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# MSA Saddle Machine Parts & Operating Manual

Part Number: 03-0100-000 / 03-0100-S01



For future reference, record your Saddle Machine model and serial numbers here:

Saddle Machine Model \_\_\_\_ SA Serial # M \_\_\_\_\_ Manual \_\_\_\_ Motorized \_\_\_\_

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## 1.0 SAFETY



### **ELECTRIC SHOCK CAN KILL**

Electric Shock can injure or kill. Saddle machine operation and many cutting processes use or produce high voltage electrical energy. This electric energy can cause severe or fatal shock to the operator or others in the work place.

- Never touch any parts that are electrically “live” or “hot”
- Wear dry gloves and clothing. Insulate yourself from the work piece or other parts of the plasma cutting circuit.
- Repair or replace all worn or damaged parts.
- Extra care must be taken when work place is moist or damp.
- If installing a motorized saddle machine, install and maintain equipment according to NEC (National Electric Code), refer to publications section in this manual.
- Disconnect power source before performing any service or repairs.
- Read and follow all the instructions in the operating manuals.



### **FIRE AND EXPLOSION**

Hot slag, sparks, oxygen-fueled cutting flame or the plasma arc can cause fire and explosion.

- Be sure there are no combustible or flammable materials in the workplace. Any material that cannot be removed must be protected.
- Ventilate all flammable or explosive vapors from the workplace.
- Do not cut or weld on containers that may have held combustibles.
- Provide a fire watch when working in an area where fire hazards may exist.



### **AUTOMATIC OPERATION**

The Saddle Machine may operate automatically without warning. Keep the immediate area around the Saddle Machine clear of materials that may cause interference. Keep area clear of bystanders. All untrained persons should not work on or near a saddle machine. Do not leave the saddle machine unattended while power is on to any electronics.



### **NOISE**

Noise can cause permanent hearing loss. Plasma arc cutting, oxy/fuel torch cutting, and grinding can cause noise levels that exceed safe limits. You must protect your ears from loud noise to prevent permanent loss of hearing.

- To protect your hearing from loud noise, wear protective earplugs and/or ear muffs. Protect others in the workplace.
- Noise levels should be measured to be sure the decibels (sound) do not exceed safe levels.
- For information on how to test for noise refer to the publications section of this manual.



### **FLYING DEBRIS**

- Metal cutting operations can create debris. Use proper eye protection pursuant to ANSI Z87.1 requirements. All persons operating in the vicinity of Saddle Machine operations should be aware of debris and take necessary precautions. Consult the publications section of this manual for further information.



## GASES, DUST, AND FUMES

Gases and fumes produced during the cutting process can be dangerous to your health.

- Keep all fumes and gases away from the breathing area. Keep your head out of the cutting fume plume.
- Use an air-supplied respirator if ventilation is not adequate to remove all fumes and gases.
- The kinds of fumes and gases from cutting depend on the kind of metal being cut, coatings on the metal, and the different processes. You must be very careful when cutting or welding any metals which may contain the following:

Antimony	Cadmium	Lead	Selenium
Arsenic	Chromium	Manganese	Silver
Barium	Cobalt	Mercury	Vanadium
Beryllium	Copper	Nickel	

Always read the Material Safety Data Sheet (MSDS) supplied with the material you are cutting. The MSDS will give you the information regarding the kind and amount of fumes and gases that may be produced from cutting and those that may be dangerous to your health

- For information on how to test for fumes and gases in your workplace refer to publications section of this manual.
- Use special equipment, if needed, to capture fumes and gases.
- Do not use in an area where combustible or explosive gases or materials are located.
- Phosgene, a toxic gas, is generated from the vapors of chlorinated solvents and cleansers. Remove all sources of these vapors.
- This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Sec. 25249.5 et seq.)
- Some dust created by cutting, grinding, drilling, and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
  - Lead from lead-based paint.
  - Crystalline silica from bricks and cement and other masonry products.
  - Arsenic and chromium from chemically-treated lumber (CCA).
- Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well-ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.
- Avoid prolonged contact with dust from cutting, grinding, drilling, and other construction activities. Wear protective clothing and wash exposed areas with soap and water. Allowing dust to get into your mouth, eyes, or lay on the skin may promote absorption of harmful chemicals.



## PLASMA ARC RAYS

Plasma Arc Rays can injure your eyes and burn your skin. The plasma arc process produces very bright ultraviolet and infrared light. These arc rays will damage your eyes and burn your skin if you are not properly protected.

- To protect your eyes, always wear a welding helmet or shield. Also, always wear safety glasses with side shields, goggles or other protective eye wear.
- Wear welding gloves and suitable clothing to protect your skin from the arc rays and sparks.
- Keep helmet and safety glasses in good condition. Replace lenses when cracked, chipped or dirty.
- Protect others in the work area from the arc rays. Use protective booths, screens or shields.
- Use the shade of lens as suggested in the following per ANSI/ASC Z49.1:



## HEAVY COMPONENTS

Use caution when lifting or moving the saddle machine. Use team lifting when necessary to avoid personal injury. When using a mechanical device to move a machine follow all manufacturers' safety guidelines. Pipe being operated on with the machine may be heavy. Use all lifting guidelines outlined in Occupational Safety & Health Administration technical manual Sect. 7, Ch. 1.5. See publications section for additional information.



## ELECTRIC AND MAGNETIC FIELDS

Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding and plasma cutting current creates EMF fields around cables and machines. EMF fields may interfere with some pacemakers, and operators and observers having a pacemaker should consult their physician before operation. Exposure to EMF fields may also have other health effects which are now not known.



## PINCH AND CRUSH POINTS

Mathey Dearman Saddle Machines in motion can create pinch points in normal operation. Be aware of all areas that may potentially be a hazard when the Saddle Machine is in motion. Avoid working on the machine while the control electronics are energized. Machines may use hard stops as part of normal setup, while in motion these stops may be contacted creating a crush point. Do not allow hoses, cords or other nearby items to come in contact with the machine.



## HOT MATERIALS

The process of plasma cutting creates an arc of electricity that can be up to 45,000°F (25,000°C). Oxygen-fuel cutting flame can be up to 6,330°F (3,500°C). As a result, cut materials will be very hot after cutting. Use extreme care when handling recently cut materials. Proper protective apparel such as protective gloves should be worn when handling recently cut material. Material handling devices should also be considered. It is recommended to allow material to cool completely before handling.



## MECHANICAL DRIVES

Mechanical drives are in use while the Saddle Machine is in operation. These drives use gears and drive chains. These components can move at high speed. Do not attempt to service, adjust, or otherwise touch these components while the machine is on. Secure loose articles of clothing and cables to prevent entanglement.



## AIR LINES UNDER PRESSURE

Certain tools and equipment use compressed air lines to operate. These air lines are under pressure. Hot sparks or flying debris may cause damage to these lines. Ensure that the air lines are kept free of punctures, burns, or other damage or defects that could cause failure. Inspect air lines periodically and repair or replace damaged lines.

