

# **Corr-vac® Mark III**

## **Manual Prepared for:**

*Company:*

*Location:*

*Pylon#:*

*Customer PO#:*

*Order Date:*

*Total Binders:*      *of*





# Corr-vac® Mark III

## Hot Bar & Impulse Machine Manual



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## **Chapter 1: Machine Specifications**

## 1.1. MACHINE SPECIFICATIONS

**M-TEK Model**

**Serial Number**

Head(s)

**Year of Manufacture**

**Electrical Requirements**

**Minimum Compressed Air Requirements**

**Maximum Compressed Air Requirements**

**Minimum Compressed Gas Requirements**

**Maximum Compressed Gas Requirements**

## **Chapter 2: Customer Service**

Thank you for purchasing the M-TEK Corr-vac® Mark III. When you need spare parts or service, please contact us at 847.741.3500 – press #2 for Parts and #3 for Service.

## 2.1. SPARE PARTS

When ordering spare parts, please have the following information ready:

- Machine serial number
- Part numbers and exact description of the items required
- Quantity required
- Date required and any special shipment request
- Delivery address
- Purchase request/order reference

## 2.2. TECHNICAL ASSISTANCE

When requesting technical assistance, please have the following information ready:

- Machine serial number
- Description of the problem
- Address and telephone number
- Contact name

## 2.3. PREVENTATIVE MAINTENANCE

For details about the preventative maintenance service we offer, please call our technical service manager directly at 847.741.3500 – press #3 for Service.

## **Chapter 3: General Information**

The information in this manual will assist you in getting the best from your Corr-vac® Mark III. The text accurately describes the original build specification, but the drawings and illustrations are intended for general reference only and are not necessarily accurate in every detail. Dimensions and characteristics are not to be considered binding and may be changed without prior notice.

The user is responsible for updating the manual with any bulletins from M-TEK and to reflect any changes or modification he may make. M-TEK cannot be held responsible for the conditions of use and changes to the machine, which is beyond its control.

Please read the manual in conjunction with our conditions of sale, including those limiting warranties and remedies, which apply to all goods supplied to us. Neither the information given in this manual or the machine to which it refers are intended for any use which would violate or infringe the 'rights of' and 'statutory obligations to' third parties.

No parts of this manual or any other documents supplied with this machine may be reproduced or transmitted without prior written consent of M-TEK, Inc.

## **Chapter 4: Safety**

Before working with any Corr-vac® machine, you should carefully read the manual. If you are not certain that you completely understand at any point which might affect the safe and/or reliable operation of this machine, do not proceed without getting competent assistance!

## 4.1. OPERATING THE MACHINE

### **The following points are strictly forbidden:**

1. Do not operate this machine in an unsafe manner, for purposes other than those for which it has been designed and intended.
2. Do not connect the machine to any energy sources (electricity, compressed air and/or gas) unless the machine is fully assembled, with all protection and safety devices properly installed. This includes proper electrical grounding of the machine.
3. Do not turn on the electrical power at the machine if the rear doors are not closed and latched.
4. Do not use any gas or gas mixture containing anything but Carbon Dioxide or Nitrogen, in a standard Corr-vac® machine. Use of poisonous, flammable or explosive gases is specifically prohibited.
5. Do not use any gas or gas mixture containing more than 21% Oxygen (by volume) unless the machine is specifically built for this purpose (designated by -O at the end of the machine's serial number).
6. If the machine is used with a high-Oxygen gas mixture, ensure that your supply hoses, pressure regulators, valves, etc. are suitable for Oxygen service.
7. Do not perform any maintenance, adjustments, repairs, etc. on this machine without first cutting off all energy sources. If this is impossible because of the work requirements, take all necessary precautions to protect yourself from injury.
8. Do not operate the machine if any guards, interlocks, or other safety devices are out of adjustment, broken, or missing. Under no circumstances should any of these devices be modified in any way.
9. Do not use two operators for a machine in order to avoid any possibility that one operator might accidentally start a machine function which would endanger the other operator.
10. Disconnect the machine from all energy sources when it is not being used.

## 4.2. USING THIS MANUAL

Throughout this manual the reader's attention is drawn to specific safety instructions as follows:



### **Warning!**

A warning alerts the reader to a potential hazard. Failure to read and comply with the safety instructions may result in death or injury of personnel and damage to the machine or product.

### **Caution!**

A caution alerts the reader to recommendations or instructions. The non-observance of which could cause damage to the machine or product.

### **Note:**

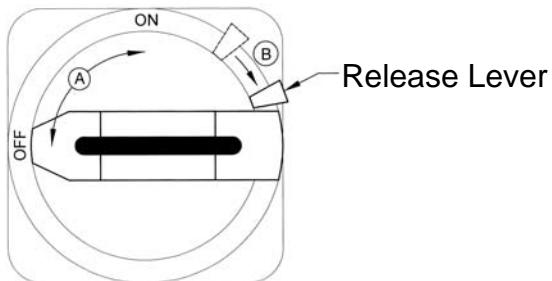
A note provides additional information which should be given special attention.

### 4.3. DOOR OPENING INSTRUCTIONS



#### Warning!

- You cannot open the door unless the rotary disconnect switch is "OFF"
- To close the door, the rotary disconnect switch must be "OFF", and the exterior red handle must also be in the "OFF (horizontal) position



To open the upper cabinet door, follow these steps:

1. Release the black door latches, by turning them counter-clockwise, one quarter turn, to a vertical position.
2. On the red and yellow rotary electrical disconnect switch:
  - Ensure that the red handle is in the "OFF" (horizontal) position
  - Hold the release lever down, as you open the door

## 4.4. DOOR CLOSING INSTRUCTIONS

To close the upper cabinet door, follow these steps:

1. On the red and yellow rotary electrical disconnect switch:
  - Ensure that the red handle is in the "OFF" (horizontal) position
  - Hold the release lever down, as you close the door (or the disconnect switch shaft will not enter the back of the door assembly)
2. Close the black door latches, by turning them clockwise, one quarter turn, to a horizontal position.



### Warning!

- You cannot open the door unless the rotary disconnect switch is "OFF" and the release lever is held down
- To close the door, the rotary disconnect switch must be "OFF", and the exterior red handle must also be in the "OFF (horizontal) position and the release lever must be held down

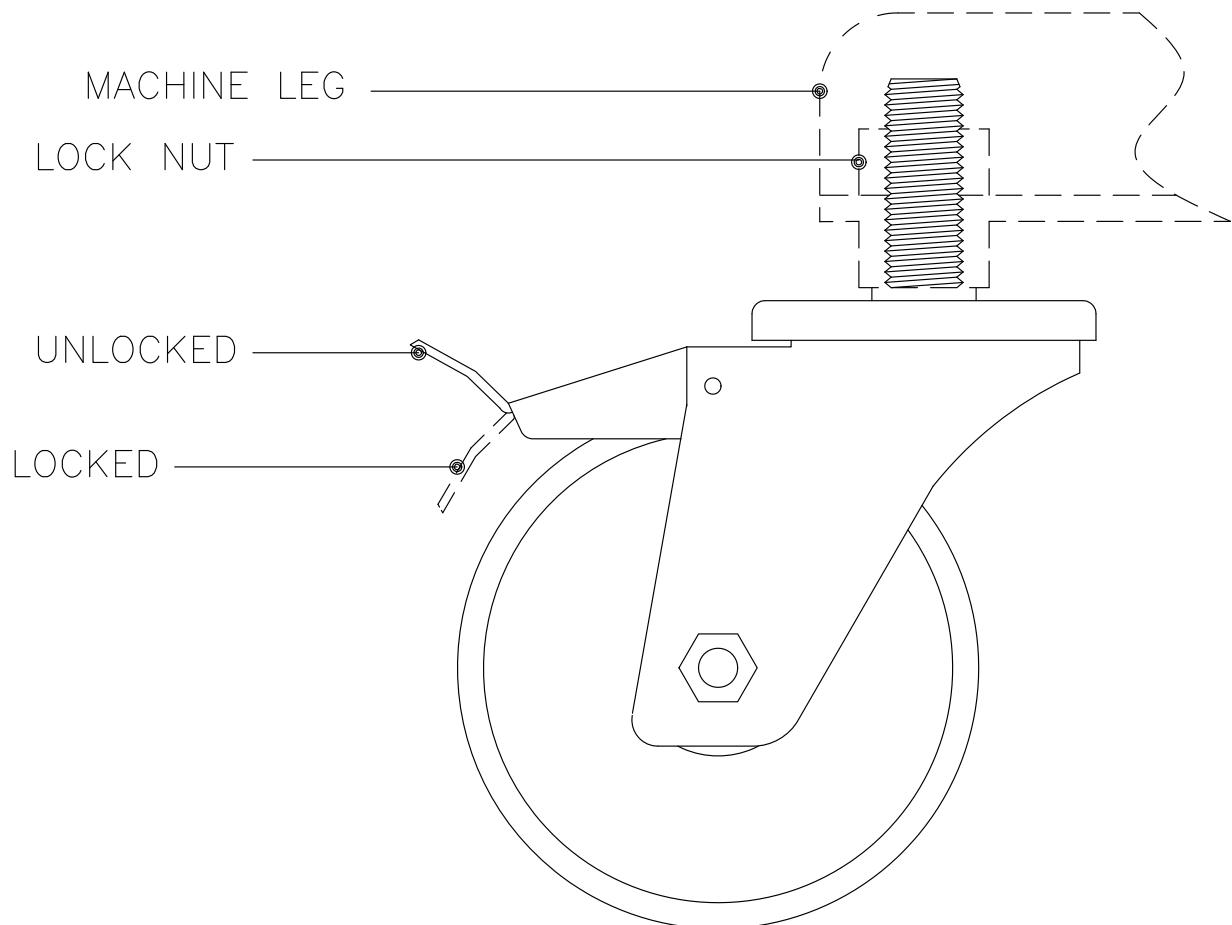
## 4.5. LOCKING CASTORS – INSTALLATION

Screw the castor's threaded stud up through the machine leg until the top of the castor is tight against the underside of the leg, then turn the lock nut tight against the top of the leg.



### Warning!

Never install the lock nut under the leg, as this will put more stress on the castor stud. Failure of this stud could cause the machine to tip over.



## **Chapter 5: Installation**

## **5.1. GENERAL DELIVERY NOTES**

The machine is usually delivered on a wooden pallet with open wooden sides and top, attached with spring clips and covered in film to prevent it from being damaged during transportation.

Following receipt, check the machine condition; any damage should be communicated as soon as possible to the shipping agent by written notice.

### **Inspection**

On delivery, always check the machine and equipment for any damage. Any damage must be notified in writing as soon as possible to the carrier or to the carrier's insurance company.

## 5.2. UNLOADING AND POSITIONING THE MACHINE

If this is your first Corr-vac® Mark III, we strongly advise you to let an M-TEK representative (or authorized agent) remove the crate, assemble the machine, attach a power supply and check the machine prior to putting it into service. Our representative will then train your personnel in safe operating procedures, troubleshooting and maintenance.



### Warning!

Great care must be taken to assure safe handling. Always:

- Comply with the handling instructions
- Move the machine slowly
- Guarantee safety around the machine during these operations
- The machine should not be lifted without adequate equipment and the presence of skilled personnel

The machine should be moved to the desired position by using the wooden crate to which it is secured, so as to ensure better balancing and avoid damage during transportation.

Extreme care should be taken when using fork trucks. Check that the lifting capacity is sufficient before moving the machine. Make sure the forks are correctly positioned within the spaces provided in the wooden crate. Always make sure that the machine weight is correctly balanced with respect to the lifting point.

### Removing the Crate

Crating will vary somewhat, depending upon the machine model and the options included. However, certain similarities will be found with all crating.

1. Remove the crate-top by first unsnapping the metal clips around the edges of the top face. Then carefully lift off the crate-top.
2. Remove the front and rear faces of the crate by unsnapping the metal clips around each face and then removing each face.
3. Before removing the end-faces, first remove the bolts which connect both faces to the wooden cross-bar in the crate. Then unsnap the remaining metal clips and remove both end-faces.
4. Remove the plastic film from around the machine.
5. Remove the wooden cross-bar from the machine.

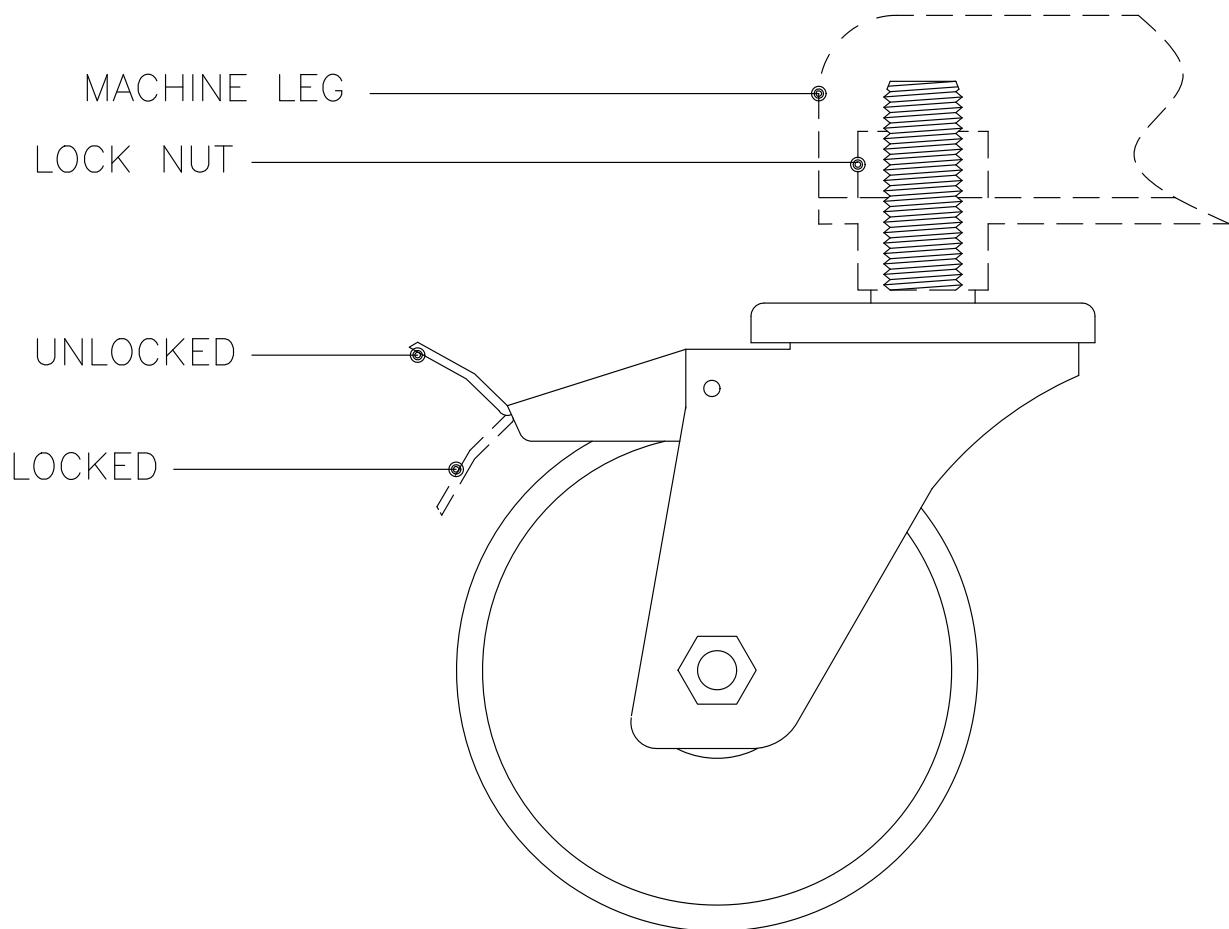
6. Remove any parts or accessories which may have been taped to the exterior of the machine.
7. Open the doors at the back of the machine and remove all parts which are packed inside. Close and securely latch the doors.
8. Remove the bolts which fasten the machine to the base of the crate.
9. Un-wrap the machine 'feet' or optional castors packed inside the machine.



### **Warning!**

The drawing below shows how the feet or castors must be installed. Where castors are used, the threaded shaft on the castor must be turned all the way in, until the body of the castor is tight against the underside of the machine leg, as shown.

The locking nut must only be installed on top of the leg, never under the leg! Incorrect installation can cause breakage of the castor, which could permit the machine to tip over.



10. Lift the machine off the crate base and install the feet. The perimeter of the cabinet is reinforced so that lifting may be done at any point.



### **Warning!**

The machine should not be lifted without adequate equipment, and skilled personnel.

### **Head Position**

If you are processing top-loaded packages, it is usually best for the operator if the machine head can be mounted at the approximate height of the operator's shoulders.

For processing end-loaded bags, the most comfortable operating height is usually around 37 inches/940 mm from the bottom of the head to the floor.

The distance between the head and the packaging conveyor will be determined by the product and packaging geometry.



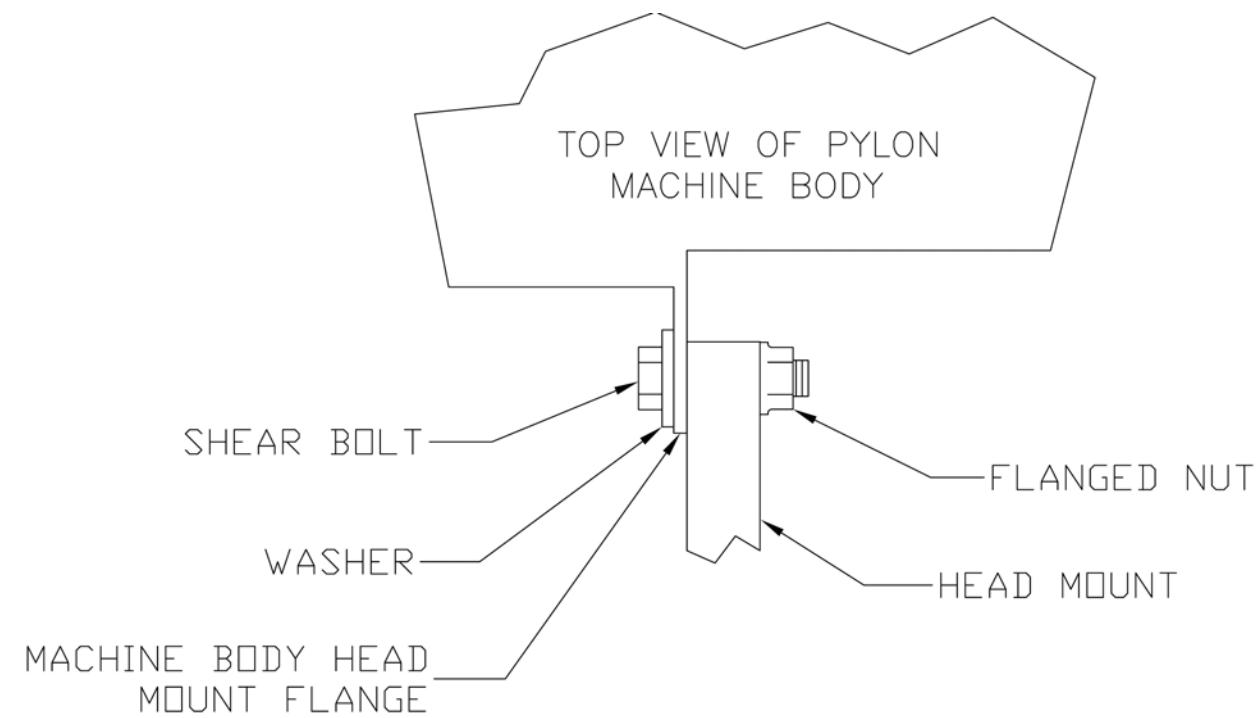
### **Warning!**

If the height of the head must be changed, exercise extreme caution and carefully follow these instructions. You will be required to lift and accurately position the machine head, which can weigh as much as 220 lbs. /100 kg.

Do not attempt the following steps without adequate equipment and skilled personnel.

1. Ensure that the wooden lifting cradle is securely in place on the head. It will help to stabilize and protect the head while it is being moved.
  - Also ensure that the jaw is securely wedged shut with the wooden shipping wedge or fastened shut with tape, wire, etc.
2. If the head is mounted to the machine body with simple head spacers, they can remain attached to the head throughout the moving procedure.
  - If the machine is equipped with a HI-LO/joystick head mount, this head mount must be removed before the head position is changed

3. Before proceeding, study the "Head Mount" drawing below. Particularly note the position of the screws, washers, and nuts which secure the various head mounts to the machine body. It is essential that you reinstall these parts in the correct order. The shear bolts are specially made and should never be replaced with anything but a factory-supplied part.



4. If the machine is equipped with castors, securely lock all of them.
5. Slide the forks of a fork-lift all the way under the wooden lifting cradle, being careful not to strike the machine body. Gently raise the forks until they are just supporting the head.
6. If the machine has a HI-LO/joystick head mount, remove the two screws which secure the head mount to the back of the head. Then pull the head away from the machine, approximately 1 inch/25 mm. This should disengage the two mounting pins which extend rearward from the back of the head, into matching holes in the head mount.



#### Warning!

The HI-LO/joystick head mount weighs 70 lbs. /32 kg. Do not attempt to remove it from the machine body without adequate personnel to securely hold it.

7. Remove the shear bolts which secure the head mount to the machine body. Reposition the head mount at the desired height and reattach it to the body.

8. Move the head up/down to match the new height of the head mount. Slide the head toward the head mount until the two mounting pins engage. Then secure the head to the head mount with the two screws.
9. If the machine only has head spacers, detach the head spacers from the machine body. Then pull the head just far enough forward for the spacers to be clear of the body.
10. Move the head up/down to the desired height. Push the head back toward the machine body and properly re-secure the head spacers to the body.

### **Technical Assistance**

For immediate technical assistance, please contact an M-TEK machinery specialist at 847-741-3500 – press #3 for Service.

### 5.3. SERVICE CONNECTIONS

#### Power Supply



##### Warning!

Electrical work should only be performed by trained personnel. It is your responsibility to ensure that connective wiring meets all code requirements.

1. Review the electrical drawings in this manual to determine what electrical supply will be needed. You will also find this information on a sticker inside the door of the machine's electrical enclosure.
2. There is a cord compression fitting on the left end-wall (as viewed from the machine's front) of the machine body. Bring your electrical cable through this fitting. Tighten the fitting so that it securely grips the cable, as well as creating a water-tight seal (note that there are two sizes of sealing grommets provided for different cable sizes).
3. Connect the power wiring into the terminals at the top of the main electrical disconnect switch.



##### Warning!

It is essential that a reliable ground (earth) wire be connected to the machine's grounding lug, located above the main disconnect.

4. Before energizing the machine's main electrical disconnect switch, take a voltmeter and carefully check the power at the terminals on top of the switch.
  - Check power between any terminal and the machine body to verify that the ground (earth) is working
  - Check power between all terminals to verify that all phases have the correct voltage

#### Note:

In some power systems, one phase (often called a 'wild leg') will have a higher voltage to ground. On three-phase machines, this phase should be connected at L3. On single-phase machines, it is desirable to avoid this phase if possible.

5. Before energizing the machine, first open the machine jaw. Then energize the main disconnect switch.

- Check that the EMERGENCY STOP BUTTON is illuminated (if it is not, pull it out to its normal operating position). This indicates that the machine's control system is receiving power
- If the machine contains a vacuum pump operating on three-phase power, the motor rotation must now be checked



### Warning!

If the pump is allowed to run backwards for more than a few seconds, it may either trip the overload protector, blow a fuse, or even damage the pump.

## Pump Rotation

1. Remove one of the plastic vacuum tubes at a vacuum probe.
2. Briefly close the machine jaw to start the vacuum pump. If you feel pressure at the end of the plastic tube (instead of vacuum), immediately press the EMERGENCY STOP BUTTON to stop the pump, as it is running backwards.

For all models, the pump motor rotation can be reversed at the motor starter/overload protector inside the machine body.

- Turn off the power at the main electrical disconnect switch
- Locate the three wires coming out of terminals at the bottom of the motor starter/overload protector unit. Reverse the location of any two of these wires to reverse the motor direction
- Turn on the power to the machine and retest to verify that the pump is running correctly

## Compressed Air



### Warning!

Compressed air can be dangerous. Ensure that all connections are made by trained personnel using adequate parts and materials.

1. The filter/regulator/lubricator (FRL) unit is mounted on the left end-wall (as viewed from the machine's front) of the machine body. Check the MACHINE SPECIFICATIONS section of this manual for compressed air requirements.



### Warning!

Under no circumstance should compressed air be supplied to the machine at pressure above 125 psi / 8.5 bar. Over-pressure may cause mechanical failure in the FRL and could be dangerous.

2. Compressed air should be supplied to the inlet port (left-hand end) in the FRL.
3. Set the FRL pressure regulator as follows:
  - All sealers except 61 ½ inch / 1560 mm: 100 psi / 6.8 bar
  - 61 ½ inch / 1560 mm sealers: 110 psi / 7.5 bar

## Gas Supply



### Warning!

Compressed gas can be dangerous. Ensure that all connections are made by trained personnel, using adequate parts and material. If you are using gas cylinders, be sure that they are properly secured and cannot fall over.

All gas connections are located on the right end wall (as viewed from the machine's front) of the machine body. Check the MACHINE SPECIFICATIONS section of this manual for compressed gas requirements.

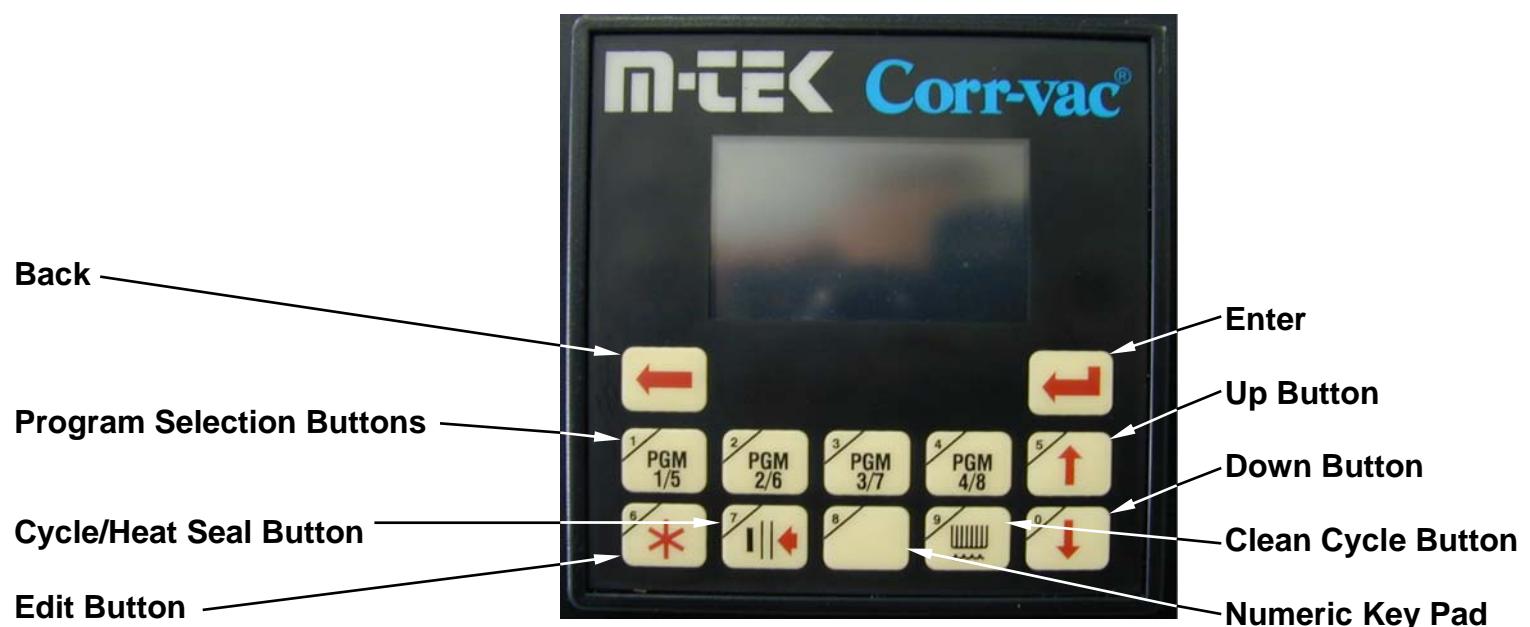
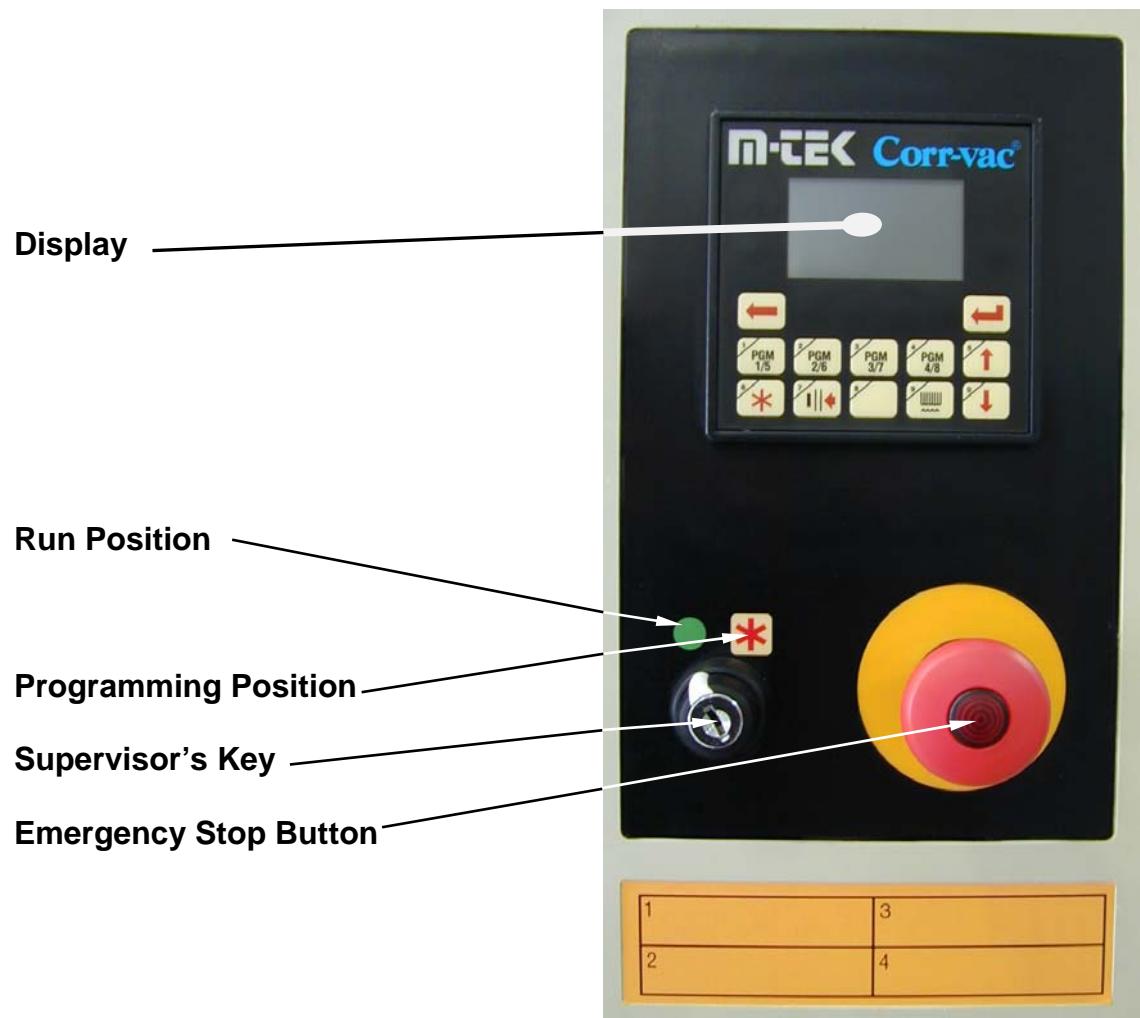


### Warning!

Under no circumstances should compressed gas be supplied to the machine at a pressure above 125 psi / 8.5 bar. Overpressure may cause mechanical failure in the machine and could be dangerous.

## **Chapter 6: Controls**

## 6.1. CONTROL PANEL (OPERATOR INTERFACE)



This machine is controlled by an Integrated-Controller specially designed for ease of use, and with simple programming and trouble-shooting features built in. The control panel ("operator interface") is shown on the previous page. Almost all machine functions can be operated and/or programmed from this panel.

## 6.2. PROGRAMMING

While you can review all the steps in all the programs without a SUPERVISOR'S KEY (see OPERATION section of this manual, Page 6-3), none of the values can be changed without inserting the KEY and rotating it clockwise to line up with the PROGRAMMING POSITION. A chart summarizing all program choices is on the previous page.

To set up or change a program, take the following steps:

1. Turn the SUPERVISOR'S KEY to the PROGRAMMING POSITION.



2. Select the program that you wish to work with by pressing the desired PROGRAM SELECTION BUTTON. The program number will be confirmed on the DISPLAY.



3. Move through the various DISPLAY screens by pressing the DOWN/UP BUTTONS, as explained in the OPERATION section of this manual.



4. The following section will give you complete instructions on how to program each DISPLAY screen.

CYCLES CYCLES/MIN	<p>The top line tells you how many packaging cycles have been made with the machine since the last time this screen was reset.</p> <p>The bottom line tells you the average machine speed since this screen was reset (number of machine cycles divided by the number of minutes).</p> <p>To reset, press the ENTER BUTTON.</p> 
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MAINTENANCE SEAL BAR IN/OUT	<p>Allows you to set the heat sealer bar either extended or retracted, for maintenance service.</p> <p>Each time that you press the ENTER BUTTON, the bar will reverse its position.</p> <p>CAUTION: IF YOU SELECT THE OUT POSITION, THE BAR WILL RAPIDLY MOVE OUTWARD, EVEN IF THE JAW IS OPEN!</p>
HI-LO HEAD HEAD UP/DOWN	<p>(Optional) For each program (1-4 or 1-8), allows you to set the HI-LO head mount position either UP or DOWN.</p> <p>Each time that you press the ENTER BUTTON, the position reverses and the DISPLAY will also show UP or DOWN.</p>
TEMP ACT xxx°F/C	Allows you to set the heat sealer bar temperature. This value will automatically be used for all other programs.
TEMP SET xxx°F/C	<p>To program the temperature SET target:</p> <ol style="list-style-type: none"> <li>Press the ENTER BUTTON once. </li> <li>Press the NUMERIC BUTTONS to change the SET temperature (shown in the upper left corner). </li> <li>When you reach the desired set point temperature, press the ENTER BUTTON once more. This temperature value is now programmed.</li> </ol>

	
SEAL ACT xxx.x SEC	This allows you to set a different heat seal dwell time for each program.
SEAL SET xxx.x SEC	<p>To program the heat-seal SET time:</p> <ol style="list-style-type: none"> <li>1. Press the ENTER BUTTON once. </li> <li>2. Press the NUMERIC BUTTONS to change the SET temperature. </li> <li>3. Press the ENTER BUTTON once more. The seal time is now programmed. </li> </ol>

In each program (1-4 or 1-8), you may select up to four repeats of the following cycle: vacuum/vacuum soak/gas flush/pause.

