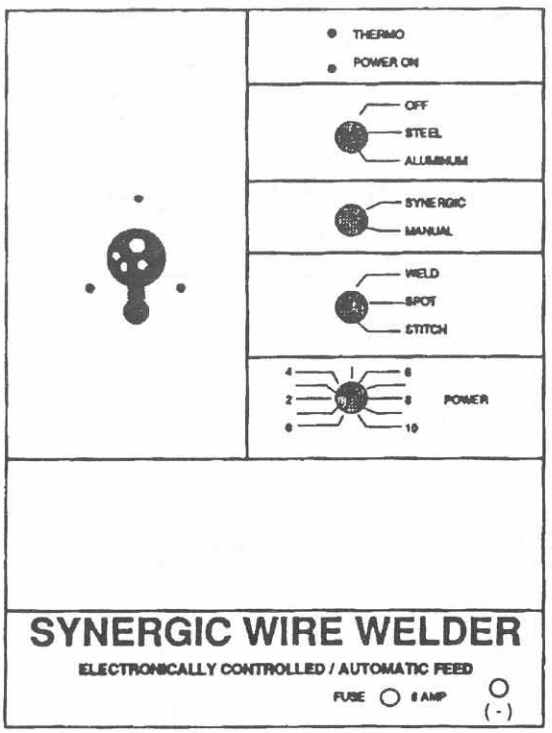
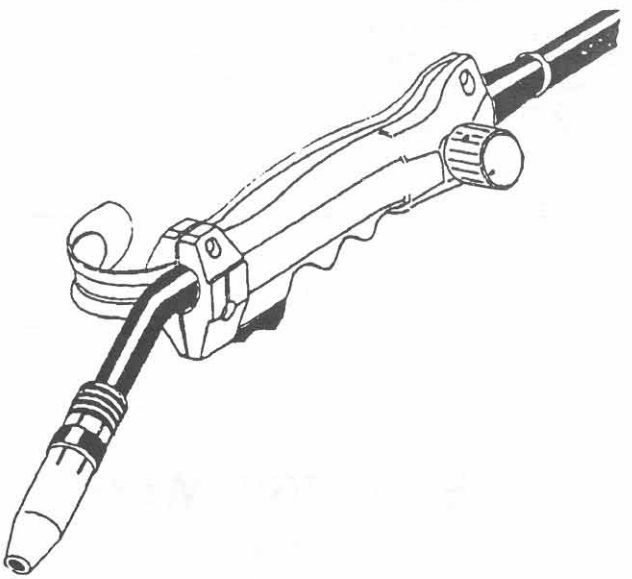
MARQUETTE®

OPERATING INSTRUCTIONS AND PARTS LIST

MODEL M12206

SYNERGIC* WIRE WELDER





SAVE THESE IMPORTANT INSTRUCTIONS

***SYNERGIC CONTROL** is a patented ultra fine tuning system where a single knob, conveniently located at the torch handle, simultaneously controls wire speed, amps and volts at their optimum relationship to each other to produce professional welds every time.

DESCRIPTION:

This is a high powered, wire welder that can weld solid and aluminum wire up to .040 (1.0 mm) diameter. Its patented automatic wire drive system has gear driven rollers that automatically adjust to the wire size being used.

⚠ WARNING

1. READ, STUDY AND UNDERSTAND ALL WARNINGS AND OPERATING INSTRUCTIONS FURNISHED WITH THIS EQUIPMENT PRIOR TO INSTALLMENT OR USE. IF ANY PART OF THIS MATERIAL IS UNCLEAR, CONTACT THE FACTORY FOR CLARIFICATION.
2. ONLY QUALIFIED PERSONS ARE TO INSTALL, OPERATE, AND MAINTAIN THIS EQUIPMENT IN ACCORDANCE WITH APPLICABLE CODES, SAFETY PRACTICES, AND MANUFACTURERS INSTRUCTIONS.
3. ELECTRIC SHOCK CAN BE FATAL, THEREFORE:
   A. INSTALL AND GROUND UNIT IN COMPLIANCE WITH NATIONAL, REGIONAL AND LOCAL CODES.
   B. PROTECT YOURSELF WITH DRY, INSULATED GLOVES AND CLOTHING.
   C. INSURE THAT WORKPIECE IS GROUNDED PRIOR TO ACTIVATING TORCH.
   D. DO NOT OPERATE IN DAMP OR WET AREA.
4. ARC RAYS CAN INJURE EYES AND BURN SKIN; THEREFORE:
   A. ALWAYS WEAR WELDING EYE SHIELD WITH PROPER FILTER LENS.
   B. WEAR APPROPRIATE PROTECTIVE CLOTHING TO COVER EXPOSED SKIN.
   C. MAKE SURE BYSTANDERS ARE ALSO PROTECTED FROM ARC RAYS WHEN OPERATING THIS UNIT.
5. FUMES AND GASES CAN BE SERIOUSLY HARMFUL TO YOUR HEALTH; THEREFORE:
   A. OPERATE THIS EQUIPMENT IN WELL VENTILATED AREA. IF THIS IS NOT POSSIBLE, USE AIR-SUPPLIED BREATHING APPARATUS.
   B. WELDING OF CONTAINERS CAN RESULT IN POISONOUS FUMES. INSURE ALL CONTAINERS ARE EMPTY AND PROPERLY CLEANED PRIOR TO WELDING.
6. HOT METAL SLAG AND SPARKS MAY CAUSE FIRE, BURNS AND EXPLOSIONS; THEREFORE:
   A. DO NOT OPERATE IN EXPLOSIVE ATMOSPHERE SUCH AS ONE CONTAINING PAINT, SOLVENTS, DEGREASER OR GASOLINE FUMES.
   B. DO NOT OPERATE NEAR COMBUSTIBLE MATERIALS.
   C. HAVE APPROPRIATE FIRE EXTINGUISHER AVAILABLE AND KNOW HOW TO USE IT.
   D. ALLOW WORKPIECE TO COOL BEFORE HANDLING.
   E. IT IS RECOMMENDED THAT A PERSON OTHER THAN THE OPERATOR BE ASSIGNED TO OBSERVE THE WELDING OPERATION TO WATCH FOR FIRE.
7. REFER TO THE OPERATOR'S MANUAL SUPPLIED WITH THIS EQUIPMENT FOR A LISTING OF ADDITIONAL SAFETY PUBLICATIONS AVAILABLE.
8. IT IS THE OWNER'S RESPONSIBILITY TO KEEP ALL WARNING DECALS LEGIBLE AND INTACT. REPLACEMENT DECALS ARE AVAILABLE FROM THE FACTORY.
9. FAILURE TO HEED THESE WARNINGS MAY RESULT IN PERSONAL OR FATAL INJURY AND/OR EQUIPMENT AND PROPERTY DAMAGE.

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SYNERGIC WIRE WELDER ACCESSORIES

CONTACT TIPS (PACKAGE OF 10)	MODEL
.023" (.6MM)	15522
.030" (.8MM)	15523
.035" (.9MM)	15524
.040" (1.0MM)	15588
NAIL / STUD WELD NOZZLE	15468
SPOT WELD NOZZLE	15521
TAPERED WELD NOZZLE	15520
STEEL LINER	15192
TEFLON LINER (for welding aluminum)	15194
TORCH ASSEMBLY (10' LEAD STD.)	15459
TORCH ASSEMBLY (15' LEAD OPTIONAL)	15463

M12206, 83-377

Read and observe all instructions included in this manual as well as these following specific procedures.