**IN ADDITION TO THE ABOVE PROCEDURES, ALL SHOP, NATIONAL AND MANUFACTURER'S SAFETY INSTRUCTION CONCERNING THE FLAME CUTTING SYSTEM SHOULD BE FOLLOWED. ALL CUTTING OPERATIONS SHOULD BE CONDUCTED IN THE BEST OF SAFETY CONDITIONS.**

## PUBLICATIONS

Refer to the following standards or their latest revisions for more information:

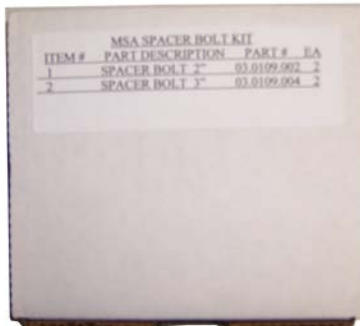
- OSHA, SAFETY AND HEALTH STANDARDS, 29CFR 1910, obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
- ANSI Standard Z49.1, SAFETY IN WELDING AND CUTTING, obtainable from the American Welding Society, 550 N.W. Lejeune Rd, Miami, FL 33126
- NIOSH, SAFETY AND HEALTH IN ARC WELDING AND GAS WELDING AND CUTTING, obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
- ANSI Standard Z87.1, SAFE PRACTICES FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018
- ANSI Standard Z49.2, FIRE PREVENTION IN THE USE OF CUTTING AND WELDING PROCESSES, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018
- AWS Standard A6.0, WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES, obtainable from American Welding Society, 550 N.W. Lejeune Rd, Miami, FL 33126
- NFPA Standard 51, OXYGEN-FUEL GAS SYSTEMS FOR WELDING, CUTTING AND ALLIED PROCESSES, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
- NFPA Standard 70, NATIONAL ELECTRICAL CODE, obtainable from the National Fire Protection Association, Battery march Park, Quincy, MA 02269
- NFPA Standard 51B, CUTTING AND WELDING PROCESSES, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
- CGA Pamphlet P-1, SAFE HANDLING OF COMPRESSED GASES IN CYLINDERS, obtainable from the Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202
- CSA Standard W117.2, CODE FOR SAFETY IN WELDING AND CUTTING, obtainable from the Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3
- NWSA booklet, WELDING SAFETY BIBLIOGRAPHY obtainable from the National Welding Supply Association, 1900 Arch Street, Philadelphia, PA 19103
- ANSI Standard Z88.2, PRACTICE FOR RESPIRATORY PROTECTION, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018

## 2.0 GENERAL INFORMATION

- 2.1 MSA Saddle Machine is designed to rotate a 1 3/8"/35mm diameter 12" long oxy/fuel or plasma machine torch to cut and/or bevel 2" / 50.8, 3"/76.2mm and 4"/101.6mm horizontal or vertical nominal size API line pipe. The machine comes with Spacers for 2" / 50.8 and 3"/76.2mm pipe. The saddle is placed on the pipe without spacers for cutting 4"/101.6mm. Spacers are available for other pipe or tubing sizes within the machine cutting range.
- 2.2 **Operator Training** – The Operator requires no special training providing they read and understand the parts and operating manual. The training mainly involves teaching the operator to smoothly and without hesitation rotate the crank handle so the oxy/fuel or plasma torch produces a smooth even cut around the pipe.
- 2.3 **Maintenance Personnel** – Mathey Dearman offers a training course at its facility on the major machine repairs at no charge. The parts and operating manual contains information concerning the lubrication and minor repair.

## 3.0 INSTALLATION OF SPACER ON THE MSA SADDLE MACHINE

- 3.1 Select the correct spacer for pipe being cut. The saddle is placed on the pipe without spacers for cutting 4"/101.6mm pipe. (See Figure 1)



Picture 1 – Spacer Storage Box

- 3.2 Place the 1<sup>st</sup> spacer on the inside of the front saddle and align the threaded hole in the spacer with the hole in the front of the saddle.



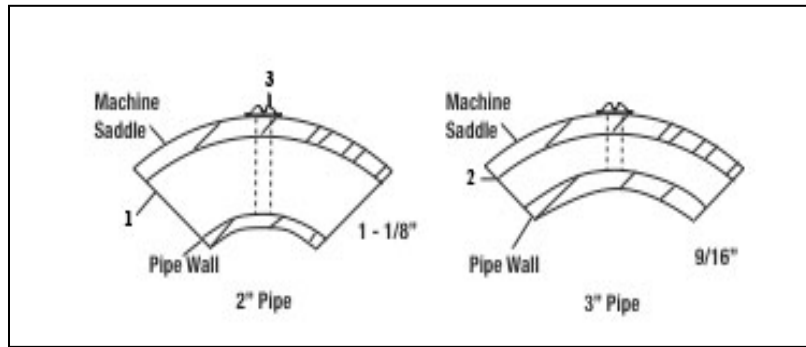
Picture 2 – Installation of Spacer

- 3.3 Secure Spacer to the Saddle by placing 1/4-20 X 5/8" machine screw through the hole in the top side of the saddle and threading it into the Spacer. The machine screw does not have to be tightened with a wrench as the purpose of the screw is to secure the spacer bolt to the saddle.
- 3.4 Repeat procedure for rear spacer

<b>Bore (inside diameter) of MSA Machine Saddle</b>	<b>4-1/2"</b>	<b>(114mm)</b>
<b>Subtract actual OD of pipe</b>	<b>2-3/8"</b>	<b>(60mm)</b>
<b>Difference</b>	<b>2-1/8"</b>	<b>(54mm)</b>
<b>Divide Difference by two (2)</b>	<b>2-1/8" ÷ 2 = 1-1/16"</b>	<b>(27mm)</b>

The correct Spacer length (between outside diameter of pipe and inside diameter of saddle) is 1-1/16" (27mm).

**Figure 1: Spacer Configuration for 2", & 3" pipe**



**Table 1 – Spacer Identification**

ITEM #	PART DESCRIPTION	PART #	QUANTITY REQUIRED
1	Spacer for 2" pipe (51 mm)	03-0109-002	2
2	Spacer for 3" pipe (73 mm)	03-0109-004	2
3	Machine Screw, 1/4-20NC X 5/8"	14-14C0-058	1
4	MSA Spacer Kit	03-0MSA-KIT	1

#### 4.0 INSTALLATION OF THE MSA SADDLE MACHINE OF THE PIPE

- 4.1 Place the MSA Machine Saddle squarely on the pipe, as close as possible to the cut line. The front and back spacers should make full contact on the pipe.
- 4.2 Place the Eye of the Boomer Assembly (Figure 2 item 2) over 1/4-20 x 1/4" Socket Head Cap Screw (Figure 4 item 9) located on the Saddle (Figure 4 Item 1).
- 4.3 Tighten the Thumb Screw (Figure 2 Item 3) of the Boomer Assembly (Figure 2) to secure the machine to the pipe.



**Warning:** Improper tensioning of the boomer assembly or failure to latch the boomer assembly may result in injury.



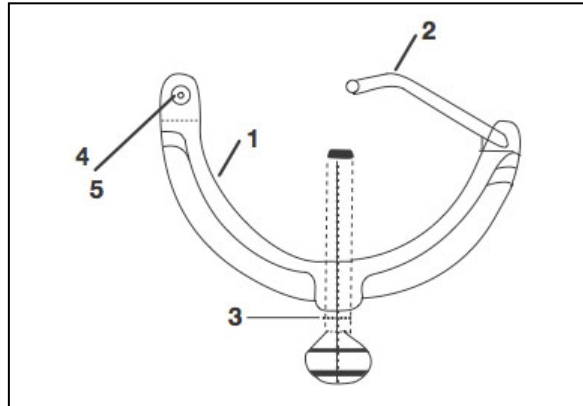
**Picture 3 – Closing Boomer**





**WARNING:** Be careful not to get finger caught between the latch handle and boomer frame.

**Figure 2: Boomer Assembly Part # 03.0100.024**

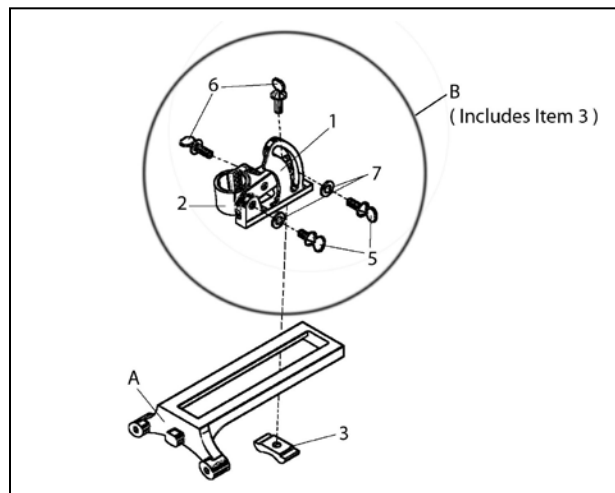


**Table 2 – Boomer Assembly Parts Identification**

ITEM #	PART DESCRIPTION	PART #	QUANTITY
1	Strap	03-0100-025	1
2	Eye	03-0100-027	1
3	Thumb Screw	03-0100.026	1
4	Hex Head Cap Screw 1/4" x 1-1/4"	10-14C0-114	1
5	Nut, hex, 1/4", 20NC	14-14C0-000	1

