IMA 574B

OPERATING MANUAL

CV320-I

Semi automatic arc welding machine

This manual applies to

Part No.	Code	Desc	Volts
KA1392	1447	CV320-I	415
KA1392-1	1473	CV320-I	380
KA1392	1509	CV320-I	415
KA1392-1	1510	CV320-I	380
KA1392	1535	CV320-I	415

SAFETY DEPENDS ON YOU

Lincoln Electric welders are designed and built with safety in mind. However, your overall safety can be increased by proper installation . . . and thoughtful operation on your part. Read and observe the general safety precautions on page 2 and follow specific installation and operating instructions included in this manual.
Most importantly, think before you act and be careful.

THE LINCOLN ELECTRIC COMPANY
(AUSTRALIA) PTY. LTD. A.C.N. 000 040 308
SYDNEY. AUSTRALIA
A Subsidiary of
THE LINCOLN ELECTRIC CO. U.S.A.
Associated Subsidiaries in Australasia, Europe, North and South America.
THE WORLD'S LEADER IN WELDING AND CUTTING PRODUCTS

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. READ AND UNDERSTAND BOTH THE SPECIFIC INFORMATION GIVEN IN THE OPERATING MANUAL FOR THE WELDER AND/OR OTHER EQUIPMENT TO BE USED AS WELL AS THE FOLLOWING GENERAL INFORMATION.

ARC WELDING SAFETY PRECAUTIONS

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 semi-automatic and automatic wire welding, the electrode, electrode reel, welding head and nozzle or semi-automatic 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 holder 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.

FUMES AND GASES can be dangerous

2. 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 vapours coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapours 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 ensure 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.

ARC RAYS can burn

3. 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 AS 1674.2-1990 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 or expose themselves to the arc rays or to hot spatter or metal.

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 AS1674 Parts 1 & 2 “Safety in Welding and Allied Processes”, WTIA Technical Note 7 “Health and Safety in Welding” 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 vapours from substances inside. These can cause an explosion even though the vessel has been “cleaned”. For information purchase AS 1674-1990.
   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 possible. 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 and 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 hand-tight except when the cylinder is in use or connected for use.

   g. Read and follow the instructions on compressed gas cylinders and associated equipment, and AS 2030 Parts 1 & 2.

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 SAA Wiring Rules, all local codes and the manufacturer’s recommendations.

   c. Ground the equipment in accordance with the SAA Wiring Rules 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 fuel near an open flame, welding arc or when the engine is running. Stop the engine and allow it to cool before refuelling 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 petrol 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 INSTALLATIONS, 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 and Cutting - ANSI Standard Z 49.1” and WTIA Technical Note 7. All WTIA publications and ANSI/AWS Standards are available from the Welding Technology Institute of Australia, P.O. Box 6165, Silverwater NSW 2128. For copies of various Australian Standards contact your local S.A.A. office.

HOW TO ORDER REPLACEMENT PARTS

To ensure that you receive the correct replacement part the following procedure should be followed:

1. Quote Serial Number and Code Number.
2. Quote the Description, Item Number and Parts List Number of the desired part. When ordering parts for items carrying brand names of other companies, such as fan motors, drive shafts, etc., be sure to include the other company’s name and part number and other relevant information.
3. Should the primary cord be damaged, a special cord is required, and is available from Lincoln.
4. Parts should be ordered from Lincoln’s nearest authorised Field Service Shop. (The “Lincoln Service Directory” listing these shops geographically is available on request.)

NOTE: “Hardware” in the Lincoln Parts Lists are not Lincoln stock items but can be obtained via the Field Service Shop network. Component parts of assemblies such as stator coils or armature coils, etc., which require electrical testing or locating fixtures are not considered replaceable items. This is to ensure that the customer receives parts which will keep the welder in the best operating condition.

WELDING, EMF AND PACEMAKERS

All welders should follow safe practices that minimize their exposure to electric and magnetic fields (EMF).

For welders wearing implanted pacemakers, safe welding practices are particularly important and additional procedures should be followed by those who have decided to continue to weld. (Hopefully in keeping with a doctor's advice).

The following procedures will not eliminate exposure to EMF or the possibility of arc welding having an effect on a pacemaker, however if followed, they will significantly reduce exposure to electric and magnetic fields. Electric and magnetic fields are created any time electric current flows through a conductor, however it is not clear whether such exposure affects ones health.

Some researchers have reported that exposure to EMF may cause leukemia or other illnesses. These claims originally arose in relation to high voltage electric power lines and are very much in dispute in the medical and scientific arena, however the best advice is to minimise your exposure to EMF to protect your health should doctors eventually decide there is a risk.

There are four fundamental fact about EMF:

- With direct current (DC), the field strength is relatively constant and does not change.
- With alternating current (AC), the field strength constantly changes.
- The greater the current flow, i.e. the higher the amps, the stronger the field created by the current
- The closer the conductor or electrical device is to the body, the greater the exposure to the field.

Minimising Exposure

All welders should use the following procedures to minimise EMF exposure.

- Route electrode or gun and work cables together. Secure them with tape if possible.
- Never coil the electrode lead around your body.
- Do not place your body between the electrode and work cables. If your electrode cable is on your right side the work cable should also be on your right side.
- Connect the work cable to the work piece as close as possible to the area being welded. (This is also a good practice to eliminate a common problem on welding - a poor work connection).
- Do not work next to the welding power source.

Welders with Pacemakers

There is no question that the fields in arc welding can interfere with a pacemakers function. Generally the interference does not permanently damage the pacemaker. Once the wearer leaves the arc welding environment or stops welding, the pacemaker returns to normal functioning. The welding arc has little or no effect on the operation of some pacemakers, especially designs that are bi-polar or designed to filter out such interference.

For a welder or anyone working around electrical equipment the selection of a pacemaker is very important. Get a doctor's advice about which pacemaker is the least sensitive to interference from welding while still being medically suitable.

In addition to the normal safety precautions, the following additional procedures should be adopted by welders with pacemakers.

- Use gas welding when the application is suitable.
- Use the lowest current setting appropriate for the application. Do not exceed 400 amps. Low current (75-200 amps) direct current (DC) welding should be used if arc welding is necessary. Do not TIG weld with high frequency.
- Do not use repeated, short welds. Wait about ten seconds between stopping one weld and starting the next. When having difficulty starting an electrode, do not re-strike the rod repeatedly.
- If you feel light headed, dizzy or faint, immediately stop welding. Lay the electrode holder down so that it does not contact the work and move away from any welding being performed. Arrange your work in advance so that, if you become dizzy and drop the electrode holder, the electrode holder will not fall on your body or strike the work.
- Do not work on a ladder or other elevated position or in a cramped, confined place.
- Do not work alone. Work only in the presence of an individual who understands these precautions and the possible effect welding may have on your pacemaker.
- Do not work near spot welding equipment.
- If you have a pacemaker and wish to continue arc welding, discuss this an any other questions you may have with your physician and follow his or her advice. The doctor may wish to contact the pacemaker manufacturer for a recommendation. As mentioned before, the design of the pacemaker significantly affects the degree to which it is subject to interference from a welding circuit. Do not rely on the fact that you know another welder with a pacemaker who has welded for years without experiencing a problem. That welder and his or her pacemaker may be quite different from you and your pacemaker.

INSTRUCTIONS FOR ELECTROMAGNETIC COMPATIBILITY

WARNING

This welding machine must be used by trained operators only. Read this manual carefully before attempting to use the welding machine.

Conformance

Products displaying the C-Tick mark are in conformity with Australian/New Zealand requirements for the Electromagnetic Compatibility (EMC). They are:

- manufactured in conformity with Australian/New Zealand Standard (Emission):- AS/NZS 3652 'Electromagnetic Compatibility - Arc Welding Equipment' (identical to and reproduced from, British Standard EN 50199).
- for using with other Lincoln Electric/LiquidArc equipment.
- designed for industrial and professional use.

Introduction

All electrical equipment generates small amounts of electromagnetic emission. Electrical emission may be transmitted through power lines or radiated through space, similar to a radio transmitter. When emissions are received by other equipment, electrical interference may result. Electrical emissions may effect many kinds of electrical equipment; other near by welding equipment, radio and TV reception, numerical controlled machines, telephone systems, computers, etc. Be aware that interference may result and extra precautions may be required when a welding power source is used in a domestic establishment.

Installation and Use

The purchaser/user is responsible for installing and using the welding equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the purchaser/user of the welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing (grounding) the welding circuit (see note below). In other cases it could involve constructing an electromagnetic screen enclosing the power source and the work complete with associated input filters. In all cases electromagnetic disturbances must be reduced to the point where they are no longer troublesome.

NOTE: The welding circuit may or may not be earthed for safety reasons according to national codes. Changing the earthing arrangements should only be authorised by a person who is competent to assess whether the changes increase the risk of injury, eg. by allowing parallel welding current return paths which may damage the earth circuits of other equipment.

Assessment of Area

Before installing welding equipment the purchaser/user shall make an assessment of potential problems in the surrounding area.

The following shall be taken into account:

a. Other supply cables, control cables, signalling and telephone cables; above, below and adjacent to the welding equipment;

b. Radio and television transmitters and receivers;

c. Computer and other control equipment;

d. Safety critical safety equipment, eg. guarding of industrial equipment;

e. The health of people around, eg. the use of pacemakers and hearing aids;;

f. Equipment used for calibration or measurement;

g. The immunity of other equipment in the environment. The purchaser/user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures;

h. The time of the day that welding or other activities are to be carried out.

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

Methods of Reducing Emissions

Mains Supply

Welding equipment should be connected to the mains supply according to the manufacturers recommendations.If interference occurs, it may be necessary to take additional precautions such as filtering the mains supply. Consideration should be given to shielding the supply cable of permanently installed welding equipment, in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the welding power source so that good electrical contact is maintained between the conduit and the welding power source enclosure.

Maintenance of the Welding Equipment

The welding equipment should be routinely maintained according to the manufacturer's recommendations. All access and service doors and covers should be closed and properly fastened when the welding equipment is in operation. The welding equipment should not be modified in any way except for those changes and adjustments covered in the manufacturers instructions. In particular, the spark gaps of arc initiation and stabilising devices should be adjusted and maintained according to the manufacturer's recommendations.

Welding Cables

The welding cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

Equipotential Bonding

Bonding of all metallic components in the welding installation and adjacent to it should be considered. However, metallic components bonded to the work piece will increase the risk that the operator could receive a shock by touching these metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

Earthing of the Workpiece

Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of its size and position, eg. ship's hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of work pieces increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection to the workpiece to earth should be made by direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

Screening and Shielding

Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire welding installation may be considered for special applications.*

* Portions of the preceding text are contained in AS./NZS3652: 'Electromagnetic Compatibility - Arc Welding Equipment'.

PRODUCT DESCRIPTION

The CV320-I is a semi-automatic Constant Voltage DC arc welding power source and wire feeder. It combines a step controlled power source with a separate solid state controlled wire feeder.

Excellent arc characteristics are provided for both gas shielded and self shielded welding within its current range.

For instructions on operation of the wire feeder refer to the separate instruction manual included. Standard features include output volt & amp meters, a spot timer, gas purge facilities, a dual position 2 or 4 step trigger interlock, a Magnum FM400 gun, a regulator/flowmeter and gas hose, a 10m electrode cable and wire feeder cable, a 3m ground cable assembly, a 3m long input lead and an undercarriage on which a gas cylinder can be mounted.

Specifications

Part No.	KA 1392 & KA1392-1		
Maximum Open Circuit Voltage	45V		
Output Current Range	20 to 400A		
Duty Cycle	30%	60%	100%
Rated Output	320A/30V	240A/26V	190A/23.5V
Rated Input	KA1392 415V 3ph 50Hz 13.5 amps	KA1392-1 380V 3ph 50hz 14.7amps	
Wire Speed Range	1-20 m/min		
Weight (complete with u/c)	140 kg		
H x W x L (mm) Over wire feeder, cylinder tray & wheels	1220 x 580 x 842 mm		
Operating Temperature	-20˚C to 40˚C		

INSTALLATION

Location

Place the welder where clean cooling air can freely circulate in through the intake louvers and out through the exhaust louvers. Dirt, dust or any foreign material that can be drawn into the welder should be kept at a minimum. Failure to observe these precautions can result in excessive operating temperatures and nuisance thermostat trips.

Wire Feeder Mounting

Locate the control cable at the rear of the CV320-I and plug into the wire feeder. The control cable is already connected to the CV320-I. Connect the supplied 1.5m electrode cable to the wire feeder mechconnector and to the desired polarity terminal on the front of the CV320-I.

⚠ WARNING

HIGH VOLTAGE can kill

- **Turn the input power off at the disconnect switch before installing or servicing this machine.**
- **Do not touch electrically "hot" parts such as output terminals or internal wiring.**
- **Connect grounding screw (⏚) to a good earth ground.**
- **Do not operate with covers removed.**
- **Turn power switch "off" before connecting or disconnecting cables or other equipment.**

Only qualified personnel should install or service this equipment.

Connection to Mains Supply

Before connecting the machine to the mains supply check that the voltage and current capacity correspond to the machine voltage and rated input current. Use a fuse or C/B per AS3000 or local wiring rules.

The machine is supplied with an input lead fitted. Have a qualified electrician fit a suitable input plug.

⚠ CAUTION

Never connect the green/yellow conductor to any of the three active supply lines from the mains. This conductor is to earth the machine as required by Electrical Regulations.

Once the above has been followed the machine can be plugged into the mains outlet.

Shielding Gas Supply (For the Gas Metal Arc Welding Process)

Refer "Safety in Welding and Cutting" - ANSI Standard Z49.1 and WTIA Technical Note 7, available from the Welding Technology Institute of Australia.

Obtain cylinder of appropriate type shielding gas for the process being used.