EYE AND BODY PROTECTION

WARNING: Never look at welding arc without a helmet or shield. Arc rays are extremely dangerous to the eyes.

1. Use helmet, filter, and cover plate complying with ANSI Z87.1 to protect your eyes and face from sparks and the rays of the arc when welding or observing open arc welding.

2. Always wear safety goggles with side shields complying with ANSI Z87.1 when in a welding area, or when near slag chipping operation.

3. To avoid spatter and ultraviolet ray burns wear oil free woolen clothing, keep sleeves and collars buttoned, no pockets in front, cuffless trousers overlapping high shoes, and leather gauntlet gloves.

4. Protect other near-by personnel with suitable non-flammable screening, and warn bystanders as to the potential hazards in the weld area.

5. Provide adequate ventilation in the welding area, particularly when welding on galvanized, lead or cadmium plated steel, and other metal which produce toxic fumes.

6. When working above floor level, protect yourself from a fall should you get a shock. Never wrap the electrode cable around any part of your body.

7. Do not weld in locations close to chlorinated hydro-carbon vapors coming from degreasing, cleaning, or spraying operations. The ultraviolet rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other gases.

PROTECTION FROM ELECTRICAL SHOCK

1. Do not let bare skin or wet clothing come between the following combinations;

   Welding Gun
   and
   Ground Clamp, or Workpiece,
   or Metal Work Table

   Voltage exists between these parts when welder is on and gun trigger pressed!
   Wear dry, hole free, clothing and gauntlet type gloves to protect and insulate the body.

2. Take special care to insulate yourself from ground using dry insulation (such as dry wood) of adequate size when welding in damp locations, on metal floors or gratings, and in positions (such as sitting or lying) where parts or large areas of your body can be in contact with possible grounds.

3. Maintain the electrode holder, work clamp , welding cable and welding machine in good, safe operating condition.

FLAMMABLE AND EXPLOSIVE MATERIALS

1. Remove flammable and explosive material 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.
2. Welding on or near containers which hold combustibles can cause an explosion, even when they have been cleaned. For information purchase "Safe Practices for Welding and Cutting Containers That Have Held Combustibles" (A6-0-65) from the American Welding Society AWS, 2501 N.W. 7th St., Miami, Florida 33125.
3. Electrodes and holders shall be so placed that they cannot make electrical contact with persons, conducting objects, flammable liquids, or compressed gas cylinders.
4. Never connect the work cable or clamp to any object but the work piece or metal work table. Connecting to other objects such as building ground can create a fire hazard.
5. Never weld anything on or to the welder cabinet, as a burn through may cause transformer failure.

PREVENTATIVE MAINTENANCE

1. Never apply power to the welder with any part of the "cabinet" removed. Position on-off switch in " Off" position and disconnect power supply at the circuit breaker or fuse box before doing maintenance work inside the machine.

2. Before connecting the welder power cord to the receptacle, check the following:
   a. Inspect the power cord and welding cables for cuts or burns and make sure blades and ground pin on the plug are straight.
   b. Inspect "On-Off" switch lever for cracks or broken parts.
   c. Inspect electrode holder jaw insulators for cracks or broken parts.
   d. For additional safety information, purchase copies of "Practice for Occupational and Educational Eye & Face Protection" (ANSI Z87.1) and "Safety in Welding and Cutting" (ANSI Z49.1) from the American Welding Society or the American National Standards Institute ANSI, 1430 Broadway, New York, New York 10018, and "Code for Safety in Welding and Cutting" (CSA Standard W117.2-1574) from the Canadian Standards Association, 178 Rexdale Blvd., Rexdale, Ontario M9W1R3.

M12206, 83-377

DESCRIPTION:

Congratulations on your decision to purchase a wire feed welder. This welder is manufactured specifically for medium manufacturing and sheet metal shops.

It has two modes of operation; synergic and manual.

In synergic mode, this welder, by varying the single control on the gun handle, the power and wire speed are varied simultaneously to provide optimum welds. This type of operation removes any guess work from the operator. It allows the beginner to quickly learn the trade.

In the manual mode the knob on the gun handle varies the wire speed only. The power knob on the machine controls volts and amps. In this mode the wire speed can be fine tuned to obtain perfect welds all the time. It is ideal when welding with aluminum and with flux core wire, whereby low voltage and high wire speed is required when welding with aluminum and vice versa with flux core wire.

The output of this machine, is controled by electronic components to provide stepless control from a predetermined minimum setting to the maximum output of the machine. There are no bulky mechanical relays or switches that will cause problems, also, output voltage is automatically regulated to compensate for input line voltage variations from as low as 195 to 260 volts.

INSTALLATION

Upon receiving your wire feed welder, inspect all contents to assure the following components are included.

QUANTITY	DESCRIPTION
1	MIG WELDER
1	GUN ASSEMBLY COMPLETE W/ HOOK
1	GROUND CABLE ASSEMBLY
1	(SET OF 3) 0.023 TIPS
1	10 FOOT INPUT CABLE
1	OPERATING MANUAL
1	SPOT WELD NOZZLE

NOTE: The gas cylinder does not come with the welder. Please contact a local gas welding distributor for your gas needs.

SERVICE NOTICE:

If, after reading this manual, you have additional questions regarding the operation of this equipment, they should be directed to your local distributor.

⚠ CAUTION

This manual has been designed for knowledgeable welding equipment users and must be read before using this equipment. If you lack experience or are unfamiliar with the practices and safe operation of welding equipment, please consult your supervisor. Do not attempt to install, operate, or perform maintenance on this equipment unless you are qualified. Read and understand the instruction manual. Make sure the information contained in this manual reaches the operator. Extra copies of this manual are available upon request.

M12206, 83-377

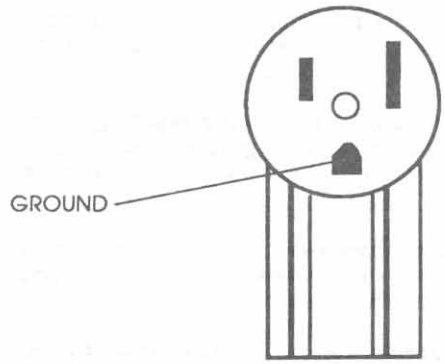
RECEPTACLE & GROUND CONNECTION:

This mig welder package includes 10 foot input cable, torch, and ground cable. The importance of proper ground connection cannot be over-emphasized, failur to properly connect ground can result in:

1. Electrical shock when touching metal cabinet of machine
2. Welder becomes inoperative
3. Serious or fatal injury

Your welder comes with a moulded plug most commonly used as today"s standards. Should your welder require a different plug to suit existing wiring in your building, request an electrician to replace existing plug with a suitalbe plug. THE COLOR FOR THE GROUND WIRE IS GREEN and improper connection may cause serious damage to your machine if the metal cabinet of the machine becomes electrically live creating a shock hazard.

FIGURE 1.



TYPICAL FEMALE CONNECTOR FOR 230 VOLTS

FRONT PANEL AND CONTROLS:

Refer to Figure 2.

INDICATOR LAMP DESCRIPTION:

GREEN: The green light is on if there is power from the mainline, the fuse is good and the control circuits are ready.

RED: The red light will only come on if the main power transformer is in an overheat condition. While on, the welder will not function. Once the transformer has cooled off, the red light will go out indicating that welding can resume.

CONTROLS:

WELD POWER ON/OFF: The control turns welder on by switching to steel or aluminum position.

SYNERGIC/MANUAL SELECTOR SWITCH:

SYNERGIC MODE: The knob on the handle adjusts volts, amps., and wire speed simultaneously.