**Figure 3: Torch Arm  
Torch Carrier Assembly**

Part Number: 03-0101-001  
Part #: 03-0100-002



**Table 3 – Torch Arm and Carrier Parts Identification**

ITEM #	PART DESCRIPTION	PART #	QUANTITY
A	Torch Arm	03-0101-001	1
B	Torch Carrier Assembly	03-0100-002	1
1	Torch Clamp Base	03-0100-003	1
2	Torch Clamp	03-0100-005	1
3	Clamp	03-0100-004	1
4	Screw Kit (includes 5, 6 & 7)	03-0100-029	1
5	Thumb Screw, 3/8-16 x 3/4"	22-38TS-034	2
6	Thumb Screw, 3/8-16 x 1"	22-38TS-100	2
7	Flat Washer, 3/8"	12-0038-F00	2

**5.0 INSTALLATION OF THE TORCH ARM, TORCH CARRIER ASSEMBLY AND TORCH**

- 5.1 Install Torch Arm (Figure 3, Item A) over the two threaded studs (Figure 4 item 13) in the face of the MSA Machine Ring Gear (Figure 4 Item 3).



**Picture 4 – Installation of Torch Arm on Threaded Stud**

- 5.2 Secure the Torch Arm (Figure 3 item A) to the Ring Gear (Figure 4 item 3) with the wing nuts (Figure 4 item 14) provided in the Spacer Bolt Box.



**Picture 5 – Installation of the Wing Nut**

- 5.2 Remove the Clamp (Figure 3 Item 3) from the torch Carrier Assembly (Figure 3 Item B).
- 5.3 Place the Torch Carrier Assembly (Figure 3 item B) on the Torch Arm (Figure 3 item A) with hole for Torch of the Torch Clamp (Figure 3 Item 2) nearest the ring gear.
- NOTE:** For the squarest cut place the torch as close to the Ring Gear (Figure 4 item 3) as possible.
- 5.4 Reinsert Thumbscrew (Figure 3 Item 6) through the hole in the base of the clamp base (Figure 3 item 1) and thread it into the Clamp (Figure 3 item 3) securing the Torch Carrier Assembly to the Torch Arm.

- 5.5 The Torch Clamp Base (Fig. 3 Item 1) is marked 0, 60, and 90. Use “0” Position for square cuts (no bevel). Positions 60 and 90 make the appropriate bevel to produce a “V” Groove of 60 and 90 degrees respectively when the two pipe ends are butted together.
- 5.6 Select the correct Cutting tip for the wall thickness and fuel gas per the torch manufactures instructions.
- 5.7 Insert 10” Long 1 3/8” diameter Machine Oxy/fuel or Plasma Machine Torch (not supplied) into Torch Clamp (Fig. 3, Item 2) and adjust torch tip to pipe height per the torch manufacturer instructions and tighten the Thumbscrew (Fig. 3, item 6) securing the Torch in the Torch Carrier Assembly.

**NOTE:** A 10” long Oxy/fuel or plasma machine torch is required for the MSA Saddle Machine to cut all pipes within its range.

## 6.0 THE MANUAL CUTTING PROCESS

- 6.1 Rotate Torch one full turn around the pipe to be sure torch tip will maintain the same distance around the pipe.  
**NOTE:** If the torch tip contacts the pipe at any point during its rotation either the incorrect spacer bolts were selected or the pipe is oversize or out of round. If the distance of the torch tip is greater at the 6:00 position, either the incorrect spacer bolts were selected or the pipe is undersize or out of round.

***If using the Plasma Machine Torch, skip to step 6.7 after completing 6.1***

- 6.2 Connect the gas hose from the fuel regulator to the left hand thread port 10” long Oxy/fuel per the manufacturer’s instructions.
- 6.3 Connect the oxygen hose from the oxygen regulator to the right hand thread port 10” long Oxy/fuel per the manufacturer’s instructions.



**WARNING:** The oxygen and fuel hoses must be connected to the right port on the machine torch. Failure to do so may result in serious injury.



**WARNING:** The hose must not be drawn through the molten slag produced by the cutting process.



**WARNING:** Goggles, gloves, mask and other appropriate safety attire must be worn during the cutting process.

- 6.4 Adjust the oxygen and fuel gas regulator per the regulator manufacturer’s instructions.
- 6.5 Light the cutting torch per the torch manufacturer instructions.  
**NOTE:** If the pipe is coated with Polyurethane, Carbo-Zinc, and Epoxy or is heavily rusted it will require that the coating be burnt off or removed by some other method in order to achieve a quality cut.
- 6.6 Follow the torch manufacturer’s instructions for preheating the pipe.
- 6.7 While rotating the machine torch around the pipe, move the cutting oxygen valve to the ON position to penetrate the pipe per the torch manufacturer’s instructions (if using the Plasma Machine torch, activate per the torch manufacturer instructions).

**NOTE:** If the torch penetrates the pipe without the machine being rotated it will create a notch in the bevel that is unacceptable to most welding codes.



**WARNING:** Keep hands and clothing away from the gearing as it will cause serious injury.

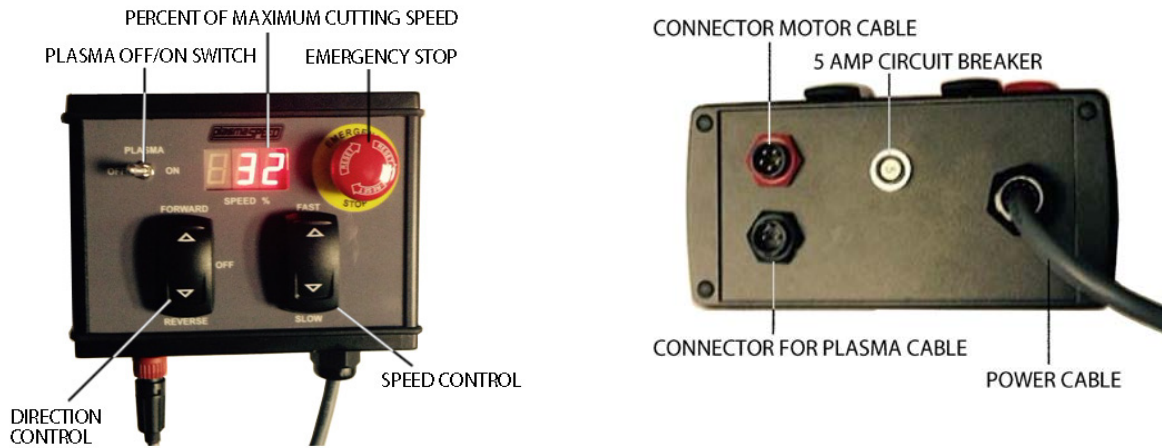
- 6.8 Rotate the torch around the pipe until the cut is complete.
- 6.9 If using a Plasma torch, turn off per the torch manufacturer instructions. If using an Oxy/fuel torch, proceed to steps 6.10-6.12.
- 6.10 Rotate the cutting oxygen valve of the cutting torch to the OFF position per the torch manufacturer’s instructions.
- 6.11 Close the fuel and oxygen valve of the torch per the torch manufacturer’s instructions.

