AIR LIQUIDE
WELDING

WST Fume Extraction Torches

for MIG/MAG welding

www.airliquidewelding.com

If the rivers are kept clean, there will be no need to clean up the oceans.

The extraction of welding fumes at source provides the assurance of a healthy environment for welders in compliance with regulations and labour laws.

In order to meet these requirements, Air Liquide Welding has developed a range of “all-in-one” torches that offer the fundamental characteristics of conventional MIG/MAG welding torches combined with an effective fixed-collector fume extraction system.

This range of WSTs (Welding Suction Torches) is also compliant with **standard EN 60974-7**.

The detailed design of the ergonomics, weight, flexibility, manoeuvrability and grip of these torches, will satisfy the most demanding users.

Energy is expensive, so let us not waste it.

A fume extraction torch requires an extraction flow of only 130 m^3/h, which is less than all other extraction systems. At the same time, its average efficiency is close to 90%.

As a result, the volume of extracted air is low and does not generally require any additional air compensating and heating installation.

The torches are connected either to independent extraction units or to a centralised high-suction unit.

In both configurations, extraction can be controlled depending on the actual welding needs by welding current automation. Which helps to reduce noise and power consumption.

But such torches are heavier than conventional ones!

Because the extraction system follows the welder's arm, it is efficient in all circumstances and can improve the productivity and working conditions of welders. By using such torches with appropriate welding booms, the torch can be brought to the welder without all the potential user drawbacks.

This improves productivity, safety and the lightness of the torch, while allowing fatigue free working in a healthy environment.

Labour Code - Article R232-5

In enclosed premises where employees are required to spend time, the air must be renewed in order to:

“maintain the purity of the atmosphere so as to protect the health of workers”.

Labour Code - Article R232-5-7

If hazardous emissions cannot be removed altogether:

“they shall be collected as they are produced, as close to their source of emission as possible, and as effectively as possible”.

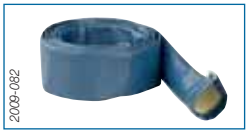
The only extraction arm that is always effective - the welder's arm!

Welders hold the torch and extraction system in their hand, thus guaranteeing continuous collection efficiency and a clean environment. The **OEL*** (**O**ccupational **E**xposure **L**imit) is consequently below the requirements of regulations.

WST Fume Extraction Torches

WST torches are above all a **range of welding torches that efficiently extract welding fumes**. Extraction is obtained at a high extraction rate with low load loss due to the **advanced air flow design of the torches**.

- Single-piece insulating guns and active parts of torches have been designed for a **longer life of parts subject to wear and tear** and with reinforced insulation.
- **Torch insulation** prevents short circuits in the event of improper use.
- The metal rotating ring at the handle slides efficiently and **improves the air flow**.



- And there is an optional **duct that offers high resistance to fire, spatter** and **cutting**.
- New torch handles allow **unparalleled manoeuvrability** and **grip** to torches with similar power ratings.
- Cooled torches have a water/electricity cable that **reduces weight, is more flexible** and **ensures more efficient cooling**.
- The whole range **is compliant with standard EN 60974-7**.
- **There is an additional conical skirt** for applications that release high fume emissions (supplied as standard).

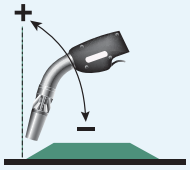
An ergonomic, lightweight and rugged range designed with the welder in mind, to achieve high welding and extraction efficiency.

To maximise the extraction efficiency, the following common sense rules must be followed:

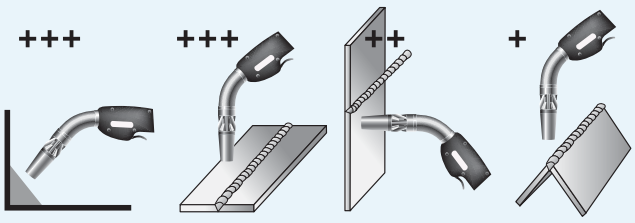
- shielding gas flow:
if the flow is too great, the fumes are blown far away from the nozzle extraction area, significantly reducing effectiveness,

- gas supply:
excess gas pressure on arcing results in the fumes being blown away from the torch extractor, especially during tack welding.
A regulator should be used in preference to a relief valve, except if it can be combined with a flow limiter,

- torch angle in relation to the molten pool,



- welding position and type of welded joint,



- anti-spatter spray:
anti-spatter spray should be used sparingly as this tends to foul the torch body when the extraction system is operating.
Anti-spatter pastes may not be used because after melting, they solidify in the torch body and foul it very rapidly.

Air Cooled Torches

WST 158

- 150 A with CO_2,
- 135 A with mixed gas,
- 15 mm² coaxial cable,
- 50° gun: Ø = 22 mm,
- Diameter of single-section extraction pipe: 32 mm.

WST 258

- 250 A with CO_2,
- 225 A with mixed gas,
- 25 mm² coaxial cable,
- 50° gun: Ø = 22 mm,
- Diameter of single-section extraction pipe: 40 mm.

