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MiniMag XM

Pipe & Plate Cutting Machine

Parts & Operating Manual



General Description

The MiniMag XM Pipe and Plate Cutting/Beveling Machine will attach to any magnetic-receptive surface using Powerful Permanent and Rare Earth Magnets located in the Wheel Assemblies. The MiniMag XM 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 XM has a pipe cutting range of 6 5/8" (168mm) to Unlimited on the outside diameter of the pipe and 24" (610mm) minimum to Unlimited on the inside diameter of the pipe. The machine can also be used to make long cuts parallel to the pipe axis on pipe diameters of 16" (406mm) and larger.

The MiniMag XM can be used to cut vertical or horizontal plate. It is also design to cut I-beams having a width of 20" (508mm) or wider. A Guide Strip can be made of rolled aluminum or steel angle when welding code requires an exacting cut. The MiniMag XM is equipped with Guide Rollers to assist in tracking the Rolled Guide Track for cutting diagonal angles, long lengths of plate and larger vertical diameters.

The stroke of the Sliding Support on Torch Arm for the MiniMag XM 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 XM is control by Mathey Dearman's Standard Motor Control Box. The Motor Control Box requires an input of 110vac at 50 or 60 hertz. The Motor Control Box gives the operator precise control of direction and speed of the MiniMag XM. The MiniMag XM Motor Control Box is made of a powdered metal casting which is impact resistant. The box has a sealed lid with covered switches that allow the unit to be used in an extremely humid environment. Due to the risk of electrical shock the MiniMag XM is not designed to be operated in rain or standing water. The MiniMag XM can achieve a maximum speed of 32" / 813mm per minute and a minimum cutting speed of 2 inches per minute. The MiniMag XM base unit weighs only 27 lbs. (13.7mm).

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 XM 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.

