

Fault LEDs and fault codes

- Some fault conditions cause one or more fault LEDs to illuminate or blink.



Temperature fault LED (yellow)



Torch Cap fault LED (yellow)



System Fault LED (yellow)



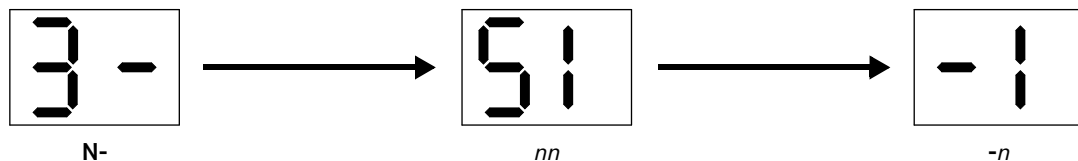
Gas Pressure fault LED (yellow)



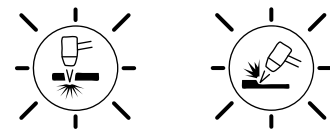
Power ON LED (green)

- Other fault conditions display a fault code in addition to the fault LEDs. The fault code provides additional information when needed to make the source of the problem easier to identify.















Fault codes follow the format **N-*nn*-*n***. They blink on the 2-digit display in increments:









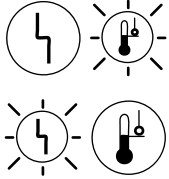








- If the Cut Mode LED or the Gouge/Marking Mode LED blinks, this indicates that the gas pressure has been manually adjusted. See page 54. It does not indicate a fault condition. When you reset the gas pressure to its default setting, the LED stops blinking. See page 56.



Refer to the following table to identify and troubleshoot each fault condition. A label with descriptions for several common fault codes can be found inside the front cover of the *Operator Manual*. Peel off the label and place it on the power supply or near your work area for reference.

Fault code	Description	LED behavior			Solutions
None	The ON/OFF power switch is set to ON (I), but the Power ON LED does not illuminate.	 OFF			<ul style="list-style-type: none"> Make sure that the power cord is plugged into the receptacle. Make sure that the power is on at the main power panel or at the disconnect-power switch box. Make sure that the line voltage is not too low (more than 10% below the rated voltage for 1-phase models or 15% below the rated voltage for 3-phase models). See page 21 and page 28.
None	Low gas pressure	 ON	 ON	<ul style="list-style-type: none"> The gas pressure is below the minimum pressure for that process, mode, torch, and lead length. Check the input gas supply. See <i>Gas Pressure fault LED</i> on page 147. 	
None	No gas input	 ON	 Blinks	<ul style="list-style-type: none"> Connect the input gas supply to the plasma power supply. Turn OFF (O) then turn ON (I) the power supply. See <i>Gas Pressure fault LED</i> on page 147. 	
None	Torch stuck open (TSO) The nozzle and electrode are not touching after a start signal is received.	 ON	 Blinks slowly	<ul style="list-style-type: none"> Turn OFF (O) the power supply. Make sure that the consumables are installed correctly and that they are in good condition. See <i>Torch Cap fault LED</i> on page 148. 	
None	Torch stuck closed (TSC) The nozzle and electrode will not separate after a start signal is received.	 ON	 Blinks rapidly	<ul style="list-style-type: none"> Turn OFF (O) the power supply. Make sure that the consumables are installed correctly and that they are in good condition. See <i>Torch Cap fault LED</i> on page 148. 	
None	Power supply is over temperature or under temperature	 ON	 ON	 ON	<ul style="list-style-type: none"> The system may have overheated. Leave the plasma power supply ON to allow the fan to cool the internal components. See <i>Understand duty cycle to prevent overheating</i> on page 58. The system may be too cold to operate. If the internal temperature of the plasma power supply approaches -30°C (-22°F), move the system to a warmer location.
None	Retaining cap off	 ON	 ON	<ul style="list-style-type: none"> Turn OFF (O) the power supply. Make sure that the torch is connected to the power supply and that consumables are installed correctly. See <i>Torch Cap fault LED</i> on page 148. 	

