arc TORCHOLOGY
INTELLIGENT TORCH SOLUTIONS

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YOUR WORKDAY

SET-UP AND MAINTENANCE GUIDE

M6WP/M6OSWP

LARGE WIRE AND HIGH DEPOSITION APPLICATIONS

ARC M HIGH PERFORMANCE SERIES

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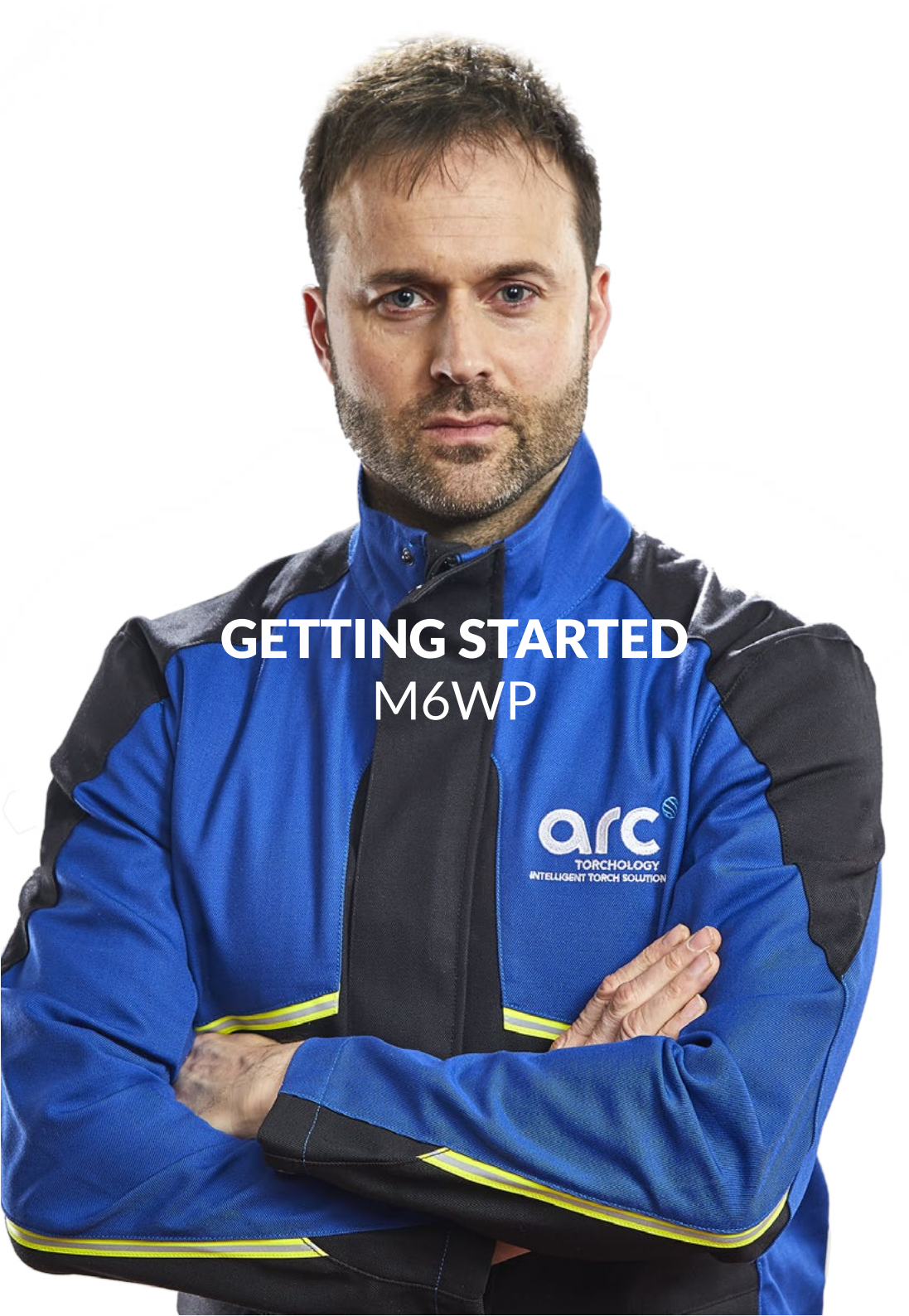
Contents



GETTING STARTED
M6WP

M6WP Liquid-Cooled Mig Welding Torch Pistol Style

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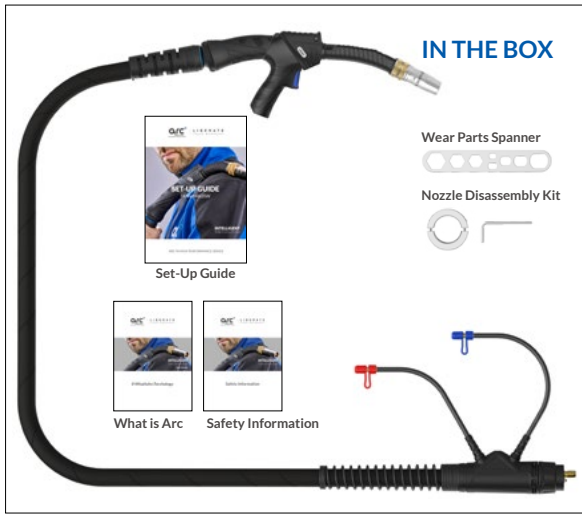
Ideal for large diameter wires, heavy duty steel, pulse and high deposition applications



