



Instruction Manual

MNL-PR-191-Rev. 1



About Pro Spot

Pro Spot International specializes in quality welding and repair products for the collision repair industry. Pro Spot owns numerous patents for special welding equipment and applications, and works with the largest auto manufacturers in the world. Pro Spot is a proud 'MADE IN THE USA' manufacturer in Carlsbad, CA. The turnkey facility includes Design, Engineering, Machine and Sheet Metal Shops, Powder Coating, Assembly, Training and Customer Support. The Pro Spot equipment line includes resistance spot welders, aluminum & steel dent repair systems, pulse MIG welders, rivet guns and tools, dust-free sanding systems, fume extraction and more.

Pro Spot Training and Services

Pro Spot provides on-going training to all of our distributors and their technicians, therefore, all owners of Pro Spot products receive complete training first hand. Pro Spot has two ASE certified training programs that are I-CAR Alliance approved. Pro Spot has a fully equipped training facility at their Headquarters in Carlsbad, CA, as well as in Nashville, TN, and Denver, CO, for groups to come in and train on all products. To stay up-to-date, Pro Spot offers their unique My.prospot.com which includes interactive training courses for shops and technicians to access online.

Pro Spot is constantly striving to improve. Whether that means designing innovative equipment, implementing cutting edge technical support or further improving their already extensive training programs, Pro Spot is always looking for ways to better our customer's experiences.



PRO SPOT

QUALITY WELDING SYSTEMS

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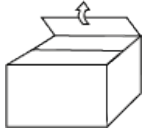
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1.1 Product Installation Safety Warnings



Before you start

- After opening the packaging, carefully check the product for damage. If in doubt, please contact our customer service.
- Installation requires qualified personnel for electrical operations.
- The Manufacturer shall not be held responsible for any unauthorized modifications to its products, which must only be used as indicated in the user manual.
- The product is not suitable for recharging batteries, defrosting water pipes or heating rooms using heating elements, etc.
- Use the product only in dry and well-ventilated areas.
- Always keep the environment around the welding area clean.
- Carefully prevent any metal dust from entering the product's fan, in order to protect the integrity of the electronic circuits.
- Carefully check that the welding cables are correctly connected to the product's sockets, to prevent the connections from overheating.
- When correctly installed and used, this product will be reliable and durable and it will help you increase the productivity of your business with minimal maintenance costs.



IP protection rating

- Protection rating IP 22S
- The IP protection rating (Ingress Protection) of an appliance is a standardized specification that indicates the degree of protection provided by the appliance against the ingress of solids and liquids.
- This classification is used to describe how resistant a device is to external agents such as dust, water and other contaminants.
- The IP classification usually consists of two digits. The first digit represents protection against solids (such as dust), while the second digit represents protection against liquids (such as water). Each digit has a specific meaning.
- The IP protection rating is important to determine the suitability of a device for a certain environment or use. For example, devices with a high IP rating are suitable for outdoor or humid environments, whereas devices with a lower IP rating may not be suitable for these conditions.
- Refer to the IP value indicated on the product nameplate and to the explanation given in the user manual.



Gas cylinder installation

- Carefully follow the recommendations for use and handling given by the gas supplier, in particular the storage areas and the areas in which the gas cylinders are used must be open and well-ventilated, sufficiently far away from operating areas and heat sources (< 50°C). Secure the cylinders, avoid shocks and protect them from any technical accidents.
- Check that the cylinder and pressure regulator correspond to the gas required for the process.
- Never lubricate the cylinder shut-off valves and do not forget to bleed them before connecting the pressure regulator.
- Distribute protective gases at the pressures recommended by the various welding/cutting procedures.
- Periodically check the airtightness of the ducting and rubber hoses. Never detect a gas leak with a

flame; use a suitable detector or soapy water with a brush.



Attention

Poor conditions of use of gases, particularly in confined spaces (ship holds, tanks, cisterns, silos, etc.) expose the user to the following dangers:

1. Asphyxiation or intoxication with gases and gas mixtures containing less than 20% CO₂ (these gases replace oxygen in the air),
2. Fire and explosion with gas mixtures containing Hydrogen (a light and flammable gas, it accumulates under ceilings or in cavities and may cause fires and explosions).



