MI180057-2010
2010.12

SWP

# MIG-180 TURBO
# MIG-210 TURBO
# OPERATING INSTRUCTIONS

**Caution**

**Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.**

## *Responsibility*

The user shall inspect the equipment, and faulty equipment shall be stopped. All the faulted, missed, abrasive, distorted and polluted parts shall be changed promptly. When repair or change, the manufacturer advised the user to change the part forward the require in written or calling form to the licensed distributors.

The user can not change any parts without the manufactures advanced permission, Otherwise, the user shall be responsible for the accidents caused by the inappropriate use.

## *Catalogue*

## GENERAL SAFETY

**Danger** Danger means a hazard that ***will*** cause death or serious injury if the warning is ignored.

**Warning** Warning means a hazard that ***could*** cause death or serious injury if the warning is ignored.

**Caution** Caution means a hazard that ***may*** cause minor or moderate injury if the warning is ignored. It also may mean a hazard that will only cause damage to property.

**WARNING** **Improper use of electric arc welders can cause electric shock, injury, and death! Take all precautions described in this manual to reduce the possibility of electric shock.**

- Verify that all components of the arc welder are clean and in good condition prior to operating the welder. Be sure that the insulation on all cables, electrode holders, and power cords is not damaged. Always repair or replace damaged components before operating the welder. Always keep welder panels, shields, etc. in place when operating the welder.
- Always wear dry protective clothing and welding gloves, and insulated footwear.
- Always operate the welder in a clean, dry, well ventilated area. Do not operate the welder in humid, wet, rainy, or poorly ventilated areas.
- Be sure that the workpiece is properly supported and grounded prior to beginning any electric arc welding operation.
- Coiled welding cable should be spread out before use to avoid overheating and damage to insulation.

**WARNING** **Electric arc welding operations produce intense light and heat and ultraviolet (UV) rays. This intense light and UV rays can cause injury to eyes and skin. Take all precautions described in this manual to reduce the possibility of injury to eyes and skin.**

- All persons operating this equipment or in the area while equipment is in use must wear protective welding gear including: welding helmet or shield with proper shade as specified in the following chart, flame resistant clothing, leather welding gloves, and full foot protection.
- Never look at arc welding operations without eye protection as described above. Never use a shade filter lens that is cracked, broken, or rated below number 10. Warn others in the area not to look at the arc.

**WARNING** **Electric arc welding operations cause sparks and heat metal to temperatures that can cause severe burns! Use protective gloves and clothing when performing any metal working operation. Take all precautions described in this manual to reduce the possibility of skin and clothing burns.**

- Make sure that all persons in the welding area are protected from heat, sparks, and ultraviolet rays. Use additional face shields and flame resistant barriers as needed.
- Never touch work pieces until completely cooled.

**WARNING** **Heat and sparks produced during electric arc welding and other metal working operations can ignite flammable and explosive materials! Take all precautions described in this manual to reduce the possibility of flames and explosions.**

- Remove all flammable materials within 35 feet (10.7 meters) of welding arc. If removal is not possible, tightly cover flammable materials with fireproof covers.
- Do not operate any electric arc welder in areas where flammable or explosive vapors may be present. Take precautions to be sure that flying sparks and heat do not cause flames in hidden areas, cracks, behind bulkheads, etc.

**WARNING** **Do not breathe fumes that are produced by the arc welding operation. These fumes are dangerous. If the welding area cannot be adequately ventilated, be sure to use an air-supplied respirator.**

- Keep the head and face out of the welding fumes.
- Do not perform electric arc welding operations on metals that are galvanized or cadmium plated, or contain zinc, mercury, or beryllium without completing the following precautions:

a. Remove the coating from the base metal.
b. Make sure that the welding area is well ventilated.
c. Use an air-supplied respirator.

Extremely toxic fumes are created when these metals are heated.

**WARNING** **The electromagnetic field that is generated during arc welding may interfere with the operation of various electrical and electronic devices such as cardiac pacemakers. Persons using such devices should consult with their physician prior to performing any electric arc welding operations.**

- Never wrap arc welder cables around the body.
- Always position the electrode and ground leads so that they are on the same side of the body.
- Exposure to electromagnetic fields during welding may have other health effects which are not known.

**WARNING** **Equipment maintenance----The wrong or inappropriate equipment maintenance can cause injury or death.**

- The licensed people can do assembly, maintenance and some other operation.
- The power source shall be turned off when any maintenance work in the power source needed.
- Endure that the cable, earth wire, connector, main lead and power supply are in the normal work.
- Do not abuse equipments and firing.
- Keep the safe equipment and cabinet shall in peace and good condition.
- Do not change any equipment.

## 1.1 Produce application

MIG series welding machine adopts special tapped transformer adjusting style. It is the economical and practical mechanical products, it has wire-feed system, easy to shift and simple operation, it applies to welding mild steel, low-alloy steel and so on.

## 1.2 Model unit

| Model / Item | MIG-180 | | | MIG-210 | | |
|---|---|---|---|---|---|---|
| Rated input voltage | 230V | | | | | |
| Frequency | 50Hz | | | | | |
| Phase | Single | | | | | |
| Max input capacity | 7.2kVA | | | 9kVA | | |
| No-load voltage（peak value） | 25-46VDC | | | 26-50VDC | | |
| Voltage Setting | 3 | 4 | 6 | 3 | 4 | 6 |
| Rated output current | 70A | 90A | 180A | 80A | 105A | 210A |
| Rated output voltage | 17.5V | 18.5V | 23V | 18V | 19.2V | 24.5V |
| *Duty cycle | 100% | 60% | 15% | 100% | 60% | 15% |
| Insulation grade | H | | | | | |
| Power supply circuit breaker specification (User-allocated) | 32A | | | 40A | | |
| Weight | 42kg | | | 44Kg | | |
| Dimension(L×W×H) | 80 cm×46 cm×68.6 cm | | | | | |

***Duty cycle** is the ratio of the uninterrupted on-load duration to the total time (10 minutes here). It lies between 0 and 1, and can be expressed as a percentage. For example, in the case of a 60% duty cycle, a load is applied continuously for 6 min followed by a no-load period of 4 min.