1. Set gas cylinder on rear platform of the machine. Hook chain in place to secure cylinder to rear of welder.

CYLINDER may explode if damaged

2. Remove the cylinder cap. Inspect the cylinder valve for damaged threads, dirt and dust. For cylinders having an external thread fitting, remove any dust and dirt from the threads with a clean cloth.

DO NOT ATTACH THE REGULATOR/FLOWMETER IF CYLINDER VALVE IS DAMAGED! Inform your gas supplier of this condition.

3. Stand to one side away from the outlet and open the cylinder valve for an instant. This blows away any dust or dirt which may have accumulated in the valve outlet.

WARNING

Be sure to keep your face away from the valve outlet when "cracking" the valve.

4. Inspect the regulator/flowmeter for damaged threads and seals, dirt and dust. Remove dust and dirt with a clean cloth.

   DO NOT USE THE REGULATOR/FLOWMETER IF DAMAGE IS PRESENT! Have an authorised repair station repair any damage.

WARNING

Gas under pressure is explosive. Always keep gas cylinders in an upright position and always keep chained to undercarriage or stationary support. Refer "Safety in Welding and Cutting" - ANSI Standard Z49-1 and WTIA Technical Note 7 available from the Welding Technology Institute of Australia.

5. Attach the regulator/flowmeter to the cylinder valve and tighten the union nut(s) securely with a spanner.
6. Attach the inlet gas hose to the outlet fitting of the regulator/flowmeter, and tighten the union nut securely with a spanner.

WARNING

Never stand directly in front of or behind the regulator/flowmeter when opening the cylinder valve. Always stand to one side.

7. Before opening the cylinder valve, turn the regulator adjusting knob counter-clockwise until the adjusting spring pressure is released.
8. Open the cylinder valve slowly a fraction of a turn. When the cylinder pressure gauge pointer stops moving, open the valve fully.
9. The regulator/flowmeter is adjustable. Set it for the flow rate recommended for the procedure and process being used before starting to weld.

Gun and Cable

The Magnum FM400 gun and cable provided with the machine is set up for 0.9/1.2mm operation.

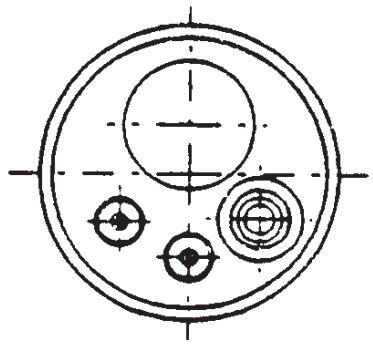
1. Lay the cable out straight.

WARNING

Turn the welder power switch off before installing gun and cable.

2. Make sure all pins on the gun cable connector are aligned with the proper mating sockets on the front panel gun connector and then join the connectors and tighten the hand nut on the gun cable connector.

NOTE: If a gun and cable other than the Magnum FM400 gun are to be used, they must conform to standard European-style connector specifications. See diagram under.



The gun trigger switch must be capable of switching 10 milliamps at 60 volts DC—resistive.

CAUTION

The gun trigger switch connected to the gun trigger control cable must be a normally open, momentary switch. The terminals of the switch must be insulated from the welding circuit. Improper operation of, or damage to, the machine might result if this switch is common to an electrical circuit other than the machine trigger circuit.

Output Polarity Connection

WARNING

Turn the welder power switch off before changing output connection.

Connect the lead from the wire feeder to the output stud of the desired polarity.

Connect the work lead to the other output stud.

WARNING

ELECTRIC SHOCK can kill

- **Do not touch electrically live parts or electrode with skin or wet clothing.**
- **Insulate yourself from work and ground.**
- **Always wear dry insulating gloves.**

FUMES AND GASES can be dangerous

- **Keep your head out of fumes.**
- **Use ventilation or exhaust to remove fumes from breathing zone.**

WELDING SPARKS can cause fire or explosion

- **Keep flammable material away.**
- **Do not weld upon containers which have held combustibles.**

ARC RAYS can burn

- **Wear eye, ear and body protection.**

IMPORTANT SAFETY NOTE: In 2T mode, this DC Constant Voltage wire welder provides “COLD” electrode when the gun trigger is not operated. Conversely, the output terminals are “LIVE” when the gun trigger is “activated” when pressed in 2T mode, or triggered on in 4T mode.

Refer to wire feeder manual for a description of the 2T/4T trigger operation.

Duty Cycle

The machine is rated at the following duty cycles:

Duty Cycle*	Output Amps	Arc Volts
30%	320	30
60%	240	26
100%	190	23.5

* Based on 10 min. time period (i.e., for 60% duty cycle, it is 6 minutes actual welding and 4 minutes with no welding output, but with the input power remaining on keeping the cooling fans operative.)

Control Panel

Power Switch

The mains power switch is incorporated in the “coarse” output voltage control rotary switch. In the “0” position (fully counter clockwise) the input mains power is switched off.

Pilot Light

This light illuminates when the input mains power is switched on

Volts Control

The output voltage is controlled by two rotary switches. One rotary switch provides four “coarse” voltage settings as well as switching the mains power on. The other rotary switch provides the user with a selection of eight “fine” voltage settings. The selection between these two rotary switches allows the user to select any one of thirty-two welding voltages.

The approximate weld voltages for the rotary switch positions are:

Coarse	Fine	Volts	Coarse	Fine	Volts
1	1	13.0	2	1	18.0
1	2	14.0	2	2	18.5
1	3	15.0	2	3	19.0
1	4	16.0	2	4	19.5
1	5	16.5	2	5	20.0
1	6	17.0	2	6	20.5
1	7	17.5	2	7	21.0
1	8	18.0	2	8	21.5
3	1	21.5	4	1	25.0
3	2	22.0	4	2	25.5
3	3	22.5	4	3	26.0
3	4	23.0	4	4	26.5
3	5	23.5	4	5	27.0
3	6	24.0	4	6	28.0
3	7	24.5	4	7	29.0
3	8	25.0	4	8	30.0

Current Control

Use the wire feed speed control on the wire feeder to adjust the speed at which the electrode wire feeds when welding. This is in effect a current control as the power source will deliver the current necessary to melt the wire. The higher the speed, the more current will be required.

Over temperature light

Indicates that the thermostats have operated to protect unit from over temperature.

Setting Up for Welding

(Also refer to the wire feeder instruction manual.)

The following items are required:

1) A reel of wire of suitable size and type .
2) A suitable gun and cable assembly with a “Euro” connector and the correct tip and, if necessary gas nozzle for the consumable being used. (A Magnum FM400 gun is supplied).
3) A work return cable and clamp. (supplied)
4) Normal welding accessories including helmet or hand shield with suitable lens, gloves etc.
5) If a gas shielded process is to be used, a cylinder of appropriate gas is required. (Regulator/flowmeter and hose are supplied.)

If gas shielding is required, see Section 1.4. Connect the gas hose.

Remember that gas cylinders may explode if damaged, so ensure that all gas cylinders are securely mounted.

Ensure there are no kinks or sharp bends in the gun cable and hold the wire inch button until the wire emerges from the gun. It is good practice to remove the tip when first feeding a new coil of wire, then refit over the wire and tighten.

Cut off the end of the wire leaving 10mm to 15mm stick-out.

The gun polarity is selected by connecting the wire feeder cable to the required output stud. e.g. electrode (+) - connect the lead to the (+) output stud. For electrode (-) - connect the lead to the (-) output stud.

Connect the work lead to the other output stud.

Welding

WARNING

When the gun trigger is pressed (2T mode) or pressed and released the first time (4T mode), the wire is at welding voltage. The wire should never touch the case of the wire feeder. If it does, it is possible for the wire to arc to the case.

Any wire overrun should be avoided.

(Refer wire feeder instruction manual.)

Put into 2T mode.

Select the output voltage required to suit the job by setting the coarse and fine rotary switches.

Before beginning welding, ensure the wire protrudes from the gun tip by approximately 10-15mm. Ensure welding shield and other protective clothing are in place. Present the protruding electrode just off the work. Maintain a steady grip on the gun, protect your eyes with a welding shield, then press and hold the gun trigger to create the arc.

If it is necessary to adjust the weld voltage, stop welding before changing either or both of the rotary switches.

Adjust the wire feed speed as necessary to suit the job. At the completion of the weld, release the gun trigger and pull the gun away from the work to stop the arc.

4T mode should only be used by experienced operators for long welds.

Maintenance

Safety Precautions

Routine Maintenance

WARNING

ELECTRIC SHOCK can kill

- **Have an electrician install and service this equipment.**
- **Turn the input power off at the fuse box,or unplug input lead before working on equipment.**
- **Do not touch electrically hot parts.**

General

In extremely dusty locations, dirt may clog the air passages and cause the welder to run hot. Blow dirt out of the welder with low-pressure air at regular intervals to eliminate excessive dirt and dust build-up on internal parts.

The fan motor has sealed ball bearings which require no service.

Welding Thermal Overload Protection

The CV320-I has built-in protective thermostats that respond to excessive temperature. They open the wire feed and welder output circuits if the machine exceeds the maximum safe operating temperature because of a frequent overload, or high ambient temperature plus overload. The over temperature light glows when the thermostats open. The thermostats automatically reset when the temperature reaches a safe operating level.

Gun and Cable Maintenance

Cable Cleaning

Clean cable liner after using approximately 150kg of electrode. Remove the cable from the wire feeder and lay it out straight on the floor. Remove the contact tip from the gun. Using an air hose and approx. 350 kPa (50psi) pressure, gently blow out the cable liner from the gas diffuser end.

WARNING

Excessive air pressure at the start of cable cleaning may cause dirt to form a plug.

Flex the cable over its entire length and again blow out the cable. Repeat this procedure until no further dirt comes out.

WARNING

Turn the welder power switch off before removing gun tips and nozzles.

Gun Tips and Nozzles

The gun tip should be replaced when worn. Replace with the correct size for the wire type and diameter. Too large a tip for the electrode wire will cause arcing within the gun cable and possible jamming of the wire within the cable .

Remove spatter from inside of gas nozzle and from tip after each 10 minutes of arc time or as required.

Procedure for Replacing PC Boards

When a PC Board is to be replaced, the following procedure must be followed:

Visually inspect PC Board in question.

1. Are any of the components damaged?
2. Is a conductor on the back side of the board damaged?
3. If there is no damage to the PB Board, insert a new PC Board and see if this remedies the problem. If the problem is remedied, reinstall the old PC Board and see if the problem still exists with the old PC Board.
   a) If the problem does not exist with the old board, check the PC Board lead harness plugs.
   b) Check leads in the harness for loose connections.

TROUBLESHOOTING GUIDE

WARNING

ELECTRIC SHOCK can kill

- **Have an electrician install and service this equipment.**
- **Turn the input power off at the fuse box before working on equipment.**
- **Do not touch electrically hot parts.**

Problem	Possible Cause	What To Do
Rough wire feeding or wire not feeding but drive rolls turning.	Gun cable kinked and/or twisted.	Inspect gun cable and replace if necessary.
	Wire jammed in gun and cable.	Remove wire from gun and cable - feed in new wire. Note any obstructions in gun and cable. Replace gun and cable if necessary.
	Incorrectly fitted drive roll.	See Wire Drive Roll Section in this manual for proper installation of drive roll.
	Drive roll loose.	Remove, clean, install and tighten.
	Gun cable dirty.	Clean cable or replace liner.
	Worn drive roll.	Replace.
	Electrode rusty and/or dirty.	Replace.
	Worn nozzle or cable liner.	Replace.
	Partially flashed or melted contact tip.	Replace contact tip.
	Incorrect idle roll pressure.	Set idle roll pressure.
Variable or “hunting” arc.	Wrong size, worn and/or melted contact tip.	Replace tip - remove any spatter on end of tip.
	Worn work cable or poor work connection.	Inspect - repair or replace as necessary.
	Loose electrode connections.	Be sure electrode lead is tight, gun cable tight in wire feeder contact block, gun nozzle and gun tip tight. All work lead connections must be tight.
	Wrong polarity.	Check connection at output studs for polarity required by welding process.
Poor arc striking with sticking or “blast offs”, weld porosity, narrow and ropey looking bead, or electrode stubbing into plate while welding.	Improper procedures or techniques.	See “Gas Metal Arc Welding Guide”(GS100).
	Improper gas shielding.	Clean gas nozzle. Make certain that gas diffuser is not restricted. Make certain that gas cylinder is not empty or turned off. Make certain gas solenoid valve is operating and gas flow rate is correct. Remove gun liner and check rubber seal for any sign of deterioration or damage. Be sure set screw in brass connector is in place and tightened against the liner bushing.
Tip seizes in diffuser.	Tip overheating due to prolonged or excessive high current and/or duty cycle welding.	Do not exceed current and duty cycle rating of gun. A light application of high temperature antiseize lubricant may be applied to tip threads.

TROUBLESHOOTING GUIDE (cont)

Problem	Possible Cause	What To Do
No wire feed, although arc voltage is present.	Defective wire feed motor or wire drive control PC board.	Measure the voltage between Red motor lead (54) and the Green motor lead (53) when the wire inch push button is depressed. If this voltage is over 10V DC, replace the wire feed motor. If no voltage is registered, replace the wire drive PCB. (Refer PCB replacement procedure at end of Trouble Shooting Guide).
No control of wire feed.	Defective wire drive control PC board.	Replace PCB. (Refer PCB replacement procedure at end of Trouble Shooting Guide).
No wire feed and no arc voltage. Pilot light indicates input power to machine.	Over-temperature protection circuit actuated due to overload or short. Over-temperature light should be illuminated.	Allow machine to cool down and reduce on time and/or wire feed speed.
	Faulty gun trigger switch or damaged control cable connected to gun trigger.	Repair.
	Defective control PC board.	Refer Procedure for Replacing PC Boards at end of Trouble Shooting Guide, if no fault is detected in trigger-thermostat circuit.
	Defective contactor.	Replace defective contactor.
Poor welding characteristics and/or cannot obtain full rated output as per nameplate.	Improper settings for wire feed speed and volts.	Set controls correctly.
	Faulty rotary switch either coarse control (on/off) or fine control.	Replace rotary switch.
	Faulty pilot transformer.	Replace.
	Faulty main transformer.	Replace.
	Faulty rectifier.	Replace.
	Faulty choke.	Replace.

