Firepower® WELDING SYSTEM
A THERMADYNE® Company

FP-120, FP-130 and FP-160 MIG Welding System Instruction Manual

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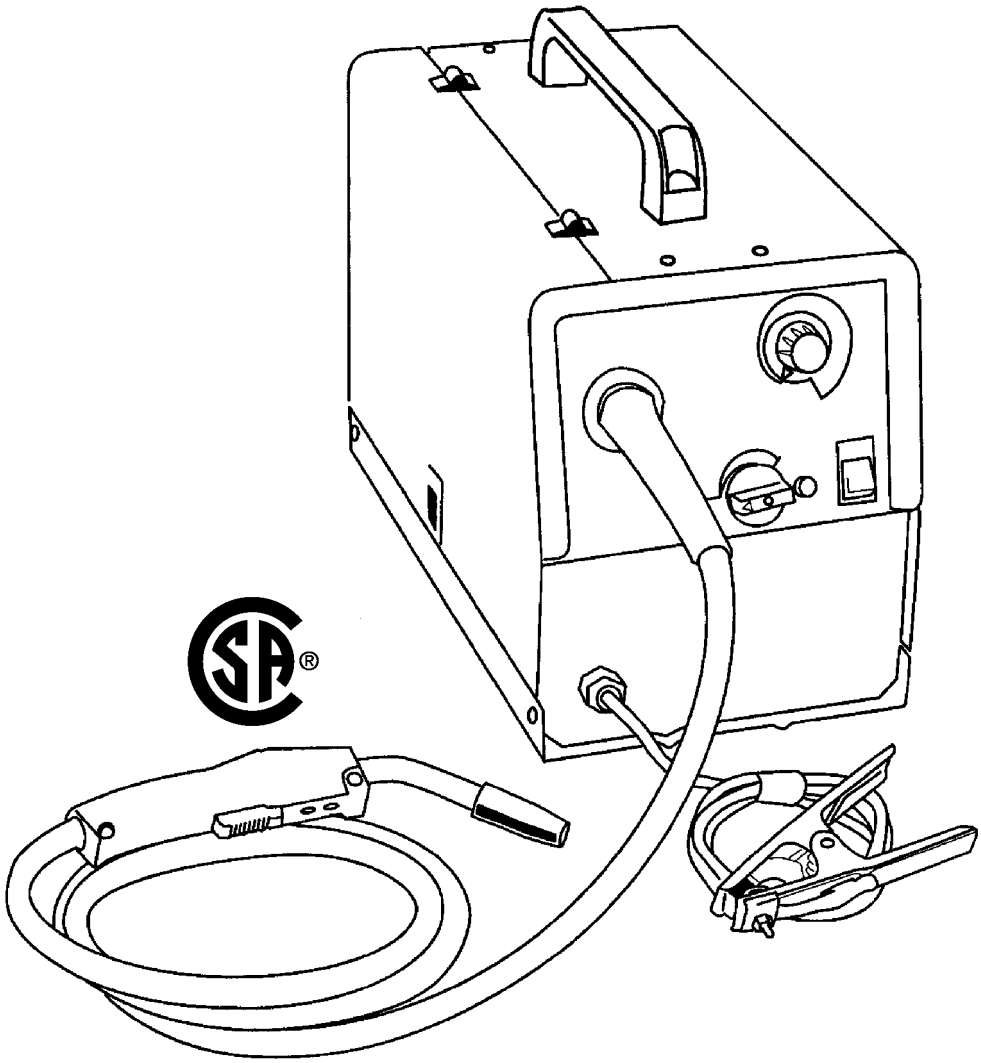
⚠ IMPORTANT ⚠

Safety and Operating Instructions



For Your Safety . . .
PLEASE READ CAREFULLY!

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INTRODUCTION

This User's Guide provides specific information about your Firepower Welding System. This guide provides pertinent information needed to safely and effectively use your Firepower Welding System. The information in this manual applies to specific Firepower Welding System models. It gives instructions on set-up, installation and actual use of your Firepower Welding System.

SAFETY PROFILE

Tradesmen respect the tools and equipment with which they work. They are also aware that tools and equipment are dangerous if used improperly or abused.

Read this guide prior to using your welding system. It enables you to do a better and safer job. You will also learn the machine's application, limitations and the specific potential hazards related to welding.

SAFETY INFORMATION

The following safety information is provided to you as a guideline. Use it to operate your new Firepower Welding System under the safest possible conditions. Any equipment that uses electrical power is potentially dangerous to use when the safety or safe handling instructions are not known and/or are not followed. This safety information gives you the necessary information for safe use and operation.

Items in this manual that significantly affect safety are identified with the following headings. Please read and understand this manual. Pay special attention to items identified with these headings.

⚠WARNING - Means there is a possibility of injury or death to yourself or others if the proper safety precautions are not followed.

⚠CAUTION - Means there is the possibility of damage to the Firepower Welding System or other property.

NOTICE - Indicates points of interest for more efficient and convenient installation or operation. It may be used before or after a procedure to highlight or better explain the step.

READ ALL SAFETY AND WARNING INSTRUCTIONS CAREFULLY before attempting to install, operate or service this welding unit. Your failure to comply with the instructions could result in personal injury and/or property damage.

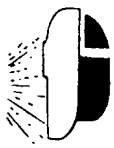
⚠ IMPORTANT ⚠ RETAIN THESE INSTRUCTIONS FOR YOUR FUTURE REFERENCE.

SAFETY SYMBOLS

Familiarize yourself with the warning symbols listed on the following pages. These symbols identify important safety messages in this manual. When you see one of these symbols, be alert to the possibility of personal injury and carefully read the message that follows.

Indicates that the possibility of electric shock hazard exists during the operation of the step(s) that follow.

Indicates that the possibility of fire hazard exists during the operation of the step(s) that follow.



Indicates that the helmet must be worn during the step(s) that follow to protect against eye damage and burns due to flash hazard.

Indicates that the possibility of toxic gas hazard exists during operation of the step(s) that follow.

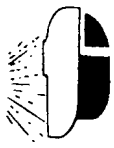
Indicates that the possibility of being burned by hot slag exists during operation of the step(s) that follow.

Indicates that eye protection should be worn to protect against flying debris in the following step(s).

Indicates that the possibility of injury or death exist due to improper handling and maintenance of compressed gas cylinders or regulators.

ELECTRIC SHOCK CAN KILL! Reduce the risk of death or serious injury from shock. Read, understand and follow the following safety instructions. Additionally, make certain that anyone else who uses this welding equipment, or who is a bystander in the welding area, understands and follows these safety instructions as well.

FIRE OR EXPLOSION CAN CAUSE DEATH, INJURY AND PROPERTY DAMAGE! Reduce the risk of death, injury or property damage from fire or explosion. Read, understand and follow the following safety instructions. Additionally, make certain that anyone else who uses this welding equipment, or who is a bystander in the welding area, understands and follows these safety instructions as well. Remember, welding by nature produces sparks, hot spatter, molten metal drops, hot slag and hot metal parts that can start fires, burn skin and damage eyes.



ARC RAYS CAN INJURE EYES AND BURN SKIN! Reduce the risk of injury from arc rays. Read, understand and follow the following safety instructions. Additionally, make certain that anyone else who uses this welding equipment, or who is a bystander in the welding area, understands and follows these safety instructions as well.

FUMES, GASSES AND VAPORS CAN CAUSE DISCOMFORT, ILLNESS AND DEATH! Reduce the risk of discomfort, illness or death. Read, understand and follow the following safety instructions. Additionally, make certain that anyone else who uses this welding equipment, or who is a bystander in the welding area, understands and follows these safety instructions as well.

IMPROPER HANDLING AND MAINTENANCE OF COMPRESSED GAS CYLINDERS AND REGULATORS CAN RESULT IN SERIOUS INJURY OR DEATH! Reduce the risk of injury or death from compressed gasses and equipment hazards. Read, understand and follow the following safety instructions. Additionally, make certain that anyone else who uses this welding equipment, or who is a bystander in the welding area, understands and follows these safety instructions as well.

GENERAL WELDING SAFETY INSTRUCTIONS

LOCATION

⚠WARNING Welding processes of any kind can be dangerous not only to the operator but to any person situated near the equipment, if safety and operating rules are not strictly observed.

PERSONAL PROTECTION

1. ⚠WARNING Wear closed, non-flammable protective clothing, without pockets or turned up trousers.
2. Wear a non-flammable welding helmet to shield the neck, face and sides of the head. Keep the protective lens clean. Replace the protective lens if broken or cracked. Position a transparent glass between the lens and the welding area. Weld in a closed, well ventilated area that does not open into other working areas.
3. **NEVER** look at the arc without proper protection to the eyes.
4. Thoroughly clean metal of rust or paint to avoid producing harmful fumes. Parts degreased with a solvent must dry before welding.
5. **NEVER** weld on metals or coated metals containing zinc, mercury, chromium, graphite, lead, cadmium or beryllium unless the operator and the people standing in the same area use an air-supplied respirator.

SAFETY INSTRUCTIONS

For your safety, **BEFORE** connecting the power source to the line, follow these instructions:

1. Insert an adequate two-pole switch, equipped with time-delay fuses, before the main outlet.
2. Make the single-phase connection with a two-pole plug compatible with the above mentioned socket.
3. The two wires of the two-pole input cable are used for the connection with the single-phase line. The yellow/green wire is for the compulsory connection to the ground in the welding area.
4. When working in a confined space, keep the power source outside the welding area and fix the ground cable to the workpiece. **NEVER** work in a damp or wet area.
5. **DO NOT** use damaged input or welding cables.
6. ⚠WARNING **NEVER** operate the power source without its panels in place. This could cause serious injury to the operator and could damage the equipment.

FIRE PREVENTION

Welding operations use fire or combustion as a basic tool.

1. The work area MUST have a fireproof floor.
2. Work benches or tables used during welding operations **MUST** have fireproof tops. **DO NOT** weld on wooden work benches.
3. Use heat-resistant shields or other approved material to protect nearby walls or unprotected flooring from sparks and hot metal.
4. Keep an approved fire extinguisher of the proper size and type in the work area. Inspect it regularly to ensure that it is in proper working order. Know how to use the fire extinguisher.

5. Remove all combustible materials from the work site. If you can not remove them, protect them with fire-proof covers.

⚠WARNING **NEVER** perform welding operations on a container that has held toxic, combustible or flammable liquids or vapors. **NEVER** perform welding operations in an area containing combustible vapors, flammable liquids or explosive dust.

VENTILATION

⚠WARNING Ventilate welding work areas adequately. Maintain sufficient air flow to prevent accumulation of explosive or toxic concentrations of gases. Welding operations using certain combinations of metals, coatings and gases generate toxic fumes. Use respiratory protection equipment in these circumstances. **BEFORE** welding, read and understand the Material Safety Data Sheet for the welding alloy.

ELECTROMAGNETIC COMPATIBILITY

BEFORE installing a MIG power source, inspect the surrounding area checking the following points:

1. Make sure there are no other power supply cables, control lines, telephone cables or other devices close to the power source.
2. Make sure that telephones, televisions, computers or other control systems are not in the working area.
3. People with pace-makers or hearing aides should keep far from the power source. In particular cases, special protection measures may be required.

