

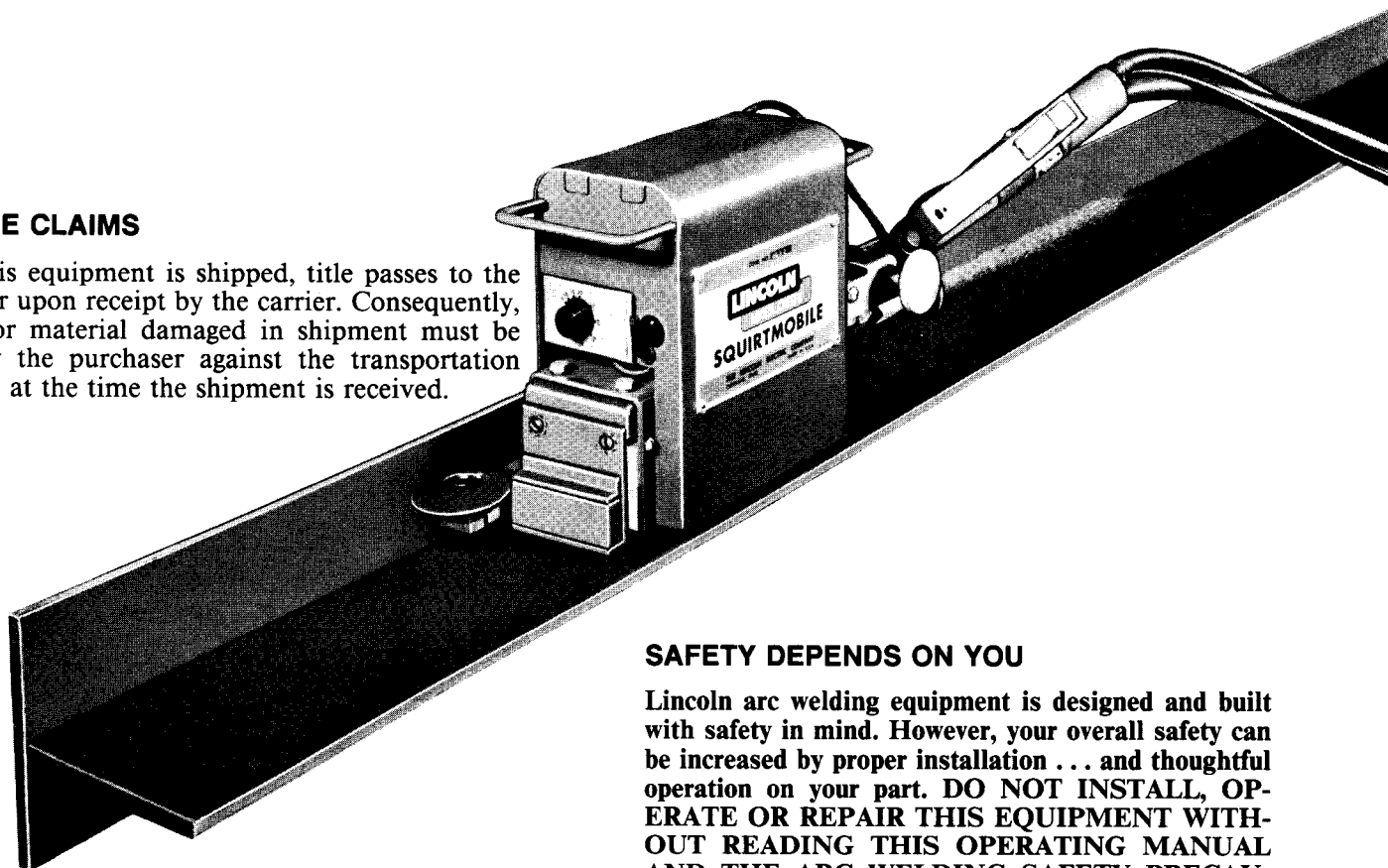
# OPERATING MANUAL

## SQUIRTMOBILE<sup>®</sup> Trackless Carriage for Submerged Arc Welding Gun

This manual covers equipment which is obsolete and no longer in production by The Lincoln Electric Co. Specifications and availability of optional features may have changed.

### DAMAGE CLAIMS

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.



### SAFETY DEPENDS ON YOU

Lincoln arc welding equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation . . . and thoughtful operation on your part. **DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS OPERATING MANUAL AND THE ARC WELDING SAFETY PRECAUTIONS ON PAGES 2, 3 AND 4.** And, most importantly, think before you act and be careful.

# ARC WELDING SAFETY PRECAUTIONS



**WARNING: PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH.**



## **ELECTRIC SHOCK can kill.**

1. a. The electrode and work (or ground) circuits are electrically "hot" when the welder is on. Do not touch these "hot" parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- b. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically "hot".
- c. Insulate yourself from work and ground using dry insulation. When welding in damp locations, on metal framework such as floors, gratings or scaffolds, and when in positions such as sitting or lying, make certain the insulation is large enough to cover your full area of physical contact with work and ground.
- d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
- e. Ground the work or metal to be welded to a good electrical (earth) ground.
- f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
- g. Never dip the electrode in water for cooling.
- h. Never simultaneously touch electrically "hot" parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
- i. When working above floor level, protect yourself from a fall should you get a shock.
- j. Also see Items 4c and 6.



## **ARC RAYS can burn.**

2. a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87.1 standards.
- b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- c. Protect other nearby personnel with suitable non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



## **FUMES AND GASES can be dangerous.**

3. a. Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. When welding on galvanized, lead or cadmium plated steel and other metals which produce toxic fumes, even greater care must be taken.
- b. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- c. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
- d. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices.
- e. Also see item 7b.



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

4. a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Have a fire extinguisher readily available.
- b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.
- c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned." For information purchase "Recommended Safe Practices for the Preparation for

Welding and Cutting of Containers and Piping That Have Held Hazardous Substances”, AWS F4.1-80 from the American Welding Society (see address below).

- e. Vent hollow castings or containers before heating, cutting or welding. They may explode.
- f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.
- h. Also see item 7c.



### CYLINDER may explode if damaged.

- 5. a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- c. Cylinders should be located:
  - Away from areas where they may be struck or subjected to physical damage.
  - A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- d. Never allow the electrode, electrode holder, or any other electrically “hot” parts to touch a cylinder.
- e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- f. Valve protection caps should always be in place and handtight except when the cylinder is in use or connected for use.
- g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-1, “Precautions for Safe Handling of Compressed Gases in Cylinders,” available from the Compressed Gas Association, 1235 Jefferson Davis Highway, Arlington, VA 22202.



### FOR ELECTRICALLY powered equipment.

- 6. a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.
- b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer’s recommendations.
- c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer’s recommendations.



### FOR ENGINE powered equipment.

- 7. a. Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.



- b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.



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



- d. Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.

- e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

- f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

- g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.



- h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.

**HAVE ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR WORK performed by qualified people.**

For more detailed information, it is strongly recommended that you purchase a copy of “Safety in Welding & Cutting — ANSI Standard Z49.1” from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974.

## PRÉCAUTIONS DE SÛRETÉ

Pour votre propre protection lire et observer toutes les instructions et les précautions de sûreté spécifiques qui paraissent dans ce manuel aussi bien que les précautions de sûreté générales suivantes:

### Sûreté Pour Soudage A L'Arc

1. Protégez-vous contre la secousse électrique:
  - a. Les circuits à l'électrode et à la pièce sont sous tension quand la machine à souder est en marche. Eviter toujours tout contact entre les parties sous tension et la peau nue ou les vêtements mouillés. Porter des gants secs et sans trous pour isoler les mains.
  - b. Faire très attention de bien s'isoler de la masse quand on soude dans des endroits humides, ou sur un plancher métallique, ou des grilles métalliques, principalement dans les positions assis ou couché pour lesquelles une grande partie du corps peut être en contact avec la masse.
  - c. Maintenir le porte-électrode, la pince de masse, le câble de soudage et la machine à souder en bon et sûr état de fonctionnement.
  - d. Ne jamais plonger le porte-électrode dans l'eau pour le refroidir.
  - e. Ne jamais toucher simultanément les parties sous tension des porte-électrodes connectés à deux machines à souder parce que la tension entre les deux pinces peut être le total de la tension à vide des deux machines.
  - f. Si on utilise la machine à souder comme une source de courant pour soudage semi-automatique, ces précautions pour le porte-électrode s'appliquent aussi au pistolet de soudage.
2. Dans le cas de travail au dessus du niveau du sol, se protéger contre les chutes dans le cas où on recoit un choc. Ne jamais enrouler le câble-électrode autour de n'importe quelle partie du corps.
3. Un coup d'arc peut être plus sévère qu'un coup de soliel, donc:
  - a. Utiliser un bon masque avec un verre filtrant approprié ainsi qu'un verre blanc afin de se protéger les yeux du rayonnement de l'arc et des projections quand on soude ou quand on regarde l'arc.
  - b. Porter des vêtements convenables afin de protéger la peau de soudeur et des aides contre le rayonnement de l'arc.
  - c. Protéger l'autre personnel travaillant à proximité au soudage à l'aide d'écrans appropriés et non-inflammables.
4. Des gouttes de laitier en fusion sont émises de l'arc de soudage. Se protéger avec des vêtements de protection libres de l'huile, tels que les gants en cuir, chemise épaisse, pantalons sans revers, et chaussures montantes.