MANUAL MODE: The knob on the handle controls only the wire speed while the power knob on the machine adjusts the volts and amps.

TYPE OF WELD OR MODE:

This control selects between continuous, spot or stitch modes

Spot welding can be used in many instances to supply original type spot welds to meet factory specifications. The welder will shut off automatically after the cycle is complete. By pressing the trigger you repeat the cycle. The stitch mode provides an intermittent weld mode allowing you to weld thinner steel while minimizing warpage to the panel. The stitch and spot times are preset to provide optimum weld conditions.

POWER CONTROL:

This control allows adjustment of volts and amps on manual mode only.

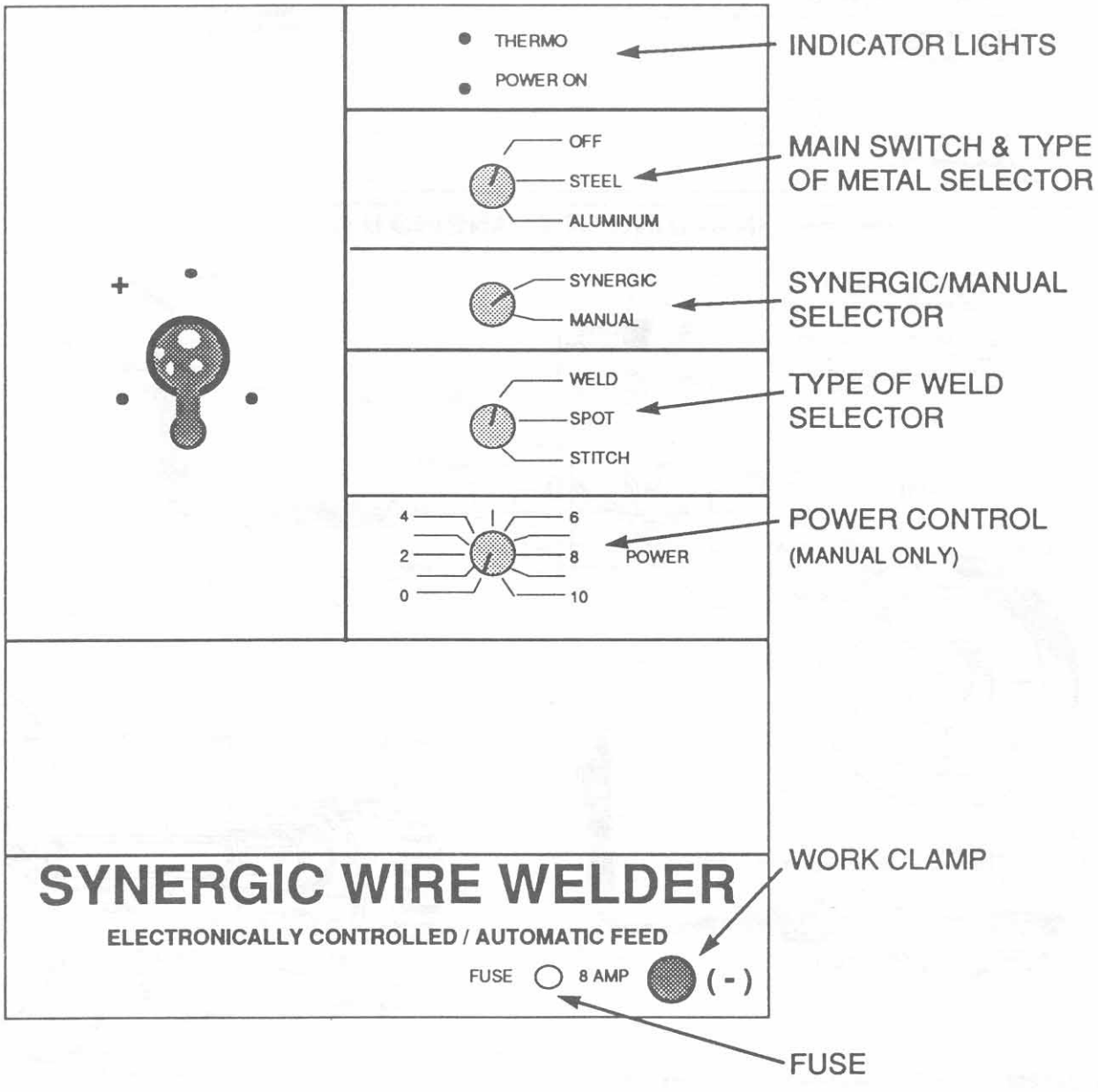
8 AMP FUSE:

The fuse is used to protect the electronic circuitry against overload or device failure. The green light will not go on if the fuse is blown.

TORCH CONNECTION:

This welder utilizes a torch connector allowing the use of lighter or heavier guns as required. You will see a large and small hole, the large hole for wire, the small hole for gas and the 2 thin pins are wired directly to the electronic circuitry. Be extremely careful not to bend the thin pins when mounting the gun. These pins are not replaceable and would require a new adaptor block if broken.

FIGURE 2.



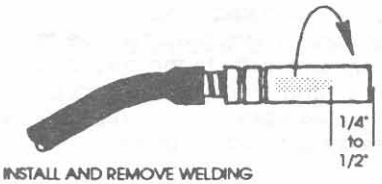
FRONT PANEL AND CONTROLS

M12206, 83-377

SET - UP PROCEDURES

CONTACT TIP & WELDING NOZZLE SET-UP:

1) Contact tip must be recessed 1/4" when welding steel.
2) Contact tip must be recessed 1/2" when welding aluminum.

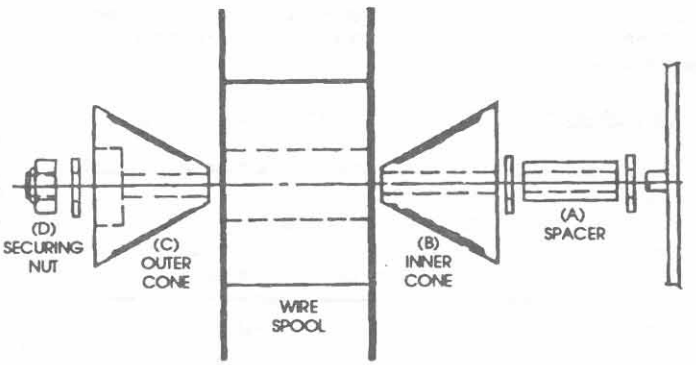


INSTALL AND REMOVE WELDING NOZZLES BY A CLOCKWISE TWISTING PUSHING OR PULLING MOTION ONLY.

TAPERED WELDING NOZZLE

SPOT WELDING NOZZLE

INSTALLING WIRE SPOOL:



INSTALLING OR CHANGING LINERS:

NOTE: WIRE SPOOL MUST BE FED INTO DRIVE SYSTEM UNDERHAND.

SECURING NUT WILL HAVE TO BE TIGHTENED ENOUGH TO CREATE A DRAG ON THE WIRE SPOOL.

