

Standard & Heavy Duty  
**Arc**  
Stud Welding Guns



**Owner's Manual**



**MIDWEST**  
**FASTENERS, INC.**

# **ARC Weld Guns**

## **Standard Duty & Heavy Duty Models**

# **Owner's Manual**

- **Installation**
- **Operation**
- **Maintenance**

***MIDWEST FASTENERS, INC.***

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**FOREWORD:** Your new stud welding equipment is carefully constructed of the finest components and materials available. Used properly, this equipment will give you years of profitable, efficient service. This equipment incorporates the latest in engineering advances for completely reliable welding of mild steel and stainless steel. The electrical and mechanical components of the welding gun are thoroughly performance inspected prior to assembly. The stud welding gun is delivered to you in functional electromechanical condition.

A careful study of this manual will enable you to understand how the gun operates to insure proper performance under all operating conditions.

**WARRANTY:** All parts used in the assembly of your MIDWEST FASTENERS Arc Stud Welding Gun are fully guaranteed for ninety (90) days from factory shipment date. Under this warranty, MIDWEST FASTENERS reserves the right to repair or replace, at its option, defects in material or workmanship which occur during the warranty period. Notice of any claim for warranty repair must be furnished to MIDWEST FASTENERS within ten (10) days after the defect is discovered. MIDWEST FASTENERS does not assume liability for shipping, or liability for any labor or material related to use of this system, unless such costs are expressly authorized in writing by MIDWEST FASTENERS.

MIDWEST FASTENERS, INC. does not warrant defects in welders, guns, parts or accessories resulting from abuse, improper installation or use, maladjustment or use not in accordance to the operating instructions furnished by the manufacturer, or for reasons beyond its control. The manufacturer does not assume any liability for paying shipping costs or for any labor or material furnished where such costs are not expressly authorized in writing.

This warranty is valid only when welding with welding studs purchased from or approved by MIDWEST FASTENERS.

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## **WELDING SAFETY PRECAUTIONS AND WARNINGS**

### **INSTALLATION AND SERVICING SAFETY**

Improperly installed or improperly grounded equipment is a hazard. Always have qualified personnel perform installation, trouble-shooting, and maintenance. Do not perform any electrical work unless you are qualified to do the work. Be sure the system is properly grounded.

Maintain the gun according to this manual. Disconnect input power before servicing this equipment and use lockout tags. Significant DC voltage can still exist in this equipment after removal or shut down of the input power. Turn off all equipment when not in use.

### **ELECTRICAL SHOCK HAZARD**

Contact with live electrical parts and ground can cause severe injury or death. **DO NOT** weld in damp areas or while equipment or clothing are damp or wet. Do not touch the stud if you are in contact with the work, ground, or another electrode from a different machine. Don't stand directly on metal or the earth; stand on dry boards, insulating mats or an insulating platform.

Before turning on power, be sure you are wearing appropriate protective clothing:

- high-topped, heavy rubber-soled shoes
- long (gauntlet style), dry, flameproof, hole-free insulated gloves
- heavy, long-sleeve, cuffless shirt
- heavy, cuffless trousers and
- a welding helmet or cap.

### **GENERAL WELDING JOB SAFETY**

Use this equipment only for its intended purpose. Use well-maintained equipment. Replace worn or damaged cables or parts immediately; bare wiring can kill. Do not drape cables over your body. Keep all panels and covers securely in place. Do not overload electrical wiring, be sure power supply system is properly sized, rated and protected to handle the unit. Don't connect multiple guns or work cables to a single weld output terminal. Follow rated duty cycle and allow overheated equipment adequate cooling periods. Do not block or filter airflow to unit.

**DO NOT** weld if movement is confined or if there is danger of falling. Wear a safety harness if working above floor level. Shut unit down and remove weld stud from the stud weld gun when not in use.

### **ELECTROMAGNETIC FIELDS AND RFI**

Electric and magnetic fields may be dangerous. Welder operators having pacemakers should consult their physician before welding. EMF may interfere with some pacemakers. Exposure to EMF may have other health effects which are unknown. Connect the work cable to the work piece as close as possible to the area being welded. Keep welding power source and cables as far away from your body as possible. Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.

### **FUMES HAZARDS**

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health, particularly in confined spaces. Do not breath fumes and gases. Always ventilate confined spaces or use approved air-supplied respirator. Don't weld on coated metals such as galvanized, lead or cadmium plated steel, unless the coating is removed from the weld area. Don't weld near degreasing, cleaning or spraying operations.

### **FIRE SAFETY AND BURN PREVENTION (ARC RAYS CAN BURN EYES AND SKIN)**

Always wear safety glasses with side shields in any work area. Even if wearing a welding helmet, face shields and goggles are also required. Wear goggles over safety glasses when chipping, wire brushing or grinding slag. Chipped slag may be hot and can fly far. Bystanders should also wear goggles over safety glasses. Use protective non-flammable screens or barriers to protect others from flash and glare.

Warn bystanders not to watch the arc and not to expose themselves to the rays of the electric-arc or hot metal.

Welding on closed containers, such as tanks, drums or pipes, can cause them to blow up. Do not weld where flying sparks can strike flammable material. Remove all combustible materials a minimum of 35 ft. away from the welding

arc or cover the materials with a protective nonflammable covering. Hot sparks or hot metal can fall through cracks or crevices in floors or wall openings and cause a hidden smoldering fire or fires on the floor below. Make certain that such openings are protected from hot sparks and metal. Be aware that welding on a ceiling, floor, bulkhead or partition can cause fire on the hidden side.

Have appropriate fire extinguishing equipment handy such as a garden hose, water pail, sand bucket or portable fire extinguisher. Be sure you are trained for proper use. After completing operations, inspect the work area to make certain there are no hot sparks or hot metal which could cause a later fire. Use fire watchers when necessary.

#### **NOISE CAN DAMAGE HEARING**

Noise from some processes or equipment can damage hearing. Therefore wear approved ear protection.

