

HANDY MIG / HANDY CORE

OPERATOR'S MANUAL



ENGLISH



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12/05

THANKS! For having chosen the QUALITY of the Lincoln Electric products.

- Please Examine Package and Equipment for Damage. Claims for material damaged in shipment must be notified immediately to the dealer.
- For future reference record in the table below your equipment identification information. Model Name, Code & Serial Number can be found on the machine rating plate.

Model Name:	
.....	
Code & Serial number:	
.....
Date & Where Purchased:	
.....

ENGLISH INDEX

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Technical Specifications

NAME			INDEX	
HANDY MIG			K14000-1	
HANDY CORE			K14001-1	
INPUT				
MIG CORE	Input Voltage U ₁	Input Power at Rated Cycle		Frequency
	230V± 10% 1-phase	2.5 kW @ 20% Duty Cycle		50/60Hz
RATED OUTPUT				
MIG CORE	Duty Cycle 40°C (based on a 10 min. period)	Output Current		Output Voltage
	20%	70A		17,5 Vdc
CORE	20%	70A		17,5 Vdc
OUTPUT RANGE				
MIG CORE	Welding Current Range		Maximum Open Circuit Voltage	
	45A - 80A		29 Vdc	
CORE	45A - 80A		29 Vdc	
RECOMMENDED INPUT CABLE AND FUSE SIZES				
MIG CORE	Fuse or Circuit Breaker Size		Power Lead	
	230V			
	16 A Superlag		3 Conductor, 1,5mm ²	
CORE	16 A Superlag		3 Conductor, 1,5mm ²	
DIMENSION				
MIG CORE	Weight	Height	Width	Length
	20,9 kg	345 mm	220 mm	455 mm
CORE	20,9 kg	345 mm	220 mm	455 mm
Protection Rating		Operating Humidity (t=20°C)	Operating Temperature	Storage Temperature
IP23		≤ 90 %	from -10 °C to +40 °C	from -25 °C to +55 °C

ECO design information

The equipment has been designed in order to be compliant with the Directive 2009/125/EC and the Regulation 2019/1784/EU.

Efficiency and idle power consumption:

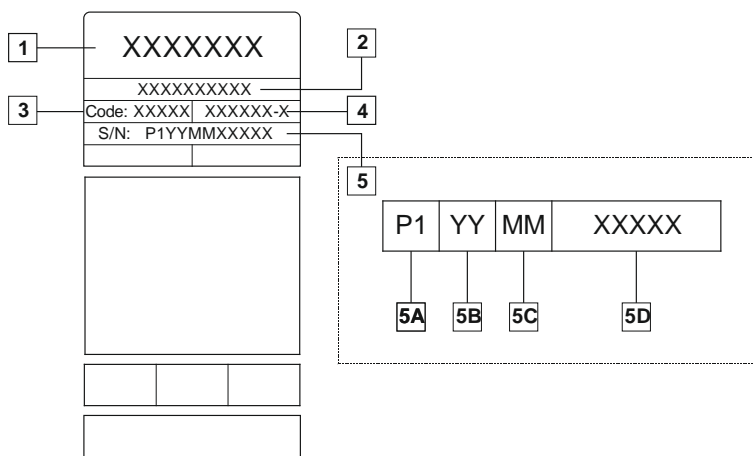
Index	Name	Efficiency when max power consumption / Idle power consumption	Equivalent model
K14000-1	HANDY MIG	50,4 % / 26W	No equivalent model

Idle state occurs under the condition specified in below table.

IDLE STATE	
Condition	Presence
MIG mode	
TIG mode	
STICK mode	
After 30 minutes of non-working	X
Fan off	

The value of efficiency and consumption in idle state have been measured by method and conditions defined in the product standard EN 60974-1:20XX.

Manufacturer's name, product name, code number, product number, serial number and date of production can be read from rating plate.



