MiniMag XM
Part Number: 05-0550-MINIXM2
Parts & Operating Manual

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Warning

Persons wearing a Pace Maker should not come in contact with this equipment
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</table>
1.0 **SAFETY**

Proper precautions should be taken when using this machine or any other heavy cutting and welding equipment. A little common sense goes a long way towards preventing accidents involving your Mathey Dearman MiniMag.

1.1 **General Safety**

- Eye protection must be worn to protect eyes from sparks, flying slag and the brilliant flame.
- Protective clothing such as chaps, sleeves, steel toed shoes and gloves shall be worn to protect the operator from sparks or slag.
- Make sure loose clothing, tools, belts, etc. do not become entangled in the Wheels or Gear Teeth of Torch Arm.
- Clear the general area where the MiniMag will be used of all trip hazards.
- Use a Heat-Resistant Shield to protect nearby walls from sparks and hot material.
- Adequate ventilation is required to prevent the concentration of oxygen/fuel gas and/or other toxic fumes.
- Do not store grease, gasoline or other flammable material in the area where the pipe is being cut.
- Always have a fire extinguisher of the proper size and type in the work area.
- Remove all smoldering materials from the work area when work has been completed.
- The pipe must be secured to the table or pipe stand, prior to mounting the machine on the pipe.
- A Heat-Resistant Shield should be used to protect nearby walls from sparks and hot material.
- Adequate ventilation is required to prevent the concentration of oxygen/fuel gas and/or other toxic fumes.
- Always use eye protection to protect your eyes from sparks, flying slag and the brilliant flame.
- Do not store grease, gasoline or other flammable material in the area where the pipe or plate is being cut.
- Flame should not be directed toward the oxygen or fuel cylinders.
- Always have a fire extinguisher of the proper size and type in the work area.
- Always inspect the general area for flame or smoldering materials when work is completed.

1.2 **Machine Safety**

- The operator and maintenance person shall read and understand the MiniMag parts and operating manual prior to attempting operation of the equipment.
- The operator and maintenance person shall read and understand the torch parts and operating manual prior to attempting operation or maintenance of the oxy/fuel torch.
- The periodic maintenance instructions must be followed in the MiniMag parts and operating manual.
- Never use the MiniMag XM for other than its intended purpose.
- Basic safety precautions must always be followed, when using the Mini-Mag XM to reduce the risk of personal injury.
- Always operate the tool in accordance with the operating instructions.
- Only an experienced electrician shall perform maintenance on the electrical motor or motor control box.
- The Oxy/Fuel Torches or the Plasma Torches must be properly installed and fastened in the Torch Holder assembly to avoid injury to the operator.
- The Mini-Mag XM should only be used with a 1 3/8” diameter oxy/fuel or plasma torch having a barrel length not to exceed 10”.
- The MiniMag XM should never be used to back bevel the pipe or plate. The heat generated by the torch will cause a loss of magnetism causing the machine to lose contact with the pipe or plate.
- Always use the Safety Cable (18) provided with MiniMag XM when cutting to avoid injury to the Operator, or damage to the machine should it become disengaged from the pipe or plate. A non-magnetic Safety Rope or Belt can be used as a substitute. Never use a Safety Chain as it may become engaged in the Wheels, causing the machine to become disengaged from the pipe or plate.
- The MiniMag XM should not be used on pipe or plate with a wall thickness of more than 3 inches. The heat generated by the cutting torch on thick wall pipe or plate will cause the MiniMag XM to lose magnetism and become disengaged from the pipe or plate.
- Do not operate MiniMag XM in an explosive environment.
• Do not operate the MiniMag XM in an extremely moisture environment or rain due to the risk of electrical shock.
• The Machine should not be used to cut material thinner than 3/8 of an inch (9.5mm) in thickness as the Machine may not adhere to the pipe or plate with enough magnetic force.
• When cutting with the MiniMag, the weld seam should be between the 11:00 – 1:00 o’clock positions as viewed from the end of the pipe. If the Machine crosses at any other point, it will become disengaged from the pipe. MiniMag will lose contact with the surface of the pipe or plate if it does not contact the weld at a 90-degree angle. The weld seam should not be over 3/16 of an inch high.
• Never use the MiniMag on material that has coating zinc, epoxy, plastic or other type of synthetic product thicker than .015”/.38mm, as the Machine will not adhere to the pipe or plate.
• Make sure the Cord (J) between the MiniMag Motor Control Box (13) does not become engaged in the Wheels of the MiniMag causing the Machine to become disengaged from the pipe or plate.
• When cutting pipe or plate there must be sufficient slack in the Oxy/fuel Hoses so that the MiniMag can make a square cut without becoming disengaged from the pipe or plate. Do not allow the Torch Hoses to be dragged around the pipe or plate by the MiniMag.
• The Oxy/fuel Hoses of the Machine Torch (A) should be wrapped (1) full turn around the pipe to help support the weight of the Hoses when cutting pipe. The rotation of the MiniMag around the pipe should be opposite the direction of the wrapped Hoses so that the Hoses are unwrapped as the Machine travels around the pipe. Never allow the hoses to be dragged through the molten slag.
• When using the 12’ / 3.7m Extension Cord between the MiniMag Base Unit and the Motor Control Box, make sure the Oxy/fuel Hoses and Extension Cord are supported. Failure to do this may cause the Machine to drift from the cut line or become disengaged from the pipe.
• The MiniMag should never be used on vertical pipe without a Guide Strip. Contact the Mathey Dearman Sales Department for details on making the Guide Strip.
• Do not use a Machine Torch (A) longer than 12 inches with the MiniMag.
• Contact Mathey Dearman Inc. before using a Plasma Torch with the MiniMag.
• Do not use Plasma Torch having a barrel diameter bigger than 1-3/8”/35mm with the MiniMag.
• Never operate the MiniMag with the Cover (8) removed from the Base Unit (19).
• If the Machine Torch is to be positioned at 90º to the pipe or plate surface, the Torch (A) should be at a minimum distance of 3”/76 inches from the MiniMag Heat Shield (3).
• The MiniMag XM should never be operated without the Heat Shield (3).
• Discontinue the operation of the MiniMag, if it is vibrating or is operating erratically.