## VAC

This will control how much vacuum is applied in each cycle, and is measured in inches of Mercury/millibar.

### Caution!

If you set the value higher than the range of your machine's vacuum pump, the machine will be unable to complete the cycle (example: 30 Hg"/mb will not work).

## SOAK

This gives you the option of extending the vacuum exposure for a period of time (seconds) after the vacuum SET point has been reached. It is typically used where there may be air pockets in a product, or for very large packages. A setting of 0 bypasses this function.

## **GAS**

This sets the number of seconds of gas flush to be injected into the package. The volume of gas can be controlled by this gas time, and/or by the gas regulator pressure. A setting of 0 bypasses this function.

## **PAUSE**

In larger packages, it may be necessary to give the gas flush time to circulate within the bag, before evacuating it with an additional vacuum cycle. This function is set in seconds. A setting of 0 bypasses this function.

The start of each repeat will be indicated by VAC 1, VAC 2, VAC 3 or VAC 4. Steps within each repeat (SOAK 1, GAS 3, etc.) will also be indicated by number. To end the machine cycle, set a value of 0 for all remaining functions in the program. To change any VAC/SOAK/GAS/PAUSE values in any program:

1. Press the PROGRAM SELECTION BUTTON to select the desired program number.



2. Press the DOWN BUTTON until you find the screen that you wish to program.



3. Press the ENTER BUTTON once.



4. Press the NUMERIC BUTTON to change the SET value on the DISPLAY.



5. When you reach the desired value, press the ENTER BUTTON once more, to program it.

## **Examples**

1. Basic vacuum (only) program:
  - VAC 1 SET: 015.0 (Hg"/mb)
  - SOAK 1 SET: 00.0 (seconds)
  - GAS 1 SET: 00.0 (seconds)
  - PAUSE 1 SET: 00.0 (seconds)
  - ALL REMAINING FUNCTIONS – SET: 00.0 (seconds)
2. Basic vacuum/gas flush program:
  - VAC 1 SET: 015.0 (Hg"/mb)
  - SOAK 1 SET: 00.0 (seconds)
  - GAS 1 SET: 01.2 (seconds)
  - PAUSE 1 SET: 00.0 (seconds)
  - ALL REMAINING FUNCTIONS – SET: 00.0 (seconds)
3. Vacuum/vacuum soak/gas flush/pause/vacuum/vacuum soak/program:
  - VAC 1 SET: 016.0 (Hg"/mb)
  - SOAK 1 SET: 01.0 (seconds)
  - GAS 1 SET: 01.4 (seconds)
  - PAUSE 1 SET: 01.0 (seconds)
  - VAC 2 SET: 014.0 (Hg"/mb)
  - SOAK 2 SET: 0.7 (seconds)
  - GAS 2 SET: 00.0 (seconds)
  - PAUSE 2 SET: 00.0 (seconds)
  - ALL REMAINING FUNCTIONS SET: 00.0 (seconds)

4. Double-flush program:
  - VAC 1 SET: 015.0 (Hg"/mb)
  - SOAK 1 SET: 00.0 (seconds)
  - GAS 1 SET: 01.5 (seconds)
  - PAUSE 1 SET: 00.0 (seconds)
  - VAC 2 SET: 012.0 (Hg"/mb)
  - SOAK 2 SET: 00.0 (seconds)
  - GAS 2 SET: 00.9 (seconds)
  - PAUSE 2 SET: 00.0 (seconds)
  - ALL REMAINING FUNCTIONS – SET: 00.0 (seconds)

When all programming is complete, return the SUPERVISOR'S KEY to the RUN POSITION, and press the program number on the PROGRAM SELECTION BUTTON. Remove the KEY. The machine is now ready to operate.

### **Programming Summary**

1. Turn the SUPERVISOR'S KEY to the PROGRAMMING POSITION.
2. Select the program that you wish to work with by pressing the desired PROGRAM SELECTION BUTTON.  

3. Move through the various DISPLAY screens with the DOWN/UP buttons until you find the screen you wish to work with.  


4. Make your program changes as described in the preceding text. If you are changing a packaging cycle, remember to end the program by setting a value of 0 for all remaining functions.
5. Turn the SUPERVISOR'S KEY back to the RUN POSITION.
6. Press the correct PROGRAM SELECTION BUTTON again.  


### **6.3. OPERATION**

When electrical power is turned on (with the main rotary electrical disconnect switch at the back of the machine), the DISPLAY and the EMERGENCY STOP BUTTON will be illuminated.

#### **Hot Bar Equipped Display**

The DISPLAY will read WARM-UP, xxx°F/C BELOW TEMP while the machine warms up to operating temperature (usually requiring 20-30 minutes). The machine will not complete an operating cycle if the operator attempts to use it before the sealer bar temperature is within 25°F/14°C of the programmed SET temperature.

#### **Impulse Equipped Display**

The DISPLAY and the EMERGENCY STOP BUTTON will be illuminated. The DISPLAY will read M-TEK, CORR-VAC®.

#### **Program Selection (All Versions)**

On machines with 4 programs, the programs are selected by pressing once on the desired BUTTON.



On machines with 8 programs, the programs are selected by:

- Press any button once to get the lower program number – for example, PROGRAM #2
- Press any BUTTON twice, in short succession, to get the upper program number, in this case, 6

When you select a program, the DISPLAY will show the program number, the current sealer bar temperature and the current vacuum level. A listing of all active programs can be made on the orange waterproof label at the bottom of the control panel.

If a package is properly loaded in place on the machine head, an automatic packaging cycle will begin when you push the head's latching handle forward, until it locks shut.

- If your machine has an air-operated vacuum pump, it will automatically turn on when you start each vacuum cycle, and it will turn off as each vacuum cycle is completed
- On machines with electrically driven vacuum pumps, the pump will normally run continuously. However, the machine incorporates a power-saving system which

shuts down the pump if the machine has not been cycled within 30 minutes of the previous cycle. To start up the pump, simply close the jaw to start a machine cycle

As the vacuum increases to its programmed SET point, you will see the vacuum readout changing on the DISPLAY. When the cycle is completed, the machine's jaw will automatically open, for unloading/reloading packaging.

If for any reason, the vacuum in the package does not reach the programmed SET point, the machine will not complete the packaging cycle. The operator should manually open the machine jaw, and check to see if the bag was improperly loaded into the machine. If loading looks OK, then check for a hole in the bag. Once the problem has been corrected, you can load the bag into the machine and restart the packaging cycle by closing the jaw.

All programming options are shown on a chart in the PROGRAMMING section of this manual. You must use a SUPERVISOR'S KEY to look at the settings for any program in the machine, as follows:

1. Select the program number you wish to review, by pressing the PROGRAM SELECTION BUTTON.



2. Press the DOWN BUTTON to move to the next screen on the DISPLAY.

- Continuing to press the DOWN BUTTON will move you through the full range of DISPLAY screens.



You can reverse direction by pressing the UP BUTTON.



If you wish to return to the first screen, simply push the desired PROGRAM SELECTION BUTTON



- In many of the screens you will see the programmed target value (SET) and the current actual value (ACT)
3. Remember that you cannot change any values in the programs unless the SUPERVISOR'S KEY is pointing at the PROGRAMMING POSITION.

### **Emergency Stop Button**

If you press this BUTTON it will immediately shut down the vacuum pump. If the machine is cycling, the vacuum probes and/or the heat sealer bar will return to their

retracted positions, and the packaging cycle will stop. The light in the BUTTON will also go dark.

You can reset by pulling the BUTTON out. However, you must then reselect the desired packaging program before cycling the machine.

### Cycle/Heat Seal Button

If the machine is running through a packaging cycle, each time that you momentarily press this button, the machine will immediately stop the portion of the cycle that it is in, and move on to the next portion.



If you hold the BUTTON down for 2 seconds, the heat sealing system will immediately be engaged (at any time that the jaw is closed).

### Clean Cycle Button

Pressing this BUTTON will prepare the machine for internal cleaning of the vacuum system. You will also see the following message on the DISPLAY: CLEAN CYCLE, ACTIVE.



1. The jaw must be open to use this program.
2. When you select this program the vacuum pump will start up.
3. The vacuum valve will open, and remain open, for the entire period.

When you wish to cancel the CLEAN CYCLE, push the BUTTON again. The DISPLAY will show M-TEK CORR-VAC®, and the vacuum pump will automatically shut down in 30 minutes, if the machine is not used again.

### Supervisor's Key

This key switch must be pointing to the RUN position, with the KEY removed, for normal machine operation. See the PROGRAMMING section of this manual for additional functions.



## 6.4. VACUUM PROGRAMMING OPTIONS

<b>Screen</b>	<b>Title</b>	<b>Function</b>
1 <sup>st</sup>	CYCLES CYCLES/MIN	Tells number of machine operating cycles and average cycles/minute speed
2 <sup>nd</sup>	MAINTENANCE SEAL BAR IN/OUT	Positions sealer bar for maintenance
3 <sup>rd</sup>	HI/LO HEAD HEAD UP/DOWN	(Optional) sets head position
4 <sup>th</sup>	TEMP ACT xxx°F/C TEMP SET xxx°F/C	Displays sealer actual temperature Sets sealer target value
5 <sup>th</sup>	SEAL ACT xx.x°F/C SEAL SET xx.x°F/C	Displays sealer actual seal time Sets sealer dwell time (seconds)
6 <sup>th</sup>	VAC ACT 1 xxx.x VAC SET 1 xxx.x	Displays actual vacuum level (Hg"/mb) Sets target value for first vacuum cycle
7 <sup>th</sup>	SOAK ACT 1 xx.x SOAK SET 1 xx.x	Displays actual soak time Sets first vacuum soak cycle time (seconds)
8 <sup>th</sup>	GAS ACT 1 xx.x GAS SET 1 xx.x	Displays actual gas-flush time Sets first gas-flush cycle time (seconds)
9 <sup>th</sup>	PAUSE ACT 1 xx.x PAUSE SET 1 xx.x	Displays actual pause cycle time Sets first pause cycle time (seconds)
10 <sup>th</sup>	VAC ACT 2 xxx.x VAC SET 2 xxx.x	Displays actual vacuum level (Hg"/mb) Sets target value for second vacuum cycle (Hg"/mb)
11 <sup>th</sup> – 21 <sup>st</sup>	Remainder of operating cycles through second, third and fourth sets of VAC/SOAK/GAS/PAUSE settings	

## 6.5. TROUBLESHOOTING CONTROLS

The Corr-vac® control system is unique in that it functions from a menu-driven operating system, which has been specially written for the Integrated-Controller. Operating, programming, and trouble-shooting can be done from these menus.

The basic Integrated-Controller configuration contains four programs. An optional eight program configuration is also available. Four-program Integrated-Controllers can be upgraded to eight-programs in the field with a kit.

The Integrated-Controller and the heat-sealing system both require 208-240 VAC 1Ø power. 24 VAC 1Ø power is required to operate the pneumatic, vacuum and gas valves. Depending upon the available power supply, there will be various transformers built into the machine to supply these voltages. Details are shown in the electrical drawings included in this manual.

All sensors operate on 24 VDC, which is created in the Integrated-Controller.

The EMERGENCY STOP BUTTON provides double safety by acting in two parallel ways. When pushed in, its internal light goes dark, and the following events occur:

1. 24 VAC power is directly cut off to all valves. The machine is designed to retract all cylinders if power is lost.
2. The Integrated-Controller simultaneously commands each valve to retract all cylinders, for double protection.

All sensors and valves contain LED's, which illuminate when they are sending or receiving a signal. There are also LED's on the corresponding input/output terminals of the Integrated-Controller. This allows you to visually check whether signals are being transmitted and received by the various sensors and valves.

The sensor LS-1 which starts each machine cycle is located on the machine head, just below the OPERATOR INTERFACE box. It is a proximity sensor, adjusted to switch on (the LED will illuminate) when the pivot shaft arm is 1/16 inch/2 mm from the face of the sensor.

On each vacuum probe air cylinder you will find a hall-effect sensor. It is triggered by a magnet embedded in the air cylinder's piston; it should be positioned 2 inches/51 mm from the top of the plastic cylinder cap down to the top of the black plastic sensor. The sensor switches on (the LED will illuminate), and stays on, at the top of the piston's upward stroke. The sensors on all vacuum probe cylinders must be switched on before the machine will make a heat seal. This interlock feature protects both the vacuum probes and the heat-sealer bar.

Connectors for each valve inside the machine contain special electronic filters, as well as the LED which illuminates when they receive a 24 VAC signal.

### Fault Messages

FAULT EMERGENCY STOP	EMERGENCY STOP button is pushed in. Pull out to clear the fault.
WARM-UP $xxx^{\circ}\text{F/C}$ BELOW TEMP	When temperature is within $25^{\circ}\text{F}/14^{\circ}\text{C}$ of SET-point, DISPLAY will change to  M-TEK CORR-VAC®  Machine is then ready to operate.
FAULT TEMP OVER RANGE	Shuts down logic and heat sealer. Cannot be cleared until seal bar temperature is near (or below) the SET-point temperature. Clear by turning SUPERVISOR'S KEY to PROGRAM, then back to RUN.
FAULT T/C OPEN WIRE	Thermocouple circuit has failed. Machine logic and heat sealer will shut down until corrected.
FAULT VACUUM PUMP	Motor overload protector for electrical vacuum pumps has tripped. Manually reset the over-load protector.  Water-ring pumps only: this fault message will also be displayed if the pump water supply pressure drops below 20 psi/1.5 bar at the water supply manifold.
FAULT VACUUM OPEN WIRE	Vacuum sensor, circuit has failed. Machine can be operated manually using CYCLE button.
FAULT LOW GAS	(Option) In RUN position, can only be cleared by raising gas pressure to SET pressure. You can also turn SUPERVISOR'S KEY to PROGRAMMING POSITION, and select a vacuum (only) program, not requiring gas.
FAULT PROBE $\frac{1}{2}$ NOT DOWN	The Jaw opens immediately. After 5 seconds the DISPLAY shows the fault.
FAULT PROBE $\frac{1}{2}$ NOT UP	The Jaw opens immediately. After 5 seconds, the DISPLAY shows the fault.
FAULT JAW NOT OPEN	Clear by manually opening jaw.

The manner in which the machine functions is described in the OPERATION and PROGRAMMING sections of this manual. There are several FAULT messages which will show on the DISPLAY, if the machine malfunctions. These are shown in the chart above.



### Warning!

Electrical work should only be performed by trained personnel. Take necessary precautions when working with live electrical circuits.

If the Integrated-Controller module fails, they can only be replaced with factory pre-programmed units.

### Vacuum Control Circuit

Vacuum is measured by a piezoelectric sensor located on the main vacuum manifold just inside the top of the machine cabinet. The sensor creates an analog signal which is processed by an analog-to-digital module mounted on the machine's electrical panel (see electrical drawings included in this manual). The digital signal then goes directly to the Integrated-Controller.

If an open circuit occurs in any part of this system, a fault message will appear on the DISPLAY:

FAULT  
VACUUM OPEN WIRE

If the fault is not a simple loose or broken wire, test the output signal from the vacuum sensor to the analog-to-digital module with a DC voltmeter. It should be checked between terminals 5 and 6 on the module (see electrical schematics in this manual for location). Voltage should rise from 1 up to 5 VDC, as you apply vacuum to the system. If the sensor is OK, then the analog-to-digital module has failed.

### Heat-Sealer Control

The heat sealer bar is heated by a 220 VAC cartridge in the bar. Temperature of the bar is measured by a thermocouple which sends an analog signal to an analog-to-digital module mounted on the machine's electrical panel (see electrical drawings included in this manual). The digital signal then goes directly to the Integrated-Controller, which pulses a signal to the heat sealer relay when heat is required. The relay switches 220 VAC power to the cartridge.

### Sealer Bar Cold

1. If the DISPLAY shows the following message, then the thermocouple, or its analog-to-digital module have failed:

FAULT  
T/C OPEN WIRE

Hot Bar Only

Disconnect the two thermocouple wires from the analog-to-digital module; with an Ohm-meter, check the resistance of the thermocouple. If it shows an open wire (infinite resistance), the thermocouple has failed.

With any other resistance reading, you must substitute a new thermocouple into the machine. If this does not eliminate the problem, then the analog-to-digital module has failed.

2. If the thermocouple circuit is OK, then you will see the following DISPLAY message:

WARM-UP xxx°F/C BELOW TEMP	Hot Bar Only
-------------------------------	--------------

If the temperature does not rise, on the DISPLAY, verify that you have full power on each power wire entering the machine.

3. Next, look for the heat sealer output light (Q1) on the Integrated-Controller. If the system is calling for heat, this light should be illuminated. If it is not illuminated, then the Integrated-Controller has failed.
4. If the heat sealer output light is illuminated, check the output of the heat sealer relay, between terminals TB1-2 and TB1-3 (upper left-hand corner of the electrical panel). You should see 220 VAC at any time that the light is illuminated. If the power is present at this point, then the heat sealer cartridge has failed.

If the power is not OK, check to see if power is present between the inputs of fuses F1 and F2, which protect this circuit. If it is present, then replace the fuse(s). If there is no power, then the heat sealer relay has failed.

### **Sealer Bar Overheated**

1. Check the heat sealer output light (Q1) on the Integrated-Controller. If it is continuously illuminated, then the -Controller has failed.
2. If the light is not illuminated, check the output of the heat sealer relay by measuring between terminals TB1-2 and TB1-3 (upper left-hand corner of the electrical panel). If you find 220 VAC, then the heat sealer relay has failed.

### **Impulse Sealer Control**

Heat sealing is done by passing an electrical current through a resistive metal band for a measured period of time, 'heat time'. At the moment the power starts through the band, the heat sealer bar pushes the band into the plastic film, which is to be sealed. When power to the band is shut off, the sealer bar remains held against the plastic film for an additional period of time, while the plastic cools and re-solidifies. This delay is referred to as 'cool time'.

Power for the band is at 50-120 VAC. It is modulated by the impulse control system to maintain constant temperature at the band. The system automatically compensates for changes in input voltage, and also for heat sealer bar temperature rise.

## **Impulse Band Control**

1. Verify that you have full electrical power on each supply wire entering the machine.
2. Look for the seal power output light (Q1) on the Micro-Controller. During a normal heat-seal cycle, this light should illuminate for the duration of the heat time. If it does not, refer to the section MICRO-CONTROLLER CHECKS.
3. If the Micro-Controller is ok, check the output of the sealer relay between terminals TB1-2 and TB1-3 (upper left-hand corner of the electrical panel). You should see 50-120 VAC at any time that the light (Q1) is illuminated. If the power is present at this point, then the impulse band has failed.

If the power is not OK, check to see if power is present between the inputs of fuses F1 and F2, which protect this circuit. If it is present, then replace the fuse(s).

If it is not present, check the phase controller:

- The red LED should be illuminated at all times, with varying brightness. If it is not illuminated, the impulse control module must be replaced
- If it is illuminated, check for 110-120 VAC between terminal TC-6 (on the main power transformer) and terminal 2 on the sealer relay. Power should be present when Micro-Controller light Q1 is illuminated. If there is now power, replace the sealer relay. Please note that relay damage is often caused by a short-circuit between the band and the sealer bar. Check the Kapton tape and the phenolic insulating blocks on the sealer bar (see MAINTENANCE section of this manual)

## **Sealer Bar Overheated**

1. Check the heat sealer output light (Q1) on the Micro-Controller. If it is continuously illuminated, then the Micro-Controller has failed.
2. If the light is not illuminated, check the output of the heat sealer relay by measuring between terminals TB1-2 and TB1-3 (upper left-hand corner of the electrical panel). If you find 220 VAC, then the heat sealer relay has failed.

## **Impulse Band – Premature Failure**

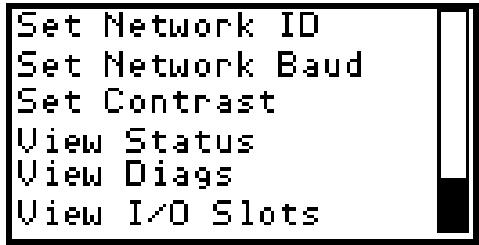
1. The majority of premature band failures comes from mechanical maintenance problems (damaged Kapton tape, improper Teflon® tape, incorrect installation, inadequate air pressure, etc.) Check the MAINTENANCE section of this manual for these items.
2. If the band overheats as soon as power to the machine is turned on, the sealer relay must be replaced. Relay damage is often caused by a short-circuit between

the band and the sealer bar. Check the Kapton tape and the phenolic insulating blocks on the sealer bar.

3. If the bands fail during normal operation:

- Verify that you have 110-220 VAC between input power terminals P2-1 and P2-2 on the impulse control nodule. If the voltage is incorrect, verify that you have the correct voltage feed the machine at terminals L1 and L2. Note: in some power systems, one phase (often called a “wild leg”) will have higher voltage to ground. This phase must not be used for L1 or L2. If the machine supply voltage is correct, then replace the main transformer
- If voltage between P2-1 and P2-2 is ok, check the voltage between terminals 3 and 5 on the impulse control module – it should be 5 VDC. If it is not, 5 VDC, disconnect the temperature sensor wires from the terminals 3 and 5. Recheck the voltage between terminals 3 and 5:
  - If the voltage is now 5 VDC, replace the temperature sensor
  - If the voltage is not 5 VDC, replace the impulse control module
- When the system is operating normally, the red LED on the phase controller should be brightly illuminated at an idle (no sealing) condition. During the first half second of a normal heat seal, the LED should become partially dimmed and then for the balance of the heat time, it should become even dimmer
  - In an idle condition, verify that the LED is brightly illuminated. If it is not, either the impulse control module or the phase controller has failed. You must substitute a new part for either component to determine which part has failed
  - If the LED is brightly illuminated, at an idle condition, set the heat time for four seconds and start a heat seal cycle on the machine. If the LED does not dim as described earlier, replace the impulse control module
  - If the LED dims correctly, then place a clamp-on style AC current meter (capable of at least 30 amperes) around the wire going to the sealer bar from terminal TB1-3. In a normal sealing cycle, the current should momentarily spike up to 25-30 amperes, then stabilize around 16-20 amperes for the remainder of the heat time
  - If the meter reading does not meet specifications, replace the phase controller
  - If the meter readings are ok, the control system is functioning properly and you should recheck your mechanical maintenance points

## 6.6. OPERATOR INTERFACE/PLC CHECKS

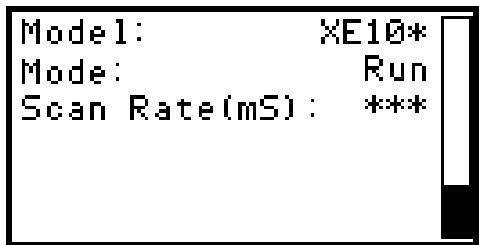


### Controller Menu Screen

To check the status of the Integrated Controller series operator Interface units, press and hold the hidden scroll up and scroll down keys at the same time. The screen shown to the left will be displayed.

See page 6-25 for the location of the hidden scroll up and scroll down keys

To exit this screen and return to the normal screens, press the Back key. Press the scroll down key until View Status is highlighted. Press the Enter key. The following screen will be displayed.



### Controller Status Screen

Press the Enter key to highlight what is being displayed for mode. Press the hidden Arrow down or hidden Arrow Up key until Run is displayed. Press the Enter key to store. Press the Back key to exit this screen.

## 6.7. MACHINE CONFIGURATION MODE PROCEDURE

CONFIGURATION

CORR-VAC (R)

### Configuration Screens

With the Run/Program keyed selector switch in the program position, press and hold the Upper Left Hidden Push button on the Display for at least five seconds. The screen to the left will be displayed.

See page 6-25 for the location of the hidden scroll up and scroll down keys

Use the Arrow Down key to navigate to the next Configuration screen. Use the Arrow Up key to navigate to the previous Configuration screen.

TOTAL CYCLES  
##### ####

### Total Cycles Screen

This displays the Total Cycles the machine has run. Press the Edit key to reset.

CYCLE PROBES  
OFF

### Cycle Probes Screen

This Screen is used to manually lower the Probes. If 'Off' is displayed, press the Edit key to lower the Probes. 'On' will be displayed and the probes will lower. Pressing the Edit key again will raise the Probes and 'Off' will be displayed.

CYCLE JAW  
OFF

### Cycle Jaw Screen

This Screen is used to manually Advance the Jaw Cylinder. If 'Off' is displayed, press the Edit key to Advance the Jaw Cylinder. 'On' will be displayed and the Jaw Cylinder will advance.

Pressing the Edit key again will retract the Jaw cylinder and 'Off' will be displayed.

CYCLE SEAL BAR  
OFF

#### **Cycle Seal Bar Screen**

This Screen is used to manually advance the Seal Bar. If 'Off' is displayed, press the Edit key to advance the Seal Bar. 'On' will be displayed and the Seal Bar will advance. Pressing the Edit key again will retract the Seal Bar and 'Off' will be displayed.

CYCLE VAC VALVE  
OFF

#### **Cycle Vacuum Valve Screen**

This Screen is used to manually energize the Vacuum valve Solenoid. If 'Off' is displayed, press the Edit key to energize the Vacuum Valve. 'On' will be displayed and the Vacuum will turn on.

Pressing the Edit key again will turn the Vacuum off and 'Off' will be displayed.

CYCLE GAS VALVE  
OFF

#### **Cycle Gas Valve Screen**

This Screen is used to manually energize the Gas valve Solenoid. If 'Off' is displayed, press the Edit key to energize the Gas Valve. 'On' will be displayed and the gas will turn on. Pressing the Edit key again will turn the Gas off and 'Off' will be displayed.

CYCLE GAS VALVE 2  
OFF

#### **Cycle Gas 2 Valve Screen**

This Screen is used to manually energize the Gas valve 2 Solenoid. If 'Off' is displayed, press the Edit key to energize the 2nd Gas Valve. 'On' will be displayed and the gas 2 valve will turn on.

Pressing the Edit key again will turn the Gas 2 valve off and 'Off' will be displayed. This only applies to machines equipped with an optional 2nd Gas Valve.

TIMED CONVEYOR  
OFF

#### **Cycle Exit Conveyor Screen**

This Screen is used to manually turn on the optional Exit Conveyor. If 'Off' is displayed, press the Edit key to turn on the Conveyor. 'On' will be displayed and the Conveyor will turn on.

Pressing the Edit key again will turn the Conveyor off and 'Off' will be displayed. This only applies to machines equipped with an optional Exit Conveyor.

**SYSTEM SCALE**  
**IMPERIAL**

### **System Scale Screen**

This Screen is used to configure the displayed values. If Imperial is displayed Press the Edit key and all values will be displayed in Metric values. Metric will be displayed.

Pressing the Edit key again will turn Metric off and Imperial will be displayed. For example, if Imperial is selected the seal bar temperature is set and displayed in Fahrenheit. If Metric is selected, Celsius is used.

**NUMBER OF PROBES**  
**#**

### **Number of Probes Screen**

This Screen is used to configure the number of Probes your machine has. Press the Edit key and use the arrow up key to increase the value displayed.

Press the arrow down key to decrease the value displayed. The range is from 0 to 2. When the correct value is displayed press the Edit key again to allow scrolling to the next Configuration screen.

MOTOR VAC.            YES  
PIAB VAC.            NO

### **Motor/Piab Vacuum Screen**

This Screen is used to configure the type of Vacuum Pump your machine has. Press the Edit key and the Yes No positions will swap.

N/C VACUUM:            YES  
N/O VACUUM:            NO

### **Vacuum Valve Type Screen**

This Screen is used to configure the type of Vacuum Pump your machine has. Press the Edit key and the Yes No positions will swap.

LOW GAS DETECT  
NO

#### Low Gas Detect Screen

This Screen is used to configure if your machine has Gas Pressure Low switch. Press the Edit key to change from No to Yes.

JAW TYPE OPEN ONLY

#### Jaw Type Screen

This Screen is used to configure the type of Jaw Mechanism your machine has. Press the Edit key and the Open Only / Open Close displays will swap.

Select Open Only if your machine has a manual Jaw Close mechanism. Select Open/Close if your machine is equipped with 2 hand controlled auto Jaw close mechanism.

PUMP OFF DELAY  
  
MINUTES (0-60) ####

#### Pump Off Delay Screen

This Screen is used to configure the amount of time in Minutes the Vacuum Pump will run after the last cycle is run. Press the Enter key. The displayed value should be highlighted in black.

Use the numerical keys to enter the desired value. Press the Enter key again to store the value.

TIMED CONVEYOR  
YES/NO

#### Timed Exit Conveyor Screen

This Screen is used to configure an Exit conveyor. Press the Edit key and the Yes No positions will swap.

JAW OPENED  
  
SEC (0-1.00) ####

#### Jaw Opened Delay Screen

This Screen is used to configure the Jaw Opened Delay. This is only used with an Exit Conveyor. This sets the delay The Exit Conveyor will start after the Jaw opens at the end of a Cycle.

Press the Enter key. The displayed value should be highlighted in black. Use the numerical keys to enter the desired value. Press the Enter key again to store the value.

BAG STRETCHER  
NO

#### **Bag Stretcher Screen**

This Screen is used to configure if your machine is equipped with Bag Stretcher Cylinders. Press the Edit key to change from No to Yes.

(FY) RUN KEY  
ENABLE

#### **Run Key Enable/Disable Screen**

This Screen is used to Enable or Disable the Run Key. Press the Edit key to change from Enable to Disable.

2ND GAS VALVE  
NO

#### **2nd Gas Valve Screen**

This Screen is used to Enable or Disable the 2nd Gas Valve. If configured to yes the 2nd Gas Valve is used for the second through forth gas flush cycles. Press the Edit key to change from No to Yes.

3RD BAG  
STRETCHER PRX  
NO

#### **3rd Bag Stretcher Switch Screen**

This Screen is used to Enable or Disable the 3rd Bag Stretcher Proximity Switch. This used only on Machines equipped with four Bag Stretcher Cylinders. Press the Edit key to change from No to Yes.

CONVEYOR  
RUNTIME  
  
SEC (0-9.99)      #####

#### **Conveyor Run Time Screen**

This Screen is used to enter the amount of time the exit conveyor will run. This is only used with an Exit Conveyor. Press the Enter key. The displayed value should be highlighted in black.

Use the numerical keys to enter the desired value. Press the Enter key again to store the value.

## 6.8. I/O STATUS VIEW PROCEDURE

IN1 *	JAW CLOSED PRX
IN2 *	PROBE 1 RAISED
IN3 *	PROBE 2 RAISED
IN4 *	CYC START PB1

### I/O Status Screens

Press and hold the Lower Left Hidden Pushbutton on the Display for at least five seconds. The screen above will be displayed. Use the Arrow Down key to navigate to the next Status screen.

IN1 *	JAW CLOSED PRX
IN2 *	PROBE 1 RAISED
IN3 *	PROBE 2 RAISED
IN4 *	CYC START PB1

### I/O Status Screen Input 1

IN5 *	CYC START PB2
IN6 *	RT BAG STRETCH
IN7 *	LT BAG STRETCH
IN8 *	3RD BAG STRETCH

### I/O Status Screen Input 2

IN9 *	LOW GAS PS
IN10 *	VAC PUMP ON
IN11 *	E STOP ACTIVE
IN12 *	RUN/PGM SS

### I/O Status Screen Input 3

Q1 *	SEAL HEAT SSR
Q2 *	ADV PROBES SOL
Q3 *	ADV SEAL BAR
Q4 *	OPEN/CLOSE JAW

### I/O Status Screen Output 1

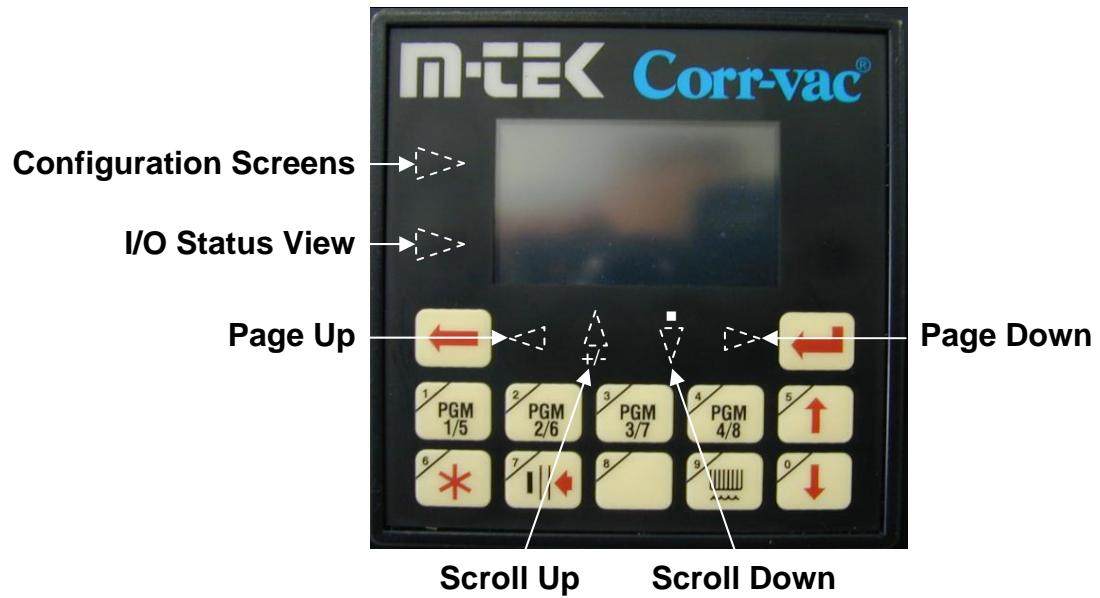
Q5	*	VACUUM ON SOL
Q6	*	GAS ON SOL
Q7	*	VAC PUMP MS
Q8	*	RT BAG STRETCH

**I/O Status Screen Output 2**

Q9	*	LT BAG STRETCH
Q10	*	HI/LO HEAD SOL
Q11	*	GAS 2 ON SOL
Q12	*	RUN CONVEYOR

**I/O Status Screen Output 3**

## 6.9. DISPLAY HIDDEN BUTTONS



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## **Chapter 7: Preventative Maintenance**

Different machine models or options, as well as various product applications, have different preventative maintenance requirements.

## 7.1. DAILY CHECKS

- Before operating, drain water from the air compressor tank and supply line to machine. Drain water filter on machines with manual drain. Is supply air pressure above 100 psi / 7 bar?
- Is gas supply adequate?
- Are vacuum line filters clean?
- Does cabinet cooling fan operate whenever pump is running?
- Is heat sealer bar clean?
- Is the vacuum/gas cycle and heat-seal operational?
- Is the conveyor at the correct height and parallel to the machine head?
- Are there any sharp points on the machine around the heat sealer area that could damage the vacuum bags? Is the bag forming mandrel (when used) also OK?