TECHNICAL SPECIFICATIONS

M6WP

IEC/EN 60974-7

Cooling Method	Liquid-Cooled			
	Cooler Rating	Max. A	Pulse	Max. Load
Rating: CO_2	1600W	580A	-	25KW
	1200W	540A	-	23KW
Rating: Mixed Gas M21	1600W	560A	400A	24KW
	1200W	510A	360A	20KW
Duty Cycle		100%	100%	
Wire Size	Filler Wires	Fe, Fe-MC / FC		0.9-2.0mm
	Filler Wires	Ss, Ss-MC / FC		0.9-1.6mm
	Filler Wires	Al		1.0-2.0mm

Minimum Liquid Flow Rate	1.5 l/min
Minimum Liquid Inlet Pressure	3.0 Bar
Maximum Liquid Inlet Pressure	5.0 Bar
Maximum Liquid Inlet Temperature	50°C
Operating Temperature Range	-10...+40°C

Important:
Please note minimum inlet pressure and flow rate.

M6WP SET-UP GUIDE

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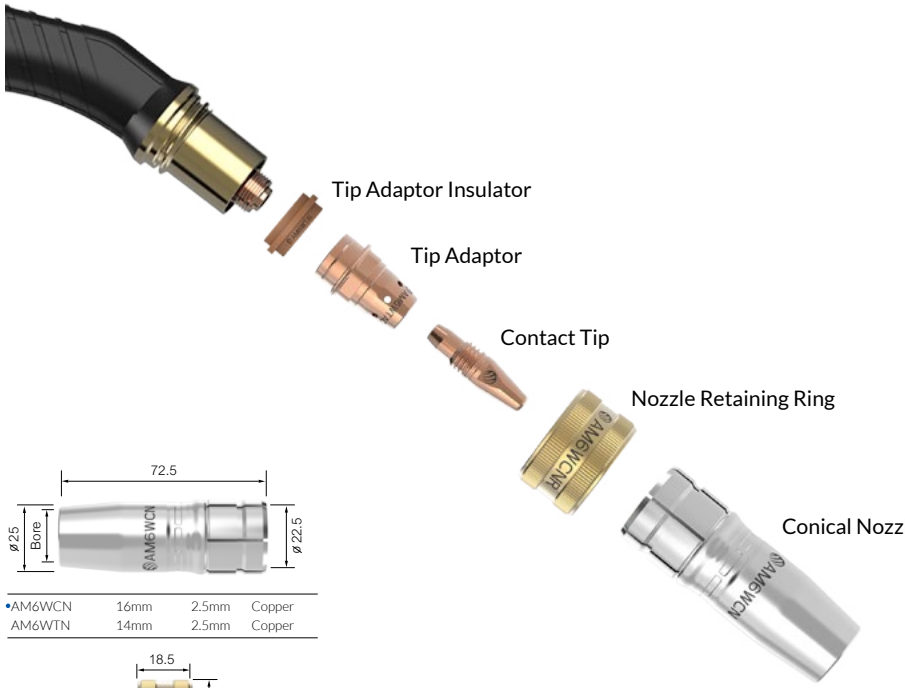
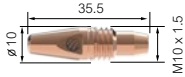
M6WP Torches are supplied “ready to weld” with all wear parts installed in accordance with the items listed below •



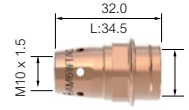
•AM6WCN	16mm	2.5mm	Copper
AM6WTN	14mm	2.5mm	Copper

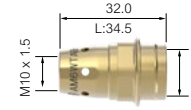
•AM6WCNR		30.5mm	Brass



Standard Series				
AM6WCT08	M10*35.5	0.8-0.030	CuCrZr	Wire Type Fe, Fe-FC/MC SS, SS-FC/MC upto 1.6mm
AM6WCT09	M10*35.5	0.9-0.035	CuCrZr	
AM6WCT10	M10*35.5	1.0-0.040	CuCrZr	
•AM6WCT12	M10*35.5	1.2-0.045	CuCrZr	
AM6WCT14	M10*35.5	1.4-0.055	CuCrZr	
AM6WCT16	M10*35.5	1.6-0.063	CuCrZr	
AM6WCT20	M10*35.5	2.0-0.080	CuCrZr	
A Series				
AM6WCT08A	M10*35.5	0.8-0.030	CuCrZr	Wire Type Aluminium SS, SS-FC/MC above 1.6mm
AM6WCT10A	M10*35.5	1.0-0.040	CuCrZr	
AM6WCT12A	M10*35.5	1.2-0.045	CuCrZr	
AM6WCT16A	M10*35.5	1.6-0.063	CuCrZr	
AM6WCT20A	M10*35.5	2.0-0.080	CuCrZr	

• Denotes torch package standard wear part set-up





	Length	Material	Recess	Transfer	Amps / Pulse
AM6WTAC-20	34.5mm	Copper	2.0mm	Short Circuit	<200A Low Current Pulse
•AM6WTAC-45	32.0mm	Copper	4.5mm	Spray	>200A High Current Pulse
AM6WTAB-20	34.5mm	Brass	2.0mm	Short Circuit	<200A Low Current Pulse
AM6WTAB-45	32.0mm	Brass	4.5mm	Spray	>200A High Current Pulse

