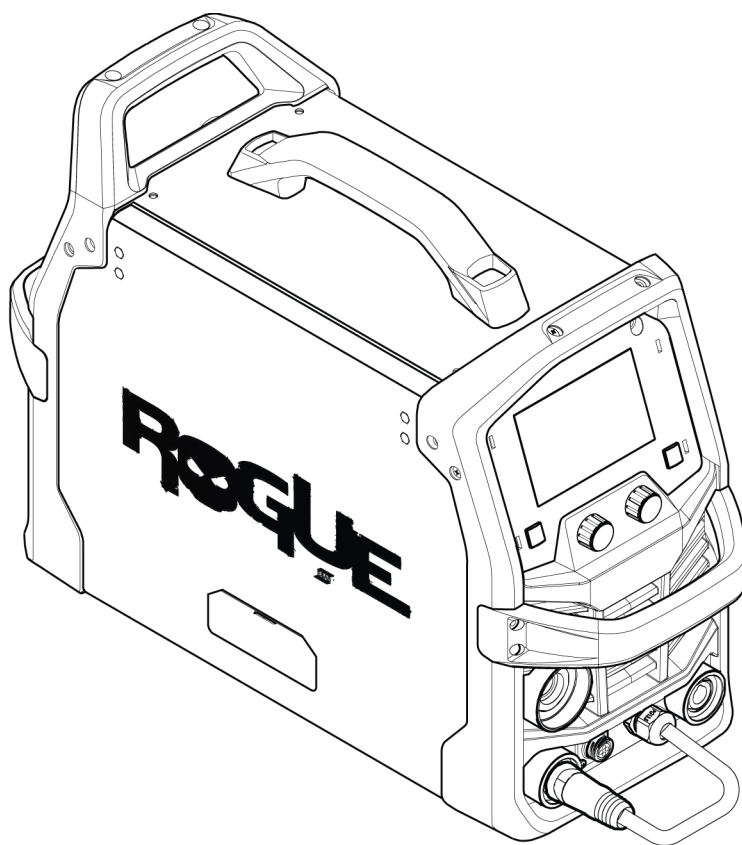


Rogue EM 190 PRO



Instruction manual

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1 SAFETY

1.1 Meaning of symbols

As used throughout this manual: Means Attention! Be Alert!



DANGER!

Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.



WARNING!

Means potential hazards which could result in personal injury or loss of life.



CAUTION!

Means hazards which could result in minor personal injury.



WARNING!

Before use, read and understand the instruction manual and follow all labels, employer's safety practices and Safety Data Sheets (SDSs).



1.2 Safety precautions



WARNING!

These Safety Precautions are for your protection. They summarize precautionary information from the references listed in the Additional Safety Information section. Before performing any installation or operating procedures, be sure to read and follow the safety precautions listed below as well as all other manuals, material safety data sheets, labels, etc. Failure to observe Safety Precautions can result in injury or death.



PROTECT YOURSELF AND OTHERS

Some welding, cutting and gouging processes are noisy and require ear protection. The arc, like the sun, emits ultraviolet (UV) and other radiation and can injure the skin and eyes. Hot metal can cause burns. Training in the proper use of the processes and equipment is essential to prevent accidents. Therefore:

1. Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching.
2. Always wear safety glasses with side shields in any work area, even if welding helmets, face shields and goggles are also required.
3. Use a face shield fitted with the correct filter and cover plates to protect your eyes, face, neck and ears from sparks and rays of the arc when operating or observing operations. Warn bystanders not to look at the arc and not to expose themselves to the rays of the electric-arc or hot metal.
4. Wear flameproof gauntlet-type gloves, heavy long-sleeve shirt, cuffless pants, high-topped shoes, and a welding helmet or cap for protection, to protect against arc rays and hot sparks or hot metal. A flameproof apron may also be desirable as protection against radiated heat and sparks.
5. Hot sparks or metal can lodge in rolled up sleeves, trouser cuffs, or pockets. Sleeves and collars should be kept buttoned and open pockets eliminated from the front of the clothing.
6. Protect other personnel from arc rays and hot sparks with a suitable non-flammable partition or curtains.
7. Use goggles over safety glasses when chipping slag or grinding. Chipped slag may be hot and can fly for long distances. Bystanders should also wear goggles over safety glasses.



FIRES AND EXPLOSIONS

Heat from flames and arcs can start fires. Hot slag or sparks can also cause fires and explosions. Therefore:

1. Protect yourself and others from flying sparks and hot metal.
2. Move all combustible materials well away from the work area or cover the materials with a protective non-flammable covering. Combustible materials include wood, cloth, sawdust, liquid and gas fuels, solvents, paints, and coating paper, etc.
3. Hot sparks or hot metal can fall through cracks or crevices in floors or wall openings and cause a hidden smoldering fire or fires on the floor below. Make certain that such openings are protected from hot sparks and metal.
4. Do not weld, cut, or perform other hot work until the work piece has been completely cleaned so that there are no substances on the work piece which might produce flammable or toxic vapors. Do not perform hot work on closed containers, they may explode.
5. Have fire extinguishing equipment handy for instant use, such as a garden hose, water pail, sand bucket, or portable fire extinguisher. Be sure you are trained in its use.
6. Do not use equipment beyond its ratings. For example, an overloaded welding cable can overheat and create a fire hazard.
7. After completing work, inspect the work area to make sure there are no hot sparks or hot metal that could cause a fire later. Use fire watchers when necessary.



ELECTRICAL SHOCK

Contact with live electrical parts and ground can cause severe injury or death. **DO NOT** use AC welding current in damp areas, if movement is confined, or if there is danger of falling. Therefore:

1. Be sure the power source frame (chassis) is connected to the earth system of the input power.
2. Connect the workpiece to a good electrical earth.
3. Connect the work cable to the workpiece. A poor or missing connection can expose you or others to a fatal shock.
4. Use well-maintained equipment. Replace worn or damaged cables.
5. Keep everything dry, including clothing, work area, cables, torch/electrode holder and power source.
6. Make sure that all parts of your body are insulated from both the work piece and from the ground.
7. Do not stand directly on metal or the ground while working in tight quarters or a damp area; stand on dry boards or an insulating platform and wear rubber-soled shoes.
8. Put on dry, hole-free gloves before turning on the power.
9. Turn off the power, before removing your gloves.
10. Refer to ANSI/ASC Standard Z49.1 for specific grounding recommendations. Do not mistake the work lead for a earth cable.



ELECTRIC AND MAGNETIC FIELDS

May be dangerous. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding and cutting current creates EMF around welding cables and welding machines. Therefore:

1. Welders with pacemakers fitted should consult their doctor before welding. EMF may interfere with some pacemakers.
2. Exposure to EMF may have other health effects which are unknown.
3. Welders should use the following procedures to minimize exposure to EMF:
 - a) Route the electrode and work cables together. Secure them with tape when possible.
 - b) Never coil the torch or work cable around your body.
 - c) Do not place your body between the torch and work cables. Route cables on the same side of your body.
 - d) Connect the work cable to the workpiece as close as possible to the area being welded.
 - e) Keep the welding power source and cables as far away from your body as possible.



FUMES AND GASES

Fumes and gases, can cause discomfort or harm, particularly in confined spaces. Shielding gases can cause asphyxiation. Therefore:

1. Keep your head out of the fumes. Do not breathe the fumes and gases.
2. Always provide adequate ventilation in the work area by natural or mechanical means. Do not weld, cut or gouge on materials such as galvanized steel, stainless steel, copper, zinc, lead beryllium or cadmium unless positive mechanical ventilation is provided. Do not breathe in the fumes from these materials.
3. Do not operate near degreasing and spraying operations. The heat or arc can react with chlorinated hydrocarbon vapors to form phosgene, a highly toxic gas, and other irritant gases.
4. If you develop momentary eye, nose or throat irritation while operating, this is an indication that the ventilation is not adequate. Stop work and take the necessary steps to improve ventilation in the work area. Do not continue to operate if physical discomfort persists.
5. Refer to ANSI/ASC Standard Z49.1 for specific ventilation recommendations.
6. **WARNING:** This product when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and in some cases cancer (California Health & Safety Code §25249.5 et seq.)



CYLINDER HANDLING

Cylinders, if mishandled, can rupture and violently release gas. A sudden rupture of cylinder valve or relief device can injure or kill. Therefore:

1. Locate cylinders away from heat, sparks and flames. Never strike an arc on a cylinder.
2. Use the proper gas for the process and use the proper pressure reducing regulator designed to operate from the compressed gas cylinder. Do not use adapters. Maintain hoses and fittings in good condition. Follow the manufacturer's operating instructions for mounting a regulator to a compressed gas cylinder.
3. Always secure cylinders in an upright position, by chain or strap, to suitable hand trucks, undercarriages, benches, wall, post or racks. Never secure cylinders to work tables or fixtures where they may become part of an electrical circuit.
4. When not in use, keep cylinder valves closed. Have valve protection cap in place if regulator is not connected. Secure and move cylinders by using suitable hand trucks.



MOVING PARTS

Moving parts, such as fans, rotors and belts can cause injury. Therefore:

1. Keep all doors, panels, guards, and covers closed and securely in place.
2. Stop the engine or drive systems before installing or connecting a unit.
3. Have only qualified people remove covers for maintenance and troubleshooting as necessary

4. To prevent accidental starting of equipment during service, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing and tools away from moving parts.
6. Reinstall panels or covers and close doors when service is finished and before starting engine.



WARNING!
FALLING EQUIPMENT CAN INJURE

- Only use lifting eye to lift unit. Do NOT use running gear, gas cylinders or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.
- Keep cables and cords away from moving vehicles when working from an aerial location.



WARNING!
EQUIPMENT MAINTENANCE

Faulty or improperly maintained equipment can cause injury or death. Therefore:

1. Always have qualified personnel perform the installation, troubleshooting and maintenance work. Do not perform any electrical work unless you are qualified to perform such work.
2. Before performing any maintenance work inside a power source, disconnect the power source from the incoming electrical power.
3. Maintain cables, earthing wire, connections, power cord and power supply in safe working order. Do not operate any equipment in faulty condition.
4. Do not abuse any equipment or accessories. Keep equipment away from heat sources such as furnaces, wet conditions such as water puddles, oil or grease, corrosive atmospheres and inclement weather.
5. Keep all safety devices and cabinet covers in position and in good repair.
6. Use equipment only for its intended purpose. Do not modify it in any manner.



CAUTION!
ADDITIONAL SAFETY INFORMATION

For more information on safe practices for electric arc welding and cutting equipment, ask your supplier for a copy of "Precautions and Safe Practices for Arc Welding, Cutting and Gouging," Form 52-529.