## 7.2. DAILY CLEANUP

- See CLEANING section of this manual.
- Clean the vacuum filter as necessary.
- Remove the vacuum cover plate. Clean it, and the probe carefully (a tooth brush is recommended). **Be careful not to scratch or dent the mating surfaces of the probe and cover plate, or vacuum leakage can occur.**
- Clean the heat sealer bar as needed. **Do not scrape or use abrasives, as this can damage the Teflon coating and change the bar's heat-sealing characteristics.**
- Clean the surface of the silicone rubber strips which are contacted by the heat sealer bar (on the clamping jaw) as needed. These strips should not be removed unless they are to be replaced.
- Flush the vacuum pump(s) with water as needed to avoid later problems with sticking pump vanes. With the pump running, dip the pump's vacuum inlet tube into a maximum quantity of 2-3 tablespoons of water. Do not exceed this amount or the pump may be damaged. The water will flush the pump and be expelled into the exhaust muffler bottle. This process should be repeated a few times, and then the bottle should be emptied. **Allow the pump to run for 15 minutes to dry it internally.**
- Turn off the main electrical disconnect switch on the door of the electrical cabinet.
- Shut off or disconnect the air supply to the machine.
- Shut off the gas supply valve. It may also be advisable to remove the handle on the gas supply regulator in case someone accidentally turns it to a dangerously high pressure setting.

### 7.3. WEEKLY CHECKS

- Clean out any material that may have accumulated in the water filter section of the air regulator assembly.
- Refill the lubricator jar in the air regulator assembly with mineral oil or "white" oil. **Do not use any other oil, or damage may occur within the machine.** Ensure that the lubricator is releasing approximately one drop for every 1-3 packages at the normal packaging line speed. If not, adjust the small needle valve screw which is located in a recessed well next to the clear plastic dome where you can observe the oil drip rate.
- Consult your vacuum pump manual for the proper maintenance as well as the recommend service schedule in the appropriate vacuum pump manual.
- For all water-ring pumps, check the in-line strainer on the water supply manifold for accumulated debris.

### 7.4. AS NEEDED

- All rotating and sliding surfaces on the head must be lubricated periodically as described in the MAINTENANCE section. Frequency of lubrication will be determined by operating conditions such as line speed, dusty conditions, frequent washing of the machine, etc.

## **Chapter 8: Cleaning**

## 8.1. STANDARD AND AIR POWERED PUMPS



### Warning!

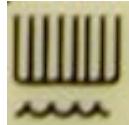
Cleaning should only be done by trained personnel. Failure to follow these guidelines may result in damage to the machine.

The exterior of the machine can be cleaned with soap and water. We specifically recommend against pressure washing the machine, as it may drive water or debris into sensitive areas.

(Cleaning procedure applicable for machines equipped with a Hot Bar)

If plastic has accumulated on the heat sealer bar, bring the bar up to full operating temperature, then wipe the plastic off with a clean, dry rag. Be very careful not to burn yourself on the bar as you clean it.

The interior vacuum circuits of the machine can be cleaned using the CLEAN CYCLE BUTTON:



1. Prepare a cleaning solution – never use a foaming cleaner, as this may damage the vacuum pump. Also, provide a container with a maximum capacity of approximately 2 cups/500 ml. This will ensure that the machine's external vacuum pump filter is not overfilled (which might damage the pump).
2. Press the CLEAN CYCLE BUTTON, to put the machine into a cleaning mode.
3. Hold up the container containing cleaning solution to each vacuum probe. The solution should be sucked through the vacuum tubes and into the external vacuum pump filter.



### Warning!

Ensure that the solution does not rise above the red warning line found on all external vacuum pump filter bottles. Excessive liquid may get into the vacuum pump, causing mechanical damage.

4. Press the EMERGENCY STOP BUTTON to stop the vacuum pump. Then open the external filter and completely drain the cleaning solution. Reclose the filter and pull the BUTTON up, to restart the cycle.

Repeat this cleaning cycle again, as necessary.

5. In many cases, the vacuum probes can be cleaned simply with a brush and cleaning solution. If additional cleaning is required, remove the vacuum cover plates from each vacuum probe.

- Unscrew the two knurled thumbscrews on each vacuum cover plate. The screws should be removed simultaneously, to avoid losing the clips which hold the screws and springs to the cover plate.

As the screws are removed, be careful not to drop the cover plate.

- With the cover plate removed, it can be washed, in addition to the vacuum probes. Be careful not to scratch or dent the cover plate or vacuum probes, as this may cause a vacuum leak.
  - Reinstall the vacuum cover plates – screw in the two thumbscrews simultaneously, to avoid losing the retainer clips.
6. With the machine in its cleaning mode, suck a small amount of water through the tubes and into the external filter. This will rinse the cleaning solution out of the machine. Be careful not to use too much water.
  7. Press the EMERGENCY STOP BUTTON to stop the vacuum pump, then drain and reclose the external filter. Pull the BUTTON up to restart the pump.
  8. For machines with electric vacuum pumps, press the CLEAN CYCLE BUTTON again to take the machine out of this operating cycle. It will be confirmed by the DISPLAY showing M-TEK CORR-VAC®. The pump will then continue to run for 30 minutes to dry it out, and will then automatically shut down. Failure to thoroughly dry out the pump may cause mechanical damage.
  9. For machines with air-powered vacuum pumps, press the CLEAN CYCLE BUTTON one last time, to take the machine out of this operating cycle. It will be confirmed by the DISPLAY showing M-TEK CORR-VAC®. The pump will then immediately shut down.

## 8.2. WATER-RING PUMPS



### Warning!

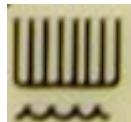
Cleaning should only be done by trained personnel. Failure to follow these guidelines may result in damage to the machine.

The exterior of the machine can be cleaned with soap and water. We specifically recommend against pressure washing the machine, as it may drive water or debris into sensitive areas.

If plastic has accumulated on the heat sealer bar, bring the bar up to full operating temperature, then wipe the plastic off with a clean, dry rag. Be very careful not to burn yourself on the bar as you clean it. (Applies only to machines equipped with a Hot Bar)

The interior vacuum circuits of the machine can be cleaned using the CLEAN CYCLE BUTTON:

1. Prepare a cleaning solution in a 2 cup/500 ml or less container.
2. Press the CLEAN CYCLE BUTTON, to put the machine into a cleaning mode.
3. Hold up the container containing cleaning solution to each vacuum probe. The solution should be sucked through the vacuum tubes and out through the pump exhaust.
4. In many cases, the vacuum probes can be cleaned simply with a brush and cleaning solution. If additional cleaning is required, remove the vacuum cover plates from each vacuum probe.
  - Unscrew the two knurled thumbscrews on each vacuum cover plate. The screws should be removed simultaneously, to avoid losing the clips which hold the screws and springs to the cover plate.



As the screws are removed, be careful not to drop the cover plate.

- With the cover plate removed, it can be washed, in addition to the vacuum probes. Be careful not to scratch or dent the cover plate or vacuum probes, as this may cause a vacuum leak.
- Reinstall the vacuum cover plates – screw in the two thumbscrews simultaneously, to avoid losing the retainer clips.

5. With the machine in its cleaning mode, suck a small amount of water through the tubes and out of the pump. This will rinse the cleaning solution out of the machine.
6. Press the CLEAN CYCLE BUTTON again to take the machine out of this operating cycle. It will be confirmed by the DISPLAY showing M-TEK CORR-VAC®. The pump will continue to run for 5 minutes, and will then automatically shut down. The pump's water supply valve will also shut down at this time.

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## **Chapter 9: Maintenance and Repair**

Most components of the machine are very straightforward to work on. The following sections describe only those operations where the best working method may not be as obvious.

## 9.1. MACHINE COMPONENTS IDENTIFICATION

### 10 cfm Vacuum Pump Service

Most repairs or cleanup of the pumps can be made in place, in the machine. Tear-down is done as follows:

1. Remove the exhaust muffler bottle. If the pump exhausts through the side of the pylon, remove the nylon elbow. If the controls air exhausts into the pump exhaust line, disconnect this line.
2. Disconnect the inlet tube at the fitting on the pump head.
3. Remove the six bolts around the top of the pump head.
4. Lift the pump head off the pump body, being careful not to scratch the surfaces where the pump head and body mate.
5. Examine the four carbon vanes for serious chipping. They should slide freely in their slots. They must be inserted so that the bevel on their outer edges matches with the angle of the walls of the pump "barrel" or "cylinder."
6. Carefully replace the pump cylinder head and retighten the six bolts in an alternating pattern (1 and 4, 2 and 5, 3 and 6). Replace inlet and exhaust fittings and lines.

### 21 cfm Vacuum Pump Service

1. Disconnect power to the machine.
2. Remove fan by gently levering it off with a flat bladed tool.
3. Remove eight (8) hex head cap screws holding end plate on unit.
4. Remove four (4) Phillips screws that hold end cap to end plate.
5. Using a puller tool remove the end plate.
6. Remove old vanes and check for foreign particles in pump chamber. Ensure that the four vane slots in the rotor are completely clean (clean with solvent as needed).
7. Install new vanes with beveled edges to match angle of pump body wall.

8. Install end plate (use a rawhide mallet or leaded rubber mallet to tap end plate down). There are two guide pins to line up on.
9. Install the eight (8) hex head cap screws to hold the end plate in place.
10. Using a  $\frac{3}{4}$ " deep well socket, placed over end of shaft, drive or set bearing fully to provide clearance for rotor to turn freely.
11. Install end cap with four (4) Phillips screws (making sure to have good seal).
12. Replace fan on shaft. Make sure fan does not hit Phillips screws of end cap.
13. Install fan guard with four (4) round head screws.

### **28/35 cfm Vacuum Pump Service**

See Vacuum Pump Manual

### **Water-Ring Vacuum Pump Service (All Models)**

See Vacuum Pump Manual and Drawings

### **Electric Vacuum Pump Removal**

1. Mark III pumps are removed by unbolting the pump mount screws from under the machine, with the exception of the Gast 35 cfm/50 cfh model.
2. Gast 35 cfm/50 cfh pumps have rubber mounting "feet" located at two points under the front of the pump/motor mount and at three points under the rear of the mount.
3. From above, remove the screws holding the mount down to the rubber feet at both points under the front, but only at the center point, in the back. You can then slide the pump/motor out of the cabinet.

## **Thermocouple Replacement (Hot-bar Sealers Only)**

Thermocouples are replaced by first disconnecting the two electrical leads inside the button box compartment, releasing the compression nut on the fitting at the bottom of the button box, and pulling the lead, in their flexible sheath, out of the button box. The sheet metal pan under the heat seal bar should be removed exposing the entry of the thermocouple sensor into the back of the heat seal bar. Remove the outer compression nut, and withdraw the thermocouple sensor. When installing the replacement thermocouple, certain precautions should be observed:

1. The thermocouple leads are vulnerable to kinking, so tight bends should be avoided.
2. When installing the sensor into the back of the heat seal bar, ensure that the small ferrule on the sensor is not lost. The tip of the sensor must also be fully "bottomed out" into the full depth of the well in the bar.
3. Note that the two leads are polar (+ and -) and must be connected to the temperature controller as shown in the circuit diagram.

## **Head Bearings Lubrication**

Head bearings should be periodically lubricated at all rotating pivot points, and sliding surfaces. A heavy, water-proof grease is recommended – comparable to the food-grade lubricants provided with later model machines.

1. Pivot points can be opened up by first removing the shaft retainer, near the right-hand end of the main pivot shaft (to which the operating handle is attached). This allows the shaft to slide sideways far enough to clean and lubricate the shaft bearings, link pivot pins and clamping bar pivot pins.

When replacing the shaft retainer, be sure that the excess play is removed by pushing the shaft to the left before tightening the retainer.

## **Flow Controls (Air Cylinders)**

Pneumatic flow controls are provided on most air cylinders on the machine to regulate their speed. This serves two functions:

1. Both ends of the heat seal bar should extend and retract at the same speed, to avoid misaligning the bar.
2. Extension and retraction speed for all cylinders, should be controlled to avoid hammering at the end of the stroke.

The flow control meters the air being pushed out ahead of the moving piston in the cylinders, thereby controlling the piston's speed. The flow control mounted on the end of the cylinder toward which the piston is traveling will control the stroke in that direction only. Cylinders without flow controls have internal bumpers to cushion their stoke.

## **Vacuum and Air Pressure Fittings**

Most plastic vacuum tubes use white nylon compression fittings. The compression nut for these fittings can be adequately tightened with finger pressure **and tools should never be used.**

Air (pneumatic) tubes use "push-lock" fittings:

1. To install a tube into a fitting, simply push the tube into the fitting until it bottoms out.
2. To remove a tube, push down on the locking ring at the top of the fitting, and pull the tube out. To release the ring it is important to push it down evenly, from all sides.

## **Silicone Rubber Parts Service**

The silicone rubber parts are very durable, and rarely need replacement. When necessary, the following tips apply:

### **1. Heat Seal Back-up Strip (Hot Bar)**

This item can be removed by lifting the old strip out of the machined groove in the clamping jaw. Adhesives are not used for installation, as the rubber makes a tight fit in the groove. After installing the new rubber strip(s), adjustments may be necessary to tune for the most uniform heat seal, before the ends of the strip are trimmed flush with the clamping jaw. Make a few test seals in the Corr-vac® bags, and examine them carefully for signs of any low pressure areas in the heat seal.

These can be remedied by slightly bunching up (or compressing) the rubber strip as it is installed in the machined metal groove, in those low pressure areas.

Alternatively, the rubber can be slightly stretched in high pressure areas. This tuning process will result in the most uniform heat seals possible.

2. Heat Seal Back-up Strip (Impulse)

Once the ends of the strip become excessively scorched from heat, the strip can be turned over and reused for one additional operating period. Replacement is as follows:

- The groove in the jaw must first be clean and dry.
- Push one end of the rubber strip into the narrow portion of the groove, so that it is flush with the point where the groove widens out (near each end). Then push the remainder of the strip into the groove, working progressively across the jaw from the starting point. Avoid either stretching or compressing the rubber while you install it, or this may create an uneven thickness in the strip. Cut off the other end of the strip, so that it is flush with its end of the narrow groove.

The Bag Clamping Strip can also be removed by pulling it out of its machined groove. The replacement should be thoroughly lubricated with soap water to ensure that it fully "bottoms out" in the groove. Start by lining up the die-cut opening in the rubber to exactly match the vacuum probe assembly. Slight stretching or bunching of the rubber may be necessary to ensure a perfect fit. Then push the rest of the strip fully into the groove.

To replace the rear probe seal, the metal seal retainer must first be removed. When installing the new seals, adjust the two mounting screws until the seal retainer is just snug on top of the seal. Excessive tightening of the screws will cause the seal to bulge outward and interfere with the vacuum probe and clamping jaw closure.

### **Heat Sealer Bar Teflon® Tape Service (Hot Bar)**

Depending on the type of vacuum bag being used, some machines are equipped with an adhesive-backed strip of Teflon coated glass fiber tape, over the working face of the heat sealer bar. As the tape becomes worn, it will periodically have to be replaced.

1. Turn the SUPERVISOR'S KEY to the PROGRAMMING POSITION. Select any program number, then move through the DISPLAY screens until you find:

MAINTENANCE  
SEAL BAR IN

2. Press the EDIT BUTTON to extend the sealer bar.
3. Peel the old tape off, and clean the old adhesive off the bar with a plastic pot scrubber and solvent. Dry thoroughly before mounting the new tape.

4. Avoid getting any grease or oil from your hands on the bar.
5. The tape should be lightly tacked to the working face of the bar at one end, with a one-inch overhang. Leave 5/8" of tape projecting below the bottom edge of the seal bar (when finished, the tape will be just short of the screw heads under the bar).
6. Work across the face of the bar, lightly tacking the tape down without wrinkles. With a smooth object, firmly tack the tape to the face of the bar, taking care to push it into the recess below the raised edge on the face of the bar.
7. Trim the tape ends flush with the ends of the bar.
8. Wrap and secure the tape back over the top and bottom of the bar, without wrinkles. Firmly tack down with a smooth object.
9. Press the EDIT BUTTON to retract the heat sealer bar, and then turn the SUPERVISOR'S KEY back to the RUN POSITION.

### **Impulse Heat Sealer Service**

The impulse sealer heats by pulsing current through a sealer band (made of a resistance heating alloy), for a controlled period of time. The heat sealer bar remains engaged for an additional controlled period of time, during which the bag seal cools to a stable condition. The sealer bar then retracts, releasing the bags.

The heat sealer bar is treated with a black anodized coating, to electrically insulate it from the current passing through the sealer band. Avoid scratching the coating surface, as electrical shorting and/or corrosion can eventually occur.

Additional insulation is provided by inserts of phenolic plastic, at each end of the sealer bar.

The surface directly behind the sealer band is also protected with a renewable layer of special Kapton® tape. It must occasionally be replaced, as needed, to avoid electrical shorting.

There are two styles of impulse sealer bands.

1. For bands with metal eyelets installed at each end, first remove the terminal screw from each end of the sealer bar. Install the new band with the colored dot facing outward (away from the sealer bar), and reinstall the two terminal screws.
2. For bands without eyelets, remove the hold-down screws, and the hold-down covers at each end of the sealer bar. Insert the short tab of the new band into the fitting at each end, with the hold-down screws finger tight. Then tighten both screws.

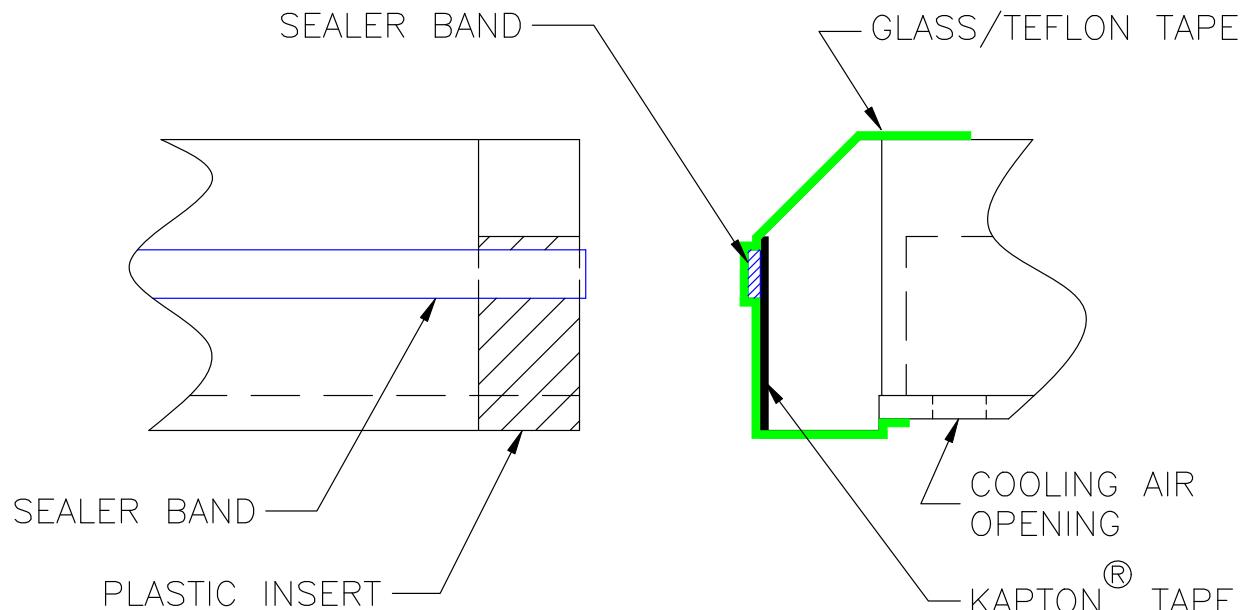
Heat sealer tape must be periodically replaced, as needed. It should be installed as shown below, making sure that it does not cover the cooling air openings on the underside of the bar. Access to the bar can be improved, as follows:

1. Turn the SUPERVISOR'S KEY to the PROGRAMMING POSITION. Select any program number, then move through the DISPLAY screens until you find:

MAINTENANCE  
SEAL BAR IN

Press the SET BUTTON to extend the sealer bar.

2. To retract the heat sealer bar, press the SET BUTTON, then turn the SUPERVISOR'S KEY back to the RUN POSITION.



#### Automatic Jaw Opener Adjustment

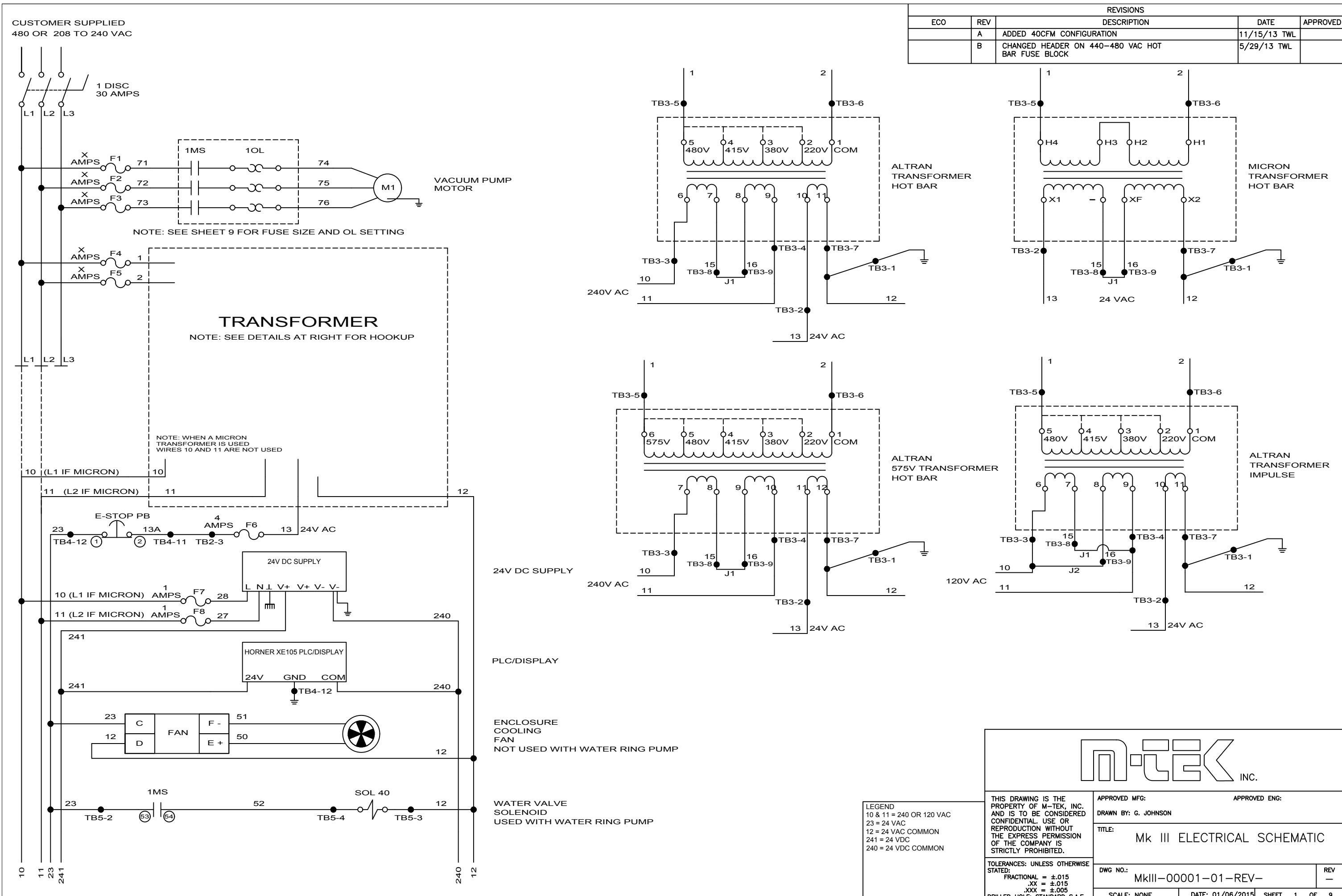
Adjustments to the jaw opening action can be made at the small air flow control, located on the auto jaw opener cylinder.

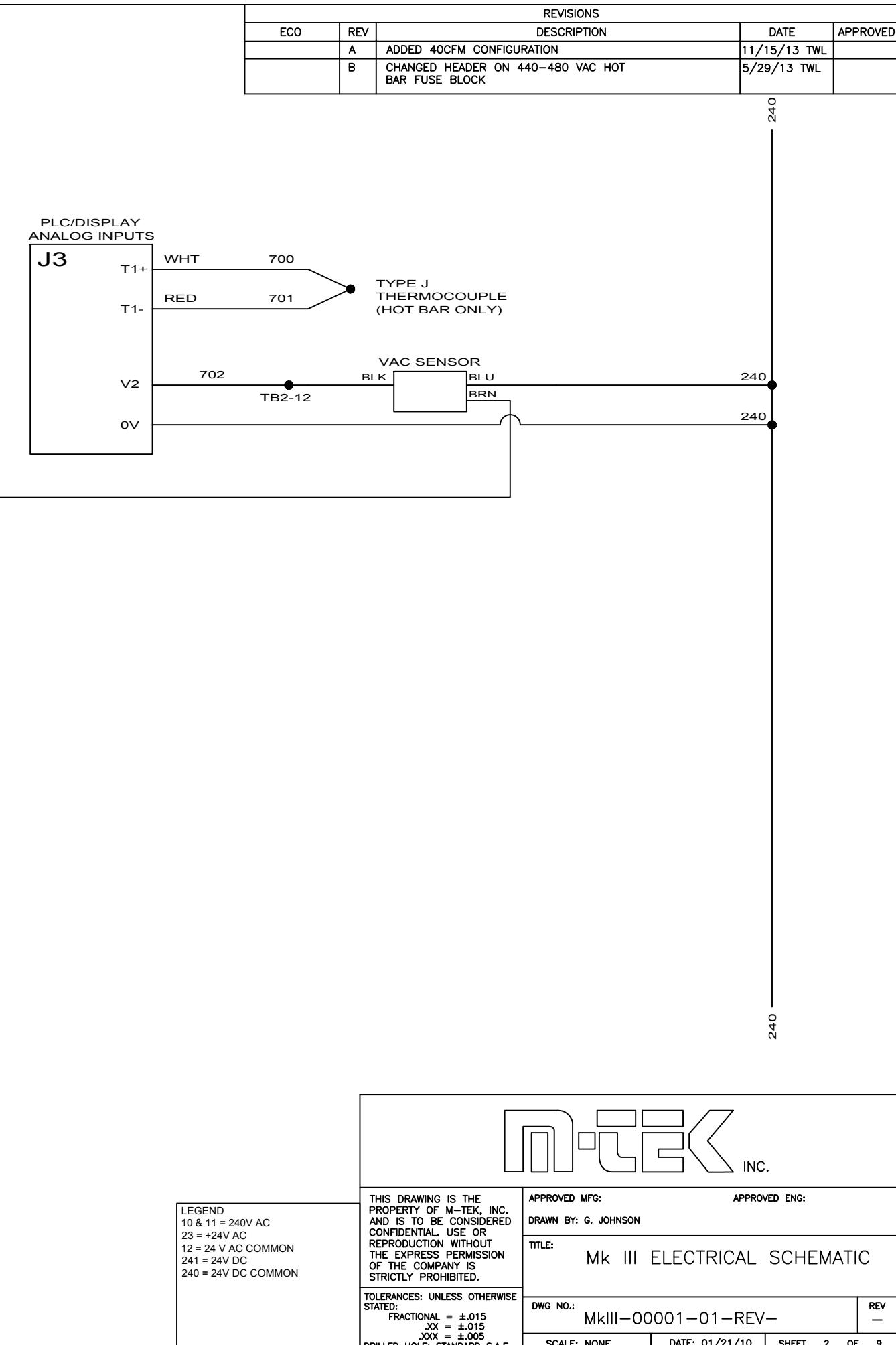
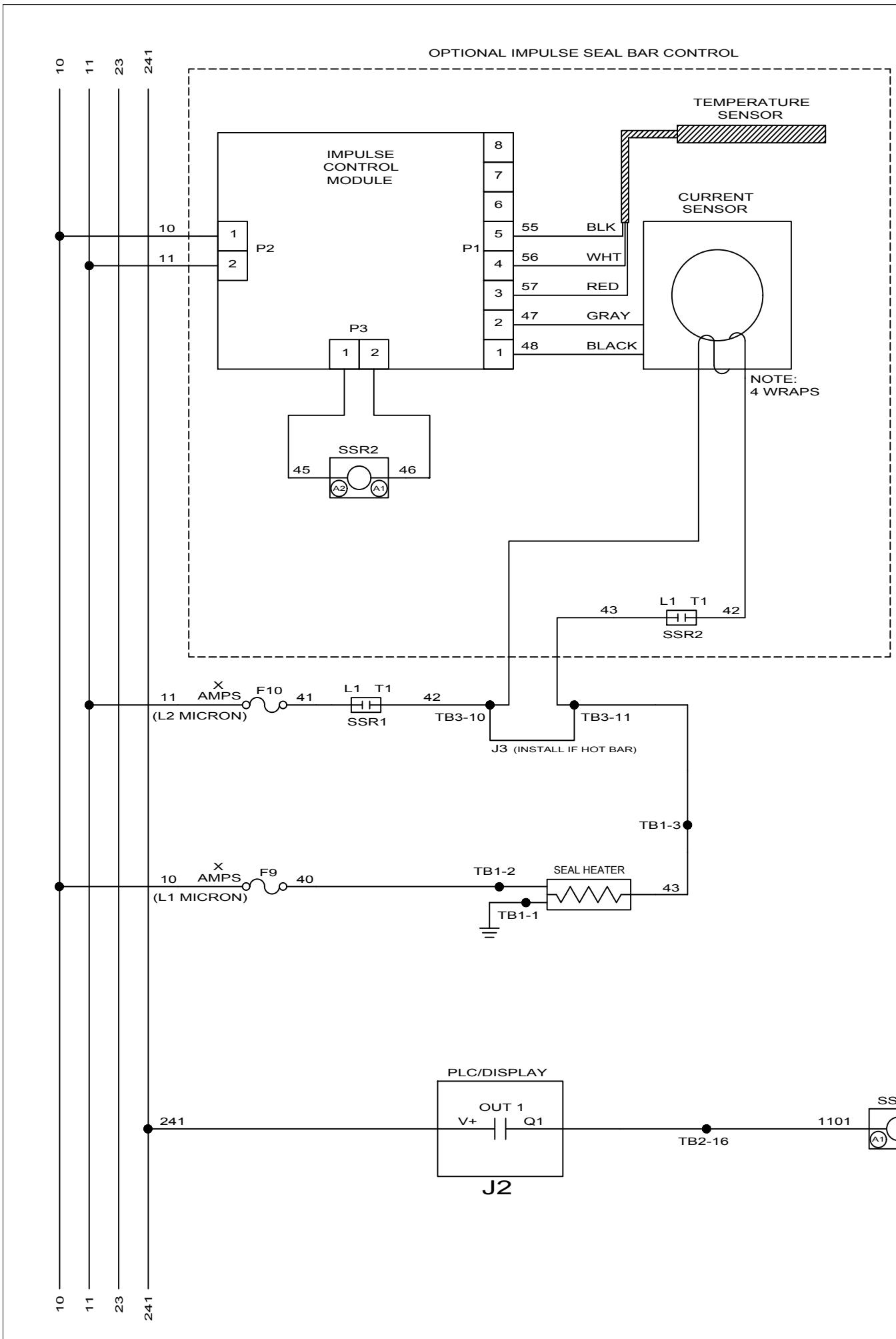
1. If the machine jaw doesn't fully open, slightly increase air flow at the flow control.
2. If the jaw opens too fast (and bounces partially shut), slightly reduce air flow at the flow control.