Fault code	Description	LED behavior		Solutions
0-11-0	Remote controller mode invalid. Valid remote modes for this system: <ul style="list-style-type: none"> ▪ 1, 2 – Continuous pilot arc ▪ 3 – Gouge 	 ON		There is a problem with the remote controller or the software interface to the system. The system cannot interpret the mode, output current, or gas pressure information coming from the controller. <ul style="list-style-type: none"> ▪ Fix the controller.
0-11-1	Remote controller current invalid. Valid remote current settings for this system: 10 – 45 A.	 ON		<ul style="list-style-type: none"> ▪ Check the RS-485 interface cable. ▪ Examine the programming code for incorrect process variables.
0-11-2	Remote controller pressure invalid. Valid remote pressure settings for this system depend on the process, mode, torch, and torch lead.	 ON		
0-12-1	Output gas pressure low	 ON		The 0-12- <i>n</i> fault codes do not appear on the 2-digit display. They display only on a CNC via an RS-485 serial interface. An 0-12- <i>n</i> fault does not stop the system from operating.
0-12-2	Output gas pressure high	 ON		<ul style="list-style-type: none"> ▪ Adjust the gas inlet pressure as needed. ▪ Make sure none of the gas lines are kinked or blocked.
0-12-3	Output gas pressure unstable	 ON		<ul style="list-style-type: none"> ▪ Run a gas test to see if the actual pressure is lower or higher than the set pressure. See <i>Run a gas test</i> on page 149. ▪ Have a qualified service technician examine the system. Contact your distributor or authorized repair facility.
0-13-0	Alternating current (AC) input power unstable (system continues to operate)	 Blinks		<ul style="list-style-type: none"> ▪ Perform a cold restart. ▪ If applicable, disconnect the system from generator power. See <i>Generator considerations</i> on page 149. ▪ If the fault does not clear, have an electrical technician correct the power source. See page 27.
0-51-0	Start/trigger signal on at power up This condition indicates that the power supply is receiving a start signal. It is sometimes referred to as a “stuck start.”	 ON	 Blinks alternately	<ul style="list-style-type: none"> ▪ Hand torch: The torch trigger was being held in the “fire” position while the plasma power supply was being powered ON (I). Release the trigger and restart the power supply. ▪ Machine torch: The plasma power supply was receiving a start signal when it was powered ON (I). Turn off the start signal and restart the power supply.


Fault code	Description	LED behavior		Solutions
0-60-0	Alternating current (AC) input voltage phase loss	 Blinks		<ul style="list-style-type: none"> ▪ Have an electrical technician check all input phases and fuses/breakers for proper voltage at the power source and at the plasma system. ▪ If applicable, disconnect the system from generator power. See <i>Generator considerations</i> on page 149.
0-60-1	Alternating current (AC) input voltage too low	 Blinks		<ul style="list-style-type: none"> ▪ The input line voltage is too low (more than 10% below the rated voltage for 1-phase models or 15% below the rated voltage for 3-phase models). Have an electrical technician check the line and increase the voltage. See page 21 and page 28. ▪ If applicable, disconnect the system from generator power. See <i>Generator considerations</i> on page 149.
0-60-2	Alternating current (AC) input voltage too high	 Blinks		<ul style="list-style-type: none"> ▪ The input line voltage is too high (more than 10% above the rated voltage for 1-phase models or 20% above the rated voltage for 3-phase models). Have an electrical technician check the line and decrease the voltage. See page 21 and page 28. ▪ If applicable, disconnect the system from generator power. See <i>Generator considerations</i> on page 149.
0-61-0	Alternating current (AC) input unstable – system shutdown	 Blinks		<ul style="list-style-type: none"> ▪ The current from the incoming power line is unstable. Power down and correct the line resonance problem before continuing. ▪ Make sure the plasma system is not being used on a phase converter. ▪ If applicable, disconnect the system from generator power. See <i>Generator considerations</i> on page 149.
1- <i>nn-n</i> 2- <i>nn-n</i> 3- <i>nn-n</i>	Major fault	 ON	 ON	<ul style="list-style-type: none"> ▪ An internal component may be faulty. Restart the plasma power supply. In some instances, a restart can clear the fault condition. ▪ If restarting the plasma power supply does not clear the fault, a qualified service technician must service the system. Contact your distributor or authorized repair facility.

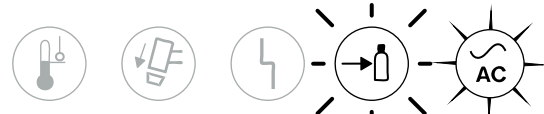
Gas Pressure fault LED

The minimum gas pressure required varies based on:





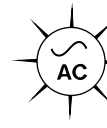
- Selected mode (cut or gouge)
- Type of torch
- Length of torch lead

For example, if you select cut mode and are using a hand torch with a 6 m (20 foot) lead, the Gas Pressure LED illuminates if the inlet gas pressure is less than 3.8 bar (55 psi).

	<p>The Gas Pressure LED illuminates while the system is powered ON.</p>
<p>The input gas pressure is too low.</p> <ul style="list-style-type: none"> ▪ Check all the connections for the input gas supply. Make sure there are no leaks or loose connections. ▪ Make sure the incoming gas supply hose has an internal diameter of 9.5 mm (3/8 inch) or greater. ▪ Check the inlet gas pressure. Adjust as needed. See page 34. ▪ Manually adjust the gas pressure on the plasma system. See page 54. Perform a quick restart. ▪ Run a gas test. See page 149. Compare the inlet set pressure against the actual output gas pressure. If there is no apparent issue with the inlet gas supply, check the air filter bowl and air filter element in the plasma power supply. Clean or replace as needed. See page 155. ▪ If the problem persists, have an authorized service technician examine the system. Contact your distributor or authorized repair facility. 	


	<p>The Gas Pressure LED blinks while the system is powered ON.</p>
<p>The input gas supply is not connected to the plasma power supply.</p> <ul style="list-style-type: none"> ▪ Make sure the input gas supply is properly connected to the plasma system. ▪ Check all the connections for the input gas supply. Make sure there are no leaks or loose connections. ▪ Restart the plasma power supply. 	