The following publications are recommended:

- ANSI/ASC Z49.1 - "Safety in Welding and Cutting"
- AWS C5.5 - "Recommended Practices for Gas Tungsten Arc Welding"
- AWS C5.6 - "Recommended Practices for Gas Metal Arc welding"
- AWS SP - "Safe practices" - Reprint, Welding Handbook
- ANSI/AWS F4.1 - "Recommended Safe Practices for Welding and Cutting of Containers That Have Held Hazardous Substances"
- OSHA 29 CFR 1910 - "Safety and health standards"
- CSA W117.2 - "Code for safety in welding and cutting"
- NFPA Standard 51B, "Fire Prevention During Welding, Cutting, and Other Hot Work"
- CGA Standard P-1, "Precautions for Safe Handling of Compressed Gases in Cylinders"
- ANSI Z87.1, "Occupational and Educational Personal Eye and Face Protection Devices"

1.3 User responsibility

Users of ESAB equipment have the ultimate responsibility for ensuring that anyone who works on or near the equipment observes all the relevant safety precautions. Safety precautions must meet the requirements that apply to this type of equipment. The following recommendations should be observed, in addition to the standard regulations that apply to the workplace.

All work must be carried out by trained personnel well-acquainted with the operation of the equipment. Incorrect operation of the equipment may lead to hazardous situations, which could result in injury to the operator and damage to the equipment.

1. Anyone who uses the equipment must be familiar with:
 - its operation
 - the location of emergency stops
 - its function
 - the relevant safety precautions
 - welding and cutting or other applicable operation of the equipment
2. The operator must ensure that:
 - no unauthorized person is within the working area of the equipment when it is started up
 - no-one is unprotected when the arc is struck or work is started with the equipment
3. The workplace must:
 - be suitable for the purpose
 - be free from drafts
4. Personal safety equipment:
 - Always wear recommended personal safety equipment, such as safety glasses, flame-proof clothing, safety gloves
 - Do not wear loose-fitting items, such as scarves, bracelets, rings, etc., which could become trapped or cause burns
5. General precautions:
 - Make sure the return cable is connected securely
 - Work on high voltage equipment **may only be carried out by a qualified electrician**
 - Appropriate fire extinguishing equipment must be clearly marked and close at hand
 - Lubrication and maintenance must **not** be carried out on the equipment during operation

If equipped with ESAB cooler

Use ESAB approved coolant only. Non-approved coolant might damage the equipment and jeopardize product safety. In case of such damage, all warranty undertakings from ESAB cease to apply.

For ordering information, see the "ACCESSORIES" chapter in the instruction manual.



WARNING!

Arc welding and cutting may cause injury to yourself and others. Take precautions when welding and cutting.

**ELECTRIC SHOCK - Can kill**

- Install and ground the unit in accordance with instruction manual.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves, or wet clothing.
- Insulate yourself from work and ground.
- Ensure your working position is safe

**ELECTRIC AND MAGNETIC FIELDS - Can be dangerous to health**

- Welders with pacemakers fitted should consult their doctor before welding. EMF may interfere with some pacemakers.
- Exposure to EMF may have other health effects which are unknown.
- Welders should use the following procedures to minimize exposure to EMF:
 - Route the electrode and work cables together on the same side of your body. Secure them with tape when possible. Do not place your body between the torch and work cables. Never coil the torch or work cable around your body. Keep the welding power source and cables as far away from your body as possible.
 - Connect the work cable to the workpiece as close as possible to the area being welded.

**FUMES AND GASES - Can be dangerous to health**

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to take fumes and gases away from your breathing zone and the general area.

**ARC RAYS - Can injure eyes and burn skin**

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

**NOISE - Excessive noise can damage hearing**

Protect your ears. Use ear defenders or other hearing protection.

**MOVING PARTS - Can cause injuries**

- Keep all doors, panels and covers closed and securely in place. Have only qualified people remove covers for maintenance and troubleshooting as necessary. Reinstall panels or covers and close doors when service is finished and before starting engine.



- Stop engine before installing or connecting unit.
- Keep hands, hair, loose clothing and tools away from moving parts.

**FIRE HAZARD**

- Sparks (spatter) can cause a fire. Make sure there are no inflammable materials nearby.
- Do not use on closed containers.

**HOT SURFACE - Parts can burn**

- Do not touch parts bare handed.
- Allow cooling period before working on equipment.
- To handle hot parts, use proper tools and/or insulated welding gloves to prevent burns.

MALFUNCTION - Call for expert assistance in the event of malfunction.

PROTECT YOURSELF AND OTHERS!



WARNING!

Do not use the power source for thawing frozen pipes.



CAUTION!

This product is solely intended for arc welding.

ESAB has an assortment of welding accessories and personal protection equipment for purchase. For ordering information contact your local ESAB dealer or visit us on our website.

1.4 California proposition 65 warning



WARNING!

Welding or cutting equipment produces fumes or gases which contain chemicals known in the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)



WARNING!

This product can expose you to chemicals including lead, which are known to the state of California to cause cancer and birth defects or other reproductive harm. Wash hands after use.

For more information, go to www.P65Warnings.ca.gov.

2 INTRODUCTION

The **Rogue EM 190 PRO** is a self-contained single phase welding system that is capable of performing GMAW (MIG) welding.

The power source is equipped with an integrated wire feed unit, digital voltage, amperage meters, and a host of other features.

2.1 Equipment

Rogue EM 190 PRO is supplied with:

- Welding power source
- Tweco Fusion 180 MIG Torch 10 ft (3 m)
- Victor gas regulator/Flow gauge
- Gas hose 10 ft (3 m)
- Ground clamp lead set 10 ft (3 m), 16 mm², 35–50 OKC
- OK AristoRod 12.50, 0.030 in. (0.8 mm), 2.4 lb (1.1 kg)
- Feed roll 0.023/0.030 in. (0.6/0.8 mm) V (Fitted)
- Feed roll 0.030/0.035 in. (0.8/0.9 mm) V (Spare)
- Feed roll 0.030/0.035 in. (0.8/0.9 mm) VK (Spare)
- Instruction manual

3 TECHNICAL DATA

	Rogue EM 190 PRO
Outlet voltage	230 V 1~ 50/60 Hz
Primary current	16 A
I_{eff}	8.8 A
No-load power demand when in energy saving mode	<20 W
Permissible load	
30% duty cycle	145 A/21.25 V
60% duty cycle	102 A/19.1 V
100% duty cycle	79 A/17.95 V
Power factor at maximum current	0.99
Efficiency at maximum current	>82%
Open-circuit voltage U₀ max (VRD 35 V deactivated)	78 V
Operating temperature	+14 to 104°F (-10 to +40°C)
Transportation temperature	-4 to +161°F (-20 to +55°C)
Constant sound pressure when idling	<66 db
Wire feed speed range	75-650 ipm (2-16.5 mpm)
Amperage range	30-190 A
Voltage range	12.0-26.0 V
Bobbin size	4 in. (100 mm)
	8 in. (200 mm)
Wire diameter	GMAW: 0.023, 0.030, 0.035 in. (0.6, 0.8, 0.9 mm)
	FCAW: 0.030, 0.035, 0.040, 0.045 in. (0.8, 0.9, 1.0, 1.2 mm)
Maximum material thickness	GMAW/Flux-cored:
	Mild Steel: 24 ga.-3/8 in. (0.6-10.0 mm) Aluminum: 18 ga.-3/8 in. (1.2-10.0 mm) Stainless: 20 ga.-1/4 in. (1.0-6.0 mm)
Dimensions l × w × h	23.2 × 8.7 × 15.2 in. (590 × 220 × 385 mm)
Weight	37.3 lbs (16.9 kg)
Enclosure class	IP 23S
Application class	S

Duty cycle

The duty cycle refers to the time as a percentage of a ten-minute period that you can weld or cut at a certain load without overloading. The duty cycle is valid for 104 °F (40 °C) or below.

Enclosure class

The **IP** code indicates the enclosure class, i.e. the degree of protection against penetration by solid objects or water.

Equipment marked **IP23S** is intended for indoor and outdoor use; however, it should not be operated in precipitation.

Application class

The symbol **S** indicates that the power source is designed for use in areas with increased electrical hazard.

4 INSTALLATION

The installation must be carried out by a professional.

**CAUTION!**

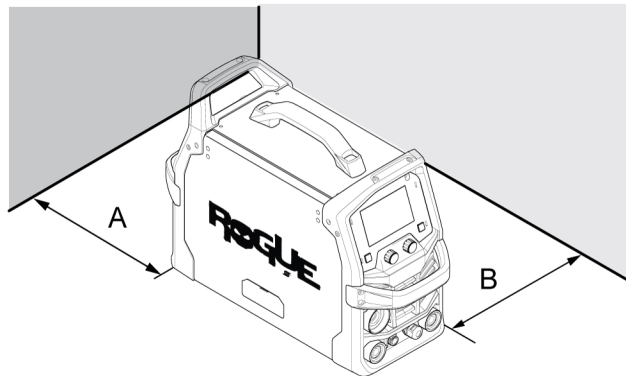
This product is intended for industrial use. In a domestic environment, this product may cause radio interference. It is the user's responsibility to take adequate precautions.

**CAUTION!**

Remove any packaging material prior to use. Do not block the air vents at the front or rear of the welding power source.

4.1 Location

Position the power source so that cooling air inlets and outlets are not obstructed.

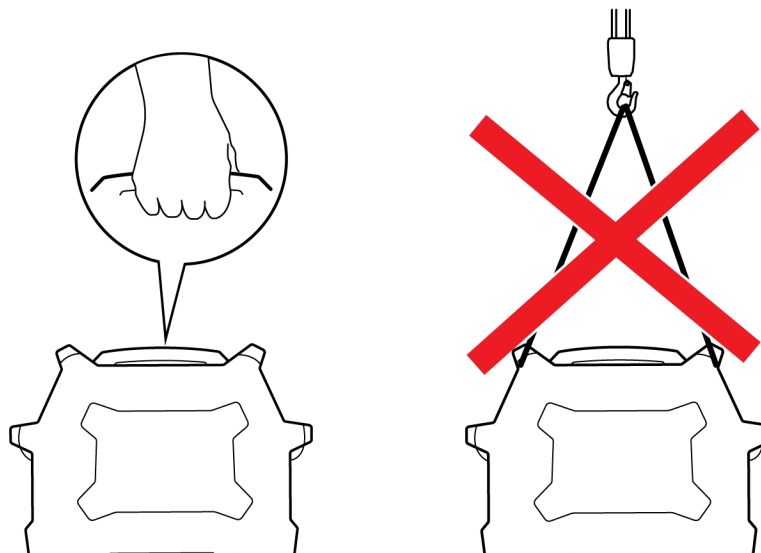


A. Minimum 8 in. (200 mm)

B. Minimum 8 in. (200 mm)

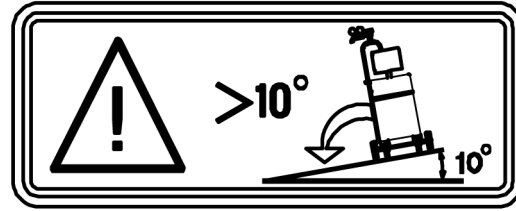
4.2 Lifting instructions

The power source can be lifted using any of the handles.