#### **ADDITIONAL SAFETY INFORMATION**

The following organizations can provide detailed information on safe practices for electric arc welding:

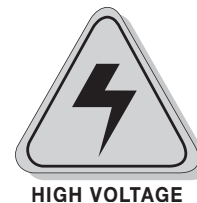
American Welding Society  
550 NW LeJuene Road, Miami, FL 33126,  
305-443-9353, [www.aws.org](http://www.aws.org)

National Fire Protection Association  
1 Battery March Park, Quincy, MA 02269-9101  
617-770-3000, [www.nfpa.org](http://www.nfpa.org) and [www.sparky.org](http://www.sparky.org)

Canadian Standards Association  
178 Rexdale Blvd, Rexdale, Ontario, CAN M9W  
1R3  
800-463-6727, [www.csa-international.org](http://www.csa-international.org))

American National Standards Institute  
11 W 42nd Street, New York, NY 10036-8002  
212-642-4900, [www.ansi.org](http://www.ansi.org)

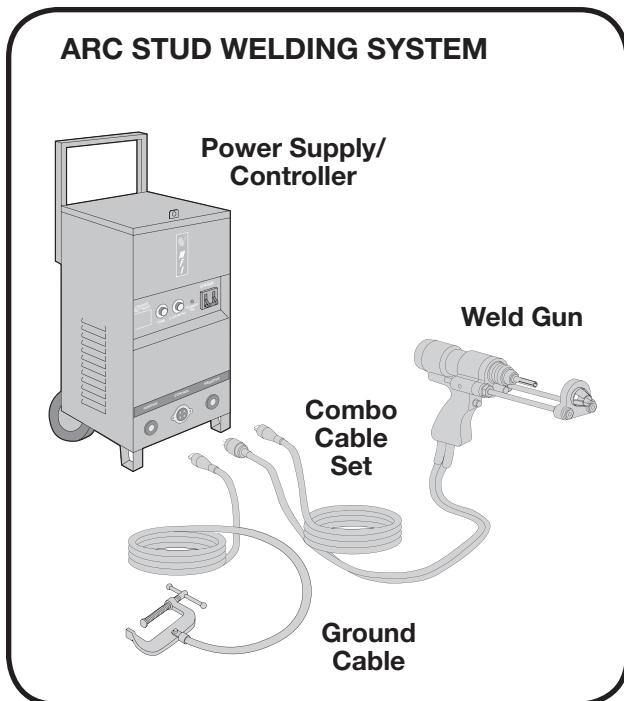
U.S. Government Printing Office  
Superintendent of Documents  
P.O. Box 371954, Pittsburgh, PA 15250  
312-353-2220, [www.osha.gov](http://www.osha.gov)



## WHAT IS ARC STUD WELDING

Stud welding is a welding process where a “stud” (or similar metal part) is instantaneously end-joined to a metal workpiece. This process involves the same basic principles and metallurgical aspects as any other welding process.

The equipment required to stud weld is composed of a direct current power supply, a controller, a weld gun and cables to tie the system components together. In most systems the power supply and controller are combined into one unit called the “Welder.”

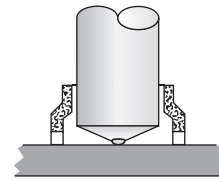


The stud welding process is as follows. The stud is placed in the chuck of the “Weld Gun” and then positioned against the workpiece. The weld gun trigger is depressed and through operation of the stud welding controller and the design of the stud, an arc is drawn which melts the base of the stud and a proportionate area of the workpiece. The stud is then forced (or “plunged”) by the weld gun into the molten pool and held in place until the metals resolidify. This high quality fusion weld is completed in milliseconds.

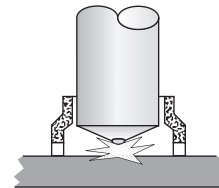
The ARC stud welding process produces weld power through one of three standard DC welding power sources. These are Transformer-Rectifier type, Motor/Generator type, or Storage Battery type. A ceramic ferrule is required in ARC stud welding to maintain the proper atmosphere in the weld area. ARC stud welding is generally used for studs over 1/4" in diameter or where heavier base metals are involved.

### “ARC” STUD WELDING PROCESS

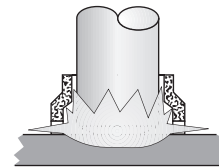
1. Stud is placed against workpiece and weld gun trigger depressed



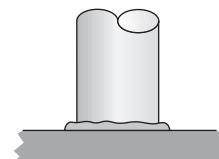
2. Stud is lifted by weld gun and "initiating arc" is drawn



3. Weld gun forces stud into molten metal



4. Weld solidifies and ferrule is removed



## SETTING UP THE ARC STUD WELDING GUN

Following the previous instructions, the weld gun should now be properly connected to the welding system. The weld gun needs to be properly set up and adjusted for the stud to be welded.

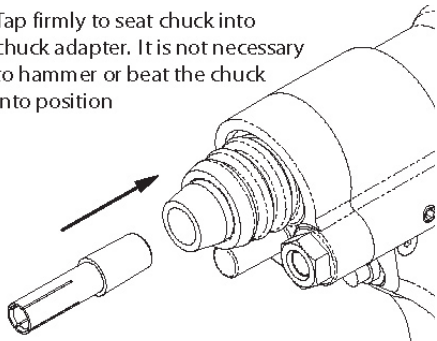
A different, and correctly sized, chuck and ferrule grip are needed for each different stud diameter and style that will be welded. The appropriate chuck is inserted into the tapered chuck adaptor. The ferrule grip is inserted in the hole in the foot and secured with the locking screws to hold it in place.

### CHUCK REMOVAL & INSTALLATION

To install a chuck, position the chuck into the front of the chuck adapter. Tap lightly on the end to seat the chuck into the adapter. It is not necessary to pound on the end of the chuck. This will only damage the chuck itself.

#### INSTALLING A CHUCK

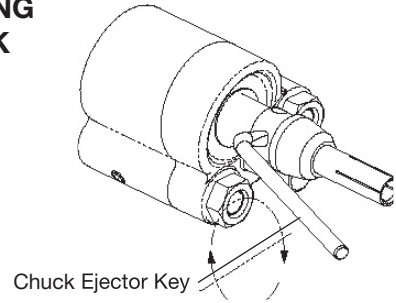
Tap firmly to seat chuck into chuck adapter. It is not necessary to hammer or beat the chuck into position



There is also a depth stop inside of the chuck. The depth stop should be adjusted so that you are retaining a good portion of the stud you are setting up to weld. Typically, this is one third to one half of the length of the stud you are welding.

To remove the chuck, insert the short, tapered end of the chuck ejector key into one of the holes in the side of the chuck adapter. You may have to move the rubber bellows to clearly see the holes in the side of the chuck adapter (under rubber boot). Rotate the chuck key either clockwise or counter clockwise and the chuck will pop out of the chuck adapter.