Reduce interference by following these suggestions:

1. If there is interference in the power source line, mount an E.M.T. filter between the power supply and the power source.
2. Shorten the output cables of the power source, keep them together and connected to ground.
3. Securely fasten the panels of the power source in place after performing maintenance.

PROTECTIVE WELDING GASSES

1. These welders use only inert or non-flammable gases for welding arc protection. It is important to choose the appropriate gas for the type of welding being performed.
2. **DO NOT** use gas from unidentified cylinders.
3. **DO NOT** connect the cylinder directly to the welder. **ALWAYS** use a pressure regulator.
4. Make sure the pressure regulator functions properly. Read the instructions supplied with the regulator.
5. **DO NOT** lubricate the regulator with oil or grease.
6. Each regulator is designed for use with a specific gas. Make sure the regulator is designed for the protective gas being used.
7. **DO NOT** use damaged cylinders.
8. Make sure that the cylinder is safely secured tightly to the welder with the chain provided.
9. **DO NOT** carry the cylinder by holding it by the valve.
10. **NEVER** expose cylinders to excessive heat, sparks, slag or flame.
11. Make sure that the gas hose is **ALWAYS** in good condition.
12. Keep the gas hose away from the working area.

HEALTH HAZARDS

The welding process can be hazardous to your health. Therefore, follow these precautions:

1. **ALWAYS** wear protective clothing without pockets and cuffs. Wear a helmet, gloves and shoes with an insulating sole.
2. **ALWAYS** use a welding mask or helmet with the properly tinted protective glass in the shade adequate to the welding operation being performed and to the current intensity.
3. Make certain that bystanders in the welding area are also following these precautions.
4. **ALWAYS** keep the welding mask glass clean. Replace it if it is cracked or chipped.
5. **NEVER** weld in a damp area or come in contact with a moist or wet surface when welding.
6. If the welding area lacks proper ventilation, use fume extractors.
7. Clean the welding pieces from solvents or alogenous grease which develop toxic gases when exposed to heat.

ELECTRIC SHOCK

⚠WARNING ELECTRIC SHOCK CAN KILL! Reduce the risk of death or serious injury from shock. Read, understand and follow **ALL** safety instructions. Be sure that everyone who uses this welding equipment or who is a bystander in the welding area understands and follows **ALL** safety instructions as well.

⚠WARNING ELECTRIC SHOCK CAN BE FATAL. A person qualified in First Aid techniques should **ALWAYS** be present in the working area. If a person is unconscious and electric shock is suspected, **DO NOT** touch the person if he or she is in contact with cables. Disconnect power from the machine, then use First Aid. Use dry wood or other insulating materials to move cables, if necessary, away from the person.

1. Never touch or come in physical contact with any part of the input current circuit and welding current circuit.
2. Frequently, check that the input cable and plug are in good condition.
3. Make sure that the welder is disconnected from the mains BEFORE attempting any repairs, opening the side panels of the machine or repairing the input cable.
4. Fit the main line, BEFORE the distribution outlet, with a three-poles switch with adequate delayed fuses (check the characteristics plate for fuse values).
5. **DO NOT** weld with cables, torch or earth clamp in poor shape.
6. **DO NOT** coil the torch or the earth cables around your body.
7. **DO NOT** aim the welding torch against yourself or against bystanders.
8. Should you feel the slightest electrical shock, **STOP** welding **IMMEDIATELY. DO NOT** use the welder until the fault is found and resolved.

WELDER SPECIFICATIONS

Your new Firepower Wire MIG (GMAW) and Flux Core (FCAW) Wire Welding System is designed for maintenance and sheet metal fabrication. The unit consists of a single-phase power transformer power source, arc stabilizer, rectifier and heavy-duty wire feed system. This welding power source is capable of welding with 0.023 inch (0.6 mm) or 0.030 inch (0.8 mm) solid steel MIG (GMAW) welding wire. A shielding gas is necessary for this process.

This unit is also capable of welding with either 0.030 inch (0.8 mm) or 0.035 inch (0.9 mm) flux cored welding wire (FCAW) process. The use of shielding gas is not required for this welding process. Please refer to the instructions provided in this manual for proper machine setup.

The use of larger diameter wire makes welding difficult. The results cannot be guaranteed. The manufacturer **DOES NOT** recommend using larger diameter welding wire with this unit.

WELDER OPERATING CHARACTERISTICS

The duty rating defines how long the welding system can be used before it must pause and cool down. Duty Cycle ratings are expressed as a percentage of a ten-minute period. It represents the maximum welding time allowed at the specified amperage setting. The remaining balance of a ten-minute period is required for cooling off the unit.

Firepower 120 volt Welding Systems have duty cycle ratings based on 15 amp and 20 amp input currents. Please refer to the data plate located on the front of the unit for the specific rating that applies to your unit.

All Firepower 230 volt Welding Systems are rated at the required input amperage for proper operation. Please refer to the data plate located on the front of the unit for the specific rating that applies to your unit.

INTERNAL THERMAL OVERLOAD PROTECTION

⚠CAUTION **DO NOT** exceed the duty cycle or damage could result to your welder. If you do exceed the duty cycle of your welder, the internal thermal overload protection shuts off all welder functions except the cooling fan. If this happens, **DO NOT SHUT OFF THE WELDER**. Leave the welder turned on and the fan running. After the welder is properly cooled, the thermal protector automatically resets and your welder will function properly.

If you find that your welder does not weld for a 2-minute time period without stopping, reduce the wire speed slightly. Welding with the wire speed set too high not only causes poor visible welds but also increases amperage draw and shortens the duty cycle.

SPECIFICATIONS FOR FP 120 WIRE(GMAW/FCAW) WELDING SYSTEM (1444-0304)

Type	110 AMP MIG Welding System
Input Voltage	120 Volt (60 Hz)
Rated Output	88 Amps @ 20% Duty Cycle
Agency Approval	CSA Rating 60 Amps @ 20% Duty Cycle
Maximum Output	110 Amps Peak
Output Power Settings	Four Position (Rotary Switch)
Wire Speed Adjustment	Infinite Speed Controlled by Potentiometer
Overload Indicator	Illuminated Pilot Light
Power Switch	Illuminated ON/OFF Switch
Power Cord	6 foot 15 Amp NEMA 5-15 Power Plug
MIG Gun	10 foot FIREPOWER® with ON/OFF Contactor Control-Gas Valve in Handle
Ground Cable and Clamp	6 foot Ground Cable/200 Amp Ground Clamp
MIG Gun Connection	Fixed Connection
Spool Capacity	2 lb and 10 lb
Accessories	Contact Tip MIG Nozzle 1 lb. .030 MIG Wire FIREPOWER® Argon Regulator FIREPOWER® MIG Gun Instruction Manual

SPECIFICATIONS FOR FP 130 WIRE(GMAW/FCAW) WELDING SYSTEM (1444-0306)

Type . . . . . .120 AMP MIG Welding System
Input Voltage . . . . . .120 Volt (60 Hz)
Rated Output . . . . . .88 Amps @ 40% Duty Cycle
Agency Approval . . . . . .CSA Rating 60 Amps @ 60% Duty Cycle
Maximum Output . . . . . .120 Amps Peak
Output Power Settings . . . . . .Four Position (Rotary Switch)
Wire Speed Adjustment . . . . . .Infinite Speed Controlled by Potentiometer
Overload Indicator . . . . . .Illuminated Pilot Light
Power Switch . . . . . .Illuminated ON/OFF Switch UL/CSA Listed
Power Cord . . . . . .6 foot 15 Amp NEMA 5-15 Power Plug
MIG Gun . . . . . .10 foot FIREPOWER® with ON/OFF Contactor Control-Gas Valve in Handle
Ground Cable and Clamp . . . . . .6 foot Ground Cable 200 Amp Ground Clamp
MIG Gun Connection . . . . . .Fixed Connection
Spool Capacity . . . . . .2 lb and 10 lb
Accessories . . . . . .Contact Tip
MIG Nozzle
1 lb. .030 MIG Wire
FIREPOWER® Argon Regulator
FIREPOWER® MIG Gun
Instruction Manual

SPECIFICATIONS FOR FP 160 WIRE(GMAW/FCAW) WELDING SYSTEM (1444-0308)

Type . . . . . .155 AMP MIG Welding System
Input Voltage . . . . . .230 Volt (60 Hz)
Rated Output . . . . . .130 Amps @ 20% Duty Cycle
Agency Approval . . . . . .CSA Rating 120 Amps @ 25% Duty Cycle
Maximum Output . . . . . .155 Amps Peak
Output Power Settings . . . . . .FOUR Position (Rotary Switch)
Wire Speed Adjustment . . . . . .Infinite Speed Controlled by Potentiometer
Overload Indicator . . . . . .Illuminated Pilot Light
Power Switch . . . . . .Illuminated ON/OFF Switch UL/CSA Listed
Power Cord without plug . . . . . .6 foot
MIG Gun . . . . . .10 foot FIREPOWER® with ON/OFF Contactor Control-Gas Valve in Handle
Ground Cable and Clamp . . . . . .6 foot Ground Cable 200 Amp Ground Clamp
MIG Gun Connection . . . . . .Fixed Connection
Spool Capacity . . . . . .2 lb and 10 lb
Accessories . . . . . .Contact Tip
MIG Nozzle
1 lb. .030 MIG Wire
FIREPOWER® Argon Regulator
FIREPOWER® MIG Gun
Instruction Manual

MIG-GUN SPECIFICATIONS

Process . . . . . .(GMAW/FCAW) Welding
Type of Cooling . . . . . .Air or Cooling Gas

Duty Cycle

MIG-GUN MODEL NO.	10% DUTY CYCLE	35% DUTY CYCLE	60% DUTY CYCLE	100% DUTY CYCLE
150	230 amps	205 amps	180 amps	140 amps
200	320 amps	290 amps	250 amps	195 amps
300	500 amps	450 amps	400 amps	275 amps

WELDER INSTALLATION

POWER SOURCE CONNECTION

Power Requirements

This welder is designed to operate on a properly grounded 120 volt, 60 HZ, single-phase alternating current (AC) power source fused with a 20 amp time-delayed fuse or circuit breaker. (FP 160 requires 230 Volt, 60 HZ, single phase AC. Please consult local codes for proper plug and receptacle applications.) A qualified electrician should verify the **ACTUAL VOLTAGE** at the receptacle into which the welder will be plugged and confirm that the receptacle is properly grounded. The use of the proper circuit size can eliminate the nuisance of circuit breaker tripping when welding.

DO NOT OPERATE THE FP-120 OR FP-130 WELDER if the ACTUAL power source voltage is less than 110 Volts AC or greater than 132 Volts AC. Contact a qualified electrician if this problem exists. Improper performance and/or damage to the welder will result if operated on inadequate or excessive power.

DO NOT OPERATE THE FP-160 WELDER if the ACTUAL power source voltage is less than 208 Volts AC or greater than 245 Volts AC. Contact a qualified electrician if this problem exists. Improper performance and/or damage to the welder will result if operated on inadequate or excessive power.

Connection to Power Source

> ⚠WARNING **High voltage danger from power source!** Consult a qualified electrician for proper installation of receptacle at the power source.