•AM6WTAI

M6WP LINER OPTIONS

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Liners

Filler Metal Fe, Fe-MC / FC

Part No.	Description	Contact Tip	Wire Size mm	M6WP
AM6SL-1012-30	Steel Liner x 3mt	Standard Series	1.0-1.2	●
AM6SL-1012-40	Steel Liner x 4mt	Standard Series	1.0-1.2	●
AM6SL-1012-50	Steel Liner x 5mt	Standard Series	1.0-1.2	●
AM6SL-16-30	Steel Liner x 3mt	Standard Series	1.6	●
AM6SL-16-40	Steel Liner x 4mt	Standard Series	1.6	●
AM6SL-16-50	Steel Liner x 5mt	Standard Series	1.6	●
AM6SL-20-30	Steel Liner x 3mt	Standard Series	2.0	●
AM6SL-20-40	Steel Liner x 4mt	Standard Series	2.0	●
AM6SL-20-50	Steel Liner x 5mt	Standard Series	2.0	●

Filler Metal SS, SS-MC / FC - Recommended

Part No.	Description	Contact Tip	Wire Size mm	M6WP
AM6CL-1012-30	Combi-Liner x 3mt	Standard Series	1.0-1.2	●
AM6CL-1012-40	Combi-Liner x 4mt	Standard Series	1.0-1.2	●
AM6CL-1012-50	Combi-Liner x 5mt	Standard Series	1.0-1.2	●
AM6CL-1620-30	Combi-Liner x 3mt	A Series	1.6-2.0	●
AM6CL-1620-40	Combi-Liner x 4mt	A Series	1.6-2.0	●
AM6CL-1620-50	Combi-Liner x 5mt	A Series	1.6-2.0	●

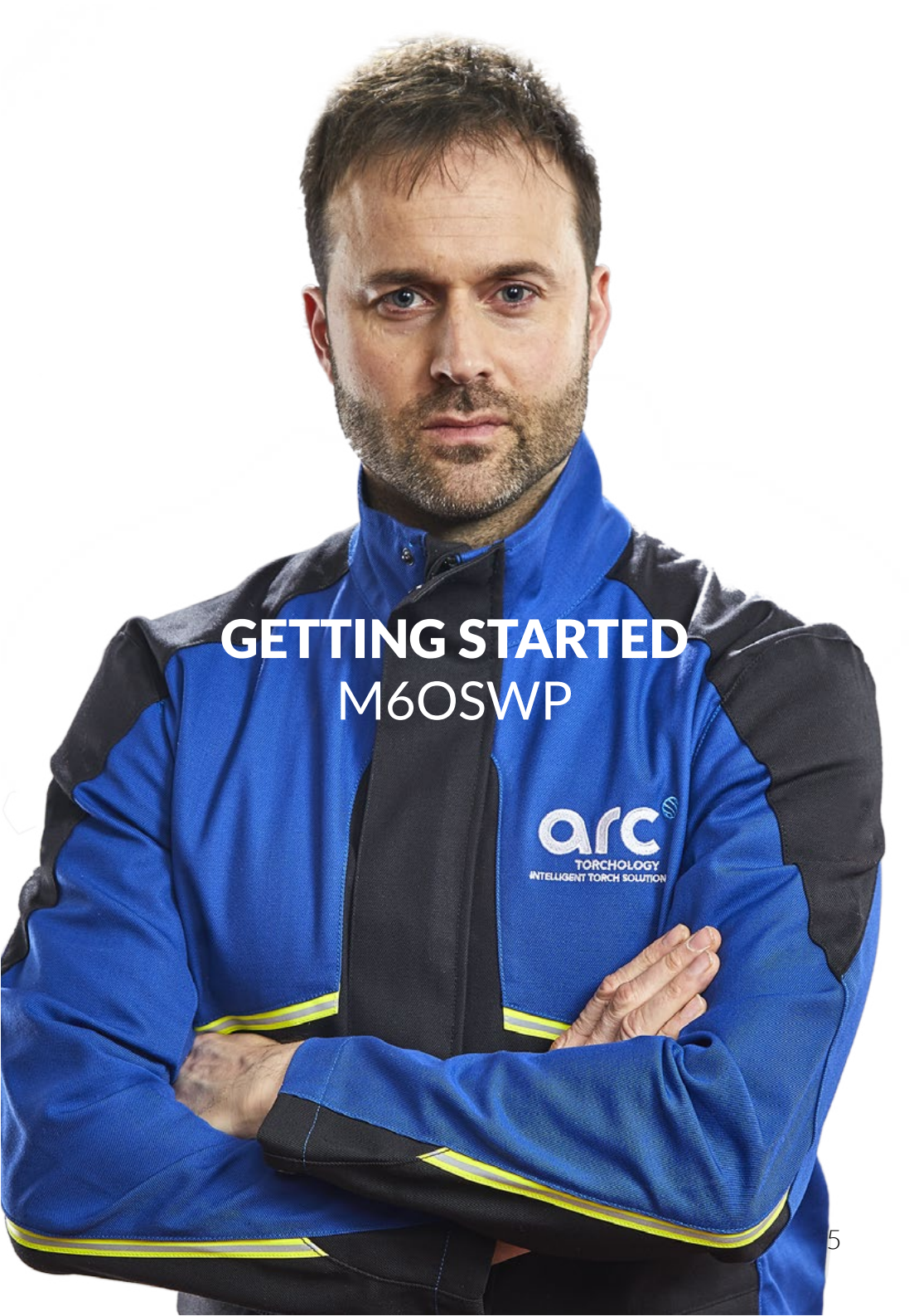
Filler Metal SS, SS-MC / FC - Alternate Option

