Installation Instructions for 555-81541 MIG/MMA Welder 180C

1. Introduction

MIG/MMA 180 is an easy-to-use MIG welding machine suitable for both hobby and professional use. Before using or doing any maintenance work please, read the operating manual and keep it for further reference.

1.1 Properties

The welding machine is small, efficient and extremely light. It is easy to carry with the help of a shoulder strap. The machine is suitable for a range of different purposes and the possibility to use a long extension cord eases operation in various sites. It is also suitable for generator use on construction sites. Welding voltage and wire feed speed are adjusted with one control according to the thickness of the welded material. Selecting the correct parameters for the job is easy. The length of the arc, or welding heat, is trimmed with another control, and once the right value is found there usually is no need to change it even when welding a thicker or thinner sheet.

Once the welding properties are optimized with a steel wire of 0.8mm diameter. Also, 0.6mm, 0.9mm or 1.0mm solid wire or cored wire can be used as filler wire. Note: The machine is designed for steel wire welding only.

1.2 About Welding

In Addition to the welding machine, welding outcome is influenced by the piece being welded and the welding environment. Therefore, recommendations in this manual must be followed.

During welding electric current is led with the welding gun's current nozzle to the filler wire and via that to the welded piece. Ground cable attached to the workpiece guides the current back to the machine, forming the needed closed circuit. Unrestricted current flow is possible when the ground clamp is properly attached to the workpiece and the fixing point of the clamp on the workpiece is clean, paint free and rust free.

Shielding gas must be used during welding in order to prevent air from mixing with the weld pool. Carbon dioxide or a mixture of carbon dioxide and argon is suitable for shielding gas. Some filler wires form a shielding gas from the wire's filling as it melts thus eliminating the need for a separate shielding gas.

2. Safety Instructions

The machine is safe to use due to its plastic cover, which does not conduct electricity. The welding gun has an overheating protector which prevents operation when the machine is overheated. The machine is also protected from too low or too high supply voltage.

However, there are some risk factors connected to welding. You should therefore read and follow the following safety instructions carefully.

2.1 Use of Protective Accessories

The arc and its reflecting radiation damage unprotected eyes. Always protect your eyes and face with an appropriate welding mask. The arc and welding spatters burn unprotected skin. When welding, always use protective gloves and clothing.

2.2 Safe Use of the Welding Gun

Parts of the machine, such as the end of the filler wire and welding gun, become burning hot during use. The wire is also sharp and moves quickly, so be careful when threading it into place.

Never carry the machine on your shoulder during welding, but place it on an even surface. Also, do not store the machine by hanging it from the shoulder strap. The shoulder strap is for carrying only.

Do not keep the machine near or on hot objects, as the plastic cover may melt.

Do not move the shielding gas bottle when control valve is in place. Fix the gas bottle securely in an upright position to a separate wall rack or bottle cart. Always close the gas bottle after use.

2.3 Fire Safety

Welding is always classified as hot work, pay attention to safety regulations. Protect the environment from welding spatters. Remove inflammable material, such as burning fluids, from the vicinity of the welding site and supply the site with adequate firefighting equipment.
Take into account dangers caused by special workplaces, such as fire risk and danger of explosion, when welding container like pieces.
NOTE! Fire caused by sparks may break out even after several hours!
CAUTION! Welding in inflammable and explosive sites is strictly forbidden!

2.4 Supply Voltage

Do not take the welding machine inside a workpiece, for example into a container or a car.
Do not place the welding machine on a wet surface.
Change faulty cables immediately for they are life threatening and may cause a fire.
Ensure that cables are not squeezed or in contact with sharp edges or a hot workpiece.

2.5 Welding Circuit

Insulate yourself from the welding circuit by using dry and undamaged protective clothing.
Do not work on a wet surface.
Do not use damaged welding cables.
Do not place the welding gun or earthing clamp on the welding machine or other electrical device.

2.6 Welding Fumes

Make sure ventilation is sufficient. Take special precautions when welding metals containing lead, cadmium, calcium, zinc, mercury or beryllium.
Supply of sufficient clean air can also be ensured with the use of a fresh air mask.

3. Machine Use

The machine is delivered ready for operation without adjustments with 0.8 mm diameter filler wire.
If you use non-recommended filler wire, make sure that the feed roll groove, welding gun contact tip and machine polarity are suited for the used wire size and type.

3.1 Before Implementation

The products are packed into durable packages especially designed for them. However, always make sure before use that products have not been damaged during transportation. Check also, that you have received the products you ordered and the instruction manuals needed. Product packing material is recyclable.

Transportation

The machine should not be transported in an upright position.
NOTE! Always move the welding machine by lifting it from the handle.
Never pull it from the welding gun or other cables.

Environment

The machine is suitable for both indoor and outdoor use, but it should be protected from heavy rain and sunshine. Store the machine in a dry and clean environment and protect it from sand and dust during use and storage. The recommended operating temperature range is -20^{o}C to 40^{o}C.
Place the machine in such a way that it does not come in contact with hot surfaces, sparks and spatters.
Make sure the air flow in the machine is unrestricted.