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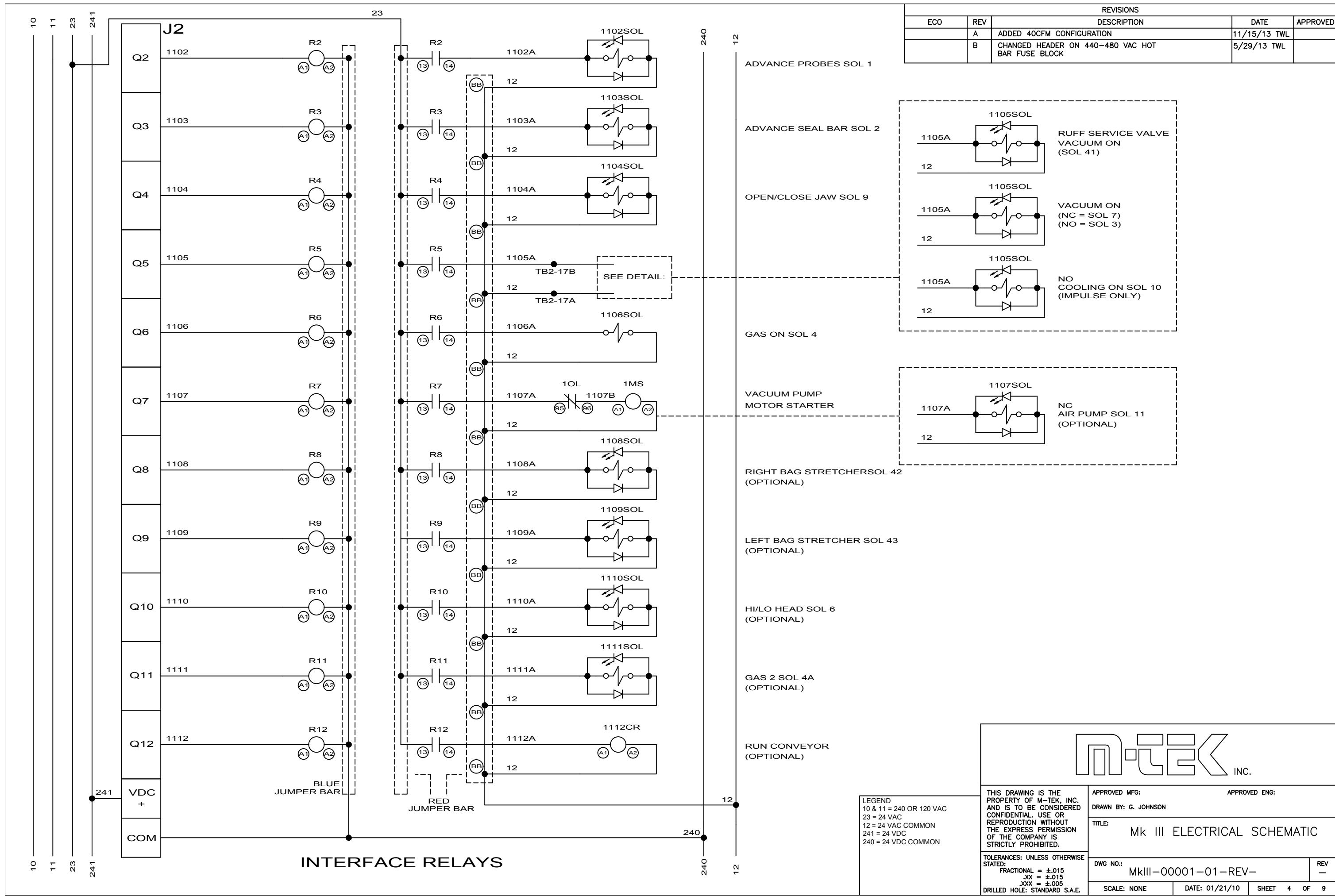
## **Chapter 10: Electrical Schematics and Bulletins**





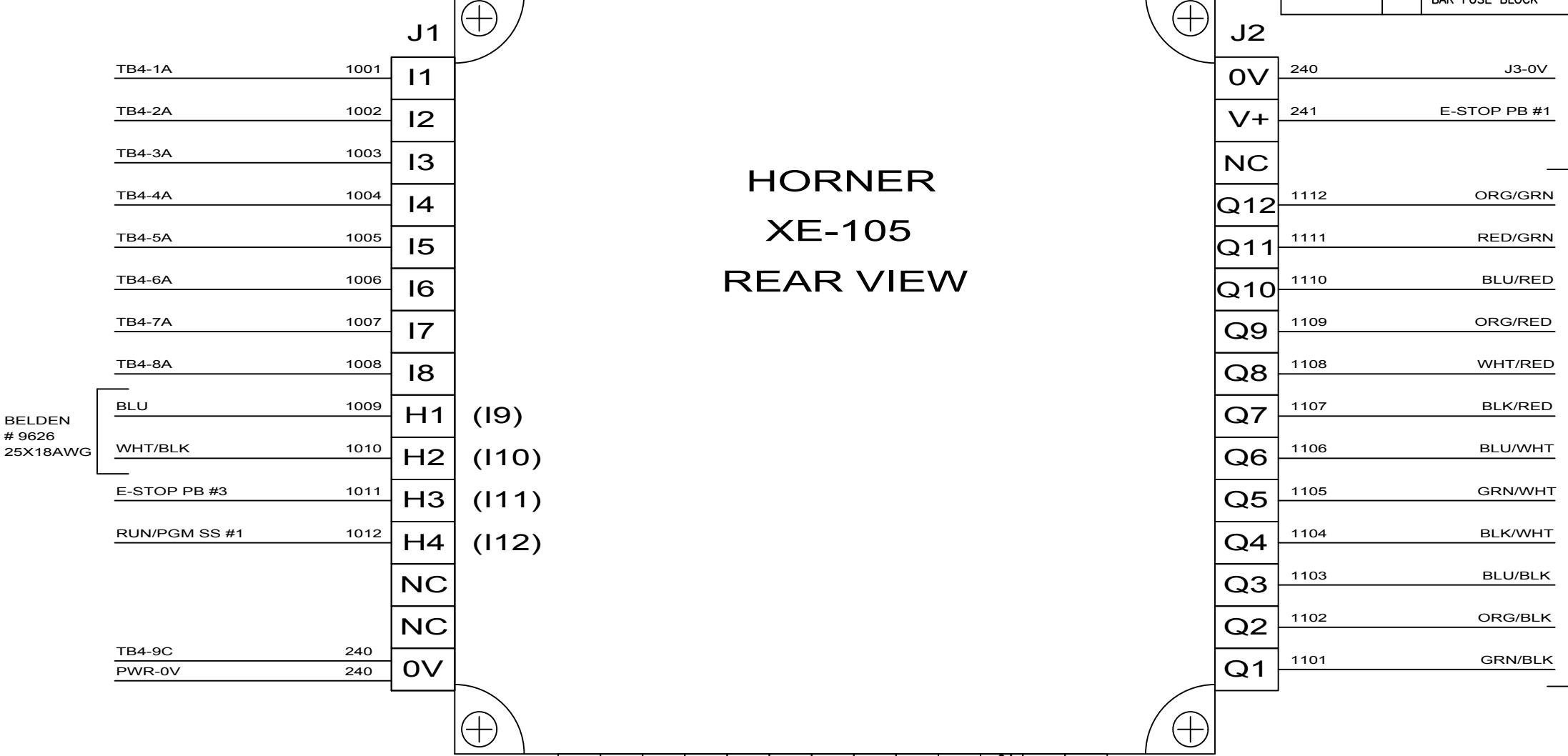






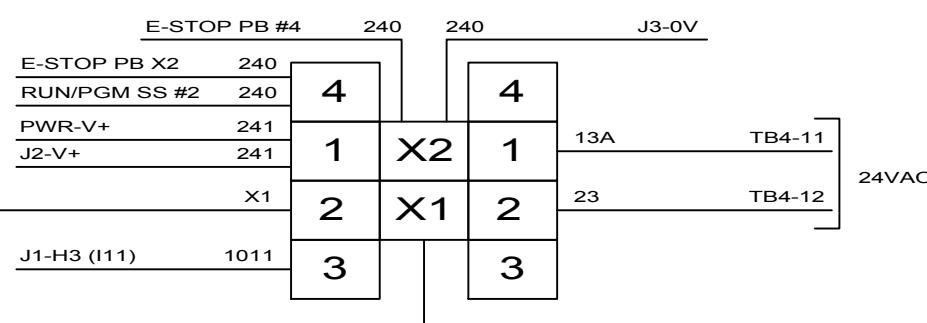
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ECO	REV	DESCRIPTION	DATE
	A	ADDED 40CFM CONFIGURATION	11/15/13 TWL
	B	CHANGED HEADER ON 440-480 VAC HOT BAR FUSE BLOCK	5/29/13 TWL

HORNER  
XE-105  
REAR VIEW



RUN/PGM  
KEYED SS

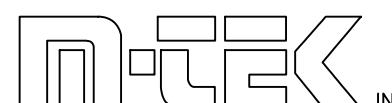
4	
1	1012 J1-H4 (I12)
2	240 PWR-0V
3	240 E-STOP PB #4



LEGEND  
10 & 11 = 240 OR 120 VAC  
23 = 24 VAC  
12 = 24 VAC COMMON  
241 = 24 VDC  
240 = 24 VDC COMMON

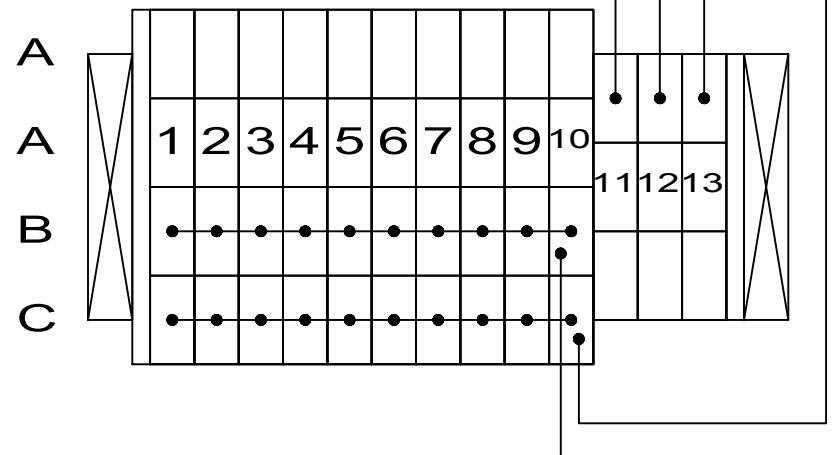
TOLERANCES: UNLESS OTHERWISE STATED:  
FRACTIONAL = ±.015  
.XX = ±.015  
.XXX = ±.005  
DRILLED HOLE: STANDARD S.A.E.

DRAWN BY: G. JOHNSON  
APPROVED MFG: APPROVED ENG:  
TITLE: Mk III ELECTRICAL SCHEMATIC  
DWG NO.: MkIII-00001-01-REV- REV  
SCALE: NONE DATE: 01/21/10 SHEET 5 OF 9



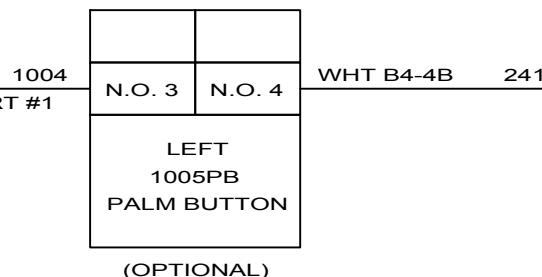
REVISIONS					
ECO	REV	DESCRIPTION		DATE	APPROVED
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	B	CHANGED HEADER ON 440-480 VAC HOT BAR FUSE BLOCK		5/29/13 TWL	

**TB4**

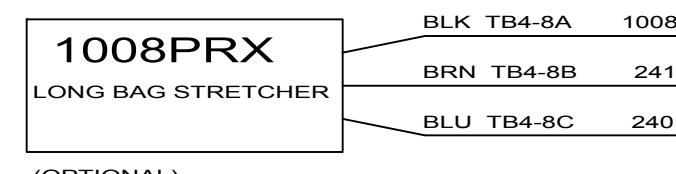
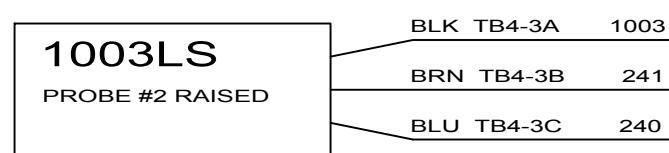
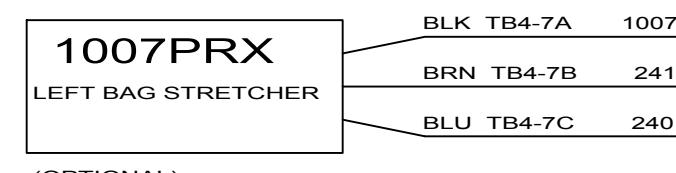
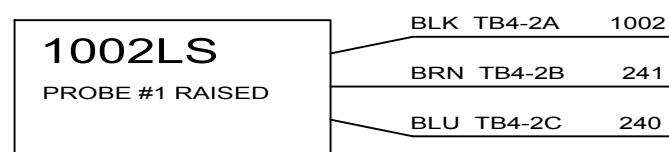
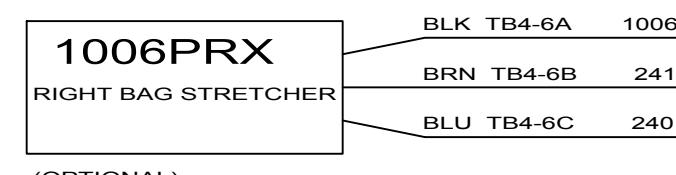
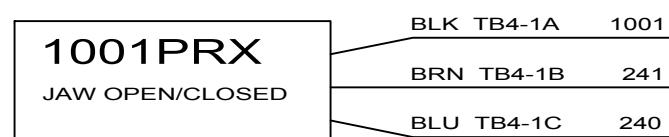
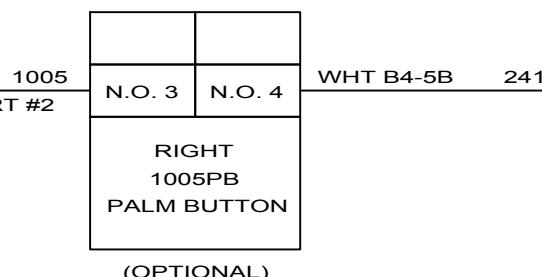


BELDEN  
# 9626  
25X18AWG

BLK TB4-4A 1004  
CYCLE START #1

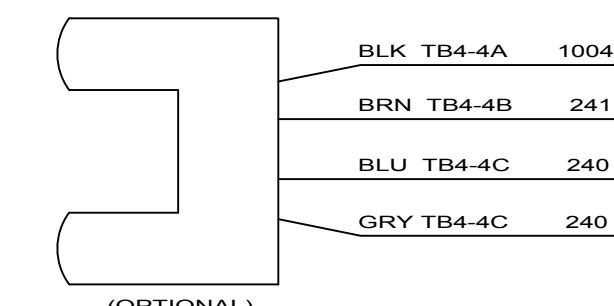


BLK TB4-5A 1005  
CYCLE START #2



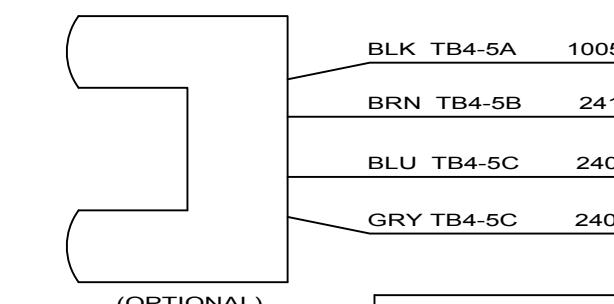
**1004PB**

CYCLE START #1

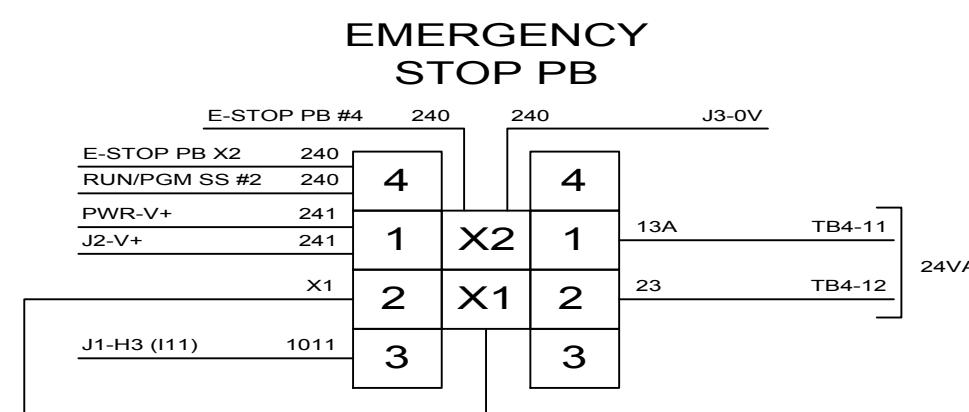
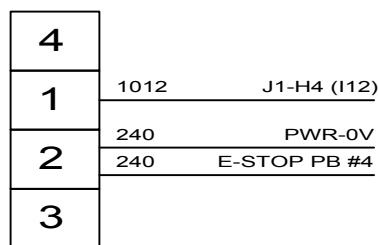


**1005PB**

CYCLE START #2



**RUN/PGM  
KEYED SS**



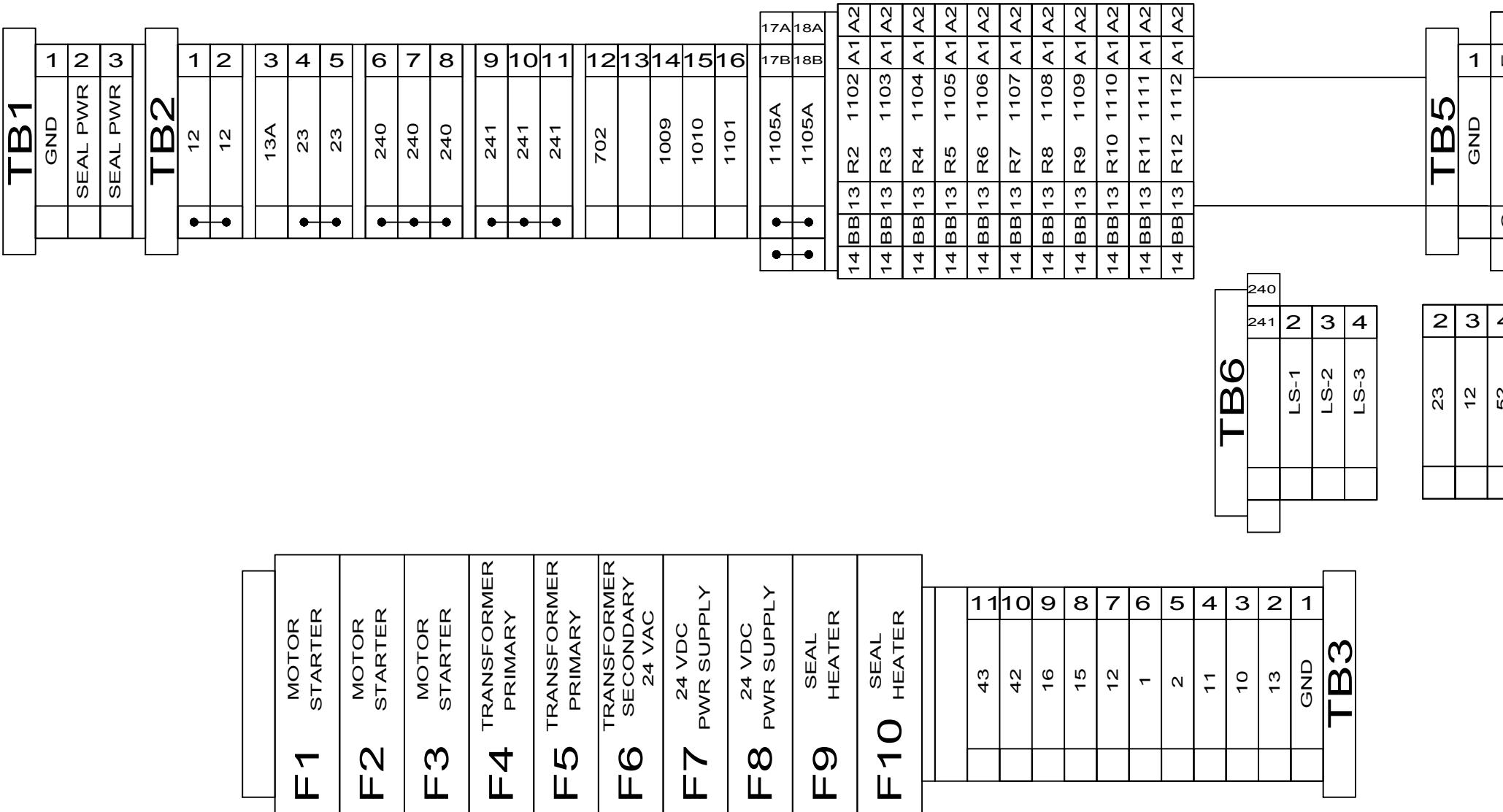
LEGEND  
10 & 11 = 240 OR 120 VAC  
23 = 24 VAC  
12 = 24 VAC COMMON  
241 = 24 VDC  
240 = 24 VDC COMMON

TOLERANCES: UNLESS OTHERWISE  
STATED:  
FRACTIONAL = ±.015  
.XX = ±.015  
.XXX = ±.005  
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG:  
DRAWN BY: G. JOHNSON  
APPROVED ENG:  
TITLE:  
Mk III ELECTRICAL SCHEMATIC  
DWG NO.: MkIII-00001-01-REV-  
SCALE: NONE DATE: 01/21/10 SHEET 6 OF 9

REVISIONS			
ECO	REV	DESCRIPTION	DATE
	A	ADDED 40CFM CONFIGURATION	11/15/13 TWL
	B	CHANGED HEADER ON 440-480 VAC HOT BAR FUSE BLOCK	5/29/13 TWL
	C	ADDED TERMINAL BLOCKS FOR LIMIT SWITCHES	4/13/2016 BRB

MAIN ENCLOSURE  
TERMINAL STRIP  
LAYOUTS



NOTE: IF WATER RING PUMP IS USED.  
REPLACE FAN MODULE WITH TB5  
TERMINALS 2, 3 AND 4

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TITLE: Mk III ELECTRICAL SCHEMATIC	
DWG NO.: MkIII-00001-01-REV- REV -	
LEGEND 10 & 11 = 240 OR 120 VAC 23 = 24 VAC 12 = 24 VAC COMMON 241 = 24 VDC 240 = 24 VDC COMMON	SCALE: NONE DATE: 01/21/10 SHEET 7 OF 9
TOLERANCES: UNLESS OTHERWISE STATED: FRACTIONAL = ±.015 .XX = ±.015 .XXX = ±.005 DRILLED HOLE: STANDARD S.A.E.	

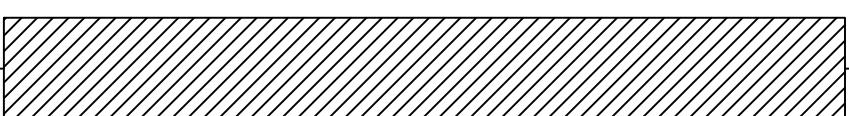
**OPERATOR PANEL TO MAIN ENCLOSURE MULTICONDUCTOR CABLE LAYOUT**

REVISIONS			
ECO	REV	DESCRIPTION	DATE
	A	ADDED 40CFM CONFIGURATION	11/15/13 TWL
	B	CHANGED HEADER ON 440-480 VAC HOT BAR FUSE BLOCK	5/29/13 TWL

**OPERATOR PANEL**

**COLOR / WIRE# / DEST. / STRIP**

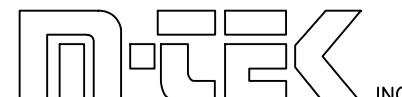
RED/WHT	13A	TB4-11	17 1/4"
RED/BLK	23	TB4-12	17"
BLK	240	TB4-10C	6.5"
RED	241	TB4-10B	7.5"
GRN	GND	TB4-13	16"
WHT	702	PLC-J3-V2	24 1/2"
BLU	1009	PLC-J1-H1	22"
WHT/BLK	1010	PLC-J1-H2	23 1/2"
GRN/BLK	1101	PLC-J2-Q1	28"
ORG/BLK	1102	PLC-J2-Q2	28"
BLU/BLK	1103	PLC-J2-Q3	28"
BLK/WHT	1104	PLC-J2-Q4	28"
GRN/WHT	1105	PLC-J2-Q5	28"
BLU/WHT	1106	PLC-J2-Q6	28"
BLK/RED	1107	PLC-J2-Q7	28"
WHT/RED	1108	PLC-J2-Q8	28"
ORG/RED	1109	PLC-J2-Q9	28"
BLU/RED	1110	PLC-J2-Q10	28"
RED/GRN	1111	PLC-J2-Q11	28"
ORG/GRN	1112	PLC-J2-Q12	28"
ORG	SP-1		28"
BLK/WHT/RED	SP-2		28"
WHT/BLK/RED	SP-3		28"
RED/BLK/WHT	SP-4		28"
GRN/BLK/WHT	SP-5		28"



**BELDEN #9626 25X18AWG  
MULTI CONDUCTOR CABLE  
CUT TO 8' 11"**

**MAIN ENCLOSURE  
STRIP TO 30"  
COLOR / WIRE# / DEST.**

RED/WHT	13A	TB2-3
RED/BLK	23	TB2-4
BLK	240	TB2-6
RED	241	TB2-9
GRN	GND	TB1-1
WHT	702	TB2-12
BLU	1009	TB2-14
WHT/BLK	1010	TB2-15
GRN/BLK	1101	TB2-16
ORG/BLK	1102	R2-A1
BLU/BLK	1103	R3-A1
BLK/WHT	1104	R4-A1
GRN/WHT	1105	R5-A1
BLU/WHT	1106	R6-A1
BLK/RED	1107	R7-A1
WHT/RED	1108	R8-A1
ORG/RED	1109	R9-A1
BLU/RED	1110	R10-A1
RED/GRN	1111	R11-A1
ORG/GRN	1112	R12-A1
ORG	SP-1	
BLK/WHT/RED	SP-2	
WHT/BLK/RED	SP-3	
RED/BLK/WHT	SP-4	
GRN/BLK/WHT	SP-5	



LEGEND  
10 & 11 = 240 OR 120 VAC  
23 = 24 VAC  
12 = 24 VAC COMMON  
241 = 24 VDC  
240 = 24 VDC COMMON

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TITLE: Mk III ELECTRICAL SCHEMATIC		
TOLERANCES: UNLESS OTHERWISE STATED: FRACTIONAL = ±.015 .XX = ±.015 .XXX = ±.005	DWG NO.: MkIII-00001-01-REV-	REV -
DRILLED HOLE: STANDARD S.A.E.	SCALE: NONE	DATE: 01/21/10
	SHEET 8 OF 9	

## FUSE SIZE CHARTS

### HOT BAR

208-220 VAC 1 PHASE 50/60HZ						
FUSE	10CFM	PIAB	-	-	ALTRAN	
F1	AM-4	NONE				
F2	AM-4	NONE				
F3	NONE	NONE				
F4	AM-2	AM-2	AM-16			
F5	AM-2	AM-2	AM-16			
F6	AM-4	AM-4				
F7	AM-1	AM-1				
F8	AM-1	AM-1				
F9	AM-8	AM-8				
F10	AM-8	AM-8				
MOTOR STARTER OL SETTING						
	3.8	NA				

380-415 VAC 1 PHASE 50HZ						
FUSE	PIAB	-	-	ALTRAN		
F1	NONE					
F2	NONE					
F3	NONE					
F4	AM-10					
F5	AM-10					
F6	AM-4					
F7	AM-1					
F8	AM1					
F9	AM-8					
F10	AM-8					
MOTOR STARTER OL SETTING						
	NA					

440-480 VAC 1 PHASE 60HZ						
FUSE	PIAB	-	-	ALTRAN		
F1	NONE					
F2	NONE					
F3	NONE					
F4	AM-8					
F5	AM-8					
F6	AM-4					
F7	AM-1					
F8	AM-1					
F9	AM-8					
F10	AM-8					
MOTOR STARTER OL SETTING						
	NA					

REVISIONS							
ECO	REV	DESCRIPTION				DATE	APPROVED
	A	ADDED 40CFM CONFIGURATION				11/15/13 TWL	
	B	CHANGED HEADER ON 440-480 VAC HOT BAR FUSE BLOCK				5/29/13 TWL	
	C	ADDED 40CFM PUMP FOR 380-415VAC				6/18/2014 BRB	

208-240 VAC 3 PHASE 50/60HZ						
FUSE	10CFM	21CFM	28CFM	35CFM	LEM15/20	LEM60
F1	AM-4	AM-8	AM-10	AM-10	AM-6	AM-12
F2	AM-4	AM-8	AM-10	AM-10	AM-6	AM-12
F3	AM-4	AM-8	AM-10	AM-10	AM-6	AM-12
F4	AM-2	AM-2	AM-2	AM-2	AM-2	AM-2
F5	AM-2	AM-2	AM-2	AM-2	AM-2	AM-2
F6	AM-4	AM-4	AM-4	AM-4	AM-4	AM-4
F7	AM-1	AM-1	AM-1	AM-1	AM-1	AM-1
F8	AM-1	AM-1	AM-1	AM-1	AM-1	AM-1
F9	AM-8	AM-8	AM-8	AM-8	AM-8	AM-8
F10	AM-8	AM-8	AM-8	AM-8	AM-8	AM-8
MOTOR STARTER OL SETTING						
	2.6	4.8	6.0	6.1	4.0	8.5

380-415 VAC 3 PHASE 50HZ						
FUSE	10CFM	21CFM	28CFM	35CFM	LEM15/20	LEM60
F1	AM-4	AM-4	AM-6	AM-6	AM-4	AM-6
F2	AM-4	AM-4	AM-6	AM-6	AM-4	AM-6
F3	AM-4	AM-4	AM-6	AM-6	AM-4	AM-6
F4	AM-10	AM-10	AM-10	AM-10	AM-10	AM-10
F5	AM-10	AM-10	AM-10	AM-10	AM-10	AM-10
F6	AM-4	AM-4	AM-4	AM-4	AM-4	AM-4
F7	AM-1	AM-1	AM-1	AM-1	AM-1	AM-1
F8	AM-1	AM-1	AM-1	AM-1	AM-1	AM-1
F9	AM-20	AM-20	AM-20	AM-20	AM-20	AM-20
F10	AM-20	AM-20	AM-20	AM-20	AM-20	AM-20
MOTOR STARTER OL SETTING						
	1.6	2.0	3.3	3.5	2.5	3.9

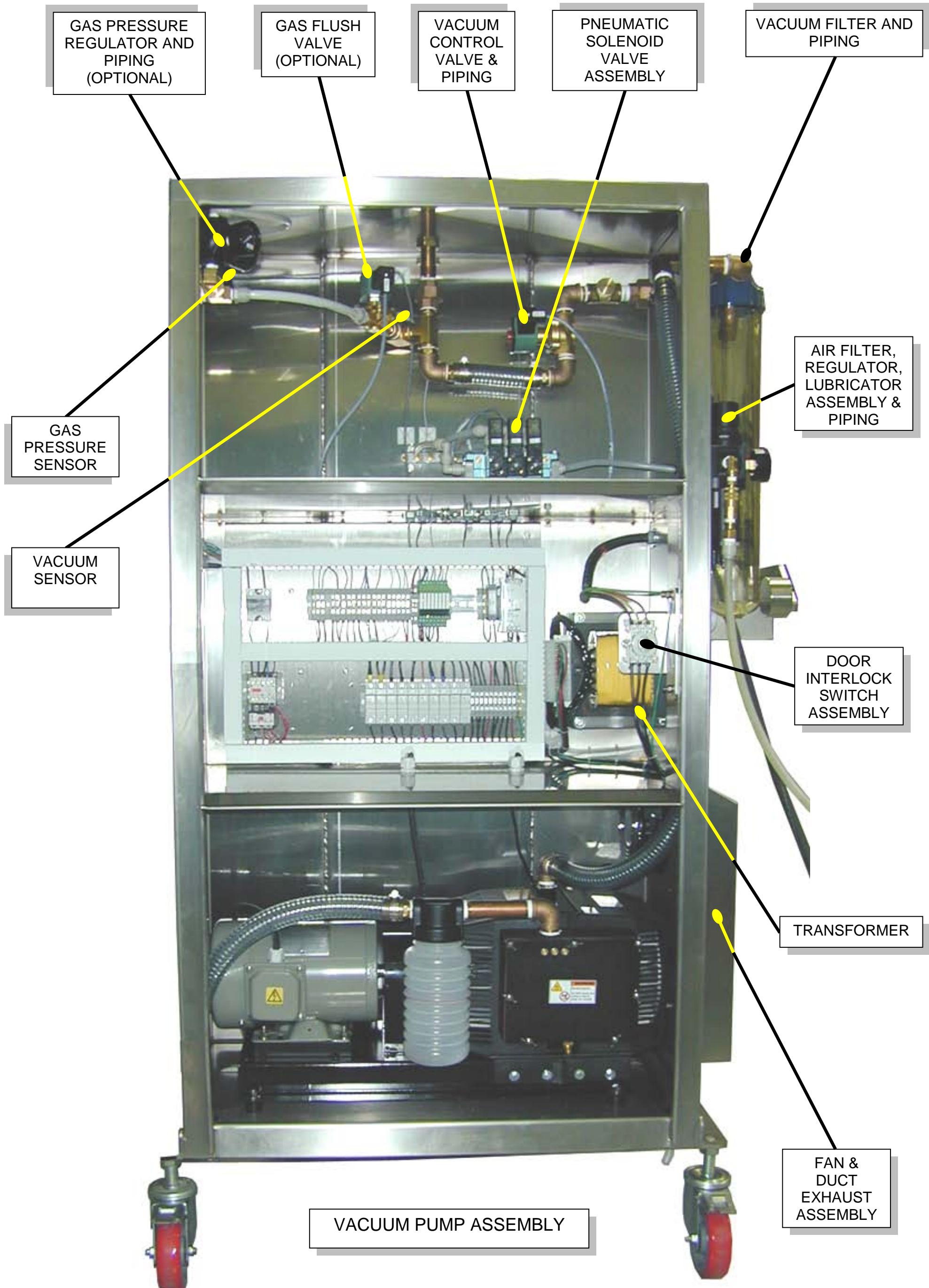
440-480 VAC 3 PHASE 60HZ						
FUSE	10CFM	21CFM	28CFM	35CFM	LEM15/20	LEM60
F1	AM-4	AM-4	AM-6	AM-6	AM-4	AM-6
F2	AM-4	AM-4	AM-6	AM-6	AM-4	AM-6
F3	AM-4	AM-4	AM-6	AM-6	AM-4	AM-6
F4	AM-8	AM-8	AM-8	AM-8	AM-8	AM-8
F5	AM-8	AM-8	AM-8	AM-8	AM-8	AM-8
F6	AM-4	AM-4	AM-4	AM-4	AM-4	AM-4
F7	AM-1	AM-1	AM-1	AM-1	AM-1	AM-1
F8	AM-1	AM-1	AM-1	AM-1	AM-1	AM-1
F9	AM-20	AM-20	AM-20	AM-20	AM-20	AM-20
F10	AM-20	AM-20	AM-20	AM-20	AM-20	AM-20
MOTOR STARTER OL SETTING						
	1.3	2.4	3.5	2.8	2.5	3.9

208-220 VAC 1 PHASE 50/60HZ						
FUSE	PIAB	-	-	ALTRAN		
F1	NONE					
F2	NONE					
F3	NONE					
F4	AM-16					
F5	AM-					

# **CORR-VAC® PARTS**

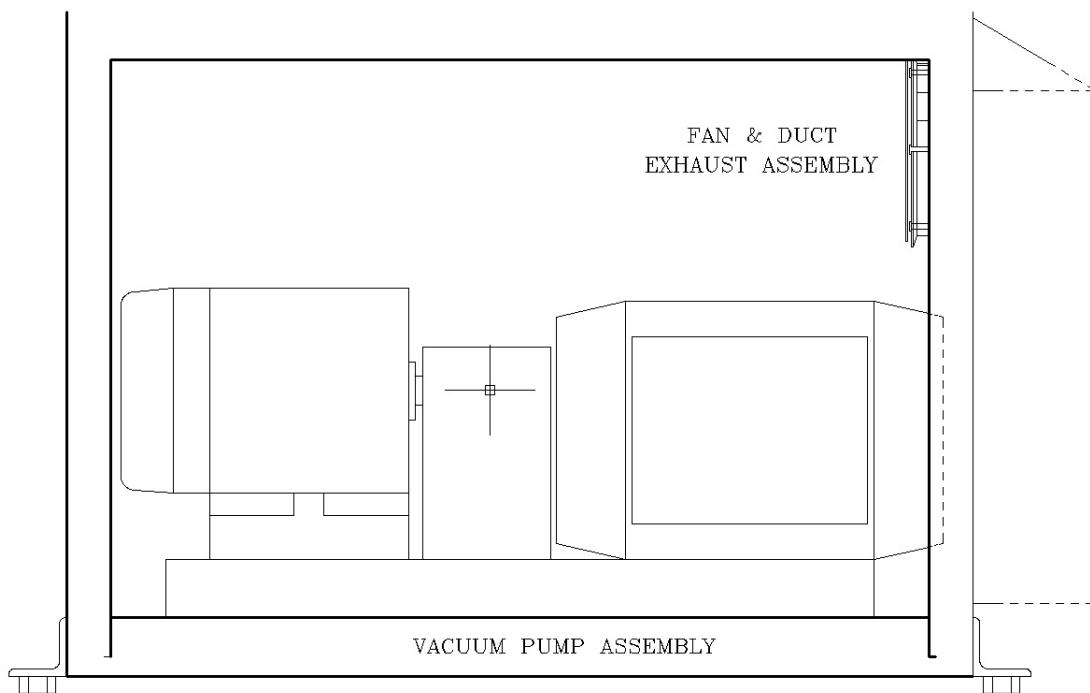
1. OVERVIEW OF TYPICAL MAIN CABINET.
2. VACUUM/GAS FLUSH MANIFOLD PARTS.  
Many drawings show a "typical" assembly. Always compare your machine with the drawings. If your machine is different from the drawings, you can select the necessary parts from the FITTINGS sections of this manual.
3. VACUUM PUMPS (INCLUDING FILTERS AND COOLING SYSTEMS).
4. PNEUMATIC PARTS.  
The table at the back of this section shows the correct electrical and pneumatic fittings needed for each Mac valve, in each machine model. For example, if you are looking for the pneumatic fittings to go on solenoid valve No. 2, on a Mark IV with Micro-Controller, first turn to the drawing and parts list for PNEUMATIC SOLENOID VALVE.  
  
