

**Part # 520.0148 / 520.0208**

**Processes**



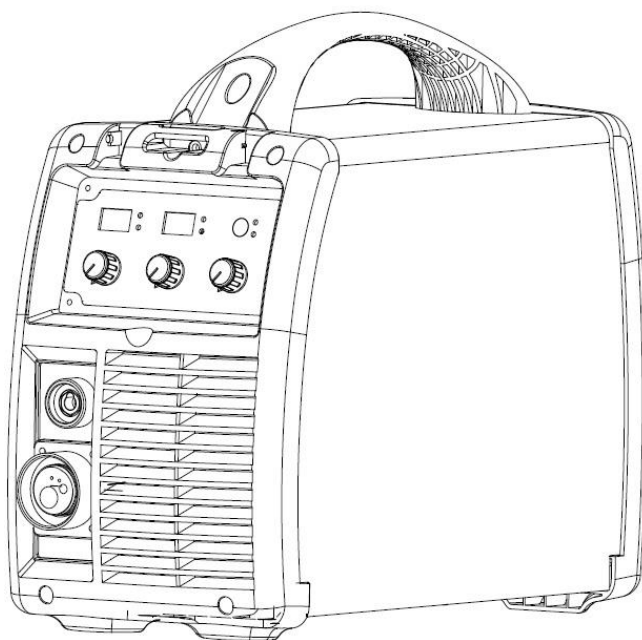
MIG/MAG(GTAW) Arc Welding

Flux-Cored (FCAW) Arc Welding

115 & 220VAC 50/60Hz

**INVERTER MIG WELDING MACHINE**

**M148 / M208**



**OPERATOR'S MANUAL**

2016.11

**IMPORTANT: Read this Owner's Manual Completely** before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your protection. Contact your distributor if you do not fully understand this manual.

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# §1 Safety

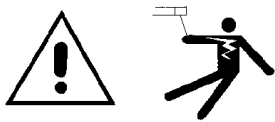
## §1.1 Signal Explanation



• The above signals mean warning! Notice! Running parts and getting an electric shock or thermal parts will take damage for your body or others. The corresponding notices are as follows. It is quite a safe operation after taking several necessary protection measures.

## §1.2 Arc Welding Damage

- The following signals and word explanations are to some damages for your body or others happening on the welding operation. While seeing these, please remind of yourself or others to be dangerous.
- Only ones who are trained professionally can install, debug, operate, maintain and repair the equipment.
- During the operation, non-concerned people should be lift, especially for children.
- After shut off the machine power, please maintain and examine the equipment according to §5 because of the DC voltage existing in the electrolytic capacitors.



**ELECTRIC SHOCK CAN KILL.**

- Never touch electrical parts.
- Wear dry, hole-free gloves and clothes to insulate yourself.
- Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.
- Take carefully when using the equipment in small place, falling-off and wet circumstance.
- Never close the machine power before installation and adjustment.

Ensure to install the equipment correctly and ground the work or metal to be welded to a good electrical (earth) ground according the operation manual.

- The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not

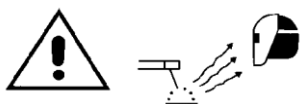
touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

- In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.
- Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
- Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
- Never dip the electrode in water for cooling.
- Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
- When working above the floor level, use a safety belt to protect yourself from a fall should you get a shock.



### **FUMES AND GASES CAN BE DANGEROUS.**

- Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. When welding with electrodes which require special ventilation such as stainless or hard facing or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and below Threshold Limit Values using local exhaust or mechanical ventilation. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when welding on galvanized steel.
- Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- Shielded gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
- Read and understand the manufacturer’s instructions for this equipment and the consumables to be used, including the material safety data sheet and follow your employer’s safety practices.



### **ARC RAYS CAN BURN.**

- Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding.
- Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- Protect other nearby personnel with suitable, non-flammable screening and /or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



### **SELF-PROTECTION**

- Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.
- Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.



**DO NOT** add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.



### **WELDING SPARKS can cause fire or explosion.**

- Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.
- Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situation.

- When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

- Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been “cleaned”.

- Vent hollow castings or containers before heating, cutting or welding. They may explode.

- Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuff less trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.

- Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.



### **UNSECURED CYLINDERS may be dangerous.**

- Use only compressed gas cylinders containing the correct shielding gas and properly operating regulators designed for the gas and cylinder pressure.

- Always keep cylinders:

- Upright position securely chained to an undercarriage or fixed support.
- Away from areas where they may be struck or subjected to physical damage.
- A safe distance from welding or cutting operations and any other source of heat, sparks, or flame.

- Keep your head and face away from the cylinder valve outlet when opening.

- Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.

### **§1.3 Knowledge of Electric and Magnetic Fields**

Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). The discussion on the effect of EMF is ongoing all the world. Up to now, no material evidences show that EMF may have effects on health. However, the research on damage of EMF is still ongoing. Before any conclusion, we should minimize exposure to EMF as few as possible.

In order to minimize EMF, we should use the following procedures:

- Route the electrode and work cables together – Secure them with tape or sleeve.
- All cables should be kept as far away from the operator as possible.
- Never coil the power or earth cables around operator body.
- Connect the work cable to the workpiece as close as possible to the area being welded.
- The people with heart-pacemaker should be away from the welding area.