3.2 General View of the Machine

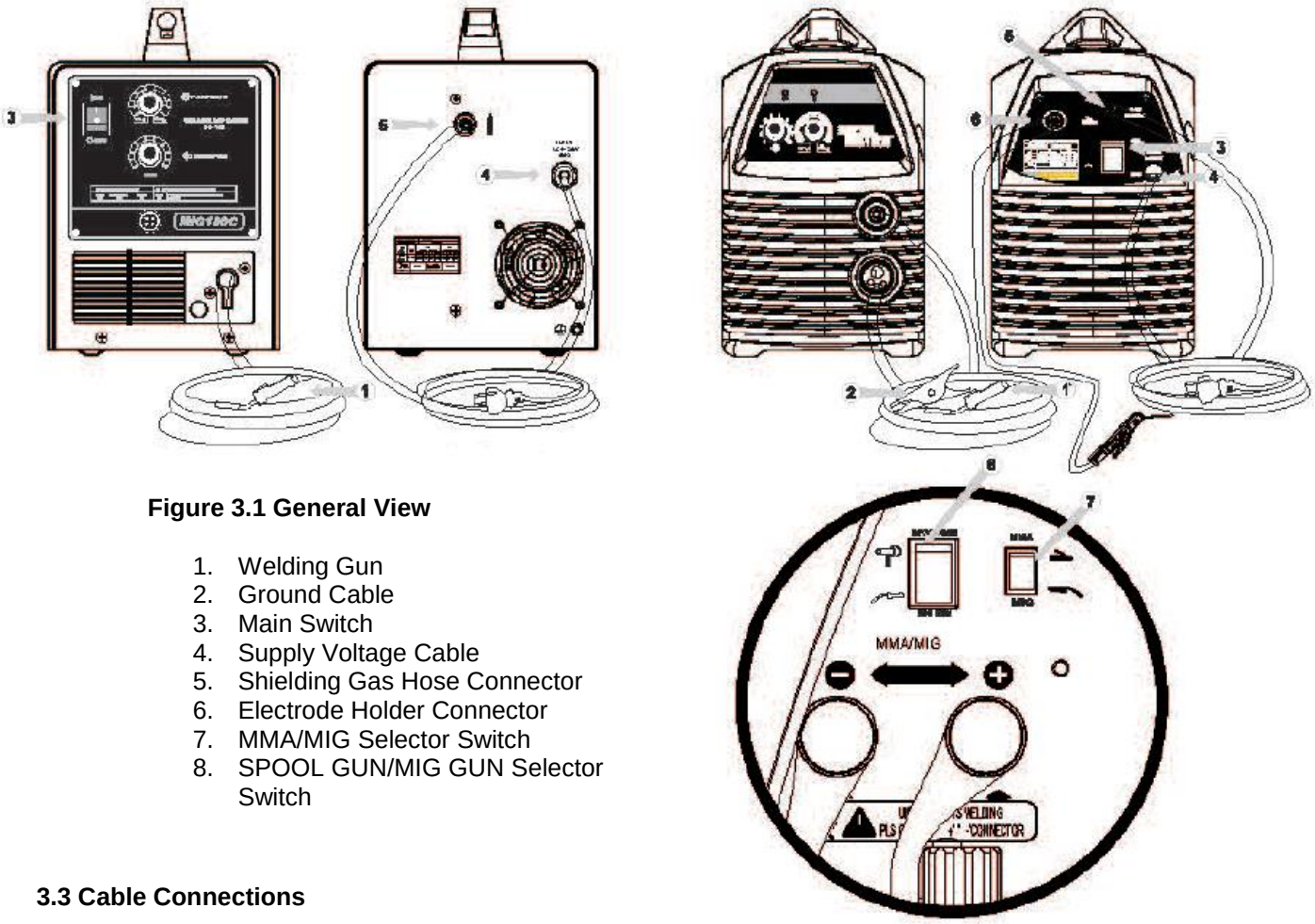


Figure 3.1 General View

1. Welding Gun
2. Ground Cable
3. Main Switch
4. Supply Voltage Cable
5. Shielding Gas Hose Connector
6. Electrode Holder Connector
7. MMA/MIG Selector Switch
8. SPOOL GUN/MIG GUN Selector Switch

3.3 Cable Connections

Connection to the Mains

The machine is equipped with a 3.3m long supply voltage cable and plug.
Connect the supply voltage cable to the mains.
NOTE! The fuse size needed is 16 A delayed.
If you use an extension cord, its cross-sectional area should be at least as large as the supply voltage cable's (3 x 2.5 mm^2). The maximum length for the extension cord is 50m.
The machine can also be used with a generator. The minimum power for the generator is 3.5 kVA, and the recommended power 6.0 kVA in order for the machine to be used at maximum capacity.

Grounding

The grounding cable is already connected to the machine. Clean the workpiece surface and fix the grounding cable clamp to the piece in order to create a closed and interference-free circuit needed for welding.

Welding Gun

The welding gun is already connected to the machine. The welding gun leads the filler wire, shielding gas and electric current to the weld. When you press the welding gun trigger, shielding gas flow and wire feed begin. The arc ignites when the filler wire touches the welded piece.

The gun neck can be rotated 360°. When turning the neck, always make sure that the neck is twisted almost all the way to the bottom. This prevents damaging and overheating the neck.