GROUND TEST PROCEDURE FOR CV320-I

Also see the LN21 wire feeder instruction manual

WARNING

This procedure is only suitable for applications using DC mega testers up to 500V.

Note: This procedure is for 'machines as built' many modifications could have taken place over the life of a particular machine, so details of this procedure may need to be 'adjusted' to suit these modifications.

For prompt service contact your local Lincoln Field Service Shop.

The insulation resistance values listed below are from Australian Standard AS1966.1.

ELECTRIC SHOCK can kill

1) Disconnect input cable from power outlet.
2) Disconnect all output cables (control & weld).
3) Remove the roof panel.
4) Jumper the three (3) AC terminals and the (+) & (-) terminals of the thre phase bridge rectifier (A total of five (5) places).
5) Jumper the four (4) meter terminals together.
6) Switch the fine control rotary switch to position one (1) & switch the coarse control rotary switch to position one (1).
7) **Primary test:** Connect one lead of the mega tester to the frame of the machine and the other lead to each of the three (3) input conductors and to the main transformer primary leads L1A, L2A & L3A. Apply the test(s).
8) **Welding circuit test:** Connect one lead of the mega tester to the frame of the machine and the other lead to the positive output stud. Apply the test. (Min resistance 1MΩ).
9) **Welding circuit to primary test:** Connect one lead of the mega tester to the positive output stud and the other lead to each of the three (3) input conductors and to the main transformer primary leads L1A, L2A & L3A. Apply the test. (Min resistance 10MΩ).
10) **Transformer thermostat test:** Connect one lead of the mega tester to the frame of the machine and the other lead to the positive output stud. Apply the test.(Min resistance 1MΩ).
11) Remove all jumper leads.
12) Refit the roof panel.

If any problems are encountered, refer to your nearest Lincoln Field Service Shop.

Note: LN-21 Code Nos less than Code No. 1508 use drive roll part No. starting with ‘AM’.
For LN-21 Code Nos greater than or equal to Code No. 1508 use drive roll part Nos starting with ‘AS’.

DRIVE ROLLS		
	Machine Code 1508	**Machine Code 1413**
Wire Size	**Part No.**	**Part No.**
Solid Wire		
0.6 - 0.8mm	AS4449-9	AM3023C
0.8 - 1.0mm	AS4449-1	AM3023D
1.0 - 1.2mm	AS4449-2	AM3023E
0.9 - 1.2mm	AS4449-8	
Cored Wire		
0.8 - 1.0mm	AS4449-3	-
1.2 - 1.6mm	AS4449-4	AM3023J
Aluminium Wire		
0.8 - 1.0mm	AS4449-5	-
1.0 - 1.2mm	-	AM3023F
1.2 - 1.6mm	AS4449-6	AM3023K

The Lincoln Electric Company (Australia) Propriety Limited
A.C.N. 000 040 308

AP-80
Operative: 2/7/99
Supercedes: 18/6/97

CV320-I
PARTS LIST AP-80

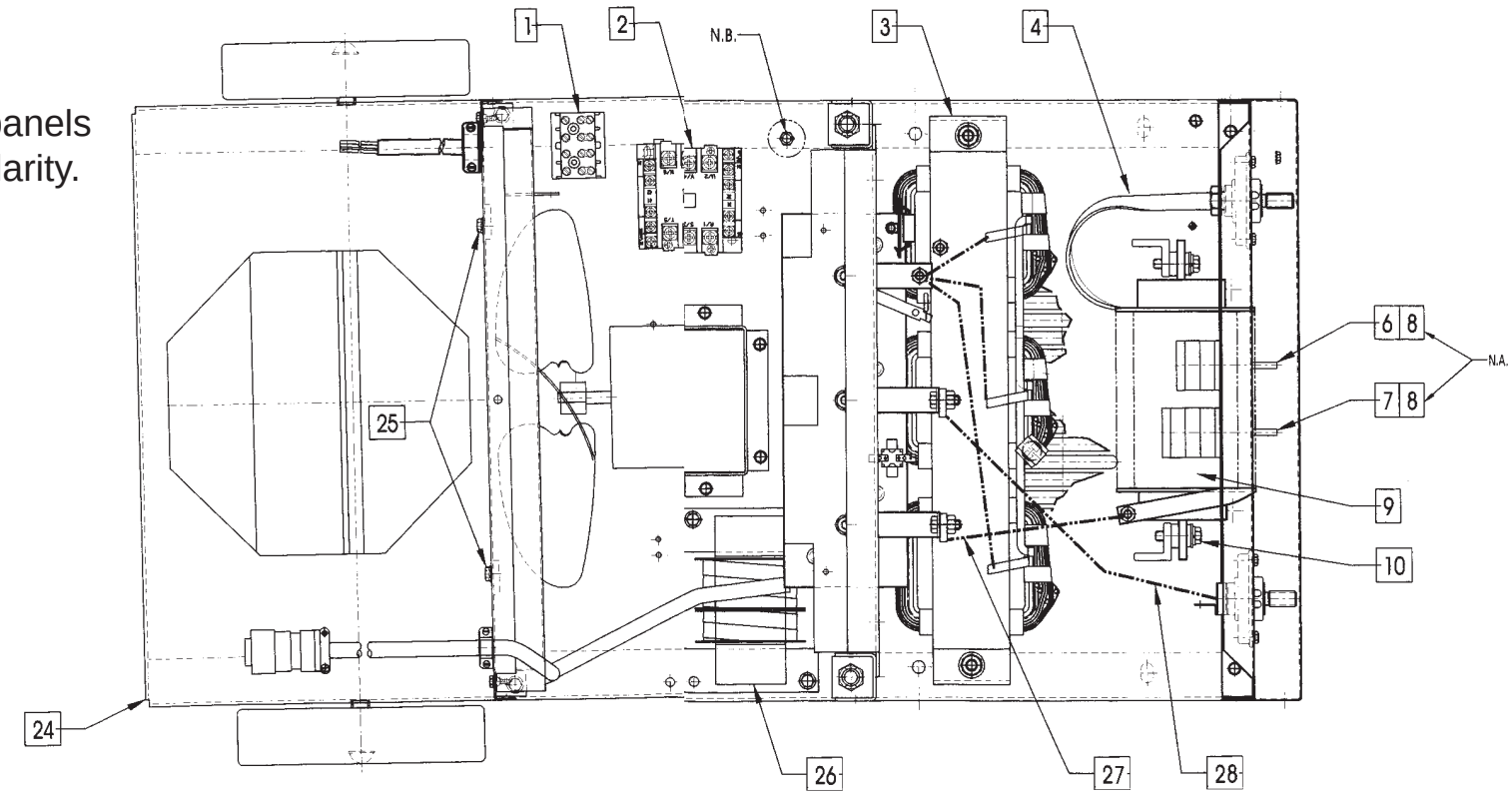
Do not use this Parts List for a machine if its code number is not listed. Contact the Service Department for any code numbers not listed. Numbers in the table below indicate which column to use in each parts list for each individual code number.

		Sub Assembly Item No. →		1	2	3	
		Sub Assembly Page Name →	Specification No.	General Assembly	Control Panel Assembly	Wiring Diagram	Instruction Manual
Machine Description ↓		Part List No. →		AP-80-C	AP-80-D		
		Code No. ↓					
CV320-I	415V	1447	KA1392	1	1	AL2513	IMA574A
	380V	1473	KA1392-1	2	1	AL2513	IMA574A
	415V	1509	KA1392	1	1	AL2513	IMA574B
	380V	1510	KA1392-1	2	1	AL2513	IMA574B
	415V	1535	KA1392	1	1	AL2513	IMA574B
LN-21		1413	KA1389	AP-68	N/A	AM3392	IMA565A
		1508	KA1389	AP-68	N/A	AM3392	IMA565B

General Assembly AP-80-C

AP-80-C
Operative: 2/7/99
Supercedes: 18/6/97

Roof and side panels not shown for clarity.



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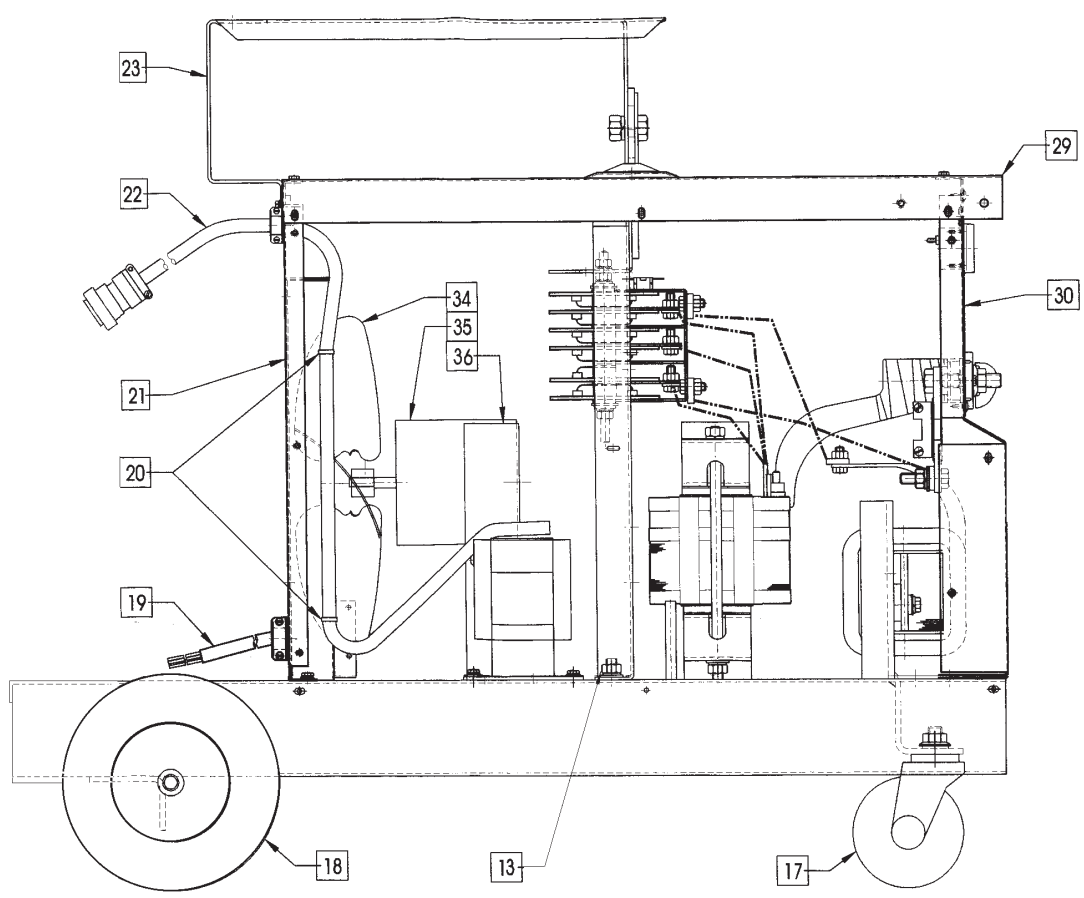
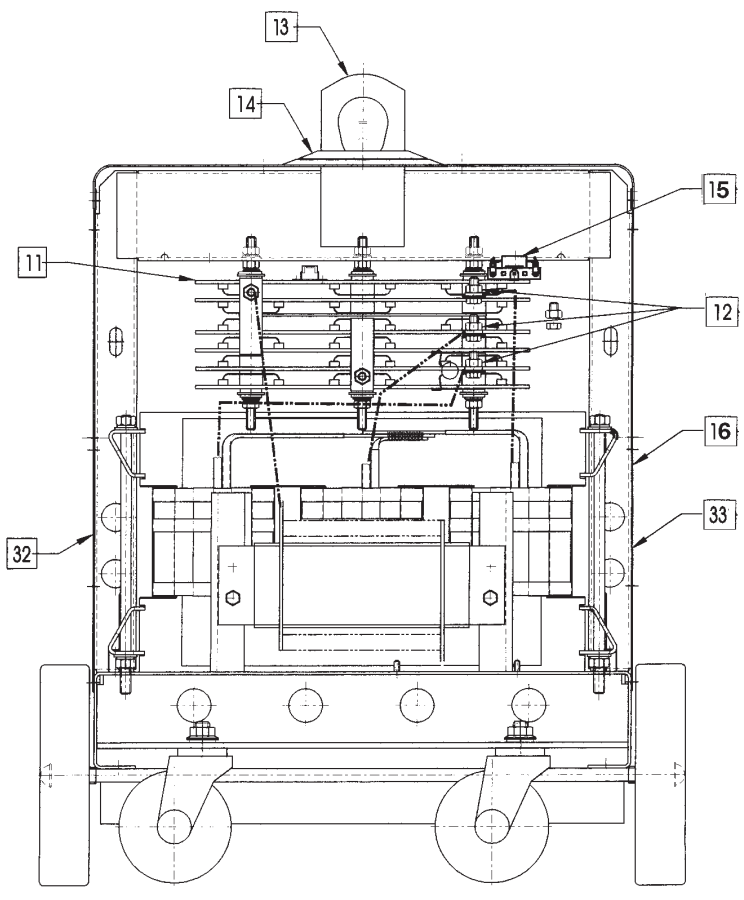




Front panel not shown for clarity.