1.3 Cutting Torch Safety
• Always follow the Torch Manufacturers Operating Instruction when using the Machine Torch (A) and Torch Angle Head Adapter.
• Never direct flame or debris associated with cutting process toward the oxygen or fuel gas cylinders.
• Due to the risk of personnel injury never direct the flame or the fuel or plasma torch back toward the machine.
• Always follow the Oxy/fuel or plasma torch manufacturers operating instruction when using the Oxy/fuel or plasma torch Machine Torch.
• Keep hands, feet and all flammable material as far possible from the path of the Cutting Torch.
• Never use a cigarette lighter to ignite the cutting torch.

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.
2.0 SPECIFICATION

2.1 General Specification
The MiniMag will attach to any magnetic-receptive surface using Rare Earth Magnets located in the Wheel Assemblies. The MiniMag is design to rotate a 12” long oxygen/fuel or plasma machine torch having a barrel diameter of 1-3/8” / 35mm along horizontal or vertical steel plate, around pipes having an outside diameter of 6-5/8” (169mm.) and larger in diameter and inside pipe having a minimum diameter of 24” (610mm) minimum to Unlimited. The machine can also be used to make long cuts parallel to the pipe axis on pipe diameters of 16” (406mm) and larger.

2.2 Features
The MiniMag can be set-up and ready to go in approximately two minutes. The setup involves placing the machine squarely on the pipe, plate or I-beam, connecting the Motor Control Box to the Base Unit, and installing the Machine Fuel Torch. The MiniMag is control by Mathey Dearman’s 230vac at 50 or 60 hertz Motor Control Box with “E” stop. The Motor Control Box gives the operator precise control of direction and speed of the MiniMag. The MiniMag Motor Control Box is made of stainless steel. Due to the risk of electrical shock the MiniMag is not designed to be operated in rain or standing water. The MiniMag can achieve a maximum speed of 32” / 813mm per minute and a minimum cutting speed of 2 inches per minute. The MiniMag base unit weighs only 27 lbs. (13.7mm). The stroke of the Sliding Support on Torch Arm for the MiniMag is 8 Inches (203mm) long. The Machine Torch can be adjusted to the cut line by means of a Racking Knob on the Sliding Support. The Torch Arm design allows the Torch to be operated in the vertical or near horizontal position. When the Machine Torch is used in the vertical position, the overall length of the torch determines the clearance required to go around the pipe. The clearance needed above the surface of the pipe or plate is 12” (305mm) when using a Machine Torch and Torch Angle Head Adapter. The MiniMag is equipped with Guide Rollers that are used in conjunction with the Guide Strip for improved tracking when cutting diagonal pipes, plate and larger vertical diameters. A Guide Strip can be made of rolled aluminum or steel angle when welding code requires an exacting cut. Safety should always be a concern when cutting pipe or plate. We at Mathey Dearman have made safety an essential part of our design process. The MiniMag comes equipped with Snap Hooks and Safety Cable for pipe diameter to 24” (610mm). Another safety value is that when cutting with the machine the operator does not have to stand in close proximity to the pipe or plate that is being cut.

Table 1 – MiniMag Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>MiniMag XM</th>
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<tr>
<td>Method of Attachment</td>
<td>Rare Earth Magnets</td>
</tr>
<tr>
<td>Set Up Time</td>
<td>One minute or less</td>
</tr>
<tr>
<td>Cutting Range (Pipe Outside Diameter)</td>
<td>6 5/8” / 168.3mm and up</td>
</tr>
<tr>
<td>Cutting Range (Pipe Inside Diameter)</td>
<td>24” (610mm) and up</td>
</tr>
<tr>
<td>Vertical Cutting Capability</td>
<td>Pipe or Plate*</td>
</tr>
<tr>
<td>Horizontal Cutting Capability</td>
<td>Pipe or Plate</td>
</tr>
<tr>
<td>Minimum Speed (per minute)</td>
<td>2” (51mm)</td>
</tr>
<tr>
<td>Maximum Speed (per minute)</td>
<td>32” (813mm)</td>
</tr>
<tr>
<td>Drive Motor / Torch Arm Motor</td>
<td>100 Volts DC</td>
</tr>
<tr>
<td>Net Weight</td>
<td>27 lbs. (16.7kg)</td>
</tr>
<tr>
<td>Shipping Weight</td>
<td>33lbs. / 15kg</td>
</tr>
<tr>
<td>Width (including Torch Arm)</td>
<td>17 3/4” (451mm)</td>
</tr>
<tr>
<td>Length</td>
<td>12 1/2” (318mm)</td>
</tr>
<tr>
<td>Height (not including torch)</td>
<td>9” (229mm)</td>
</tr>
<tr>
<td>Electrical Requirement</td>
<td>230 vac at 50/60Hz</td>
</tr>
</tbody>
</table>

