**OM-223 194** June 2005
Effective with serial number 210 344

**Processes**

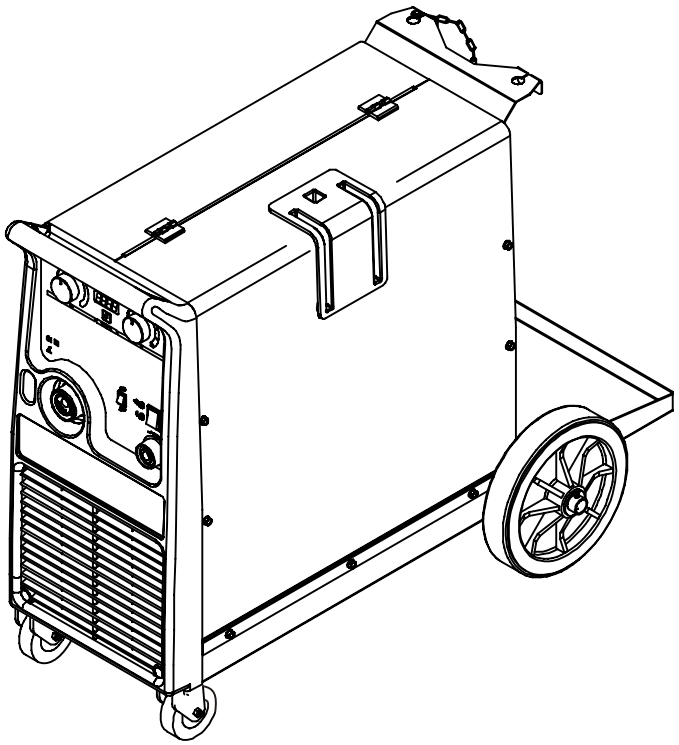
MIG (GMAW) Welding
Flux Cored (FCAW) Welding

**Description**

CV DC 3 Phase 1 Phase

Arc Welding Power Source
Wire Feeder

# Migmatic®
# 271/273/333/383



## OWNER'S MANUAL

Visit our website at
**www.MillerWelds.com**

# From Miller to You

*Thank you* and *congratulations* on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

Today, the people that build and sell Miller products continue the tradition. They're just as committed to providing equipment and service that meets the high standards of quality and value established in 1929.

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite. We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide which exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.

Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual catalog sheets.

TRUE BLUE® WARRANTY

Working as hard as you do − every power source from Miller is backed by the most hassle-free warranty in the business.

Miller®

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# Declaration of Conformity

*Manufacturer's Name:* **ITW WELDING PRODUCTS ITALY S.r.l.**

*Manufacturer's Address:* Via Privata Iseo, 6/E
20098 San Giuliano
Milanese, Italy

*Declares that this product:* **Migmatic 271/273/333/383**

*Conforms to the following Directives and Standards:*

**Directives**

*Electromagnetic Compatibility Directives: 89/336/EEC*

*Low Voltage: 73/23/EEC*

*Machinery Directives: 89/392/EEC*

*And their amendments 91/368/EEC, 93/31/EEC, 93/44/EEC, 93/68/EEC*

**Standards**

*Electromagnetic compatibility (EMC) Product standard for arc welding equipment: EN50199: August 1995*

*Safety Requirements for Arc Welding Equipment Part 1: EN 60974-1: 1989*

*European Contact:* Ing. Danilo Fedolfi, Managing Director
ITW WELDING PRODUCTS ITALY S.r.l.
Via Privata Iseo, 6/E
20098 San Giuliano
Milanese, Italy

*Telephone:* 39(02)98290-1
*Fax:* 39(02)98290-203

# SECTION 1 − SAFETY PRECAUTIONS - READ BEFORE USING

som _3/05

▲ **Warning: Protect yourself and others from injury — read and follow these precautions.**

## 1-1. Symbol Usage

Means Warning! Watch Out! There are possible hazards with this procedure! The possible hazards are shown in the adjoining symbols.

▲ **Marks a special safety message.**

☞ *Means "Note"; not safety related.*

This group of symbols means Warning! Watch Out! possible ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

## 1-2. Arc Welding Hazards

▲ **The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-5. Read and follow all Safety Standards.**

▲ **Only qualified persons should install, operate, maintain, and repair this unit.**

▲ **During operation, keep everybody, especially children, away.**

### ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

- Do not touch live electrical parts.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling.
- Use AC output ONLY if required for the welding process.
- If AC output is required, use remote output control if present on unit.
- Additional safety precautions are required when any of the following electrically hazardous conditions are present: in damp locations or while wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped positions such as sitting, kneeling, or lying; or when there is a high risk of unavoidable or accidental contact with the workpiece or ground. For these conditions, use the following equipment in order presented: 1) a semiautomatic DC constant voltage (wire) welder, 2) a DC manual (stick) welder, or 3) an AC welder with reduced open-circuit voltage. In most situations, use of a DC, constant voltage wire welder is recommended. And, do not work alone!
- Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
- Always verify the supply ground − check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
- When making input connections, attach proper grounding conductor first − double-check connections.
- Frequently inspect input power cord for damage or bare wiring − replace cord immediately if damaged − bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or poorly spliced cables.
- Do not drape cables over your body.
- If earth grounding of the workpiece is required, ground it directly with a separate cable.
- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Do not touch electrode holders connected to two welding machines at the same time since double open-circuit voltage will be present.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal.

### SIGNIFICANT DC VOLTAGE exists in inverter-type welding power sources after removal of input power.

- Turn Off inverter, disconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any parts.

### FUMES AND GASES can be hazardous.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation at the arc to remove welding fumes and gases.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watchperson nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

## ARC RAYS can burn eyes and skin.

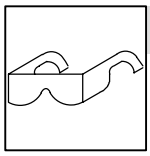
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (leather, heavy cotton, or wool) and foot protection.

## WELDING can cause fire or explosion.

Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding.

- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Do not weld where flying sparks can strike flammable material.
- Protect yourself and others from flying sparks and hot metal.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (see Safety Standards).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do not use welder to thaw frozen pipes.
- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.



## FLYING METAL can injure eyes.

- Welding, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool, they can throw off slag.
- Wear approved safety glasses with side shields even under your welding helmet.

## BUILDUP OF GAS can injure or kill.

- Shut off shielding gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.

## HOT PARTS can cause severe burns.

- Do not touch hot parts bare handed.
- Allow cooling period before working on gun or torch.
- To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

## MAGNETIC FIELDS can affect pacemakers.

- Pacemaker wearers keep away.
- Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.

## NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.

## CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.
- Never weld on a pressurized cylinder − explosion will result.
- Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Use the right equipment, correct procedures, and sufficient number of persons to lift and move cylinders.
- Read and follow instructions on compressed gas cylinders, associated equipment, and Compressed Gas Association (CGA) publication P-1 listed in Safety Standards.

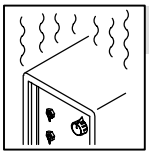
## 1-3. Additional Symbols For Installation, Operation, And Maintenance

### FIRE OR EXPLOSION hazard.

- Do not install or place unit on, over, or near combustible surfaces.
- Do not install unit near flammables.
- Do not overload building wiring − be sure power supply system is properly sized, rated, and protected to handle this unit.

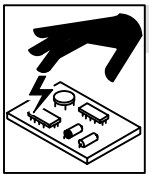
### FALLING UNIT can cause injury.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.



### OVERUSE can cause OVERHEATING

- Allow cooling period; follow rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.
- Do not block or filter airflow to unit.



### STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.

### MOVING PARTS can cause injury.

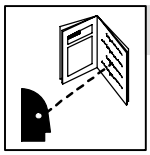
- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.

### WELDING WIRE can cause injury.

- Do not press gun trigger until instructed to do so.
- Do not point gun toward any part of the body, other people, or any metal when threading welding wire.

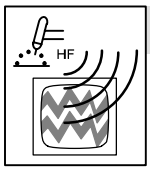
### MOVING PARTS can cause injury.

- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.
- Have only qualified persons remove doors, panels, covers, or guards for maintenance as necessary.
- Reinstall doors, panels, covers, or guards when maintenance is finished and before re-connecting input power.



### READ INSTRUCTIONS.

- Read Owner's Manual before using or servicing unit.
- Use only genuine Miller/Hobart replacement parts.




### H.F. RADIATION can cause interference.

- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified persons familiar with electronic equipment perform this installation.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency source doors and panels tightly shut, keep spark gaps at correct setting, and use grounding and shielding to minimize the possibility of interference.

### ARC WELDING can cause interference.

- Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- Locate welding operation 100 meters from any sensitive electronic equipment.
- Be sure this welding machine is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area.

## 1-4. California Proposition 65 Warnings

▲ **Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)**

▲ **Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.**

**For Gasoline Engines:**

▲ **Engine exhaust contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.**

**For Diesel Engines:**

▲ **Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.**

## 1-5. Principal Safety Standards

*Safety in Welding, Cutting, and Allied Processes,* ANSI Standard Z49.1, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

*Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping*, American Welding Society Standard AWS F4.1 from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihs.com).

*National Electrical Code*, NFPA Standard 70, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269−9101 (phone: 617−770−3000, website: www.nfpa.org).

*Safe Handling of Compressed Gases in Cylinders*, CGA Pamphlet P-1, from Compressed Gas Association, 1735 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202−4102 (phone: 703−412−0900, website: www.cganet.com).

*Code for Safety in Welding and Cutting*, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3 (phone: 800−463−6727 or in Toronto 416−747−4044, website: www.csa−international.org).

*Practice For Occupational And Educational Eye And Face Protection,* ANSI Standard Z87.1, from American National Standards Institute, 11 West 42nd Street, New York, NY 10036−8002 (phone: 212−642−4900, website: www.ansi.org).

*Standard for Fire Prevention During Welding, Cutting, and Other Hot Work*, NFPA Standard 51B, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269−9101 (phone: 617−770−3000, website: www.nfpa.org).

OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250 (there are 10 Regional Offices−−phone for Region 5, Chicago, is 312−353−2220, website: www.osha.gov).

## 1-6. EMF Information

Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

Welding current, as it flows through welding cables, will cause electromagnetic fields. There has been and still is some concern about such fields. However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: “The body of evidence, in the committee's judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human-health hazard.” However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

**About Pacemakers:**

Pacemaker wearers consult your doctor before welding or going near welding operations. If cleared by your doctor, then following the above procedures is recommended.

# SECTION 2 − DEFINITIONS

Warning! Watch Out! There are possible hazards as shown by the symbols.

1 Electric shock can kill.

1.1 Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.

1.2 Protect yourself from electric shock by insulating yourself from work and ground.

1.3 Disconnect input plug or power before working on machine.

2 Breathing welding fumes can be hazardous to your health.

2.1 Keep your head out of the fumes.

2.2 Use forced ventilation or local exhaust to remove the fumes.

2.3 Use ventilating fan to remove fumes.

3 Welding sparks can cause explosion or fire.

3.1 Keep flammables away from welding. Do not weld near flammables.

3.2 Welding sparks can cause fires. Have a fire extinguisher nearby, and have a watchperson ready to use it.

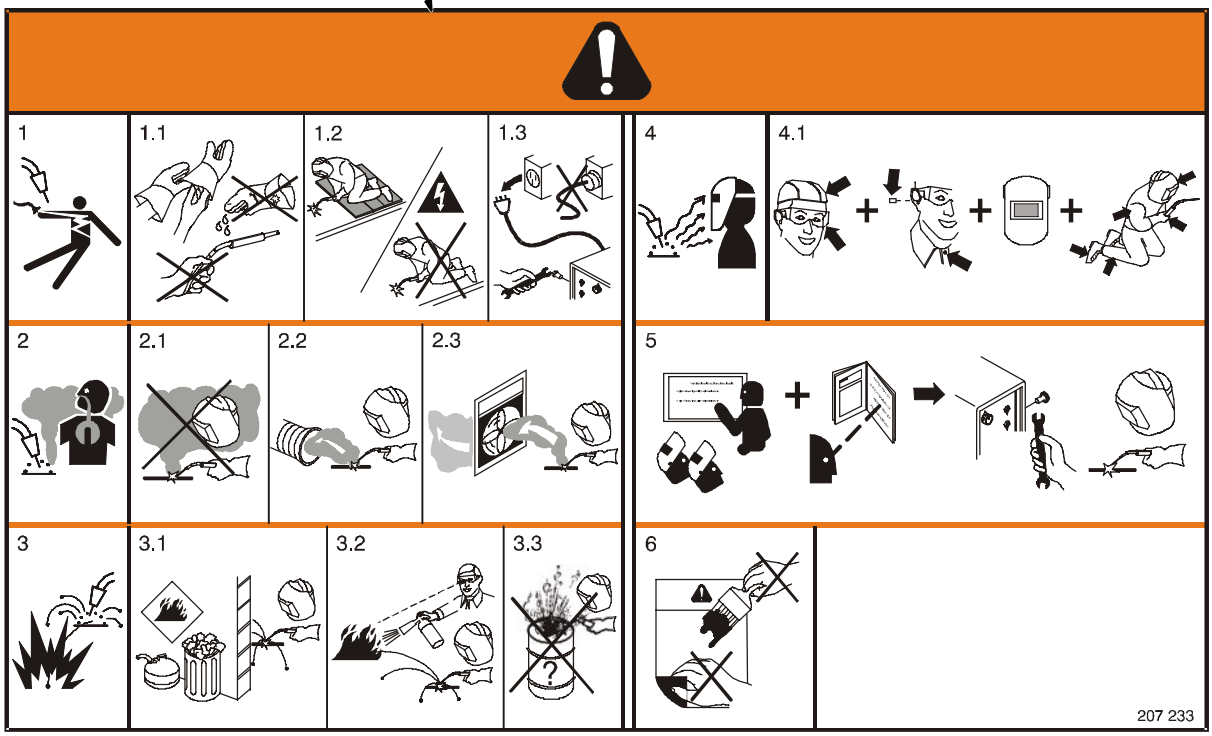
3.3 Do not weld on drums or any closed containers.

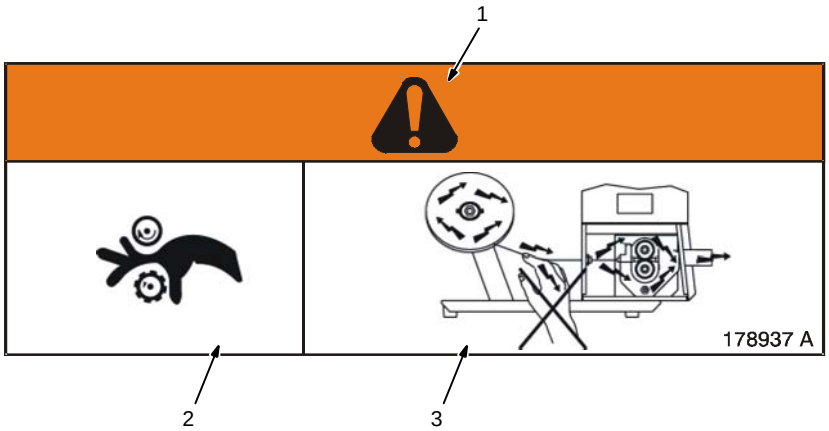
4 Arc rays can burn eyes and injure skin.

4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.

5 Become trained and read the instructions before working on the machine or welding.

6 Do not remove or paint over (cover) the label.

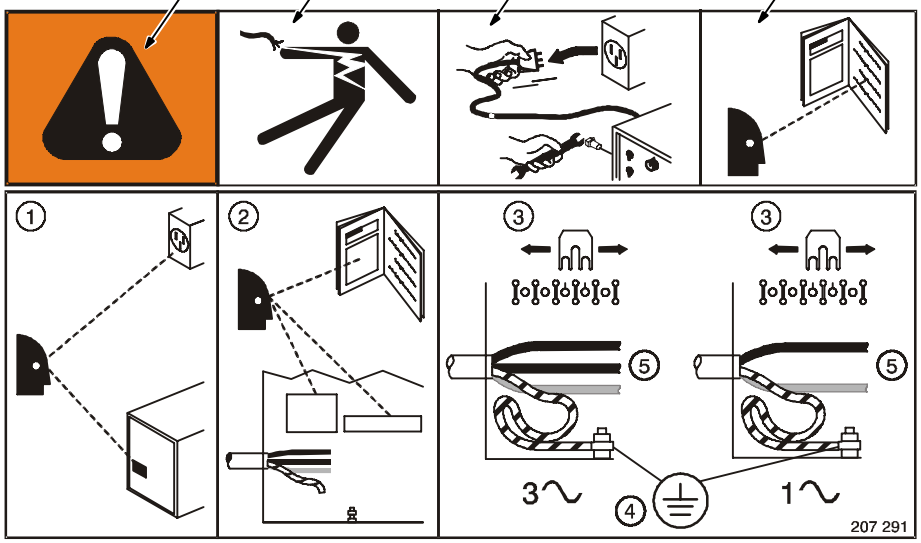



1 Warning! Watch Out! There are possible hazards as shown by the symbols.

2 Drive rolls can injure fingers

3 Welding wire and drive parts are at welding voltage during operation − keep hands and metal objects away.




Warning! Watch Out! There are possible hazards as shown by the symbols.

Electric shock from wiring can kill.

Disconnect input plug or power before working on machine.

Read the Owner's Manual before working on this machine.

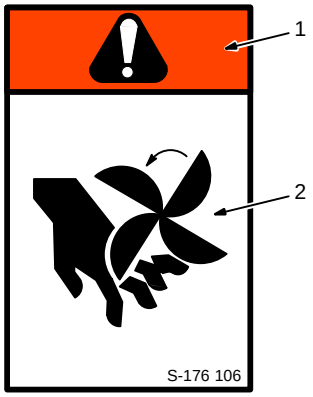
1 Consult rating label for input power requirements, and check power available at the job site − they must match.

