



Sidewinder[®] MiniSpool™ Gun

Owner's Manual

Product:	Sidewinder
Manual:	091-0551
Serial:	09020001
Voltage Rating:	24/42/115 VDC
Revision:	Feb 2009 Rev D
Gun models:	321-XXX 322-XXX



135 Ampere Push-Pull Welding Gun

Table of Contents

Safety Considerations	i-iv
-----------------------------	------

Installation	Section A
Technical Specifications	1
Support Equipment Required	1

Operation	Section B
General	2
Barrels	2
Controls and Settings	2
Drive Roll and Idler Rolls	2

Accessories	Section C
Contact Tips	3
Gas Cups	3
Welding Wire	3
Optional Barrel Assemblies	4
Optional Kits	4

Maintenance	Section D
Periodic Maintenance	4
Recommended Spare Parts List	4

Troubleshooting	Section E
Troubleshooting Guide	5
Testing the Gun	6

Appendices	Section F
Diagrams/Parts List	7
SP-1 Configurations	14

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: **Sidewinder[®]**
conforms to the following Directives and Standards:

Directives

Low Voltage Directive: 73/23/EEC

Electromagnetic Compatibility (EMC) Directive: 89/336/EEC

Standards

Arc Welding Equipment Part I: Welding Power Sources: IEC 60974-1
(September 1998 - Second Edition)

Arc Welding Equipment: Wirefeed Systems: IEC 974-5
(September 1997 - Draft Revision)

Degrees of Protection Provided by Enclosures (IP Code): IEC 529:1989
(November 1989 - First Edition)

Insulation Coordination For Equipment With Low-Voltage Systems:
Part I: Principles, Requirements and Tests: IEC 664-1: 1992
(October 1992 - First Edition)

Electromagnetic Compatibility, (EMC): EN 50199
(August 1995)

Torches And Guns For Arc Welding, EN 50078

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

ELECTRIC ARC WELDING PRODUCES HIGH INTENSITY HEAT AND ULTRAVIOLET 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 glass). This is a must for welding or cutting (and chipping) to protect the eyes from radiant energy and flying metal. Replace cover glass 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 unless 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 from 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, falling 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. Immerse pressured hose in water; bubbles indicate leaks

Repair leaky or worn hose by cutting area out 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 dark area in the field of vision.

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 a 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 bared 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

- .023", .030" & .035" (0.6, 0.8 & 0.9 mm) Aluminum Wire only

Wire Speed*

- 600 ipm (15.2 mpm) at 12VDC Motor Input Voltage

Spool Size

- 2-1/2" inches (63.5mm)

Duty Cycle - All ratings are at 18V using Argon Gas

- 20% @ 200 Amps
- 60% @ 135 Amps

**Maximum IPM varies depending on input voltage, wire size and the control box used.*

Support Equipment Required

- CV or CC power source of sufficient capacity for your needs.
- Regulated gas supply and hoses.
- Properly sized power leads from power source.

Welding Gun Lead Connections

Power Cable - Air Cooled

A #6 AWG welding power cable (75A, 600V rating) is used on the Sidewinder®. The power cable comes standard with a ring lug connector.

Gas Hose

The end of the Sidewinder® gas hose uses a 5/8"-18 IAA RH, male gas fitting, standard.

Electric Cable

A four-conductor control cable is used on the Sidewinder®. As the electrical diagram shows, two wires are used for motor voltage and two wires are used for the micro switch from the trigger mechanism. The control end has a four-pin CPC (Circular Plastic Connector).

Spool Gun Setup

Loading Electrode Wire

Raise the Wire Restrainer until it clicks into place in the spool housing.

With the welding wire coming off the top of the MiniSpool™, straighten out the first 2" to 3" of wire and push it through the liner inlet.

Jog the trigger until the wire is picked up by drive rolls and fed through the contact tip.

Press the MiniSpool™ of wire on to the spindle until it clicks into place. Lower the Wire Restrainer onto the wire surface.

NOTE:

The Wire Restrainer is designed to automatically control spool drag and keep the wire from jumping off the spool, no adjustment required.

Section B

Operation

General Description

The 12 VDC Sidewinder® motor is controlled by an external motor/wire speed controller. This can be an intergral circuit within a welding power supply or through an MK Control Module.

The trigger is designed so when it is partially depressed, gas flow starts via the valve located in the gun body - prior to ignition of the arc. When the trigger is partially released after welding - just as the arc is extinguished, gas flow continues until the trigger is fully released. This is designed as built-in Pre and Post gas flow.

The 1/4" Contact Tips and the standard knurled Drive Roll used on the Sidewinder® are the same as those used on the Cobra® Gold or classic Gooseneck. Whereas the Gas Cups and the Idler Roll are unique to this gun.

Barrels

Barrel Selection

The Sidewinder® MiniSpool™ gun is available with a 4" or 7" Straight Air Cooled barrel.

Barrel Removal and Installation

To remove a barrel assembly, the handles must first be removed. There are four socket screws which hold the barrel onto the front of the body assembly.

The barrel assembly has a gas passage bayonet, with two o-rings, inserted into the body. Once the screws are removed, simply pull to remove the barrel from the body.

To replace a barrel assembly, take care not to damage the o-rings when inserting into the body. Apply a small amount of o-ring lube to the o-rings, insert bayonet into body and secure with screws and washers previously removed. Reassemble handles to the gun.

Controls and Settings

Speed Control

The wire speed of the Sidewinder® is controlled by variable DC motor input voltage either from a welding power supply with Wire Speed/Amperage Control or from an MK Control Module.

