Jinan North Welding Tools Co . Ltd ., The North of 308 National Highway, Daqiao Town, Tianqiao Zone, Jinan 250121, Shandong, China

NORTH®

OPERATING MANUAL / INSTRUCTIONS

MAGNIFIK SERIES MIG/MAG TORCH

PART NUMBER: OM-112A EN

ISSUE: 01-0324

Read and understand this entire Manual and your employer's safety practices before installing, operating, or servicing this Product. While the information contained in this Manual represents the Manufacturer's best judgment, the Manufacturer assumes no liability for its use

User Manual No: OM-112A EN for: MAGNIFIK Push-Pull MIG/MAG Manual Welding Torches

Torch Cooling Method	Torch Controls	Torch Model Numbers
Air Cooled	Control Knob and Potentiometer (10K Ohms)	MPG3001-E4512G-60E, MPG3001-E4512G-80E
	Digital Display with Thumb Wheel Control and Select Button	MPG3002-E4512G-60E, MPG3002-E4512G-80E
	Up / Down Button Controls	MPG3003-E4512G-60E, MPG3003-E4512G-80E
Fluid Cooled	Control Knob and Potentiometer (10K Ohms)	MPW3001-E4512G-60E, MPW3001-E4512G-80E; MPW3001-E4512G-60M, MPW3001-E4512G-80M; MPW4001-E4512G-60E, MPW4001-E4512G-80E; MPW4001-E4512G-60M, MPW4001-E4512G-80M
	Digital Display with Thumb Wheel Control and Select Button	MPW3002-E4512G-60E, MPW3002-E4512G-80E; MPW3002-E4512G-60M, MPW3002-E4512G-80M; MPW4002-E4512G-60E, MPW4002-E4512G-80E; MPW4002-E4512G-60M, MPW4002-E4512G-80M
	Up / Down Button Controls	MPW3003-E4512G-60E, MPW3003-E4512G-80E; MPW3003-E4512G-60M, MPW3003-E4512G-80M; MPW4003-E4512G-60E, MPW4003-E4512G-80E; MPW4003-E4512G-60M, MPW4003-E4512G-80M

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Website: www.northweld.com

Publication Date: 13 October 2024

Record the following information for Warranty purposes

Place of Purchase:

_____

_____

_____

Purchase Date:

_____

Declaration of Conformity

Jinan North Welding Tools Co. Ltd. declares that the product(s) identified in this declaration conform to the essential requirements and provisions of the stated Council Directives and Standards.

Product Description: **Arc Welding Equipment MIG/MAG Manual Welding Push-Pull Torches**

Product Models: **MAGNIFIK SERIES of Push-Pull MIG/MAG Manual Welding Torches**

Manufacturer: **Jinan North Welding Tools Co. Ltd.**

Address: **The North of 308 National Highway, Daqiao Town, Tianqiao Zone, Jinan 250121, Shandong, China.**

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Council Directives:
- 2006/95/EC Low Voltage Directive
- 2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment

Standards:
- "N" within Torch Model Number designates:
  GB/T 15579.7-2023 Standardization Administration of China - Arc Welding Equipment - Part 7: Torches.
- "E" within Torch Model Number designates:
  IEC 60974-7:2013 Arc welding equipment – Part 7: Torches.

Signature of Manufacturer's responsible representative:

Zhang Jinlu

Signature

13 October 2024

Date

Zhang Jinlu

Name

Manager-Engineering

Title

CE

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SECTION 1 – SAFETY INSTRUCTIONS: Read Before Using this Product

DANGER! – Protect yourself and others around you from possible severe injury or death.

1) Read, follow, and understand this User Manual before installing, operating, or servicing this Product. 2) Pacemaker wearers keep away until consulting your doctor. 3) Have all installation, operation, maintenance, and repair work performed only by Suitably Trained and Qualified Tradesperson. 4) Keep children away. 5) Do not lose these instructions.

6) When shipped, ownership is passes to the purchaser upon receipt from the transportation company. Accordingly, claims for component damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

" NOTE:" Provides information regarding operating recommendations for this Product.

Product and processes can cause severe injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety instructions and take precautionary actions.
Anyone not extensively trained in welding and cutting practices should not attempt to weld or cut metal.
Safe practices are outlined in American National Standard Z49.1 entitled: SAFETY IN WELDING AND CUTTING. This publication and other guides to what you should learn before using this product are listed at the end of these safety instructions.

1.01 Arc Welding Hazard Symbols

ELECTRIC SHOCK can kill

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit are electrically live whenever the output is on. DO NOT WORK ALONE! The input power circuit and Power Source internal circuits are also electrically live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded welding equipment is a hazard.

- Do not touch live electrical parts.
- Beware of electric shock from wiring.
- Keep all panels and covers securely in place.
- Wear dry, hole-free insulating gloves, and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Additional safety precautions are required when any of the following electrically hazardous conditions are present:
  - In damp locations or while wearing wet clothing.
  - On metal structures such as floors, gratings, or scaffolds.
  - When in cramped positions such as sitting, kneeling, or lying.
  - When there is a substantial risk of unavoidable or accidental contact with the workpiece or ground.

  For these conditions, use the following equipment:
  1) A semiautomatic DC constant voltage (wire) welder, or
  2) A DC manual (stick) welder. In most situations a DC welder is recommended.
- Disconnect input power or stop engine before installing or servicing this Product. Lockout/Tagout input power according to OSHA 29 CFR 1910.147.
- Properly install and ground this Power Source according to its User Manual and national, state, and local codes.
- Use only well-maintained equipment. Repair or replace damaged parts at once.
- Do not wrap cables around your body.
- Always verify the Input Power Cord ground – check and be sure that Input Power Cord ground wire is properly connected to ground terminal in disconnect box or that Input Power Cord plug is connected to a properly grounded receptacle outlet.
- When making input connections, attach proper grounding conductor first. DOUBLE - CHECK ALL CONNECTIONS.
- Keep all electrical Power Cords dry, free of oil and grease, and protected from hot metal, sparks, and sharp metal edges.
- Frequently inspect Input Power Cord and ground conductor for damage or bare wiring. Replace immediately if damage, bare wiring can kill.
- Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
- Use fully insulated Torch. Never dip Torch in water to cool it or lay it down on the ground or the work surface. Do not touch Torches connected to two Power Sources at the same time or touch other people with the Torch or electrode.
- Do not use worn, damaged, undersized, repaired or poorly spliced cables.
- Ground the work piece to a good electrical (earth) ground.
- Do not touch electrode while in contact with the work (ground) circuit.
- In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
- Wear a safety harness to prevent falling if working above floor level.
- Do not touch electrode holders connected to two Power Sources at the same time as double open-circuit voltage will be present.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal. Disconnect cable for process not in use.
- Use ground-fault circuit interrupter (GFCI) protection when operating auxiliary equipment in damp or wet locations.

FLYING METAL or DIRT can injure eyes

Welding, chipping, wire brushing, and grinding cause sparks and flying metal.

- Welding slag can be thrown off welds as they cool down.
- Wear approved safety glasses with side shields even under your welding helmet.

HOT PARTS can burn

Nozzles, contact tips, gas diffuser welded parts, cut metal, or ground clamp can cause burn bare skin when hot.

- Do not touch hot parts with bare skin.
- If handling hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

ARC RAYS can injure eyes and burn skin

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin.

- Wear approved safety glasses. Side shields recommended.
- Wear a welding helmet fitted with a proper shade of filter (see ANSI Z49.1 listed in Safety Standards) to protect your face and eyes when welding or watching.
- Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.

NOISE can damage hearing

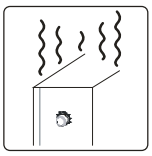
Noise from metal fabrication processes can damage hearing.

- Use approved ear plugs or earmuffs for high noise levels environments.

FLYING SPARKS can injure

Flying sparks and hot metal can cause injury. Chipping and grinding cause flying metal.

- Wear proper body protection to protect skin.
- Wear approved face shield or safety goggles with side shields are recommended.
- Sparks can cause fire, remove all flammable materials within 35 ft (10.7 m) of the working zone.



EQUIPMENT OVERHEATING

Power Source casing, terminals, cables, ground clamp, electrode stub or torch parts can cause inquiry when overheated.

- Allow cooling period before touching MIG Torch.
- Allow cooling period; follow rated duty cycle of MIG Torch.
- Reduce amperage and/or arc on time before starting to weld again.
- Do not block or filter air vent to Power Source.

BUILDUP OF GAS can injure or kill

Shielding GAS used for wire welding can cause asphyxiation or death in confined places.

- Shut off compressed shielding gas supply when not in use.
- Always ventilate confined spaces or use approved air supplied respirator.

FUMES and GASES can be hazardous

FUMES and GASES can be hazardous to your health. Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use local exhaust at the arc to remove welding fumes and gases.
- If ventilation is poor, use an approved air-supplied respirator.
- Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for consumables, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have an observer trained in rescue and emergency procedures to monitor the person in a confined space. Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapours to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

MOVING PARTS can cause injury

Moving parts, such as fans, drive gears, rotating wire spools, rotors, and belts can cut fingers and hands and catch loose clothing.

- Keep all doors, panels, covers, and guards closed and securely in place.
- Switch OFF Power Source before installing or connecting it.
- Keep hands, hair, loose clothing, and tools away from moving parts.
- Have only suitably Trained and Qualified Tradesperson remove guards or covers for maintenance and troubleshooting, as necessary.
- To prevent accidental starting during servicing, disconnect Power Source from power receptacle or disconnect negative battery cable from battery.
- Reinstall panels or guards and close doors when servicing is finished and before starting engine.

ELECTRIC and MAGNETIC FIELDS (EMF) can affect Implanted Medical Devices

Consult your doctor and the Implanted Medical Device manufacturer before going near arc welding, spot welding, gouging or plasma arc cutting.

- Wearers of Pacemakers and other Implanted Medical Devices should keep away.

SHIELDING GAS CYLINDERS can explode

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process; be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
- Install and secure cylinder(s) in an upright position by chaining cylinder(s) to a stationary support or equipment cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never allow a welding electrode to touch any cylinder.
- Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

WELDING WIRE can cause injury

Welding wire can cause injuries to hands, ears, eyes, etc.

- Do not depress Torch Trigger or commence welding process until it is safe to do so.
- Do not point the end of the MIG Torch near any part of your body, other people, or any metal when threading the welding wire thru the MIG Torch.

Eye protection filter shade selector numbers for welding (goggles or helmet)			
Welding operation	**Arc Amperage (Amps)**	**Minimum Filter Shade Number**	**Suggested ^ Filter Shade Number**
Gas Metal Arc Welding (GMAW) and Flux Cored Arc Welding (FCAW)	Less than 60	7	7
	60 – 160	10	11
	160 – 250	10	12
	250 – 550	10	14

^ As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to a lighter shade which gives sufficient view of the weld zone without going below the minimum. This Lens Shade Selector Guide was adapted from ANSI Z49.1, 2012.

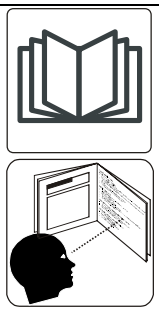
WELDING can cause fire or explosion

Sparks and spatter fly off from the welding arc. The flying sparks and hot molten metal, weld spatter, hot work piece and hot equipment can cause fires and burns.

Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, fire, or explosion. Check that the area is safe before doing any welding.

- Protect yourself and others from flying sparks and hot metal.
- Do not weld where flying sparks can strike flammable material.
- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld on containers that have held combustibles or on closed containers such as tanks, drums, or pipes unless they are properly prepared according to AWS F4.1 and AWS A6.0.
- Do not weld where the atmosphere contains flammable dust, gas, or liquid vapours (gasoline for example).
- Connect work cable to the work as close to the welding area as practical to prevent welding amperage from travelling long, possibly unknown paths and causing electric shock and fire hazards.
- Use only correct fuses or circuit breakers. Do not oversize or bypass them.
- Cut off welding wire at contact tip when not in use.
- Wear body protection made from durable, flame–resistant material (leather, heavy cotton, wool). Body protection includes oil-free clothing such as leather gloves, heavy shirt, cuff less trousers, high shoes, and a cap.
- Remove any combustibles, such as butane lighter or matches, from your person before doing any welding.
- After completion of work, inspect area to ensure it is free of sparks, glowing embers, and flames.
- Follow requirements in OSHA 1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.
- Read and understand the Safety Data Sheets (SDSs) and the manufacturer's instructions for adhesives, coatings, cleaners, consumables, coolants, degreasers, fluxes, and metals.

1.02 Additional Installation, Operation and Maintenance Hazard Symbols



READ USER MANUAL

Read and follow all Power Source labels and User Manual carefully before installing, operating, or servicing the Power Source.

- Read the safety information at the beginning of the manual and in each section.
- Perform installation, maintenance, and service according to the User Manual, industry standards, and national, state, and local codes.

IMPROPER INSTALLATION can cause fire

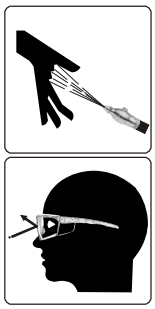
Improper equipment installation can cause fire.

- Do not install or place Power Source on, over, or near combustible surfaces.
- Do not install Power Source near flammables.
- Do not overload building wiring; be sure Input Power Supply system is properly sized, rated, and protected for weld system.

ARC WELDING can cause interference

Arc welding produces electromagnetic energy that can interfere with sensitive electronic equipment.

- Electronic equipment that can be affected are computers, telecommunication equipment, and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- Locate welding operation 100 meters from any sensitive electronic equipment.
- Be sure this Power Source is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the Power Source, using shielded cables, using line filters, or shielding the work area.



COMPRESSED AIR can injure or kill. Whipping air hoses can injure.

A concentrated stream of compressed air at high pressure and high speed can cause severe injury to you or people around you.

- Do not direct air stream toward self or others.
- Wear protective equipment such as safety glasses, hearing protection, leather gloves, heavy shirt / trousers, steel toe boots, and a cap when working on compressed air system.
- Release air pressure from air system / air tools before servicing, adding, or changing attachments.
- Turn off and lockout / Tagout air compressor, release air pressure from system and be sure air pressure cannot be accidentally reapplied before working on compressed air system.
- Relieve air pressure before disconnecting or connecting air lines.
- Check compressed air system components and all connections and hoses for damage, leaks, and wear before operating unit.
- Use soapy water to search for leaks; never use bare hands. Do not use equipment if leaks are found.