Ref. No. C is 14, which is M-Tek part No. 74204201.  
  
Ref. No. D is 12 (74204601) and 13 (74203801).
5. FITTINGS.  
This section includes full-sized templates for each size of pipe, tubing, or fittings.  
  
You will then find drawings of each kind of fittings, with available sizes.
6. ELECTRICAL CONTROL PARTS.
7. CONTROL BOX PARTS.
8. HEAD PARTS.
9. MISCELLANEOUS.

## OVER VIEW OF TYPICAL MAIN CABINET



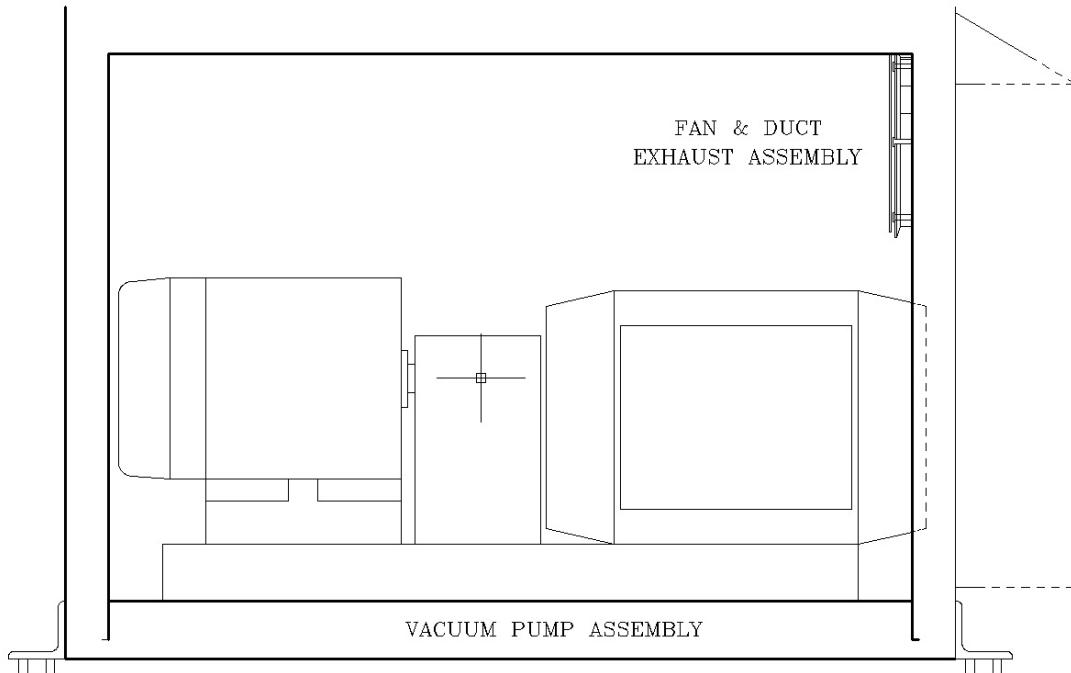
# Fan & Duct Exhaust Assembly, MK III

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
MK III:			
	71500401	Fan, 6.75 inch/171.4 mm Dia, 24 VDC .....	1
	71604401	Cord, 18/2 SJO Black, 40 inch/1016 mm Long .....	1
	71500601	Fan Cord, 6.7 inch/170 mm Long..... (Attached To SJO Cord)	1
	71500701	Fan Guard .....	1
	76206901	Exhaust Duct, MK III .....	1
	76203301	Cover, Fan Duct, MK III (Used When No Fan ..... As Req'd Is Installed)	



# Fan Exhaust Assembly, MK III

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
	71500101	Fan, 4.7 inch/119 mm Square, 120 VAC .....	1
	76201301	Bracket, Fan & Flexible Hose Mounting.....	1



Fanhose2 20 Oct 2010

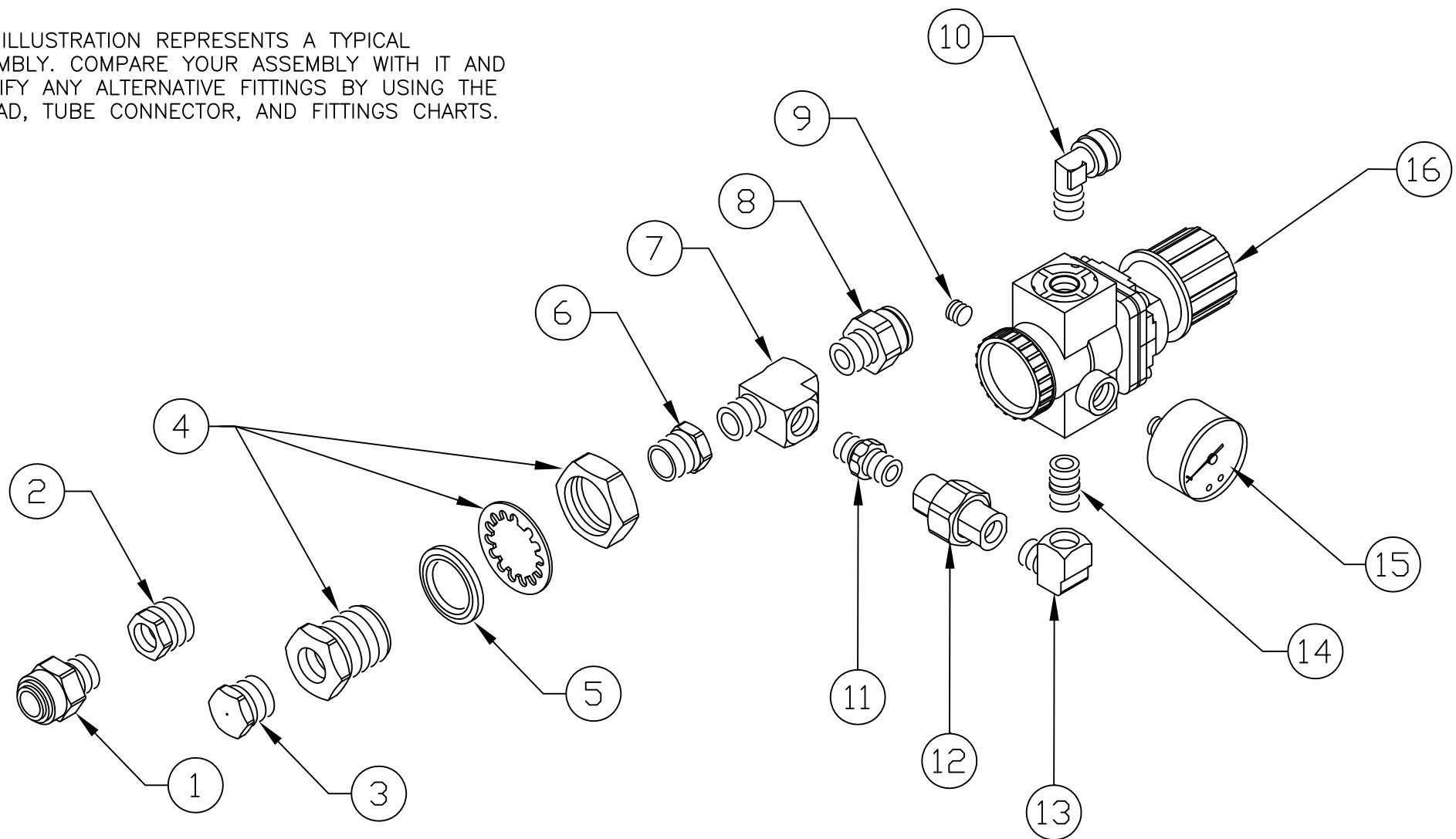
M-TEK INCORPORATED  
Telephone: 847-741-3500

1675 Todd Farm Drive  
Fax: 847-741-3569

Elgin, Illinois 60123 USA  
E-mail: mtek@mtekcorp.com

# GAS PRESSURE REGULATOR AND PIPING (OPTIONAL)

THIS ILLUSTRATION REPRESENTS A TYPICAL ASSEMBLY. COMPARE YOUR ASSEMBLY WITH IT AND IDENTIFY ANY ALTERNATIVE FITTINGS BY USING THE THREAD, TUBE CONNECTOR, AND FITTINGS CHARTS.



# Gas Pressure Regulator And Piping (Optional)

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
1	74203001	3/8 Tube X 1/4 NPT Male Conn, Plastic, (With Accumulator Tank) .....	1
2	74307801	1/2 NPT Male X 1/4 NPT Female Hex Head Bushing, Brass .....	1
		(With Accumulator Tank)	
3	74301901	1/2 NPT Male Plug, Hex Head, Brass (Without Accumulator Tank) .....	1
4	74300401	1/2 NPT Female X 1/2 NPT Female, 1.5 in/38 mm Bulkhead.....	1
		Coupling, Brass	
5	71601101	Seal Ring, 3/4" Pipe S/S .....	1
6	74302301	1/2 NPT Male X 3/8 NPT Female Hex Head Bushing, Brass .....	1
7	74306001	3/8 NPT Male Run Tee, Extruded, Brass.....	1
8	74100401	3/8 Tube X 3/8 NPT Male Compression Fitting, Brass .....	1
9	74301701	1/4 NPT Plug, Hex Countersunk, Brass.....	1
10	74204201	3/8 Tube X 1/4 NPT Fixed Elbow Male, Plastic .....	1
11	74303501	3/8 NPT Male X 1/4 NPT Male Hex Reducer Nipple, Brass .....	1
12	74301201	1/4 NPT Union, Machined, Brass.....	1
13	74304401	1/4 NPT Street Elbow, Extruded Long, Brass .....	1
14	74303101	1/4 NPT Close Nipple, Brass .....	1
15		Gauge .. . . . .	1
	73502701	Gauge, 1/4 NPT, 0-160 PSI/0-11 Bar	
	73502401	Gauge, Oxygen Cleaned, 1/4 NPT, 0-160 PSI/0-11 Bar	
16		Regulator .. . . . .	1
	73502302	Regulator, 1/4 NPT	
	73502202	Regulator, 1/4 NPT Oxygen Cleaned.....	1

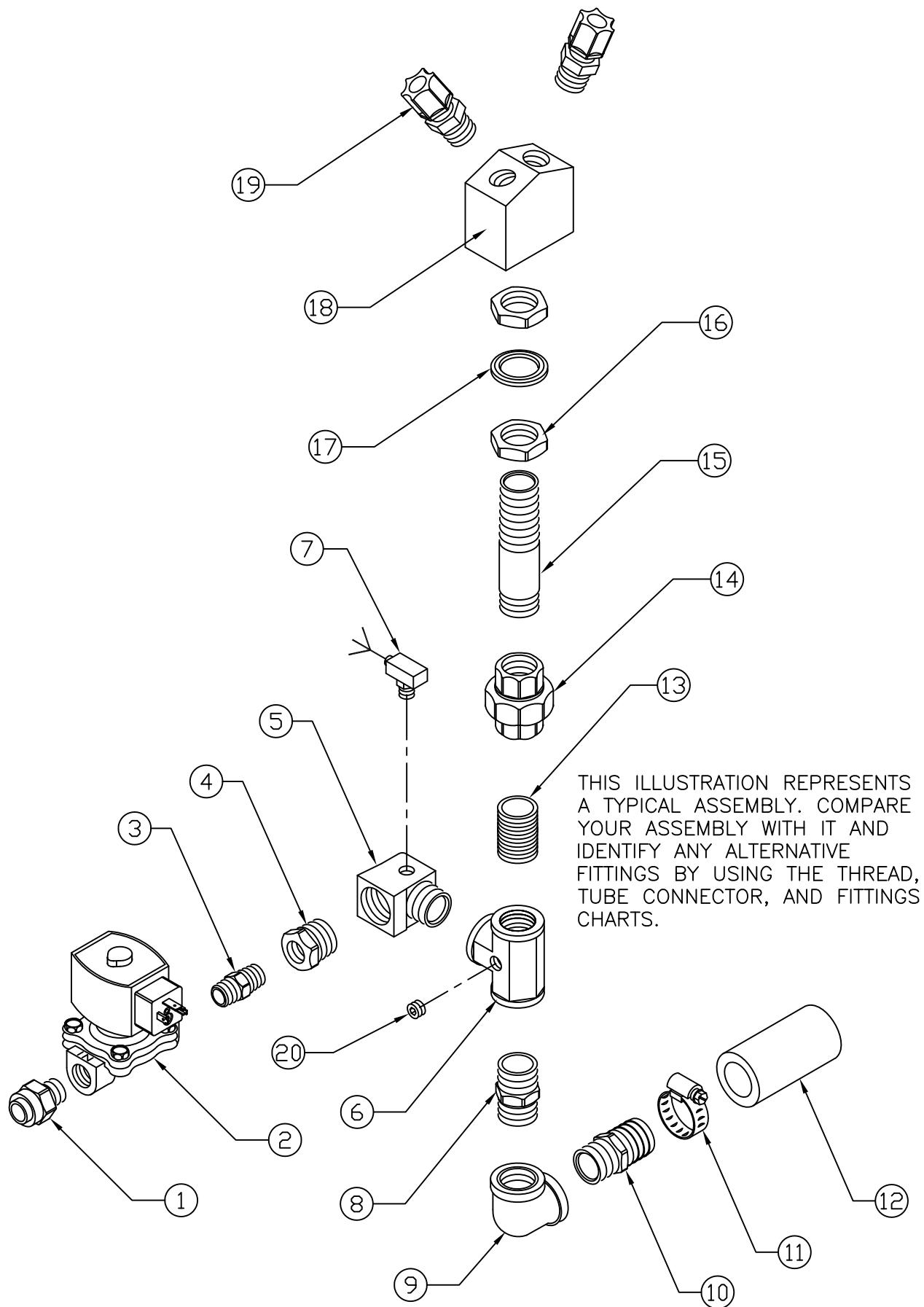
Gasprreg 23 Dec 1998

M-TEK INCORPORATED  
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Elgin, Illinois 60123 USA  
E-mail: mtek@mtekcorp.com

VACUUM CONTROL PIPING  
AND OPTIONAL GAS FLUSH VALVE  
(FOR INTEGRATED-CONTROLS)



# Vacuum Control Piping and Optional Gas Flush Valve (For Integrated Controls)

<b>Ref. No.:</b>	<b>M-Tek Part No.:</b>	<b>Description:</b>	<b>Qty.:</b>
1	74203101	1/2 Tube X 3/8 NPT Male Conn, Plastic .....	1
2		Valve, 3/8 NPT NC, Brass .....	1
	73103701	Valve, 3/8 NPT NC, Brass 24 VAC	
	73104101	Valve, O <sub>2</sub> 3/8 NPT NC, Brass 24 VAC	
3	74303601	1/2 NPT Male X 3/8 NPT Male Hex Reducer Nipple, Brass.....	1
4	74302401	3/4 NPT Male X 1/2 NPT Female Hex Head Bushing, Brass....	1
5	74304601	3/4 NPT Street Elbow - Extruded Brass .....	1
6	74300901	3/4 NPT Female Tee Forged, Brass.....	1
7	72300801	Sensor, Vacuum 1/8 NPT .....	1
8	74304101	3/4 NPT Hex Nipple, Brass .....	1
9	74300701	3/4 NPT Female Elbow - Forged Brass .....	1
10		Male Hose Barb, Brass .....	1
	74103201	3/4 Hose X 3/4 NPT Male Hose Barb, Brass	
	74103301	1 Hose X 3/4 NPT Male Hose Barb, Brass	
11		Hose Clamp Worm Gear S/S.....	1
	75001601	Hose Clamp #12 Worm Gear S/S	
	75001701	Hose Clamp #16 Worm Gear S/S	
12		Tubing, Polywire For Vacuum.....	As Req'd
	73301401	Tubing, 3/4" Polywire For Vacuum	
	73301501	Tubing, 1" Polywire For Vacuum	
13	74303401	3/4 NPT Close Nipple, Brass .....	1
14	74301501	3/4 NPT Union, Machined, Brass .....	1
15	74305101	3/4 NPT X 4 in/102 mm Long Nipple, Brass .....	1
16	74303001	3/4 NPT Locknut, Brass .....	2
17	71601101	Seal Ring, 3/4" Pipe S/S .....	1
18	79200101	Vacuum "Y", White Delrin .....	1
19	74200601	1/2 Tube X 1/2 NPT Male Conn, Plastic .....	2
20	74301601	1/8 NPT Plug, Hex Countersunk, Brass .....	Optional

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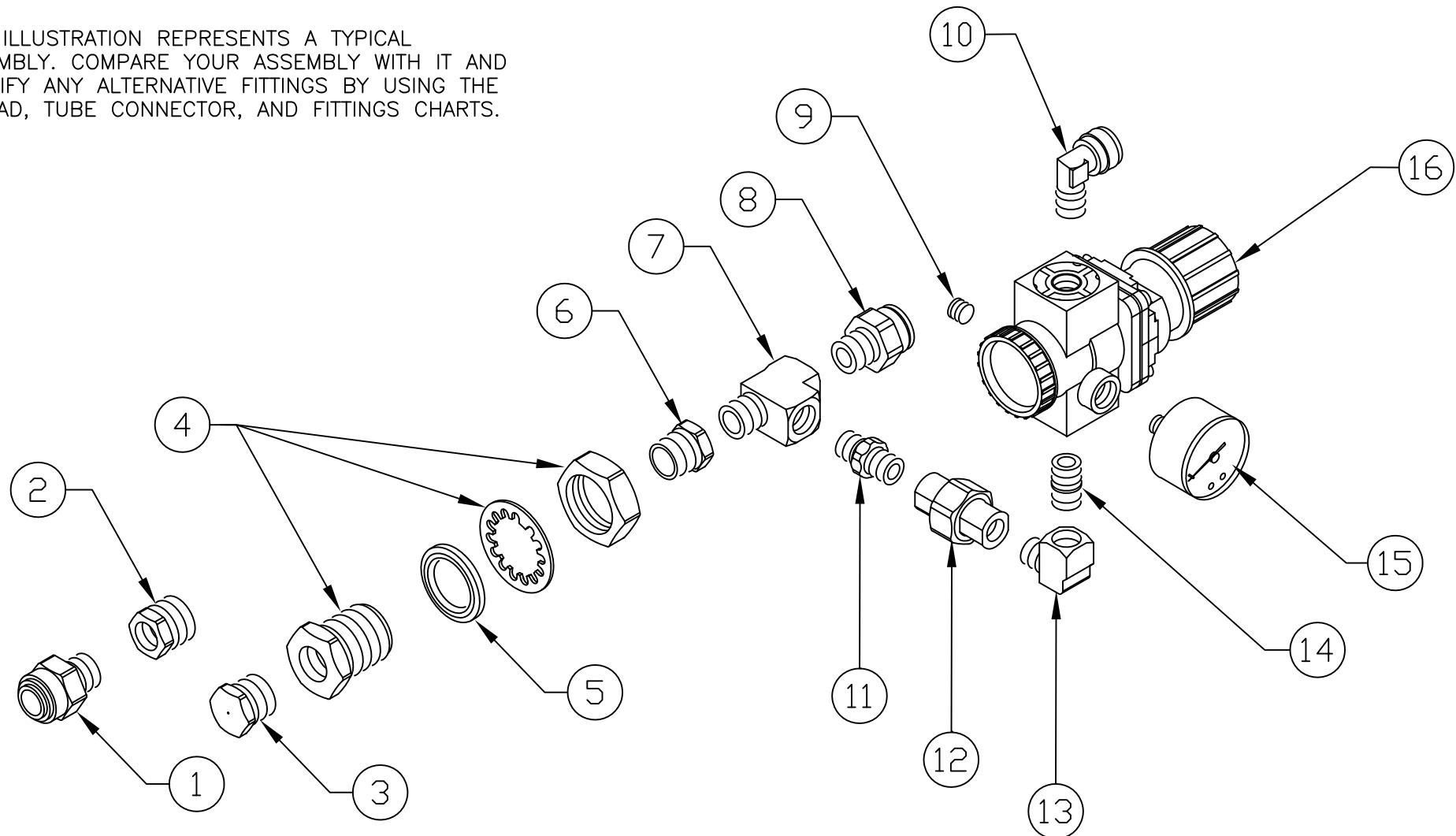
18 Oct 10

## **Gas Accumulator Tank And Piping (Optional)**

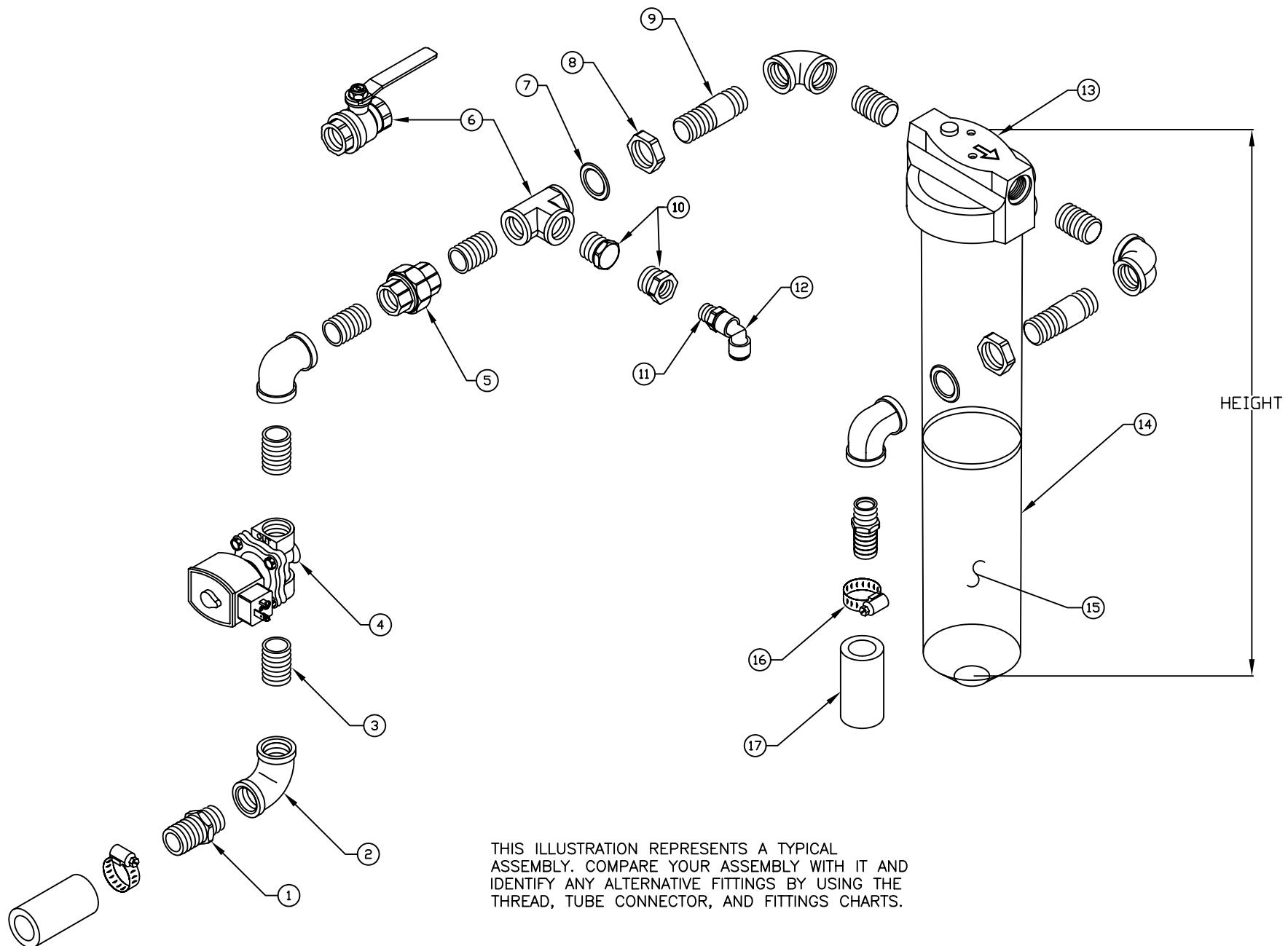
<b>Ref. No.:</b>	<b>M-Tek Part No.:</b>	<b>Description:</b>	<b>Qty.:</b>
	73103401	Relief Valve, 1/4 NPT, 125 PSI/8.6 Bar, S/S.....	1
	74302201	3/8 NPT Male X 1/4 NPT Female Hex Head Bushing, Brass .....	2
	74306001	3/8 NPT Male Run Tee, Extruded Brass.....	1
	74203101	1/2 Tube X 3/8 NPT Male Conn, Plastic .....	1
	74302601	3/4 NPT Male X 3/8 NPT Female Hex Head Bushing, Brass .....	2
	73000101	Tank, Gas Accumulator S/S, 3/4 NPT, 9.00 inch/228.6 mm ..... OD, 7.25 Cubic inch/.12 liters	1
	73103601	Ball Valve, 2-Way, 1/4 NPT, Brass .....	1

# GAS PRESSURE REGULATOR AND PIPING (OPTIONAL)

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## CUNO VACUUM FILTER AND PIPING



THIS ILLUSTRATION REPRESENTS A TYPICAL ASSEMBLY. COMPARE YOUR ASSEMBLY WITH IT AND IDENTIFY ANY ALTERNATIVE FITTINGS BY USING THE THREAD, TUBE CONNECTOR, AND FITTINGS CHARTS.

# Cuno Vacuum Filter And Piping

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
1		Male Hose Barb, Brass .....	2
	74103201	3/4 Hose X 3/4 NPT Male Hose Barb, Brass	
	74103301	1 Hose X 3/4 NPT Male Hose Barb, Brass	
2	74300801	3/4 NPT Female Elbow Cast, Brass.....	5
3	74303401	3/4 NPT Close Nipple, Brass .....	6
4		Valve, 3/4 NPT, Brass.....	1
	73102401	Valve, 3/4 NPT NC, Brass 24 VAC	
	73102301	Valve, 3/4 NPT NC, Brass 120 VAC	
	73102101	Valve, 3/4 NPT NO, Brass 24 VAC	
	73102001	Valve, 3/4 NPT NO, Brass 120 VAC	
	73103801	Valve, O <sub>2</sub> 3/4 NPT NC, Brass 24 VAC, Oxygen Rated	
	73101801	Valve, O <sub>2</sub> 3/4 NPT NC, Brass 120 VAC, Oxygen Rated	
5	74301501	3/4 NPT Union - Machined, Brass .....	1
6		Tee (or) Ball Valve (Optional).....	1
	74300901	3/4 NPT Female Tee Forged, Brass	
	73104501	Ball Valve, 3/4 NPT, Brass 400 PSI/28 Bar	
7	71601101	Seal Ring, 3/4 Pipe S/S .....	2
8	74303001	3/4 NPT Locknut, Brass .....	2
9	74305701	3/4 NPT X 3/4 NPSM X 4 inch/102 mm Long Special Nipple, ....	2
	Brass		
10		Plug or Bushing (Optional).....	1
	74302101	3/4 NPT Plug Hex Head, Brass	
	74302601	3/4 NPT Male X 3/8 NPT Female Hex Head Bushing, Brass	
11	74204601	3/8 Tube X 1/4 NPT, Stem Adapter, Plastic (Optional) .....	1
12	74204001	3/8 Tube X 3/8 Tube, Plug In Elbow, Plastic (Optional) .....	1
13		Filter Unit, Cuno .....	1
	72201101	Filter Unit, Cuno 1M1 Complete, 13.5 inch/343 mm Height	
	72201801	Filter Unit, Cuno 1M2 Complete, 23.2 inch/589 mm Height	
	72201201	Head, Cuno Filter, Blue Acetal	
	72202301	O-Ring, Cuno Filter	

CUNO 10282004

M-TEK INCORPORATED  
Telephone: 847-741-3500

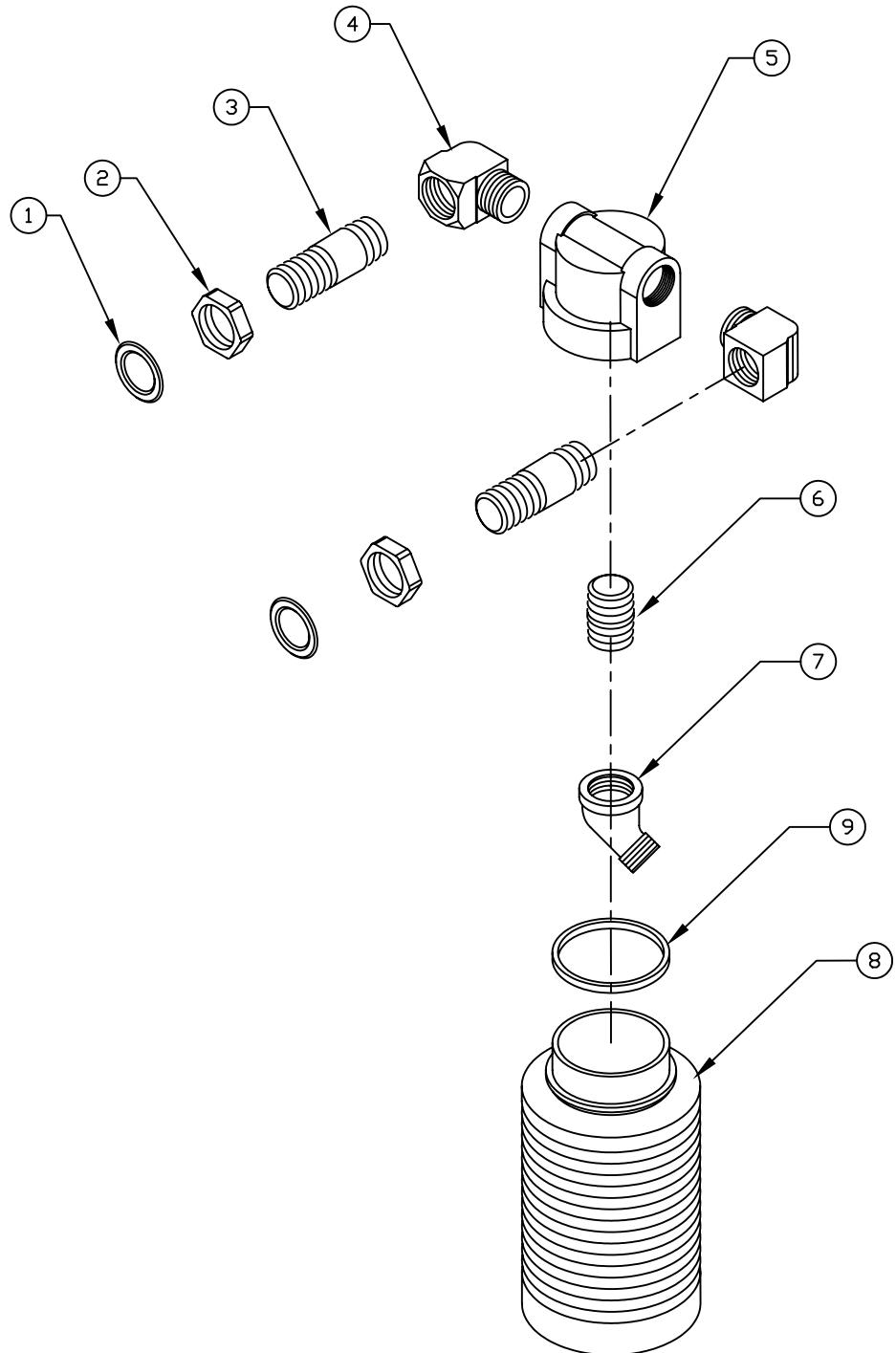
1675 Todd Farm Drive  
Fax: 847-741-3569

Elgin, Illinois 60123 USA  
E-mail: mtek@mtekcorp.com

# Cuno Vacuum Filter And Piping

<b>Ref. No.:</b>	<b>M-Tek Part No.:</b>	<b>Description:</b>	<b>Qty.:</b>
14		Sump Only, Cuno.....	1
	72201001	Sump Only, Cuno 1M1 Transparent	
	72201901	Sump Only, Cuno 1M2 Transparent	
15		Filter (Optional)	
	72202201	Filter, S/S 30 Mesh For Cuno, 9.75 inch/247.6 mm Long For Cuno 1M1 Filter Unit .....	(If Req'd) 1
		For Cuno 1M2 Filter Unit .....	(If Req'd) 2
	72200401	Filter, Paper For Cuno, 9.75 inch/247.6 mm Long For Cuno 1M1 Filter Unit .....	(If Req'd) 1
		For Cuno 1M2 Filter Unit .....	(If Req'd) 2
16		Hose Clamp Worm Gear S/S .....	2
	75001601	Hose Clamp #12 Worm Gear S/S	
	75001701	Hose Clamp #16 Worm Gear S/S	
17		Tubing, Polywire For Vacuum .....	As Req'd
	73301401	Tubing, 3/4" Polywire For Vacuum	
	73301501	Tubing, 1" Polywire For Vacuum	

## GAST VACUUM FILTER AND PIPING

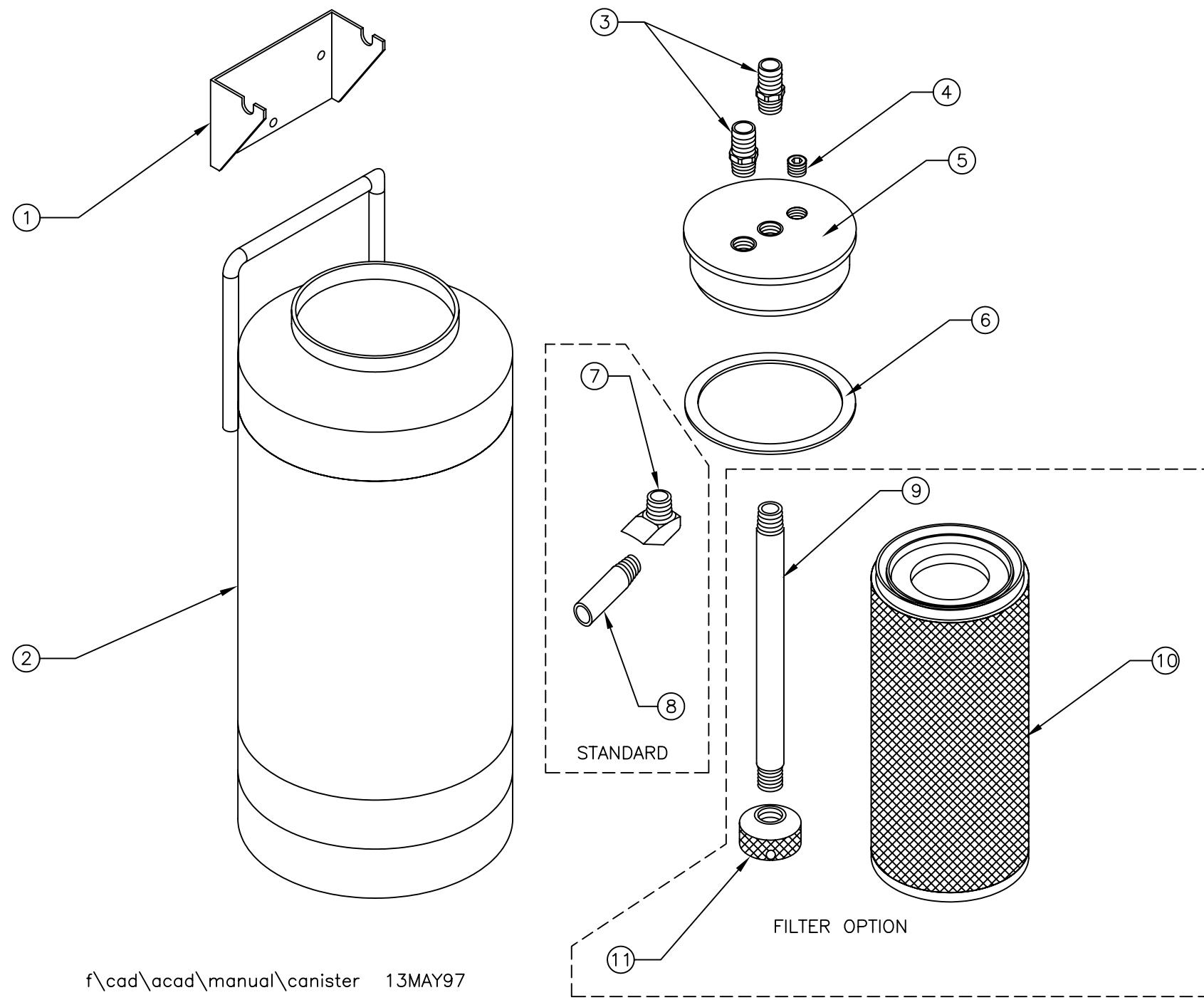


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# Gast Vacuum Filter And Piping