Ref: AG1369
A15-5-96M

General Assembly AP-80-C.1

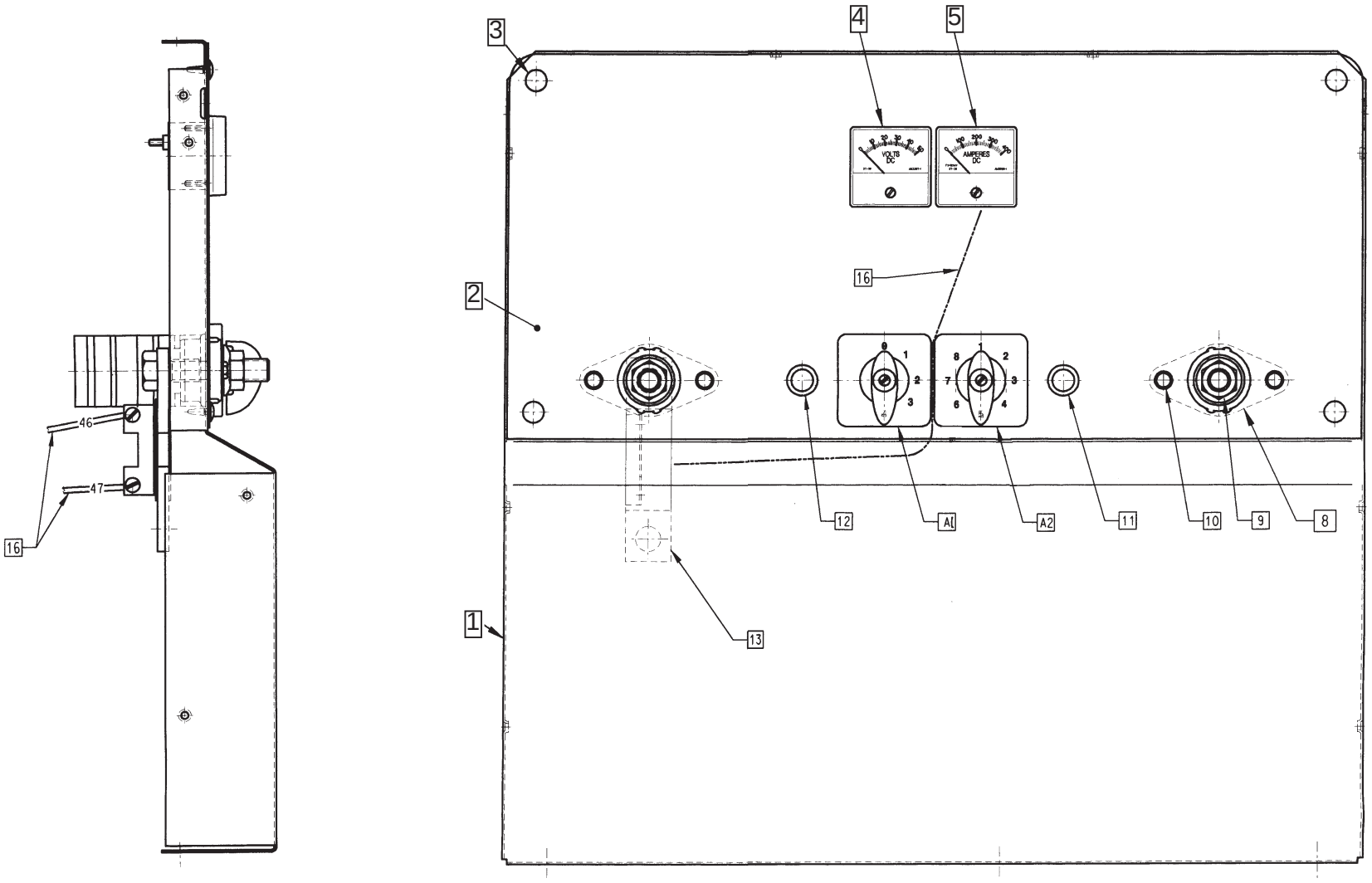
When ordering parts quote AP-80-C-1, Machine Serial & Code Numbers, Part Description and Item Number.

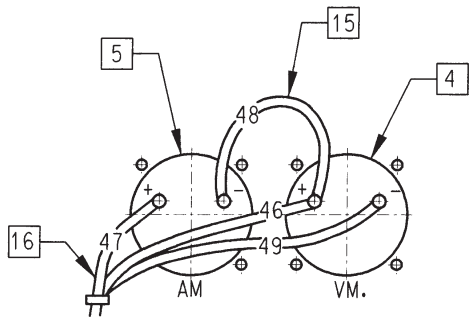
Item	Part No.	Description	Qty.	1	2
1	AT3070-3	Connector Block	1	X	X
2	AM3423	Contactor SC35	1	X	X
3	AL2494-1	Main Transformer Assembly 415V	1	X	
	AL2494-2	Main Transformer Assembly 380V	1		X
4		Sleeving	2	X	X
6	AM3388-1	Rotary Switch 8 Pos.	1	X	X
7	AM3388-2	Rotary Switch 5 Pos.	1	X	X
8		Cotton Tape 25.4mm wide	3.0m	X	X
9	AM3275-1	Choke Assembly	1	X	X
10	T7028-226	Insulation Tube	2	X	X
	AT2882	Insulation Washer	6	X	X
11	AL2480	Rectifier	1	X	X
13	AL2527	Liftbale Welded Assembly	1	X	X
14	S12934	Cover Seal	1	X	X
15	AS4525-2	Resistor & Tag Strip Assembly	1	X	X
	AT3425-5	Blind Rivet 5/32″ dia. x 5/16″	1	X	X
16	G2017R	Case Side Right	1	X	X
17	AS4070	4″ dia. Swivel Castor	2	X	X
18	AS4071-1	8″ Wheel	2	X	X
	AT2876	Push Nut	2	X	X
19	AS4303	Input Lead	1	X	X
	T9639-1	Box Connector	1	X	X
20	AT2980-2	Cable Tie	3	X	X
21	AL2530	Case Rear Assembly	1	X	X
22	AS4407-3	Amphenol & Lead Assembly 3m	1	X	X
	T9639-2	Box Connector	1	X	X
	AL2651-1	Cable Assy 10m (Code 1535 only)	1	X	X
23	AG1358	Gas Bottle & Wire Feeder Support	1	X	X
24	AG1365	Base Welded Assembly	1	X	X
26	PT0051	Auxiliary Transformer 415V	1	X	
	PT0053	Auxiliary Transformer 380V	1		X
27	AM3040B108	Cable - Rect. (-) to Choke	1	X	X
28	AM3040B107	Cable - Rect. (+) to Shunt	1	X	X
29	L7699R	Roof	1	X	X
30	AL2524	Front panel Assembly	1	X	X
32	G2018R	Case Side-Left	1	X	X
33	G2017R	Case Side Right	1	X	X

NOTE: All screws and bolts listed in FSS release 288

Item	Part No.	Description	Qty.	1	2
34	M6819-4A	Fan	1	X	X
		Loctite #262	1.0mL	X	X
35	M7468-2	Fan Motor	1	X	X
36	M15562F	Fan Motor Bracket	1	X	X
		Items Not shown			
36	AT2980-2	Cable Tie	9	X	X
37	T12068-1	Insulating Splice	6	X	X
38	AS4453-2	Resistor/Diode & Lead Assembly	1	X	X
39		Multi-Lead /41/41B	1	X	X
40		Lead /4	1	X	X
41		Lead Earth	1	X	X
42		Lead /44	1	X	X
43		Lead /43A	1	X	X
44		Lead /L1B	1	X	X
45		Lead /L1A	1	X	X
46		Lead /L2A	1	X	X
47		Lead /L3A	1	X	X
48		Lead /L1	1	X	X
49		Lead /L2	1	X	X
50		Lead /L3	1	X	X
51		Lead L3B	1	X	X
52		Sleeving-Aux. Tran. Leads to Fan	1	X	X
53		Sleeving-Aux. Tran. to Front Panel	1	X	X
54		Sleeving-Aux. Tran./Fan to Contactor	1	X	X
55		Sleeving-Contactor to Rotary.SW.1	1	X	X
56	AP80	Wiring Diagram	1	X	X
57	AS4244	Warning Decal	1	X	X
58	AT3378	Warning Decal	1	X	X
59		Input Decal Typed	1	X	X
60	AS3234	Warning Tag - Input Connection	1	X	X
	AT2980-2	Cable Tie	1	X	X
61	AL1369-115	Literature Envelope	1	X	X
62	K476-9	Magnum FM400 12ft Mig Gun	1	X	X
63	801E30LKAR21	Argon Regulator Flowmeter 30L/min	1	X	X
64	AS4092-5	Ground cable assembly	1	X	X
65	AS4050-1	Gas Hose assembly	1	X	X
66	AT3873	Chain	1	X	X
67	AT4069	Liftbale Washer	1	X	X
[NC]		1/2″ UNC. x 1/2″ Hex. Hd. Screw	1	X	X
		1/2″ UNC. Hex. Nut.	1	X	X
		1/2″ UNC. Springwasher	1	X	X
		5/16″ UNC. x 3/4″ Hex. Hd. Screw	4	X	X
		5/16″ UNC. Hex. Nut	4	X	X
		5/16″ dia. Flatwasher	4	X	X
		5/16″ dia. Springwasher	4	X	X
68		Plastic Bag 9″ x 12″	1	X	X
69		Staple	3	X	X
70	KA1389	LN21	1	X	X
71		Plastic Bag	1	X	X
72		Pallet	1	X	X

Control Panel AP-80-D





METER HARNESS DETAIL

VIEWED FROM REAR

Ref: AL2524
(AL21-2-96M)

When ordering parts quote AP-80-D, Machine serial & Code numbers, part description and item number.

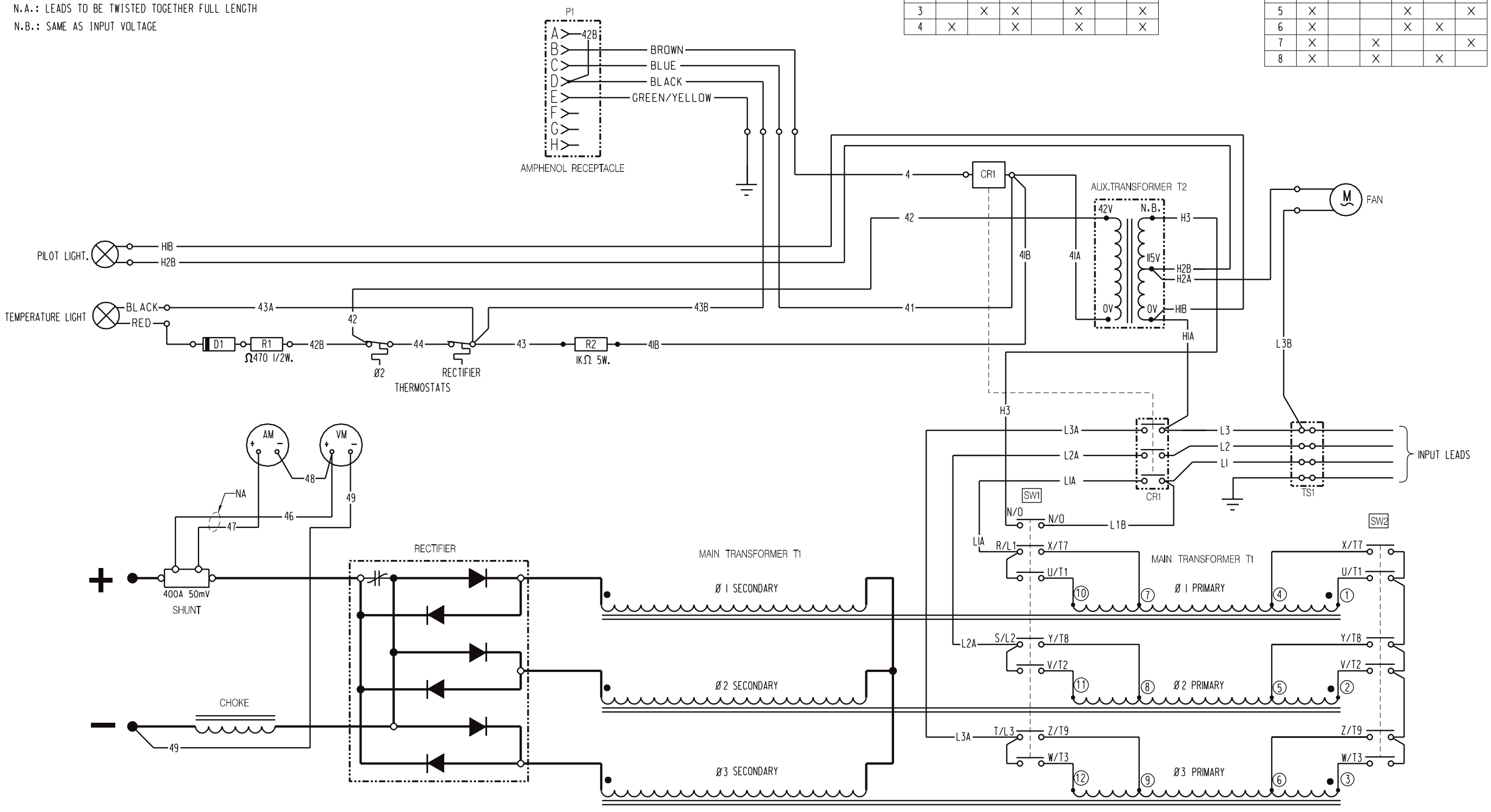
Item	Part No.	Description	Qty.	1
1	AG1355	Front Panel	1	X
2	AL2516	Nameplate	1	X
3	T14659-1	Fastener Button (Black)	4	X
4	AM3397-1	Voltmeter	1	X
5	AM3398-1	Ammeter	1	X
8	AM2464-1	Moulded Output Stud	2	X
9	T3960	Flange Nut	2	X
10	AS1733-3Z	Self Tapping Screw	4	X
11	AS4460	Indicator Light	1	X
12	T13486-1	Pilot Light	1	X
13	S6602-22	Shunt	1	X
15		Lead / 48	1	X
16	AM3400	Meter Lead Harness	1	X
A1	AM3388-2	Output Control Switch (Coarse)	1	X
A2	AM3388-1	Output Control Switch (Fine)	1	X

This diagram is typical of the machine's wiring. For specific detail refer to the diagram attached to the machine itself. If the diagram has been destroyed or defaced, contact the factory quoting the machine serial number and code number from the nameplate.

