

CHICAGO **welding**
ELECTRIC **systems**

MIG WELDER 131

Model 06098

ASSEMBLY AND OPERATING INSTRUCTIONS



3491 Mission Oaks Blvd., Camarillo, CA 93011
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For technical questions and replacement parts, please call 1-800-444-3353

Specifications

ITEM	DESCRIPTION
Welding Current	25 ~ 85 amps
Duty Cycle	20% at 75 amps; 45% at 50 amps; 90% at 35 amps; 100% at 25 amps
Power Consumption	120 VAC, 21 amps at 60 Hz (Peak)
Open Circuit Voltage	19 to 30 volts
Heat Control	25 ~ 85 amps, variable
Ground Cable	6 feet, 4 AWG, single insulation, grounding clamp.
Torch Power Cable	6 feet, 8 AWG, single insulation
Power Cord	6 feet, 3-core, 14 AWG, UL® Listed; 3-prong plug
Thermal Overload Protection with Light	Automatic shutdown and restart after cool down
Wire Size	0.023 to 0.035 inch steel and stainless steel 0.030 to 0.035 inch aluminum; 0.030 flux core
Welding Material Size	22 gauge to 5/32"
Wire Spool Size	4 inch spool diameter
Weight	55.1 lbs.
Accessories	1 - Hand held shaded face shield 1 - Brush Hammer 1 - Wheel Kit 1 - 2 lb. spool of flux wire

Save This Manual

You will need the manual for the safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number on the inside of the front cover. Keep the manual and invoice in a safe and dry place for future reference.

Safety Warnings and Precautions

WARNING: When using tool, basic safety precautions should always be followed to reduce the risk of personal injury and damage to equipment.

Read all instructions before using this tool!

1. **Keep work area clean.** Cluttered areas invite injuries.
2. **Observe work area conditions.** Do not use machines or power tools in damp or wet locations. Don't expose to rain. Keep work area well lighted. Do not use electrically powered tools in the presence of flammable gases or liquids.
3. **Keep children away.** Children must never be allowed in the work area. Do not let them handle machines, tools, or extension cords.

4. **Store idle equipment.** When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep out of reach of children.
5. **Do not force tool.** It will do the job better and more safely at the rate for which it was intended. Do not use inappropriate attachments in an attempt to exceed the tool capacity.
6. **Use the right tool for the job.** Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this tool was designed. Do not modify this tool and do not use this tool for a purpose for which it was not intended.
7. **Dress properly.** Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, electrically non-conductive clothes and non-skid footwear are recommended when working. Wear restrictive hair covering to contain long hair.
8. **Use eye and ear protection.** Always wear ANSI approved, arc shaded, impact safety full face shield when arc welding. Wear an ANSI approved dust mask or respirator when working around metal, chemical dusts, fumes and mists.
9. **Do not overreach.** Keep proper footing and balance at all times. Do not reach over or across running machines.
10. **Maintain tools with care.** Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and, if damaged, have them repaired by an authorized technician. The handles must be kept clean, dry, and free from oil and grease at all times.
11. **Disconnect power.** Unplug tool when not in use.
12. **Remove adjusting keys and wrenches.** Check that keys and adjusting wrenches are removed from the tool or machine work surface before plugging it in.
13. **Avoid unintentional starting.** Be sure the switch is in the Off position when not in use and before plugging in. Do not carry any tool with your finger on the trigger, whether it is plugged in or not.
14. **Stay alert.** Watch what you are doing, use common sense. Do not operate any tool when you are tired.
15. **Check for damaged parts.** Before using any tool, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if any switch does not turn On and Off properly.
16. **Guard against electric shock.** Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures.
17. **Replacement parts and accessories.** When servicing, use only identical replacement parts. Use of any other parts will void the warranty. Only use accessories intended for use with this tool. Approved accessories are available from Harbor Freight Tools.
18. **Do not operate tool if under the influence of alcohol or drugs.** Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs.

If there is any doubt, do not operate the tool.

19. **Maintenance.** For your safety, service and maintenance should be performed regularly by a qualified technician.
20. **Use proper size and type extension cord.** If an extension cord is required, it must be of the proper size and type to supply the correct current to the tool without heating up. Otherwise, the extension cord could melt and catch fire, or cause electrical damage to the tool. This tool requires use of an 120 VAC extension cord of **20 amps** minimum capability (up to 30 feet), with wire size rated at **10 AWG**. Longer extension cords require larger size wire. If you are using the tool outdoors, use an extension cord rated for outdoor use (signified by "WA" on the jacket).
21. **Pacemaker safety warning.** People with pacemakers should consult with their physician(s) before using this product; operation of equipment in close proximity to a heart pacemaker could cause interference or failure of the pacemaker.