**Note:** 1. The heating test of the welding power source is carried out at ambient temperature. Duty cycle at 40℃ has been determined by simulation.

2. The welding power source belongs to Group 2 and Class B ISM equipment according to CISPR 11:2003.

## 1.3 Equipment condition

a) Range of the temperature of the ambient air :
During welding: −10℃ to +40℃
After transport and storage at : −25℃ to +55℃

b) Relative humidity of the air :
Up to 50% at 40℃
Up to 90% at 20℃

c) Ambient air, free from abnormal amounts of dust, acids, corrosive gases or substances etc, other than those generated by the welding process.

d) Altitude above sea level up to 1000m.

e) Base of the welding power source include up to 15° .

### 1.4 Noise announce

When the machine working, it maybe have noise, but the noise can't exceed 75 decibel.

### 1.5 Safety

Before operating the equipment, you must read the safety directions to avoid the hurt that because of misapply and improper installing.

### 1.6 Specific packing please sees the packing list (the last page of the manual).

## 2.1 The requirement of installing ground

Even ground is very necessary to the machine, the ground must be have good ventilation system, and can't be exposed in dust, dirt, wet and active steam, the minimum distance between back board and it's nearest bar also ⩾46cm.

## 2.2 Check, discharge and place

1. After receiving the equipment, you should check if the equipment has been damaged during traffic. If damaged, you should notify the conveyance, if lack spare parts, please notify the dealer at once.
2. Take the spare parts out from packing box, remove the packing material, and check if any cast in packing box.
3. Check every airway in the shell, and make sure packing box can't block air circulating.
4. Choose roomy ground to placed spare parts, in order to installing conveniently.

**2.3 Installing the wheel:** (Refer to Diagram 2-1) The wheels are more easily assembled with the welder placed upside down on a smooth non-abrasive surface. The welder should be turned over by two people as it is very heavy.

1. Bolt the two castors (1) to the front end of the base (2) using the bolts provided.
2. Take the solid axle (3) and slide a wheel (4) over one end followed by a washer (5). Insert a split pin (6) through the hole in one end of the axle as shown below and bend it over.
3. Take an axle retaining bracket (7) and insert it into the slots in the base (2). Hold the bracket in place and slide the axle assembly through both parts of the bracket. Insert the second axle retaining bracket (7) through the base and continue to slide the axle across so that it passes through the second bracket and holds the wheel (4) up against the side of the base. Slide the second wheel (8) onto the free end of the axle followed by a washer (9). Retain the entire axle assembly by passing a split pin (10) through the free end of the axle and bend it over to retain the whole axle assembly.
4. With the assistance of another person turn the welder the right way up onto its wheels.

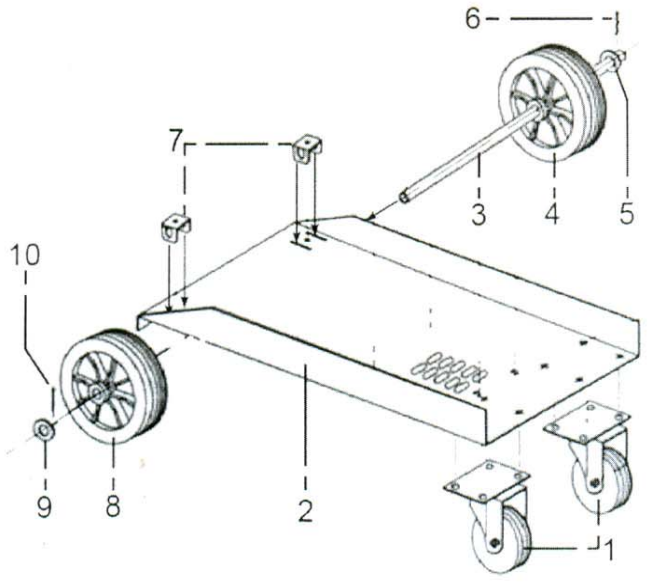



Diagram 2-1

**2.4 Installing the handle:** (Refer to Diagram 2-2) On the front of the welder there are two pairs of threaded inserts, one pair in the top left corner and one pair in the top right hand corner.

1. Attach the left hand handle mounting (1) to the front of the welder using two of the round headed bolts provided. Do not fully tighten yet.
2. Slide the handle tube (2) into the socket in the mounting and push fully home.
3. Slide the socket on the right hand handle mounting (3) over the free end of the handle tube and rotate the mounting downwards until it is resting on the front of the welder. Using two of the round headed bolts provided to fix the right hand mounting in place.
4. Now fully tighten all four fixings.

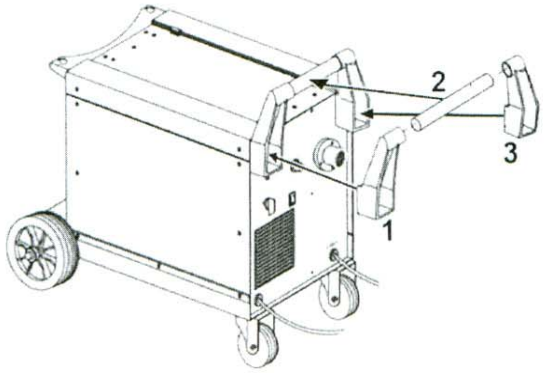



Diagram 2-2

**2.5 Installing the clamp:** (Refer to Diagram 2-3) Feed the eyelet on the end of the earth lead through the hole in the clamp arm. Drop the eyelet over the terminal and firmly fix with the bolt provided.

