THANK YOU! For choosing the QUALITY of the Lincoln Electric products.

- Please check packaging and equipment for damage. Claims for material damaged in shipment must be notified immediately to the dealer.
- For ease of use, please enter your product identification data in the table below. Model Name, Code & Serial Number can be found on the machine rating plate.

---

**Model Name:**

---

**Code & Serial number:**

---

**Date & Where Purchased:**

---

---

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# Technical Specifications

<table>
<thead>
<tr>
<th>NAME</th>
<th>INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td>LF 52Ds</td>
<td>K14186-2</td>
</tr>
</tbody>
</table>

## INPUT

<table>
<thead>
<tr>
<th>Input Voltage U₁</th>
<th>Input Amperes I₁</th>
<th>EMC Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>40Vdc</td>
<td>4Adc</td>
<td>A</td>
</tr>
</tbody>
</table>

## RATED OUTPUT

<table>
<thead>
<tr>
<th>Duty Cycle 40°C (based on a 10 min. period)</th>
<th>Output Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>420A</td>
</tr>
<tr>
<td>60%</td>
<td>500A</td>
</tr>
</tbody>
</table>

## OUTPUT RANGE

<table>
<thead>
<tr>
<th>Welding Current Range</th>
<th>Peak Open Circuit Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 ÷ 500A</td>
<td>113Vdc peak</td>
</tr>
</tbody>
</table>

## DIMENSION

<table>
<thead>
<tr>
<th>Weight</th>
<th>Height</th>
<th>Width</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.2 kg</td>
<td>516 mm</td>
<td>302 mm</td>
<td>642 mm</td>
</tr>
</tbody>
</table>

## WIRE FEED SPEED RANGE / WIRE DIAMETER

<table>
<thead>
<tr>
<th>WFS Range</th>
<th>Drive Rolls</th>
<th>Drive roll diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5 ÷ 22 m/min</td>
<td>4</td>
<td>Ø37</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Solid Wires</th>
<th>Aluminum Wires</th>
<th>Cored Wires</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.8 ÷ 1.6 mm</td>
<td>1.0 ÷ 1.6 mm</td>
<td>0.9 ÷ 1.6 mm</td>
</tr>
</tbody>
</table>

## SAFETY

<table>
<thead>
<tr>
<th>Protection Rating</th>
<th>Maximum Gas Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP23</td>
<td>0.5 MPa (5 bar)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operating Temperature</th>
<th>Storage Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>from -10°C to +40°C</td>
<td>from -25°C to 55°C</td>
</tr>
</tbody>
</table>
Electromagnetic Compatibility (EMC)

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, if necessary with 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 if may be necessary to take additional precautions such as filtering the input supply.
- The output cables should be as short as possible and positioned together as close as possible to each other. 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

EMC classification of this product is class A in accordance with electromagnetic compatibility standard EN 60974-10 which means that the product is designed to be used in an industrial environment only.

⚠️ 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 may be potential difficulties in ensuring electromagnetic compatibility in those locations, due to conducted as well as radiated 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.

**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.

**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.
| 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. |
| 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. |
| SAFETY MARK: This equipment is suitable for supplying power for welding operations carried out in an environment with increased risk of electric shock. |

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

LF 52Ds is digital wire feeder which have been designed to work with Lincoln Electric power source:
- POWERTEC® i400S.

The CAN protocol is used for communication between the power source and the wire feeder. All signals from the power source are displayed on the User Interface located in the wire feeder machine.

Power source – wire feeder set allow the welding:
- GMAW (MIG/MAG)
- FCAW
  SMAW (MMA) with using a special adapter (see chapter “Accessories”).

Installation and Operator Instructions

Read this entire section before installation or operating the machine.

Exploitation conditions
This machine can operate in harsh environments. However, it is important to use the following simple preventive measures that will ensure its long life and reliable operation:
- Do not place or operate this machine on a surface with an incline higher 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. 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 IP23. 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:
- Welding for 6 minutes.
- Break for 4 minutes.

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

Input Supply Connection
Check the input voltage, phase, and frequency of the power source that will be connected to this wire feeder. The acceptable level of input voltage is indicated in the section „Technical Specifications” and on the rating plate of the power source. Verify the connection of grounding wires from the power source to the input source.
Controls and Operational Features

Front panel LF 52Ds

1. **EURO socket**: For connecting a welding gun (for GMAW, FCAW process).

   **WARNING**
   
   Maximum coolant pressure is 5 bar.

2. **U0 User Interface (LF 52Ds)**: See “User Interface” section.