Note: Performance of this tool may vary depending on variations in local line voltage. Extension cord usage may also affect tool performance.

Warning: The warnings, cautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be supplied by the operator.

Arc Welding Safety Warnings and Precautions

Warning: This product, when used for welding and similar applications, produces chemicals known to the State of California to cause cancer and birth defects (or other reproductive harm). California Health & Safety Code 25249.5, et seq.

1. **Avoid electrical shock.** Do not permit electrically live parts, cables, or electrodes to contact skin, clothing, or gloves. Protective clothing should be free of holes, dry, and ANSI approved.


This unit draws enough current to cause serious injury or death. Before turning the welder on, check the electrode holder to be sure that there are no protruding screw heads, and that all insulation is secure. Do not weld unless you are insulated from ground and the work piece.

2. **Avoid breathing fumes or gases.** They can cause serious health problems. Use an active ventilation system directly above the welding area. Keep your head out of the fumes.
3. **Avoid eye and body damage.** Arc rays and infrared radiation can injure eyes and burn skin. Wear ANSI approved eye and body protection. Do not allow viewing by visitors without proper eye and body protection. Use a Face Shield with arc shaded filter plate.
4. **Know proper arc welding practices.** Read and understand this instruction manual, as well as your employer's safety practices for arc welding.
5. **Connect only to a code approved power source.** Connect only to a grounding power source conforming to the National Electrical Code and Local Codes.

6. **Avoid fire and explosion.** Remove flammable and explosive material from at least 35 feet from the welding arc to prevent welding sparks or molten metal from starting a fire. Keep a type ABC fire extinguisher within easy reach. Thoroughly clean the object being welded of any paint, grease, or other foreign material.
7. **Avoid being burned.** Always wear ANSI approved welding gear: leather gloves, leather apron, and shoes.
8. **Wear proper clothing when welding.** Use flameproof, welding type gloves. Wear cuffless pants and pocketless shirt. Both must be free of oil and grease. Wear high-topped, safety to shoes with rubber soles.


Inhalation Hazard

Welding Produces TOXIC FUMES and GASSES.



Exposure to welding gasses can increase the risk of developing certain cancers, such as cancer of the larynx and lung cancer. Also, some diseases that may be linked to exposure to welding gasses or fumes are:

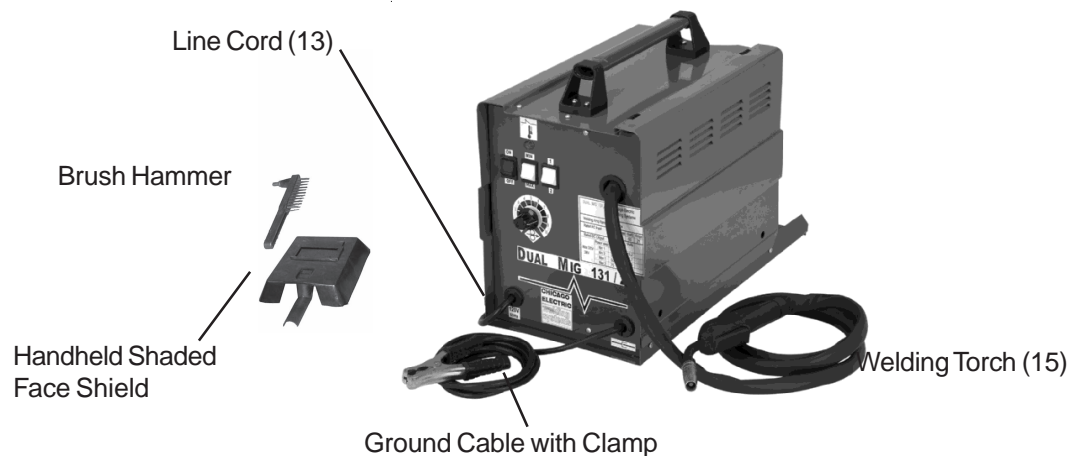
- Early onset of Parkinson's Disease
- Damage to the reproductive organs
- Inflammation of the small intestine or stomach
- Respiratory diseases such as emphysema, bronchitis or pneumonia
- Heart Disease
- Ulcers
- Kidney damage



Safety precautions, such as using natural or forced air ventilation and wearing an ANSI approved respirator, are **ESSENTIAL** to reduce the risk of developing the above illnesses.