A Guide Strip is required to cut vertical pipe or plate.
Call Mathey Dearman, Inc. Sales Department for Details.
3.0 TECHNICAL DIAGRAMS
Figure 1 - Top View with Cover:
Figure 2 - Top View without Cover:
Figure 3 - Machine Back View:
Reference the drawings in the front of this manual when reading the operation and maintenance instructions.

**Table 2 – MiniMag Parts List**

<table>
<thead>
<tr>
<th>Item</th>
<th>P/N</th>
<th>Qty</th>
<th>Description</th>
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<tr>
<td>1</td>
<td>05-0550-016</td>
<td>1</td>
<td>Drive Motor, 110vdc</td>
</tr>
<tr>
<td>2</td>
<td>11-005M-034</td>
<td>4</td>
<td>Socket Head Machine Screw, 5mm x 3/4”</td>
</tr>
<tr>
<td>3</td>
<td>05-0550-029</td>
<td>1</td>
<td>Heat Shield</td>
</tr>
<tr>
<td>4</td>
<td>05-0550-030</td>
<td>3</td>
<td>Spacer, Heat Shield</td>
</tr>
<tr>
<td>5</td>
<td>11-006M-138</td>
<td>3</td>
<td>Round Head Machine Screw, 6mm x 1-3/8”</td>
</tr>
<tr>
<td>6</td>
<td>05-0510-117</td>
<td>1</td>
<td>Torch Holder Assembly, 1 3/8” /35mm</td>
</tr>
<tr>
<td>7</td>
<td>5-0510-114</td>
<td>1</td>
<td>Sliding Support</td>
</tr>
<tr>
<td>8</td>
<td>05-0550-075</td>
<td>1</td>
<td>Cover, MiniMag</td>
</tr>
<tr>
<td>9</td>
<td>11-01F0-012</td>
<td>4</td>
<td>Socket Head Cap Screw, 10-32 x 3/4”</td>
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<td>10</td>
<td>05-0550-112M</td>
<td>1</td>
<td>Torch Arm</td>
</tr>
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<td>11</td>
<td>05-0550-076</td>
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<td>Torch Arm Mounting Bracket</td>
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<td>12</td>
<td>13-08C0-038</td>
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<td>Flat Head Allen Screw, 8-32 x 3/8”</td>
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<td>13</td>
<td>03-0203-006</td>
<td>1</td>
<td>230vac Motor Control Box</td>
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<td>14</td>
<td>05-0510-117B</td>
<td>1</td>
<td>Locking Knob</td>
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<tr>
<td>15</td>
<td>05-0550-051</td>
<td>2</td>
<td>1/4” Snap Hooks</td>
</tr>
<tr>
<td>16</td>
<td>Not Used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>05-0550-052</td>
<td>1</td>
<td>Safety cable (Not Shown)</td>
</tr>
<tr>
<td>19</td>
<td>01-0247-008</td>
<td>1</td>
<td>3-amp Slow Blow Fuse (Not Shown)</td>
</tr>
<tr>
<td>20</td>
<td>03-0203-011</td>
<td>1</td>
<td>Cord, Beldon</td>
</tr>
<tr>
<td>21</td>
<td>11-14C0-012</td>
<td>4</td>
<td>Socket Head Cap Screw, ¼-20NC x 1/2” long</td>
</tr>
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<td>22</td>
<td>05-0550-007</td>
<td>1</td>
<td>Cord Restraint</td>
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<tr>
<td>23</td>
<td>Not used</td>
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<td></td>
</tr>
<tr>
<td>24</td>
<td>05-0550-034</td>
<td>2</td>
<td>Roller Guide Assembly</td>
</tr>
</tbody>
</table>

**Note:** The MiniMag XM should be returned to Mathey Dearman for replacement of any part not listed above.
4.0 **SET-UP**

Read and understand the MiniMag parts and operating manual prior to operating the MiniMag XM.

MiniMag is designed for use with a 10” long 2 Hose Machine Fuel Torch (A) or plasma torch having a 1 3/8” / 35mm barrel diameter with 32-pitch rack or metric rack.

**Warning:** When a plasma torch is used with the MiniMag, never use a magnetic ground in conjunction with the plasma system as it will damage the electrical system of the MiniMag.