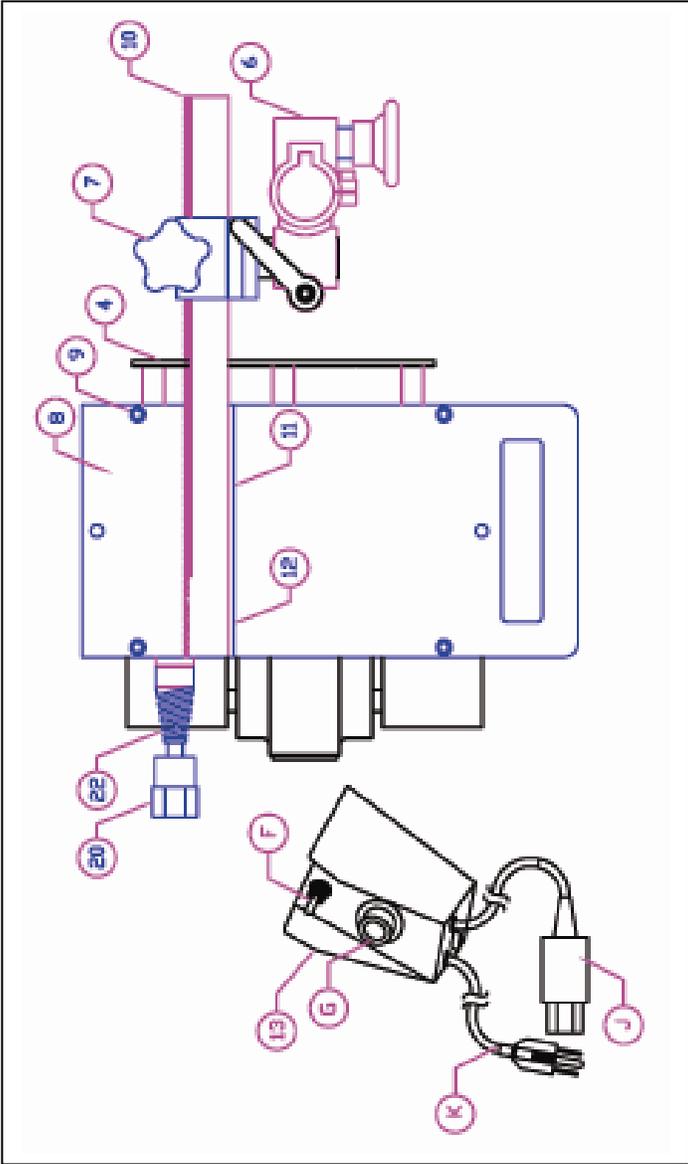
Specifications

Model	MiniMag XM	Mini'Mag' XM
Part Number	05-0550-MINIXM	05-0550-MINIXM2
Electrical Requirement	110vac at 50/60Hz	230vac 50/60Hz
Method of Attachment	Rare Earth Magnets	Rare Earth Magnets
Set Up Time	One minute or less	One minute or less
Cutting Range (Pipe Outside Diameter)	6 5/8" (168.3mm) and up	6 5/8" / 168.3mm and up
Cutting Range (Pipe Inside Diameter)	24" (610mm) and up	24" (610mm) and up
Vertical Cutting Capability	Pipe or Plate*	Pipe or Plate*
Horizontal Cutting Capability	Pipe or Plate	Pipe or Plate
Minimum Speed (per minute)	2" (51mm)	2" (51mm)
Maximum Speed (per minute)	32" (813mm)	32" (813mm)
Drive Motor / Torch Arm Motor	100 Volts DC	100 Volts DC
Net Weight	27 lbs. (16.7kg)	27 lbs. (16.7kg)
Shipping Weight	33lbs. / 15kg	33lbs. / 15kg

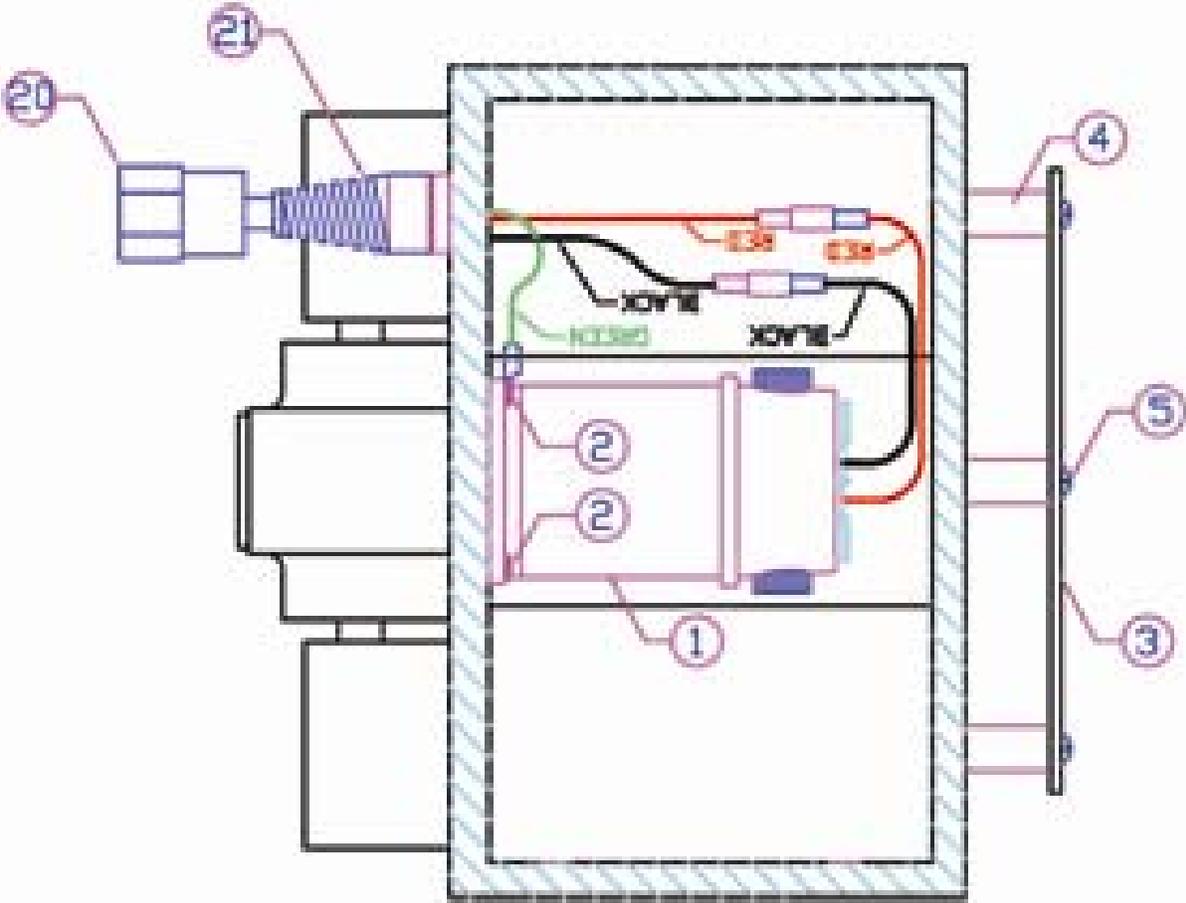
A Guide Strip is required to cut vertical pipe or plate.
 Call Mathey Dearman, Inc. Sales Department for Details.