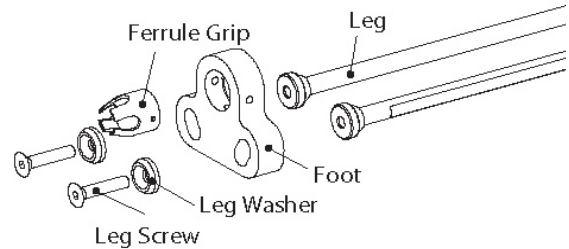
#### REMOVING A CHUCK



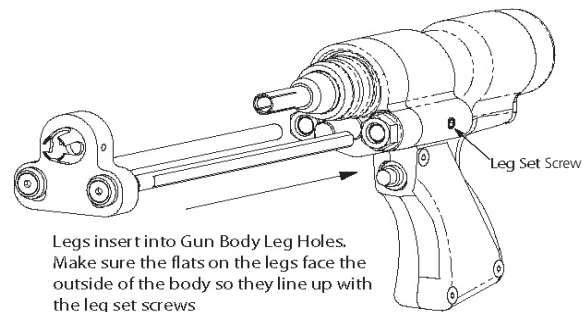
### FOOT & LEG SET UP

The foot comes in 3 different sizes (small, medium and large) and 2 different configurations (closed and split). Typically, a split foot is only used when welding headed anchors and shear connectors. The standard duty gun ships with a small foot and 9" legs. The heavy duty gun ships with a medium foot and 14" legs.

#### FOOT & LEG COMPONENTS



The foot is installed on the ends of the legs. Unscrew the flat head screws from the ends of the legs. Place the leg washers on the flat head screws and place the screws through the adjustment slots in the foot. Reattach the screws to the legs. Insert the legs into the gun body leg retainers. Line





up the flat on the leg with the set screw. The set screw will bite into the flat region and hold the leg securely. Tighten the set screws in the side of the legs. If the set screw bites into the round portion of the leg, it will damage the leg so it doesn't inset into the gun body leg retainer any more.

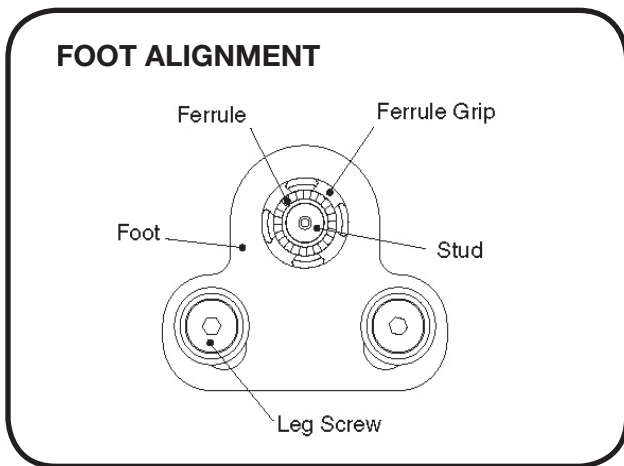
**FERRULE GRIP / SPARK SHIELD USAGE**

There are three set screws (two on a gas foot) that retain the ferrule grip or spark shield in the foot. Loosen all three set screws. Push the grip or spark shield into the foot. The grip is sometimes a tight fit so press it firmly into the foot so it seats against the back stop. The two side holes in the ferrule grip should line up with the set screws in the foot. Tighten the set screws to retain the ferrule grip. It is not necessary to make these extremely tight.

When a spark shield is being used, it is not necessary to align the spark shield with the set screws in the foot.

**FOOT ALIGNMENT**

Alignment of the foot is very important, if the foot is not aligned properly it can create bad welds in the form of hang-ups. Place a stud into the chuck and a ferrule into the ferrule grip. The stud should sit perfectly in the center of the ferrule. If it does not, loosen the flat head screws on the legs holding the foot. Position the foot so the stud is perfectly aligned in the ferrule. Retighten the leg screws.



**PLUNGE ADJUSTMENT**

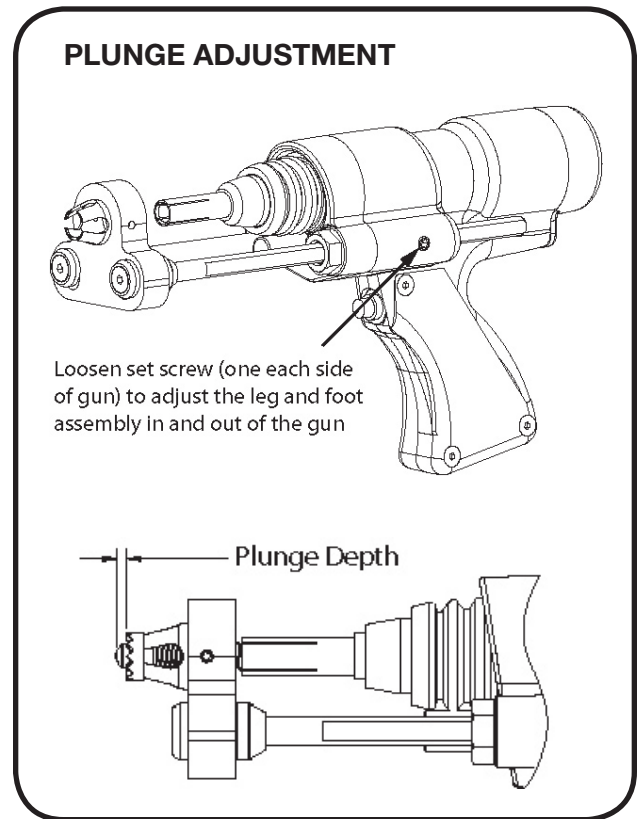
**Plunge Settings When Using Ferrules**

Plunge controls the amount of stud that is melted during the arc time. Too much plunge

and the fillet will overfill the ferrule or create excessive splatter when using a spark shield. Too little plunge and there may be incomplete fillet formation. There should be approximately 1/8 of an inch of stud protruding past the end of the ferrule. A bit less for smaller studs, a bit more for larger studs.

Stud Diameter	Plunge
.25 -.625	.125
.75 and up	.188

To adjust the plunge, loosen the leg set screws in the gun body. Move the foot towards the gun or away from the gun to increase or decrease plunge. The plunge measurements are from the end of the stud and do not include the flux load.



