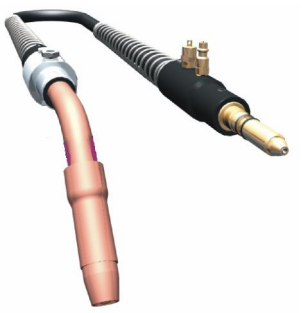
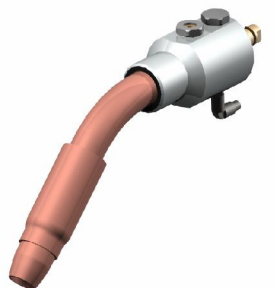
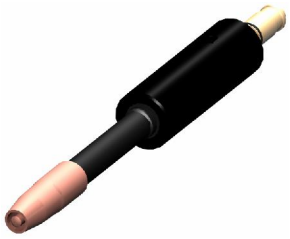
MAINTENANCE INSTRUCTIONS

ALL WIRE FEED ARC WELDING PRODUCTS







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About Us

Since 1994, PAC-MIG, Inc. has manufactured a patented line of GMAW guns and accessories cooled by a controlled flow of compressed/shop air. Our Mig guns are designed to replace water-cooled and hot running standard air-cooled Mig guns.

PAC-MIG specializes in robotic and automatic applications and also manufactures a full line of hand held or semi-automatic equipment as well. All Mig guns can be ordered with direct wire feed connections for most wire feeders on the market.

At PAC-MIG, we take pride in the fact that we will work with you to develop or duplicate any special arc welding gun accessory. “Your special is our standard.”

All Pac-Mig guns can be ordered to match existing mount diameters, conductor tube angles and lengths to minimize reprogramming.

For 15 years, PAC-MIG has outperformed both standard air-cooled and water-cooled torches with our patented technology. We guarantee a minimum of 20% increase in consumable life, which leads to increased welding productivity, when switching to our torches.

The cooler you keep the gun, the longer your front-end parts will last. Heat build-up leads to downtime. PAC-MIG will decrease your downtime and increase your profits.

“Cool Under Pressure.”
The PAC-MIG Advantage.

Heat Buildup = Down-time

The major or number 1 cause of downtime in wire feed arc-welding production is heat absorption in the front end of the gun. What makes one arc-welding Mig gun out perform another of the same amp rating? ***It all boils down to heat dissipation***. In every situation with all other parameters the same, i.e. Liners, Copper Content, Electrical Connection and Shielding Gas Flow or Coverage, the arc welding Mig gun that runs the coolest or dissipates the reflective heat from the arc the best will be the most productive from arc start to arc stop.

The main factor that restricts arc on time in most situations is extreme heat absorption at the front end of the Mig gun. The inability to effectively dissipate this extreme reflective heat will always take a toll on arc weld deposition as far as contact tip, gas diffuser, nozzle and conductor tube life is concerned. The more the heat builds up and is held in the front end of the Mig gun, the more electrical energy is required to process the weld. This usually results in premature stoppage of the arc welding process. The hotter the front-end gun parts become, the more spatter and particulate sticks to the tip, nozzle and diffuser. This causes the weld process to stop and if it is a robotic application, the result is more frequent cycles to the clean-out station.

We do one major thing differently at PAC*MIG™. We use a controlled flow of air to move and continually dissipate this extreme heat from the welding Mig gun. We believe that with our patented heat dissipation technology, we do this better and with less production problems than our competition. The next time you are in the market for robotic wire feed arc-welding Mig gun, please ask yourself one question. How is the robotic Mig gun dissipating this extreme reflective heat that is absorbed into the front end parts from the welding process?

PACMIG
PRESSURIZED AIR-COOLED ROBOTIC & AUTOMATIC MIG GUN MAINTENANCE INSTRUCTIONS

General Maintenance Items:
Cooling Air: **Shop air regulated at 60-80 PSI** is used for cooling air.
Nozzle: (#1) All PACMIG nozzles are threaded nozzles. These should be removed periodically cleaned and inspected for wear or damage. Any nozzle with damage to the insulation should be replaced.
Contact Tip: (#2) Contact tips should always be installed wrench tight. Tips should be replaced when wear is noticeable in the tip I.D. Robotic and automatic applications should plan tip changes at intervals based on wire usage and tip wear to avoid down time.
Diffusers: (#3) Diffusers should always be installed wrench tight. Diffusers should be cleaned and checked to ensure that all gas holes are free of spatter when ever the nozzle is removed. Replace any diffuser that has excessive wear to the threads that hold the contact tip.
Conductor Tubes: (#4) It is recommended that before installation of a new gun or any replacement conductor tube that the conductor tube be checked on the RAT check fixture for proper alignment. This will ensure that the conductor tube is aligned and that it will match the required TCP. Conductor tubes should be inspected periodically for wear to the nozzle threads also inspect the front o-ring. This o-ring should be replaced if showing any signs of wear. On pressurized air-cooled conductor tubes check for cooling air flow out of the ports at the front of the outer sleeve. To remove the conductor tube from the front case, loosen the 3/16 hex set screw in the front retainer nut as shown by the arrow in Figure 1. Pull the tube straight out of the case. When reinstalling the tube, align the keyway in the tube with the key in the conductor block.

Figure 1

Conduit Liners: Liners should be replaced on a periodic bases based on wire usage. This can only be determined from history of a given application.
To replace a conduit liner:

1. Ensure that the power source and robot is shut off and /or disconnected from its power supply.

2. Release the drive roll pressure.
3. Remove the welding wire from the liner by either rewinding it onto the wire reel or cutting it at the drive rolls and pulling out of the gun.
4. Disconnect the Mig Gun's rear connector plug from the feeder drive rolls.
5. Loosen the conduit set screw in the rear connector plug. For Miller plugs remove the bullet end.
6. Remove the conduit liner by pulling it out of the rear connector plug of the cable assembly.
7. Before attempting to install a new conduit liner, remove the nozzle, contact tip, and diffuser.
8. Keeping the cable assembly in as straight line as possible, install the new conduit into the rear connector plug. Use a short pushing action. If the conduit liner tends to hang up twist the conduit in a counterclockwise direction while continuing to push.
9. When the conduit liner is completely through the gun, press the conduit stop w/o-ring tightly against the rear connector plug and tighten the 8/32 conduit set screw. Install the bullet on Miller plugs.
10. Reinstall the rear connector plug into the wire feeder.
11. Trim the conduit ½ to ¾ in. from the end of the conductor tube (See Figure 2). Deburr the cut end of the conduit with a file making sure that all burrs are removed.