This welder must be grounded while in use to protect the operator from electrical shock. If you are not sure if your outlet is properly grounded, have it checked by a qualified electrician. **DO NOT** cut off the grounding prong or alter the plug in any way. **DO NOT** use any adapters between the welder's power cord and the power source receptacle.

> ⚠CAUTION Make sure the POWER switch is OFF. Connect the welder's power cord to a properly grounded 120 VAC, 60 Hz, single-phase, 20 amp power source. **DO NOT** operate this welder if the source voltage is less than 110 Volts AC or greater than 132 Volts AC. Contact a qualified electrician if this problem exists. Improper performance and/or damage to the welder will result if operated on inadequate or excessive power.

Extension Cords

For optimum welder performance, an extension cord should not be used unless absolutely necessary. If necessary, care must be taken in selecting an extension cord appropriate for use with your specific welder.

Select a properly grounded extension cord that will mate directly with the ac power source receptacle and the welder power cord without the use of adapters. Make certain that the extension cord is properly wired and in good electrical condition (minimum gauge size 10/3 AWG).

MACHINE ASSEMBLY

1. Unpack the welder.
2. Lay the power source on one side and fix the four rubber feet (front and back) to the base of the machine using the four screws supplied in the kit. Bring the power source back to the upright position.

3. Assemble the plastic handle as shown in Figure 1.
4. Tools required: Allen Wrench.

⚠CAUTION Be sure that the welder's electrical power supply cord is not connected while performing this procedure.

5. Install MIG gun per instructions.
6. Install welding wire per instructions.
7. Place the power source in a well ventilated area. **DO NOT** obstruct the air intake and output vents. A reduced air flow can cause a reduced duty cycle and damage internal components.
8. Insure at least 6 feet of open space on the side of the welder.

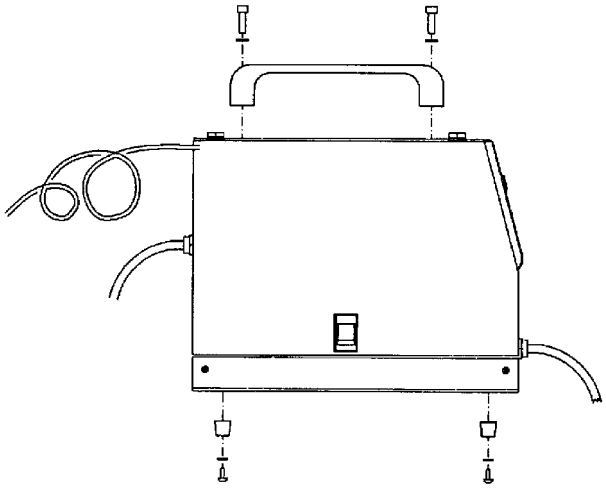


Figure 1: Feet and Handle Installation

⚠CAUTION Avoid contacts with wires or parts. **DO NOT** work with the side panels partially opened or removed completely from the power source.

MIG GUN INSTALLATION

This unit uses a Firepower MIG Gun furnished with rear connections that fit directly into the wire drive assembly. These guns are referred to as "Direct Connect" MIG Guns and are easy to install. Firepower "Direct Connect" MIG Guns are designed specifically for use with the Firepower Welding Systems.

1. Remove the gun liner cover from the wire feeder by removing the two Phillips-head screws.

⚠CAUTION **DO NOT** remove the screws at the front of the wire feeder.

2. Remove the nut and the washer from the MIG Gun Connector. Insert the connector, gas hose and wire control connector through the opening on the front of the welder. Insert the threaded brass section up through the brass bushing located in the front of the wire drive assembly.
3. The wire liner must be cut to the proper length. Carefully mark the wire liner. Make sure that it is either flush or extends slightly past the end of the gun liner cover (the end closest to the drive rollers).

⚠CAUTION **DO NOT** cut the liner too short!

4. Remove the MIG Gun Connector. Cut the MIG gun liner with a sharp pair of wire cutters. Make sure the cut is straight, as close to the drive roller as possible without touching and there are no rough edges left on the wire liner.

⚠CAUTION Be careful. **DO NOT** smash the liner.

5. Re-install the MIG Gun Connector. Attach the machine power connection cable, the washer and the nut. Tighten the nut snugly. **DO NOT** overtighten. Plug in the wire control connector and the gas hose to the appropriate fixed connection on the machine.

⚠CAUTION **NEVER** look at an electric arc without eye protection. The arc rays can injure the eyes permanently. **ALWAYS** use a protective shield any other protection mask or welding helmet.

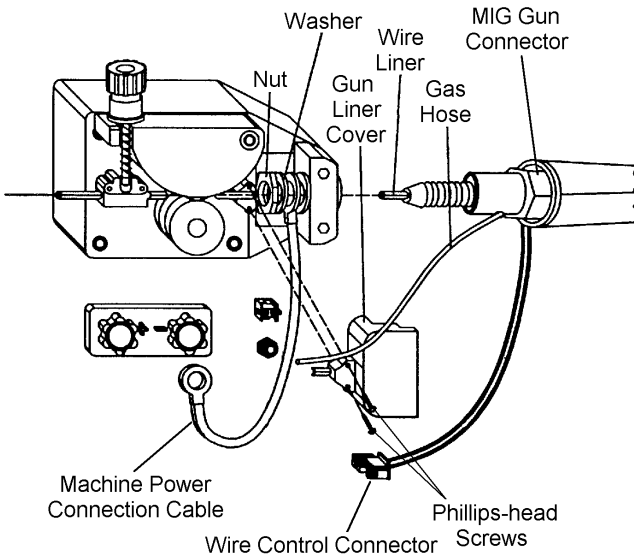


Figure 2: MIG Gun Installation

INSTALLATION OF THE WELDING WIRE

The power source is supplied with a spool of .030 MIG Welding Wire. Install the wire into the feeding system by following the instructions below and referring to Figure 3. MIG (GMAW) welding applications require argon shielding gas.

⚠WARNING Remove the contact tip and gun nozzle from the MIG gun before starting this procedure.

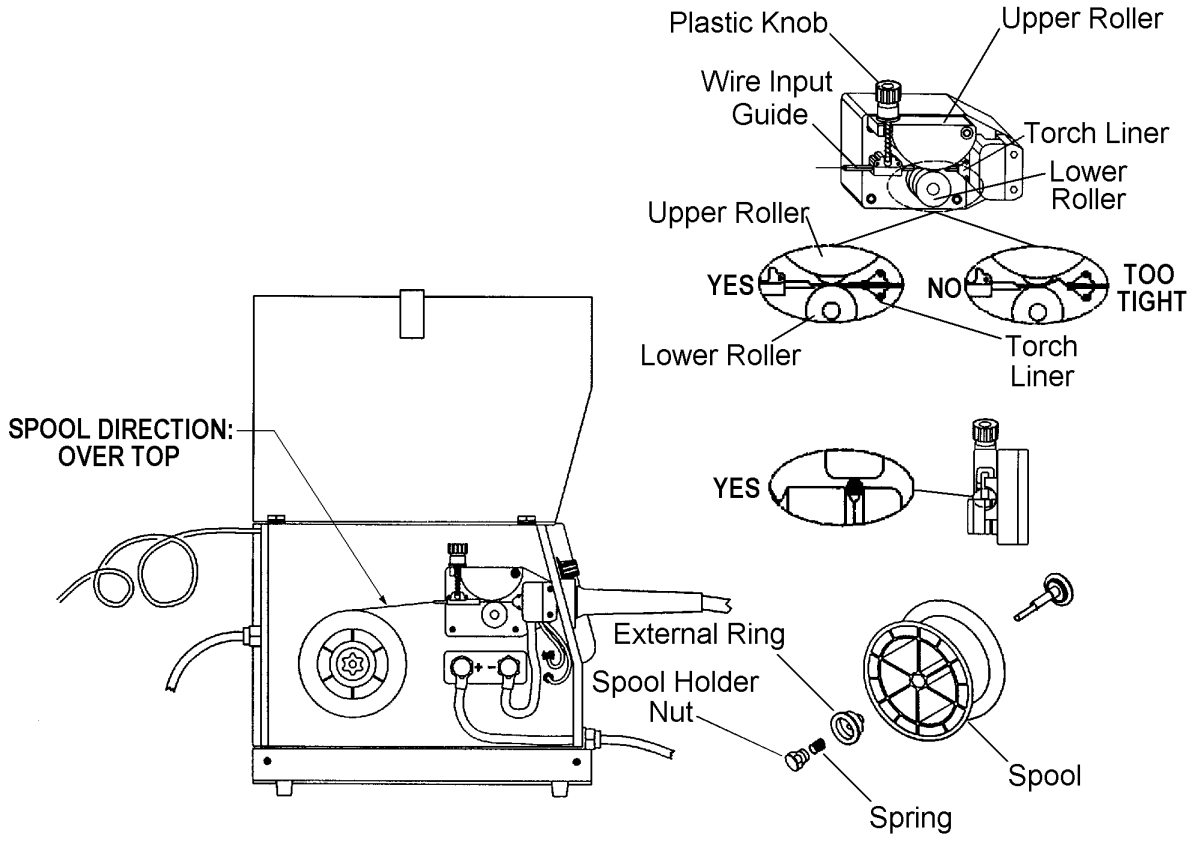


Figure 3: Wire Installation

1. Loosen the nut of the spool holder (brake drum). Remove the spring and the external ring.
2. Remove the plastic protection from the spool. Place it on the spool holder again. Mount the external ring, the spring and the plastic lock nut again. These parts form the braking system for the wire spool. Tighten nut to appropriate tightness. Excessive pressure strains the wire feeding motor. Too little pressure does not allow the immediate stop of the wire spool at the end of the welding.
3. Loosen and lower the plastic knob. Release the upper roll of the feeder. Extract any wire remaining in the torch liner from an earlier roll of wire.
4. When the wire is disconnected, grasp it with pliers so that it cannot exit from the spool. If necessary, straighten it before inserting it in the wire input guide. Insert the wire on the lower roll and in the torch liner.

   ⚠CAUTION Keep the torch straight. When feeding a new wire through the liner, make sure the wire is cut cleanly (no burrs or angles) and that at least 2” from the end is straight (no curves). Failure to follow these instructions could cause damage to the liner.
5. Lower the upper roll and the knob. Tighten slightly. If tightened too much, the wire gets locked and could cause motor damage. If not tightened enough, the rolls will not feed the wire.

NOTICE When changing the wire diameter being used, or replacing the wire feed roll, be sure that the correct groove for the wire diameter selected is inside, closest to the machine. The wire is driven by the inside groove. Feed rolls are marked on the side identifying the nearest groove. Feed rolls installed on the FP 120, FP 130, FP 160 are marked "0.6" on one side. When this side is inside, closest to the machine, the groove is suitable for use with 0.023" (0.6mm) hard wire. The other side is marked "0.8". When this side is inside, closest to the machine, the groove is suitable for use with 0.030" (0.8mm) hard wire and 0.035" (0.9mm) flux core wire.

6. Connect the power supply cable to the power output line. Turn on the switch. Press the torch switch. The wire fed by the wire feeding motor at variable speed must slide through the liner. When it exits from the torch neck, release the torch switch. Turn off the machine. Mount the contact tip and the nozzle.