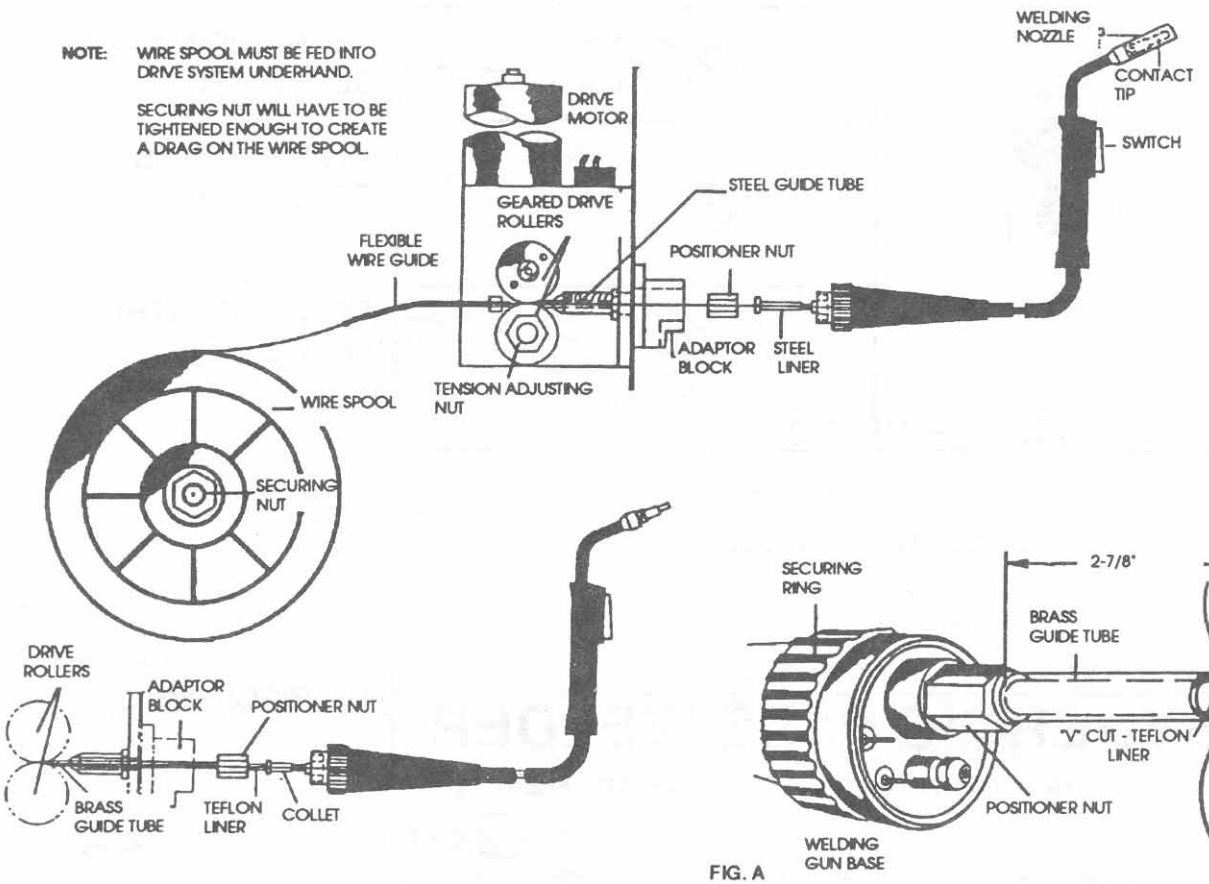


FIG. A

M12206, 83-377

INSTALLATION OF TEFLON LINER FOR ALUMINUM WELDING:

1) Remove steel liner & guide tube, weld nozzle & contact tip.
2) Make a "V" cut at one end of the teflon liner. (see Fig.A)
3) Put the "V" cut end of the teflon liner through the torch cable from the gun end.
4) Install collet over the machine end of the liner and install positioner nut with 2 7/8" of liner protruding from machine end of torch. Tighten positioner nut so that "V" cut on end of liner fits into groove made by drive wheels, see Fig. A.
5) Place brass guide tube over the exposed part of the liner and insert the back end of the gun assembly into the adaptor block and tighten swcuring ring.
6) From the gun end of the torch cable assembly, push the teflon liner in as far as it will go. Mark and cut 1/4" from the mark toward the machine. Screw on the contact tip and affix the gas nozzle. Use a contact tip .005" larger than the dia. of the wire being used.

OPERATION:

1. Shielding nozzle is removed and replaced by turning clockwise while pulling off or pushing nozzle on.
2. Contact tip should be finger tight only, and should be removed whenever feeding wire through the cable hose.
3. The area inside nozzle should remain free of slag and cleaned when needed.
4. Anti spatter gel or spray should be used occasionally while nozzle and tip are hot, especially when using flux cored wire.
5. Increase gas pressure when working in drafty areas.
6. The best results will be attained when both surface areas are clean of any debris or protective film on new sheet metal.
7. Stitch welding mode is ideal on thinner metals to minimize warpage while retaining the strength capabilities.
8. Metals to be welded should be as close as possible for best results.

PRINCIPLES OF MIG WELDING:

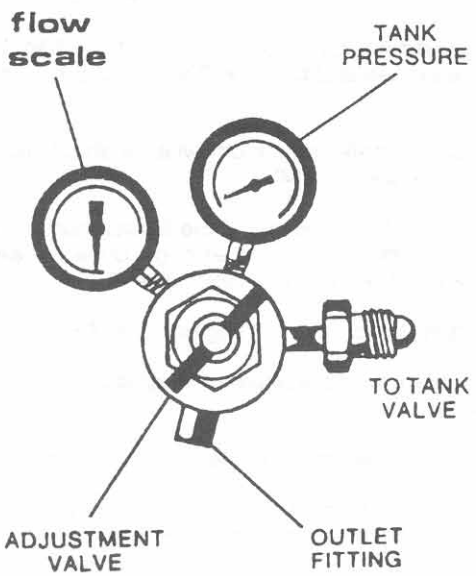
The mig welding process utilizes an uncoated electrode (welding wire without flux) shielded by a blanket of inert gas (argon / CO2 or argon) to protect the newly formed weld from contact with the atmosphere. Mig welding is a fast high quality process that eliminates; welding rod changes, flux applications, and descaling of the work piece.

GENERAL:

GMAW (Gas Metal Arc Welding) can be performed with three basic modes of metal transfer; short arc, globular, and spray arc welding techniques. This machine uses only the short arc process.

GAS SELECTION:

WELD TYPE	RECOMMENDED GAS	PRESSURE	RECOMMEND WIRE
Steel	75 -25 / C -25	20 CFH	.023 .030 .035 E70S-6
Alum.	100% Argon	40 CFH	.035 5356 composition
Stainless Steel	98 - 2 Argon/co2	20 CFH	.030 .035 Stainless 308
Silicon Bronze	100% Argon	20 CFH	.035 SIL/BRNZ
Flux Core	75-25/C-25	20 CFH	.035 E71T-1 AWS a5.20



Short arc mig welding is usually used for welding light gauge metal, and for out-of-position welding. Short arc is similar to Spray arc mig welding except that lower currents and smaller diameter electrode wires are used. Molten metal is not transferred across the arc as in spray arc, but is deposited in large size drops as the molten electrode tip makes contact with the weld puddle and the arc shorts out. This automatically occurs from 50 to 200 times or more per second, giving off a sound like frying eggs.