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
1	71601101	Seal Ring, 3/4 Pipe S/S.....	2
2	74303001	3/4 NPT Locknut, Brass .....	2
3	74305701	3/4 NPT X 3/4 NPSM X 4 inch/102 mm Long Special Nipple, .... Brass	2
4	74304601	3/4 NPT Street Elbow, Extruded Brass .....	2
5	72106101	Filter Head, Gast, 3/4 NPT.....	1
6	74303401	3/4 NPT Close Nipple, Brass .....	1
7	74305501	3/4 NPT Street Elbow, 45°, Forged Brass.....	1
8	72201701	Jar, Vacuum Filter, Ribbed Sides, Plastic.....	1
9	72102001	Gasket, Gast Pump Filter or Exhaust Head .....	1

# VACUUM DRAIN CANISTER (OPTIONAL)



# Vacuum Drain Canister (Optional)

<b>Ref. No.:</b>	<b>M-Tek Part No.:</b>	<b>Description:</b>	<b>Qty.:</b>
1	76203901	Canister Hanger.....	1
2	72200101	Canister Tank, 9.0 inch/23 mm OD, S/S .....	1
3	74103101	¾ Hose X ½ NPT Male Hose Barb, Brass .....	2
4	74301801	⅜ NPT Plug, Hex Countersunk . . . . . (Optional) .....	1
5	72200501	Canister Lid, ½ NPT .....	1
6	72200601	Gasket, Canister Lid.....	1
STANDARD PARTS:			
7	74307201	½ NPT Street Elbow, 45°, Brass .....	1
8	72200801	Drain Tube, Canister, ½ NPT .....	1
FILTER OPTION:			
9	72200701	Mount Tube, Canister Filter, ½ NPT .....	1
10	72200201	Filter, Canister Paper .....	1
11	72200901	Knob, Canister Filter, ½ NPT .....	1
EARLY MODELS:			
3	74200501	½ Tube X ⅜ NPT Male Connector, Plastic .....	2
4	72102301	Vacuum Relief Valve, ⅜ NPT. . . . . (Optional).....	1
5	72201401	Canister Lid, 1/4 NPT .....	1
7	74305801	¼ NPT Street Elbow, 45°, Brass .....	1
8	72201601	Drain Tube, Canister, ¼ NPT .....	1
9	72201501	Mount Tube, Canister Filter, ¼ NPT .....	1
11	72201301	Knob, Canister Filter, ¼ NPT .....	1

# **10 CFM/283 LPM Vacuum Pump Assembly, MK III (Oil-less, Dry Vane)**

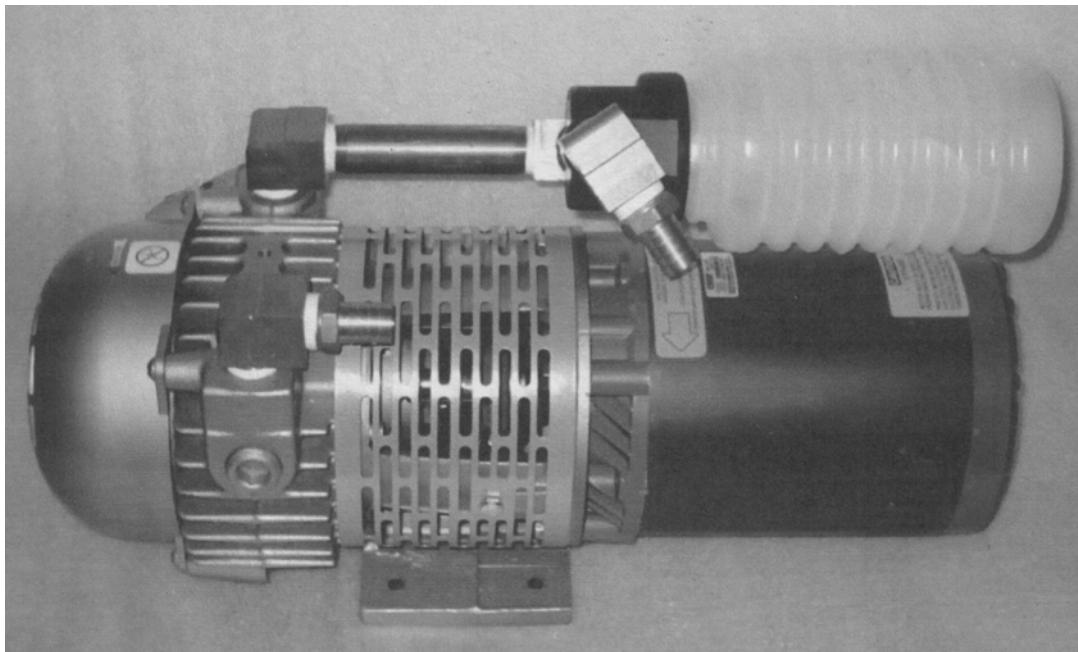
<b>Ref. No.:</b>	<b>M-Tek Part No.:</b>	<b>Description:</b>	<b>Qty.:</b>
	72105201	Gast Pump Assembly, 10 CFM/283 LPM (Oil-less, Dry Vane) .... 1	
	75001901	Polyurethane Stud Bumper, Pump Feet, 1 inch/25 mm OD ..... 4	
	72100301	Pump Vanes, 10 CFM, (Old) Model 1022 #AB992B. .... .4	
	72106201	Pump Vanes, 10 CFM, (Current) Model 1023 #AK513. .... .4	
<b>INPUT:</b>			
	74304701	½ NPT Female X ¾ NPT Male Street Elbow, Brass.....1	
	74103101	¾ Hose X ½ NPT Male Hose Barb, Brass .....	1
<b>OUTPUT:</b>			
	74308401	¾ NPT x 5 inch/127 mm Long Nipple, Brass .....	1
	74304501	¾ NPT Street Elbow, Extruded Long, Brass .....	1
	72107701	Gast, Filter Head Only, ¾ NPT .....	1
		Note: Filters Must Not Be Used For This Application	
	72100101	Jar, Exhaust, Plastic.....	1
	72102001	Gast Gasket, Filter Head (Service Only).....	As Req'd
	74304701	½ NPT Female X ¾ NPT Male Street Elbow, Brass.....1	
	74103101	3/4 Hose X ½ NPT Male Hose Barb, Brass .....	1



Model #1023-V103

# 21 CFM/595 LPM Vacuum Pump Assembly, MK III (Oil-less, Dry Vane)

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
	72105801	Gast Pump Assembly, 21 CFM/595 LPM (Oil-less, Dry Vane) ....	1
	72106701	Pump Vanes, 21 CFM, Model 2567 #AH195. ....	4
INPUT:			
	74304101	¾ NPT Hex Nipple, Brass .....	1
	74300801	¾ NPT Female Elbow, Cast Brass.....	1
	74103301	1 Hose X ¾ NPT Male Hose Barb, Brass .....	1
OUTPUT:			
	74305501	¾ NPT Street Elbow, 45° Forged Brass.....	3
	74305201	¾ NPT X 5 inch/127 mm Long Nipple.....	1
	72106101	Gast Filter Head Only, ¾ NPT .....	1
		Note: Filters Must Not Be Used For This Application	
	72100101	Jar, Exhaust, Plastic.....	1
	72102001	Gast Gasket, Filter Head (Service Only).....	As Req'd
	74103301	1 Hose X ¾ NPT Male Hose Barb, Brass .....	1



21vp 4 Dec 1998

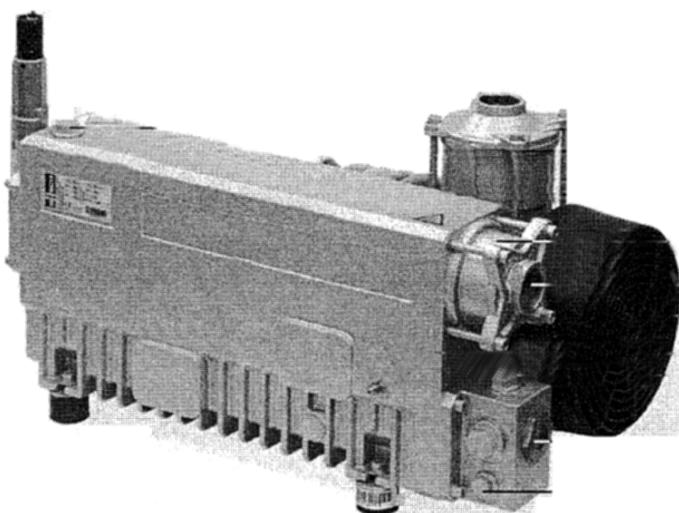
M-TEK INCORPORATED  
Telephone: 847-741-3500

1675 Todd Farm Drive  
Fax: 847-741-3569

Elgin, Illinois 60123 USA  
E-mail: mtek@mtekcorp.com

# 28 CFM/793 LPM Vacuum Pump Assembly, MK III (Oil Sump)

<b>Ref. No.:</b>	<b>M-Tek Part No.:</b>	<b>Description:</b>	<b>Qty.:</b>
		Pump Assembly (Oil Sump).....	1
	72106501	Busch Pump Assembly, 28 CFM/793 LPM	
	72105501	Busch Pump Assembly, 28 CFM/793 LPM, O <sub>2</sub> Rated	
<b>INPUT:</b>			
	74303801	1 1/4 NPT Male X 3/4 NPT Female Hex Head Bushing, Brass .....	1
	74305501	3/4 NPT Street Elbow 45°, Forged Brass.....	1
	74103301	1 Hose X 3/4 NPT Male Hose Barb, Brass .....	1
<b>OUTPUT:</b>			
	74303801	1 1/4 NPT Male X 3/4 NPT Female Hex Head Bushing, Brass .....	1
	74305001	3/4 NPT X 3 inch/76 mm Long Nipple.....	1
	74300801	3/4 NPT Female Elbow, Cast Brass.....	1
	74103301	1 Hose X 3/4 NPT Male Hose Barb, Brass .....	1
<b>OIL DRAIN:</b>			
	74302301	1/2 NPT Male X 3/8 NPT Female Hex Head Bushing, Brass .....	1
	74304501	3/8 NPT Street Elbow, Extruded Long, Brass .....	1
	74302201	3/8 NPT Male X 1/4 NPT Female Hex Head Bushing, Brass .....	1
	73103601	Ball Valve, 1/4 NPT, 2 Way, Brass.....	1
	74301701	1/4 NPT Plug, Hex Countersunk, Brass.....	1
<b>ELECTRICAL:</b>			
	71604801	Cord Grip, .375/.437 inch (9.52/11.10 mm) Dia, 3/4 NPT .....	1



28vp 23 Dec 1998

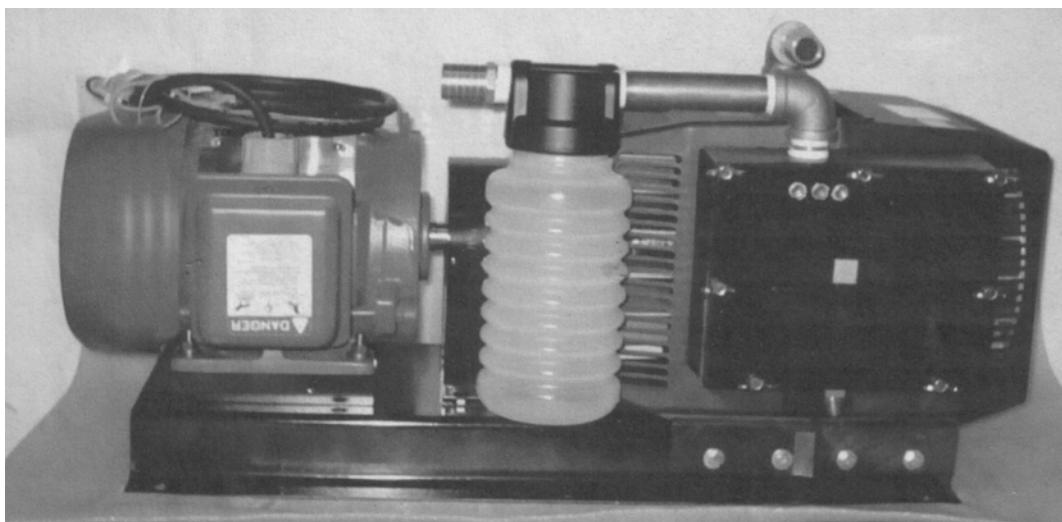
M-TEK INCORPORATED  
Telephone: 847-741-3500

1675 Todd Farm Drive  
Fax: 847-741-3569

Elgin, Illinois 60123 USA  
E-mail: mtek@mtekcorp.com

# 35 CFM/991 LPM Vacuum Pump Assembly, MK III (Oil-less, Dry Vane)

<b>Ref. No.:</b>	<b>M-Tek Part No.:</b>	<b>Description:</b>	<b>Qty.:</b>
	52100101	Gast Pump Assembly, 35 CFM/991 LPM ..... (Oil-less, Dry Vane)	1
	75001901	Polyurethane Stud Bumper, Pump Feet, 1 inch/25 mm OD .....	5
	72105101	Pump Vanes, 35 CFM, Model 3080 #AN131.....	4
<b>INPUT</b>			
	74303401	¾ NPT Close Nipple, Brass .....	1
	74300801	¾ NPT Female Elbow, Cast Brass.....	1
	74103301	1 Hose X ¾ NPT Male Hose Barb, Brass .....	1
<b>OUTPUT</b>			
	74303401	¾ NPT Close Nipple, Brass .....	1
	74300801	¾ NPT Female Elbow, Cast Brass.....	1
	74305201	¾ NPT X 5 inch/127 mm Long, Brass.....	1
	72106101	Gast Filter Head, ¾ NPT.....	1
		Note: Filters Must Not Be Used For This Application.	
	72201701	Jar Vacuum Filter, Ribbed Sides, Plastic .....	1
	74103301	1 Hose X ¾ NPT Male Hose Barb, Brass .....	1
<b>ELECTRICAL</b>			
	71604801	Cord Grip, .375/.437 inch (9.52/11.10 mm) DIA, ¾ NPT .....	1

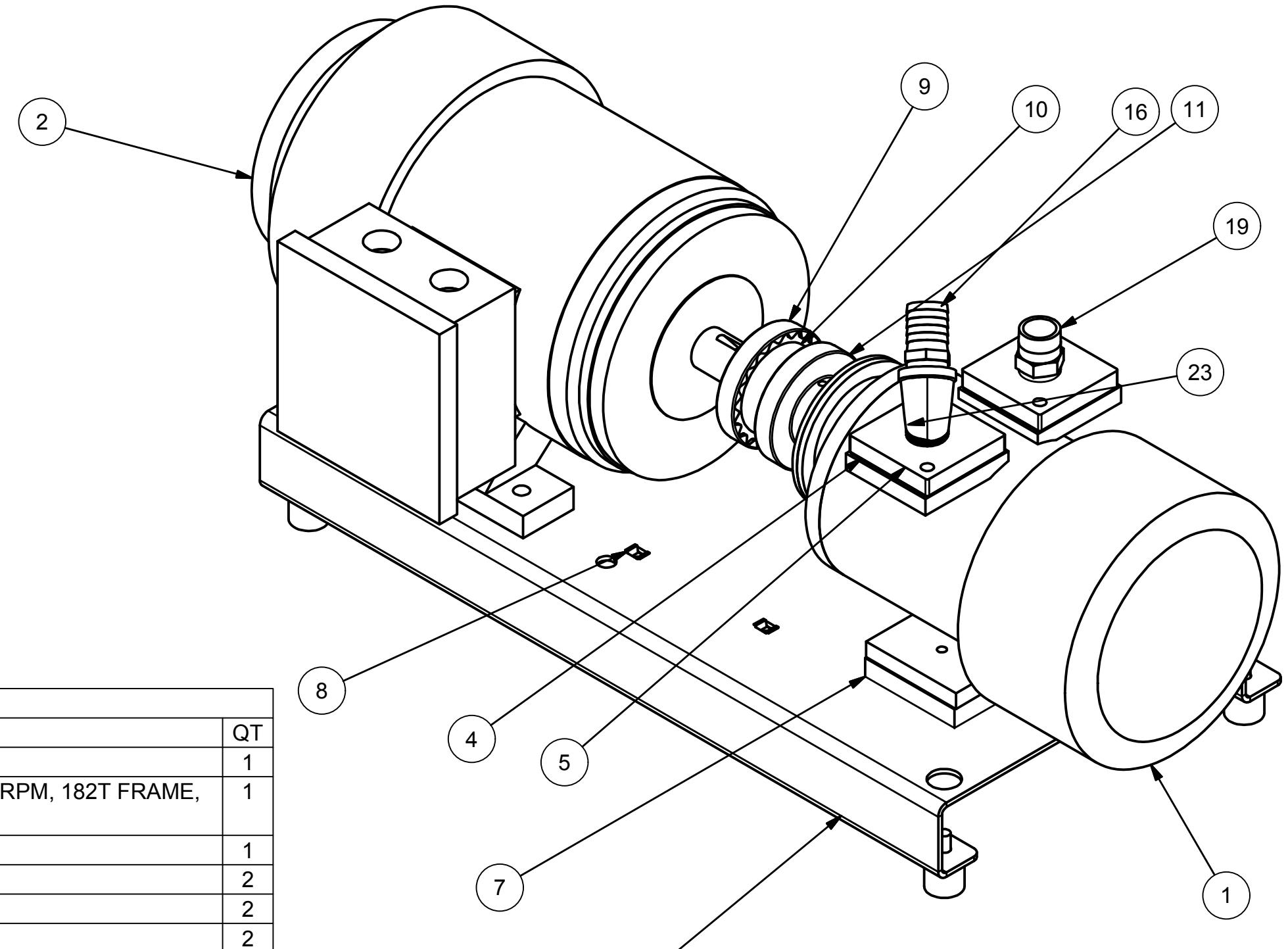


35vp 4 Dec 1998

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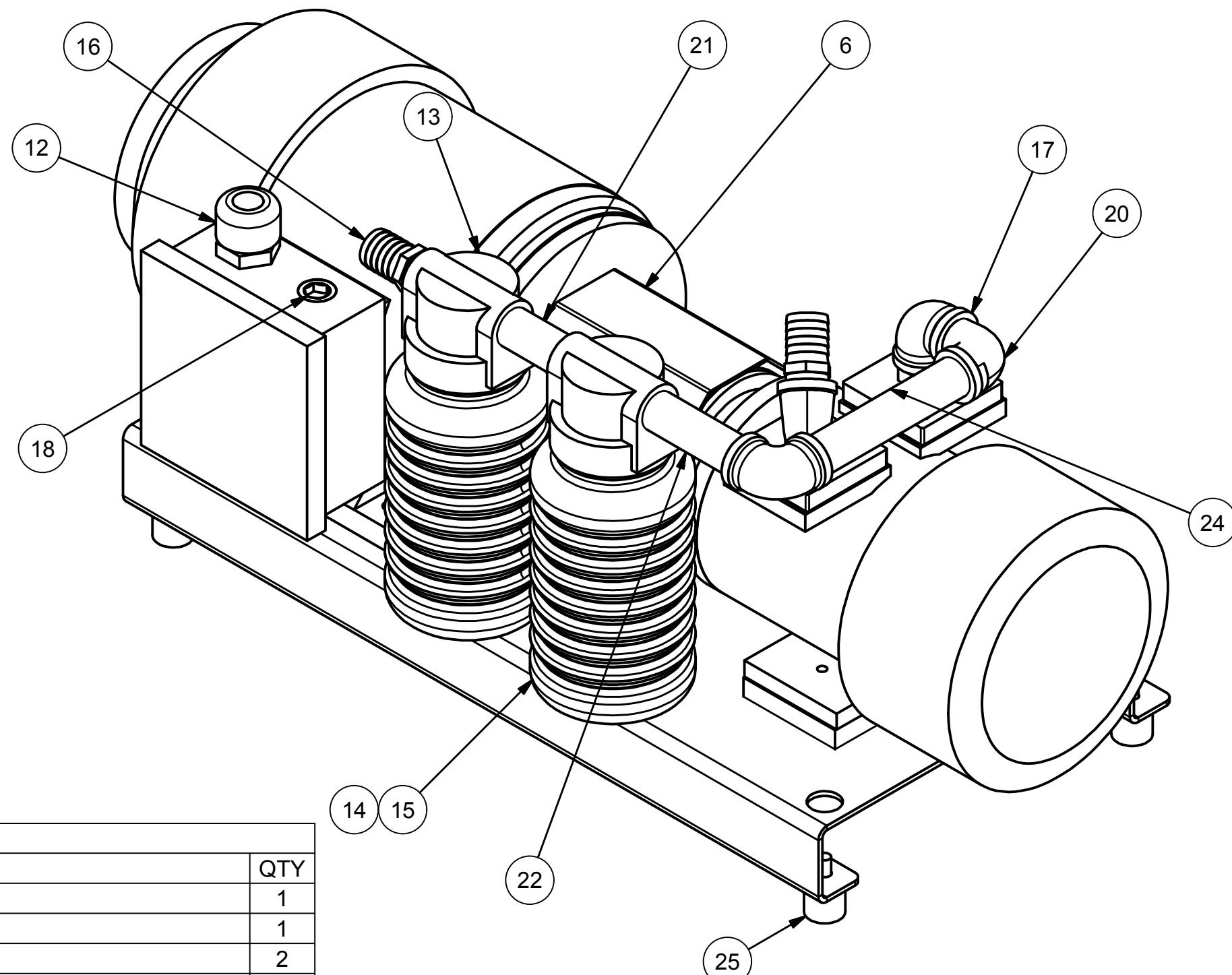
Elgin, Illinois 60123 USA  
E-mail: mtek@mtekcorp.com



PARTS LIST

ITEM	PART NO.	DESCRIPTION	QT
1	122064C1	40 CFM DRY ROTARY VANE VACUUM PUMP	1
2	122065C1	GENERAL PURPOSE AC MOTOR, 3HP, 1800 RPM, 182T FRAME, 3 PHASE	1
3	122066C1	40 CFM PUMP MOUNT BASE	1
4	122069C1	40 CFM PUMP GASKET	2
5	122070C1	40 CFM PUMP INLET/OUTLET BLOCK	2
7	122072C1	40 CFM PUMP SPACER	2
8	122073C1	CLIP-ON NUT 1/4-20	4
9	122096C1	ELASTOMER IN SHEAR COUPLING FLANGE, 1-1/8 BORE w/KEYWAY	1
10	122098C1	ELASTOMER IN SHEAR COUPLING INSERT	1
11	122099C1	ELASTOMER IN SHEAR COUPLING FLANGE, 28mm BORE w/KEYWAY FOR PUMP	1
16	74103301	1 X 3/4 NPT MALE HOSE BARB	2
19	74304101	3/4 NPT HEX NIPPLE, BRASS	1
23	74305501	3/4 NPT STREET ELBOW, 45 DEG., FORGED BRASS	1

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TITLE: PUMP 40 CFM	
DWG NO.: MA250-0003	
SCALE: 0.32 : 1 DATE: 6/5/2013 SHEET 1 OF 2	



PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
6	122071C1	40 CFM PUMP COUPLING COVER	1
12	71604801	CORD GRIP,.375-.437, 3/4 WOOD	1
13	72106101	FILTER HEAD 3/4 NPT	2
14	72109101	COUPLING, 3/4 MALE THREAD FOR FILTER HEAD	2
15	72201701	JAR, VACUUM FILTER, RIBBED SIDES, PLASTIC	2
17	74300801	3/4 NPT FEMALE ELBOW, CAST BRASS	2
18	74302001	3/4 PLUG, HEX COUNTERSUNK	1
20	74304201	3/4 NPT STREET ELBOW, CAST	1
21	74305001	3/4 NPT X 3 LONG NIPPLE, BRASS	1
22	74305101	3/4 NPT X 4 LONG NIPPLE, BRASS	1
24	74307101	3/4 x 6" NIPPLE	1
25	75001902	VIBRATION ISOLATION PAD	5

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APPROVED MFG:	APPROVED ENG:
DRAWN BY: T. LIAKOPOULOS	
TITLE:	
PUMP 40 CFM	
DWG NO.: MA250-0003	
SCALE: 0.32 : 1	DATE: 6/5/2013
SHEET 2 OF 2	

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
3	71604801	CORD GRIP,.375-.437, 3/4 WOOD	1
4	72111401	WATER RING PUMP 60	1
5	73107301	1/2 NPT, .75 GPM, EPR Seal, PVC Flow Control Valve	1
6	73107501	Valve, 1/2 NPT brass N.C. 24VAC w/ DIN	1
7	74000101	PVC Y-Strainer 1/2 NPT Pipe 150 psi	1
8	74000301	Locking Nylon Pipe Hanger 3/4 to 7/8 O.D. Pipe, 9/16 High X 1 Inch Wide	1
9	74303701	1/4 NPT hex nipple - long	1
10	74500101	1/2 NPT Male X 1/4 NPT Female Reducing Hex Bushing Schedule 80, Dark Gray PVC	1
11	74500201	1/2 NPT Female X 1/2 NPT Female 90 Degree Elbow Schedule 80 Dark Gray PVC	3
12	74500301	1/2 NPT X 1/2 NPT X 2 Inch Long Threaded Pipe Nipple Schedule 80 Dark Gray PVC	1
13	74500401	1/2 NPT X 1/2 NPT X 1-1/8 INCH LONG THREADED PIPE NIPPLE SCHEDULE 80 DARK GREY PVC	4
14	74500601	Adapter 1/2 Inch Barbed (.635 O.D.) X 1/2 NPT Male Schedule 80 Dark Gray PVC	3
15	74500701	1/2 NPT Female Bulkhead Fitting 1/2 NPT Female X 1/2 NPT Female Gray PVC 1-3/8 Inch Hole Required	2
16	74500801	1/2 NPT Female Ball Valve Schedule 80 Gray CPVC Vito O-Rings	1
17	74500901	1-1/4 NPT Male X 1 NPT Female Reducing Hex Bushing Schedule 80 Dark Gray PVC	2
18	74501001	1 NPT X 1 NPT X 1-1/2 Threaded Pipe Close Nipple Schedule 80 Dark Gray PVC	1
19	74501101	1 NPT Female X 1 NPT Female 45 Degree Elbow Schedule 80 Dark Gray PVC	1
20	74501201	1 Inch Barbed X 1 NPT Male Adapter Schedule 80 Dark Gray PVC	3
21	74501801	Water and Air Separator Weldment (PVC)	1
22	74501901	1/2 NPT X 1/2 NPT X 3 Inch Long Threaded Pipe Nipple Schedule 80 Dark Gray PVC	1
24	76000401	PIPE HANGER SUPPORT BRACKET FOR LEM60 WATER-RING PUMP	1
25	76000701	Pipe Hanger Mounting Bracket LEM60 Water-Ring Pump	1
26	84400101	1 Inch NPT Close 304/304L Stainless Steel Pipe Nipple, 1-1/2 Inch Long Schedule 40 Close	1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	02/22/2016	N.B

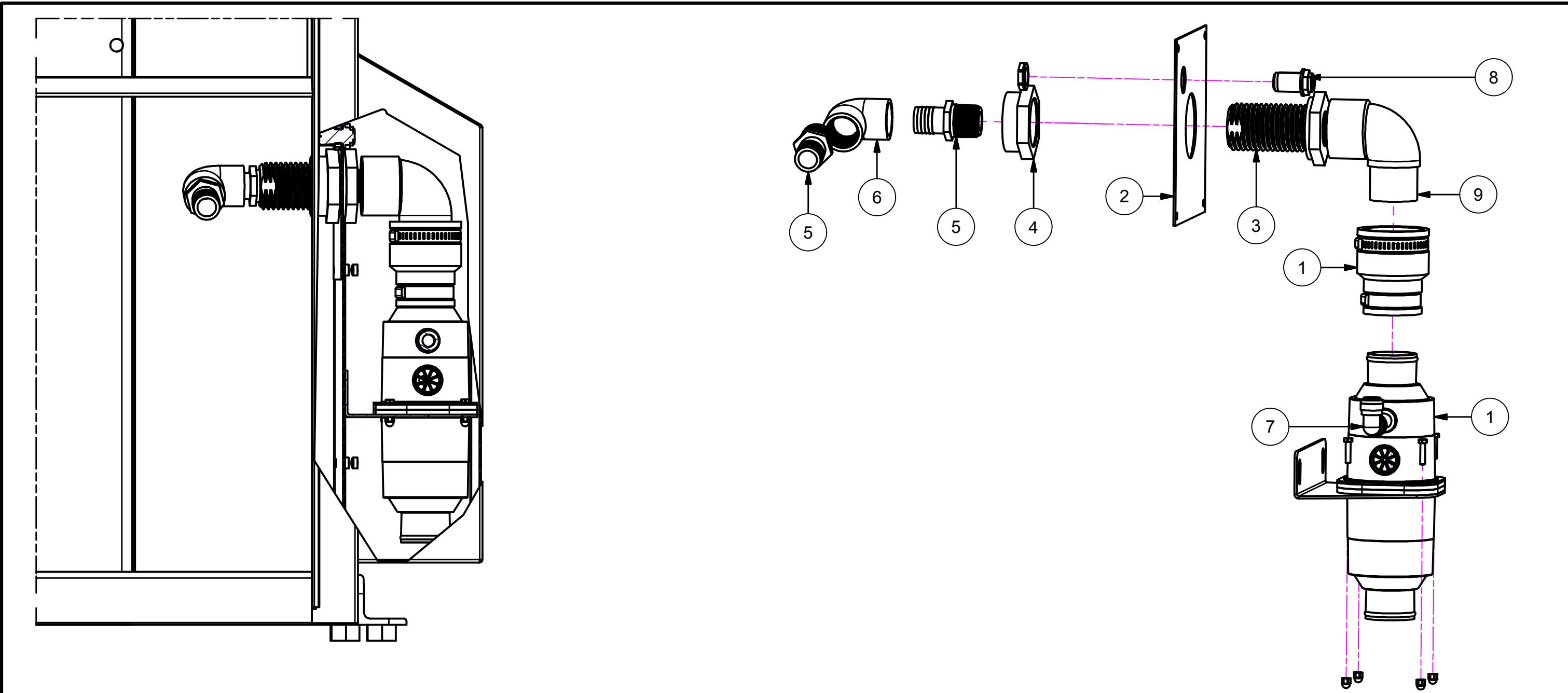
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 .XXX = ± .005  
 XXXX = ± .0005  
 DRILLED HOLE STANDARD S.A.E.

