Product: Python
Manual: 091-0632
Serial: 11120001
Voltage Rating: 24 VDC
Revision: Dec 2011 Rev A
Gun models: 289-8XX
290-8XX

Owner’s Manual

225 Ampere Air Cooled
450 Ampere Water Cooled
Push-Pull Welding Guns
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Safety Warnings

Warranty
Declaration of Conformity for European Community (CE) Products

Note  This information is provided for units with CE certification (see rating label on unit).

Manufacturer’s Name: MK Products, Inc.
16882 Armstrong Ave.
Irvine, CA  92606

Declares that the product: Python® Fronius Compatible
conforms to the following Directives and Standards:

Directives

Low Voltage Directive: 2006/95/EC

Standards

Torches And Guns For Arc Welding, EN 60974-7: 2005
SAFETY CONSIDERATIONS
ELECTRIC ARC WELDING EQUIPMENT
CAUTION : READ BEFORE ATTEMPTING INSTALLATION, OPERATION
OR MAINTENANCE OF THIS EQUIPMENT

1-1 INTRODUCTION
This equipment is intended for ultimate application by commercial/industrial users and for operation by persons trained and experienced in the use and maintenance of welding equipment. Operation should not be undertaken without adequate training in the use of such equipment. Training is available from many public and private schools or similar facilities.

Safe practices in the installation, operation and maintenance of this equipment requires proper training in the art, a careful study of the information provided with the equipment, and the use of common sense. Rules for safe use are generally provided by suppliers of welding power sources, compressed gas suppliers, and electrode suppliers. Careful compliance with these rules will promote safe use of this equipment.

The following Safety Rules cover some of the more generally found situations. READ THEM CAREFULLY. In case of any doubt, obtain qualified help before proceeding.

1-2 GENERAL PRECAUTIONS

A. Burn Prevention
ELECTRICARC WELDING PRODUCES HIGH INTENSITY HEAT AND ULTRA-VIOLET RADIANT ENERGY WHICH MAY CAUSE SERIOUS AND PERMANENT EYE DAMAGE AND WHICH MAY DAMAGE ANY EXPOSED SKIN AREAS.

Wear helmet with safety goggles or glasses with side shields underneath, appropriate filter lenses or plates (protected by clear cover glasses). This is a must for welding or cutting (and chipping) to protect the eyes from radiant energy and flying metal. Replace cover glasses when broken, pitted, or spattered.

Medical first aid and eye treatment. First aid facilities and a qualified first aid person should be available for each shift. Unnecessary medical facilities are close by for immediate treatment of flash burns of the eyes and skin burns.

Wear protective clothing - leather (or asbestos) gauntlet gloves, hat, and high safety-toe shoes. Button shirt collar and pocket flaps, and wear cuffless trousers to avoid entry of sparks and slag.

Avoid oily or greasy clothing. A spark may ignite them.

Flammable hair preparations should not be used by persons intending to weld or cut.

Hot metal such as electrode stubs and work pieces should never be handled without gloves.

Ear plugs should be worn when working on overhead or in a confined space. A hard hat should be worn when others work overhead.

B. Toxic Fume Prevention
WARNING: The use of this product may result in exposure to chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Adequate ventilation. Severe discomfort, illness or death can result from fumes, vapors, heat, or oxygen enrichment or depletion that welding (or cutting) may produce. Prevent them with adequate ventilation. NEVER ventilate with oxygen.

Lead-, cadmium-, zinc-, mercury-, beryllium-bearing and similar materials, when welded or cut, may produce harmful concentrations of toxic fumes. Adequate local exhaust ventilation must be used, or each person in the area, as well as the operator, must wear an air-supplied respirator. For beryllium, both must be used.

Metals coated with or containing materials that emit toxic fumes should not be heated unless coating is removed form the work surface, the area is well ventilated, or the operator wears an air-supplied respirator. Work in a confined space only while it is being ventilated and, if necessary, while wearing an air-supplied respirator.

Gas leaks in a confined space should be avoided. Leaked gas in large quantities can change oxygen concentration dangerously.

Do not bring gas cylinders into a confined space.

Leaving confined space, shut OFF gas supply at source to prevent possible accumulation of gases in the space if downstream valves have been accidentally opened or left open. Check to be sure that the space is safe before reentering it.

Vapors from chlorinated solvents can be decomposed by the heat of the arc (or flame) to form PHOSGENE, a highly toxic gas, and other lung and eye irritating products. The ultraviolet (radiant) energy of the arc can also decompose trichloroethylene and perchloroethylene vapors to form phosgene. DO NOT WELD or cut where solvent vapors can be drawn into the welding or cutting atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichloroethylene or perchloroethylene.

C. Fire and Explosion Prevention
Causes of fire and explosion are: combustibles reached by the arc, flame, flying sparks, hot slag, or heated material, misuse of compressed gases and cylinders, and short circuits.

BE AWARE THAT flying sparks or falling slag can pass through cracks, along pipes, through windows or doors, and through wall or floor openings, out of sight of the goggled operator. Sparks can fly many feet.

To prevent fires and explosion:

Keep equipment clean and operable, free of oil, grease, and (in electrical parts) of metallic particles that can cause short circuits.

If combustibles are in area, do NOT weld or cut. Move the work if practicable, to an area free of combustibles. Avoid paint spray rooms, dip tanks, storage areas, ventilators. If the work cannot be moved, move combustibles at least 35 feet away, out of reach of sparks and heat; or protect against ignition with suitable and snug-fitting, fire-resistant covers or shields.

Walls touching combustibles on opposite sides should not be welded on (or cut). Walls, ceilings, and floor near work should be protected by heat-resistant covers or shields.

Fire watcher must be standing by with suitable fire extinguishing equipment during and for some time after welding or cutting if:

1. Appreciable combustibles (including building construction) are within 35 feet.
2. Appreciable combustibles are further than 35 feet, but can be ignited by sparks.
3. Openings (concealed or visible) in floors or walls within 35 feet may expose combustibles to sparks.
4. Combustibles adjacent to walls, ceilings, roofs, or metal partitions can be ignited by radiant or conducted heat.

Hot work permit should be obtained before operation to ensure supervisor's approval that adequate precautions have been taken.

After work is done, check that area is free of sparks, glowing embers, and flames.

An empty container that held combustibles, or that can produce flammable or toxic vapors when heated, must never be welded on or cut, unless container has first been cleaned in accordance with industry standards.

This includes: a thorough steam or caustic cleaning (or a solvent of water washing, depending on the combustible's solubility), followed by purging and inerting with nitrogen or carbon dioxide, and using protective equipment.
Water-filling just below working level may substitute for inerting.
A container with unknown contents should be cleaned (see paragraph above). Do NOT depend on sense of smell or sight to determine if it is safe to weld or cut.
Hollow castings or containers must be vented before welding or cutting. They can explode.
Explosive atmospheres. NEVER weld or cut where the air may contain flammable dust, gas, or liquid vapors (such as gasoline).

D. Compressed Gas Equipment
The safe handling of compressed gas equipment is detailed in numerous industry publications. The following general rules cover many of the most common situations.

1. Pressure Regulators
Regulator relief valve is designed to protect only the regulator from overpressure; it is not intended to protect any downstream equipment. Provide such protection with one or more relief devices. Never connect a regulator to a cylinder containing gas other than that for which the regulator was designed.
Remove faulty regulator from service immediately for repair (first close cylinder valve). The following symptoms indicate a faulty regulator:
Leaks - if gas leaks externally.
Excessive Creep - if delivery pressure continues to rise with downstream valve closed.
Faulty Gauge - if gauge pointer does not move off stop pin when pressurized, nor returns to stop pin after pressure release.
Repair. Do NOT attempt repair. Send faulty regulators for repair to manufacturer’s designated repair center, where special techniques and tools are used by trained personnel.