SW1 OFF / COARSE							
L3A		L2A		L1A		H3	
T/L3		S/L2		R/L1		N/O	
Z/T9	W/T3	Y/T8	V/T2	X/T7	U/T1	N/O	
(9)	(12)	(8)	(11)	(7)	(10)	L1B	
POS.							
OFF							
1		X		X		X	X
2		X		X	X		X
3		X	X		X		X
4	X		X		X		X

SW2 FINE						
X/T7	U/T1	Y/T8	V/T2	Z/T9	W/T3	
(4)	(1)	(5)	(2)	(6)	(3)	
POS.						
1		X		X		X
2		X		X	X	
3		X	X			X
4		X	X		X	
5	X			X		X
6	X			X	X	
7	X		X			X
8	X		X		X	

N.A.: LEADS TO BE TWISTED TOGETHER FULL LENGTH
N.B.: SAME AS INPUT VOLTAGE



LN21 WIRE FEEDER
PARTS LIST AP-68

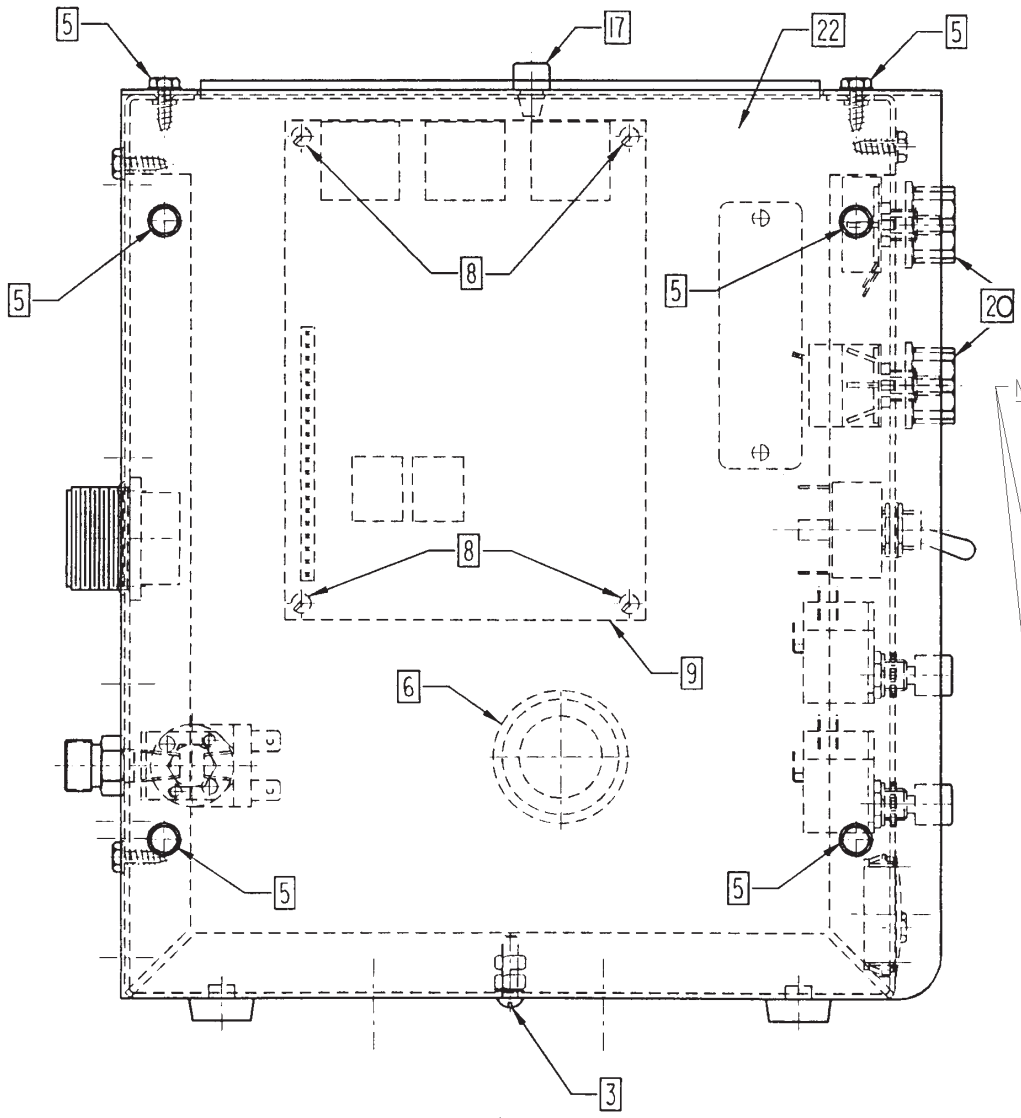
Do not use this Parts List for a machine if its code number is not listed. Contact the Service Department for any code numbers not listed.

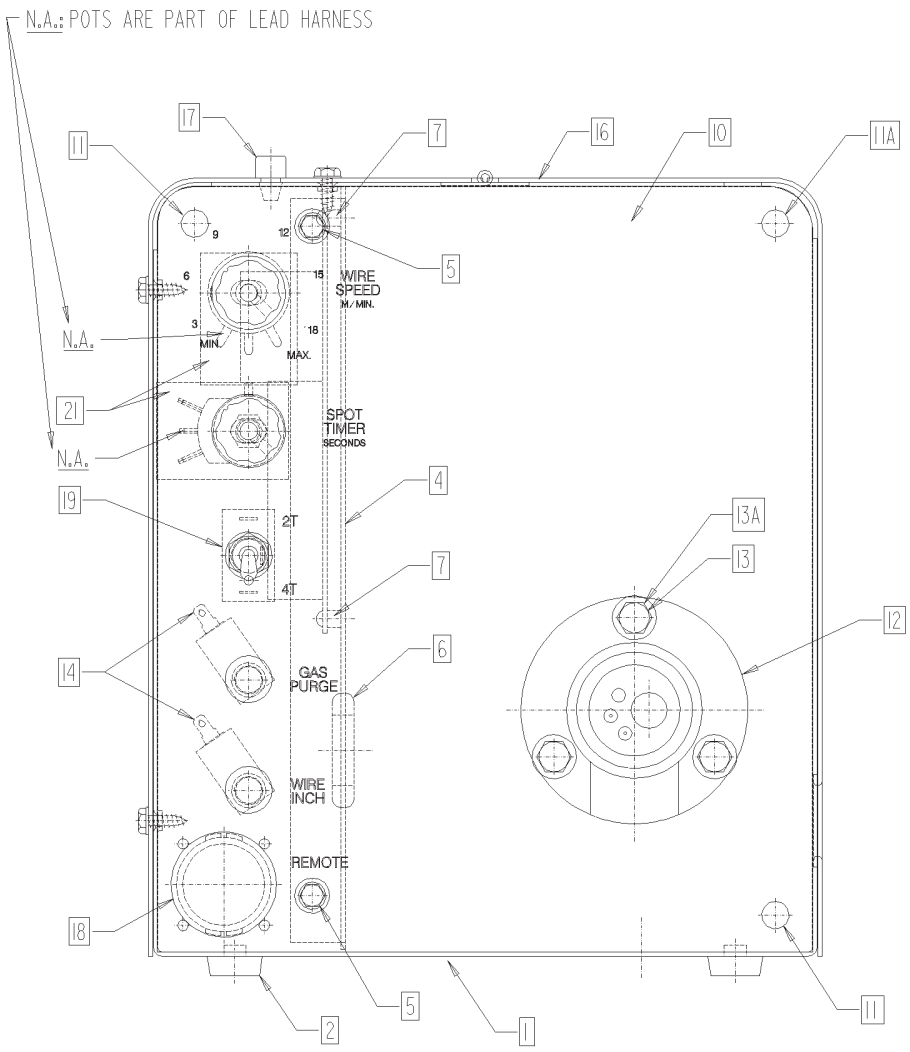
Numbers in the table below indicate which column to use in each parts list for each individual code number.

Machine Description ↓	Sub Assembly Item No. →		1	2	3
	Sub Assembly Page Name →	Specification No.	General Assembly	Wiring Diagram	Instruction Manual
	Part List No. →		AP-68-C AP-68-C-1		
	Code No. ↓				
LN-21	1413	KA1389	1	AM3392	IMA565A
LN-21	1508	KA1389	2	AM3392	IMA565B

General Assembly AP-68-C

AP-68-C
Operative: 18/6/97
Supercedes: 26/11/96





Ref: AG1346A
(16.7.97)

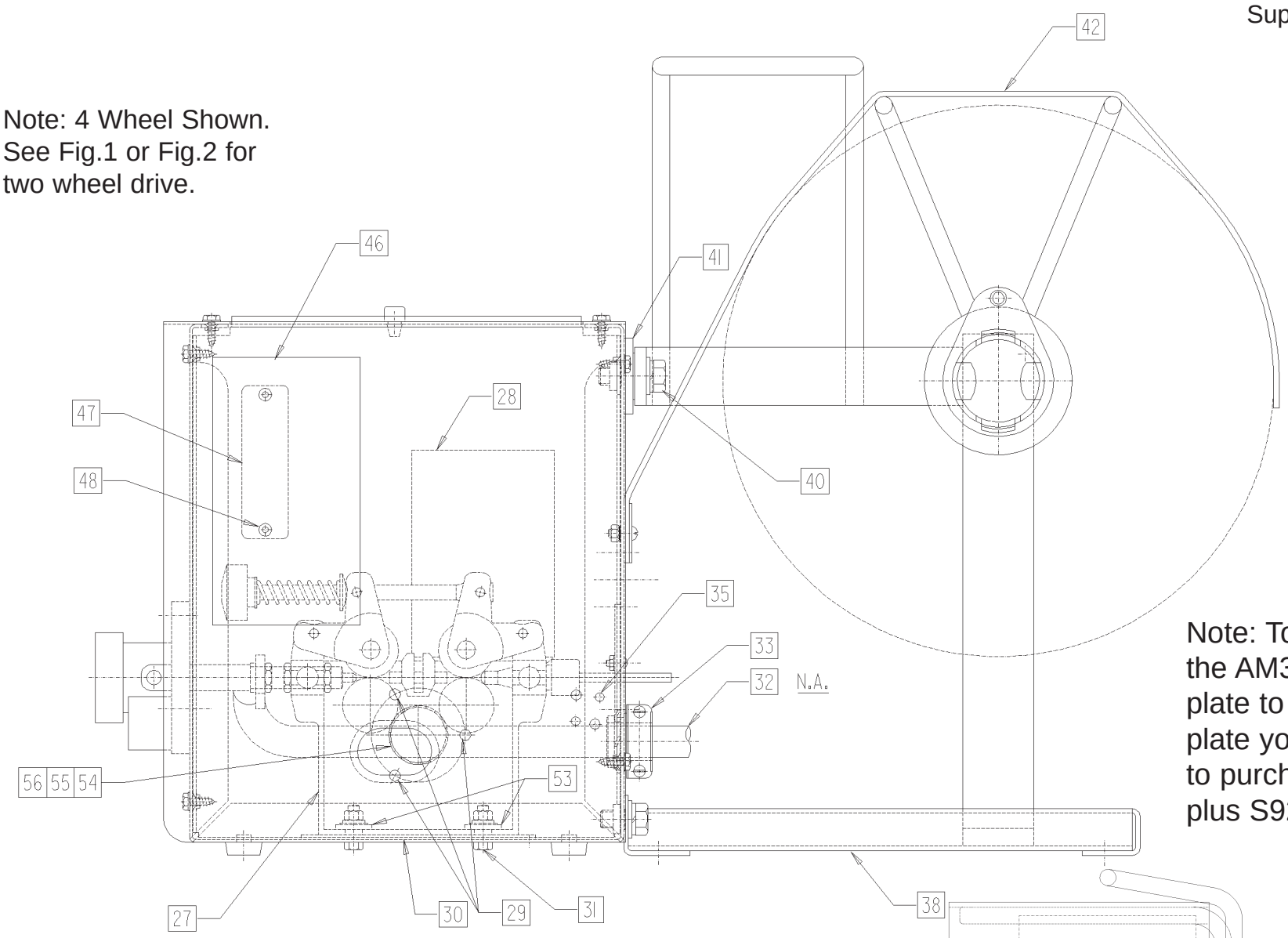
Item	Part Name and Description	No. Req.	Part Number	1	2
1	BASE, FRONT AND REAR PANEL	1	AG1344	x	-
	BASE, FRONT AND REAR PANEL	1	AM3161	-	x
2	PLASTIC FOOT	4	AT4084-1	x	x
4	BULKHEAD	1	AM3379	x	x
5	SELF TAPPING SCREW	8	AS1733-3Z	x	x
6	GROMMET	1	AS3086-9	x	x
7	NUTSERT	4	AT3937	x	x
8	SEMS SCREW	4	T10082-27	x	x
9	PCB ASSEMBLY	1	AS4212-4	x	x
10	NAMEPLATE MAXIDRIVE 2	1	AM3382-1	-	x
	NAMEPLATE MAXIDRIVE 4	1	AM3382-2	-	-
	NAMEPLATE LN21	1	AM3382-3	x	-
11	FASTENER BUTTON	2	TI4659-1	-	x
11A	FASTENER BUTTON	1	T14659	x	-
12	GUN ADAPTOR	1	AS4456	x	x
13	HEX HD. SCREW	3		x	-
	SPRINGWASHER	3		x	-
	FLATWASHER	3		x	-
	HEX NUT	3		x	-
13A	THREAD FORMING SCREW	3	S9225-17	-	x
14	RED MICROSWITCH	2	AT3561-1	x	x
15	HARNESS (not shown)	1	AL2495	x	x
16	CASE AND DOOR ASSEMBLY	1	AM3378U	-	x
	CASE AND DOOR ASSEMBLY	1	AM3378R	x	-
17	BUFFER GROMMET	1	AS4404-2	x	x
18	PLUG BOTTOM (BLACK)	1	AS4450	x	x
19	TOGGLE SWITCH	1	T13562	x	x
20	KNOB	2	T10491D	x	x
21	INSULATION	2	T12792-1	x	x
22	WIRING DIAGRAM (inside panel)	1	SEE AP-68-A		

NOTE: All screws and bolts listed in FSS release 288

General Assembly AP-68-C.1

AP-68-C.1
Operative: 18/6/97
Supercedes: 26/11/96

Note: 4 Wheel Shown.
See Fig.1 or Fig.2 for
two wheel drive.