The MK Control Module is designed to connect between the Sidewinder® and both the welding power supply and the input power for the module. While converting its input power to controllable DC motor voltage for welding wire speed, the MK Control Module interfaces the Sidewinder® trigger microswitch to the welding power supply contact closure signal.

Reference Section F for Module connection configuration.

Drive and Idler Rolls

The Sidewinder® gun comes standard with a knurled drive roll (universal to all aluminum alloys) and a grooved idler roll designed for wire diameters from .023" to .035".

Drive roll tension is accomplished by means of a spring loaded idler lever, applying a constant - non-operator adjustable - but controlled pressure on the welding wire against the knurled drive roll. Proper tension is measured when wire does not slip if a small amount of pressure is added to the wire as it exits the tip.

NOTE:

Changing the factory set idler roll pressure may cause the wire to feed erratically, negatively affecting wire feed speed and welding conditions and may damage moving parts within the welding gun.

Drive Roll Removal/Installation

1. Push the idler roll release button. This will relieve the pressure against the drive roll.
2. Align the Drive Roll Removal Tool (P/N 931-0100) over the flats of the drive roll. Because the threads on the drive roll and drive shaft are left hand threaded, you must turn the drive roll removal tool in a CLOCKWISE direction to loosen/remove.
3. Install a new drive roll on the left-hand threaded shaft. Push the idler roll release button to relieve the pressure against the drive roll. Spin drive roll all the way down the shaft. The drive roll will self-tighten onto the shaft when it feeds wire.

Idler Roll Installation and Removal

1. Push and hold the idler roll release button located on the side of the gun. This will relieve the pressure against the drive roll.
2. Using a flat bladed screwdriver, loosen idler screw and remove.
3. Reinstall or replace idler roll, **make sure the groove is towards the top of the idler roll before installing screw.**
3. Tighten as necessary.

Section C

Accessories

Contact Tips



1/4" Diameter Contact Tip*				
Wire Size	Tip ID Stamp	Arc	Length	Part No.
.023"(0.6mm)	.031"(0.8mm)	Spray	1.50"(38.1mm)	621-00527-25
.030"(0.8mm)	.037"(.09mm)	Spray	1.50"(38.1mm)	621-0325-25†
.030"(0.8mm)	.040"(1.0mm)	Spray	1.50"(38.1mm)	621-0076-25
.035"(0.9mm)	.045"(1.0mm)	Spray	1.50"(38.1mm)	621-0001-25**

* All tips sold in quantities of 25
 ** Also sold in quantities of 250 and 500
 † This size tip furnished with gun

Gas Cups



Gas Cups		
Cup Size	Cup I.D.	Part No.
6	3/8" (9.5 mm)	621-0440
7	7/16" (11.1 mm)	621-0441
8	1/2" (12.7 mm)	621-0442
10	5/8" (15.9 mm)	621-0443

Welding Wire - 1/4 lb MiniSpool™

MiniSpool™ Wire		
Wire Diameter	Alloy	Part No.
.030" (0.8 mm)	ER4043	909-030-4043
	ER5356	909-030-5356
.035" (0.9 mm)	ER4043	909-035-4043
	ER5356	909-035-5356



Section D

Optional Barrel Assemblies

4" Straight Barrel	003-2250
7" Straight Barrel	003-2251

Optional Kits & Speed Control Modules

Handle Kit	005-0711
Control Cable Extension, 25 ft.....	005-0425
SP-1 - All Source Speed Control, 115VAC	005-0355
SP-L1 - Lincoln Electric, 14-pin, 42VAC	005-0356
SP-M1 - Miller Electric, 14-pin, 24VAC	005-0357
SP-4A - All Source Speed Control, 4-pin, 115VAC	005-0358

Maintenance

Your Sidewinder® MiniSpool™ gun is designed to provide years of reliable service.

Maintenance of the spool gun will normally consist of a general cleaning of the wire guide system, including tubes and drive rolls at regular intervals.

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

The only parts on the gun that are subject to normal wear are the parts that contact the electrode wire, the wire guide, contact tips, gas cups, drive and idler rolls and barrel liners. A supply of those parts should be maintained on hand.

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

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.

Maintenance Tools

Tool	Part Number
Drive Roll Removal Tool	931-0100

Recommended Spare Parts List

Qty.	P/N	Description
2	003-2197	Assy Switch
5	511-0113	Assy Idler Roll 0.023/0.035
5	511-0101	Drive Roll Gold
2	003-2216	Assy Trigger
1	211-0079	Motor 12VDC
1	003-2250	Assy Barrel, 4"
1	003-2251	Assy Barrel, 7"
1	931-0140	Liner Package

Section E

Troubleshooting

The Sidewinder® MiniSpool™ gun operates on a very simple principle.

The torch trigger is designed so that when it is partially depressed, gas flow starts via the valve located in the torch body, prior to ignition of the arc. When the trigger is partially released after welding (extinguishing the arc), gas flow continues until the trigger is fully released; built-in pre and post gas flow.

The 12VDC torch motor is controlled by a solid state speed control externally located in either the welding power supply or in a MK speed control module, while the gas valve is located in the body of the gun. All other function of the welding process, when using the Sidewinder®, occurs at external devices (welding power supply, motor voltage control and gas supply).

Problems with the wire feed speed or motor voltage are related to the external speed control device while gas flow may be a problem within the gun body (gas valve). The path of the wire through the gun may become obstructed by debris.