1.2 Risk of Fire

- Welding sparks can cause fires.
- Do not weld or cut anywhere near flammable materials, gasses or vapors.
- Do not weld or cut containers, cylinders, tanks or piping unless a qualified technician or expert has checked that it is possible to do so, or has made the appropriate preparations.



1.3 Electrical Connection

Before connecting your welder to the electrical supply, check that:

- The over-voltage and short-circuit protection device, the sockets, the plugs and the electrical system on site are compatible with its maximum power and supply voltage (see nameplate) and are in accordance with current Standards and regulations.
- The single-phase or three-phase connection with ground (yellow/green wire) is made with the protection of a medium or high residual current device (sensitivity between 1 and 30mA).

Any work on electrical and electronic equipment must be carried out by qualified technicians capable of performing the specific operations.

Class A Equipment

This equipment has been designed to be used in professional and industrial environments.

If this equipment is used in domestic environments and those directly connected to a low voltage power supply network which supplies buildings used for domestic purposes, it may be difficult to ensure compliance to electromagnetic compatibility as the result of conducted or radiated disturbances.



Additional Warnings

- Do not use the welding machine for purposes other than those described.
- Place the welding machine on a flat stable surface, and make sure that it cannot move. It must be positioned securely to allow it to be controlled during use and prevent the welder from being hit by sparks.
- Do not lift the welding machine while in use.
- Do not use cables with damaged insulation or loose connections.

1.4 Welding in Conditions of Risk

- Do not use the PR-191 in the presence of flammable or explosive materials. Make sure that trained people are present who can intervene in the event of an emergency. Always use personal protective equipment.
- If you are using the PR-191 in a position raised above ground level, always use a safety platform.

1.5 Interferences



Before using the equipment, make sure that the following devices are not present in the installation area:

- Electro-medical instruments and life support equipment, including cardiac stimulators (pacemakers) and hearing aids.
- Computers, robots, household electronic devices (radios, TVs, video recorders, telephones, alarm systems).
- Safety control devices in industrial equipment
- Radio and television transmitters and receivers



Reduction of interference

To reduce interference from product emissions:

- Filter the main power supply
- Keep welding cables as short as possible and close to the floor
- In the fixed welding positions, it is necessary to run the entire length of the cable inside conduits made of metal or equivalent materials, making sure that the shielding is firmly connected to the equipment to ensure adequate electrical contact.

1.6 Safe Handling

Manual handling



- Refer to national regulations to determine the maximum weight that a person can safely lift.
- Use only the handles and belts to lift the equipment manually.
- Manual lifting devices are designed to lift the weight of the individual piece of equipment on which they are mounted. If there are additional accessories connected to the equipment (such as cooling units, trolleys, traction cables, etc.), lift the entire assembly from the base.



Lifting by means of mechanical devices.

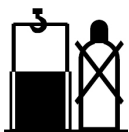
If available, use the specific attachment points indicated by the Manufacturer and identified in the instruction manual with a dedicated symbol.

When there are no specific attachment points on the equipment for mechanical lifting, use:

- a forklift truck that lifts the equipment from its base;
- ropes/chains that wrap around the base of the equipment to be lifted



It is forbidden to lift the equipment using ropes or chains connected to structures not specifically designed for this purpose, as there is a risk of them breaking and the load falling.



Lifting the appliances

Make sure that all the devices intended to be lifted with the equipment are securely fastened and cannot move.

- Make sure that the fixing screws between the base and the welders mounted on them are tight before lifting them (the recommended tightening torque is at least 10 Nm).
- Disconnect the equipment from the power supply during the mechanical lifting operations.

Do not lift the equipment together with cylinders, trolleys, or any other unexpected mobile device.



- During lifting, the chains/ropes must remain perpendicular to the equipment in order not to stress the attachment points.
- Take care to ensure that the lifting chains/ropes are suitable to support the weight of the equipment.



Positioning the product and risk of tipping

To avoid overturning and falling, do not place the equipment on a surface with an inclination greater than 10°.

- When a trolley is moved on an inclined surface, make sure that:
 - the weight of the cylinders, wire spools, torches, mobile devices and anything else installed on it is distributed in a balanced manner.
 - all covers are closed and moving parts are well secured. Sudden weight imbalance can cause the equipment to overturn.
- During welding operations, secure any wheeled equipment (if placed on an inclined surface) with hooks or ropes to prevent it from sliding and overturning.

