

**SET-UP AND
MAINTENANCE GUIDE**
Auto Liquid-Cooled Series

ARC M AUTO LIQUID-COOLED SERIES

Contents

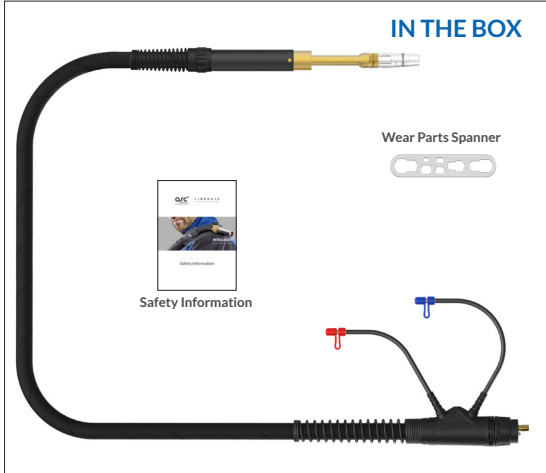
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M5WA Liquid-Cooled Mig Welding Torch



MAKE WORK
LIFE EASIER

Ideal for heavy duty 1.2mm high deposition and pulse applications with all wire types



TECHNICAL SPECIFICATIONS

M5WA

IEC/EN 60974-7

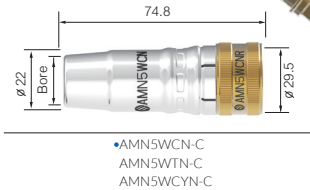
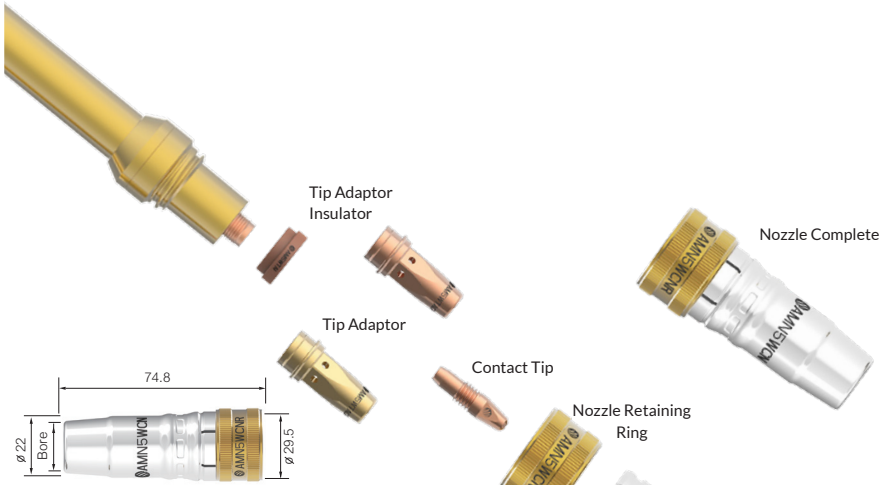
Cooling Method	Liquid-Cooled			
	Cooler Rating	Max. A	Pulse	Max. Load
Rating: CO ₂	1600W	560A	-	24KW
	1200W	540A	-	22KW
	1000W	510A	-	20KW
Rating: Mixed Gas M21	1600W	540A	380A	22KW
	1200W	520A	350A	21KW
	1000W	500A	340A	19,5KW
Duty Cycle		100%	100%	
Wire Size	Filler Wires	Fe, Fe-MC / FC		0.9-1.6mm
	Filler Wires	Ss, Ss-MC / FC		0.9-1.6mm
	Filler Wires	Al		1.0-1.6mm
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		

M5WA SET-UP GUIDE

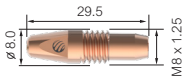


MAKE WORK
LIFE EASIER

M5WA Torches are supplied "ready to weld" with all wear parts installed in accordance with the items listed below



	68.1		
	22		20.5
	Bore		
•AMN5WCN	13.5mm	3.0mm	Copper
AMN5WTN	11.5mm	3.0mm	Copper
AMN5WCYN	16.0mm	3.0mm	Copper