Part No.	Description	Contact Tip	Wire Size mm	M6WP
AM6SSTL-1012-30	Stainless Steel Liner x 3mt	Standard Series	1.0-1.2	●
AM6SSTL-1012-40	Stainless Steel Liner x 4mt	Standard Series	1.0-1.2	●
AM6SSTL-1012-50	Stainless Steel Liner x 5mt	Standard Series	1.0-1.2	●
AM6SSTL-16-30	Stainless Steel Liner x 3mt	A Series	1.6	●
AM6SSTL-16-40	Stainless Steel Liner x 4mt	A Series	1.6	●
AM6SSTL-16-50	Stainless Steel Liner x 5mt	A Series	1.6	●

Filler Metal Al

Part No.	Description	Contact Tip	Wire Size mm	M6WP
AM6CL-1012-30	Combi-Liner x 3mt	A Series	1.0-1.2	●
AM6CL-1012-40	Combi-Liner x 4mt	A Series	1.0-1.2	●
AM6CL-1012-50	Combi-Liner x 5mt	A Series	1.0-1.2	●
AM6CL-1620-30	Combi-Liner x 3mt	A Series	1.6-2.0	●
AM6CL-1620-40	Combi-Liner x 4mt	A Series	1.6-2.0	●
AM6CL-1620-50	Combi-Liner x 5mt	A Series	1.6-2.0	●

● Standard wear part range ● Torch package standard wear part set-up



GETTING STARTED
M6OSWP

M6OSWP Liquid-Cooled Mig Welding Torch Optimized for Soft Wires

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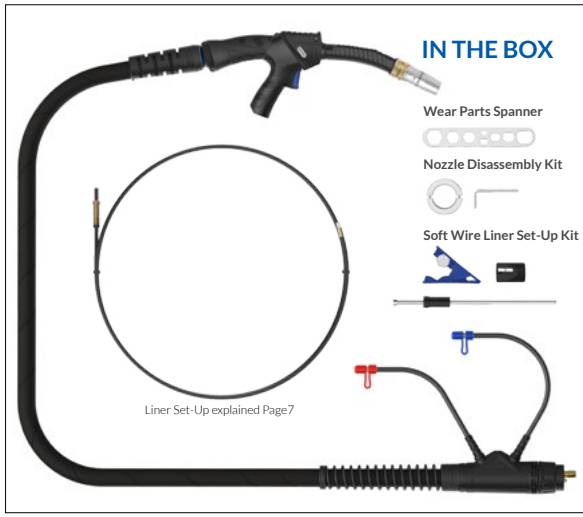
Ideal for large diameter soft wires and high deposition pulse Mig processes


Set-Up Guide


What is Arc


Safety Information



TECHNICAL SPECIFICATIONS

M6OSWP

IEC/EN 60974-7

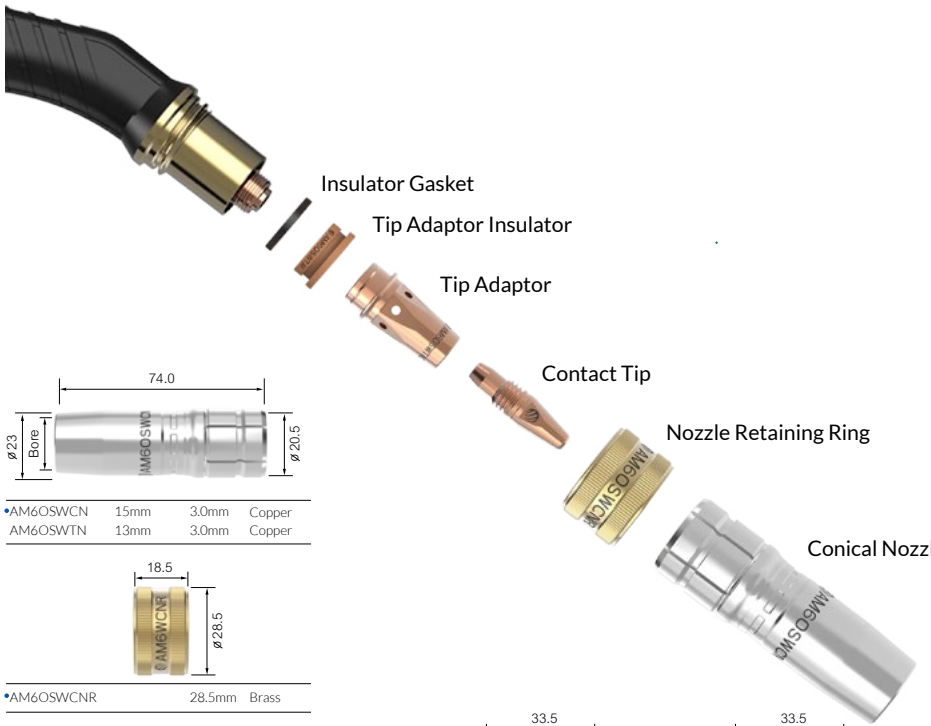
Cooling Method	Liquid-Cooled			
	Cooler Rating	Max. A	Pulse	Max. Load
Rating: CO_2	1600W	580A	-	25KW
	1200W	540A	-	23KW
Rating: Mixed Gas M21	1600W	560A	400A	24KW
	1200W	510A	360A	20KW
Duty Cycle		100%	100%	
Wire Size	Filler Wires	Fe, Fe-MC / FC		0.9-2.0mm
	Filler Wires	Ss, Ss-MC / FC		0.9-1.6mm
	Filler Wires	Al		1.0-2.0mm