Troubleshooting Guide		
Trouble	Cause	Remedy
No wire feed at torch.	Check fuse in speed control device.	Replace fuse.
	Micro-switch defective/not being activated.	Replace switch. Check switch for operation.
	Broken electrical cable.	Check micro-switch wires for continuity.
Wire feeds, but welding wire is not energized.	Loose or no cable connections.	Check all power connections.
	Welding power source.	Check power source manual.
Wire feeds erratically.	Idler roll stuck.	Check for lock washer under idler roll, or replace if damaged.
	Wrong size contact tip.	See contact tip table.
Wire walks out of drive rolls.	Idler roll upside-down.	Place groove in idler roll toward top.
	Rear wire guide missing.	Replace wire guide.
Poor gas flow/ coverage.	Bad gas hose end connections or not enough gas flow from flow regulator.	Inspect all gas hose connections and hose integrity. Adjust gas flow rate at flow regulator.
	Gas cup and gas ports misaligned or clogged.	Remove gas cup and inspect gas ports at diffuser.

Testing The Gun

Motor Check

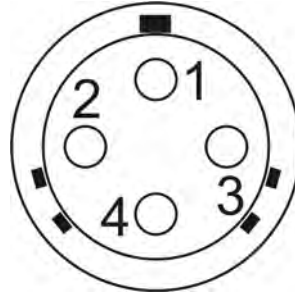
Disconnect 4-pin CPC.

Check the resistance across pins "3" and "4". The resistance across the motor should be between 15-25 ohms.

If an open circuit or short exists, check the motor leads and motor independently of each other. Replace the defective part.

Testing the Micro Switch

Check for continuity across pins "1" and "2" when the trigger is pulled. The signal should be open when the trigger is released.

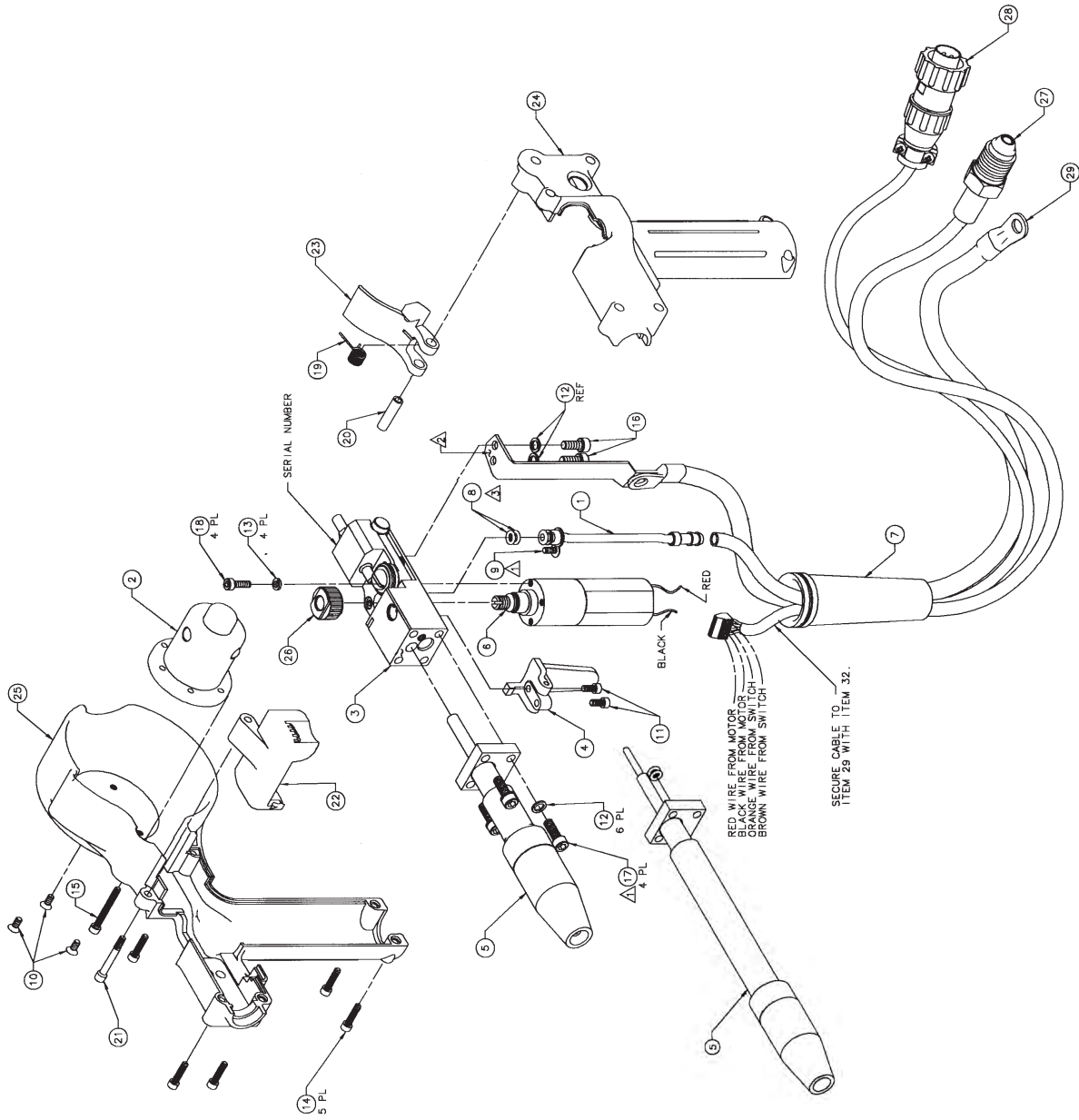


Section F

Sidewinder® Diagrams/Parts List

Gun Exploded View.....9
Main Body Assembly.....10
Straight Barrel - 4”11
Straight Barrel - 7”12
Electrical.....13
SP-1 Configurations.....14