*Refer to the torch manufacturer’s welding tip and tip flow data charts for the correct tip, regulator pressures, and travel speed.*

**Table 3 – Power Cord Requirement**

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<tr>
<th>VOLTAGE</th>
<th>CORD LENGTH IN FEET / METERS</th>
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<tr>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Recommended Wire Gage</td>
<td>0 – 25’ / 0 – 7.6m</td>
</tr>
<tr>
<td>115 VAC</td>
<td></td>
</tr>
<tr>
<td>230 VAC</td>
<td>0 – 50’ /0 15.2m</td>
</tr>
</tbody>
</table>

**Caution:** Always keep extension cord behind the machine and away from the cutting process. If you cut or damage the cord, unplug it at the electrical outlet immediately, before inspecting or repairing the cord.

*Picture 1- Motor Control Box Parts Identification*
4.1 Remove the MiniMag from its plastic storage box.
4.2 Set the machine on a clean magnetic surface.
4.3 If the MiniMag was previously used, check the Gear Rack of the Torch Arm (Figure 1 item 10) for slag or other debris and remove it with the Brush provided in the Storage Box.
4.4 Install the Torch Holder Assembly (Figure 1 item 6) on Sliding Support (Figure 1 item 7) and turn the Locking Knob (Figure 3 item 14) clockwise, until the Torch Holder Assembly is held in a fixed position on the Torch Support.
   **Note:** If there is excessive radial play between the Sliding Support (figure 1 item 7) and Torch Arm (Figure 1 item 10), see instruction for “Adjustment of the play of the Sliding Support.”
4.5 Depress the Emergency Stop Switch (see Picture 1).
4.6 Move the Forward/Stop/Reverse Switch (Figure 1 item F) to the Center or Stop Position.
4.7 Make sure the Unit Speed Control Rheostat (Figure 1 item G) is in the "0" position on the dial.
4.8 Connect the Cord with Connector Plug (Figure 1 item J) to the Female Connector (Figure 1 item 20) on the Base Unit.
4.9 Connect Power Cord (Figure 1 item K) of the Motor Control Box into 230vac 50 or 60 hertz power source.

**Warning:** There is a risk of severe electrical shock and death when connecting the Motor Control Box into 230vac 50 or 60 hertz power source.

**Warning:** The CE version MiniMag Motor Control Box is not designed for use with an 110vac power source. There is a risk of personal injury, if the Motor Control Box is connect to the wrong voltage.

4.10 Twist to release the Emergency Stop Switch (see Picture 1).
4.11 Move the FORWARD-STOP-REVERSE Switch (Figure 1 item F) in the direction you want the MiniMag to travel.
   **Note:** Before changing Drive Motor Direction the FORWARD-STOP-REVERSE Switch (Figure 1 item F) of the Motor Control Box (Figure 1 item 13) must be moved to the STOP position for at least one full second.
4.12 Rotate the Unit Speed Control Rheostat (Figure 1 item G) to the desired position. If this is the first time that the MiniMag is used, rotate the Unit Speed Control Rheostat to the Number 4 position. Adjust the Unit Speed Control Rheostat until the desired speed is achieved.

**Caution:** Immediately depress the Emergency Stop Switch should any type of stoppage occur or emergency situation arise.

4.13 Depress the Emergency Stop Switch (See Picture 1) after testing of the unit is complete.
4.14 Move the FORWARD-STOP-REVERSE Switch (Figure 1 item F) to the STOP or center position.
4.15 Disconnect Power Cord (Figure 1 item K) of the motor control box from the 230vac Power Source.

**Warning:** There is a risk of severe electrical shock and death when disconnecting the Motor Control Box into 230vac 50 or 60 hertz power source.

4.16 Disconnect the DC Cord with Connector Plug (Figure 1 item J) from the DC Beldon Cord (Figure 1 item 20).
4.17 The machine is now ready for operation.

**5.0 THE PIPE CUTTING PROCESS**

5.1 Make sure the pipe surface is free from obstruction, slag and other debris that may be collected by the wheels of the MiniMag.
5.2 When cutting pipe set the MiniMag on the pipe near the line to be cut or beveled and move the machine in a
twisting motion until all Wheels (Figure 1 item D) are in full contact with the pipe.

**Warning:** When cutting pipe with a welded seam running parallel to the pipe axis, the
welded seam must be place between the 11:00 and 1:00 o’clock position. Place the
MiniMag XM on the pipe so it will cross the welded seam just prior to finishing the cut.
The MiniMag will lose contact with the surface of the pipe or plate if it does not
contact the weld at a 90-degree angle. The weld should not be over 3/16 of an inch high.

5.3 Attach the Safety Snaps (Figure 1 Item 15) to the MiniMag at points (Figure 1 items P & Q).

5.4 Attach the Safety Cable (18) (not shown) provided with the MiniMag to the Safety Snaps (Figure 1 Item 15).

5.5 Loosen Socket Head Allen Screws of the Torch Holder (Figure 1 item 6) to ensure the Machine Fuel Torch (Figure 3
item A) slips into the torch holder assembly (Figure 1 item 6). Use the 4mm Allen Wrench provided with the
MiniMag to loosen or tighten the Socket Head Allen Screws.