Where:

- 1- Manufacturer name and address
- 2- Product name
- 3- Code number
- 4- Product number
- 5- Serial number
 - 5A**- country of production
 - 5B**- year of production
 - 5C**- month of production
 - 5D**- progressive number different for each machine

Typical gas usage for **MIG/MAG** equipment:

Material type	Wire diameter [mm]	DC electrode positive		Wire Feeding [m/min]	Shielding Gas	Gas flow [l/min]
		Current [A]	Voltage [V]			
Carbon, low alloy steel	0,9 ÷ 1,1	95 ÷ 200	18 ÷ 22	3,5 – 6,5	Ar 75%, CO ₂ 25%	12
Aluminium	0,8 ÷ 1,6	90 ÷ 240	18 ÷ 26	5,5 – 9,5	Argon	14 ÷ 19
Austenitic stainless steel	0,8 ÷ 1,6	85 ÷ 300	21 ÷ 28	3 - 7	Ar 98%, O ₂ 2% / He 90%, Ar 7,5% CO ₂ 2,5%	14 ÷ 16
Copper alloy	0,9 ÷ 1,6	175 ÷ 385	23 ÷ 26	6 - 11	Argon	12 ÷ 16
Magnesium	1,6 ÷ 2,4	70 ÷ 335	16 ÷ 26	4 - 15	Argon	24 ÷ 28

Tig Process:

In TIG welding process, gas usage depends on cross-sectional area of the nozzle. For commonly used torches:

Helium: 14-24 l/min.

Argon: 7-16 l/min.

Notice: Excessive flow rates causes turbulence in the gas stream which may aspirate atmospheric contamination into the welding pool.

Notice: A cross wind or draft moving can disrupt the shielding gas coverage, in the interest of saving of protective gas use screen to block air flow.



End of life

At end of life of product, it has to be disposal for recycling in accordance with Directive 2012/19/EU (WEEE), information about the dismantling of product and Critical Raw Material (CRM) present in the product, can be found at <https://www.lincolnelectric.com/en-gb/support/Pages/operator-manuals-eu.aspx>.

Electromagnetic Compatibility (EMC)

11/04

This machine has been designed in accordance with all relevant directives and standards. However, it may still generate electromagnetic disturbances that can affect other systems like telecommunications (telephone, radio, and television) or other safety systems. These disturbances can cause safety problems in the affected systems. Read and understand this section to eliminate or reduce the amount of electromagnetic disturbance generated by this machine.



This machine has been designed to operate in an industrial area. To operate in a domestic area it is necessary to observe particular precautions to eliminate possible electromagnetic disturbances. The operator must install and operate this equipment as described in this manual. If any electromagnetic disturbances are detected the operator must put in place corrective actions to eliminate these disturbances with, if necessary, assistance from

Lincoln Electric.

Before installing the machine, the operator must check the work area for any devices that may malfunction because of electromagnetic disturbances. Consider the following.

- Input and output cables, control cables, and telephone cables that are in or adjacent to the work area and the machine.
- Radio and/or television transmitters and receivers. Computers or computer controlled equipment.
- Safety and control equipment for industrial processes. Equipment for calibration and measurement.
- Personal medical devices like pacemakers and hearing aids.
- Check the electromagnetic immunity for equipment operating in or near the work area. The operator must be sure that all equipment in the area is compatible. This may require additional protection measures.
- The dimensions of the work area to consider will depend on the construction of the area and other activities that are taking place.

Consider the following guidelines to reduce electromagnetic emissions from the machine.

- Connect the machine to the input supply according to this manual. If disturbances occur it may be necessary to take additional precautions such as filtering the input supply.
- The output cables should be kept as short as possible and should be positioned together. If possible connect the work piece to ground in order to reduce the electromagnetic emissions. The operator must check that connecting the work piece to ground does not cause problems or unsafe operating conditions for personnel and equipment.
- Shielding of cables in the work area can reduce electromagnetic emissions. This may be necessary for special applications.

WARNING

The Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There can be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radio-frequency disturbances.










WARNING

This equipment have to be used by qualified personnel. Be sure that all installation, operation, maintenance and repair procedures are performed only by qualified person. Read and understand this manual before operating this equipment. Failure to follow the instructions in this manual could cause serious personal injury, loss of life, or equipment damage. Read and understand the following explanations of the warning symbols. Lincoln Electric is not responsible for damages caused by improper installation, improper care or abnormal operation.

