



Welding & Cutting Torch Technology

Operating and Maintenance Guide

Fume Series

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Important Safety Warnings

Read and understand all instructions before using this product

Parker Torchology Fume torches are designed for use only by trained welding professionals who fully understand the risks and consequences of improper handling. Always use the torch strictly as described in this guide.

If misused, there may be substantial risk of injury, property and material damage, and other serious consequences.

Hazards in Welding Activities

Welding presents a number of hazards that require careful attention to safety. These include, but are not limited to:

Electric Shock

Electric shock can lead to severe injury or death, either from the shock itself or from a fall caused by the reaction to a shock. Inspect equipment and components for any signs of damage prior to operation, ensure all electrical connections are secure and that the welding machine is correctly grounded. Make sure that the work area is clean, uncluttered and dry.

Fumes and Gases

Welding fumes contains potentially harmful metal oxide compounds from consumables, base metal and its coatings.

Always assume metal vapours given off during the welding process are harmful.

Welding should not be undertaken without sufficient fume extraction. It's essential to ensure that the extraction in place is suitable for the specific job and welding conditions. In some cases, additional extraction beyond the fume extraction torch and unit may be required to ensure adequate protection.

Refer to the MAC (Maximum Allowable Concentration) values for your country of working. Never weld on workpieces cleaned with chlorinated solvents unless thoroughly washed, as this risks phosgene gas formation. Similarly, avoid welding near degreasing plants containing chlorine.

Fire and Explosion

The extreme temperatures of the welding arc pose a significant fire and explosion hazard. Whilst the welding arc can reach temperatures of over 5000°C, the real danger comes from the intense heat near the arc and the heat, sparks and spatter it creates. This spatter can reach up to 10 metres from the welding position. It is crucial to ensure no flammable materials are close to the welding process and to check for residual risks of fire after the completion of the weld process. **Always have a fire extinguisher nearby.**

Burns

Welding is inherently a hot process. Be aware that previously welded parts may still be hot. Always wear protective clothing suitable for the process.

Additionally, UV radiation from the welding arc can cause burns and damage to the skin.

UV Light Damage

UV radiation from the welding arc can cause Arc-eye, or welder's flash, is an inflammation of the cornea and is a result of ultraviolet (UV) radiation released by a welding arc. UV radiation can also cause burns to the skin.

Noise Damage

Welding can be loud, and because the welder is generally close to the arc, this can cause damage to hearing.

Pacemaker Users

All welding operations produce some magnetic and electrical interference. If you have a pacemaker or some other medical device controlled by an electric current, we strongly recommend you consult your doctor before using any welding or cutting equipment.

General Advice Performance

All products are rated as per the advertised data and duty cycles, established through extensive testing. Adhering to these values and performing regular maintenance will ensure a long and satisfactory service life. Using products outside of these parameters will result in damage.

Personal Protective Equipment

Always wear protective clothing that is appropriate for the welding operation, including but not limited to:

Flame-resistant clothing and gloves:

Essential for protection from burns, sparks, and UV radiation. Clothing should consist of long sleeves and trousers made of non-flammable materials (e.g., leather or heavy cotton treated for flame resistance). Gloves are crucial for protecting hands from heat, sparks, and electrical hazards. Avoid synthetic fabrics that can melt onto the skin.

Welding helmet or goggles: Crucial for protecting eyes and face from intense UV light, infrared radiation, sparks, and spatter. Ensure the filter lens has the correct shade level for the specific welding process.

Hearing protection: Depending on the welding process and noise levels of the job, earplugs or earmuffs should be worn prevent hearing damage from the noise generated by the welding arc.

Safety footwear: Closed-toe, durable, and preferably insulated boots to protect feet from falling objects, heat, and electrical hazards.

Disclaimer

Parker Torchology cannot be held responsible for any accidents, incidents, property damage, environmental harm, or personal injury that occurs as a result of using its welding products. Safe operation and adherence to all safety guidelines are the sole responsibility of the user.

Intended Use:

The Parker Fume Extraction Torch is intended exclusively for welding in conjunction with a sufficiently powerful extraction system.

Fume Extraction System Requirement

To ensure effective fume capture and safe operation, the Uniarc Fume Extraction torch must only be used in conjunction with a fume extraction system which meets specific requirements.