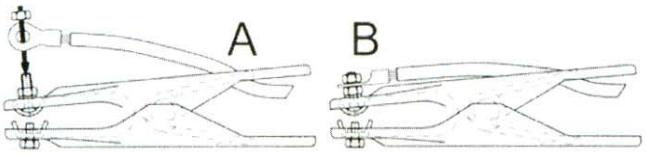
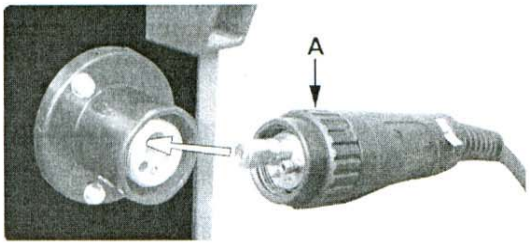
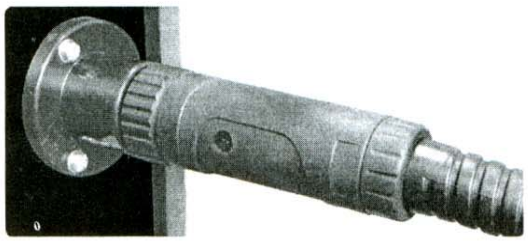



Diagram 2-3

**2.6 Connect the torch cable to the welder:** (Refer to Diagram 2-4) Align the pins on the Euro connector with the socket on the welder front panel as shown in Diagram 2-4A. Push the connector into the socket and rotate the locking ring (A) clockwise so that it draws the plug into the socket as shown in Diagram 2-4B.




A

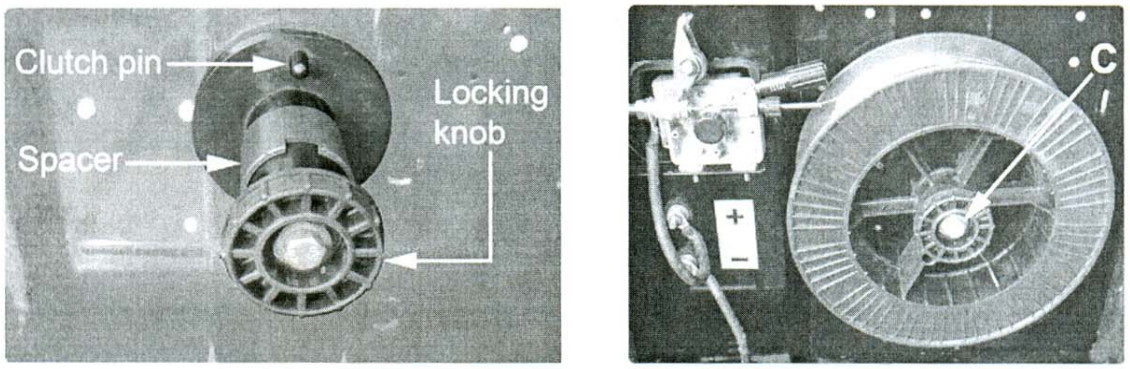


B

Diagram 2-4

**2.7 Installing the reel of wire:** The welder will accept either a 5kg or a 15kg reel of wire. Ensure that the wire diameter used, is matched by the correct groove size in the drive wheel and the correct tip size on the torch as well as the correct torch liner. Failure to do this could cause the wire to slip and/or bind.

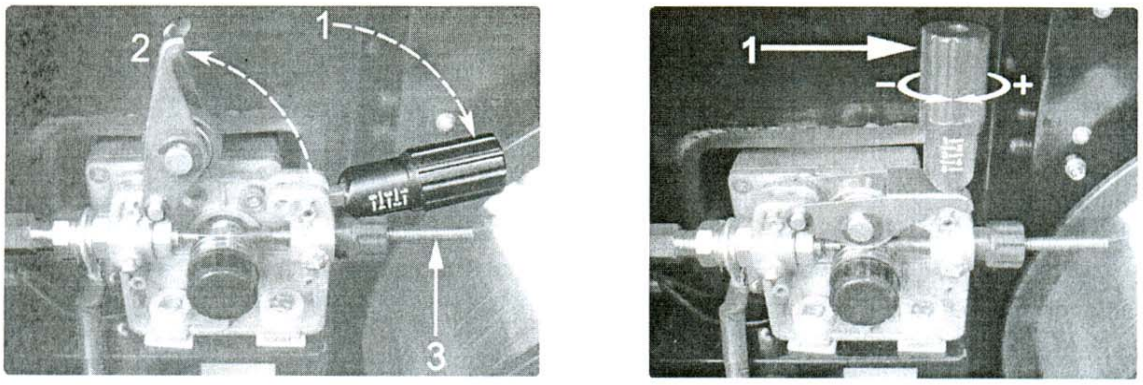
Unscrew the locking knob from the end of the spool holder (see Diagram 2-5A) and remove the spacer. Slide the reel of wire onto the spool holder and ensure that the clutch pin at the back of the spool holder engages into the guide hole in the wire reel moulding. This will prevent the wire reel from freewheeling on the spool holder. When using a 5kg reel, slide the spacer onto the spool holder before refixing the locking knob. Ensure that the wire is coming off the top of the reel in the direction of the wire drive unit as shown in diagram 2-5B which shows a 15kg reel of wire in place on the spool holder.