FALLING EQUIPMENT can injure

Use designated lifting device on power source to lift the power source only, NOT cart/running gear, gas cylinders, or any other accessories

- Use lifting equipment of adequate capacity to lift and support power source.
- If using lift forks to move power source, be sure forks are long enough to extend beyond opposite side of power source.
- Keep cables and Power Cords away from moving vehicles when working from an aerial location.
- Follow the guidelines in the *Applications Manual for the Revised NIOSH Lifting Equation* [DHHS (NOISH) Publication No. 94–110] when manually lifting heavy parts or Power Source.

1.03 Read Principal Safety Standards

Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, is available as a free download from the American Welding Society at (Website: www.aws.org).

Safe Practices for the Preparation of Containers and Piping for Welding and Cutting, American Welding Society Standard AWS F4.1, from Global Engineering Documents (Website: www.global.ihs.com).

Safe Practices for Welding and Cutting Containers that have Held Combustibles, American Welding Society Standard AWS A6.0, from Global Engineering Documents (Website: www.global.ihs.com).

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Quincy, MA 02269 (Website: www.nfpa.org).

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 14501 George Carter Way, Suite 103, Chantilly, VA 20151 (website: www.cganet. com).

Safety in Welding, Cutting, and Allied Processes, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5NS (Website: www.csagroup.org).

Safe Practice for Occupational and Educational Eye and Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 25 West 43rd Street, New York, NY 10036 (Website: www.ansi.org). Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, from National Fire Protection Association, Quincy, MA 02269 (Website: www.nfpa.org).

OSHA, Occupational Safety and Health Standards for General Industry,

Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, (Website: www.osha.gov).

Applications Manual for the Revised NIOSH Lifting Equation, The National Institute for Occupational Safety and Health (NIOSH), 1600 Clifton Rd, Atlanta, GA 30329-4027 (Website: www.cdc.gov/NIOSH).

1.04 California Proposition 65 Warnings

This product contains chemicals, including lead, or otherwise produces chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. Wash hands after handling. (California Health & Safety Code 25249.5 et seq.)

Welding and cutting equipment produce fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. Wear an approved air-supplied respirator for welding and cutting. (California Health & Safety Code Section 25249.5 et seq.)

1.05 ELECTRIC and MAGNETIC FIELDS (EMF) Recommendations

Consult your doctor and the Implanted Medical Device manufacturer before going near arc welding, spot welding, gouging, or plasma arc cutting.

EMF is produced around welding cables / accessories during the welding operation and can interfere with some medical implants such as pacemakers. All Welding Operators should use the following procedures in order to minimize exposure to EMF when welding.

- Keep electrode / ground cables together by twisting or taping them together.
- Keep electrode / ground cables away from your body.
- Do not place your body in between the electrode and ground cables.
- Do not coil or drape cable around the body.
- Keep Power source and accessories as far away from your body as possible.
- Do not weld whilst carrying the Power source or accessories.
- Connect the ground clamp to the workpiece as close as possible to the weld zone.

SECTION 2 – WARRANTY

The MIG/MAG Manual Welding Torch is safe and reliable in operation when handled, installed, and maintained by suitably Trained and Qualified Tradesperson.

JINAN NORTH WELDING TOOLS products are meticulously checked during and at completion of manufacture. JINAN NORTH WELDING TOOLS guarantees that each product is free from material defects and workmanship at the time of dispatch and functions according to its intended use.

JINAN NORTH WELDING TOOLS provides warranty on material defects and workmanship according to national or state legal requirements.

Contact Tips, Nozzles, and Liners (consumables) are exempt from this warranty.

The warranty does not cover any damages or functional defects resulting from:

- Overloading, abusing, or diverting from intended use of the product.
- Collisions or accidents.
- Non-compliance with instructions stated in this document.
- Improper installation or assembly.
- Insufficient maintenance.
- Modifying the product from its original state.
- Chemical influences.
- Normal wear and tear.

JINAN NORTH WELDING TOOLS assumes no liability other than for replacement or repair of faulty parts.

JINAN NORTH WELDING TOOLS makes no other warranty of any kind, expressed or implied, including, but not limited to the warranties of merchantability, or fitness for any purpose. JINAN NORTH WELDING TOOLS shall not be liable under any circumstances to Buyer, or to any person who shall purchase from Buyer, for damages of any kind, including, but not limited to any direct, indirect incidental or consequential damages or loss of production or loss of profits resulting from any cause whatsoever, including, but not limited to any delay, act, error, or omission of JINAN NORTH WELDING TOOLS.

Genuine JINAN NORTH WELDING TOOLS parts must be used for safety and performance reasons, or the warranty becomes invalid. Warranty shall not apply if accident, abuse, or misuse damages of a product, or if a product is modified in any way except by authorized JINAN NORTH WELDING TOOLS personnel.

2.01 Conditions of Intended Use

- This product is intended for industrial and commercial use and must only be utilized by suitably trained personnel. JINAN NORTH WELDING TOOLS is not liable for any damage or accidents resulting from improper usage.
- The instructions for installation, operation and maintenance described in this document must be followed.
- The MIG/MAG Manual Welding Torch must only be installed, operated, and serviced by suitably Trained and Qualified Tradesperson. The installation, operation, and maintenance regulations detailed in this manual are to be followed.
- The MIG/MAG Manual Welding Torch must solely be used for the intended purpose by the user within the Torches technical specifications and with an automated welding system. The type of Torch must be selected to suit the welding task.
- The MIG/MAG Manual Welding Torch was designed for use as a complete system. The incorporation of components from other manufacturers into the system is not permissible.
- The product must be kept dry and protected from humidity when transported, stored, or used.
- The system is designed for environmental temperature range from 5 °C to 40 °C (41 °F to 104 °F). In case these limits are exceeded, specific action is needed.

SECTION 3 – INTRODUCTION

3.01 MAGNIFIK Torch Description

These Air-Cooled or Fluid-Cooled Push-Pull MIG/MAG Manual Welding Torches are designed for hand Metal Inert Gas welding (MIG) and Metal Active Gas welding (MAG) welding using MIG/MAG welding Power Source.

The Torches consist of a variety design elements:

1. CNC machined tips and gas diffusers are 100% compatible with OEM MIG Torches.
2. Ergonomic, solid handle design.
3. Positive grip Trigger Button with long life contacts.
4. Heavy Duty insulated metal jacketed swan neck with high conductivity inner copper tube.
5. Cable supported by steel spring to reduce hand fatigue.

These elements create an exceptionally reliable and long-lasting Torch system with minimal maintenance.

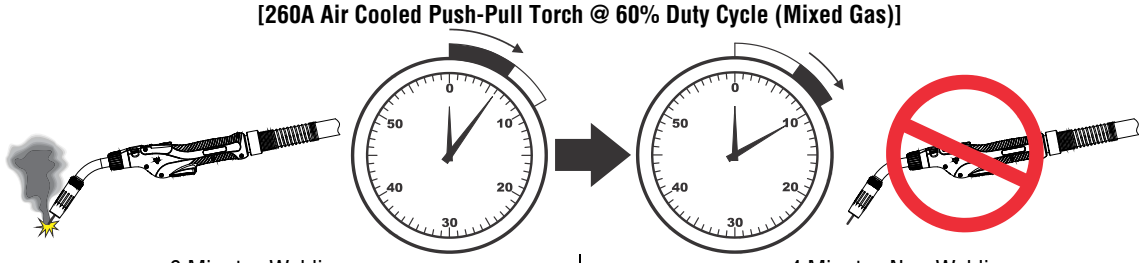
The JINAN NORTH WELDING TOOLS ordering numbers, available accessories, spare parts, and wear parts are found within this User Manual.

NOTE 1: *JINAN NORTH WELDING TOOLS reserves the right to change, improve or revise the specifications or design of this product without prior notice. Such updates or changes do not entitle the buyer of this Product previously sold or shipped to the corresponding changes, updates, improvements, or replacement. The values specified in the table above are nominal parameters. An individual Torch may differ from the above specifications due to in part, but not exclusively, to any one or more of the following variations or changes in manufactured components, installation location/conditions.*

3.02 MAGNIFIK Push-Pull Torches Duty Cycle

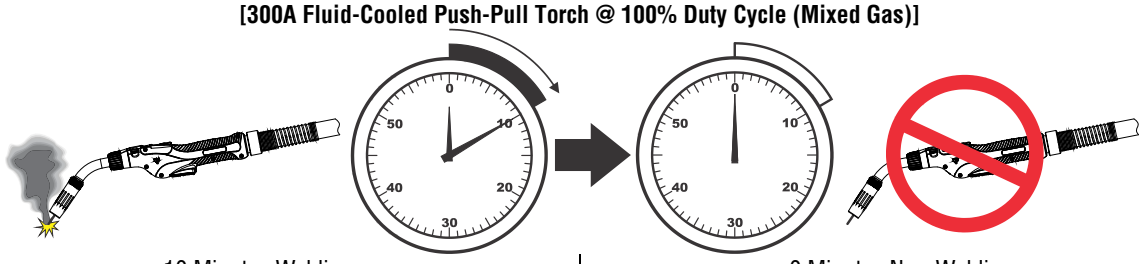
The MIG/MAG Manual Welding Push-Pull Torches rated duty cycles is a statement of the time it may be operated at its rated welding amperage without exceeding the temperature limits of the component parts.

290A Air Cooled Push-Pull Torch @ 60% Duty Cycle (CO2 Gas)
[260A Air Cooled Push-Pull Torch @ 60% Duty Cycle (Mixed Gas)]



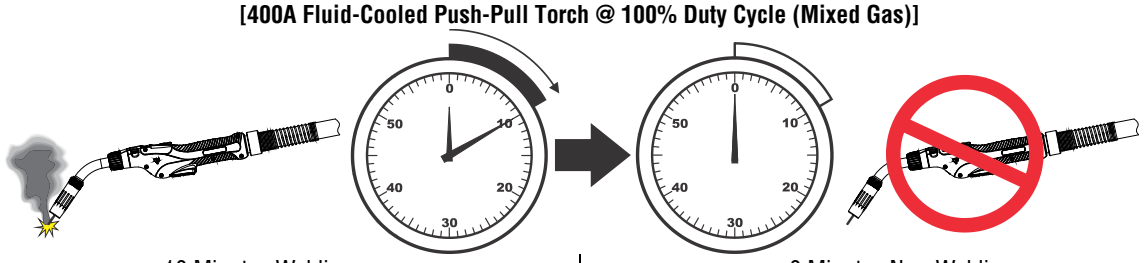
6 Minutes Welding in any 10 Minute Period	4 Minutes Non-Welding in any 10 Minute Period

350A Fluid-Cooled Push-Pull Torch @ 100% Duty Cycle (CO2 Gas)
[300A Fluid-Cooled Push-Pull Torch @ 100% Duty Cycle (Mixed Gas)]



10 Minutes Welding in any 10 Minute Period	0 Minutes Non-Welding in any 10 Minute Period

450A Fluid-Cooled Push-Pull Torch @ 100% Duty Cycle (CO2 Gas)
[400A Fluid-Cooled Push-Pull Torch @ 100% Duty Cycle (Mixed Gas)]



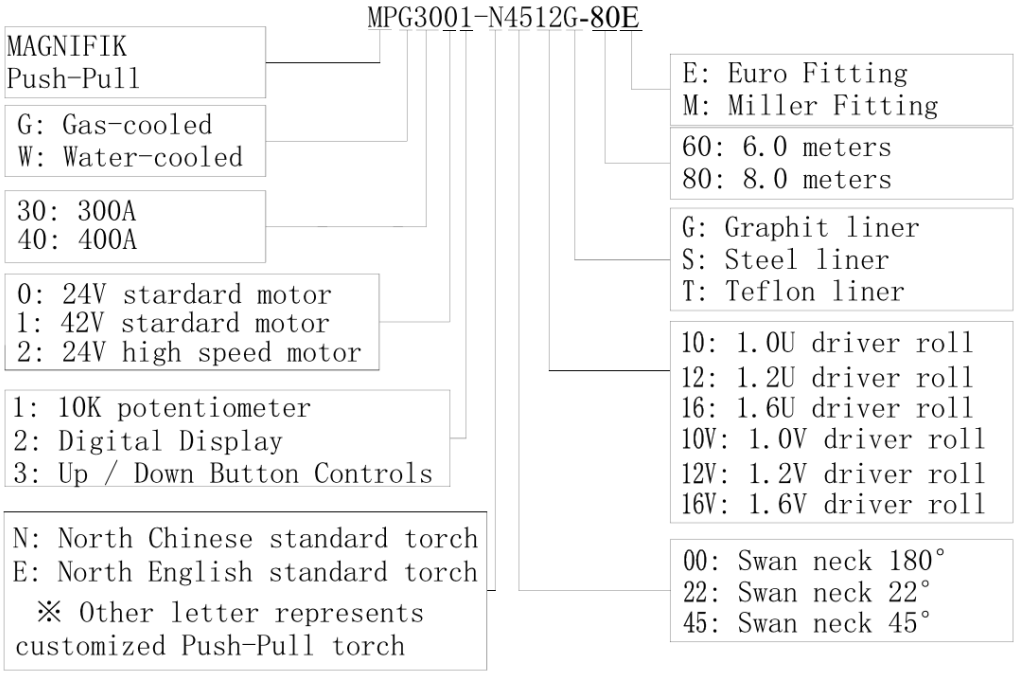
10 Minutes Welding in any 10 Minute Period	0 Minutes Non-Welding in any 10 Minute Period

3.03 MAGNIFIK Push-Pull Torch Contents

All **MAGNIFIK** Push-Pull Torches come complete with:

- MIG/MAG Manual Welding Push-Pull Torch.
- Contact Tip 1.2mm for Aluminium wire.
- Drive Roll Spanner.
- Copper Nozzle Assembly.
- User Manual No: OM-112A EN
- Drive Roll to suit 1.2mm Aluminium welding wire.