Note: These are instructions for standard ferrules. For reduced fillet ferrules (only recommended for very specific applications) decrease the amount of plunge by half.

**Plunge Settings For Arc or Gas Arc Stud Welding**

For Short Arc or Gas Short Arc the stud should protrude past the end of the spark shield by about 0.04" or 1mm. This is about the same as the flange



thickness on flanged style studs. For standard time duration Gas Arc the plunge should be set at 0.08" or 2mm (about 2 flange thicknesses).

### ADJUSTING GUN LIFT

The lift controls the arc length and thus is one factor in controlling the heat of the welding process. "Lift" should be set as shown below depending on the diameter of the stud to be welded.

Single phase equipment:

1/8" lift for most applications.

Three phase equipment :

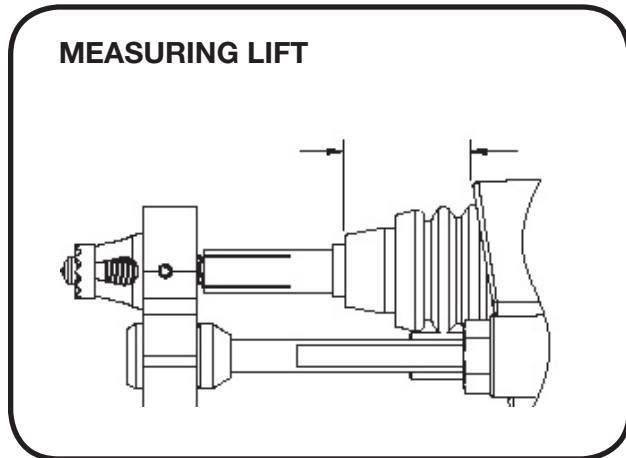
1/16" lift for studs up to 5/16" diameter

3/32" lift for studs 5/16" to 1/2" diameter

1/8" lift for studs over 1/2" diameter

### Measuring Lift

It is straight forward to measure lift. For safety from accidental activation, always disconnect the weld cable from the power supply before making any gun adjustments or performing any service on the gun.

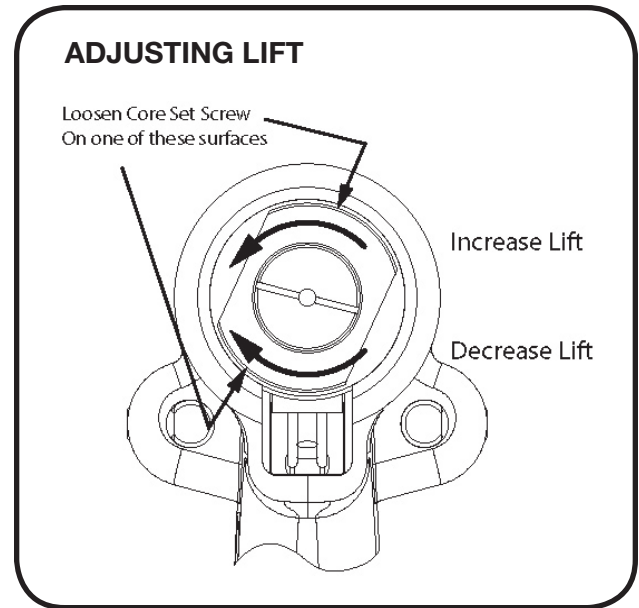


To measure gun lift, hold a scale against some fixed part of the tool. The front cover or the foot will work well. Press the trigger so the tool activates the lift mechanism. Now measure again. The lift is the difference between the two measurements.

### Adjusting Lift

To adjust lift, remove the slotted screw holding the rear cap in place. Put the rear cap aside. Loosen the nylon tipped set screw that holds

the adjustable core in place. To increase lift, turn the adjustable core screw counter clockwise. To decrease lift, turn the adjustable core screw clockwise. Each half turn is .025".



After properly setting the lift, retighten the nylon tipped set screw to keep the adjustable core in place. Replace the rear cap and tighten the rear cap screw. It is important that the rear cap is in place as this prevents dirt and other contaminants from entering the gun and fouling the lift mechanism.

### WELD GUN FUNCTIONS

The weld gun automates the stud welding process. It performs several key function:

1. It holds the stud.
2. It holds the ferrule, spark shield or gas delivery system.
3. It strikes the arc.
4. Establishes the arc length (lift distance).
5. Via the power supply, the gun controls the arc time.
6. Controls the rate of plunge of the stud into the base metal.

## FIRST TEST WELDS

Before you begin to weld anytime it is important to review the set up. By making sure that the gun and welder are set up properly, you will have the best welding results. 95% of all stud welding problems are due to improper gun set up or improper power settings.

## WELD SETTINGS

On the welder control panel there are two rotary knobs for adjusting 'time' and 'current' settings. Clockwise rotation increases level and counter clockwise rotation decreases level. To begin test welding, start with the recommended settings as shown on the chart on the front panel of your controller according to the weld stud size.

### RECOMMENDED SETTINGS

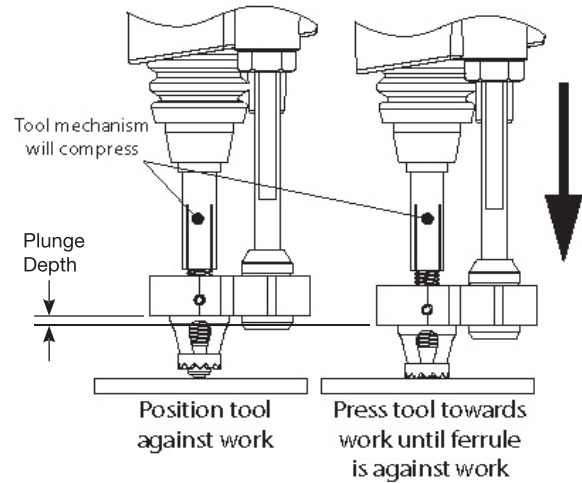
Record the settings from the front of your controller here:

Stud Size	Time	Current
1/4"	___ sec.	___ %
5/16"	___ sec.	___ %
3/8"	___ sec.	___ %
1/2"	___ sec.	___ %
5/8"	___ sec.	___ %
3/4"	___ sec.	___ %
7/8"	___ sec.	___ %
1"	___ sec.	___ %

Once you have set up as described previously, the actual welding process is straight forward. Begin your first test welds by:

1. Place the stud to be welding into the weld chuck.
2. Place a ferrule into the ferrule grip (this step is not necessary if you are using a spark shield).
3. Position the end of the stud onto the location where you want it welded.
4. Press the gun downward so the ferrule is sitting on the base metal.
5. Pull the trigger to begin the weld sequence.
6. **Hold the gun still during the arcing process.**
7. After the weld has completed continue to hold the gun still for 1 second to allow the molten metal to solidify.