2 Read Owner's Manual and inside labels for connection points and procedures.

3 Move jumper links as shown on inside label to match voltage at job site.

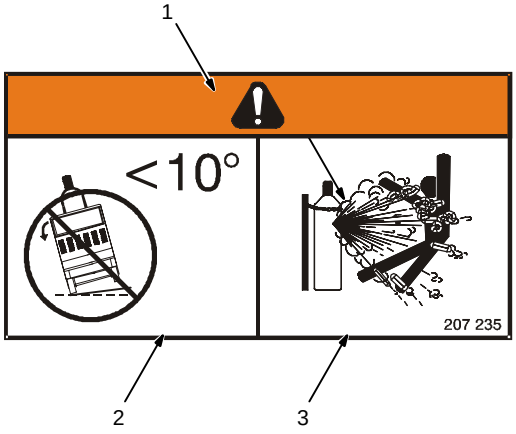
4 Having a loop of extra length, connect grounding conductor first.

5 Connect line input conductors as shown on inside label − double-check all connections, jumper link positions, and input voltage before applying power.




1 Warning! Watch Out! There are possible hazards as shown by the symbols.

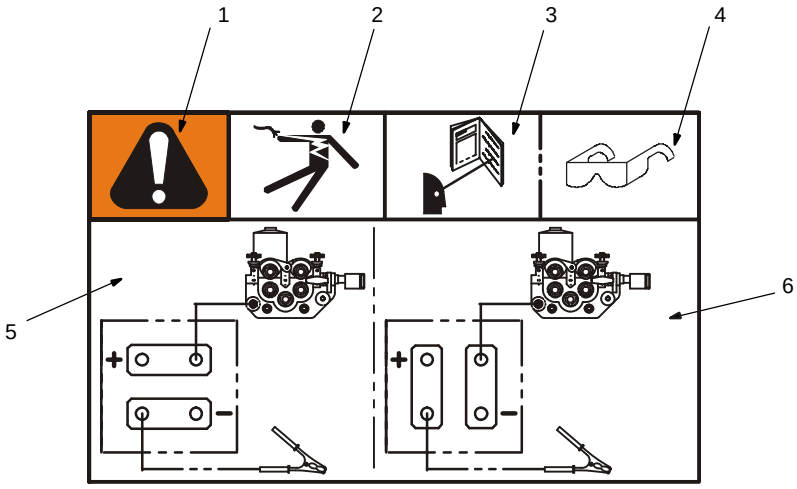
2 Moving parts, such as fans, can cut fingers and hands and cause injury. Keep away from moving parts.




1 Warning! Watch Out! There are possible hazards as shown by the symbols.

2 Falling unit can cause injury. Do not move or operate unit where it could tip.

3 Cylinders can expolde if damaged. Protect compressed gas cylinders from excessive heat, mechanical shock, slag, open flames, sparks, and arcs.




1 Warning! Watch Out! There are possible hazards as shown by the symbols.

2 Electrical shock from wiring can kill.

3 Read Owner's Manual before working on this machine

4 Wear approved safety glasses

5 Electrode Positive (Straight Polarity)

Place terminal strips as shown.

6 Electrode Negative (reverse Poalrity)

Place terminal strips as shown.

# SECTION 3 − INSTALLATION

## 3-1. Specifications

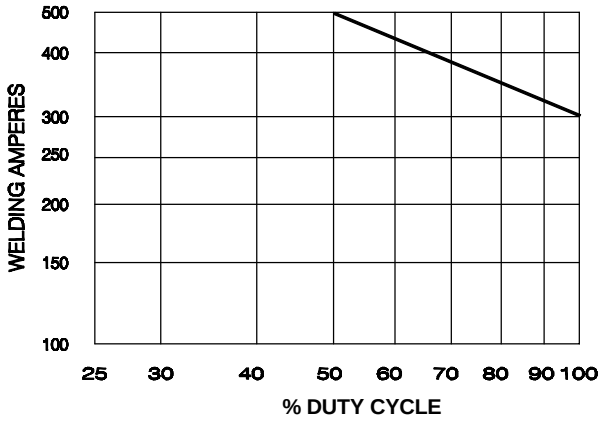
| Model | Rated Output | | | Max. Open Circuit Voltage | Rated Input Amperage at Rated Output | Dimension (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|
| | 100% | 60% | 20% | | 220/230 VAC 50Hz | | |
| 271 | 110 A<br>20.0 V | 150 A<br>21.0 V | 240 A<br>26 V | 41 | 32 A<br>3 A* | 480 x 800 x 1050 | 85 Net |
| Wire feed speed range 1.3 mpm to 20 mpm.<br>* While idling | | | | | | | |

| Model | Rated Output | | | Max. Open Circuit Voltage | Rated Input Amperage at Rated Output | | Dimension (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| | 100% | 60% | 35% | | 230 V | 400 V | | |
| 273 | 145 A<br>21.0 V | 190 A<br>23.0 V | 240 A<br>26 V | 38 | 23 A<br>3 A* | 13 A<br>1.38 A* | 480 x 800 x 1050 | 85-103 Net |
| Wire feed speed range 1.3 mpm to 20 mpm.<br>* While idling | | | | | | | | |

| Model | Rated Output | | | Max. Open Circuit Voltage | Rated Input Amperage at Rated Output | | Dimension (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| | 100% | 50% | 35% | | 230 V | 400 V | | |
| 333 | 210 A<br>24.5 V | 300 A<br>29.0 V | 350 A<br>31.5 V | 38 | 32 A<br>3 A* | 19 A<br>1.75 A* | 480 x 800 x 1050 | 96-114 Net |
| Wire feed speed range 1.3 mpm to 20 mpm.<br>* While idling | | | | | | | | |

| Model | Rated Output | | | Max. Open Circuit Voltage | Rated Input Amperage at Rated Output | | Dimension (mm) | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| | 100% | 50% | 35% | | 230 V | 400 V | | |
| 383 | 280 A<br>28.0 V | 350 A<br>32.0 V | 380 A<br>33 V | 42 | 38 A<br>3 A* | 22 A<br>1.75 A* | 480 x 800 x 1050 | 105-123 Net |
| Wire feed speed range 1.3 mpm to 20 mpm.<br>* While idling | | | | | | | | |

## 3-2. Duty Cycle And Overheating

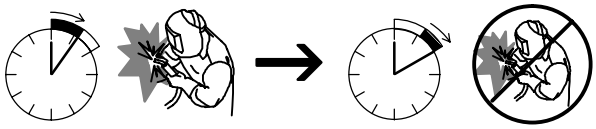



Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating.

If unit overheats, thermostat(s) opens, output stops, and cooling fan runs. Wait fifteen minutes for unit to cool. Reduce amperage or voltage, or duty cycle before welding.

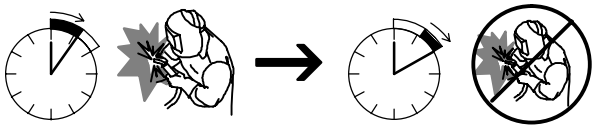
▲ **Exceeding duty cycle can damage unit and void warranty.**

40% Duty Cycle At 200 Amperes



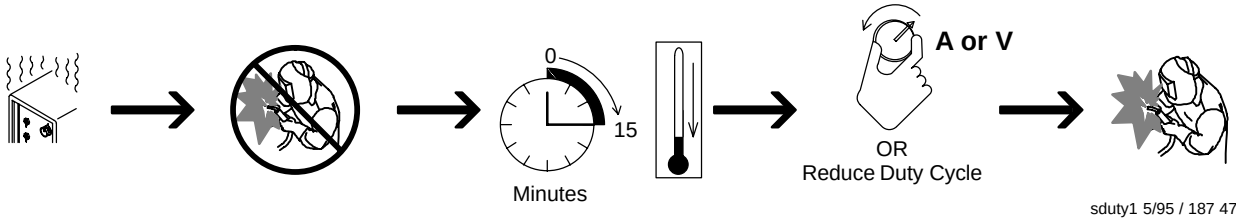
4 Minutes Welding — 6 Minutes Resting

40% Duty Cycle At 250 Amperes



4 Minutes Welding — 6 Minutes Resting

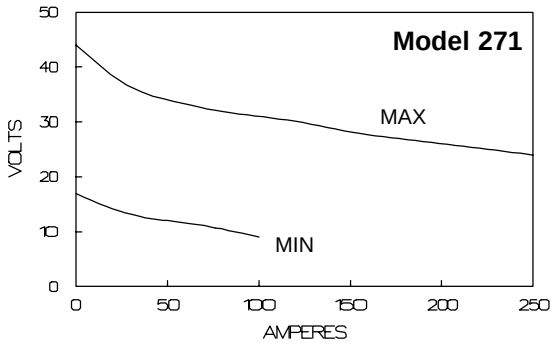
**Overheating**

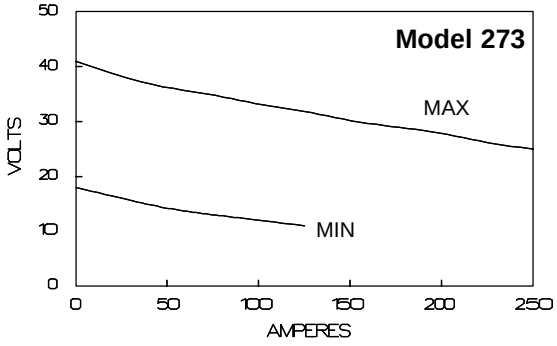


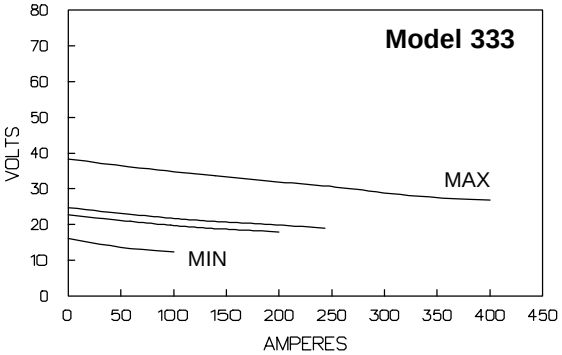

sduty1 5/95 / 187 478-A

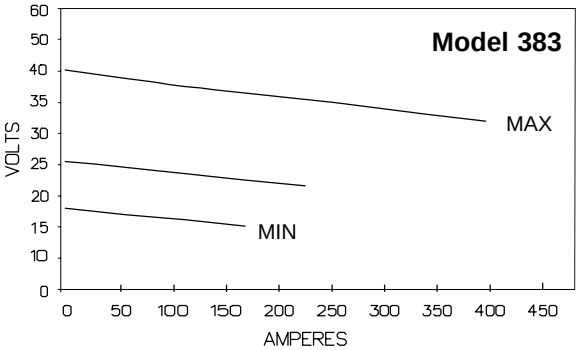
## 3-3. Volt-Ampere Curves

The volt-ampere curves show the normal minimum and maximum voltage and amperage output capabilities of the welding power source. Curves of other settings fall between the curves shown.

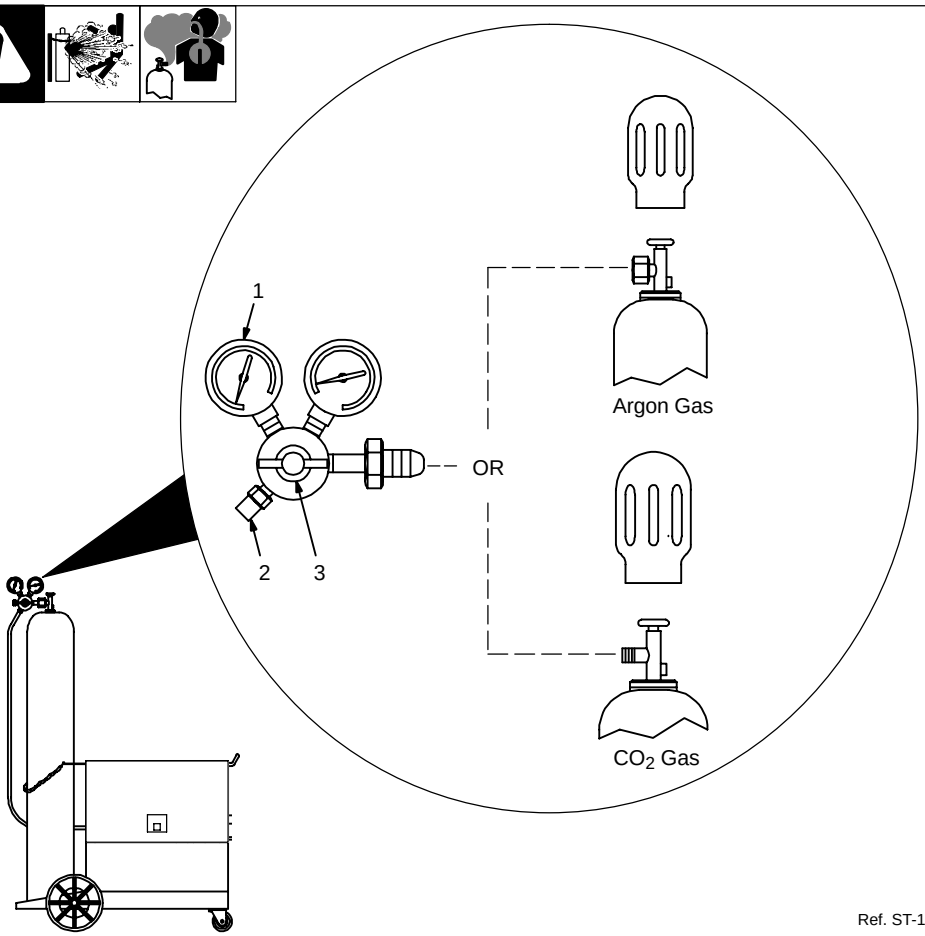


## 3-4. Installing Gas Supply




Chain gas cylinder to running gear, wall, or other stationary support so cylinder cannot fall and break off valve.

1 Regulator/Flow Gauge

Install so face is vertical.

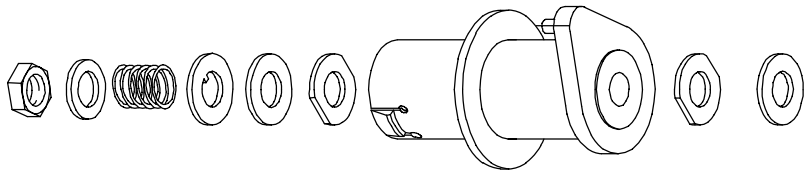
2 Gas Hose Connection

3 Flow Adjust

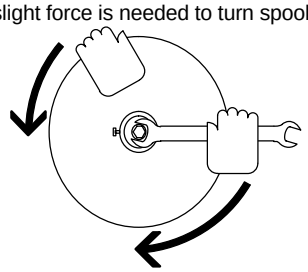
Typical flow rate is 20 cfh (cubic feet per hour). Check wire manufacturer's recommended flow rate. This flow gauge can be adjusted between 5 and 25 cfh.

Ref. ST-148 265-B / Ref. ST-149 827-B / Ref. ST-158 697-A

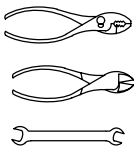
## 3-5. Installing Wire Spool and Adjusting Hub Tension



When a slight force is needed to turn spool, tension is set.



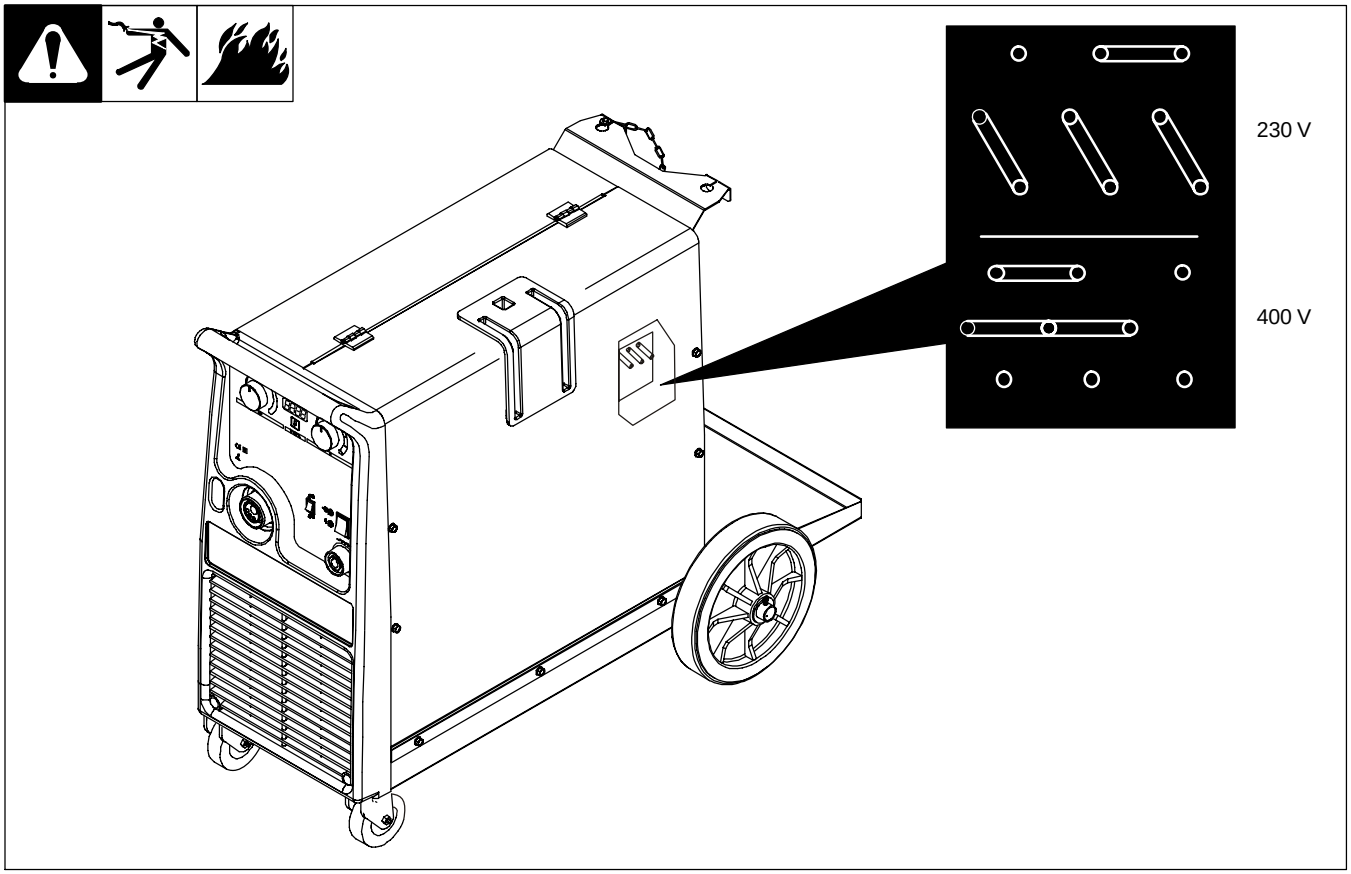
Tools Needed:



15/16 in

ST-072573-B

## 3-6. Positoning Jumper Links (230/400V 3-Phase Models)

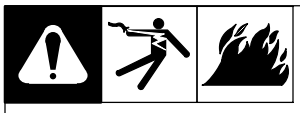



## 3-7. Electrical Service Guide

| **Migmatic Model** | 271 | 273 | | 333 | | 383 | |
|---|---|---|---|---|---|---|---|
| **Input Voltage** | 230 | 230 | 400 | 230 | 400 | 230 | 400 |
| **Input Amperes at Rated Output** | 35 | 23 | 13 | 32 | 19 | 38 | 22 |
| **Max Recommended Standard Fuse or Circuit Breaker Rating in Amperes** | 35 | 23 | 13 | 32 | 19 | 38 | 22 |
| **** Input Conductor Size in $mm^2$** | 4 | 2.5 | 2.5 | 6 | 4 | 6 | 4 |
| **** Grounding Conductor Size in $mm^2$** | 4 | 2.5 | 2.5 | 6 | 4 | 6 | 4 |

** Power cord supplied with the unit is sized for 230V operation. Larger power cord may be required for cable lengths greater than 3 meters. Consult national and local regulations.