Ref: AG1346B (25.6.97)

Item	Part Name and Description	No. Req'd	Part Number	1	2
25	WIRE PANEL INSULATION	1	AS4436	x	x
27	DRIVE PLATE	1	AM3391-1	x	-
	DRIVE PLATE	1	AM3391	-	-
	DRIVE PLATE	1	AM3391-8	-	x
28	WIRE DRIVE MOTOR AND GEARBOX	1	AM3185	x	x
29	CHEESE HEAD SCREW	3	AM3054-181	x	x
30	DRIVE PLATE INSULATION	1	AS4435-1	x	-
	DRIVE PLATE INSULATION	1	AS4435	-	-
30A	DRIVE PLATE INSULATION WASHER	2	AT2882	-	x
32	LEAD	1	AM3040A907	x	x
33	BOX CONNECTOR	1	T9639-1	x	x
34	SOLENOID	1	AM3399-1	x	x
36	GAS SOLENOID NIPPLE	1	AS4457	x	x
36A	STRAIGHT BARB TAIL	1	AT3730-11	-	x
37	SELF TAPPING SCREW	4	S8025-73	x	x
38	SPINDLE AND READI-REEL ADAPTOR	1	K377	x	-
	SPINDLE & SMALL MOUNTING STAND	1	KA1395	-	x
41	DISHED WASHER	1	AT2943Z	x	x
42	WIRE REEL DUST STRIP	1	AS4451	x	x
43	DUST STRIP RETAINING PLATE	1	AS4452	x	x
45	SELF TAPPING SCREW	2	AS1733-3Z	x	x
46	WARNING DECAL	1	AS4244	x	x
47	CODE AND SERIAL No. DECAL	1		x	x
49	SPACERS	2	AS4463	x	-
50	SLEEVING (over motor leads)	1	AM3058-412	x	x
51	INSULATED SPLICE (motor conn)	2	T12068-1	x	x
52	DUST STRIP SUPPORT BKT. ASSY.	1	AM3402	x	x
53	INSULATING BUSHES	2	AM3391-1S	x	x
54	DRIVE ROLL CAP SCREW	1	AM3391-1R	x	x
55	DRIVE ROLL 0.9 - 1.2mm SOLID	1	AS4449-8	-	x
	DRIVE ROLL 1.0 - 1.2mm SOLID	1	AM3023E	x	-
56	DRIVE ROLL ADAPTER	1	AM3391-3H	-	x
57	DRIVE PLATE MOUNTING BRACKET	1	AM3390-2	-	x
58	CABLE END PLUG	1	S12020-9	x	x
58	MACHINE END CONNECTOR	1	S12021-1	x	x

Note: To upgrade from the AM3391-1 drive plate to AM3391-7 drive plate you will also need to purchase AM3390-2 plus S9225-7.

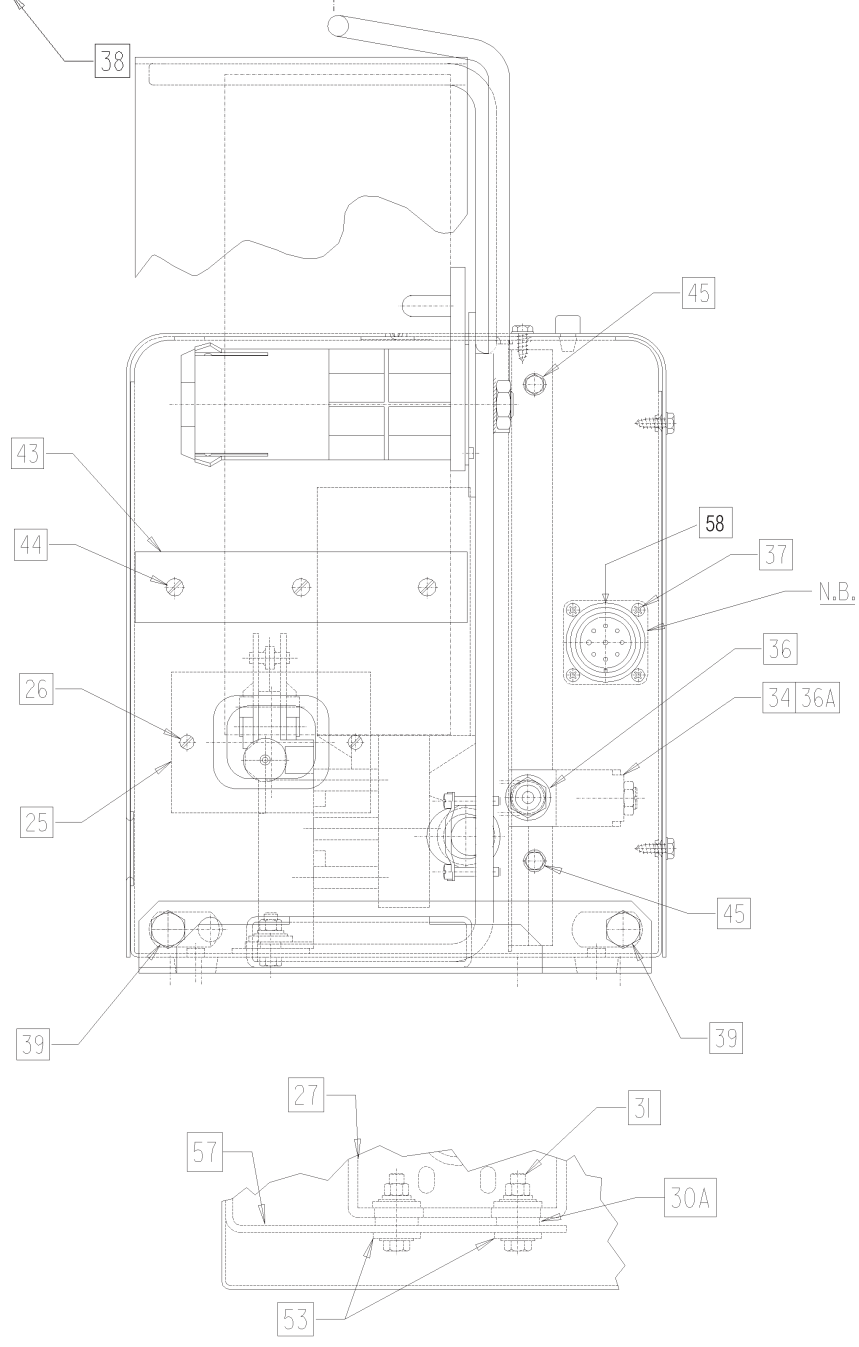
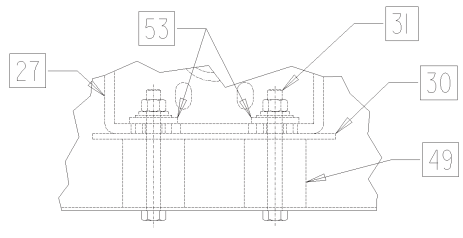


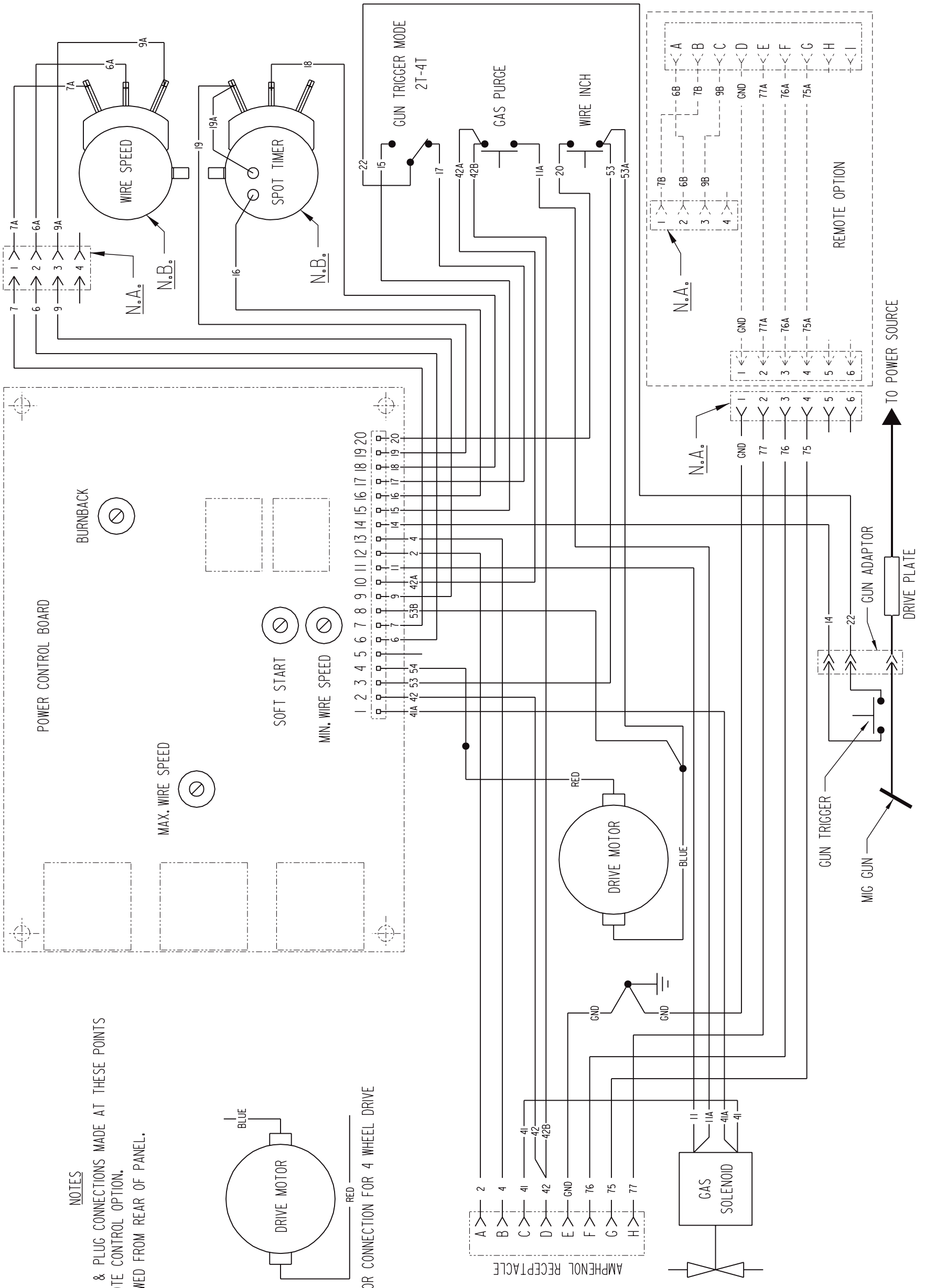
Figure 2

Figure 1



NOTE: All screws and bolts listed in FSS release 288

WIRING DIAGRAM LN21



This diagram is typical of the machine's wiring. For specific detail refer to the diagram attached to the machine itself. If the diagram has been destroyed or defaced, contact the factory quoting the machine serial number and code number from the nameplate.

NOTES

N.A.: AMPHENOL & PLUG CONNECTIONS MADE AT THESE POINTS FOR REMOTE CONTROL OPTION.

N.B.: UNITS VIEWED FROM REAR OF PANEL.