Back panel LF 52Ds

3. **Gas quick coupling socket**: For connecting a gas pipe.

   **WARNING**
   
   The machine allows the use all suitable shielding gases with a maximum pressure of 5 bar.

4. **Control Socket**: 5 pins socket for connecting the power source. The CAN protocol is used for communication between the power source and wire feeder.

5. **Current Socket**: For connecting a welding cable.


7. **Switch**: wire feed / gas purge: This switch allows wire feeding (wire test) and gas flow (gas test) without switching on the output voltage.

8. **Wire Spool Holder**: For wire spool with maximum 16kg weight. Holder allows mounting plastic, steel and fiber spools on the 51mm spindle.

   **WARNING**
   
   Be sure that wire spool case has to be completely closed during welding.

9. **Spool with wire**: Not supplied as standard.

10. **Wire drive**: 4-rolls wire drive.

   **WARNING**
   
   The side panel and wire spool case have to be completely closed during welding.

   **WARNING**
   
   Do not use handle to move the machine during operation. See “Accessories” section.

Figure 1

Figure 2

Figure 3
User Interface

Wire feeder LF 52Ds is based on a standard interface (U0) with two separate LED displays, while the LF 56D is based on a 7” TFT display.

Standard Interface (U0)

![Standard Interface Diagram]

11. Display:
   - Left display: Shows wire feed speed or welding current. During welding shows the actual welding current value.
   - Right display: Shows the welding voltage in volts units or tuning value (Trim). During welding shows the actual welding voltage value.

12. Left Knob: Adjusts values on the left display.

13. Right Knob: Adjusts values on the right display.


15. Left Button: Enables changing the welding process and shielding gas.

16. Thermal Overload Indicator: It indicates that the machine is overloaded or that the cooling is not sufficient.

17. Status Indicator: A two color light that indicates system errors. Normal operation is steady green light. LED light conditions and their meanings are described in Table 1.

⚠️ WARNING

The status light will flash green, and sometimes red and green when the machine is first turned on. When the power source is powered it can take as long as 60 seconds for the machine to be ready to weld. This is a normal situation as the machine goes through initialization.

Table 1 LED Light Conditions

<table>
<thead>
<tr>
<th>LED Light Condition</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steady Green</td>
<td>Correct operation mode. The power source communicates normally with all peripheral equipment.</td>
</tr>
<tr>
<td>Blinking Green</td>
<td>Occurs during a system reset, and indicates that the power source is mapping (identifying) additional connected components in the system. This condition occurs for 1-10 seconds after connecting the power supply or when the system configuration is changed during operation.</td>
</tr>
<tr>
<td>Alternating Green and Red</td>
<td>If the status lights are flashing any combination of red and green color, it means that an error is present in the machine. Each digit of the code represents the number of red flashes of the indicator light. Individual code digits are flashed in red with a long pause between digits. If more than one code is present, the codes will be separated by green light. Read the error code before you turn off the machine. To clear the error, turn off the machine, wait a few seconds, and then turn on the machine again. If the error remains, a maintenance is required. Please contact the nearest authorized service center or Lincoln Electric and report the error code.</td>
</tr>
<tr>
<td>Steady Red</td>
<td>Indicate no communication in CAN protocol.</td>
</tr>
</tbody>
</table>

18. LED Indicator: Informs that the left display shows the wire feed speed.

19. LED Indicator: Informs that the left display shows the ampere units.

20. LED Indicator: Informs that the right display shows the volts units.

21. Welding Programs Indicators: LED light indicate the active manual weld mode. See Table 2.

22. Welding Parameters Indicators: LED light indicate the active weld parameters. See Table 3.
Welding process change
It is possible to quick recall of one of the six manual welding programs - Table 2.

Table 2 Manual Weld Modes:

<table>
<thead>
<tr>
<th>Symbol</th>
<th>LED</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMAW</td>
<td>MIX CO₂ Ar</td>
<td>GMAW MIX</td>
</tr>
<tr>
<td></td>
<td>MIX CO₂ Ar</td>
<td>GMAW CO₂</td>
</tr>
<tr>
<td></td>
<td>MIX CO₂ Ar</td>
<td>GMAW AR</td>
</tr>
<tr>
<td>FCAW</td>
<td>MIX CO₂ Ar</td>
<td>FCAW MIX</td>
</tr>
<tr>
<td></td>
<td>MIX CO₂ Ar</td>
<td>FCAW CO₂</td>
</tr>
<tr>
<td>SMAW</td>
<td>MIX CO₂ Ar</td>
<td>SMAW</td>
</tr>
</tbody>
</table>

To set the welding process:
- Press the left button [15], to select the right weld mode – LED of the current program flashes.
- Again press the left button, the active weld mode indicator will skip to the next program.