Extraction Volume Flow

The fume extraction unit within the system must provide an extraction volume flow between 50 - 80 m³/h (29.4 - 47 cfm); (dependent on which torch within the range is used)

Note:

Volume Flow Too Low there is a risk that the welding fumes will not be adequately extracted.

Volume Flow Too High there is a risk that the shielding gas will be diverted away from the weld seam.

Negative Pressure

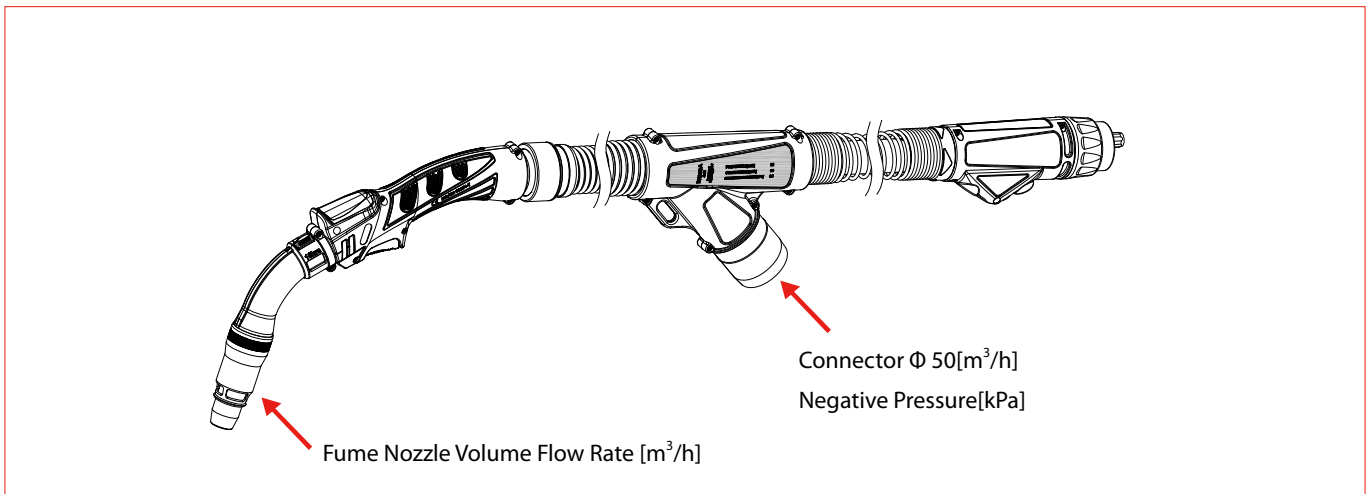
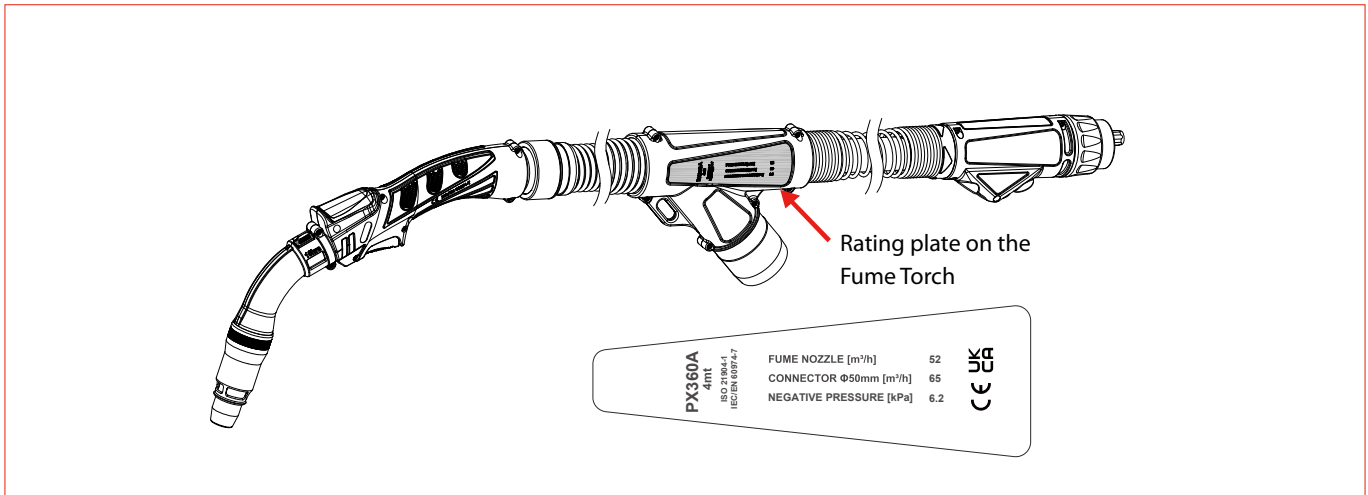
The extraction system must generate a negative pressure of at least 5-13 kPa (50-130 mbar), depending on the length and diameter of the extraction hose and the specific welding torch used.