2.1 Personal Protective Equipment (PPE)



- Body protection

Avoid clothing soiled with flammable fluids, solvents, oily substances or paints that might react with the heat produced during welding operations. Wear protective and fireproof clothing instead.



- Face protection

Wear protective masks equipped with approved safety filters to protect the face during welding operations, and also a protective, fireproof welding cap to protect against welding spatter.



- Hearing protection

Wear earmuffs if the welding operations and the operations required to prepare the parts to be welded are very noisy.



- Foot protection

Wear protective, fireproof footwear to protect against electric shock, ash and welding spatter.



- Hand protection

Wear protective, fireproof gloves to protect against electric shock, ash and welding spatter.



- Eye protection

Do not wear contact lenses during welding operations.

Wear protective glasses with side shields during welding, deburring, brushing and grinding operations.



- Breathing protection

Wear a dust mask when performing cleaning operations by blowing with compressed air.



Attention

Welding, cutting and similar procedures can be dangerous for the operator and for any people near the work area.



- Risk due to fumes and gases

Do not perform welding operations in environments containing explosive dusts, fluids or gases and near coating, cleaning and degreasing stations or on coated materials (galvanized, cadmium plated) or materials that are soiled with unknown substances. These substances may react and form toxic and irritating gases.



Use suitable fume extractors to avoid the risk of intoxication from fumes or gases generated by the welding process when working in environments with poor ventilation.



- Risk of noise

Welding operations and operations required to prepare the material to be welded can be noisy and cause permanent hearing problems.



- Risk of falling and tripping

In order to minimize the risk of losing balance, it is essential to avoid welding with the equipment on your shoulders or on your back. To prevent situations where there is a risk of tripping, it is essential that the power cables, welding cables, torches and connection wiring between the various pieces of equipment are visible when they are on the ground.



- Risks due to potential exposure to artificial optical radiation

Due to the characteristics of the electric arc and its high light emission, welding machines belong to equipment category 2, requiring the implementation of both personal and collective precautions.

The ultraviolet radiation emitted during electric welding can pose risks similar to those of sunburn on unprotected skin. Therefore, it is essential to protect both the face and body from this radiation.



- Risk of electric shock

Make sure that the ground system is correctly connected and in perfect working order.

Always check the condition of the power cables and of the connection cables between the various devices:

- the wires of the power cable must not protrude from the plug body;
- the equipment cables must not be damaged.

- Do not work in damp or wet environments.

The welding sockets are energized and ready for the activation of the welding arc when the machine is switched on and set to MMA mode.

In MIG/MAG and TIG welding processes, both the welding wire and the wire feeder rolls, the wire spool and the components in contact with the welding wire are energized.

Do not handle the conductive part of the electrode holder and metal components at the same time.

When welding on a base, it is necessary to place an insulating cover between the body and the base.

Check that the wire feeder trolley is at a certain distance from any conductive structure on which it rests and from any metal hooks or cables supporting it.



When the floor is conductive, take measures to ensure that the equipment is isolated from it.



National and international Standards regulate the maximum open-circuit voltage between the welding sockets of a welding machine. Welders bearing the "S" (Safety) symbol are suitable for use in high-risk electrical environments, but it is essential to avoid placing the welder in such environments.



- Risks due to explosion and fire

Do not weld / cut containers containing petrol, lubricant or other flammable substances.



Before starting to weld, ventilate environments where there are potentially flammable areas. Do not work in an area with a significant concentration of flammable dust or gas or combustible liquid vapor in the environment.

Remove all flammable materials from the work area to prevent any possible risk of fire.

Do not weld or cut near a ventilation duct, a gas pipe or any installation capable of spreading fire quickly.



- Mechanical risks

Be very careful when near moving parts that pose a potential risk, such as the drive rollers of the wire feeders.



When replacing the wire spool and inserting the wire into the torch of MIG/MAG machines, avoid wearing gloves as they could get caught in rotating parts.

While the product is working, it is important to check that all covers and doors are correctly closed and locked.



- Risk of burns

Do not grab the material near the cutting or welding area.

Do not touch hot parts with bare hands.



During the welding process, spattering of material at high temperatures occurs.

After welding for a long time, the coolant inside the cooling unit and torch may reach high temperatures.