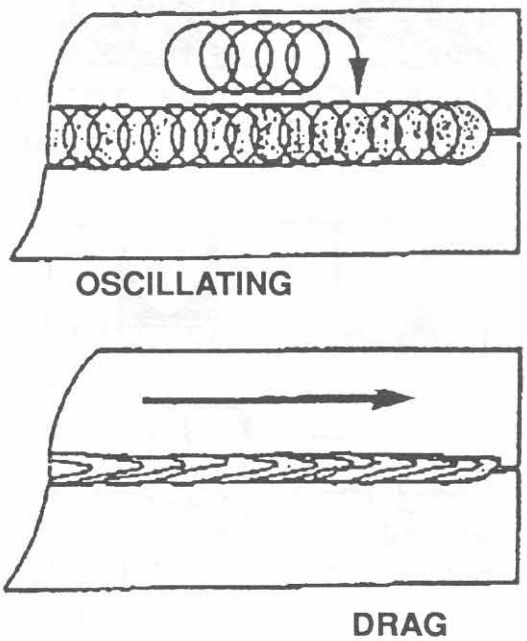


FIGURE 3.

HOLDING THE WELDING GUN:

When approaching the work piece with the welding gun, the following adjustments to handling should be made:

A. Tilt gun in a 45° to 60° position in the direction of travel.

B. For best results, operator must adjust to a suitable angle to fit the job application.

C. DO NOT PULL GUN AWAY WHEN ARC STARTS. This will create alot of sparks and very poor welds.

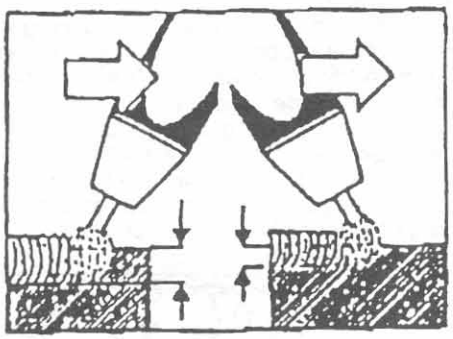
D. Two basic techniques can be used when welding: (See Figure 3.)

E. Generally, when using most welding techniques, the speed of travel (of the gun) will dictate the type of weld bead produced. The average speed normally used is 15" / 40 cm to 20" / 50 cm per minute. Carbon dioxide is a suitable gas for use on carbon steel, however, Argon mixed with with CO_2 (C - 25)" is good for steel welding, especially where a strong spatter-free weld is required. Argon must be used in its pure form for aluminum welding. This gas cannot be used to weld steel, except when combined with CO_2. Premixed tanks of gas (25% CO_2 and 75% Argon) are available.

You will find the gases are under high pressure (2,000 PSI - 150 Kg/sq cm to 3,000 PSI - 200 Kg/sq cm) and will require a pressure regulator to bring this high pressure to workable values.

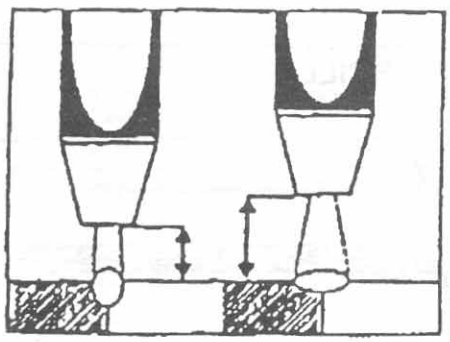
STEEL:

1. Set weld type selector switches to Steel, Synergic and Weld position.



GUN DIRECTION AND WELD DEPTH

FIGURE 4



ARC LENGTH AND WELD DEPTH

FIGURE 5

2. Use a gas mixture of 75% argon and 25% CO_2 at 20CFH. (cubic feet per hour)

3. Use .023 diameter steel wire and .6mm standard tip or use .030 diameter wire and .8mm standard tip.

4. Hold the gun at a 45° angle and 1/4" (.6mm) from the surface. If the gun is a little further from the work piece, a wider and more shallow weld will result. (See figure 4.)

5. Start with power control on the torch fully counterclockwise and pull the gun trigger. Turn the power control clockwise slowly until a frying sound is heard and a flat weld is produced (using .023 wire - approx. setting 5).

6. In the case of downhill welding, (figure 6) penetration depth decreases with the increase of the slope. The smallest penetration is attained with vertical downhill welding.

7. It may be advantageous to use larger diameter wire on thicker steels to attain proper penetration levels - larger wire allows increased amperage output.

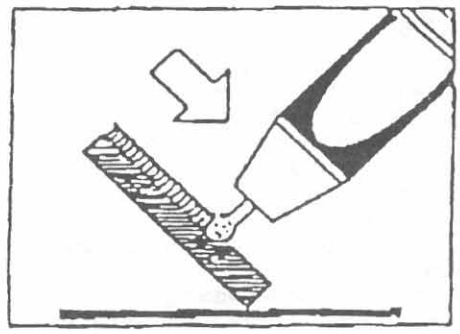
8. Increase gas pressure when welding overhead or in dirty areas ie, inside wheel housings, etc.

SPOT WELDING:

Spot welds can be made through two thicknesses of material, but the best results will be obtained if a hole is first punched in the top plate.

1. When spot welding through two pieces of metal, the pieces must be clean and fit closely together.

2. Attach the spot welding nozzle.



DOWNHILL WELDING

FIGURE 6

3. Set the weld control on the torch to obtain a flat weld. This should be done on separate samples of steel - the same as the materials to be welded.

4. Hold the gun straight up and down perpendicular to the work surface.

5. If welding into a punched hole, aim the wire at the center of the hole and fill.

6. If no hole is punched in the top layer of steel, increase power setting so that you can burn through the top layer.

7. If using the standard nozzle to spot, keep 1/4" to 1/2" distance between nozzle and sheet metal.

STITCH WELDING FOR STEEL:

Stitch welding is handy when you weld thin or rusty material where warpage or burnthrough is a problem. Stitch welding is basically a series of spot welds which overlap slightly and which have time to cool between welds.

1. Set weld type selector to STITCH and power control in accordance to material thickness.

2. Pull the trigger and move the gun along the seam slightly between welds.

3. Travel at a speed which will allow the orange color to disappear from the previous weld.

ALUMINUM WELDING:

1. Set machine (Top Selector) to Aluminum.

2. Make certain that you use type 5356 (.030 or .035 diameter wire). Use a .040 tip for .035 wire and a .035 tip for .030 wire.

3. Use .035 diameter aluminum wire for sheet aluminum thickness of 16 gauge to 1/4".

4. Reduce tension by loosening the tension nut to the end of travel. This should provide enough drive to feed the aluminum without damaging it (See figure 7).

5. Use 100% argon as the shielding gas at 40 CFH.

6. Always "push" with aluminum to keep gas "ahead" of the weld puddle.

7. Use a stainless steel brush to clean metal prior to welding.

8. Starting with torch setting fully counterclockwise, increase power until correct bead is achieved (approx. setting 6).

9. Only use a pushing motion with the gun since the argon gas will shield your weld, thus leaving a cleaner appearance.

10. Since aluminum is such a good heat conductor, the power will have to be decreased after about 2" of travel. This is done by turning the knob on the torch.