- 6.12 Close the valve on the Oxygen and fuel gas bottles if no further cuts are to be made per the torch manufacturers instructions.



**WARNING:** The pipe and debris from the cutting process are extremely hot and cause serious injury or death.

## 7.0 THE MOTORIZED CUTTING PROCESS



**WARNING:** Motor Control Box is designed for use with single phase 90 -240 volts alternating current (AC). Use of a higher current will result in serious injury or death





**WARNING:** Motor Control Box is **not** designed for use with direct current (DC). Connection of the Motor Control Box to direct current will result in serious injury or death.


- 7.1 Installation of Torch Arm, Torch Carrier Assembly and Oxy/fuel or Plasma Torch per instruction in 5.0
- 7.2 Depress the Emergency Stop Switch.
- 7.3 Connect the Motor Cable to surface mount connector of the Motor Control Box.
- 7.4 Connect the other end of the motor cable to the motor assembly.  
**NOTE:** Verify the cable lock feature is engage at both ends of the motor cable.  
**NOTE:** If using a plasma torch system, connect the plasma cable between the Motor Control Box and the plasma torch system in the same manner. Verify the cable lock feature is engaged at both ends.  
**Make sure the Plasma Switch is in the "Off" position.**
- 7.5 Connect the Motor Control Box power cable to the AC electrical receptacle.
- 7.6 Twist to release the Emergency Stop Switch.
- 7.7 The digital screen will light with the following.  
 991 – Indicates that a NEMA 23 motor is in use.  
 992 – Indicates that a NEMA 34 motor is in use.  
 993 – Indicates that a heavy-duty NEMA 34 motor is in use.  
 994 & 995 – Check cable connection at Motor Control Box and Motor.  
 999 – Indicates the Directional Control Switch is in the "Forward" or "Reverse" position. Move to the "Off" position.
- 7.8 If no faults are present after the motor number appears, the percent of maximum speed will be displayed in the window.
- 7.9 Move the Directional Control Switch to the "Forward" or "Reverse" direction.
- 7.10 Depress the Speed Control Switch until the percent of motor speed reads about 32% or machine speed or control of the machine can be maintained should an emergency arise.

- 7.11 Rotate Torch one full turn around the pipe to be sure torch tip will maintain the same distance around the pipe.  
**NOTE:** If the torch tip contacts the pipe or is further away from the pipe at any point during its rotation, either the incorrect spacer bolts were selected or the pipe is oversize, undersize or out of round.
- 7.12 Depress the Emergency Stop Switch.
- 7.13 Disconnect the Motor Control Box power cable from the AC electrical receptacle. **If using a Plasma Torch, skip to step 7.17.**
- 7.14 Connect the gas hose from the fuel regulator to the left hand thread port 10" long Oxy/fuel per the manufacturer's instructions.
- 7.15 Connect the oxygen hose from the oxygen regulator to the right hand thread port 10" long Oxy/fuel per the manufacturer's instructions.




 **WARNING:** The oxygen and fuel hoses must be connected to the right port on the machine torch. Failure to do so may result in serious injury.

 **WARNING:** The Oxygen and fuel gas hoses must not be drawn through the molten slag produced by the cutting process

 **WARNING:** Goggles, gloves, mask and other appropriate safety attire must be worn during the cutting process.

- 7.16 Adjust the oxygen and fuel gas regulator per the regulator manufacturer's instructions.
- 7.17 Connect the Motor Control Box power cable to the AC electrical receptacle.
- 7.18 Twist to release the Emergency Stop Switch.
- 7.19 Verify the percent of maximum speed is displayed in the window.
- 7.20 Depress the Speed Control Switch until the percent of motor speed reads about 32% so control of the machine can be maintained should an emergency arise.
- 7.21 Move the Directional Control Switch to the "Forward" or "Reverse" direction. **If using a Plasma Torch, skip to step 7.24**
- 7.22 Light the cutting torch per the torch manufacturer instructions.  
**NOTE:** If the pipe is coated with Polyurethane, Carbo Zinc, and Epoxy or is heavily rusted it will require that the coating be burnt off or removed by some other method in order to achieve a quality cut.
- 7.23 Follow the torch manufacturer's instructions for preheating the pipe.
- 7.24 While the machine is rotating around the pipe, move the cutting oxygen valve to the ON position to penetrate the pipe per the torch manufacturer's instructions.  
**NOTE:** If using a plasma torch in conjunction with the Motor Control Box, depress the Plasma On / Off button on the Motor Control Boxes at this time to turn the plasma torch on. (The plasma cable is designed for use with a Hypertherm, Thermal Dynamics, Victor or new ESAB plasma system.)  
**NOTE:** If the torch penetrates the pipe without the machine being rotated it will create a notch in the bevel that is unacceptable to most welding codes.

 **WARNING:** Keep hands and clothing away from the gearing as it will cause serious injury.

- 7.25 Adjust the torch travel speed with Speed Control Switch until a quality cut is achieved.
- 7.26 Rotate the torch around the pipe until the cut is complete.
- 7.27 If using an Oxy/fuel torch, rotate the cutting oxygen valve of the cutting torch to the OFF position per the torch manufacturer's instructions. If using a Plasma torch, it will be necessary to depress the Plasma On / Off button on the Motor Control Box to turn the torch off.
- 7.28 Depress the Emergency Stop Switch.
- 7.29 If using a Plasma torch, skip to step 7.32
- 7.30 Close the fuel and oxygen valve of the torch per the torch manufacturer's instructions.
- 7.31 Close the Oxygen and fuel valve on the gas bottles per the torch manufacturer's instructions.

- 7.32 Disconnect the Motor Control Box power cable from the electrical receptacle.
- 7.33 Move the Directional Control Switch to the "Off" position.



**WARNING:** The pipe and debris from the cutting process are extremely hot and can cause serious injury.

## A NOTE ON BACK BEVELING

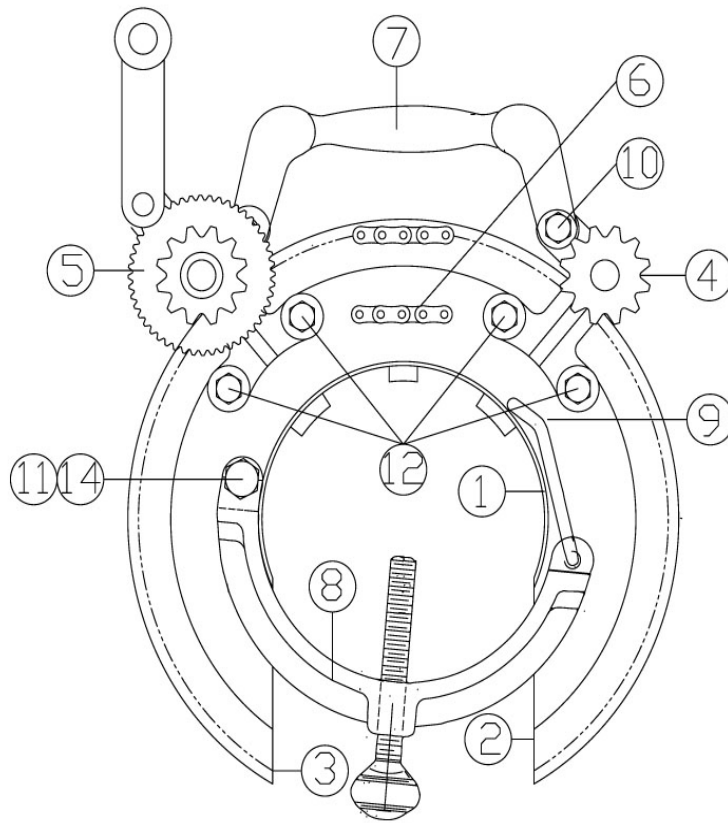
Remove the torch from the torch carrier assembly. Rotate the Torch Clamp Base and Torch 180 degrees on the Torch Arm and re-tighten with thumbscrew and clamp. Reinstall the torch into the torch carrier assembly. When back beveling, place Torch as close to Saddle as possible without placing flame directly on or near Saddle. The Torch is now positioned for back beveling.