Sidewinder® MiniSpool™ Gun Exploded View

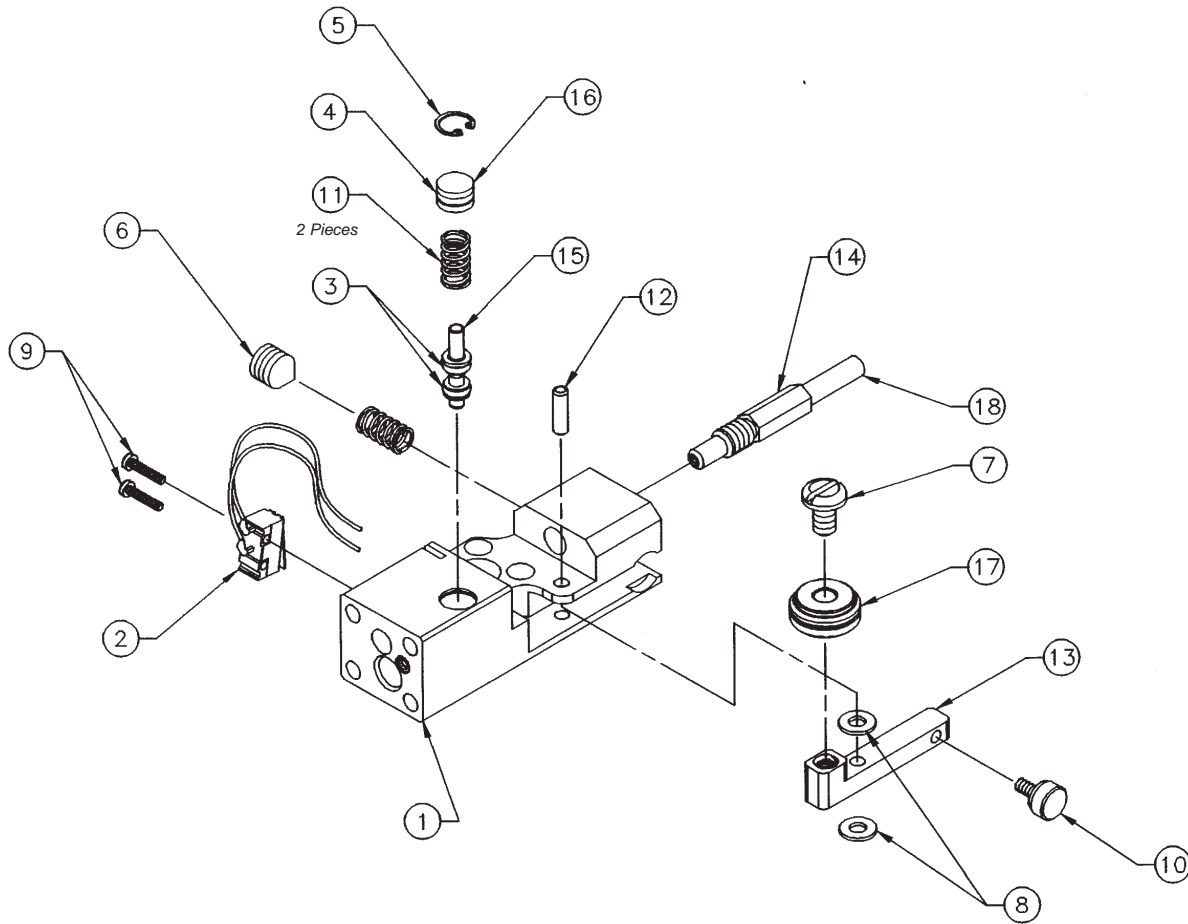


Sidewinder Parts Listing

No.	Qty.	Part No.	Description
1	1	002-0664	Assy Brazed Gas Line
2	1	003-2198	Assy Spindle
3	-	-	Not Available Separately
4	1	003-2216	Assy Trigger
5	-	003-2250	Assy Barrel, 4"
		003-2251	Assy Barrel, 7"
6	1	211-0079	Motor 12VDC
7	1	301-0099	Boot
8	2	303-0096	O-Ring .145 ID x .07 W
9	1	316-0002	SCR TRUSS HD 4-40 x 1/4 SST
10	3	319-0252	SCR FH PH4-40 x 1/4 SST 82°
11	2	328-0237	SCR SHC 4-40 x 1/4 SST
12	6	333-0006	Washer SPR LK #8
13	4	333-0100	Washer SPR LK M3
14	5	338-0014	SCR SHC 4-40 x 1/2 SST
15	1	338-0017	SCR SHC 4-40 x 1 SST
16	2	338-0033	SCR SHC 8-32 x 3/8 SST
17	4	338-0034	SCR SHC 8-32 x 1/2 SST
18	4	338-0161	SCR SHC M3 x 10 SST
19	1	419-0100	Torsion Spring Wire Restrainer
20	1	431-1749	Spacer Wire Restrainer
21	1	431-1760	SCR Shoulder 1/8 x 4-40
22	1	437-0277	Door
23	1	437-0280	Wire Restrainer
24	1	005-0711	Handle Kit: includes line items 24, 25
25			
26	1	511-0101	Driveroll Gold
27	1	552-0201	Assy Gas Hose 15 ft
		552-0202	Assy Gas Hose 25 ft
28	1	843-0555	Assy Controller Cable 15 ft.
		843-0556	Assy Controller Cable 25 ft.
29	1	843-0590	Assy Power Cable 15 ft.
		843-0591	Assy Power Cable 25 ft.