Pay the utmost attention to jets of liquid when replacing the torch or in circumstances where it is possible to come into contact with the hot liquid accidentally.



- Risks in the work area

Pay attention to protruding objects.

If the product is located on a high surface, consider the presence of the risk of falling and take appropriate safety measures.



Keep a safe distance from the product when it is lifted or placed on a higher level.

It is very important to ensure sufficient ventilation, especially when welding indoors.

When welding in confined spaces, it is essential to be aware of all the special rules that must be observed.



- Risks due to electric and magnetic fields (EMF)

People with implanted medical devices must consult their doctor and the Manufacturer of the device before approaching arc welding, spot welding, plasma cutting or similar operations.



All welders must observe the following procedures to minimize exposure to the EMFs generated during welding:

1-Do not work, sit or stand near the welding machine.

2-Do not wrap cables around your body.

3-Attach the clamp to the workpiece to be processed as close as possible to the welding point.

4-Do not weld while carrying the welding machine.

4.1 Description

The PR-191 is a multi-process welding machine that offers three welding options in a single welder, which can be selected directly via the adjustment knob on the front of the machine:

MIG welding (GMAW and FCAW) with Gas and without Gas

The welding machine offers the possibility of working in manual mode or in synergic mode:

- Manual mode: allows the operator to independently adjust the wire feed speed and the welding voltage.
- Synergic mode: the operator must adjust the thickness of the material to be welded. Once this parameter is set, the wire speed and the correct voltage will be automatically set by the machine software and the operator will be allowed to fine-tune this value if needed.

Stick welding (SMAW)

Both rutile and basic electrodes can be welded. The welding current is adjusted using the potentiometer on the front of the machine.

TIG welding (GTAW)

TIG welding requires a TIG torch with a EURO attachment or a gas valve on the handle. In the latter case, the gas valve must be opened manually before welding and closed manually after welding. The arc is struck by contact. The welding current is adjusted using the potentiometer on the front of the machine.

4.2 Positioning the Welder

Follow these guidelines to position your cutting system correctly:

- In places free from dust and moisture;
- At temperatures between 14°F and 104°F (-10° and +40°C);
- In places protected from oil, steam and corrosive gases;
- In places not subject to particular vibrations or quakes;
- In places protected from sunlight and rain, relative humidity of air: up to 50% at 104°F (40°C), up to 90% at 68°F (20°C);
- Altitude: up to 3,280 feet (1000 m) above sea level;
- Provide a clearance of at least 16.5 feet (5 m) around the machine. Make sure that no obstacles obstruct the flow of cooling air from the front and rear openings of the machine.
- Whenever it is necessary to move the machine, always unplug it from the socket and pick up any pipes and hoses to prevent them from being damaged by passing over them.

4.3 Connection to the Line



IMPORTANT! Disconnect the equipment from the building power before performing any assembly operations. Closing the power switch does not guarantee disconnection from the building power.

Before making any electrical connection, check that the supply voltage and the available frequency correspond to those indicated on the welder nameplate.

The building voltage should be within $\pm 10\%$ of the rated line voltage. Too low a voltage may result in poor performance; too high a voltage may, on the other hand, cause overheating and, as a consequence, the failure of some components.

The welding machine must be:

- Installed correctly by qualified personnel;
- Connected correctly, in accordance with local regulations;
- Connected to a socket of suitable capacity.

Connect the power cable to a standardized plug of adequate capacity.

PR-191 is equipped with a CEE7z7 type 16a socket and must be connected to a 230 V (50 - 60 Hz) single-phase power. The actual current absorbed (I_{eff}) is indicated on the device, for optimal conditions of use. Check that the power supply and protections (fuse and/or circuit breaker) are compatible with the required operating current. In certain countries, it may be necessary to change the plug to allow the device to be used in optimal conditions.