Technical Diagrams

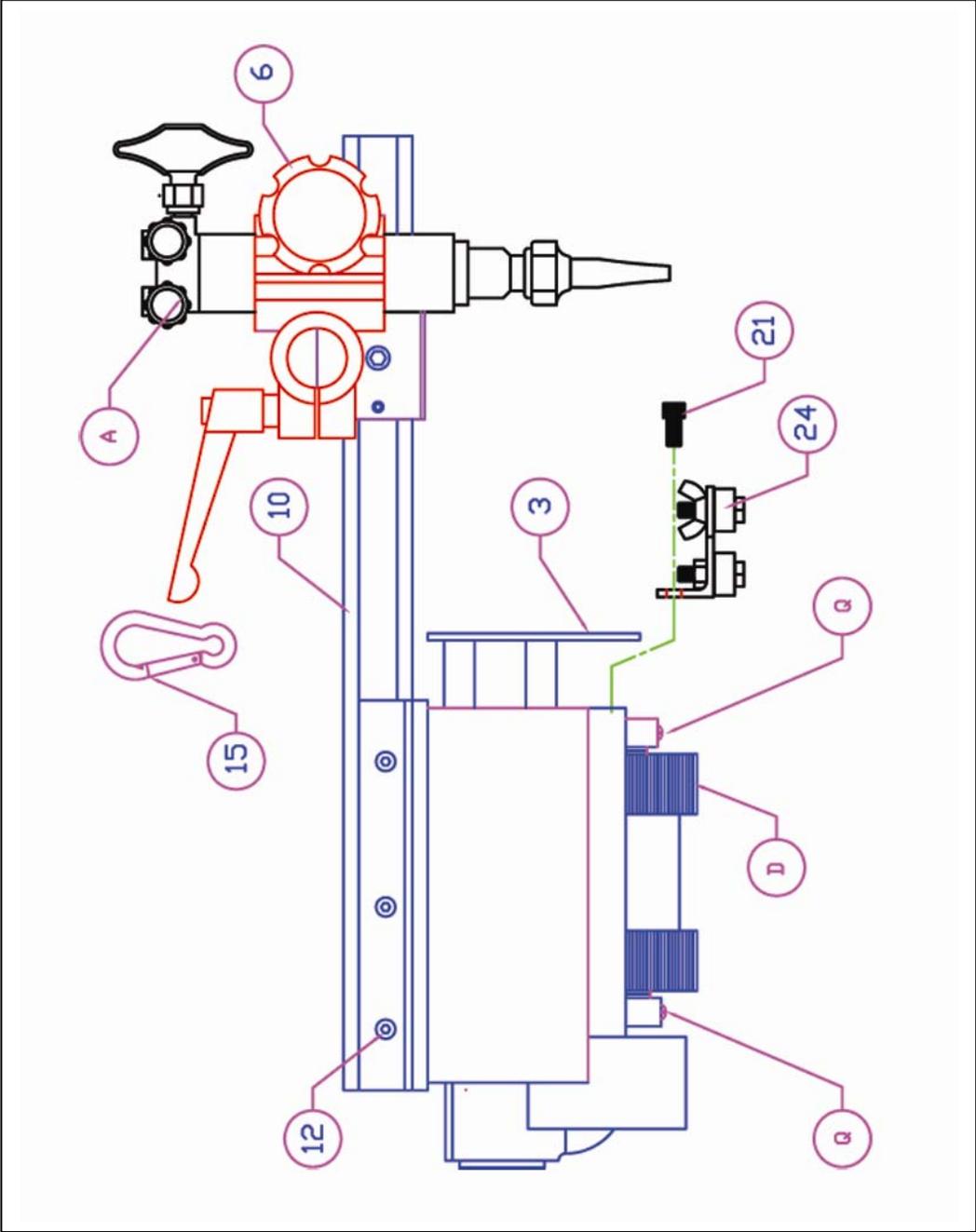
Top View with Cover:



Top View without Cover:



Machine Back View:



Please reference the drawings in the front of this manual when reading the operation and maintenance instructions.