5. Toujours porter des lunettes de sécurité dans la zone de soudage. Utiliser des lunettes avec écrans latéraux dans les zones où l'on pique le laitier.
6. Eloigner les matériaux inflammables ou les recouvrir afin de prévenir tout risque d'incendie dû aux étincelles.
7. Quand on ne soude pas, poser la pince à une endroit isolé de la masse. Un court-circuit accidentel peut provoquer un échauffement et un risque d'incendie.
8. S'assurer que la masse est connectée le plus près possible de la zone de travail qu'il est pratique de le faire. Si on place la masse sur la charpente de la construction ou d'autres endroits éloignés de la zone de travail, on augmente le risque de voir passer le courant de soudage par les chaînes de levage, câbles de grue, ou autres circuits. Cela peut provoquer des risques d'incendie ou d'échauffement des chaînes et des câbles jusqu'à ce qu'ils se rompent.
9. Assurer une ventilation suffisante dans la zone de soudage. Ceci est particulièrement important pour le soudage de tôles galvanisées plombées, ou cadmiées ou tout autre métal qui produit des fumées toxiques.
10. Ne pas souder en présence de vapeurs de chlore provenant d'opérations de dégraissage, nettoyage ou pistolage. La chaleur ou les rayons de l'arc peuvent réagir avec les vapeurs du solvant pour produire du phosgène (gas fortement toxique) ou autres produits irritants.
11. Pour obtenir de plus amples renseignements sur la sûreté, voir le code "Code for safety in welding and cutting" CSA Standard W 117.2-1974.

## PRÉCAUTIONS DE SÛRETÉ POUR LES MACHINES À SOUDER À TRANSFORMATEUR ET À REDRESSEUR

1. Relier à la terre le chassis du poste conformément au code de l'électricité et aux recommandations du fabricant. Le dispositif de montage ou la pièce à souder doit être branché à une bonne mise à la terre.
2. Autant que possible, l'installation et l'entretien du poste seront effectués par un électricien qualifié.
3. Avant de faire des travaux à l'intérieur de poste, la débrancher à l'interrupteur à la boîte de fusibles.
4. Garder tous les couvercles et dispositifs de sûreté à leur place.

## INSTALLATION

<b>WARNING</b>	
	<ul style="list-style-type: none"> <li>• Have an electrician install and service this equipment.</li> <li>• Turn the input power off at the fuse box before working on equipment.</li> <li>• Do not touch electrically hot parts.</li> </ul>
<b>HIGH VOLTAGE can kill.</b>	

### RECOMMENDED INSTALLATIONS

The K114 gun and cable assembly is recommended for Squirtmobile installations because it includes a flux control valve and the receptacle needed for connecting the Squirtmobile to the wire feeder. A travel control circuit must be included to provide input power to the Squirtmobile. A flux tank for continuous flux feed is also required. The following wire feeders provide the needed features:

- a. LN-8S, LN-8SE, LN-9S or LN-9SE (equipped with flux tank) and K161 Mechanized Travel Power Pack.

- b. Discontinued LN-6S or LN-6SE (equipped with flux tank) and K161 Mechanized Travel Power Pack.

The installation of these recommended combinations requires no special wiring of fixtures. Instructions are as follows:

1. Install the power source and wire feeder — mount the K161 power pack adapter to the LN-8, LN-9 or LN-6 per instructions sent with the K161 kit. Connect the K114 gun to the wire feeder.
2. Mount the K114 gun in the appropriate gun holder as recommended on page 9 for your specific type of weld. Mount the gun clamp on the Squirtmobile.
3. Insert the 3-prong Squirtmobile power input plug into the receptacle on the K114 gun. Be sure the toggle switch on the K161 power pack adapter box mounted to the front of the LN-8, LN-9 or LN-6 (or the “Weld-Travel Only” switch on the LN-4 or ML-3) is set to “On” rather than to “Travel Only” when inserting this plug.

The Squirtmobile is now ready for welding.

## OPERATION

<b>WARNING</b>			
	<ul style="list-style-type: none"> <li>• Do not touch electrically live parts or electrode with skin or wet clothing.</li> <li>• Insulate yourself from work and ground.</li> <li>• Always wear dry insulating gloves.</li> </ul>		<ul style="list-style-type: none"> <li>• Wear eye, ear and body protection.</li> </ul>
<b>ELECTRIC SHOCK can kill.</b>		<b>ARC-RAYS can burn.</b>	
	<ul style="list-style-type: none"> <li>• Keep your head out of fumes.</li> <li>• Use ventilation or exhaust to remove fumes from breathing zone.</li> </ul>		<ul style="list-style-type: none"> <li>• Keep flammable material away.</li> <li>• Do not weld on containers that have held combustibles.</li> </ul>
<b>FUMES AND GASES can be dangerous.</b>		<b>WELDING SPARKS can cause fire or explosion.</b>	

## GENERAL REQUIREMENTS

In every "Squirtmobile" application the following requirements are necessary:

1. The magnetic rolls must be on a magnetic steel surface wide enough to provide full contact with the rolls and of not less than 10 gauge (3.5 mm).
2. The welding cable or hoses should be placed so the "Squirtmobile" does not have to drag the cable or hoses over the plate edges or other sharp corners.
3. The "Squirtmobile" can follow a curved seam provided the curve is not greater than  $\frac{1}{8}$  in./ft (10 mm/meter).
4. The surface on which the rolls move must be free of weld spatter, dirt and large particles which can prevent the rolls from making proper contact with the magnetic surface.

## TRAVEL SPEED CONTROL

Turn the travel speed control rheostat (Item A in photo on page 7) located on the "Squirtmobile" to adjust the travel speed. The dial indicates the approximate speed of travel. Speed range is 7-60 in./min (.17-1.5 m/min). Speed may vary if the input voltage varies.

To set the "Squirtmobile" for an exact speed, turn the toggle switch in the K161 adapter box on the front of the wire feeder to the "On" position. This turns the travel motor on without energizing the welding circuit. Adjust the travel speed dial and time the "Squirtmobile" until you have the exact desired speed set. Turn the switch back to "Off" and you are ready to weld.

**CAUTION:** Be sure the switch is set to "Off" when plugging in the tractor travel motor plug.

Driving power is conveyed to the rolls by a V-belt. The belt assembly includes a clutch. Pull the clutch lever (B) up to engage and push it down to disengage the clutch. When disengaged, the "Squirtmobile" can be rolled freely in either direction.

A V-belt take-up is included in the clutch assembly. Turn the belt take-up screw (C) down to tighten the belt when it stretches in use.

## TRAVEL DIRECTION

The "Squirtmobile" normally runs with the gun following the tractor. With the clutch disengaged, the "Squirtmobile" is freely rolled in either direction.

In certain applications it is necessary to have the "Squirtmobile" driven in the other direction. To change the travel direction, flip the switch on the travel motor control box. The switch is accessible through the hole in the end of the "Squirtmobile"

case. The "Squirtmobile" will now be driven in the opposite direction.

**CAUTION: NEVER TURN THIS SWITCH WHILE THE MOTOR IS RUNNING.** Doing so will seriously damage the gears.

If necessary the pick-up magnet and the gun holder assembly can be interchanged. Simply remove the two hex head screws holding these parts to the "Squirtmobile" and reassemble them to the opposite ends.

## ARC CONTROL

Starting and stopping the arc and the "Squirtmobile" travel varies depending on the wire feeder and gun combination as follows:

1. Start the arc and the travel with the slide switch on the gun.
2. Stop the arc by lifting the gun from the work<sup>(1)</sup> and stop the travel and wire feed motor by operating the slide switch on the gun.