	WARNING: This symbol indicates that instructions must be followed to avoid serious personal injury, loss of life, or equipment damage. Protect yourself and others from possible serious injury or death.
	READ AND UNDERSTAND INSTRUCTIONS: Read and understand this manual before operating this equipment. Arc welding can be hazardous. Failure to follow the instructions in this manual could cause serious personal injury, loss of life, or equipment damage.
	ELECTRIC SHOCK CAN KILL: Welding equipment generates high voltages. Do not touch the electrode, work clamp, or connected work pieces when this equipment is turned on. Insulate yourself from the electrode, work clamp, and connected work pieces.
	ELECTRICALLY POWERED EQUIPMENT: Turn off the input power using the disconnect switch at the fuse box before working on this equipment. Ground this equipment in accordance with local electrical regulations.
	ELECTRICALLY POWERED EQUIPMENT: Regularly inspect the input, electrode, and work clamp cables. If any insulation damage exists replace the cable immediately. Do not place the electrode holder directly on the welding table or any other surface in contact with the work clamp to avoid the risk of accidental arc ignition.
	ELECTROMAGNETIC FIELD MAY BE DANGEROUS: Electric current flowing through any conductor creates electromagnetic field (EMF). EMF fields may interfere with some pacemakers, and welders having a pacemaker shall consult their physician before operating this equipment.
	CE COMPLIANCE: This equipment complies with the European Community Directives.
	ARTIFICIAL OPTICAL RADIATION: According with the requirements in 2006/25/EC Directive and EN 12198 Standard, the equipment is a category 2. It makes mandatory the adoption of Personal Protective Equipment (PPE) having filter with a protection degree up to a maximum of 15, as required by EN169 Standard.
	FUMES AND GASES CAN BE DANGEROUS: Welding may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. To avoid these dangers the operator must use enough ventilation or exhaust to keep fumes and gases away from the breathing zone.
	ARC RAYS CAN BURN: 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. To protect the skin, use suitable clothing made of durable, fireproof material. Protect other nearby personnel with suitable, non-flammable screening and warn them not to watch the arc nor expose themselves to the arc.

	<p>WELDING SPARKS CAN CAUSE FIRE OR EXPLOSION: Remove fire hazards from the welding area and have a fire extinguisher easily accessible. Welding sparks and hot materials from the welding process can easily go through small cracks and openings to adjacent areas. Do not weld on any tanks, drums, containers, or material until the proper steps have been taken to insure that no flammable or toxic vapors will be present. Never use this equipment when flammable gases, vapors or flammable liquids are present.</p>
	<p>WELDED MATERIALS CAN BURN: Welding generates a large amount of heat. Hot surfaces and materials in work area can cause serious burns. Use gloves and pliers when touching or moving materials in the work area.</p>
	<p>CYLINDER MAY EXPLODE IF DAMAGED: Use only certificate, compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. Always keep cylinders in an upright position securely chained to a fixed support. Do not move or transport gas cylinders with the protection cap removed. Do not allow the electrode, electrode holder, work clamp or any other electrically live part to touch a gas cylinder. Gas cylinders must be located away from areas where they may be subjected to physical damage or the welding process including sparks and heat sources.</p>
	<p>MOVING PARTS ARE DANGEROUS: There are moving mechanical parts in this machine, which can cause serious injury. Keep your hands, body and clothing away from those parts during machine starting, operating and servicing.</p>
	<p>SAFETY MARK: This equipment is suitable for supplying power for welding operations carried out in an environment with increased risk of electric shock.</p>

The manufacturer reserves the right to make changes and/or improvements in design without upgrade at the same time the operator's manual.

Introduction

The machine is a semiautomatic constant voltage DC arc welder. The machine uses a single phase constant voltage transformer, solid state rectifier and a DC permanent magnet motor for feeding and welding solid steel electrode and flux-cored electrode (for HANDY MIG) and only flux-cored electrode (for HANDY CORE).

This machine is ideally suited for individuals having access to 230 volt AC input power and wanting the ease of use, quality and dependability of both metal inert gas (MIG) welding and the Innershield electrode process (self-shielded flux-cored welding). The machine will handle reels of wire up to 1 Kg.