⚠️ WARNING
During switching the displays show a “dotted line” on the screen.

Quick Access and Configuration Menu for U0 User Interface
Users have access to the two menu levels:
- Quick Access – basic menu related with welding parameters settings
- Configuration Menu – advanced menu associated with machine configuration and selected welding parameters.

⚠️ WARNING
Access to the menu is not available under welding, or if there is a fault (status LED is not solid green).

Availability of the parameters in the Quick Access and Configuration Menu depend on the selected welding program / welding process.

After the device has been restarted the user settings are restored.


Basic level
To enter the menu (Table 3):
- Press the right button [14] to select mode.
- Use the right knob [13] to set the value of parameter.
- Press the left button [15], to return to main menu.

⚠️ WARNING
System returns to the main menu automatically after 2 seconds of inactivity.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Definition</th>
</tr>
</thead>
</table>
| Inductance                      | - controls the arc characteristics when short-arc welding. Increasing Inductance higher than 0.0 provides a crisper arc (more spatter) while decreasing the inductance less than 0.0 provides a softer arc (less spatter).  
  - Regulation range: from -10.0 to +10.0.  
  - Factory default, Pinch is OFF.                                                                 |
| Torch trigger mode (2-step / 4-step) | - changes the function of the torch trigger.  
  - 2 Step trigger operation turns welding on and off as direct response to the trigger. Welding process starts when the torch trigger is press.  
  - 4-Step mode allows to continue welding, when the torch trigger is released. To stop welding, the torch trigger should be pressed again. 4-step model facilitates to making long welds. |
| Run-in WFS                       | - sets the wire feed speed from the time the torch trigger is pressed until an arc is established.  
  - Regulation range: from minimum to maximum of the wire feed speed.  
  - Factory default, Run-in WFS is turned off.                                                                 |
| Burnback Time                    | - amount of time that the welding is continue after the wire stops feeding. It prevents the wire from sticking in the puddle and prepares the end of the wire for the next arc start.  
  - Burnback Time is set automatically (0.07s)  
  - Regulation range: from 0s (OFF) to 0.25s |
### Advanced menu

#### To enter the menu (Table 4):
- Press the right [14] and left button [15] simultaneously, to access the menu.
- Use the left knob [12], to choose the parameter.
- Press the right button [14], to confirm.
- Use the right knob [13] to choose the value of parameter. At any time you can return to the list of parameters using the left button [15].
- Press the right button [14], to confirm.
- Press the left button [15], to return to main menu.

#### WARNING

To exit from the menu with saved changes, press the left [15] and right button [14] simultaneously.

System returns to the main menu automatically after one minute of inactivity.