Minimum Liquid Flow Rate	1.5 l/min	Low pressure will affect torch performance
Minimum Liquid Inlet Pressure	3.0 Bar	
Maximum Liquid Inlet Pressure	5.0 Bar	
Maximum Liquid Inlet Temperature	50°C	
Operating Temperature Range	-10...+40°C	

M6OSWP SET-UP GUIDE

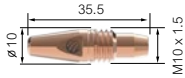
M6OSWP Torches are supplied “ready to weld” with all wear parts installed in accordance with the items listed below •

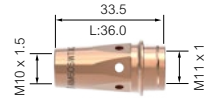
The liner for OSW models is supplied separately and must be fitted in accordance with the (Aluminium / Combi-Liner Set-Up) procedure outlined on Page 14.

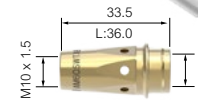


•AM6OSWCN	15mm	3.0mm	Copper
AM6OSWTN	13mm	3.0mm	Copper

•AM6OSWCNR		28.5mm	Brass







Standard Series				
AM6WCT08	M10*35.5	0.8-0.030	CuCrZr	Wire Type Fe, Fe-FC/MC SS, SS-FC/MC upto 1.6mm
AM6WCT09	M10*35.5	0.9-0.035	CuCrZr	
AM6WCT10	M10*35.5	1.0-0.040	CuCrZr	
AM6WCT12	M10*35.5	1.2-0.045	CuCrZr	
AM6WCT14	M10*35.5	1.4-0.055	CuCrZr	
AM6WCT16	M10*35.5	1.6-0.063	CuCrZr	
AM6WCT20	M10*35.5	2.0-0.080	CuCrZr	
A Series				
AM6WCT08A	M10*35.5	0.8-0.030	CuCrZr	Wire Type Aluminium SS, SS-FC/MC above 1.6mm
AM6WCT10A	M10*35.5	1.0-0.040	CuCrZr	
•AM6WCT12A	M10*35.5	1.2-0.045	CuCrZr	
AM6WCT16A	M10*35.5	1.6-0.063	CuCrZr	
AM6WCT20A	M10*35.5	2.0-0.080	CuCrZr	

• Denotes torch package standard wear part set-up

	Length	Material	Recess	Transfer	Amps / Pulse
•AM6OSWTAC-20	36.0mm	Copper	2.0mm	Short Circuit	<200A Low Current Pulse
AM6OSWTAC-45	33.5mm	Copper	4.5mm	Spray	>200A High Current Pulse
AM6OSWTAB-20	36.0mm	Brass	2.0mm	Short Circuit	<200A Low Current Pulse
AM6OSWTAB-45	33.5mm	Brass	4.5mm	Spray	>200A High Current Pulse

•AM6OSWTAI

•AM6OSWTAIG

M6OSWP LINER OPTIONS

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Liners

Filler Metal Al

Part No.	Description	Contact Tip	Wire Size mm	M6OSWP
AM6OSWL-1012-30	Soft Wire Liner x 3mt	A Series	1.0-1.2	●
AM6OSWL-1012-40	Soft Wire Liner x 4mt	A Series	1.0-1.2	●
AM6OSWL-1620-30	Soft Wire Liner x 3mt	A Series	1.6-2.0	●
AM6OSWL-1620-40	Soft Wire Liner x 4mt	A Series	1.6-2.0	●

Filler Metal Fe, Fe-MC / FC

Part No.	Description	Contact Tip	Wire Size mm	M6OSWP
AM6SL-1012-30	Steel Liner x 3mt	Standard Series	1.0-1.2	●
AM6SL-1012-40	Steel Liner x 4mt	Standard Series	1.0-1.2	●
AM6SL-16-30	Steel Liner x 3mt	Standard Series	1.6	●
AM6SL-16-40	Steel Liner x 4mt	Standard Series	1.6	●
AM6SL-20-30	Steel Liner x 3mt	Standard Series	2.0	●
AM6SL-20-40	Steel Liner x 4mt	Standard Series	2.0	●

Filler Metal SS, SS-MC / FC - Recommended

Part No.	Description	Contact Tip	Wire Size mm	M6OSWP
AM6CL-1012-30	Combi-Liner x 3mt	Standard Series	1.0-1.2	●
AM6CL-1012-40	Combi-Liner x 4mt	Standard Series	1.0-1.2	●
AM6CL-1620-30	Combi-Liner x 3mt	A Series	1.6-2.0	●
AM6CL-1620-40	Combi-Liner x 4mt	A Series	1.6-2.0	●

Filler Metal SS, SS-MC / FC - Alternate Option

Part No.	Description	Contact Tip	Wire Size mm	M6OSWP
AM6SSTL-1012-30	Stainless Steel Liner x 3mt	Standard Series	1.0-1.2	●
AM6SSTL-1012-40	Stainless Steel Liner x 4mt	Standard Series	1.0-1.2	●
AM6SSTL-16-30	Stainless Steel Liner x 3mt	A Series	1.6	●
AM6SSTL-16-40	Stainless Steel Liner x 4mt	A Series	1.6	●

● Standard wear part range ● Torch package standard wear part set-up

HARD WIRE LINER SET–UP

Fe, Fe-MC/FC
SS, SS-MC/FC

HARD WIRE LINER SET-UP

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Preparing the Torch and Fitting the Liner

Prepare the Torch

Step 1

Lay the torch out flat and straight

- Remove the nozzle.
- Remove the contact tip and tip adaptor.
- Remove the liner retaining nut, twist and pull out the old liner if necessary.