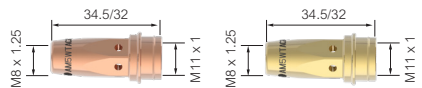
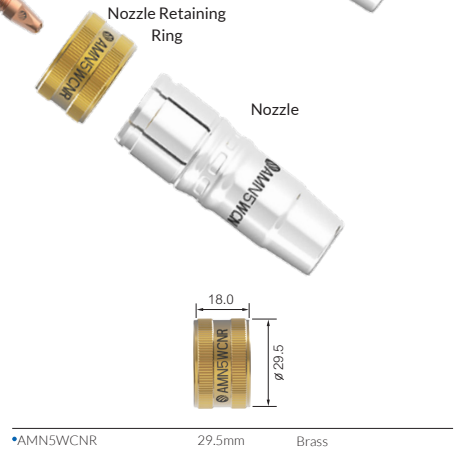
Standard Series

AM5CT09	M8*29.5	0.9-0.035	CuCrZr	Wire Type Fe, Fe-FC/MC SS, SS-FC/MC upto 1.2mm
AM5CT10	M8*29.5	1.0-0.040	CuCrZr	
•AM5CT12	M8*29.5	1.2-0.045	CuCrZr	
AM5CT14	M8*29.5	1.4-0.055	CuCrZr	
AM5CT16	M8*29.5	1.6-0.063	CuCrZr	

A Series

AM5CT10A	M8*29.5	1.0-0.040	CuCrZr	Wire Type Aluminium SS, SS-FC/MC 1.6mm
AM5CT12A	M8*29.5	1.2-0.045	CuCrZr	
AM5CT16A	M8*29.5	1.6-0.063	CuCrZr	
AM2CT10A	M8*29.5	1.0-0.040	Copper	
AM2CT12A	M8*29.5	1.2-0.045	Copper	

• Denotes torch package standard wear part set-up



	Length	Material	Tip Recess
•AM5WTAC-20	34.5mm	Copper	2.0mm
AM5WTAC-45	32mm	Copper	4.5mm
AM5WTAB-20	34.5mm	Brass	2.0mm
AM5WTAB-45	32mm	Brass	4.5mm

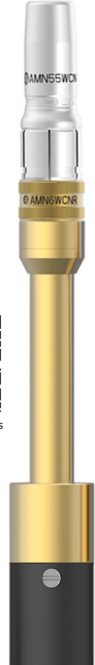
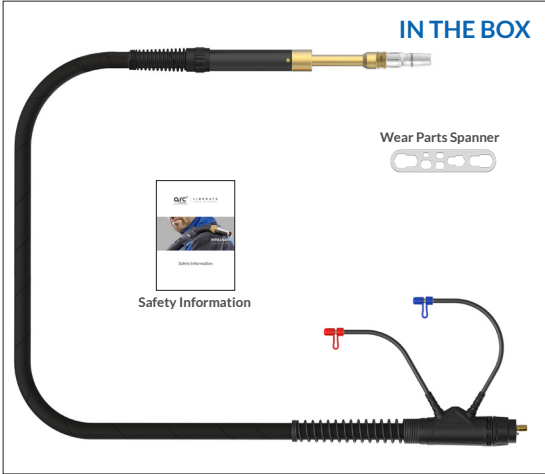


M65WA Liquid-Cooled Mig Welding Torch



MAKE WORK
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A double circuit Liquid-Cooled Auto torch ideal for continuous use at high amperages.
Suitable for high deposition, pulse and larger wire sizes.