### PLUNGE ADJUSTMENT



8. Remove the weld gun by lifting straight up off the welded stud. Remove the ferrule by breaking it away.
9. Inspect the test weld and make further adjustments to the controls and gun setups as necessary until satisfactory welds are being made consistently.

## TESTING WELD QUALITY

Testing of weld quality beyond visual inspection varies with stud characteristics. Refer to AWS (American Welding Society) structure welding code AWS d.1 - rev. 1-76. Welding procedures are covered in sections 4.28 and 4.29. Weld test and inspection is covered in section 4.30, paragraphs 1 through 4. (American Welding Society, 2501 N.W. 7th street. Miami, FL 33125.)

A bend test may be used to test weld results if the stud may be destroyed. This is usually done with a bending tool (a hollow pipe with an inside diameter just large enough to fit over the diameter of the stud. The bend tool is placed over the stud, down to the base material. The stud is then repeatedly bent away from its axis until failure occurs.

Torque test maybe used on threaded studs. The stud is twisted to the point of failure. A twisting tensile load is applied by using a collar, washer and nut. A bend lest can be used on threaded studs as well.

In an acceptable weld, failure will occur in the stud material or tear out of a thin base plate. Failure in the weld requires adjustment of procedure and/or settings.

### Weldable Material Combinations

Base Material	Stud Materials
Mild steel 1006-1022	Mild Steel 1010, 1020 Stainless Steel series 300 (except 303)
Stainless Steel series 300 (except 303) 405, 410 and 430	Mild Steel 1010, 1020 Stainless Steel series 300 (except 303)

See weld joint quality diagram to the right to visually determine the success of your test welds. If your first welds do not have a 'good weld' fillet, make the adjustments recommended beside the illustration that best displays your weld fillet.

### PREVENTIVE MAINTENANCE

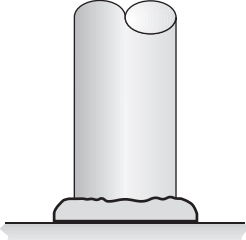
Your MIDWEST FASTENERS weld gun is designed for long service with minimal care. Ordinary common sense maintenance will keep it operating efficiently. The following are a few tips on preventive maintenance.

1. Treat the cables with respect. Avoid sharp bends or kinks which may break the cables. **DO NOT** use the cables as a "towline" to drag or lift the controller. Avoid damaging or straining the cables where they enter the gun or controller.
2. Keep the weld gun clean and dry and free of grease, water, dust and dirt. Do not lubricate any part of your weld gun.
3. The weld gun is for welding studs only. Do not use the weld gun as a multipurpose tool (i.e., Hammer—banging studs to test welds or break ferrules, Scraper—removing rust, scale or weld splatter, etc.).

### WELD JOINT QUALITY

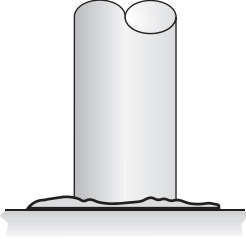
Inspect the weld quality visually, reference diagram below.

**WELD QUALITY - VISUAL REFERENCE**



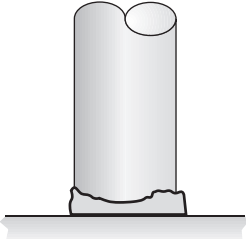
**GOOD WELD**

Weld fillet evenly distributed around base of stud. Fillet has a shiny surface and smooth serrations around edge. Stud burn-off of 1/8" or more.



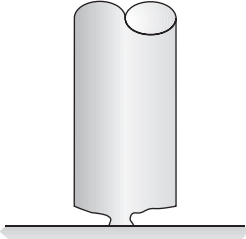
**HOT WELD**

Low, concave fillet with shiny surface.  
**SOLUTION:** Decrease time, current, or both.



**COLD WELD**

Fillet complete but with gray, grainy surface and a few stringers.  
**SOLUTION:** Decrease time, current, or both.



**HANG-UP**

Ferrule so far off-center from weld end of stud that stud catches on edge of ferrule and is not driven into pool of molten metal.  
**SOLUTION:** Realign ferrule.

## TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
1. "Hang up" (incomplete weld - stud looks like it's sitting on an hour glass shaped pedestal).	A. Check alignment of foot.	Realign foot to prevent binding.
	B. Check gun to ensure that lift/plunge is functioning properly.	Clean and service weld gun to restore proper lift functioning.
2. "Undercutting" (lack of full weld fillet).	A. Too little plunge.	Increase the amount of stud extension beyond the ferrule or spark shield.
	B. Too little time or current.	Reset welder according to Recommended Settings table on page 9.
3. Lots of thin splatter or "BB's" spread out from the weld area.	A. Too much plunge.	Decrease the amount of stud extension beyond the ferrule or spark shield.
	B. Too much time or current.	Reset welder according to Recommended Settings table on page 9.
	C. If your gun has a dampener it may be worn out.	Replace dampener.
4. Stud breaks off at weld zone or looks 'crystallized'.	A. Too little current.	Reset welder according to Recommended Settings table on page 9.
5. Bubbles in weld fillet.	A. If you are attempting a short arc you may not be able to avoid this condition. You may need to use a shielding gas.	Check your shielding gas type and gas flow rate.
	B. Are you using a flux-loaded stud?	Check to make sure studs aren't missing their flux load.
6. No Lift.	A. Gun coil connections damaged.	Check and repair connections.
	B. Gun coil short or open condition.	Test gun coil. There should be 19 ohms resistance in the gun coil.
	C. Adjustable core bottomed out.	Check and readjust to proper setting.
	D. Trigger circuit damaged.	Check for shorts or open and repair.
7. Stud too short to get enough extension past the ferrule.	A. Internal stop mal-adjusted.	Adjust internal stop in chuck.