## §2 Overview

### §2.1 Brief Introduction

The *M-Series* of **MIG, MAG** INVERTER arc welding machine adopts the latest pulse width modulation (PWM) technology and insulated gate bipolar transistor (IGBT) power module, which can change work frequency to medium frequency so as to replace the traditional hulking work frequency transformer with the compact medium frequency transformer. This technology provides a compact, lightweight, portable power supply with high output power and superior efficiency.

*M-Series* arc welding machines are designed to use active gas (Ar+O<sub>2</sub>, Ar+CO<sub>2</sub>) and inactive gas (Ar) for MIG/MAG welding or Flux-Cored wire for non-shield gas welding.

The *MGI Series* arc welding machine has automatic protection functions with intelligent to over-voltage, over-current and over-heat sensing with auto-reset. If any one of the above problems happens, the alarm lamp on the front panel will illuminate and output current will be shut off automatically to protect itself and prolong the equipment using life.

M-SERIES Features:

1. Digital control system with infinitely adjustable (non-step) settings for power & wire speed
2. Electronic inverter power source provides high performance and efficiency
3. Waveform control provides stable welding arc on all materials and power settings
4. IGBT technology insures low power dissipation in compact package
5. Superior 40% duty cycle inverter design for professional welding.

The *M-Series* arc welding machine is suitable for all positions welding for various materials including stainless steel, carbon steel, alloy steel, etc. common in the auto body repair, light fabrication, pipe installment, petrochemical, architectural, general construction, farming and restoration industries.

MAG--Metal Active Gas Welding (Mixed Argon, CO<sub>2</sub> or O<sub>2</sub>)

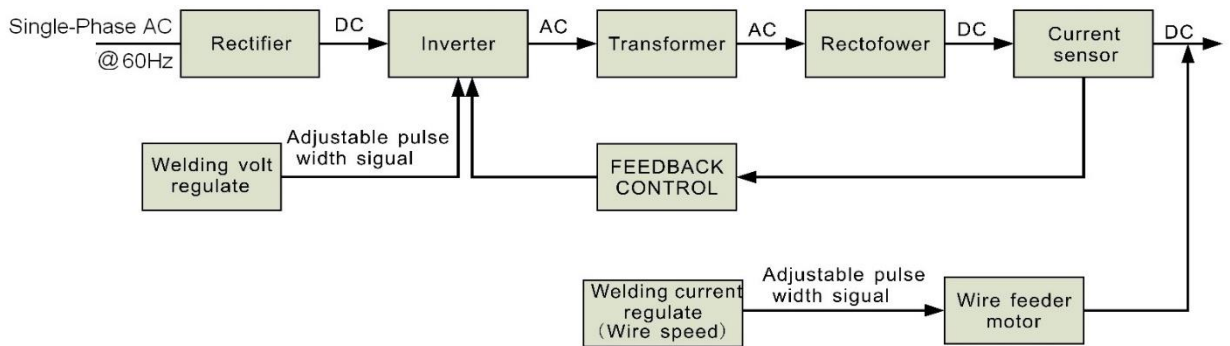
MIG--Metal Inert Gas Welding (Argon or Helium Gas)

FLUX-CORED—Arc Welding (No-Gas)



## §2.2 Working Principle

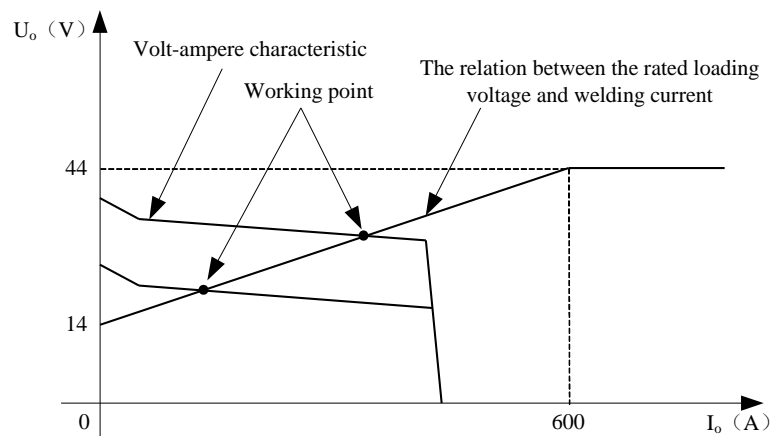
The working principle of *M-SERIES* arc welding machine is shown as the following figure. single-phase 110 or 220V work frequency AC is rectified into DC (154V), then is converted to medium frequency AC (about 37KHz) by inverter device (IGBT), after reducing voltage by medium transformer (the main transformer) and rectifying by medium frequency rectifier (fast recovery diodes), and is outputted by inductance filtering. Meanwhile, the welding current parameter can be adjusted infinitely to meet with the requirements of welding application.