TECHNICAL SPECIFICATIONS

M65WA Auto

IEC/EN 60974-7

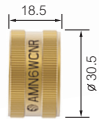
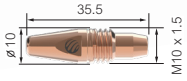
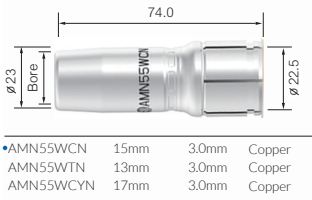
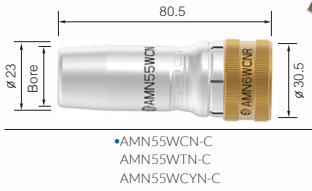
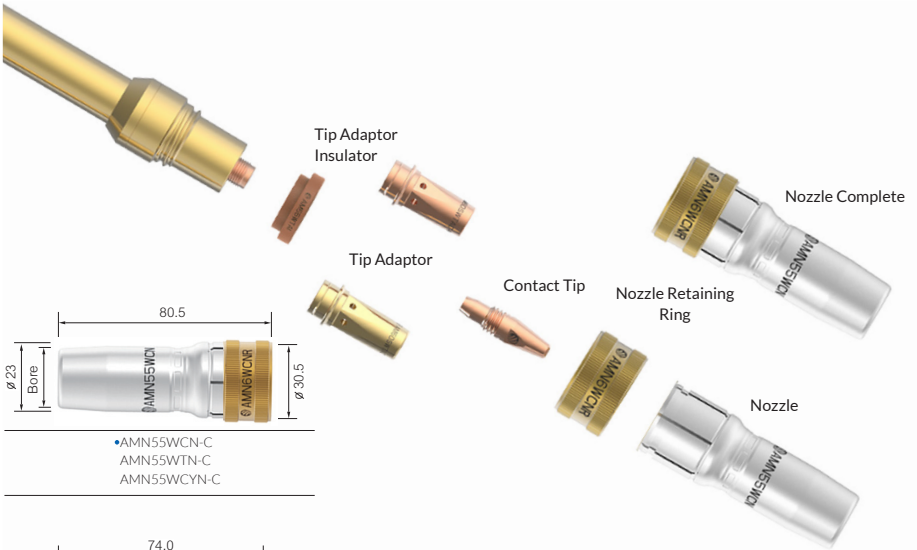
Cooling Method	Liquid-Cooled			
	Cooler Rating	Max. A	Pulse	Max. Load
Rating: CO ₂	1600W	580A	-	25KW
	1200W	550A	-	23KW
	1000W	520A	-	21KW
Rating: Mixed Gas M21	1600W	560A	400A	23KW
	1200W	530A	360A	21.5KW
	1000W	510A	350A	20KW
Duty Cycle		100%	100%	
Wire Size	Filler Wires	Fe, Fe-MC / FC		0.9-2.0mm
	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		Important: Please note minimum inlet pressure and flow rate. Low pressure will affect torch performance	
Minimum Liquid Inlet Pressure	2.5Bar			
Maximum Liquid Inlet Pressure	5.0 Bar			
Maximum Liquid Inlet Temperature	50°C			
Operating Temperature Range	-10...+40°C			

M65WA SET-UP GUIDE

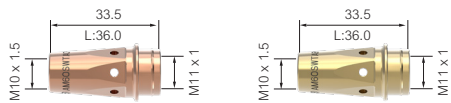


MAKE WORK
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M65WAWA Torches are supplied 'ready to weld' with an M10 set-up in accordance with the items listed below



•AMN6WCNR	30.5mm	Brass
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Standard Series

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

Wire Type
Fe, Fe-FC/MC
SS, SS-FC/MC
upto 1.2mm

A Series

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
AMC6WCT10A	M10*35.5	1.0-0.040	Copper
AMC6WCT12A	M10*35.5	1.2-0.045	Copper

Wire Type
Aluminium
SS, SS-FC/MC
1.6mm

	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



•AM55WTAI

• Denotes torch package standard wear part set-up

LINER OPTIONS



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Liners

Filler Metal

Steel Liner Recommended for: Fe, Fe-MC/FC. Light and medium duty applications

M5WA Auto
M65WA Auto

Part No.	Description	Contact Tip	Wire Size mm		
AM6SL-1012-20	Steel Liner x 2mt	Standard Series	1.0-1.2	●	●
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-16-20	Steel Liner x 2mt	Standard Series	1.6	●	●
AM6SL-16-30	Steel Liner x 3mt	Standard Series	1.6	●	●
AM6SL-16-40	Steel Liner x 4mt	Standard Series	1.6	●	●
AM6SL-20-20	Steel Liner x 2mt	Standard Series	2.0	●	●
AM6SL-20-30	Steel Liner x 3mt	Standard Series	2.0	●	●
AM6SL-20-40	Steel Liner x 4mt	Standard Series	2.0	●	●

Filler Metal

Stainless Steel Liner Recommended for: SS, SS-MC/FC. Heavy Duty Fe. High amperages and heavy deposition welding