5.6 Install the 12-inch Machine Fuel Torch with Rack (Figure 3 item A) into Torch Holder Assembly (Figure 1 item 6).
The torch tip to material height can easily be adjusted with 12-inch Oxy/fuel or plasma machine torch with Rack.
Note: A 12-inch Oxy/fuel or plasma machine torch can also be used in the Torch Holder Assembly.

5.7 Once the torch tip to material height has been established per the torch manufacturer’s instructions. Tighten the
Socket Head Allen Screws on the Torch Holder Assembly (Figure 1 item 6) with the 4mm Allen Wrench provided,
until sufficient pressure is applied to the machine torch to hold it in position in Torch Holder Assembly.

5.8 Connect the Oxy/fuel Hoses to the Oxy/fuel or plasma Machine Torch (Figure 3 item A) per the Torch
Manufacturer's Operating Instructions. Make sure the Oxy/fuel Hoses are long enough to allow the Machine to
make the complete cut. The Hoses of the Machine Torch should be wrapped one (1) full turn around the pipe to
help support the weight of the Hoses. The rotation of the MiniMag around the pipe should be opposite the
direction of the wrapped Hoses so that the Hoses are unwrapped as the Machine goes around the pipe.
Depress the Emergency Stop Switch (see Picture 1).

Move the Speed Rheostat (Figure 1 item G) to the “0” position on the dial.

Move the FORWARD-STOP-REVERSE Switch (Figure 1 Item F) to the STOP or center position.

Connect the DC Cord with Connector Plug (Figure 1 Item J) to the DC Beldon Cord (Figure 1 item 20).

Warning: Make sure there is enough slack in the DC Cord (Figure 1 item J) so that the MiniMag will make a square cut and does not become disengaged from the pipe injuring the operator or causing damage to the machine.

Connect the Power Cord (Figure 1 item K) of the motor control box to the 230vac Power Source.

Warning: There is a risk of sever electrical shock and death when connecting the Motor Control Box into 230vac 50 or 60 hertz power source.

Turn the Locking Knob (Figure 3 item 14) of the Torch Holder Assembly (Figure 1 item 6) counter clockwise and adjust the Torch to the desired bevel angle. Once the Torch is set to the desired bevel angle, turn the Locking Knob clockwise to hold the Torch at that bevel angle.

Adjust the Torch Tip to material distance per the Torch Manufacturer’s Operating Instructions.

Twist to release the Emergency Stop Switch (see Picture 1).

Move the Speed Rheostat (Figure 1 item G) to the “3” position on the dial.

Light the Fuel Machine Torch and adjust the flame per the Torch Manufacturer’s Operating Instructions.

Warning: Never use a cigarette lighter to light the Cutting Torch.

Preheat the material per the Torch Manufacturer’s Operating Instructions.

Move the FORWARD-STOP-REVERSE Switch (Figure 1 Item F) in the desired direction.

Note: The FORWARD-STOP-REVERSE Switch (F) should always be moved to the STOP position for at least one full second before changing motor direction.

Turn the Oxygen-Cutting Valve of the Fuel Torch to the cutting position to penetrate the material per the Torch Manufacturer’s Operating Instructions.

Slowly rotate the Speed Rheostat (Figure 1 item G) clockwise until the desired cutting speed and cut quality is achieved.

Note: Refer to the Torch Manufacturer’s Cutting Reference Chart for cutting trouble-shooting illustrations.

Warning: Make sure the Safety Cable, Electrical Cord of the Motor Control Box or Oxy/fuel hoses of the machine torch do not become engaged in the Wheels of the MiniMag, causing the Machine to become disengaged from the pipe or plate.
5.23 Once the cutting operation is complete Shut OFF the Oxygen-cutting Valve of the Machine Fuel Torch (A) per the torch manufacturer’s instructions.

Note: Shut off the Oxygen-Cutting Valve as soon as possible to avoid under cutting the pipe.

5.24 Depress the Emergency Stop Switch (see Picture 1).

5.25 Turn off the Oxygen and Fuel Valve of the Machine Fuel Torch per the Manufacturer’s Operating Instructions.

5.26 Move the FORWARD-STOP-REVERSE Switch (Figure 1 Item F) to the STOP or center position.

5.27 Move the Speed Rheostat (Figure 1 item G) to the “0” position on the dial.

5.28 Disconnect the Power Cord (Figure 1 item K) of the motor control box from the 230vac Power Source.

5.29 Disconnect the DC Cord with Connector Plug (Figure 1 Item J) from DC Beldon Cord (Figure 1 item 20).

5.30 The MiniMag is now ready to be removed from the pipe. To remove MiniMag XM from the pipe by grasping the Cover Handle and the Torch Arm, and twist the machine while lifting upward.

5.31 Remove any debris associated with the cutting process from the MiniMag XM.

**Warning:** The use air to remove the slag or other debris from the MiniMag XM due to the risk of eye injury or death.

### 6.0 THE PLATE CUTTING PROCESS

6.1 Make sure the plate surface is free from obstruction, slag and other debris that may be collected by the wheels of the MiniMag.

6.2 Place the MiniMag on the plate near the line to be cut or beveled. Run the machine back and forward along the cut aligning the machine to the cut line.