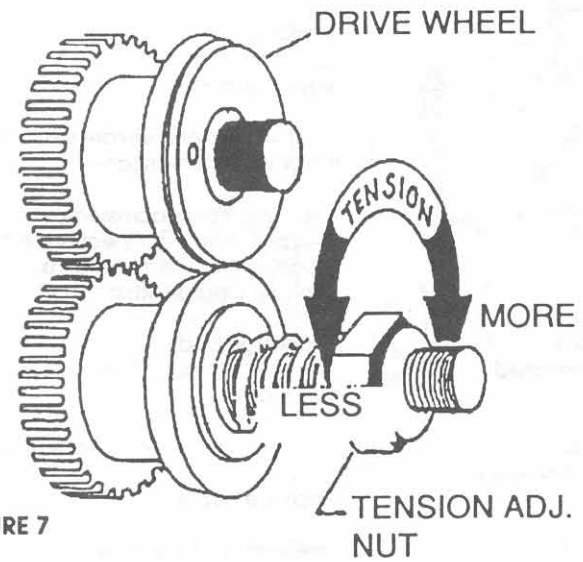


FIGURE 7

FILLING IN HOLES:

1. Fully clean the area of the hole.

2. Make a short weld on the inside wall of the hole and let the weld cool.

3. Make another short tack weld on each of the first and let this cool.

4. Make two longer welds overlapping the first three by rotating the gun while welding. Allow these to cool.

5. Repeat the process working across the hole.

6. Holes and wide gaps can be filled easily with stitch welding as well.

BRAZING, SPOTTING, & STITCHING BRASS:

Use the same procedure as you would for steel welding but USE ONLY ARGON GAS at 25 CFH and silicone bronze wire.

1. Hold the gun at a 45° angle to the work with the nozzle about 1/4" from the surface. The closer the gun, the deeper the weld.

2. Move the gun smoothly and steadily as you weld.

3. Thicker materials and faster travel speeds require higher setting at the power and speed control knobs.

4. In general the flattest and best welds will be produced at higher gun settings and faster travel speeds. You will burn through the metal if you move the gun too slowly at high gun settings.

5. If burn-through is a problem, turn down the power and/or speed controls or stop occasionally until the orange color disappears.

6. Avoid welding in very drafty areas because a weak, pitted weld will result due to the air blowing away the shielding gas.

7. When working overhead, drag the gun towards you so that you can see the weld puddle and the seam. Increase the gas pressure to 25 CFH to protect the nozzle from spatter.

MAINTENANCE:

1. ALWAYS apply an antispatter welding spray to the tip and nozzle (when the nozzle is hot). This prevents slag build - up and allows proper gas flow.

2. Sharp bends or kinks in the cable hose must be avoided so that the wire feeds properly. This also promotes longer gun life.

3. The gun liner should be cleaned when you change the wire spool. Through continued use the wire feed liner will gradually build up dirt. Therefore, clean the liner after each roll of wire. Disconnect the gun from the welder, remove positioner nut and pull out the liner. Soak liner in solvent and use compressed air to clean.

4. Using low pressure, blow out the dust from inside the machine often since this keeps the machine running cooler.

5. The control is a precision device and should be treated as such. Do not use excessive force on the control since damage may result.

TROUBLE SHOOTING GUIDE

TROUBLE	CAUSE	REMEDY
A) UNIT DOES NOT FUNCTION		
- No Power Light	1) AC plug replaced & wired incorrectly	
	2) No power in wall socket	
	3) Fuses	Replace
	4) Defective Circuit Board	Exchange board
	5) Defective AC plug	Replace plug
- Red Light On	1) Unit is overheated	Wait 15 min. and welder will come back on automatically
- Motor will not turn	1) Trigger switch contact defective	Test by jumping across the two switch wire connections in the adaptor plug - If motor turns, replace trigger switch
	2) Defective circuit board	Exchange board
	3) Wires to motor disconnected	Connect wires
	4) Fuse	Replace
- Nozzle or swan neck burns or sparks to the workpiece	1) Nozzle clogged with spatter and nozzle is touched to workpiece	Clean, do not touch nozzle to work-piece
	2) Burnt nozzle	Replace nozzle
- Fuse Burns	1) Wire feed problem	See section(B) on wire feed problem
B) WIRE FEED PROBLEMS NOTE: GUIDE TUBE "MUST" BE IN PLACE AT ALL TIMES.		
- Wire Feeds Irregularly	1) Obstruction in tip	Remove obstruction or replace tip
	2) Wire knotted on spool	
	3) Wire spool held too tightly	Loosen tension nut
	4) Dirty liner	Clean or replace liner
	5) Wire tension nut loose	Tighten
	6) Defective gun switch	Replace
	7) Wrong size contact tip	Replace matching wire size
	8) Guide tube too long	Replace or cut to size
- Sparking	1) Paint or rust on workpiece prevents arc	Clean workpiece-loosen wire tension nut
	2) Faulty contact at ground clamp	Improve contact clean workpiece
- Wire Bunches at Motor Drive	1) Gun liner or tip blocked	Clean or replace
	2) Gun tip is not correct size for wire used	Use appropriate tip
	3) Bent guide tube	Replace
C) WELD QUALITY		
- No Weld Power or Unstable Arc	1) Poor connection at ground clamp	
	2) Nozzle clogged with spatter	Clean
	3) Burnt nozzle	Replace nozzle
	4) Defective circuit board	Exchange board
	5) Power line too low or overloaded	Plug to different line
	6) Wrong size tip	Replace with proper size
- Weld Tip Clogs & Burns	1) No shielding gas	See item above
	2) Dirt & spatter	Clean using spatter release
	3) Gun tip is not correct size for wire used	Use appropriate tip
	4) Gun too distant from workpiece	Move gun closer to workpiece
- Spatter	1) Dirty gun nozzle	Clean
	2) Wrong type wire	Use proper wire
	3) Wrong size tip in gun	Use correct tip