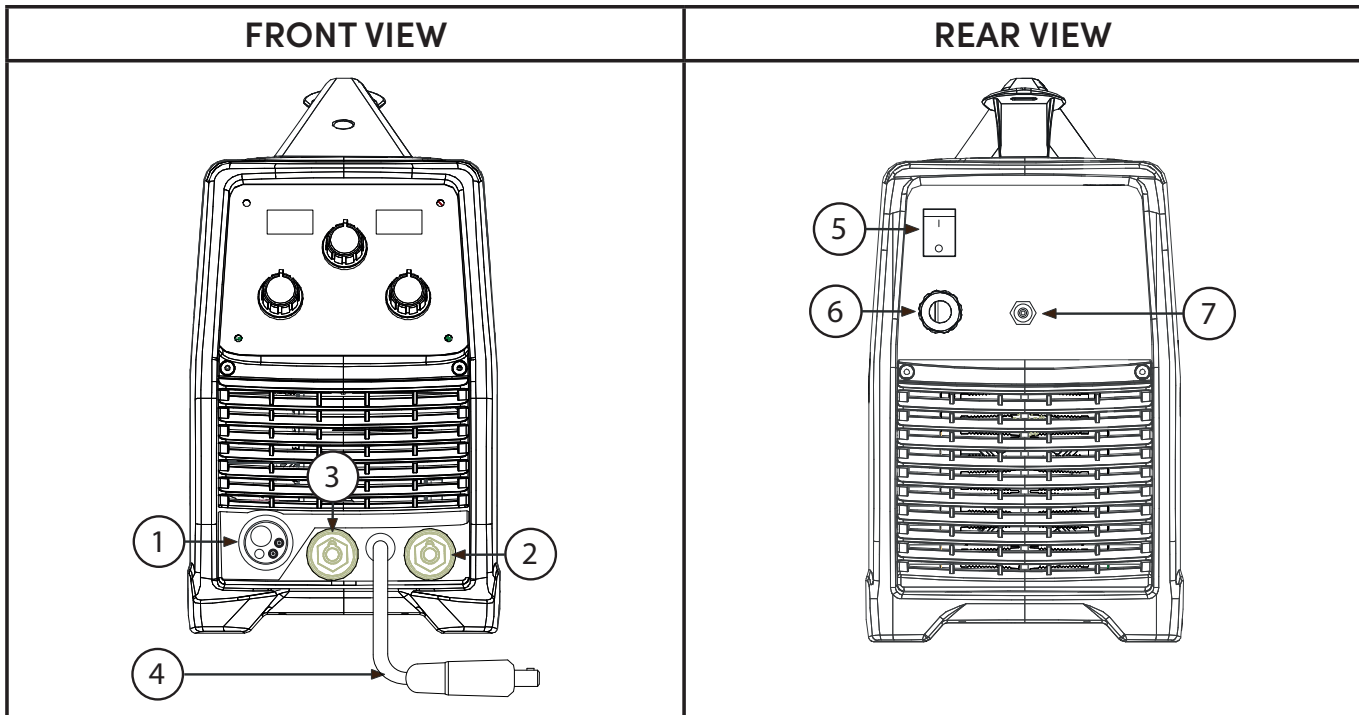


The socket to which the generator will be connected must be equipped with suitable protective fuses or a circuit breaker.

Notes:

- The power cable must be regularly checked for signs of damage or aging. If it is not found to be in good condition, do not use the machine but have it repaired at a service center.
- Do not tug on the power cable to disconnect it from the socket.
- Never run over the power cable with other machinery: you may damage it and there is a risk of electric shock.
- Keep the power cable away from heat sources, oils, solvents and sharp edges.
- When using an extension cable with a suitable cross-section, unwind the cable completely otherwise it might overheat.

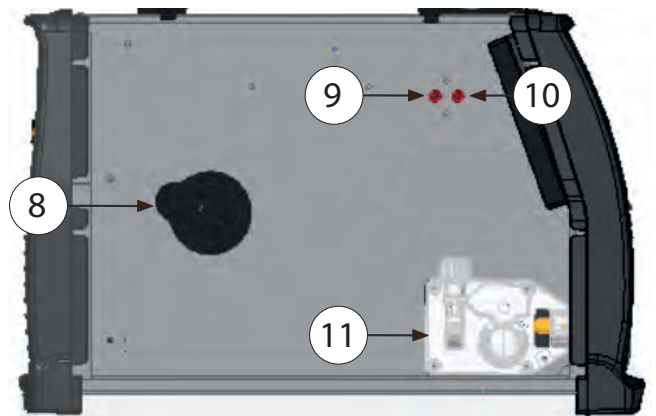
5.1 Connections and Sockets



1. MIG/MAG TORCH attachment
2. POSITIVE socket
3. NEGATIVE socket
4. Torch connector polarity change
5. ON/OFF switch
6. Power cable
7. Power Supply Over-Voltage Alarm LED