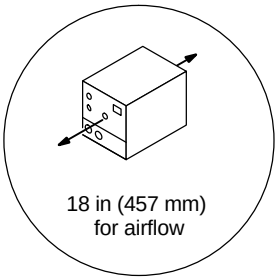
## 3-8. Selecting a Location and Connecting Input Power (1-Phase and 3-Phase)

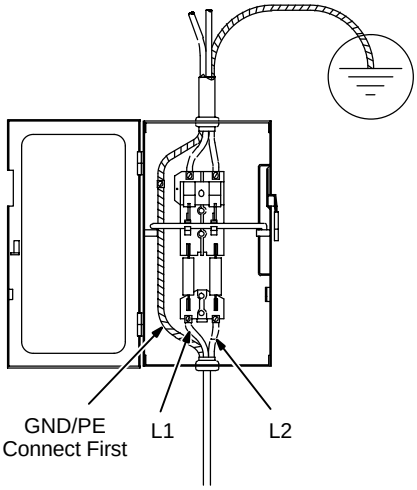


Have only qualified persons make this installation.

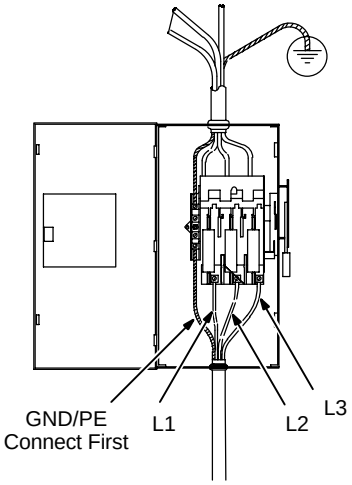
1 Rating Label

Supply correct input power.

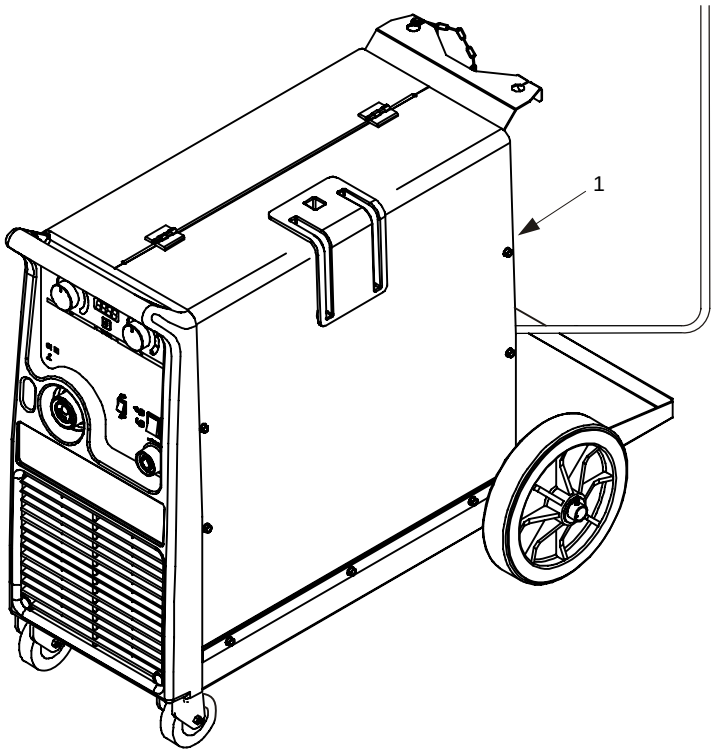


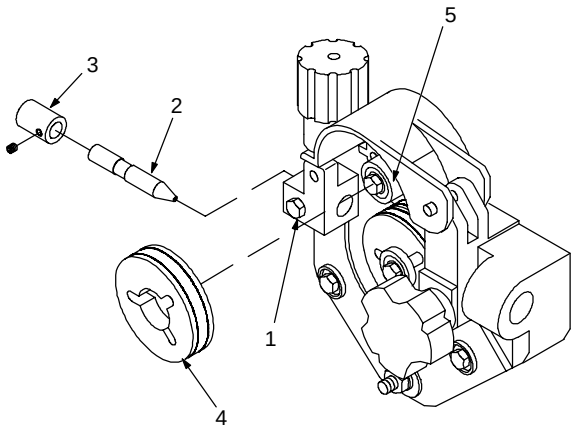

**1-Phase Primary Connection**




**3-Phase Primary Connection**



## 3-9. Installing Drive Rolls and Wire Guide




1 Securing Screw

2 Inlet Wire Guide

Loosen screw. Slide tip as close to drive rolls as possible without touching. Tighten screw.

3 Anti-Wear Guide

Install guide as shown.

4 Drive Roll

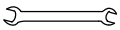
The drive roll consists of two different sized grooves. The stamped markings on the end surface of the drive roll refers to the groove on the opposite side of the drive roll. The groove closest to the motor shaft is the proper groove to thread.

5 Drive Roll Securing Nut.

Turn nut one click to secure drive roll.

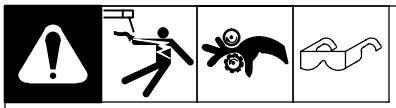
Tools Needed:

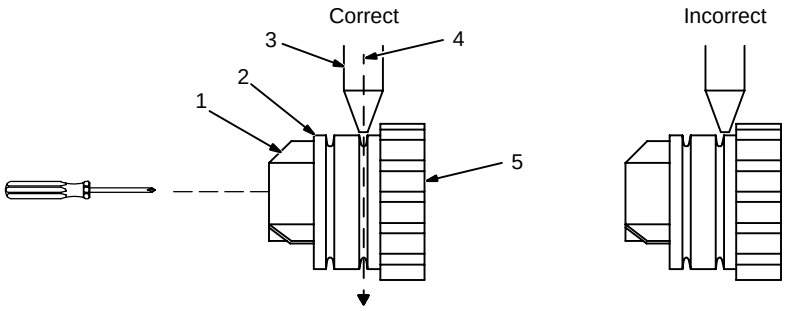
5/64 in



7/16 in

## 3-10. Aligning Drive Rolls and Wire Guide






▲ **Turn Off power.**

View is from top of drive rolls looking down with pressure assembly open.

1 Drive Roll Securing Nut

2 Drive Roll

3 Wire Guide

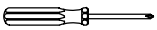
4 Welding Wire

5 Drive Gear

Insert screwdriver, and turn screw in or out until drive roll groove lines up with wire guide.

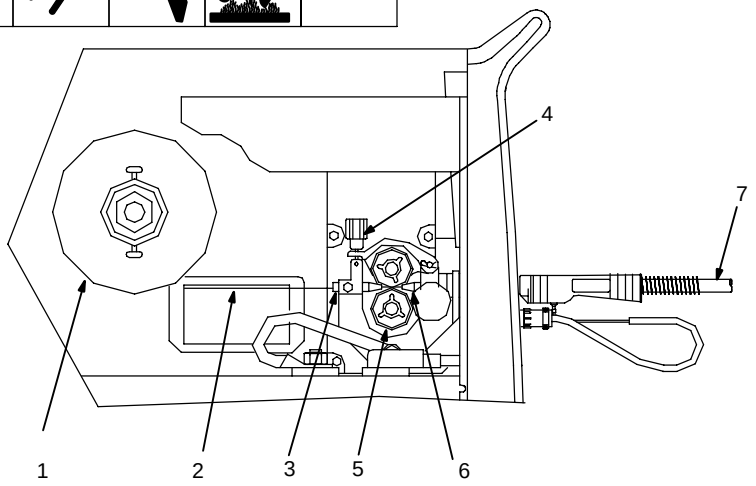
Close pressure roll assembly.

Tools Needed:



Ref. 800 412-A

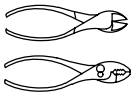
## 3-11. Threading Welding Wire and Adjusting Pressure Roll Tension

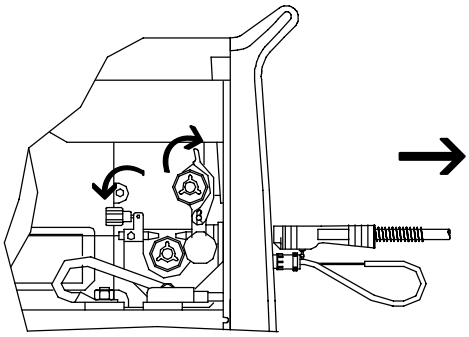



1 Wire Spool
2 Welding Wire
3 Inlet Wire Guide
4 Pressure Adjustment Knob
5 Drive Roll
6 Outlet Wire Guide
7 Gun Conduit Cable

Lay gun cable out straight.

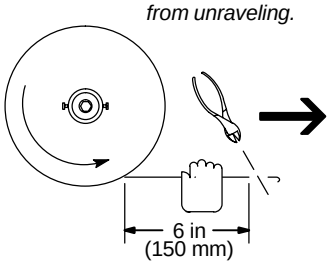
Tools Needed:



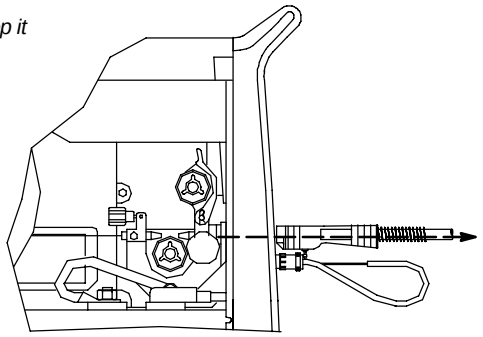


Open pressure assembly.

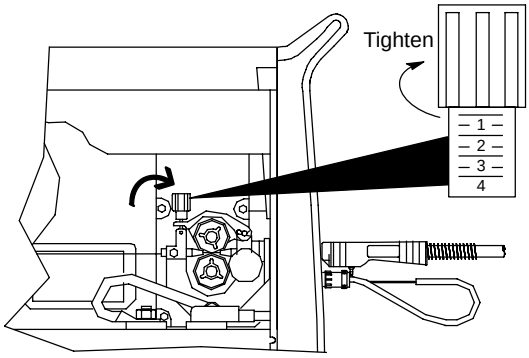
☞ *Hold wire tightly to keep it from unraveling.*




Pull and hold wire; cut off end.



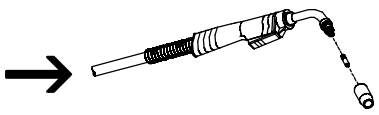
Push wire thru guides into gun; continue to hold wire.



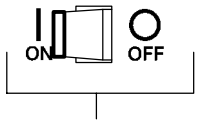

☞ *Use pressure indicator scale to set a desired drive roll pressure.*

Pressure Indicator Scale

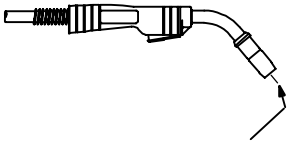
Close and tighten pressure assembly, and let go of wire.



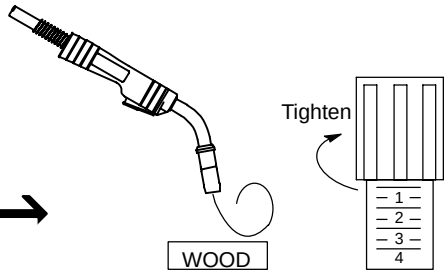
Remove gun nozzle and contact tip.



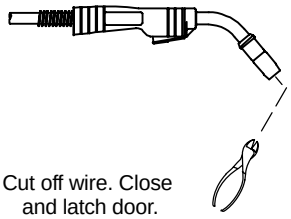

Turn On.



Press gun trigger until wire comes out of gun. Reinstall contact tip and nozzle



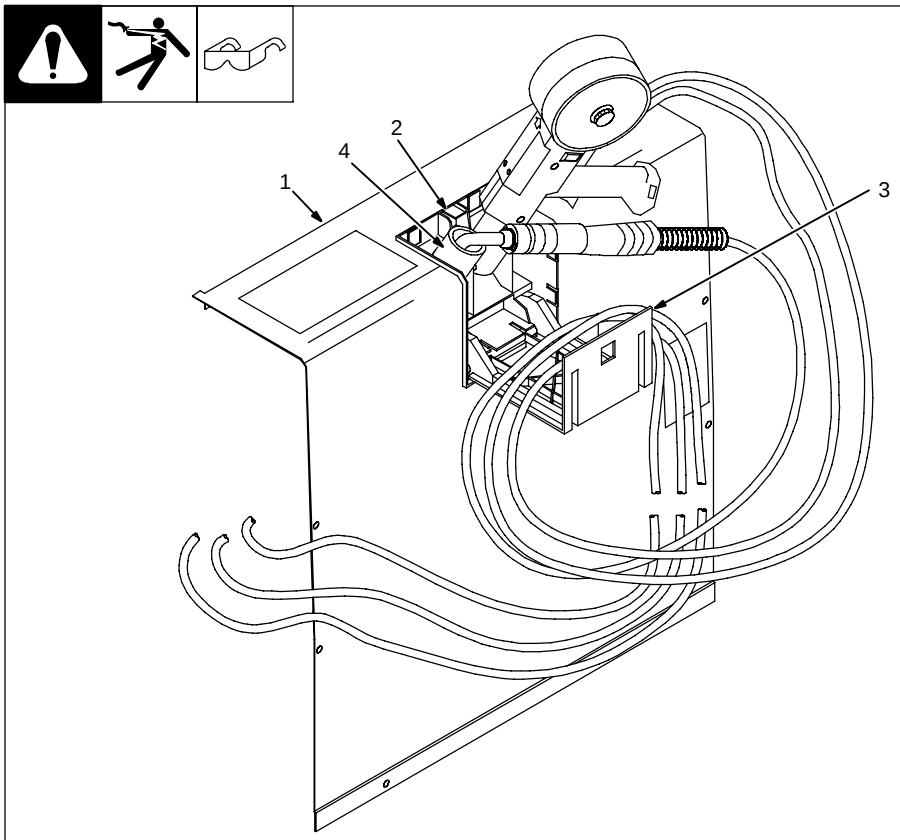

Feed wire to check drive roll pressure. Tighten knob enough to prevent slipping.



Cut off wire. Close and latch door.

Ref. 802 064-D / S-0627-A

## 3-12. Using Gun/Cable Holder




1 Side Panel

2 Latch

3 Cable Holder

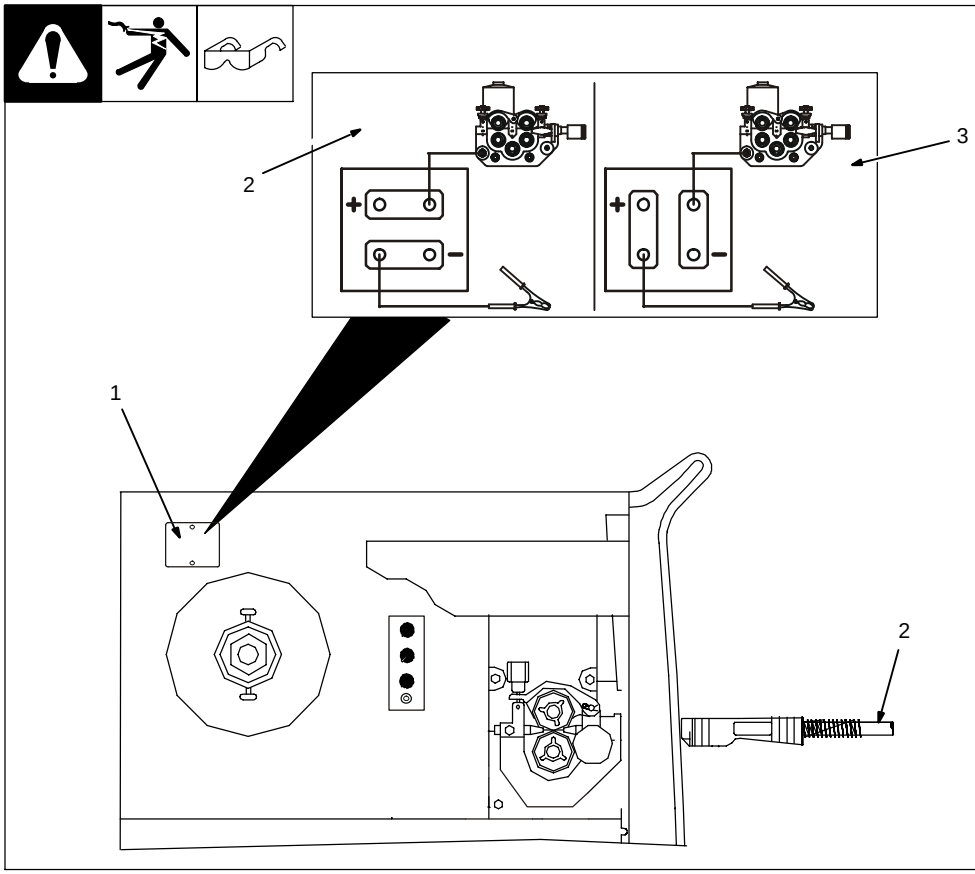
Press latch down to release and open door.