Figure 2

12. Install the diffuser and contact tip and tighten with a wrench.
13. Thread wire through drive rolls and into conduit liner 1 to 2 feet by hand. Continue to feed wire with inch button on feeder until it clears the contact tip. Install nozzle.

Mig Gun Disassembly and Assembly

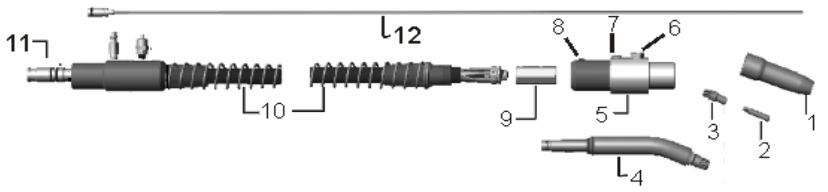
To replace Mig Gun components and/or repair components of the Mig Gun follow these steps:

Front Case Assembly (Figure 3)

1. Remove the Mig Gun from the wire feeder and the robot or automated fixture. Lay the Mig Gun out in a straight line.
2. Remove the nozzle (#1), contact tip (#2), and diffuser (#3).

Figure 3

3.



Loosen the 8/32 set screw in the rear connector plug (#11)

4. Remove the conduit liner (#12) by pulling it out of the rear connector plug (#11).
5. With a 3/16” hex wrench loosen the conductor tube locking screw in the center of the locking button (#6).
6. Remove the conductor tube (#4) by pulling it straight out of the front case.
7. Loosen and remove the locking buttons (#6) & (#7) and the button head screw (#8).
8. Slide the cable assembly (#10) and front connector block (#9) out of the back of the front case (#5).
9. The front connector block can now be unscrewed from the cable assembly.

Rear Case Assembly (Figure 4)

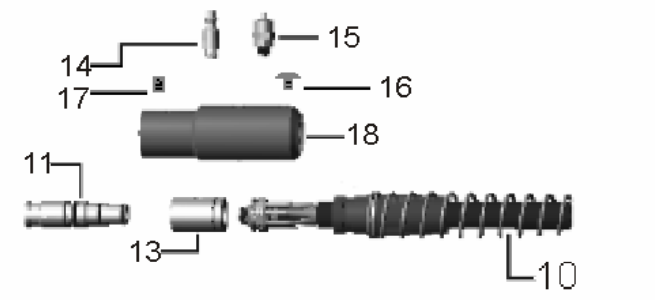


Figure 4

1. With the conduit liner removed from the rear connector plug (#11), Loosen and back the connector plug set screw (#17) out to be flush with the O.D. of the plastic rear case (#18).
2. Remove the connector plug by pulling it out of the rear of the case.
3. Turn the connector plug set screw (#17) inwards until it clears the plastic case.
4. Remove the button head set screw (#16) from the rear case (#18).
5. Slide the rear case backward off of the rear connector block (#13) and cable assembly (#10).
6. Unscrew the rear connector block (#13) from the cable assembly (#10).
7. The air line elbow (#14) and pressure relief valve (#15) do not need to be removed from the rear case unless one of them is defective.

Assembly of the MIG Gun is in the reverse order of the above disassembly instructions.

Before reassembly of the Mig Gun all parts should be thoroughly inspected for wear or damage. Parts found to be damaged should be replaced. All interfacing surfaces, o-rings, and o-ring seats should be wiped clean before assembly.
All o-rings should be closely inspected for nicks, wear, or out of shape. Any o-ring that does not appear in new condition should be replaced. The following Figure 5 shows all o-ring locations and part numbers.

O-ring Locations & Part Numbers

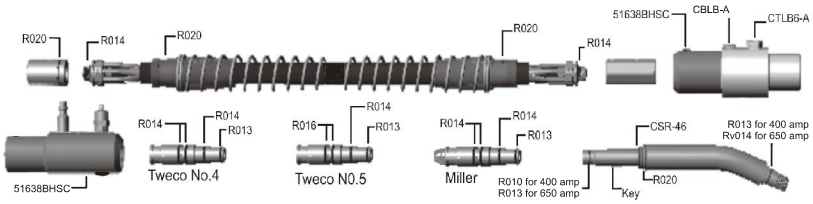


Figure 5

The above Figure 5 is shown with a Tweco rear connector plug. O-rings on other connector plugs may have a different part number. For a kit containing all the above listed parts order a Maintenance Kit part No. MK-65.

Note: When attaching shop air to the pressurized air-cooled Mig Gun it should be regulated at 60-80 PSI. An Air Pressure Regulator & Filter is available. Order Part No. AR-1

Questions or Problems call PAC-MIG Customer service:
1-800-556-3040 or 316-269-3040

PACMIG
EXPERT ARC (EA) SERIES ROBOTIC MIG GUN ADAPTER INSTALLTION MANUAL

The EA Series adapter provides direct mounting of PacMig Pressurized Air-Cooled Robotic Mig Guns to Motoman Robots equipped with a Tregaskiss crash mount.

If an existing gun is required to be removed from the mount follow these steps (refer to figure 1):

1. Ensure that the power source and robot is shut off and /or disconnected from its power supply.
2. On the side of the Tregaskiss crash mount in the connector housing (#8) loosen the gooseneck retaining screw with a 5mm hex wrench.
3. Remove the existing conductor tube assembly.