5.2 Wire Feeder Compartment

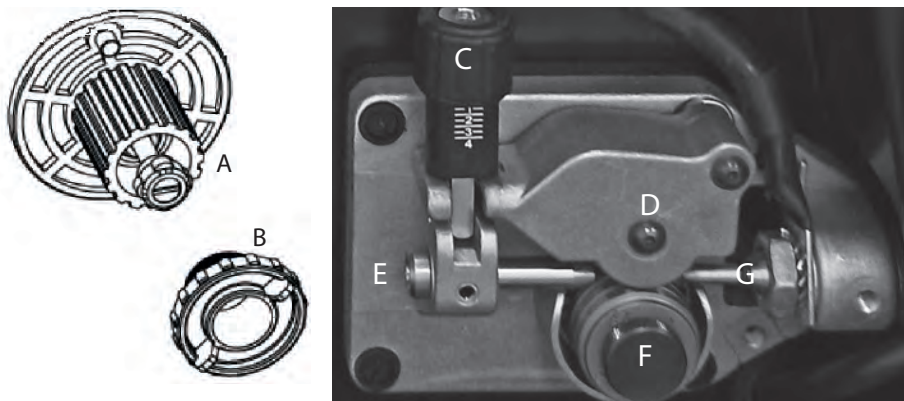
8. Spool holder for 100 and 200mm diameter reels of wire
9. Burnback time (B.B.T.) adjustment potentiometer
10. Motor slope time adjustment potentiometer
11. 2-roller wire feed unit



5.3 Preparation for MIG/MAG Welding

1. Connect the MIG/MAG Torch to the socket (1)
2. Connect the gas nose from the cylinder to the rear gas connector (6)
3. Connect the ground clamp to the welding socket according to the required polarity: Connect the ground clamp cable to the positive socket (2) and connect the cable to the negative terminal (10) of the voltage change board inside the spool holder compartment, for continuous wire welding WITHOUT GAS.

4. Connect the ground clamp cable to the negative socket (3) and connect the connection cable to the positive terminal (10) of the voltage change board inside the spool holder compartment, for continuous wire welding with PROTECTION GAS.
5. Unscrew the cap (B) of the spool holder (A). If necessary, install an adapter for the wire.
6. Position the wire spool in the spool holder spindle (A) and calibrate the tension of the spool holder via the screw. Fasten the cap (B) back onto the spool holder (A)
7. Decrease the wire feeder pressure spool with the tension knob (C)
8. Lift the wire feeder pressure arms (D). Check that the correct drive rollers (E) for the type and size of wire to be used are installed.
9. Slide the wire between the wire feeder rolls (E) and insert it into the MIG/MAG TORCH connection (G)
10. Close the wire feeder tension arms (D) and adjust the tension system with the tension knob (C) to ensure smooth wire feed without slipping
11. Plug the power cable into the building power and turn the welder switch to the "ON" position
12. Select the following welding mode via the user interface: MIG/MAG.
13. Slide the wire into the torch until it comes out of its tip, by pressing the torch trigger
14. Open the gas solenoid valve by pressing and releasing the torch button; use the flow meter to adjust the gas flow to the desired amount, while the gas is flowing



5.4 Preparation for MMA Welding

1. Connect the electrode holder clamp cable to the welding socket (2-3) according to the polarity required by the type of electrode
2. Connect the ground clamp to the welding socket (2-3) according to the required polarity
3. Plug the power cable into the main socket and turn the welder switch to the "ON" position
4. Select the following welding mode via the user interface: MMA

5.5 Preparation for TIG Welding

1. Connect the TIG torch plug to the socket (1).
2. Connect the ground clamp cable to the positive socket (2)
3. Connect the cable to the negative terminal (10) of the voltage change board inside the wire spool holder compartment
4. Plug the power cable into the building power and turn the welder switch to the "ON" position
5. Select the following welding mode via the user interface: TIG