4 Holster (2)

Wrap cable around cable holder, and place gun nozzle into holster.

Ref. 802 726-A

## 3-13. Setting Gun Polarity for Wire Type (Optional)




1 Terminal Cover

Protects Polarity Change over terminals from accidental contact. Remove cover to gain access.

2 Electrode Positive (DCEP)

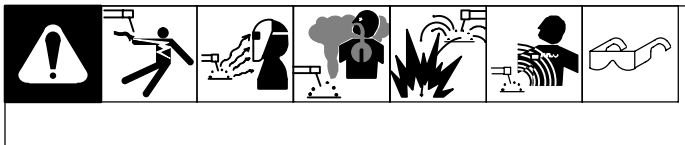
For solid steel, stainless steel, aluminum, or flux core with gas, wires (GMAW).

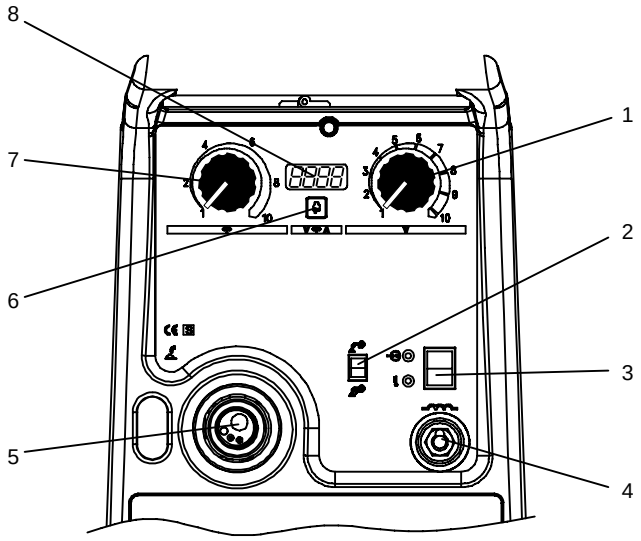
3 Electrode Negative (DCEN)

For gasless flux core wires (FCAW), wire drive assembly becomes negative.

# SECTION 4 − OPERATION

## 4-1. Controls for Migmatic 271/273






1 Voltage Control

Turn control clockwise to increase voltage.

2 2T/4T Trigger Hold Function

Latching Torch Trigger

3 Power Switch

4 Work Lead Connection

5 MIG Torch Connection

6 Digital Display Function Button*

7 Wire Feed Speed Control

Turn control clockwise to increase wire feed speed.

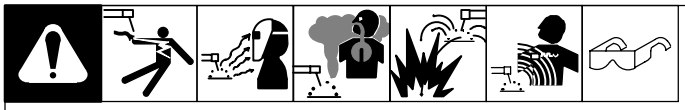
8 Digital Display*

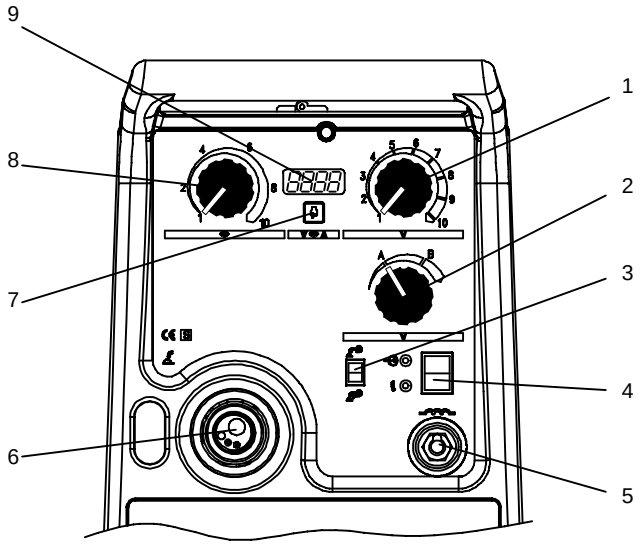
Volts/Amps/Wire Feed Speed with last value hold function. Trigger mode (2T/4T) is shown at power on for 3 seconds and when Trigger mode is changed.

☞ *Not shown:*
*Jog and Purge controls are located under the hinged side wire consumable access door.*

* Optional

## 4-2. Controls for Migmatic 333/383






1 Voltage Control (Fine Adjust)

Turn control clockwise to increase voltage.

2 Voltage Control (Coarse Adjust)

Turn control clockwise to increase voltage (A and B for 333, and A, B, C for 383).

3 2T/4T Trigger Hold Function

Latching Torch Trigger

4 Power Switch

5 Work Lead Connection

(2 inductance terminals on 383)

6 MIG Torch Connection

7 Digital Display Function Button*

8 Wire Feed Speed Control

Turn control clockwise to increase wire feed speed.

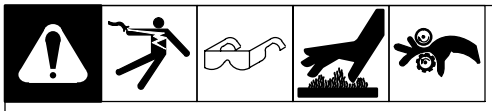
9 Digital Display*

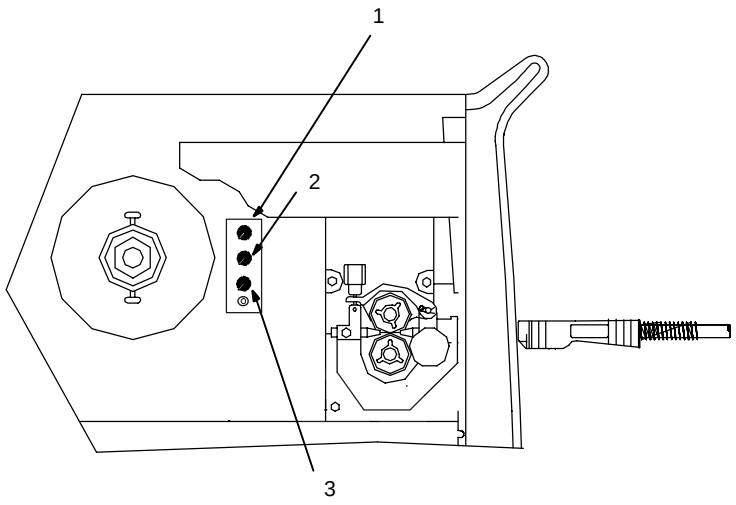
Volts/Amps/Wire Feed Speed with last value hold function. Trigger mode (2T/4T) is shown at power on for 3 seconds and when Trigger mode is changed.

☞ *Not shown:*
*Jog and Purge controls are located under the hinged side wire consumable access door.*

* Optional

## 4-3. Run-In, Burnback (Optional) and Spot Weld Timer Controls






1 Run-In Control*

Speed of wire prior to striking a welding arc. This value is a percentage of the set wire for welding.

2 Burnback Control*

Time that welding wire stays energized after trigger is released.

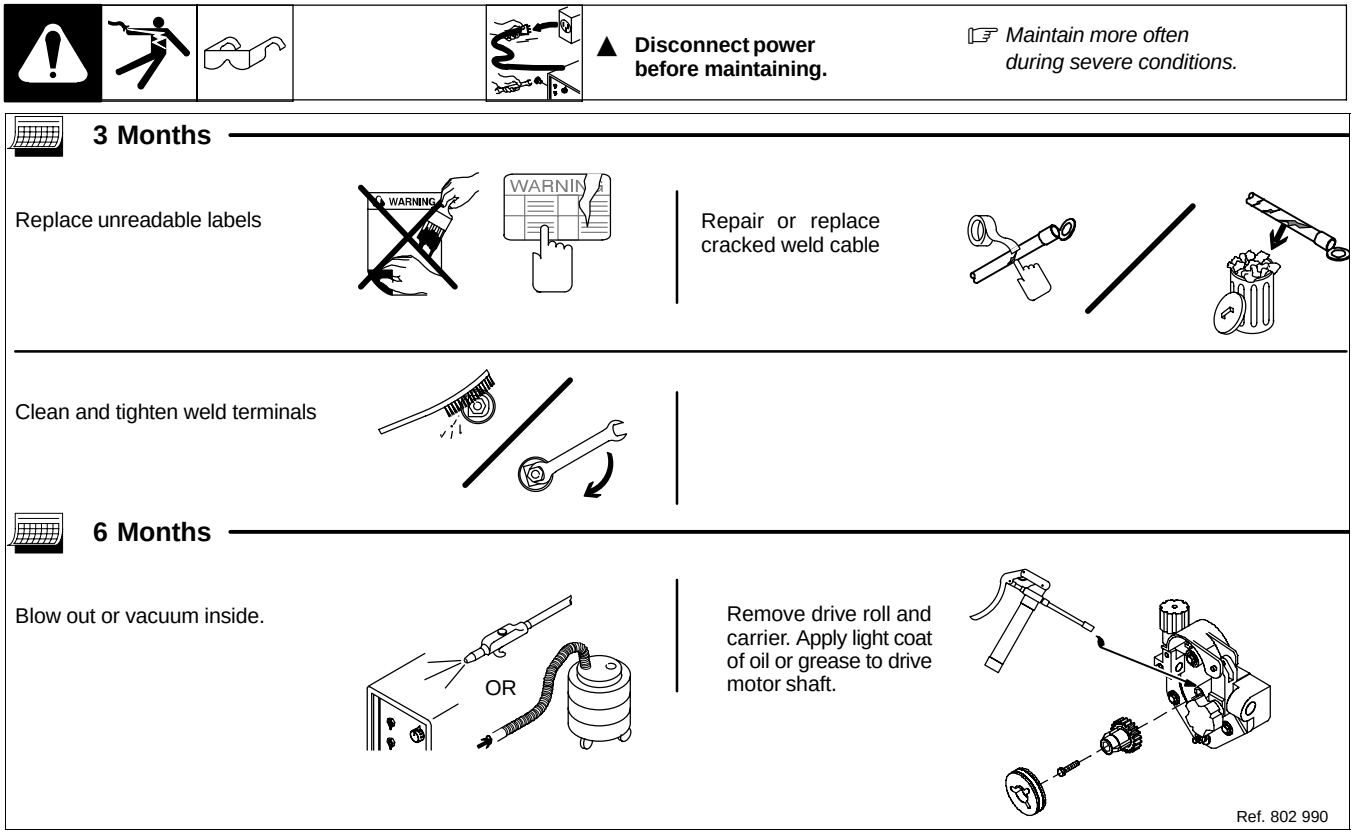
3 Spot Weld Timer

Time that welding arc is active before shutting off automatically.

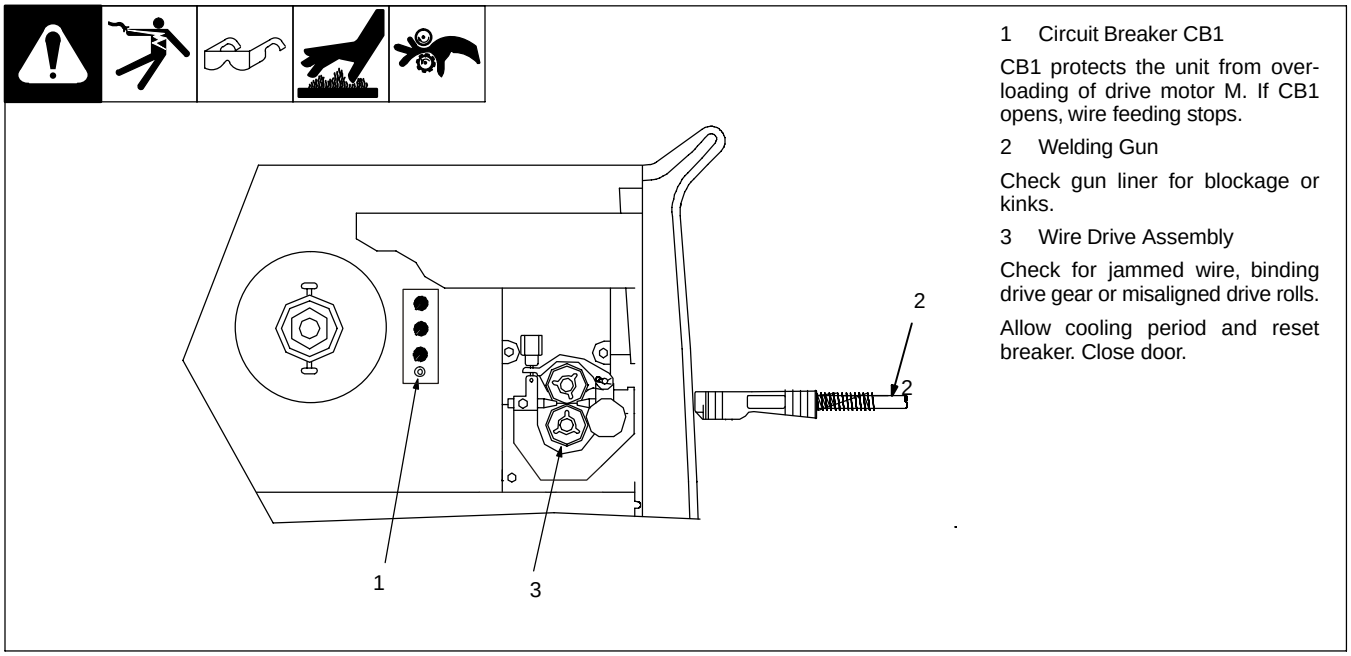
Spot Timer resets after releasing gun trigger.

# SECTION 5 − MAINTENANCE &TROUBLESHOOTING

## 5-1. Routine Maintenance




## 5-2. Circuit Breaker CB1




1 Circuit Breaker CB1

CB1 protects the unit from overloading of drive motor M. If CB1 opens, wire feeding stops.

2 Welding Gun

Check gun liner for blockage or kinks.

3 Wire Drive Assembly

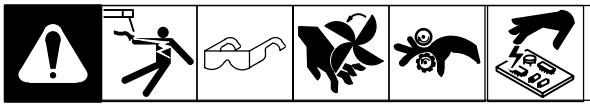
Check for jammed wire, binding drive gear or misaligned drive rolls.

Allow cooling period and reset breaker. Close door.

## 5-3. Unit Overload

Thermal switches TP1 in XFMR and TP2 in SR1 protect the unit from damage due to overheating. If the thermal indicator illuminates, wait for unit to cool allowing fan motor to run before trying to weld. If unit is cool and no weld output continues, contact Factory Authorized Service Agent.

## 5-4. Troubleshooting



| Trouble | Remedy |
|---|---|
| No weld output; wire does not feed. | Be sure line disconnect switch is On (see Section 3-8). |
| | Replace building line fuse or reset circuit breaker if open. |
| | Reset circuit breaker CB1 (see Section 5-2). |
| | Secure gun trigger connections. |
| | Check continuity of power switch S1 and replace if necessary. |
| | Check main transformer T1 for signs of windig failure. Check continuity across windings and check for proper connections. Check secondary voltages. Replace T1 if necessary. |
| | Check continuity of thermostats TP1 and TP2. Replace TP1 and TP2 if necessary. |
| | Check main control boarf PC1 and connections and replace if necessary. |
| No weld output; wire feeds. | Connect work clamp to get good metal to metal contact. |
| | Replace contact tip (see gun Owner's Manual). |
| | An overload condition occurred (see Section 5-3) |
| | Check diodes in main rectifier SR1, and replace if necessary. |
| | Check stabilizer Z1 for signs of winding failure. Check continuity across windings and check connections. Replace Z1 if necessary. |
| | Check main transformer T1 for signs of winding failure. Check continuity across windings and check connections. Check secondary voltages. Replace T1 if necessary. |
| | Check voltage switch(s). Replace if necessary. |
| Low weld output. | Connect unit to proper input voltage or check for low line voltage (see Section 3-6). |
| | Check input voltage jumper links and correct position if necessary (see Section 3-6). |
| | Check main rectifier SR1, and replace if necessary. |
| | Check voltage switch(s). Replace if necessary. |
| Low, high, or erratic wire speed. | Readjust front panel settings (see Section 4-1). |
| | Change to correct size drive rolls. |
| | Readjust drive roll pressure (see Section 3-11). |
| | Replace inlet guide, contact tip, and/or liner if necessary. |
| | Check position of input jumper links (see Section 3-6). |
| | Check Wire Speed control R1, and replace if necessary. |
| | Check diodes in main rectifier SR1, and replace if necessary. |
| | Check main control boarf PC1 and connections and replace if necessary. |
| No wire feed. | Reset circuit breaker CB1 (see Section 5-2). |
| | Rotate Wire Speed control R1 to higher setting (see Section 4-1). |
| | Clear obstruction in gun contact tip or liner (see gun Owner's Manual). |

# SECTION 6 − ELECTRICAL DIAGRAMS

| ⚠ WARNING | • Do not touch live electrical parts.<br>• Disconnect input power or stop engine before servicing.<br>• Do not operate with covers removed.<br>• Have only qualified persons install, use, or service this unit. |
|---|---|
| ELECTRIC SHOCK HAZARD | |