Part No.	Description	Contact Tip	Wire Size mm		
AM6SSTL-1012-20	Stainless Steel Liner x 2mt	Standard Series	1.0-1.2	●	●
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-16-20	Stainless Steel Liner x 2mt	A Series	1.6	●	●
AM6SSTL-16-30	Stainless Steel Liner x 3mt	A Series	1.6	●	●
AM6SSTL-16-40	Stainless Steel Liner x 4mt	A Series	1.6	●	●

Filler Metal

Al - Combi Liner Recommended for: Liquid-Cooled torches with AlMg and frequent /repetitive arc starts

Part No.	Description	Contact Tip	Wire Size mm		
AM6CL-1012-20	Combi-Liner x 2mt	A Series	1.0-1.2	●	●
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-1620-20	Combi-Liner x 2mt	A Series	1.6	●	●
AM6CL-1620-30	Combi-Liner x 3mt	A Series	1.6	●	●
AM6CL-1620-40	Combi-Liner x 4mt	A Series	1.6	●	●

Filler Metal

Al - Soft Wire Liner Recommended for: Liquid-Cooled torches with AlMg, AlSi, Pure Al and copper wires

Part No.	Description	Contact Tip	Wire Size mm		
AM6OSWL-1012-20	Soft Wire Liner x 2mt	A Series	1.0-1.2	●	●
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 2mt	A Series	1.6-2.0	●	●
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	●	●

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

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. (Figure 1)
- Twist the handle if the liner sticks when feeding the liner through the swan neck. (Figure 2)
- Continue to feed until the liner nipple is inside gun plug body.
- Fit liner nut. The torque is about 2.5N·m. (Figure 3)

Important:

Do not use a kinked liner



Figure 1



Figure 2

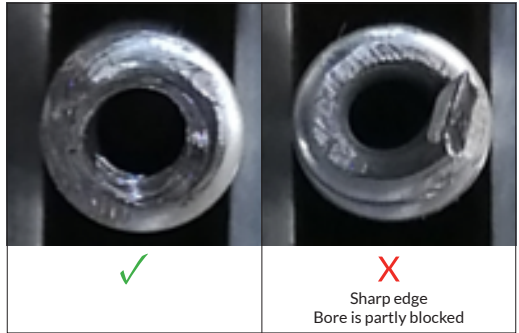
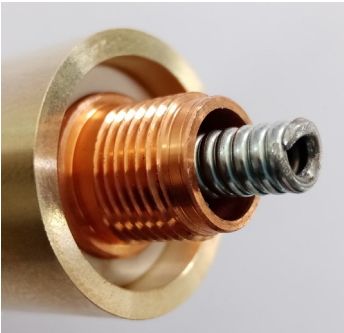


Figure 3

Install the New Liner, Cont.

Step 3

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



Important:

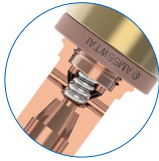
The inner bore of the liner must be totally cylindrical and burr free.

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



Figure A

Important:

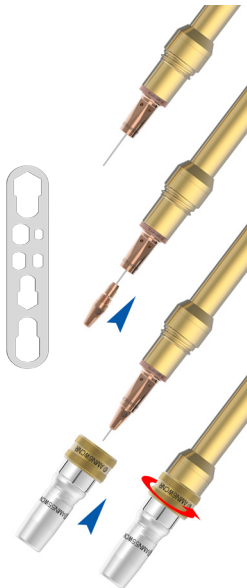
The liner should always remain under light tension within the torch.

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



MAKE WORK
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The correct fitting of your soft wire liner is essential.



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 soft wire liner.

SOFT WIRE / COMBI LINER SET-UP

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.