Important:
Liners should not be fitted if the torch is bent or coiled

Install the New Liner

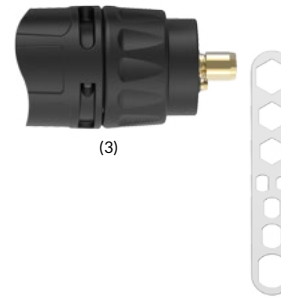
Step 2

- Feed in the new liner in short strokes of 20cm per time.
- Twist the handle if the liner sticks when feeding the liner through the swan neck.
- Continue to feed until the liner is inside gun plug body.
- Fit liner nut. The torque is about 2.5Nm.

Important:
Do not use a kinked liner

(1)

(2)



(3)

Install the New Liner, Cont.

Step 3

- Gently push the liner towards swan neck.
- Cut the excess liner so the liner sticks out of swan neck front is about 5mm.
- Remove sharp burr from any internal and external surfaces from liner front-end with a file or a grinder.

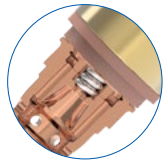
✓	X Sharp edge Bore is partly blocked

Important:
The inner bore of the liner must be totally cylindrical and burr free.
Remove any external overhanging material prior to fitting the tip adaptor.

Install the New Liner, Cont.

Step 4

- Refit the tip adaptor.
- The liner front-end sits inside the tip adaptor as shown in Figure A.



Section A

A

Important:
The liner should always remain under tension within the torch.

HARD WIRE LINER SET-UP

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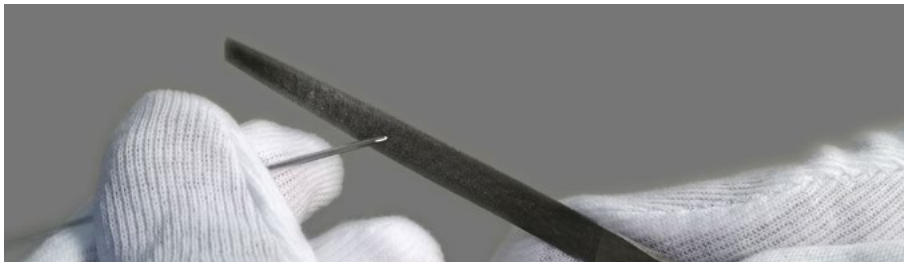
Feeding Wire Through the Torch

Preparing the Wire

Step 1

- Inch the wire out through the machine by 15-20cm. Using a file remove all sharp burrs from the leading edge of the filler metal.
- Feed the wire directly into the torch liner, carefully pulling the torch towards the machine if necessary.
- Mount the torch to the machine or feed unit



Feeding the Wire Through the Torch

Step 2

- Slowly inch the wire through the torch until it appears at the end of the tip adaptor.
- Feed the wire through the tip being careful not to scratch the bore.
- Tighten the contact tip and refit the nozzle.

You are ready to weld!

SOFT WIRE / COMBI-LINER SET–UP

SOFT WIRE / COMBI-LINER SET–UP

The Arc M – OSW series Mig torches have been specifically developed for aluminium wires and aluminium pulse welding applications.

The OSW models have been “fine tuned” in every aspect to provide the most reliable performance and weld quality.

The correct fitting of your soft-wire liner is essential.

The OSW Series torches can also be used for “hard-wire” application where accessability is limited and spatter accumulation is less important.

Please Note:

The Arc Combi-Liner systems have been developed to pick up the filler metal directly at the drive rolls and deliver it directly to the contact tip.

The outside dimension of the liner is 5.0mm and is the same dimension as the inside of the brass wire guide tube fitted to the machine/feed unit.

It may be necessary to remove any old wire guides used to support smaller OD liners prior to fitting the Arc M OSW torch.

SOFT WIRE / COMBI-LINER SET–UP

TORCHOLOGY
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Preparing the Torch and Fitting the Liner

Prepare the Torch **Step 1**

Lay the torch out flat and straight

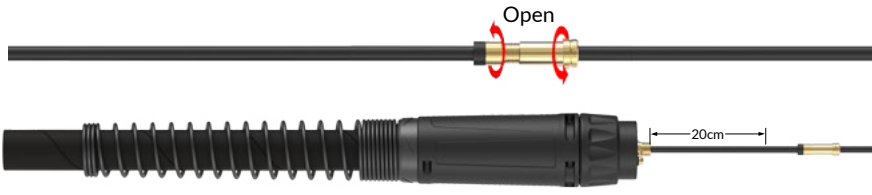
- Remove the nozzle.
- Remove the contact tip.
- Remove the liner retaining nut, twist and pull out the old liner if necessary.