Unpacking

When unpacking, check to make sure the following parts are included.

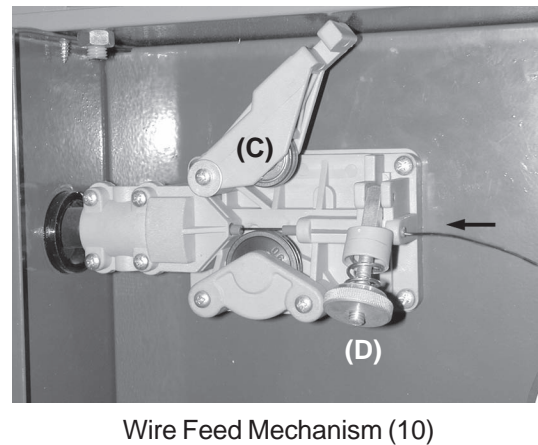
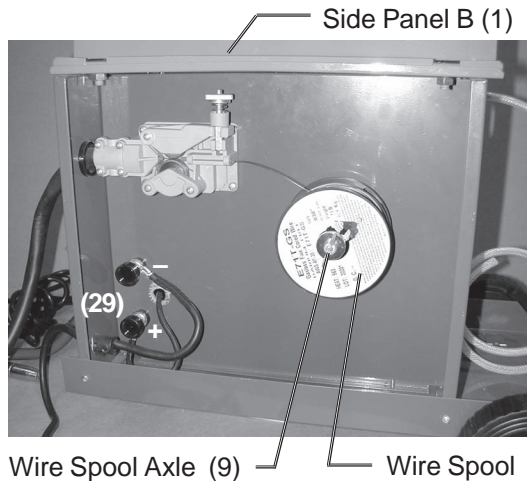


If any parts are missing or broken, please call Harbor Freight Tools at the number on the cover of this manual as soon as possible.

Assembly

MIG Welder Unit

1. Insert the Handle (4) into the Handle Sockets (3) and mount the Handle Sockets to the Side Panel B (1) top using supplied hardware.
2. Lift Side Panel B (1) all the way to expose the wire spool and Wire Feed Mechanism (10).



3. Remove the Nut from the Wire Spool Axle (9). Place the Wire Spool over the Axle with the wire exiting the spool over the top. Refer to photos above. Replace the Spool Axle Nut.
4. Open the Wire Feed Mechanism (10) as shown in the photo (top-right).
5. Feed and guide the spool wire into the Wire Feed Mechanism, past the feed wheels (C), and into the Welding Torch / Cable (15).

It will help if the Welding Torch / Cable (15) is straightened out as much as possible. Push in until the wire comes out the Welding Torch head. If it cannot be fed manually all the way out, it can be fed automatically when the welding unit is powered up.

6. Close the Feed Mechanism (10) over the wire, and adjust the feed tension (D) if necessary.
7. Check that +/- cables to connection Knobs (29) are correct. See photo (top-left).

When using non-flux wire and protective gas, connect wire cables as shown in photo. For 0.9 flux cored wire, no gas is required. Reverse cable connections.

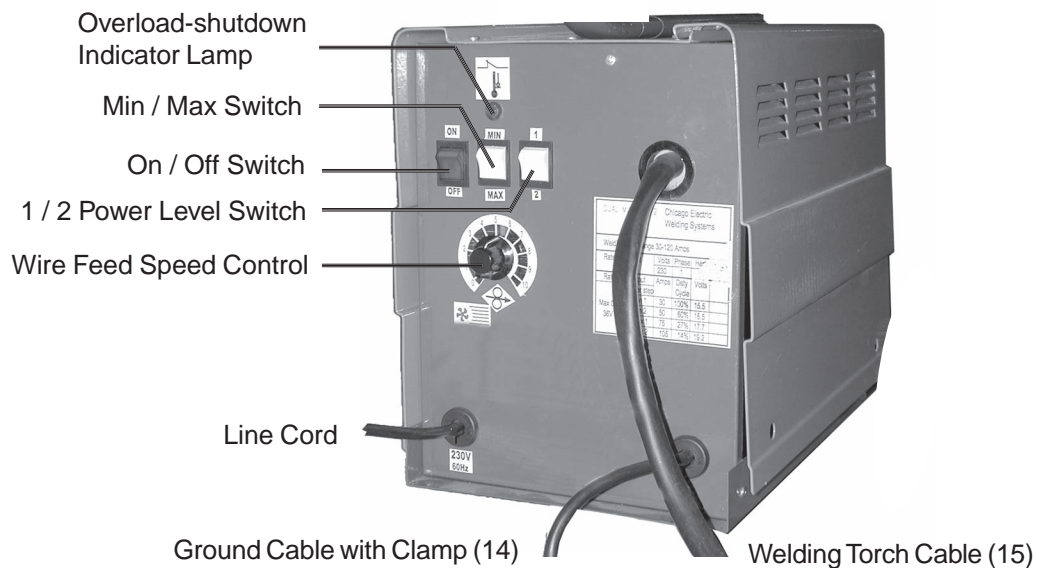
8. Close the Side Panel B (1).