A B

Diagram 2-5

**2.8 Feed wire through to torch:** (Refer to Diagram 2-6) Open the wire feed mechanism by pushing the locking/wire tension knob (1) down to the right allowing the pressure roller carrier (2) to spring up revealing the feed roller as shown in diagram 2-6A.




A B

Diagram 2-6

1. Ensure that the required feed groove (0.6 or 0.8) is in line with the wire path. See Section 2.11 on how to reverse or change the roller.
2. Release the wire from the reel and cut off any bent portion ensuring that there are no burrs left on the end of the wire. Keep the wire under tension at all times to prevent it uncoiling.
3. Straighten about 40-50mm of wire and gently push it through the flexible metal sheathed cable (3) and through the 0.6 or 0.8mm feed roller groove and into the torch cable liner.

4. Push down the pressure roller carrier onto the wire feed roller and hold it down. Lift up the locking/wire tension knob so that it enters the slot in the pressure roller carrier and snaps into the indent in its top surface. See diagram 2-6B. Rotate the tension knob to a medium setting i.e. between 2 and 3.
5. Remove gas cup (Diagram 2-7) and contact tip (1) from end of torch as follows:
   a) Take torch in left hand with the torch tip facing to the right.
   b) Grasp gas cup firmly in your right hand.
   c) Turn gas cup clockwise only and pull it off end of torch tip.

   **WARNING! Do not turn gas cup anti-clockwise, as this will damage the internal spring.**

   d) Unscrew copper contact tip (right hand thread) to remove.

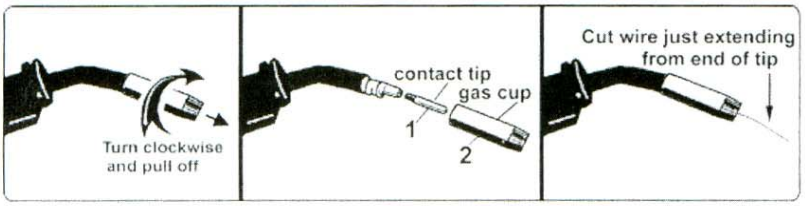



Diagram 2-7

6. Check welder is switched off "0", and that the earth clamp is away from the torch tip. Connect the welder to the mains power supply and set the voltage switch to one.
7. Set the wire speed knob to position 5 or 6. Keep the torch cable as straight as possible and press the torch switch. The wire will feed through the torch.
8. When the wire has fed through, switch welder off, unplug from mains.
   a) Take torch in left hand, slide the contact tip over the wire and screw back into place.
   b) Grasp gas cup in right hand, push onto torch head and turn clockwise only. Do not turn gas cup anti-clockwise, as this will damage the internal spring.
   c) Cut wire so that it is just protruding from the cup.

## 2.9 Setting wire tension:

1. Adjust the wire tension by rotating the wire tension knob. Turn clockwise to increase the tension and anticlockwise to decrease the tension. See (1) in diagram 2-6A.

   **IMPORTANT:** Too little or too much tension will cause problematic wire feed and result in poor welding.
2. Tension between rollers is checked by slowing down the wire between gloved fingers. If top feed roller skids the tension is correct. Use as low a tension as possible, too high a tension will disfigure wire and result in a blown fuse.

## 2.10 Clutch adjustment:

**Note:** It is essential that the clutch is adjusted correctly.

1. Once the wire is fed through the torch, switch on the machine and set the wire speed to maximum.
2. Depress torch switch and release quickly. If the spool overruns it indicates that the clutch is too loose.
3. Tighten the clutch nut located in the centre of the wire spool holder with a spanner (diagram 2-5B-C) and test the machine as above until the wire stops over running.

   **Note:** Do not over tighten the clutch as this will cause wire feed problems and strain the motor.

**2.11 Turning changing the drive roller:** (Refer to Diagram 2-8) Ensure that the wire diameter used is matched by the correct groove size in the drive wheel and the correct tip size on the torch as well as the correct torch liner. Failure to do this could cause the wire to slip and/or bind.

1. Referring to diagram 2-8, open the wire feed mechanism by pushing the locking/wire tension knob (1) down to the right allowing the pressure roller carrier (2) to spring up revealing the feed roller.
2. Referring to diagram 2-8, loosen and unscrew the black feed roller retaining knob (C) and put to one side.
3. The roller carrier (A) is keyed to the main drive shaft and the drive roller (B) is keyed to the carrier, see below. Place a finger onto the end of the drive shaft to prevent the carrier moving and slide the drive roller off the carrier with your other hand.
4. The size of each wire feed groove is printed on the edge of the roller on the same side as the groove.
5. Turn the roller over to use the other groove or use a roller with different sized grooves as required. The groove to be used should be positioned furthest away from you to be in line with the drive path.
6. Check that the key in the carrier (A) is properly seated in its slot. Ensure that the slot on the inside face of the drive roller (B) is aligned with the key and slide the roller back onto the carrier.
7. Screw the black roller retaining knob (C) back on to the end of the drive shaft and tighten.

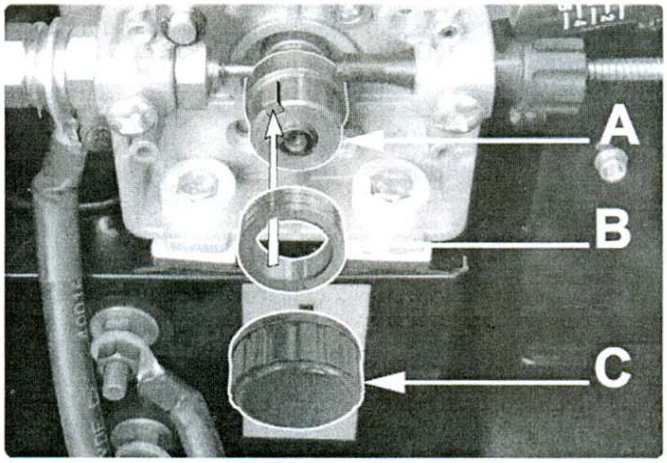



Diagram 2-8

**2.12 Preparing the Shielding Gas** (For Gas Metal Arc Welding Processes)

Customer must provide cylinder of appropriate type shielding gas, a gas flow regulator, for Argon blend gas, an inlet gas hose, a gas hose, and two stainless steel hose for the process being used. When using 100% $CO_2$ an additional adapter will be required to connect the regulator to the gas bottle.