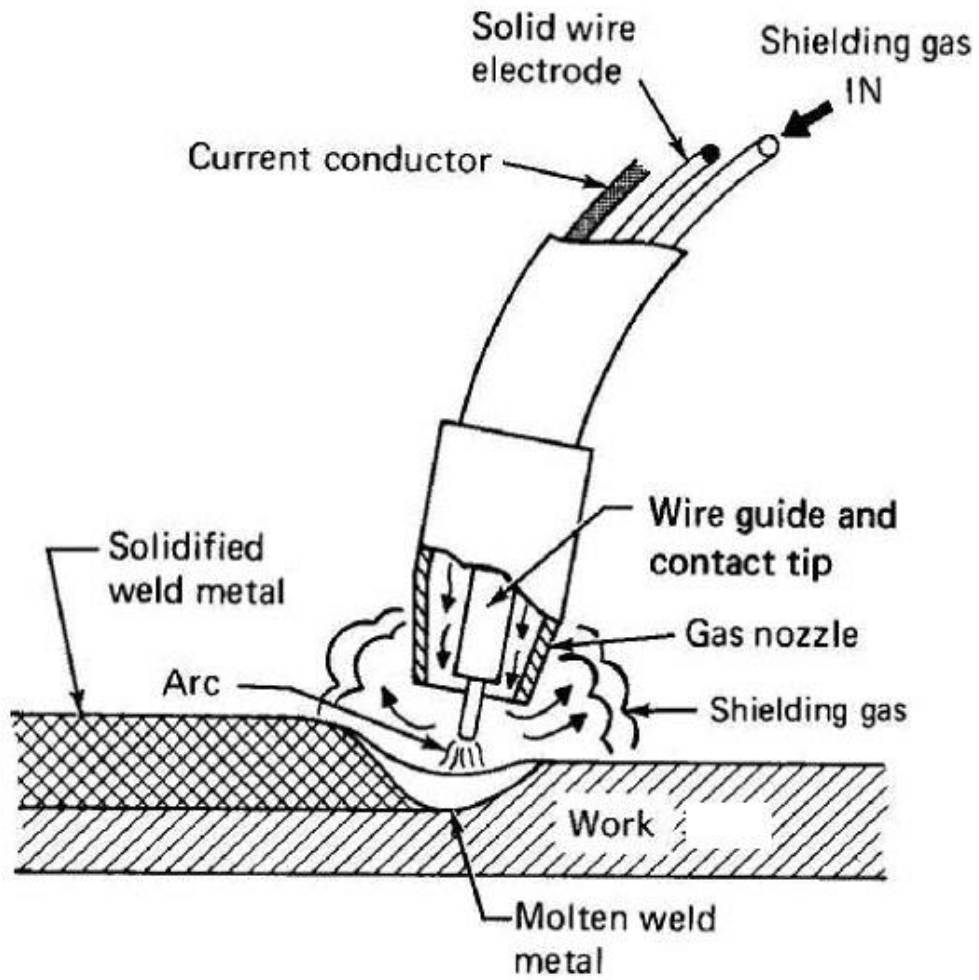
## §2.3 Volt-Ampere Characteristic

The inverter has an excellent volt-ampere characteristic, whose graph is shown as the following figure. The relation between the rated loading voltage  $U_2$  and welding current  $I_2$  is as follows:

$$U_2 = 14 + 0.05I_2 (V)$$



## §2.4 Principles of welding



## §3 Installation and Adjustment

### §3.1 Parameters

Model Parameters	M148 (110VAC)	M208 (220VAC)
Input Voltage (V)	1~110/115±10%	1~208-240±5%
Input Current (A)	20 (max.)	20 (max.)
Input Power (KW)	4.2	5.7
Welding Current (A)	35~140	50~200
No-load Voltage (V)	48	57
Duty cycle (40°C)	40%130A 100%95A	25%200A 100%120A
Diameter(mm)	Fe: 0.6/0.8/0.9 SS: 0.6/0.8/0.9 Flux-Cored: 0.8/0.9/1.0	
Protection class	IP23	
Insulation class	H	
Dimensions (mm)	465*214*395	465*214*395
Weight (Kg)	12.5 Kg.	

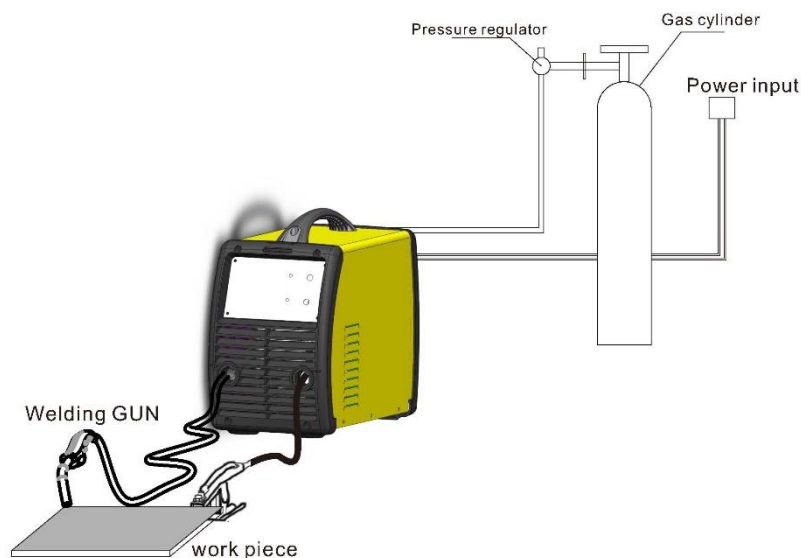
Note: The above parameters are subject to chan.

### §3.2 Duty cycle and Over-temp

The rated duty cycle is defined as the proportion of the time that a machine can work continuously over a 10 minute cycle when set at 100% of rated output welding current in 40C (104F) ambient environment.