### Table 4 The default settings of advanced menu

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spot Welding Settings</td>
<td>– sets the total welding time in the range of 0-120 seconds, even if the torch trigger is still pressed. This function does not work in 4-Step Trigger Mode.</td>
</tr>
<tr>
<td>Crater Procedure</td>
<td>– turn ON/OFF the crater procedure:</td>
</tr>
<tr>
<td></td>
<td>• &quot;ON&quot; = Crater can be adjusted. The crater parameter is assigned to the right button on user interface. During adjusting of crater, the LED indicator is on.</td>
</tr>
<tr>
<td></td>
<td>• &quot;OFF&quot; (factory default) = The Crater Procedure adjustment is OFF and ignored after pressing the right button on the user interface.</td>
</tr>
<tr>
<td>Preflow Time</td>
<td>– time that shielding gas flows after the torch trigger was pressed before prior to wire feeding.</td>
</tr>
<tr>
<td></td>
<td>• Factory default, Preflow Time is set at 0.2 seconds.</td>
</tr>
<tr>
<td></td>
<td>• Regulation range: od 0.1 seconds do 25 seconds.</td>
</tr>
<tr>
<td>Postflow Time</td>
<td>– time that shielding gas flows after the welding stopped.</td>
</tr>
<tr>
<td></td>
<td>• Factory default, Postflow Time is set at 0.5 seconds.</td>
</tr>
<tr>
<td></td>
<td>• Regulation range: from 0.1 seconds to 25 seconds.</td>
</tr>
<tr>
<td>Arc/Loss Time</td>
<td>– this option can be used to optionally shut off output if an arc is not established, or is lost for a specified amount of time. Error 269 will be displayed if the machine times out. If the value is set to OFF, machine output will not be turned off if an arc is not established or will output be turned off if an arc is lost. When a value is set, the machine output will shut off and error 269 will be displayed if an arc is not established within the specified amount of time after the trigger is pulled or if the trigger remains pulled after an arc is lost.</td>
</tr>
<tr>
<td></td>
<td>To prevent errors, set the appropriate Arc/Loss Time values taking into account all parameters (Run-in WFS, Wire Feed Speed, Burnback Time etc.).</td>
</tr>
<tr>
<td></td>
<td>• Regulation range: from OFF (0) to 10 seconds, (OFF is factory default).</td>
</tr>
<tr>
<td>Note:</td>
<td>This parameter is disabled while stick welding process.</td>
</tr>
<tr>
<td>Screen Brightness</td>
<td>– enables setting the display brightness level.</td>
</tr>
<tr>
<td></td>
<td>• Factory default: 5.</td>
</tr>
<tr>
<td></td>
<td>• Regulation range: from 1 to 10</td>
</tr>
<tr>
<td>Feedback Persist</td>
<td>– determines how the welding current value will be displayed after stopped welding.</td>
</tr>
<tr>
<td></td>
<td>• &quot;n0&quot; (factory default) = last recorded feedback value will blinked for 5 seconds after stopped welding, then return to default values on display.</td>
</tr>
<tr>
<td></td>
<td>• &quot;Yes&quot; - last recorded feedback value will blinked after stopped welding until the trigger will pressed or the knob will be used or arc ignition.</td>
</tr>
</tbody>
</table>
| **Wire Feed Speed (WFS) unit** | enables change of the displayed WFS unit:  
• CE (factory default) - m/min;  
• US - in/min. |
|---|---|
| **Hot Start** | percentage regulation of growth nominal current value during arc start. It causes temporary rise up of output current which makes ignition of the electrode easier.  
• Factory default: 0.0  
• Regulation range: from -10.0 to +10.0. This parameter is only for SMAW. |
| **Arc Force** | temporary increased of the output current to prevent sticking of the electrode in order to facilitate welding process. Lower values will provide less short circuit current and a softer arc. Higher settings will provide a higher short circuit current, more forceful arc and possibly more spatter.  
• Factory default: 5.0  
• Regulation range: from 0.0 to +10.0 |
| **Restore to Factory Settings** | it allows to restore the factory settings. |
| **View Software version** | used for viewing the software version on user interface.  
• First view shows the effect after getting access to the Soft menu.  
• Second view shows the effect after getting access to parameter edit. |
Welding GMAW and FCAW Process in non-synergic mode

During non-synergic mode wire feed speed and welding voltage are independent parameters that must be set by the user.

Procedure of begin welding for GMAW or FCAW-SS process:
- First turn the machine off.
- Connect by dedicated interconnection cable (see "Accessories chapter"). wire feeder with a dedicated welding power source that using the CAN protocol for communication
- Place the welding set near the work area to minimize exposure to chipping and avoid sharp bend on the welding cable.
- Specify the polarity for the electrode wire that you would like to use. See the specifications of the wire.
- Connect GMAW or FCAW welding torch to the Euro socket [1].
- Connect work lead to proper output socket in power source. For more information please refer to power source instruction manual.
- Connect the work lead to the welding piece with the work clamp.
- Install the proper wire.
- Install the proper drive roll.
- Insert the wire through the guide tube, over the rolls and through the second guide tube of Euro Socket into liner of gun. The wire can be pushed into the liner manually for a few centimeters, and should feed easily and without any force.
- Make a sure if it is needed (GMAW process), that the gas shield has been connected.
- Turn the machine on.
- Push the gun trigger to feed the wire through the gun liner until the wire comes out of the threaded end.

**WARNING**
Keep the gun cable as straight as possible when loading electrode through cable.

**WARNING**
Never use defected gun.

- Check gas flow with Gas Purge Switch [7].
- Close the wire drive door.
- Close the spool wire case.
- Select the right welding program.
- Set the welding parameters.
- The welding machine is now ready to weld.

**WARNING**
The wire drive door and wire spool case have to be completely closed during welding.

**WARNING**
Do not kink or pull cable around sharp corners.

- By applying the principle of occupational health and safety at welding, welding can be begun.

For non-synergic mode you can set:
- Wire Feed Speed, WFS
- Welding Voltage
- Burnback Time
- Run-in WFS
- Preflow Time
- Postflow Time
- Spot Welding Settings
- 2-Step/4-Step
- Start Procedure
- Crater Procedure
- Wave Control:
  - Pinch

Welding SMAW Process

Wire feeder LF 52Ds does not include the electrode holder with lead necessary for SMAW welding as well as MIG-SMAW adapter, but the one can be purchased separately (see "Accessories" chapter).