3.04 MAGNIFIK Push-Pull Torch Part Number Explanation



3.05 300A Air-Cooled MAGNIFIK Push-Pull Torch Specifications

Refer to NOTE 1 on Page 10

Part Number	Refer to ***Declaration of Conformity*** on page 3 and Section ***3.04 MAGNIFIK Push-Pull Torch Part Number*** Explanation on page 11	Refer to ***Declaration of Conformity*** on page 3 and Section ***3.04 MAGNIFIK Push-Pull Torch Part Number*** Explanation on page 11
Torch Length	6 Metre or 8 Metre	6 Metre or 8 Metre
Torch Power Connector	E = Euro Fitting	M = Miller Style Fitting
Swan Neck Angle (°)	180 or 45	180 or 45
Wire Size Range (mm)	0.8–1.2	0.8–1.2
Standardization Administration of China – Arc Welding Equipment – Part 7: Torches IEC Standard for Safety – Arc Welding Equipment – Part 7: Torches	GB/T 15579.7-2023 IEC 60974-7:2013	
Cooling Method	Air-Cooled	Air-Cooled
Operating Temperature Range	-10 °C to +40 °C (+14 °F to +104 °F)	
Storage/Transportation Temperature Range	-25 °C to +55 °C (-13 °F to +131 °F)	
Relative Air Humidity During Operating	0% to 90% (at +20 °C ambient air temperature)	
Welding Power Rating for MIG/MAG Manual Welding Torch [+40 °C Air Temperature]		
Rated Amps / Duty Cycle using: CO_2 Shielding Gas Mixed Shielding Gas	 290A/60% 260A/60%	 290A/60% 260A/60%
MIG/MAG Torch Maximum Voltage	113 VDC (Peak Welding Voltage)	

3.06 300A Fluid-Cooled MAGNIFIK Push-Pull Torch Specifications

Refer to NOTE 1 on Page 10

Part Number	Refer to ***Declaration of Conformity*** on page 3 and Section ***3.04 MAGNIFIK Push-Pull Torch Part Number*** Explanation on page 11	Refer to ***Declaration of Conformity*** on page 3 and Section ***3.04 MAGNIFIK Push-Pull Torch Part Number*** Explanation on page 11
Torch Length	6 Metre or 8 Metre	6 Metre or 8 Metre
Torch Power Connector	E = Euro Fitting	M = Miller Style Fitting
Swan Neck Angle (°)	180 or 45	180 or 45
Wire Size Range (mm)	0.8–1.2	0.8–1.2
Standardization Administration of China – Arc Welding Equipment – Part 7: Torches IEC Standard for Safety – Arc Welding Equipment – Part 7: Torches	GB/T 15579.7-2023 IEC 60974-7:2013	
Cooling Method	Fluid-Cooled	Fluid-Cooled
Operating Temperature Range	-10 °C to +40 °C (+14 °F to +104 °F)	
Storage/Transportation Temperature Range	-25 °C to +55 °C (-13 °F to +131 °F)	
Relative Air Humidity During Operating	0% to 90% (at +20 °C ambient air temperature)	
Welding Power Rating for MIG/MAG Manual Welding Torch [+40 °C Air Temperature]		
Rated Amps / Duty Cycle using: CO_2 Shielding Gas Mixed Shielding Gas	 350A/100% 300A/100%	 350A/100% 300A/100%
MIG/MAG Torch Maximum Voltage	113 VDC (Peak Welding Voltage)	

3.07 400A Fluid-Cooled MAGNIFIK Push-Pull Torch Specifications

Refer to NOTE 1 on Page 10

Part Number	Refer to ***Declaration of Conformity*** on page 3 and Section ***3.04 MAGNIFIK Push-Pull Torch Part Number*** Explanation on page 11	Refer to ***Declaration of Conformity*** on page 3 and Section ***3.04 MAGNIFIK Push-Pull Torch Part Number*** Explanation on page 11
Torch Length	6 Metre or 8 Metre	6 Metre or 8 Metre
Torch Power Connector	E = Euro Fitting	M = Miller Style Fitting
Swan Neck Angle (°)	180 or 45	180 or 45
Wire Size Range (mm)	1.0–1.6	1.0–1.6
Standardization Administration of China – Arc Welding Equipment – Part 7: Torches IEC Standard for Safety – Arc Welding Equipment – Part 7: Torches	GB/T 15579.7-2023 IEC 60974-7:2013	
Cooling Method	Fluid-Cooled	Fluid-Cooled
Operating Temperature Range	-10 °C to +40 °C	(+14 °F to +104 °F)
Storage/Transportation Temperature Range	-25 °C to +55 °C	(-13 °F to +131 °F)
Relative Air Humidity During Operating	0% to 90%	(at +20 °C ambient air temperature)
Welding Power Rating for MIG/MAG Manual Welding Torch [+40 °C Air Temperature]		
Rated Amps / Duty Cycle using: CO_2 Shielding Gas Mixed Shielding Gas	 450A/100% 400A/100%	 450A/100% 400A/100%
MIG/MAG Torch Maximum Voltage	113 VDC (Peak Welding Voltage)	

SECTION 4 – Torch Installation

4.01 Environmental Limits

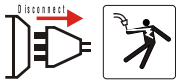
Air-Cooled, and Fluid-Cooled MIG/MAG Manual Welding Torches are designed for use in environments where:

- Operating temperature range is -10 °C to +40 °C (+14 °F to +104 °F)
- Relative air humidity during operating is 0% to 90% @ + 20 °C ambient air temperature

4.02 Operation Guidelines

Be sure to locate the MIG/MAG equipment according to the following guidelines:

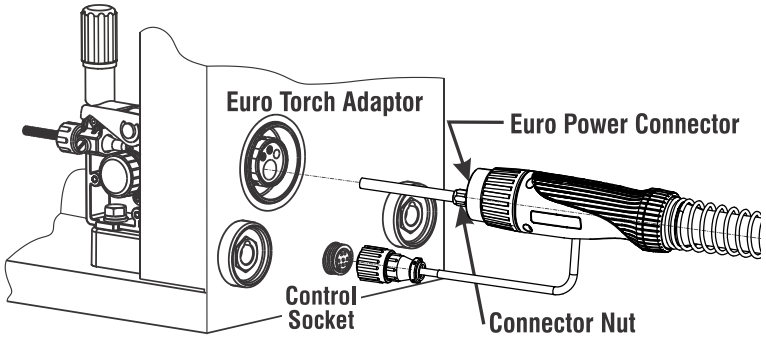
- In areas, free from moisture and dust.
- In areas, free from oil, steam, and corrosive gases.
- In areas, not subjected to abnormal vibration or shock.
- In areas, not exposed to direct sunlight or rain.

							
Torch installation must be done by a suitably Trained and Qualified Tradesperson.	Disconnect Power to MIG/MAG equipment. Electric shock can kill.	Flying metal or dirt can injure eyes.	FUMES and Shielding GAS can be hazardous to your health.	Moving parts can cause injury.	Sparks, weld spatter or hot work piece can cause fires and burns.	Improper installation can cause fire.	Read User Manual.

Genuine JINAN NORTH WELDING TOOLS parts must be used for safety and performance reasons, or the warranty becomes invalid. Inspect all parts for transportation damage. ***Do not use damaged parts.***

4.03 Connecting Euro Style Air-Cooled Torch to MIG Equipment Adaptor

Connecting Air-Cooled Torch to Euro Power Connector



a) Disconnect Power to the MIG/MAG equipment.

b) Align **Euro Power Connector Block** with **Euro Torch Adaptor** then insert it. Ensure the Liner is inserted through the **Euro Toch Adaptor** and out through to the Outlet Guide but does not fowl on the Feed Rollers.

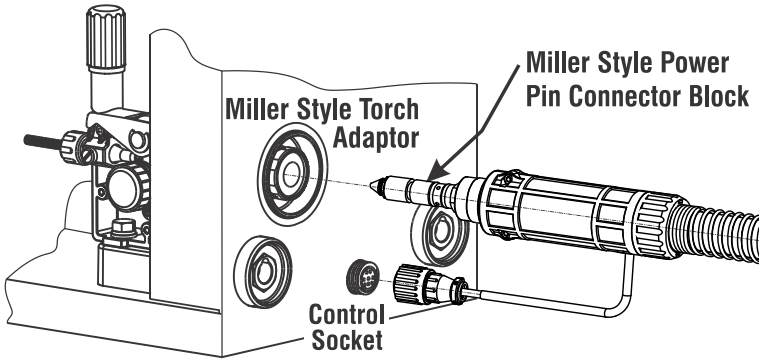
c) Secure tighten the **Connector Nut** into the **Euro Adaptor**.

d) Connect the Multi-Pin Plug to the MIG/MAG equipment **Control Socket**.

e) Refer to the MIG/MAG equipment user manual for feeding the welding wire into the MIG/MAG Welding Torch.

4.04 Connecting Miler Style Air-Cooled Torch to MIG Equipment Adaptor

Connecting Air-Cooled Torch to Miller Style Power Pin



a) Disconnect Power to the MIG/MAG equipment.

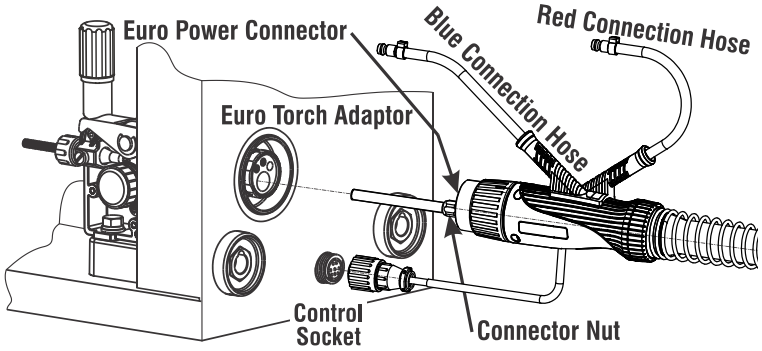
b) Align **Miller Style Power Pin Connector Block** with **Miller Style Torch Adaptor** then insert it to the shoulder. Secure the **Miller Power Pin Connector Block** using mechanical means as described in MIG/MAG equipment user manual.

c) Connect the Multi-Pin Plug to the MIG/MAG equipment **Control Socket**.

d) Refer to the MIG/MAG equipment user manual for feeding the welding wire into the MIG/MAG Welding Torch.

4.05 Connecting Fluid-Cooled Euro Style Torch to MIG Equipment Adaptor

Connecting Fluid-Cooled Torch to Euro Style Power Connector



a) Disconnect Power to the MIG/MAG equipment.

b) Align the **Euro Power Connector Block** with **Euro Torch Adaptor** then insert it. Ensure the Liner is inserted through the **Euro Toch Adaptor** and out through to the Outlet Guide but does not fowl on the Feed Rollers.

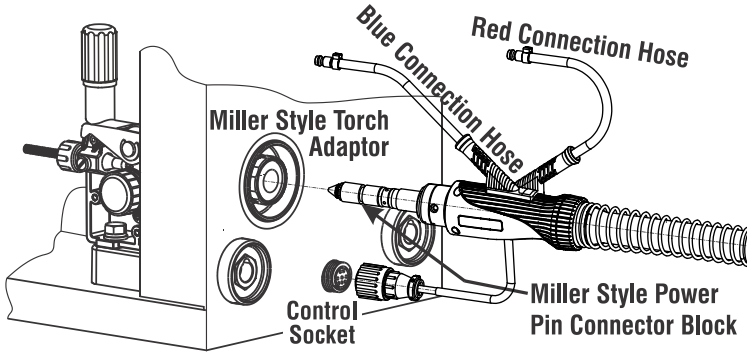
c) Secure tighten the **Connector Nut** into the **Euro Adaptor**.

d) Connect the Multi-Pin Plug to the MIG/MAG equipment **Control Socket**.

e) Connect the **Blue Connection Hose** and the **Red Connection Hose** as follows:
- **Red Connection Hose** fitting to the **Red Connector** on the Fluid Re-circulator equipment.
- **Blue Connection Hose** fitting to the **Blue Connector** on the Fluid Re-circulator equipment.

f) Refer to the MIG/MAG equipment user manual for feeding the welding wire into the MIG/MAG Welding Torch.

Connecting Fluid-Cooled Torch to Miller Style Power Pin



a) Disconnect Power to the MIG/MAG equipment.

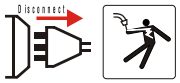
b) Align the **Miller Style Power Pin Connector Block** with **Miller Style Torch Adaptor** then insert it to the shoulder. Secure the **Miller Power Pin Connector Block** using mechanical means as described in MIG/MAG equipment user manual.

c) Connect the Multi-Pin Plug to the MIG/MAG equipment **Control Socket**.

e) Connect the **Blue Connection Hose** and the **Red Connection Hose** as follows:
- **Red Connection Hose** fitting to the **Red Connector** on the Fluid Re-circulator equipment.
- **Blue Connection Hose** fitting to the **Blue Connector** on the Fluid Re-circulator equipment.

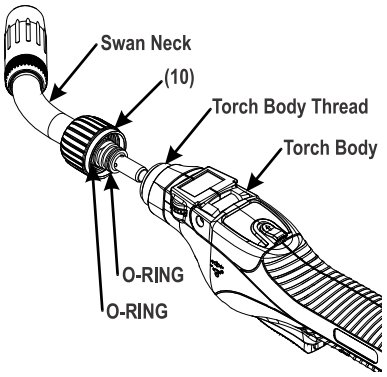
d) Refer to the MIG/MAG equipment user manual for feeding the welding wire into the MIG/MAG Welding Torch.

SECTION 5 – Torch Operation

							
Torch installation must be done by a suitably Trained and Qualified Tradesperson.	Disconnect power to MIG/MAG equipment. Electric shock can kill.	Flying metal or dirt can injure eyes.	FUMES and Shielding GAS can be hazardous to your health.	Moving parts can cause injury.	Welding wire can cause injury	Improper installation can cause fire.	Read User Manual.

Genuine JINAN NORTH WELDING TOOLS parts must be used for safety and performance reasons, or the warranty becomes invalid. Inspect all parts for transportation damage. ***Do not use damaged or worn parts.*** *Before starting the MIG/MAG equipment, check the whole installation according to the manufacturer's instructions, this Manual and applicable national / state / local safety regulations.*

5.01 How to Change or Rotate the Swan Neck



TURN OFF the Water Recirculatory and disconnect the Red & Blue Fluid Lines when removing the Swan Neck from a Fluid-Cooled Torch.

a) Disconnect Power to the MIG/MAG equipment and the Water Recirculatory (if fitted).