<sup>(1)</sup> If the gun is mounted so it cannot be lifted to stop the arc, a K202 Burnback Kit is required with LN-8's and LN-9's to prevent the electrode from sticking in the crater. For older wire feeders a capacitor-resistor assembly (Kit No. T12631) was shipped loose with "Squirtmobiles" built between August 1966 and April 1976. Installation instructions were packed with the kit.

## GUN HOLDER ADJUSTMENTS

The "Squirtmobile" is designed with maximum flexibility so it can be adapted to a great number of applications. To gain this flexibility the gun holder assembly includes several adjustments for lining the electrode up with the weld. The operation of each adjustment follows. The item letters refer to the letters in the photo on page 7.

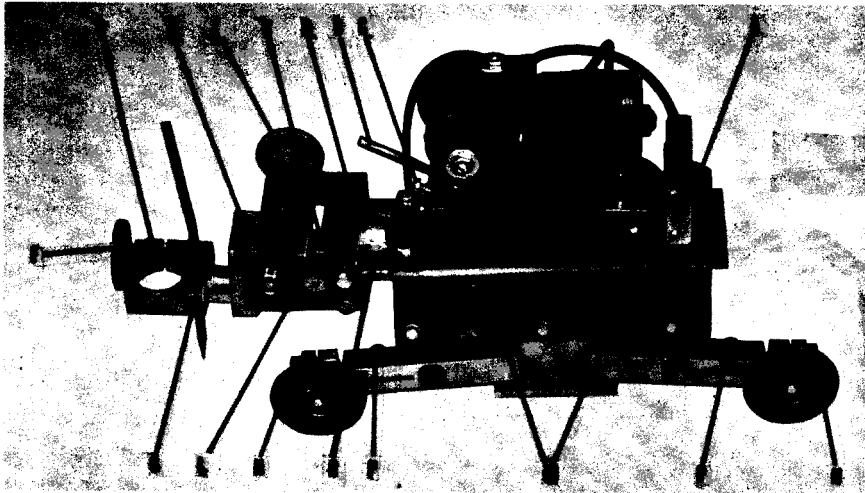
Recommended adjustments for various applications are given in the section entitled "Recommended Gun Alignments" on page 9.

### Gun Clamp (Item D)

Install the appropriate gun clamp on the "Squirtmobile." Three different gun clamps are provided for different types of welds. See the section entitled "Recommended Gun Alignments" for instructions on which gun clamp should be used for different applications.

### Gun Clamp Set Screw (Item E)

Use this set screw to lock the gun clamp in the desired position so the gun feeds the electrode into the seam at the proper angle.



- A. Speed Control Rheostat
- B. Clutch Lever
- C. Belt Take-up Screw
- D. Gun Clamp
- E. Gun Clamp Set Screw
- F. Gun Clamping Screw
- G. Pointer Set Screw
- H. Gun Holder Set Screw
- J. Cross Seam Alignment Screw
- K. Cross Seam Alignment Screw
- L. Gun Holder Release Spring
- M. Spring Tension Set Screw
- N. Guide Roll Clamping Set Screw
- P. Guide Roll Position Set Screw
- R. Mounting Bracket

FIGURE 1

#### **Gun Clamping Screw (Item F)**

Tighten this screw to hold the gun rigidly in the gun clamp. Loosen this screw to adjust the gun height to obtain the proper flux depth for good welding. For best operation, position the gun handle parallel to the line of the weld.

#### **Pointer Set Screw (Item G)**

Line up the end of the pointer with the electrode by loosening this screw and turning the pointer.

#### **Gun Holder Set Screw (Item H)**

The entire gun holder and cross adjustment assembly can be rotated through 360° with this set screw loosened.

#### **Cross Seam Alignment Screw (Item J)**

This screw moves the gun in a path 90° to the weld. This adjustment can be changed while the weld is being made.

#### **Cross Seam Alignment Set Screw (Item K)**

Tighten this screw to remove the vertical “play” from the gun holder assembly. This set screw also locks the cross seam alignment screw in position. If adjustment of the cross seam alignment screw is necessary during welding, this screw must not be locked.

#### **Gun Holder Release Spring (Item L)**

This leaf spring fits over the stub at the end of the cross seam alignment screw. Push this spring out to release the gun holder assembly so it can be tilted back to clip the electrode without disturbing the alignment.

#### **GUIDE ROLL ALIGNMENT**

Proper alignment of the guide rolls is necessary to make the “Squirtmobile” follow the seam. Each guide roll is adjusted with three set screws. Adjustment instructions for each set screw are as follows:

#### **Spring Tension Set Screw (Item M)**

The guide roll arms are spring loaded to keep rolls tightly against the guiding surface. The spring tension is set to permit the rolls to pass over a tack weld or other obstruction without stalling the travel or lifting the gun. To increase spring tension, screw the set screws into the guide roll arms.

#### **Guide Roll Clamping Set Screw (Item N)**

Loosen this set screw to move the guide roll and axle in and out to change the offset distance.

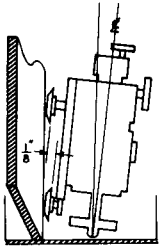
#### **Guide Roll Position Set Screw (Item P)**

Loosen this set screw to adjust the guide roll position for different types of welds. The guide roll can be pivoted around the axis of the guide roll arm to the desired position with the set screw loosened.

**When reference is made to the guide rolls being in a vertical or horizontal position, the face of the roll is vertical or horizontal respectively.**

On all lap welds, fillet welds and tight butt welds where a track is used, the guide rolls are set in the vertical position. With the guide rolls in the vertical position, the front and rear roll must be offset 1/8" (3.2 mm) in relation to each other.

The rear guide roll must be  $\frac{1}{8}$ " (3.2 mm) out farther from the "Squirtmobile frame." This turns the "Squirtmobile" into the vertical guiding surface so it follows the seam properly.



Toe-in Adjustment —  $\frac{1}{8}$ " (3.2 mm) lateral adjustment provides necessary toe-in to keep "Squirtmobile" accurately aligned.

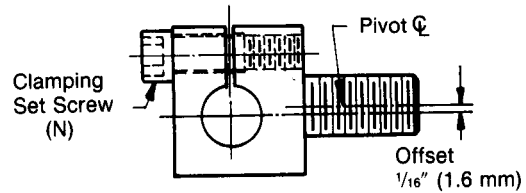
The offset is not used for butt welds which have a  $\frac{1}{8}$ " (3.2 mm) or more gap between the plates. In this case set the guide rolls in line. The "Squirtmobile" is guided by the rolls riding in the gap.

When the guide rolls are used in the horizontal position, the  $\frac{1}{8}$ " (3.2 mm) offset between the two rolls is automatically set if they are positioned as follows:<sup>(2)</sup>

Start with all parts set as in the photo on page 7. Loosen the guide roll position set screw (P) at the gun holder end of the "Squirtmobile." Rotate the guide roll 90° so the roll face is facing up. Tighten the screw (P).

Then loosen the guide roll clamping screw (N) at the pickup magnet end of the "Squirtmobile." Remove the roll and reinstall the guide roll axle into the hole from the opposite side. Tighten screw (N). Loosen screw (P). Rotate the roll 90° so the roll is facing up. The  $\frac{1}{8}$ " (3.2 mm) offset is now set.

Recommended guide roll alignments for various general applications are given in the section entitled "Recommended Gun Alignments."



**FIGURE 2 — Guide Roll Pivot Block**

- <sup>(2)</sup> The guide roll pivot block is made with the guide roll axle offset  $\frac{1}{16}$ " (1.6 mm) from the block pivot centerline. When the clamping screw is above the centerline, the offset is  $\frac{1}{16}$ " (1.6 mm) below the centerline and vice versa. When the rolls are set in the horizontal position as described above, the  $\frac{1}{16}$ " (1.6 mm) offset of the two rolls is added together to automatically provide the desired  $\frac{1}{8}$ " (3.2 mm) offset.