**WARNING:** When back beveling, the cutting flame and "hot" zone of the pipe is directed toward the operator.

**Figure 4: MSA Saddle Machine Parts Configuration**

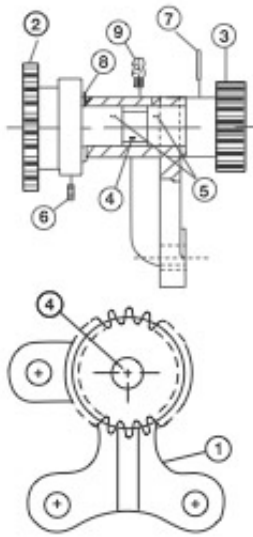
Part #03-0100-000

**Table 4 – MSA Saddle Machine Parts Identification**

ITEM #	DESCRIPTION	PART #	QTY.
1	Saddle	03-0100-006	1
2	Cap Ring	03-0100-008	1
3	Ring Gear	03-0100-007	1
4	Single Bearing Bracket Assembly	03-0100-009	1
5	Double Bearing Bracket Assembly	03-0101-014	1
6	Drive Chain	03-0100-022	1
7	Tie Rod Handle	03-0100-023	1
8	Boomer Assembly	03-0100-024	2
9	Socket Head Cap Screw, 1/4-20NC X 1/4"	11-14C0-014	1
10	Machine Screw, Hex Head, 1/4-20NC X 1/2"	26-14C0-012	2
11	Cap Screw, Hex Head, 1/4-20NC X 1-1/4"	10-14C0-114	1
12	Socket Head Cap Screw, 1/4-20NC X 5/8"	10-14C0-058	8
13	Threaded Stud (not shown)	01-0194-003	2
14	Wing Nut, 5/16"-18NC (not shown)	1W-56C0-000	2

**Figure 5: Single Bearing Bracket Assembly Part # 03-0100-009**

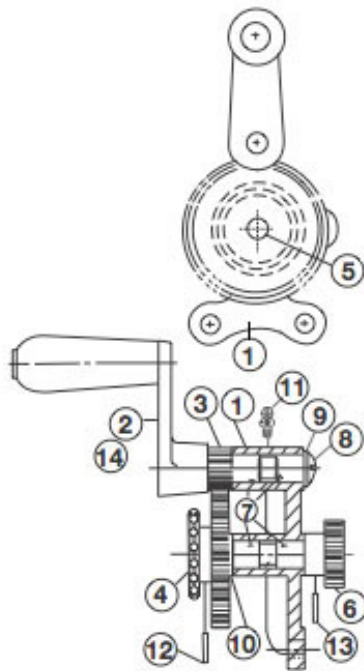
**Table 5 – Single Bearing Bracket Assembly Parts Identification**



ITEM #	DESCRIPTION	PART #	QTY.
1	Bracket	03-0100-010	1
2	Sprocket	03-0100-011	1
3	Pinion Gear	03-0100-012	1
4	Axle	03-0100-013	1
5	Bronze Bushing	01.0210.004	2
6	Socket Set Screw, 1/4-20 X 1/4" lg.	19-14C0-014	1
7	Spring Pin, 1/8" x 3/4" lg.	18-1800-034	1
8	Flat Washer, 3/8"	12.0038.F00	1
9	Grease Zerk, 1/4-28NF	01-0179-014	1

**Figure 6: Double Bracket Assembly, Part # 03-0100-014**

**Table 6- Double Bearing Bracket Assembly Parts Identification**



ITEM #	DESCRIPTION	PART#	QTY.
1	Bracket	03-0100-015	1
2	Crank Handle Assembly	03-0100-018	1
3	Crank Pinion	03-0100-017	1
4	Crank Gear and Sprocket	03-0100-016	1
5	Axle	03-0100-013	1
6	Pinion Gear	03-0100-012	1
7	Bronze Bushing	01-0210-004	4
8	Round Head Machine Screw, 1/4-20 X 1/2" lg.	14-14C0-012	1
9	Flat Washer, 1/4"	12-0014-F00	1
10	Flat Washer, 3/8"	12-0038-F00	1
11	Grease Zerk, 1/4-28NF	01-0179-014	1
12	Spring Pin, 1/8" x 1" lg.	18-1800-100	1
13	Spring Pin, 1/8" x 3/4" lg.	18-1800-034	1
14	Screw, socket set, 1/4"- 20NC	19-14C0-010	3





**Table 7 – Motorized MSA Saddle Machine Parts Identification**

ITEM #	DESCRIPTION	PART#	QTY.
	Stepper Motor Kit (components listed below)	03-0100-SA1	
1	Mounting Plate Rear	03-0100-060	1
2	Motor Coupling	03-0100-061	1
3	Mounting Plate Front	03-0100-062	1
4	Handle Spacer	03-0100-063	2
5	Motor Adaptor	03-0100-064	1
6	HANDLE	03-0117-020	1
7	NEMA 23 Motor Stepper Assembly	03-0201-060	1
8	Hex Head Cap Screw, 1/4-20 UNC x 5/8" lg.	10-14C0-058	4
9	Socket Head Cap Screw, #8-32 x 1/2" lg.	11-08C0-012	3
10	Flat Socket Head Cap Screw, 1/4-20 unc x 1" lg.	13-14C0-100	2
11	Socket Head Set Screw, #10-24 x 1/4" lg.	19-10C0-014	1
12	Button Head Socket Cap Screw, #10-24 x 3/4" lg.	26-10C0-034	4
13	Hex Head Cap Screw, 1/4-20 unc x 3/4" long	10-14C0-034	2
14	Hex Nut, Locking	1L-14C0-000	2
15	Motor Control Box with motor and plasma Cable ( not shown)	03-0203-008	1
16	Cable, Stepper Motor to Motor Control Box (not shown)	03-0203-200	1
17	Cable, Plasma Stepper Motor Box (not shown)	03-0203-201	1
18	Connector, NEMA 23 Stepper Motor Assembly (included in Item 7)	03-0203-115	1

**Table 8 – Trouble shooting – Manual Machine**

<b>MANUAL</b>		
<b>Symptom</b>	<b>Possible Cause(s)</b>	<b>Corrective Action</b>
Machine is cutting out of square	Incorrect Spacers are used	Use only Mathey Spacer.
	Customer is cutting tubing.	Contact Mathey Dearman Sales Department for Spacers for tubing.
	Spacers are not in contact with pipe.	Reposition machine so that both Spacers contact the pipe and re-tighten Boomer.
	Torch, Torch Arm or Torch Carrier is loose.	Tighten Wing Nuts or Thumbscrews.
	Hoses are binding.	Wrap the Hose one (1) full turn around the pipe. Rotate the Ring Gear of the machine so the Hoses unwrap during the cutting process.
	Machine has been dropped.	Send the machine to a certified repair station for resizing Cap Ring, Ring Gear and Saddle.
	Torch is at end of Torch Arm.	Move the Torch closer to the Ring Gear.
	The Pinion Gears are too shallow in the large Ring Gear.	Readjust the Pinion Gear so it is at the proper depth in Ring Gear
Machine hesitates or stops as the Pinion Gear enters the Ring Gear.	The timing of the Pinion Gears to the Ring Gear is out of adjustment.	Readjust the timing of the Pinion Gear to the Ring Gear per the repair instructions.
	The Drive Chain is stretched.	Readjust the Bearing Brackets to eliminate the slack in the Chain per the repair instructions.
		Replace the Drive Chain
<b>MOTORIZED</b>		
Machine does not rotate	Bad DC Cable	Replace cable
	No DC output from motor control box	Reset circuit breaker on motor control box
	No Power at wall Receptacle	Reset circuit breaker at power panel
	Emergency stop is depressed	Rotate to release emergency stop
	Forward and reverse switch is bad	Contact Mathey Dearman
	Bad 6 pin connector on motor	Contact Mathey Dearman