Parts List

Item	P/N	Qty	Description
1	05-0550-016	1	Drive Motor, 110 vdc
2	11-005M-034	4	Socket Head Machine Screw, 5mm x 3/4" long
3	05-0550-029	1	Heat Shield
4	05-0550-030	3	Spacer, Heat Shield
5	11-006M-138	3	Round Head Machine Screw, 6mm x 1-3/8" long
6	05-0510-117	1	Torch Holder Assembly, 1 3/8" /35mm
7	5-0510-114	1	Sliding Support
8	05-0550-075	1	Cover, MiniMag XM
9	11-01F0-012	4	Socket Head Cap Screw, 10-32 x 3/4" long
10	05-0550-112M	1	Torch Arm
11	05-0550-076	1	Torch Arm Mounting Bracket
12	13-08C0-038	6	Flat Hd Allen Screw, 8-32 x 3/8" long
13	03-0203-009	1	115vac Motor Control Box if ordered for 115vac
	03-0203-003	1	230vac Motor Control Box if order for 230vac
14	Not Used		
15	05-0550-051	2	1/4" Snap Hooks
16	Not Used		
17	Not used		
18	05-0550-052	1	Safety cable (Not Shown)
19	01-0247-008	1	3-amp Slow Blow Fuse (Not Shown)
20	03-0203-011	1	Cord, Beldon
21	11-14C0-012	4	Socket Head Cap Screw, ¼-20NC x 1/2" long
22	05-0550-007	1	Cord Restraint
23	01-0759-008	1	230 – 110vac Step Down Transformer (Ordered separately)
24	05-0550-034	2	Roller Guide Assembly

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

Warranty Notes

1. If the MiniMag XM is under warranty, contact the Mathey Dearman Inc. Sales Department contacted prior to performing any maintenance.

The disassembly or adjustment of any component of the MiniMag XM or the motor Control Box will void the Machine's Warranty.

2. If it is necessary to replace the DC Cord (J), the Motor Control Box (13) must be returned to Mathey Dearman Inc.
3. Under no circumstances should the Wheel Mounting Brackets (Q) be removed from the Machine Frame. Removing the Wheel Mounting Brackets may affect the tracking and may cause the Drive Motor (1) to overheat.
4. The MiniMag XM should be returned to Mathey Dearman for replacement of any parts not listed in the parts list.

Safety Tips

1. 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.
2. 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. Always use a Safety Rope or Belt, *never use* a Safety Chain as it may become engaged in the Wheels, causing the machine to become disengaged from the pipe or plate.
3. The MiniMag XM, with *Permanent Magnets*, should not be used on pipe or plate with a wall thickness of more than 2 inches. 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 with *Permanent Magnets* to lose magnetism and become disengaged from the pipe or plate.
4. Do not operate MiniMag XM in an explosive environment.
5. Do not operate the MiniMag XM in an extremely moisture environment or rain due to the risk of electrical shock.
6. 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 strongly enough.
7. When cutting with the MiniMag XM, 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 XM 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.
8. Never use the MiniMag XM with *Permanent Magnets* on material, that has a coating zinc, epoxy, plastic or other type of synthetic product thicker than 5 mils or .005 of an inch, as the Machine will not adhere to the pipe or plate. Never use the MiniMag XM with Rare Earth Magnets on material that has a coating of zinc, epoxy, plastic or other types of synthetic product thicker than 15 mils or .015 of an inch, as the machine will not adhere to the pipe or plate.
9. Make sure the Cord (J) between the MiniMag XM Motor Control Box (13) does not become engaged in the Wheels of the MiniMag XM causing the Machine to become disengaged from the pipe or plate.
10. When cutting pipe or plate there must be sufficient slack in the Oxy/fuel Hoses so that the MiniMag XM 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 XM.

11. 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 XM 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.
12. When using the 12' / 3.7m Extension Cord between the MiniMag XM 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.
13. The MiniMag XM should never be used on vertical pipe without a Guide Strip. Contact the Mathey Dearman Sales Department for details on making the Guide Strip.
14. Do not use a Machine Torch (A) longer than 12 inches with the MiniMag XM .
15. Contact Mathey Dearman Inc. before using a Plasma Torch with the MiniMag XM .
16. Do not use Plasma Torch having a barrel diameter bigger than 1-3/8" / 35mm with the MiniMag XM .
17. Never operate the MiniMag XM with the Cover (8) removed from the Base Unit (19).
18. If the Machine Torch is to be positioned at 90° to the pipe or plate surface, the Torch (A) should be at a minimum distance of 3" / 76 inches from the MiniMag XM Heat Shield (3).
19. The MiniMag XM should never be operated without the Heat Shield (3).
20. Use of the MiniMag XM for a purpose other than cutting and beveling the pipe or plate (i.e. welding) without the Authorization of Mathey Dearman Inc. will void the Warranty.
21. Always follow the Torch Manufacturers Operating Instruction when using the Machine Torch (A) and Torch Angle Head Adapter.
22. Never use a cigarette lighter to ignite the cutting torch.
23. A Heat-Resistant Shield should be used to protect nearby walls from sparks and hot material.
24. Adequate ventilation is required to prevent the concentration of oxygen/fuel gas and/or other toxic fumes.
25. Always use eye protection to protect your eyes from sparks, flying slag and the brilliant flame.
26. Do not store grease, gasoline or other flammable material in the area where the pipe or plate is being cut.
27. Flame should not be directed toward the oxygen or fuel cylinders.
28. Always have a fire extinguisher of the proper size and type in the work area.
29. Always inspect the general area for flame or smoldering materials when work is completed.