2. Cylinders
Cylinders must be handled carefully to prevent leaks and damage to their walls, valves, or safety devices:
Avoid electrical circuit contact with cylinders including third rails, electrical wires, or welding circuits. They can produce short circuit arcs that may lead to a serious accident. (See 1-3C)
ICC or DOT marking must be on each cylinder. It is an assurance of safety when the cylinder is properly handled.
Identifying gas content. Use only cylinders with name of gas marked on them; do not rely on color to identify gas content. Notify supplier if unmarked. NEVER DEFACE or alter name, number, or other markings on a cylinder. It is illegal and hazardous.
Empties: Keep valves closed, replace caps securely; mark MT; keep them separate from FULLS, and return promptly. Prohibited use. Never use a cylinder or its contents for other than its intended use, NEVER as a support or roller.
Locate or secure cylinders so they cannot be knocked over.
Passageways and work areas. Keep cylinders clear of areas where they may be stuck.
Transporting cylinders. With a crane, use a secure support such as a platform or cradle. Do NOT lift cylinders off the ground by their valves or caps, or by chains, slings, or magnets.
Do NOT expose cylinders to excessive heat, sparks, slag, and flame, etc. that may cause rupture. Do not allow contents to exceed 55 degrees C (130 degrees F). Cool with water spray where such exposure exists.
Protect cylinders, particularly valves from bumps, falls, failing objects, and weather. Replace caps securely when moving cylinders.
Stuck valve. Do NOT use a hammer or wrench to open a cylinder valve that cannot be opened by hand. Notify your supplier.
Mixing gases. NEVER try to mix any gases in a cylinder.
NEVER refill any cylinder. Cylinder fittings should never be modified or exchanged.

3. Hose
Prohibited use. Never use hose other than that designed for the specified gas. A general hose identification rule is: red for fuel gas, green for oxygen, and black for inert gases.
Use ferrules or clamps designed for the hose (not ordinary wire or other substitute) as a binding to connect hoses to fittings.
No copper tubing splices. Use only standard brass fittings to splice hose.
Avoid long runs to prevent kinks and abuse. Suspend hose off ground to keep it from being run over, stepped on, or otherwise damaged.

Coil excess hose to prevent kinks and tangles.
Protect hose from damage by sharp edges, and by sparks, slag, and open flame.
Examine hose regularly for leaks, wear, and loose connections. Immense pressured hose in water; bubbles indicate leaks.
Repair leaky or worn hose by cutting area around leak and splicing. Do NOT use tape.

4. Proper Connections

Clean cylinder valve outlet of impurities that may clog orifices and damage seats before connecting regulator. Except for hydrogen, crack valve momentarily, pointing outlet away from people and sources of ignition. Wipe with a clean, lintless cloth.
Match regulator to cylinder. Before connecting, check that the regulator label and cylinder marking agree, and that the regulator inlet and cylinder outlet match. NEVER Connect a regulator designed for a particular gas or gases to a cylinder containing any other gas.

Tighten connections. When assembling threaded connections, clean and smooth seats where necessary. Tighten. If connection leaks, disassemble, clean, and retighten, using properly fitting wrench.
Adapters. Use a CGA adapter (available from your supplier) between cylinder and regulator, if one is required. Use two wrenches to tighten adapter marked RIGHT and LEFT HAND threads.
Regulator outlet (or hose) connections may be identified by right hand threads for oxygen and left hand threads (with grooved hex on nut or shank) for fuel gas.

5. Pressurizing Steps:
Drain regulator of residual gas through suitable vent before opening cylinder (or manifold valve) by turning adjusting screw in (clockwise). Draining prevents excessive compression heat at high pressure seat by allowing seat to open on pressurization. Leave adjusting screw engaged slightly on single-stage regulators.
Stand to side of regulator while opening cylinder valve.
Open cylinder valve slowly so that regulator pressure increases slowly. When gauge is pressurized (gauge reaches regulator maximum) leave cylinder valve in following position; for oxygen and inert gases, open fully to seal stem against possible leak; for fuel gas, open to less than one turn to permit quick emergency shut-off.
Use pressure charts (available from your supplier) for safe and efficient recommended pressure settings on regulators.
Check for leaks on first pressurization and regularly thereafter. Brush with soap solution. Bubbles indicate leaks. Clean off soapy water after test; dried soap is combustible.

E. User Responsibilities
Follow all Safety Rules.
Remove leaky or defective equipment from service immediately for repair. Read and follow user manual instructions.

F. Leaving Equipment Unattended
Close gas supply at source and drain gas.

G. Rope Staging-Support
Rope staging-support should not be used for welding or cutting operation; rope may burn.

1-3 ARC WELDING
Comply with precautions in 1-1, 1-2, and this section. Arc Welding, properly done, is a safe process, but a careless operator invites trouble. The equipment carries high currents at significant voltages. The arc is very bright and hot. Sparks fly, fumes rise, ultraviolet and infrared energy radiates, weldments are hot, and compressed gases may be used. The wise operator avoids unnecessary risks and protects himself and others from accidents.
A. Burn Protection
Comply with precautions in 1-2.

The welding arc is intense and visibly bright. Its radiation can damage eyes, penetrate lightweight clothing, reflect from light-colored surfaces, and burn the skin and eyes. Skin burns resemble acute sunburn; those from gas-shielded arcs are more severe and painful. DON'T GET BURNED; COMPLY WITH PRECAUTIONS.

1. Protective Clothing
Wear long-sleeve clothing in addition to gloves, hat, and shoes. As necessary, use additional protective clothing such as leather jacket or sleeves, flameproof apron, and fire-resistant leggings. Avoid outer garments of untreated cotton.

Bare skin protection. Wear dark, substantial clothing. Button collar to protect chest and neck, and button pockets to prevent entry of sparks.

2. Eye and Head Protection
Protect eyes from exposure to arc. Eyes may be damaged by radiant energy when exposed to the electric arc, even when not looking in the direction of the arc. Never look at an electric arc without protection.

Welding helmet or shield containing a filter plate shade no. 12 or denser must be used when welding. Place over face before striking arc.

Protect filter plate with a clear cover plate. Cracked or broken helmet or shield should NOT be worn; radiation can be passed through to cause burns.

Cracked, broken, or loose filter plates must be replaced IMMEDIATELY. Replace clear cover plate when broken, pitted, or spattered.

Flash goggles with side shields MUST be worn under the helmet to give some protection to the eyes should the helmet not be lowered over the face before an arc is struck. Looking at an arc momentarily with unprotected eyes (particularly a high intensity gas-shielded arc) can cause a retinal burn that may leave a permanent pitted, or spattered.

Flash goggles with side shields MUST be worn under the helmet to give some protection to the eyes should the helmet not be lowered over the face before an arc is struck. Looking at an arc momentarily with unprotected eyes (particularly a high intensity gas-shielded arc) can cause a retinal burn that may leave a permanent pitted, or spattered.

3. Protection of Nearby Personnel
Enclose the welding area. For production welding, a separate room or enclosed bay is best. In open areas, surround the operation with low-reflective, noncombustible screens or panels. Allow for free air circulation, particularly at floor level.

Viewing the weld. Provide face shields for all persons who will be looking directly at the weld.

Others working in area. See that all persons are wearing flash goggles.

Before starting to weld, make sure that screen flaps or bay doors are closed.

B. Toxic Fume Prevention
Comply with precautions in 1-2B.

Generator engine exhaust must be vented to the outside air. Carbon monoxide can kill.

C. Fire and Explosion Prevention
Comply with precautions in 1-2C.

Equipment's rated capacity. Do not overload arc welding equipment. It may overheat cables and cause a fire.

Loose cable connections may overheat or flash and cause fire.

Never strike an arc on a cylinder or other pressure vessel. It creates a brittle area that can cause a violent rupture or lead to such a rupture later under rough handling.

D. Compressed Gas Equipment
Comply with precautions in 1-2D.

E. Shock Prevention
Exposed electrically hot conductors or other bare metal in the welding circuit, or in ungrounded, electrically - HOT equipment can fatally shock a person whose body becomes a conductor. DO NOT STAND, SIT, LIE, LEAN ON, OR TOUCH a wet surface when welding without suitable protection.