**WARNING!**

Secure the equipment - particularly if the ground is uneven or sloping.



4.3 Main supply

The supply voltage should be 230 V AC $\pm 15\%$. Too low of supply voltage may cause poor welding performance. Too high of welding supply voltage will cause components to overheat and possibly fail. Contact the local electric utility for information about the type of electrical service available, how proper connections should be made, and inspection required.

The welding power source must be:

- Correctly installed, if necessary, by a qualified electrician.
- Correctly grounded (electrically) in accordance with local regulations.
- Connected to the correct size power point and fuse as indicated in table below.

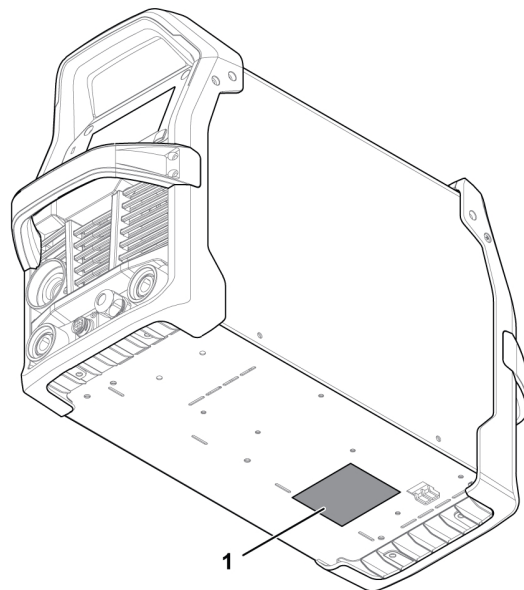
**NOTE!**

Use the welding power source in accordance with the relevant local and national regulations.

**CAUTION!**

Disconnect input power and secure employing 'Lock-out' / 'Tagging' procedures. Ensure input power line disconnect switch is locked (Lock-out/Tagging) in the 'Open' position BEFORE removing input power fuses. Connection/Disconnect should be carried out by competent persons.

1. Rating plate



4.4 Recommended fuse and cable sizes



WARNING!

An electrical shock or fire hazard is probable if the following electrical service guide recommendations are not followed. These recommendations are for a dedicated branch circuit sized for the rated output and duty cycle of the welding power source

Supply voltage	230 V AC, 1~50/60 Hz
Input current at maximum output	16 A
Maximum recommended fuse* or circuit breaker rating	25 A
* Time delay fuse	
Maximum recommended fuse or circuit breaker rating	32.0 A
Minimum recommended cord size	14 AWG (2.08 mm ²)
Maximum recommended extension cord length	325 ft. (100 m)
Minimum recommended grounding conductor size	14 AWG (2.08 mm ²)

Supply from power generators

The power source can be supplied from different types of generators. However, some generators may not provide sufficient power for the welding power source to operate correctly. Generators with Automatic Voltage Regulation (AVR) or with equivalent or better type of regulation, with rated power 9 kW, are recommended.

5 OPERATION

General safety regulations for handling the equipment can be found in the "SAFETY" chapter of this manual. Read it through before you start using the equipment!



NOTE!

When moving the equipment, use the handle. Never pull the cables.



WARNING!

Rotating parts can cause injury, take great care.



WARNING!

Electric shock! Do not touch the workpiece or the welding head during operation!



WARNING!

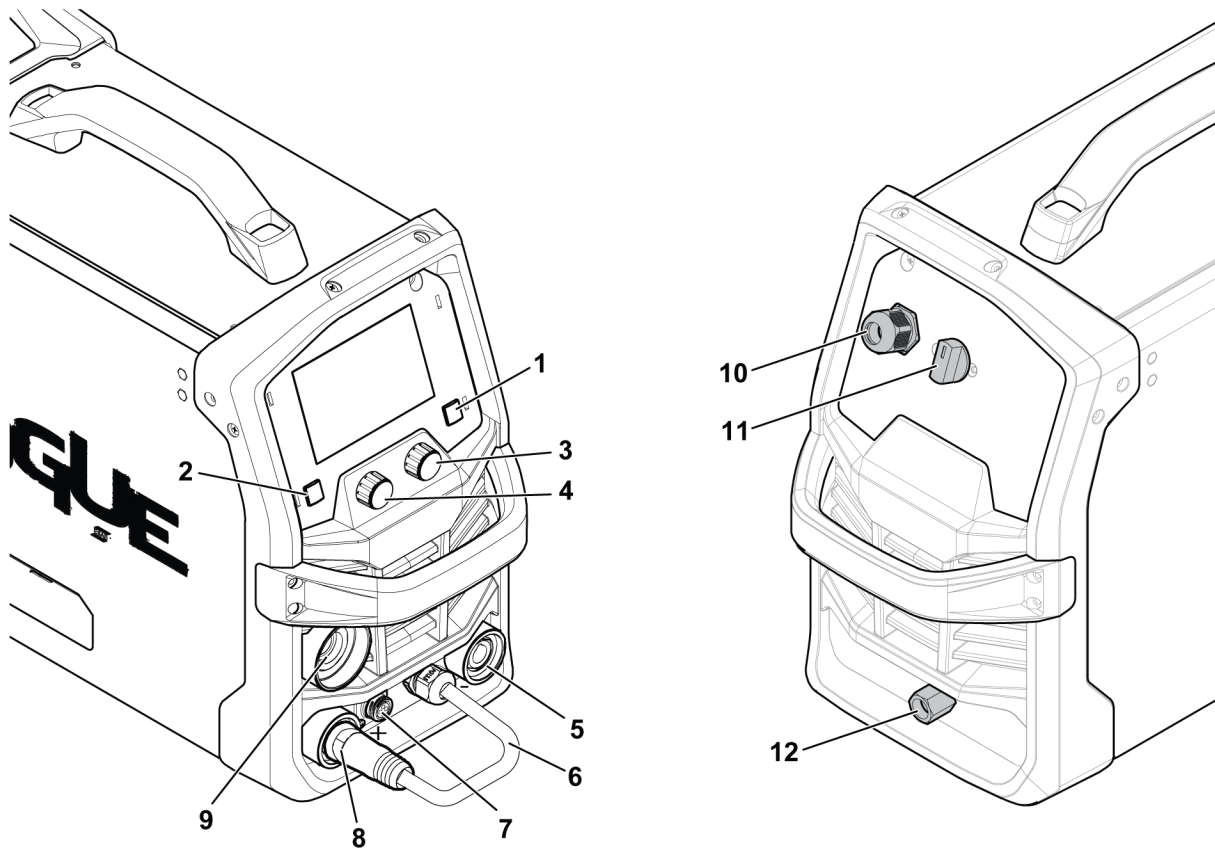
Make sure the side panels are closed during operation.



WARNING!

Tighten the spool locking nut in order to prevent it from sliding off the hub.

5.1 Connections

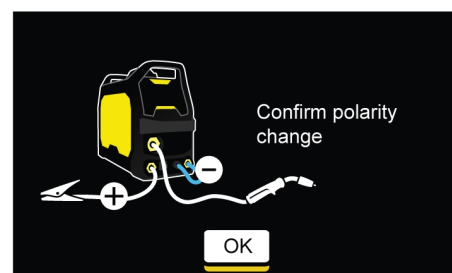
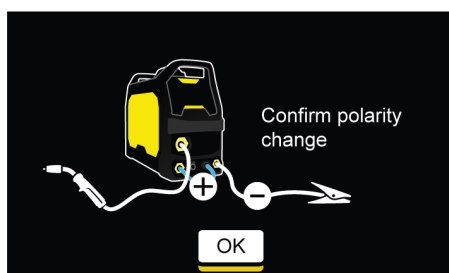


- | | |
|--|---|
| 1. Push button (menu access) | 7. Torch trigger and spool gun control receptacle |
| 2. Push button (return to previous menu) | 8. Electrode positive terminal (+) |
| 3. Push button encoder (parameter adjust and display navigation) | 9. GMAW torch and spool gun connection |
| 4. Encoder (parameter adjust) | 10. Mains supply cable |
| 5. Electrode negative terminal (-) | 11. Mains supply switch, ON/OFF |
| 6. Polarity changeover cable | 12. Gas inlet |

5.2 Cable connections - Weld, return and polarity change over

The power source has two output studs for connecting the weld and return cables: Electrode negative [-] terminal (5) and Electrode positive [+] terminal (8), see Section 5.1 "Connections", page 17.

GMAW Synergic & Manual mode - solid wires GMAW Synergic & Manual mode - FCAW wires



The polarity changeover cable is used to select the correct polarity for the weld output. The correct polarity is determined by the wire that has been selected to complete the weld. To configure the

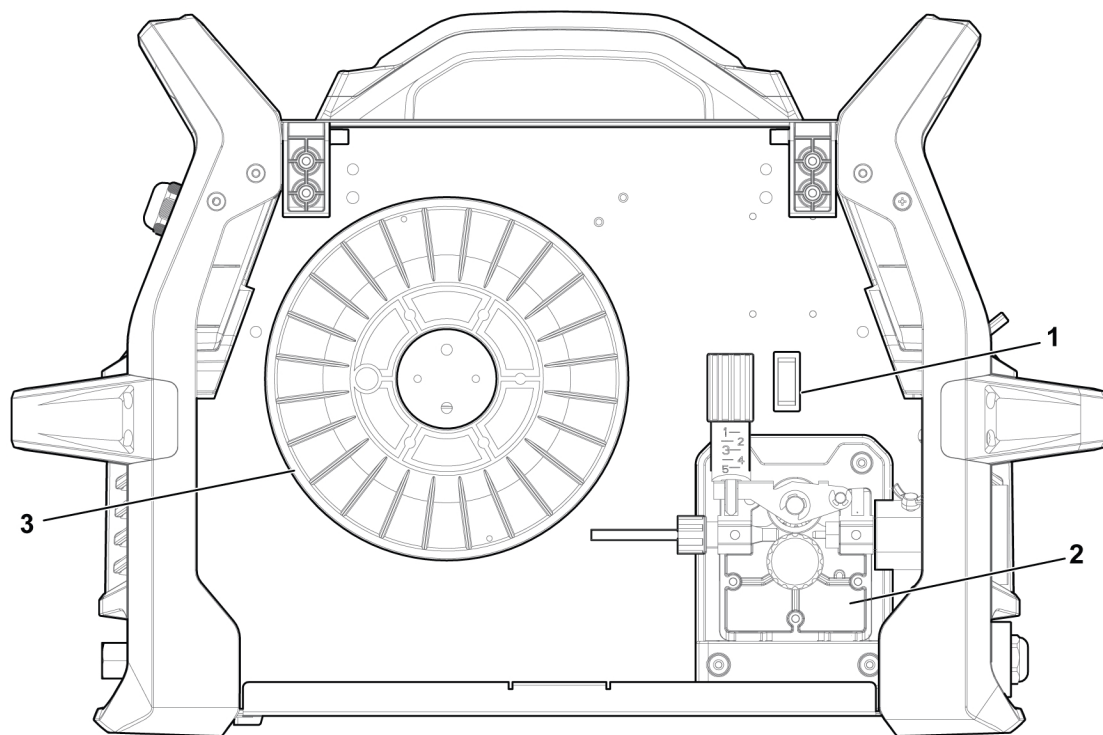
machine to operate with electrode positive, insert and secure the polarity changeover cable into the positive [+] terminal and the return lead into the negative [-] terminal. Be sure that the connections are tight. Secure the work clamp to the work piece in a clean, debris-free location.