Procedure of begin welding of SMAW process:
- First turn the machine off.
- Connect by dedicated interconnection cable (see "Accessories chapter") wire feeder with a dedicated welding power source that using the CAN protocol for communication.
- Determine the require polarity for the electrode that has to be used. Consult the electrode technical data for this information.
- Depending on the chosen electrode polarity, connect the work lead and the electrode holder with lead to proper output sockets according to Table 5.

<table>
<thead>
<tr>
<th>Table 5 Polarity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>POLARITY</strong></td>
</tr>
<tr>
<td>DC (+)</td>
</tr>
<tr>
<td>Interconnection cable</td>
</tr>
<tr>
<td>Work lead</td>
</tr>
<tr>
<td>DC (-)</td>
</tr>
<tr>
<td>Interconnection cable</td>
</tr>
<tr>
<td>Work lead</td>
</tr>
</tbody>
</table>

- Connect the work lead to the welding piece with the work clamp.
- Install the proper electrode in the electrode holder.
- Turn the machine on.
- Set the SMAW welding program.
- Set the welding parameters.
- The welding machine is now ready to weld
- By applying the principle of occupational health and safety at welding, welding can be begun.
For SMAW process user can set:
- Welding Current
- Switch on / switch off the output voltage on the output lead.
- Wave Control:
  - Arc Force
  - Hot Start

**Loading the Wire Spool**
Wire spool type S300 and BS300 can be installed on the wire spool support without adapter.
Wire spool type S200, B300 or Readi-Reel® can be installed with use applicable adapter that must be purchased separately (see "Accessories" chapter).

**Wire Spool Type S300 & BS300 Loading**

⚠️ **WARNING**
Turn the input power OFF at the welding power source before installation or changing a wire spool.

- Turn the input power OFF.
- Open the spool wire case.
- Unscrew the Locking Nut [8] and remove it from the Spindle.
- Place the spool type S300 or BS300 [9] on the Spindle [8] making certain the Spindle Brake Pin is put in the hole in back side of spool type S300 or SB300.

⚠️ **WARNING**
Position the spool type S300 or SB300 so that it will rotate in the same direction as wire feed and electrode wire should feed from the bottom side of the spool.

- Install the locking nut [8]. Make sure that the locking nut is tightened.

**Wire Spool Type S200 Loading**

⚠️ **WARNING**
Turn the input power OFF at the welding power source before installation or changing a wire spool.

- Turn the input power OFF.
- Open the spool wire case.
- Unscrew the Locking Nut [8] and remove it from the Spindle.
- Place the spool type S200 on the Spindle [8] making certain the Spindle Brake Pin is put in the hole in back side of the adapter. The adapter of spool type S200 can be purchased separately (see "Accessories" chapter).
- Place the spool type S200 [9] on the Spindle [8] making certain that the adapter brake pin is put in the hole in the back side of the spool.

⚠️ **WARNING**
Position the spool type S200 so that it will rotate in the same direction as wire feed and electrode wire should feed from the bottom side of the spool.

- Install the locking nut [8]. Make sure that the locking nut is tightened.

**Wire Spool Type B300 Loading**

⚠️ **WARNING**
Turn the input power OFF at the welding power source before installation or changing a wire spool.

- Turn the input power OFF.
- Open the spool wire case.
- Unscrew the Locking Nut [8] and remove it from the Spindle.
- Place the adapter of spool type B300 on the spindle [9]. Make certain that the spindle brake pin is put in the hole in the back side of the adapter. The adapter of spool type B300 can be purchased separately (see "Accessories" chapter).
- Install the locking nut [8]. Make sure that the locking nut is tightened.
- Rotate the spindle and adapter so the retaining adapter spring of the adapter is at the 12 o’clock position.
- Place the spool type Readi-Reel® on the adapter. Set one of the spool wire inside in the groove of the locking spring.

⚠️ **WARNING**
Position the spool type B300 so that it will rotate in the same direction as wire feed and electrode wire should feed from the bottom side of the spool.

**Wire Spool Type Readi-Reel® Loading**

- Turn the input power OFF.
- Open the spool wire case.
- Unscrew the Locking Nut [8] and remove it from the Spindle.
- Place the adapter of spool type Readi-Reel® on the spindle [8]. Make certain that the spindle brake pin is put in the hole in the back side of the adapter. The adapter of spool type Readi-Reel® can be purchased separately (see "Accessories" chapter).
- Install the locking nut [8]. Make sure that the locking nut is tightened.
- Rotate the spindle and adapter so the retaining spring of the adapter is at the 12 o’clock position.
- Place the spool type Readi-Reel® on the adapter. Set one of the spool wire inside in the groove of the locking spring.