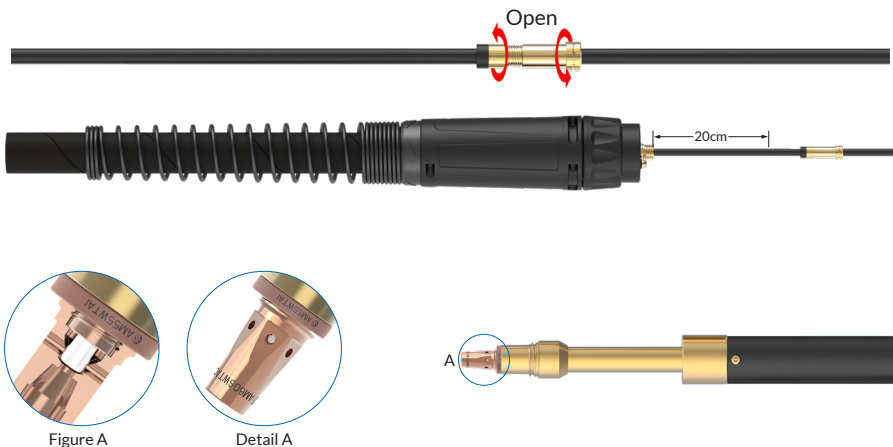
Install the New Liner

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 front nipple can be seen through the holes on the tip adaptor as shown in Figure A.

Important:

Do not use a kinked liner.



SOFT WIRE / COMBI LINER SET-UP



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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).

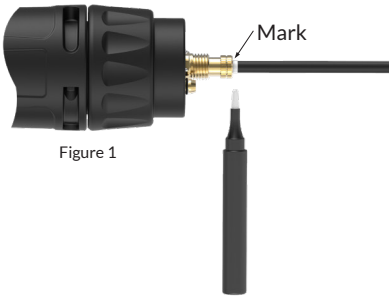


Figure 1

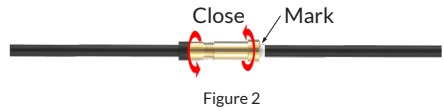


Figure 2

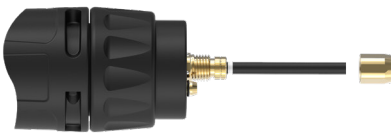


Figure 3



SOFT WIRE / COMBI LINER SET-UP



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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.



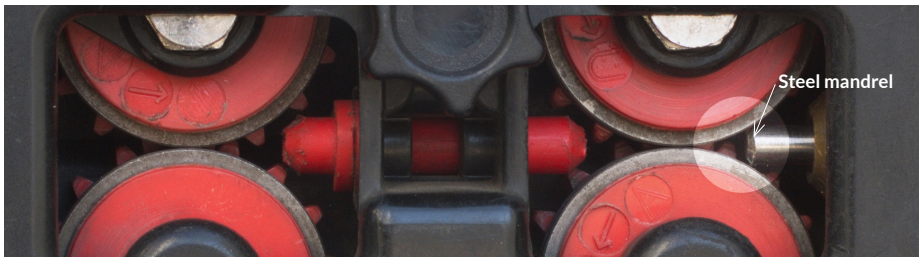
- Ensure there is no gap between the shoulder of the plastic gauge and the machine Euro socket.



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.



Important:

The back end of the liner should be close to the drive rolls without touching them.

SOFT WIRE / COMBI LINER SET-UP



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Feeding Wire Through the Torch

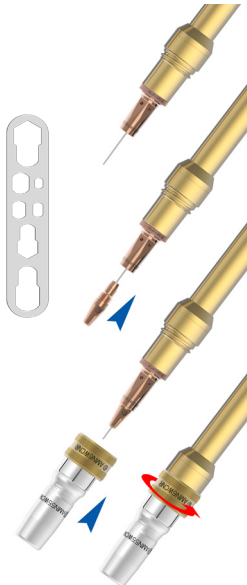
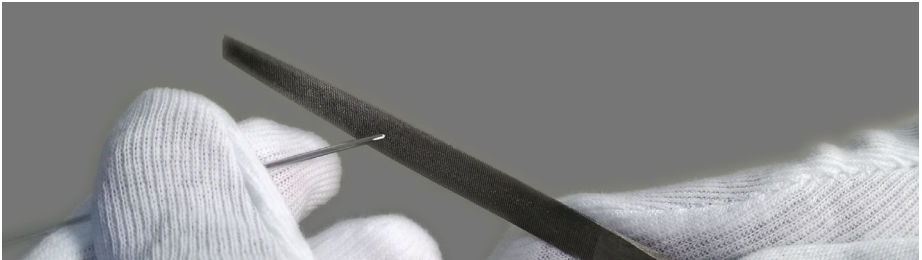
Important:

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



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Spatter Removal

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



Nozzle Insulation Wear

In the event that shorting out or burn marks appear on the tip adaptor or nozzle surfaces it is a sign that the internal nozzle insulation has worn away.
Replace the nozzle immediately.