When the transformer reaches an over-heat condition, the heat sensor inside it will open and will output an instruction to circuit board to cut AC relay and the output welding current while illuminating the over-heat pilot lamp in the front panel. At this time, all welding operations should cease for 15 minutes allowing the cooling fan to reduce the temperature. The unit will auto-reset when correct temperature has been achieved and pilot light will go out. If the machine reached the over-temp capacity again, the welding output current or the arc cycle should be reduced.

### §3.3 Equipment Connection

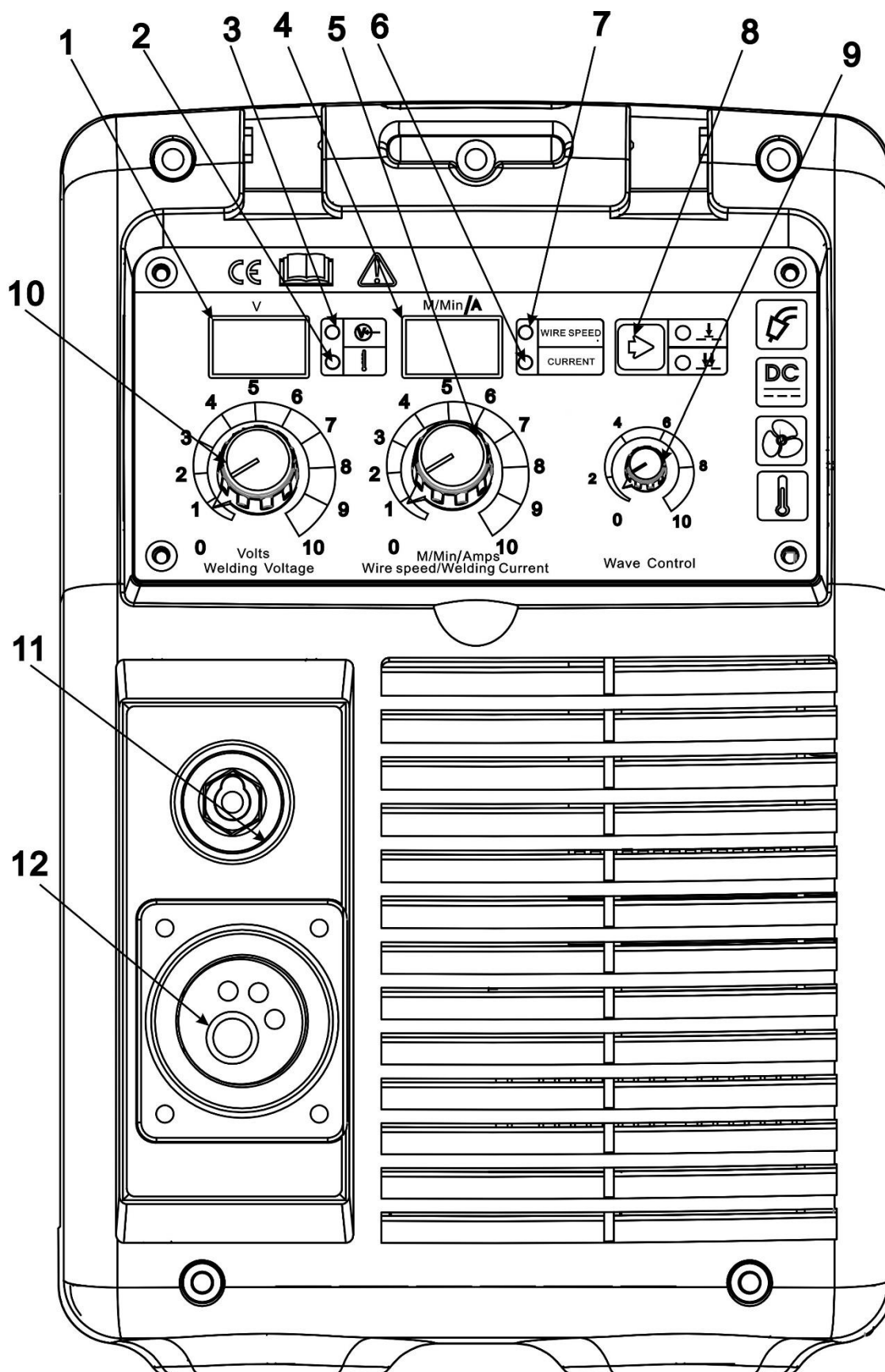


#### Operation Steps:

1. Connect the NEMA plug power cord of welding machine to matching electric outlet.
2. Connect input shield gas hose from regulator to input fitting on back of machine.
3. Connect the negative (-) cable clamp to the work piece (base metal).
4. Install spool of welding wire on spool holder with tension spring to hold in place.
5. Confirm drive roll V-groove and torch contact tip size “match” wire diameter on spool.
6. Lift idler roller arm and guide wire over V-groove on drive roll and **into torch liner**.
7. Secure idler roller arm in place and tighten tensioning spring.
8. Remove gas nozzle and contact tip from torch neck.
9. Set wire speed control to 100%, turn ON machine and, holding torch neck away from face, push trigger to feed wire into torch cable through torch neck.
10. Turn machine OFF and replace contact tip over wire.
11. Install gas nozzle and clip wire to ¼” from tip.
12. Turn on shield gas valve and set regulator flow rate.
13. Ready to weld.