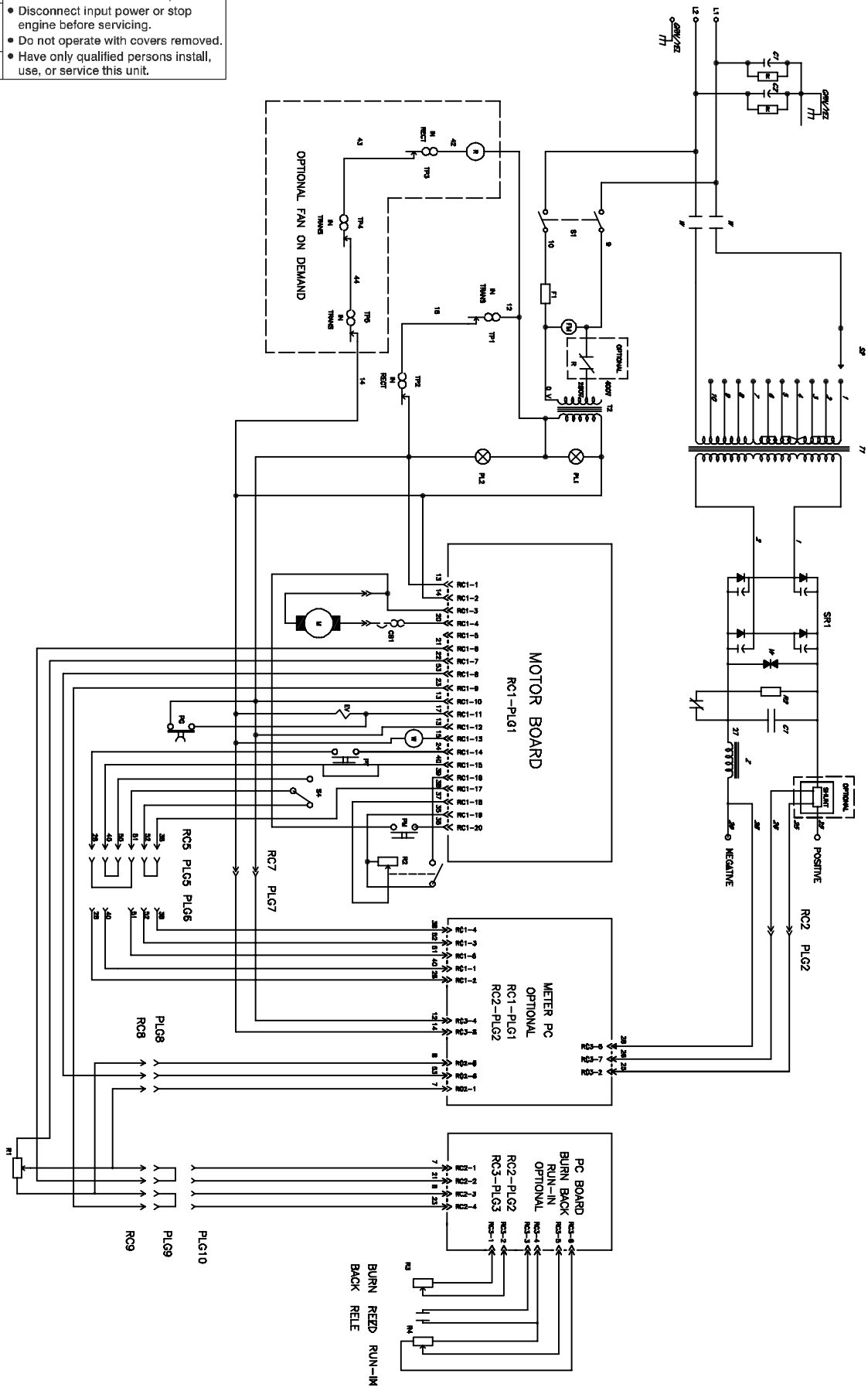



**Figure 6-1. Circuit Diagram for Migmatic 271 (230 VAC)**

| ⚠ WARNING | • Do not touch live electrical parts.<br>• Disconnect input power or stop engine before servicing.<br>• Do not operate with covers removed.<br>• Have only qualified persons install, use, or service this unit. |
|---|---|
| ELECTRIC SHOCK HAZARD | |

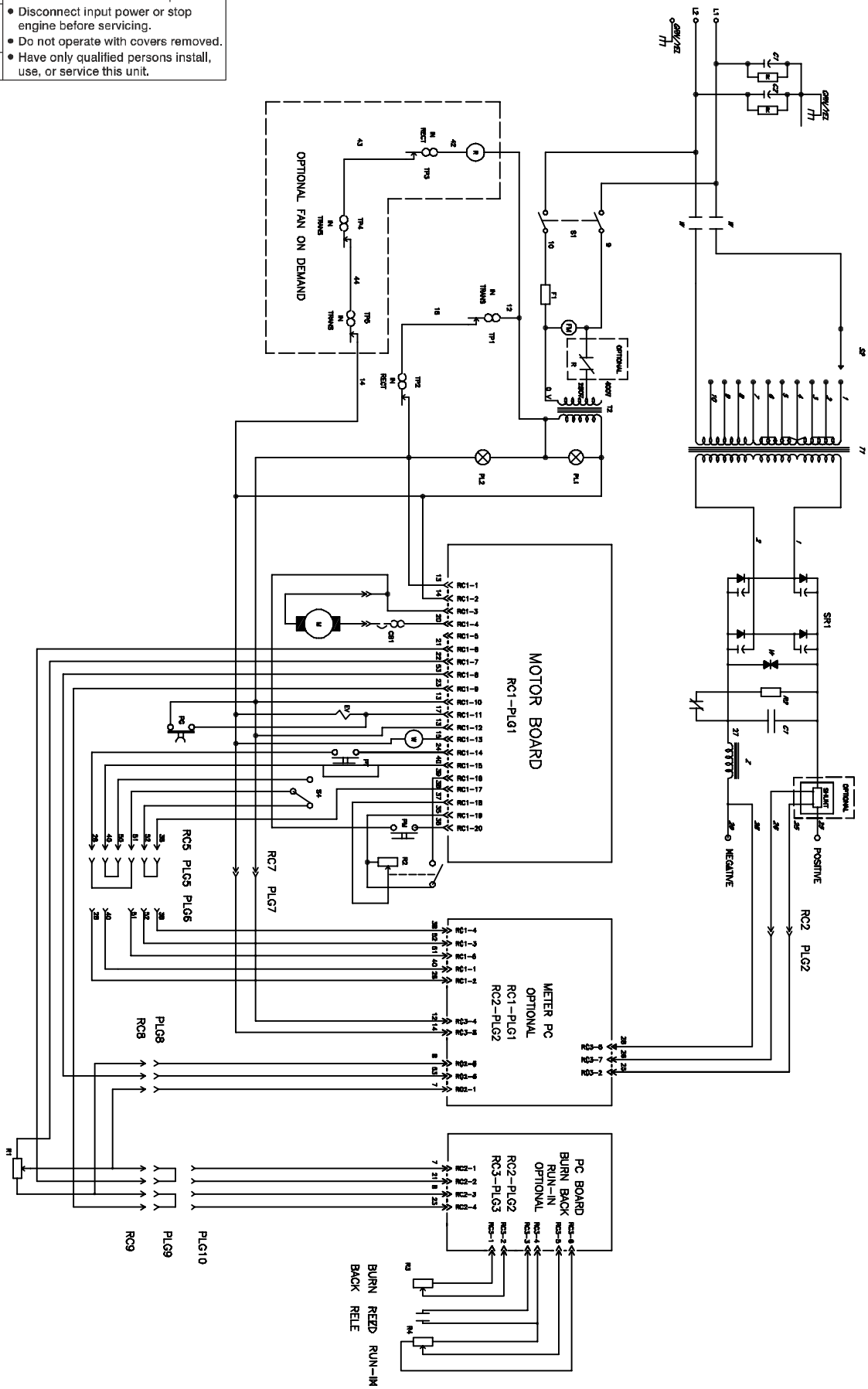



**Figure 6-2. Circuit Diagram for Migmatic 273 (400 VAC)**

| ⚠ WARNING | • Do not touch live electrical parts.<br>• Disconnect input power or stop engine before servicing.<br>• Do not operate with covers removed.<br>• Have only qualified persons install, use, or service this unit. |
|---|---|
| ELECTRIC SHOCK HAZARD | |

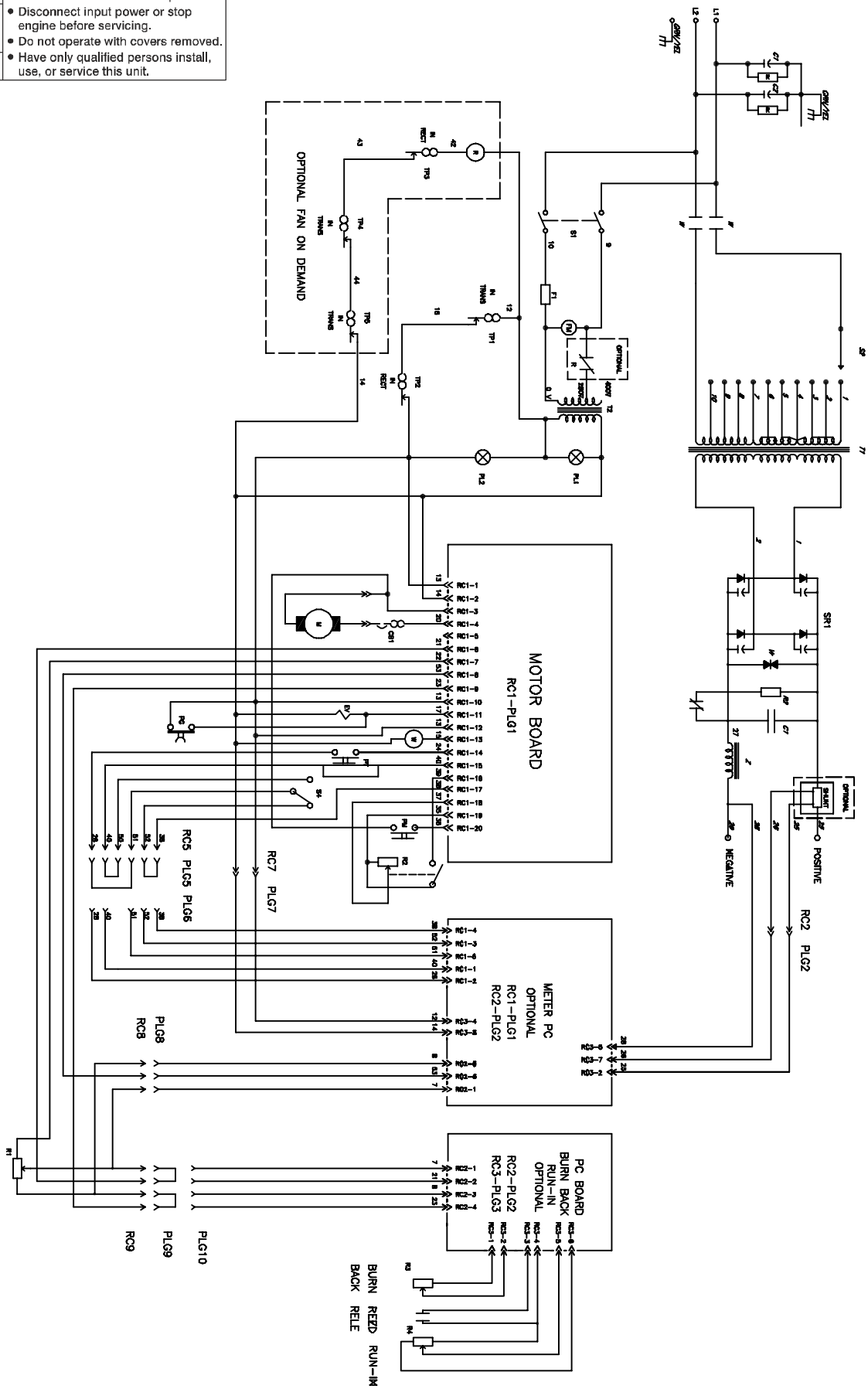



**Figure 6-3. Circuit Diagram for Migmatic 333 (400 VAC)**

| ⚠ WARNING | • Do not touch live electrical parts.<br>• Disconnect input power or stop engine before servicing.<br>• Do not operate with covers removed.<br>• Have only qualified persons install, use, or service this unit. |
|---|---|
| ELECTRIC SHOCK HAZARD | |