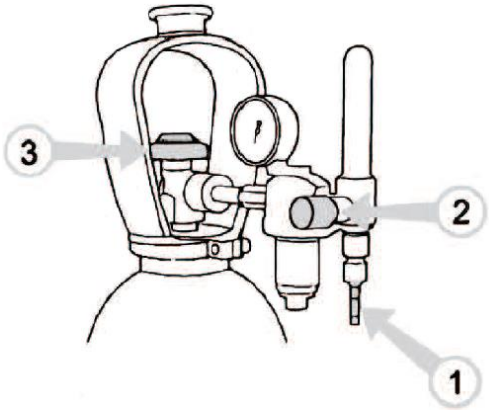
NOTE! If you use other than 0.8 mm diameter filler wire, change the welding gun contact tip to match the wire thickness.

Shielding Gas

The shielding gas used for steel wires is carbon dioxide or a mixture of argon and carbon dioxide which replaces air in the arc's area. Thickness of the welded sheet and welding power define the flow rate of the shielding gas.

The machine is delivered with a 4.5 m long shielding gas hose. Connect the bayonet socket of the shielding gas hose to the machine's hose connector and the hose connector end to the gas bottle's control valve.

Figure 3.2 Connecting the gas hose to the typical control valve



1. Connect the hose to the gas bottle's control valve and tighten the connector.
2. Adjust the flow rate with the control valve screw. A suitable shielding gas flow rate is 8-15 l/min
3. Close the bottle's valve after use.

NOTE! Use a shielding gas suitable for the material's welding. Fix the gas bottle securely in an upright position before installing the control valve.

3.4 Filler Wire

The machine is delivered with the welding gun connected to the positive (+) pole making it suitable for steel solid wire welding without adjustments.

3.4.1 Changing the Feed Roll Groove

The feed roll groove is factory set for welding filler wires of 0.8-1.0 mm diameter. The feed roll groove must be changed if you use 0.6 mm thick filler wire.

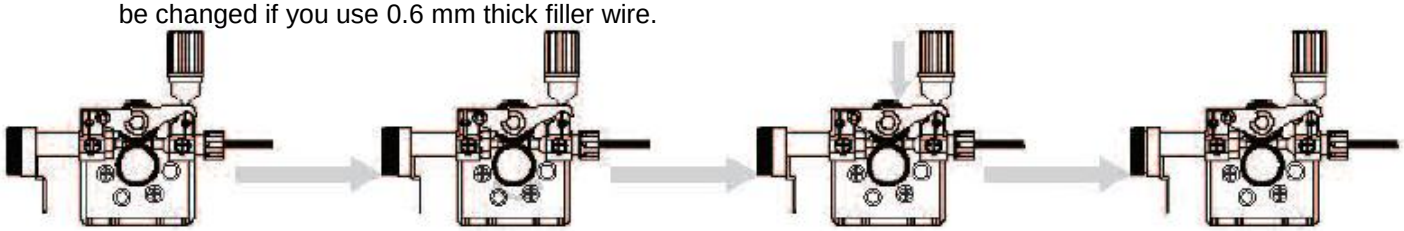
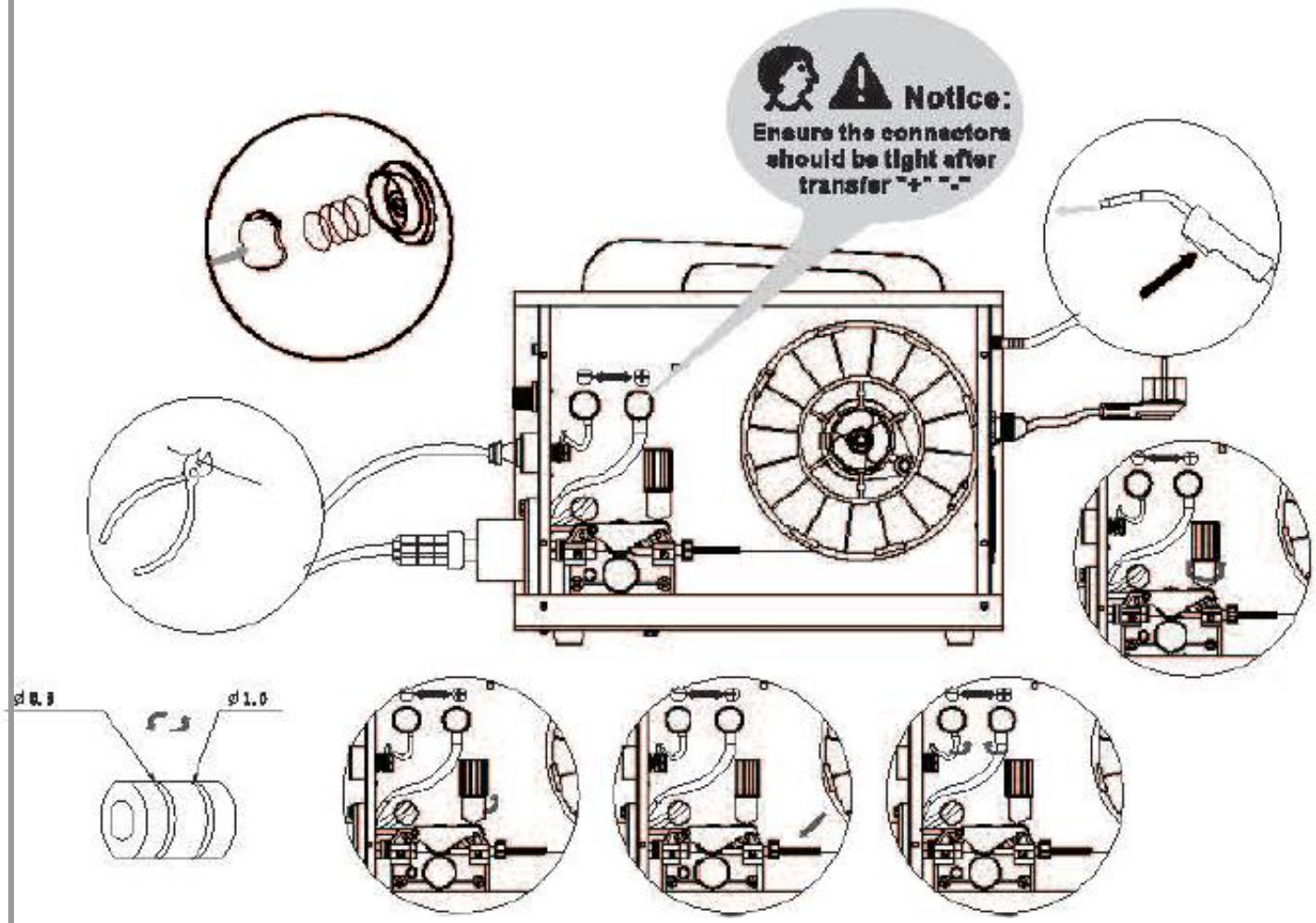