Installation and Operator Instructions

Read this entire section before installation or operation of the machine.

Location and Environment

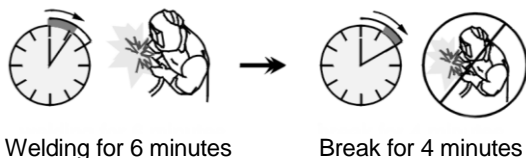
This machine will operate in harsh environments. However, it is important that simple preventative measures are followed to assure long life and reliable operation.

- Do not place or operate this machine on a surface with an incline greater than 15° from horizontal.
- Do not use this machine for pipe thawing.
- This machine must be located where there is free circulation of clean air without restrictions for air movement to and from the air vents. Do not cover the machine with paper, cloth or rags when switched on.
- Dirt and dust that can be drawn into the machine should be kept to a minimum.
- This machine has a protection rating of IP21. Keep it dry when possible and do not place it on wet ground or in puddles.
- Locate the machine away from radio controlled machinery. Normal operation may adversely affect the operation of nearby radio controlled machinery, which may result in injury or equipment damage. Read the section on electromagnetic compatibility in this manual.
- Do not operate in areas with an ambient temperature greater than 40°C.

Duty cycle and Overheating

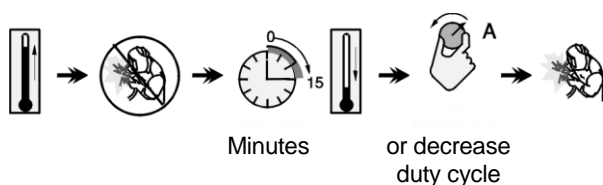
The duty cycle of a welding machine is the percentage of time in a 10 minute cycle at which the welder can operate the machine at rated welding current.

Example: 60% duty cycle:



Excessive extension of the duty cycle will cause the thermal protection circuit to activate.

The machine is protected from overheating by a temperature sensor.

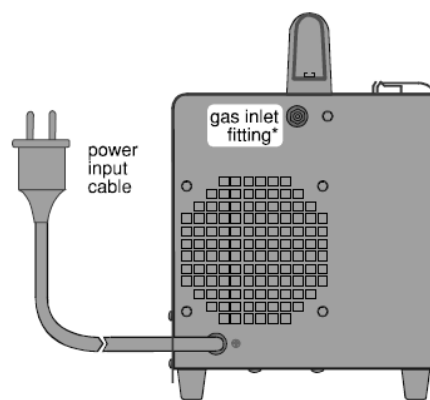


Input Supply Connection



WARNING

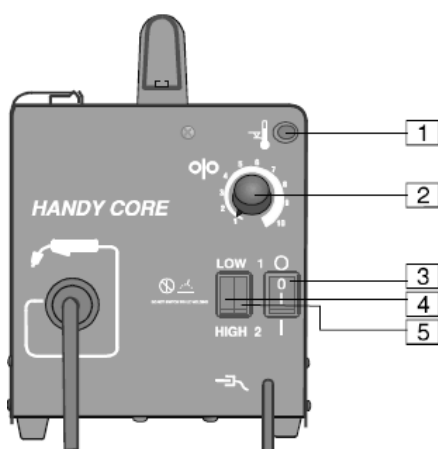
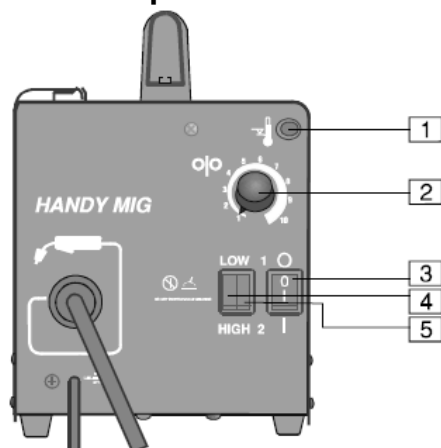
Only a qualified electrician can connect the welding machine to the supply network. Installation the outlet plug to power lead and connecting the welding machine had to be made in accordance with the appropriate National Electrical Code and local regulations.