Install shielding gas supply as follows:

1. Set gas cylinder on rear platform of Welder. Hook chain in place to secure cylinder to rear of welder.
2. Remove the cylinder cap. Inspect the cylinder valves and regulator for damaged threads, dirt, dust, oil or grease. Remove dust and dirt with a clean cloth.

**DO NOT ATTACH THE REGULATOR IF OIL, GREASE OR DAMAGE IS PRESENT!** Inform your gas supplier of this condition. Oil or grease in the presence of high pressure oxygen is explosive.

3. Stand to one side away from the outlet and open the cylinder valve for an instant. This blows away any dust or dirt which may have accumulated in the valve outlet.
   **Be sure to keep your face away from the valve outlet when "cracking" the valve.**
4. Check your regulator to make sure that it was supplied with a gasket. Tighten the regulator coupling to the cylinder gas valve.
   **NOTE:** If connecting to 100% $CO_2$ cylinder, an additional regulator adapter must be installed between the regulator and cylinder valve. If adapter is equipped with a plastic washer, be sure it is seated for connection to the $CO_2$ cylinder.
5. Connect one end of the inlet gas hose (not include) to the outlet fitting of the flow regulator, the other end to the Welder rear fitting, a stainless steel hose clamp can be used to insure a leak-proof connection.
6. Before opening the cylinder valve, turn the regulator adjusting knob counterclockwise until the adjusting spring pressure is released.
7. Standing to one side, open the cylinder valve slowly a fraction of a turn. When the cylinder pressure gauge pointer stops moving, open the valve fully.
   **Never stand directly in front of or behind the flow regulator when opening the cylinder valve. Always stand to one side.**
8. The flow regulator is adjustable. Adjust it to the flow rate recommended for the procedure and process being used before making the weld.

**Cautions**

**Do not operate the machine when the shell has been opened, improper cooling can damage the parts; make sure the side board have been closed. When welding, you must wear helmet, glove and other guard.**

## 3.1 Layout drawing of control panel (diagram 3-1)

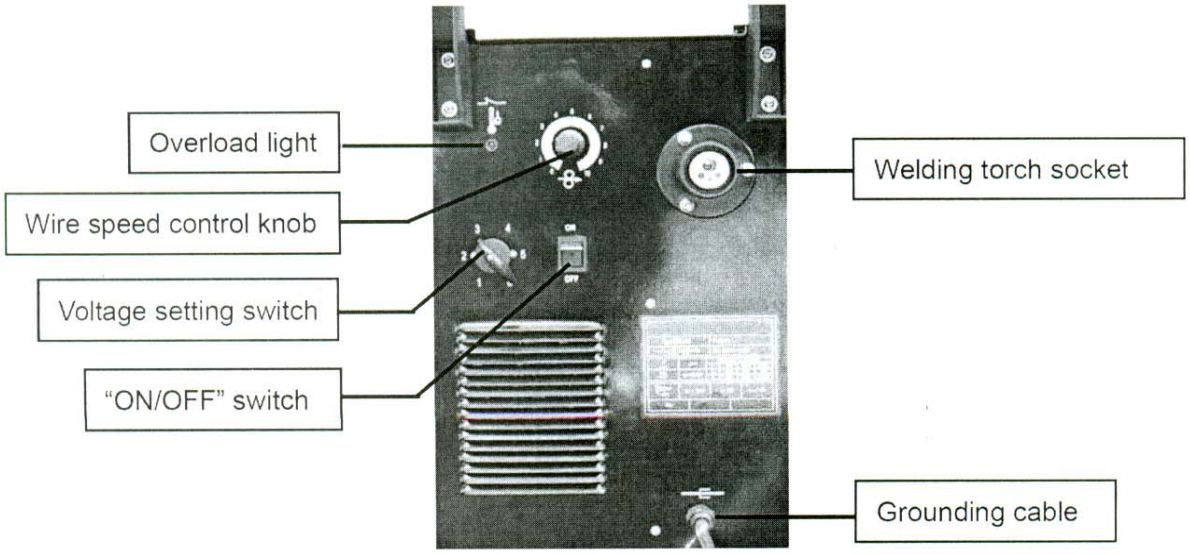



Diagram 3-1

### 3.1.1 "ON/OFF "switch

When the switch on "OFF" position means power has been closed, when the switch on "ON" position means supply power for the main transformer and control circuit.

### 3.1.2 Voltage setting switch

Voltage setting switch is at the front panel of machine, it have six shelves, and you can choose different shelves according to the metal material.

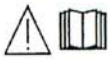
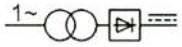
### 3.1.3 Wire speed control knob

Controls the wire speed, turn it clockwise to increase the wire speed or counter-clockwise to decrease the wire speed. The Number 0~10 around knob only show the wire feed speed, rated wire feed speed is 1.8m/min ~ 11.6m/min.

### 3.1.4 Overload light

If welding with large current for a long time and exceed the duty cycle, the overload lamp will light, the welder will turn off until it cools down. If this happens, you must stop welding and wait about 10 minutes, then you can continue.