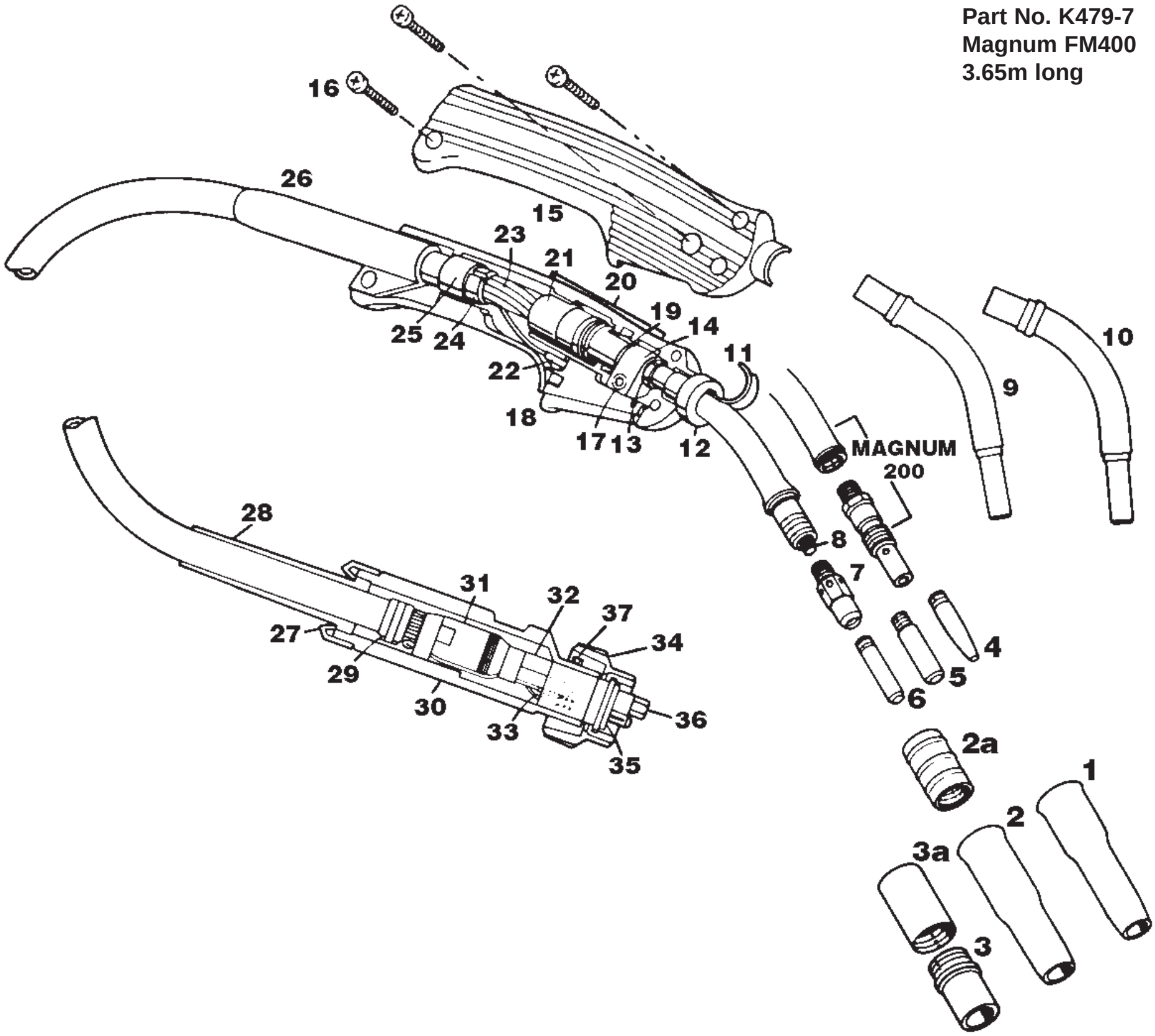
MOTOR CONNECTION FOR 4 WHEEL DRIVE

AM 3392
(A22.1.97M)

Magnum Fastmate Guns
AP-202-G

AP-202-G
Operative: 10/3/97
Supercedes: New

Part No. K479-7
Magnum FM400
3.65m long



Item	Part No.	Description
1		Gas nozzle, Fixed, Tip recessed:
	M16080-1	Magnum 400FM (9.5 mm ID)
	M16080-2	Magnum 400FM (12.7 mm ID)
	M16080-3	Magnum 400FM (15.9 mm ID)
	M16080-4	Magnum 400FM (19.1 mm ID)
1A		Gas nozzle, Fixed, Tip flush:
	M16081-1	Magnum 400FM (9.5 mm ID)
	M16081-2	Magnum 400FM (12.7 mm ID)
	M16081-3	Magnum 400FM (15.9 mm ID)
	M16081-4	Magnum 400FM (19.1 mm ID)
2		Gas nozzle, Adjustable slip-on (requires Item 2A):
	M16093-1	Magnum 200FM (15.9 mm ID)
	M16082-1	Magnum 400FM (15.9 mm ID)
	M16093-2	Magnum 200FM (12.7 mm ID)
	M16082-2	Magnum 400FM (12.7 mm ID)
2		Gas nozzle, Recessed slip-on (requires Item 2A):
	M16082-3	Magnum 400FM (15.9 mm ID)
	M16082-4	Magnum 400FM (12.7 mm ID)

Item	Part No.	Description
2A		Nozzle insulator assembly:
	S19417-1	Magnum 200FM
	S19394-1	Magnum 400FM
3		Gas nozzle, Coarse thread, Tip recessed 4mm (requires Item 3A):
	M16830-1	Magnum 400FM (15.9 mm ID)
	M16830-2	Magnum 400FM (19.1 mm ID)
3		Gas nozzle, Coarse thread, Tip recessed 12.7mm (requires Item 3A):
	M16830-3	Magnum 400FM (15.9 mm ID)
	M16830-4	Magnum 400FM (19.1 mm ID)
3A	M16937-1	Nozzle Insulator Ass., Magnum 400FM
4		Contact tip, Tapered:
	S19393-5	Magnum 200FM (0.6mm)
	S19393-6	Magnum 200FM (0.8mm)
	S19393-1	Magnum 200FM, 400FM (0.9mm)
	S19393-7	Magnum 200FM, 400FM (1.0mm)
	S19393-2	Magnum 200FM, 400FM (1.2mm)
	S19393-3	Magnum 400FM (1.3mm)
	S19393-4	Magnum 400FM (1.6mm)

Magnum Gun
Replacement Parts AP-202-G.1

When ordering parts quote machine code and serial numbers, parts list number, item and part number and description.

Item	Part No.	Description
5		Contact tip, Heavy duty:
	S19392-1	Magnum 200FM, 400FM (0.9mm)
	S19392-6	Magnum 200FM, 400FM (1.0mm)
	S19392-2	Magnum 200FM, 400FM (1.2mm)
	S19392-3	Magnum 400FM (1.3mm)
	S19392-4	Magnum 400FM (1.6mm)
	S19392-5	Magnum 400FM (2.0mm)
6		Contact tip, Standard duty:
	S19391-6	Magnum 200FM (0.6mm)
	S19391-7	Magnum 200FM (0.8mm)
	S19391-1	Magnum 200FM, 400FM (0.9mm)
	S19391-8	Magnum 200FM, 400FM (1.0mm)
	S19391-2	Magnum 200FM, 400FM (1.2mm)
	S19391-3	Magnum 400FM (1.3mm)
	S19391-4	Magnum 400FM (1.6mm)
	S19391-5	Magnum 400FM (2.0mm)
6A		Contact tip, Notched, for Aluminium:
	S18697-44	Magnum 200FM (0.8mm)
	S18697-45	Magnum 200FM (0.9mm)
	S18697-46	Magnum 200FM (1.2mm)
7		Gas Diffuser assembly:
	S19418-2	Magnum 200FM (0.6-0.8mm)
	S19418-1	Magnum 200FM (0.9-1.2mm)
	S19395-1	Magnum 400M (0.6-2.0mm)
8		Cable Liner (trim to fit):
	M16087-2	Magnum 200FM (0.6-0.8mm)
	M16087-1	Magnum 200FM (0.9-1.2mm)
	M16083-1	Magnum 400FM (0.9-1.2mm)
	M16083-2	Magnum 400FM (1.3-1.6mm)
	M16083-3	Magnum 400FM (1.6-2.0mm)
8		Cable Liner for Aluminium (trim to fit):
	M16107-1	Magnum 200FM (0.9-1.2mm)
9		Gun tube, 60˚:
	M15659-1	Magnum 200FM§, 400FM (400amp)
	M15659-2	Magnum 200FM§, 400FM (300amp)
	S19440	Magnum 200FM (200amp)
10		Gun tube, 45˚:
	M15685-1	Magnum 200FM§, 400FM (400amp)
	M15685-2	Magnum 200FM§, 400FM (300amp)
10	T10642-172	Gun Tube Insulator Magnum 200FM, 400FM
11	M15693	Hanger
12	S18831	Collar assembly
13	S9776-7	Retaining ring
14	S15921-2	Clamp for gun tube
15	G1927	Gun housing, left, Magnum 400FM
	G1928	Gun housing, right, Magnum 400FM
	G2090	Gun housing, left, Magnum 200FM
	G2091	Gun housing, right, Magnum 200FM
16	S18825-1	#6 x 32 screw
17	T14438	Clamping screw
18	S18932	Trigger assembly
19	T13483-8	‘O’ ring
20	S18655-1	Connector assembly, Magnum 400FM
		Connector assembly includes: Retaining ring (S9776-7) Clamping screw (T14438) Clamp for gun tube (S15921-2) ‘O’ ring (T13483-8)
21	S19067	Connector nut (gun tube) Magnum 200FM
	S18749-2	Connector nut (gun tube) Magnum 400FM
22	S19492-2	Terminals (trigger switch)
23	L7761-11	Cable assembly, 3m (10ft) Magnum 200FM
23	L7761-16	Cable assembly 3.6m (12ft) Magnum 400FM
24	S18787	Strain relief, Magnum 400FM
	S18787-1	Strain relief, Magnum 200FM
25	S18786	Strain relief housing, Magnum 400FM
	S18786-1	Strain relief housing, Magnum 200FM
26	M15751	Handle boot, Magnum 400FM
	M15751-1	Handle boot, Magnum 200FM
27	S18930	Boot nut (moulded)
28	S18895-1	Cable boot, Magnum 200FM
	S18895-2	Cable boot, Magnum 400FM
29	T11141-8	Cable clamp, Magnum 400FM
	T11141-9	Cable clamp, Magnum 200FM
30	M15808	Cable handle (moulded)
31	S19067	Incoming connector nut, Magnum 200FM
	S19126-2	Incoming connector nut, Magnum 400FM
32	S19153-1	Incoming connector assembly Magnum 200FM
32	S19153	Incoming connector assembly Magnum 400FM
33	S19008-1	Terminal lead assembly (feeder end) (2 required).
34	S18929	Collar nut (moulded)
35	S18948-2	Central adaptor assembly
36	S18991	Liner nut
37	T1473-19	Screw

§ 300 & 400 amp gun tubes can be used with 200 amp guns. Use corresponding amperes gas diffuser, nozzle and nozzle insulator.

Magnum Replacement Parts

CROSS REFERENCE GUIDE FOR MAGNUM MIG CONSUMABLE PARTS

FIXED GAS NOZZLES, TIP RECESSED

Industry Ref No.	Lincoln Part No.	Qty	ID mm (Inches)	
21T-37	M16294	1	9.5	(0.38)
21T-50	M16684-1	1	12.7	(0.50)
21T-62	M16684-1	1	15.9	(0.62)
23-37	M16080-1	1	9.5	(0.38)
	M16080-1D	5		
	M16080-1M	25		
23-50	M16080-2	1	12.7	(0.50)
	M16080-2D	5		
	M16080-2M	25		
23-62	M16080-3	1	15.9	(0.62)
	M16080-3D	5		
	M16080-3M	25		
23-75	M16080-4	1	19.1	(0.75)
	M16080-4D	5		
	M16080-4M	25		
23H-62	M17256-1	1	15.9	(0.62)
	M17256-1M	25		

FIXED GAS NOZZLES, TIP FLUSH

Industry Ref No.	Lincoln Part No.	Qty	ID mm (Inches)	
21-50-F	M16294	1	12.7	(0.50)
23-37F	M16081-1	1	9.5	(0.38)
	M16081-1D	5		
	M16081-1M	25		
23-50F	M16081-2	1	12.7	(0.50)
	M16081-2D	5		
	M16081-2M	25		
23-62F	M16081-3	1	15.9	(0.62)
	M16081-3D	5		
	M16081-3M	25		
23-75F	M16081-4	1	19.1	(0.75)
	M16081-4D	5		
	M16081-4M	25		

ADJUSTABLE SLIP-ON GAS NOZZLES

Industry Ref No.	Lincoln Part No.	Qty	ID mm (Inches)	
22-50	M16093-2	1	12.7	(0.50)
	M16093-2D	5		
	M16093-2M	25		
22-62	M16093-1	1	15.9	(0.62)
	M16093-1D	5		
	M16093-1M	25		
24A-50	M16082-2	1	12.7	(0.50)
	M16082-2D	5		
	M16082-2M	25		
24A-62	M16093-1	1	15.9	(0.62)
	M16093-1D	5		
	M16093-1M	25		

RECESSED SLIP-ON GAS NOZZLES

Industry Ref No.	Lincoln Part No.	Qty	ID mm (Inches)	
24A-50-SS	M16082-4	1	12.7	(0.50)
	M16082-4D	5		
	M16082-4M	25		
24A-62-SS	M16082-3	1	15.9	(0.62)
	M16082-3D	5		
	M16082-3M	25		

FIXED GAS NOZZLES, COARSE THREAD

Industry Ref No.	Lincoln Part No.	Qty	ID mm (Inches)	
24CT-62-R	M16830-3	1	15.9	(0.62)
	M16830-3M	25		
24CT-62-S	M16830-1	1	15.9	(0.62)
	M16830-1M	25		
24CT-75-R	M16830-4	1	19.1	(0.75)
	M16830-4M	25		
24CT-75-S	M16830-2	1	19.1	(0.75)
	M16830-2M	25		
25CT-62	M16831-1	1	15.9	(0.62)
	M16831-1M	25		
25CT-75	M16831-2	1	19.1	(0.75)
	M16831-2M	25		
26CT-62	M16832-1	1	15.9	(0.62)
	M16832-1M	25		
26CT-75	M16832-2	1	19.1	(0.75)
	M16832-2M	25		
26CT-62-R	M16832-3	1	15.9	(0.62)
	M16832-3M	25		
26CT-75-R	M16832-4	1	19.1	(0.75)
	M16832-4M	25		