⚠️ **WARNING**
Position the spool type Readi-Reel® so that it will rotate in the same direction as wire feed and electrode wire should feed from the bottom side of the spool.
Loading the Electrode Wire

- Turn the input power OFF.
- Open the spool wire case.
- Unscrew the locking nut of the sleeve [8].
- Load the spool wire on the sleeve such that the spool turns clockwise when the wire is feed into the wire feeder.
- Make sure that the spindle brake pin goes into the fitting hole on the spool.
- Screw in the locking nut of the sleeve.
- Open the wire drive door.
- Put on the wire roll with the correct groove corresponding to the wire diameter.
- Free the end of the wire and cut off the bent end making sure it has no burr.

**WARNING**
Sharp end of the wire can hurt.

- Rotate the wire spool clockwise and thread the end of the wire into the wire feeder as far as the Euro Socket.
- Adjust force pressure roll of the wire feeder properly.

Adjustments of Brake Torque of Sleeve

To avoid spontaneous unrolling of the welding wire the sleeve is fitted with a brake. Adjustment is carried by rotation of its screw M10, which is placed inside of the sleeve frame after unscrewing the brake locking nut.

![Figure 5](image)

23. Locking Nut.
25. Pressing Spring.

Turning the M10 screw clockwise increases the spring tension and increase the brake torque

Turning the M10 screw anticlockwise decreases the spring tension and decrease the brake torque.

After finishing of adjustment, you should screw brake locking nut again.

Adjusting of Pressure Roll Force

The pressure arm controls the amount of force the drive rolls exert on the wire. Pressure force is adjusted by turning the adjustment nut clockwise to increase force, counterclockwise to decrease force. Proper adjustment of pressure arm gives the best welding performance.

**WARNING**

If the roll pressure is too weak the roll will slide on the wire. If the roll pressure is set too heavy the wire may be deformed, which cause feeding problems in the welding. The pressure force should be set properly. For this purpose decrease the pressure force slowly until the wire just begins to slide on the drive roll and then increase the force slightly by turning of the adjustment nut by one turn.

Inserting Electrode Wire into Welding Torch

- Turn the welding machine off.
- Depending of welding process connect proper welding torch to the euro socket. Rated parameters of the torch and welding machine should be matched.
- Depends on type of gun must be remove the nozzle from the gun and contact tip or protection cap and contact tip.
- Turn the welding machine on.
- Hold the Cold Feed/Gas Purge Switch [14] or use torch trigger until wire appear over threaded end of the gun.
- When the Cold Feed switch or torch trigger is released spool of wire should not unwind.
- Adjust wire spool brake accordingly.
- Turn the welding machine off.
- Install a proper contact tip.
- Depending on the welding process and the type of the gun, install the nozzle (GMAW process) or protection cap (FCAW process).

**WARNING**
Take precaution to keep eyes and hands away from the end of the gun while the wire is being come out of the threaded end.
Changing Driving Rolls

⚠️ WARNING

Turn the input power off before installation or changing drive rolls.

Wire Feeder LF 52Ds is equipped with drive roll V1.0/V1.2 for cored wires. For others wires and sizes it is required to install proper drive rolls kit (see “Accessories” chapter) and follow instruction:

- Turn the input power OFF.
- Unlock 4 rolls by turning 4 Quick-Change Carrier Gear [30].
- Release the pressure roll levers [31].
- Change the drive rolls [29] corresponding to the used wire.

⚠️ WARNING

Be sure that the gun liner and contact tip are also size to match the selected wire size.

⚠️ WARNING

For wires with the diameter larger than 1.6mm, the following parts have to be changed:

- The guide tube of the feeding console [27] and [28].
- The guide tube of the Euro Socket [28].

- Lock 4 new rolls by turning 4 Quick-Change Carrier Gear [30].
- Insert the wire through the guide tube, over the roller and through the guide tube of Euro Socket into liner of gun. The wire can be pushed into the liner manually for a few centimeters, and should feed easily and without any force.
- Lock the pressure roll levers [31].