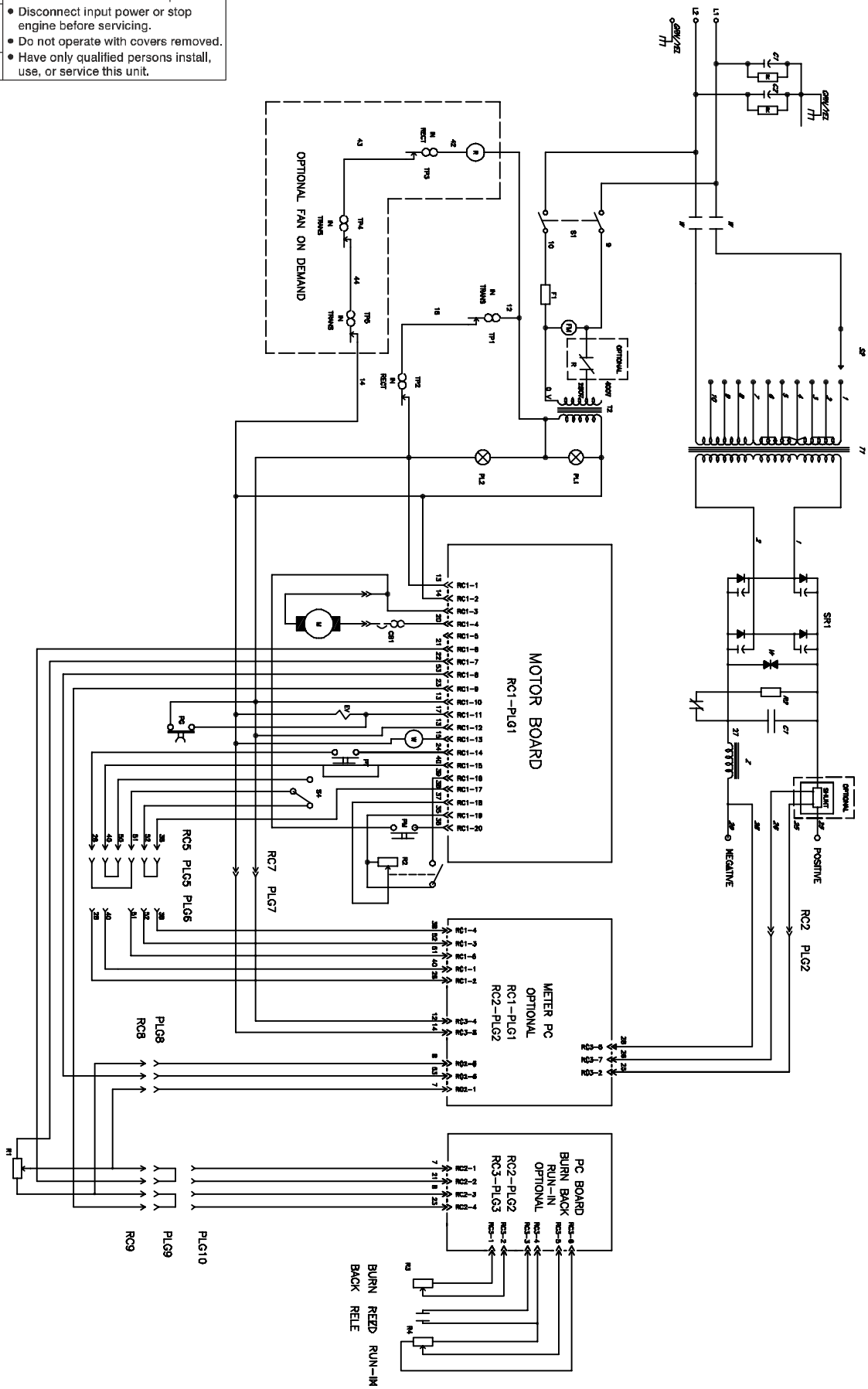



**Figure 6-4. Circuit Diagram for Migmatic 383 (400 VAC)**

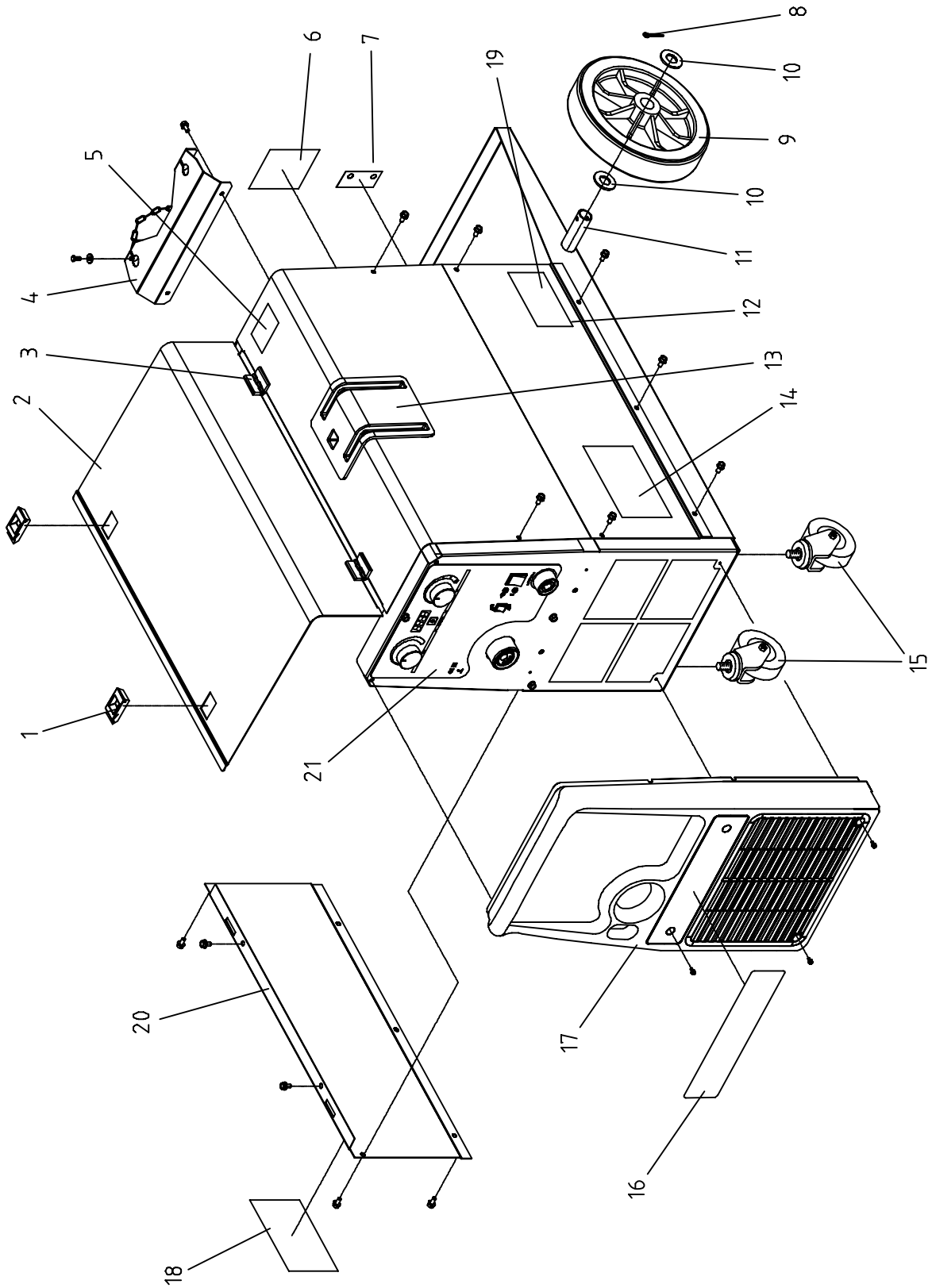



**Figure 7-1. Wrapper Assembly, All Models**

| Item No. | Part No. | Description | Quantity |
|---|---|---|---|

**Figure 7-1. Wrapper Assembly, All Models**

| | | | |
|---|---|---|---|
| 1 | 156034005 | Catch, side panel | 2 |
| 2 | 156122058 | Side Panel, hinged | 1 |
| 3 | 156034004 | Hinge | 2 |
| 4 | 156005098 | Cylinder Rack, upper support | 1 |
| 5 | 000207235 | Label, warning, tilt | 1 |
| 6 | 956142514 | Rating Plate, Migmatic 271 | 1 |
| 6 | 956142505 | Rating Plate, Migmatic 273 | 1 |
| 6 | 956142508 | Rating Plate, Migmatic 333 | 1 |
| 6 | 956142511 | Rating Plate, Migmatic 383 | 1 |
| 7 | 956142503 | Label, F1, fuse and gas input | 1 |
| 8 | 156087017 | Pin, split | 2 |
| 9 | 056054075 | Wheel, rear, 250 O.D. | 2 |
| 10 | 156009067 | Washer | 2 |
| 11 | 156012113 | Axle, rear wheel | 1 |
| 12 | 156121023 | Wrapper, R/H side fixed | 1 |
| 13 | | Gun and cable Holder assy, consisting of | |
| | 000200923 | Holder Assy. | 1 |
| | 000200921 | Gun Holder Insert | 1 |
| 14 | 000207233 | Label, general precautionary | 1 |
| 15 | 056054068 | Wheel/Caster, front 80 O.D. | 2 |
| 16 | 316029701 | Nameplate, lower, Migmatic 271 | 1 |
| 16 | 316029702 | Nameplate, lower, Migmatic 273 | 1 |
| 16 | 316029703 | Nameplate, lower, Migmatic 333 | 1 |
| 16 | 316029704 | Nameplate, lower, Migmatic 383 | 1 |
| 17 | 000208154 | Front, shroud, plastic assy | 1 |
| 18 | 000207233 | Label, general precautionary | 1 |
| 19 | 000207921 | Label, primary power connections | 1 |
| 20 | 156122059 | Side Panel, L/H side lower | 1 |
| 21 | 316029698 | Nameplate, upper Migmatic 271 and 273 | 1 |
| 21 | 316029699 | Nameplate, upper Migmatic 333 | 1 |
| 21 | 316029700 | Nameplate, upper Migmatic 383 | 1 |

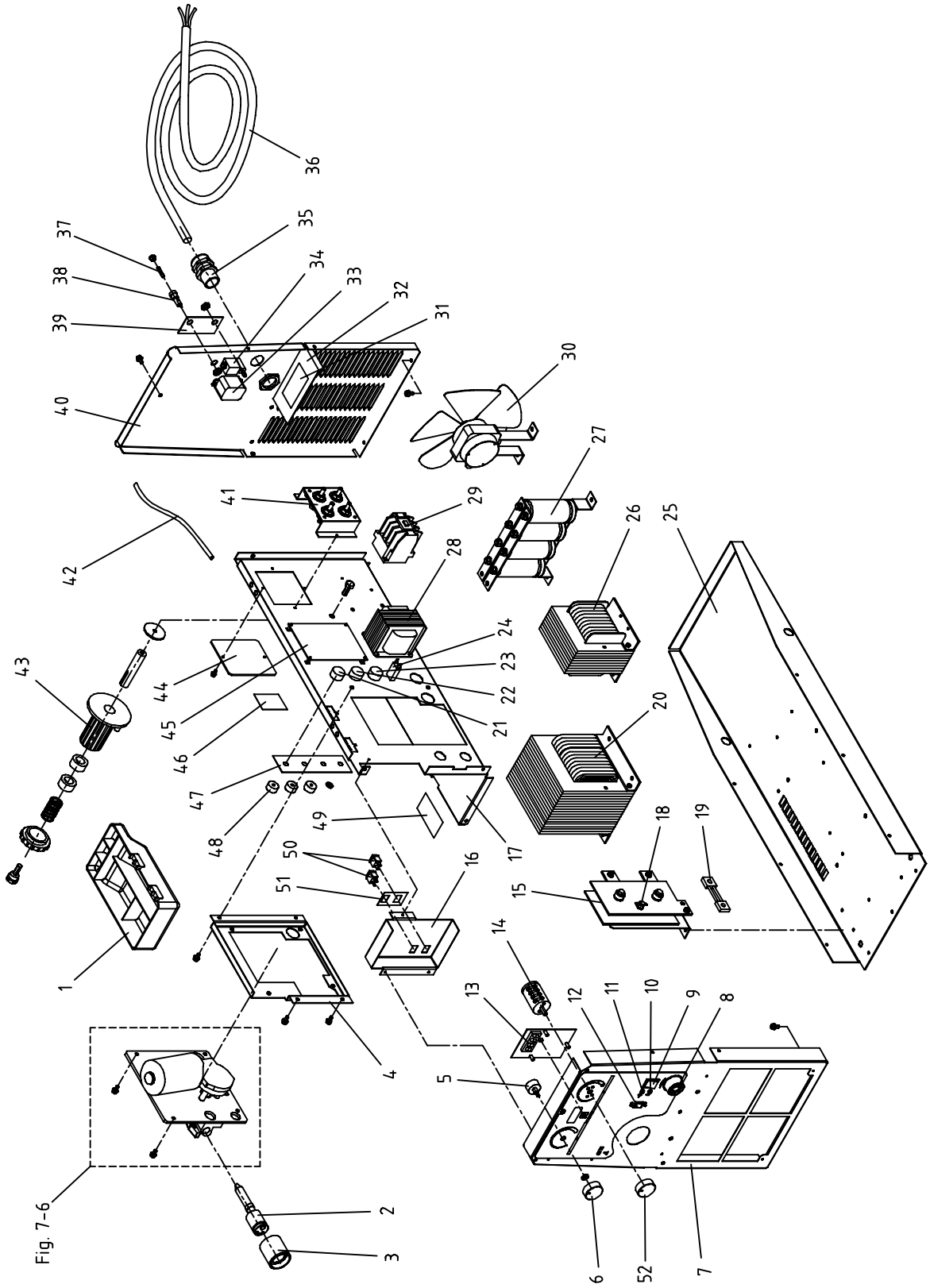



**Figure 7-2. Main Assembly for Migmatic 271**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|

**Figure 7-2. Main Assembly for Migmatic 271**

| | | | | |
|---|---|---|---|---|
| 1 | | 000197555 | Tool tray | 1 |
| 2 | | V57052030 | Euro Adapter Assembly | 1 |
| 3 | | V56050028 | Shroud, Euro adapter | 1 |
| 4 | | 056059274 | Mounting bracket, drive assembly | 1 |
| 5 | R1 | | Potentiometer, 1K ohm | 1 |
| 6 | | 000207075 | Knob pointer, wire fed speed control | 1 |
| 7 | | 116118172 | Front panel | 1 |
| 8 | | 056076152 | Dinze adapter | 1 |
| 9 | S3 | 056067251 | Switch, main on/off | 1 |
| 10 | PL2 | 056072075 | LED indicator, orange, over temperature | 1 |
| 11 | PL1 | 056072076 | LED indicator, white, power | 1 |
| 12 | | 056067169 | Switch, 2T/4T trigger hold function | 1 |
| 13 | | 057095015 | Digital Volt/Amp/WFS Display (optional) | 1 |
| 14 | S2 | 056067210 | Switch, 10 position, voltage selection | 1 |
| 15 | SR1 | 056050145 | Rectifier, 1Ph 250 Amp | 1 |
| 16 | | 656014012 | Mounting bracket, wire jog and gas purge switches | 1 |
| 17 | | 117060016 | Baffle plate | 1 |
| 18 | TP2 | 000175405 | Thermal Switch PTC 125° C | 1 |
| 19 | | 056059257 | Shunt (optional) | 1 |
| 20 | | 028021459 | Transformer, main 220/230 VAC 50 Hz c/w | 1 |
| | TP1 | 000175405 | Thermal Switch PTC 125° C | 1 |
| 21 | R3 | 056059278 | Potentiometer, Run-In control (optional) c/w | 1 |
| 22 | R4 | 056059277 | Potentiometer, Wire burn-back control (optional) | 1 |
| 23 | R2 | 056059275 | Potentiometer, Spot-weld timer | 1 |
| 24 | CB1 | 056067188 | Circuit Breaker | 1 |
| 25 | | 156006038 | Base | 1 |
| 26 | Z1 | 058028016 | Stabilizer | 1 |
| 27 | C1 | 056082091 | Capacitor 1600 80µƒ VDC | 4 |
| 28 | | 058021141 | Transformer, auxiliary | 1 |
| 29 | | 057079033 | W Contactor 11Kw, 230VAC 50/60Hz | 1 |
| 30 | | 056126073 | Fan motor assembly, consisting of | 1 |
| | FM1 | 056126073 | Fan motor, 230 VAC | 1 |
| | | 356078037 | Blade, 250Ø 27° | 1 |
| 31 | | 000176106 | Label, safety, caution moving parts | 1 |
| 32 | | 116117073 | Cowling, fan assembly | 1 |
| 33 | | 000006393 | Relay, Fan-On-Demand (optional) | 1 |
| 34 | GSV1 | 056061042 | Gas Solenoid Valve, 24VAC | 1 |
| 35 | | V56091091 | Strain Relief, primary cable | 1 |
| | | V56018092 | Strain Relief, nut | 1 |
| 36 | | 057014199 | Primary cable, 3 core 4mm 230VAC | 1 |
| 37 | F1 | 056092094 | Fuse, 20mm 10 Amp 500VAC | 1 |
| 38 | F1 | 056092039 | Fuse Holder, 20mm | 1 |
| 39 | | 956142503 | Label, gas connection and F1 fuse | 1 |
| 40 | | 116118171 | Rear Panel | 1 |
| 41 | | 028066250 | Polarity Change Terminal Bracket (optional) | 1 |
| 42 | | 027061026 | Hose, gas, braided, black | 1 |
| 43 | | V56161034 | Reel holder assembly | 1 |
| 44 | | 156121024 | Cover, polarity change over terminal | 1 |
| 45 | PC1 | 057084115 | Motor Control | 1 |
| 45 | PC1 | 057084116 | Motor Control, c/w optional, PC2 run-in, burn-back control | 1 |
| 46 | | 223041A | Label, safety, polarity change over | 1 |
| 47 | | 956142502 | Label, run-in, wire burn-back, spot-timer and CB1 | 1 |
| 48 | | 000207076 | Knob pointer | 1 |
| 49 | | 178937A | Label, safety, caution moving parts | 1 |
| 50 | | 056093022 | Switch, push button, momentary contact, Jog/Purge | 2 |
| 51 | | 956142504 | Nameplate, wire jog and gas purge | 1 |
| 52 | | 056020069 | Knob pointer, voltage selection | 1 |

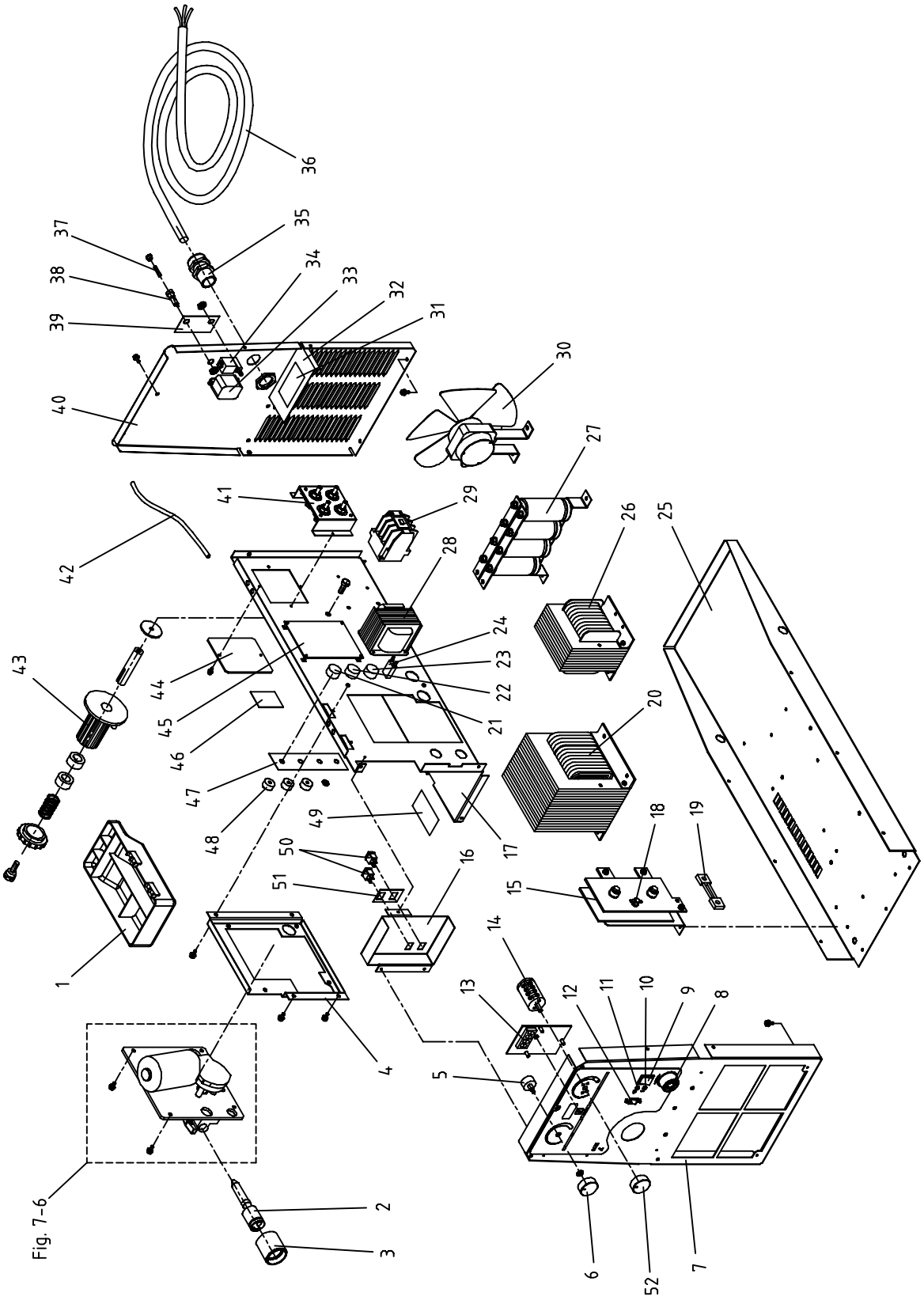



**Figure 7-3. Main Assembly for Migmatic 273 (400 VAC)**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|

**Figure 7-3. Main Assembly for Migmatic 273 (400 VAC)**

| | | | | |
|---|---|---|---|---|
| 1 | | 000197555 | Tool tray | 1 |
| 2 | | V57052030 | Euro Adapter Assembly | 1 |
| 3 | | V56050028 | Shroud, Euro adapter | 1 |
| 4 | | 056059274 | Mounting bracket, drive assembly | 1 |
| 5 | R1 | | Potentiometer, 1K ohm | 1 |
| 6 | | 000207075 | Knob pointer, wire fed speed control | 1 |
| 7 | | 116118172 | Front panel | 1 |
| 8 | | 056076152 | Dinze adapter | 1 |
| 9 | S3 | 056067251 | Switch, main on/off | 1 |
| 10 | PL2 | 056072075 | LED indicator, orange, over temperature | 1 |
| 11 | PL1 | 056072076 | LED indicator, white, power | 1 |
| 12 | | 056067169 | Switch, 2T/4T trigger hold function | 1 |
| 13 | | 057095015 | Digital Volt/Amp/WFS Display (optional) | 1 |
| 14 | S2 | 056067183 | Switch, 10 position, voltage selection | 1 |
| 15 | SR1 | 056050146 | Rectifier, 3Ph 250 Amp | 1 |
| 16 | | 656014012 | Mounting bracket, wire jog and gas purge switches | 1 |
| 17 | | 117060016 | Baffle plate | 1 |
| 18 | TP2 | 000175405 | Thermal Switch PTC 125° C | 1 |
| 19 | | 056059257 | Shunt (optional) | 1 |
| 20 | | 028021458 | Transformer, main 400 VAC 50 Hz c/w | 1 |
| | TP1 | 000175405 | Thermal Switch PTC 125° C | 1 |
| 21 | R3 | 056059278 | Potentiometer, Run-In control (optional) c/w | 1 |
| 22 | R4 | 056059277 | Potentiometer, Wire burn-back control (optional) | 1 |
| 23 | R2 | 056059275 | Potentiometer, Spot-weld timer | 1 |
| 24 | CB1 | 056067188 | Circuit Breaker | 1 |
| 25 | | 156006038 | Base | 1 |
| 26 | | 556070011 | Link, primary power terminal | 4 |
| 27 | | 756069012 | Primary power terminal board (230/400 models) | 1 |
| 28 | | 058021141 | Transformer, auxiliary | 1 |
| 29 | W | 057079032 | Contactor 7.5 Kw, 230VAC 50/60Hz | 1 |
| 30 | | | Fan motor assembly, consisting of | 1 |
| | FM1 | 056126073 | Fan motor, 230 VAC | 1 |
| | | 356078037 | Blade, 250Ø 27° | 1 |
| 31 | | 000176106 | Label, safety, caution moving parts | 1 |
| 32 | | 116117073 | Cowling, fan assembly | 1 |
| 33 | | 000006393 | Relay, Fan-On-Demand (optional) | 1 |
| 34 | GSV1 | 056061042 | Gas Solenoid Valve, 24VAC | 1 |
| 35 | | V56091091 | Strain Relief, primary cable | 1 |
| | | V56018092 | Strain Relief, nut | 1 |
| 36 | | 057014197 | Primary cable, 4 core 2.5mm | 1 |
| 37 | F1 | 056092094 | Fuse, 20mm 10 Amp 500VAC | 1 |
| 38 | F1 | 056092039 | Fuse Holder, 20mm | 1 |
| 39 | | 956142503 | Label, gas connection and F1 fuse | 1 |
| 40 | | 116118171 | Rear Panel | 1 |
| 41 | | 028066250 | Polarity Change Terminal Bracket (optional) | 1 |
| 42 | | 027061026 | Hose, gas, braided, black | 1 |
| 43 | | V56161034 | Reel holder assembly | 1 |
| 44 | | 156121024 | Cover, polarity change over terminal | 1 |
| 45 | PC1 | 057084115 | Motor Control | 1 |
| 46 | | 223041A | Label, safety, polarity change over | 1 |
| 47 | | 956142502 | Label, Run-in, wire burn-back, spot-timer and CB1 | 1 |
| 48 | | 000207076 | Knob pointer | 1 |
| 49 | | 178937A | Label, safety, caution moving parts | 1 |
| 50 | | 056093022 | Switch, push button, momentary contact, Jog/Purge | 2 |
| 51 | | 956142504 | Nameplate, wire jog and gas purge | 1 |
| 52 | | 056020069 | Knob pointer, voltage selection | 1 |