Nozzle Wear

In the event that the nozzle needs replacing, pull and remove the retaining ring.
Reassemble the ring on a new nozzle.



Contact Tip Wear

Replace worn contact tips.



Tip Adaptor and Insulator Wear

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



TIPS ON CARE AND MAINTENANCE



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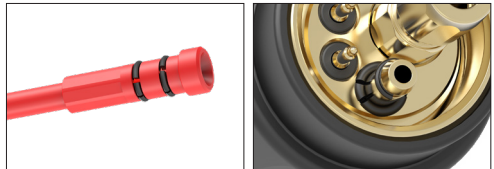
Every Wire Change

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

Blow from the torch front to the torch back-end. Make sure you wear eye protection.

Every Liner Change

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



M5WA WATER FLOW, COOLING POWER AND TORCH PERFORMANCE



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Torch Performance depends on both water flow and cooler capacity.

To measure water flow

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

Arc M5W Ratings

CO₂ @100 Duty Cycle

Coolant Capacity	Flow Rate	
	1.5 l/min	1.2 l/min
1600W Cooler	560A	530A
1200W Cooler	540A	510A
1000W Cooler	510A	485A

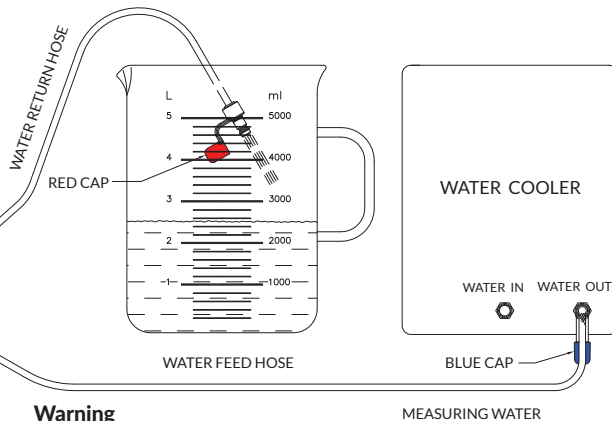
Mixed Gas M21 @100 Duty Cycle

Coolant Capacity	Flow Rate	
	1.5 l/min	1.2 l/min
1600W Cooler	540A	510A
1200W Cooler	520A	490A
1000W Cooler	500A	470A

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.



Warning

We recommend the use of a flow switch which will disable the torch in event of low flow / no flow.

M65WA WATER FLOW, COOLING POWER AND TORCH PERFORMANCE



MAKE WORK LIFE EASIER



Torch Performance depends on both water flow and cooler capacity.

To measure water flow

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

Arc M65WA Ratings

CO₂ @100 Duty Cycle

Coolant Capacity	Flow Rate	
	1.5 l/min	1.2 l/min
1600W Cooler	580A	550A
1200W Cooler	550A	530A
1000W Cooler	520A	500A

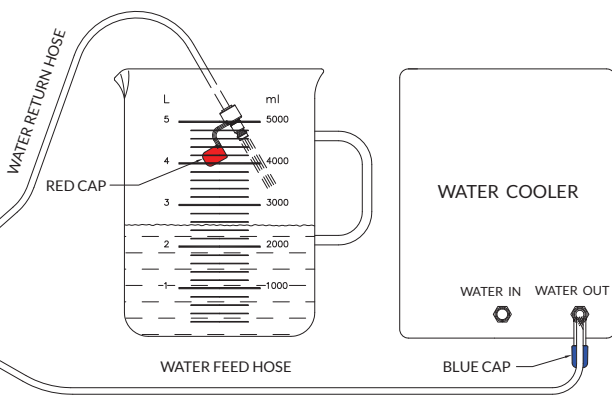
Mixed Gas M21 @100 Duty Cycle

Coolant Capacity	Flow Rate	
	1.5 l/min	1.2 l/min
1600W Cooler	560A	530A
1200W Cooler	530A	490A
1000W Cooler	510A	470A

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.



Warning

We recommend the use of a flow switch which will disable the torch in event of low flow / no flow.

MEASURING WATER



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