Check the input voltage, phase, and frequency supplied to this machine before turning it on. The allowable input voltage is indicated in the technical specification section of this manual and on the rating plate of the machine. Verify the connection of grounding wires from the machine to the input source.

Make sure the amount of power available from the input connection is adequate for normal operation of the machine. The necessary fuse and cable sizes are indicated in the technical specification section of this manual.

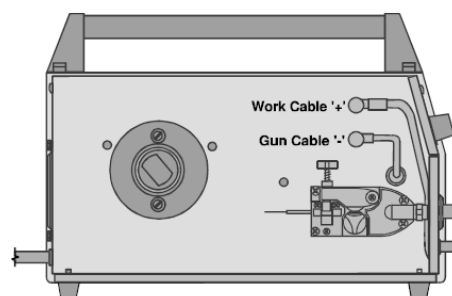
Controls and Operational Features



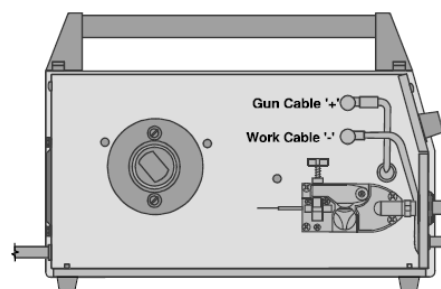
1. Thermal Protection Indicator: The machine has a rated output duty cycle of 20%. If the duty cycle is exceeded, thermal protector will shut off the output until the machine cools to a normal operating temperature. This is an automatic function of the machine and does not require user intervention.
2. Wire Speed Control.
3. Power ON/OFF Switch: When the power is ON the welding output and wire feeder are ON ("hot") when the gun trigger is pressed.
4. Low / High Heat Range Switch: A rocker switch control that gives low or high coarse range adjustment of the power source output voltage.
5. 1 - 2 Fine Heat Adjustment Switch: Allows fine adjustment of the voltage within the selected Low or High output range.

Changing Polarity (only for Handy MIG)

1. For Negative Polarity welding (DC-): Refer to below Figure. As delivered, the machine is wired for Negative polarity with the gun cable connected to the Negative (-) output terminal and the work cable's terminal lug to the Positive (+) output terminal. Make sure that both thumbscrews are tight.



2. For Positive Polarity (DC+): Refer to below Figure. To wire for Positive polarity, connect the gun cable to the Positive (+) output terminal and the work cable to the Negative (-) terminal. This is the typical configuration for the Metal Inert Gas (MIG) process. Make sure that both thumbscrews are tight.



MIG Welding

Table below shows the recommended material/gas combinations for MIG welding with solid electrodes.

Material	Gas
Carbon Steel	CO ₂ or Argon / CO ₂
Low Alloy Steel	CO ₂ or Argon / CO ₂

Flux-cored (Innershield) Welding

The recommended electrode for the flux-cored, selfshield process is 0.9 mm diameter Lincoln Innershield NR-211-MP on 0.45 kg spools.

Shielding Gas Connection (only for Handy MIG)

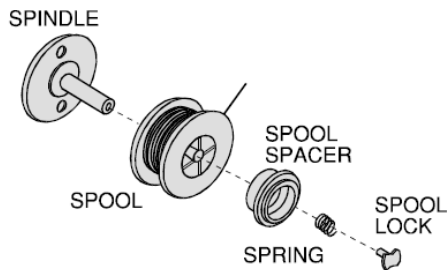
When using the MIG process, you will need a cylinder of carbon dioxide (CO₂) or argon-carbon dioxide mixed shielding gas. The regulator should be installed on the gas cylinder. An adapter and plastic washer are needed for using 100% CO₂ gas.

1. Open the cylinder valve slowly a fraction of a turn. When the cylinder pressure gauge pointer stops moving, open the valve fully.
2. Keep the cylinder valve closed, except when welding. When finished welding:
 - Close the cylinder valve to stop gas flow.
 - Depress the gun trigger briefly to release the pressure in the gas hose.
 - Turn off the machine.