Set-up and Operation

Please read the operating instruction prior to operating the MiniMag XM .

MiniMag XM is designed for use with a 2 Hose Machine Fuel Torch (A) having a 1 3/8-inch barrel diameter with 32-pitch rack. (i.e.: Harris 98-6E with 32-pitch rack, Victor MT210A with 32-pitch rack, Smith SC770 with 32-pitch rack or equivalent).

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

Set-Up

1. Remove the MiniMag XM from its plastic storage box.
2. Set the machine on a clean, non-magnetic surface.
3. If the MiniMag XM was previously used, check the Gear Rack of the Torch Arm (B) for slag or

- other debris and remove it with the Brush provided in the Storage Box.
5. Install Sliding Support (7) on to Torch Arm (B) until it is at the middle of the Torch Arm (10) flush with the end of the Torch Arm.
 6. Use a 3/16-inch Allen Wrench furnished with the MiniMag XM to tighten the Setscrew (C) in the Sliding Support (7).
 6. Install the Torch Holder Assembly (6) on Sliding Support (7) and turn the Ratchet Handle (M) clockwise, until the Torch Holder Assembly is held in a fixed position on the Torch Support
 7. Make certain the Unit Directional Control Switch (F) is in center or OFF position.
 8. Make sure the Unit Speed Control Rheostat (G) is in the "0" position.
 9. Connect the Cord with Connector Plug (J) to the Female Connector (20) on the Base Unit.
 10. Connect Power Cord (K) of the Motor Control Box into 110vac 50 or 60 hertz power source.
Note: The MiniMag XM can be used with a 230–110 VAC Step-down Transformer (23) for 230vac operation.
Warning: The MiniMag XM Motor Control Box is not designed for use with a 110-vdc Power Source.
 11. Move the FORWARD-STOP-REVERSE Switch (F) in the direction you want the MiniMag XM to travel.
Note: Before changing Drive Motor Direction the Unit Directional Control Switch (F) should always be moved to the STOP position for at least one full second. (G) Rotate the Unit Speed Control Rheostat to the desired position. If this is the first time that the MiniMag XM is used, rotate the Unit Speed Control Rheostat to the Number 4 position. Adjust the Rheostat until the desired speed is achieved.
 12. Once the desired speed is achieved move the Unit Directional Control Switch (F) to the STOP or center position.
 13. The machine is now ready for operation.

Straight line Cutting

1. Make sure the plate or pipe surface is free from obstruction, slag and other debris.
2. Set the MiniMag XM on the pipe or plate and move the machine in a twisting motion until all Wheels are in full contact with the pipe or plate.
Warning: When cutting pipe with a welded seam running parallel to the pipe axis, place the welded seam 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.
Warning: The MiniMag XM is not designed for use on non-magnetic or wrapped pipes or plate.
Warning: The MiniMag XM is not designed for use on spiral welded pipe as it will lose contact with the pipe surface.
Warning: If at all possible start the cutting operation with the Machine between the 3:00 through the 9:00 O'clock position on the pipe or plate. The piece being cut off may separate the MiniMag XM from the surface of the material causing damage to the Machine.
Warning: Never place the Machine on the piece of pipe or plate that is being cut off.
Warning: The MiniMag XM 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.
3. **Attach** the Safety Snaps (18) to the MiniMag XM at points (P & Q).
4. **Attach** the Safety Cable (18) provided with the MiniMag XM to the Safety Snaps (17).

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

4. Check both Socket Head Allen Screws of the Torch Holder (6) to ensure these are loose enough for the Machine Fuel Torch (A) to slip into the torch holder assembly (6). Use the 4mm Allen Wrench provided with the MiniMag XM to loosen or tighten the Socket Head Allen Screws.
5. Install the 12-inch Machine Fuel Torch with Rack (A) into Torch Holder Assembly (6).
6. Tighten the Socket Head Allen Screws with the 4mm Allen Wrench provided, until sufficient pressure is applied to the Torch to hold it in position in Torch Holder Assembly (6).

7. Connect the Oxy/fuel Hoses to the Torch 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.

Note: When cutting pipe 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 XM 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.

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

Note: The MiniMag XM should *never drag the hoses* around the pipe or along the plate.

Note: Make sure the Electrical Cord (J) of the MiniMag XM Motor Control Box does not become engaged in the Wheels of the MiniMag XM, causing the Machine to become disengaged from the pipe or plate.

Note: Make sure there is enough slack in the Electrical Cord (J) to accomplish the full length of the cut.

8. 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.