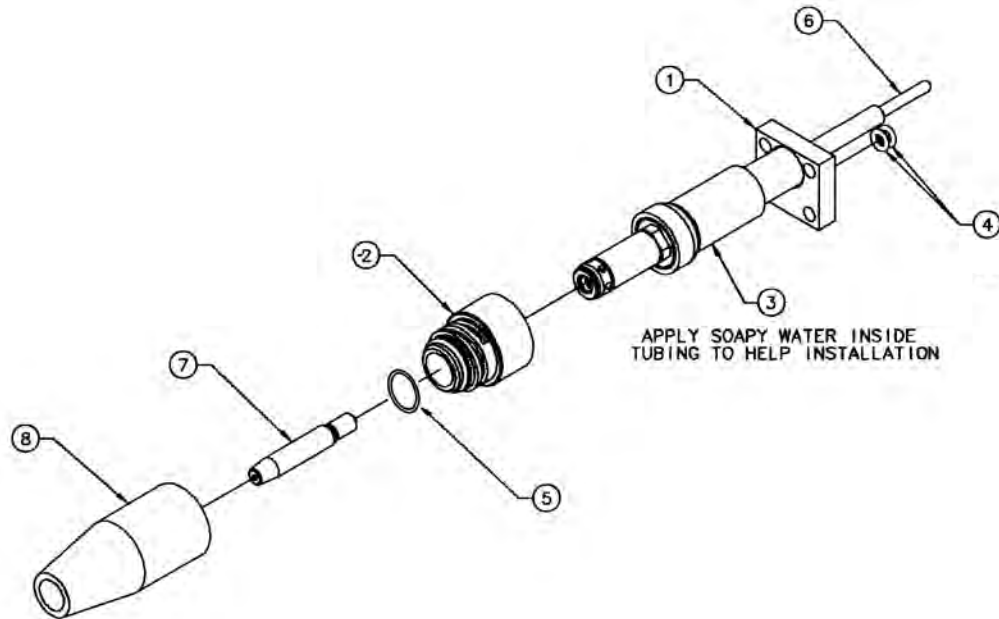
Sidewinder® Gun Body Assembly

P/N 003-2215



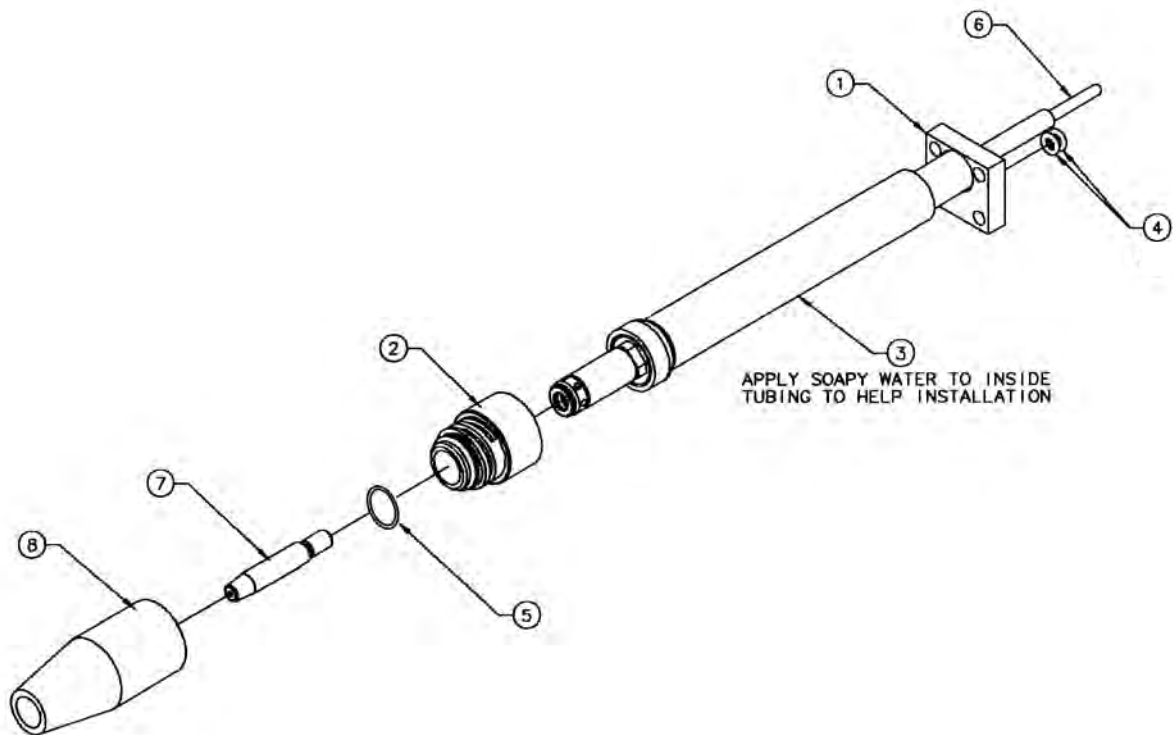
Gun Body Assembly			
No.	Qty.	Part No.	Description
1	-	-	Not Available Separately
2	1	003-2197	Assy Switch
3	2	303-0097	O-Ring .101 ID x .07 W
4	1	303-0098	O-Ring .176 ID x .07 W
5	1	313-0030	Retaining Ring Internal 0.312
6	1	321-1125	Set SCR 5/16-18 x 3/8 LG Cone
7	1	325-0206	SCR PH SL 10-24 x 0.340
8	2	331-0115	Washer Brass 0.147 ID x 0.312
9	2	336-0244	SCR Phil Pan 1-72 x 0.38 SST
10	1	401-0039	Thumb Knob 4 40 x 1/4
11	2	419-0099	Spring Comp 0.240 OD x 0.188
12	1	421-0522	Pin Dowel 1/8 x 7/16 SST
13	1	431-1750	Idler Lever
14	1	431-1753	Wire Guide
15	1	431-1754	Valve Stem
16	1	431-1756	Gas Cap
17	1	511-0113	Assy Idler Roll 0.023/0.035
18	1	615-0349	Inlet Liner