Secure the work clamp to the work piece in a clean, debris free location.

**NOTE!**

For some wires it is recommended to use negative polarity such as self-shielded flux-core. See wire manufacturer's recommendation.

5.3 Drive system diagram



- 1. Wire inching/purge
- 2. Wire feed mechanism

- 3. Wire spool

5.4 Attaching fusion 180 GMAW gun

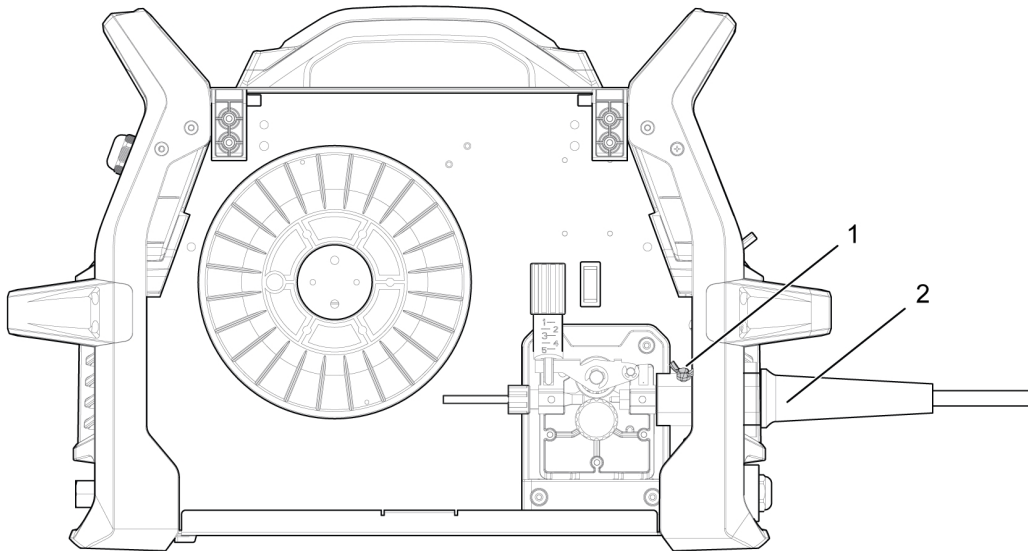
Direct plug GMAW guns install by inserting the power pin of the torch into the torch receptacle located on the front of the unit and tightening the power pin retaining thumb screw. GMAW guns require a control wire assembly to connect the trigger leads to the unit. The control wire assembly is located near the power pin and plugs into the remote control socket.

**WARNING!**

The mains supply must be disconnected during installation.

- 1) Open wire feed compartment door and loosen retaining thumb screw.
- 2) Fit the MIG gun power pin into torch receptacle, insert fully.
- 3) Tighten retaining thumb screw.

- 4) Locate the control wire assembly, align keyway with the key on the remote control socket, insert plug, and rotate threaded collar fully clockwise.



1. Thumb screw

2. Torch receptacle

5.5 Inserting and replacing wire

Rogue EM 190 can be used with bobbin sizes of 4 in. (100 mm) and 8 in. (200 mm). See Section 3 "Technical data", page 11, for suitable wire dimensions for each wire type.



WARNING!

Do not place or point the torch near the face, hand, or body as this may result in personal injury.



WARNING!

Make sure that the power is turned off, before replacing or installing any parts.

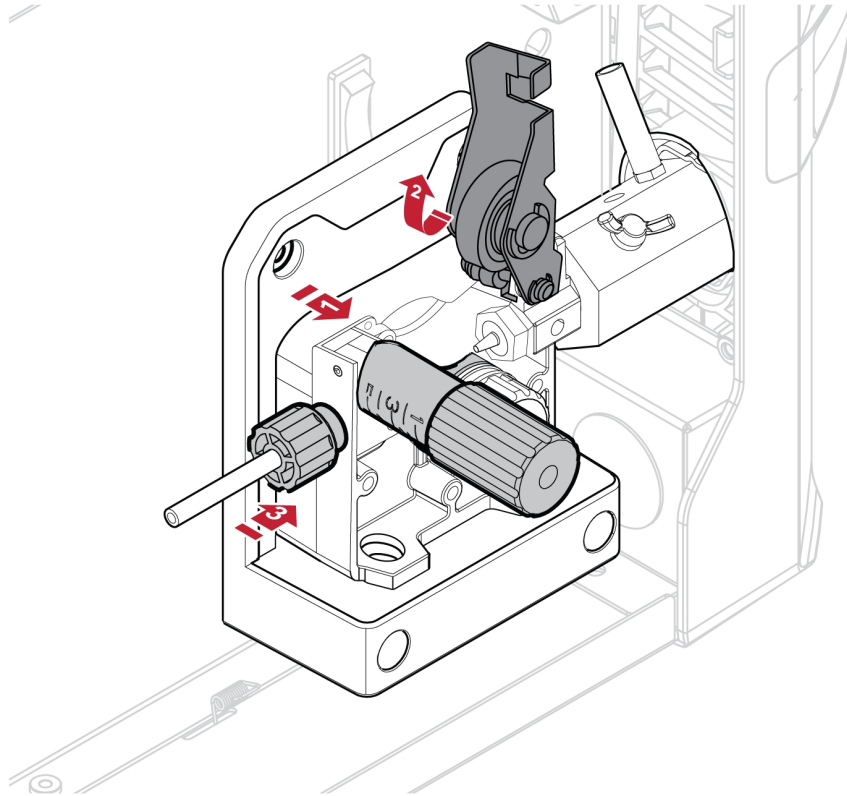


WARNING!

Risk of crushing when replacing the wire bobbin! Do **not** use safety gloves when inserting the welding wire between the feed rollers.

- 1) Open the spool side door.
- 2) Release the pressure roller arm by levering the tension screw (1).
- 3) Lift the pressure roller arm (2).
- 4) With the GMAW welding wire feeding from the bottom of the spool, pass the electrode wire through the inlet guide (3), between the rollers, through the outlet guide and into the GMAW torch. Ensure that the wire is aligned with the correct groove in the drive roll.

- 5) Re-secure the pressure roller arm and wire drive tension screw and adjust the pressure if necessary.
- 6) With the GMAW torch lead reasonably straight, feed the wire through the GMAW torch by depressing the wire inch button or trigger switch.
- 7) Close the spool side door.



5.5.1 Welding with aluminum wire



NOTE!

Make sure the correct feed/pressure rollers are used. For more information see Section 11.3 "WEAR PARTS", page 39.



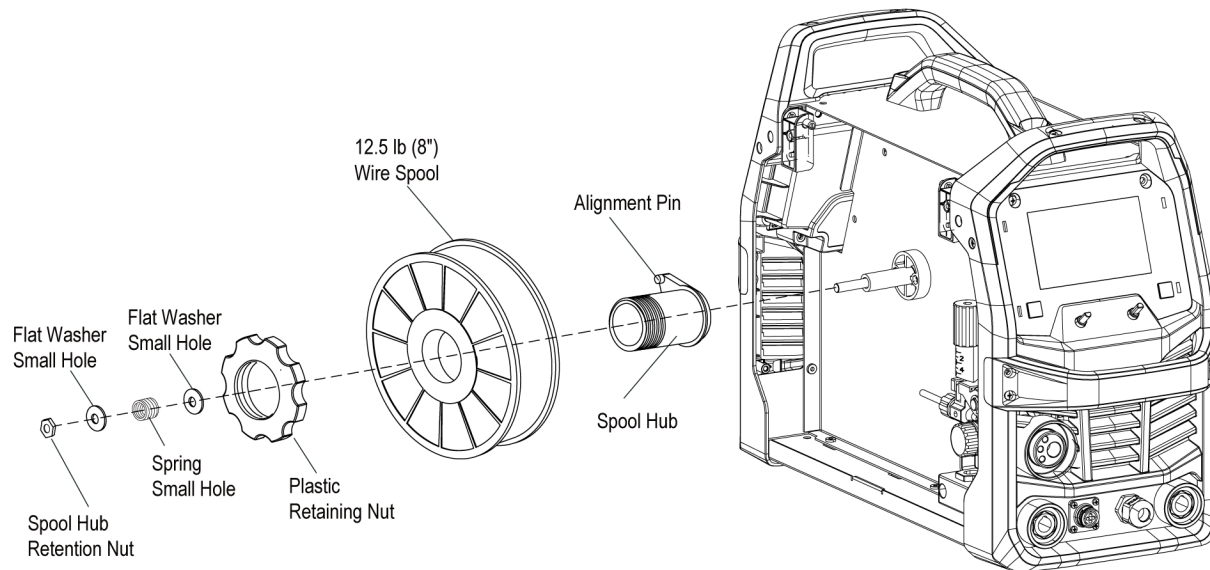
NOTE!

Make sure to use the correct contact tip in the welding torch for the wire diameter used. The torch is fitted with a contact tip for 0.030 in. (0.8 mm) wire. If you use another diameter, make sure to change the contact tip and drive roll. The wire liner fitted in the torch is recommended for welding with Fe and SS wires.

To weld with aluminum wire, use optional spool gun for the best result. Refer to Spool Gun Instruction Manual for the correct set up.