M12206, 83-377

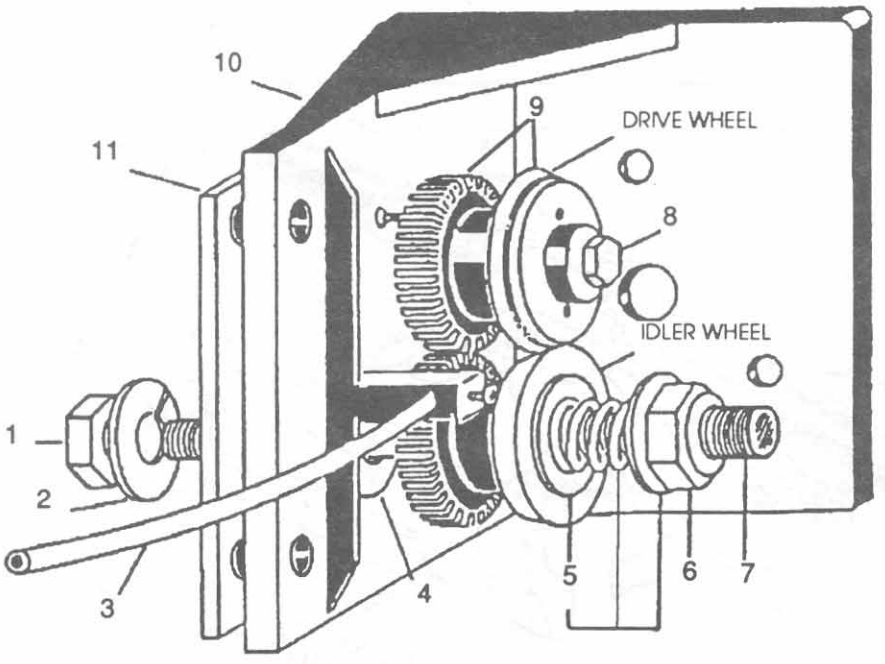


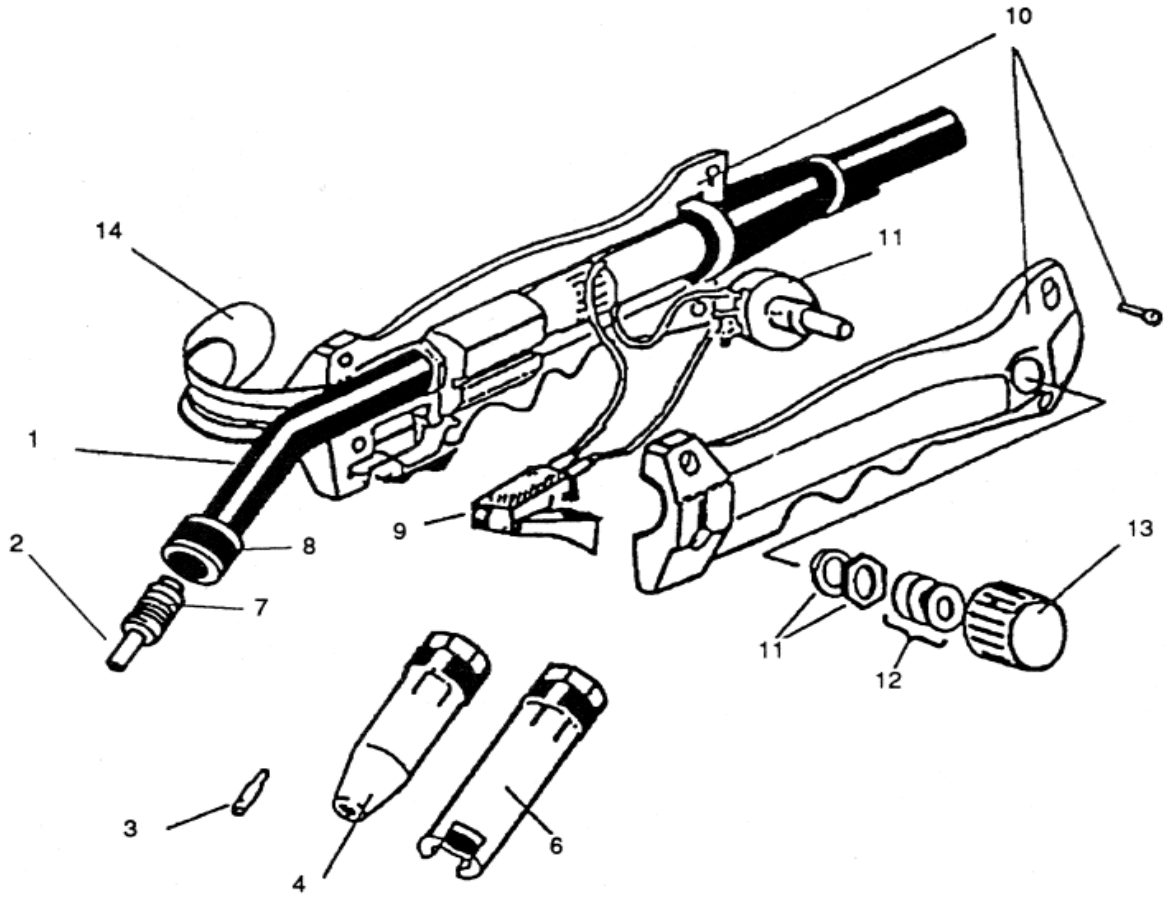
FIGURE 8

WIRE DRIVE ASSEMBLY (See figure 8)

ITEM NO.	PART CODE	DESCRIPTION
1	B7134370	3/8 HEX NUT
2	B7135370	3/8 LOCKWASHER
3	B7136370	GUIDE CABLE (10")
4	B7199370	5/16 FLAT WASHER
5	B7137370	NYLON WASHER (2) W/ TENSION SPRING
6	B7140370	JAM NUT
7	B7138370	SHAFT
8	B7141370	M12 FILLESTER HEAD SCREW
9	B7142370	DRIVE & IDLE WHEEL ASSEMBLY
10	B7143370	PLASTIC MOTOR BRACKET
11	B7144370	REINFORCING PLATE