Figure 3.3 Changing the feed roll groove

1. Open the feed roll from the pressure control lever.
2. Switch the machine on from the main switch.
3. Press the welding gun trigger and drive the feed roll in so the locking screw is up and can be opened.
4. Switch the power off from the main switch.
5. Open the feed roll locking screw with a 2.0 mm allen wrench approximately half a turn.
6. Pull the feed roll from its shaft.
7. Turn the feed roll and reinstall it to its shaft all the way to the bottom making sure that the screw is on the shaft's level.
8. Tighten the feed roll locking screw.

3.4.2 Threading the Filler Wire



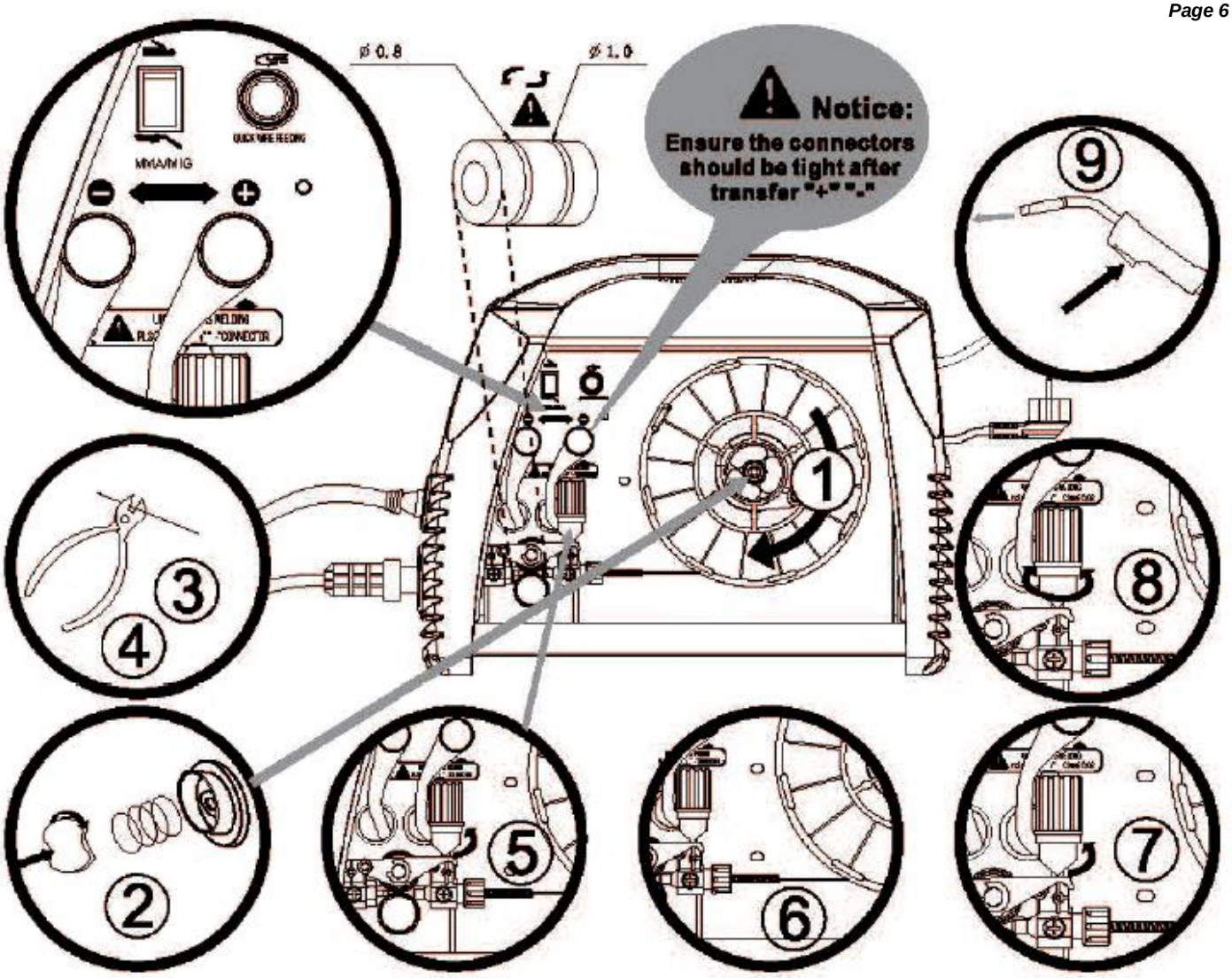


Figure 3.4 Threading the Filler Wire

1. Open the reel housing by pressing on the open button and install the wire reel in such a way that it rotates counter clockwise. You can use either an 11 lb. (diameter 200mm) or 2 lb. (100mm) wire reel in the machine.
2. Attach the reel with a reel lock.
3. Unfasten the wire end from the reel, and hold on to it.
4. Straighten the wire end approximately 7.87” (200mm) and cut the wire in the straightened location.
5. Open the pressure control lever which then opens the feed gear.
6. Thread the wire through the wire’s rear guide to the gun’s wire guide.
7. Close the feed gear and fasten it with the pressure control lever. Make sure that the wire runs in the feed roll groove.