Sidewinder® - 4" Straight Barrel Assembly P/N 003-2250



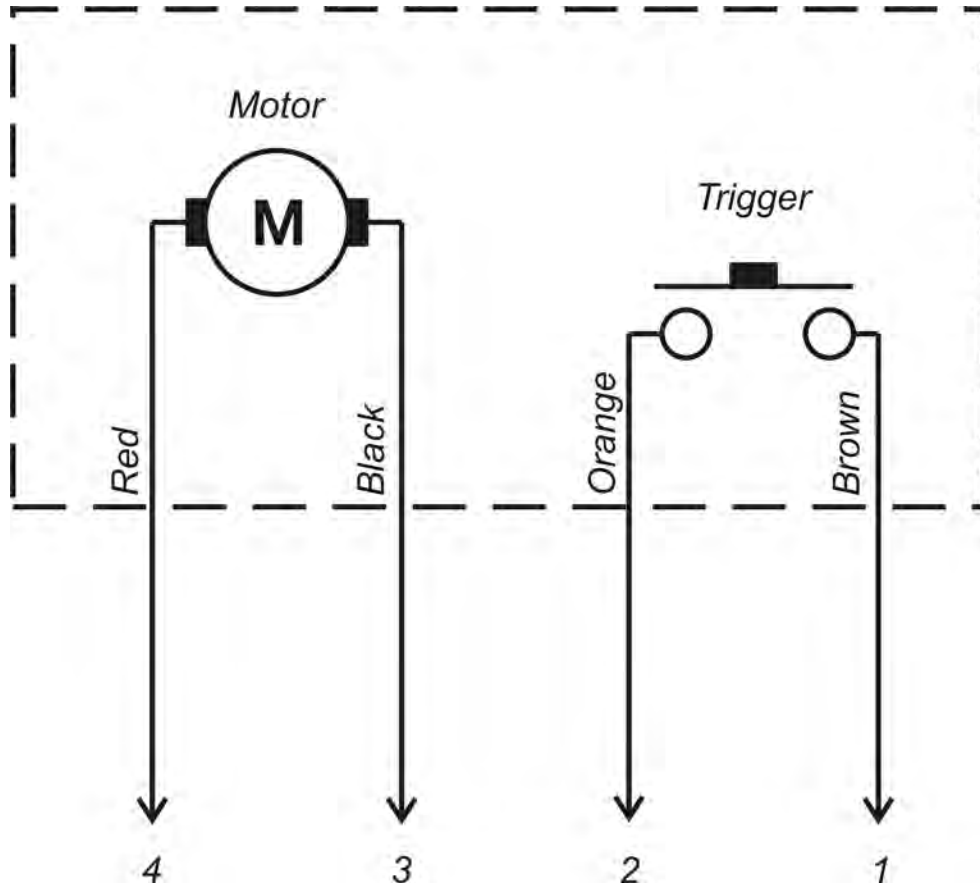
4" Straight Barrel Assembly			
No.	Qty.	Part No.	Description
1	-	-	Not Available Separately
2	1	003-2224	Assy Retainer Quick Cup
3	1	261-0451	Insulator Barrel Sidewinder
4	2	303-0096	O-Ring .145 ID x .07 W
5	1	313-0098	Ring 0.406 Shaft
6	0.36 FT	615-0350	Teflon Liner
7	1	621-0325	Tip .037 x .25 OD
8	1	621-0440	Quick Cup No 6 Mini

Sidewinder® - 7" Straight Barrel Assembly P/N 003-2251





7" Straight Barrel Assembly			
No.	Qty.	Part No.	Description
1	1	002-0666	Assy Brazed Barrel 7.00
2	1	003-2224	Assy Retainer Quick Cup
3	1	261-0452	Insulator Barrel 7.00
4	2	303-0096	O-Ring .145 ID x .07 W
5	1	313-0098	Ring 0.406 Shaft
6	0.61 ft	615-0350	Teflon Liner
7	1	621-0325	Tip .037 x .25 OD
8	1	621-0440	Quick Cup No 6 Mini

Electrical Diagrams



Front Pin View of 4-Pin Circular Connector

 WARNING	<ul style="list-style-type: none">• Do not touch live electrical parts.• Disconnect input power or stop engine before servicing.• Do not operate with covers removed.• Have only qualified persons install, use, or service this units.
	
ELECTRIC SHOCK HAZARD	

SP-1 Connection Configuration

OPERATION

For a Sidewinder Direct-Connect to a welding power supply, which has front panel wire feed speed controls (variable DC motor voltage), the Sidewinder 4-pin control cable connect direct. (Fig. 1).

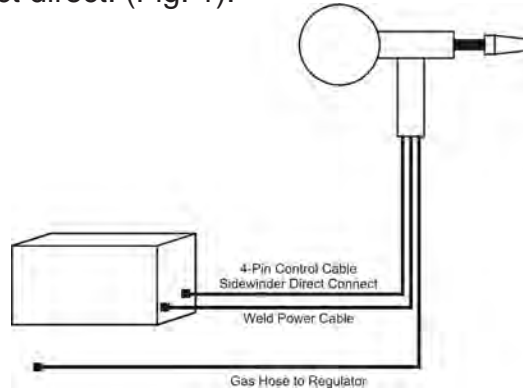


Figure 1

If the welding power supply does not offer adjustable motor voltage, then SP-1 Speed Control Module must be used. The SP-1 uses standard 115VAC input power and connects to the trigger pins (closing contacts) of the power supply (Fig. 2).