9. Turn the Ratchet Handle of the Torch Holder Assembly (6) counterclockwise and adjust the Torch to the desired bevel angle. Once the Torch is set to the desired bevel angle, turn the Ratchet Handle clockwise to hold the Torch at that bevel angle.

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

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

12. Move the Forward and Reverse Switch (F) in the direction the MiniMag XM should travel.

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

13. Slowly rotate the Rheostat (G) clockwise until the desired cutting speed is achieved.

Note: Refer to the Manufacturer's Oxygen Fuel Cutting Reference Chart for cutting troubleshooting illustrations.

Shutting the Machine off after Completion of Cut

1. Once the cutting operation is complete ***Shut OFF*** the Oxygen- cutting Valve of the Machine Fuel Torch (A).

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

2. ***Turn off the Oxygen and Fuel Valve*** of the Machine Fuel Torch per the *Manufacturer's Operating Instructions*.
3. Move the Unit Directional Control Switch (F) to the OFF position.
4. ***Disconnect*** the motor control box from the 110vac Power Source.
5. ***Disconnect*** the DC Cord with Connector Plug (J) from the DC Beldon Cord (20).
6. ***Remove*** the Machine Fuel Torch from the Torch Holder (6).
7. The MiniMag XM is now ready to be removed from the pipe. To *remove MiniMag XM* from the pipe, grasp the Cover Handle and the Torch Block, and twist the machine while lifting upward. To remove MiniMag XM from the flat plate, grasp the Cover Handle and pull upward.
8. ***Check*** the Gear Rack of the Torch Arm (10) after each cut for slag or other debris.

Note: Do not use air to remove the slag or other debris from the Gear Rack of the Torch Arm due to the risk of eye injury.

MiniMag XM Maintenance and Repair

Warnings:

1. ***Before performing any maintenance on the MiniMag XM contact Mathey Dearman Inc. Sales Department. The disassembly of any part of the MiniMag XM or adjustment of the components will void the Machine's Warranty.***
2. ***Under no circumstances should the Wheel Mounting Brackets be removed from the machine. Removing the Wheel Mounting Brackets may affect the tracking and may cause the Motor to overheat. Disassembly of the Wheel Mounting Brackets from the machine will void the Warranty.***
3. ***The MiniMag XM should be returned to Mathey Dearman for replacement of parts not listed in the parts list.***

Adjustment of the Play in the Sliding Support (7)

1. ***Back off*** center Allen Head Cap Screw.
2. ***Spray*** a light film of despat or light machine oil on the Torch Arm (10) and ***move*** the Sliding Support (7) ***back and forward*** the full length of the Torch Arm.
3. ***Adjust*** Front and Rear Allen head Set Screw (B) of the Sliding Support (7) so that they apply the same amount of pressure on the flat of the Torch Arm (10). The Sliding Support should ***move freely*** along the Torch Arm.
4. ***Tighten*** the Center Allen Head Set Screw (C) ***while moving*** the Sliding Support ***up and down and back and forward*** on the Torch Arm. Do not over tension.
5. It maybe 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

Removal of the Drive Motor (1)

1. **Disconnect** the AC power cord (K) from the 110vac Power Source.
 2. **Disconnect** the Connector (J) of the Motor Control Box from the Beldon Cord (20) of the MiniMag XM .
 3. **Remove** the Flat Head Allen Screws (9) with a 5/32-inch Allen Wrench from the Cover (8).
 4. **Remove** the Cover (8) from the top of the Base Unit.
 5. **Disconnect** the Electrical Connectors between the Beldon Cord (20) DC and Drive Motor (1).
 6. Remove the Heat Shield (3) from MiniMag XM **by removing** the three Round Head Machine Screws (5).
- Note:** Care should be taken **not to lose** the Heat Shield spacers (4), when **removing** the 3 Round Head Machine Screws from the Heat Shield.
7. **Remove** the two lower Machine Screws (2) from the Flange of the Drive Motor (1) **by inserting** a *long reach* Phillips Screwdriver into the two holes that are located behind the Heat Shield.
 8. **Remove** the two upper Machine Screws (2) from the Flange of the Drive Motor (1).
 9. The Motor is now ready to **remove** from the MiniMag XM .

Installation of the Drive Motor

1. **Align** the Tang on the Shaft of the Drive Motor (1) with the slot in the Transmission Shaft.
2. **Install** the two Lower Head Machine Screws (2) into the Flange of the Drive Motor (1) **by inserting** a *long reach* Phillips Screwdriver into the two holes that were located behind the Heat Shield. **Do not tighten** the Screws at this time.
3. **Install** the Two Upper Round Head Machine Screws (2) in to the Flange of the Drive Motor (1).