The diagram illustrates the control panel of the PRO SPOT PR-191 MIG welding power source. The panel is primarily black with blue and yellow accents. At the top, there are two large rectangular digital displays labeled D1 and D2. D1 shows the current in Amperes (A) with a range of 0 to 100 mm. D2 shows the voltage in Volts (V) with a range of 0 to 100 mm. Below these displays, there are two large circular dials labeled P1 and P2. P1 is for wire speed, with a range of 0 to 100 mm. P2 is for wire thickness, with a range of 0 to 100 mm. In the center, there is a rotary selector labeled S1, which allows the user to choose between different welding modes and materials. The modes include NO GAS, CO2 100%, Fe 0.6 Ø, Fe 0.6 Ø - 20%, MIX 80% - 20%, 60% - 2%, CuSi 0.8 Ø, Al 0.8 Ø, Al 1.0 Ø, MMA, TIG, MIG MAG, and NO GAS (0.9 Ø). To the right of the rotary selector, there is a QR code labeled 'LEARN MORE'. At the bottom, the brand name 'PRO SPOT' is prominently displayed in yellow, followed by the model name 'PR-191 MIG' in white. The panel also features various safety and technical icons, including a warning symbol, a CE mark, and a 'HOT START' indicator.

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ACRONYM	DESCRIPTION
S1	Welding mode selector: MMA, TIG, manual MIG/MAG, synergic MIG/MAG.
L1	Green LED lit indicates generator powered, flashing indicates that the generator is setting the welding process (S1); in the event of overvoltage, the green LED flashes and the red LED (L3) is lit.
L2	Yellow LED lit in overtemperature. Indicates that the machine has overheated and stopped automatically. Do not turn off the machine; when the generator has cooled down sufficiently, the yellow LED will go out and it will be possible to resume welding.
L3	Red LED lit in overvoltage.

Process	Left Knob				Right Knob			
	Value	Amps	Wire Speed	Thickness	Value	Voltage	Balance	Hot Start
MMA Manual	20 - 180	X			H0 to H50			X
TIG Manual	10 - 180	X			-			
MIG MAG	2.5 - 20.6		X		11 - 28	X		
No Gas	0.8 - 6			X	-5.0 - 5.0		X	
MAG CO2 100%, Fe 0.6	0.8 - 3.0			X	-5.0 - 5.0		X	
MAG CO2 100%, Fe 0.8	1-6			X	-5.0 - 5.0		X	
MAG Mix 80/20% Fe 0.6	0.6 - 3.9			X	-5.0 - 5.0		X	
MAG Mix 80/20% Fe 0.8	.6 - 5			X	-5.0 - 5.0		X	
MAG 98/2% SS 0.8	.8 - 5			X	-5.0 - 5.0		X	
MIG Ar 100% CuSi 0.8	.8 - 5			X	-5.0 - 5.0		X	
MIG Ar 100% Al 0.8	.6 - 3			X	-5.0 - 5.0		X	
MIG Ar 100% Al 1.0	.6 - 5			X	-5.0 - 5.0		X	

7.1 Switching on the System

1. Set the generator power switch to "I" to switch on the equipment. In displays D1 and D2, the SW version.
2. When it is started up for the first time, the generator is set up with the values predetermined at the factory.
3. Subsequent power-ups: The welder will be set up in the last configuration set before it was switched off previously.

7.2 MIG/MAG Welding

1. Select the manual welding procedure using the selector (S1) on the front panel.
2. Set the welding parameters:
3. Wire feed speed via left potentiometer (P1).
4. Arc voltage via potentiometer (P2).
5. Bring the torch close to the part to be welded and press the torch button.
6. After the electric arc is struck, the motor slope time (the time required to switch from the minimum speed to the maximum speed of the wire feed motor) starts; this time can be adjusted using the potentiometer (10) inside the spool holder compartment.

7. At the end of the ramp, the wire feed speed reaches the value set with the left potentiometer (P1).
8. To end the welding process, release the torch trigger. The arc remains lit for the wire burn time (BBT), which can be adjusted with the potentiometer (9).