Extraction Hose Length

Keep the Interconnection extraction hose as short and thick as possible. Shorter, thicker hoses require less energy from the fume unit to achieve the necessary extraction values.

Note: When welding at higher altitudes, air density decreases. The extraction capacity must be reduced accordingly, either by opening the airflow switch on the welding torch or reducing the extraction capacity.

Extraction Information On The Rating Plate



Fume Nozzle Flow Rate [m³/h]

The of air the torch is sucking in right at the nozzle where you're welding. It's how much fume the torch itself can pull in.

Connector Flow Rate (Ø50) [m³/h]

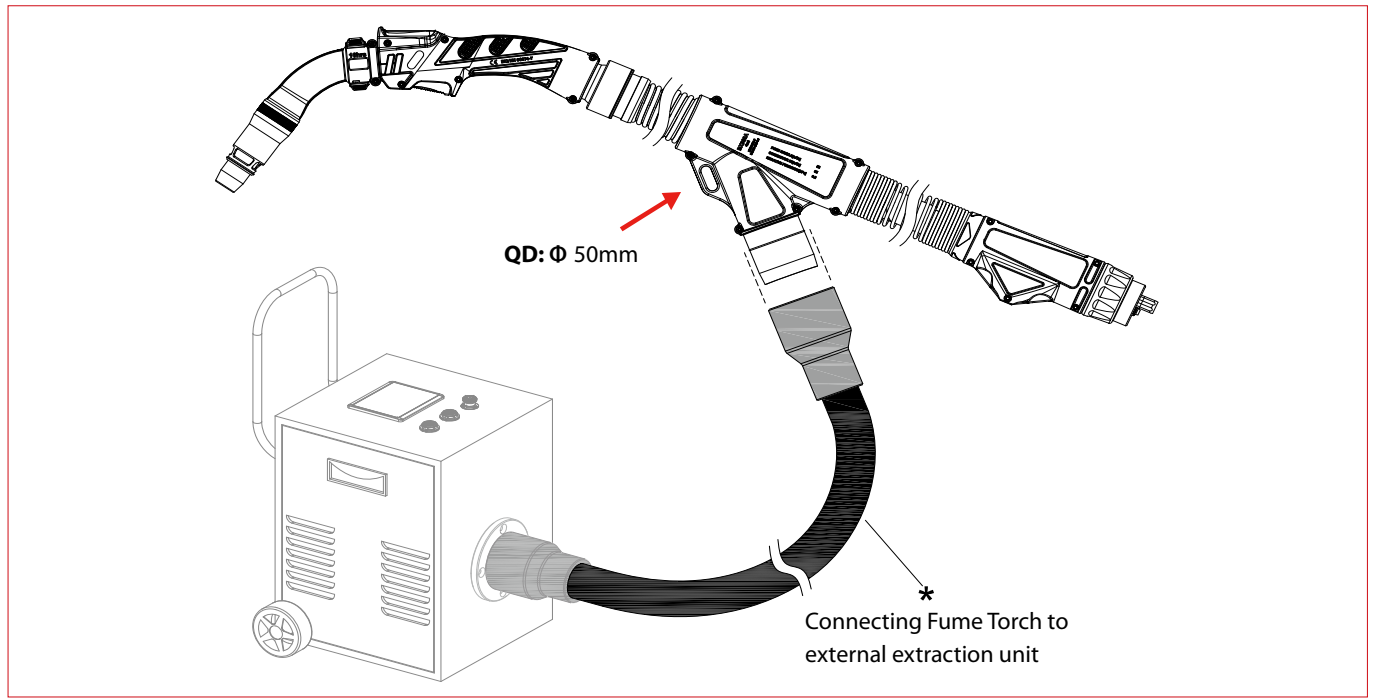
The amount of air that needs to be pulled through the system at the connection point (usually a 50 mm hose). Your fume extraction unit has to provide at least this much flow to work properly.