**Warning:** The MiniMag is not designed for use on non-magnetic or wrapped plate.

**Warning:** Never place the Machine on the piece of plate that is being cut off.

6.3 Attach the Safety Snaps (Figure 1 Item 15) to the MiniMag at points (Figure 1 items P & Q).

6.4 Attach the Safety Cable (18) (not shown) provided with the MiniMag to the Safety Snaps (Figure 1 Item 15).

**Warning:** Always use a safety cable, rope or belt with MiniMag to avoid injury or damage to the Machine should it become disengaged from the vertical plate. Never use a Safety Chain as the Chain may become engaged in the Wheels of the MiniMag.

6.5 Loosen Socket Head Allen Screws of the Torch Holder (Figure 1 item 6) to ensure the Machine Fuel Torch (Figure 3 item A) slips into the torch holder assembly (Figure 1 item 6). Use the 4mm Allen Wrench provided with the MiniMag XM to loosen or tighten the Socket Head Allen Screws.

6.6 Install the 12-inch Machine Fuel Torch with Rack (Figure 3 item A) into Torch Holder Assembly (Figure 1 item 6). The torch tip to material height can easily be adjusted with 12-inch Oxy/fuel or plasma machine torch with Rack. Note: A 12-inch Oxy/fuel or plasma machine torch can also be used in the Torch Holder Assembly.
6.7 Once the torch tip to material height has been established per the torch manufacturer’s instructions. Tighten the Socket Head Allen Screws on the Torch Holder Assembly (Figure 1 item 6) with the 4mm Allen Wrench provided, until sufficient pressure is applied to the machine torch to hold it in position in Torch Holder Assembly.

6.8 Connect the Oxy/fuel Hoses to the Oxy/fuel or plasma Machine Torch (Figure 3 item A) per the Torch Manufacturer's Operating Instructions. Make sure the Oxy/fuel Hoses are long enough to allow the Machine to make the complete cut.

**Warning:** When cutting pipe or plate, make sure there is sufficient slack in the Oxygen and Fuel Hoses so that the MiniMag will make a square cut and does not become disengaged from the plate injuring the operator or causing damage to the machine.

6.9 Depress the Emergency Stop Switch (see Picture 1).

6.10 Move the Speed Rheostat (Figure 1 item G) to the “0” position on the dial.

6.11 Move the FORWARD-STOP-REVERSE Switch (Figure 1 Item F) to the STOP or center position.

6.12 Connect the DC Cord with Connector Plug (Figure 1 Item J) to the DC Beldon Cord (Figure 1 item 20).

**Warning:** Make sure there is enough slack in the DC Cord (Figure 1 item J) so that the MiniMag will make a square cut and does not become disengaged from the plate injuring the operator or causing damage to the machine.

6.13 Connect the Power Cord (Figure 1 item K) of the motor control box to the 230vac Power Source.

**Warning:** There is a risk of sever electrical shock and death when connecting the Motor Control Box into 230vac 50 or 60 hertz power source.

6.14 Turn the Locking Knob (Figure 3 item 14) of the Torch Holder Assembly (Figure 1 item 6) counter clockwise and adjust the Torch to the desired bevel angle. Once the Torch is set to the desired bevel angle, turn the Locking Knob clockwise to hold the Torch at that bevel angle.

6.15 Adjust the Torch Tip to material distance per the Torch Manufacturer's Operating Instructions.

6.16 Twist to release the Emergency Stop Switch (see Picture 1).

6.17 Move the Speed Rheostat (Figure 1 item G) to the “3” position on the dial.

6.18 Light the Fuel Machine Torch and adjust the flame per the Torch Manufacturer’s Operating Instructions.

**Warning:** Never use a cigarette lighter to light the Cutting Torch.

6.19 Preheat the material per the Torch Manufacturer’s Operating Instructions.

6.20 Move the FORWARD-STOP-REVERSE Switch (Figure 1 Item F) in the desired direction.

Note: The FORWARD-STOP-REVERSE Switch (F) should always be moved to the STOP position for at least one full second before changing motor direction.

6.21 Turn the Oxygen-Cutting Valve of the Fuel Torch to the cutting position to penetrate the material per the Torch Manufacturer's Operating Instructions.

6.22 Slowly rotate the Speed Rheostat (Figure 1 item G) clockwise until the desired cutting speed and cut quality is achieved.

Note: Refer to the Torch Manufacturer’s Cutting Reference Chart for cutting trouble-shooting illustrations.
6.23 Once the cutting operation is complete shut OFF the Oxygen-cutting Valve of the Machine Fuel Torch (A) per the torch manufacturer’s instructions.

Note: Shut off the Oxygen-Cutting Valve as soon as possible to avoid under cutting the pipe.

6.24 Depress the Emergency Stop Switch (see Picture 1).

6.25 Turn off the Oxygen and Fuel Valve of the Machine Fuel Torch per the Manufacturer’s Operating Instructions.

6.26 Move the FORWARD-STOP-REVERSE Switch (Figure 1 Item F) to the STOP or center position.

6.27 Move the Speed Rheostat (Figure 1 item G) to the “0” position on the dial.

6.28 Disconnect the Power Cord (Figure 1 item K) of the motor control box from the 230vac Power Source.

6.29 Disconnect the DC Cord with Connector Plug (Figure 1 Item J) from DC Beldon Cord (Figure 1 item 20).

6.30 Remove MiniMag from the plate by grasping the Cover Handle and the Torch Arm, and twist the machine while lifting upward.