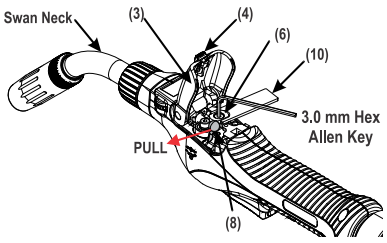
b) Remove the **Swan Neck**.
- Loosen the **Lock Nut (10)** until it is clear of the **Torch Body Thread**.
- Using a twisting action pull the Swan Neck out of the **Torch Body**.

c) Fit the **Swan Neck**.
- Replace damaged **O-RINGS** in **Swan Neck** before fitting into the **Torch Body**.
- Using a twisting action push the Swan Neck into the **Torch Body**.
CAUTION: DO NOT damage the O-RINGS when inserting into the **Torch Body**.

d) Tighten the **Lock Nut (10)** firmly onto the **Torch Body** to ensure the **Swan Neck** will not rotate.

e) Rotate the **Swan Neck**.
- Loosen the **Lock Nut (10)** by about 1 turn then pull the **Swan Neck** out a small amount from the **Torch Body**.
- Rotate the **Swan Neck** to the new position then tighten the **Lock Nut (10)** firmly onto the **Torch Body** to ensure the **Swan Neck** will not rotate.

5.02 How to Change Drive Roll / Pressure Roll



CHANGE Drive Roll (6)

a) Disconnect Power to the MIG/MAG equipment.

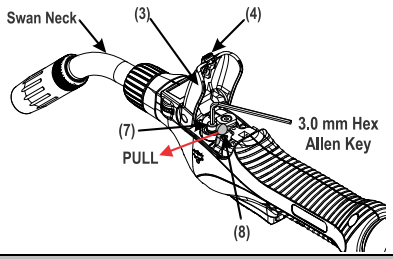
b) Release the **Wire Drive Mechanism Cover (3)** by pushing the **Wire Drive Mechanism Cover Latch (4)** towards the **Swan Neck.**

c) Insert the **3.0 mm Hex Allen** into the **Drive Roll (6)** screw.

d) Clamp the **Drive Roll (6)** using the **Drive Roll Spanner (10)** then rotate the **3.0 mm Hex Allen** counter-clockwise to loosen the **Drive Roll (6)**.

e) **PULL** the **Tension Arm (8)** as shown by the red arrow to remove the **Drive Roll (6)**.

f) Fit a new **Drive Roll (6)** and then re-assemble the Push-Pull Torch.



CHANGE Pressure Roll (7)

a) Disconnect Power to the MIG/MAG equipment.

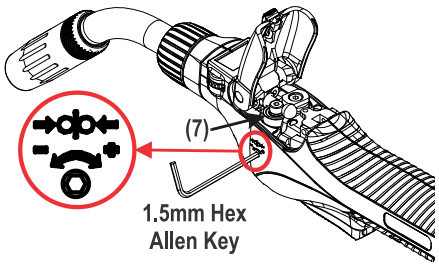
b) Release the **Wire Drive Mechanism Cover (3)** by pushing the **Wire Drive Mechanism Cover Latch (4)** towards the **Swan Neck.**

c) Insert the **3.0 mm Hex Allen** into the **Pressure Roll (7)** screw.

d) Rotate the **3.0 mm Hex Allen** counter-clockwise to loosen the **Pressure Roll (7)** while **PULLING** the **Tension Arm (8)** as shown by the red arrow to remove the **Pressure Roll (7).**

e) Fit a new **Pressure Roll (7)** and then re-assemble the Push-Pull Torch.

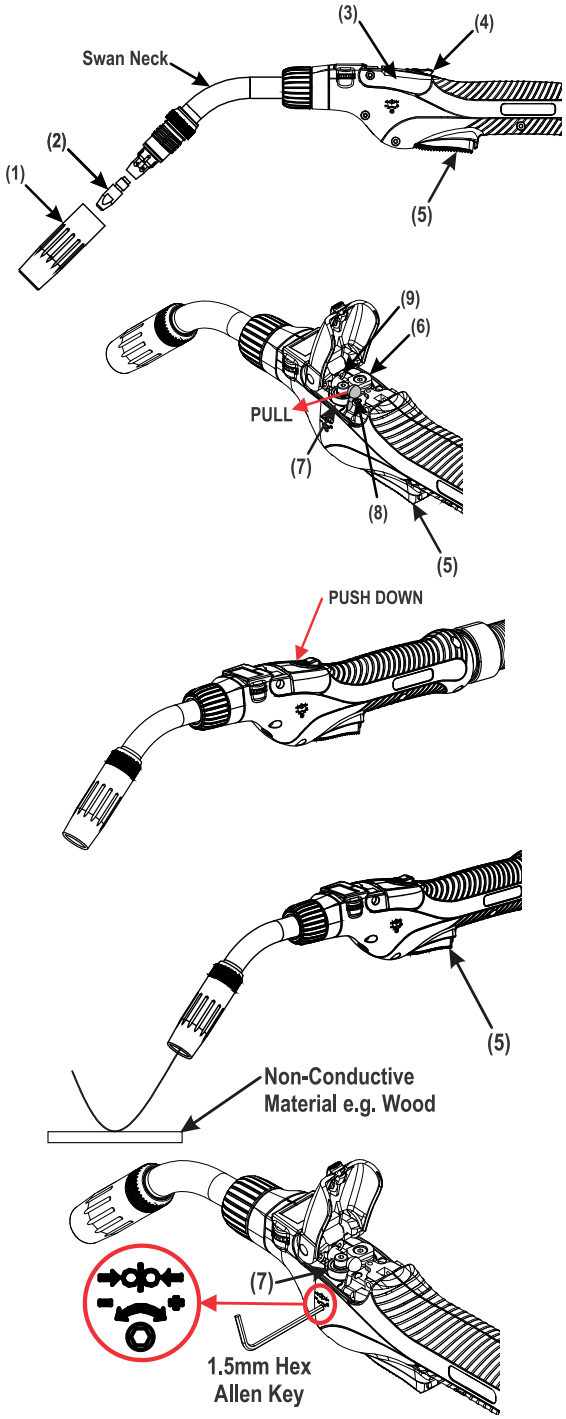
5.03 How to Adjust Pressure to the Drive Roll



a) Increase Pressure to **Drive Roll**.
If the **Welding Wire** slips on the PUSH-PULL Drive Roll (**Welding Wire** does not feed constantly from the Torch), then increase the pressure of the **Pressure Roll (7)** by rotating a **1.5mm Hex Allen Key** clockwise a little at a time, then test for consistent **Welding Wire** feedability.
CAUTION: DO NOT put excessive pressure onto the **Pressure Roll (7).** Too much force on the **Drive Roll** may cause the **Welding Wire** to deform producing metal fragments which clogs the **Liner** in the **Swan Neck** and can produce poor wire feedability.

b) Decrease Pressure to **Drive Roll**.
If metal fragments are foaming off the **Welding Wire** on the PUSH-PULL Drive Roll, then decrease the pressure of the **Pressure Roll (7)** by rotating a **1.5mm Hex Allen Key** counter-clockwise a little at a time.
CAUTION: Too little force on the **Drive Roll** may cause the **Welding Wire** to slip on the **Drive Roll** causing an inconsistence weld bead.

5.04 How to Feed Welding Wire



a) Disconnect Power to the MIG/MAG equipment.

b) Ensure the Drive Roll in the MIG/MAG equipment, and PUSH-PULL Torch are marked with the same diameter size as the **Welding Wire** you are about to feed thru the PUSH-PULL Torch.

c) Unscrew the **Nozzle (1)** then unscrew the **Contact Tip (2)**.

d) Fit the **Welding Wire** spool as described in the MIG/MAG equipment operating manual.

e) Connect the PUSH-PULL Torch per in Section 4.03 or Section 4.05 then connect Power to the MIG/MAG equipment.

f) Release the **Wire Drive Mechanism Cover (3)** by pushing the **Wire Drive Mechanism Cover Latch (4)** towards the **Swan Neck**.

g) With the PUSH-PULL Torch laying straight, depress the **Torch Trigger Switch (5)** to slowly feed the **Welding Wire** until it reaches the PUSH-PULL **Drive Roll (6)** then release the **Torch Trigger Switch (5).**

***NOTE 2**: Refer to SECTION 7 – TROUBLESHOOTING on Page 26 if the **Welding Wire** tangles (Birds Nest) at the MIG/MAG equipment Drive Roll OR the PUSH-PULL Torch Drive Roll.*

h) **PULL** the **Tension Arm (8)** as shown by the red arrow to let the **Welding Wire** to pass over the **Drive Roll (6)** while depressing the **Torch Trigger Switch (5)** and guiding the **Welding Wire** into the **Outlet Guide (9)** then release the **Torch Trigger Switch (5)** and **Tension Arm (8).**

i) Depress the **Torch Trigger Switch (5)** again until the **Welding Wir**e is 75 mm (3 in.) out past the **Swan Neck** then release the **Torch Trigger Switch (5)**.

***NOTE 3**: The **Tension Arm (8)** must be released to allow the **Pressure Roll (7)** to push against the **Welding Wire** through the **Swan Neck**.*

j) Push the **Wire Drive Mechanism Cover (3)** by down to cover the **Wire Drive Mechanism**.

k) Fit the **Contact Tip (2)**, and **Nozzle (1)** to the PUSH-PULL Torch.

l) Before you start welding, test the **Wire Drive Mechanism** can feed the **Welding Wire**:

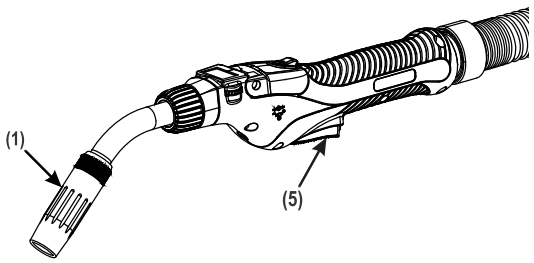
i. Point the PUSH-PULL Torch at 60 degree and 100mm (4 in.) from a flat non-conductive material, e.g. wood, on the floor.

ii. Depress **Torch Trigger Switch (5)** to feed **Welding Wire** on to the flat non-conductive material, e.g. wood.

iii. If the **Welding Wire** slips on the PUSH-PULL Drive Roll (**Welding Wire** does not feed constantly from Torch), then increase the pressure of the **Pressure Roll (7)** by rotating a **1.5mm Hex Allen Key** clockwise.

iv. If the **Welding Wire** slips on the MIG/MAG equipment Drive Roll (**Welding Wire** does not feed constantly from Torch) then adjust the Drive Roll Pressure in the MIG/MAG equipment. Refer to the MIG/MAG equipment operating manual for information on how to adjust the Drive Roll Pressure.

5.05 Torch Trigger Switch



a) Connected the PUSH-PULL Torch to the MIG/MAG equipment as described in Section 4.03 or Section 4.05.

b) Depressed **Torch Trigger (5)** to energized welding power, **Welding Wire** (if fitted) is driven into PUSH-PULL torch and shielding gas flows (if gas is connected MIG/MAG equipment and turned on) out of the **Nozzle (1)**.

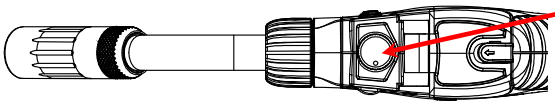
*DO NOT put MIG Torch near your ears or eyes when the **Torch Trigger (5)** is depressed as **Welding Wire** will rapidly exit the **Contact Tip** then the **Nozzle** and will cause serious to your ears, eyes, or skin.*

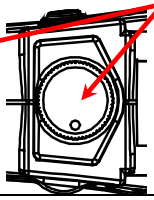
*Touching **Welding Wire** when electrically alive may cause fatal shocks or severe burns.*

Always wear Safety glass when operating or near MIG/MAG equipment.

5.06 Torch Controls

5.6.1 Wire Speed Control Knob

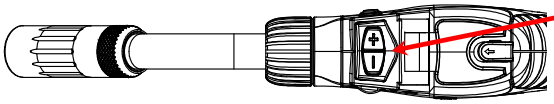


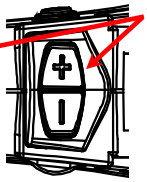


Rotating the **Wire Speed Control Knob** in a clockwise direction increases the wire speed and decreases the wire speed in a counter clockwise direction.

***NOTE 4**: Refer to the MIG/MAG equipment user manual to check that the PUSH-PULL Torch with **Wire Speed Control** is compatible with the MIG/MAG equipment operation.*

5.6.2 Wire Speed Control Up / Down Buttons

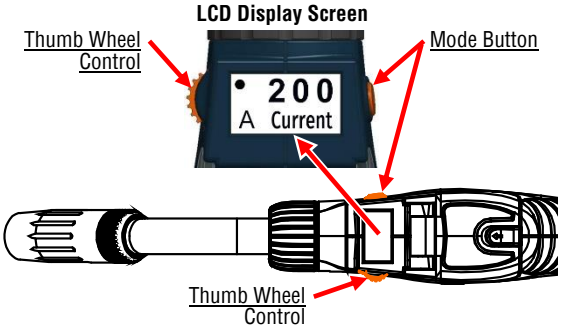




The **+ Button** increases the wire speed and the **- Button** decreases the wire speed.

***NOTE 5**: Refer to the MIG/MAG equipment user manual to check that the PUSH-PULL Torch with **Wire Speed Up / Down Button** Control is compatible with the MIG/MAG equipment operation.*

5.6.3 Multi Digi Display Module with Thumb Wheel Control and Select Button Controls



***NOTE 6**: Refer to the MIG/MAG equipment user manual to check that the PUSH-PULL Torch with **Multi Digi Display Module with Thumb Wheel Control / Select Button Controls** is compatible with the MIG/MAG equipment operation. Also check that all **five Parameter Types** are available with the MIG/MAG equipment.*

LED Light

***NOTE 7**: The LED Light is only available with the Multi Digi Display Module.*

LCD Display Screen Sequence of Operation

1. Connect the Push-Pull Torch to the MIG/MAG equipment, refer to SECTION 4, then Power Up the MIG/MAG equipment.
2. The Push-Pull Torch Company Logo appears on the LCD Display Screen.
3. The current Parameter Value/Parameter Type are displayed on the LCD Display Screen, see below.