7.3 SYNERGIC MIG/MAG Welding

1. Select the synergy welding procedure using the selector (S1) knob on the front panel.
2. The synergic MIG function allows the operator to achieve optimal welding parameters simply by setting the thickness of the material to be welded using the left knob (P1).
3. The wire speed and voltage will be set automatically by the welder software, the operator will be allowed to balance the arc voltage using the right potentiometer (P2).
4. Set the thickness value of the material to be welded using the left potentiometer (P1):
5. Adjust the arc voltage if necessary, using the right potentiometer (P2). The permitted variation is +/-5V on the default set value (0 on display D2, potentiometer in central position).
6. Bring the torch close to the part to be welded and press the torch trigger.
7. After the welding arc is struck, the motor slope time (the time required to switch from the minimum speed to the maximum speed of the wire feed motor) starts; this time can be adjusted using the dial (10) inside the wire spool compartment.
8. At the end of the Slope-Up time, the wire speed reaches the value set with the left dial (P1).
9. To end the welding process, release the torch trigger. The arc remains lit for the wire burn time (BBT), which can be adjusted with the potentiometer (9).

7.4 MMA Welding

1. Select the MMA welding procedure using the selector (S1) on the front panel.
2. Set the welding current using the left potentiometer (P1)
3. The welding current must be selected following the instructions provided by the welding electrode manufacturer and stated on the electrode packaging.
4. Touch the workpiece to be welded with the electrode inserted in the electrode holder until the arc is struck. Avoid damaging the workpiece to be welded with the electrode, because it could release the coating and make it more difficult to strike the arc. After the arc is struck, keep the electrode in the same position at an angle of about 60° and move from left to right to visually check the weld. The length of the arc can also be controlled by slightly raising or lowering the electrode. A change in the welding angle could increase the size of the welding area, improving the slag covering capacity. After welding, let the residue cool down before removing it, using the brush with the tip.

7.5 TIG Welding

1. Select the TIG welding procedure using the selector (S1) on the front panel.
2. Set the welding current using the left potentiometer (P1)
3. Touch the workpiece to be welded with the TIG torch electrode, slowly lift the electrode to strike the arc.
4. To finish welding, lift the torch until the arc is extinguished.

7.6 Troubleshooting

No.	Description	Cause	Solution
1	The machine does not turn on	• Power cable or switch malfunction • Incorrect power installation	• Check that the power cable is properly plugged into the plug and in good condition • Check for the correct power to the welder
2	The torch does not deliver wire	• Damaged torch button	• Replace the component
3	The gear motor works but does not drag the wire	• Faulty gear motor • Insufficient pressure on the wire feed roll. • Liner clogged or damaged. • Wire contact tip clogged or damaged.	• Replace the component • Increase the roller pressure • Replace the torch sheath • Replace the contact tip

4	The wire is birdnesting between the drive roller and torch connection	- Excessive pressure on the wire feed roller - Liner clogged or damaged. - Wire contact tip clogged or damaged.	- Reduce the roller pressure - Replace the liner - Replace the contact tip
5	The wire melts on the wire guide tip	- Wire contact tip clogged or damaged. - Incorrectly sized contact tip - BBT duration too long	- Replace the contact tip - Replace the contact tip with the correct one - Reduce BBT duration
6	Clamp and/or cables overheat	- Bad cable connection - Bad connection between clamp and workpiece to be welded	- Improve the connection or replace the cable - Improve the connection between the clamp and the workpiece to be welded
7	The wire rejects the torch (wire stubbing)	Excessive wire speed	Reduce wire speed
8	The nozzle forms an arc with the workpiece to be welded	Slag accumulation inside the nozzle or damaged nozzle	Remove slag or replace nozzle

8.1 Technical Data

Construction Standards	EN 60974-1; EN 60974-10 Class A
Implemented Directives	2014/30/EU (EMC)
	2014/35/EU (LVD)
	907/2006 (REACH)
	2011/65/EU (RoHS2)
	2009/125/EU (Ecodesign)

Power Input	(1ph) 230V 50/60 Hz		
Max power	8.9 KVA		
Maximum current	22 A		
No-load voltage	70 V		
Min-Max amperage	MIG/MAG	MMA	TIG
	25 - 180 A	20 - 180 A	5 - 180 A
Work cycle	180A @ 30%	180A @ 20%	180A @ 30%
	105A @ 60%	105A @ 60%	105A @ 60%
	75A @ 100%	75A @ 100%	75A @ 100%
Insulation class	H		
Protection rating	IP 22S		
Dimensions (LxWxH)	9"x16"x16" 230x400x400 mm		
Net weight	33lbs. 14.8Kg		



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