Important:
Liners should not be fitted if the torch is bent or coiled.

Install the New Liner **Step 2**

- Open the liner collet by twisting the two halves.
- Feed in the new liner in short strokes of 20cm per time.
- Twist the handle if the liner sticks when feeding the liner through the swan neck.
- Continue to feed until the liner nipple can be seen through the holes on the tip adaptor as shown in Figure A.

Important:
Do not use a kinked liner.



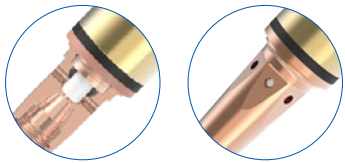


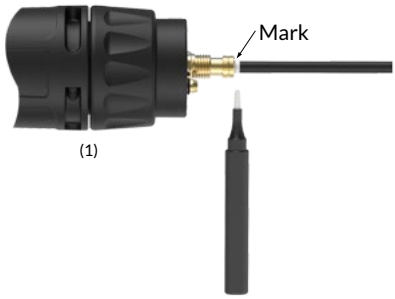
Figure A Detail A

SOFT WIRE / COMBI-LINER SET–UP

Install the New Liner, Cont.

Step 3

- Ensure the liner is under slight compression within the torch conduit and the front nipple can be seen through the tip adaptor holes. Mark the position at the rear of the liner nipple (Figure 1).
- Retract the liner back slightly and position the collet by tightening it to the liner at the marked position (Figure 2).
- Reposition and tighten the liner retaining nut (Figure 3).



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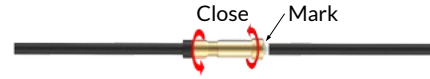

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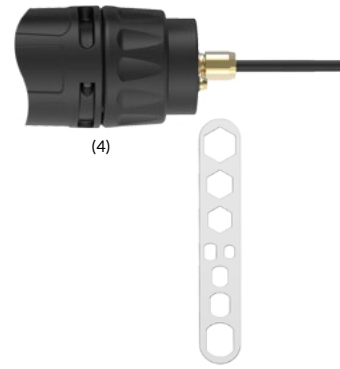
(3)



(4)

SOFT WIRE / COMBI-LINER SET–UP

Preparing the Machine to Fit the Torch

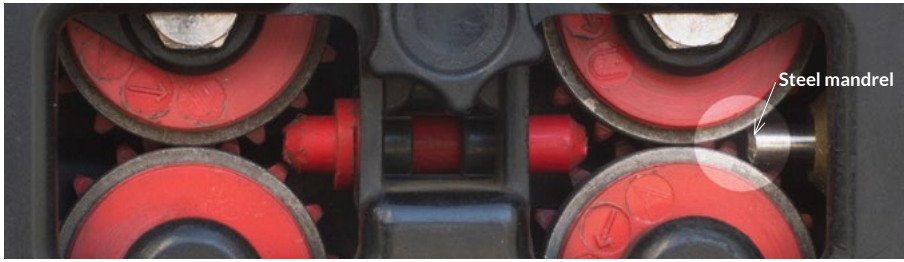
Measuring the Distance to the Drive Rolls **Step 1**

- Remove the old wire guide from the machine / wire feed unit if necessary.
- Insert the liner measuring jig supplied into the machine Euro socket as shown.

- Ensure there is no gap between the shoulder of the plastic gauge and the machine Euro socket.

Using the Liner Measuring Jig, Cont. **Step 2**

- Gently push the steel mandrel until the front-end touches the wire feed rollers.
- Remove the Jig from the machine ensuring there is no movement between the plastic gauge and the mandrel.



SOFT WIRE / COMBI-LINER SET–UP

Cutting and Trimming the Liner

Step 3

- Offer the liner to the Jig and mark the point at the face of the plastic gauge.
- Cut the liner with the liner cutter provided.
- Use the liner sharpener provided to sharpen the leading edge of the liner.
- The sharpener is preset to the correct angle.

Important
The inner bore of the liner must be totally cylindrical and burr free.

Remove any overhanging material from the bore prior to installation.

The Correct Set-up

Step 4

- Refit the torch to the machine and tighten the torch lock nut slowly, being mindful of the interface between the end of the liner and the drive rolls.
- The liner should now sit close to the drive rolls.

SOFT WIRE / COMBI-LINER SET–UP

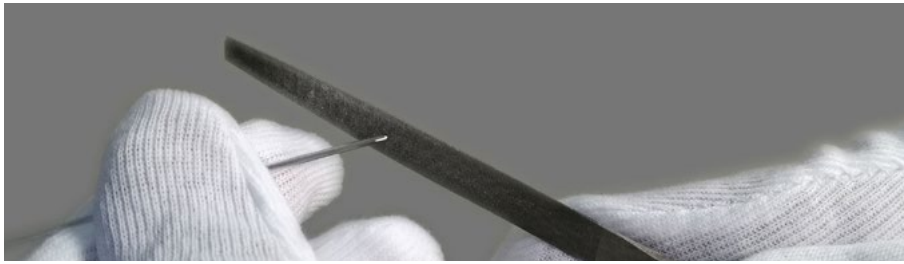
Feeding Wire Through the Torch

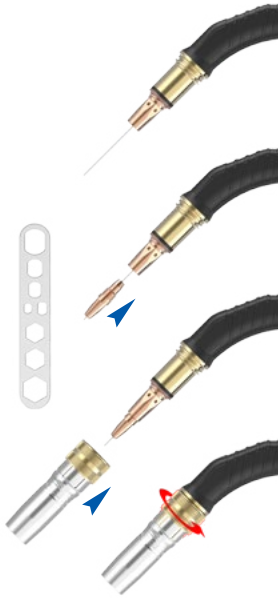
Important:
Remove the torch from the machine / feed unit

Step 1

Preparing the Wire

- Inch the wire out through the machine by 15-20cm. Using a file remove all sharp burrs from the leading edge of the filler metal.
- Feed the wire directly into the torch liner, carefully pulling the torch towards the machine if necessary.
- Mount the torch to the machine or feed unit.