⚠WARNING The rolls, when moving, may crush the fingers. Periodically, check the rolls. Replace them when they are worn and compromise the regular feeding of the wire.

GAS CYLINDER AND REGULATOR CONNECTION

1. Assemble the pressure regulator to the cylinder. Tighten the regulator nut, but **DO NOT** overtighten. Overtightening can damage the cylinder valve.
2. Connect the gas hose to the regulator using a safety ring.
3. Open the cylinder valve. Push the torch trigger to ensure that the gas is flowing through the torch.

⚠WARNING Cylinders are highly pressurized. Handle with care. Serious accidents can result from improper handling or misuse of compressed gas cylinders. **DO NOT** drop the cylinder, knock it over, expose it to excessive heat, flames or sparks. **DO NOT** strike it against other cylinders. Contact your gas supplier for more information about the use and handling of cylinders.

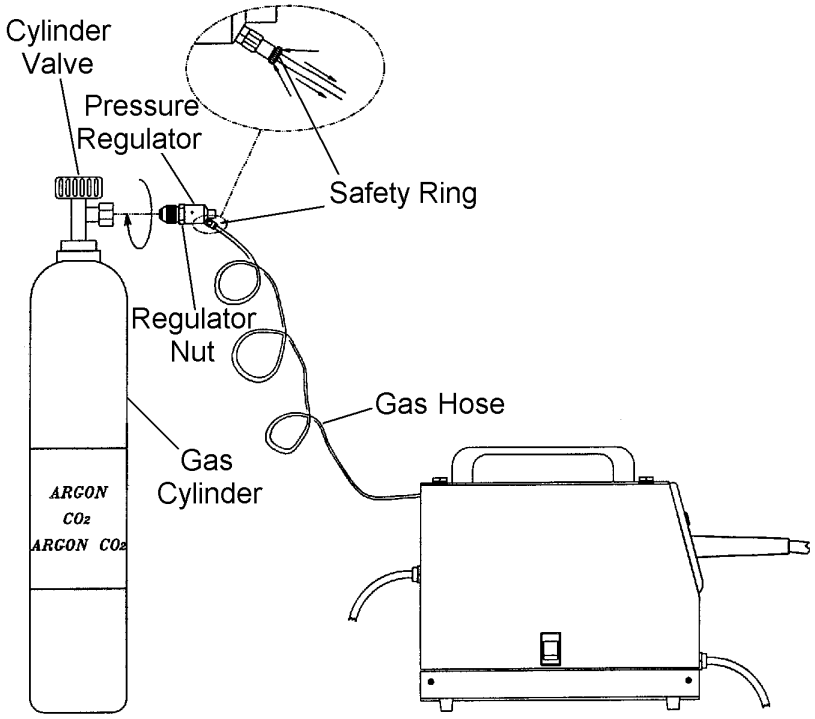


Figure 4: Gas Cylinder and Regulator Connection

⚠WARNING **DO NOT** use the cylinder if you find oil, grease or damaged parts. Inform your gas supplier of this condition immediately.

MIG GUN

We recommend to periodically check the contact tips and the nozzle. These parts must be clean and not worn. Replace the torch liner when the wire does not run smoothly.

MIG WELDING

In MIG (GMAW) welding, a continuously fed metal electrode is melted into a welding pool at constant and controlled speed. The torch is connected to the positive pole while the ground cable is connected to the nega-

tive pole. When the wire is fed and touches the workpiece, an electric arc is produced. The arc melts the wire that is deposited on the workpiece.

MIG welding uses a steel coppered wire as an electrode and an inert gas (CO_2, CO_2/Argon mix or pure Argon) for protection of the weld pool.

The wire can be one of three types:

1. Solid wire - **ALWAYS** used with a protective gas.
2. Cored wire - Has a core of mineral powders to enhance its characteristics and is used with gas.
3. Gasless cored-wire - Has a core of mineral powders that, when burning, release the protective gas for the arc. **ALWAYS** used without gas.

The welding unit consists of a DC power source, a wire-feeder, a torch, a ground clamp and a pressure regulator. Each power source has a 4-position switch used to regulate the welding current, a potentiometer regulating the wire speed, a potentiometer with a switch and a timer to set the spot welding time (for those models where this feature is provided). Welding current and wire speed are set considering the thickness of the material to be welded. The thicker the material, the higher welding current and the higher the wire speed. The wire speed can be fine tuned during welding for better results.

IMPORTANT **ONLY** experienced personnel should use the power sources.

GASLESS WELDING

In gasless welding the torch is connected to the negative pole and the ground cable to the positive pole. In gas welding, the shielding gas is used to protect the weld pool from oxidation and porosity. In gasless welding, this protection is given by a special wire called “flux cored wire.” This technique simplifies the use of these machines.

ADVANTAGES OF GASLESS WELDING

1. There is no need for gas cylinders.
2. Welding outdoors is easier because there are fewer chances that wind blows away the shielding gas.
3. Welding time is about 50% less compared to the normal stick electrode welding.
4. The learning time for the operator is very short.
5. Minimum waste of welding material.
6. Most important, this process is faster and more efficient.
7. Less heat, less distortion.
8. Possible to weld thin materials.

PREPARATION FOR WELDING

⚠WARNING Cylinders are highly pressurized. Handle with care. Serious accidents can result from improper handling or misuse of compressed gas cylinders. **DO NOT** drop the cylinder, knock it over, expose it to excessive heat, flames or sparks. **DO NOT** strike it against other cylinders. Contact your gas supplier for more information about the use and handling of cylinders.

⚠WARNING **DO NOT** use the cylinder if you find oil, grease or damaged parts. Inform your gas supplier of this condition immediately.

1. Connect the FP-160 welding machine to a 230V, 60 Hz line. Connect the FP-120 or FP-130 to a 120V, 20 AMP, 60 Hz line.

2. **IMPORTANT** Make sure that the polarity of torch and ground cable is correctly set. For gasless welding, the ground cable must be connected to the positive terminal (+), while the torch must be connected to the negative terminal (-) (see Figure 4).
3. Connect the ground cable to the workpiece. Make sure that the contact is good.
4. Make sure that the wire-feeding roll is correctly positioned (groove matching the wire diameter). Note that each roll has two grooves. One is marked ".023"/0.6 mm" and the other is marked ".030"/0.8 mm."
5. This unit comes with a preset regulator so there is no need to adjust the gas flow.

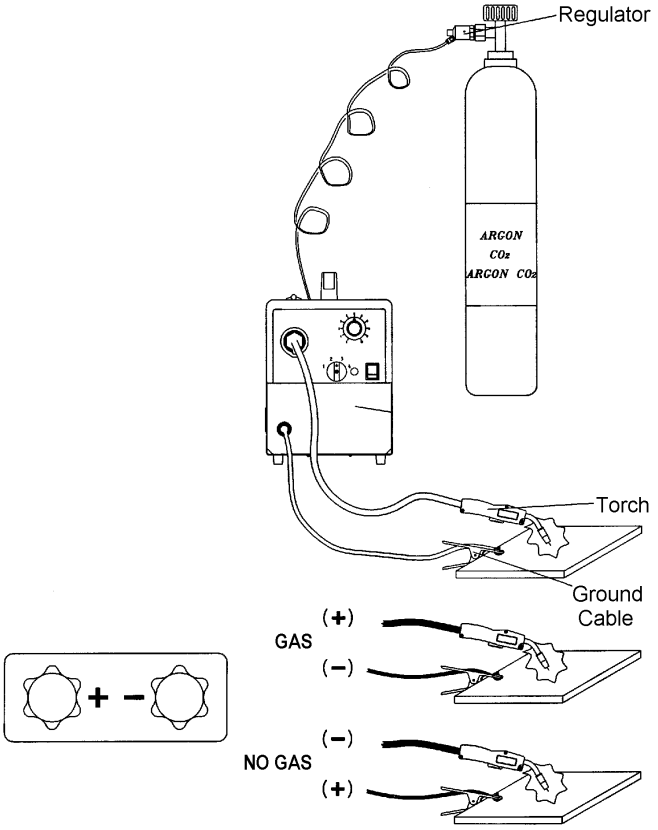


Figure 5: Polarity Preparation

WELDING PROCEDURES

1. Your welding power source has four positions for the regulation of the current in the various conditions. The choice of the position for the welding is determined by the thickness of the material to weld.
2. Refer to Table 1 for the adjustment of the power source.

PROCESS	WELDING WIRE	SHIELDING GAS	STEEL THICKNESS									
			24 ga .024 in.	22 ga .030 in.	20 ga .036 in.	18 ga .048 in.	16 ga .060 in.	14 ga .075 in.	12 ga .105 in.	10 ga .135 in.	3/16 in.	1/4 in.
GASLESS FLUX-CORE DC(–)	.035 in. (0.9 mm) DIA. 1440-0235 2 lb 1440-0236 10 lb	NONE			2-2	2-2	2-2	3-2	4-2	4-2	4-6	4-7
MIG DC (+)	.023 in. (0.6 mm) DIA. SOLID STEEL WIRE 1440-0210 2 lb 1440-0211 10 lb	POWER CO_2	2	2	3	3	3	4				
		WIRE SPEED	3	3	2	2	4	5				
		C20 Or C25 (75 - 80% Argon 25-20% CO_2)	1-2	1-3	1-3	2-4	3-5	4-7				
	.030 in. (0.8 mm) DIA. SOLID STEEL WIRE 1440-0215 2 lb 1440-0216 10 lb	CO_2			2-2	3-3	4-3	4-4				
		C20 or C25 (75 - 80% Argon 25-20% CO_2)			2-3	2-3	3-3	4-5				

Table 1:Approximate Settings for Welding

REPLACEMENT OF THE WIRE SPOOL

The welding power source is supplied with a mini wire spool of about 0.5 Kg of 0.024" (0.6mm) diameter wire. When the wire spool is finished it can be replaced with a wire spool of 2 lbs. or 10 lbs.

The wire is pushed by a roll which is moved by a series of mechanisms. The roll has two grooves, one marked by 0.035" (0.9 mm) and the other marked by 0.023" (0.6 mm). It is very important to use the correct groove as explained in "Preparation for Welding" on page 12. Otherwise, the wire will not feed regularly or it will be crushed. Make sure that the torch tip matches with the wire diameter. Your welding power source is supplied with a torch, complete with tip, for the wire included with the power source. For all the other wire spools mount a tip that matches with the wire diameter.

Refer to Figure 3 on page 10. Follow the procedure described in "Installation of the Welding Wire" on page 10 for the replacement of the wire spool.

WELDING TIPS

1. Keep the torch handle with a 45º angle with respect to the workpiece. Maintain the nozzle about 1/4" (0.6 mm) from the surface.
2. Move the torch handle with prudence and steadiness.
3. Avoid welding in areas with too much draft. Too much draft blows away the shielding gas from the weld pool and mainly causes porosity in the weld.
4. Keep the wire and its cover clean. **DO NOT** use rusted wire.
5. Avoid sharp bends and kinks on the MIG gun cable.
6. If possible, clean the wire liner with compressed air when replacing the wire spool.
7. Periodically, remove the dust using low pressure air or nitrogen (2-3 bar/30-45 PSI) from the inside of the power source, to assure adequate heat dissipation from power source during operation.