LCD Display Screen Explained:

Controls Enabled LED
Thumb Wheel and Select Button controls are enabled when this LED is illuminated.

Parameter Value

Parameter Type

Thumb Wheel Control Operation:

If the **Control Enabled LED** is OFF (NOT illuminated) then PRESS and HOLD the **Mode Button** for one second to TURN the **Control Enabled LED** ON:

a) When the ***Controls Enabled LED*** is ON (illuminated) the **Thumb Wheel Control** adjusts the displayed **Parameter Value** up or down.
b) **Increasing the Parameter Value:** Scroll the **Thumb Wheel Control** in a clockwise direction to increase the value.
c) **Decreasing the Parameter Value:** Scroll the **Thumb Wheel Control** in a counterclockwise direction to decrease the value.

Mode Button Control Operation:

If the **Control Enabled LED** is OFF (NOT illuminated) then PRESS and HOLD the **Mode Button** for one second to TURN the **Controls Enabled LED** ON:

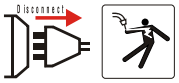
a) When the ***Controls Enabled LED*** is ON (illuminated) the **Mode Button** control is used to change the **Parameter Type** by a momentary press the **Mode Button**.
b) Five **Parameter Types** are available, refer to ***NOTE 6***:
   1. Weld Program, 2. Weld Current,
   3. Weld voltage, 4. Wire speed,
   5. Weld Arc Length.
c) Use the **Thumb Wheel Control** to adjust the **new Parameter Type** displayed on the **LCD Display Screen,** refer to "**Thumb Wheel Control Operation**" section above**.**

LED Light Operation:

Please note that the LED Light is only available with the Multi Digi Display Module.

a) Depress the Torch Trigger Switch and the LED Light will turn ON.
b) The LED Light will turn OFF a few seconds after the Torch Trigger Switch is released.
   ***NOTE 8**:* The LED Light turn OFF time delay depends on the programmed time in the MIG/MAG equipment.

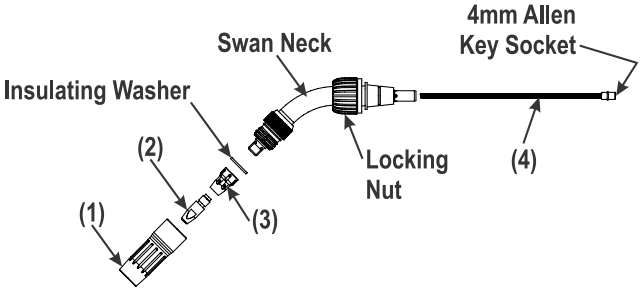
SECTION 6 – Wear Parts & Torch Parts

							
Torch installation must be done by a suitably Trained and Qualified Tradesperson.	Disconnect power to MIG/MAG equipment. Electric shock can kill.	Flying metal or dirt can injure eyes.	FUMES and Shielding GAS can be hazardous to your health.	Moving parts can cause injury.	Welding wire can cause injury	Improper installation can cause fire.	Read User Manual.

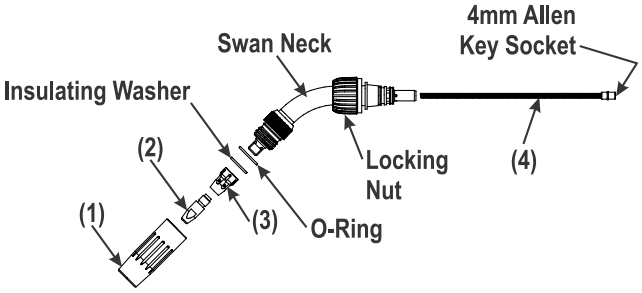
Genuine JINAN NORTH WELDING TOOLS parts must be used for safety and performance reasons, or the warranty becomes invalid. Inspect all parts for transportation damage. ***Do not use damaged or worn parts.*** *Before starting the MIG/MAG equipment, check the whole installation according to the manufacturer's instructions, this Manual and applicable national / state / local safety regulations.*

6.01 Change Swan Neck Wear Parts

MPG300 Push-Pull Torch Swan Neck



MPW/MPW400 Push-Pull Torch Swan Neck



a) Disconnect power to MIG/MAG equipment.

b) Remove the **Swan Neck** Assembly from the Push-Pull Torch by unscrewing the **Locking Nut** then twist the **Swan Neck** Assembly to remove it.

c) **Remove the Wear Parts as follows:**

- **Nozzle (1):** Unscrew the threaded **Nozzle (1)** by turning the **Nozzle (1)** counter clockwise to remove.
- **Contact Tip Adaptor (2):** Cut **Welding Wire** (electrode) close to the **Contact Tip (2)** to remove burrs. Unscrew the **Contact Tip (2)** using an appropriate tool in a counter clockwise to remove it.
- **Tip Adaptor (3):** Unscrew the **Tip Adaptor (3)** using an appropriate tool in a counter clockwise to remove it.
- **Swan Neck Liner (4):** Unscrew the **Swan Neck Liner (4)** using a 4mm Allen Key in a counter clockwise to remove it.

d) **Replace the Wear Parts as follows:**

- **Swan Neck Liner (4):** Screw the **Swan Neck Liner (5)** into the **Swan Neck** using a 4mm Allen Key.
- **Tip Holder (3):** Screw the **Tip Holder (3)** using an appropriate tool onto the **Swan Neck**.
- **Contact Tip (2):** Screw the **Contact Tip (2)** into the **Tip Holder (3)**.
- **Nozzle (1):** Screw the **Nozzle (1)** onto the **Swan Neck.**

6.02 Nozzles, Contact Tips, Contact Tip Holders, Liners Parts, and Drive Rolls

A. NOZZLES

PART NUMBER	DESCRIPTION	MPG300 Air-Cooled	MPW300 Fluid-Cooled	MPW400 Fluid-Cooled
NTA4216	NOZZLE	■		
TA4217B	NOZZLE		■	
NTA5217	NOZZLE			■

B. CONTACT TIPS

PART NUMBER	DESCRIPTION	MPG300 Air-Cooled	MPW300 Fluid-Cooled	MPW400 Fluid-Cooled
EB3208AL	CONTACT TIP 0.8MM ECU for Aluminium Wire	■	■	
EB3210AL	CONTACT TIP 1.0MM ECU for Aluminium Wire	■	■	■
EB3212AL	CONTACT TIP 1.2MM ECU for Aluminium Wire	■	■	■
EB3216AL	CONTACT TIP 1.6MM ECU for Aluminium Wire			■
EB3208	CONTACT TIP 0.8MM ECU	■	■	
EB3210	CONTACT TIP 1.0MM ECU	■	■	■
EB3212	CONTACT TIP 1.2MM ECU	■	■	■
EB3216	CONTACT TIP 1.6MM ECU			■

C. CONTACT TIP HOLDERS

PART NUMBER	DESCRIPTION	MPG300 Air-Cooled	MPW300 Fluid-Cooled	MPW400 Fluid-Cooled
NTC5001	TIP ADAPTOR	■	■	■

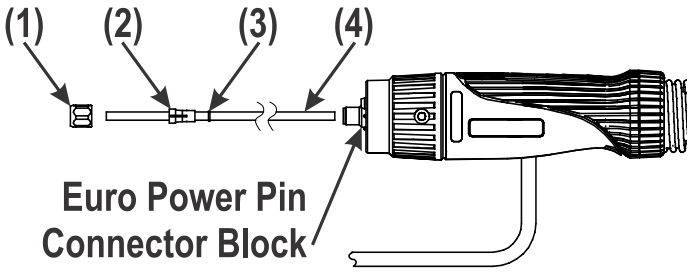
D. LINERS

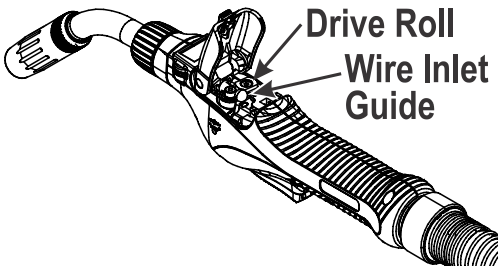
PART NUMBER	DESCRIPTION	MPG300 Air-Cooled	MPW300 Fluid-Cooled	MPW400 Fluid-Cooled
NTR3100	JUMP LINER in SWAN NECK	■	■	■
NTR5100	JUMP LINER in SWAN NECK			
R3412-6	GRAPHITE LINER ID=2.3MM OD=4.7MM L=6M			
R3412-8	GRAPHITE LINER ID=2.3MM OD=4.7MM L=8M			
R5416-6	GRAPHITE LINER ID=2.9MM OD=4.7MM L=6M	■	■	■
R5416-8	GRAPHITE LINER ID=2.9MM OD=4.7MM L=8M	■	■	■

E. DRIVE ROLLS

PART NUMBER	DESCRIPTION	MPG300 Air-Cooled	MPW300 Fluid-Cooled	MPW400 Fluid-Cooled
MPWZ510212-08	DRIVE ROLL 0.8MM U-GROOVE ALUM Wire	■	■	
MPWZ510212-10	DRIVE ROLL 1.0MM U-GROOVE ALUM Wire	■	■	■
MPWZ510212	DRIVE ROLL 1.2MM U-GROOVE ALUM Wire	■	■	■
MPWZ510212-16	DRIVE ROLL 1.6MM U-GROOVE ALUM Wire			■
MPWZ510212-08V	DRIVE ROLL 0.8MM V-GROOVE HARD Wire	■	■	
MPWZ510212-10V	DRIVE ROLL 1.0MM V-GROOVE HARD Wire	■	■	■
MPWZ510212V	DRIVE ROLL 1.2MM V-GROOVE HARD Wire	■	■	■
MPWZ510212-16V	DRIVE ROLL 1.6MM V-GROOVE HARD Wire			■

6.03 Changing the EURO Torch Cable Liner





a) Disconnect power to MIG/MAG equipment.

b) Disconnect the Torch from the MIG/MAG equipment.

c) Measure the old **Liner (4)** length protruding out from the **Liner Nut (1)** so that the new **Liner** can be trimmed to the same length as the old **Liner**.

d) Lay the Torch cable out straight.

e) Remove the **Liner Nut (1)** from the **Euro Power Pin Connector Block** using an appropriate wrench in a counter clockwise direction.

f) Remove the **Liner Nipple (2)** and **O-Ring (3)** from the old **Liner (4).**

g) Remove the old **Liner (4)** by twisting and pulling the liner end out of the **Euro Power Pin Connector Block**.

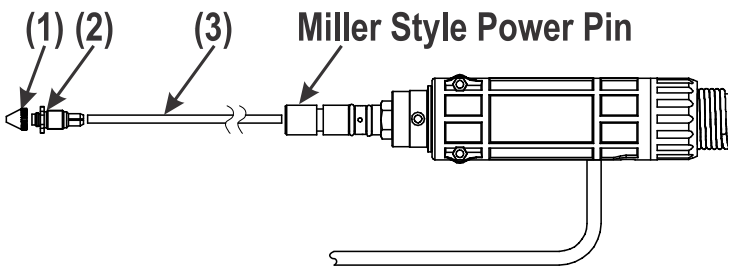
h) With the Torch laying straight, insert new **Liner (4)** into **Euro Power Pin Connector Block** and feed 50mm at a time into the Torch using a twisting motion to stop the new **Liner** from kinking.
NOTE: Ensure that the new **Liner (4)** is fed all the way to the wire drive assembly **Wire Inlet Guide** next to the **Drive Roll** in the Torch Head.

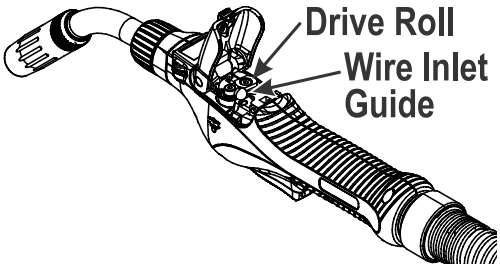
i) Fit the **Liner Nipple (2)** and **O-Ring (3)** to the new **Liner (4).**
NOTE: Replace the **Liner Nipple (2)** or **O-Ring (3)** if either component is damaged.

j) Secure the new **Liner (4)** by screwing **Liner Nut (1)** into **Euro Power Pin Connector Block** to secure the Liner.

k) Trim the new **Liner (4)** length protruding out from the **Liner Nut (1)** as measured in c) above.

6.04 Changing the MILLER STYLE Torch Cable Liner





a) Disconnect power to MIG/MAG equipment.

b) Disconnect the Torch from the MIG/MAG equipment.

c) Lay the Torch cable out straight.

d) Remove the **Miller Liner Nipple (1)** from the **Miller Liner Holder Nipple (2)** using an appropriate wrench in a counter clockwise direction.

e) Remove the **Miller Liner Holder Nipple (2)** using an appropriate wrench in a counter clockwise direction from the **Miller Style Power Pin.**

f) Measure the old **Liner (3)** length protruding out from the **Miller Style Power Pin** so that the new **Liner** can be trimmed to the same length as the old **Liner**.

g) Remove the old **Liner (3)** by twisting and pulling the liner end out of the **Miller Style Power Pin**.