8. Adjust the compression pressure with the pressure control lever no higher than to the middle of the scale. If the pressure is too high, it removes metal fragments from the wire surface and may damage the wire. On the other hand, if the pressure is too low, the feed gear slips and the wire does not run smoothly.
9. Press the welding gun trigger and wait for the wire to come out.
10. Close the reel housing cover.

CAUTION! When driving the wire in to the gun, do not point the gun at yourself or others or put, for example, your hand in front of the tip, because the cut wire end is extremely sharp. Also, do not put fingers near the feed rolls, because they might get squeezed between the rolls.

3.4.3 Reversing Polarity

Some filler wires are recommended to be welded with the gun in the negative (–) pole, so the polarity should be reversed. Check the recommended polarity from the filler wire package.

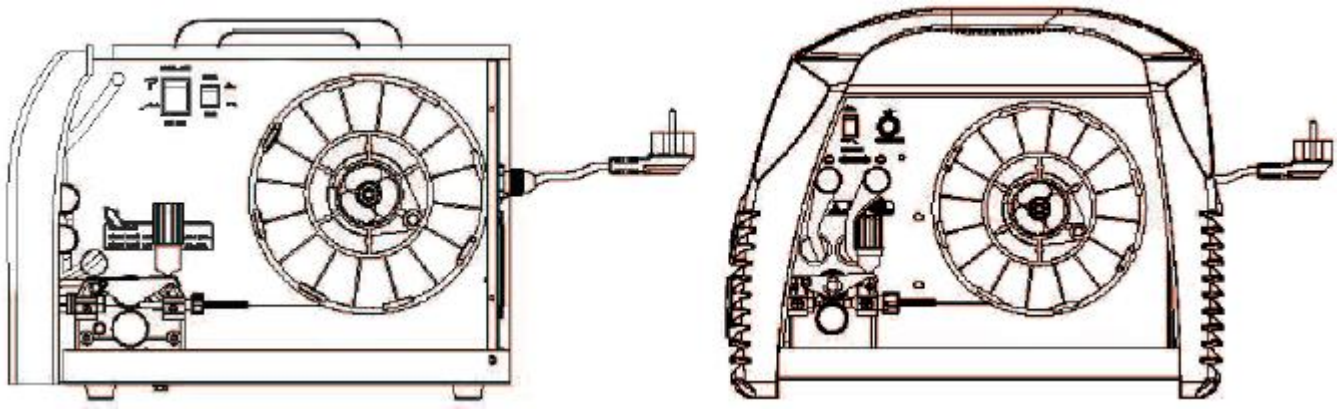


Figure 3.5 Reversing Polarity

1. Disconnect the machine from the mains.
2. Bend the rubber cover of the grounding cable's pole in such a way that the cable can be disconnected.
3. Remove poles tightening nuts and washers. **Note the correct order of the washers!**
4. Interchange the cables.
5. Install the washers in place and close the tightening nuts with a wrench.
6. Put the rubber cover of the grounding cable's pole firmly in place. The rubber cover must always protect the grounding cable's pole.