WST 308

- 300 A with CO_2,
- 265 A with mixed gas,
- 25 mm² coaxial cable,
- 50° gun: Ø = 28 mm,
- Diameter of single-section extraction pipe: 40 mm.

WST 358

- 350 A with CO_2,
- 310 A with mixed gas,
- 35 mm² coaxial cable,
- 50° gun: Ø = 30 mm,
- Diameter of single-section extraction pipe: 40 mm.

WST 408

- 400 A with CO_2,
- 350 A with mixed gas,
- 50 mm² coaxial cable,
- 50° gun: Ø = 28 mm, 60° gun: Ø = 30 mm,
- Diameter of dual-section extraction pipe: 40/50 mm.

Model	Part no.	Duty cycle at 100%		Contact tip*	Ø Nozzle	Ø Torch union	Metal ring	Wire size range mm	Extraction performance at torch union**
		CO_2	Ar/CO_2						
Torch WST 158 3 m	W 000 273 339	150 A	135 A	M6 x 8/10th	12 mm	40 mm	-	**0.8*** / 1.0	75 m³/h with 17.4 kPa
Torch WST 158 4 m	W 000 273 340								
Torch WST 158 5 m	W 000 273 341								
Torch WST 258 3 m	W 000 273 342	250 A	225 A	M6 x 8/10th	14 mm	40 mm	-	**0.8*** / 1.0	103 m³/h with 15.4 kPa
Torch WST 258 4 m	W 000 273 343								
Torch WST 258 5 m	W 000 273 345								
Torch WST 308 3 m	W 000 273 346	300 A	265 A	M8 x 10/10th	16 mm	50 mm	✔	0.8 / **1.0*** / 1.2	126 m³/h with 13.3 kPa
Torch WST 308 4 m	W 000 273 347								
Torch WST 308 5 m	W 000 273 348								
Torch WST 358 3 m	W 000 273 349	350 A	310 A	M8 x 12/10th	16 mm	50 mm	✔	0.8 / 1.0 / **1.2***	132 m³/h with 13.3 kPa
Torch WST 358 4 m	W 000 273 350								
Torch WST 358 5 m	W 000 273 351								
Torch WST 408 3 m	W 000 273 352	400 A	350 A	M8 x 12/10th	19 mm	50 mm	✔	0.8 / 1.0 / **1.2***	134 m³/h with 12.9 kPa
Torch WST 408 4 m	W 000 273 353								
Torch WST 408 5 m	W 000 273 354								

** Diameter of contact tip supplied as original equipment.*
*** Air Liquide Welding factory measurements.*

All torches supplied with additional skirt and cleaning tool.
Optional high-resistance protective duct: W 000 265 919.

Water Cooled Torches

WST 308W

- 300 A with CO_2,
- 265 A with mixed gas,
- 20 mm² water/electricity cable,
- 45° gun: Ø = 28 mm,
- Diameter of single-section extraction pipe: 40 mm.

WST 408W

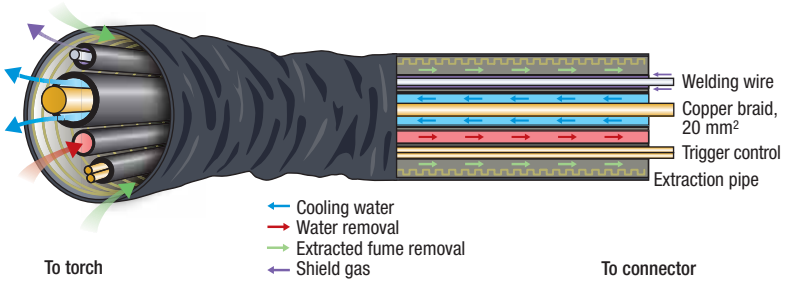
- 400 A with CO_2,
- 350 A with mixed gas,
- 20 mm² water/electricity cable,
- 50° gun: Ø = 30 mm,
- Diameter of dual-section extraction pipe: 40/50 mm.

WST 508W

- 500 A with CO_2,
- 445 A with mixed gas,
- Double cooling water circuit,
- 20 mm² water/electricity cable,
- 45° gun: Ø = 35 mm,
- Diameter of dual-section extraction pipe: 40/50 mm.

Benefits of multiple-strand water/electricity cable:

The copper braid that conducts the electrical power is continuously cooled by the water in the torch cooling circuit, making it possible to reduce the cable section for any given power requirement. That reduces the weight and makes the torch harness much more flexible, making the torch easier to handle.