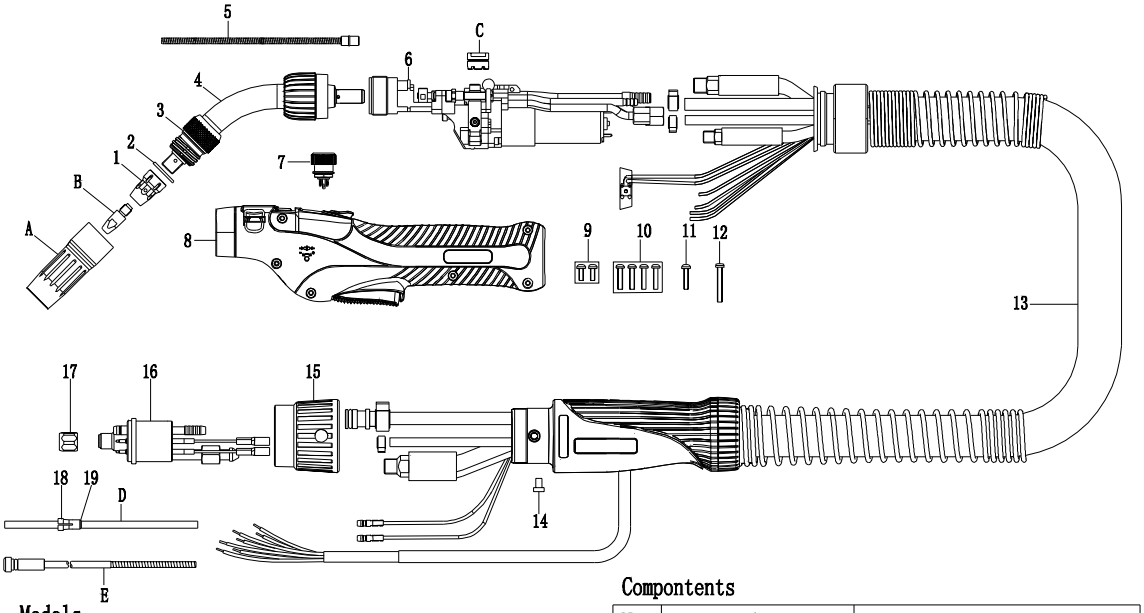
h) With the Torch laying straight, insert new **Liner (3)** into **Miller Style Power Pin** and feed 50mm at a time into the Torch using a twisting motion to stop the new **Liner** from kinking.
NOTE: Ensure that the new **Liner (3)** is fed all the way to the wire drive assembly **Wire Inlet Guide** next to the **Drive Roll** in the Torch Head.

i) Trim the new **Liner (4)** length protruding out from the **Miller Style Power Pin** as measured in f) above.

j) Fit the **Miller Liner Holder Nipple (2)** to the new **Liner (4)** then screw it into the **Miller Style Power Pin**.
NOTE: Replace the **Miller Liner Holder Nipple (2)** if this component is damaged.

k) Secure the new **Liner (3)** by screwing **Miller Liner Nipple (1)** into **Miller Style Power Pin** to secure the Liner.

6.05 MPG300 Euro AIR COOLED Torch Parts



Models

Description	Part Number	
	6m	8m
Aluminum Welded *	MPG3001-E4512G-60E	MPG3001-E4512G-80E
Steel Welded	MPG3001-E4512S-60E	MPG3001-E4512S-80E

Nozzle

No.	Part Number	Description
A	NTA4216	Nozzle 16mm

Contact Tips

No.	Part Number	Description
B	EB3208AL	Contact Tip 0.8mm Ecu For AL
	EB3210AL	Contact Tip 1.0mm Ecu For AL
	EB3212AL *	Contact Tip 1.2mm Ecu For AL
	EB3208	Contact Tip 0.8mm Ecu
	EB3210	Contact Tip 1.0mm Ecu
	EB3212	Contact Tip 1.2mm Ecu

Drive Rolls

No.	Part Number	Description
C	MPWZ510212-0.8	0.8U Drive Roll
	MPWZ510212-1.0	1.0U Drive Roll
	MPWZ510212 *	1.2U Drive Roll
	MPWZ510212-0.8V	0.8V Drive Roll
	MPWZ510212-1.0V	1.0V Drive Roll
	MPWZ510212V	1.2V Drive Roll

* Denotes Standart Build

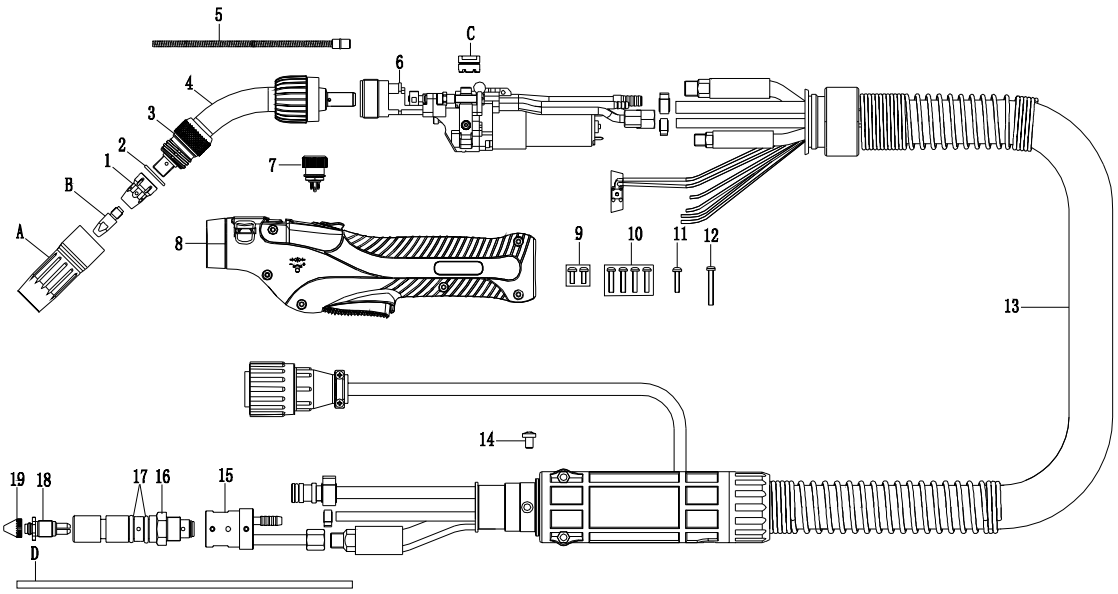
Compontents

No.	Part Number	Description
1	NTC5001	Tip Adaptor
2	SF5206A	Insulating Washer
3	Q518015V	O-Ring 18×1.5
4	NTF3245	Swan Neck Assy
5	NTR3100	Jump Liner Assy
6	MPGZ310000A	24L Mechanism Assy
7	Q8510K	Potentiometer,10kΩ
8	NH0108A	Handle Assy for Pot
9	Q210308SSP	Screw M3×8
10	Q210312SSP	Screw M3×12
11	Q210314SSP	Screw M3×14
12	Q210325SSP	Screw M3×25
13	PGL3060E	Cable Assembly 6m
	PGL3080E	Cable Assembly 8m
14	Q210406B	Screw M4×6
15	NH020203	Gun Plug Nut
16	MPGU1001	Euro Gun Plug for PP
17	EU1011	Nut M10×1
18	ER5332	Liner Nipple
19	Q503515	O-Ring 3.5×1.5

Liners

No.	Part Number	Description
D	R5416-X *	Graphite Liner 2.9/4.7,Xm
	R3412-X	Graphite Liner 2.3/4.7,Xm
E	LTR2210-X	Steel Liner 0.8-1.0mm×Xm
	LTR3212-X	Steel Liner 1.0-1.2mm×Xm

6.06 MPG300 MILLER STYLE AIR COOLED Torch Parts



Model

Description	Part Number	
Aluminum Welded	6m	8m
	MPG3021-M4512G-60M	MPG3021-M4512G-80M

Nozzle

No.	Part Number	Description
A	NTA4216	Nozzle 16mm

Contact Tips

No.	Part Number	Description
B	EB3208AL	Contact Tip 0.8mm Ecu For AL
	EB3210AL	Contact Tip 1.0mm Ecu For AL
	EB3212AL *	Contact Tip 1.2mm Ecu For AL
	EB3208	Contact Tip 0.8mm Ecu
	EB3210	Contact Tip 1.0mm Ecu
	EB3212	Contact Tip 1.2mm Ecu

Drive Rolls

No.	Part Number	Description
C	MPWZ510212-0.8	0.8U Drive Roll
	MPWZ510212-1.0	1.0U Drive Roll
	MPWZ510212 *	1.2U Drive Roll
	MPWZ510212-0.8V	0.8V Drive Roll
	MPWZ510212-1.0V	1.0V Drive Roll
	MPWZ510212V	1.2V Drive Roll

* Denotes Standart Build

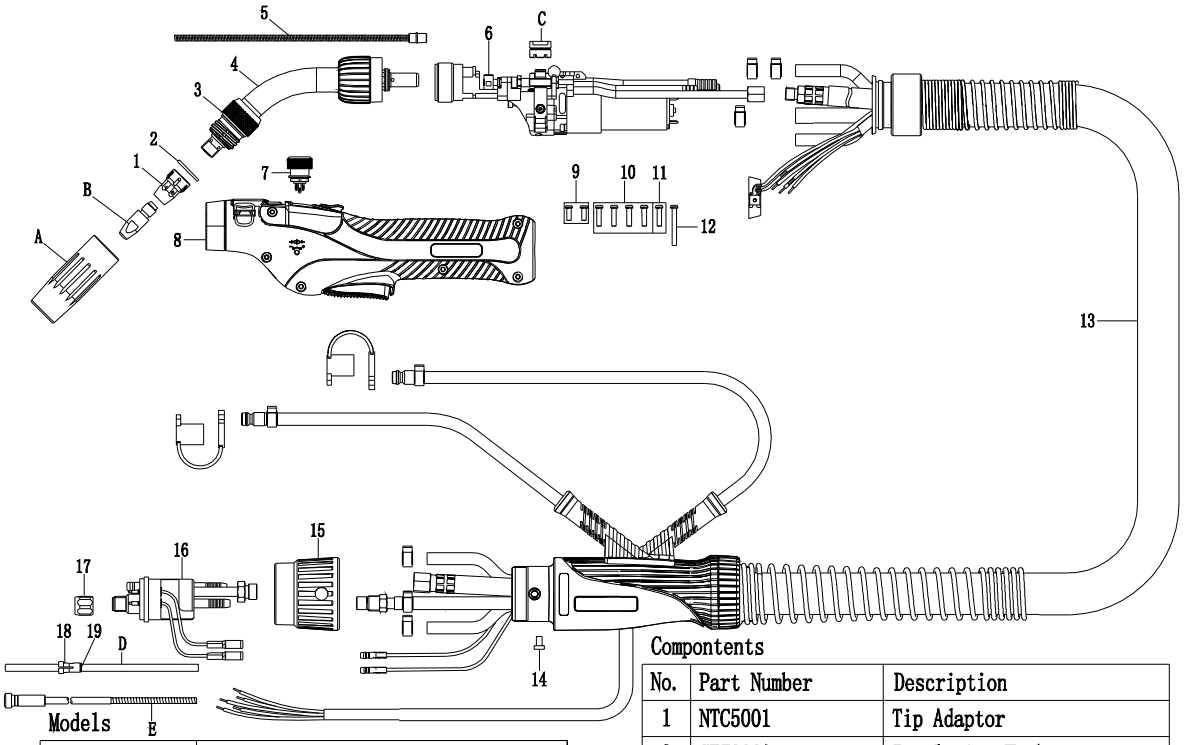
Compontents

No.	Part Number	Description
1	NTC5001	Tip Adaptor
2	SF5206A	Insulating Washer
3	Q518015V	O-Ring 18×1.5
4	NTF3245	Swan Neck Assy
5	NTR3100	Jump Liner Assy
6	MPGZ310000	24H Mechanism Assy
7	Q8510K	Potentiometer,10kΩ
8	NH0108A	Handle Assy for Pot
9	Q210308SSP	Screw M3×8
10	Q210312SSP	Screw M3×12
11	Q210314SSP	Screw M3×14
12	Q210325SSP	Screw M3×25
13	PGL3060M	Cable Assembly 6m
	PGL3080M	Cable Assembly 8m
14	Q210406B	Screw M4×6
15	MPGU310500	Miller Tail Holder
16	MPGU310510	Miller Tail
17	Q512526	O-Ring 12.5×2.65
18	MR5431	Miller Liner Hold Nipple
19	MR5432	Miller Liner Nipple

Liners

No.	Part Number	Description
D	R5416-X *	Graphite Liner 2.9/4.7,Xm
	R3412-X	Graphite Liner 2.3/4.7,Xm

6.07 MPW300 EURO FLUID COOLED Torch Parts



Models

Description	Part Number	
	6m	8m
Aluminum Welded *	MPW3001-E4512G-60E	MPW3001-E4512G-80E
Steel Welded	MPW3001-E4512S-60E	MPW3001-E4512S-80E

Nozzle

No.	Part Number	Description
A	TA4217B	Nozzle 17mm

Contact Tips

No.	Part Number	Description
B	EB3208AL	Contact Tip 0.8mm Ecu For AL
	EB3210AL	Contact Tip 1.0mm Ecu For AL
	EB3212AL *	Contact Tip 1.2mm Ecu For AL
	EB3208	Contact Tip 0.8mm Ecu
	EB3210	Contact Tip 1.0mm Ecu
	EB3212	Contact Tip 1.2mm Ecu

Drive Rolls

No.	Part Number	Description
C	MPWZ510212-0.8	0.8U Drive Roll
	MPWZ510212-1.0	1.0U Drive Roll
	MPWZ510212 *	1.2U Drive Roll
	MPWZ510212-0.8V	0.8V Drive Roll
	MPWZ510212-1.0V	1.0V Drive Roll
	MPWZ510212V	1.2V Drive Roll