APPROVED MFG: DRAWN BY: C.ILONTA APPROVED ENG:

TITLE: WATER RING PUMP, MK III DWG NO.: Mk III Water Ring Pump Assembly A

SCALE: N/A DATE: 1/14/2016 SHEET 1 OF 1

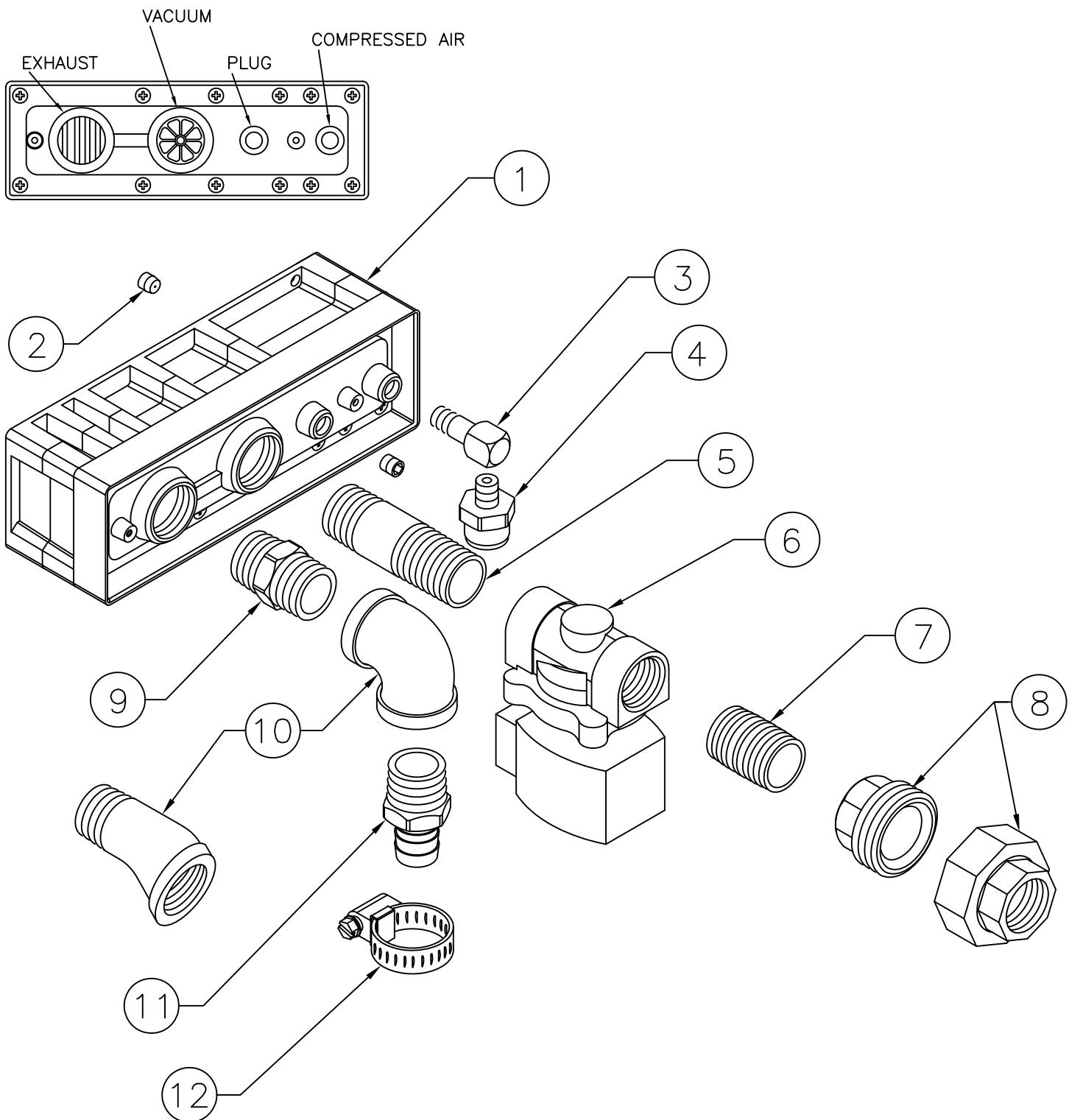


PARTS LIST

ITEM	PART NO.	DESCRIPTION	QT
1	122904C1	Pump, Vacuum, Round Coax Cartridge Style	1
2	123248C1	PIAB ADAPTER PLATE	1
3	74501301 body	1 NPT X 1 NPT Female Bulkhead Fitting Gray PVC, 1-7/8 Inch Hole Diameter Required	1
4	74501301 Nut	1 NPT X 1 NPT Female Bulkhead Fitting Gray PVC, 1-7/8 Inch Hole Diameter Required	1
5	74501201	1 Inch Barbed X 1 NPT Male Adapter Schedule 80 Dark Gray PVC	2
6	121178C1	Thick-Wall Dark Gray PVC Threaded Pipe Fitting, 1 Pipe Size, 90 Degree Elbow, Schedule 80	1
7	74203901	1/2 O.D. TUBE UNION EBOW, PLASTIC	1
8	110507C1	3/8 O.D. TUBE, BULK HEA UNION	1
9	121898C1	Gray PVC 90 Deg Threaded Elbow, 1-1/4 NPTF, Schedule 80	1

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	<small>APPROVED ENG:</small> <small>TITLE:</small>
<small>TOLERANCES: UNLESS OTHERWISE STATED:            FRACTIONAL = ± .015            XX = ± .015            XXX = ± .005            DRILLED HOLE: STANDARD S.A.E.</small>	<small>DWG NO.: MARK III PYLON PIAB</small>
<small>SCALE: N/A</small>	<small>DATE:</small>
<small>SHEET 1 OF 1</small>	

# PIAB AIR DRIVEN VACUUM PUMP AND PIPING, MK III

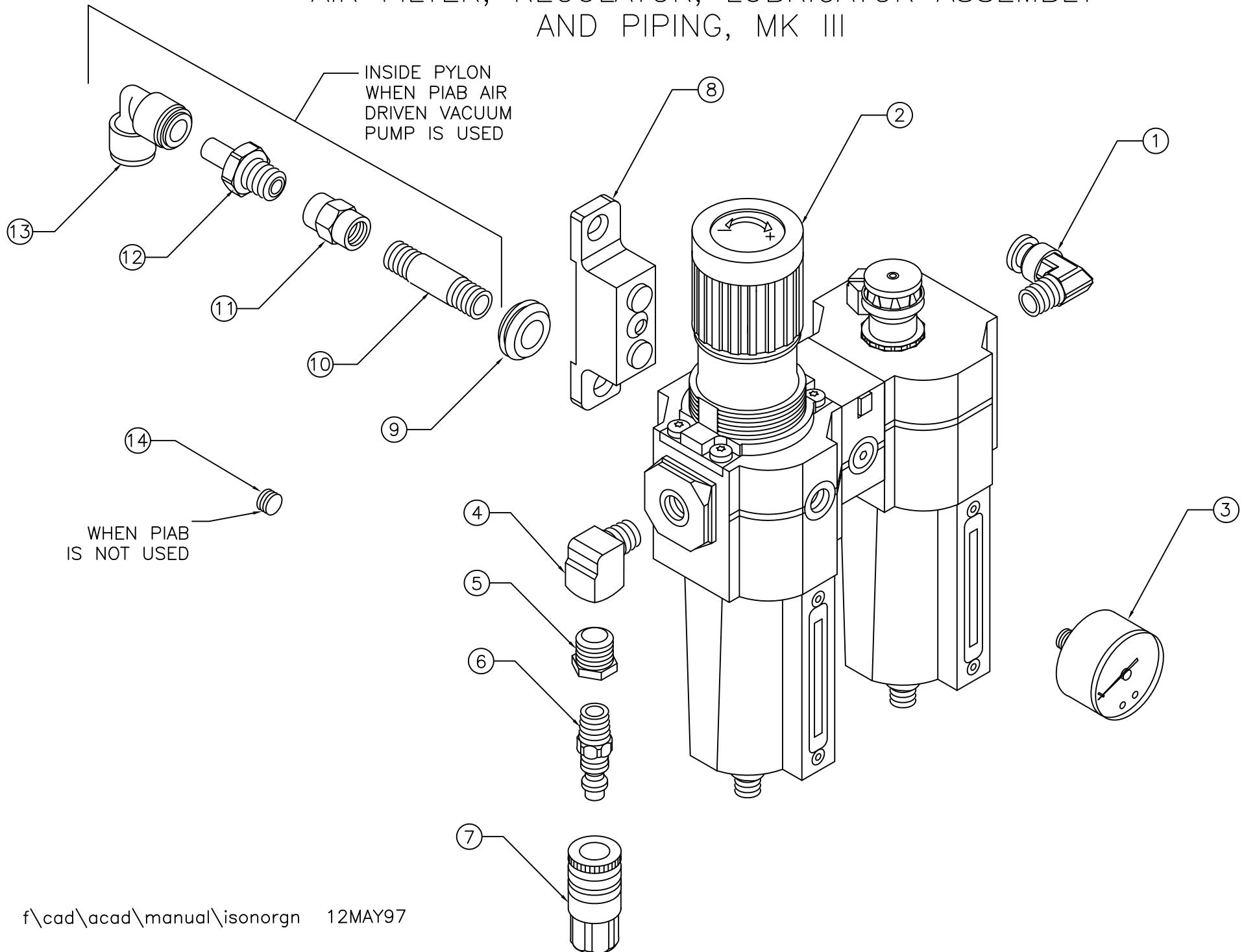


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# Piab Air Driven Vacuum Pump And Piping, MK III

Ref.	M-Tek No.: Part No.:	Description:	Qty.:
1	72105601	Piab Air Driven Pump.....	1
2	74301601	1/8 NPT Plug, Hex Countersunk, Brass.....	2
3	74304801	1/8 NPT Street Elbow, Heavy Forged Brass.....	1
4	74202701	1/4 Tube X 1/8 NPT Male Connector, Plastic .....	1
5		3/4 NPT Nipple.....	1
	74305001	3/4 NPT X 3 inch/76 mm Long Nipple, Brass (MK III)	
	74304101	3/4 NPT Hex Nipple, Brass (MK IV)	
6		Valve, O <sub>2</sub> 3/4 NPT NC, Brass Oxygen Rated (Optional).....	1
	73103801	Valve, O <sub>2</sub> 3/4 NPT NC, Brass 24 VAC Oxygen Rated (Optional)	
	73101801	Valve, O <sub>2</sub> 3/4 NPT NC, Brass 120 VAC Oxygen Rated (Optional)	
7	74303401	3/4 NPT Close Nipple, Brass (Optional).....	1
8	74301501	3/4 NPT Union, Machined, Brass.....	1
9	74304101	3/4 NPT Hex Nipple, Brass (MK III) .....	1
10		3/4 NPT Elbow .....	1
	74300701	3/4 NPT Female Elbow, Forged Brass (MK III)	
	74305501	3/4 NPT Street Elbow, 45° Forged Brass (MK IV)	
11	74303201	3/4 Hose X 3/4 NPT Male Hose Barb, Brass .....	1
12	75001601	Hose Clamp #12 Worm Gear S/S.....	1

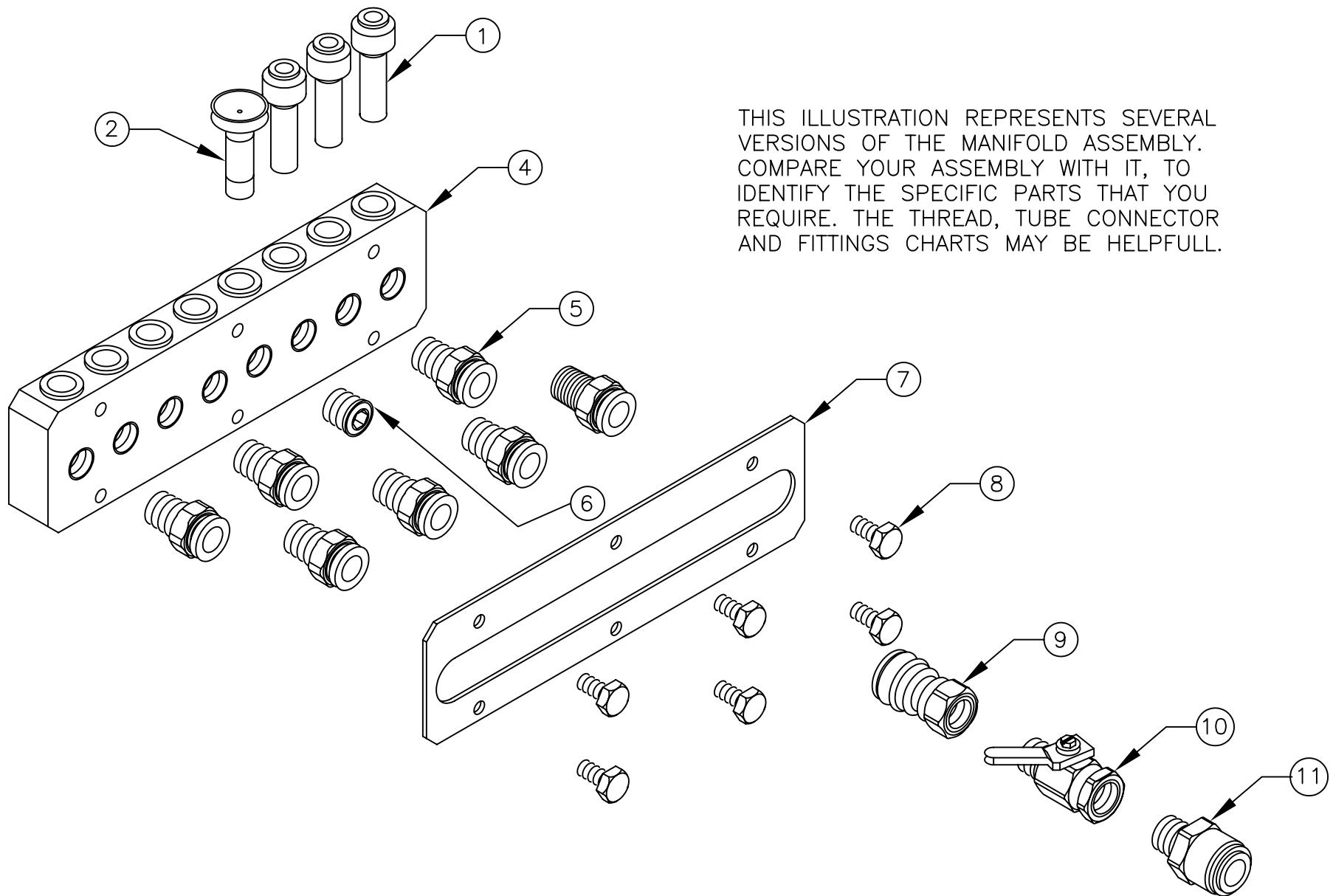
# AIR FILTER, REGULATOR, LUBRICATOR ASSEMBLY AND PIPING, MK III



# Air Filter, Regulator, Lubricator Assembly And Piping, MK IV

<b>Ref. No.:</b>	<b>M-Tek Part No.:</b>	<b>Description:</b>	<b>Qty.:</b>
1	74103601	¾ Tube X ¾ NPT Male Elbow, Brass.....	1
2	73000301	Filter, Regulator, Lubricator Unit, ¾ NPT, Norgren .....	1
3	73502701	Gauge, Norgren 0-160 PSI/0-11 Bar, ¾ NPT Rear Mount.....	1
4	74304501	¾ NPT Street Elbow, Extruded Long Brass .....	1
5	74302201	¾ NPT Male X ¼ NPT Female Hex Head Bushing, Brass .....	1
6	74300201	¼ NPT Quick Coupler Nipple, Brass.....	1
7	74300301	¼ NPT Female Sleeve Type Quick Coupler, Brass .....	1
8	73000401	Bracket, Norgren FRL Quick Clamp.....	1
9	79501501	Grommet, Rubber, .5 inch/12.7 mm Hole, ..... .094 inch/2.38 mm Groove Width, .281 inch/7.14 mm Thick, 1 inch/25.4 mm Diameter	1
10	74307701	¼ NPT X 2 inch/50.8 mm Long Nipple.....	1
11	74301101	¼ NPT Female Hex Coupling, Brass .....	1
12	74204601	¾ Tube X ¼ NPT Stem Adapter, Plastic.....	1
13	74203801	¾ Tube Union Elbow, Plastic .....	1
14	74301701	¼ NPT Plug, Hex Countersunk, Brass.....	1

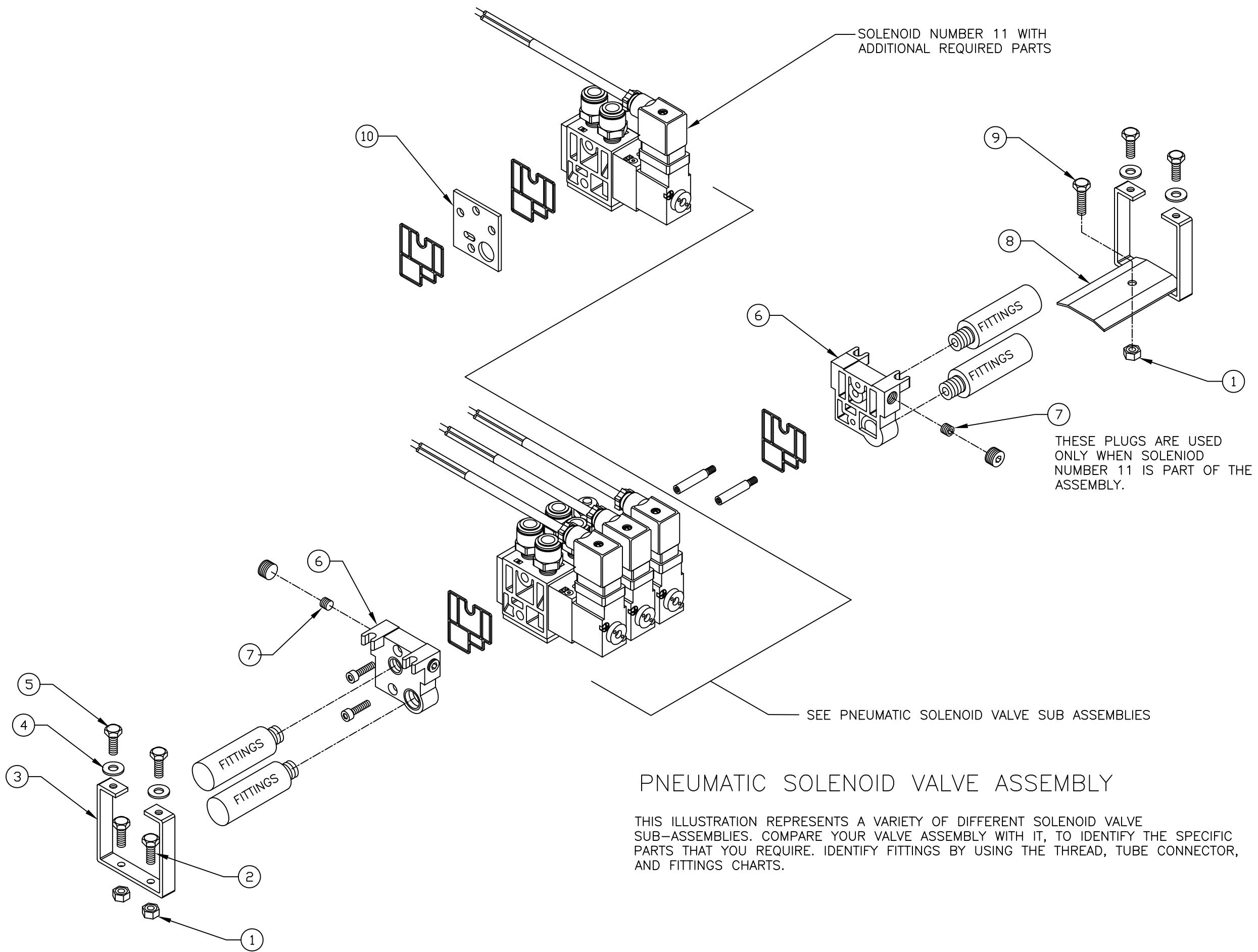
# PNEUMATIC MANIFOLD ASSEMBLY



THIS ILLUSTRATION REPRESENTS SEVERAL VERSIONS OF THE MANIFOLD ASSEMBLY. COMPARE YOUR ASSEMBLY WITH IT, TO IDENTIFY THE SPECIFIC PARTS THAT YOU REQUIRE. THE THREAD, TUBE CONNECTOR AND FITTINGS CHARTS MAY BE HELPFUL.

# Pneumatic Manifold Assembly

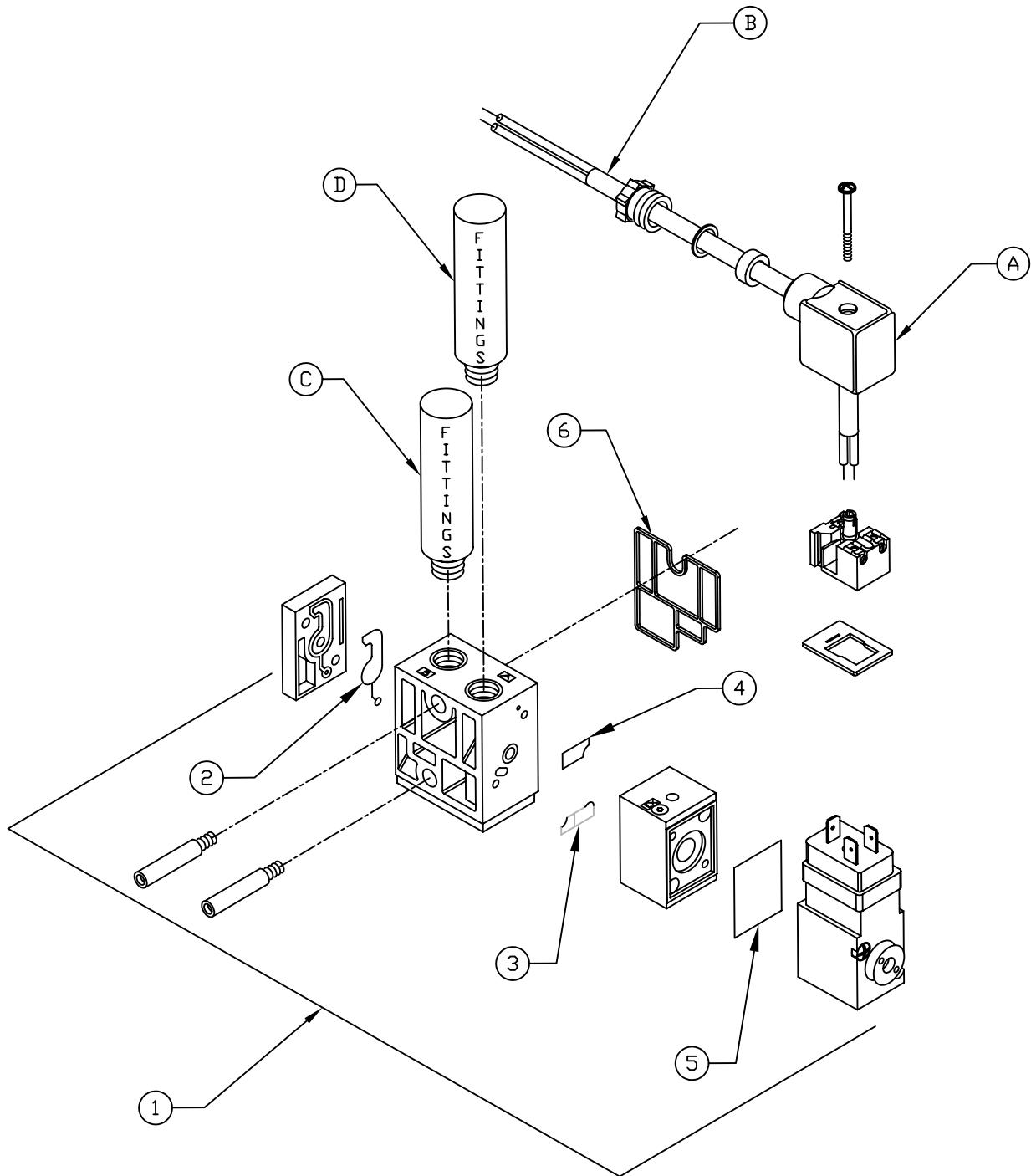
Ref. No.:	M-Tek Part No.:	Description:	Qty:
1	74103501	1/4 Tube X 3/8 Tube Reducer, Plastic. ....	As Req'd
2	74203301	3/8 Tube Plug, Plastic .....	As Req'd
3			
4	69200101	Distribution Manifold, Delrin. ....	1
5	74102001	3/8 Tube X 1/4 NPT Male Connector, Brass. ....	As Req'd
6	74301701	1/4 NPT Plug, Hex Countersunk, Brass. ....	As Req'd
7	79200701	Gasket, Distribution Manifold for Pneumatics .....	1
8	75106601	1/4-28 X 1/2 Hex Head Cap Screw S/S. ....	6
9	74204301	3/8 Tube X 1/4 NPT Female Connector, Plastic. ....	As Req'd
10	73103601	Ball valve, 1/4 NPT, 2 - Way, Brass .....	As Req'd
11	74203001	3/8 Tube X 1/4 NPT Male Connector, Plastic .....	As Req'd



# Pneumatic Solenoid Valve Assembly

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
1	75109701	1/4-20 Sealing Nut S/S.....	3
2	75109501	1/4-20 X 1/2 Hex Head Capscrew S/S.....	2
3	76204401	Stand Off, Mac Valve .....	2
4	75103301	1/4 Flat Washer S/S .....	4
5	75106601	1/4-28 X 1/2 Hex Head Capscrew.....	4
6	73101301	End Plate Set, Mac 713 Stack .....	1
7	73100701	1/16 NPT Plug, Hex Countersunk .....	1
8	76204501	Plate, Mac Hold Down Plate For Stand Off .....	1
9	75106401	1/4-20 X 3/4 Hex Head Capscrew .....	1
10	73104801	Isolator Plate, Inlet & Exhaust .....	1

REFER TO TABLE OF FITTINGS & CONNECTORS  
TO IDENTIFY PART NUMBERS FOR A THRU D.



PNEUMATIC SOLENOID VALVE

# Pneumatic Solenoid Valve

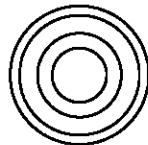
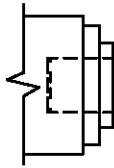
Ref. No.:	M-Tek Part No.:	Description:	Qty.:
1		Valve, Mac Stacking Complete W/DIN..... (Includes Individual Parts Ref. No. 2 thru 6)	1
	73100201	Valve, Mac Stacking Complete 24 VAC W/DIN	
	73100501	Valve, Mac Stacking Complete 120 VAC W/DIN	
2	73100901	Gasket, Mac 711 & 713 End Plate .....	1
3	73101001	Gasket, Mac 711 & 713 Ext. Pilot .....	1
4	73101101	Gasket, Mac 711 & 713 Int. Pilot.....	1
5	73100601	Gasket, Mac 711 & 713 Solenoid/Pilot.....	1
6	73100801	Gasket, Mac 713 .....	1
7	71609101	DIN Connector, Rectangular W/Screw & Gasket.....	1
8	71607501	DIN Connector, Std B Rectangular, W/Cord, 24 V L.E.D.....	1
9	71604401	Cord, 18/2 SJO Black, 32 inch/813 mm Long .....	1
10	74202801	¼ Tube X ¼ NPT Male Connector, Plastic .....	1
11	74203001	¾ Tube X ¼ NPT Male Connector, Plastic .....	1
12	74204601	¾ Tube X ¼ NPT Stem Adapter, Plastic.....	1
13	74203801	¾ Tube Union Elbow, Plastic .....	1
14	74204201	¾ Tube X ¼ NPT Male Fixed Elbow, Plastic .....	1
15	74301701	¼ NPT Plug, Hex Countersunk .....	1

# Pneumatic Solenoid Valve

## Fittings and Connectors

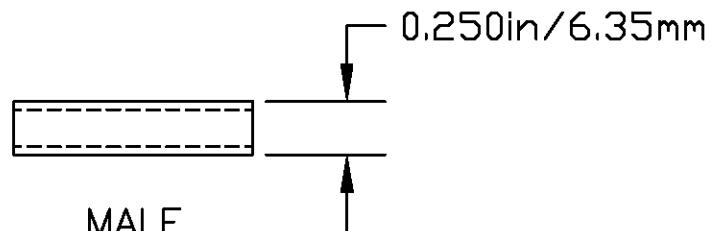
Solenoid No.:	Description:	A Ref. No.:	B Ref. No.:	C Ref. No.:	D Ref. No.:
1	Vacuum Probe Tower Cylinder Valve MK III .....	7 .....	9 .....	11 .....	11 .....
2	Seal Bar Cylinder Valve MK III .....	7 .....	9 .....	11 .....	11 .....
6	Hi-Lo Head Cylinder Valve MK III .....	7 .....	9 .....	11 .....	15 .....
9	Auto Jaw Opener Cylinder Valve MK III .....	7 .....	9 .....	10 .....	10 .....
11	Piab Vacuum Pump Air Drive Valve MK III .....	7 .....	9 .....	15 .....	11 .....

## FULL SIZE TUBE CONNECTOR CHART

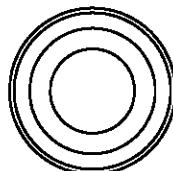
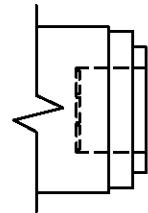


FEMALE

1/4 TUBE CONNECTOR

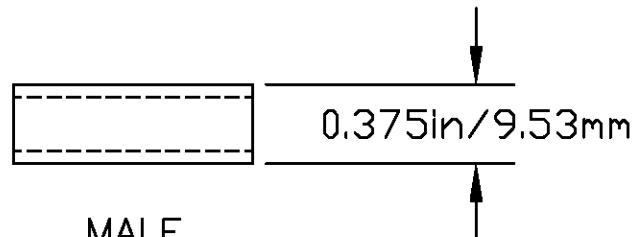


MALE

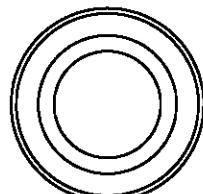
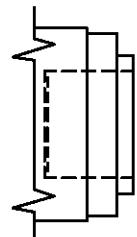


FEMALE

3/8 TUBE CONNECTOR

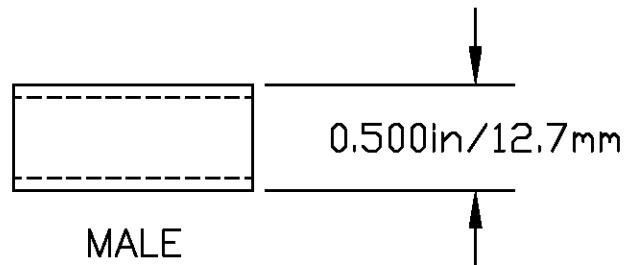


MALE



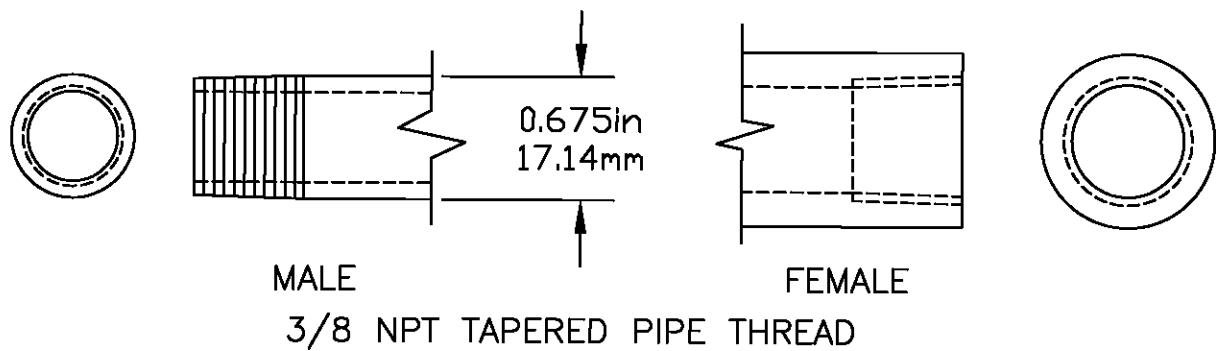
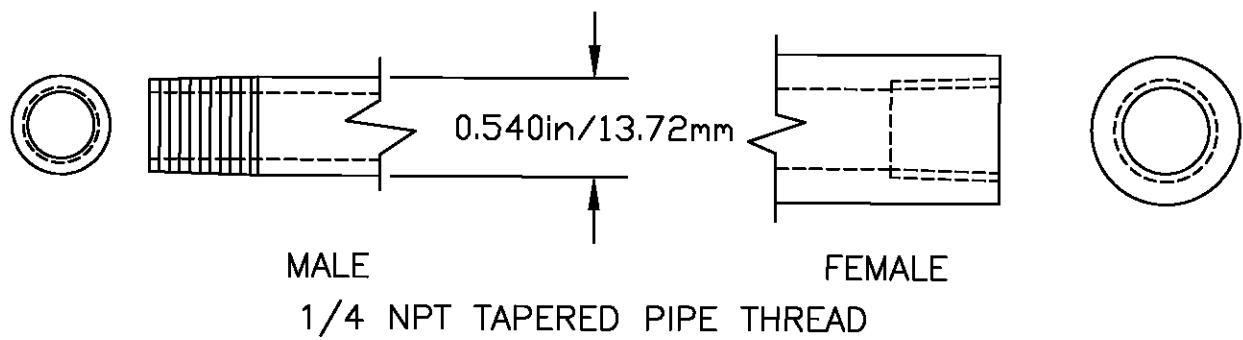
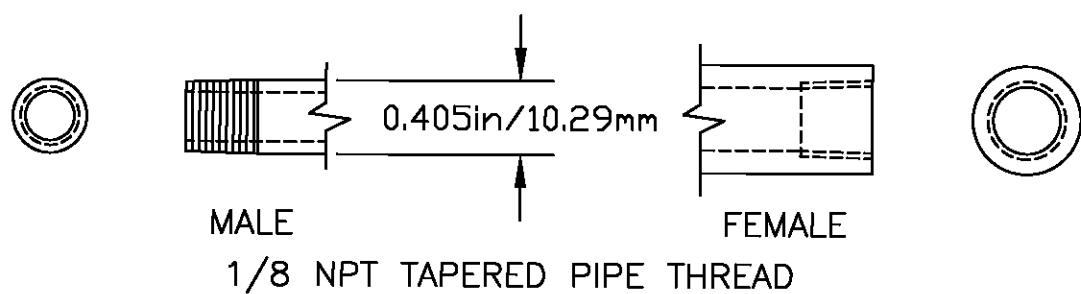
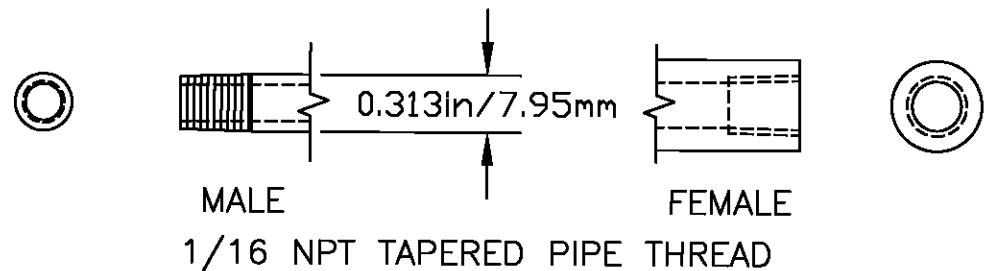
FEMALE

1/2 TUBE CONNECTOR

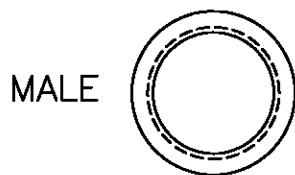


MALE

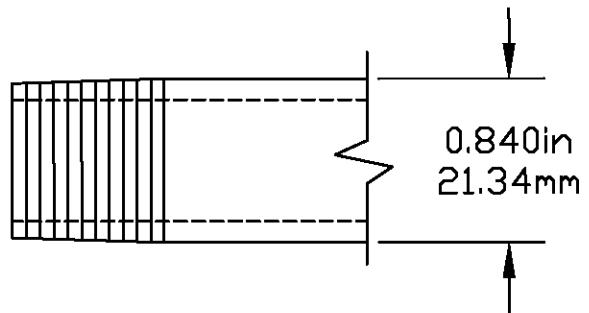
## FULL SIZE PIPE THREAD CHART



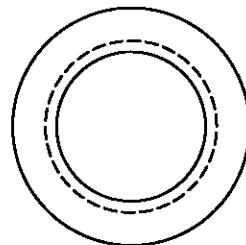
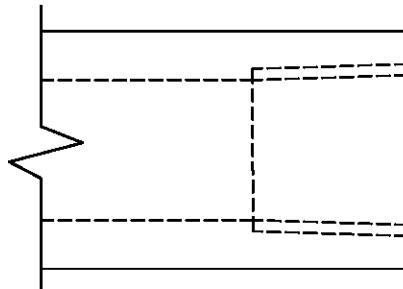
## FULL SIZE PIPE THREAD CHART



MALE



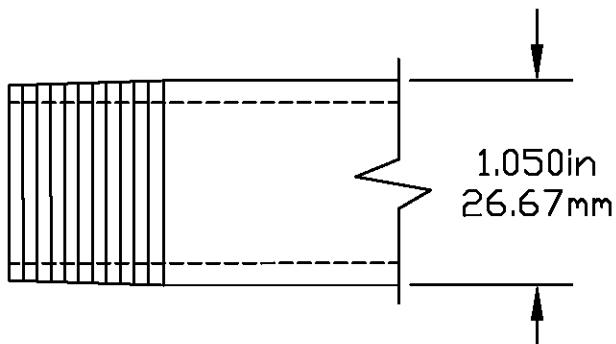
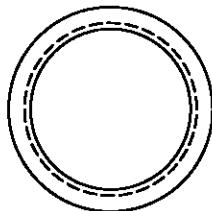
0.840in  
21.34mm