Handheld Shaded Face Shield

Assemble the Handheld Shaded Face Shield as illustrated in its Assembly Drawing at the end of this manual.

Operation

Controls and Indicators



Welding

Caution: Before arc welding, read and understand all safety precautions and warnings listed on pages 2 through 5.

1. If using non-flux core wire, connect and secure the Argon / CO₂ gas hose to the rear of the MIG Welder. (If using flux core wire, protective gas is not required.)
2. Attach the Ground Cable with Clamp (14) as close as possible to the metal object to be welded, or to the metal work bench where the object is mounted and electrically connected.
3. Set the desired welding current (30~120 amps) for the type of metal being welded using the Min/Max Switch and 1/2 Power Level Switch.



Refer to the power setting table on the next page. Thinner metals use lower current. Heavier metals use higher current.

4. Verify that the On/Off Switch is in the OFF position, then plug the MIG Welder Line Cord into a dedicated, 120 VAC, 20 amp line with delayed action type circuit breaker or fuses. If an extension cord is used, it must have the following wire size: up to 30 feet, use 10 AWG size wire; 30 to 50 feet, 8 AWG wire; Over 50 feet, 6 AWG wire.

Rated DC Output	Set Power Switches	Amps	Duty Cycle	Volts
Maximum OCV 28V	Min. -- 1	25	100%	15.2
	Min. -- 2	35	90%	15.7
	Max. -- 1	50	45%	16.5
	Max. -- 2	75	20%	17.7

- While holding the Welding Torch handle, with the electrode wire clearly out of the way of any grounded objects, turn the On/Off Switch to the ON position.
- Momentarily press the Welding Torch trigger switch to test the wire feed speed.
Adjust the speed by turning the Wire Feed Speed Control knob.
- Orient yourself on the area to be welded, then hold the Arc Shaded Face Shield over your eyes.

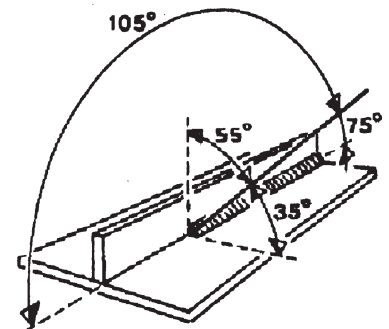
Warning: Never look at the ignited arc without ANSI approved, arc shaded, eye protection in a full face shield. Permanent eye damage or blindness can occur. Skin burns can occur. Never breath arc fumes.

- Press (and hold) the Torch Trigger Switch and stroke the area to be welded with the electrode wire to ignite the arc.

Never tap the electrode wire into the welding surface to ignite the arc. This damages its external coating on the electrode which prevents oxygen in the air from coming into contact with the molten metal, causing it to oxidize.

- Once the arc is ignited, tilt the electrode wire forward at an angle of about 35° . Refer to the illustration at right.

The wire feeds automatically at a speed dependent on the Min. or Max. current setting. The wire speed can also be adjusted using the Wire Feed Speed Control.



Note: If too much current is drawn from the MIG Welder, the Thermal Overload protector will activate, the red Overload indicator will light, and the Arc Welder will turn off until it cools down. If this happens, turn the On/Off Switch to the OFF position and wait about 3 ~ 5 minutes.

- When the weld is complete, lift the Welding Torch handle electrode wire clearly away from any grounded object, remove your Face Shield, and turn the On/Off Switch to the OFF position.
- Unplug the power Line Cord from the electrical outlet.