To protect against shock:

Keep body and clothing dry. Never work in damp area without adequate insulation against electrical shock. Stay on a dry duckboard, or rubber mat when dampness or sweat cannot be avoided. Sweat, sea water, or moisture between body and an electrically HOT part - or grounded metal - reduces the body surface electrical resistance, enabling dangerous and possibly lethal currents to flow through the body.

1. Grounding the Equipment
When installing, connect the frames of each unit such as welding power source, control, work table, and water circulator to the building ground. Conductors must be adequate to carry ground currents safely. Equipment made electrically HOT by stray currents may shock, possibly fatally. Do NOT GROUND to electrical conduit, or to a pipe carrying ANY gas or a flammable liquid such as oil or fuel.

Three-phase connection. Check phase requirement of equipment before installing. If only three-phase power is available, connect single-phase equipment to only two wires of the three-phase line. Do NOT connect the equipment ground lead to the third (live) wire, or the equipment will become electrically HOT - a dangerous condition that can shock, possibly fatally.

Before welding, check ground for continuity. Be sure conductors are touching bare metal of equipment frames at connections.

If a line cord with a ground lead is provided with the equipment for connection to a switch box, connect the ground lead to the grounded switch box. If a three-prong plug is added for connection to a grounded mating receptacle, the ground lead must be connected to the ground prong only. If the line cord comes with a three-prong plug, connect to a grounded mating receptacle.

Never remove the ground prong from a plug, or use a plug with a broken ground prong.

2. Connectors
Fully insulated lock-type connectors should be used to join welding cable lengths.

3. Cables
Frequently inspect cables for wear, cracks, and damage. IMMEDIATELY REPLACE those with excessively worn or damaged insulation to avoid possibly lethal shock from bare cable. Cables with damaged areas may be taped to give resistance equivalent to original cable.

Keep cable dry, free of oil and grease, and protected from hot metal and sparks.

4. Terminals and Other Exposed Parts
Terminals and other exposed parts of electrical units should have insulating covers secured before operation.

5. Electrode Wire
Electrode wire becomes electrically HOT when the power switch of gas metal-arc welding equipment is ON and welding gun trigger is pressed. Keep hands and body clear of wire and other HOT parts.

6. Safety Devices
Safety devices such as interlocks and circuit breakers should not be disconnected or shunted out.

Before installation, inspection, or service of equipment, shut OFF all power, and remove line fuses (or lock or red-tag switches) to prevent accidental turning ON of power. Disconnect all cables from welding power source, and pull all 115 volts line-cord plugs.

Do not open power circuit or change polarity while welding. If, in an emergency, it must be disconnected, guard against shock burns or flash from switch arcing.

Leaving equipment unattended. Always shut OFF, and disconnect all power to equipment.

Power disconnect switch must be available near the welding power source.
Thank You

For selecting a quality product. We want you to take pride in operating this product...as much pride as we have in bringing the product to you!

Please Examine Carton and Equipment For Damage Immediately

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

Please record your equipment identification information below for future reference. This information can be found on your machine nameplate.

Model Name & Number

Code & Serial Number

Date of Purchase

Whenever you request replacements parts for, or information on this equipment always supply the information you have recorded above.

Read this Owner’s Manual completely before attempting to use this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your protection.
Section A

Installation

Technical Specifications

Wire Capacity
.030” - .045” (0.6mm - 1.2mm) solid and hard wire
.030” - 1/16” (0.8mm - 1.6mm) aluminum and cored wire

Wire Speed
800 IPM (20.3 mpm) Max. at rated feeder Input Voltage (120VAC / 42VAC)

Duty Cycle - 60% (All ratings are using Argon Gas)
225 Amps/25 Volts  Air Cooled
450 Amps/25 Volts  Water Cooled

Support Equipment Required

- C.V. or C.C. Power Source of sufficient capacity for your needs.
- Regulated gas supply and hoses.
- Properly sized power leads from power source to wire feeder and ground.
- Water source and hose capable of providing a minimum of 1 quart (.95 liter) / min. at 45 p.s.i. when using water cooled guns.

Coolant Recommendations

Use Cobra Coolant (Aluminum Protection), P/N 931-0060. Cobra Coolant does not contain reactive sulphur or chlorine and does not react with copper, brass or aluminum.

The coolant flow rate should be a minimum of 15 GPH (1 qt/min) between 35 and 45psi. Contact the re-circulator manufacturer for specifications on pressure.

Gun Lead Connections

Power Cable - Air Cooled
A #2 power cable is used on the Python Fronius Compatible gun. The gun and Euro Power Manifold ends of the cable are stripped to the copper strands and wrapped with a copper strip. A setscrew holds the cable securely in the gun body and in the Euro Power Manifold with torque requirements of 55-60 in-lb.

Power Cable - Water Cooled
Python Fronius Compatible water cooled gun utilizes a power/water cable with a #6 AWG cable inside a 5/16” diameter hose. When water is used with this cable and the #10 water cooled gas cup (P/N 621-0065), the system is rated at 450 amps @ 60% duty cycle. The gun end is threaded into the gun body. These connections utilize a conductive sealant and are tightened with torque requirements of 100 ± 5 IN-LB.

Conduit
The Python Fronius Compatible comes standard with a poly-lined conduit, for feeding aluminum wire. The longer fitting with a shallow groove is used on the gun end. A set screw located on top of the gun handle secures the conduit in place. The cabinet end of the conduit is secured into the Euro Power Manifold connector with a set screw.

The conduit liner extends from the Euro Power Manifold and is designed to slide into the TPS-2700 wire drive up to the trailing drive rolls.

Gas Hose
The BLACK gas hose is pushed over a barbed fitting on the end of the gun body and secured by twisting the hose retainer to the end of the hose (shown next page). The opposite end of the BLACK hose is pushed over a barbed fitting in the Euro Power Manifold. The hose retainer is re-usable and can be removed and re-installed as needed.
**Coolant Connections**

If so equipped, the ends of the coolant hose push over a barbed fitting on the end of the gun body and are secured by twisting the hose retainer to the end of the hose. The hose retainer is re-usable and can be removed and re-installed as needed.

The BLUE coolant supply hose pushes over a barbed fitting on the end of the gun body and is secured by twisting the hose retainer to the end of the hose. The hose retainer is re-usable and can be removed and re-installed as needed. The opposite end of the BLUE hose pushes into a threaded coolant fitting.

The RED coolant return hose pushes over the barbed fitting in the Power Manifold. The opposite end of the RED hose pushes into a threaded return hose of the coolant recirculator.

Both threaded fittings on the end of the BLUE and RED hoses are quick connect fittings. MK Products compatible guns have interchangeable fittings, so you can match as needed for your cooler. Both types of fittings require a hose retainer.

**Control Cable**

A multi-conductor control cable is used on the Python Fronius Compatible gun. The gun end of the cable is secured with a cable clamp and the wires are connected to the potentiometer, the micro switch, the motor and the gun body mechanically. Slack is left in the electric cable as it exits the back of the gun to prevent cable and/or wire breakage. The cabinet end of the control cable uses a 9-Pin, rectangular connector.

**Operation**

**General**

The Python Fronius Compatible gun maintains a constant, steady, uniform wire feed speed, regardless of curved or looped wire conduit. The constant push exerted by the slave motor in the cabinet, combined with the pull of the gun motor, causes the wire to literally float friction-free through the wire conduit. The 24VDC gun motor is controlled by a three and three-quarter (3 3/4) turn potentiometer in the gun handle.

**Controls and Settings**

**Potentiometer**

The laterally-positioned potentiometer is located in the lower end of the handle, providing up to 800 ipm with 3 3/4 turns.

**Micro Switch**

The micro switch assembly consists of the micro switch, and leads.

**Trigger Sensitivity**

The amount of trigger level travel can be shortened for a "quicker" or "more responsive" action.

A more sensitive trigger lever is produced by reducing the gap between the trigger lever and the micro-switch lever. By turning-in the Trigger...
Sensitivity Adjustment Screw, it closed the gap between the trigger lever and the micro-switch lever. This will enable the operator to increase the sensitivity of the trigger lever.