SPOT WELDING

Spot welding is possible by replacing the welding nozzle with a spot welding nozzle. You can buy the spot welding nozzle from any supplier of Firepower Welding Systems. Spot welding can be performed on carbon steel sheets of 18 gauge thickness.

Place the spot welding nozzle on the upper sheet. Push firmly on the torch, being sure that the top sheet is in contact with the bottom one. Press and hold the trigger. Welding will stop automatically after the pre-selected time. For spot welding, the machine must be set at maximum current and maximum wire speed. We recommend 0.030" welding wire.

ADJUSTMENT OF THE POWER SOURCE

Set the voltage. Use the correct "stick out." The wire "stick out" is the distance between the contact tip and the workpiece. The wire "stick out" (sometimes improperly called the arc length) should remain in the 0.197"-0.394" (5mm-10mm) range to obtain the best welding (and sound) performance.

1. Position the voltage switch in the desired position (see Table 1). Select lower position for lower thickness and higher settings for higher thickness.
2. Adjust the wire speed. Start using a trial metal sheet thoroughly cleaned of layers of rust or paint. Connect the ground cable to the workpiece. Adjust the wire speed at the high setting. Press the torch switch.

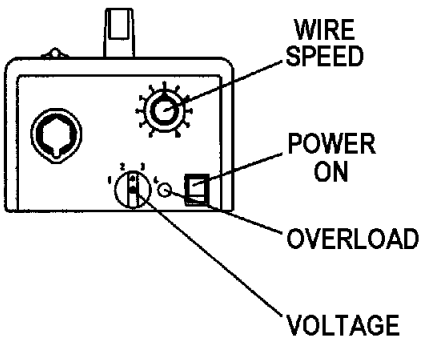


Figure 6: Power Source

NOTICE The torch switch must be pressed thoroughly to perform its three functions: gas flow, wire feed and welding current.) Start welding and decrease the wire speed gradually. Continue to decrease the wire speed and listen to the sound. The sound will change from a crackling noise to a regular and strong buzzing (similar to the sound of frying bacon). This buzzing sound indicates the correct wire speed for the workpiece being welded. When the current regulation is changed, reset the wire speed. **ALWAYS** start from a higher wire speed. This operation prevents damage to the contact tip during welding. During welding, keep the torch at a 45º angle from the workpiece. Keep the nozzle 1/4" to 1/2" from the workpiece.

ADDITIONAL SAFETY INFORMATION

Make sure you read and understand all of the information and instructions contained in this manual **BEFORE** proceeding.

The National Electrical Code, Occupational Safety and Health Act (OSHA) regulations, local industrial codes and local inspection requirements also provide a basis for equipment installation, use and service.

For additional information concerning welding safety, refer to the following standards and comply with them as applicable.

- ANSI Standard Z49.1 - SAFETY IN WELDING AND CUTTING - obtainable from the American Welding Society, 2051 N.W. 7th St. Miami, FL 33125 (305) 443-9353.
- ANSI Standard Z87.1 - SAFE PRACTICE FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION - obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018.
- NFPA Standard SIB - CUTTING AND WELDING PROCESSES - obtainable from the National Fire Protection Association, 470 Atlantic Avenue, Boston, MA 02210.
- CGA Pamphlet P-I - SAFE HANDLING OF COMPRESSED GASSES IN CYLINDERS - obtainable from the Compressed Gas Association, 5005th Avenue, New York, NY 10038.
- OSHA Standard 29 CFR, Part 1910, Subpart 0. - WELDING, CUTTING AND BRAZING - obtainable from your state OSHA office.
- CSA Standard W117.2 - CODE FOR SAFETY IN WELDING AND CUTTING - obtainable from Canadian Standards Association, 178 Rexdale Blvd., Rexdale, Ontario Canada M9W 1R3.
- American Welding Society Standard A6.0 - WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES - obtainable from the American Welding Society, 2051 N.W. 7th St., Miami, FL 33125 (305) 443-9353.

TROUBLESHOOTING INFORMATION

Use this chart to assist you in resolving common problems you may encounter. These are not all of the possible solutions.

Problem	Possible Cause	Remedy
1. Dirty, porous or brittle weld.	Plugged welding nozzle.	Clean or replace welding nozzle.
2. Arc works but is not feeding wire.	Faulty wire speed control assembly.	Replace wire speed control assembly.
	No tension on the drive roller.	Adjust the drive tension.
	Faulty drive motor (very rare).	Replace drive motor.
3. When trigger pulled, there is no wire feed, weld output or gas flow. Fan does not operate.	Incorrect voltage.	Check for correct voltage.
	No power.	Confirm power switch is on.
	Circuit breaker in off position.	Reset circuit breaker.
4. Wire feeding, but there is no arc.	Bad ground or loose connection.	Check ground and connections. Tighten as necessary.
	Bad connection to gun or faulty gun.	Check connection to gun or replace gun.
5. Fan operates normally, but when gun trigger pulled, there is no wire feed, weld output or gas flow.	Faulty trigger on gun.	Replace trigger.
	Faulty transformer (rare).	Replace transformer.
	Exceeded duty cycle: thermal protector has opened.	Allow welder to cool at least 10 minutes. Maintain appropriate duty cycle.
6. Non-penetrating weld or low output.	Loose connection inside machine.	Blow inside machine out with compressed air. Clean and tighten all connections.
	Too long or improper extension cord.	See extension cord use in this manual.
	Wrong size wire.	Use correct size welding wire.
	Poor ground connection.	Reposition clamp. Check cable to clamp connection.
	Wrong size contact tip.	Use correct size contact tip.
	Loose Gun connection or faulty gun assembly.	Tighten gun or replace gun.
7. Wire is birdnesting at the drive roller.	Too much tension on drive roller.	Adjust the drive tension.
	Gun liner worn or damaged.	Replace gun liner.
	Contact tip is clogged or damaged.	Replace contact tip.
	Liner is stretched or is too long.	Trim liner to proper length.
8. Wire burns back to contact tip.	Gun liner is worn or damaged.	Replace gun liner.
	Wrong size contact tip.	Use correct size contact tip.
	Contact tip clogged or damaged.	Replace contact tip.
	Liner is stretched or is too long.	Trim liner to proper length.
9. Workpiece clamp and/or cable gets hot.	Bad connection from cable to clamp.	Tighten connection or replace cable.
10. Gun nozzle arcs to work surface.	Slag buildup inside nozzle or nozzle is shorted.	Clean or replace nozzle as needed.
11. Wire pushes torch back from the workpiece.	Excessive wire speed.	Decrease wire speed.
12. Wire sticks onto the contact tip.	Low wire feeding.	Increase wire speed.

GENERAL OPERATING TIPS

Contact tips and nozzles should be cleaned frequently. Spatter buildup may cause bridging between nozzle and tip.This could cause electrical shorting between the nozzle and work piece as well as poor or improper gas flow.

Regularly inspect the conductor tube, handle, cable hose, and other parts of the MIG gun for abrasion, cuts, or undue wear. Replace or repair any parts found deficient.

TROUBLESHOOTING GUIDE FOR FIREPOWER FP-200 MIG GUN

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Wire feed inconsistent or not smooth.	1. Loose contact tip or diffuser.	1. Tighten contact tip and diffuser plier-tight.
	2. Excessively worn contact tip.	2. Replace contact tip.
	3. Spatter buildup on end of contact tip.	3. Clean or replace contact tip.
	4. Sharp bends or kinks in conduit.	4. Straighten or replace conduit.
	5. Dirty or plugged wire liner.	5. Replace wire liner.
	6. Conduit pulled back from diffuser.	6. Reposition conduit and tighten front set screw.
	7. Machine improperly adjusted.	7. Reset machine as per machine and wire manufacturers' recommendations.
Mig-Gun is running hot.	1. Loose contact tip or diffuser.	1. Tighten contact tip and diffuser plier-tight.
	2. Loose power connections.	2. Inspect complete gun for loose connections and repair.
	3. Loose or undersize ground cable or ground clamp.	3. Tighten or replace as required.
	4. Operating gun above recommended amperage rating.	4. Re-adjust machine to correct setting for size of gun being used.
Porous weld.	1. Poor or improper gas flow.	1. Check gas flow out of gun nozzle. Check for leaks or restrictions in gas hoses and connections.
	2. Dirty or contaminated wire.	2. Change wire.
	3. Base metal contaminated.	3. Replace base metal.

FP-200 WIRE LINER REPLACEMENT

To remove the wire liner:

1. Lay the MIG gun out on a table or on the floor in a straight line. Make sure the gun is fully extended and all twists in the cable are removed.
2. Remove the nozzle, diffuser, contact tip and the left gun handle case.
3. Unscrew the wire liner stop from the rear connector plug.
4. Remove the wire liner with a twisting motion.

To install the wire liner:

1. Uncoil the conduit and lay it in a straight line. Insert the wire liner into the rear connector plug. Push the wire liner into the gun with short strokes. If the wire liner hangs up, twist the wire liner counterclockwise or gently whip the cable while applying pressure to the wire liner.
2. When the wire liner clears the cable into the handle - guide the wire liner along the valve body and into the conductor tube. Continue to install the wire liner until the wire liner extends at least 2" past the end of the conductor tube.
3. Install and tighten the wire liner stop, then trim the wire liner 1 3/16" /30mm from the end of the stop.
4. Reinstall the left handle case.
5. Trim the wire liner extending from the conductor tube 13/16"/20,6mm from the end of the conductor tube.
6. File the cut wire liner end to remove burrs that could interfere with wire feeding or catch on the diffuser.
7. Replace the diffuser and contact tip. Install and tighten the nozzle.
8. The MIG gun is now ready to be reinstalled on the feeder.