Troubleshooting

Symptom	Possible Cause	Checks and Remedies
MIG Welder does not work when turned on.	No power to MIG Welder.	Check Line Cord and plug. Check facility circuit breaker.
	Overheated during use.	In overload mode; Allow to cool down.
Wire does not feed properly.	Insufficient wire feed spring tension.	Tighten spring tension knob. See photo on page 6.
	Wire guide sheath blocked.	Clean or replace wire sheath.
	Wire spool axle nut too tight.	Loosen nut so reel moves freely.
	Braking on wire reel excessive.	Loosen brake using adjusting screw.
	Wire reel has oxidized, poorly wound or quality wire.	Replace wire reel.
Reduced welding power.	Ground Cable not connected or poor connection.	Check that the Ground Cable Clamp is securely attached to the metal being welded. This area should be cleaned down to the metal and free of paint, dirt and grease.
	Internal connection loose on switches.	A qualified technician should open the unit and check and tighten any loose connectors.
	Faulty contactor.	Check the state of the contacts and the mechanical operation of the contactors.
	One or more rectifiers failed.	A qualified technician should open the unit and check for burnt rectifiers and replace.
Porous or spongy welds.	No gas; Little gas.	Check presence of gas and supply line and pressure.
	Clogged holes in Welding Torch head diffuser.	Clear clogged holes using compressed air.
	Solenoid valve blocked.	A qualified technician should open the unit and check solenoid operation and electrical connection.
	Poor quality gas or wire.	Gas must be very dry. Use a moisture filter. Use a different type of wire.
Gas supply does not switch off.	Worn or dirty solenoid valve.	A qualified technician should open the unit and dismantle valve, clean orifice and seating element.
Pressing Welding Torch trigger produces no result.	Faulty Welding Torch trigger; Disconnected or broken control cables.	A qualified technician should open the unit and remove the torch connection plug and short-circuit the poles. Check and repair control cables.
	Overload controller defective.	A qualified technician should open the unit and replace the overload controller.

Maintenance

Caution: Before performing any maintenance on the MIG Welder, unplug the power Line Cord from the electrical outlet.

1. Periodically using compressed air, open the top and side panels and blow out all dust from the interior.

2. Store the unit in a clean and dry location.
3. Periodically clean out the Torch Head.

Replacing the Wire Reel

When the wire on the Feed Reel is used up, you will need to replace it as described on page 6, step 5 through step 9.

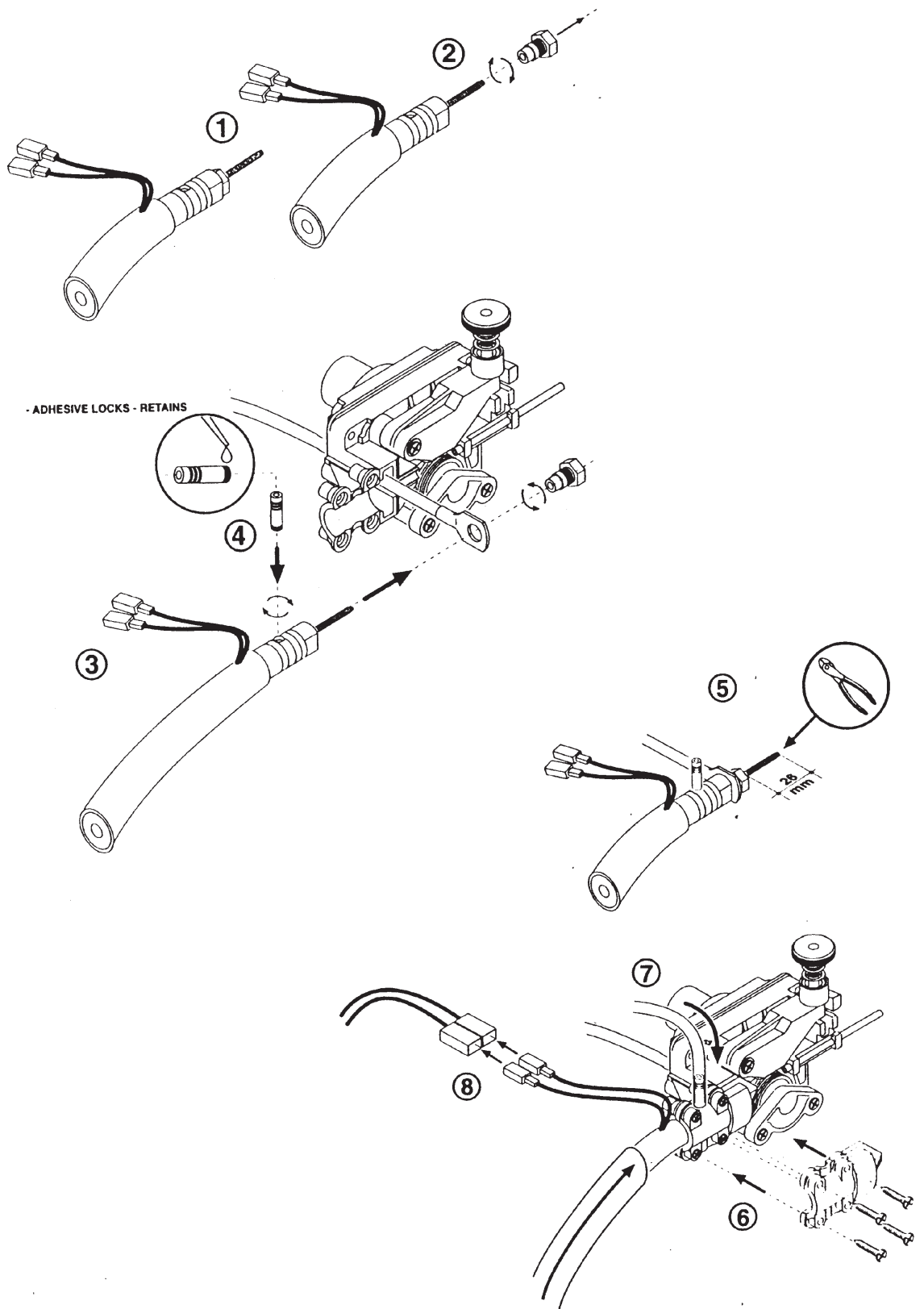
Parts List	
Item #	Description
1	Side Panel B
2	Hinge
3	Handle Socket
4	Handle
5	Back Panel
6	Rectifier Rack
7	Temperature Controller
8	rectifier Rack
9	Wire Spool Axle
10	Wire feed Mechanism
11	Wire Feed Wheel
12	Side Panel A
13	Line Cord
14	Ground Cable With Clamp
15	Welding Torch / Cable
16	Cover
17	Knob
18	Switch
19	Indicator Light
20	Cable Nib
21	Front Plate
22	Filter Reactor
23	Main Transformer
24	Transformer Carriage
25	Bottom Plate
26	Plate, Printed Panel
27	Panel, Printed
28	Potentiometer
29	Knob
30	Nut, Copper, M6
31	Washer, Spring, 6
32	Washer, Copper, Plain, 6
33	Washer, Insulating, 1
34	Nut, Copper, M6x35
35	Washer, Insulating, 2