6.31 Remove any debris associated with the cutting process from the wheels (Figure 3 item D) of the MiniMag.

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**Warning:** Make sure the Safety Cable, Electrical Cord of the Motor Control Box or Oxy/fuel hoses of the machine torch do not become engaged in the Wheels of the MiniMag, causing the Machine to become disengaged from the pipe or plate.

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7.0 MINIMAG XM MAINTENANCE AND REPAIR

**7.1 Warranty Warnings:**

7.1.1 The disassembly of any part of the MiniMag or adjustment of the components will void the Machine’s Warranty. Before performing any maintenance on the MiniMag contact Mathey Dearman Inc. Sales Department.

7.1.2 Disassembly of the Wheel Mounting Brackets from the machine will void the Warranty. Under no circumstances should the Wheel Mounting Brackets be removed from the machine. Removing the Wheel Mounting Brackets will affect the tracking and may cause the Motor to overheat.

7.1.3 The MiniMag should be returned to Mathey Dearman for replacement of parts not listed in the parts list.

**7.2 Adjustment of the Play of the Sliding Support (Figure 3 item 7)**

7.2.1 Rotate both 6M Hex Nuts (Figure 4 item 1) 1 full turn counterclockwise using an adjustable wrench or 10mm wrench. (See picture on next page for details).

7.2.2 Rotate 10m x 5/8” long socket set screw (Figure 4 item 3) 1 full turn counterclockwise using a 5mm allen wrench or till it does not apply pressure to the torch arm (Figure 3 item 10).

7.2.3 Rotate 6m x 1” long socket set screw (Figure 4 item 2) 1 full turn counterclockwise using a 3mm allen wrench or till it does not apply pressure to the torch arm (Figure 3 item 10).

7.2.4 Spray a light film of WD-40 or light machine oil on the Torch Arm (Figure 3 item 10) and move the Sliding Support (Figure 3 item 7) back and forward the full length of the Torch Arm.

7.2.5 Rotate 6m x 1” long socket set screw (Figure 4 item 2) clockwise until it is figure tight against the brass gib (Figure 4 item 4). Do not use a 3mm allen wrench to tighten the 6m x 1” long socket set screw.
7.2.6  Rotate the Knob with Pinion (Figure 4 item) clockwise and counter clockwise to make sure the Sliding Support (Figure 3 item 7) moves smoothly along the torch arm (Figure 3 item 10). Adjust the tension that the 6m x 1” long socket set screw applies to the brass gib as needed so the Sliding Support (Figure 3 item 7) moves smoothly along the torch arm (Figure 3 item 10).

7.2.7  While moving the Sliding Support (Figure 3 item 7) back and forward along the torch arm (Figure 3 item 10) with the Knob with Pinion (Figure 4 item), slowly rotate 10m x 5/8” long socket set screw (Figure 4 item 3) clockwise with a 5mm allen wrench.

7.2.8  It may be necessary at this point to loosen the Front and/or Rear Allen Head Set Screw (B) so that the Sliding Support moves freely along the Torch Arm.

7.3  Removal of the Drive Motor (Figure 2 item 1)

7.3.1  Depress “E” Stop Switch (Picture 1)

7.3.2  Disconnect the AC power cord (Figure 1 item K) from the 230vac Power Source.

**Warning:** There is a risk of sever electrical shock and death when disconnecting the Motor Control Box into 230vac 50 or 60 hertz power source.

7.3.3  Disconnect the Connector (Figure 1 item J) of the Motor Control Box from the Beldon Cord (Figure 1 item 20).

7.3.4  Remove the Flat Head Allen Screws (Figure 1 item 9) from the Cover (Figure 1 item 8) with a 5/32-inch Allen Wrench.

7.3.5  Remove the Cover (Figure 1 item 8) from the top of the Base Unit.

7.3.6  Disconnect the Electrical Connectors on the red and black wires between the Beldon Cord (Figure 2 item 20) DC and Drive Motor (Figure 2 item 1).

7.3.7  Remove the Heat Shield (3) from MiniMag by removing the three Slotted Round Head Machine Screws (Figure 2 item 5).

**Note:** Care should be taken not to lose the Heat Shield spacers (Figure 2 item 4), when removing the 3 Round Head Machine Screws from the Heat Shield.

7.3.7  Remove the two lower Round head Phillips machine Screws (Figure 2 item 2) from the Flange of the Drive Motor (Figure 2 item 1) by inserting a long reach Phillips Screwdriver into the two holes located in the lower portion of the base unit behind heat shield.
7.3.8 Remove the two upper Round head Phillips machine Screws (Figure 2 item 2) from the Drive Motor Flange (Figure 2 item 1).

7.3.9 Remove the Motor from the MiniMag base unit.

7.4 Installation of the Drive Motor

7.4.1 Align the Tang on the Shaft of the Drive Motor (Figure 2 item 1) with the slot in the Transmission Shaft.

7.4.2 Install the two Lower Round head Phillips machine Screws (Figure 2 item 2) into the Flange of the Drive Motor (Figure 2 item 1) by inserting a long reach Phillips Screwdriver into the two holes that were located in the lower portion of the base unit behind heat shield. Do not tighten the Screws at this time.