3.5 Controls and Indicator Lights

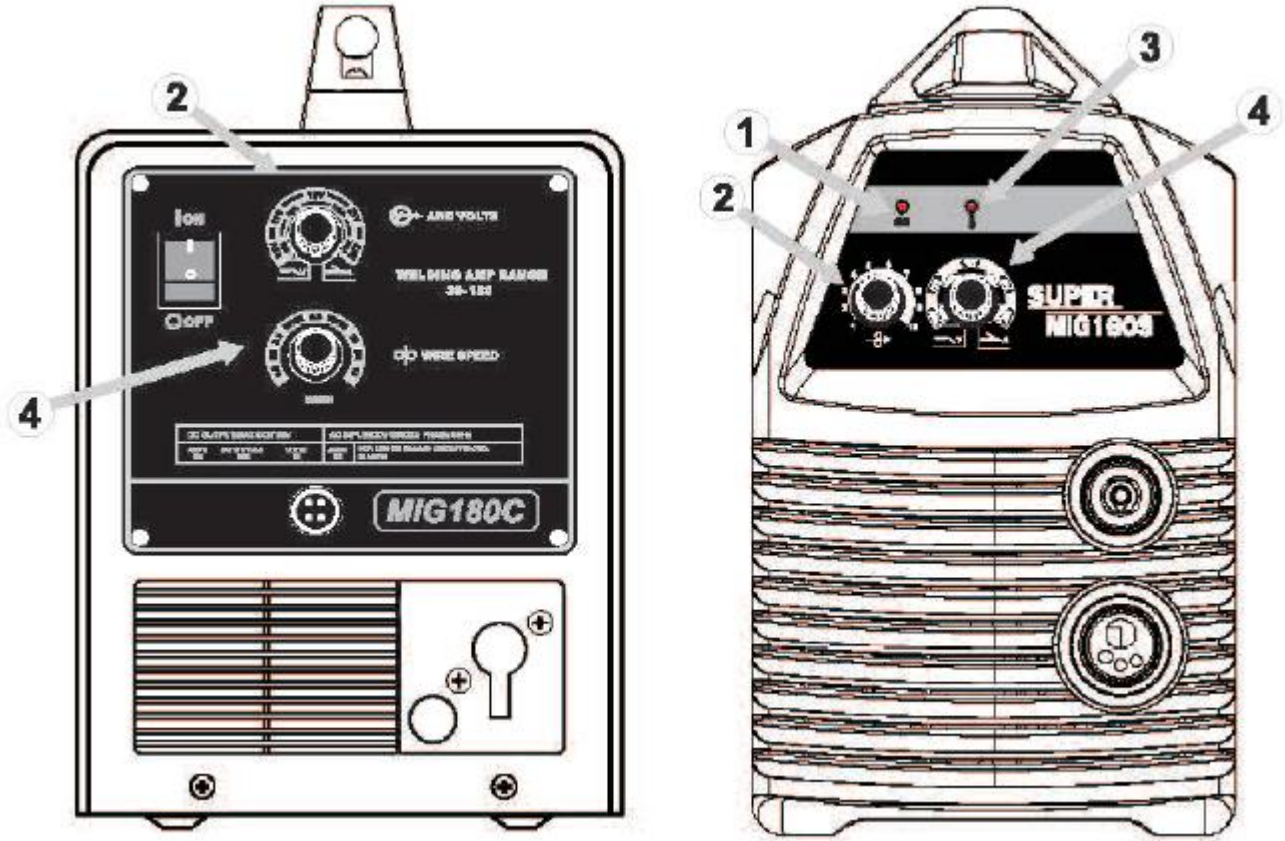


Figure 3.6 Machine's Front Panel

1. Welding power control
2. Arc length trimmer
3. Standby indicator light
4. Overheating indicator light; Current adjustment when MMA welding condition

The welding power is adjusted according to the thickness of the welded sheet.
The machine also has a trimmer for arc length.

Indicator lights display the machine's standby mode and inform of the possible overheating.

When you switch the machine on, a green standby light switches on. Simultaneously, the main switch indicator light switches on. If the machine overheats or the supply voltage is too low or too high, the welding operation automatically switches off and the yellow overheating indicator light switches on. The light switches off when the machine is ready for operation again. Make sure that there is enough space around the machine allowing free air to flow freely and cool the machine.

3.5.1 Welding Power Adjustment

Adjusting the welding power to sheet thickness affects simultaneously both wire feed speed and amount of current lead to the wire. This is a good starting point for welding in different operating situations. However, connection type and root opening may influence the amount of welding power needed.

Select the correct parameter with the welding power control according to the welded fillet weld's sheet thickness. If the fillet weld's sheets are of different thickness, use their average as a default parameter.

Sheet thickness scale has been given in millimeters and it is based on 0.8 mm wire diameter. When using a 0.6 mm wire, set the welding power control slightly higher than the used sheet thickness and corresponding slightly lower with 0.9-1.0 mm wires.

NOTE! When welding for the first time, we recommend that you set the arc length trimmer to the middle position.

3.5.2 Arc Length Trimmer

The arc length trimmer adjusts the length of the arc shorter or longer and affects the welding temperature. A shorter arc is colder and a longer one hotter. The arc length trimmer also affects the arc's welding properties and spatters with different combinations of filler wire diameters and shielding gases.

If the weld is too convex, the arc is too short or cold. Then adjust the arc longer or hotter by turning the control clockwise.

If on the other hand, you want to weld with a colder arc to prevent for example the parent material from burning through, adjust the arc shorter by turning the control counter clockwise. You can also adjust the welding power, if need be.

Once the arc has been trimmed, it usually does not need to be changed when the welded sheet thickness changes.

4. Service

When servicing the machine, its utilization degree and environmental circumstances should be taken into account. If you use the machine appropriately and service it regularly, you will spare yourself from unnecessary malfunctions.

CAUTION! Disconnect the machine from the mains before handling the electrical cables.