# §4 Operation

## §4.1 Layout for the front and rear panel



1. Voltage Display: Set desired welding voltage before welding. Displays actual welding voltage when machine is working.
2. Alarm Led: When the machine senses LINE over voltage or low voltage, output over current or over heat condition, the alarm pilot lamp will be on.
3. Power Led: Power led is illuminated when LINE voltage is applied to the machine.
4. Wire Feed & Current Display: Set desired wire speed before welding. Actual welding current displayed when machine is working.
5. Wire Speed & Current Knob: Set the wire speed for desired welding current.
6. Current LED: When illuminated, display is actual output welding current.
7. Wire Speed LED: When illuminated, display is the desired wire speed.
8. Trigger Function Select: 2T = ON/OFF 4T = ON/Latch & Latch/OFF
9. Wave Control Knob: Controls arc characteristic or the rate at which the amperage rises when a short circuit is produced.
10. Welding Voltage Knob: Set the welding volts
11. Earth Output Connector: This polarity must connect the work piece.
12. MIG Gun Connector: Euro-connect for torch cable to machine.

## **§4.2 Welding Operation**

### **§4.2.1 Output Voltage Setting (V)**

Turn knob to desired WELDING VOLTAGE “V” based on wire size, type and material being welded per 4.3 below.

### **§4.2.2 Wire Speed Setting**

Turn knob to desired WIRE SPEED “M/Min” based on wire size, type and material being welded per 4.3 below.

## §4.3 Welding parameters

Welding current (A)	Welding volt (V)	Wave control	Wire speed		
			φ 0.6	φ 0.8	φ 1.0
40A	13~15V	1-2	2--3		
60A	14~16V	2-4	3--5	2--3	
80A	15~17V	3-5	6--8	3--5	2--3
100A	16~19V	3-5	8--10	3--6	2-3
120A	17~20V	4-6		4--7	3--5
140A	19~21V	5-10		5--8	3--5
160A	20~22V	5-10		6--9	4--7
180A	21~23V	5-10			6--9
200A	22~24V	5-10			8--12

## §4.3 Operation Environment

- Height above sea level is below 3200 Ft. (1000 meters).
- Operation range: temperature 14<sup>0</sup>F-104<sup>0</sup>F (-10<sup>0</sup>C-40<sup>0</sup>C) & relative humidity below 90 % (20<sup>0</sup>C).
- Ventilation of at least 1 foot (30cm) free space between the machine and any structure.

## §4.4 Operation Notices

- ▲ Read §1 carefully before attempting to use this equipment.
- ▲ NEMA power cord plug must be inserted directly into GROUNDED outlet by others.
- ▲ Insure that the input LINE circuit is rated at nameplate voltage with **20-amp** (Min.) breaker.
- ▲ Ensure good ventilation of the machine to improve duty-cycle ratio.
- ▲ Make certain welding area is free of all flammable or combustible materials.
- ▲ Turn off the power switch when the operation finished for economize energy sources.
- ▲ When output shuts off and ALERT lamp illuminates, do not restart it until problem is resolved.  
Otherwise, the range of problem will be extended and machine may be damaged.
- ▲ In case of problems, contact your local dealer or authorized repair center.

# s§5 Maintenance & Troubleshooting

## §5.1 Maintenance

In order to guarantee that arc welding machine works high-efficiently and in safety, it must be maintained regularly. Let customers understand the maintenance methods and means of arc welding machine more , enable customers to carry on simple examination and safeguarding by oneself, try one's best to reduce the fault rate and repair times of arc welding machine, so as to lengthen service life of arc welding machine .Maintenance items in detail are in the following table.

- **Warning:** For safety while maintaining the machine, please shut off the supply power and wait for 5 minutes, until capacity voltage already drop to safe voltage 36V.

Frequency	Maintenance items
Daily examination	<p>If the power switch does not correctly snap in position, please replace immediately. Contact service department for replacement switch.</p> <p>After power ON, watch/listen to confirm arc welding machine cooling fan is on and there is vibration or peculiar smell. If there is one of the above problems, disconnect power cord and remove cover to determine blockage and remove.</p> <p>Observe LED display lamp and confirm POWER lamp is continuously illuminated. If this lamp id flickering, LINE voltage is too high or low.</p> <p>Observe that both voltage “V” and wire speed “S” knobs are functional and turn easily. If not, replace potentiometers.</p> <p>Confirm all welding cables are not damaged and all terminal connections are secure. Loose connectors will quickly over heat cables and terminals causing permanent damage.</p> <p>Observe shield gas hose and fittings are in good condition and securely fastened to regulator and machine. Cylinder control valve should be turned OFF when machine is not in use to insure there is no loss of shield gas.</p>
Monthly examination	<p>Using dry compressed air, clear the inside of arc welding machine of dust and contamination on main voltage transformer, inductor coil, IGBT module &amp; diode aluminum finned heat sinks as well as across the surface of the PCB.</p> <p>Check the terminal lugs in arc welding machine, if loose, please secure. If burnt, please replace. If rusty, remove oxidation on bolt with emery cloth or steel wool to ensure good electrical contact.</p>
Quarter-yearly examination	<p>All welding wires, cables and connections must be in good condition and attached securely. Machine cooling fan must be operable and no excessive dirt or dust should be built-up on internal components.</p>



## §5.2 Troubleshooting

- All welding machines have undergone 100% inspection before leaving the factory.
- Disconnect power cord from LINE before any trouble shooting and only professional maintenance personal should perform any action on the machine!