Torch Cap fault LED


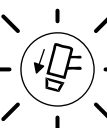


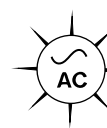






The Torch Cap LED illuminates while the system is powered ON.

- Make sure the torch lead is securely plugged into the plasma power supply. See page 48.
- Make sure the torch-disable switch on the torch is set to the green “ready to fire” (✓) position.
- Turn OFF (O) the power supply. Make sure that the consumables are installed correctly. See page 46. Turn ON (I) the power supply.

 If the consumables are not installed, or if they are not installed correctly, the Torch Cap LED illuminates even if the torch-disable switch is set to the green “ready to fire” (✓) position.

- Make sure the consumables are not too loose or too tight. Never tighten the consumables more than finger-tight. It is normal for some gas to escape between the torch shell and the retaining cap during use. This is part of the torch design.
- When you use the torch-disable switch to lock and then unlock the torch without turning OFF the plasma power supply, the Torch Cap LED illuminates until you fire the torch 1 time to start the warning puffs of air. See page 45.
- If the torch will not fire an arc, test the torch-disable switch to see if it is working properly. See page 152. Replace the switch if it is broken.
- If the consumables are in good condition and appear to be installed correctly, the torch may be damaged. Contact your distributor or authorized repair facility.








The Torch Cap LED blinks slowly (TSO) or rapidly (TSC) while the system is powered ON.

- If the consumables became loose or were removed while the plasma power supply was ON and the torch-disable switch remained ON, turn OFF (O) the power supply, correct the problem, and then turn ON (I) the power supply to clear the fault.
- **A slow blink rate (less than 1 blink per second) indicates a “torch stuck open” (TSO) condition.** Check the consumables, including the swirl ring. Make sure they are not worn or damaged. See page 154. If you are in gouge/marketing mode, make sure you are not using the Maximum Control gouging consumables with the output current set below 26 A. Either increase the output current above 25 A or install the Precision gouging consumables. See *Gouging processes* on page 71. Next, check the gas line. See *Check the gas pressure* on page 140 and *Check the gas quality* on page 141.
- **A rapid blink rate (multiple blinks per second) indicates a “torch stuck closed” (TSC) condition.** Check the consumables, including the swirl ring. Make sure they are not worn or damaged. See page 154. Next, check the gas line. See *Check the gas pressure* on page 140 and *Check the gas quality* on page 141.
- If the fault persists, change all of the consumables, including the swirl ring. If the consumables are in good condition and appear to be installed correctly, the torch may be damaged. Contact your distributor or authorized repair facility.

Generator considerations

- If a fault occurs while using a generator, turning the power switch quickly to OFF and then to ON again (a quick restart) may not clear the fault. Instead, turn OFF the power supply and wait 60 to 70 seconds before turning it ON again.
- Issues with input line voltage (fault codes 0-13-0, 0-60-*n*, and 0-61-0) can be more difficult to troubleshoot when you are operating the plasma system off of a generator. Disconnect the plasma system from the generator, and connect it to an appropriately sized power outlet.

 See page 33 for generator specifications.

Run a gas test

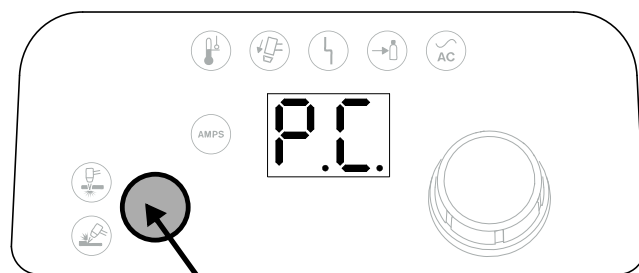
CAUTION

Point the torch away from you before performing a gas test. Always keep hands, clothes, and objects clear of the torch tip. Never point the torch toward yourself or others.

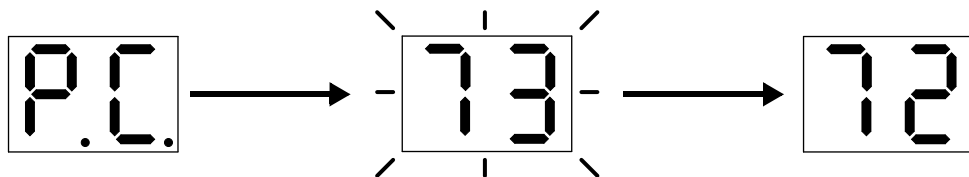
Use a gas test to determine if adequate gas pressure is exiting the torch. The gas test lets you see the plasma system's actual gas pressure so that you can compare it to the inlet set pressure.

Enter gas test mode

1. Press-and-hold the **Mode** button for approximately 5 seconds.
2. Release the **Mode** button when the 2-digit display shows **P.C.**
3. The set pressure blinks on the 2-digit display before the actual output gas pressure displays. Make note of the set pressure so that you can compare it to the actual pressure.



Press-and-hold for 5 seconds.



"P.C." displays when you enter gas test mode.

The set pressure blinks briefly.

The actual pressure displays.