### PICK-UP MAGNET

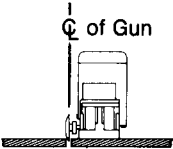
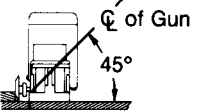

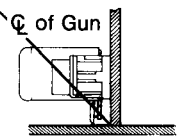
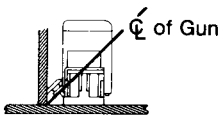
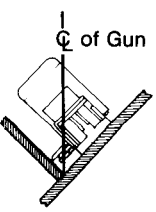
Attach the pick-up magnet to the frame per assembly drawing on page 10. The pick-up magnet is designed to clean magnetic particles from the plate in front of the "Squirtmobile." This prevents such particles from clinging to the drive rolls or interrupting the travel. The magnet will not, of course, remove non-metallic dirt or spatter.



## RECOMMENDED GUN ALIGNMENTS

The following chart indicates general set-ups which should be used for various basic welds. Variations can be made for specific applications.

### Welding Application Set-Up

Type of Weld	Guide Roll Position	Guide Roll Offset	Spring Tension On Guide Roll Arm	Gun Holder Adjustment
<p>OPEN BUTT JOINT — guide wheels travel in the joint. Spring loaded guide wheel mounts permit wheels to move over tacks without disturbing alignment.</p> 	Vertical	None	Maximum — Screw down Allen head. Set screw (M) flush with spring holder.	Use Gun Clamp S11539 <sup>(1)</sup> . Set gun in vertical position directly over weld.
<p>LAP JOINT — guide wheels guide against the edge of the plate opposite to the one on which the "Squirtmobile" rides. Similar arrangement is used for Tight Butt Joints.</p> 	Vertical	Set rear roll 1/8" (3.2 mm) out further from tractor frame than front roll.	1/2 of maximum — 1/8" (3.2 mm) of set screw (M) thread exposed.	Use Gun Clamp S11657 <sup>(1)</sup> . Set gun at 45° angle. *For Tight Butt Joints use gun clamp S11539. <sup>(1)</sup> Set gun in vertical position directly over weld.
<p>COVER PLATE LAP — "Squirtmobile" rides top plate. Guide rolls hook over edge of top plate.</p> 	Vertical with guide roll tilted slightly into corner of joint.	Set front roll 1/8" (3.2 mm) out further from tractor frame than rear roll.	Maximum — Screw down Allen head. Set screw (M) flush with spring holder.	Use Gun Clamp M9485 <sup>(1)</sup> . Set gun at 45° angle.
<p>FILLET — guide wheels are raised to ride on the horizontal plate.</p> 	Both guide rolls horizontal (perpendicular to the Squirtmobile).	Set rear roll 1/8" (3.2 mm) out further from tractor frame than front roll.	Maximum — Screw down Allen head. Set screw (M) flush with spring holder.	Use Gun Clamp S11657 <sup>(1)</sup> . Set gun at 45° angle.
<p>FILLET — guide wheels are raised to ride on the vertical plate.</p> 	Both guide rolls angled against guiding surface so angle on roll is flat against guiding surface.	Set rear roll 1/8" (3.2 mm) out further from tractor frame than front roll.	1/2 of maximum — 1/8" (3.2 mm) of set screw (M) thread exposed.	Use Gun Clamp S11657 <sup>(1)</sup> . Set gun at 45° angle.
<p>FLAT FILLET — guide wheels raised to ride on the side of the work.</p> 	Both guide rolls horizontal (perpendicular to the Squirtmobile).	Rear roll is 1/8" (3.2 mm) out further from tractor frame than front roll.	Maximum — Screw down Allen head. Set screw (M) flush with spring holder.	Use Gun Clamp S11657 <sup>(1)</sup> . Rotate gun holder assembly to 45°. When tractor is at 45° gun holder will be in horizontal plane. Gun is in vertical position.

<sup>(1)</sup> The part numbers are stamped on the gun clamps.

## TROUBLESHOOTING

Trouble	Solution
V-Belt drive is not tight enough for constant travel speed.	Tighten the V-Belt by adjusting the take-up screw on the clutch pivot bar. Do not overtighten the V-Belt. No more than firm finger pressure is required to engage the drive.
The guide rolls do not keep the tractor on the line of weld.	<ol style="list-style-type: none"> <li>1. The welding cable is dragging or catching on some obstacle in the path of the cable. Make sure the cable is able to move freely behind the "Squirtmobile."</li> <li>2. The magnetic surface on which the "Squirtmobile" is moving has dirt or weld spatter which occasionally breaks the magnetic rolls free of their contact with the plate. Be sure the surface is free of spatter and brushed clean.</li> <li>3. The offset between the front and rear guide rolls is not sufficient. This should be set at 1/8" (3.2 mm).</li> </ol>
Travel motor operates at full speed regardless of speed setting.	1/8 amp fuse in the Power Pack case may be burned out. Replace fuse.
Speed control dial setting does not agree with the actual speed.	Set the actual speed at 30 in./min (.76 m/min). Loosen the set screw on the knob and set the pointer on 30. The dial will then read correctly provided the 115V AC Power Pack input voltage remains constant. If a given "Squirtmobile" is used with different Power Pack units, it may be necessary to reset this travel speed knob.
Magnetic drive and idle rolls seem to lose their magnetic holding power.	Non-magnetic particles have been embedded into outside diameter of pole pieces. Carefully scrape and steel wool outside diameter of pole pieces until clean. For maximum holding power the surface of all the pole pieces must make contact with the plate. Cleaning must be uniform around O.D.

## MAINTENANCE

<b>WARNING</b>	
	<ul style="list-style-type: none"> <li>Do not operate with covers removed.</li> <li>Turn off power source before installing or servicing.</li> <li>Do not touch electrically hot parts.</li> <li>Turn the input power to the welding power source off at the fuse box before working in the terminal strip.</li> </ul>
<b>HIGH VOLTAGE</b> can kill.	
	<ul style="list-style-type: none"> <li>Keep away from moving parts.</li> </ul>
<b>MOVING PARTS</b> can injure.	
<ul style="list-style-type: none"> <li>Only qualified personnel should install, use or service this equipment.</li> </ul>	

The lubrication in the motor gear reducer should be checked after 1000 hours of operation. Remove the six screws that hold the gear box to the motor. Check to see if the grease appears hardened or dirty or if the level would be below the top of the motor worm gear. If relubrication is indicated, remove as much of the old grease as possible but do *not* wash in a solvent. Repack with No. S-56M Non-Fluid Oil (Nonfluid Oil Co., Newark, NJ), or Platilube No. 2 (Warren Refining Co., Cleveland, OH) or equivalent grease and reassemble.

Because of the permanent magnet rolls, magnetic particles will accumulate on the tractor. To remove this accumulation the tractor should be cleaned with a blast of compressed air once each day, especially on the underside of the tractor around the rolls.

**WARNING:** Care must be used to insure that the material blown off does not strike personnel. Use proper eye protection.

### RECOMMENDED SPARE PARTS

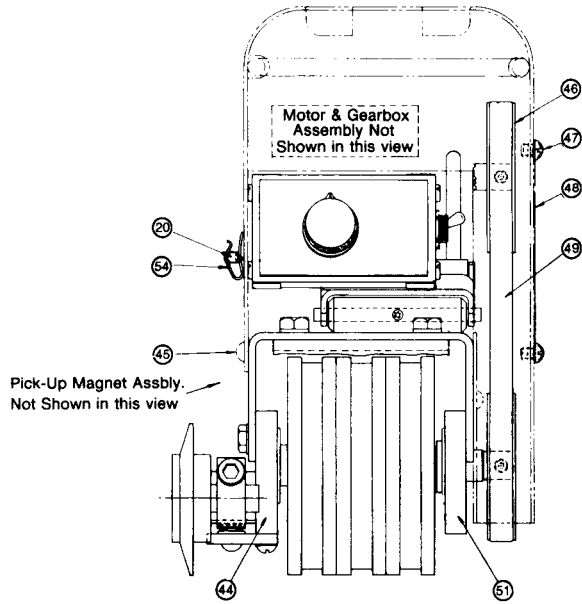
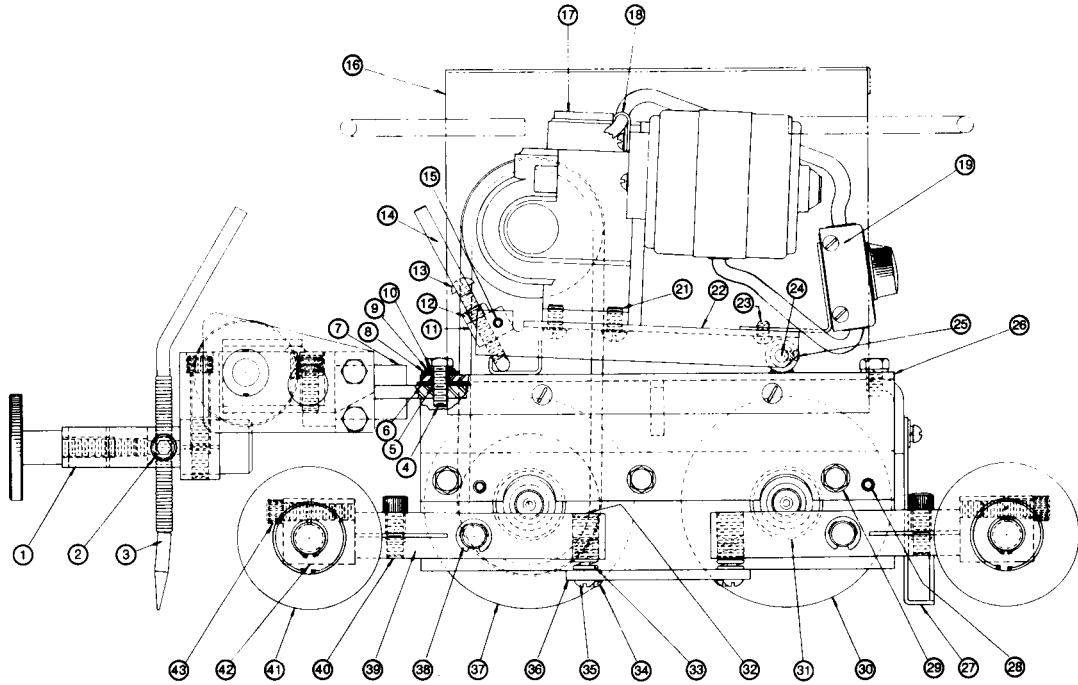
It is recommended that you keep the following spare parts on hand:

One set of two guide rolls . . . . . S11713  
 One V-Belt . . . . . T11492  
 One set of motor brushes. When ordering motor brushes, give all the information on the motor name-plate.

### GENERAL INSTRUCTIONS

The drive motor brushes should be checked after every 500 hours of operation. Replace the brushes before the length is reduced to less than .25" (6.35 mm).

### GENERAL ASSEMBLY



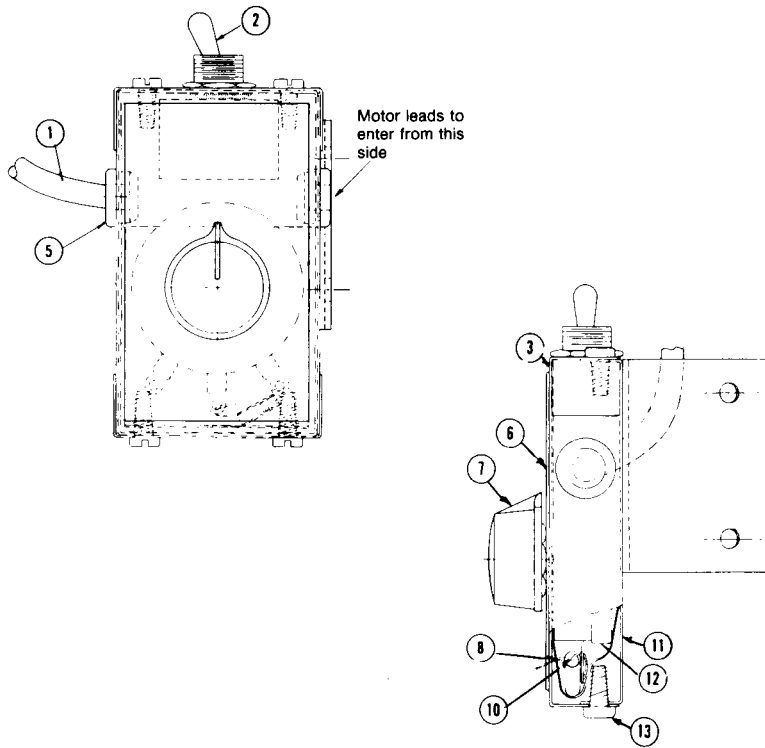
**NOTE:** For a parts list for the Power Pack, write to the factory Service Department. Request assembly drawing G1159 and L3524.

G1156  
10-30-87C

"Squirtmobile"		For Code No. 4236 — Use only the parts marked "X" in column 1 below.							
# Indicates A Change This Printing		For Code No. 4622 and above — Use only the parts marked "X" in column 2 below.							
ITEM	PART NAME & DESCRIPTION	PART NO.	NO. REQ'D	1	2	3	4	5	6
1	Gun Holder Assembly	See P-57-E	1	X	X				
2	Pointer Set Screw	T9447-19	1	X	X				
3	Pointer	S10103-1	1	X	X				
4	Hex Head Screw	1/4-20 x 3/4	2	X	X				
5	Insulation Tube	T7305-26	2	X	X				
6	Insulation Strip	T11357-3	1	X	.				
6	Insulation Strip	T11357-6	1	.	X				
7	Gun Holder Assembly Mounting Bracket	S11646	1	X	.				
7	Gun Holder Assembly Mounting Bracket	S11715	1	.	X				
8	Insulation Washer	S10773-12	2	X	X				
9	Plain Washer	S9262-23	2	X	X				
10	Lock Washer	E106A-2	2	X	X				
11	Pivot Block	T11486	1	X	X				
12	Hex Nut	1/4-20	1	X	X				
13	Belt Take-Up Screw	1/4-20 x 1-1/2	1	X	X				
14	Clutch Lever	T11488	1	X	X				
15	Roll Pin	T9967-17	1	X	X				
16	Cover	S11550	1	X	.				
16	Cover	S11656	1	.	X				
17	Motor and Gear Box Assembly, Includes:	M9457	1	X	X				#
18	Lead Clip	T12563-4	1	X	X				
19	Control Box Assembly	See P-57-D	1	X	X				
20	Socket Key	T11563-1	1	X	X				
21	Sems Screw	T10082-20	4	X	X				#
22	Motor Mounting Base	M9458	1	X	.				
22	Motor Mounting Base	M9634	1	.	X				
23	Self Tapping Screw	S8025-13	2	X	X				
24	Pivot Pin	T11484	1	X	.				
24	Pivot Pin	T11604	1	.	X				
25	Set Screw	S11604-1	1	X	X				
26	Squirtmobile Frame	S11545	1	X	.				
26	Squirtmobile Frame	S11704	1	.	X				
27	Pick-Up Magnet Assembly	M9635	1	.	X				
28	Roll Pin	T9967-24	4	X	X				
29	Sems Screw	T10082-23	6	X	X				
	Brush Cap	M9457-1A	1	X	X				#
	Brush Assembly	M9457-1B	1	X	X				#
	Ball Bearing	M9457-1C	1	X	X				#
	Brush Cap	M9457-2A	1	X	X				#
	Brush Assembly	M9475-2B	1	X	X				#
	Ball Bearing	M9475-2C	1	X	X				#
	Fiber Gear	M9457-2D	1	X	X				#
30	Idle Roll	S11711-1	1	X	.				
30	Idle Roll and Bearing Assembly	S13704-1	1	.	X				
31	Ball Bearing	M9300-32	4	X	.				
32	Set Screw	S11604-12	2	X	.				
32	Set Screw	S11604-26	2	.	X				
33	Spring	T10247-5	2	X	.				
33	Spring	T10247-6	2	.	X				
34	Sems Screw	T10082-3	2	.	X				
35	Self Tapping Screw	S8025-22	2	.	X				#
36	Down Travel Stop	S11798	1	.	X				
37	Drive Rolls	S11711-2	1	X	.				
37	Drive Roll and Bearing Assembly	S13704-2	1	.	X				
38	Snap Ring	S9776-10	2	.	X				
39	Guide Roll Arm (Left)	S11533	1	X	.				
39	Guide Roll Arm (Right)	S11652	1	X	.				
	Pin, Mounts Guide Roll Arms	T11505	2	X	.				
	Roll Pin, Mounts Guide Roll Arms	T9967-22	2	X	.				
39	Guide Roll Arm	S11706	2	.	X				
40	Socket Head Screw	T9447-13	2	X	.				#
40	Socket Head Screw	T9447-27	2	.	X				#