Negative Pressure [kPa]

The "suction power" needed at the connector. It's the amount of vacuum the extraction system needs to create to pull the fumes effectively.

Connecting the Uniarc Fume Torch to the Extraction System

The Parker Fume Torch can be connected to an external extraction unit as well as to a central extraction system. The Parker Fume Torch is always connected in the same way.

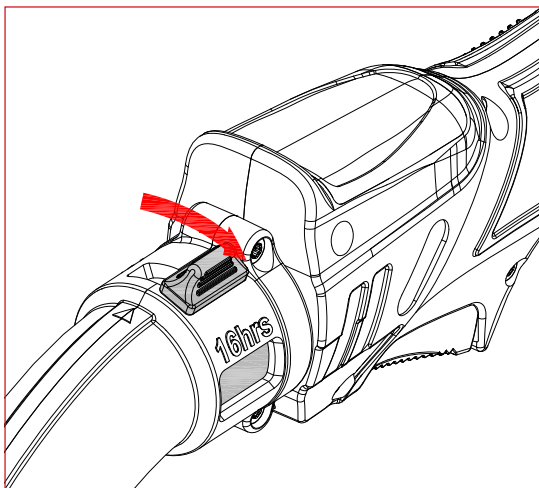


*Extraction Hose:

Keep the extraction hose as short as possible; a shorter hose minimizes the energy required by the fume unit to achieve the necessary extraction values.

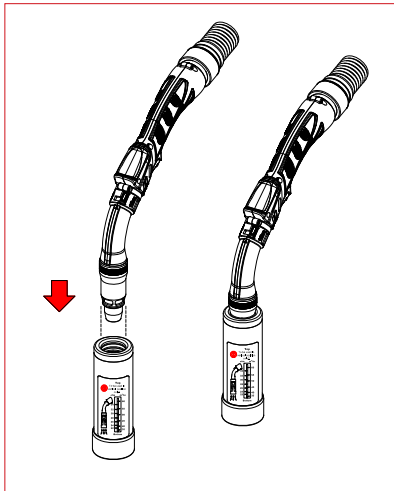
Measuring the Extraction Volume Flow with the Airflow Meter

1. Switch on the Fume Extraction System.
2. Read the measurement on the airflow meter in m^3/h .
3. Check there are no holes, cracks or damage to the torch and hose, to ensure there is no loss in suction power.



Commissioning

4. Close the Airflow Regulator – this ensures maximum extraction is measured.
5. Insert the torch (fume extraction nozzle) into the Airflow meter – ensure the torch is vertical and that no air can escape.



6. Compare the measured extraction volume flow with the required extraction volume flow listed on the torch's rating plate

If they match: The system is correctly set up

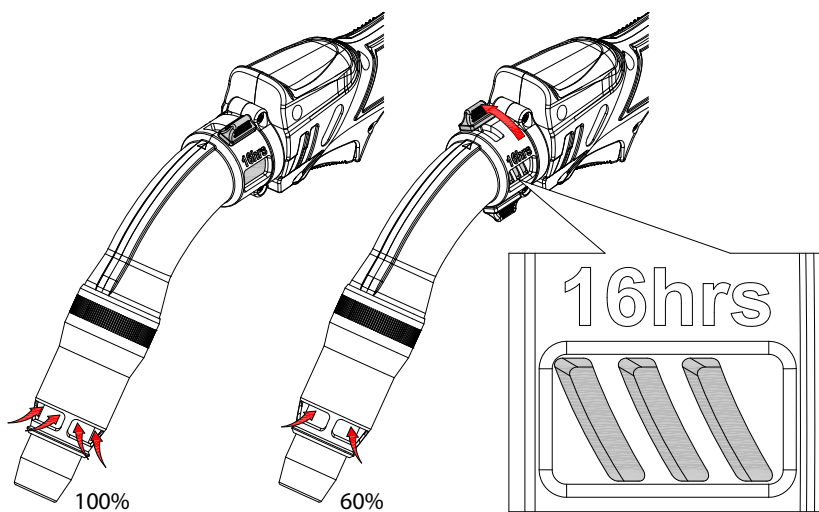
If they do not match: Adjust the power of the extraction system until the extraction volumetric flow falls within the correct range

Adjusting the Extraction Capacity

The Uniarc Fume Torch features an Airflow Regulator that allows you to adjust the extraction capacity during welding.