* Denotes Standart Build

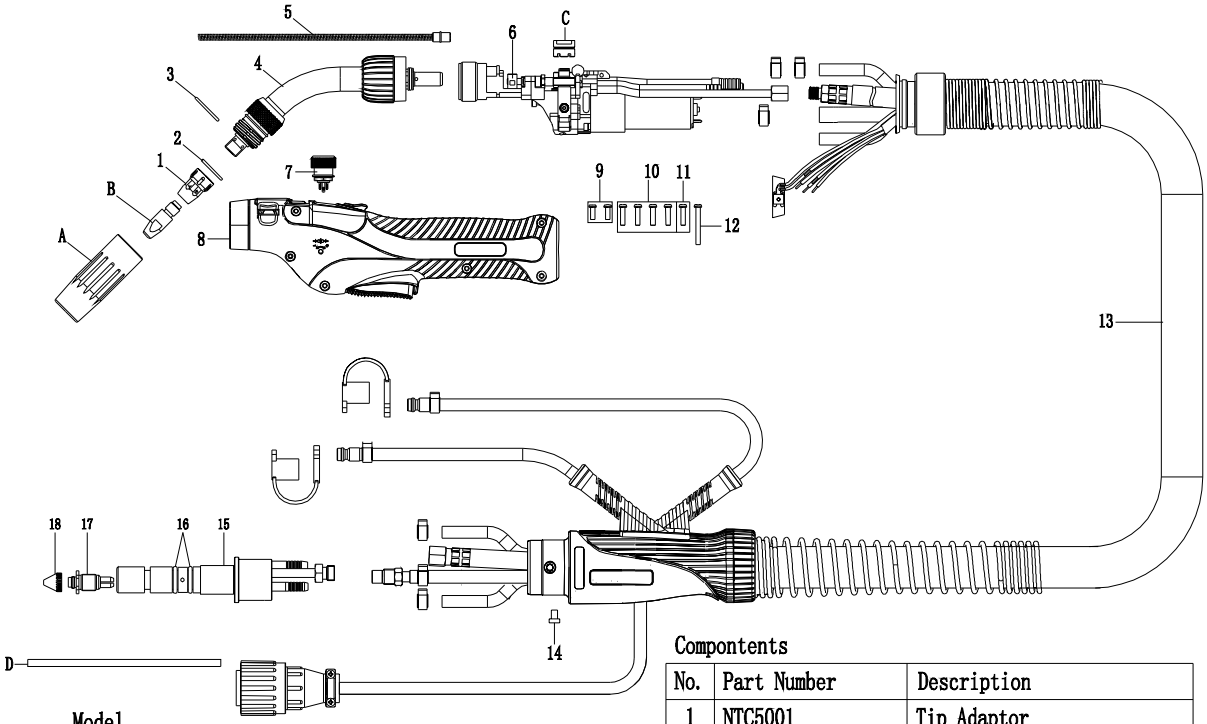
Compontents

No.	Part Number	Description
1	NTC5001	Tip Adaptor
2	SF5206A	Insulating Washer
3	Q518015V	O-Ring 18×1.5
4	TF4245	Swan Neck Assy
5	NTR3100	Jump Liner Assy
6	MPWZ510100A	24L Mechanism Assy
7	Q8510K	Potentiometer,10kΩ
8	NH0108A	Handle Assy for Pot
9	Q210308SSP	Screw M3×8
10	Q210312SSP	Screw M3×12
11	Q210314SSP	Screw M3×14
12	Q210325SSP	Screw M3×25
13	PWL3060E	Cable Assembly 6m
	PWL3080E	Cable Assembly 8m
14	Q210406B	Screw M4×6
15	NH020203	Gun Plug Nut
16	TRU5001	Water Cooled Gun Plug Nut
17	EU1011	Nut M10×1
18	ER5332	Liner Nipple
19	Q503515	O-Ring 3.5×1.5

Liners

No.	Part Number	Description
D	R5416-X *	Graphite Liner 2.9/4.7,Xm
	R3412-X	Graphite Liner 2.3/4.7,Xm
E	LTR2210-X	Steel Liner 0.8-1.0mm×Xm
	LTR3212-X	Steel Liner 1.0-1.2mm×Xm

6.08 MPW300 MILLER STYLE FLUID COOLED Torch Parts



Model

Description	Part Number	
Aluminum Welded	6m	8m
	MPW3021-M4512G-60M	MPW3021-M4512G-80M

Nozzle

No.	Part Number	Description
A	TA4217B	Nozzle 17mm

Contact Tips

No.	Part Number	Description
B	EB3208AL	Contact Tip 0.8mm Ecu For AL
	EB3210AL	Contact Tip 1.0mm Ecu For AL
	EB3212AL *	Contact Tip 1.2mm Ecu For AL
	EB3208	Contact Tip 0.8mm Ecu
	EB3210	Contact Tip 1.0mm Ecu
	EB3212	Contact Tip 1.2mm Ecu

Drive Rolls

No.	Part Number	Description
C	MPWZ510212-0.8	0.8U Drive Roll
	MPWZ510212-1.0	1.0U Drive Roll
	MPWZ510212 *	1.2U Drive Roll
	MPWZ510212-0.8V	0.8V Drive Roll
	MPWZ510212-1.0V	1.0V Drive Roll
	MPWZ510212V	1.2V Drive Roll

* Denotes Standart Build

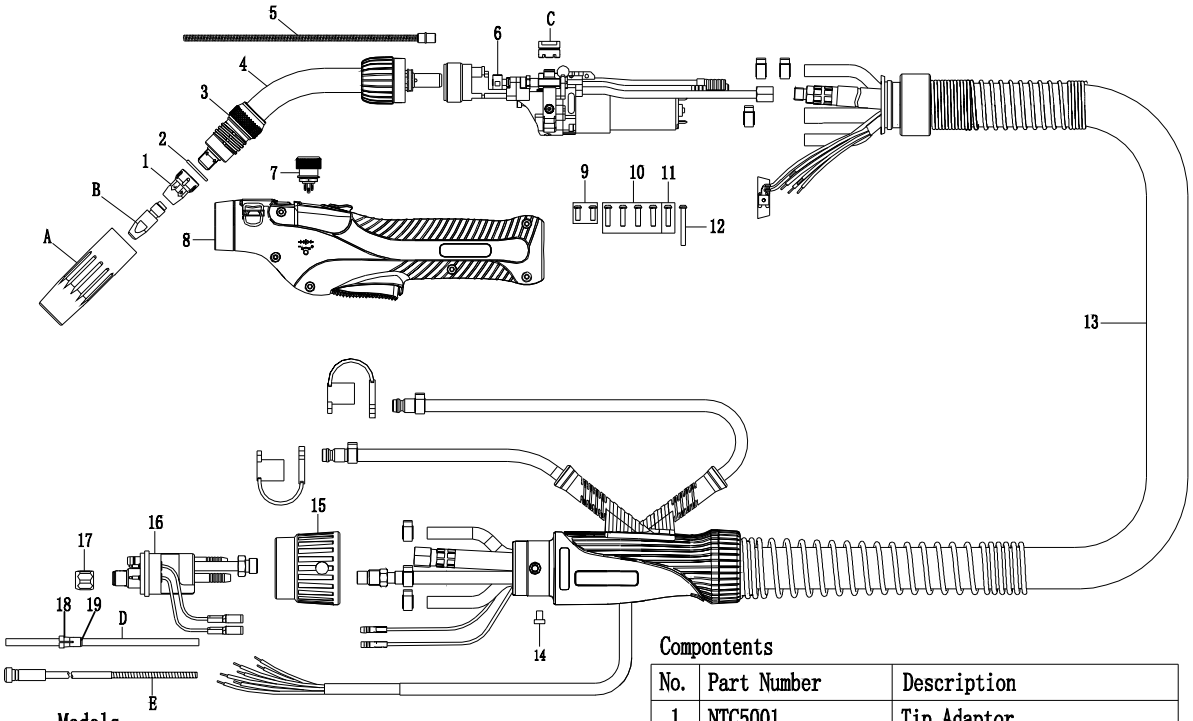
Compontents

No.	Part Number	Description
1	NTC5001	Tip Adaptor
2	SF5206A	Insulating Washer
3	Q518015V	O-Ring 18×1.5
4	TF4245	Swan Neck Assy
5	NTR3100	Jump Liner Assy
6	MPWZ510100C	24H Mechanism Assy
7	Q8510K	Potentiometer,10kΩ
8	NH0108A	Handle Assy for Pot
9	Q210308SSP	Screw M3×8
10	Q210312SSP	Screw M3×12
11	Q210314SSP	Screw M3×14
12	Q210325SSP	Screw M3×25
13	PWL3060M	Cable Assembly 6m
	PWL3080M	Cable Assembly 8m
14	Q210406B	Screw M4×6
15	SU1008	Water Cooled Miller Tail
16	Q512526	O-Ring 12.5×2.65
17	MR5431	Miller Liner Hold Nipple
18	MR5432	Miller Liner Nipple

Liners

No.	Part Number	Description
D	R5416-X *	Graphite Liner 2.9/4.7,Xm
	R3412-X	Graphite Liner 2.3/4.7,Xm

6.09 MPW400 EURO FLUID COOLED Torch Parts



Models

Description	Part Number	
	6m	8m
Aluminum Welded *	MPW4001-E4512G-60E	MPW4001-E4512G-80E
Steel Welded	MPW4001-E4512S-60E	MPW4001-E4512S-80E

Nozzle

No.	Part Number	Description
A	NTA5217	Nozzle 17mm

Contact Tips

No.	Part Number	Description
B	EB3210AL	Contact Tip 1.0mm Ecu For AL
	EB3212AL *	Contact Tip 1.2mm Ecu For AL
	EB3216AL	Contact Tip 1.6mm Ecu For AL
	EB3210	Contact Tip 1.0mm Ecu
	EB3212	Contact Tip 1.2mm Ecu
	EB3216	Contact Tip 1.6mm Ecu

Drive Rolls

No.	Part Number	Description
C	MPWZ510212-1.0	1.0U Drive Roll
	MPWZ510212 *	1.2U Drive Roll
	MPWZ510212-1.6	1.6U Drive Roll
	MPWZ510212-1.0V	1.0V Drive Roll
	MPWZ510212V	1.2V Drive Roll
	MPWZ510212-1.6V	1.6V Drive Roll

* Denotes Standart Build

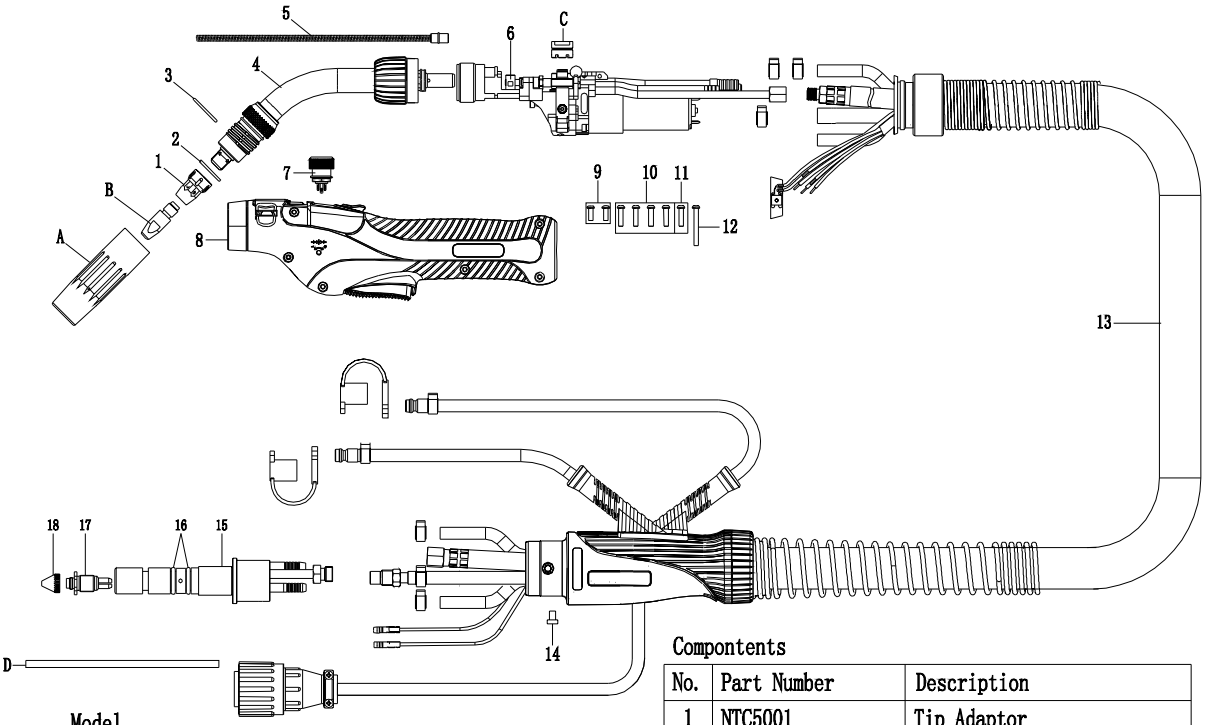
Compontents

No.	Part Number	Description
1	NTC5001	Tip Adaptor
2	SF5206A	Insulating Washer
3	Q518015V	O-Ring 18×1.5
4	NTF5245	Swan Neck Assy
5	NTR3100	Jump Liner Assy
6	MPWZ510100A	24L Mechanism Assy
7	Q8510K	Potentiometer,10kΩ
8	NH0108A	Handle Assy for Pot
9	Q210308SSP	Screw M3×8
10	Q210312SSP	Screw M3×12
11	Q210314SSP	Screw M3×14
12	Q210325SSP	Screw M3×25
13	PWL4060E	Cable Assembly 6m
	PWL4080E	Cable Assembly 8m
14	Q210406B	Screw M4×6
15	NH020203	Gun Plug Nut
16	TRU5001	Water Cooled Gun Plug Nut
17	EU1011	Nut M10×1
18	ER5332	Liner Nipple
19	Q503515	O-Ring 3.5×1.5

Liners

No.	Part Number	Description
D	R5416-X *	Graphite Liner 2.9/4.7,Xm
	R3412-X	Graphite Liner 2.3/4.7,Xm
E	LTR3212-X	Steel Liner 1.0-1.2mm×Xm
	LTR5216-X	Steel Liner 1.2-1.6mm×Xm

6.010 MPW400 MILLER STYLE FLUID COOLED Torch Parts



Model

Description	Part Number	
Aluminum Welded	6m	8m
	MPW4021-M4512G-60M	MPW4021-M4512G-80M

Nozzles

No.	Part Number	Description
A	NTA5217	Nozzle 17mm

Contact Tips

No.	Part Number	Description
B	EB3210AL	Contact Tip 1.0mm Ecu For AL
	EB3212AL *	Contact Tip 1.2mm Ecu For AL
	EB3216AL	Contact Tip 1.6mm Ecu For AL
	EB3210	Contact Tip 1.0mm Ecu
	EB3212	Contact Tip 1.2mm Ecu
	EB3216	Contact Tip 1.6mm Ecu

Drive Wheels

No.	Part Number	Description
C	MPWZ510212-1.0	1.0U Drive Roll
	MPWZ510212 *	1.2U Drive Roll
	MPWZ510212-1.6	1.6U Drive Roll
	MPWZ510212-1.0V	1.0V Drive Roll
	MPWZ510212V	1.2V Drive Roll
	MPWZ510212-1.6V	1.6V Drive Roll