7.4.3 Install the Two Upper Round head Phillips Machine Screws (Figure 2 item 2) through the Flange of the Drive Motor (Figure 2 item 1) and tighten.

Warning: Make sure the Grounding Lug is underneath the Right Upper Round head Phillips Machine Screw (Figure 2 item 2).

7.4.4 Tighten all round Phillips head machine screws (Figure 2 item 2) evenly, so the Flange of the Motor is seated against the Housing of the Transmission, which protrudes into the inner cavity of the Base Unit. Warning: If the flange of the motor (Figure 2 item 1) is not seated against Housing of the Transmission the Motor will fail to operate, cause the Motor to overheat or will have less than adequate amount of torque.

7.4.5 Connect the Electrical Connectors on the red and black wires between the Beldon Cord (Figure 2 item 20) DC and Drive Motor (Figure 2 item 1).

7.4.6 Install the Cover (Figure 1 item 8) on the Base unit and install the Flat Head Allen Screws using a 5/32 allen wrench.

7.4.7 Place Unit on the table on its cover (Figure 1 item 8) so that both the Front and Rear Wheels (Figure 3 item D) turn freely.

7.4.8 Connect the Beldon Cord (Figure 1 Item 20) with Connector (Figure 1 item J).

7.4.9 Connect the AC Power Cord (K) from the 230vac Power Source.

**Warning:** There is a risk of sever electrical shock and death when connecting the Motor Control Box into 230vac 50 or 60 hertz power source.

7.4.10 Twist to release the “E” Stop Switch.

7.4.11 Move the Unit Speed Control Switch (Figure 1 item F) to the Forward or Reverse position.

7.4.12 Rotate the Unit Speed Control Rheostat to the number “5” position on the dial.

7.4.13 Let the Drive Wheels of the MiniMag rotate for about 15 minutes.

7.4.14 During the 15 minute period check the Motor for overheating, change of wheel speed or changes in the sound of the Motor. These are all indicators that the Tang of the Motor Shaft is not properly aligned with the slot in the Transmission Shaft or the motor flange is not properly seated against the flange of the transmission.

7.4.15 Depress the “E” Stop Switch

7.4.16 Disconnect the AC Power Cord (Figure 1 item K) from the 230vac Power Source.

**Warning:** There is a risk of sever electrical shock and death when disconnecting the Motor Control Box into 230vac 50 or 60 hertz power source

7.4.17 Disconnect the Connector (Figure 1 item J) from the Beldon Cord (Figure 1 item 20).

7.4.18 The MiniMag is now ready for operation.
## Table 4 – Trouble Shooting Guide

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Probable Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive Motor (1) does not rotate</td>
<td>Blow Fuse</td>
<td>Remove the Fuse from the Motor Control Box (13). Place a Lead of the volt/ohm Meter on each side of the Fuse and check the Fuse for continuity.</td>
</tr>
<tr>
<td></td>
<td>Bad Motor Control Box</td>
<td>If the Motor Control Box has little or no output voltage and the Fuse is not blown, send the Motor Control Box to the Mathey Dearman for repair.</td>
</tr>
<tr>
<td></td>
<td>Bad DC Drive Motor</td>
<td>If there is no continuity of one or both Electrical Leads and it cannot be repaired without taking apart the Motor, replace the Motor.</td>
</tr>
<tr>
<td></td>
<td>Bad Transmission</td>
<td>Remove the drive motor. If Transmission does not turn freely replace the transmission.</td>
</tr>
<tr>
<td></td>
<td>Tang of Motor not properly aligned with slot in transmission</td>
<td>Realign the Motor to the transmission</td>
</tr>
<tr>
<td></td>
<td>Motor Brushes are worn</td>
<td>Remove the both Brushes from the Motor. Check the Brush for chipping and measure the length of the Brush. If a motor brush is chipped or worn, replace both brushes.</td>
</tr>
<tr>
<td>Drive Motor is grinding or is not rotating correctly</td>
<td>Remove the Rectangular Inspection Plate from the back of the Motor and inspect the Commutator for Arc Marks.</td>
<td>If the Commutator of the Motor has Arc Marks, replace the motor. Do not replace the Brushes in a Motor having an Arc Commutator as they will have a short life span.</td>
</tr>
<tr>
<td></td>
<td>Check the Brush for chipping and measure the length of the Brush.</td>
<td>If the Brush is chipped or the Brush measures shorter than ¼” replace the brush.</td>
</tr>
<tr>
<td>Drive Motor is Overheating</td>
<td>Tang of Motor not properly aligned with slot in transmission</td>
<td>Realign the Motor to the transmission</td>
</tr>
<tr>
<td></td>
<td>Welding slag or grind dust around the wheel bushing causing</td>
<td>Clean debris from wheel bushing area.</td>
</tr>
</tbody>
</table>
8.0 WARRANTY
8.1 For Warranty Information visit www.mathey.com
Figure 4 – Motor Control Box Electrical Schematic