## 3.2 Graphic symbols and technical data

| | |
|---|---|
| $U_0$.....V | This symbol shows the secondary no-load voltage (in volts). |
| X | This symbol shows the rated duty cycle. |
| $I_2$.....A | This symbol shows the welding current in AMPS. |
| $U_2$.....V | This symbol shows the welding voltage in VOLTS. |
| $U_1$ | This symbol shows the rated supply voltage. |
| $I_{1max}$...A | This symbol shows the welding unit's maximum absorbed current in AMP. |
| $I_{1eff}$...A | This symbol shows the welding unit's maximum effective supply current in AMP. |
| IP21 | This symbol shows the welding unit's protection class. |
| S | This symbol shows that the welding unit is suitable for use in environments where there is a high risk of electric shocks. |
|  | This symbol shows read the operating instructions carefully before operation. |
|  | This symbol shows a single phase transformer rectifier welder. |
|  1 ~ 50Hz | This symbol shows the supply power phase and line frequency in Hertz. |
|  | This symbol shows the welder is metal inert and active gas welding including the use of flux cored wire. |

## 3.3 Operation process

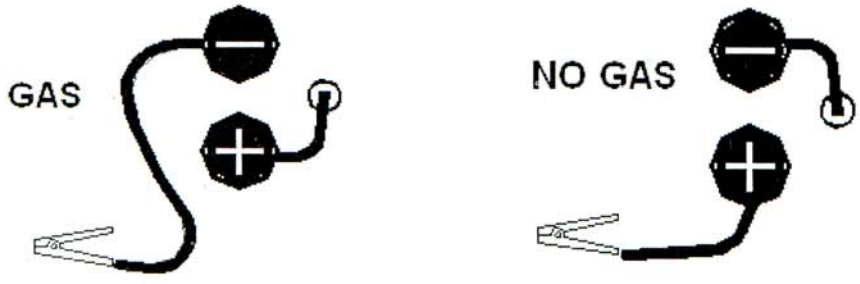
Before Welding

- Read and understand the safety rules section of this manual.
- Be sure all flammable materials are removed the work area.
- There is good ventilation around the welding unit and the area that you will be working.
- Be sure you have fire-extinguisher ready in case of an accident.
- Put on appropriate protective clothing and insulated leather gloves.

### 3.3.1 Use with cored wire

The welder can used with special Flux wire that dose not require protective gas. This wire, contrary to the case with electrodes, does not leave slag and gives better bread penetration with substantially lower line absorption.

Make sure you use proper welding polarity: as diagram 3-2B. Grounding cable connects "+" terminal, another cable (welding torch cable) connect "-" terminal.




A B

Diagram 3-2

Step1: Connect work clamp onto metal to be welded, or to the metal workbench where the object is mounted and electrically connected.

Step2: Before plugging in, adjust amperage and wire feed speed according to material type and thickness, and the wire size.

Step3: Check the power switch is in OFF position, and then plug the power cord into its electrical outlet.

Step4: While holding the Torch with the wire and tip clearly out of the way of any grounded objects, turn the power switch to ON position.

Step5: Orient yourself on the area to be welded, and then place the Face Shield over your eyes.

**Warning: Never look at the ignited arc without ANSI approved, arc shaded, eye protection in a full-face shield. Permanent eye damage or blindness can occur. Skin burns can occur. Never breathe arc fumes.**

Step6: Press (and hold) the torch button and stroke the area to be welded with the electrode wire to ignite the arc.

Step7: Once the arc is ignited, tilt the electrode wire forward at an angle of approximately 35° (as diagram 3-3).

Step8: When the weld is complete, loose the torch button and lift the wire clearly away form any grounded object, set the Face Shield down and turn the Power Switch to the "OFF" position.

Step9: Unplug the Power Cord from the electrical outlet.

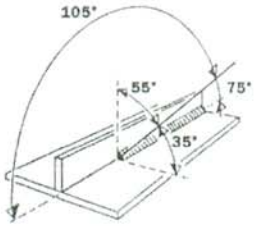



Diagram 3-3

### 3.3.2 Use mild steel wire

The welder can use with mild steel wire and shield gas for welding carbon steel. The shielding gas should be either pure (100%) $CO_2$ or a 75% argon-25% $CO_2$ mixture.

Make sure you use proper welding polarity: as diagram 3-2A, grounding cable connect "-" terminal, another cable (welding torch cable) connect "+" terminal. The diameter of the wire you select should correspond to the thickness of the work piece. Make sure that the contact tip is match the size of the wire diameter.

Step1: Connect work clamp onto metal to be welded, or to the metal workbench where the object is mounted and electrically connected.

Step2: Before plugging in, adjust amperage and wire feed speed according to material type and thickness, and the wire size.

Step3: Open the gas valve of regulator; press (and hold) the torch trigger set a flow of 5-7 L/Min (depending on the welding position chosen).

Step4: Check the power switch is in OFF position, and then plug the power cord into its electrical outlet.

Step5: While holding the Torch with the wire and tip clearly out of the way of any grounded objects, turn the power switch to ON position.

Step6: Orient yourself on the area to be welded, and then place the Face Shield over your eyes.

**Warning: Never look at the ignited arc without ANSI approved, arc shaded, eye protection in a full-face shield. Permanent eye damage or blindness can occur. Skin burns can occur. Never breathe arc fumes.**

Step7: Press (and hold) the torch trigger and stroke the area to be welded with the electrode wire to ignite the arc.

Step8: Once the arc is ignited, tilt the electrode wire forward at an angle of approximately 35° (as diagram 3-3).

Step9: When the weld is complete, loose the torch button and lift the wire clearly away form any grounded object, set the Face Shield down and turn the Power Switch to the "OFF" position.