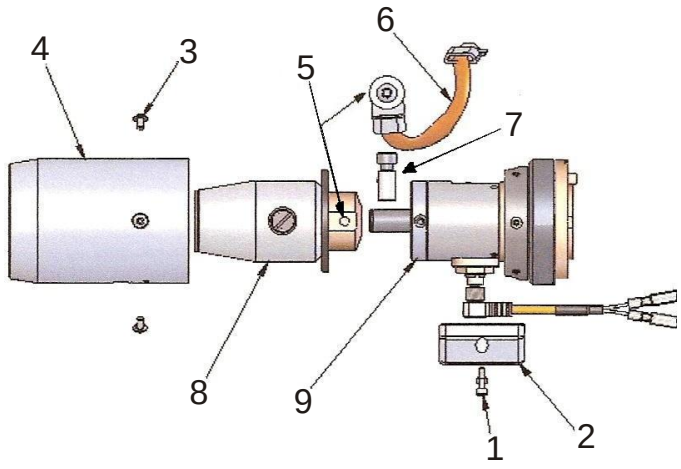


Figure 1

4. Now remove 2 switch cover screws (#1) with a 2.5mm hex key, and remove the switch cover (#2).
5. Remove the 3 cover screws (#3) with a 2.5mm hex key and remove the cover (#4).

6. Remove the hex head bolt (#5) holding the shunt cable assembly to the connector housing (#8).
7. Remove the lock pin and screw (#7) and slide the connector housing off of the clutch assembly (#9) shaft. This may be a tight fit and require tapping with a soft mallet.

The crash mount is now ready to mount the Pac Mig EA adapter to it by following these steps (refer to figure 2):

1. Slip the EA adapter onto the clutch assembly (#9) shaft.
2. Install the lock pin and screw (#7) and tighten.
3. Install the hex head bolt (#5) through the shunt cable assembly and into the EA adapter (#8) as shown.

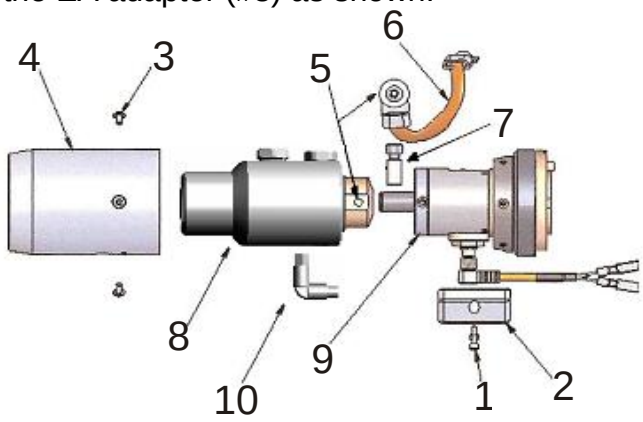


Figure 2

4. Remove the air input elbow (#10) from the EA adapter (#8).
5. Slide the cover (#4) over the EA adapter (#8) and attach with the 3 cover screws (#3).
6. Reinstall the switch cover (#2) with the 2 screws (#1).
7. Reinstall the air input elbow (#10) into the EA adapter (#8) and attach an air line. **The shop air should be regulated at 60-80 PSI.**

Note: An air solenoid and pressure regulator assembly is available from Motoman. Part number 150651-1 may be ordered from the Motoman customer service group.

To install the PacMig Pressurized Air-Cooled Robotic Torch Head follow these steps as shown in Figure 3.

1. Ensure that the conduit liner is protruding out of the EA adapter and is in good shape. If it is worn or damaged replace as per Motoman Instructions.
2. Loosen the 3/16 hex set screw (#1) in the center of the front retainer nut located in the EA Adapter (#2). (Note: set screw and retained nut shown removed from EA Adapter)
3. Remove the nozzle (#6), contact tip (#5), and diffuser (#4) from the conductor tube.

4. Align the conductor tube key with the key way in the adapter and insert the conductor tube (#3) into the EA Adapter (#2).

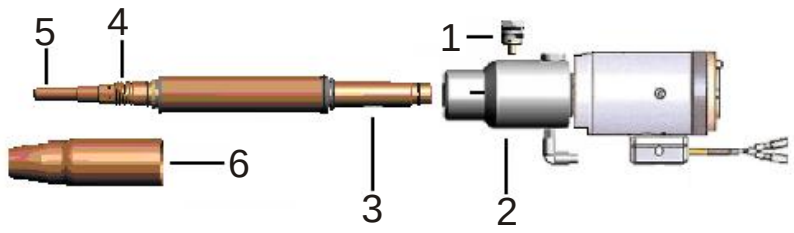
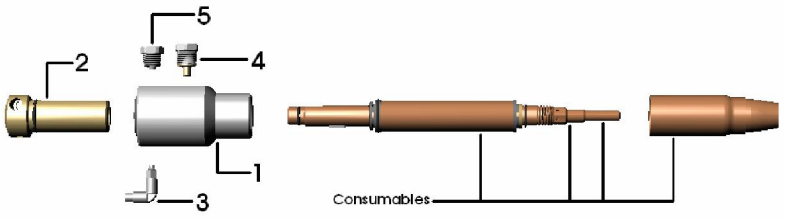


Figure 3

5. Tighten the 3/16 hex set screw (#)1 while holding inward pressure on the conductor tube.
6. Trim the conduit liner ½ to ¾" from the end of the conductor tube. Deburr the conduit liner to avoid any wire feed restrictions.
7. Install the diffuser (#4) and wrench tighten.
8. Install the contact tip (#5) and tighten with pliers.
9. Install the nozzle (#6) and the PacMig EA Series Robotic Mig Gun is ready to weld