* Denotes Standart Build

Compontents

No.	Part Number	Description
1	NTC5001	Tip Adaptor
2	SF5206A	Insulating Washer
3	Q518015V	O-Ring 18×1.5
4	NTF5245	Swan Neck Assy
5	NTR3100	Jump Liner Assy
6	MPWZ510100C	24H Mechanism Assy
7	Q8510K	Potentiometer,10kΩ
8	NH0108A	Handle Assy for Pot
9	Q210308SSP	Screw M3×8
10	Q210312SSP	Screw M3×12
11	Q210314SSP	Screw M3×14
12	Q210325SSP	Screw M3×25
13	PWL4060M	Cable Assembly 6m
	PWL4080M	Cable Assembly 8m
14	Q210406B	Screw M4×6
15	SU1008	Water Cooled Miller Tail
16	Q512526	O-Ring 12.5×2.65
17	MR5431	Miller Liner Hold Nipple
18	MR5432	Miller Liner Nipple

Liners

No.	Part Number	Description
D	R5416-X *	Graphite Liner 2.9/4.7,Xm
	R3412-X	Graphite Liner 2.3/4.7,Xm

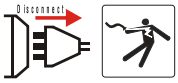
SECTION 7 – TROUBLESHOOTING

NOTE: *Weld quality is dependent on the correct consumables, proper Torch position/angles, and Product maintenance.*

Description	Possible Cause	Corrective Action
1. **Push-Pull Torch:** Welding wire does not feed into the **Push-Pull Torch** Drive Rolls and a **Birds Nest** may develop at the MIG/MAG equipment Drive Rolls. **NOTE**: A **Birds Nest** is a tangle of welding wire at the Drive Rolls when the welding wire stops due an obstruction in a Torch Liner while the Drive Rolls are spinning.	A The Push-Pull Torch is not fitted with the correct contact tip, Swan Neck Liner, Torch Cable Liner, and Drive Rolls for the wire diameter & wire material. B The contact tip is blocked with wire debris OR the Liner is worn / filled with dirt and debris. C Wrong size Push-Pull Torch Cable Liner and Swan Neck Liner. D Worn or broken Torch Trigger Switch E Wrong size/type feed rolls for welding wire or worn feed rolls in Push-Pull Torch and/or the MIG/MAG equipment.	A Check then replace any incorrect size parts in the Push-Pull Torch such as contact tip, Swan Neck Liner, Torch Cable Liner, and Drive Rolls. B Replace the contact tip and/or Liner, blow out Torch Neck, Liner conduit with clean, dried compressed air. C Change Push-Pull Torch Cable Liner and/or Swan Neck Liner to correct size/type for the welding wire. D Test, if not working then replace. E Change feed rolls to correct size/type for welding wire or change worn feed rolls in Push-Pull Torch and/or the MIG/MAG equipment.
2. Welding wire creates a **Birds Nest** at the MIG/MAG equipment Drive Rolls. Refer to **NOTE** above for additional information on **Birds Nest**.	A The Push-Pull Torch is not fitted with the correct Torch Cable Liner and Swan Neck Liner for the wire diameter & wire material. B The welding wire is not entering the Push-Pull Torch due to the mis-alignment between the Torch Cable Liner and the Wire Inlet Guide. C Inadequate **Pressure Roll** force to the **Drive Roll** which causes the Welding Wire to slip on the **Drive Roll**. D A newly fitted Liner in the Torch has not been fed all the way to the wire drive assembly **Wire Inlet Guide** next to the **Drive Roll** in the Torch Head and is not long enough.	A Check then replace any incorrect size parts in the Push-Pull Torch such as Swan Neck Liner, and Torch Cable Liner. B Make sure that the Push-Pull Torch is fixed into the Push-Pull Torch Welding wire inlet guide. C Increase the **Pressure Roll** force to the Drive Roll by the **Pressure Arm Screw**. D Replace the Liner in the Torch with a new Liner. Refer to Section 6.03 (Changing the EURO Torch Cable Liner) on Page 19 or Section 6.04 (Changing the MILLER STYLE Torch Cable Liner)on Page 19.
3. Torch is getting extremely hot.	A Contact tip or tip holder are not tightened properly. B Cooling system is not cooling effectively. C Cooling system is not correctly connected. D Torch Cable connections loose or defective.	A Make tighter using a suitable tool. B Check then correct coolant flow, fluid level, or cleanliness. C Check connections (coolant inlet and return). D Make Torch Cable / Swan Neck connections tighter.
4. Welding wire feeding problems.	A The MIG/MAG equipment is not compatible with the PUSH-PULL Torch. B Contact tip is worn. C Torch Liner and/or Swan Neck Liner is worn / dirty. D Consumables used are not suitable for the welding wire diameter or material. E MIG/MAG equipment not set-up properly. F Welding wire is contaminated with corrosion. G PUSH-PULL Torch Drive Roll groove size is a larger size to the Welding Wire diameter. H PUSH-PULL Torch control Multi-Pin Connector is not connected to the MIG/MAG equipment.	A Ask an Authorized Distributor if a PUSH-PULL Torch Interface Kit is available for your MIG/MAG equipment. B Replace contact tip. C Check the Liner; blow it out with clean, dry compressed air. If needed replace it. D Use recommended consumables for the welding wire diameter/material used. E Check the feed rolls, feed roll pressure and the spool brake are adjusted as stated by the MIG/MAG equipment's manual. F Use a cleaning felt to clean welding wire in the MIG/MAG equipment. G Change the PUSH-PULL Torch Drive Roll groove size to suit the Welding Wire diameter or change the Welding Wire diameter to suit the PUSH-PULL Torch Drive Roll groove size. H Connect the Multi-Pin to the MIG/MAG equipment.
5. Wire feed stops during welding.	A Welding Wire blockage in contact tip. B Wire burns back into contact tip. C Groove worn in contact tip by welding wire.	A Check for contamination/clogging, clean or replace contact tip. B Move the contact tip further away from the arc. C Replace contact tip.

Description	Possible Cause	Corrective Action
6. Porosity in the weld metal.	A Turbulent shielding gas flowing to weld zone caused by spatter build up inside nozzle or on gas diffuser.	A Clean the Torch consumables and use nozzle / gas diffuser anti-spatter spray.
	B Too low or extremely high shielding gas flow in the Torch.	B Check flow using a gas flow meter then adjust gas flow rate from 10 LPM (indoors, no drafts) up to 20 LPM (welding in drafts or outdoors).
	C Shielding gas supply contaminated or incorrect shielding gas used.	C Check for gas leakages using soapy water or check for correct shielding gas to the Welding System.
	D Moisture or contamination on the welding wire or on the work piece	D Check the wire and the work piece, use less or different anti-spatter spray.
7. Welding arc: - always varies length - is unstable - is erratic	A Contact tip is worn.	A Change contact tip.
	B Wrong welding parameters.	B Check the MIG/MAG equipment setup parameters then change parameters.
	C Poor electrical connections in the welding circuit.	C Check / tighten all electrical connections of the MIG/MAG equipment, Torch, and ground cable to work piece.
8. Welding wire burns back to contact tip	A Incorrect arc voltage/ wire feed speed weld parameters for the welding wire wire/material/Torch position.	A Adjust arc voltage and/or wire feed speed parameters.
	B Erratic / unstable welding arc.	B Refer to *" 5. Wire feed stops during welding."* on page 27.
	C Incorrect contact tip stick-out length for required weld.	C Adjust nozzle / tip relationship.
	D Incorrect welding wire stick-out length for required weld.	D Adjust wire stick-out.
	E Ground cable to work piece fault.	E Replace ground cables and/or connections.
9. Short contact tip life	A Contact tip size.	A Replace with correct contact tip size.
	B Welding wire eroding contact tip due to feed rolls scoring wire.	B Change feed rolls.
	C Exceeding Torch duty cycle.	C Replace with higher rated Torch.
10. Extreme spatter	A Incorrect arc voltage/ wire feed speed weld parameters for the welding wire / material / Torch position.	A Adjust arc voltage and/or wire feed speed parameters.
	B Inadequate shielding gas coverage.	B Verify shielding gas coverage or gas mixture.
	C Contaminated wire or work piece.	C Use a cleaning felt to clean welding wire in the MIG/MAG equipment and work piece.

SECTION 8 – ROUTINE SERVICE and MAINTENANCE

								
Service / Maintenance must be performed by a suitably Trained and Qualified Tradesperson	Disconnect Input Power Supply from Welding System before performing maintenance on the system. Electric shock can kill	Hot parts can burn. Let the Torch cool down prior to doing maintenance work	Turn off air compressor, and release air pressure from system. Compressed air can injure or kill.	Welding wire can cause injury	Moving parts can cause injury	Flying metal or dirt can injure eyes	Improper installation can cause fire	Read User Manual

Damaged Swan Necks, Torches, or Cable Assemblies must not be used!

Known defects must be repaired by suitably Trained and Qualified Tradesperson prior using Torch.

Schedule for Routine Maintenance / Inspection with Actions

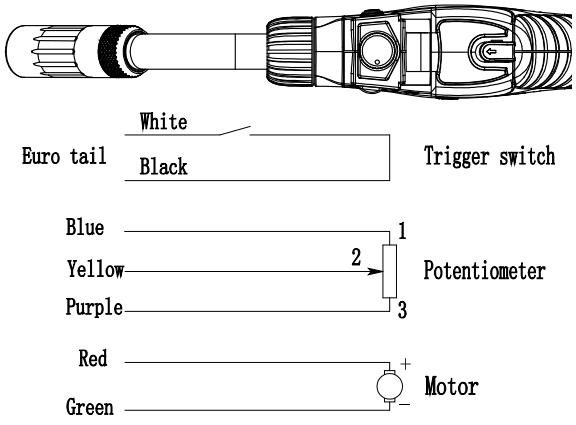
Before Every Use	• Check torch, contact tip, nozzle, liner, cables, Wire Drive System, Worn Drive Roll, and overall equipment for damage. Replace any damaged components.
Every 8 Hours of Use	• Change Contact Tip.
Once per Day	• Visual inspect for damages on the Swan Neck, and Torch Cable Assembly.
Every 16 Hours of Use	• Use dry, clean compressed air to blow out the Liner but first remove contact tip.
Every 40 Hours of Use	• Remove the Liner and check for wear. Replace Liner if worn. • Remove the Liner and check for dirt deposits. Use dry, clean compressed air to blow out the Liner but first remove contact tip. Replace Liner if dirt cannot be removed from Liner.
Once per Month (1 x 8 Hour Shift per Day) OR **Twice per Month (2 x 8 Hour Shifts per Day) OR** **Three Times per Month (3 x 8 Hour Shifts per Day)**	• Make sure that all screws are tightened. • Inspect all connections and hoses for damages.

SECTION 9 – CIRCUIT DIAGRAMS FOR TORCHES

***NOTE 9**: The **Multi-Pin Plugs** and **Pin Outs** for all PUSH-PULL TORCHES must be compatible with the MIG/MAG equipment they will be connected too.*
***NOTE 10**: The MIG/MAG equipment must have the control circuitry to drive the **DC MOTORS** in the PUSH-PULL TORCHES.*
***NOTE 11**: The **Wire Speed Potentiometers** in the PUSH-PULL TORCHES must be compatible with the MIG/MAG equipment control circuitry.*

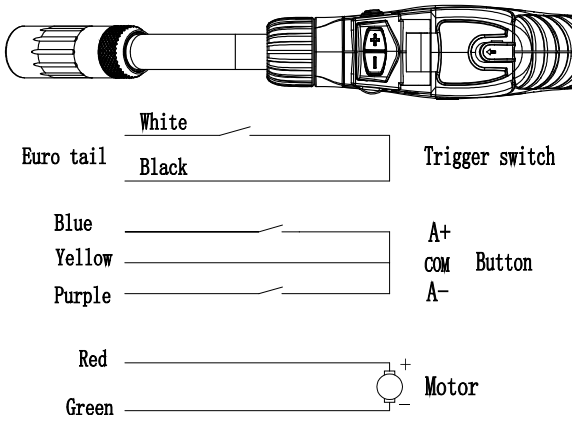
9.01 Torch Wire Speed Control Knob Circuit.

***NOTE 12**: Refer to the MIG/MAG equipment user manual to check that the PUSH-PULL **Wire Speed Control** is compatible with the MIG/MAG equipment.*



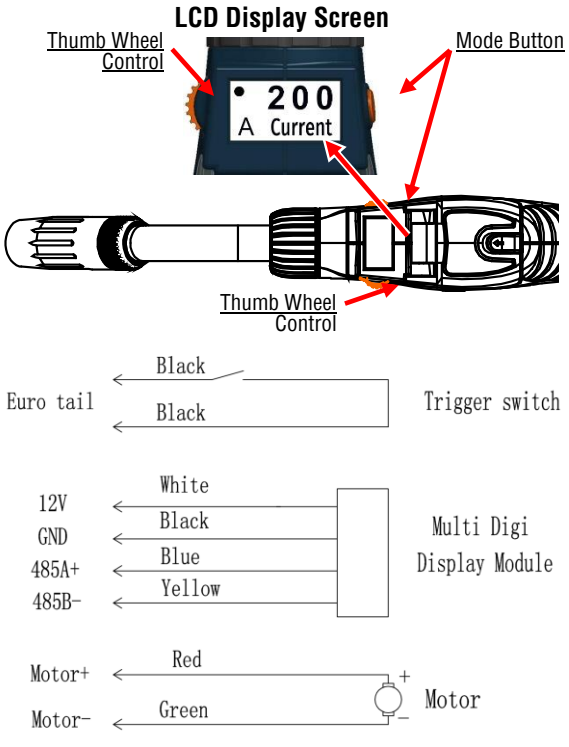
9.02 Torch Wire Speed Up / Down Button Controls Circuit.

***NOTE 13**: Refer to the MIG/MAG equipment user manual to check that the PUSH-PULL **Wire Speed Control** is compatible with the MIG/MAG equipment.*



9.03 Torch Multi Digi Display Module with Thumb Wheel Control and Select Button Controls Circuit.

***NOTE 14**: Refer to the MIG/MAG equipment user manual to check that the PUSH-PULL **Multi Digi Display Module with Thumb Wheel Control and Select Button Controls** are compatible with the MIG/MAG equipment.*



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