"Squirtmobile"		For Code No. 4236 — Use only the parts marked "X" in column 1 below.							
# Indicates A Change This Printing		For Code No. 4622 and above — Use only the parts marked "X" in column 2 below.							
ITEM	PART NAME & DESCRIPTION	PART NO.	NO. REQ'D	1	2	3	4	5	6
41	Guide Roll	S11713	2	X	X				
42	Guide Roll Pivot Block (Left)	S11605	1	X	•				
42	Guide Roll Pivot Block (Right)	S11654	1	X	•				
42	Guide Roll Pivot Block	S11710	2	X	X				
43	Socket Head Screw	T9447-20	2	X	•			#	
43	Socket Head Screw	T9447-13	2	•	X			#	
44	Bearing Housing	M9456	1	X	•				
44	Bearing Housing	S12684	1	•	X			#	
45	Sems Screw	T10082-4	4	X	X				
46	Pulley	T11493	2	X	X				
47	Self Tapping Screw	S8025-12	4	X	•				
47	Self Tapping Screw	S8025-20	4	•	X				
48	Nameplate	M9460-1	1	X	•				
48	Nameplate	M9627	1	•	X				
49	V-Belt	T11492	1	X	X				
51	Bearing Housing	M9456	1	X	•				
51	Bearing Housing	M9617-2	1	•	X				
54	Tinnerman Clip	T12035-1	1	X	X				

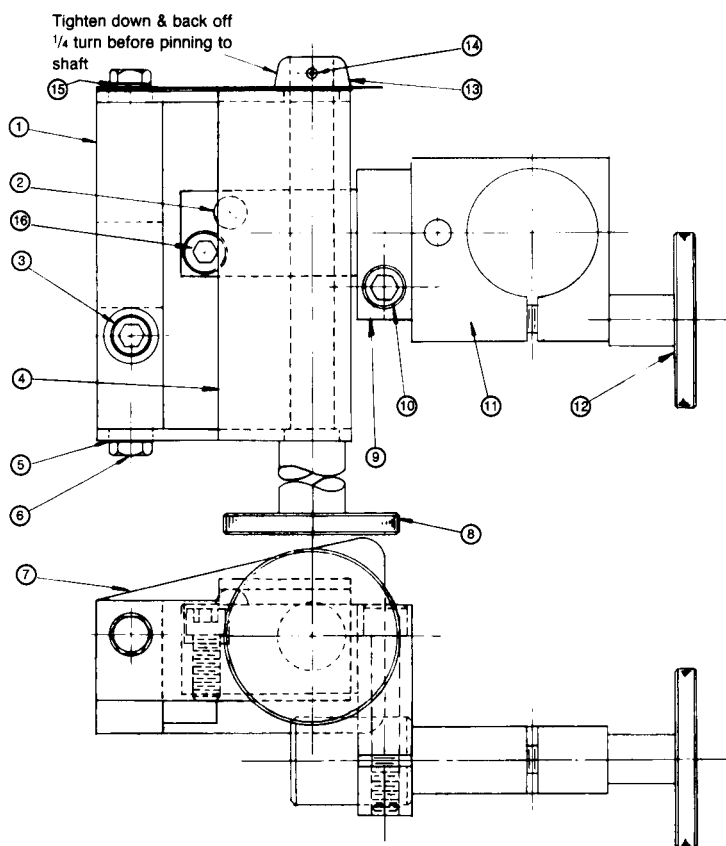
### CONTROL BOX ASSEMBLY



M9620  
12-20-79K

"Squirtmobile"					
# Indicates A Change This Printing					
ITEM	PART NAME & DESCRIPTION	PART NO.	NO. REQ'D	1	2 3 4 5 6
	Control Box Assembly, Code 4236 Only, Includes All Parts Marked "X" in Column 1	M9462	1	X	.
1	Control Box Assembly, Code 4622 and Above, Includes All Parts Marked "X" in Column 2 Control Cable, Includes:	M9620 S11716	1 1	.	X X
2	Male Plug	T11154-1	1	X	X
2	Reversing Switch	T11156	1	X	.
		T13111	1	.	X
3	Control Box Front	M9110	1	X	.
3	Control Box Front	M9693	1	.	X
5	Grommet	S10255-9	2	X	.
5	Grommet	T9274-1	2	.	X
6	Dial Plate	M9460-2	1	X	.
6	Dial Plate	S11730	1	.	X
7	Knob	T11157	1	X	X
8	Insulation	T11228	1	X	X
10	Resistor	T12731-24	1	X	X
					#
11	Control Box Back	T11489	1	X	.
11	Control Box Back	T11621	1	.	X
12	Rheostat	T10812-9	1	X	X
					#
13	Self Tapping Screw	S8025-37	4	X	.
13	Self Tapping Screw	S8025-60	4	.	X

### GUN HOLDER ASSEMBLY

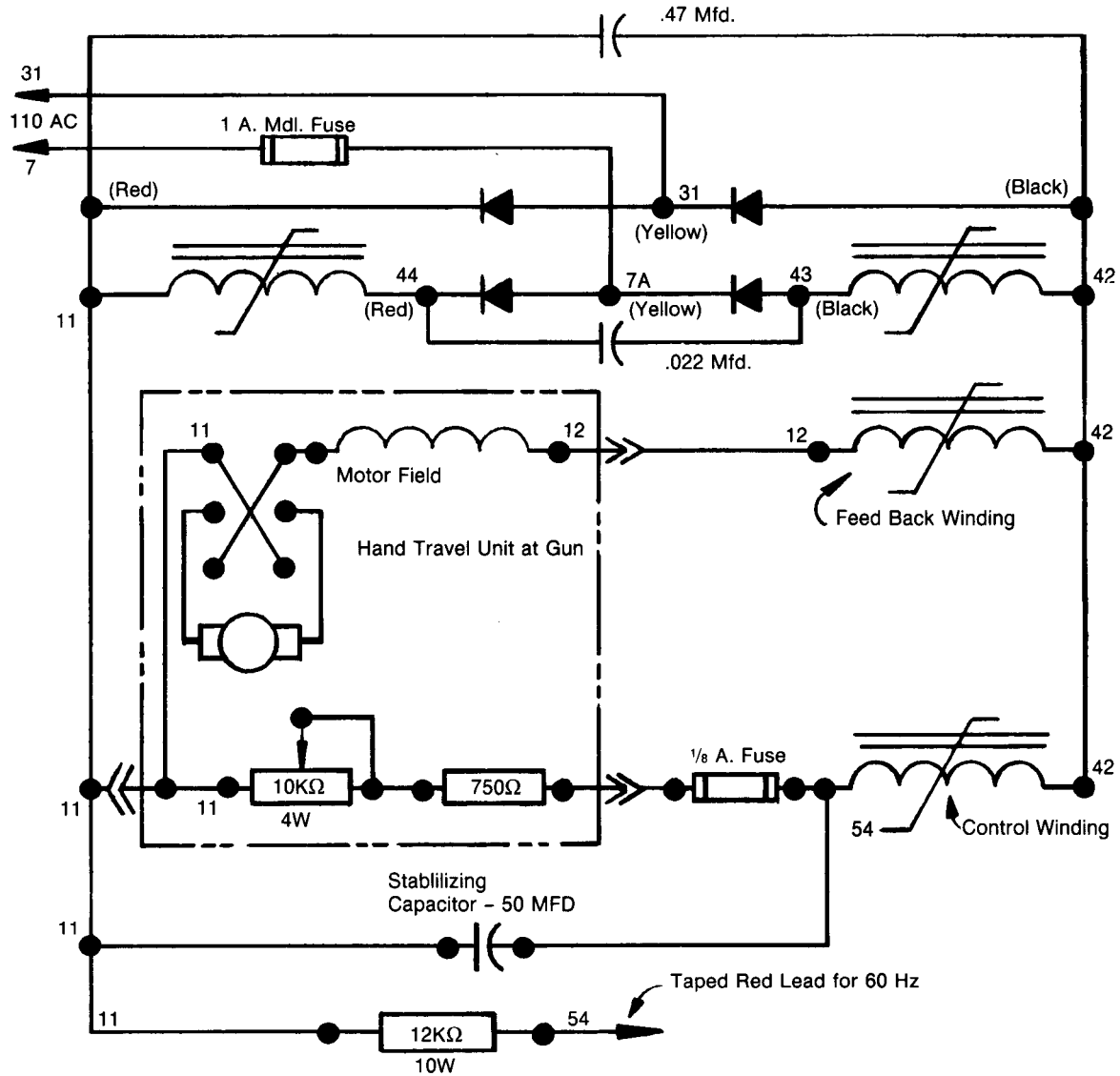


M9619  
2-5-82B

# Indicates A Change This Printing						
ITEM	PART NAME & DESCRIPTION	PART NO.	NO. REQ'D	1	2	3 4 5 6
1	Gun Holder Assembly, Includes All Below Mounting Block	M9619 S11647	1 1	X X		
2	Drive Screw	S8025-11	1	X		
3	Socket Head Cap Screw	T9447-20	1	X		
4	Gun Holder Base	S11630	1	X		
5	Spacer	S10153-13	3	X		
6	Hex Head Screw	1/4-20 x 1/2	3	X		
7	Spring	T11490	1	X		
8	Cross Adjusting Handle	T11480	1	X		
9	Cross Adjusting Nut	T11572	1	X		
10	Socket Head Cap Screw	T9447-26	1	X		
11	Gun Holder Clamp	S11657	1	X		
11	Angled Offset Gun Holder Clamp (Optional)	M9485	1	X		#
11	Offset Gun Holder Clamp (Optional)	S11539	1	X		#
12	Gun Holder Screw	T11321	1	X		
13	Cross Screw Guide	T11478	1	X		
14	Roll Pin	T9967-6	1	X		
15	Lock Washer	E106A-2	2	X		
16	Take-Up & Locking Screw	T11589-1	1	X		