Gas Connection

⚠️ WARNING

- CYLINDER may explode if damaged.
- Always fix the gas cylinder securely in an upright position, against a cylinder wall rack or purpose-made cylinder cart.
- Keep cylinder away from areas where it may be damaged, heated or electrical circuits to prevent possible explosion or fire.
- Keep cylinder away from welding or other live electrical circuits.
- Never lift welder with cylinder attached.
- Never allow welding electrode to touch cylinder.
- Build up of shielding gas may harm health or kill. Use in a well-ventilated area to avoid gas accumulation.
- Close the gas cylinder valves thoroughly when not in use to avoid leaks.

⚠️ WARNING

Welding machine supports all suitable shielding gases at a maximum pressure of 5,0 bar.

⚠️ WARNING

Before use, make sure that the gas cylinder contains gas suitable for the intended purpose.

- Turn off input power at the welding power source.
- Install a proper gas flow regulator to the gas cylinder.
- Connect the gas hose to the regulator using the hose clamp.
- The other end of gas hose connect to the gas connector on the power source rear panel or directly to the quick connector located on the rear panel of the wire feeder [8]. More details you will found in power source instruction manual.
- Connect by dedicated interconnection cable (see „Accessories” chapter) wire feeder and power source.
- Turn on input power at the welding power source.
- Open the gas cylinder valve.
- Adjust the shielding gas flow of the gas regulator.
- Check gas flow with Gas Purge Switch [7].

⚠️ WARNING

To weld GMAW process with CO₂ shielding gas, CO₂ gas heater should be used.
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 be lost.

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 least once a 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 removed case, machine has to be turned off and the power lead has 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.

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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](http://www.lincolnelectric.com) for any updated information.
Error
Table 6 shows list of basic errors that can appear. To get full list of error codes, please contact with authorize Lincoln Electric service.

Table 6 Error codes

<table>
<thead>
<tr>
<th>Error code</th>
<th>Symptoms</th>
<th>Cause</th>
<th>Recommended Course of Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Power source is not connected.</td>
<td>The User Interface cannot seem to communicate with the Power Source.</td>
<td>• Check cable connections between the power source and the user interface.</td>
</tr>
</tbody>
</table>
| 36         | The machine has shut down because it has overheated. | System detected a temperature level beyond the normal system operating limit. | • Be sure process does not exceed duty cycle limit of the machine.  
• Check the setup for proper air flow around and through the system.  
• Check that the system has been properly maintained, including removal of accumulated dust and dirt from the intake and outlet louvers. |
| 81         | Motor overload, long term.                    | The wire drive motor has overheated. Check that the electrode slides easily through the gun and cable. | • Remove tight bends from the gun and cable.  
• Check that the spindle brake is not too tight.  
• Verify the adequacy of the electrode to the welding process.  
• Verify a high quality electrode is being used.  
• Check drive rolls alignment and gears.  
• Wait for the error to reset and the motor to cool (approximately 1 minute). |

⚠️ WARNING
If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your Local Lincoln Authorized Field Service Facility for technical troubleshooting assistance before you proceed.
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

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.

REACCh

Communication in accordance with Article 33.1 of Regulation (EC) No 1907/2006 – REACCh.
Some parts inside this product contain:
- Bisphenol A, BPA, EC 201-245-8, CAS 80-05-7
- Cadmium, EC 231-152-8, CAS 7440-43-9
- Lead, EC 231-100-4, CAS 7439-92-1
- Phenol, 4-nonyl-, branched, EC 284-325-5, CAS 84852-15-3

in more than 0.1% w/w in homogeneous material. These substances are included in the "Candidate List of Substances of Very High Concern for Authorisation" of REACCh.

Your particular product may contain one or more of the listed substances.

Instructions for safe use:
- use according to Manufacturer instructions, wash hands after use;
- keep out of reach of children, do not put in mouth,
- dispose in accordance with local regulations.