M12206, 83-377

M15459 (10') Synergic Mig Gun

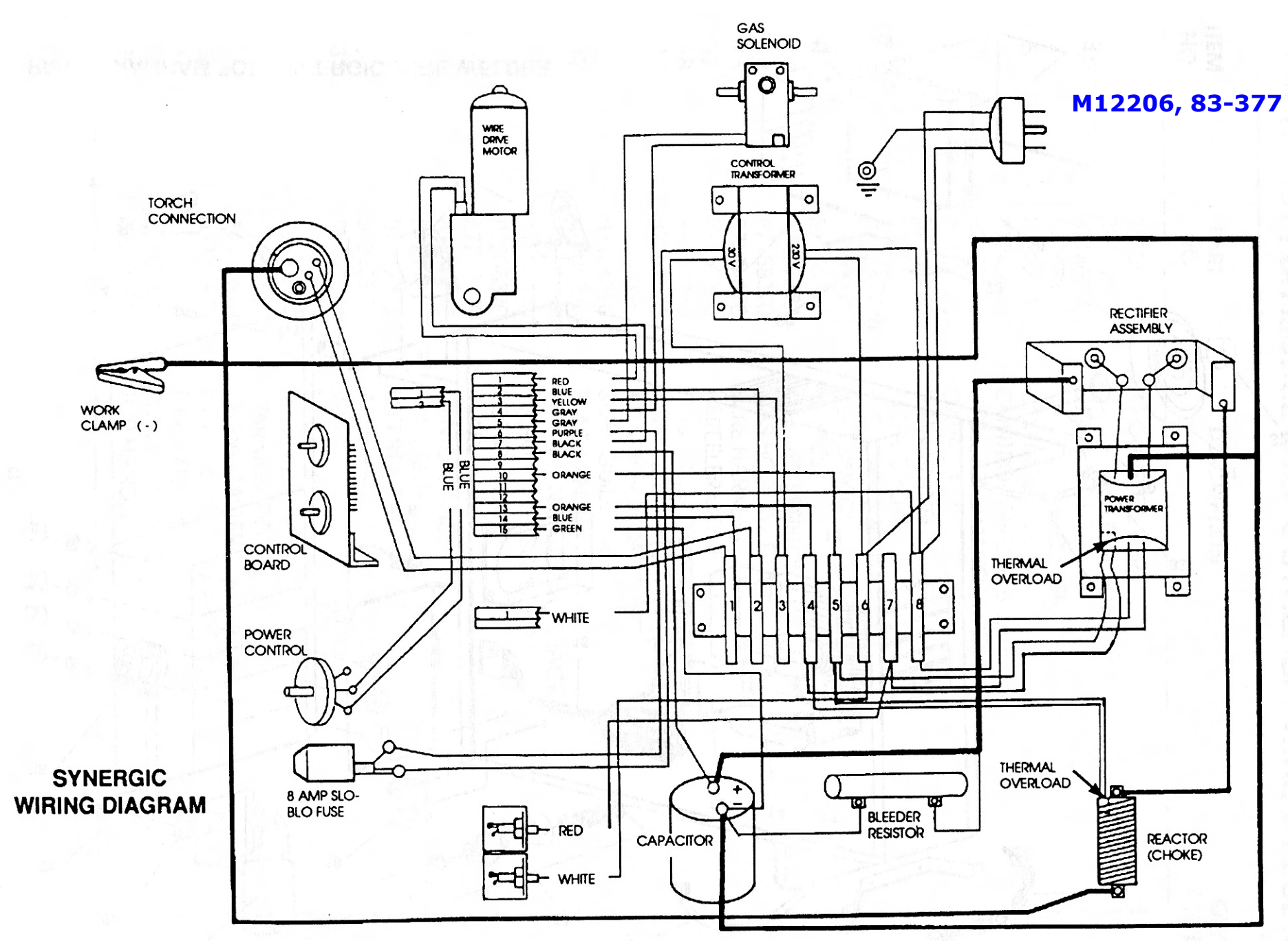


Item #	Lincoln #	Old Numbers	Description
1	334-628-000	B7123370	Swan Neck
2	334-632-000	246311	Gas Diffuser
3	KP2052-1	M15522	Contact tip, 0.025
	KP2052-2	M15523	Contact tip, 0.030
	KP2052-3	M15524	Contact tip, 0.035
4	KH721	M15520, 334-164-400	Steel Welding Nozzle
6	KH731	M15521, 334-162-300	Spot Welding Nozzle
7	334-172-000	B7124370	Nozzle Spring
8		B7218370	Head Insulator
9		B7219370	Orange Trigger Switch Assembly
10		B7221370	Blue Handle Parts w/ Screws
11		B7194370	Potentiometer w/ Nut & Lockwasher
12		B7195370	Springwashers
13		B7196370	Control Knob
14		B7188370	Gun Hook
16	411-121-666	M15192	Steel Liner (Not Shown)
	411-123-666	M15194	Teflon Liner (Not Shown)

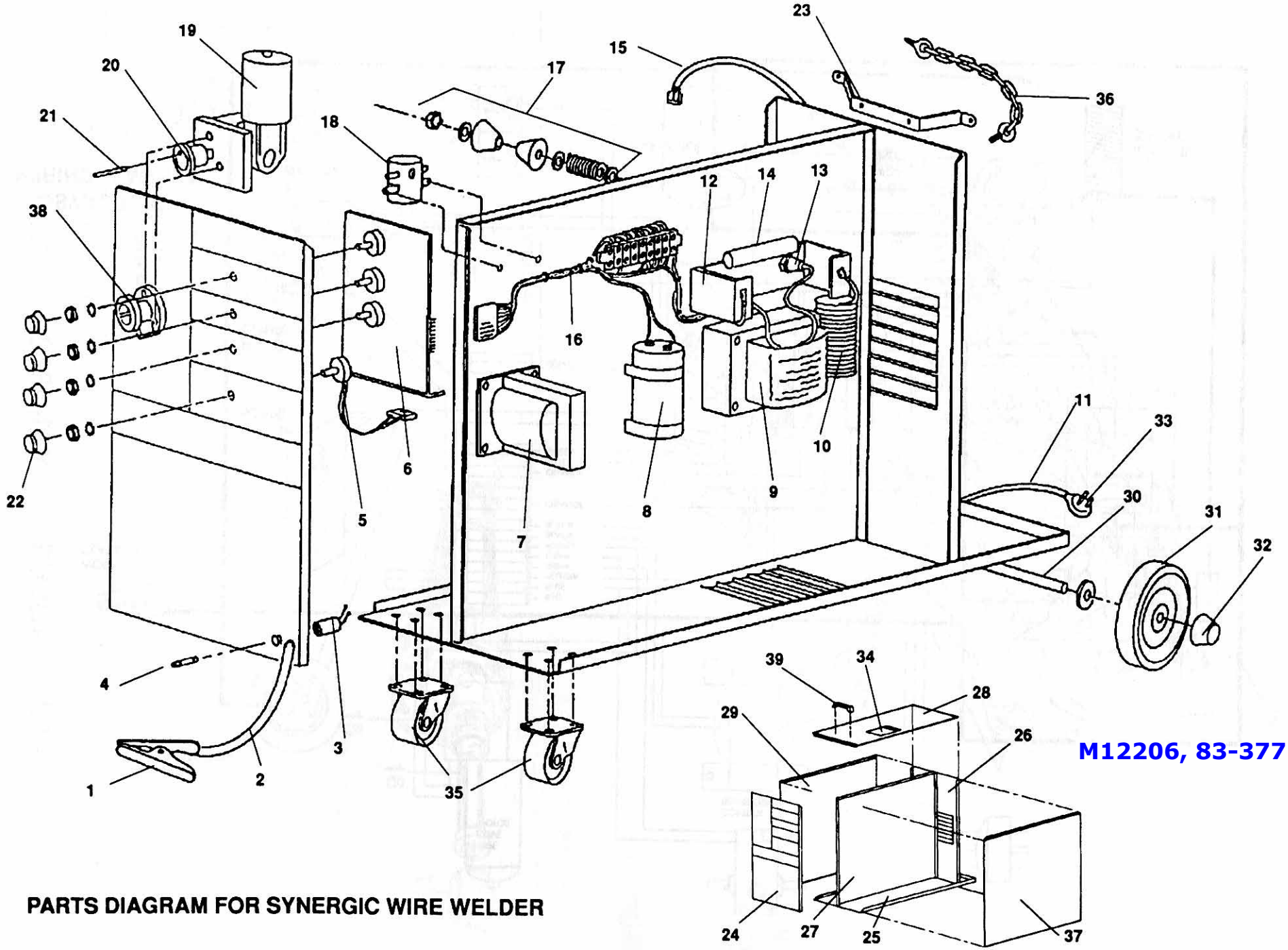
Used on M12206 & M12207

M12206, 83-377

M12206, 83-377



SYNERGIC WIRING DIAGRAM



M12206, 83-377

PARTS DIAGRAM FOR SYNERGIC WIRE WELDER

PARTS LIST FOR MODEL M12206 SYNERGIC WIRE WELDER

ITEM NO.	PART NO.	DESCRIPTION	QTY. REC'D.
1	15305	GROUND CLAMP	1
2	B7145370	GROUND CLAMP ASSEMBLY	1
3	B7146370	FUSE HOLDER	1
4	B7147370	8 AMP SLO-BLO FUSE	1
5	B7202370	CONTROL POT.	1
6	B7240370	CONTROL CIRCUIT BOARD	1
7	B7150370	CONTROL TRANSFORMER	1
8	B7151370	CAPACITOR	1
9	B7152370	MAIN TRANSFORMER	1
10	B7153370	FILTER CHOKE	1
11	B7154370	A.C. CABLE & PLUG	1
12	B7155370	HEAT SINK COMPLETE W/ DIODES	1
13	B7156370	DIODES	2
14	B7157370	BLEEDER RESISTOR	1
15	B7158370	GAS HOSE W/ FITTING	1
16	B7204370	WIRE HARNESS	1
17	B7160370	DEREELER CONE SET	1
18	B7161370	GAS SOLENOID ASSEMBLY	1
19	B7162370	COMPLETE MOTOR ASSEMBLY	1
20	B7163370	ADAPTOR BLOCK	1
21	B7164370	STEEL GUIDE TUBE	1
22	B7205370	BLACK KNOB	4
23	B7177370	UPPER TANK SUPPORT BRACKET	1
24	B7207370	FRONT PANEL SCREENED	1
25	B7208370	BOTTOM PAN	1
26	B7209370	REAR PANEL	1
27	B7210370	CENTER PANEL	1
28	B7211370	TOP PANEL	1
29	B7212370	LEFT SIDE PANEL	1
30	B7213370	AXLE	1
31	62964321	WHEEL	2
32	69940980	HUB CAP	2
33	15541	PLUG ONLY	1
34	B7128619	WARNING DECAL	1
35	B7170370	FRONT CASTER	2
36	B7176370	CHAIN & EYE BOLT ASSEMBLY	1
37	B7227370	RIGHT SIDE PANEL	1
38	B7166370	PLASTIC ADAPTOR	1
39	B7226370	TOP HANDLE	1

M12206, 83-377