Model	Part no.	Duty cycle at 100%		Contact tip*	Ø Nozzle	Ø Torch union	Metal ring	Wire size range mm	Extraction performance at torch union**
		CO_2	Ar/CO_2						
Torch WST 308W 3 m	W 000 273 355	300 A	265 A	M8 x 12/10th	19 mm	50 mm	✔	0.8 / 1.0 / **1.2***	113 m³/h with 14.6 kPa
Torch WST 308W 4 m	W 000 273 356								
Torch WST 308W 5 m	W 000 273 357								
Torch WST 408W 3 m	W 000 273 358	400 A	350 A	M8 x 12/10th	19 mm	50 mm	✔	0.8 / 1.0 / **1.2***	134 m³/h with 12.4 kPa
Torch WST 408W 4 m	W 000 273 359								
Torch WST 408W 5 m	W 000 273 360								
Torch WST 508W 3 m	W 000 273 361	500 A	445 A	M8 x 12/10th	19 mm	50 mm	-	0.8 / 1.0 / **1.2***	130 m³/h with 12.9 kPa
Torch WST 508W 4 m	W 000 273 362								
Torch WST 508W 5 m	W 000 273 363								

** Diameter of contact tip supplied as original equipment.*
*** Air Liquide Welding factory measurements.*

All torches supplied with additional skirt and cleaning tool.
Optional high-resistance protective duct: W 000 265 919.

Fume Collection

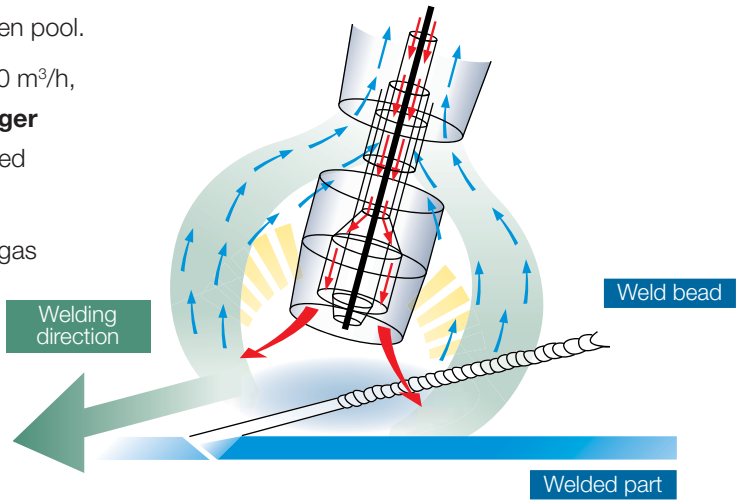
Indirect fume collection for extraordinary efficiency

The fume collector is fixed and placed 7 cm above the molten pool.

From that distance, with an extraction air volume of 80 - 130 m^3/h, depending on the type of torch, **the collection zone is larger than with direct collection**, and the percentage of collected fumes is close to 90 - 95%.

The collection process has no direct effect on the shielding gas and the **quality of the welds is protected in all welding positions**.

Also, the collector is fixed (not adjustable), to guarantee **optimal conditions at all times**.



Collection units for use with these torches

- Single-phase unit with filtration for maintenance and light work
- Two 1000-watt motors
- 230 m^3/h max. with 22,000 Pa maximum suction
- Controlled by the welding current

- Three-phase industrial unit with filtration as an option for heavy-duty use
- Two motor power ratings: 1.5 and 2.2 kW
- 250 m^3/h max. with 22,000 Pa maximum suction
- 310 m^3/h max. with 30,000 Pa maximum suction
- Controlled by the welding current

- Three-phase industrial unit for heavy-duty work with high dust emission, using unclogging cartridge filtration
- Motor power rating: 2.2 kW
- 310 m^3/h max. with 30,000 Pa maximum suction
- Controlled by the welding current

Centralised high suction units

A range of units for connecting extraction torches to a centralised system, that can handle torch fumes and also ground dust, fumes from collection nozzles and grinders with integrated extraction.

- Central units only 1, supplemented by filtration 2 or in compact version 3
- Suction flow: 1 000 – 2 000 – 3 000 – 4 500 m^3/h with 20 000 or 25 000 Pa constant suction.
- The motor power adapts automatically to the number of torches connected to the system.

Ergonomic workstations for enhanced productivity

High workstation ergonomics makes work more comfortable, more productive, safer, and more profitable, and does away with welding torch issues.

- **Self-balancing booms** for compact machines or with separate wire feeders

- « **GIRAFE** » booms with a working radius of 2.5 or 3.5 m

- « **ERGOMIG 2D** » booms with a working radius of 2.6, 3.6 or 4.6 m

- « **AEROMIG 3D** » booms with adjustable parallelograms and a working radius of 2.6, 3.6 or 4.6 m

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AIR LIQUIDE
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Air Liquide is the world leader in gases for industry, health and the environment, and is present in over 75 countries with 43,000 employees. Oxygen, nitrogen, hydrogen and rare gases have been at the core of Air Liquide's activities since its creation in 1902. Using these molecules, Air Liquide continuously reinvents its business, anticipating the needs of current and future markets. The Group innovates to enable progress, to achieve dynamic growth and a consistent performance. Air Liquide combines many products and technologies to develop valuable applications and services not only for its customers but also for society.

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