Authorized Service Shops Location

- 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.
## Accessories

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>K14241-1</td>
<td>POWERTEC® i400S</td>
</tr>
<tr>
<td>K14204-1</td>
<td>WIRE FEEDER DRUM QUICK CONNECTOR</td>
</tr>
<tr>
<td>K14175-1</td>
<td>GAS FLOW METER KIT (POWERTEC-i)</td>
</tr>
<tr>
<td>K10158-1</td>
<td>ADAPTER FOR SPOOL TYPE B300</td>
</tr>
<tr>
<td>K10158</td>
<td>ADAPTER FOR SPOOL TYPE B300</td>
</tr>
<tr>
<td>R-1019-125-1/08R</td>
<td>ADAPTER FOR SPOOL S200</td>
</tr>
<tr>
<td>KP10519-8</td>
<td>ADAPTER TIG EURO</td>
</tr>
<tr>
<td>W10429-36-3M</td>
<td>LGS2 360 G-3.0M MIG GUN AIR COOLED</td>
</tr>
<tr>
<td>W10429-36-4M</td>
<td>LGS2 360 G-4.0M MIG GUN AIR COOLED</td>
</tr>
<tr>
<td>W10429-36-5M</td>
<td>LGS2 360 G-5.0M MIG GUN AIR COOLED</td>
</tr>
<tr>
<td></td>
<td><strong>MIG/MAG TORCHES</strong></td>
</tr>
<tr>
<td>W000345072-2</td>
<td>PROMIG MAGNUM 370 3M</td>
</tr>
<tr>
<td>W000345073-2</td>
<td>PROMIG MAGNUM 370 4.5M</td>
</tr>
<tr>
<td></td>
<td><strong>ROLL KIT FOR SOLID WIRES</strong></td>
</tr>
<tr>
<td>KP14150-V06/08</td>
<td>ROLL KIT 0.6/0.8VT FI37 4PCS GREEN/BLUE</td>
</tr>
<tr>
<td>KP14150-V06/10</td>
<td>ROLL KIT 0.8/1.0VT FI37 4PCS BLUE/RED</td>
</tr>
<tr>
<td>KP14150-V10/12</td>
<td>ROLL KIT 1.0/1.2VT FI37 4PCS RED/ORANGE</td>
</tr>
<tr>
<td>KP14150-V12/16</td>
<td>ROLL KIT 1.2/1.6VT FI37 4PCS ORANGE/YELL</td>
</tr>
<tr>
<td>KP14150-V16/24</td>
<td>ROLL KIT 1.6/2.4VT FI37 4PCS YELL/GREY</td>
</tr>
<tr>
<td>KP14150-V09/11</td>
<td>ROLL KIT 0.9/1.1VT FI37 4PCS</td>
</tr>
<tr>
<td>KP14150-V14/20</td>
<td>ROLL KIT 1.4/2.0VT FI37 4PCS</td>
</tr>
<tr>
<td></td>
<td><strong>ROLL KIT FOR ALUMINIUM WIRES</strong></td>
</tr>
<tr>
<td>KP14150-U06/08A</td>
<td>ROLL KIT 0.6/0.8AT FI37 4PCS GREEN/BLUE</td>
</tr>
<tr>
<td>KP14150-U08/10A</td>
<td>ROLL KIT 0.8/1.0AT FI37 4PCS BLUE/RED</td>
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<td>KP14150-U10/12A</td>
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</tr>
<tr>
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<td>ROLL KIT 1.2/1.6AT FI37 4PCS ORANGE/YELL</td>
</tr>
<tr>
<td>KP14150-U16/24A</td>
<td>ROLL KIT 1.6/2.4AT FI37 4PCS YELL/GREY</td>
</tr>
<tr>
<td></td>
<td><strong>ROLL KIT FOR CORED WIRES</strong></td>
</tr>
<tr>
<td>KP14150-V12/16R</td>
<td>ROLL KIT 1.2/1.6RT FI37 4PCS ORANGE/YELL</td>
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<tr>
<td>KP14150-V14/20R</td>
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<td>KP14150-V16/24R</td>
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<tr>
<td>KP14150-V10/12R</td>
<td>ROLL KIT 1.0/1.2RT FI37 4PCS -ORANGE</td>
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<tr>
<td></td>
<td><strong>WIRE GUIDES</strong></td>
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<tr>
<td>0744-000-318R</td>
<td>WIRE GUIDE SET BLUE Ø0.6-1.6</td>
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<tr>
<td>0744-000-319R</td>
<td>WIRE GUIDE SET RED Ø1.8-2.8</td>
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<tr>
<td>D-1829-066-4R</td>
<td>EURO WIRE GUIDE Ø0.6-1.6</td>
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<tr>
<td>D-1829-066-5R</td>
<td>EURO WIRE GUIDE Ø1.8-2.8</td>
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<tr>
<td></td>
<td><strong>INTERCONNECION CABLES</strong></td>
</tr>
<tr>
<td>K14198-PG-30M-S</td>
<td>CABLE PACK 5PIN G 95MM2 30M (SHIPYARD)</td>
</tr>
<tr>
<td>K14198-PG-40M-S</td>
<td>CABLE PACK 5PIN G 95MM2 40M (SHIPYARD)</td>
</tr>
</tbody>
</table>
Connection configuration

 LF 52Ds K14186-2

 K14198-PG-30M-S
 K14198-PG-40M-S

 POWERTEC i400S K14241-1