Replacement Parts

EA Adapter to fit Motoman w/Tregaskiss Crash Mount

Item	Part No.	Description
1	MP65-TR-C	EA Series Case
2	MP40-TR-B	Adapter Block (400 amp)
2	MP65-TR-B	Adapter Block (650 amp)
3	MP65-EL	90 deg. Swivel Elbow
4	CTLB6-A	Conductor Tube Locking Button
5	CBLB-A	Connector Block Locating Button

Questions or Problems call PACMIG Customer service:
1-800-556-3040 or 316-269-3040

PACMIG
PRESSURIZED AIR-COOLED ROBOTIC & AUTOMATIC
MIG GUN
WIRE LOCK INSTRUCTIONS

<u>Robotic and Automatic guns equipped with a wire lock will require 90 to 100 PSI of regulated air pressure to operate.</u> An Air Pressure Regulator & Filter is available. Order Part No. AR-1
This should be available from a solenoid on the robot and controlled by the robot software. Should any maintenance or repair work be required on the wire lock, follow these instructions.

Disassembly

1. Disconnect the 1/8 inch air line (#12) from the nipple (#1) on the air cylinder. (#5)
2. Unscrew the air cylinder (#5) from the cylinder mount sleeve (#3).
3. Inspect the wire lock cylinder rod tip (#11) for wear. If worn replace by unscrewing the rod tip (#11) from the cylinder rod and screw on a new tip.
4. Unscrew the cylinder mount sleeve (#3) from the front case (#9).
5. Remove the wire lock cylinder bushing (#6) and o-ring (#7) from the wire lock cylinder hole.

The wire lock cylinder and all of its parts are now removed from the Mig Gun. To further remove the front connector block (#8) and disassemble the complete Mig Gun:

6. Loosen the set screw in the locking button (#4) with a 3/16” hex wrench.
7. Remove the conductor tube (#13) by pulling it straight out of the case (#9).
8. Loosen or remove the locking button (#4).
9. Loosen the cable assembly locking screw (#10) at the rear of the front case.
10. Pull the cable assembly and front connector block out of the back of the front case.
11. Unscrew the front connector block from the cable assembly.

The front Mig Gun assembly is now disassembled. Inspect all parts for wear or damage and replace parts that are worn or damaged.

Assembly

To assemble the wire lock cylinder front case assembly, follow these steps:

1. Inspect and if required replace the 014 o-ring (#14) on the front cable assembly power fitting.
2. Screw the Cable assembly power fitting into the rear of the front connector block (#8) and tighten.
3. Place the 010 o-ring (#7) into the rear hole of the front connector block. Make sure that it is seated to the shoulder inside the hole. <u>This is important as the o-ring seals the wire lock cylinder from leaking gas.</u>
4. Insert the bushing (#6) into the hole on top of the o-ring.
5. Insert the front connector block into the plastic end of the front case. Align the 2 holes in the connector block with the corresponding holes in the front case.
6. Screw the cylinder mount sleeve (#3) loosely into the rear hole of the front case. <u>Do not bottom it out on the connector block.</u>
7. Thread the alignment tool (#2) into the cylinder mount sleeve (#3) as far as it will go. The alignment tool should seat into the hole and align the case with the connector block.
8. Tighten the cylinder mount sleeve (#3).
9. Install the locking button (#4) and tighten the 11/16 hex outer plastic case.
10. Remove the alignment tool (#2) by unscrewing it from the cylinder mount sleeve.
11. Check the wire lock cylinder (#5) and ensure that the wire lock cylinder rod tip (#11) is tighten onto the cylinder rod and is in good physical shape.
12. Screw the swivel elbow (#1) into the wire lock cylinder (#5).
13. Screw the wire lock cylinder (#5) into the cylinder mount sleeve (#3) finger tight.

At this time it is advisable to test the wire lock to ensure that it works properly. To test follow these steps:

1. Attach an air hose from a regulated air supply to the elbow (#1).
2. Cut a 12” piece of the welding wire that will be used in the Mig Gun and insert it 6-8” into the center of the connector block (#8) in the front case (#9).
3. Set the regulator on the air line at 90 PSI and apply air pressure to the cylinder.
4. By hand pull on the wire. If it moves, increase to air pressure until the wire does not move easily.
5. Release the air pressure and make sure that the air cylinder releases the wire.

Once this check has been preformed then:

1. Install the conductor tube and tighten the hex head screw in the center of the locking button (#4) with a 3/16" hex key.
2. The Mig Gun is now ready to install on the robot. After installation on the robot attach the 1/8" air hose to the swivel elbow. Air supply should be regulated at 90-100 PSI or at the pressure established during the above testing.

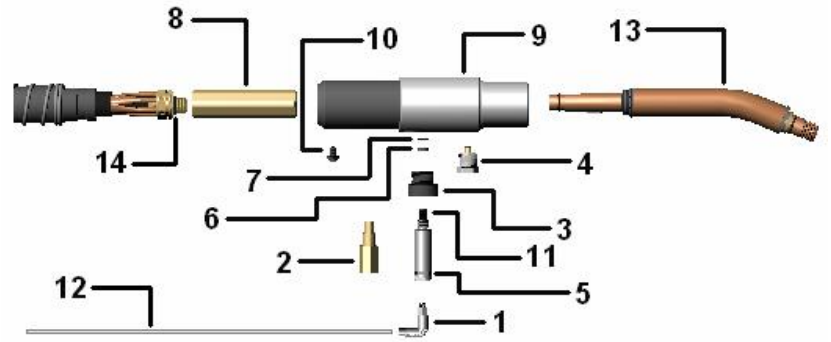


Figure 1

Parts Listing

Item No.	Part No.	Description	Item No.	Part No.	Description
1	WLC-SE	W.L.C. Swivel Elbow	8	FCBR-46K-WL	Front Connector Block
2	WLC-AT	Alignment Tool	9	HR-46WL-XX	Front Case
3	CMS-1	Cylinder Mount Sleeve	10	BH-5161838	Button Head Screw
4	CTLB6-A	Locking Button	11	WLC-RT	W.L.C. Rod Tip
5	WLC-1	W.L.C.	12	NT-1/8	1/8" Nylon Air Line
6	WLC-B	W.L.C. Bushing	13	--	Conductor Tube
7	R-010	O-ring	14	R-014	O-ring