# K110 Hand Travel Schematic Diagram

T12834  
10-15-82L



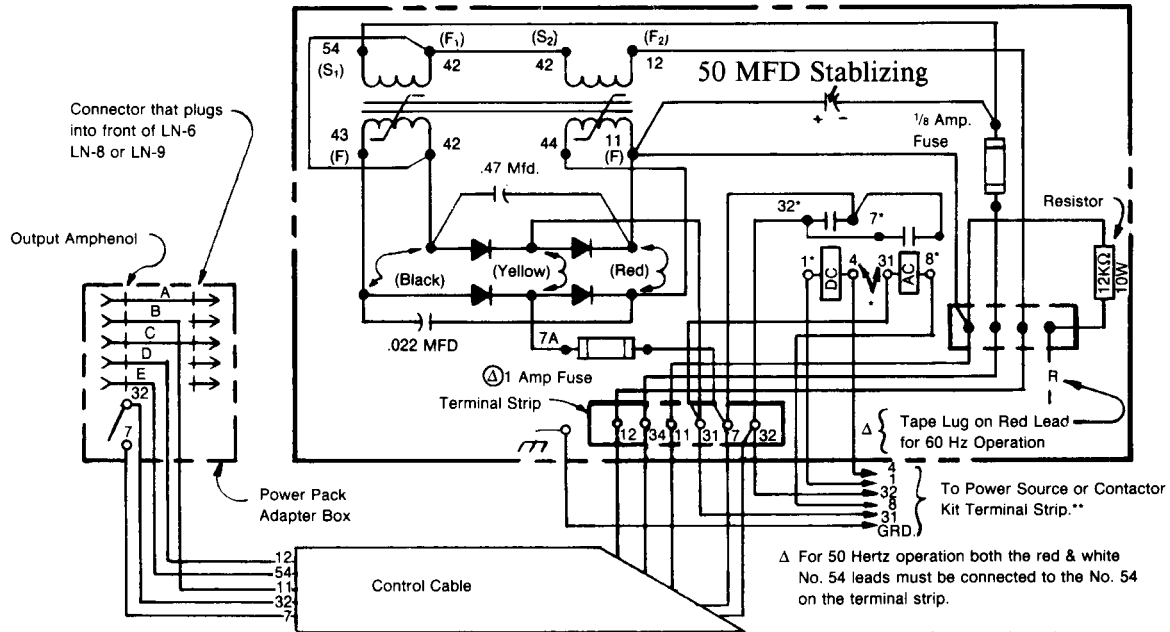
\* For 50 Hz operation both red & black No. 54 leads must be connected to No. 54 on power pack terminal strip

This wiring diagram is typical for this unit but is not exact for all codes. If an exact diagram is needed, specify the code number and contact the Lincoln Electric Service Department.



# K161 Power Pack Wiring Diagram

S15803  
10-15-82L



Ⓐ 1 Amp Fuse Not Used  
On Earlier Units.

\* These numbers refer to circuit numbers  
only, and not to any number that may  
appear on the relay housing.

\*\* If the power source or contactor kit has terminals 31, 32, and 4, but **no** terminal 1, connect leads 31 and 32 from the power pack to their respective terminals on the terminal strip. Connect **lead 8** from the power pack to **terminal 4** on the terminal strip. Tape separately the lugs on leads 1 and 4. Connect the green lead from the power pack to the frame of the power source or contactor kit by means of the frame stud near the terminal strip or other secure electrical connection.

If the power source or contactor kit has terminals 31, 32, 4, and 1 connect leads 31, 32, 4, and 1 from the power pack to their respective terminals on the terminal strip. Tape up the lug on lead 8. Connect the green lead from the power pack to the power source or contactor kit by means of the frame stud near the terminal strip or other secure electrical connection.

This wiring diagram is typical for this unit but is not exact for all codes. If an exact diagram is needed, specify the code number and contact the Lincoln Electric Service Department.





<b>WARNING</b>	<ul style="list-style-type: none"> <li>● Do not touch electrically live parts or electrode with skin or wet clothing.</li> <li>● Insulate yourself from work and ground.</li> </ul>	<ul style="list-style-type: none"> <li>● Keep flammable materials away.</li> </ul>	<ul style="list-style-type: none"> <li>● Wear eye, ear and body protection.</li> </ul>
Spanish <b>AVISO DE PRECAUCION</b>	<ul style="list-style-type: none"> <li>● No toque las partes o los electrodos bajo carga con la piel o ropa mojada.</li> <li>● Aíslese del trabajo y de la tierra.</li> </ul>	<ul style="list-style-type: none"> <li>● Mantenga el material combustible fuera del área de trabajo.</li> </ul>	<ul style="list-style-type: none"> <li>● Protéjase los ojos, los oídos y el cuerpo.</li> </ul>
French <b>ATTENTION</b>	<ul style="list-style-type: none"> <li>● Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension.</li> <li>● Isolez-vous du travail et de la terre.</li> </ul>	<ul style="list-style-type: none"> <li>● Gardez à l'écart de tout matériel inflammable.</li> </ul>	<ul style="list-style-type: none"> <li>● Protégez vos yeux, vos oreilles et votre corps.</li> </ul>
German <b>WARNUNG</b>	<ul style="list-style-type: none"> <li>● Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung!</li> <li>● Isolieren Sie sich von den Elektroden und dem Erdboden!</li> </ul>	<ul style="list-style-type: none"> <li>● Entfernen Sie brennbares Material!</li> </ul>	<ul style="list-style-type: none"> <li>● Tragen Sie Augen-, Ohren- und Körperschutz!</li> </ul>
Portuguese <b>ATENÇÃO</b>	<ul style="list-style-type: none"> <li>● Não toque partes elétricas e electrodos com a pele ou roupa molhada.</li> <li>● Isole-se da peça e terra.</li> </ul>	<ul style="list-style-type: none"> <li>● Mantenha inflamáveis bem guardados.</li> </ul>	<ul style="list-style-type: none"> <li>● Use proteção para a vista, ouvido e corpo.</li> </ul>
Japanese <b>注意事項</b>	<ul style="list-style-type: none"> <li>● 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。</li> <li>● 施工物やアースから身体が絶縁されている様にして下さい。</li> </ul>	<ul style="list-style-type: none"> <li>● 燃えやすいものの側での溶接作業は絶対にしてはなりません。</li> </ul>	<ul style="list-style-type: none"> <li>● 目、耳及び身体に保護具をして下さい。</li> </ul>
Chinese <b>警告</b>	<ul style="list-style-type: none"> <li>● 皮肤或湿衣物切勿接觸帶電部件及銲條。</li> <li>● 使你自已與地面和工件絕緣。</li> </ul>	<ul style="list-style-type: none"> <li>● 把一切易燃物品移離工作場所。</li> </ul>	<ul style="list-style-type: none"> <li>● 佩戴眼、耳及身體勞動保護用具。</li> </ul>
Korean <b>위험</b>	<ul style="list-style-type: none"> <li>● 전도체나 용접봉을 젖은 헝겊 또는 피부로 절대 접촉치 마십시오.</li> <li>● 모재와 접지를 접촉치 마십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 인화성 물질을 접근시키지 마시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 눈, 귀와 몸에 보호장구를 착용하십시오.</li> </ul>
Arabic <b>تحذير</b>	<ul style="list-style-type: none"> <li>● لا تلمس الأجزاء التي يسري فيها التيار الكهربائي أو الألكترود بجند الجسم أو بالملابس المبللة بالماء.</li> <li>● ضع عازلا على جسمك خلال العمل.</li> </ul>	<ul style="list-style-type: none"> <li>● ضع المواد القابلة للاشتعال في مكان بعيد.</li> </ul>	<ul style="list-style-type: none"> <li>● ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.</li> </ul>