Item	Trouble		Reasons	Solution
1	Power switch “ON” but the power light not illuminated		Breaker open or damaged	Check circuit breaker
			Power switch damaged	Replace switch
			Power cord damaged	Replace cord
2	Machine over-heat LED illuminated but fan is not functioning		Fan damaged	Clear obstruction or replace
			The cable is loosen	Secure the cable tightly
3	Depress trigger switch, no output shielded gas	No output gas when test gas	No gas in cylinder or closed	Open valve or fill cylinder
			Low gas flow or leaks in hose and fittings	Adjust regulator flow, secure fittings
			Gas solenoid valve problem	Check and replace if required
	Output gas when test gas	Control switch damaged	Repair the switch	
		Control circuit damaged	Check the board	
4	Depress trigger switch, no wire feed	Wire feeder doesn't turn	Motor damaged	Check and replace
			Control circuit damaged	Check and replace wire feed board
	Wire feed turns but no wire feed at nozzle	Welding wire skids over drive roller wheel	Check tension arm & tighten	
		Welding wire skids over drive roller wheel	Confirm roller groove matches wire dia.	
		Drive roller worn	Replace	
		Wire won't feed through gun with tip removed	Replace torch wire conduit liner	
		Wire won't feed through gun with tip installed	Wrong size or worn contact tip, change	
5	No striking arc and no output voltage		Output cable is connected incorrectly or loose terminal	Screw it down or change it
			Control circuit damaged	Check the circuit
6	Welding stops and over-temp light illuminates		Machine has reached duty-cycle limit or internal dust	Stop welding for 10-minutes to allow cool down. Auto-reset will turn lamp off
7	Welding current is run away and can be not controlled		The potentiometer damaged	Check or change it
			The control circuit damaged	Check the circuit
8	The crater current can be not adjusted		The PCB damaged	Check it
9	Weld is inconsistent		Inadequate or wrong gas	Change cylinder to correct

## §5.3 Wire Feeding Maintenance

The welding wire must travel smoothly and freely from the spool all the way to the weld pool for controlled welding. Poor welding performance is many times a result of mechanical feeding problems with the wire through the torch. Check for smooth feeding without welding by holding gun 1' from wood surface and feeding wire at 60-degree angle. It should feed smoothly as it bows up from the surface. If not, maintenance needs to be performed.

1. Drive Roll: Check the wear of the feed roll "V" groove and clean the groove with wire brush and/or compressed air.
2. Idle Roll: Check for signs of wear and good bearing support. Change is necessary.
3. Wire Guide: Pressure of the feed rolls removes copper plating from the welding 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:
  - a. Cut the wire and remove the welding gun from the feeder.
  - b. With a pneumatic pistol, blow compressed air through the wire guide.
  - c. Blow the wire feed mechanism and reel housing clean with compressed air.
  - d. Reattach the torch, install wire, feed wire, install and tighten the contact tip with wrench and install nozzle.
4. Wire Liner Replacement: If the wire liner in the MIG gun cable is too worn or totally clogged, change it to a new one according to the following instructions:
  - a. Remove MIG gun mounting nut which exposes the brass liner nut.
  - b. Remove liner nut and withdraw the wire conduit liner from the gun cable.
  - c. Push a new liner in to the gun making sure that it enters all the way to the contact tip's base. Trim to length to lightly contact base of tip.
  - d. File the sharp edges of the cut-off end round for smooth feeding
  - e. Tighten the wire liner nut in place and reattach the gun to machine.
  - f. Feed wire through gun and reinstall contact tip, tighten with wrench.