**Sensitivity Adjustment**

With the wire feeder turned on (with or without welding wire loaded), turn the screw in until the micro-switch is activated. Once activated, the gun and wire feeder motors will begin feeding wire. Retract the screw accordingly until the system is deactivated and adjusted to the operators' liking.

**Drive Roll and Idler Rolls**

**General**

The Python Fronius Compatible gun comes standard with a knurled drive roll and a grooved idler roll, which will handle aluminum wire with diameters of .030 to 1/16 inch and steel from .030 to .045 inches. Optional insulated V-groove drive rolls are also available for aluminum wire if desired (see Optional Kits).

Drive roll tension is accomplished with a unique spring-loaded pressure screw. The Python Fronius Compatible comes from the factory with the pressure adjustment screw preset. **NO ADJUSTMENT IS REQUIRED FOR ALL SIZES AND TYPES OF WIRES.**

**Drive Roll Installation/Removal**

*NOTE: Neither of the handles needs to be removed to access the Drive or Idler Rolls.*

1. Pull the Cam Lever away from the idler roll. This will relieve the pressure against the drive roll (as shown in Figure 1).

2. Align the Drive Roll Removal Tool (P/N 931-0100) over the flats of the drive roll (as shown in Figure 2). Hold the gun with one hand or on a table top, with the other hand give the Removal Tool a quick snap-turn in the **CLOCKWISE DIRECTION**.

3. Once the drive roll is loose, continue to spin drive roll in the clockwise direction to remove the drive roll from the gun.

4. Install a new drive roll on the left-hand threaded shaft. The drive roll will self-tighten when it is feeding wire.

**Idler Roll Installation and Removal**

(Reference Figure 3)

1. Using a slot type screwdriver, loosen idler screw, taking care not to lose lock washer under idler roll.

2. Insert new idler roll and lock washer onto screw, insuring that idler groove is toward top and lock washer is beneath.

3. Tighten.

*NOTE: Lock washer must be under idler roll or it will not turn freely.*
Section C

Accessories/Options

**Insulated Drive Roll Kits** are used to prevent preheating of the wire which may soften it and clog the liner. This picking up of current at the drive rolls rather than at the contact tip is usually not a problem unless using too large of a contact tip or excessively oxidized aluminum wire.

**Insulated Groove Drive Roll Kit** ............................................. 005-0715
For .030" (0.8mm) dia. aluminum wire. Includes insulated groove drive roll and insulated idler roll assy.

**Insulated Groove Drive Roll Kit** ............................................. 005-0716
For .035" (0.9mm) dia. aluminum wire. Includes insulated groove drive roll and insulated idler roll assy.

**Insulated Groove Drive Roll Kit** ............................................. 005-0717
For .040" (1.0mm) dia. aluminum wire. Includes insulated groove drive roll and insulated idler roll assy.

**Insulated Groove Drive Roll Kit** ............................................. 005-0718
For 3/64" (1.2mm) dia. aluminum wire. Includes insulated groove drive roll and insulated idler roll assy.

**Insulated Groove Drive Roll Kit** ............................................. 005-0719
For .062" (1.6mm) dia. aluminum wire. Includes insulated groove drive roll and insulated idler roll assy.

**Handle Kit** ............................................................................ 005-0699
Includes left and right handles, screws and drive roll door.

**Trigger Kit** ............................................................................. 005-0694
Trigger adjustment kit includes a spring and sensitivity adjustment screw replacement for all Python Fronius Compatible guns.

**Micro Switch Kit** .................................................................... 005-0701
Replacement micro switch assembly for all Python Fronius Compatible guns.

**Potentiometer Kit** .................................................................... 005-0695
Replacement potentiometer assembly for all Python Fronius Compatible guns.

**Conduits**
Flat spiral steel conduit for steel & cored wire.
15 ft./4.5m............................................................................. 615-0621-15
25 ft./7.6m............................................................................. 615-0621-25
35 ft./10.7m............................................................................ 615-0621-35
50 ft./15.2m............................................................................ 615-0621-50

**Optional nickel tube liner** .......................................................... 431-2033

**Snake Skins®**
Snake Skin® protective covers are now standard on all guns. You may order spare replacement covers to protect the lead assy of the gun when the factory one becomes damaged or worn. It can easily be replaced in the field by means of Velcro®.

Snake Skin Cover 13ft (for 15ft leads)............................................. 931-0110
Snake Skin Cover 23ft (for 25ft leads)............................................. 931-0122
Snake Skin Cover 33ft (for 35ft leads)............................................. 931-0132
Snake Skin Cover 48ft (for 50ft leads)............................................. 931-0123
Contact Tips

To remove contact tip when using full water cooled gas cup (P/N 621-0065), contact tip removal tool (P/N 931-0044) must be used.

### Heavy Duty Contact Tip - 3/8" Diameter*

<table>
<thead>
<tr>
<th>Wire Size</th>
<th>Tip ID</th>
<th>Arc</th>
<th>Tip Length</th>
<th>Part No.</th>
</tr>
</thead>
</table>
| .030" (0.8mm) | .041" (1.0mm) | Spray | 1.57" (39.9mm) | 621-0390-25  
| .035" (0.9mm) | .044" (1.1mm) | Spray | 1.57" (39.9mm) | 621-0391-25  
| .035" (0.9mm) | .044" (1.1mm) | Short | 1.82" (46.2mm) | 621-0391-250†  
| .045" (1.1mm) | .053" (1.35mm) | Short | 1.82" (46.2mm) | 621-0397-25  
| 3/64" (1.2mm) | .053" (1.35mm) | Spray | 1.57" (39.9mm) | 621-0392-25  
| 3/64" (1.2mm) | .060" (1.5mm) | Spray | 1.57" (39.9mm) | 621-0393-25  
| 1/16" (1.6mm) | .074" (1.9mm) | Spray | 1.57" (39.9mm) | 621-0394-25  

*Use of tip removal tool is recommended  † Also sold in quantities of 250  **This size tip furnished with gun  † † Also sold in quantities of 500

### Spring Loaded Contact Tip - 3/8" Diameter

<table>
<thead>
<tr>
<th>Wire Size</th>
<th>Tip ID</th>
<th>Arc</th>
<th>Tip Length</th>
<th>Qty</th>
<th>Part Number</th>
</tr>
</thead>
</table>
| .030" (0.8 mm) | .041" (1.0 mm) | Spray | 1.57" (39.9 mm) | EA | 621-0331    
| .035" (0.9 mm) | .044" (1.1 mm) | Spray | 1.57" (39.9 mm) | EA | 621-0332    
| 3/64" (1.2 mm) | .060" (1.5 mm) | Spray | 1.57" (39.9 mm) | EA | 621-0334    
| 1/16" (1.6 mm) | .074" (1.9 mm) | Spray | 1.57" (39.9 mm) | EA | 621-0335    

### 3/8" Diameter Flex Barrel Tip - Recommended for Flex Barrel*

<table>
<thead>
<tr>
<th>Wire Size</th>
<th>Tip ID</th>
<th>Arc</th>
<th>Tip Length</th>
<th>Qty</th>
<th>Part Number</th>
</tr>
</thead>
</table>
| .030" (0.8 mm) | .041" (1 mm) | Spray | 1.0" (25.4 mm) | EA | 621-0480-25  
| .035" (0.9 mm) | .044" (1.1 mm) | Spray | 1.0" (25.4 mm) | EA | 621-0481-25  
| .045" (1.1 mm) | .053" (1.37 mm) | Short | 1.0" (25.4 mm) | EA | 621-0482-25  
| 3/64" (1.2 mm) | .060" (1.5 mm) | Spray | 1.0" (25.4 mm) | EA | 621-0483-25  

* Used with Flex Barrel cups 621-0465 and 621-0466, on Air Cooled models only

### Finned Copper Cups

#### Finned Copper Gas Cups

<table>
<thead>
<tr>
<th>Cup Size</th>
<th>Cup I.D.</th>
<th>Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 6</td>
<td>3/8&quot; (9.5mm)</td>
<td>621-0248</td>
</tr>
<tr>
<td>No. 8</td>
<td>1/2&quot; (12.7mm)</td>
<td>621-0249</td>
</tr>
<tr>
<td>No. 10</td>
<td>5/8&quot; (15.8mm)</td>
<td>621-0250*</td>
</tr>
</tbody>
</table>

#### Heavy Duty Finned Copper Gas Cups

<table>
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<th>Cup I.D.</th>
<th>Part No.</th>
</tr>
</thead>
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<tr>
<td>10</td>
<td>5/8&quot; (15.8mm)</td>
<td>621-0251</td>
</tr>
<tr>
<td>12</td>
<td>3/4&quot; (19.0mm)</td>
<td>621-0252</td>
</tr>
</tbody>
</table>

*Standard - furnished with Air Cooled gun
Barrel Assemblies

All barrels are rated at 60% duty cycle.