NOTE: Some parts are listed and shown for illustration purposes only and are not available individually as replacement parts.

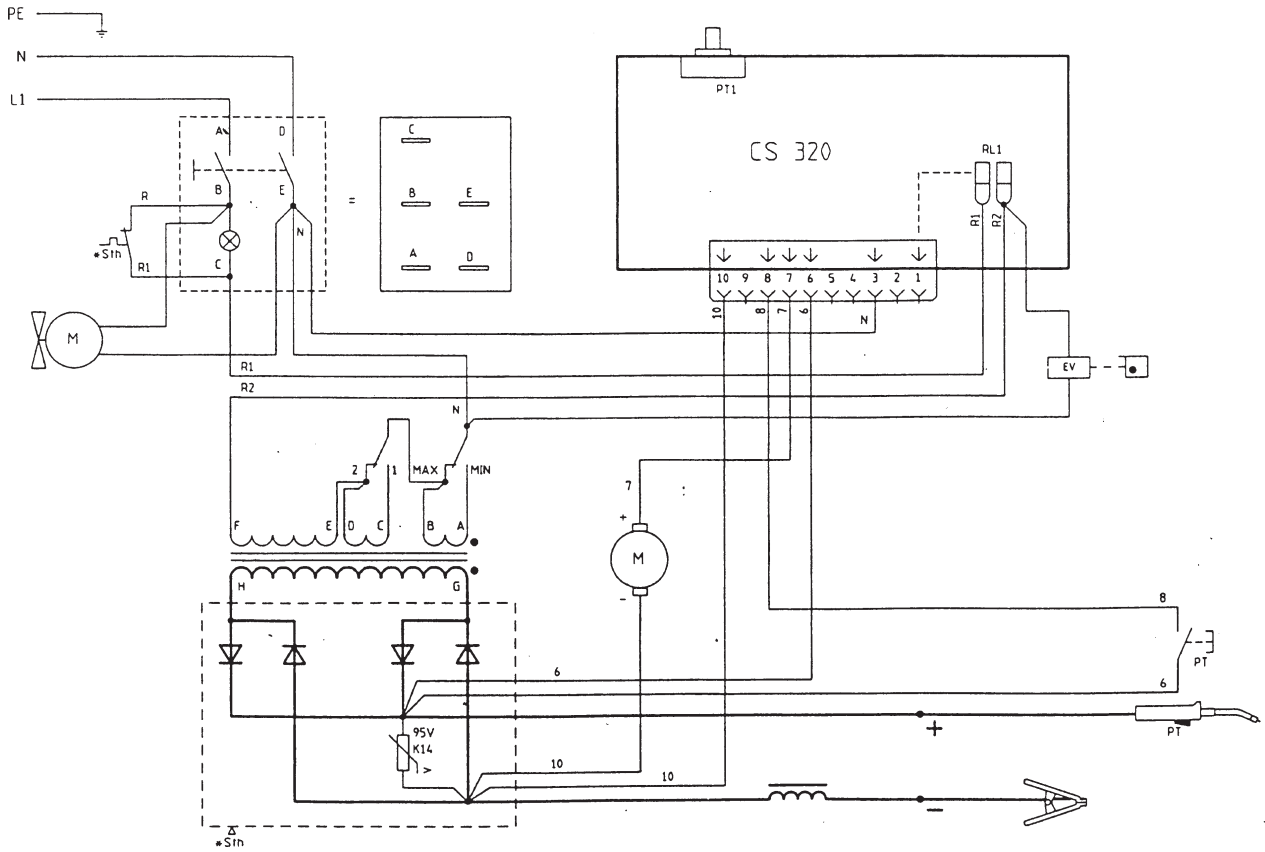