Fully Open Airflow Switch: Reduces the welding torch's extraction capacity by approximately 40%.

Closed Airflow Switch: Provides maximum extraction capacity.

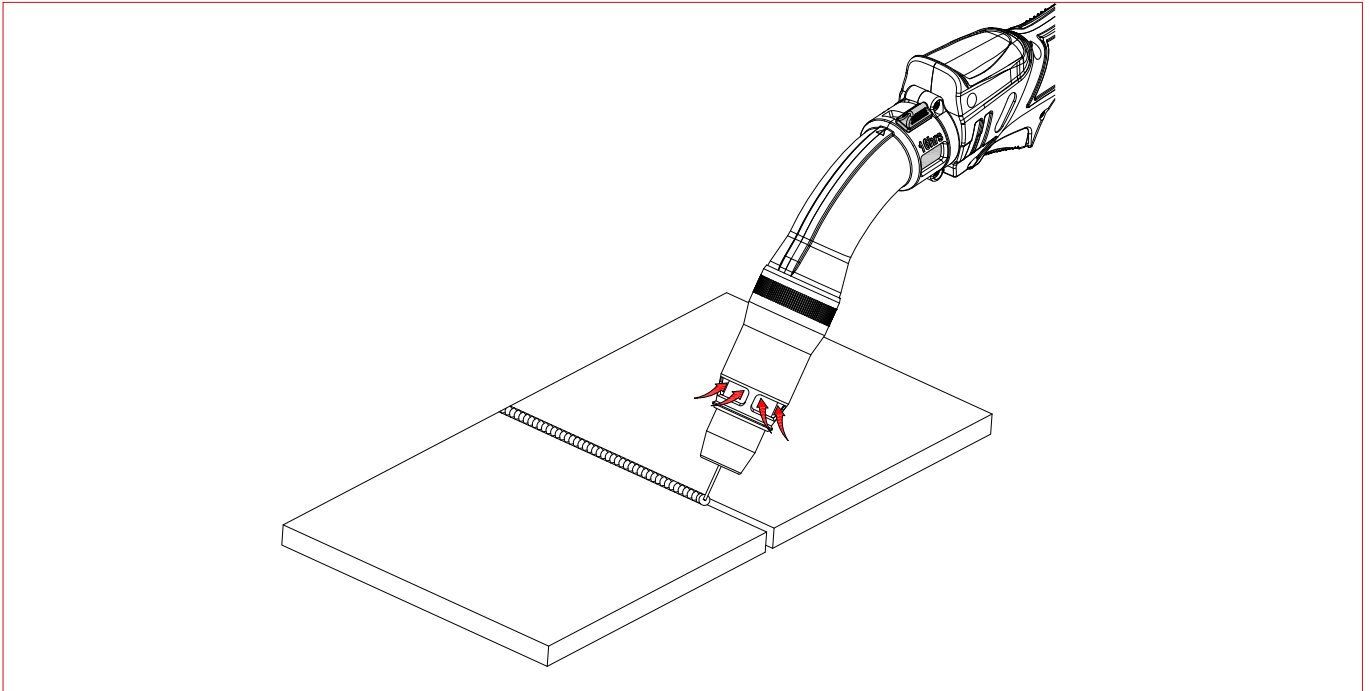


Left: Airflow Regulator closed = 100% Extraction Capacity

Right: Airflow Regulator open = 60% Extraction Capacity

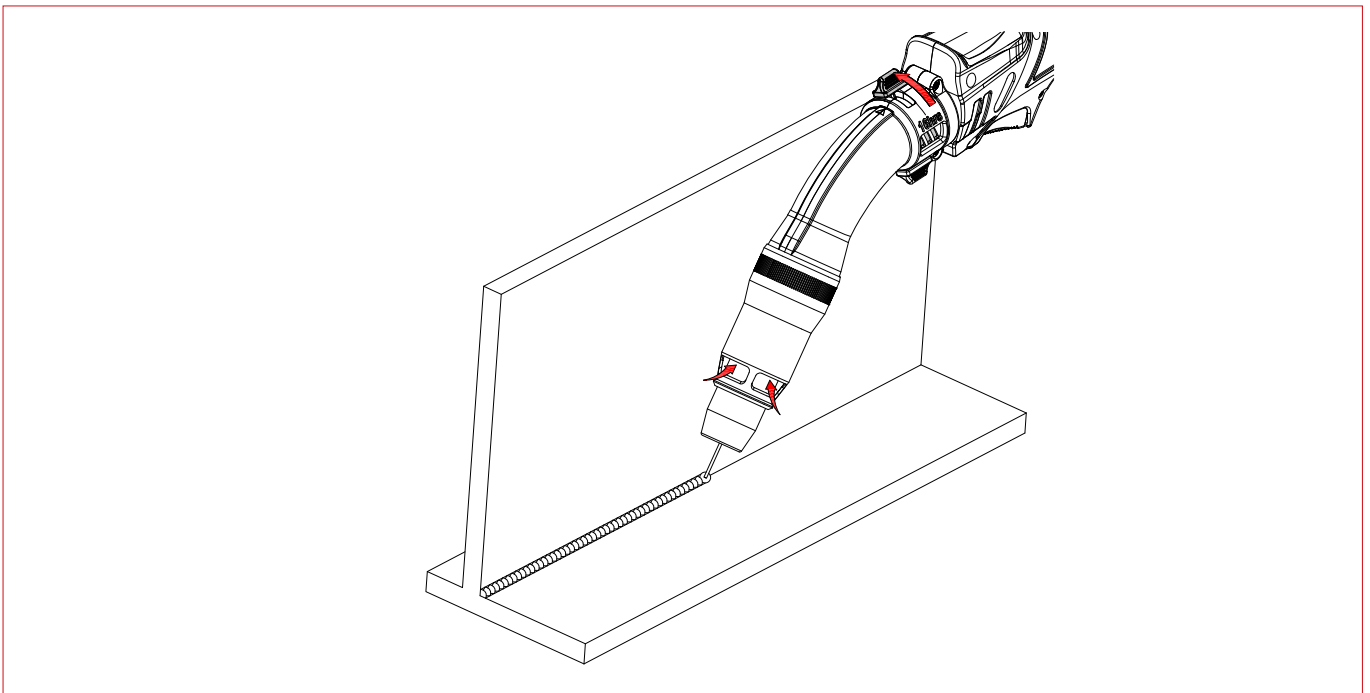
Applications for the Airflow Regulator: Corner – Fillet Welds

When welding fillet welds, it may be necessary to open the Airflow regulator and thus reduce the capacity.



Open Surfaces – Butt Welds

When welding on open surfaces (such as square butt welds), it may be necessary to close the Airflow regulator and thus use the maximum extraction capacity. This provides the best possible extraction of welding fumes.



Range and Ratings

Ratings conform to EN60974-7 and ISO 21904-1

PX 150A

IEC/EN 60974-7 ISO21904-1

Cooling Method		Air-Cooled	Max Load
Rating:	CO ₂	180A	4.5KW
	Mixed Gas M21	150A	3.0KW
Duty Cycle		60%	
Wire Size		0.6-1.0mm	
Volume Flow Rate	Fume Nozzle	41 m ³ /h	
	Connector	50.9 m ³ /h	
Pressure Drop		5.26 kPa	
Shielding Gas Flow Rate		10-13 l/min	
Efficiency		93%	

PX 250A

IEC/EN 60974-7 ISO21904-1

Cooling Method		Air-Cooled	Max Load
Rating:	CO ₂	250A	8.0KW
	Mixed Gas M21	220A	6.0KW
Duty Cycle		60%	
Wire Size		0.8-1.2mm	
Volume Flow Rate	Fume Nozzle	48 m ³ /h	
	Connector	56.0 m ³ /h	
Pressure Drop		6.03 kPa	
Shielding Gas Flow Rate		10-15 l/min	
Efficiency		93%	