W.L.C = Wire Lock Cylinder

Questions or Problems call PACMIG Customer service:
1-800-556-3040 or 316-269-3040

PACMIG
ROBOTIC ALIGNMENT TOOL OPERATING INSTRUCTIONS

The PAC-MIG Robotic Alignment Tool (RAT) is intended as a tool for realigning PacMig robotic conductor tubes which have been in a crash or have been bent so as not to be able to fit to the TCP. It is recommended that before installation of a new gun or any replacement conductor tube that the conductor tube be checked on the RAT check fixture for proper alignment. This will ensure that the conductor tube is aligned and that it will match the required TCP. It is further recommended that a single RAT tool be set up and used in each welding shop as a control for all tubes in that shop. This RAT tool will control all tubes to match the required TCP. The tool consists of the following parts as shown in figure 1:

Item/Description	Qty.	Part No.
1. Base Plate	1	RAT-1-P
2. Slider Block	1	RAT-1-SB
3. Clamping Block	1	RAT-1-CB
4. Tweaking Lever	1	RAT-1-TL
5. Tip Centering Slides	1	RAT-TCS-1 (for T4 tips)
	1	RAT-TCS-2 (for HT4 & T6 tips)

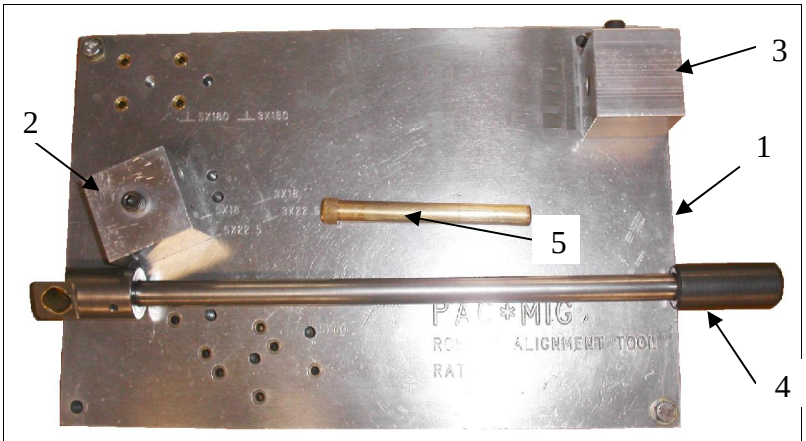


Figure 1

When a conductor tube has been crashed or will not fit the TCP follow this procedure:

1. Remove the tube from the gun and crash mount.
2. Remove the consumables (tip, diffuser & nozzle)
3. Remove the snap ring at the rear insulator of the conductor tube housing and remove the insulator, housing, and internal insulation. Now remove the front insulator and all o-rings. (Figure 2)

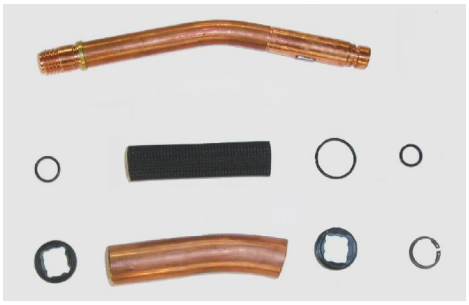


Figure 2

4. Be sure the RAT is firmly attached to a large heavy table or base.
5. Remove all attachments from the RAT except the clamping block #3. (Figure 3)

Figure 3

6. Install a new contact tip and diffuser into the conductor tube.
7. Aligning the key in the tube with the keyway slot in the clamping block #3, slide the conductor tube completely into the clamping block #3 until it bottoms out. (Figure4a & 4b)
8. Tighten the index screw.

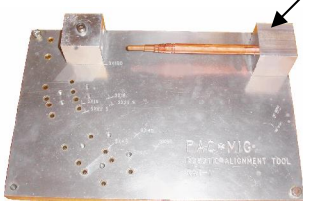


Figure 4a

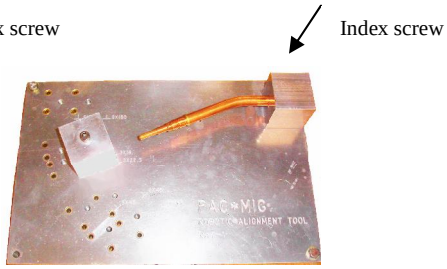
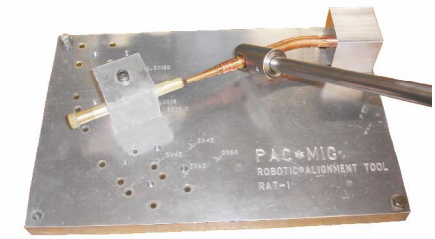


Figure 4b

9. Now install the slider block #2 with the lower right hand corner of the block aligned with the marked positions on the RAT base for the conductor tube being straighten. (Figure 4a & 4b)
10. Slip the tweaking lever #4 over the end of the conductor tube. (Figure 5)

Figure 

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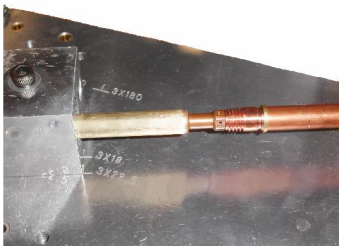
11. Select the proper tip centering slide #5 and install it into the slider block. #2
12. Apply forces to the conductor tube with the tweaking lever #4 (Figure 5) in the opposite direct of it's mismatch between the contact tip and the tip centering slide #5 until the tip centering slide slips easily over the contact tip. (Figure 7)

Figure 7 

13. Once the conductor tube has been properly aligned, remove the tube from the RAT by loosening the index screw #3a.
14. Reinstall the conductor tube outer housing and insulators. Install new o-rings at both the front and rear of the conductor tube. (Figure 8) The tube may now be reinstalled in t R-020

Figure 8

O-ring part numbers are shown in figure 8.