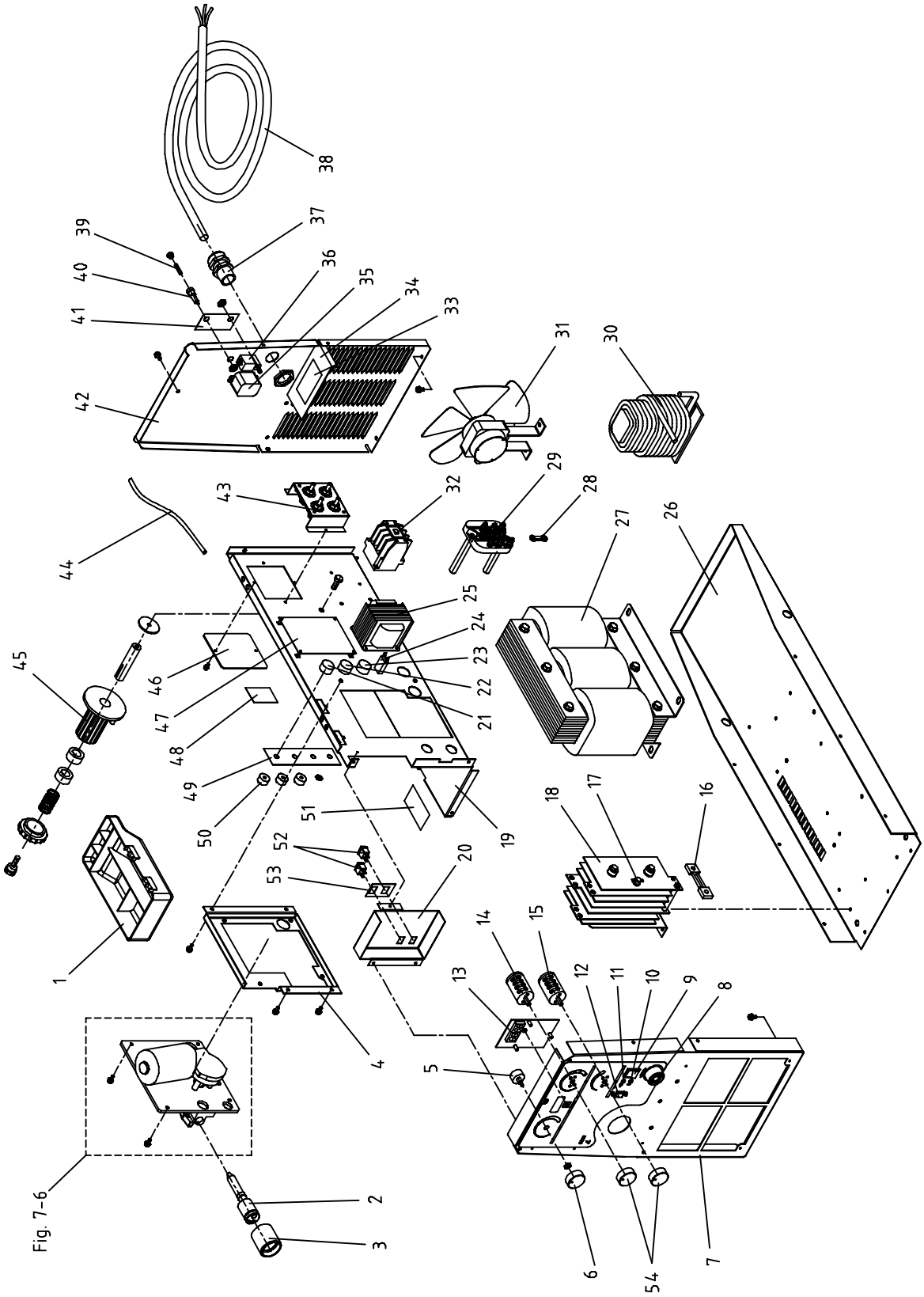



**Figure 7-4. Main Assembly for Migmatic 333 (400 VAC)**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|

**Figure 7-4. Main Assembly for Migmatic 333 (400 VAC)**

| | | | | |
|---|---|---|---|---|
| 1 | | 000197555 | Tool tray | 1 |
| 2 | | V57052030 | Euro Adapter Assembly | 1 |
| 3 | | V56050028 | Shroud, Euro adapter | 1 |
| 4 | | 056059274 | Mounting bracket, drive assembly | 1 |
| 5 | R1 | | Potentiometer, 1K ohm | 1 |
| 6 | | 000207075 | Knob pointer, wire fed speed control | 1 |
| 7 | | 116118172 | Front panel | 1 |
| 8 | | 056076152 | Dinze adapter | 1 |
| 9 | S3 | 056067251 | Switch, main on/off | 1 |
| 10 | PL2 | 056072075 | LED indicator, orange, over temperature | 1 |
| 11 | PL1 | 056072076 | LED indicator, white, power | 1 |
| 12 | | 056067169 | Switch, 2T/4T trigger hold function | 1 |
| 13 | PC3 | 057095015 | Digital Volt/Amp/WFS Display (optional) | 1 |
| 14 | S2 | 056067183 | Switch, 10 position, voltage selection | 1 |
| 15 | S3 | 056067249 | Switch, 2 position, voltage slelection | 1 |
| 16 | | 056067249 | Shunt (optional) | 1 |
| 17 | TP2 | 000175405 | Thermal Switch PTC 125° C | 1 |
| 18 | SR1 | 056050147 | Rectifier, 3P 350 Amp | 1 |
| 19 | | 117060016 | Baffle plate | 1 |
| 20 | | 656014012 | Mounting bracket, wire jog and gas purge switches | 1 |
| 21 | R3 | 056059278 | Potentiometer, Run-In control (optional) c/w | 1 |
| 22 | R4 | 056059277 | Potentiometer, Wire burn-back control (optional) | 1 |
| 23 | R2 | 056059275 | Potentiometer, Spot-weld timer | 1 |
| 24 | CB1 | 056067188 | Circuit Breaker | 1 |
| 25 | | 058021141 | Transformer, auxiliary | 1 |
| 26 | | 156006038 | Base | 1 |
| 27 | | 028021452 | Transformer, main 400 VAC 50 Hz c/w | 1 |
| | TP1 | 000175405 | Thermal Switch PTC 125° C | 1 |
| 28 | | 556070011 | Link, primary power terminal | 4 |
| 29 | | 756069012 | Primary power terminal board (230/400 models) | 1 |
| 30 | Z1 | 058028012 | Stabilizer | 1 |
| 31 | | | Fan motor assembly, consisting of: | |
| | FM1 | 056126073 | Fan motor, 230 VAC | 1 |
| | | 356078037 | Blade, 250Ø 27° | 1 |
| 32 | W | 057079032 | Contactor 7.5 Kw, 230 VAC 50/60 Hz | 1 |
| 33 | | 000176106 | Label, safety, caution moving parts | 1 |
| 34 | | 116117073 | Cowling, fan assembly | 1 |
| 35 | | 000006393 | Relay, Fan-On-Demand (optional) | 1 |
| 36 | GSV1 | 056061042 | Gas Solenoid Valve, 24VAC | 1 |
| 37 | | V56091091 | Strain Relief, primary cable | 1 |
| | | V56018092 | Strain Relief, nut | 1 |
| 38 | | 057014198 | Primary cable, 4 core 4.0mm | 1 |
| 39 | F1 | 056092094 | Fuse, 20mm 10 Amp 500VAC | 1 |
| 40 | F1 | 056092039 | Fuse Holder, 20mm | 1 |
| 41 | | 956142503 | Label, gas connection and F1 fuse | 1 |
| 42 | | 116118171 | Rear Panel | 1 |
| 43 | | 028066251 | Polarity Change Terminal Bracket (optional) | 1 |
| 44 | | 027061026 | Hose, gas, braided, black | 1 |
| 45 | | V56161034 | Reel holder assembly | 1 |
| 46 | | 156121024 | Cover, polarity change over terminal | 1 |
| 47 | PC1 | 057084115 | Motor Control | 1 |
| 48 | | 223041A | Label, safety, polarity change over | 1 |
| 49 | | 956142502 | Label, Run-in, wire burn-back, spot weld timer and CB1 | 1 |
| 50 | | 000207076 | Knob pointer | 1 |
| 51 | | 178937A | Label, safety, caution moving parts | 1 |
| 52 | | 056093022 | Switch, push button, momentary contact, Jog/Purge | 2 |
| 53 | | 956142504 | Nameplate, wire jog and gas purge | 1 |
| 54 | | 056020069 | Knob pointer, voltage selection | 2 |

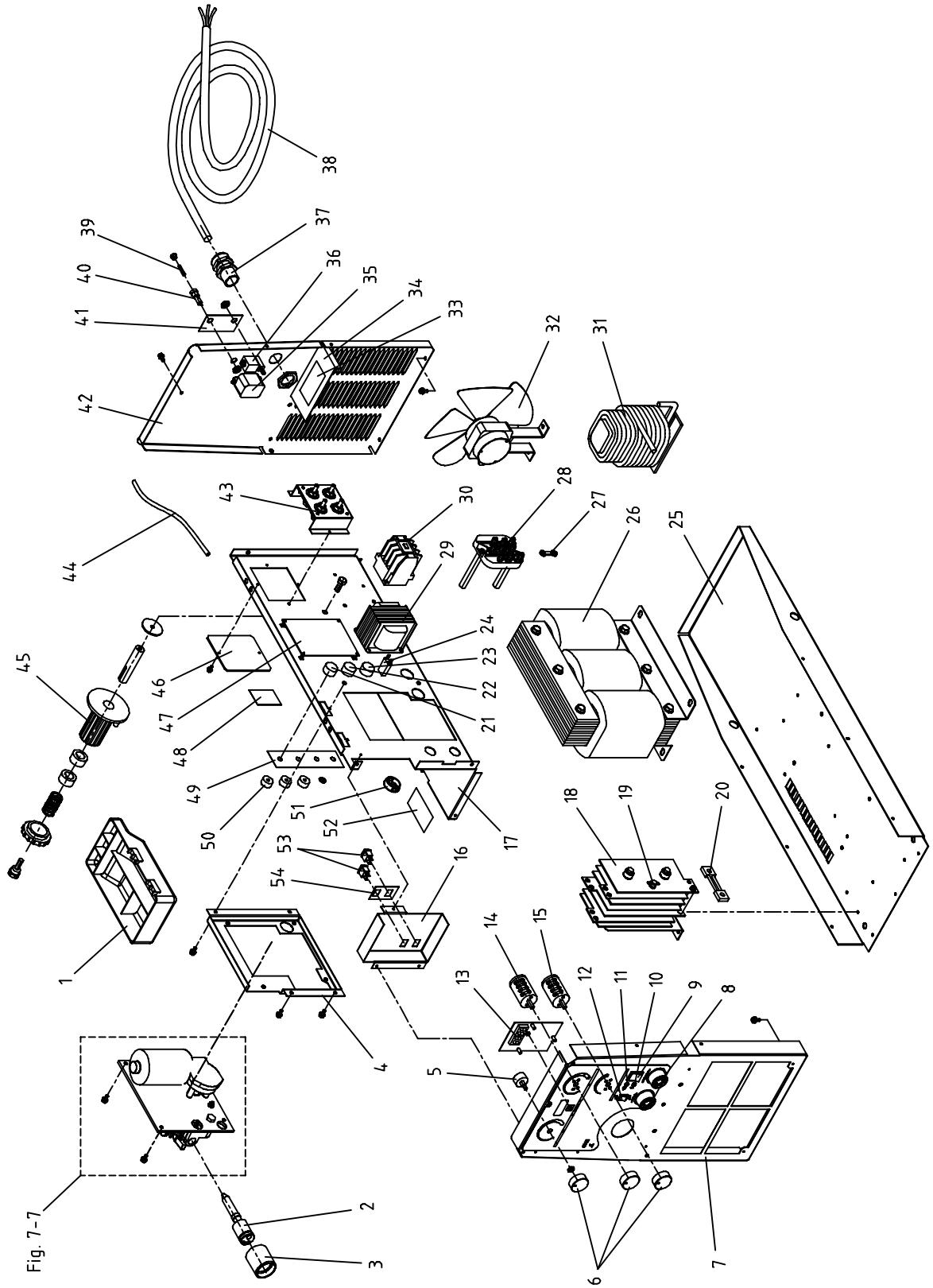



**Figure 7-5. Main Assembly for Migmatic 383**

| Item No. | Dia. Mkgs. | Part No. | Description | Quantity |
|---|---|---|---|---|

**Figure 7-5. Main Assembly for Migmatic 383**

| | | | | |
|---|---|---|---|---|
| 1 | | 000197555 | Tool tray | 1 |
| 2 | | V57052030 | Euro Adapter Assembly | 1 |
| 3 | | V56050028 | Shroud, Euro adapter | 1 |
| 4 | | 056059274 | Mounting bracket, drive assembly | 1 |
| 5 | R1 | | Potentiometer, 1K ohm | 1 |
| 6 | | 000207075 | Knob pointer, wire fed speed control | 1 |
| 7 | | 116118172 | Front panel | 1 |
| 8 | | 056076152 | Dinze adapter | 2 |
| 9 | S3 | 056067251 | Switch, main on/off | 1 |
| 10 | PL2 | 056072075 | LED indicator, orange, over temperature | 1 |
| 11 | PL1 | 056072076 | LED indicator, white, power | 1 |
| 12 | | 056067169 | Switch, 2T/4T trigger hold function | 1 |
| 13 | PC3 | 057095015 | Digital Volt/Amp/WFS Display (optional) | 1 |
| 14 | S2 | 056067183 | Switch, 10 position, voltage selection | 1 |
| 15 | S3 | 056067253 | Switch, 3 position, voltage slelection | 1 |
| 16 | | 056059262 | Shunt (optional) | 1 |
| 17 | TP2 | 000175405 | Thermal Switch PTC 125° C | 1 |
| 18 | SR1 | 056050147 | Rectifier, 3P 350 Amp | 1 |
| 19 | | 117060016 | Baffle plate | 1 |
| 20 | | 656014012 | Mounting bracket, wire jog and gas purge switches | 1 |
| 21 | R3 | 056059278 | Potentiometer, Run-In control (optional) c/w | 1 |
| 22 | R4 | 056059277 | Potentiometer, Wire burn-back control (optional) | 1 |
| 23 | R2 | 056059275 | Potentiometer, Spot-weld timer | 1 |
| 24 | CB1 | 056067188 | Circuit Breaker | 1 |
| 25 | | 058021141 | Transformer, auxiliary | 1 |
| 26 | | 156006038 | Base | 1 |
| 27 | | 028021451 | Transformer, main 400 VAC 50 Hz c/w | 1 |
| | TP1 | 000175405 | Thermal Switch PTC 125° C | 1 |
| 28 | | 556070011 | Link, primary power terminal | 4 |
| 29 | | 756069012 | Primary power terminal board (230/400 models) | 1 |
| 30 | Z1 | 058028017 | Stabilizer | 1 |
| 31 | | | Fan motor assembly, consisting of: | |
| | FM1 | 056126073 | Fan motor, 230 VAC | 1 |
| | | 356078037 | Blade, 250Ø 27° | 1 |
| 32 | W | 057079032 | Contactor 7.5 Kw, 230 VAC 50/60 Hz | 1 |
| 33 | | 000176106 | Label, safety, caution moving parts | 1 |
| 34 | | 116117073 | Cowling, fan assembly | 1 |
| 35 | | 000006393 | Relay, Fan-On-Demand (optional) | 1 |
| 36 | GSV1 | 056061042 | Gas Solenoid Valve, 24VAC | 1 |
| 37 | | V56091091 | Strain Relief, primary cable | 1 |
| | | V56018092 | Strain Relief, nut | 1 |
| 38 | | 057014198 | Primary cable, 4 core 4.0mm | 1 |
| 39 | F1 | 056092094 | Fuse, 20mm 10 Amp 500VAC | 1 |
| 40 | F1 | 056092039 | Fuse Holder, 20mm | 1 |
| 41 | | 956142503 | Label, gas connection and F1 fuse | 1 |
| 42 | | 116118171 | Rear Panel | 1 |
| 43 | | 028066251 | Polarity Change Terminal Bracket (optional) | 1 |
| 44 | | 027061026 | Hose, gas, braided, black | 1 |
| 45 | | V56161034 | Reel holder assembly | 1 |
| 46 | | 156121024 | Cover, polarity change over terminal | 1 |
| 47 | PC1 | 057084115 | Motor Control | 1 |
| 48 | | 223041A | Label, safety, polarity change over | 1 |
| 49 | | 956142502 | Label, run-in, wire burn-back, spot weld timer and CB1 | 1 |
| 50 | | 000207076 | Knob pointer | 1 |
| 51 | | V56033124 | Blank, cap motor housing | 1 |
| 52 | | 178937A | Label, safety, caution moving parts | 1 |
| 53 | | 056093022 | Switch, push button, momentary contact, Jog/Purge | 2 |
| 54 | | 956142504 | Nameplate, wire jog and gas purge | 1 |
| 55 | | 056020069 | Knob pointer, voltage selection | 2 |