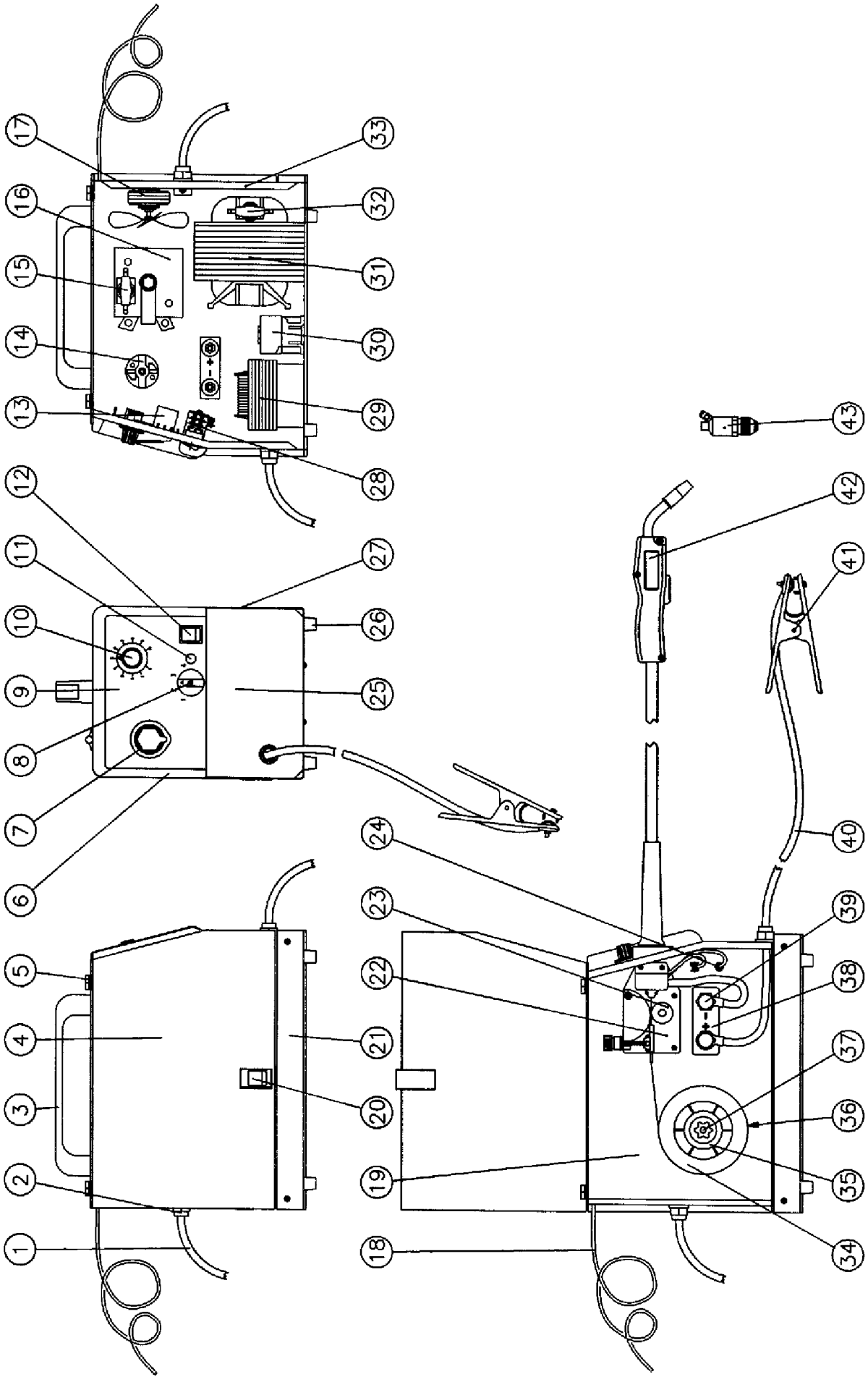


Figure 8: FP 120

FP 120 PARTS LIST

ITEM NO.	PART NO.	DESCRIPTION	QTY.
1	1444-0433	INPUT POWER CABLE	1
2	1444-0428	CABLE CLAMP	2
3	1444-0473	HANDLE	1
4	1444-0474	SIDE PANEL MIG 100 FP	1
5	1444-0435	PLASTIC HINGE FOR SIDE PANEL	2
6	1444-0476	FRONT PANEL FRAME	1
7	1444-0477	TORCH GROMMET	1
8	1444-0478	SWITCH KNOB	1
9	1444-0479	FRONT PANEL ADHESIVE PLATE	1
10	1444-0480	POTENTIOMETER KNOB	1
11	1444-0481	ORANGE PILOT LAMP 110V	1
12	1444-0482	GREEN PILOT LIGHT SWITCH	1
13	1444-0483	P.C. BOARD	1
14	1444-0484	WIRE FEEDING MOTOR 24V	1
15	1444-0456	THERMOSTAT	1
16	1444-0432	RECTIFIER	1
17	1444-0486	COMPLETE FAN	1
18	1444-0487	GAS HOSE	1
19	1444-0488	DIVIDING PANEL	1
20	1444-0426	DOOR LATCH	1
21	1444-0490	LOWER PANEL	1
22	1444-0491	BLACK WIRE FEEDER	1
23	1444-0427	WIRE FEED ROLL	1
24	1444-0493	INTERMEDIATE COUPLER FOR GAS HOSE	1
25	1444-0494	FRONT PANEL	1
26	1444-0495	PLASTIC FOOT	4
27	1444-0496	UPPER PANEL	1
28	1444-0497	SWITCH	1
29	1444-0457	CHOKE	1
30	1444-0498	CONTACTOR	1

ITEM NO.	PART NO.	DESCRIPTION	QTY.
31	1444-0458	TRANSFORMER	1
32	1444-0470	THERMOSTAT	1
33	1444-0499	BACK PANEL	1
34	1444-0500	MILD STEEL WIRE REEL	1
35	1444-0430	SPOOL HOLDER RETAINING RING	1
36	1444-0429	FIXED SPOOL HOLDER D.16-50	1
37	1444-0431	SPOOL HOLDER KNOB W/NUT0	1
38	1444-0504	GAS/NO GAS CHANGE BOARD	1
39	1444-0505	PLASTIC KNOB	2
40	1444-0725	GROUND CABLE	1
41	1443-0025	GROUND CLAMP	1
42	1444-0405	FP-200 TORCH	1
43	0387-1232	GAS REGULATOR WITHOUT GAUGE (Note: Must replace. Repair parts not available)	1

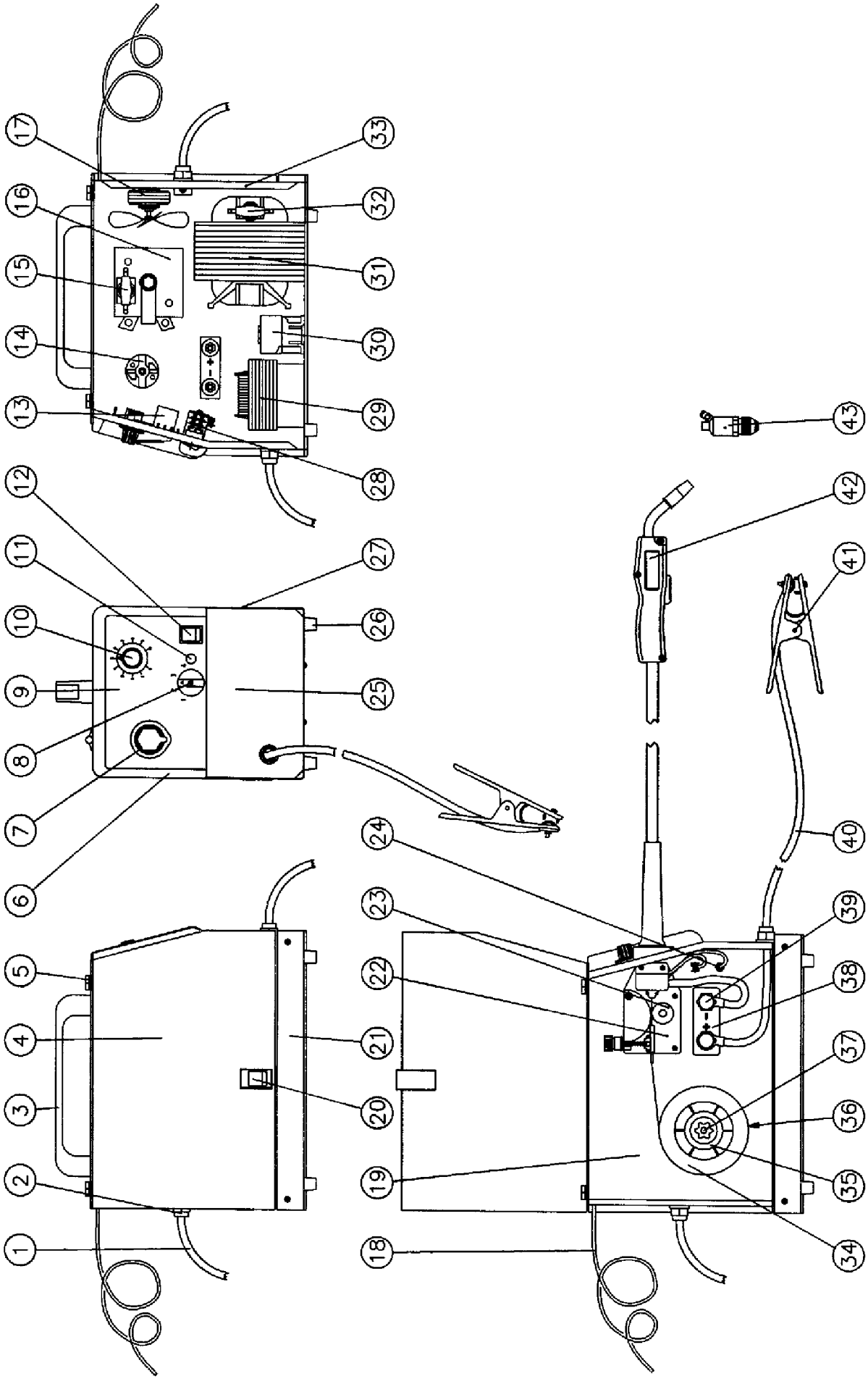


Figure 9: FP 130

FP 130 PARTS LIST

ITEM NO.		DESCRIPTION	QTY.
1	1444-0433	INPUT POWER CABLE	1
2	1444-0428	CABLE CLAMP FOR HOLE	2
3	1444-0473	HANDLE	1
4	1444-0474	SIDE PANEL	1
5	1444-0435	PLASTIC HINGE FOR SIDE PANEL	2
6	1444-0476	FRONT PANEL FRAME	1
7	1444-0477	TORCH GROMMET	1
8	1444-0478	SWITCH KNOB	1
9	1444-0479	FRONT PANEL ADHESIVE PLATE	1
10	1444-0480	POTENTIOMETER KNOB	1
11	1444-0481	ORANGE PILOT-LAMP 110V	1
12	1444-0482	GREEN PILOT-LIGHT SWITCH	1
13	1444-0483	P.C. BOARD	1
14	1444-0484	WIRE FEEDING MOTOR	1
15	1444-0443	THERMOSTAT	1
16	1444-0432	RECTIFIER	1
17	1444-0486	COMPLETE FAN	1
18	1444-0487	GAS HOSE	1
19	1444-0488	DIVIDING PANEL	1
20	1444-0426	DOOR LATCH	1
21	1444-0490	LOWER PANEL	1
22	1444-0491	BLACK WIRE FEEDER	1
23	1444-0427	WIRE FEED ROLL	1
24	1444-0493	INTERMEDIATE COUPLER FOR GAS HOSE	1
25	1444-0494	FRONT PANEL	1
26	1444-0495	PLASTIC FOOT	4
27	1444-0496	UPPER PANEL	1
28	1444-0497	SWITCH	1
29	1444-0461	CHOKE	1
30	1444-0498	CONTACTOR	1

ITEM NO.		DESCRIPTION	QTY.
31	1444-0462	TRANSFORMER	1
32	1444-0470	THERMOSTAT	1
33	1444-0499	BACK PANEL	1
34	1444-0500	MILD STEEL WIRE REEL	1
35	1444-0430	SPOOL HOLDER RETAINING RING	1
36	1444-0429	FIXED SPOOL HOLDER	1
37	1444-0431	SPOOL HOLDER KNOB W/NUT	1
38	1444-0504	GAS/NO GAS CHANGE BOARD	1
39	1444-0505	PLASTIC KNOB	2
40	1444-0725	GROUND CABLE	1
41	1443-0025	GROUND CLAMP	1
42	1444-0405	FP-200 TORCH	1
43	0387-1232	GAS REGULATOR W/OUT GAUGE	1
		(Note: Must replace. Repair parts not available)	

