranty against defects of conformity in accordance with the European Directive 1999/44/EC.
The warranty period starts from the date indicated on the document of purchase (receipt or invoice) issued by the seller and to be kept together with the equipment.

1. During the warranty period, replacement or repair of the product with defects in accordance with established and experienced technical service of the manufacturer and caused by manufacturing defects, will be performed at no cost for the user.
2. Replacing the product, instead of repairing, will be carried out only in cases where the latter is, in the opinion of the manufacturer, objectively impossible or excessively unconvenient.
3. Repairs carried out under warranty or replacement of the product does not extend or renew the terms of warranty expiry.
4. If unable to produce the document of purchase bearing the date of purchase and the name of the seller, the warranty will be void.
5. If the defect is not found to be a lack of conformity following the verification of the manufacturer, the user will be notified and charged for any incurred cost (transport, labour and materials).
6. Warranty does not cover defects resulting from:
   - negligence, inexperience and carelessness during usage
   - modifications, adaptations or maintenance performed by unauthorized personnel
   - tampering or carrying out interventions on the product
   - improper or unreasonable use of the product
   - damage due to bumps, drops, transportation damage
   - replacement of parts.
7. The manufacturer declines any responsibility for any damage that may directly or indirectly be caused to persons, property or animals as a result of improper usage of the product.

This warranty does not affect the user’s legal rights which may change from country to country.
For more information and/or service, the user can call the manufacturer at the number +39 051 6164811 or email mwm@mwmitalia.it.

DECLARATION OF CONFORMITY

Manufacturer's Name: MWM srl

Adress: Via Toscana, 2/A - 40069 Zola Predosa (Bologna) – Italy

Model: DOUBLE GAS PLASTIC WELDER

Detailed purpose: Welder for plastics for professional use

It is compliant with essential requirements of EC directiveEMC 2014/30/UE, LVD 2014/35/UE,PED 2014/68/UE e ROSH/65/2011/UEapplicable toproduct, in reference to the following harmonised standards:

EN 55014-1 : 2006 + A1 : 2009 +A2 :2011
EN 55014 - 2 :1997 +A1 :2001 + A2 :2008
EN 61000 - 3 - 2 :2014
EN 61000 - 3 -3 - 2013
EN 60335 - 1: 2012 + A11 :2014
EN 62233 : 2008

Zola Predosa, 18/10/2016

MWM SRL

Raffaele Mongiorgi

8. HOW TO REPAIR

PP (POLYPROPYLENE)
COOLANT OVERFLOW TANK

VIDEO

PC (POLYCARBONATE)
CAR BUMPER

VIDEO

P/E (PP+EPDM)
CAR BUMPER

VIDEO

TPO CAR BUMPER

VIDEO

ABS REAR VIEW WINDOW

VIDEO

MISSING SUPPORT
ON A PA/NYLON GRID

VIDEO

ANGULAR STRIPS

VIDEO

NITROGEN VS
COMPRESSED AIR

VIDEO

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