## 8.0 MAINTENANCE

In order to the maximum life of the 1SA Saddle machine, the maintenance should be performed by an authorized Mathey Dearman Certified Repair Center. The Mathey Dearman Pipe Cutting and Beveling Machine requires only minimal maintenance; however, these are precision machines. In order to achieve proper results, make sure your machine is handled with reasonable care and it kept clean and lubricated. The machine should be stored in a protective container such as a Mathey Dearman Machine Storage Box or the original factory shipping crate during transporting or when not in use.

The Ring Gear, Pinion Gears, and Drive Chains should be kept clear of slag and other trapped abrasives, especially sand and dirt. The Saddle, Ring Gear, and Cap Ring should be cleaned weekly and the Ring Gear Track Surfaces should be coated with Lubriplate 130-AA or equal lubricant weekly under heavy use and before storing. The Drive Chains and Sprockets should be cleaned regularly and coated with a film of a light oil or lubricant such as WD-40 or equal. Lithium Grease should be applied to the Grease Zerk (Figure 5 item 9) of the Single Bearing Bracket (Figure 5) and to the Grease Zerk (Figure 6 item 11) of the Double Bearing Bracket (Figure 6) weekly.

Contact Mathey Dearman at 918-447-1288, should any questions arise that are not covered in the manual

### 8.1 Timing the Ring Gear to the Pinion Gears of a Manual MSA Saddle Machine

- 8.1.1 Remove the Tie Rod Handle (Figure 4 item 7) from the Single and Double Bearing Brackets (Figure 4 item 4 & 5) by removing Hex Head Cap Screws (Figure 4 item 10) with a 7/16" wrench.
- 8.1.2 Using a 1/8" allen wrench loosen the 2 Socket Set Screws (Figure 5 item 6) in the Sprocket of the Single Bearing Bracket (Figure 5).
- 8.1.3 Rotate the Ring Gear (Figure 4 item 3) clockwise (as viewed from the front of the machine) until the gap in the Ring Gear is at the 11:00 Position and off the Pinion Gear (Figure 5 item 3) of the Single Bearing Bracket (Figure 5) or until the Pinion Gear does not make contact with the Ring Gear (Figure 4 item 3).
- 8.1.4 Rotate the Sprocket (Figure 5 item 2) on the axle (Figure 5 item 4) of the Single Bearing Brackets (Figure 5) to make sure it is loose on the axle.
- 8.1.5 Rotate the Ring Gear (Figure 4 item 3) clockwise (as viewed from the front of the machine) until the gap in the Ring Gear is at the 12:00 Position.
- 8.1.6 Adjust the Pinion Gear (Figure 5 item 3) of the Single Bearing Brackets (Figure 5) as needed so that it enters the Ring Gear (Figure 4 item 3) without hesitation.  
**Note:** When the Pinion Gear (Figure 5 item 3) enters the Ring Gear (Figure 4 item 3) it should not suddenly pull the Ring Gear. As the Pinion Gear (Figure 5 item 3) leaves the Ring Gear (Figure 4 item 3) it should not suddenly push the Ring Gear.
- 8.1.7 Check the Pinion Gear (Figure 5 item 3) of the Single Bearing Brackets (Figure 5) and the Pinion Gear (Figure 6 item 6) Double Bearing Bracket (Figure 6) so that they are evenly spaced in the teeth of the Ring Gear.
- 8.1.8 Tighten the Hex Head Cap Screws (Figure 4 item 12) on both sides of the Single Bearing Bracket Assembly Figure using a 7/16" wrench.
- 8.1.9 Tighten of the 1 Socket Head Set Screws (Figure 5 item 6) in the Sprocket (Figure 5 item 2) of the Single Bearing Bracket Assembly (Figure 5).
- 8.1.10 Rotate the Ring Gear (Figure 4 item 3) one (1) full revolution in the clockwise and counterclockwise direction checking the entry of the Ring Gear (Figure 4 item 3) into the Pinion Gears (Figure 5 item 3 & Figure 6 item 6).  
**Note:** The entry of the Pinion Gears into the Ring Gear should be smooth and without hesitation.  
**Note:** There should be no more than .005 - .010" / .12 - .25mm of play between the Pinion Gear (Figure 5 item 3) of the Single Bearing Bracket (Figure 5) and the Pinion Gear (Figure 6 item 6) Double Bearing Bracket (Figure 6) and the Ring Gear (Figure 4 item 3) so that they are evenly spaced in the teeth of the Ring Gear (Figure 4 item 3).
- 8.1.11 If entry of the Pinion Gears (Figure 5 item 3 & Figure 6 item 6) into the Ring Gear (Figure 4 item 3) is satisfactory tighten the 2<sup>nd</sup> Set Screw (Figure 5 item 6) in the Sprocket (Figure 5 item 2).
- 8.1.12 Align the threaded holes in the Tie Rod Handle (Figure 4 item 7) with the holes in the Single and Double Bearing Bracket Assemblies (Figure 5 item 1 & Figure 6 item 1) and install and tighten the Hex Head Cap Screws (Figure 4 item 10) with a 7/16" wrench.
- 8.1.13 Rotate the Ring Gear (Figure 4 item 3) one (1) full revolution in the clockwise and counterclockwise direction checking the entry of the Ring Gear (Figure 4 item 3) into the Pinion Gears (Figure 5 item 3 & Figure 6 item 6) to insure the entry of the Pinion Gears into the Ring Gear is smooth and without hesitation.
- 8.1.14 The machine is now ready for the cutting operation.

## 8.2 Installation of a New Drive Chain of a Manual MSA Saddle Machine

- 8.2.1 Remove the Tie Rod Handle (Figure 4 item 7) as described in 8.1.1. With a 7/16" wrench loosen the Hex Head Cap Screw (Figure 4 item 12) to the left of the Single Bearing Bracket (Figure 4 item 4) as viewed from the rear of the machine.
- 8.2.2 With a 7/16" wrench loosen and remove Hex Head Cap Screw (Figure 4 item 12) to the right of the Single Bearing Bracket Assembly (Figure 4 item 4) as viewed from the rear of the machine.
- 8.2.3 Tilt the Single Bearing Bracket Assembly (Figure 4 item 4) toward the center of the machine and remove the drive chain (Figure 4 item 6).
- 8.2.4 With a 1/8" allen wrench loosen the both Socket Set Screws (Figure 5 item 6) in the Sprocket (Figure 5 item 2) of the Single Bearing Bracket (Figure 5).
- 8.2.5 Rotate the Sprocket (Figure 5 item 2) on the axle (Figure 5 item 4) of the Single Bearing Bracket (Figure 5) until it rotates freely on the axle.
- 8.2.6 Place the chain (Figure 4 item 6) over the sprocket of the Crank Gear and Sprocket Assembly (Figure 6 item 4).
- 8.2.7 Place the chain (Figure 4 item 6) over the sprocket (Figure 5 item 2) of the Single Bearing Bracket Assembly (Figure 5).
- 8.2.8 Rotate the Single Bearing Bracket Assembly (Figure 4 item 4) clockwise while rotating the Pinion Gear (Figure 5 item 3) so that it meshes into the Ring Gear (Figure 4 item 3).
- 8.2.9 Insert the Hex Head Cap Screw (Figure 4 item 12) in the hole on the right of the Single Bearing Bracket Assembly (Figure 4 item 4) and hand tighten only at this time.
- 8.2.10 With a 7/16" wrench tighten the Hex Head Cap Screw (Figure 4 item 12) to the left of the Single Bearing Bracket Assembly (Figure 4 item 4) as viewed from the rear of the machine.
- 8.2.11 Adjust teeth of the Pinion Gear (Figure 5 item 3) of the Single Bearing Brackets (Figure 5) and the Pinion Gear (Figure 6 item 6) of the Double Bearing Bracket (Figure 6) so they are evenly spaced in the teeth of the Ring Gear (Figure 4 item 3). There should be no more than .005" / .12mm of play between the Pinion Gear (Figure 5 item 3) of the Single Bearing Bracket (Figure 5), the Pinion Gear (Figure 6 item 6) of the Double Bearing Bracket (Figure 6) and the Ring Gear (Figure 4 item 3).