Barrels

Air Cooled
The Python Fronius Compatible air cooled gun comes standard with a 60° curved barrel. The barrel assembly locks to the gun body using the patented EZ Lock™ system.

Water Cooled
The Python Fronius Compatible water cooled gun comes standard with a 60° curved water cooled barrel assembly.

Optional 6", 12" and 18" Straight and Curved Barrel Assemblies

12" Straight, Air Cooled Barrel Assembly .................................................. 003-2332
12" Curved, 45° Air Cooled Barrel Assembly ........................................ 003-2333
12" Straight, Water Cooled Barrel Assembly ........................................... 003-2318
12" Curved, 45° Water Cooled Barrel Assembly ................................. 003-2319
Barrel Removal and Installation
To remove the barrel assembly, loosen the patented EZ Lock™ Taper lock nut until it is clear of the threads. Pull barrel out of the gun body.

To replace a barrel assembly, open the drive and idler roll door and seat the barrel assembly until the inlet guide is almost touching the drive and idler roll and the rear face of the barrel is flush with the aluminum body block. Take care not to damage the “O” rings when inserting into the body. Tighten taper lock nut assembly firmly so that barrel cannot rotate.

Barrel Rotation
To rotate a barrel assembly, loosen the patented EZ Lock™ Taper lock nut assembly no more than 1 turn. Rotate barrel to the position of your choice and retighten taper lock nut assembly firmly so that the barrel cannot rotate.

WARNING: Do not attempt to weld without the barrel being tightly secured in the gun body, or damage to the barrel or body may result.

Maintenance

Periodic Maintenance
Your Cobramatic® System is designed to provide years of reliable service. Maintenance of the gun will normally consist of a general cleaning of the wire guide system, including barrels, drive rolls, and conduits at regular intervals.

Remove spatter build-up from inside of nozzles with a hardwood stick.

The only parts on the Cobramatic® system that are subject to normal wear are the conduit, contact tips, gas cups, front body liners, wire guides, drive and idler rolls. A supply of these parts should be maintained on hand.

The number of units in operation and the importance of minimal “down time” will determine to what extent spare parts should be stocked on hand. See the “Recommended Spare Parts List” for the most commonly replaced parts.

If repairs do become necessary, qualified shop maintenance personnel can easily replace any part.

<table>
<thead>
<tr>
<th>Maintenance Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tool</strong></td>
</tr>
<tr>
<td>Contact Tip Removal Tool</td>
</tr>
<tr>
<td>Drive Roll Removal Tool</td>
</tr>
</tbody>
</table>
## Recommended Spare Parts List

<table>
<thead>
<tr>
<th>Qty</th>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>615-0620-15</td>
<td>Conduit -15 ft</td>
</tr>
<tr>
<td>1</td>
<td>615-0620-25</td>
<td>Conduit - 25 ft</td>
</tr>
<tr>
<td>1</td>
<td>615-0620-35</td>
<td>Conduit - 35 ft</td>
</tr>
<tr>
<td>1</td>
<td>615-0620-50</td>
<td>Conduit - 50 ft</td>
</tr>
<tr>
<td>1</td>
<td>437-0253</td>
<td>Drive Roll Door</td>
</tr>
<tr>
<td>2</td>
<td>005-0694</td>
<td>Trigger Assy. Kit</td>
</tr>
<tr>
<td>2</td>
<td>005-0695</td>
<td>Potentiometer Kit</td>
</tr>
<tr>
<td>1</td>
<td>005-0699</td>
<td>Handle Kit</td>
</tr>
<tr>
<td>2</td>
<td>005-0701</td>
<td>Micro-Switch Kit</td>
</tr>
<tr>
<td>10</td>
<td>511-0101</td>
<td>Drive Roll</td>
</tr>
<tr>
<td>5</td>
<td>005-0686</td>
<td>Idler Roll Kit</td>
</tr>
</tbody>
</table>

---

**DRIVE ROLL REMOVAL TOOL**  
931-0100

**IDLER ROLL**  
005-0686

**KNURLED DRIVE ROLL**  
511-0101

**MICRO SWITCH ASSEMBLY**  
005-0701
## Troubleshooting

<table>
<thead>
<tr>
<th>Trouble</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No wire feed at gun, feeder not operating, i.e. no slave motor or brake solenoid.</td>
<td>115/42 VAC Control fuse in feeder/Control box blown.</td>
<td>Replace fuse.</td>
</tr>
<tr>
<td></td>
<td>Micro-switch defective/not being activated.</td>
<td>Replace switch. Check switch for operation.</td>
</tr>
<tr>
<td></td>
<td>Broken electrical cable.</td>
<td>Check micro-switch wires for continuity.</td>
</tr>
<tr>
<td>No wire feed at gun, feeder operating properly.</td>
<td>24 VAC Control fuse in feeder/Control box blown.</td>
<td>Check motor leads for shorts; then replace fuse.</td>
</tr>
<tr>
<td></td>
<td>Bad potentiometer.</td>
<td>Check potentiometer with meter.</td>
</tr>
<tr>
<td></td>
<td>Broken Electrical Cable.</td>
<td>Check motor and potentiometer wires for continuity.</td>
</tr>
<tr>
<td></td>
<td>Bad Speed control/PCB</td>
<td>See specific cabinet/control box owners manual for speed control operation.</td>
</tr>
<tr>
<td>Wire feeds, but welding wire is not energized.</td>
<td>Loose or no cable connections.</td>
<td>Check all power connections.</td>
</tr>
<tr>
<td></td>
<td>Contactor control cable loose or in wrong position.</td>
<td>Check power supply owners manual for location and type of contactor signal required.</td>
</tr>
<tr>
<td></td>
<td>Welding power source.</td>
<td>Check power source.</td>
</tr>
<tr>
<td>Wire feeds erratically.</td>
<td>Dirty or worn conduit.</td>
<td>Blow out or replace conduit.</td>
</tr>
<tr>
<td></td>
<td>Wrong size contact tip.</td>
<td>See Contact tip table.</td>
</tr>
<tr>
<td></td>
<td>Idler roll stuck.</td>
<td>Check for lock washer under idler roll, or replace if damaged.</td>
</tr>
<tr>
<td>Wire feeds one speed only.</td>
<td>Bad potentiometer.</td>
<td>Check with meter.</td>
</tr>
<tr>
<td></td>
<td>Broken electrical cable.</td>
<td>Check potentiometer wires for continuity or short.</td>
</tr>
<tr>
<td></td>
<td>Bad speed control.</td>
<td>See specific cabinet/control owners manual for speed control operation.</td>
</tr>
<tr>
<td>Wire walks out of drive rolls.</td>
<td>Idler roll upside-down.</td>
<td>Place groove in idler roll toward top.</td>
</tr>
<tr>
<td></td>
<td>Rear wire guide missing.</td>
<td>Replace wire guide.</td>
</tr>
</tbody>
</table>
Troubleshooting Guide

Regardless of which gun or feeder used, all MK Products’ push-pull guns operate on the same principle. The slave motor in the feeder runs at a fast, constant speed, but has very low torque. It is always trying to feed more wire than the gun motor wants, and when the motor gets all it wants, it slows the slave motor, preventing a bird’s nest. Because of the low torque produced by the slave motor, a brake system is used to prevent wire overrun rather than tension. The drag adjustment in the feeder is used simply to keep the wire slightly taut, so it will not pull off the spool while feeding wire.