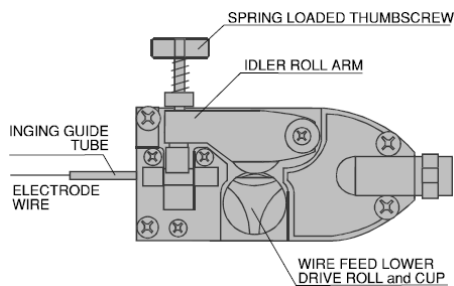
Sequence of Operations for Wire Loading

Turn machine power switch to the OFF ("0") position before working inside the wire feed enclosure. Make sure that the wire feed drive roll and contact tip of the gun match the diameter and type of wire used.

1. Push the spool onto the spindle so that the wire feeds off the bottom of the spool, toward the drive roll.
2. Push the spool spacer onto the spindle, against the spool. If it is necessary, for getting proper breaking torque you should rotate the spool spacer.
3. Slide the spring onto the spool, then press on the spool lock, turning it clockwise to lock the spool assembly onto the spindle.



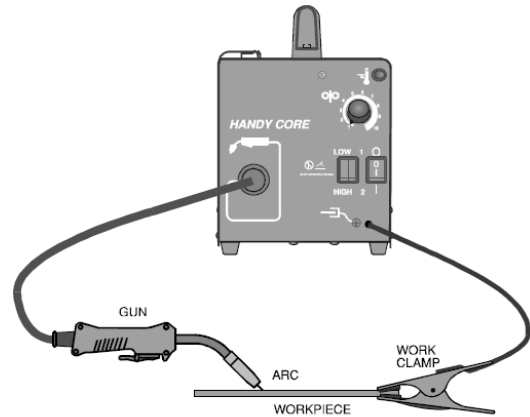
4. Release the spring loaded thumbscrew and rotate the idle roll arm away from the wire feed drive roll. Ensure that the visible, stenciled size on the drive roll side facing you matches the wire size being used.



5. Carefully detach the end of the wire from the spool maintain tension on the wire. To prevent the spool from unwinding and do not release the wire until after step 8.
6. Cut the bent portion of wire off and straighten the first 100 mm.
7. Thread the wire through the ingoing guide tube, over the drive roll, and into the gun liner.
8. Close the idle roll arm and turn down the thumbscrew until the idle roller presses down firmly on the wire. (Now you may release the welding wire.) Make sure the wire is positioned in the groove of lower drive roll.
9. The spring loaded thumbscrew on the idle roll arm can be used as a "brake" to adjust the pressure on the wire. Adjust pressure by turning the thumbscrew to prevent wire overrun, but still allow smooth and easy wire feeding. Start with the pressure set to an intermediate value. Readjust, if necessary. Slightly less pressure may be required when using 0.6 mm wire. If the drive roll slips while feeding wire, the pressure should be increased until the wire feeds properly.
10. Remove the nozzle and contact tip from the gun.
11. Turn the machine ON ("I").
12. Straighten the gun cable assembly.

13. Depress the gun trigger switch and feed welding wire through the gun and cable. (Point the gun away from yourself and others while feeding wire.) Release the gun trigger after wire appears at the end of the gun.
14. Turn the machine OFF ("0").
15. Replace the contact tip. Cut the wire off so that 10 to 15 mm protrudes from the end of the tip.
16. Turn on the machine. The machine is now ready to weld.

Welding



1. Select the right welding process based on the type and condition of the pieces to be welded; the environment in which welding is to be done; and the desired finished appearance of the weld.
2. Select and install the welding wire to match the process. Use Genuine Lincoln Electric Brand wire. Wire quality is essential for successful welding.
3. Install the drive roll, contact tip, and nozzle appropriate for the weld process.
4. Check that the polarity is correct for the welding wire being used and that the gas supply, if required, is turned on.
5. Refer to above Figure. Connect the work clamp to the metal to be welded. The work clamp must make good electrical contact to the work piece. The work piece must also be grounded as stated in Welding Safety Precautions in the beginning of this manual.
6. Based on the welding process type and material thickness of the work piece, set the correct wire speed and heat range setting.
7. Based on the weld joint type and orientation of the weld joint, position the gun into the joint at the correct angel.
8. To begin welding, raise your hand shield to protect your eyes and pull the trigger.
9. While welding, travel at a constant speed and maintain an electrode stickout of 9 mm. Follow the correct direction of travel for the process and joint type and orientation.
10. To stop welding, release the gun trigger.
11. When no more welding is to be done, close the valve on the gas cylinder (if used), momentarily operate the gun trigger to release gas pressure, and turnoff the machine.