**See Table 7-1**
**Drive Roll & Wire Guide Kits**

☞ *Hardware is common and not available unless listed.*

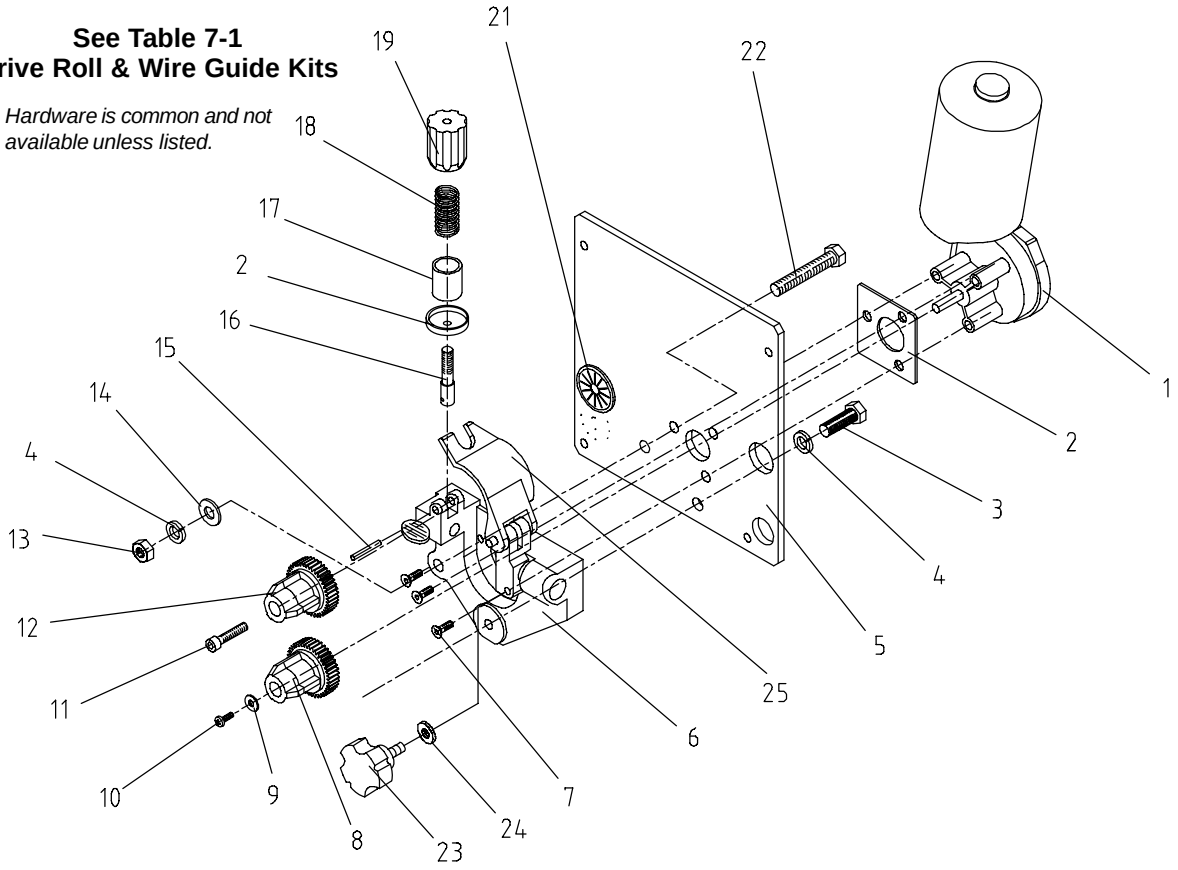



**Figure 7-6. Wire Drive and Gears (2 roll)**

| Item No. | Part No. | Description | Quantity |
|---|---|---|---|
| | | **Figure 7-6 Wire Drive and Gears** | |
| 1 | 057010052 | Motor, 24 VDC 185 rpm | 1 |
| 2 | 187 325 | Insulator, Motor | 1 |
| 3 | 601 966 | Screw, 0.375-16 x 1.00 Hexhd | 1 |
| 4 | 602 213 | Washer, flat 0.438 ID x 1.00 OD | 1 |
| 5 | 656005029 | Insulator, Drive assy | 1 |
| 6 | 182 788 | Housing, adapter gun/feeder | 1 |
| 7 | 604 673 | Screw, hex c/sunk | 1 |
| 8 | 173 619 | Carrier, drive roll w/components | 1 |
| 9 | 602 239 | Washer, central Drive gear shaft/drive carrier | 1 |
| 10 | 174 609 | Screw, central drive gear/shaft | 1 |
| 11 | 602 009 | Screw, soc head hex | 1 |
| 12 | 172 075 | Carrier, drive roll w/components | 1 |
| 13 | 601 872 | Nut, power stud terminal | 1 |
| 14 | 602 213 | Washer, spring | 1 |
| 15 | 010 224 | Pin, spring CS .187 x 1.000 | 1 |
| 16 | 085 242 | Fastener, pinned | 1 |
| 17 | 196 896 | Cup, spring | 1 |
| 18 | 196 897 | Spring, cprsn .695 OD x .095 wire | 1 |
| 19 | 196 895 | Knob, tension adj | 1 |
| 20 | 085 244 | Washer, cupped stl .328 ID x .812 OD x .125 lip | 1 |
| 21 | 756033039 | Grommet, star | 1 |
| 22 | 601 966 | Screw .375-16 x 1.25 hexhd | 1 |
| 23 | 204 585 | Knob, fluted | 1 |
| 24 | 604 538 | Washer, flat stl SAE .312 | 1 |
| 25 | 166 071 | Lever, mtg pressure gear | 1 |

**See Table 7-2**
**Drive Roll & Wire Guide Kits**

☞ *Hardware is common and not available unless listed.*

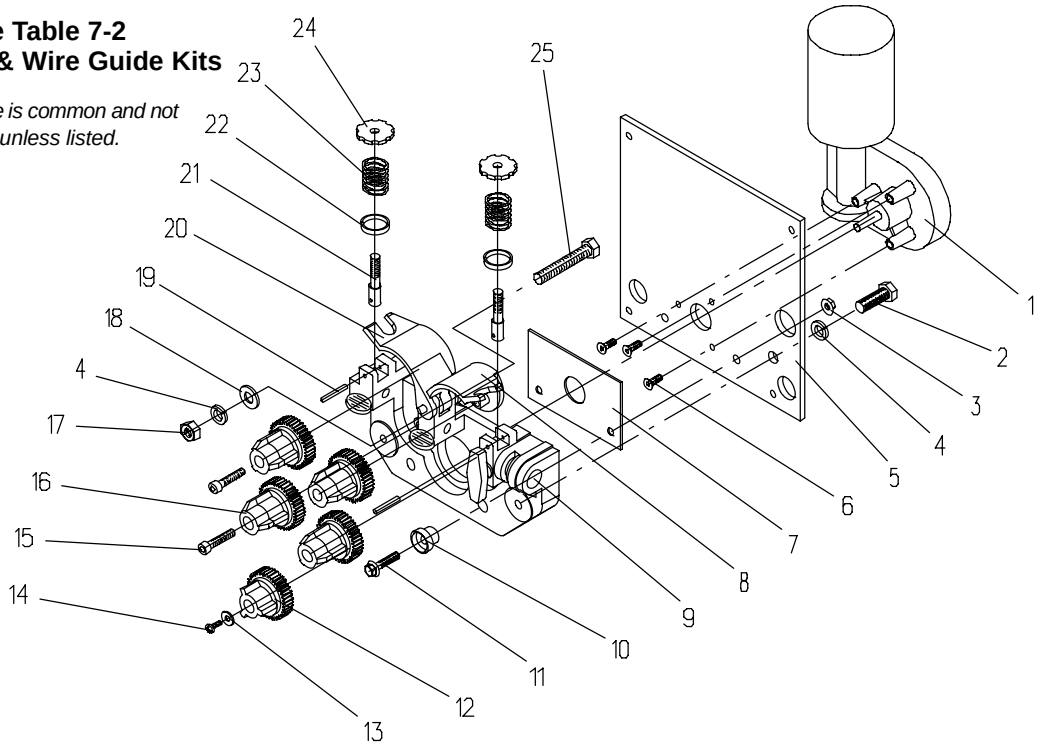



**Figure 7-7. Wire Drive and Gears (4 roll)**

| Item No. | Part No. | Description | Quantity |
|---|---|---|---|
| | | **Figure 7-7 Wire Drive and Gears** | |
| 1 | 057010051 | Motor, 24 VDC 185 rpm | 1 |
| 2 | 601 966 | Screw, housing | 1 |
| 3 | | Nut | 2 |
| 4 | | Washer, locking | 2 |
| 5 | 656005026 | Insulator, bulkhead | 1 |
| 6 | 604 673 | Screw, hex c/sunk | 4 |
| 7 | 187 325 | Insulator, drive assembly | 1 |
| 8 | 166 338 | Lever, mounting pressure gear | 1 |
| 9 | 166 337 | Housing, adapter gun/feeder | 1 |
| 10 | 072 010 | Washer, nisulated | 2 |
| 11 | 108 943 | Bolt, adapter housing | 2 |
| 12 | 173 618 | Drive Gear, central | 2 |
| 13 | 602 239 | Washer, central drive gear/shaft | 1 |
| 14 | 174 609 | Screw, central drive gear/shaft | 1 |
| 15 | 602 009 | Screw, soc head hex | 4 |
| 16 | 172 075 | Carrier, drive roll w/component 24 pitch | 4 |
| 17 | 601 872 | Nut, power stud | 1 |
| 18 | 602 213 | Washer plain, power stud | 1 |
| 19 | 010 224 | Pin, tension arm | 2 |
| 20 | 166 071 | Lever, mtg pressure gear | 1 |
| 21 | 089 562 | Tension arm, pinned | 2 |
| 22 | 085 244 | Washer, cuppled steel | 2 |
| 23 | 089 477 | Spring, tension arm | 2 |
| 24 | 089 243 | Knob, adjustment tension | 2 |
| 25 | 202 562 | Power stud | 1 |

*Recommended Spare Parts.

**To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.**

## Table 7-1. Drive Roll And Wire Guide Kits (2 Roll Models)

**NOTE** ☞

*Base selection of drive rolls upon the following recommended usages:*

1. *V-Grooved rolls for hard wire.*
2. *U-Grooved rolls for soft and soft shelled cored wires.*
3. *U-Cogged rolls for extremely soft shelled wires (usually hard surfacing types).*
4. *V-Knurled rolls for hard shelled cored wires.*
5. *Drive roll types may be mixed to suit particular requirements (example: V-Knurled roll in combination with U-Grooved).*

| Wire Diameter | | | Kit No. | Drive Roll | | Wire Guide |
|---|---|---|---|---|---|---|
| Metric | Fraction | Decimal | | Part No. | Type | Inlet |
| 0.6 mm | 0.023/0.025 in | 0.023/0.025 in | 087 132 | 087 130 | V-Grooved | 056 192 |
| 0.8/0.9 mm | 0.030/0.035 in | 0.030/0.035 in | 204 579 | 203 526 | V-Grooved | 056 192 |
| 0.8 mm | 0.030 in | 0.030 in | 079 594 | 053 695 | V-Grooved | 056 192 |
| 0.9-1.0 mm | 0.035 in | 0.035 in | 079 595 | 053 700 | V-Grooved | 056 193 |
| 0.9/1.2 mm | 0.035/0.045 in | 0.035/0.045 in | N?A | 189 285 | V-Grooved | 056 192 |
| 1.2 mm | 0.045 in | 0.045 in | 079 596 | 053 696 | V-Grooved | 056 193 |
| 0.9-1.0 mm | 0.035 in | 0.035 in | 044 749 | 072 000 | U-Grooved | 056 192 |
| 1.2 mm | 0.045 in | 0.045 in | 079 599 | 053 701 | U-Grooved | 056 193 |
| 0.9 mm | 0.035 in | 0.035 in | 079 606 | 132 958 | V-Knurled | 056 192 |
| 1.2 mm | 0.045 in | 0.045 in | 079 607 | 132 957 | V-Knurled | 056 193 |
| 1.2 mm | 0.045 in | 0.045 in | 083 318 | 083 489 | U-Cogged | 056 193 |

## Table 7-2. Drive Roll And Wire Guide Kits (4 Roll Models)

| Wire Diameter | | | Kit No. | Drive Roll | | Wire Guide | |
|---|---|---|---|---|---|---|---|
| Metric | Fraction | Decimal | | Part No. | Type | Inlet | Intermediate |
| 0.6 mm | 0.023/0.025 in | 0.023/0.025 in | 087 132 | 087 130 | V-Grooved | 056 192 | 056 206 |
| 0.8/0.9 mm | 0.030/0.035 in | 0.030/0.035 in | N/A | 203 526 | V-Grooved | 056 192 | 056 206 |
| 0.8 mm | 0.030 in | 0.030 in | 046 780 | 053 695 | V-Grooved | 056 192 | 056 206 |
| 0.9-1.0 mm | 0.035 in | 0.035 in | 046 781 | 053 700 | V-Grooved | 156 193 | 056 207 |
| 0.9/1.2 mm | 0.035/0.045 in | 0.035/0.045 in | N/A | 189 285 | V-Grooved | 156 193 | 056 207 |
| 1.2 mm | 0.045 in | 0.045 in | 046 782 | 053 697 | V-Grooved | 056 193 | 056 207 |
| 0.9-1.0 mm | 0.035 in | 0.035 in | 044 750 | 072 000 | U-Grooved | 156 192 | 056 206 |
| 1.2 mm | 0.045 in | 0.045 in | 044 750 | 072 000 | U-Grooved | 056 192 | 056 206 |
| 0.9 mm | 0.035 in | 0.035 in | 046 785 | 053 701 | V-Knurled | 056 192 | 056 206 |
| 1.2 mm | 0.045 in | 0.045 in | 046 792 | 132 958 | V-Knurled | 056 192 | 056 206 |
| 1.2 mm | 0.045 in | 0.045 in | 083 319 | 083 489 | U-Cogged | 056 193 | 056 207 |

# Notes

# Notes

# TRUE BLUE® WARRANTY

Effective January 1, 2005

This limited warranty supersedes all previous Miller warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY − Subject to the terms and conditions below, ITW Welding Products Italy S.r.l., warrants to its original retail purchaser that new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to a European distributor or eighteen months after the equipment is sent to an International distributor.

1. 5 Years Parts − 3 Years Labor
   * Original main power rectifiers
   * Inverters (input and output rectifiers only)
2. 3 Years — Parts and Labor
   * Transformer/Rectifier Power Sources
   * Plasma Arc Cutting Power Sources
   * Semi-Automatic and Automatic Wire Feeders
   * Inverter Power Sources (unless otherwise stated)
   * Water Coolant Systems (integrated)
   * Intellitig
   * Maxstar 150
   * Engine Driven Welding Generators except Panther **(NOTE: Engines are warranted separately by the engine manufacturer.)**
3. 2 year − Parts and Labor (Panther only) **(NOTE: Engines are warranted separately by the engine manufacturer.)**
4. 1 year − Parts and Labor unless specified
   * DS-2 Feeder
   * Motor Driven Guns (w/exception of Spoolguns)
   * Process Controllers
   * Positioners and Controllers
   * Automatic Motion Devices
   * RFCS Foot Controls
   * IHPS Power Sources and Coolers
   * Water Coolant Systems (non−integrated)
   * Flowgauge and Flowmeter Regulators (No Labor)
   * HF Units
   * Grids
   * Maxstar 140
   * Spot Welders
   * Load Banks
   * Arc Stud power sources and Arc Stud guns
   * Running Gear/Trailers
   * Plasma Cutting Torches (except APT & SAF Models)
   * Field Options (NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
5. 6 Months — Batteries
6. 90 Days — Parts
   * MIG Guns/TIG Torches
   * Induction heating coils and blankets
   * APT Model Plasma Cutting Torches
   * Remote Controls
   * Accessory Kits
   * Replacement Parts (No labor)
   * Spoolmate Spoolguns
   * Canvas covers

Miller's True Blue® Limited Warranty shall not apply to:

1. **Consumable components; such as contact tips, cutting nozzles, contactors, brushes, slip rings, relays or parts that fail due to normal wear.**
2. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
3. Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

In the event of a warranty claim covered by this warranty, the exclusive remedies shall be, at Miller's option: (1) repair; or (2) replacement; or, where authorized in writing by Miller in appropriate cases, (3) the reasonable cost of repair or replacement at an authorized Miller service station; or (4) payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the goods at customer's risk and expense. Miller's option of repair or replacement will be F.O.B., Factory at ITW Welding Products Group Europe, or F.O.B. at a Miller authorized service facility as determined by Miller. Therefore no compensation or reimbursement for transportation costs of any kind will be allowed.

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# Owner's Record

Please complete and retain with your personal records.

Model Name Serial/Style Number

Purchase Date (Date which equipment was delivered to original customer.)

Distributor

Address

Country Zip/Postal Code

**ITW Welding Products Italy S.r.l.**
Via Privata Iseo, 6/E
20098 San Giuliano
Milanese, Italy
Phone: 39 (0) 2982901
Fax: 39 (0) 298290-203
email: miller@itw−welding.it

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