The high torque 24VDC gun motor is controlled by a solid state speed control located in the feeder, and a pot located in the gun. The gun motor, potentiometer, and micro switch are connected to the cabinet/control box via a control cable and Amphenol connector. If this cable becomes damaged, a variety of symptoms can occur, depending on which wire(s) break. To test, check each wire for continuity and shorts.

Remember, the micro switch in the gun activates both the slave motor and gun motor circuits in the cabinet. Therefore, if the slave motor and brake solenoid operate, but the gun does not, look more toward the gun motor’s 24V circuits, speed control, control cable, or the gun motor. If nothing operates, look more toward the slave motor’s input, micro switch leads, or micro switch.

Testing The Gun

Reference the 9-pin rectangular diagram on the Python Fronius Compatible electrical diagram for information about pin-outs and locations.

Motor Check
Remove the connector from the cabinet.
Using the 9-pin connector, check the resistance across pins “1” and “6” (motor leads). The resistance across the motor should be between 5 - 10 ohms as the potentiometer is turned.
If an open circuit or short exist, check the motor leads and motor independently.

Testing the Gun Potentiometer
Using the 9-pin connector, check the resistance across pin “3” (wiper) and pin “2”. The resistance should vary from 0 - 5K ohms as the potentiometer is turned.
Check the resistance across pin “3” (wiper) and pin “7”. The resistance should vary from 5K - 0 ohms as the potentiometer is turned.

Testing the Micro Switch
Using the 9-pin connector, check for continuity across pins “9” and “5” when the trigger is pressed.
Appendices

Diagrams / Parts List

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<table>
<thead>
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<th>No.</th>
<th>Qty.</th>
<th>Part No.</th>
<th>Description</th>
<th>No.</th>
<th>Qty.</th>
<th>Part No.</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>002-0629</td>
<td>Assy Cam Idler Arm</td>
<td>12</td>
<td>2</td>
<td>320-0101</td>
<td>Scr Button 4-40 x 3/16 SST</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>005-0694</td>
<td>Trigger Kit</td>
<td>13</td>
<td>9</td>
<td>338-0022</td>
<td>Scr SHC 6-32 x 3/8 SST</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>003-2125</td>
<td>Assy Knob Pot</td>
<td>14</td>
<td>4</td>
<td>333-0260</td>
<td>Wshr Spr LK #6 SST</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>005-0701</td>
<td>Micro Swx Kit</td>
<td>15</td>
<td>1</td>
<td>338-0153</td>
<td>Scr SHC 1-72 x 3/8 SST</td>
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<tr>
<td>5</td>
<td>1</td>
<td>003-2271</td>
<td>Front Body Assy, A/C</td>
<td>16</td>
<td>1</td>
<td>405-0706</td>
<td>Label</td>
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<td>1</td>
<td>003-2108</td>
<td>Front Body Assy, W/C</td>
<td>17</td>
<td>1</td>
<td>421-0018</td>
<td>Pin Dowel 3/32 x 7/8</td>
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<td>6</td>
<td>1</td>
<td>003-2153</td>
<td>Assy Boot Torch</td>
<td>18</td>
<td>1</td>
<td>431-1622</td>
<td>Scr Shoulder 1/8 x 4-40</td>
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<tr>
<td>7</td>
<td>1</td>
<td>005-0695</td>
<td>Assy Speed Control Pot Kit</td>
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<td>1</td>
<td>431-1637</td>
<td>Screw Hex 3/8-20 x 3/8</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>003-2289</td>
<td>Rear Body Assy, A/C</td>
<td>20</td>
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<td>435-1585</td>
<td>Strap Motor Python</td>
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<td>003-2287</td>
<td>Rear Body Assy, W/C</td>
<td>21</td>
<td>1</td>
<td>005-0699</td>
<td>Handle Kit: Includes line items 13,18, and 23</td>
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<tr>
<td>9</td>
<td>1</td>
<td>211-0077</td>
<td>Motor 24VDC, Standard</td>
<td>22</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>211-0080</td>
<td>Motor 24VDC, Hi-Speed (optional)</td>
<td>23</td>
<td>1</td>
<td>437-0253</td>
<td>Door Molded Python</td>
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<tr>
<td>10</td>
<td>2</td>
<td>319-0254</td>
<td>Scr FH Phil 82 4-40 x 3/8 SST</td>
<td>24</td>
<td>1</td>
<td>437-0268</td>
<td>Cover Knob Python</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>319-0258</td>
<td>Scr FH Phil 82 4-40 5/8 SST</td>
<td>25</td>
<td>0.30 ft.</td>
<td>737-0048</td>
<td>Tube, Insulation 9 AWG, Clear</td>
</tr>
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## Front Body Assembly

<table>
<thead>
<tr>
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<th>Qty.</th>
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</tr>
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<td>-</td>
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<td>2</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>3*</td>
<td>1</td>
<td>325-0206</td>
<td>10-24 x 3/8 PH Screw</td>
</tr>
<tr>
<td>4*</td>
<td>1</td>
<td>333-0082</td>
<td># 10 Lock Washer</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>419-0092</td>
<td>0.29 x 0.047 x 0.32 Comp. Spring</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>421-0525</td>
<td>1/8 x 7/8 SST Dowel Pin</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>431-1663</td>
<td>Idler Adjusting Screw</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>431-1598</td>
<td>Idler Arm</td>
</tr>
<tr>
<td>9*</td>
<td>1</td>
<td>511-0001</td>
<td>Idler Wire Feed Assembly</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>511-0101</td>
<td>Drive roll</td>
</tr>
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</table>

* Items 3, 4 & 9 available as package kit: **Part number 005-0686**
<table>
<thead>
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<td>-</td>
<td>Not available separately</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>303-0096</td>
<td>O-Ring .145 ID x .07 W</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>321-1082</td>
<td>Set Screw Flat 1/4-20 5/16 SST</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>321-1104</td>
<td>Set Screw Mod Conduit</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>336-0020</td>
<td>Scr PH Phil 4-40 x 5/16 SST</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>411-0243</td>
<td>Tie Wrap Scr 4</td>
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Apply silicone lubricant for installation.
### Water Cooled Rear Body Assembly

<table>
<thead>
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<th>Part No.</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
<td>Not available separately</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>303-0096</td>
<td>O-Ring .145 ID x .07 W</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>321-1104</td>
<td>Set Screw Mod Conduit</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>336-0020</td>
<td>Scr PH Phil 4-40 x 5/16 SST</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>411-0243</td>
<td>Tie Wrap Scr 4</td>
</tr>
</tbody>
</table>

*Apply silicone lubricant for installation.*
*Apply silicone lubricant to items 4 and 5 before installing.

<table>
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<th>Qty.</th>
<th>Part Number</th>
<th>Description</th>
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<tbody>
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<td>-</td>
<td>Not available separately</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>005-0696</td>
<td>Taper Lock Kit</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>261-0143</td>
<td>Insulator Barrel</td>
</tr>
<tr>
<td>4*</td>
<td>2</td>
<td>303-0010</td>
<td>O-Ring .489 ID x .07 W</td>
</tr>
<tr>
<td>5*</td>
<td>2</td>
<td>303-0094</td>
<td>O-Ring .301 ID x .07 W</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>313-0091</td>
<td>Retaining Ring 5/8 Shaft</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>431-1774</td>
<td>Cup Insulator Barrel</td>
</tr>
<tr>
<td>8</td>
<td>0.63 ft</td>
<td>615-0178</td>
<td>Liner Tef 0.084 ID x 0.174 OD</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>621-0250</td>
<td>Assy Cup Copper Finned #10</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>621-0393</td>
<td>Tip HD Spray .060</td>
</tr>
</tbody>
</table>
*Apply silicone lubricant to items 5, and 6 before installing.