## TROUBLESHOOTING CHART (CONTINUED)

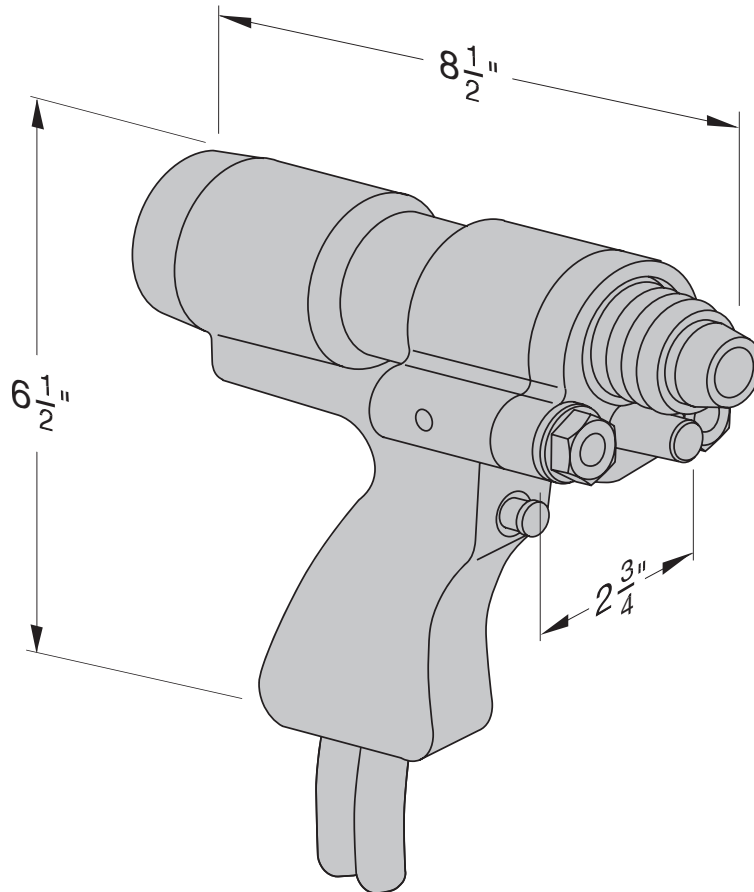
PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
8. Arc extinguishes, or you just get a short arc with no weld.	A. Too much lift.	Adjust gun to proper lift.
	B. Ground path short or open.	Check all ground cables and connections and tighten or repair.
9. No weld occurs.	A. Broken or bad weld cable.	Check weld cables and repair or replace.
	B. Broken or bad ground cable or ground connection.	Check all ground cables and connections and tighten or repair.
	C. Gun lift maladjusted.	Adjust gun lift to proper setting.
10. Gun shaft does not move freely.	A. Dirt may be binding the shaft.	Clean and service the gun.
11. Gun shaft is sloppy or has lots of free play.	A. Front bearing may be worn.	Replace bearing.
	B. Front cover may be loose.	Tighten front cover nuts.

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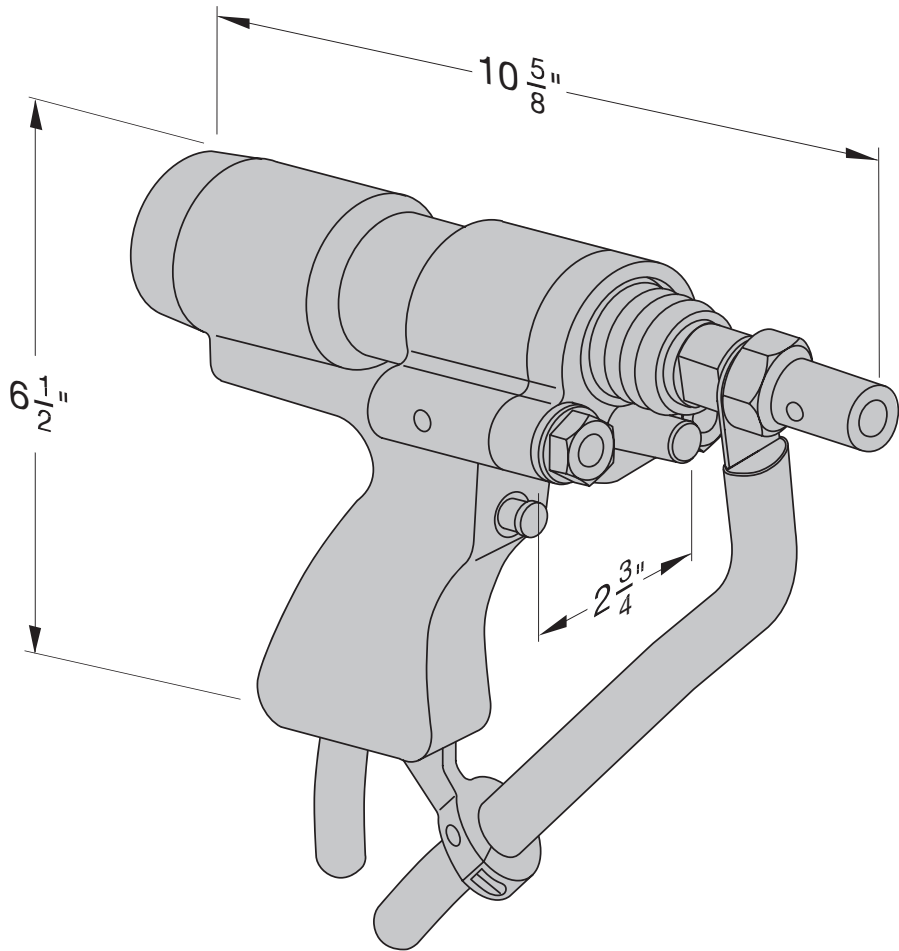