**Note:** If the desired chain tension cannot be attained it may be necessary to adjust the Double Bearing Bracket in the same manor.
- 8.2.12 With a 7/16" wrench tighten Hex Head Cap Screw (Figure 4 item 12) to the right of the Single Bearing Bracket (Figure 4 item 4).
- 8.2.13 Tighten 1 of the Socket Head Set Screws (Figure 5 item 6) in the Sprocket (Figure 5 item 2) of the Single Bearing Bracket Assembly (Figure 5) to fix it to the Axle.
- 8.2.14 Rotate the Ring Gear (Figure 4 item 3) one (1) full revolution in the clockwise and counterclockwise direction checking the entry of the Ring Gear (Figure 4 item 3) into the Pinion Gears (Figure 5 item 3 & Figure 6 item 6).

**Note:** The entry of the Pinion Gears into the Ring Gear should be smooth and without hesitation.

**Note:** The Pinion Gear (Figure 5 item 3) of the Single Bearing Bracket (Figure 5) and the Pinion Gear (Figure 6 item 6) of the Double Bearing Bracket (Figure 6) should be evenly spaced in the teeth of the Ring Gear (Figure 4 item 3). There should be no more than .005" play between the Pinion Gears and the Ring Gear.
- 8.2.15 Place the Tie Rod Handle (Figure 4 item 6) on the backside of the holes in the Single and Double Bearing Bracket (Figure 4 items 4 & 5) and thread the two (2) Hex Head Cap Screws (Figure 4 item 12) in the holes of the Tie Rod Handle and tighten with a 7/16" wrench.
- 8.2.16 Recheck the entry of the Ring Gear (Figure 4 item 3) into the Pinion Gears (Figure 5 item 3 & Figure 6 item 6).
- 8.2.17 The machine is now ready for the cutting operation.

## 8.3 Retiming of the MSA Machine with Stepper Motor

- 8.3.1 Remove 1/4 -20 x 3/4" Long hex head camp screws (Figure 7 item 13) and 1/4-20 lock nuts (Figure 7 item 14) using 2 of a 7/16" combination wrench. (Set these aside as they will be used in the reassembly of the Stepper Motor Kit.)
- 8.3.2 Pull on the Rear Mounting Bracket (Figure 7 item 1); removing Stepper Motor Kit from the MSA Saddle Machine.
- 8.3.3 Loosen #10-24 x 1/4" long socket set screw (Figure 7 item 11).
- 8.3.4 Remove the motor coupling from the Crank Pinion (Figure 6 item 3).
- 8.3.5 Install the Crank Handle Assembly (Figure 6 item 2) on to the Crank Pinion (Figure 6 item 3)
- 8.3.5 Follow instructions in 8.1 for retiming of the machine.
- 8.3.6 Reverse steps 8.3.1 thru 8.3.4 to reassemble the Stepper Motor Kit to the MSA Saddle Machine.

- 8.3.7 Place the machine on a pipe.
- 8.3.8 Connect the Motor Cable to the Motor Assembly (Figure 7 item 7) and to the Motor Control Box.
- 8.3.9 Depress the Emergency Stop Switch.
- 8.3.10 Move the Directional Control Switch to the "Off" position.
- 8.3.11 Plug the Motor Control Box into a wall outlet having an output of 90 to 240 volts AC.
- 8.3.12 Twist to release the Emergency Stop Switch.
- 8.3.13 The Digital Screen will light up showing the following.
  - 991 – Indicates the stepper motor is NEMA 23.
  - 992 – Indicates the Stepper Motor is NEMA 34.
  - 993 – Indicates the Stepper Motor is a heavy-duty NEMA.
  - 994 & 995 – Check cable connection at motor and motor control box.
  - 999 – Indicates the Directional Control Switch is in the "Forward" or "Reverse" position. Move to the "Off" position.

**NOTE:** If any other codes appear contact Mathey Dearman prior to continuing the cutting process.
- 8.3.14 If no faults are present after the motor number appears, the percent of maximum speed will be displayed in the window.
- 8.3.15 Move the Directional Control Switch to the "Forward" or "Reverse" direction.
- 8.3.16 Depress the Speed Control Switch until the percent of motor speed reads about 32% so control of the machine can be maintained should an emergency arise.
- 8.3.17 If the motorized unit is operating improperly, see the trouble shooting in Table 8.

## 8.4 Replacement of Drive Chain of the Machine with Stepper Motor

- 8.4.1 Remove 1/4 -20 x 3/4" Long hex head camp screws (Figure 7 item 13) and 1/4-20 lock nuts (Figure 7 item 14) using 2 of a 7/16" combination wrench. (Set these aside as they will be used in the reassembly of the Stepper Motor Kit.)
- 8.4.2 Pull on the Rear Mounting Bracket (Figure 7 item 1); removing Stepper Motor Kit from the MSA Saddle Machine.
- 8.4.3 Loosen #10-24 x 1/4" long socket set screw (Figure 7 item 11).
- 8.4.4 Remove the motor coupling from the Crank Pinion (Figure 6 item 3).
- 8.4.5 Install the Crank Handle Assembly (Figure 6 item 2) on to the Crank Pinion (Figure 6 item 3)
- 8.4.6 Follow instructions in 8.2 for installing a new drive chain.
- 8.4.7 Reverse steps 8.4.1 thru 8.4.4 to reassemble the Stepper Motor Kit to the MSA Saddle Machine.
- 8.4.8 Place the machine on a test pipe.
- 8.4.9 Connect the Motor Cable to the Motor Assembly (Figure 7 item 7) and to the Motor Control Box.
- 8.4.10 Depress the Emergency Stop Switch.
- 8.4.11 Move the Directional Control Switch to the "Off" position.
- 8.4.12 Plug the Motor Control Box into a wall outlet having an output of 90 to 240 volts AC.
- 8.4.13 Twist to release the Emergency Stop Switch.
- 8.4.14 The Digital Screen will light up showing the following.
  - 991 – Indicates the stepper motor is NEMA 23.
  - 992 – Indicates the Stepper Motor is NEMA 34.
  - 993 – Indicates the Stepper Motor is a heavy-duty NEMA.
  - 994 & 995 – Check cable connection at motor and motor control box.
  - 999 – Indicates the Directional Control Switch is in the "Forward" or "Reverse" position. Move to the "Off" position.