PLEASE READ THE FOLLOWING CAREFULLY

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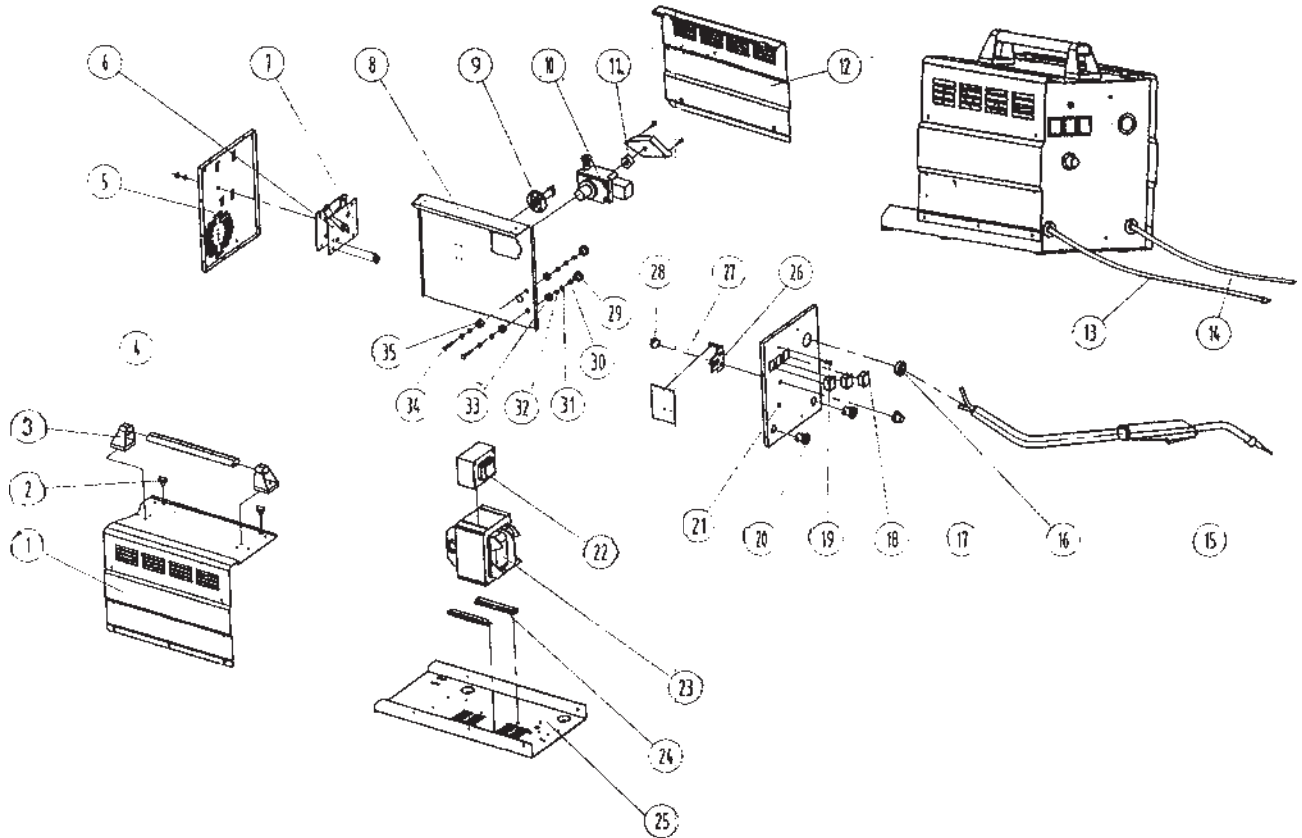
Wire Feed Mechanism Assembly Drawing