Step10: Unplug the Power Cord from the electrical outlet.

Step11: Close the gas cylinder valve.

Step12: Depress torch trigger to release gas in regulator, gas pressure indicator will return to 0.

**Cautions**

**If welding with large current for a long time and exceed the duty cycle, the overload lamp will light, and the welder will turn off until it cools down. If this happens, you must stop welding and wait about 10 minutes, then you can continue.**

**Warning**

**Before performing any maintenance on the Welder, unplug the Power Cord from the electrical out let and allow all parts of the welder to cool thoroughly.**

1. Periodically open the Access Panel from the unit and, using compressed air, blow out all dust and debris from the interior. Inspect all air vents and cooling slots to ensure that they are clean and unobstructed.
2. Always store the Welder in a clean, dry, safe location out of reach of children and other unauthorized people.
3. For optimal weld quality, clean and inspect the Contact Tip and Nozzle before each use, as follows:

## NOZZLE INSPECTION, CLEANING, AND REPLACEMENT

1. Turn the Nozzle counterclockwise while pulling to remove.
2. Scrub the interior of the Nozzle clean with a wire brush.
3. Examine the end of the Nozzle. The end should be flat and even. If the end is uneven, chipped, melted, cracked, or otherwise damaged, the Nozzle will adversely effect the weld and should be replaced.
4. Reinstall the Nozzle after inspecting and cleaning the Contact Tip.

## CONTACT TIP INSPECTION, CLEANING, AND REPLACEMENT

1. Make sure the entire Welding Torch is completely cool before proceeding.
2. Remove the Nozzle as explained above. Then remove the Contact Tip.
3. Scrub the exterior of the Contact Tip clean with a wire brush. Check that the Contact Tip is the proper type for the wire size used.
4. Examine the hole at the end of the Contact Tip for the following problems: The hole should be an even circle, and should not be oblong or have any bulges in it; The Contact Tip will decrease in efficiency as the center hole enlarges.
5. If any problems are noted with a Contact Tip, it is recommended to have it replaced.
6. When inspection and maintenance is completed, reinstall the Contact Tip and Nozzle.

**Warning**

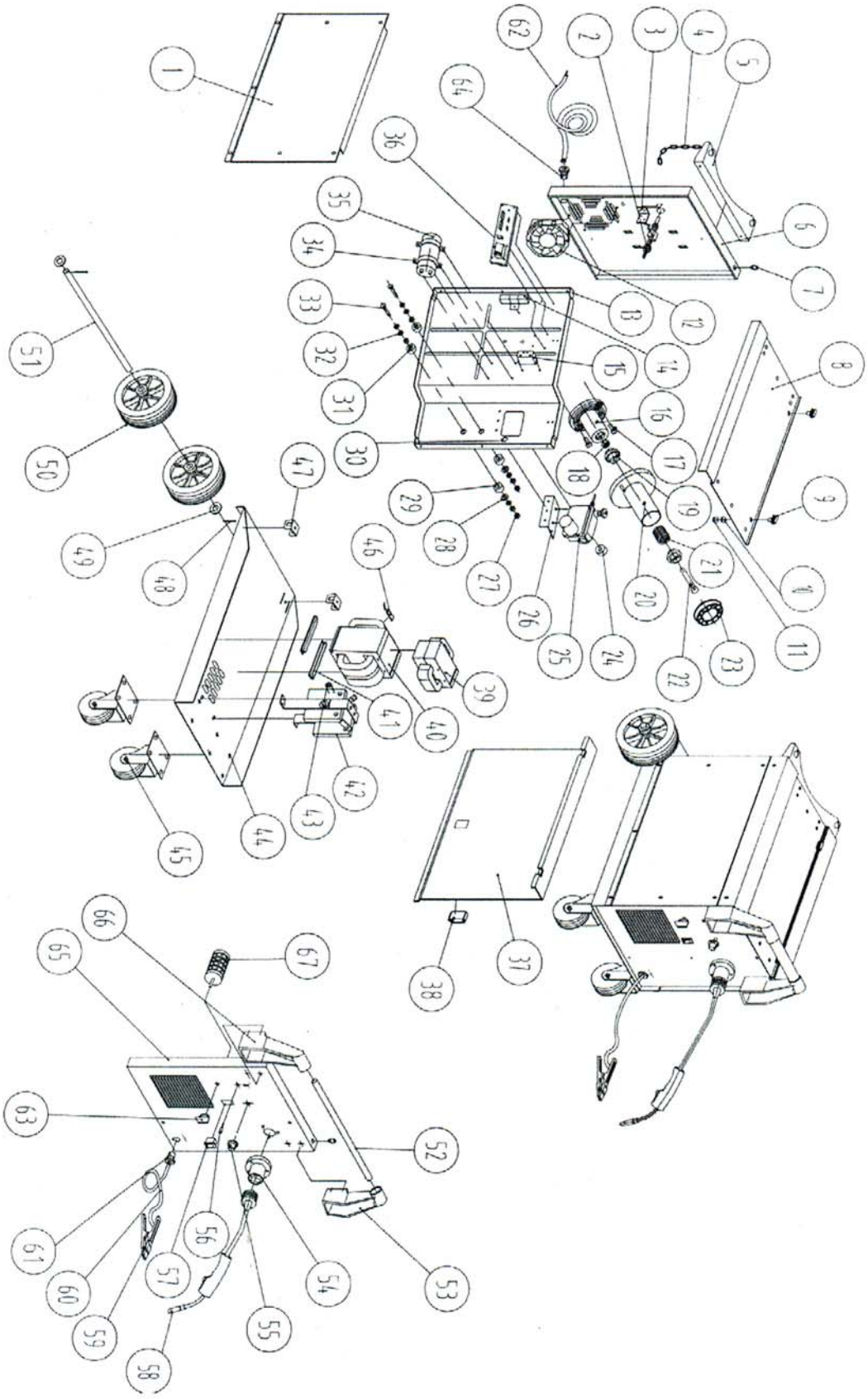
**Be CERTAIN to shut off the welder, disconnect it from power, and discharge the torch to ground before adjusting, cleansing, or repairing the unit.**