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<th>No.</th>
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<th>Description</th>
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<td>Taper Lock Kit</td>
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<td>261-0141</td>
<td>Insulator Barrel</td>
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<tr>
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<td>1</td>
<td>261-0381</td>
<td>Insulator Cup with five O-Rings</td>
</tr>
<tr>
<td>5*</td>
<td>8</td>
<td>303-0010</td>
<td>O-Ring .489 ID x .07 W</td>
</tr>
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<td>6*</td>
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<td>303-0094</td>
<td>O-Ring .301 ID x .07 W</td>
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<tr>
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<td>Retaining Ring 5/8 Shaft</td>
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<td>1</td>
<td>431-0977</td>
<td>Retaining Nut</td>
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<td>431-1774</td>
<td>Cup Insulator Barrel</td>
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<tr>
<td>10</td>
<td>0.70 ft.</td>
<td>615-0178</td>
<td>Liner Tef 0.084 ID x 0.174 OD</td>
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<tr>
<td>11</td>
<td>1</td>
<td>621-0065</td>
<td>Cup #10 Assy</td>
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<tr>
<td>12</td>
<td>1</td>
<td>621-0393</td>
<td>Tip HD Spray .060</td>
</tr>
</tbody>
</table>
CUP INSULATOR AND O-RING MAINTENANCE

CAUTION: Power-off the coolant pump before disassembling water-cooled barrels.

1. Unscrew Retaining Nut and slide back on barrel.

2. Using a firm pull and twist action, the Water-Cooled Gas Cup or Air-Cooled Gas Cup Assembly can be removed from the Cup Insulator.

3. Inspect the Cup Insulator and o-rings (included with Insulator) for wear and proper lubrication. It is considered good practice to replace all o-rings at the same time.

4. To remove the Cup Insulator, it must be unscrewed and pulled from the barrel. Use a rag or towel (due to o-ring lubrication) and wrap it around the Cup Insulator.

   Unscrew and pull when completed unthreaded from barrel. Be sure the Insulator is fully unscrewed from the threads. Pulling the Insulator over barrel threads will damage the threads on the Insulator.

   Inspect o-rings on barrel for wear and lubrication. It is considered good practice to replace all o-rings at the same time.

5. To install the Cup Insulator, it must be pushed all the way onto the barrel then screwed onto the threads. If necessary, place small amount of o-ring lubricant on the inside diameter of the Cup Insulator, this will help it slide onto the barrel.

   Push the Insulator onto the barrel until it bottoms out, screw onto barrel threads.

   The Insulator MUST be all the way onto the barrel to avoid assure proper coolant passage and from blocking the gas outlet orifices.

6. Push Water-Cooled Gas Cup or Chrome Nut, Cup Adapter and Gas Cup Assembly onto Cup Insulator. Slide Retaining Nut forward and tighten.
Python® Fronius Compatible Lead Assembly
Air Cooled

TIGHTEN WITH 55-55 IN-LBS TORQUE

TIGHTEN WITH 180-1 TO 183-1 IN-LBS TORQUE

APPLICATION INSTRUCTIONS
- APPLY QUICK DRYING NOSE LUBRICANT ON BOTH ENDS OF ITEM 13 OR INSTALLATION OF ITEM 44 TO PROVIDE 4.44 INCHES BEYOND ITEM 13.
- TRIM TELSON LINTER AFTER ASSEMBLY, TELSON LINTER TO PROVIDE 4.44 INCHES BEYOND ITEM 10.
<table>
<thead>
<tr>
<th>No.</th>
<th>Qty.</th>
<th>Description</th>
<th>15' Part No.</th>
<th>25' Part No.</th>
<th>35' Part No.</th>
<th>50' Part No.</th>
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<tbody>
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<td></td>
<td>003-2153</td>
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<tr>
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<td>1</td>
<td>Assy Power Manifold, A/C</td>
<td></td>
<td></td>
<td>003-2373</td>
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</tr>
<tr>
<td>3</td>
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<td>261-0094</td>
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<td></td>
<td></td>
</tr>
<tr>
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<td>931-0132</td>
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<td>6</td>
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<tr>
<td>7</td>
<td>4</td>
<td>Screw SHC 4-40 x 1/2 SST</td>
<td></td>
<td></td>
<td>338-0014</td>
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<tr>
<td>8</td>
<td>4</td>
<td>Tie Wrap</td>
<td>411-0045</td>
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<tr>
<td>9</td>
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<td>431-1788</td>
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<tr>
<td>10</td>
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<td>Retainer 5/16 Hose</td>
<td>431-1898</td>
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<td>11</td>
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<td>Washer for Euro Connection</td>
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<td>1</td>
<td>Nut Handle Adapter</td>
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<td>13</td>
<td>1</td>
<td>Handle Kit: includes item 7</td>
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<td>Assy Gas Hose</td>
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<td>Conduit Tef Tube</td>
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<td>Assy Power Cable Global</td>
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<td>Ultra Flex Power Cable (optional)</td>
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* Hose Retainer is re-usable and can be removed and re-installed as needed

** Power Cable includes copper wrap P/N 701-0053-1
<table>
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<th>No.</th>
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<th>Description</th>
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<tr>
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</tr>
<tr>
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</tbody>
</table>

*Hose Retainer is re-usable and can be removed and re-installed as needed*
Gun End, Air Cooled

- Spiral Wrap p/n: 261-0094-13
- Conduit
- Power Cable
**Python Fronius Compatible**

**Lead Assembly Spiral Wrap Installation**

033-0929

*Gun End, Water Cooled*

Spiral Wrap p/n: 261-0094-13
Cabinet End, Air and Water Cooled

Spiral Wrap p/n: 261-0094
### Air Cooled Power Manifold Assembly

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<td>O-Ring Buna-N .101 ID x .07W</td>
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<tr>
<td>2</td>
<td>1</td>
<td>321-1082</td>
<td>Set Screw Flat 1/4 - 20 x 3/8 SST</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>321-1104</td>
<td>Set Screw Conduit</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>431-1905</td>
<td>Fitting 1/8 ID x 1/16 - 27 NPT</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>431-1948</td>
<td>Connector Thread</td>
</tr>
<tr>
<td>6</td>
<td>-</td>
<td>-</td>
<td>Not available separately</td>
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</tbody>
</table>

1. APPLY SILICONE LUBRICANT FOR INSTALLATION.
2. APPLY HIGH STRENGTH THREAD SEALANT TO THREADS.
3. APPLY LOW STRENGTH THREAD LOCKING TO EXTERNAL THREADS BEFORE INSTALLATION.
4. TIGHTEN WITH 65±5 IN-LBS TORQUE.
5. TIGHTEN WITH 30 IN-LBS OF TORQUE.

---

**Diagram:**
- 1: O-Ring Buna-N .101 ID x .07W
- 2: Set Screw Flat 1/4 - 20 x 3/8 SST
- 3: Set Screw Conduit
- 4: Fitting 1/8 ID x 1/16 - 27 NPT
- 5: Connector Thread
- 6: Not available separately
Python Fronius Compatible
Power Manifold Assembly, Water Cooled
P/N 003-2378

Water Cooled Power Manifold Assembly

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<td>1</td>
<td>303-0097</td>
<td>O-Ring Buna-N .101 ID x .07W</td>
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<td>Fitting 1/8 ID x 1/16 - 27 NPT</td>
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<tr>
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<td>Connector Thread</td>
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<tr>
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</table>

APPLY LOW STRENGTH THREAD LOCKING TO EXTERNAL THREADS BEFORE INSTALLATION.

APPLY HIGH STRENGTH THREAD SEALANT TO THREADS

APPLY SILICONE LUBRICANT FOR INSTALLATION.

APPLY SILICONE LUBRICANT FOR INSTALLATION.