Cleaning Tip and Gas Nozzle

Clean the contact tip and gas nuzzle to avoid arc bridging between them. Bridging can result in a shorted nozzle, poor welds and an overheating gun. Anti-stick spray or gel, available from a welding distributor, may reduce buildup and aid in spatter removal.

Maintenance



WARNING

For any repair operations, modifications or maintenances, it is recommended to contact the nearest Technical Service Center or Lincoln Electric. Repairs and modifications performed by unauthorized service or personnel will cause, that the manufacturer's warranty will become null and void.

Any noticeable damage should be reported immediately and repaired.

Routine maintenance (everyday)

- Check condition of insulation and connections of the work leads and insulation of power lead. If any insulation damage exists replace the lead immediately.
- Remove the spatters from the welding gun nozzle. Spatters could interfere with the shielding gas flow to the arc.
- Check the welding gun condition: replace it, if necessary.
- Check condition and operation of the cooling fan. Keep clean its airflow slots.

Periodic maintenance (every 200 working hours but at list once every year)

Perform the routine maintenance and, in addition:

- Keep the machine clean. Using a dry (and low pressure) airflow, remove the dust from the external case and from the cabinet inside.
- If it is required, clean and tighten all weld terminals.

The frequency of the maintenance operations may vary in accordance with the working environment where the machine is placed.



WARNING

Do not touch electrically live parts.



WARNING

Before the case of welding machine will be removed, the welding machine had to be turned off and the power lead had to be disconnected from mains socket.



WARNING

Mains supply network must be disconnected from the machine before each maintenance and service. After each repair, perform proper tests to ensure safety.

Customer Assistance Policy

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric is not in a position to warrant or guarantee such advice, and assumes no liability, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.

WEEE

07/06



Do not dispose of electrical equipment together with normal waste!

In observance of European Directive 2012/19/EC on Waste Electrical and Electronic Equipment (WEEE) and its implementation in accordance with national law, electrical equipment that has reached the end of its life must be collected separately and returned to an environmentally compatible recycling facility. As the owner of the equipment, you should get information on approved collection systems from our local representative.

By applying this European Directive you will protect the environment and human health!

Spare Parts

12/05

Part List reading instructions

- Do not use this part list for a machine if its code number is not listed. Contact the Lincoln Electric Service Department for any code number not listed.
- Use the illustration of assembly page and the table below to determine where the part is located for your particular code machine.
- Use only the parts marked "X" in the column under the heading number called for in the assembly page (# indicate a change in this printing).

First, read the Part List reading instructions above, then refer to the "Spare Part" manual supplied with the machine, that contains a picture-descriptive part number cross-reference.

Authorized Service Shops Location

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- The purchaser must contact a Lincoln Authorized Service Facility (LASF) about any defect claimed under Lincoln's warranty period.
- Contact your local Lincoln Sales Representative for assistance in locating a LASF or go to www.lincolnelectric.com/en-gb/Support/Locator.

Electrical Schematic

Refer to the "Spare Part" manual supplied with the machine.

Suggested Accessories

1361-410-005	GAS HOSE ONLY FOR HANDY MIG 2,5M
0742-200-939	GAS NOZZLE ONLY FOR HANDY MIG
0742-200-936	FLUX NOZZLE (GASLESS)
0742-200-938	CONTACT TIP 0.6 MM ONLY FOR HANDY MIG
0742-200-937	CONTACT TIP 0.9 MM
2886-162-011	CHIPPING HAMMER/BRUSH
0657-229-003	HANDSHIELD
0744-180-047	FILTER LENS
0744-180-046	CLEAR COVER LENS
C-4941-715-1	INNERSHIELD CORED WIRE 0.9
C-4941-727-1	STEEL WIRE 0.6 ONLY FOR HANDY MIG

Dimension Diagram

06/23