5.5.2 Installing 12.5 lb spool (8 in. diameter)

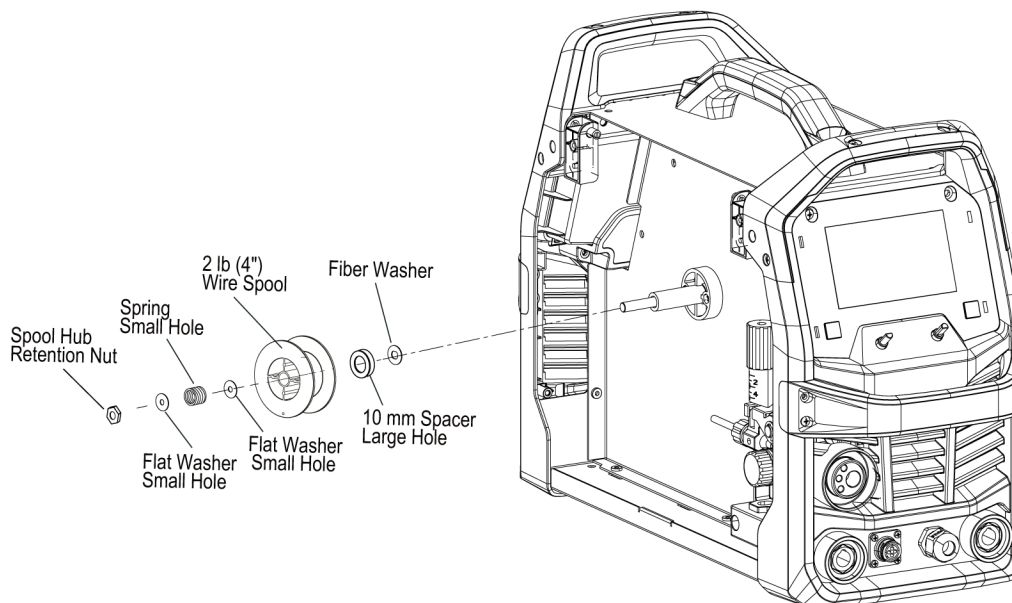
In order to fit a 12.5 lb spool (8 in. diameter) assemble parts in the sequence shown in the figure below. To install wire spool, follow the steps below.



1. Remove plastic retaining nut.
2. Place wire spool onto the hub, loading it so that the wire will feed off the bottom of the spool as the spool rotates counterclockwise. Make sure to align the spool alignment pin on the hub with the mating hole in the wire spool.
3. Replace the plastic retaining nut until tight against wire spool.

5.5.3 Installing 2 lb spool (4 in. diameter)

In order to fit a 2 lb spool (4 in. diameter) assemble parts in the sequence shown in the figure below. To install wire spool, follow the steps below.



1. Remove plastic retaining nut.
2. Place wire spool onto the hub, loading it so that the wire will feed off the bottom of the spool as the spool rotates counterclockwise. Make sure to align the spool alignment pin on the hub with the mating hole in the wire spool.
3. Replace the plastic retaining nut until tight against wire spool.

5.6 Setting the wire feed pressure

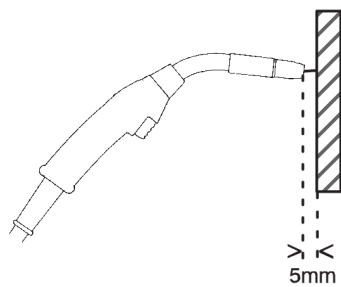


Illustration A

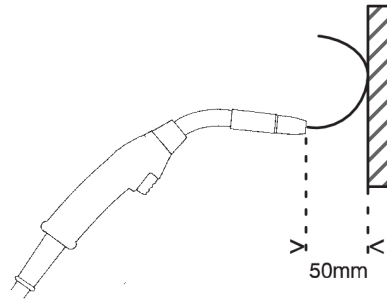


Illustration B

Start by making sure that the wire moves smoothly through the wire guide. Then set the pressure of the wire feeder's pressure rollers. It is important that the pressure is not too high.

To check that the feed pressure is set correctly, you can feed out the wire against an insulated object, e.g. a piece of wood.

When you hold the welding torch approximately 5 mm (0.2 in.) from the piece of wood (illustration A), the feed rollers should slip.

If you hold the welding torch approximately 50 mm (2 in.) from the piece of wood, the wire should be fed out and bend (illustration B).

The wire reel hub incorporates a friction brake which is adjusted during manufacture for optimum braking. If it is considered necessary, adjustment can be made by turning the thumb screw inside the open end of the hub clockwise to tighten the brake. Correct adjustment will result in the wire reel circumference continuing no further than 1/8 in.-3/16 in. (3-5 mm) after release of the trigger. The electrode wire should be slack without becoming dislodged from wire spool.



CAUTION!

Overtension of the brake will cause rapid wear of mechanical wire feeder parts, overheating of electrical components and possibly more incidences of contact tip burnback.

5.7 Changing the feed/pressure rollers

Three dual groove feed roller are supplied as standard. Change the feed roller to match the filler metal wire diameter.



NOTE!

Make sure not to lose the key that is located on the drive motor shaft. This key must be in place and align with drive roll slot for proper operation.

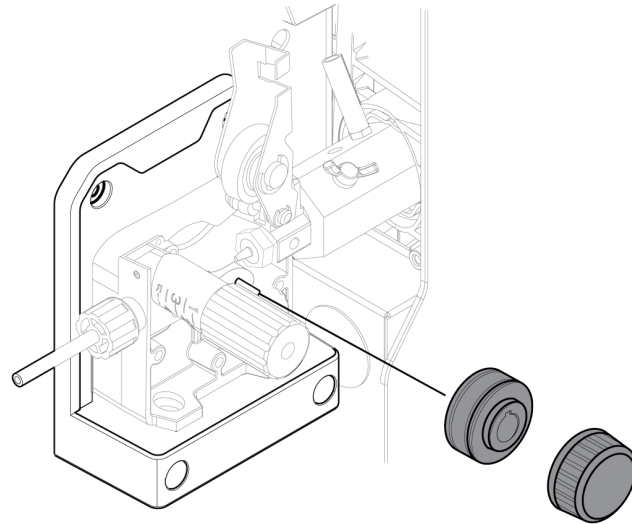
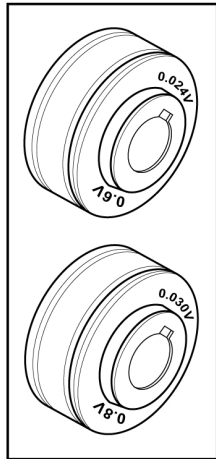
- 1) Open the spool side door.
- 2) Release the pressure roller arm by levering the tension screw.
- 3) Lift the pressure roller arm.
- 4) Remove the feed roll retaining screw by turning it counterclockwise.
- 5) Change the feed roll.
- 6) Tighten the feed roll retaining screw by turning it clockwise.
- 7) Secure the pressure roller arm and wire drive tension screw.

8) Close the spool side door.



NOTE!

Visual indication on the face of the drive roll indicates the diameter of the groove on the outside of the drive roll and the groove that is in use for the selected wire diameter.



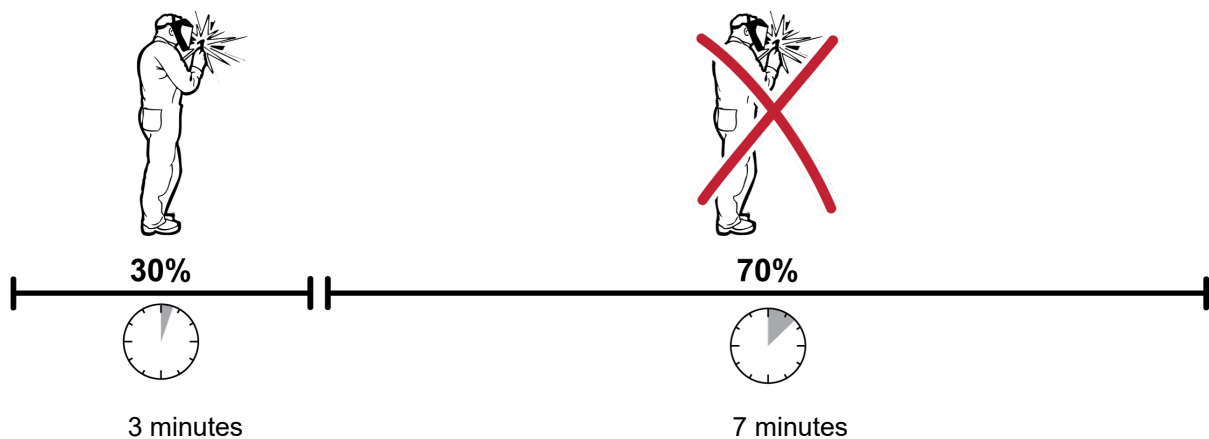
5.8 Shielding gas

The choice of suitable shielding gas depends on the material. Typically mild steel is welded with mixed gas (Ar + CO₂) or 100% carbon dioxide (CO₂). Stainless Steel can be welded with mixed gas (Ar + CO₂). Aluminum can be welded with argon gas (Ar) and silicon bronze can be welded with use pure argon gas (Ar) or (Ar + O₂).

5.9 Duty cycle

The Rogue EM 190 PRO has a welding current output of 145 A at 30% duty cycle (230 V). A self-resetting thermostat will protect the power source if the duty cycle is exceeded.

Example: If the power source operates at a 30% duty cycle, it will provide the rated amperage for a maximum of 3 minutes out of every 10-minute period. For the remaining time, 7 minutes, the power source must be allowed to cool down.



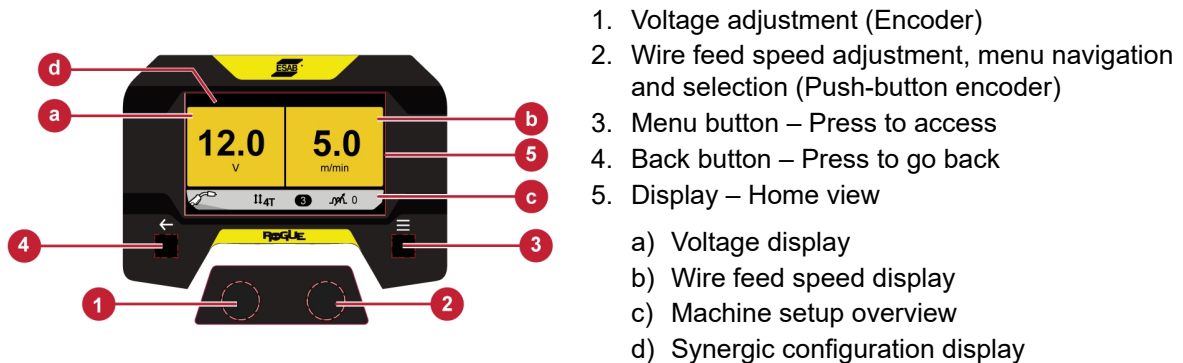
A different combination of duty cycle and welding current can be selected.