PACMIG
PRESSURIZED AIR-COOLED
SEMI-AUTOMATIC MIG GUN MAINTENANCE INSTRUCTIONS

General Maintenance Items:

Cooling Air: **Shop air regulated at 60-80 PSI** is used for cooling air.

Nozzle: (#1) All PACMIG nozzles are threaded nozzles. These should be removed periodically, cleaned, and inspected for wear or damage. Any nozzle with damage to the insulation should be replaced.

Contact Tip: (#2) Contact tips should always be tighten with pliers. Tips should be replaced when wear is noticeable in the tip I.D.

Diffusers: (#3) Diffusers should always be installed wrench tight. Diffusers should be cleaned and checked to ensure that all gas holes are free of spatter when ever the nozzle is removed. Replace any diffuser that has excessive wear to the threads that hold the contact tip.

Conductor Tubes: (#4) Conductor tubes should be inspected periodically for wear to the nozzle threads also inspect the front o-ring. This o-ring should be replaced if showing any signs of wear. On pressurized air-cooled conductor tubes check for cooling air flow out of the ports at the front of the outer sleeve. To remove the conductor tube from the handle, loosen the 5/16 hex set screw (B) in the top front of the handle as shown in Figure 1, and pull the tube straight out of the handle. When reinstalling the tube, align the keyway in the tube with the key in the inner connector block. Push the tube completely into the handle and tighten the screw.

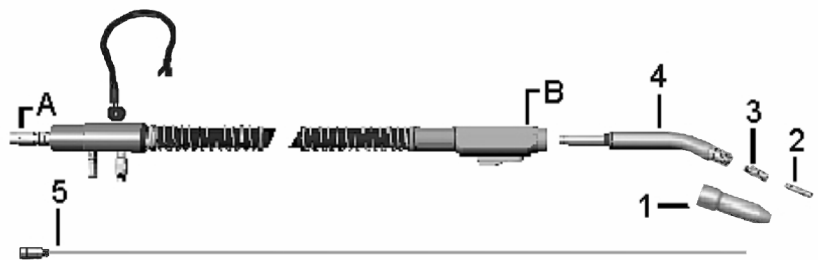


Figure 1

Conduit Liners: Liners should be replaced on a periodic bases based on wire usage. This can only be determined from history of a given application.

To replace a conduit liner:

14. Ensure that the power source is shut off and /or disconnected from the primary power.

15. Release the drive roll pressure.
16. Remove the welding wire from the liner by either rewinding it onto the wire reel or cutting it at the drive rolls and pulling out of the gun.
17. Disconnect the Mig Gun's rear connector plug from the feeder drive rolls.
18. Loosen the conduit set screw (A) in the rear connector plug. For Miller plugs remove the bullet end.
19. Remove the conduit liner by pulling it out of the rear connector plug of the cable assembly.
20. Before attempting to install a new conduit liner, remove the nozzle (#1), contact tip (#2), and diffuser (#3).
21. Keeping the cable assembly in as straight line as possible, install the new conduit liner into the rear connector plug. Use a short pushing action. If the conduit liner tends to hang up twist the conduit liner in a counterclockwise direction while continuing to push.
22. When the conduit liner is completely through the gun, press the conduit stop w/o-ring tightly against the rear connector plug and tighten the 8/32 conduit set screw (A). Install the bullet on Miller plugs.
23. Reinstall the rear connector plug into the wire feeder.
24. Trim the conduit ½ to ¾ in. from the end of the conductor tube (See Figure 2). Deburr the cut end of the conduit with a file making sure that all burrs are removed.

Figure 2

25. Install the diffuser (#3) and contact tip (#2) and tighten with a wrench.
26. Thread wire through drive rolls and into conduit liner 1 to 2 feet by hand. Continue to feed wire with inch button on feeder until it clears the contact tip. Trim wire and install nozzle (#1).

Mig Gun Disassembly and Assembly

To replace Mig Gun components and/or repair components of the Mig Gun follow these steps:

Handle Case Assembly (Figure 3)

10. Remove the Mig Gun from the wire feeder and lay the Mig Gun out in a straight line.
11. Remove the nozzle (#1), contact tip (#2), and diffuser (#3).
12. Loosen the 8/32 set screw in the rear connector plug (#10)
13. Remove the conduit liner (#16) by pulling it out of the rear connector plug (#10).
14. With a 3/16” hex wrench loosen the conductor tube locking screw (B) in the top front of the handle (#5)

15. Remove the conductor tube (#4) by pulling it straight out of the front handle case.
16. Loosen and remove the trigger retaining screw (C).

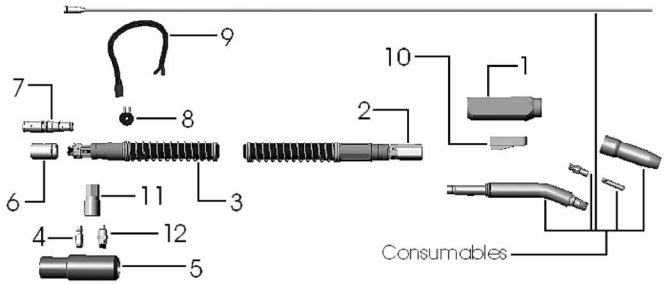
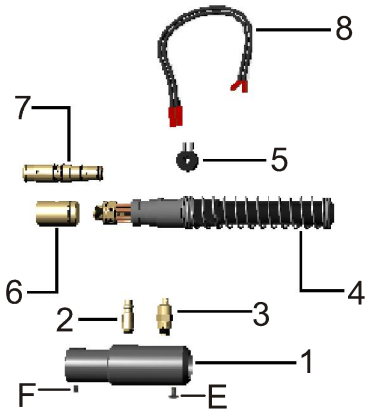


Figure 3

17. Remove the trigger from the handle and loosen two 6-32 set screws (D) holding the two control wires.
18. Slide the cable assembly (#8) and front connector block (#7) out of the back of the handle case (#5).
19. The front connector block can now be unscrewed from the cable assembly.