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

			
<ul style="list-style-type: none"> <li>● Keep your head out of fumes.</li> <li>● Use ventilation or exhaust to remove fumes from breathing zone.</li> </ul>	<ul style="list-style-type: none"> <li>● Turn power off before servicing.</li> </ul>	<ul style="list-style-type: none"> <li>● Do not operate with panel open or guards off.</li> </ul>	<b>WARNING</b>
<ul style="list-style-type: none"> <li>● Los humos fuera de la zona de respiración.</li> <li>● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.</li> </ul>	<ul style="list-style-type: none"> <li>● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio.</li> </ul>	<ul style="list-style-type: none"> <li>● No operar con panel abierto o guardas quitadas.</li> </ul>	Spanish <b>AVISO DE PRECAUCION</b>
<ul style="list-style-type: none"> <li>● Gardez la tête à l'écart des fumées.</li> <li>● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail.</li> </ul>	<ul style="list-style-type: none"> <li>● Débranchez le courant avant l'entretien.</li> </ul>	<ul style="list-style-type: none"> <li>● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés.</li> </ul>	French <b>ATTENTION</b>
<ul style="list-style-type: none"> <li>● Vermeiden Sie das Einatmen von Schweißrauch!</li> <li>● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes!</li> </ul>	<ul style="list-style-type: none"> <li>● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!)</li> </ul>	<ul style="list-style-type: none"> <li>● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen!</li> </ul>	German <b>WARNUNG</b>
<ul style="list-style-type: none"> <li>● Mantenha seu rosto da fumaça.</li> <li>● Use ventilação e exaustão para remover fumo da zona respiratória.</li> </ul>	<ul style="list-style-type: none"> <li>● Não opere com as tampas removidas.</li> <li>● Desligue a corrente antes de fazer serviço.</li> <li>● Não toque as partes elétricas nuas.</li> </ul>	<ul style="list-style-type: none"> <li>● Mantenha-se afastado das partes moventes.</li> <li>● Não opere com os painéis abertos ou guardas removidas.</li> </ul>	Portuguese <b>ATENÇÃO</b>
<ul style="list-style-type: none"> <li>● ヒュームから頭を離すようにして下さい。</li> <li>● 換気や排煙に十分留意して下さい。</li> </ul>	<ul style="list-style-type: none"> <li>● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切って下さい。</li> </ul>	<ul style="list-style-type: none"> <li>● パネルやカバーを取り外したままで機械操作をしないで下さい。</li> </ul>	Japanese <b>注意事項</b>
<ul style="list-style-type: none"> <li>● 頭部遠離煙霧。</li> <li>● 在呼吸區使用通風或排風器除煙。</li> </ul>	<ul style="list-style-type: none"> <li>● 維修前切斷電源。</li> </ul>	<ul style="list-style-type: none"> <li>● 儀表板打開或沒有安全罩時不準作業。</li> </ul>	Chinese <b>警告</b>
<ul style="list-style-type: none"> <li>● 얼굴로부터 용접가스를 멀리하십시오.</li> <li>● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 보수전에 전원을 차단하십시오.</li> </ul>	<ul style="list-style-type: none"> <li>● 판넬이 열린 상태로 작동치 마십시오.</li> </ul>	Korean <b>위험</b>
<ul style="list-style-type: none"> <li>● ابعء رأسك بعيداً عن الدخان.</li> <li>● استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها.</li> </ul>	<ul style="list-style-type: none"> <li>● اقطع التيار الكهربائي قبل القيام بأية صيانة.</li> </ul>	<ul style="list-style-type: none"> <li>● لا تشغيل هذا الجهاز اذا كانت الاغطية الحديدية الواقية ليست عليه.</li> </ul>	Arabic <b>تحذير</b>

**LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.**

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的說明以及應該使用的銀擇材料，並請遵守貴方的有關勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

# LIMITED WARRANTY

## STATEMENT OF WARRANTY:

The Lincoln Electric Company (Lincoln) warrants to the original purchaser (end-user) of new equipment that it will be free of defects in workmanship and material.

This warranty is void if Lincoln finds that the equipment has been subjected to improper care or abnormal operation.

## WARRANTY PERIOD:

All warranty periods date from the date of shipment to the original purchaser and are as follows:

### Three Years:

Transformer Welders  
Motor-generator Welders  
Semiautomatic Wire Feeders  
Plasma-cutting Power Source  
Engine Driven Welders (except engine and engine accessories) with operating speed under 2,000 RPM

### Two Years:

Engine Driven Welders (except engine and engine accessories) with operating speed over 2,000 RPM

All engine and engine accessories are warranted by the engine or engine accessory manufacturer and are not covered by this warranty.

Equipment not listed above such as guns and cable assemblies, automatic wire feeders and field-installed optional equipment is warranted for one year.

## TO OBTAIN WARRANTY COVERAGE:

You are required to notify Lincoln Electric, your Lincoln Distributor, Lincoln Service Center or Field Service Shop of any defect within the warranty period. Written notification is recommended.

## WARRANTY REPAIR:

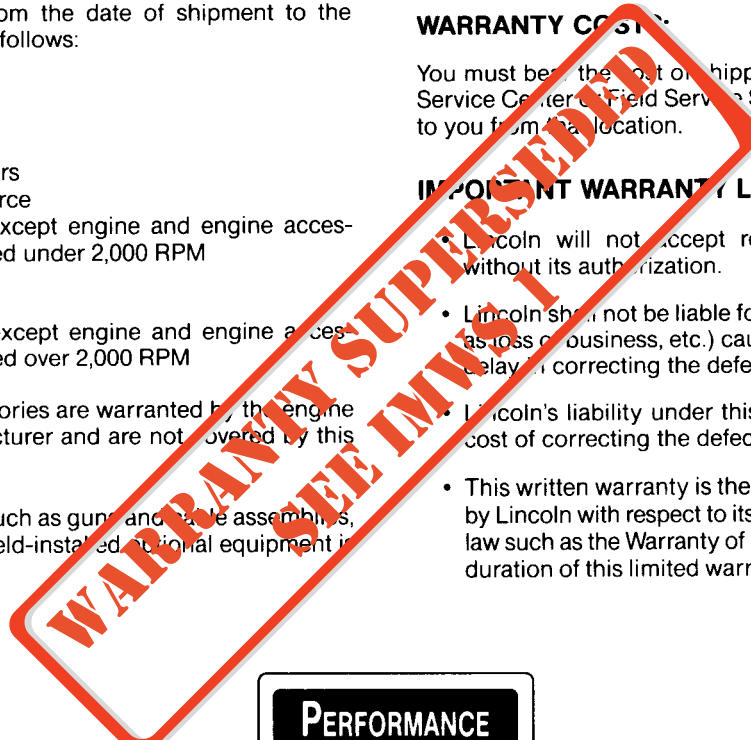
If Lincoln's inspection of the equipment confirms the existence of a defect covered by this warranty, the defect will be corrected by repair or replacement at Lincoln's option.

## WARRANTY COSTS:

You must bear the cost of shipping the equipment to a Lincoln Service Center or Field Service Shop as well as return shipment to you from that location.

## IMPORTANT WARRANTY LIMITATIONS:

- Lincoln will not accept responsibility for repairs made without its authorization.
- Lincoln shall not be liable for consequential damages (such as loss of business, etc.) caused by the defect or reasonable delay in correcting the defect.
- Lincoln's liability under this warranty shall not exceed the cost of correcting the defect.
- This written warranty is the **only** express warranty provided by Lincoln with respect to its products. Warranties implied by law such as the Warranty of Merchantability are limited to the duration of this limited warranty for the equipment involved.



## THE LINCOLN ELECTRIC COMPANY

World's Leader in Welding and Cutting Products • Premier Manufacturer of Industrial Motors

Sales and Service through Subsidiaries and Distributors Worldwide

Cleveland, Ohio 44117-1199 U.S.A.

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