PX 360A

IEC/EN 60974-7 ISO21904-1

Cooling Method		Air-Cooled	Max Load
Rating:	CO ₂	300A	11.3KW
	Mixed Gas M21	270A	8.9KW
Duty Cycle		60%	
Wire Size		0.9-1.2mm	
Volume Flow Rate	Fume Nozzle	52 m ³ /h	
	Connector	65 m ³ /h	
Pressure Drop		6.2 kPa	
Shielding Gas Flow Rate		16-18 l/min	
Efficiency		93%	

PX 501W

IEC/EN 60974-7 ISO21904-1

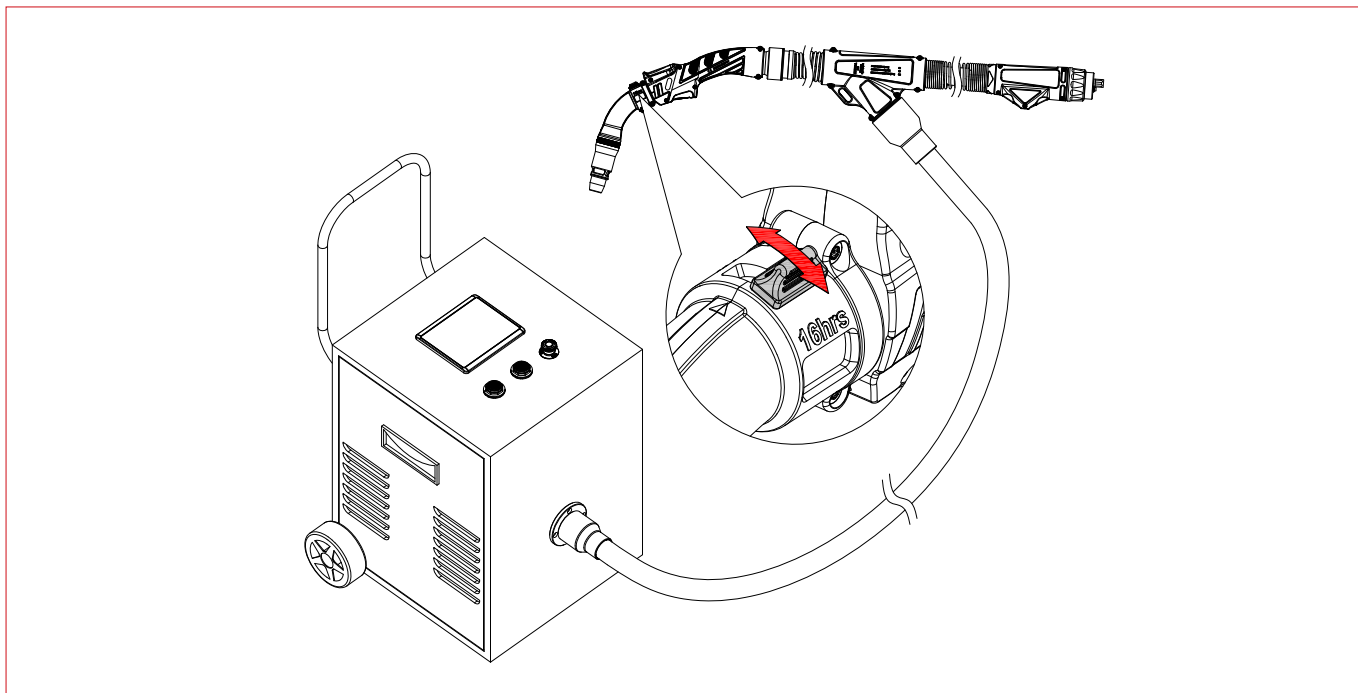
Cooling Method		Liquid-Cooled			
		Cooler Rating	Max. A	Pulse	Max. Load
Rating: CO ₂		1000W	500A	-	20.0KW
Rating: Mixed Gas M21		1000W	450A	300A	17.1KW
Duty Cycle			100%	100%	
Wire Size		Filler Wires	Fe, Fe-MC / FC		0.9-1.6mm
		Filler Wires	Ss, Ss-MC / FC		0.9-1.6mm
		Filler Wires			1.0-1.6mm
Volume Flow Rate	Fume Nozzle				52 m ³ /h
	Connector				66 m ³ /h
Pressure Drop					10 kPa
Shielding Gas Flow Rate					16-22 l/min
Efficiency					93%
Minimum Liquid Flow Rate		1.5 l/min			Important: Please note minimum inlet pressure and flow rate. Low pressure will affect torch performance
Minimum Liquid Inlet Pressure		2.5 Bar			
Maximum Liquid Inlet Pressure		5.0 Bar			
Maximum Liquid Inlet Temperature		50°C			
Operating Temperature Range		-10...+40°C			