Rear Case Assembly (Figure 4)



8. With the conduit liner removed from the rear connector plug (#7), Loosen and back the connector plug set screw (F) out to be flush with the O.D. of the plastic rear case (#1).
9. Remove the connector plug by pulling it out of the rear of the case.
10. Turn the connector plug set screw (F) inwards until it clears the plastic case.

11. Remove the screw holding the control wire connector (#5) to the rear case (#1). Remove the two control wires from the connector.
12. Remove the button head set screw (E) from the rear case (#1).
13. Slide the rear case backward off of the rear connector block (#6) and cable assembly (#4).
14. Unscrew the rear connector block (#6) from the cable assembly (#4).
15. The air line elbow (#2) and pressure relief valve (#3) do not need to be removed from the rear case unless one of them is defective.

Assembly of the Mig Gun is in the reverse order of the above disassembly instructions.

Before reassembly of the Mig Gun all parts should be thoroughly inspected for wear or damage. Parts found to be damaged should be replaced. All interfacing surfaces, o-rings, and o-ring seats should be wiped clean before assembly.
All o-rings should be closely inspected for nicks, wear, or out of shape. Any o-ring that does not appear in new condition should be replaced. The following Figure 5 shows all o-ring locations and part numbers.

O-ring Locations & Part Numbers

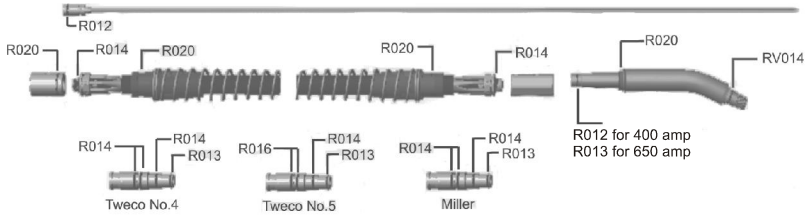


Figure 5

The above figure is shown with a Tweco rear connector plug. O-rings on other connector plugs may have a different part number.

Note: When attaching shop air to the pressurized air-cooled Mig Gun it should be regulated at 60-80 PSI. An Air Pressure Regulator & Filter is available. Order Part No. AR-1

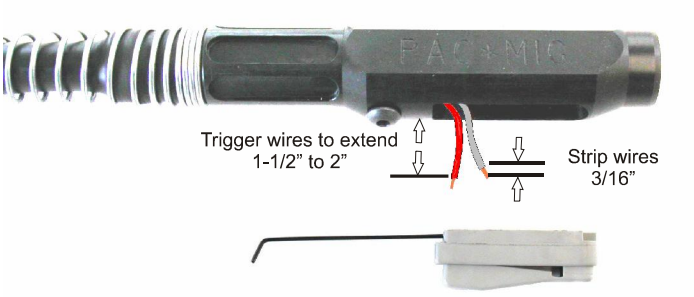
Questions or Problems call PACMIG Customer service:
1-800-556-3040 or 316-269-3040

PACMIG
SEMI-AUTOMATIC MIG GUN
TRIGGER REPLACEMENT INSTRUCTIONS

To replace the trigger assembly in all Semi-automatic Mig guns follow these steps:

Trigger Removal

1. Loosen the socket head screw at the front of the trigger until trigger is free from handle. (Screw will remain with trigger)
2. Slip the trigger down out of the handle.
3. Using a 1/16” hex wrench, loosen the 2 set screws at the rear of the trigger.
4. Remove the 2 control wires from the 2 holes in the top rear of the trigger.



Trigger Installation

1. To install the new trigger first make sure the trigger wires extend 1-1/2” to 2” from the handle and are striped (3/16”) and not frayed.
2. Then insert the wires into the 2 holes in the top rear of the trigger.
3. Tighten the 2 set screws in the rear of the trigger with a 1/16” hex wrench.
4. Slip the wires completely back into the handle and fit the trigger into the pocket in the handle.
5. Install and tighten the socket head screw in the front of the trigger.
6. Test trigger circuit for continuity before reinstalling the Mig gun.

Note: On pressurized air-cooled guns trigger must fit tightly into handle to avoid air leakage. If air leakage is experienced, seal between trigger and handle with a small amount of silicone sealer.

PACMIG
CONDUIT LINER
REPLACEMENT INSTRUCTIONS

Conduit Liners: Liners should be replaced on a periodic bases based on wire usage. This can only be determined from history of a given application.

To replace a conduit liner:

1. Ensure that the power source and robot is shut off and /or disconnected from its power supply.
2. Release the drive roll pressure.
3. Remove the welding wire from the liner by either rewinding it onto the wire reel or cutting it at the drive rolls and pulling out of the gun.
4. Disconnect the Mig Gun's rear connector plug from the feeder drive rolls.
5. Loosen the conduit set screw in the rear connector plug. For Miller plugs remove the bullet end.
6. Remove the conduit liner by pulling it out of the rear connector plug of the cable assembly.
7. Before attempting to install a new conduit liner, remove the nozzle, contact tip, and diffuser.
8. Keeping the cable assembly in as straight line as possible, install the new conduit into the rear connector plug. Use a short pushing action. If the conduit liner tends to hang up twist the conduit in a counterclockwise direction while continuing to push.
9. When the conduit liner is completely through the gun, press the conduit stop w/o-ring tightly against the rear connector plug and tighten the 8/32 conduit set screw. Install the bullet on Miller plugs.
10. Reinstall the rear connector plug into the wire feeder.
11. Trim the conduit ½ to ¾ in. from the end of the conductor tube (See Figure 2). Deburr the cut end of the conduit with a file making sure that all burrs are removed.