**NOTE:** If any other codes appear contact Mathey Dearman prior to continuing the cutting process.
- 8.4.15 If no faults are present after the motor number appears, the percent of maximum speed will be displayed in the window.
- 8.4.16 Move the Directional Control Switch to the "Forward" or "Reverse" direction.
- 8.4.17 Depress the Speed Control Switch until the percent of motor speed reads about 32% so control of the machine can be maintained should an emergency arise.
- 8.4.18 If the motorized unit is operating improperly see the trouble shooting in Table 8.

## 8.5 Installation of the Stepper Motor Kit

- 8.5.1 Loosen the set screw in the Crank Handle Assembly (Figure 6 item 2) with a 1/8" hex Allen wrench.
- 8.5.2 Remove the Crank Handle Assembly (Figure 6 item 2) from the shaft of the Crank Pinion (Figure 6 item 3).
- 8.5.3 Remove the 1/4-20 Hex Head Cap Screw (Figure 4 item 10) that mounts Carrying Handle (Figure 4 item 7) from the Single and Double Bearing Bracket assemblies(Figure 7 item 4 & 5) with a 7/16" combination wrench.
- 8.5.4 Install the Motor Coupling (Figure 7 item 2) on to the shaft of the Crank Pinion (Figure 6 item 3).
- 8.5.5 Tighten the #10-24 Set screw (Figure 7 item 11) located in the Motor Coupling (Figure 7 item 2).
- 8.5.6 If the Motor Assembly (Figure 7 item 7) is attached to the Motor Adaptor (Figure 7 item 5) remove the Stepper Motor Assembly from the Motor Adaptor by removing the 4 – #10-24 Button Head Socket Cap Screws (Figure 7 item 12).

- 8.5.7 Slide the Motor Coupling (Figure 7 item 2) through the hole in the Rear Mounting Plate (Figure 7 item 1) and into the Motor adaptor (Figure 7 item 5) until the Front Mounting Plate (Figure 7 item 3) is flush with the backside of the holes for the carrying handle mounting holes.
  - 8.5.8 Place the 1/4-20 x 3/4" long Hex Head Cap Screws (Figure 7 item 13) into the front of the Carrying Handle Mounting holes.
  - 8.5.9 Install and tighten the 1/4-20 Lock Nuts (Figure 7 item 14) onto the 1/4-20 x 3/4" long Hex Head Cap Screws (Figure 7 item 13).
  - 8.5.10 Align the flat of the Stepper Motor Assembly (Figure 7 item 7) Shaft with the flat in the bore of the Motor Coupling (Figure 7 item 2).
  - 8.5.11 Insert the Shaft of the Stepper Motor Assembly (Figure 7 item 7) into the Motor Coupling (Figure 7 item 2) until the face of the Stepper Motor Assembly is flush with the face of the Motor adaptor (Figure 7 item 5).
  - 8.5.12 Install the 4 – #10-24 Button Head Socket Cap Screws (Figure 7 item 12) into the holes of the Stepper Motor Assembly (Figure 7 item 7).
  - 8.5.13 Tighten the #10-24 Button Head Socket Cap Screws (Figure 7 item 12)
  - 8.5.14 Place the machine on a test pipe.
  - 8.5.15 Connect the Motor Cable to the Motor Assembly (Figure 8 item 3) and to the Motor Control Box.
  - 8.5.16 Depress the Emergency Stop Switch.
  - 8.5.17 Move the Directional Control Switch to the "Off" position.
  - 8.5.18 Plug the Motor Control Box into a wall outlet having an output of 90 to 240 volts AC.
  - 8.5.19 Twist to release the Emergency Stop Switch.
  - 8.5.20 The Digital Screen will light up showing the following.
    - 991 – Indicates the stepper motor is NEMA 23.
    - 992 – Indicates the Stepper Motor is NEMA 34.
    - 993 – Indicates the Stepper Motor is a heavy-duty NEMA.
    - 994 & 995 – Check cable connection at motor and motor control box.
    - 999 – Indicates the Directional Control Switch is in the "Forward" or "Reverse" position. Move to the "Off" position.
- NOTE:** If any other codes appear contact Mathey Dearman prior to continuing the cutting process.
- 8.5.21 If no faults are present after the motor number appears, the percent of maximum speed will be displayed in the window.
  - 8.5.22 Move the Directional Control Switch to the "Forward" or "Reverse" direction.
  - 8.5.23 Depress the Speed Control Switch until the percent of motor speed reads about 32% so control of the machine can be maintained should an emergency arise.
  - 8.5.24 If the motorized unit is operating improperly, see the trouble shooting in Table 8.

## 8.6 Repair of the Single and Double Bearing Bracket Assemblies

Contact Mathey Dearman for instructions, if disassembling and/or repairing of the Single and Double Bearing Bracket Assemblies is required.

## 8.7 Storage

If the machine will not be used for a period of the time, the machine should be cleaned and regreased with Lubriplate 130-AA. The machine should be stored in a clean and dry place protected from damage.

## 9.0 LIMITATIONS

Mathey Dearman is not and will not be responsible for

- Improper use of the Saddle Machine.
- Use of the Saddle Machine in violation of any national and/or international safety regulations in force.
- Faulty maintenance.
- Unauthorized modification and/or service of the Saddle Machine.
- Use of non-original spare parts or non-specific components.
- Lack of observance or partial observance of the operating and maintenance instructions.
- Unusual events such as natural disasters, wars, strikes or similar events.

## 10.0 MACHINE SAFETY

Users should follow these standard safety procedures in order to observe and prevent the safety of all employees using the machine:

- Operators must use the wear safety goggles and shoes and should be suitably dressed for the working environment. Operators and maintenance personnel should read and understand the Parts and Operating Manual prior to attempting any type of function.
- Observe all health warnings listed in the Parts and Operating Manual.

## 11.0 CONDITION OF USE

### 11.1 Condition of use

- The purpose of the Saddle Machine is indicated on section 2.1. Any other use, different from what is listed in section 2.1, could be hazardous to the operator.
- The Saddle Machine should be placed in a safe place protected from rain, extreme humidity, mud or accidental impact.
- Adopt all the safety devices supplied or suggested by the manufacturer.
- No modification to the Saddle Machine or its accessories should be done without the previous written approval by the manufacturer.

### 11.2 Use of the Saddle Machine not allowed by the Manufacturer

- Operation of the Saddle without the appropriate safety devices.
- Use of a liquid or foam fire extinguisher to extinguish a fire in or near the Saddle Machine.

## 12.0 DISPOSAL OF THE SADDLE MACHINE

### 12.1 General Information

Do not dispose of any components recklessly without regard for the environment. Separate the components by category for a possible reuse. All national and state regulations should be followed when disposing of waste.

### 12.2 Composition of the Major Components

Component Description	Material
Saddle, Cap Ring, Ring Gear, Single & Double Bearing Bracket Spacers,	Aluminum
Pinion Gear, Boomer, Boomer Chain, Boomer Spring, Spring Snap, Drive Chain, Crank Gear and Sprocket, Spacer Bolts, Bearings, Bushings	Carbon Steel  Oilite Bronze

## 13.0 WARRANTY

For warranty information visit [www.mathey.com](http://www.mathey.com)

**Table 9 – Commercial Pipe Sizes and Wall Thickness**

Pipe Size	OD (inches)	Nominal Wall Thickness for Schedule								
		10	20	40	Extra Strong	80	120	140	160	XX Strong
2	2 <sup>3</sup> / <sub>8</sub>	.109	--	.154	.218	.218	--	--	.343	.436
2 ½	2 <sup>7</sup> / <sub>8</sub>	.120	--	.203	.276	.276	--	--	.375	.552
3	3 ½	.120	--	.216	.300	.300	--	--	.437	.600
3 ½	4	.120	--	.226	.318	.318	--	--	--	.636
4	4 ½	.120	--	.237	.337	.337	.437	--	.531	.674