6 USER INTERFACE

General safety regulations for handling the equipment can be found in the "SAFETY" chapter of this manual. General information about operation can be found in the "OPERATION" chapter of this manual. Read both chapters thoroughly before you start using the equipment.

After power on has completed, the main menu appears on the user interface.

6.1 Home screen



6.2 Navigation

1. Left-hand encoder – used to trim the voltage in GMAW Synergic mode or to adjust voltage in GMAW Manual mode.
2. Right-hand push button encoder – used to adjust the material thickness in GMAW Synergic mode or adjust wire feed speed in GMAW Manual mode.
3. Menu button – provides access to the system menu allowing for custom configuration. See Section 6.3 "GMAW Synergic mode", page 25 and Section 6.4 "GMAW Manual mode", page 25.
4. Back button – returns the user to the previous screen in GMAW Synergic or GWAM Manual modes.
5. User display – at the home view the display is segmented to four sections:
 - a) Left-hand side – displays preset Voltage in both GMAW Synergic and GMAW Manual modes and actual Voltage while welding.
 - b) Right-hand side – displays preset material thickness in GMAW Synergic mode and preset wire feed speed in GMAW Manual mode. Welding current will be also displayed while welding.
 - c) Gutter ribbon – provides the user with brief overview of the machine set up.
 - d) Header ribbon – provides the user with an overview of the selected material, wire diameter, and gas type that has been selected in the synergic mode.



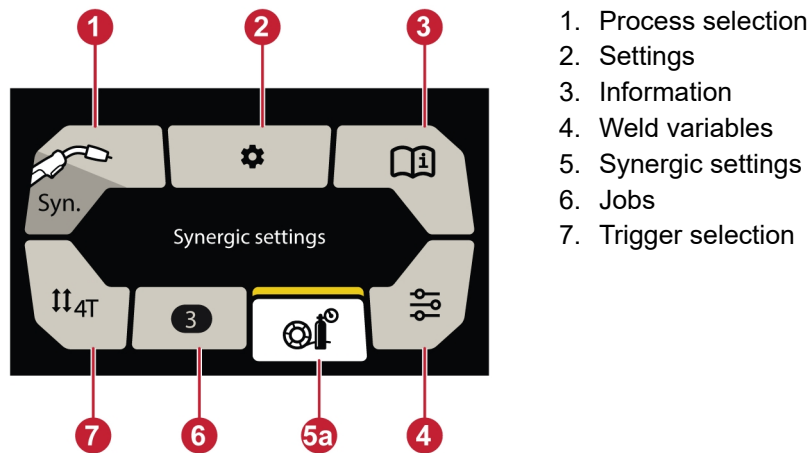
NOTE!

After welding, the display hold the last actual welding parameters and the duration of the weld for 10 seconds.

6.3 GMAW Synergic mode

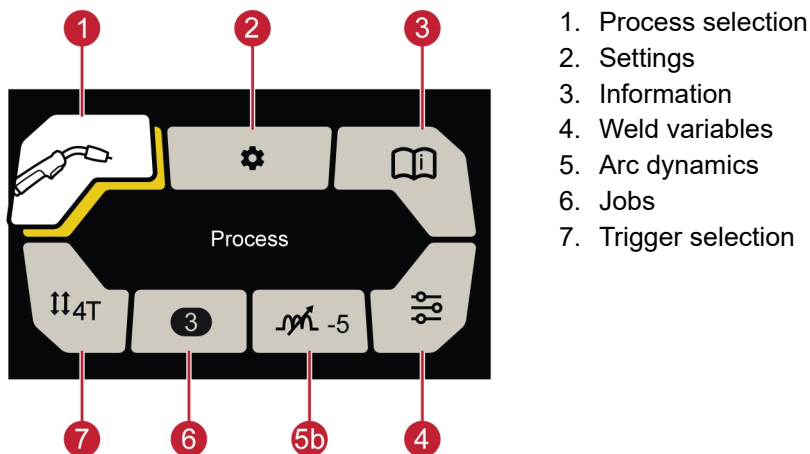
GMAW Synergic mode is a constant voltage weld process where voltage and wire feed speed are in relation using predetermined synergic data, providing stable arc performance throughout the range of a given wire and gas combination.

Synergic mode operates in short circuit, globular, and spray transfer modes.



6.4 GMAW Manual mode

GMAW Manual mode is a constant voltage weld process where the voltage and wire feed speed are set independent of each other.



To select and enter any of the tiles, rotate right-hand push button encoder to the desired tile and press the encoder. After the user enters, there will be various options to select from.

1. **Process Selection**– provides the option of selecting Synergic GMAW or Manual GMAW mode.
2. **Settings** – provides the option to configure various settings that can be selected or viewed by the operator on a system level.
 - Language selection
 - Unit of measure (in./mm)
 - Display brightness
 - Trigger Job shift (multiple Jobs available to operator)
 - Factory reset
 - About (software version)

**NOTE!**

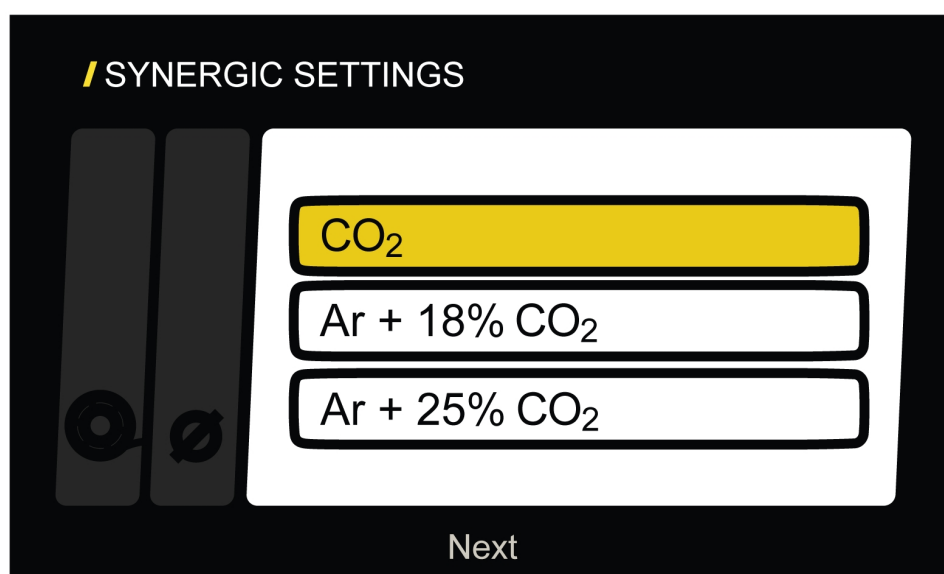
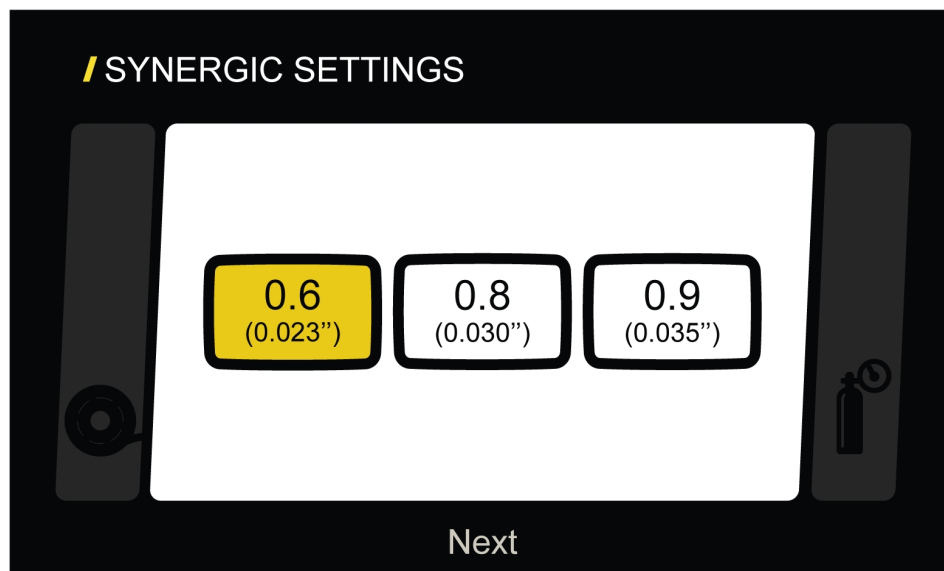
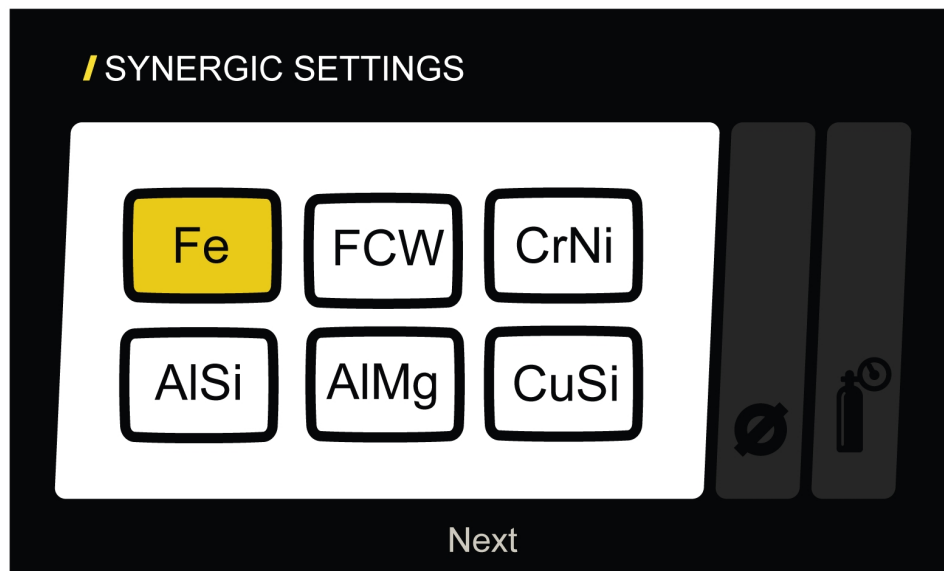
Factory reset will delete all custom configurations and reset the unit to the original factory configuration. Total arc time will not be deleted or reset to factory configuration.