## STANDARD DUTY ARC STUD WELDING GUN - SPECIFICATIONS



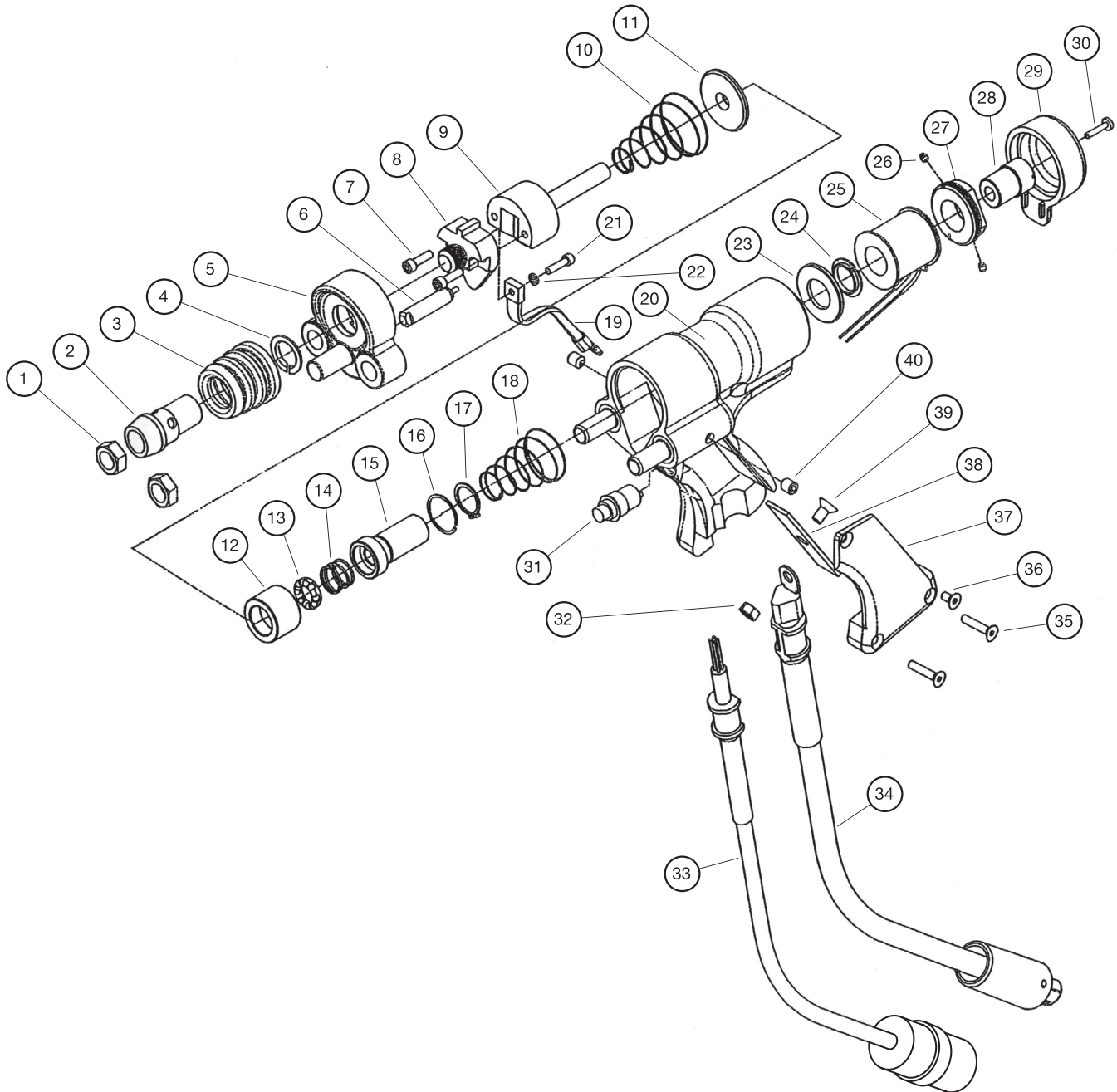
Weight .....	4.5 pounds (not including cables)
Stud Range .....	10 GA. – 1/2" dia.
Weldable Materials .....	Mild Steel, Stainless, & Aluminum
Material .....	High strength, impact resistant, poly carbonate
Cable Length .....	7'

# HEAVY DUTY ARC STUD WELDING GUN - SPECIFICATIONS



- Weight ..... 5 pounds  
(not including cables)
- Stud Range ..... 10 GA. – 7/8" dia.
- Weldable Materials ..... Mild Steel, Stainless,  
& Aluminum
- Material ..... High strength, impact  
resistant, poly carbonate
- Cable Length ..... 7'