Daily Maintenance

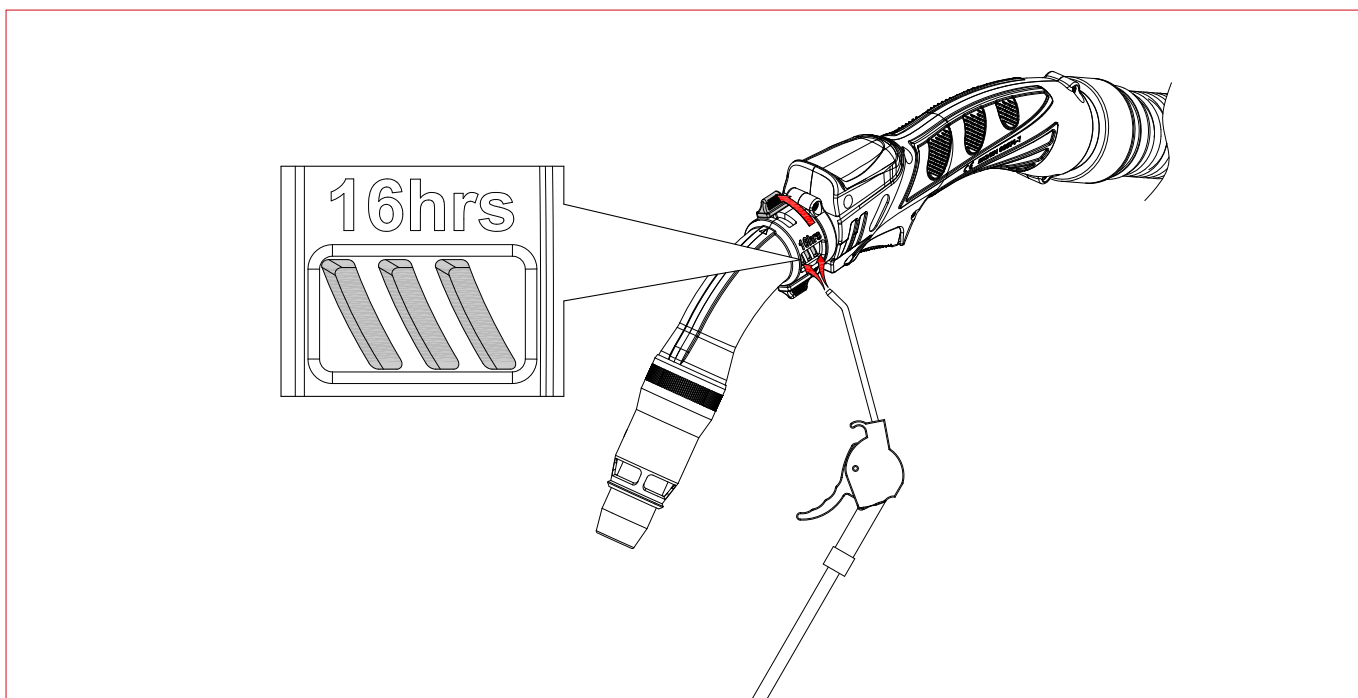
Clean fume nozzle, gas nozzle, contact tip, nozzle fitting, and insulating parts from welding splatter, check for damage, and replace damaged parts:

Every 16 Hours Clean the Airflow Regulator:

1. Switch on the extraction system.
2. Open and close the airflow regulator multiple times to clean it.



If the air inlets are dirty and / or the Airflow regulator can no longer be opened smoothly, clean the air inlets with compressed air:



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