Warning: *Make sure the Grounding Lug is underneath the Right Upper Screw (2).*

4. **Tighten all round head machine screws (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 (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.*

5. **Reconnect all** the Electrical Lugs between the Beldon Cord (20) and the Drive Motor (1).
6. **Connect** the Beldon Cord (20) with Connector (J)
7. **Set** the MiniMag XM Unit on a surface so that both the Front and Rear Wheels of the Mini'Mag' **turn freely**.
8. **Move** the Unit Speed Control Switch (F) to the **Forward or Reverse position**.
9. **Rotate** the Unit Speed Control Rheostat to the **50% position**.
10. Let the Drive Wheels of the MiniMag XM **rotate** for about 15 minutes.
11. **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.
12. **Disconnect** the AC Power Cord (K) from the 110vac Power Source.
13. **Disconnect** the Connector (J) from the Beldon Cord (20).
14. **Place** the Cover (8) on top of the Base Unit and align holes with the threaded holes in the top of the body.
15. **Install** the Socket Head Cap Screws (9) and tighten 5/32-inch Allen Wrench.
16. The Mini'Mag' is now ready for operation.

Symptom	What to Do	Corrective Action
Drive Motor (1) does not rotate	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.	If the volt/ohm Meter measures 0 ohms, replace 3amp Fuse (19).
	Plug the Motor Control Box (13) into a 110-VAC outlet. Move the Forward and Reverse Switch (F) to the Forward or Reverse Position. Turn the Rheostat (G) clockwise until it stops. The voltage across the 2 pins of the Beldon Cord should be 80 - 90 vdc	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.
	Disconnect the 2 Connecting Lugs between the Drive Motor and the Beldon Cord (20). Check the voltage across the 2 lugs of the Beldon Cord ((20). Caution: Care should taken not to pull the electrical lead out of the motor	If there is no continuity of one or both Electrical Leads and it cannot be repaired without taking apart the Motor, replace the Motor.
	Hook a volt-ohm meter between 1 of the Leads of the 90-volt Leads of the Motor Control Box and one of the Leads of the Motor. Plug the Motor Control Box into a 110 VAC Electrical Outlet. Turn the Forward and Reverse Switch (F) to the forward or reverse position. Turn the Rheostat (G) clockwise until it stops . Note: If you do not get a reading with the ampere meter move the Forward and Reverse Switch (F) in the opposite position .	If there is carbon built up in the Motor, you will see rapid fluctuation of the Ampere Meter. Remove the Rectangular Plate from the Motor and use clean dry air to blow the carbon dust out of the Motor. Warning: Use a Face Shield and Particle Mask, when using air to blow the carbon out of the Motor. Note: Run a new Motor run for 10 minutes, before checking with ampere meter. Remove the Rectangular Inspection Plate from the back of the Motor and inspect the Motor for carbon dust build up. Use clean dry air to remove the carbon dust.
	Remove the Motor from the Transmission. Stick a common Screwdriver into the Slot of the Transmission Shaft and turn it clockwise or counter clockwise .	If Transmission turns freely place a Washer between the Motor Flange and the inner wall of the Mini'Mag' body. Follow the instruction for "Installation of the Drive Motor".
		If the Transmission turns freely after the Screws in the Mounting Blocks are loosened , follow the instructions for "Adjusting the MagnaCutXM Tracking."
	Remove the Rectangular Inspection Plate from the back of the Motor and inspect the Armature for flaking of the lacquer, which will indicate the Motor has been severely overheated.	Replace the Motor.
Remove the both Brushes from the Motor. Check the Brush for chipping and measure the length of the Brush.	If the Brush is chipped or the Brush measures shorter than ¼" replace the Brush.	
Drive Motor is grinding or is not rotating correctly	Remove the Rectangular Inspection Plate from the back of the Motor and inspect the Commutator for Arc Marks.	If the Commutator of the Motor has Arc Marks, replace the motor . Note: Do not replace the Brushes in a Motor having an Arc Commutator as they will have a short life span.
	Check the Brush for chipping and measure the length of the Brush.	If the Brush is chipped or the Brush measures shorter than ¼" replace the brush .