Figure 2

12. Install the diffuser and contact tip and tighten with a wrench.
13. Thread wire through drive rolls and into conduit liner 1 to 2 feet by hand. Continue to feed wire with inch button on feeder until it clears the contact tip. Install nozzle.

Operating & Safety Instructions for Air Regulator & Filter

Read and observe the following safety information and installation instructions.

The air regulator and filter should always be installed as a unit between the shop air feed line and the PAC-MIG pressurized air-cooled MIG Gun or TIG Torch.

General Safety Information

This air regulator and filter is intended for use in industrial compressed air systems only, and must not be used with fluids other than air, for nonindustrial applications, or for life support.

1. Do not use this regulator and filter where pressures can exceed 150 psig and temperatures can exceed 125 F.
2. Protect air lines from damage or puncture.
3. Check hoses periodically for any weak or worn condition, making certain that all connections are secure.
4. Release all pressures within the system before attempting to service any component.

Air Regulator & Filter Installation

SHUT OFF the AIR PRESSURE before attempting to install the air regulator and filter

1. Pick a location as near to the shop air input nipple on the PacMig Mig Gun as practical.
2. If regulator and filter are not assembled use thread sealant on the male threads of the double male connector (#1 figure 1) and thread the regulator and filter together making sure that the arrows on both bodies are in the same direction. Tighten the threads so the regulator and filter are in relation to each other as shown in figure 1.

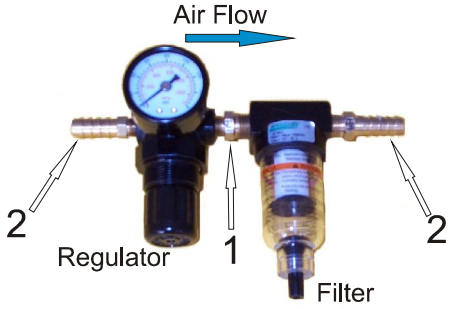


Figure 1

3. Install the nipples (#2 figure 1) in the input side of the regulator and the exit side of the filter using thread sealant on the male threads.

4. Mount the regulator and filter in an upright position as shown in figure 1. Filter must always be in this position to work properly.
5. Install the air hose from the shop air supply to the input side of the regulator and secure with a hose clamp.
6. Install an air hose from the exit side of the filter to the quick connect furnished with the PacMig Mig Gun or Tig Torch and secure with hose clamps. Connect the quick connect to the shop air input nipple on the Mig Gun rear case. Do not turn on shop air at this time.

Air Regulator & Filter Operation

1. Before turning shop air on, pull the regulator adjustment knob down and turn it counterclockwise until all spring pressure is released.
2. Turn on the shop air. Then turn the regulating adjustment knob clockwise until the desired pressure (75psig) is shown on the gage. Push the regulator adjustment knob up to lock it in position.
3. When adjusting the air pressure always approach the desired pressure from a lower pressure. When reducing from a higher to a lower setting always reduce to a lower pressure then bring it up to the required pressure.
4. Filters should be drained periodically before the fluid level reaches the bottom of the filer. To drain the filter, turn the knob at the bottom of the filter clockwise and release the fluid. Retighten after all moisture has been drained.
5. Replace air filter element (Part No. AR-EL) periodically or as needed.

Note: When attaching shop air to the pressurized air-cooled Mig Gun or Tig Torch it should be regulated at 60-80 PSI.

Questions or Problems call PACMIG Customer service:
1-800-556-3040 or 316-269-3040

TROUBLESHOOTING
PAC-MIG$_{TM}$ ROBOTIC &
AUTOMATIC MIG GUNS

Problem/Cause	Possible Solutions
Porosity in Weld	1. Remove impurities on base metal 2. Clean weld area 3. Rusty, oxide (aluminum), dirty or poor quality wire. Replace wire. 4. Gas flow to high or to low. 5. Spatter Build-up in nozzle. 6. Improper weld parameters. (Check power source settings.) 7. Bad o-ring on conductor tube behind diffuser under rear of nozzle. Replace 8. Damaged or kinked gas hose.
Poor Wire Feed	1. Conduit clogged or kinked. 2. Conduit cut to short and does not fit completely into the gas diffuser. 3. Conduit cut to long and causes wire to bind at front of gun. 4. Wrong size conduit or contact tip. 5. Tip not tight in diffuser, causing resistance. 6. Drive rolls adjusted to tight causing deformation of the wire. 7. Drive rolls adjusted to loose causing slippage. 8. To much cast in the welding wire.
Short Tip Life	1. Drive rolls adjusted to tight causing deformation of the wire. 2. Drive rolls adjusted to loose causing slippage. 3. Tip not tight in diffuser, causing resistance. 4. Rusty, oxide (aluminum), dirty or poor quality wire. 5. Using uncoated wire causing additional tip wear. 6. Gun being run above its rating.

Problem/Cause	Possible Solutions
Gun Overheating	1. Improper flow or lack of shop air supply to gun. Ensure that a pressure regulator is installed and properly adjusted. 2. Bad and leaking o-rings in gun system. (see instruction manual) 3. Gun running in excess of its rating. 4. Tip not tight in diffuser, causing resistance. 5. Gun power cable damaged or containing broken stranding reducing current carrying capacity. 6. Loose conductor tube locking screw. 7. Loose connector plug locking screw 8. Loose front or rear cable locking screws. 9. Bad ground.
Excessive Spatter	1. Improper weld parameters. 2. To fast or to slow wire feed speed. 3. Excessive angle between the nozzle and the work piece. 4. Improper stick-out. 5. Wrong or bad shielding gas. 6. Bad or improper ground. 7. Incorrect polarity.

Notes:

Notes:

Questions or Problems call PACMIG Customer service:
1-800-556-3040 or 316-269-3040

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