## §5.4 Changing the Feed Roll

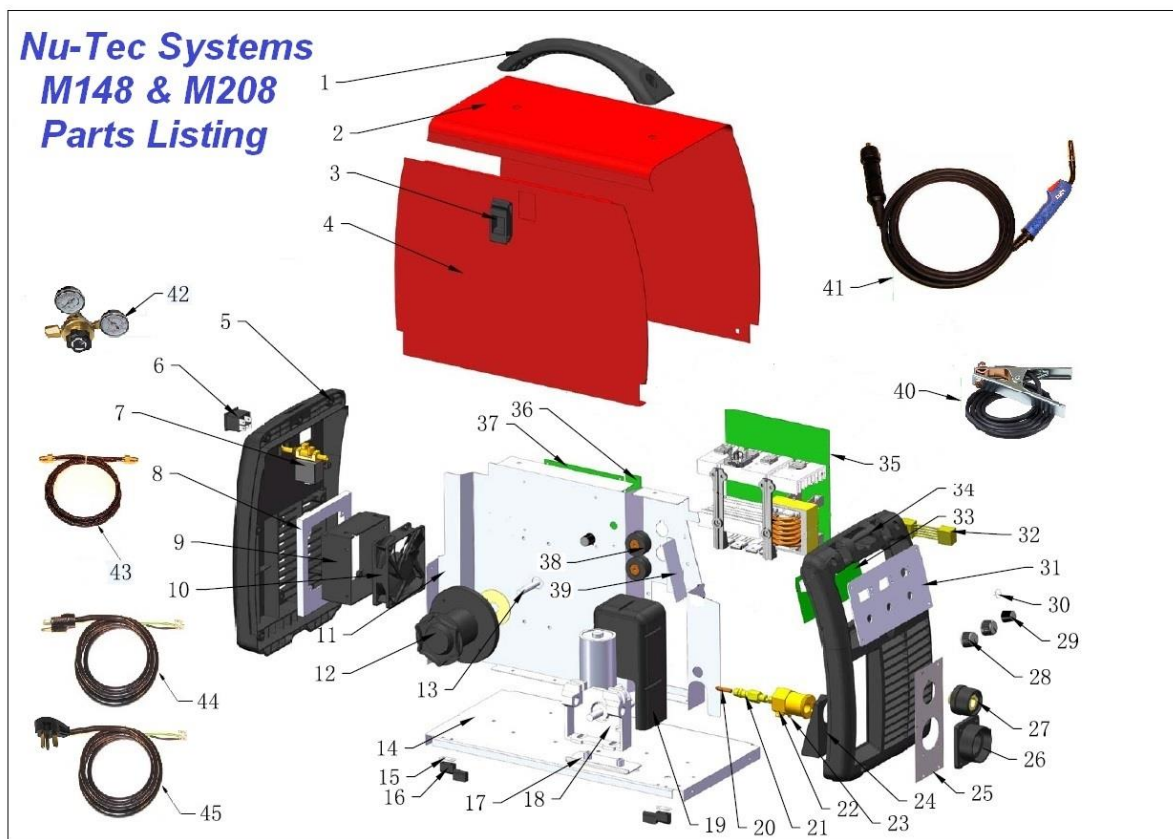
The wire feed roller is factory set for welding filler wires 0.8 – 0.9mm (.030" - .035"). The roller has a 0.6mm (.023") diameter groove on the other side; therefore, the feed roller side must be changed if you use 0.6mm thick filler wire. In order to thread the filler wire, follow these steps:

1. Open the wire cabinet housing by pressing on the opening button and install the wire spool in such a way that it rotates counter clockwise. You can use either a diameter 200mm (8") or 100mm (4") wire reel in the machine.
2. Attach the reel onto the spool holder being sure to locate drive detent on 200mm (8") reels and be sure to install spring pressure plate directly under tension nut.
3. Unfasten the wire end from the reel, but hold on it all the time.
4. Straighten the wire end 20 cm out and cut the wire in the straightened location.
5. Open the pressure control level which then exposes the drive roll wire groove.
6. Thread the wire through the wire's rear guide, over the roller making certain it aligns with groove, feed 10 cm into 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. Make sure the gun nozzle and contact tip are removed.

**Note: When driving the wire into the gun, do not point the gun at yourself or others.**

10. Press the welding gun trigger to feed the wire into the gun. Once it extends out, reinstall tip using wrench to tighten. Reinstall nozzle.

## §5.5 Replacement Exploded Parts Drawing



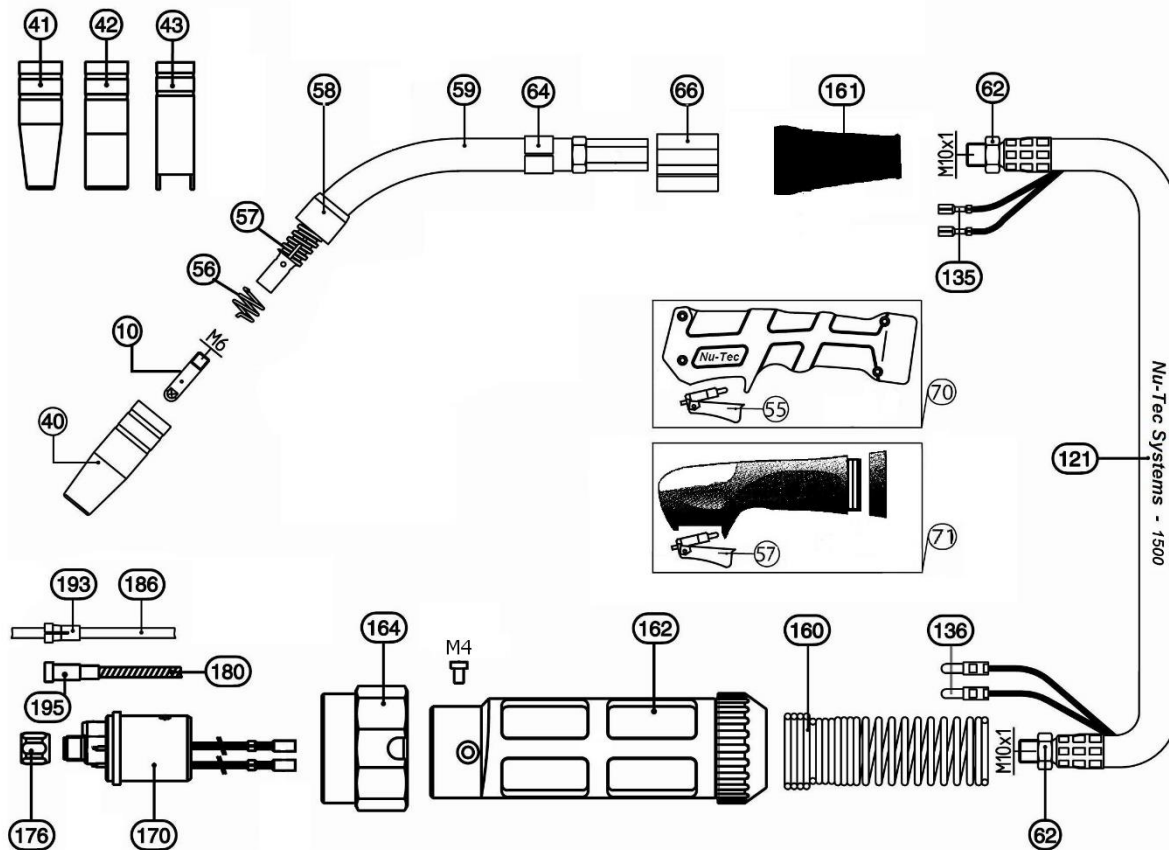
No.	Part Number	Description	Qty.
1	520.3010	Handle, Machine CP	1.00
2	520.3050	Cabinet, Cover 148/208	1.00
3	538.0017	Latch, Wire Feed Door CP	1.00
4	520.3051	Cabinet, Wire Feed Door 148/208	1.00
5	520.3052	Cabinet, Rear Panel 148/208	1.00
6	530.0020	Power Switch	1.00
7	520.3012	Solenoid Valve, Two-Way	1.00
8	520.3053	Fan Mouting Plate CP	1.00
9	740.0122	Fan Cover CP	1.00
10	740.0121	Cooling Fan CP	1.00
11	520.3054	Cabinet Center Panel 148/208	1.00
12	538.0016	Spool Holder Assembly CP	1.00
13	520.3015	Spool Holder Shaft Assembly CP	1.00
14	520.3055	Cabinet Base 148/208	1.00
15	520.3016	Hinge Base CP	1.00
16	520.3017	Hinge Lever CP	2.00
17	520.3018	Wire Feeder Insulation Board CP	1.00
18	520.3019	Wire Feed Drive Motor 148/208	1.00
19	520.3020	Motor Cover 148/208	1.00
20	520.3036	Wire Guide 148/208	1.00
21	520.3022	Central Adaptor Mount 148/208	1.00