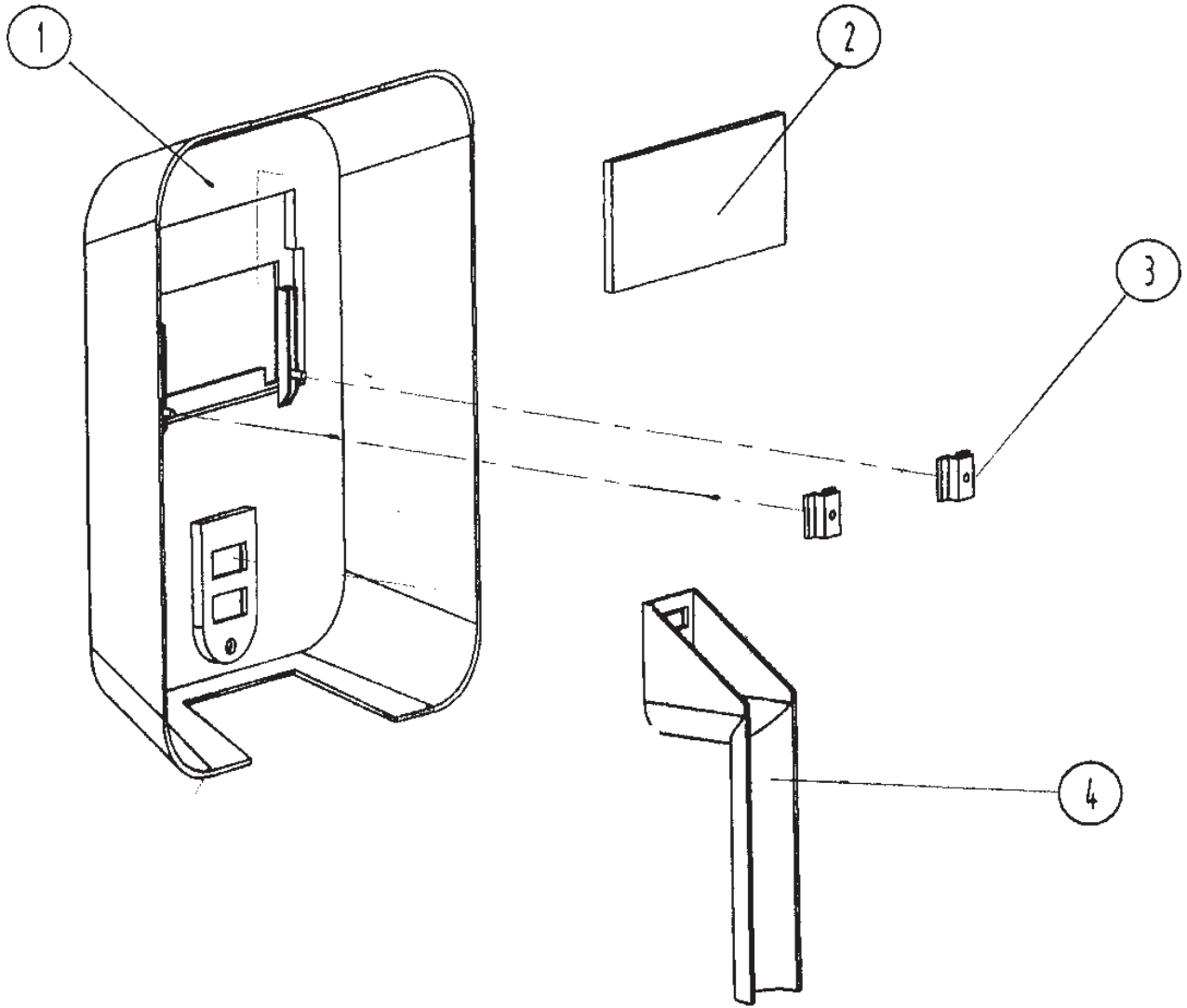
MIG Welder 131 Schematic Diagram



MIG Welder 131 Assembly Drawing



Hand Held Shield Assembly Drawing



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