Symptom	What to Do	Corrective Action
<p>Drive Motor (1) is grinding or is not rotating correctly (continued)</p>	<p>Connect a volt-ohm meter between 1 of the Leads of the 90-volt Leads of the Motor Control Box and one of the Leads of the Motor. Plug the Motor Control Box into a 110 VAC Electrical Outlet. Turn the Rheostat (G) clockwise until it stops. Loosen the Screws in the Motor Flange 1 full turn. Loosen the 4 Screws in the Round Plate at the back of the Transmission. Check for clearance between the Screw Gear on the Output Shaft of the Transmission and the Round Gear on the end of the Wheel Assembly.</p> <p>Note: If you do not get a reading with the volt-ohm Meter move the Forward and Reverse Switch (F) in the opposite position.</p>	<p>If the amperage drops when the Screws in the Round Plate are loosened, insert a washer between the Motor and the inner wall of the Mini'Mag' body. Follow the instruction for "Installation of the Drive Motor."</p>
		<p>If the amperage does not drop when the screws are loosened, retighten the screws in the round plate. Loosen the screw in both of the Mounting Blocks of 1 of the Wheel Assemblies. If the amperage drops follow the instruction for "Adjusting the MagnaCut Tracking."</p>
		<p>If the amperage does not drop when the Screws are loosened, retighten the Screws in the Mounting Blocks. Loosen the Screw in both Mounting Blocks of the other Wheel Assemblies. If the amperage drops follow the instruction for "Adjusting the MagnaCut Tracking."</p>
<p>Drive Motor is Overheating</p>	<p>Connect a volt-ohm Meter between 1 of the Leads of the 90-volt Leads of the Motor Control Box and one of the Leads of the Motor. Plug the Motor Control Box into a 110 VAC Electrical Outlet. Turn the Rheostat (G) clockwise until it stops. Loosen the Screws in the Motor Flange 1 full turn. Loosen the 4 Screws in the Round Plate at the back of the Transmission. Check for clearance between the Screw Gear on the Output Shaft of the Transmission and the Round Gear on the end of the Wheel Assembly.</p> <p>Note: If you do not get a reading with the volt-ohm Meter move the Forward and Reverse Switch (F) in the opposite position.</p>	<p>If the amperage on the volt-ohm Meter drops insert Washers between the Motor Flange and the inner wall of the Mini'Mag' body.</p>
		<p>If the amperage does not drop when the Screws are loosened, retighten the Screws in the Round Plate. Loosen the screw in both Mounting Blocks of 1 of the Wheel Assemblies. If the amperage drops follow the instruction for "Adjusting the MagnaCut Tracking."</p>
		<p>If the amperage does not drop when the Screws are loosened, retighten the Screws in the Mounting Blocks. Loosen the Screw in both Mounting Blocks of the other Wheel Assemblies. If the amperage drops follow the instruction for "Adjusting the MagnaCut Tracking."</p>
		<p>The play between the Screw Gear and the Round Gear on the end of the Wheel Assembly should be .003 - .005 by sight. To adjust the play between the Screw Gear and the Round Gear on the end of the Wheel Assembly, follow the instruction for "Adjusting the MagnaCut Tracking."</p>

Warranty

If any merchandise sold hereunder (except merchandise manufactured by other persons or firms) by Mathey Dearman, Inc. (the "Company") is not in accordance with specifications shown on the order within customarily accepted tolerances, or is defective on account of workmanship or material, and if such merchandise is returned at the customer's expense and risk, to the Company's manufacturing facility (or at the Company's option, is returned to a repair facility authorized by the Company), within ninety (90) days after the Company's date of shipment thereof, the Company will, at its option, replace or repair the merchandise. This agreement, however, is upon the conditions: That the customer promptly notify the Company in writing of any claim under this agreement, setting forth in detail any such claimed defect. (B) That the Company be afforded a reasonable opportunity to examine the merchandise and to investigate the claimed defect at the Company's manufacturing facility or at an authorized repair facility, the Company shall not be, in any event, liable for damages beyond the price paid by the customer for such defective merchandise; specifically but without limitation, the Company may fulfill its obligations under this Agreement by tendering such purchase price at any time. **THE COMPANY SHALL NOT BE LIABLE FOR CONSEQUENTIAL, INCIDENTAL, PUNITIVE, OR EXEMPLARY DAMAGES.** This agreement does not obligate the Company to bear any transportation charges in connection with the replacement or the repair of defective merchandise. As to any item manufactured by other persons or firms, the Company agrees to present a request for adjustment for repair to such manufacturer, and the customer agrees that the liability of the Company shall not exceed any adjustment with respect to which such manufacturer accepts responsibility. **THE ABOVE AGREEMENT IS IN LIEU OF ALL WARRANTIES, EXPRESSED OR IMPLIED AND IT IS AGREED THAT THERE IS NO EXPRESSED OR IMPLIED WARRANTY BY THE COMPANY AS TO THE FITNESS, MERCHANTABILITY CAPACITY, OR EFFICIENCY OF ANY MERCHANDISE SOLD, AND THAT THERE ARE NO ORAL OR WRITTEN EXPRESSED OR IMPLIED WARRANTIES MADE IN CONNECTION WITH ANY SALE BY THE COMPANY.** No modification or addition to this agreement, either before or after the contract of sale, shall be made except on written authority of the President or Vice President of the Company.