3. **Information** – provides the option to configure various settings that can be selected or viewed by the operator on a system level.
 - Wears and Spares
 - Accessories
 - Filler metals
 - General maintenance
 - User manual
4. **Weld Variables** – provides the option the set specific welding variables that can enhance the weld results.
 - **Arc dynamics** – used to adjust the intensity of the welding arc. Lower arc control settings make the arc softer with less weld spatter and better wetting action of the weld puddle. Higher arc control settings give a more driving arc which can increase weld penetration. Setting range -9 to +9.
 - **Preflow time** – the time during which shielding gas flows before the arc is struck. Setting range 0.0-5.0 s.
 - **Creep start** – feeds the wire at a lower wire feed speed than preset wire feed speed, until it makes electrical contact with the workpiece, transitioning to preset wire feed speed. Set as percentage of preset wire feed speed.
 - **Burnback time** – Burnback is a time delay between the time when the wire starts to brake until the time when the power source disables the welding output. Setting range 0.01-0.35 s. Too short burnback time will result in a long wire stick out after completion of welding, with the risk of the wire being stuck in the solidifying weld pool. Too long a burnback time results in a shorter stick out, with increased risk of the wire burning back to the contact tip.
 - **Postflow time** – Post-flow is the time during which shielding gas flows after the arc is extinguished. Setting range 0.0-10.0 s.
5. **GMAW Modes:**
 - a) **GMAW Synergic mode:**

Synergic settings - Allows the user to configure the machine for a specific wire type, wire diameter, and gas combination. This optimizes the welding parameters from the minimum to maximum material thicknesses that the machine or process is capable of welding.

**NOTE!**

Mild Steel (Fe) is used in the example below. Other combinations are available.



b) **GMAW Manual mode:**

Arc dynamics - Used to adjust the intensity of the welding arc. Lower arc control settings make the arc softer with less weld spatter and better wetting action of the weld puddle. Higher arc control settings give a more driving arc which can increase weld penetration. Setting range -9 to +9.

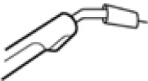
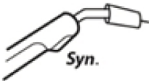
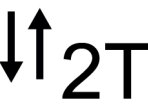
6. **Jobs** – provides the user the option to easily save and recall specific welding condition that are used on a frequent basis.

- **To create Jobs** – it is required to establish specific welding parameters that are desired in synergic or manual mode.
- **To save Jobs** – first is to create the welding parameters. Access the menu and select the Jobs tile. There are 10 individual Jobs that can be created for each process setting. Use the push button encoder to select the desired job number. When the desired Job number is selected, press and hold the encoder for 2 seconds. The job is now saved.
The parameters that were establish are displayed in the Job tile and will be the active Job. The Job number will be displayed on the home screen.
- **To delete Jobs** - Access the menu and select the Jobs tile. Use the push button encoder to select the desired job number. When the desired Job number is selected, press and hold the back button for 5 seconds. The job is now deleted.
- **Trigger Job Call** - allows the user to trigger between preprogrammed Jobs while welding. The individual Jobs must be established in advance of use.
Under the Setting Tile, turn on Trigger Job Call. Under this menu, the option to select 1 & 2 or 1, 2, & 3 depending on the number of Jobs the user wants to select.
Allowing the user to trigger/toggle between Jobs 1 & 2 or Jobs 1, 2 & 3 with the trigger while welding.
Trigger Job Call only functions in the 4T Trigger configuration.

7. **Trigger Selection** – provides the user with the ability to control the trigger functionality.

- **2-stroke**
With 2-stroke, gas pre-flow starts when the welding torch trigger is pressed if feature is active. The welding process then starts. Releasing the torch trigger stops welding entirely and starts gas post-flow if feature is active.
- **4-stroke**
With 4-stroke, the gas pre-flow starts when the welding torch trigger is pressed, and the wire feed starts when it is released, and welding will begin. The welding process continues until the torch trigger is pressed again, the wire feed and welding stops. When the torch trigger is released the gas post-flow starts.
- **Spot**
The spot function enables the user to set a specific length of weld time each time the torch trigger is depressed. Setting range 0-10.0 s
- **Stitch**
The stitch function enables the user to set two independent times, stitch time and dwell time. These times will repeat as long the torch trigger is depressed. Setting range: Stitch time 0.0-10.0 s, dwell time 0.0-10.0 s

6.5 Icon reference guide

	GMAW Manual		GMAW Synergic
	2T, Trigger On/Off		4T, Trigger Hold/Lock
	Arc dynamics		Information

	Jobs		Remote
	Settings		Spot weld
	Synergic setting		Weld variables
A	Amps	V	Voltage
	Wire feed speed		

7 MAINTENANCE


NOTE!

Regular maintenance is important for safe and reliable operation.


CAUTION!

Repair and electrical work should be performed by an authorized ESAB service technician. Use only ESAB original spare and wear parts.


CAUTION!

All warranty undertakings from the supplier cease to apply if the customer attempts any work to rectify any faults in the product during the warranty period.


WARNING!

The mains supply must be disconnected during cleaning and maintenance.


NOTE!

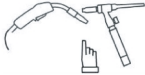
Perform maintenance more often during severe dusty conditions.

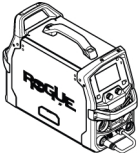
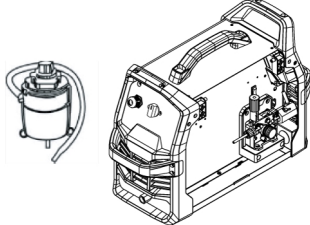
Before each use, make sure that the:

- Product and cables are undamaged.
- The torch is clean and undamaged.

7.1 Routine maintenance

Maintenance schedule during normal conditions. Check equipment before every use.

Interval	Area to maintain	
Each use	 Visual check of regulator and pressure	 Visual check of torch consumable
Weekly	 Visually inspect the torch body and consumables	 Visually inspect the cables and leads. Replace if necessary

Interval	Area to maintain	
Every 3 months	 Replace all broken parts	 Clean exterior of power source
Every 6 months	 Bring the unit to an authorized service provider to remove any accumulated dirt and dust from the interior. This may need to be done more frequently under exceptionally dirty conditions.	

7.2 Power source and wire feeder maintenance

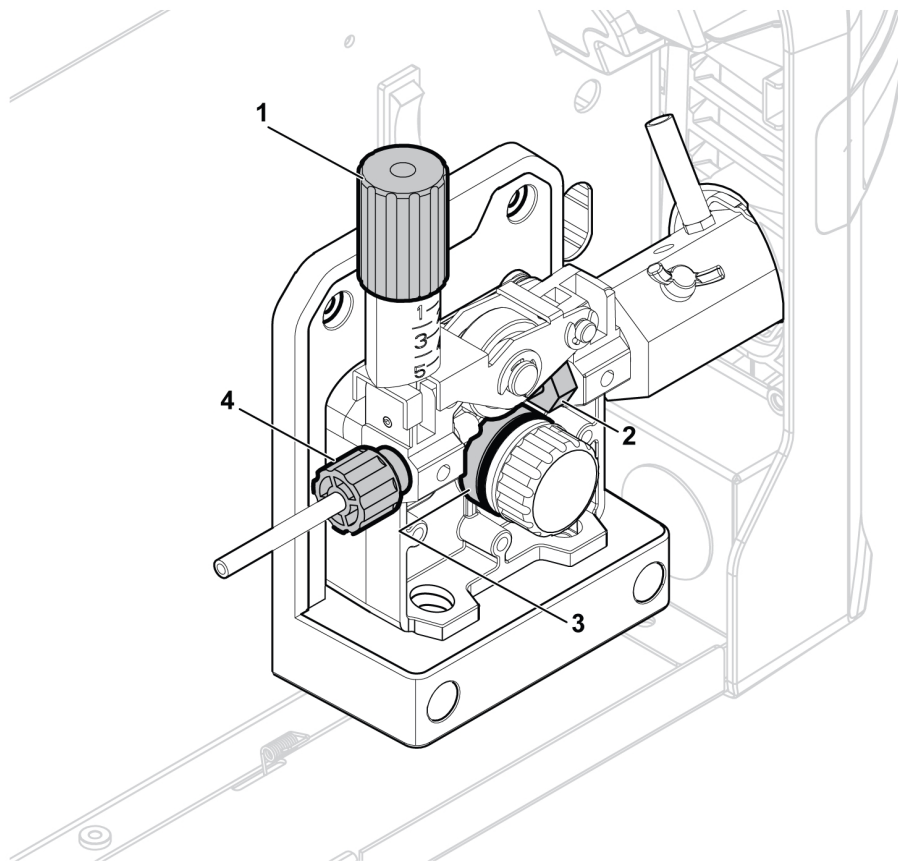
General practice is to perform a power source cleaning each time a wire bobbin is replaced.

**WARNING!**

Always wear safety gloves and protective eye wear during cleaning.

Power source and wire feeder cleaning procedure:

- 1) Disconnect the power source from the input power receptacle.
- 2) Open the spool side door and release the tension from the pressure roller by turning the tension screw (1) counterclockwise, then move it outward.
- 3) Remove the torch, wire, and wire bobbin.
- 4) Use a low-pressure dry airline to clean the power source interior and power source air inlet and outlet louvers.
- 5) Inspect the wire inlet guide (4), the drive roll (3), and torch inlet (2) for wear. If any item is worn, replace immediately. See Section 11.3 "WEAR PARTS", page 39 for ordering replacement items.
- 6) Remove and clean the feed roller (3) with a soft brush. Clean the pressure roller attached to the wire feeder mechanism with a soft brush.



7.3 Torch and liner maintenance

Torch and liner cleaning procedure:

- 1) Disconnect the power source from the input power receptacle.
- 2) Open the spool side door and release the tension from the pressure roller by turning the tension screw counterclockwise, then move it outward.
- 3) Remove the wire and the wire spool.
- 4) Remove the torch from the power source and remove the contact tip and nozzle.
- 5) Clean the liner by blowing low-pressure dry compressed through the end of the liner that was mounted closest to the power source.
- 6) Reinstall contact tip and nozzle.

8 ERROR CODES

Error codes indicate that a fault has occurred in the equipment. Errors are indicated by the text "Error" followed by the error code number shown in the display.

8.1 Error code descriptions

Error codes that the user can handle are listed below. If any other error code appears, contact an authorized ESAB service technician.

Error codes	Title	Display information	Description	Action
002	Shorted trigger	Error 002 Shorted trigger	There is a fault in torch, or the 8-pin connector.	Release the trigger.
205	Mains power under voltage	Error 205 Mains power under voltage	The product has detected that the incoming mains power is outside of the product specifications.	Make sure that the mains power is within the product specification.
205	Mains power over voltage	Error 205 Mains power over voltage	The product has detected that the incoming mains power is outside of the product specifications.	Make sure that the mains power is within the product specification.
206	Over temperature	Error 206 Over temperature	The unit has overheated and shut down to allow the fan to cool it down. Welding can resume once the unit has cooled.	Wait until the temperature cools down.
216	Over current	Error 216 Output current exceeded	Output amperage exceeded design maximum.	Reduce settings and resume welding.
216	Output short circuit	Error 216 Output short circuit	Short circuit has been detected during output activation.	Remove short circuit condition.