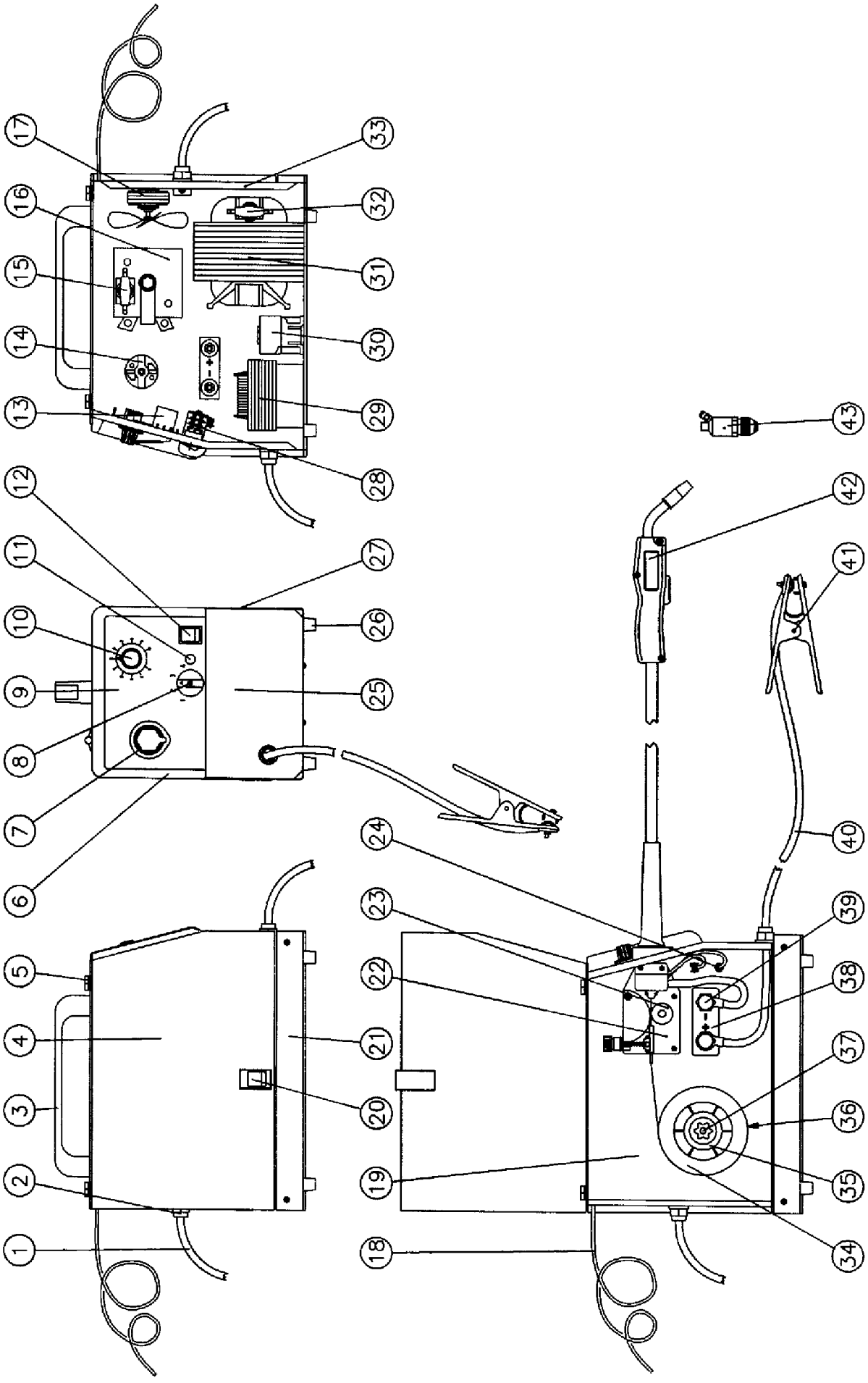


Figure 10: FP 160

FP 160 PARTS LIST

ITEM NO.		DESCRIPTION	QTY.
1	1444-0463	INPUT POWER CABLE	1
2	1444-0428	CABLE CLAMP	2
3	1444-0473	HANDLE	1
4	1444-0474	SIDE PANEL	1
5	1444-0435	PLASTIC HINGE FOR SIDE PANEL	2
6	1444-0478	FRONT PANEL FRAME	1
7	1444-0477	TORCH GROMMET	1
8	1444-0478	SWITCH KNOB	1
9	1444-0479	FRONT PANEL ADHESIVE PLATE	1
10	1444-0480	POTENTIOMETER KNOB	1
11	1444-0464	ORANGE PILOT-LAMP 220V	1
12	1444-0482	GREEN PILOT-LIGHT SWITCH	1
13	1444-0465	P.C. BOARD	1
14	1444-0484	WIRE FEEDING MOTOR	1
15	1444-0443	THERMOSTAT	1
16	1444-0466	RECTIFIER	1
17	1444-0467	FAN	1
18	1444-0487	GAS HOSE	1
19	1444-0488	DIVIDING PANEL	1
20	1444-0426	DOOR LATCH	1
21	1444-0490	LOWER PANEL	1
22	1444-0491	WIRE FEEDER	1
23	1444-0427	WIRE FEED ROLL	1
24	1444-0493	INTERMEDIATE COUPLER FOR GAS HOSE	1
25	1444-0494	FRONT PANEL	1
26	1444-0495	PLASTIC FOOT	4
27	1444-0496	UPPER PANEL	1
28	1444-0497	SWITCH	1
29	1444-0468	CHOKE	1
30	1444-0498	CONTACTOR	1

ITEM NO.		DESCRIPTION	QTY.
31	1444-0469	TRANSFORMER	1
32	1444-0470	THERMOSTAT	1
33	1444-0499	BACK PANEL	1
34	1444-0500	MILD STEEL WIRE REEL	1
35	1444-0430	SPOOL HOLDER RETAINING RING	1
36	1444-0429	FIXED SPOOL HOLDER	1
37	1444-0431	SPOOL HOLDER KNOB W/NUT	1
38	1444-0504	GAS/NO GAS CHANGE BOARD	1
39	1444-0505	PLASTIC KNOB	2
40	144-0725	GROUND CABLE	1
41	1443-0025	GROUND CLAMP	1
42	1444-0405	FP-200 TORCH	1
43	0387-1232	GAS REGULATOR WITHOUT GAUGE (Note: Must replace. Repair parts not available)	1