Feeding the Wire Through the Torch

Step 2

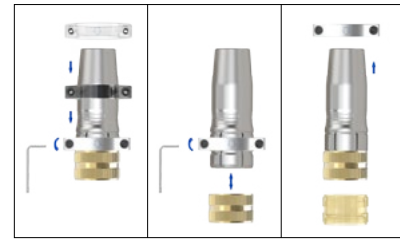
- Slowly inch the wire through the torch until it appears at the end of the tip adaptor.
- Feed the wire through the tip being careful not to scratch the bore.
- Tighten the contact tip and refit the nozzle.

You are ready to weld!

TIPS ON CARE AND MAINTENANCE

Spatter Removal
Remove spatter from all external and internal surfaces. Regularly apply anti-spatter spray.

Nozzle Wear
In the event that the nozzle needs replacing, use the nozzle tool provided to remove the retaining ring. Reassemble the ring on a new nozzle.



Contact Tip Wear
Replace worn contact tips.

Tip Adaptor and Insulator Wear M6OSWP
The tip adaptor and its insulator “snap fit” together. Replace either worn item or the complete assembly.

OSW systems have an additional gas sealing gasket. Replace if necessary

M6WP M6OSWP

TIPS ON CARE AND MAINTENANCE

TORCHOLOGY
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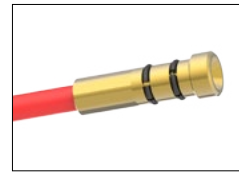
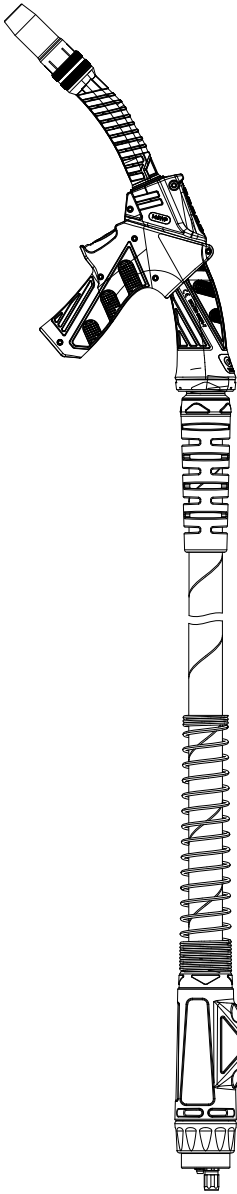
Every Wire Change
Remove the wear parts and clean the liner by blowing it out with clean dry compressed air.

Every Liner Change
Check all liner and gun body 'O' Rings for signs of damage or wear. Replace if necessary.



WATER FLOW, COOLING POWER AND TORCH PERFORMANCE



Torch Performance depends on both water flow and cooler capacity.

To measure water flow

- Connect torch as per illustration
- Measure the water after 60 seconds

Arc M6WP/M6OSWP Ratings

CO_2 @100 Duty Cycle

Coolant Capacity	Flow Rate	
	1.5 l/min	1.2 l/min
1600W Cooler	580A	550A
1200W Cooler	540A	415A
1000W Cooler	490A	470A

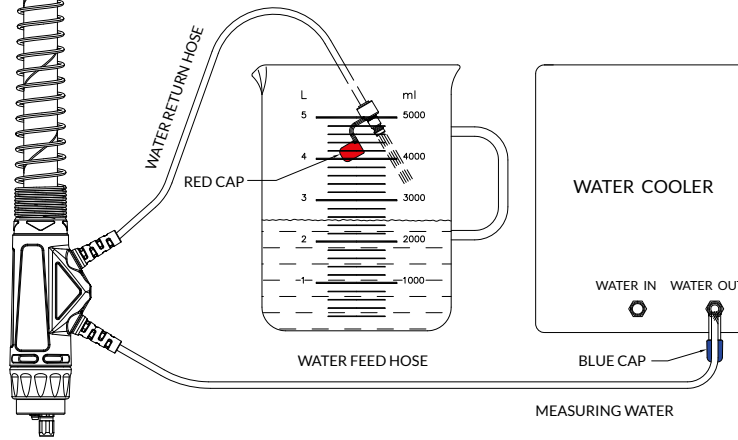
Mixed Gas M21 @100 Duty Cycle

Coolant Capacity	Flow Rate	
	1.5 l/min	1.2 l/min
1600W Cooler	560A	530A
1200W Cooler	510A	480A
1000W Cooler	470A	450A

Note: Indicative performance on 4m length torches

Flow rates and pump pressures

It is important to follow guidelines on minimum inlet pressures and coolant flow rates in order to maximize torch performance.



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