9 TROUBLESHOOTING

Perform these checks and inspections before contacting an authorized service technician.

Type of fault	Corrective action
Porosity within the weld metal	Check gas bottle is not empty.
	Check gas regulator is not closed.
	Check gas inlet hose for leaks or blockage.
	Check that the correct gas is connected and the correct gas flow is used.
	Keep the distance between the GMAW torch nozzle and the work piece to a minimum.
	Do not work in areas where drafts, which would disperse the shielding gas, are common.
	Make sure the work piece is clean, with no oil or grease on the surface, before welding.
Wire feeding problems	Make sure the wire spool brake is adjusted correctly.
	Make sure the feed roller is correct size and not worn.
	Make sure the correct pressure is set on the feed rollers.
	Make sure the correct contact tip is used and it is not worn.
	Make sure the liner is the right size and type for the wire.
	Make sure the liner is not bent so that friction is caused between the liner and the wire.
GMAW (MIG) welding problems	Make sure the torch is connected to the correct polarity.
	Replace contact tip if it has arc marks in the bore causing excessive drag on the wire.
	Make sure the correct shielding gas, gas flow, voltage, welding current, travel speed and torch angle are used.
	Make sure the work lead has proper contact with the work piece.
No power/No arc	Check that the input power supply switch is turned ON.
	Check if a temperature fault is shown on display.
	Check if system breaker is tripped.
	Check that the input power, welding and return cables are correctly connected.
	Check that the correct current value is set.
	Check the input power supply fuses.
The overheating protection trips frequently	Make sure that you are not exceeding the recommended duty cycle for the weld current you are using. See Section 5.9 "Duty cycle", page 23.
	Make sure that the air inlets or outlets are not clogged.

10 ORDERING SPARE PARTS



CAUTION!

Repair and electrical work should be performed by an authorized ESAB service technician.
Use only ESAB original spare and wear parts.

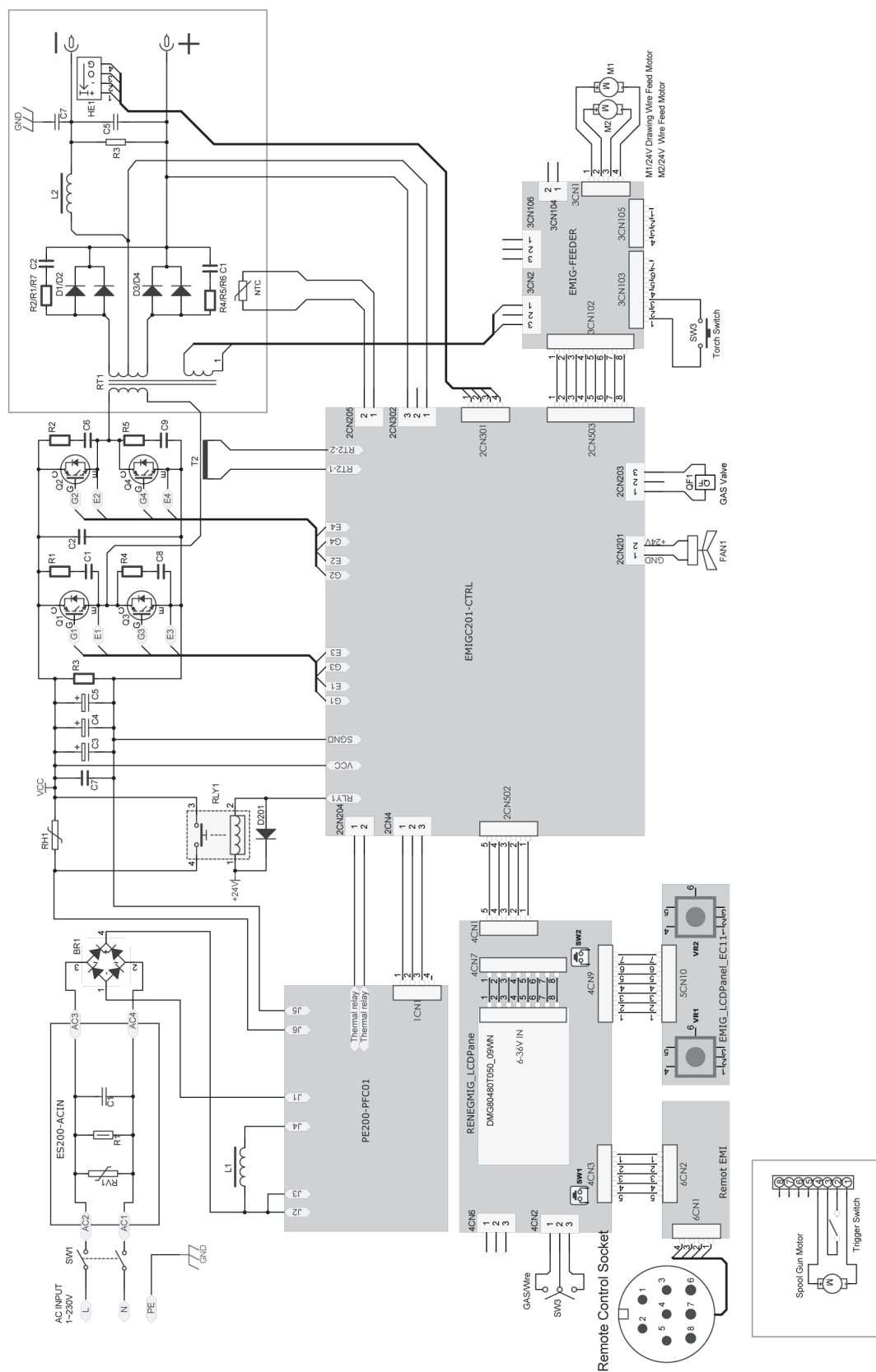
The Rogue EM 190 PRO is designed and tested in accordance with the international standards **ANSI/IEC 60974-1** and **CSA C22.2 No.60974-1**. Upon completion of service or repair work, it is the responsibility of the person(s) performing the work to ensure that the product still complies with the requirements of the above standards.

Spare parts and wear parts can be ordered through your nearest ESAB dealer, see the back cover of this document. When ordering, please state product type, serial number, designation and spare part number in accordance with the spare parts list. This facilitates dispatch and ensures correct delivery.

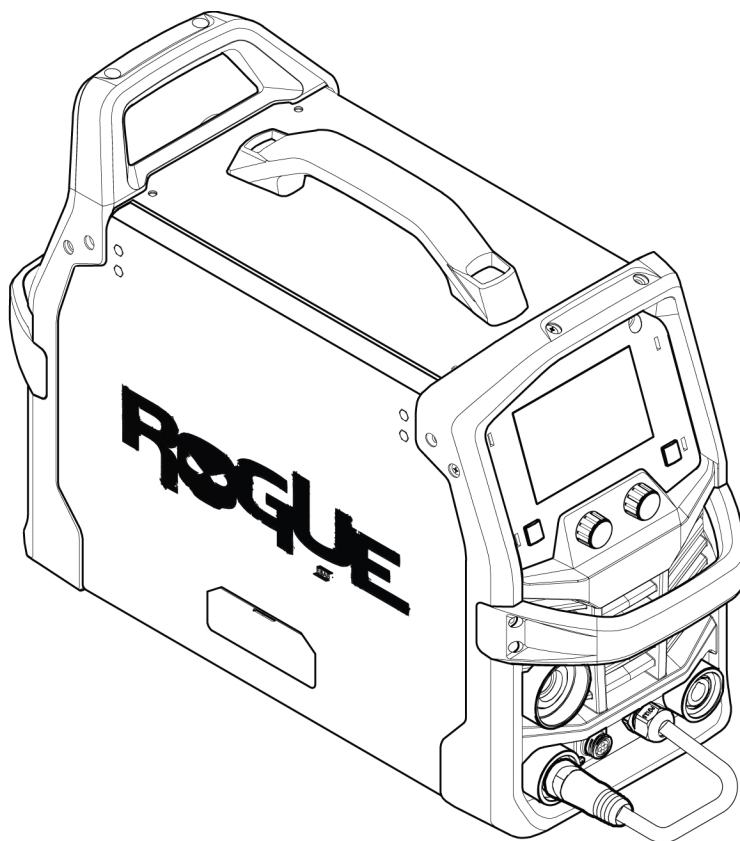
The spare parts list is published in a separate document that can be downloaded from the Internet:
www.esab.com

APPENDIX

WIRING DIAGRAM



ORDERING NUMBERS



Ordering number	Denomination	Type	Notes
0700 301 083	Power source with wire feeder	Rogue EM 190 PRO	NAM

Technical documentation is available on the Internet at: www.esab.com

WEAR PARTS

Ordering number	Denomination	Wire dimensions
	Drive rolls	
7977036	Feed roll	0.023/0.030 in. (0.6/0.8 mm) V
7977731	Feed roll	0.030/0.035 in. (0.8/0.9 mm) U
7977732	Feed roll	0.030/0.035 in. (0.8/0.9 mm) VK
7977660	Feed roll	0.035/0.045 in. (0.9/1.2 mm) V
W4014800	Feed roll	0.023/0.035 in. (0.6/0.9 mm) V
0558102928	Wire guide, inlet	
0558102929	Wire guide, outlet	
0558102930	Motor drive key shaft	
	Spool gun	
1110-1100	Standard contact tip (.023 in.) tweco spool gun 160 A	
1110-1101	Standard contact tip (.030 in.) tweco spool gun 160 A	
1110-1102	Standard contact tip (.035 in.) tweco spool gun 160 A	
1210-1100	Standard nozzle (3/8 in. id) tweco spool gun 160 A	
1210-1110	Standard nozzle (1/2 in. id) tweco spool gun 160 A	
1210-1120	Standard nozzle (5/8 in. id) tweco spool gun 160 A	
2031-2107	Conduit / Liner (compatible with TWECO spool gun 160 A)	
1510-1101	Gas diffuser (tweco spool gun 160 A)	

ACCESSORIES

1444-0900	Basic utility cart (single cylinder)
0460 330 880	Trolley 2-wheel with cylinder support
1027-1397	TWECO Spool Gun 160 A 12 ft.
1017-1338	TWECO Fusion 180 GMAW torch, 3 m (10 ft.)
0781-9411	Victor Regulator/Flow Gauge
0700 400 858	Gas hose, 3 m (10 ft.)
0700 006 901	Work clamp lead set, with 50 mm ² OKC connector, 3 m (10 ft)



A WORLD OF PRODUCTS AND SOLUTIONS.



For contact information visit <http://esab.com>

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