THANK YOU FOR USING OUR PRODUCTS

22	520.3023	Central Adaptor Socket 148/208	1.00
23	520.3024	Gas Line Nipple 148/208	1.00
24	520.3025	Central Adaptor Mounting Frame 148/208	1.00
25	520.3056	Front Output Plate	1.00
26	520.3026	Central Adaptor Flange 148/208	1.00
27	511N0016	Dinse Socket 1/2" Panel (35-70mm2)	1.00
28	520.3027	Knob, Potentiometer Large	2.00
29	538.0028	Knob, Potentiometer Small	2.00
30	520.3029	Switch Cap	2.00
31	520.3056	Front Control Plate	1.00
32	520.3030	Shunt 148/208	1.00
33	520.3030	Control PCB 148/208	1.00
34	520.3057	Cabinet, Front Panel 148/208	1.00
35	520.3034	Power Inverter M148	1.00
	520.3035	Power Inverter M208	1.00
36	520.3032	Burn Back Potentiometers PCB	1.00
37	520.3033	Power Board 148/208	1.00
38	520.3034	Output Adaptor Brass Panel Mount 148/208	2.00
39	520.3058	Sealing plate	1.00
40	513N0010	Earth Clamp 3M W/ 3/8" Dinse	1.00
41	SL15-10	SL15 MIG Gun 10' Euro-Connect	1.00
42	721.0004	Gas Regulator 2-Gauge 5/8-18RHT	1.00
43	520.0009	Gas Hose 5/8-18RHT Fittings	1.00
44	707.0121	Power Cord NEMA 5-15 (115VAC)	1.00
45	570.001	Power Cord NEMA 6-50 (230VAC)	1.00

## §5.6 MIG Gun Exploded Parts

### NU-TEC NM15 & SL15 MIG GUN PARTS LIST



10	140N0008	CONTACT TIP .023"	121	160N0065	POWER CABLE 10'
	140N0059	CONTACT TIP .030"		160N0587	POWER CABLE 12'
	140N0177	CONTACT TIP .035"			
40	145N0075	NOZZLE 1/2" (STANDARD)	135	175N0022	TERMINAL TRIGGER
41	145N0123	NOZZLE 3/8"	136	175N0004	TERMINAL EURO
42	145N0041	NOZZLE 5/8"			
43	145N0168	NOZZLE SPOT-WELD	160	400N2099	CABLE SUPPORT SPRING
54	185N0005	TRIGGER NM STYLE	161	180N0046	CABLE SUPPORT SWIVEL
55	185N0006	TRIGGER SL STYLE	162	501N0045	CABLE SUPPORT BODY
56	002N0058	NOZZLE SPRING #15	164	501N0014	EURO CABLE NUT
57	002N0078	GAS DIFFUSER/TIP HOLDER #15	170	501N0003	CENTRAL ADAPTOR A/C
58	002N0050	HEAD INSULATOR #15	176	501N0082	LINER POSITION NUT
59	002N0009	SWAN NECK #15	180	124N0015	STEEL LINER .023"-.035"
62	001N0009	BRASS NUT JAM	186	126N9001	TEFLON LINER .023"-.035"
64	002N0064	SWAN NECK BUSHING #15			
66	400N0044	TORCH BODY			
70	180N0103	HANDLE NM-STYLE BLUE			
71	180N0040	HANDLE SWIVEL BLUE			

## §5.5 Electrical Schematic Drawing