# STANDARD DUTY ARC STUD WELDING GUN - EXPLODED VIEW

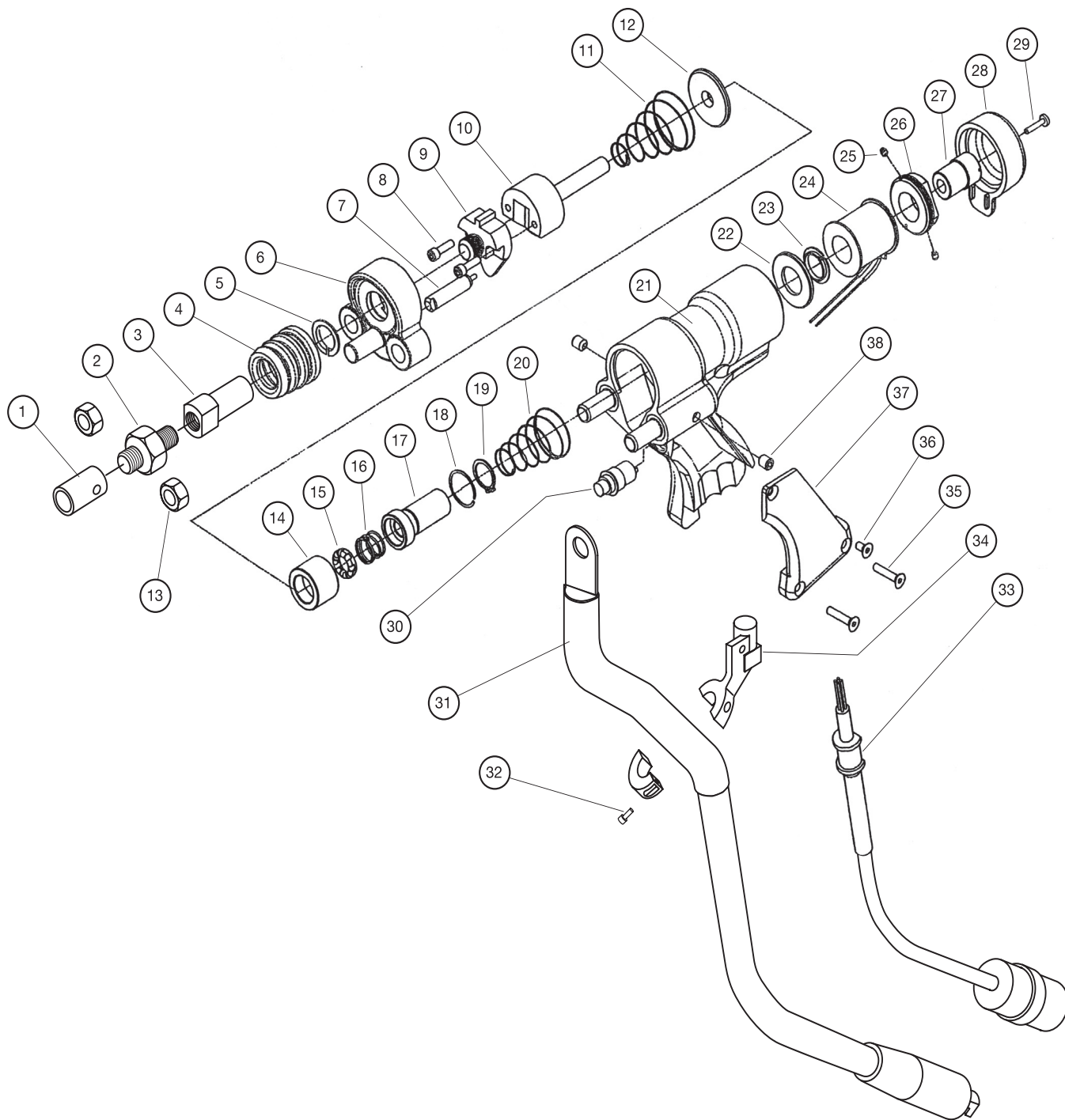


## STANDARD DUTY ARC STUD WELDING GUN - PARTS LIST

Item	Qt'y.	Part No.	Description
1	2	196-IM04-01	Front Cover Jam Nut
2	1	196-IM04-02	Chuck Adapter
3	1	196-IM04-03	Dust Bellows
4	2	196-IM04-04	Nylon Bushing
5	1	196-IM04-05	Front Cover
6a	1	196-IM04-07	Plunge Dampener - Soft (OPT)
6b	1	196-IM04-08	Plunge Dampener - Med. (OPT)
6c	1	196-IM04-09	Plunge Dampener - Hard (OPT)
7	2	196-IM04-06	Cable Clamp Adapter Screw
8	1	196-IM04-10	Cable Clamp Adapter
9	1	196-IM04-14	Lifting Rod
10	1	196-IM04-15	Main Spring
11	1	196-IM04-16	Lift Release
12	1	196-IM04-17	Moveable Core Bearing Retainer
13	1	196-IM04-18	Lift Bearing
14	1	196-IM04-19	Lift Bearing Spring
15	1	196-IM04-20	Moveable Core Shaft
16	1	196-IM04-22	Shaft Spring Seat
17	1	196-IM04-21	Shaft Retainer
18	1	196-IM04-23	Core Return Spring
19	1	196-IM04-11	Internal Weld Cable

Item	Qt'y.	Part No.	Description
20	1	196-IM04-24	Gun Body
21	1	196-IM04-13	Internal Weld Cable Screw
22	1	196-IM04-12	Internal Weld Cable Lock Washer
23	1	196-IM04-26	Front Coil Yoke
24	~	~	(2nd item no. 4) Nylon Bushing
25	1	196-IM04-27	Gun Coil
26	2	196-IM04-29	Rear Coil Yoke Set Screws
27	1	196-IM04-28	Rear Coil Yoke
28	1	196-IM04-30	Adjustable Core
29	1	196-IM04-31	Rear Cap
30	1	196-IM04-32	Rear Cap Screw
31	1	196-IM04-33	Trigger Switch Ass'y.
32	1	196-IM04-36	Anchor Plate Kep Nut
33	1	196-IM04-49	Control Cable Ass'y.
34	1	196-IM04-42	External Weld Cable Ass'y.
35	2	196-IM04-39	Handle Cover Lower Screw
36	1	196-IM04-38	Handle Cover Upper Screw
37	1	196-IM04-37	Handle Cover
38	1	196-IM04-34	Weld Cable Anchor Plate
39	1	196-IM04-35	Anchor Plate Screw
40	2	196-IM04-25	Leg Set Screw

# HEAVY DUTY ARC STUD WELDING GUN - EXPLODED VIEW



## HEAVY DUTY ARC STUD WELDING GUN - PARTS LIST

Item	Qt'y.	Part No.	Description
1	1	196-IM04-02	Chuck Adapter
2	1	196-IM06-02	Connector Stud
3	1	196-IM06-03	Shaft Extension
4	1	196-IM04-03	Dust Bellows
5	2	196-IM04-04	Nylon Bushing
6	1	196-IM04-05	Front Cover
7a	1	196-IM04-07	Plunge Dampener - Soft (OPT)
7b	1	196-IM04-08	Plunge Dampener - Med. (OPT)
7c	1	196-IM04-09	Plunge Dampener - Hard (OPT)
8	2	196-IM04-06	Cable Clamp Adapter Screw
9	1	196-IM04-10	Cable Clamp Adapter
10	1	196-IM04-14	Lifting Rod
11	1	196-IM04-15	Main Spring
12	1	196-IM04-16	Lift Release
13	2	196-IM04-01	Front Cover Jam Nut
14	1	196-IM04-17	Moveable Core Bearing Retainer
15	1	196-IM04-18	Lift Bearing
16	1	196-IM04-19	Lift Bearing Spring
17	1	196-IM04-20	Moveable Core Shaft
18	1	196-IM04-22	Shaft Spring Seat
19	1	196-IM04-21	Shaft Retainer
20	1	196-IM04-23	Core Return Spring

Item	Qt'y.	Part No.	Description
21	1	196-IM04-24	Gun Body
22	1	196-IM04-26	Front Coil Yoke
23	~	~	(2nd item no. 4) Nylon Bushing
24	1	196-IM04-27	Gun Coil
25	2	196-IM04-29	Rear Coil Yoke Set Screws
26	1	196-IM04-28	Rear Coil Yoke
27	1	196-IM04-30	Adjustable Core
28	1	196-IM04-31	Rear Cap
29	1	196-IM04-32	Rear Cap Screw
30	1	196-IM04-33	Trigger Switch Ass'y.
31	1	196-IM04-42	External Weld Cable Ass'y.
32	2	196-IM06-35	Weld Cable Support Screw
33	1	196-IM04-49	Control Cable Ass'y.
34	1	196-IM06-34	Weld Cable Support
35	2	196-IM04-39	Handle Cover Lower Screw
36	1	196-IM04-38	Handle Cover Upper Screw
37	1	196-IM04-37	Handle Cover
38	2	196-IM04-25	Leg Set Screw







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