SELF-INSULATED GAS NOZZLES

Industry Ref No.	Lincoln Part No.	Qty	ID mm (Inches)	
26I-62	M16970-1	1	15.9	(0.62)
	M16970-1D	5		
	M16970-1M	25		
26I-75	M16970-2	1	19.1	(0.75)
	M16970-2D	5		
	M16970-2M	25		
26I-87	M16970-3	1	22.1	(0.87)
	M16970-3D	5		
	M16970-3M	25		

NOZZLE INSULATOR ASSEMBLIES

Industry Ref No.	Lincoln Part No.	Qty
32	S19417-1D	5
	S19417-1M	25
34A	S19394-1D	5
	S19394-1M	25
34CT	M16937-1	1
	M16937-1M	25
35CT	M16937-2	1
	M16937-2M	25
36CT	M16937-3	1
	M16937-3M	25

Magnum Replacement Parts

CONTACT TIPS STANDARD

Industry Ref No.	Lincoln Part No.	Qty	Wire Size mm (Inches)
11-23	S19726-1D	10	
	S19726-1M	25	0.6 (0.025)
11-30	S19726-2D	10	
	S19726-2M	25	0.8 (0.030)
11-35	S19726-3D	10	
	S19726-3M	25	0.9 (0.035)
11-45	S19726-4D	10	
	S19726-4M	25	1.2 (0.045)
14-23	S19391-6D	10	
	S19391-6M	25	0.6 (0.025)
14-30	S19391-7D	10	
	S19391-7M	25	0.8 (0.030)
14-35	S19391-1D	10	
	S19391-1M	25	0.9 (0.035)
14-40	S19391-8D	10	
	S19391-8M	25	1.0 (0.040)
14-45	S19391-2D	10	
	S19391-2M	25	1.2 (0.045)
14-52	S19391-3D	10	
	S19391-3M	25	1.3 (0.052)
14-116	S19391-4D	10	
	S19391-4M	25	1.6 (1/16)
14-564	S19391-6D	10	
	S19391-6M	25	2.0 (4/64)

CONTACT TIPS HEAVY DUTY (300A & 400A)

Industry Ref No.	Lincoln Part No.	Qty	Size mm (Inches)
14H-35	S19392-1D	10	
	S19392-1M	25	0.9 (0.035)
14H-40	S19392-6D	10	
	S19392-6M	25	1.0 (0.040)
14H-45	S19392-2D	10	
	S19392-2M	25	1.2 (0.045)
14H-52	S19392-3D	10	
	S19392-3M	25	1.3 (0.052)
14H-116	S19392-4D	10	
	S19392-4M	25	1.6 (1/16)
14H-564	S19392-5D	10	
	S19392-5M	25	2.0 (5/64)

DRIVE ROLLS

Wire Size	Machine Code 1508 Part No.	Machine Code 1413 Part No.
Solid Wire		
0.6, 0.8mm	AS4449-9	AM3023C
0.8, 1.0mm	AS4449-1	AM3023D
1.0, 1.2mm	AS4449-2	AM3023E
0.9, 1.2mm	AS4449-8	
Cored Wire		
0.8, 1.0mm	AS4449-3	-
1.2, 1.6mm	AS4449-4	AM3023J
Aluminium Wire		
0.8, 1.0mm	AS4449-5	-
1.0, 1.2mm	-	AM3023F
1.2, 1.6mm	AS4449-6	AM3023K

Note: LN-21 Code Nos. less than Code No. 1508 use drive roll Part Nos. starting with 'AM'.
For LN-21 Code Nos. greater than or equal to Code No. 1508 use drive roll Part Nos. starting with 'AS'.

CONTACT TIPS TAPERED

Industry Ref No.	Lincoln Part No.	Qty	Wire Size mm (Inches)
11T-23	S20278-1D	10	
	S20278-1M	25	0.6 (0.025)
11T-30	S20278-2D	10	
	S20278-2M	25	0.8 (0.030)
11T-35	S20278-3D	10	
	S20278-3M	25	0.9 (0.035)
11T-45	S20278-4D	10	
	S20278-4M	25	1.2 (0.045)
14T-23	S19393-5D	10	
	S19393-5M	25	0.6 (0.025)
14T-30	S19393-6D	10	
	S19393-6M	25	0.8 (0.030)
14T-35	S19393-1D	10	
	S19393-1M	25	0.9 (0.035)
14T-40	S19393-7D	10	
	S19393-7M	25	1.0 (0.040)
14T-45	S19393-2D	10	
	S19393-2M	25	1.2 (0.045)
14T-52	S19393-3D	10	
	S19393-3M	25	1.3 (0.052)
14T-116	S19393-4D	10	
	S19393-4M	25	1.6 (1/16)
15HFC-35	S20476-1M	25	0.9 (0.035)
15HFC-45	S20476-2M	25	1.2 (0.045)
15HFC-52	S20476-3M	25	1.3 (0.052)
15HFC-116	S20476-4M	25	1.6 (1/16)
15HFC-564	S20476-5M	25	2.0 (5/64)
15AHFC-364	S20476-9M	25	1.2 (3/64A)
15AHFC-116	S20476-10M	25	1.6 (1/16A)

GAS DIFFUSERS

Industry Ref No.	Lincoln Part No.	Qty	Size mm (Inches)
35-50	S19728	1	0.6 - 0.9 (0.025 - .035)
52	S19418-1D	5	
	S19418-1M	25	0.9 - 1.2 (0.035 - .045)
52-23	S19418-2D	5	
	S19418-2M	25	0.6 - 0.8 (0.025 - .030)
54A	S19395-1D	5	
	S19395-1M	25	0.6 - 2.0 (0.025 - 5/64)
55	S21098-2	1	
	S21098-2M	25	1.6 - 2.0 (1/16 - 5/64)
55H	S21098-3	1	
	S21098-3M	25	2.4 - 3.2 (3/32 - 1/8)
55S-H	S21098-5	1	
	S21098-5M	25	2.4 - 3.2 (3/32 - 1/8)
55S-HL	S21098-7	1	
	S21098-7M	25	2.4 - 3.2 (3/32 - 1/8)
55SW	S21098-1	1	
	S21098-1M	25	0.9 - 1.6 (0.035 - 1/16)
55S-SW	S21098-4	1	
	S21098-4M	25	0.9 - 1.6 (0.035 - 1/16)
55S-SWL	S21098-6	1	
	S21098-6M	25	0.9 - 1.6 (0.035 - 1/16)
56S-H	S20478-2	1	
	S20478-2M	25	1.6 - 3.2 (1/16 - 1/8)
56S-SW	S20478-1	1	
	S20478-1M	25	0.9 - 1.6 (0.035 - 1/16)

When ordering parts, quote machine code and serial numbers, parts list number, item and part number and description.

WARRANTY

The Lincoln Electric Company (Australia) Pty Limited ("Lincoln") warrants all new machinery and equipment ("goods") manufactured by Lincoln against defects in workmanship and material subject to certain limitations hereinafter provided. Certain conditions warranties and obligations are implied by law (for example under the Trade Practices Act 1974) and cannot be excluded or modified ("the statutory warranties").

Where the statutory warranties do apply then any express warranties given by Lincoln (the "express warranties") are given in addition and without derogation from the statutory warranties. Apart from the express warranties and (in cases where they apply by law but not otherwise) the statutory warranties Lincoln gives no warranties whether express or implied by operation of law or otherwise in respect of any goods manufactured or supplied by Lincoln or by its authorised distributor.

Any warranty whether express or statutory and the term of any such warranty as set out herein commences on the date Lincoln or Lincoln's authorised distributorship forwards the goods from the premises of Lincoln or Lincoln's authorised distributor to the purchaser.

In respect of any claim under the warranty herein provided a purchaser must furnish Lincoln with written notice of any claim under the warranty within the time period of the warranty as further specified herein.

The extent of Lincoln's warranty whether express or statutory is limited to a liability to repair, replace or pay to the purchaser an amount equal to:

a) The cost of replacing the goods;
b) The cost of obtaining equivalent goods; or
c) The cost of having the goods repaired, whichever remedy in its absolute discretion Lincoln chooses.

Upon request by Lincoln the purchaser must permit Lincoln to inspect the goods the subject of any claim under this warranty and Lincoln may at its absolute discretion repair or replace the goods F.O.B. at its own premises or at such other premises as Lincoln may designate provided that all freight charges to and from Lincoln's premises or such other premises as Lincoln may designate shall be paid by the purchaser.

Period of Warranty

The period of warranty in respect of goods covered by this warranty shall be as follows:

a) In respect of manual and semi-automatic and fully automatic wire feeders and welders (except belted, engine driven welders and alternator sets) - 3 years from the date of commencement of the warranty;
b) In respect of the Invertec V130-S inverter - 1 year from the date of sale.
c) In respect of belted, engine driven welders and alternator sets designed for operating speeds under 2,000 rpm - 3 years from the date of commencement of the warranty;
d) In respect of Tractapac mobile rural welders mounted in approved fixtures - 3 years from the date of commencement of the warranty;
e) In respect of belted, engine driven welders and alternator sets designed for operating speeds over 2,000 rpm - 2 years from the date of commencement of the warranty;
f) Other goods manufactured by Lincoln including gun and cable assemblies, undercarriages, field installed options, unattached options, welding supplies, standard accessory sets and replacement parts -1 year from the date of commencement of the warranty;
g) In respect of all alternators irrespective of the manufacturer of those alternators - 12 months in respect of labour and parts from the date of commencement of the warranty;
h) To the extent permitted by law Lincoln shall be entitled to in its absolute discretion repair all engines and engine accessories however Lincoln shall not be held responsible for any such repair which shall be the sole responsibility of the engine manufacturer which provides for warranties for the period and subject to any limitations provided for by those manufacturers of the respective engines and engine accessories.

At the date of this warranty the details of those manufacturers warranties are as follows:

Engine Manufacturer	Labour	Parts
i) Perkins Engines and Accessories (The Perkins Distributor Organisation provides all warranty service (accessories included) for the Perkins Engines powering goods manufactured by Lincoln.)	*24 months *Subject to conditions imposed by Perkins	*24 months
ii) Onan, Lombardini, Kubota & Ruggerini Engines and their Accessories (warranty service can only be carried out by authorised Lincoln Field Service Shop or the engine distributors authorised by the Lincoln branch office)	12 months	12 months
iii) Intermotor Engines and Accessories (warranty services can only be carried out by an authorised Lincoln F.S.S. or other agency approved by the Lincoln branch office)	12 months	12 months
iv) Briggs & Stratton Vanguard Engines and Accessories (warranty service can only be carried out by an authorised Briggs & Stratton service dealer).	*24 months •The Magnetron ignition system is warranted by Briggs & Stratton for 5 years.	*24 months

Exclusions

Subject to the express and statutory warranties hereinbefore provided Lincoln provides no other warranties in respect of the manufacture or sale of goods and in particular Lincoln shall have no responsibility or liability in respect of:

a) Repairs done to Lincoln's goods and undertaken by the purchaser outside Lincoln's premises without written authority from Lincoln obtained prior to any such repair;
b) Any damage or failure of the goods as a result of normal wear and tear or the neglect misuse abuse or failure to properly service goods by any purchaser.

The liability of Lincoln is limited as hereinbefore provided and Lincoln shall not be liable for any incidental special or consequential damage suffered by a purchaser whether or not arising out of circumstances known or foreseeably known by Lincoln and in particular arising out of the supply of goods to a purchaser or the use of goods by a purchaser whether based on breach of contract negligence or tort.

Lincoln supplies certain batteries in connection with its supply of goods and the purchaser acknowledges that any such battery is warranted by its manufacturer and any claim in respect of such a battery whether as to a defect in the battery or as to damage consequential upon a defect in a battery shall be made by the purchaser to the manufacturer of the battery and the purchaser shall not hold Lincoln in any way liable for the operation non-operation or malfunction of any such battery.

Spare Parts Policy

As a manufacturer Lincoln undertakes to support its product with supply of spare parts. Lincoln policy in the case of light to medium duty welding equipment is to provide full parts support for the period of 10 years from last manufacture. In the case of heavy duty industrial and fully automatic equipment, Lincoln undertakes to provide full parts support for a period of 15 years from last manufacture date of any model.
Lincoln recognises that it is totally bound by the policy of its suppliers with regard to purchase items, however, the above policy will apply to purchase items and components and Lincoln practice is to take into its stock appropriate levels of inventory at the time it ceases to buy for current manufacturing to ensure its overall policy is followed. Where possible, due to common usage or availability, Lincoln will continue to supply beyond the above periods, however, Lincoln will not undertake special manufacture outside these guidelines unless a customer is willing to accept the appropriate set up charge where tooling has been retained, and the delivery as dictated by manufacturing demand.

IN LINE WITH THE COMPANY'S POLICY OF CONTINUING PRODUCT IMPROVEMENT, SPECIFICATIONS HEREIN ARE SUBJECT TO MODIFICATION OR CHANGE WITHOUT NOTICE

LINCOLN® ELECTRIC

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In Australia, Lincoln Technical Sales Representatives are located in Townsville, Mackay, Gladstone, Brisbane, Newcastle, Sydney, Wollongong, Melbourne, Tasmania, Adelaide and Perth. To contact your local Lincoln Technical Sales Representative, call 1300 728 720 (for the cost of a local call). Lincoln products are sold primarily through its distributors. Our Regional Office locations are:

Northern Region:	240 Evans Road, Salisbury, Qld, 4107	(07) 3277-2955
Central Region:	35 Bryant Street, Padstow, NSW, 2211	(02) 9772-7222
Southern Region:	1-3 Grange Road, Cheltenham, Vic, 3192	(03) 9584-9299
Western Region:	25 Barker Street, Belmont, WA, 6104	(08) 9277-8744
New Zealand:	152 St Georges Road, Avondale (Auckland)	(9) 828-5180
Singapore:	Blk 219,#02-01 Henderson Road, Singapore	276-0878

THE LINCOLN ELECTRIC CO.
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