APPLY LOW STRENGTH THREAD LOCKING TO EXTERNAL THREADS BEFORE INSTALLATION.
<table>
<thead>
<tr>
<th>WARNING</th>
<th>AVISO DE PRECAUCION</th>
<th>ATTENTION</th>
<th>WARNUNG</th>
<th>ATECÃO</th>
<th>注意事項</th>
<th>警告</th>
<th>위험</th>
<th>تحذير</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Do not touch electrically live parts or electrodes with skin or wet clothing.</td>
<td>• No toque las partes o los electrodos bajo carga con la piel o ropa mojada.</td>
<td>• Keep flammable materials away.</td>
<td>• Mantenga al material combustible fuera del área de trabajo.</td>
<td>• Isolé-vous du travail et de la terra.</td>
<td>• Manteve inflamáveis bem guardados.</td>
<td>• 電気の完全な部分や電極を肌や湿っている衣類で触らないでください。</td>
<td>• 電気の完全な部分や電極を肌や湿っている衣類で触らないでください。</td>
<td>• 電気の完全な部分や電極を肌や湿っている衣類で触らないでください。</td>
</tr>
<tr>
<td>• Insulate yourself from work area.</td>
<td>• Aisalee del trabajo y de la tierra.</td>
<td>• Wear eye, ear and body protection.</td>
<td>• Protejase las ojos, las cóncas y el cuerpo.</td>
<td>• Entornen Sie brennbare Materialien!</td>
<td>• Use protección para a vista, ouvido e corpo.</td>
<td>• 保護装置を外れてください。</td>
<td>• 保護装置を外れてください。</td>
<td>• 保護装置を外れてください。</td>
</tr>
<tr>
<td>• Keep the area free from combustible materials.</td>
<td>• Garde la zona libre de materiales inflamables.</td>
<td></td>
<td>• Tragen Sie Augen-, Ohren- und Körperschutz!</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Never put your hands in the work area while the welding is taking place.</td>
<td>• Nunca ponga sus manos en el área de trabajo mientras se está soldando.</td>
<td></td>
<td>• 请不要把手伸入工作区域。</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• No se ponga nunca las manos ni los pies en el área de trabajo mientras se esté soldando.</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• El área de trabajo debe estar libre de cualquier material inflamable.</td>
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<tr>
<td></td>
<td>• El área de trabajo debe estar libre de cualquier material inflamable.</td>
<td></td>
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</tr>
<tr>
<td>READ AND UNDERSTAND THE MANUFACTURER’S INSTRUCTION FOR THIS EQUIPMENT AND THE COMSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER’S SAFETY PRACTICES.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>LIZEZ ET COMPRENZE LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET ÉQUIPEMENT ET LES PRODUITS À ÊTRE EMPLOYES ET SUIVEZ LES PROCÉDURES DE SECURITE DE VOTRE EMPLOYEUR.</td>
<td></td>
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</tr>
<tr>
<td>LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSSPORIFRICHEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.</td>
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</tr>
<tr>
<td>Keep your head out of humpes.</td>
<td>Turn power off before servicing.</td>
<td>Do not operate with panel open or guards off.</td>
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</tr>
<tr>
<td>Use ventilation or exhaust to remove fumes from breathing zone.</td>
<td>Desconectar el cable de alimentación de la máquina antes de iniciar cualquier servicio.</td>
<td>No operar con panel abierto o guardas quitadas.</td>
<td></td>
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<td>Les humos fuera de la zona de respiración.</td>
<td>Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases.</td>
<td>No operar con el panel abierto o guardas quitadas.</td>
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<td>Menünenan-Service kann gefährlich sein.</td>
<td>Desconecte a corrente antes de fazer serviço.</td>
<td>Não toque as partes elétricas suave.</td>
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<tr>
<td>Juegos de cobre.</td>
<td>Verifique se o equipamento não está ligado.</td>
<td>Não toque as partes elétricas suave.</td>
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<td>엔트리에 빈도를 사용할 수 있는 리튬 배터리.</td>
<td>소화은 제거하기 전에 기계를 제거하시십시오.</td>
<td>저항이 절대로 없이 작동지 하십시오.</td>
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<td>알코올을 사용할 수 있는 리튬 배터리.</td>
<td>보수전을 전원을 제거하십시오.</td>
<td>준비하여 사용할 수 있는 리튬 배터리.</td>
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<tr>
<td>في بيئة جوية، يجب الأشخاص الذين يعملون في المنطقة التي تتأثر بها.</td>
<td>لا تطيل هذا الممارسات الأخرى. إذا كانت الامتلاك المثل.</td>
<td>الحماية الشخصية ليست عليه.</td>
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<td>الحماية الشخصية ليست عليه.</td>
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LEIA E COMPREenda as instruções do fabricante para esta equipamento e as partes de uso, e siga as práticas de segurança do empregador.

使用機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的說明以及應該使用的維護材料，並謹遵貴單位的有關勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다。

 irresisting. 

 أثناء متناول واقم تطلعات المصنع المنتج لهذه المعدات والمواد قبل استعمالها وتابع تطلعات الوقاية لصاحب العمل.
LIMITED WARRANTY

Effective August 1, 2010

This warranty supersedes all previous MK Products warranties and is exclusive, with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY - MK Products Inc., Irvine, California warrants that all new and unused equipment furnished by MK Products is free from defects in workmanship and material as of the time and place of delivery by MK Products. No warranty is made by MK Products with respect to trade accessories or other items manufactured by others. Such trade accessories and other items are sold subject to the warranties of their respective manufacturers, if any.

MK Products’ warranty does not apply to components having normal useful life of less than one (1) year, such as relay points, wire conduit, tungsten, and welding gun parts that come in contact with the welding wire, including gas cups, gas cup insulators, and contact tips where failure does not result from defect in workmanship or material.

MK Products shall, exclusively remedy the limited warranty or any duties with respect to the quality of goods, based upon the following options:

(1) repair
(2) replacement
(3) where authorized in writing by MK Products, the reasonable cost of repair or replacement at our Irvine, California plant.

As a matter of general policy only, MK Products may honor an original user’s warranty claims on warranted equipment in the event of failure resulting from a defect within the following periods from the date of delivery of equipment to the original user:

1. Power Supplies and Wire Feed Cabinets ............... 3 years
2. Weldheads, Coolers, Positioners, and Push-Pull Guns .... 1 year
3. Spool Guns, and Spool Gun Modules ................. 180 days
4. Repairs/Exchanges/Parts .................................. 90 days

Classification of any item into the foregoing categories shall be at the sole discretion of MK Products. Notification of any failure must be made in writing within 30 days of such failure.

A copy of the invoice showing the date of sale must accompany products returned for warranty repair or replacement.

All equipment returned to MK Products for service must be properly packaged to guard against damage from shipping. MK Products will not be responsible for any damages resulting from shipping.

Normal surface transportation charges (one way) for products returned for warranty repair or replacement will be borne by MK Products, except for products sold to foreign markets.

ANY EXPRESS WARRANTY NOT PROVIDED HEREIN AND ANY IMPLIED WARRANTY, GUARANTY, OR REPRESENTATION AS TO PERFORMANCE, AND ANY REMEDY FOR BREACH OF CONTRACT WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE, OR COURSE OF DEALING, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR PARTICULAR PURPOSE, WITH RESPECT TO ANY AND ALL EQUIPMENT FURNISHED BY MK PRODUCTS, IS EXCLUDED AND DISCLAIMED BY MK PRODUCTS.

EXCEPT AS EXPRESSLY PROVIDED BY MK PRODUCTS IN WRITING, MK’S PRODUCTS ARE INTENDED FOR ULTIMATE PURCHASE BY COMMERCIAL/INDUSTRIAL USERS AND FOR OPERATION BY PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT AND NOT FOR CONSUMERS OR CONSUMER USE. MK PRODUCTS’ WARRANTIES DO NOT EXTEND TO, AND NO RE-SELLER IS AUTHORIZED TO EXTEND MK PRODUCTS’ WARRANTIES TO ANY CONSUMER.

USE OF OTHER THAN GENUINE MK PRODUCTS’ CONSUMABLES, PARTS, AND ACCESSORIES MAY INVALIDATE YOUR PRODUCT WARRANTY.

August 1, 2010