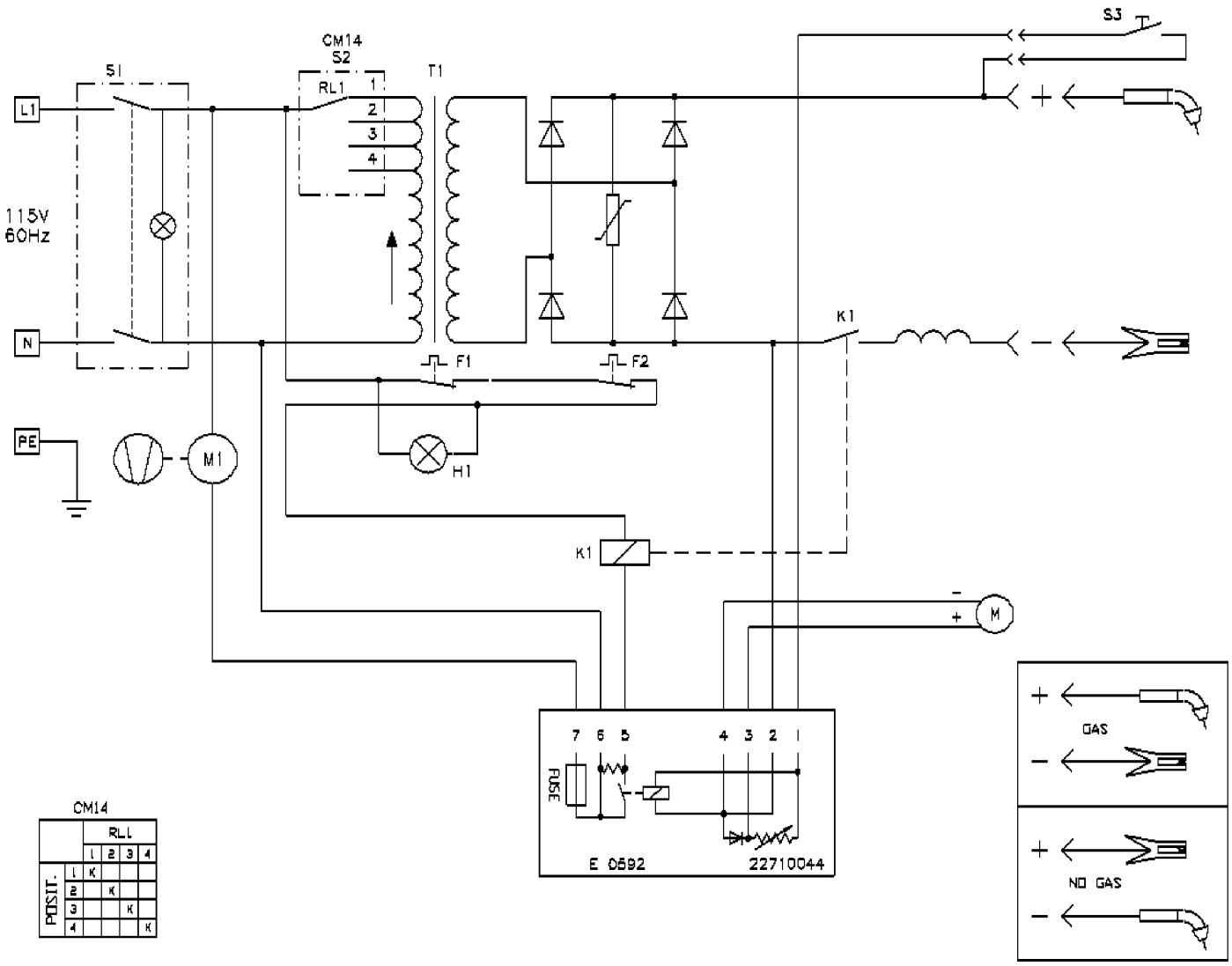


Figure 11: FP 120 Wiring Diagram

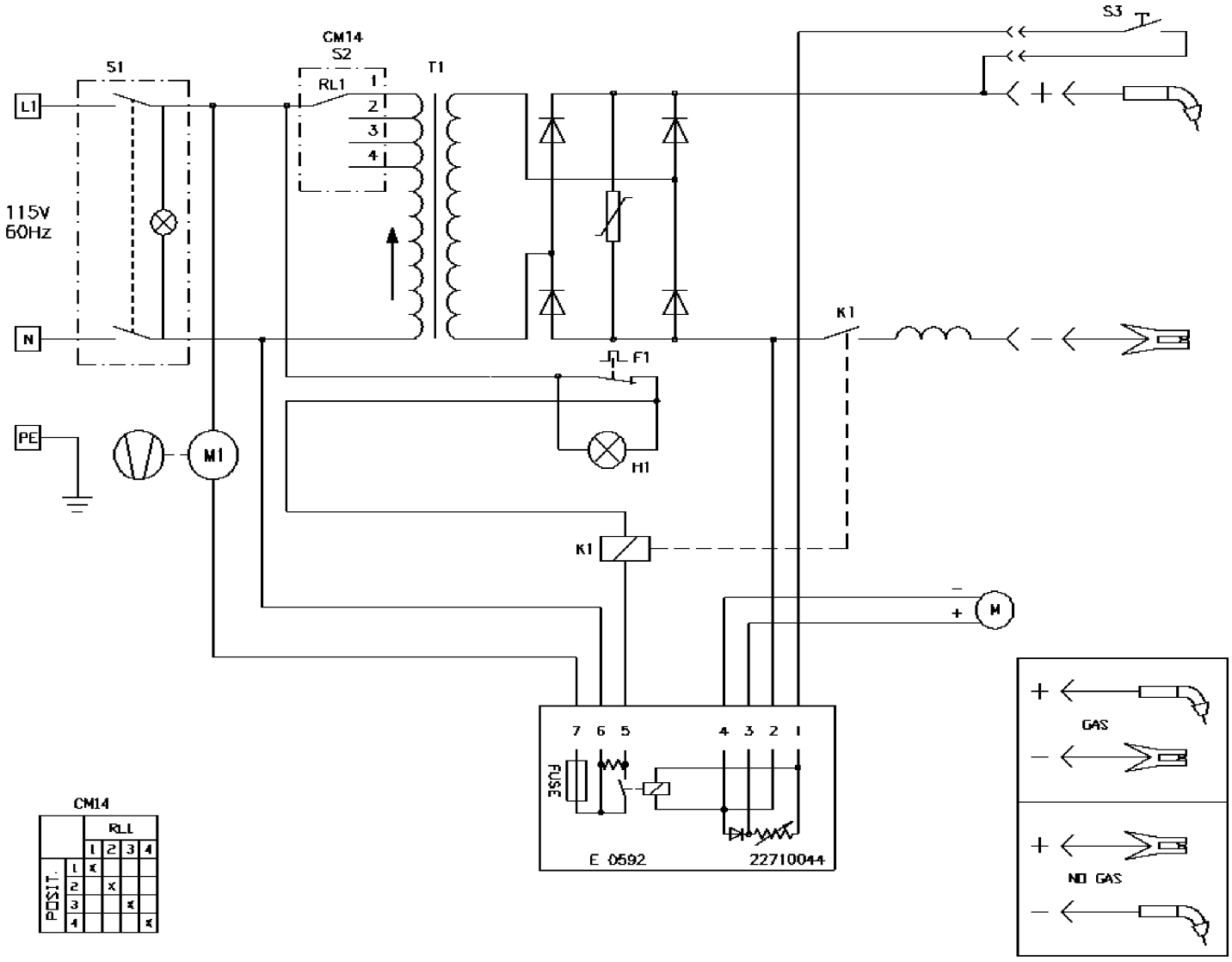


Figure 12: FP 130 Wiring Diagram

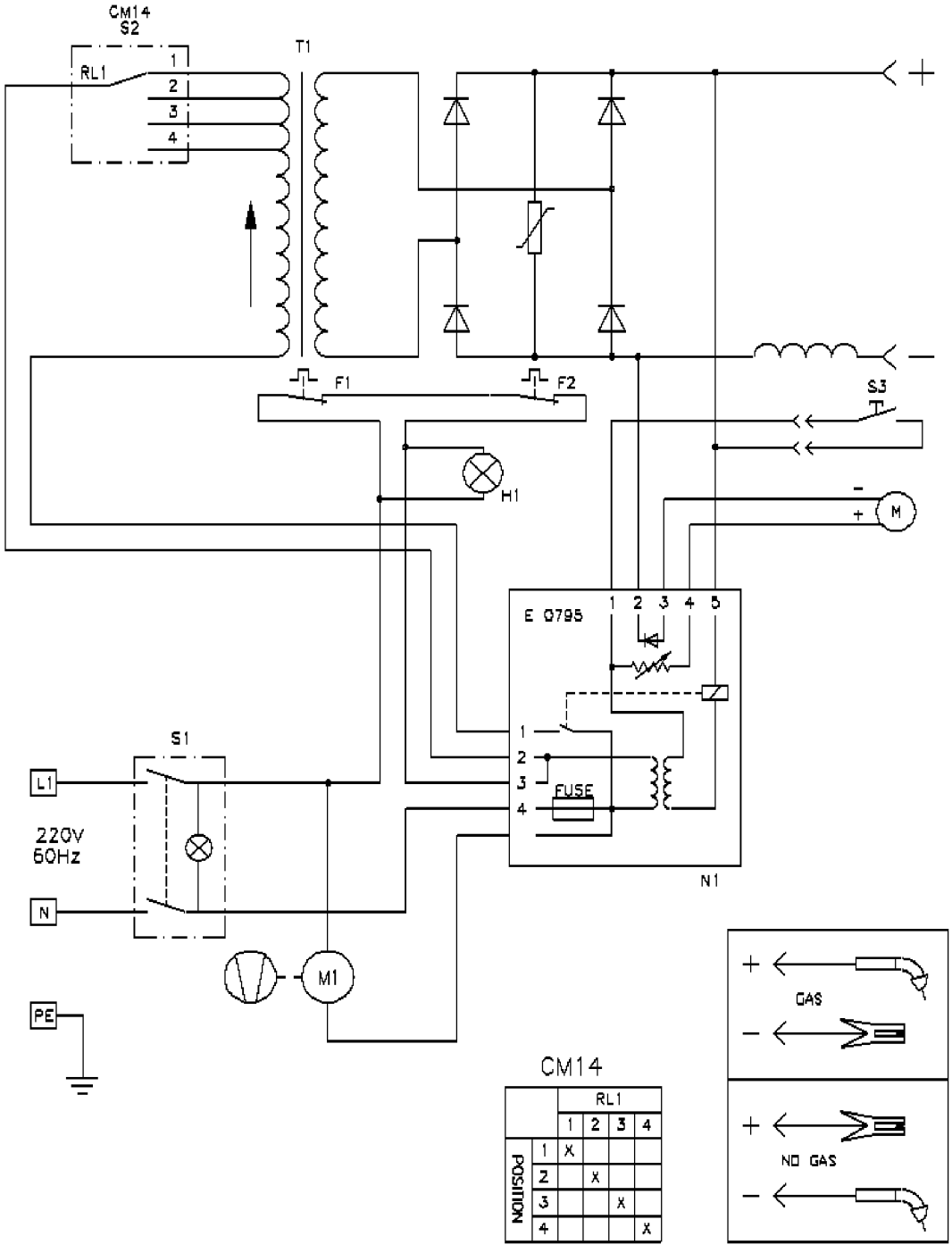


Figure 13: FP 160 Wiring Diagram

FIREPOWER LIMITED WARRANTY

SCOPE OF LIMITED WARRANTY: Firepower, a division of Thermadyne Industries, Inc. (hereinafter, "Seller") warrants that its products are free of defects in workmanship or material. If an authorized distributor or the customer of an authorized distributor (hereinafter, collectively, "Purchaser") who purchases Seller's product, notifies Seller within the time set forth below that the product has a defect in workmanship or material even though it has been stored, installed, operated, and maintained in accordance with Seller's specifications, instructions, recommendations and in accordance with recognized standard industry practice, and the product was not misused, repaired, neglected, altered, or damaged, the Seller may repair or replace, in its sole discretion, those parts of the product determined by Seller to be defective in workmanship or material if said defect is not attributable to Purchaser's acts or omissions.

THIS WARRANTY EXCLUDES ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR OTHER WARRANTY OF QUALITY, WHETHER EXPRESSED, IMPLIED OR STATUTORY.

LIMITED WARRANTY PERIOD: Except as otherwise limited below, this limited warranty is effective for twelve months from the date Seller sells the product to an authorized distributor, or for twelve months after an authorized distributor sells the product to its customer, whichever is longer, except that in no event will this warranty exceed eighteen months from the date the product is sold from Seller to an authorized distributor.

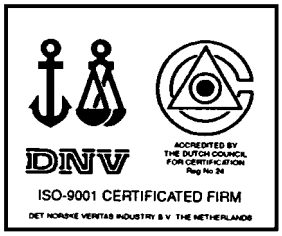
Notwithstanding the foregoing,

- Firepower oxygen / acetylene products will be covered by a two-year product replacement warranty
- Firepower plasma cutting equipment will be covered by a one-year (parts & labor) warranty.
- Firepower electric welding machines will be covered by the Firepower 5-2-1 limited warranty.
  - 5 years on the transformer
  - 2 years on the welding unit
  - 1 year on the MIG gun
- Firepower engine-driven welding machines will be covered by a one-year (parts & labor) warranty. Engines will be covered by the manufacturer's warranty.
- Firepower ADF (auto-darkening) welding helmets will be covered by a one-year warranty. Any ADF helmet claims must be made directly to Jackson / Morsafe products, Belmont, MI, 800-253-7281.
- Firepower welding electrodes, MIG (& flux cored) wire, and brazing rods, although manufactured to AWS Class specifications, are considered perishable items. As, such, these products are sold "as is" and "with faults" and without warranty, either express or implied, including the warranties of merchant ability and fitness for a particular purpose.
- Products used in rental applications are warranted for one year from the date sold by the Seller to an authorized distributor, without regard to when they were later sold by the authorized distributor.

LIMITED WARRANTY CLAIM METHOD: To make a claim under this warranty, Purchaser must notify Seller of the details of such claim within thirty days of discovering a defect in material or workmanship. If the claim is covered by this warranty, Seller will direct Purchaser to return the product to an authorized warranty repair center. The Seller will not be responsible for transportation costs or risks of any kind under this warranty. The Purchaser will be responsible for all such transportation costs and risks.

LIMITATION OF LIABILITY: Seller shall not, under any circumstances, be liable for special, indirect, incidental or consequential damages (regardless of the form of action, whether in contract or in tort including negligence), including, but not limited to, damage or loss of other property or equipment, loss of profits or revenue, cost of capital, cost of purchased or replacement goods, or claims of Purchaser for service interruption. In no event will this warranty obligate Seller for any amount exceeding the price of the goods upon which liability is based. Correction of non-conformities, in the manner and time provided herein, constitutes fulfillment of all Seller's obligations to Purchaser with respect to Purchaser's purchase of Seller's product.

This warranty is invalid if the product was sold by non-authorized entities. This warranty is invalid if replacement parts or accessories were used that in Seller's sole opinion impaired the safety or performance of seller's product. This warranty supersedes all previous warranties.



The quality system of the Denton and Abilene, Texas locations of Victor Equipment Company, Victor de Mexico in Hermosillo, Mexico and Victor de Brazil in Rio de Janeiro, Brazil are registered by Det Norske Veritas (DNV) to meet the requirements of ISO-9001, 1994.

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Firepower® WELDING SYSTEM
A THERMADYNE® Company

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800-426-1888	Canada	Canada	44-1257-261755	65-763-4022	52-539-3708
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