4.1 Daily Maintenance

- Remove welding spatters from the welding gun's tip and check the condition of the parts. Change damaged parts to new ones immediately
- Check that the insulating tips of the welding gun's neck are undamaged and in place. Change damaged insulation parts to new ones immediately.
- Check the tightness of the welding gun's and grounding cable's connections.
- Check the condition of the supply voltage and welding cable and replace faulty cables.

4.2 **Maintenance of the Wire feed Mechanism**

Service the wire feed mechanism at least every time the reel is changed.

- Check the wear of the feed roll groove and change the feed roll when necessary.
- Clean the welding gun wire guide with compressed air.

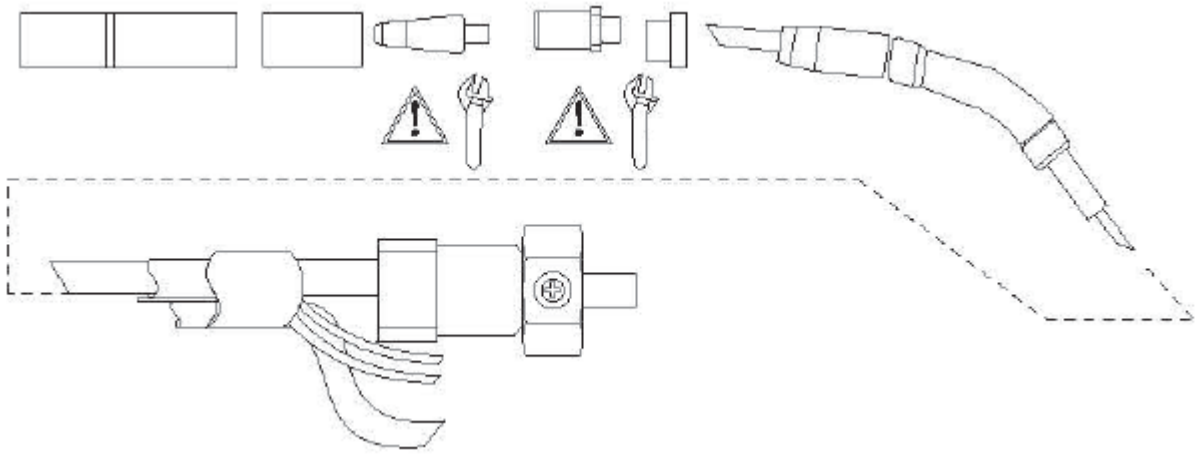


Figure 4.1 Parts of the Welding Gun and Wire Guide

Cleaning the Wire Guide

Pressure of the feed rolls removes metal dust from the filler wire's surface which then finds its way to the wire guide. If the wire guide is not cleaned, it gradually clogs up and causes wire feed malfunctions, clean the wire guide in the following manner:

1. Remove the welding gun's gas nozzle, contact tip and contact tip's adapter.
2. With the pneumatic pistol, blow compressed air through the wire guide.
3. Blow the wire feed mechanism and reel housing clean with compressed air.
4. Reattach the welding gun's parts. Tighten the contact tip and contact tip's adapter with a wrench.

Changing the Wire Guide

If the wire guide is too worn or totally clogged, change it to a new one according to the following instructions:

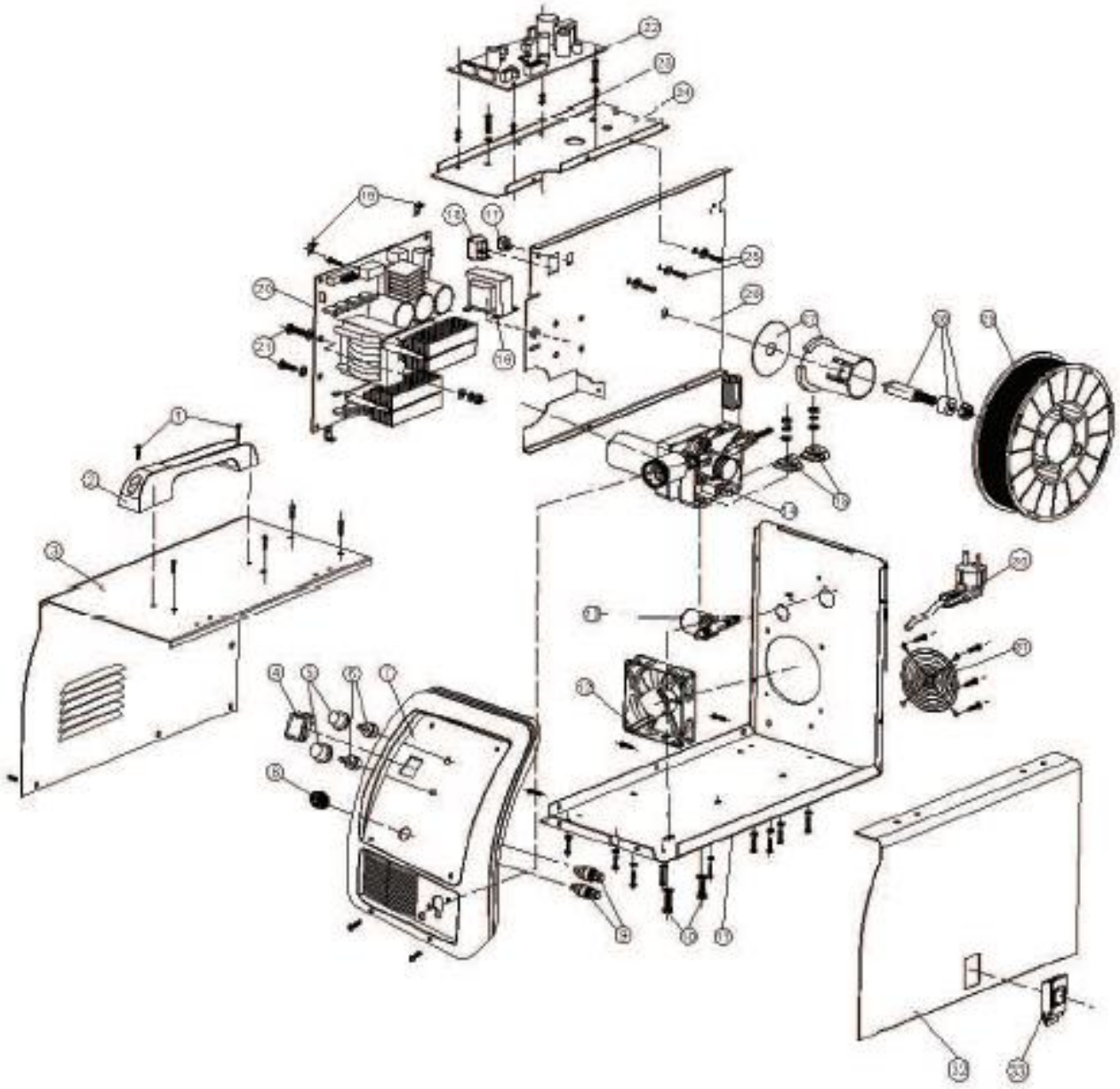
1. Disconnect the welding gun from the machine.
   a. Disconnect the cable clamp of the gun's power cable by opening the screws.
   b. Disconnect the gun's power cable from the machine's pole.
   c. Disconnect the connector of the trigger conductors from the machine.
   d. Open the gun's mounting nut.
   e. Extract the gun gently from the machine whereupon all parts come through the front part's cable hole.
2. Open the mounting nut of the wire guide which exposes the end of the wire guide.
3. Straighten the welding gun's cable and withdraw the wire guide from the gun.
4. Push a new wire guide into the gun. Make sure that the wire guide enters all the way into the contact tip's adapter and that there is an o-ring at the machine end of the guide.
5. Tighten the wire guide in place with the mounting nut.
6. Cut the wire guide 0.08" (2 mm) from the mounting nut and file the sharp edges of the cut round.
7. Reattach the gun in place and tighten the parts with a wrench.

5. Troubleshooting

Problem	Cause
The wire does not move or wire feed entangles	Feed rolls, wire conduit or contact tips are defective • Check that feed rolls are not too tight or too loose • Check that the feed roll groove is not too worn • Check that the wire conduit is not blocked • Check that there are no spatters on the conduit tip and that the hole is not cramped or worn loose
Main switch indicator light does not switch on	The machine has no supply voltage • Check supply voltage fuses • Check supply voltage cable and plug
Machine welds badly	Welding outcome is influenced by several factors • Check the trimming settings of welding power control and arc length • Check that the ground clamp is fixed properly, fixing point is clean and both cable and its connections are undamaged • Check the flow of the shielding gas from the tip of the welding gun • Supply voltage is uneven, too low or to high
Overheating indicator light switches on	The machine has overheated • Check that cooling air can flow without obstructions • Machine's volume-capacity ratio has been exceeded; wait for the indicator light to switch off • The supply voltage is too low or too high

6. Technical Data

Item	Super MIG 180C/S
Load Capacity	25%ED 180A/23V
	60%ED 120A/20.0V
	100%ED 100A/19.0V
Adjustment Range	20-180A/12-23V
Wire feed Adjustment Range	1~12m/min
Open Circuit Voltage	15.5-42.5V
Power Ratio	0.60 (180A/23.0V)
Operating Efficiency	0.81 (180A/23.0V)
Filler Wires	Fe soli wire F0.6~1.0mm
	Fe cored wire F0.8~1.0mm
	Ss F0.8~1.0mm
Shielding Gases	CO_2, Ar+CO_2-mixed gases
Max. Size of the Wire Reel	Ø200mm
Temperature Range	H(180ºC)/F(155ºC)
Dimensions	L450 x W203 x L340
Operating Temperature Range	-20ºC - +40ºC
Storage Temperature Range	-40ºC - +60ºC
Protection Class	IIP21



1	M6 bolt	**12**	Fan	**23**	Pcb Support
2	Handle	**13**	Electronic valve	**24**	Horizontal board
3	Cover	**14**	Wire feeder	**25**	M4 bolt
4	Switch	**15**	Rubber foot for wire feeder	**26**	Middle clapboard
5	Current potentiometer	**16**	Transformer	**27**	Fixing of wire feeder
6	Potentiometer	**17**	Switch	**28**	Fixing of wire feeder
7	Front panel	**18**	Switch	**29**	Supply cable with plug
8	Socket	**19**	Pcb fixing foot	**30**	Welding wire
9	Connection point	**20**	Pcb	**31**	Fan net
10	M6 Screw	**21**	M4 bolt	**32**	Side cover
11	Bottom panel	**22**	Pcb	**33**	Lock