**Electrical repairs should only be made by trained technician.**

## TROUBLESHOOTING

| Symptom | Possible Cause | Corrective Action |
|---|---|---|
| No output | 1. Duty cycle exceeded<br>2. Poor work clamp connection<br>3. Tripped circuit breaker<br>4. Blown breaker or fuse | 1. Allow welder to cool until lamp goes out<br>2. Be sure all connections are secure, and attaching surface is clean<br>3. Reset by pushing button on back of unit<br>4. Reduce circuit load, reset breaker or replace fuse |
| Wire tangles at drive roller | 1. Wrong size contact tip<br>2. Torch liner clogged or damaged<br>3. Contact tip clogged or damaged<br>4. Drive roller worn<br>5. Not enough tension | 1. Use proper size contact tip<br>2. Clean or replace wire liner<br>3. Clean or replace contact tip<br>4. Replace drive roller<br>5. Tighten tension knob |
| Gun nozzle arcs to work surface | 1. Slag inside gun nozzle<br>2. Insulation ring melted or expired | 1. Clean slag from gun nozzle<br>2. Replace nozzle |
| Work clamp and/or cable gets hot | 1. Poor contact<br>2. Using an extension cord with excessive length | 1. Be sure all connections are secure, and attaching surface is clean<br>2. Never use an extension cord longer than 20 ft |
| Wire does not feed | 1. Wire jammed<br>2. Out of wire<br>3. Not enough tension<br>4. Wire liner worn<br>5. Contact tip clogged | 1. Reload wire<br>2. Replace wire spool<br>3. Tighten tension knob if wire is slipping<br>4. Replace liner<br>5. Replace contact tip |
| Weld pops and sputters | 1. Wire speed setting<br>2. Contact tip size too large<br>3. Polarity set incorrectly<br>4. Drive roller slipping<br>5. Gas bottle empty | 1. Tune in correct setting<br>2. Replace contact tip<br>3. Reverse polarity<br>4. Increase tension<br>5. Replace gas bottle |

# Assembly Drawing



## Parts List

| Item # | Description | Item # | Description |
|---|---|---|---|
| 1 | Side Panel | 35 | Capacitance |
| 2 | Solenoid Valve | 36 | Circuit Board |
| 3 | Solenoid Valve Bracket | 37 | Access Panel |
| 4 | Chain | 38 | Latch |
| 5 | Gas Bottle Support | 39 | Filter Reactor |
| 6 | Back Panel | 40 | Main Transformer |
| 7 | Rubber Support | 41 | Transformer Carriage |
| 8 | Top Panel | 42 | Rectifier Rack |
| 9 | Hinge | 43 | Thermal Switch |
| 10 | Rubber Washer | 44 | Bottom Panel |
| 11 | Nut, M8 | 45 | Caster |
| 12 | Fan | 46 | Thermal Switch |
| 13 | Inner Panel | 47 | Axes Bracket |
| 14 | Resistance | 48 | Cotter Pin |
| 15 | Relay | 49 | Washer, 20 |
| 16 | Wire disc seat | 50 | Wheel |
| 17 | Bolt, M8x25 | 51 | Axle |
| 18 | Nut, M10 | 52 | Handle |
| 19 | Plastic Knob | 53 | Right Handle Socket |
| 20 | Spool Holder B | 54 | Torch Seat |
| 21 | Spring | 55 | Wire Speed Control Knob |
| 22 | Bolt, M10x80 | 56 | Overload Indicator Light |
| 23 | Retainer | 57 | ON/OFF Switch |
| 24 | Wire Feed Wheel | 58 | *Welding Torch |
| 25 | Wire Feeder | 59 | Ground Clamp |
| 26 | Wire Feeder Support | 60 | Ground Cable |
| 27 | Copper Nut, M8 | 61 | Cable Tip, PG13.5 |
| 28 | Washer, 8 | 62 | Line Cable |
| 29 | Insulating Washer | 63 | Voltage Control Knob |
| 30 | Rubber Ring | 64 | Cable Tip, PG16 |
| 31 | Insulating Washer | 65 | Front Panel |
| 32 | Washer, 8 | 66 | Left Handle Socket |
| 33 | Copper Bolt, M8x55 | 67 | Voltage Control Switch |
| 34 | Capacitor Installing Clamp | 68 | |

***Welding Torch is according to the customer's requirements.**

## Packing list

| No. | Name | Specification | Qty | Remark |
|---|---|---|---|---|
| 1 | Welding power | | 1 | |
| 2 | Operating manual | | 1 | |
| 3 | Handle socket | | 2 | |
| 4 | Earth clamp | | 1 | |
| 5 | Wheel | 8″ | 2 | |
| 6 | Caster | | 2 | |
| 7 | Axle bracket | | 2 | |
| 8 | Axle | Φ20 | 1 | |
| 9 | Straight handle | | 1 | |
| 10 | Bolt | GB818 M4×10 | 2 | |
| 11 | Cotter pin | GB91 3.2×40 | 2 | |
| 12 | Washer | GB97.1 20 | 2 | |
| 13 | Chain | | 1 | |
| 14 | Hose | | 1 | |
| 15 | Hose clamp | | 2 | |