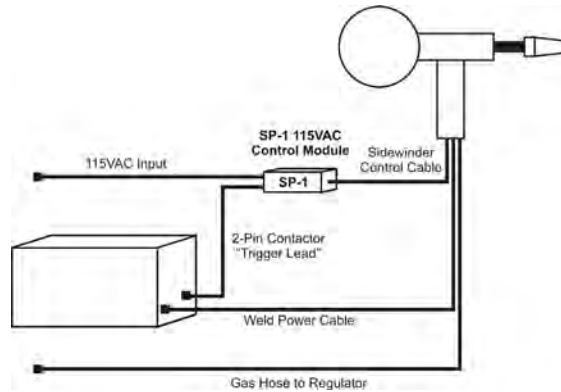


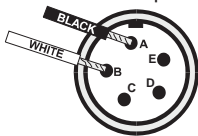
Figure 2

Strip the BLACK and WHITE contactor wires from the SP-1 and connect to the closing contactor pins on the power supply.

Contactor Pin Locations for Different Manufacturers Welding Power Supplies

Always consult the power supply manufacturer's owner's manual for exact pin locations

Hobart 5-Pin Amphenol



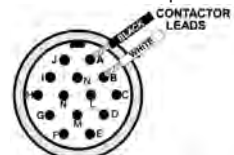
14-Pin AMP



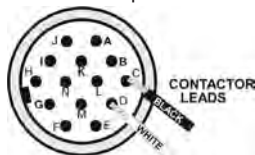
Miller/Panasonic 4-Pin AMP



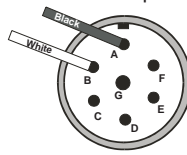
Miller 14-Pin Amphenol



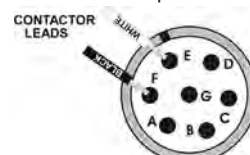
Lincoln 14-Pin Amphenol



ESAB 8-Pin Amphenol



MK 7-Pin Amphenol



SP-1 Connection Configuration Con't.

For many Miller (Fig. 3) and Lincoln (Fig. 4) welding power supplies, a 14-pin connector offers power to the SP-1 module and the trigger signal for contact closure.

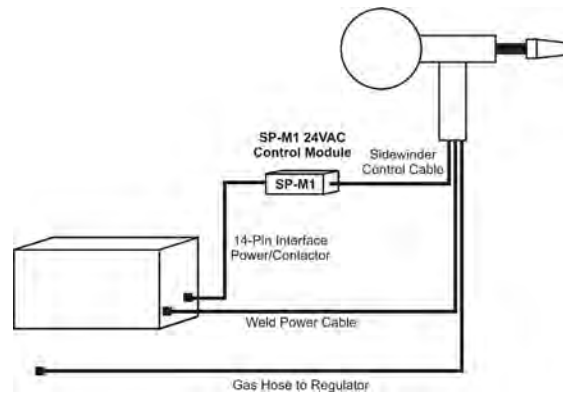


Figure 3

In addition to Miller and Lincoln units, many other manufacturers also utilize the same type of 14-pin connector, with the same pinouts and clocking. Consult the power supply owner's manual and or manufacturer for pin location and labels.

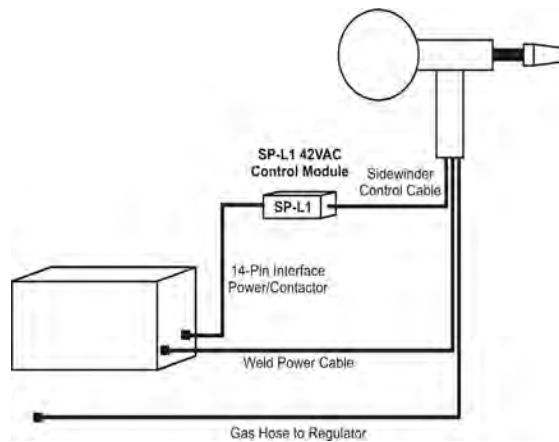


Figure 4

Once the power is connected and turned on, the gun motor is live. Pull the gun trigger to engage the motor and use the knob on the SP-1 to adjust the wire speed.

To measure wire speed, pull trigger for 6 seconds and measure wire length. Multiply measured length of wire by 10 for true IPM (inches per minute).

Approximate wire speeds, by diameter, to achieve 80-100A @ 18-20VDC, depending on aluminum wire alloy and power supply output:

.023 wire: 525ipm | .030 wire: 425ipm | .035 wire: 350ipm

			
WARNING	<ul style="list-style-type: none"> Do not touch electrically live parts or electrode with skin or wet clothing. Insulate yourself from work and ground. 	<ul style="list-style-type: none"> Keep flammable materials away. 	<ul style="list-style-type: none"> Wear eye, ear and body protection.
Spanish AVISO DE PRECAUCION	<ul style="list-style-type: none"> No toque las partes o los electrodos bajo carga con la piel o ropa mojada. Aisiese del trabajo y de la tierra. 	<ul style="list-style-type: none"> Mantenga el material combustible fuera del área de trabajo. 	<ul style="list-style-type: none"> Protéjase los ojos, los oídos y el cuerpo.
French ATTENTION	<ul style="list-style-type: none"> Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. Isolez-vous du travail et de la terre. 	<ul style="list-style-type: none"> Gardez à l'écart de tout matériel inflammable. 	<ul style="list-style-type: none"> Protégez vos yeux, vos oreilles et votre corps.
German WARNUNG	<ul style="list-style-type: none"> Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! Isolieren Sie sich von den Elektroden und dem Erdboden! 	<ul style="list-style-type: none"> Entfernen Sie brennbares Material! 	<ul style="list-style-type: none"> Tragen Sie Augen-, Ohren- und Körperschutz!
Portuguese ATENÇÃO	<ul style="list-style-type: none"> Não toque partes elétricas e electrodos com a pele ou roupa molhada. Isolar-se da peça e terra. 	<ul style="list-style-type: none"> Mantenha inflamáveis bem guardados. 	<ul style="list-style-type: none"> Use proteção para a vista, ouvido e corpo.
Japanese 注意事項	<ul style="list-style-type: none"> 通電中の電気部品、又は溶材にヒフやぬれた布で触れないこと。 施工物やアースから身体が絶縁されている様にして下さい。 	<ul style="list-style-type: none"> 燃えやすいものの側での溶接作業は絶対にしてはなりません。 	<ul style="list-style-type: none"> 目、耳及び身体に保護具をして下さい。
Chinese 警告	<ul style="list-style-type: none"> 皮肤或湿衣物切勿接触带电部件及焊缝。 使你自已与地面和工件绝缘。 	<ul style="list-style-type: none"> 把一切易燃物品移离工作场所。 	<ul style="list-style-type: none"> 佩戴眼、耳及身体劳动保护用具。
Korean 위험	<ul style="list-style-type: none"> 전도체나 용접봉을 젖은 헝겍 또는 피부로 절대 접촉치 마십시오. 모재와 접지를 접촉치 마십시오. 	<ul style="list-style-type: none"> 인화성 물질을 접근 시키지 마십시오. 	<ul style="list-style-type: none"> 눈, 귀와 몸에 보호장구를 착용하십시오.
Arabic تحذير	<ul style="list-style-type: none"> لا تلمس الأجزاء التي يسري فيها التيار الكهربائي أو الأقطاب بجلد الجسم أو بالملابس المبللة بالماء. ضع عازلا على جسمك خلال العمل. 	<ul style="list-style-type: none"> ضع المواد القابلة للاشتعال في مكان بعيد. 	<ul style="list-style-type: none"> ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

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.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

			
<ul style="list-style-type: none"> ● Keep your head out of fumes. ● Use ventilation or exhaust to remove fumes from breathing zone. 	<ul style="list-style-type: none"> ● Turn power off before servicing. 	<ul style="list-style-type: none"> ● Do not operate with panel open or guards off. 	WARNING
<ul style="list-style-type: none"> ● Los humos fuera de la zona de respiración. ● Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases. 	<ul style="list-style-type: none"> ● Desconectar el cable de alimentación de poder de la máquina antes de iniciar cualquier servicio. 	<ul style="list-style-type: none"> ● No operar con panel abierto o guardas quitadas. 	Spanish AVISO DE PRECAUCION
<ul style="list-style-type: none"> ● Gardez la tête à l'écart des fumées. ● Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail. 	<ul style="list-style-type: none"> ● Débranchez le courant avant l'entretien. 	<ul style="list-style-type: none"> ● N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés. 	French ATTENTION
<ul style="list-style-type: none"> ● Vermeiden Sie das Einatmen von Schweißrauch! ● Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes! 	<ul style="list-style-type: none"> ● Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öffnen; Maschine anhalten!) 	<ul style="list-style-type: none"> ● Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen! 	German WARNUNG
<ul style="list-style-type: none"> ● Mantenha seu rosto da fumaça. ● Use ventilação e exaustão para remover fumo da zona respiratória. 	<ul style="list-style-type: none"> ● Não opere com as tampas removidas. ● Desligue a corrente antes de fazer serviço. ● Não toque as partes elétricas nuas. 	<ul style="list-style-type: none"> ● Mantenha-se afastado das partes moventes. ● Não opere com os painéis abertos ou guardas removidas. 	Portuguese ATENÇÃO
<ul style="list-style-type: none"> ● ヒュームから顔を離すようにして下さい。 ● 換気や排煙に十分留意して下さい。 	<ul style="list-style-type: none"> ● メンテナンス・サービスに取りかかる際には、まず電源スイッチを必ず切って下さい。 	<ul style="list-style-type: none"> ● パネルやカバーを取り外したまま機械操作をしないで下さい。 	Japanese 注意事項
<ul style="list-style-type: none"> ● 頭部遠離煙霧。 ● 在呼吸區使用通風或排風器除煙。 	<ul style="list-style-type: none"> ● 維修前切斷電源。 	<ul style="list-style-type: none"> ● 儀表板打開或沒有安全罩時不準作業。 	Chinese 警告
<ul style="list-style-type: none"> ● 얼굴로부터 용접가스를 멀리하십시오. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시오. 	<ul style="list-style-type: none"> ● 보수전에 전원을 차단하십시오. 	<ul style="list-style-type: none"> ● 판넬이 열린 상태로 작동치 마십시오. 	Korean 위험
<ul style="list-style-type: none"> ● بعد رأسك بعيداً عن الدخان. ● استعمل للتبوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها. 	<ul style="list-style-type: none"> ● الطع التيار الكهربائي قبل القيام بأية صيانة. 	<ul style="list-style-type: none"> ● لا تشغل هذا الجهاز إذا كانت الاغطية الحديدية الواقية ليست عليه. 	Arabic تحذير

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う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銀揮材料，並請遵守貴方的有關勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

LIMITED WARRANTY

Effective August 1, 2008

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, CobraCooler, Positioners, Prince XL and Prince XL Spool Guns, Python, CobraMAX, Cobra SX, Cobra MX 1 year
- 3. Sidewinder Spool Gun, Prince SG Spool Guns, 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.



16882 Armstrong Ave.
Irvine, CA 92606
Tel (949)863-1234
Fax (949)474-1428
www.mkproducts.com

August 1, 2008



www.mkproducts.com

16882 Armstrong Ave.

Irvine, California 92606

Tel (949) 863-1234 Fax (949) 474-1428