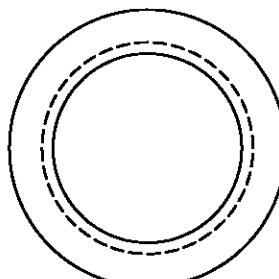
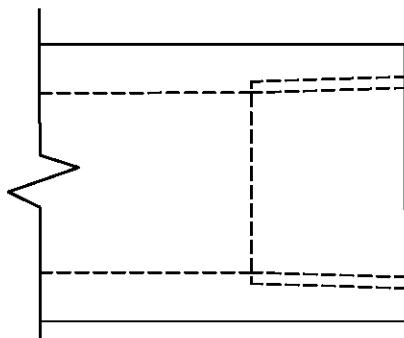
FEMALE

1/2 NPT TAPERED PIPE THREAD

MALE



1.050in  
26.67mm

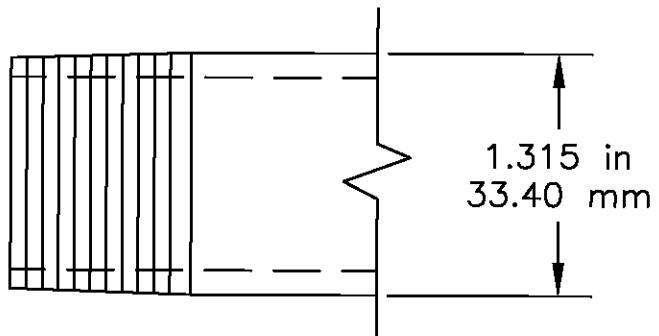
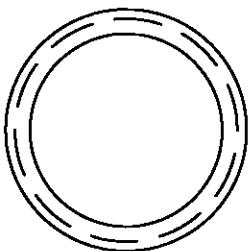


FEMALE

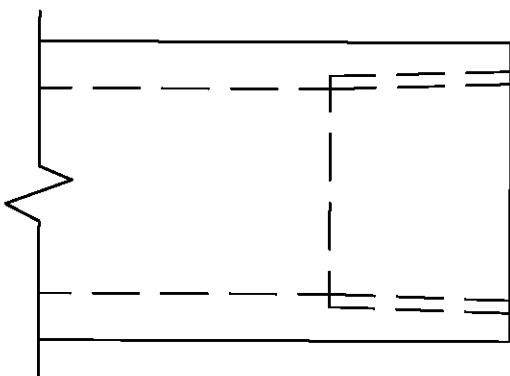
3/4 NPT TAPERED PIPE THREAD

## FULL SIZE PIPE THREAD CHART

MALE

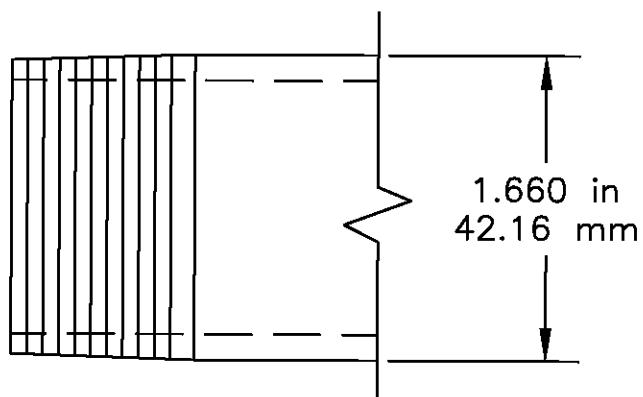
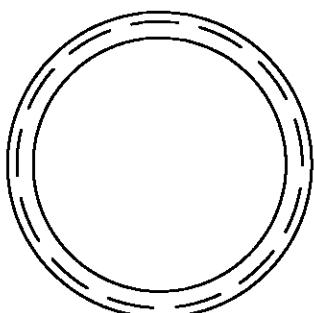


FEMALE

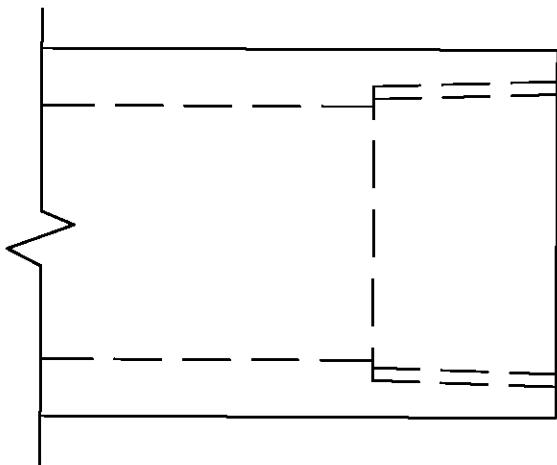


### 1 NPT TAPERED PIPE THREAD

MALE



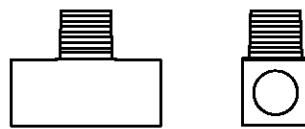
FEMALE



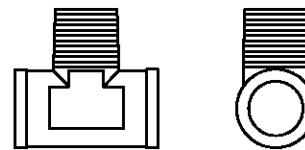
### 1 1/4 NPT TAPERED PIPE THREAD

## FITTINGS, METAL TEES

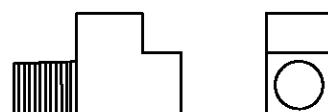
74306301 1/4 NPT MALE BRANCH TEE, BRASS  
74306401 3/8 NPT MALE BRANCH TEE, BRASS  
74306601 3/4 NPT MALE BRANCH TEE, BRASS



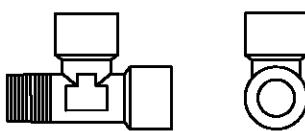
74306501 1/2 NPT MALE BRANCH TEE, BRASS



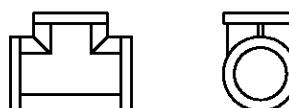
74305901 1/4 NPT MALE RUN TEE, BRASS  
74306001 3/8 NPT MALE RUN TEE, BRASS



74306101 1/2 NPT MALE RUN TEE, BRASS  
74306201 3/4 NPT MALE RUN TEE, BRASS



74400501 1/4 NPT FEMALE TEE, STAINLESS STEEL  
74300901 3/4 NPT FEMALE TEE, BRASS



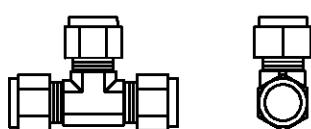
74103401 3/8 TUBE UNION TEE, BRASS  
74102201 1/2 TUBE UNION TEE, BRASS



74102801 1/4 TUBE X 1/8 NPT MALE RUN TEE,  
SWIVEL, BRASS  
74102901 3/8 TUBE X 1/4 NPT MALE RUN TEE,  
SWIVEL, BRASS

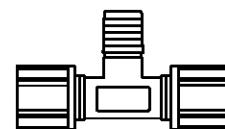


74100701 3/8 TUBE UNION TEE, BRASS

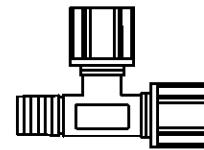


## FITTINGS, PLASTIC TEES

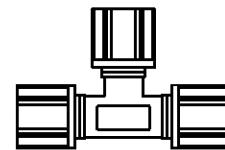
74202101      3/8 TUBE X 1/4 NPT MALE  
BRANCH TEE, PLASTIC  
74202201      1/2 TUBE X 3/8 NPT MALE  
BRANCH TEE, PLASTIC



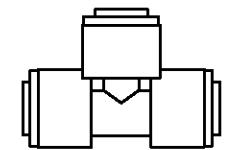
74202501      3/8 TUBE X 1/4 NPT MALE  
RUN TEE, PLASTIC  
74202601      1/2 TUBE X 3/8 NPT MALE  
RUN TEE, PLASTIC



74202301      3/8 TUBE UNION TEE, PLASTIC  
74202401      1/2 TUBE UNION TEE, PLASTIC

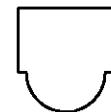
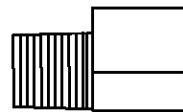


74203401      1/4 TUBE UNION TEE, PLASTIC  
74203501      3/8 TUBE UNION TEE, PLASTIC  
74203601      1/2 TUBE UNION TEE, PLASTIC

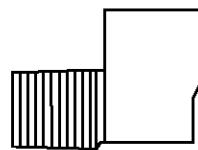


## FITTINGS, METAL ELBOWS

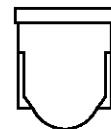
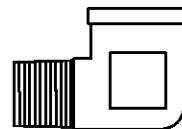
74304301 1/8 NPT STREET ELBOW, BRASS  
74304601 3/4 NPT STREET ELBOW, BRASS



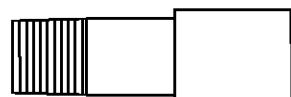
74304401 1/4 NPT STREET ELBOW, LONG, BRASS  
74304501 3/8 NPT STREET ELBOW, LONG, BRASS



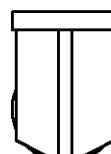
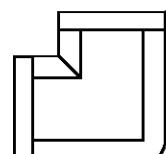
74307301 1/4 NPT FEMALE X 3/8 NPT MALE  
STREET ELBOW, BRASS  
74304701 1/2 NPT FEMALE X 3/8 NPT MALE  
STREET ELBOW, BRASS



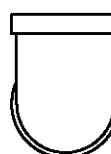
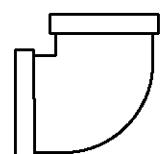
74304801 1/8 NPT STREET ELBOW,  
HEAVY, BRASS



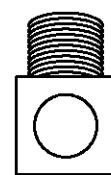
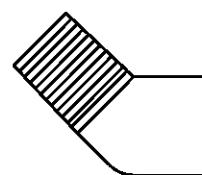
74300601 1/4 NPT FEMALE ELBOW, BRASS  
74300701 3/4 NPT FEMALE ELBOW, BRASS



74300801 3/4 NPT FEMALE ELBOW, BRASS

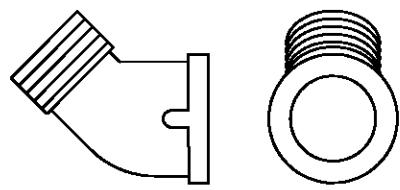


74306701 1/8 NPT STREET ELBOW, 45°, BRASS  
74305801 1/4 NPT STREET ELBOW, 45°, BRASS  
74307201 1/2 NPT STREET ELBOW, 45°, BRASS

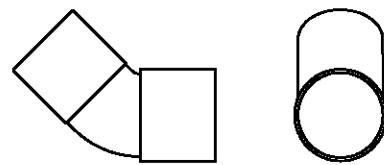


## FITTINGS, METAL ELBOWS

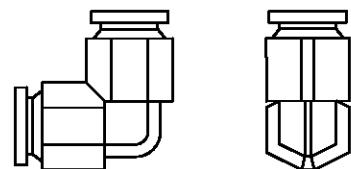
74305501 3/4 NPT STREET ELBOW, 45°, BRASS



74400101 1" TUBE 45° ELBOW, COPPER



74102301 1/2 TUBE UNION ELBOW, BRASS



74102601 1/4 TUBE X 1/8 NPT MALE ELBOW, BRASS



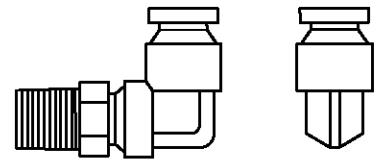
74102701 3/8 TUBE X 1/4 NPT MALE ELBOW, BRASS

74103601 3/8 TUBE X 3/8 NPT MALE ELBOW, BRASS

74103001 1/2 TUBE X 3/8 NPT MALE ELBOW, BRASS

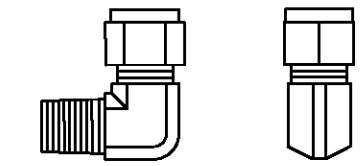


74102501 1/4 TUBE X 1/8 NPT MALE ELBOW,  
SWIVEL, BRASS



74100801 3/8 TUBE X 1/4 NPT MALE ELBOW, BRASS

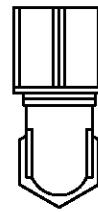
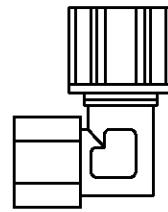
74100901 3/8 TUBE X 3/8 NPT MALE ELBOW, BRASS



## FITTINGS, PLASTIC ELBOWS

74201901 3/8 TUBE X 3/8 NPT FEMALE ELBOW,  
PLASTIC

74202001 1/2 TUBE X 3/8 NPT FEMALE ELBOW,  
PLASTIC

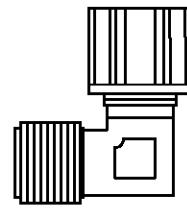


74201501 3/8 TUBE X 1/4 NPT MALE ELBOW,  
PLASTIC

74201601 3/8 TUBE X 3/8 NPT MALE ELBOW,  
PLASTIC

74201701 1/2 TUBE X 3/8 NPT MALE ELBOW,  
PLASTIC

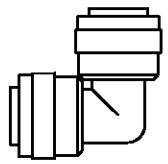
74201801 1/2 TUBE X 1/2 NPT MALE ELBOW,  
PLASTIC



74203701 1/4 TUBE UNION ELBOW, PLASTIC

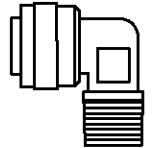
74203801 3/8 TUBE UNION ELBOW, PLASTIC

74203901 1/2 TUBE UNION ELBOW, PLASTIC

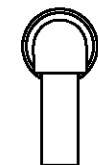
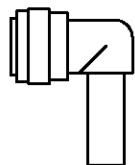


74204101 1/4 TUBE X 1/8 NPT FIXED ELBOW MALE,  
PLASTIC

74204201 3/8 TUBE X 1/4 NPT FIXED ELBOW MALE,  
PLASTIC

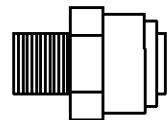


74204001 3/8 TUBE X 3/8 PLUG IN ELBOW, PLASTIC

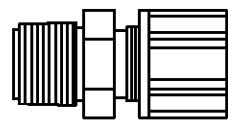


## FITTINGS, PLASTIC CONNECTORS

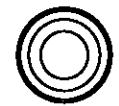
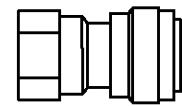
74202701 1/4 TUBE X 1/8 NPT MALE CONNECTOR,  
PLASTIC  
74202801 1/4 TUBE X 1/4 NPT MALE CONNECTOR,  
PLASTIC  
74202901 3/8 TUBE X 1/8 NPT MALE CONNECTOR,  
PLASTIC  
74203001 3/8 TUBE X 1/4 NPT MALE CONNECTOR,  
PLASTIC  
74203101 1/2 TUBE X 3/8 NPT MALE CONNECTOR,  
PLASTIC  
74203201 3/8 TUBE X 3/8 NPT MALE CONNECTOR,  
PLASTIC



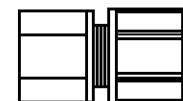
74200201 1/4 TUBE X 1/4 NPT MALE CONNECTOR,  
PLASTIC  
74200301 3/8 TUBE X 1/4 NPT MALE CONNECTOR,  
PLASTIC  
74200401 3/8 TUBE X 3/8 NPT MALE CONNECTOR,  
PLASTIC  
74200501 1/2 TUBE X 3/8 NPT MALE CONNECTOR,  
PLASTIC  
74200601 1/2 TUBE X 1/2 NPT MALE CONNECTOR,  
PLASTIC



74204301 3/8 TUBE X 1/4 NPT FEMALE CONNECTOR,  
PLASTIC

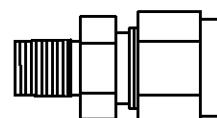
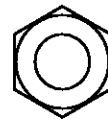
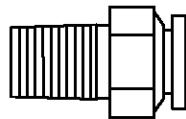


74201201 3/8 TUBE X 1/4 NPT FEMALE CONNECTOR,  
PLASTIC  
74201301 3/8 TUBE X 3/8 NPT FEMALE CONNECTOR,  
PLASTIC  
74201401 1/2 TUBE X 3/8 NPT FEMALE CONNECTOR,  
PLASTIC



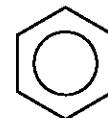
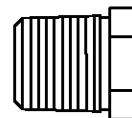
## FITTINGS, METAL CONNECTORS

74101701	1/4 TUBE X 1/8 NPT MALE CONNECTOR, BRASS
74102401	1/4 TUBE X 1/4 NPT MALE CONNECTOR, BRASS
74101901	3/8 TUBE X 1/8 NPT MALE CONNECTOR, BRASS
74102001	3/8 TUBE X 1/4 NPT MALE CONNECTOR, BRASS
74102101	1/2 TUBE X 3/8 NPT MALE CONNECTOR, BRASS
74100201	3/8 TUBE X 1/8 NPT MALE COMPRESSION, BRASS
74100301	3/8 TUBE X 1/4 NPT MALE COMPRESSION, BRASS
74100401	3/8 TUBE X 3/8 NPT MALE COMPRESSION, BRASS
74100501	1/2 TUBE X 3/8 NPT MALE COMPRESSION, BRASS
74100601	1/2 TUBE X 1/2 NPT MALE COMPRESSION, BRASS



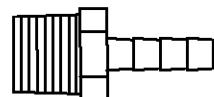
## FITTINGS, METAL BUSHINGS

74302501	1/4 NPT MALE X 1/8 NPT FEMALE HEX HEAD BUSHING, BRASS
74301001	3/8 NPT MALE X 1/8 NPT FEMALE HEX HEAD BUSHING, BRASS
74302201	3/8 NPT MALE X 1/4 NPT FEMALE HEX HEAD BUSHING, BRASS
74307801	1/2 NPT MALE X 1/4 NPT FEMALE HEX HEAD BUSHING, BRASS
74302301	1/2 NPT MALE X 3/8 NPT FEMALE HEX HEAD BUSHING, BRASS
74302601	3/4 NPT MALE X 3/8 NPT FEMALE HEX HEAD BUSHING, BRASS
74302401	3/4 NPT MALE X 1/2 NPT FEMALE HEX HEAD BUSHING, BRASS
74302701	1 NPT MALE X 3/4 NPT FEMALE HEX HEAD BUSHING, BRASS
74303801	1 1/4 NPT MALE X 3/4 NPT FEMALE HEX HEAD BUSHING, BRASS



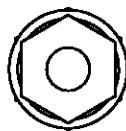
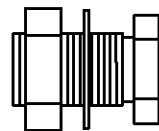
## FITTINGS, METAL HOSE BARBS

74101101	3/16 HOSE ID X 1/4 NPT MALE HOSE BARB, BRASS
74101201	5/16 HOSE ID X 1/4 NPT MALE HOSE BARB, BRASS
74103101	3/4 HOSE ID X 1/2 NPT MALE HOSE BARB, BRASS
74103201	3/4 HOSE ID X 3/4 NPT MALE HOSE BARB, BRASS
74103301	1 HOSE ID X 3/4 NPT MALE HOSE BARB, BRASS

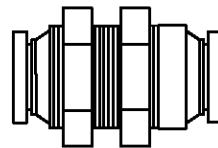


## FITTINGS, METAL BULKHEADS

74300501 1/4 NPT FEMALE X 1/4 NPT FEMALE  
X 3/4-16, 1 1/2 LONG BULKHEAD  
COUPLING, BRASS

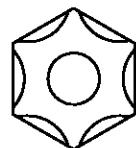
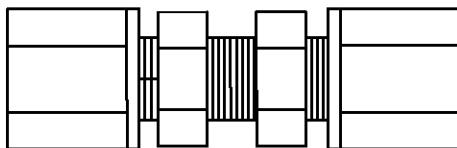


74300401 1/2 NPT FEMALE X 1/2 NPT FEMALE X  
1 1/8-14, 1 1/2 LONG BULKHEAD  
COUPLING, BRASS



74101501 3/8 TUBE BULKHEAD UNION, BRASS  
74101601 1/2 TUBE BULKHEAD UNION, BRASS

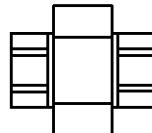
## FITTINGS, PLASTIC BULKHEADS



74200801 1/4 TUBE BULKHEAD UNION, PLASTIC  
74201001 3/8 TUBE BULKHEAD UNION, PLASTIC  
74201101 1/2 TUBE BULKHEAD UNION, PLASTIC

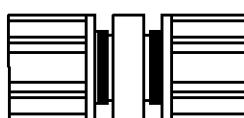
## FITTINGS, METAL UNIONS

74301201 1/4 NPT UNION, MACHINED, BRASS  
74301301 3/8 NPT UNION, MACHINED, BRASS  
74301401 1/2 NPT UNION, MACHINED, BRASS  
74301501 3/4 NPT UNION, MACHINED, BRASS



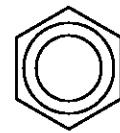
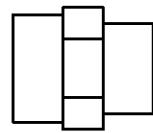
## FITTINGS, PLASTIC UNIONS

74200701 1/2 TUBE UNION, PLASTIC

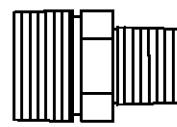


## FITTINGS, METAL REDUCERS

- 74305301 3/8 NPT FEMALE X 1/4 NPT FEMALE  
REDUCER COUPLING, BRASS  
74305401 3/4 NPT FEMALE X 1/2 NPT FEMALE  
REDUCER COUPLING, BRASS

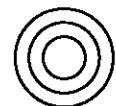
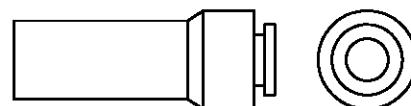


- 74303501 3/8 NPT MALE X 1/4 NPT MALE HEX  
REDUCER NIPPLE, BRASS  
74303601 1/2 NPT MALE X 3/8 NPT MALE HEX  
REDUCER NIPPLE, BRASS



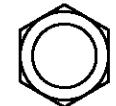
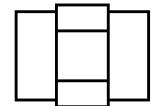
## FITTINGS, PLASTIC REDUCERS

- 74101801 1/4 TUBE X 1/2 TUBE REDUCER,  
PLASTIC  
74103501 1/4 TUBE X 3/8 TUBE REDUCER,  
PLASTIC



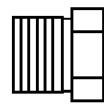
## FITTINGS, METAL COUPLINGS

- 74301101 1/4 NPT FEMALE HEX COUPLING, BRASS  
74307401 3/4 NPT FEMALE HEX COUPLING, BRASS



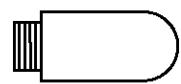
## FITTINGS, METAL BREATHERS

- 74300101 1/4 NPT BREATHER VENT, BRASS

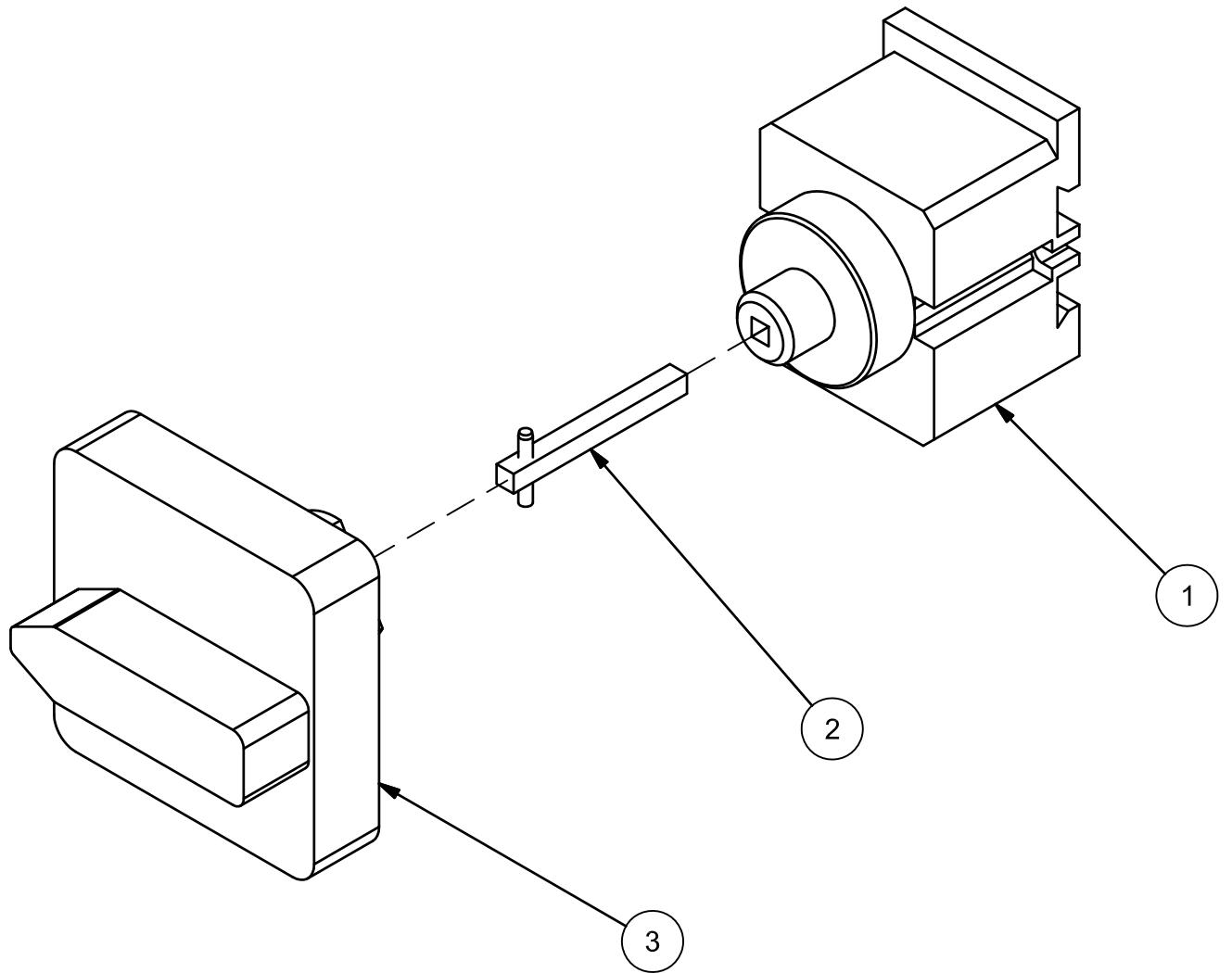


## FITTINGS, PLASTIC BREATHERS

- 74400801 1/4 NPT BREATHER VENT, PLASTIC



# DOOR INTERLOCK SWITCH ASSEMBLY

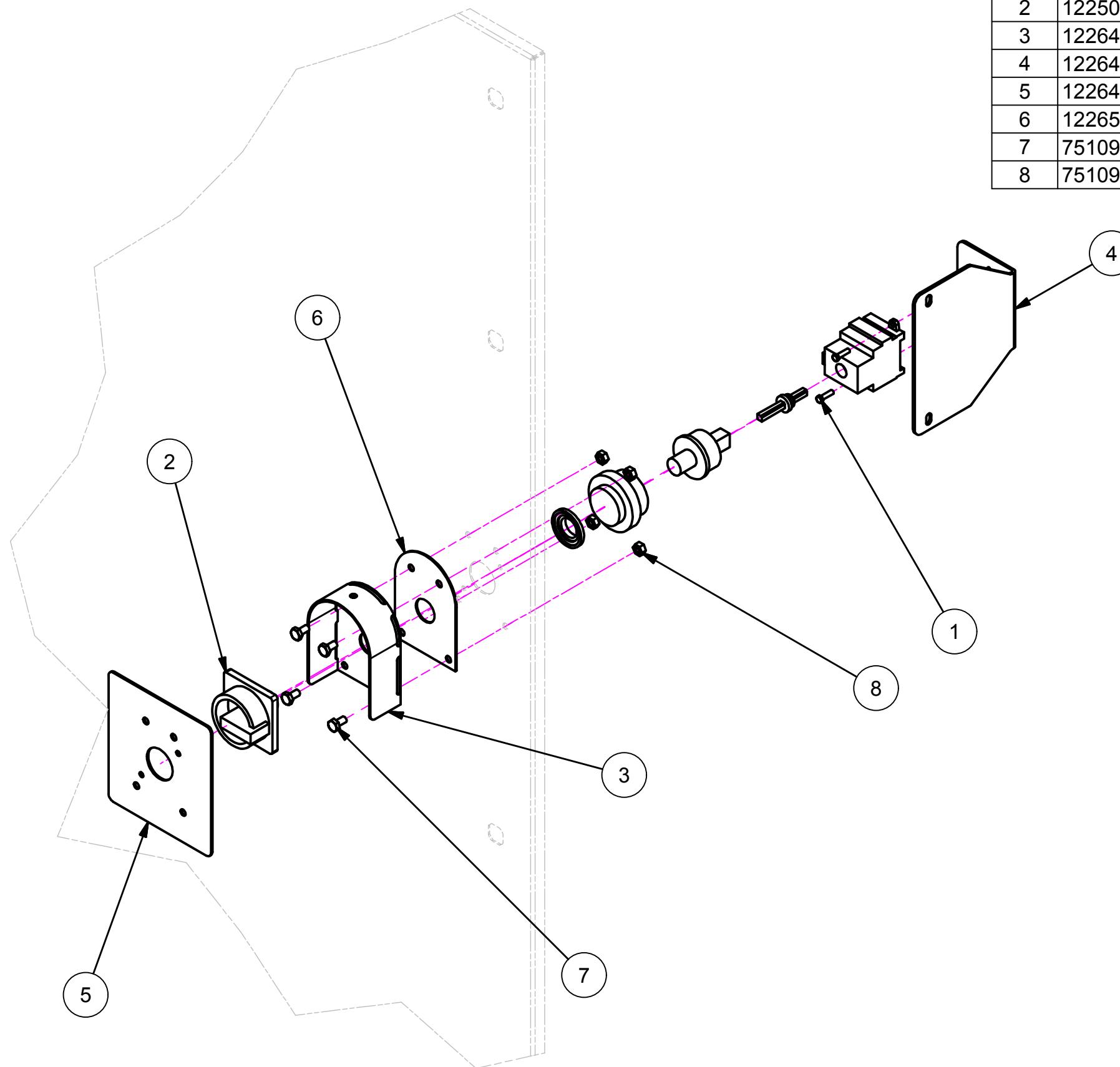


# **Door Interlock Switch Assembly**

<b>Ref.</b>	<b>M-Tek</b>		
<b>No.:</b>	<b>Part No.:</b>	<b>Description:</b>	<b>Qty.:</b>
		Switch, Door Disconnect (With Associated Parts).....	1
1	71403301	Switch, Disconnect 30 Amp.....	1
2	71403402	Shaft, Disconnect 10.43 inch/264.9 mm Long - modified .....	1
3	110807C1	Handle, Disconnect Red/Yellow - Square Style .....	1

PARTS LIST

ITEM	PART NO.	DESCRIPTION	QT
1	109329C1	#8-32 X 5/8 LNG HEX HEAD MACHINE SCREW, S/S	2
2	122508C1	MK III DISCONNECT SWITCH COMPLETE	1
3	122640C1	MK III DISCONNECT RETROFIT WELDMENT	1
4	122648C1	MK III DISCONNECT BRACKET	1
5	122649C1	MK III DISCONNECT RETROFIT TEMPLATE	1
6	122650C1	MK III DISCONNECT GUARD GASKET	1
7	75109501	1/4-20 X 1/2 LNG HEX HEAD CAP SCREW, S/S	4
8	75109701	1/4-20 SEALING NUT	4

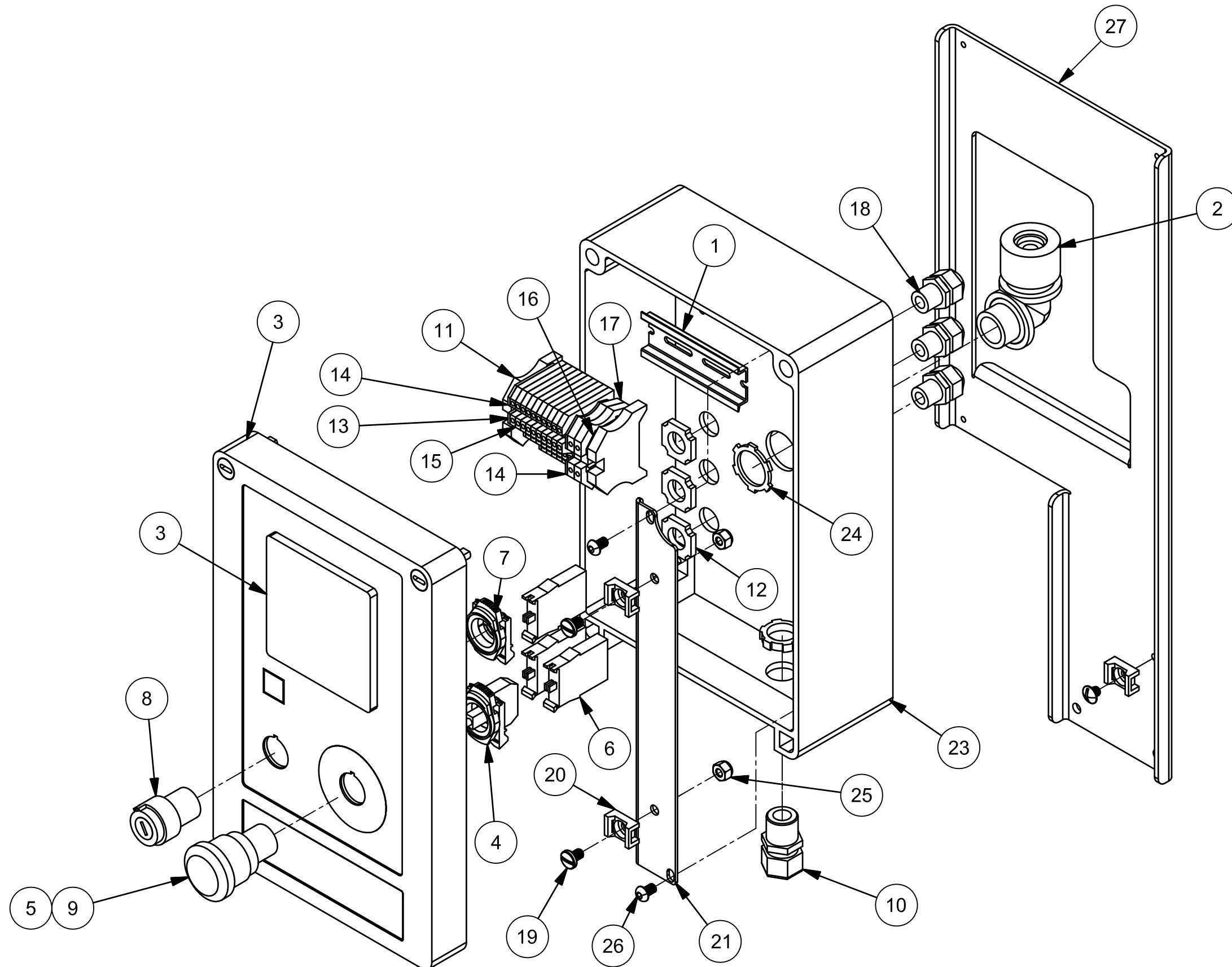


**m-tek** INC.

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	DRAWN BY: T. LIAKOPOULOS JR	
	TITLE:	
	MK III DISCONNECT RETROFIT	
	DWG NO.: MA110-0009	
	SCALE: N/A	DATE: 3/4/2014
		SHEET 1 OF 1

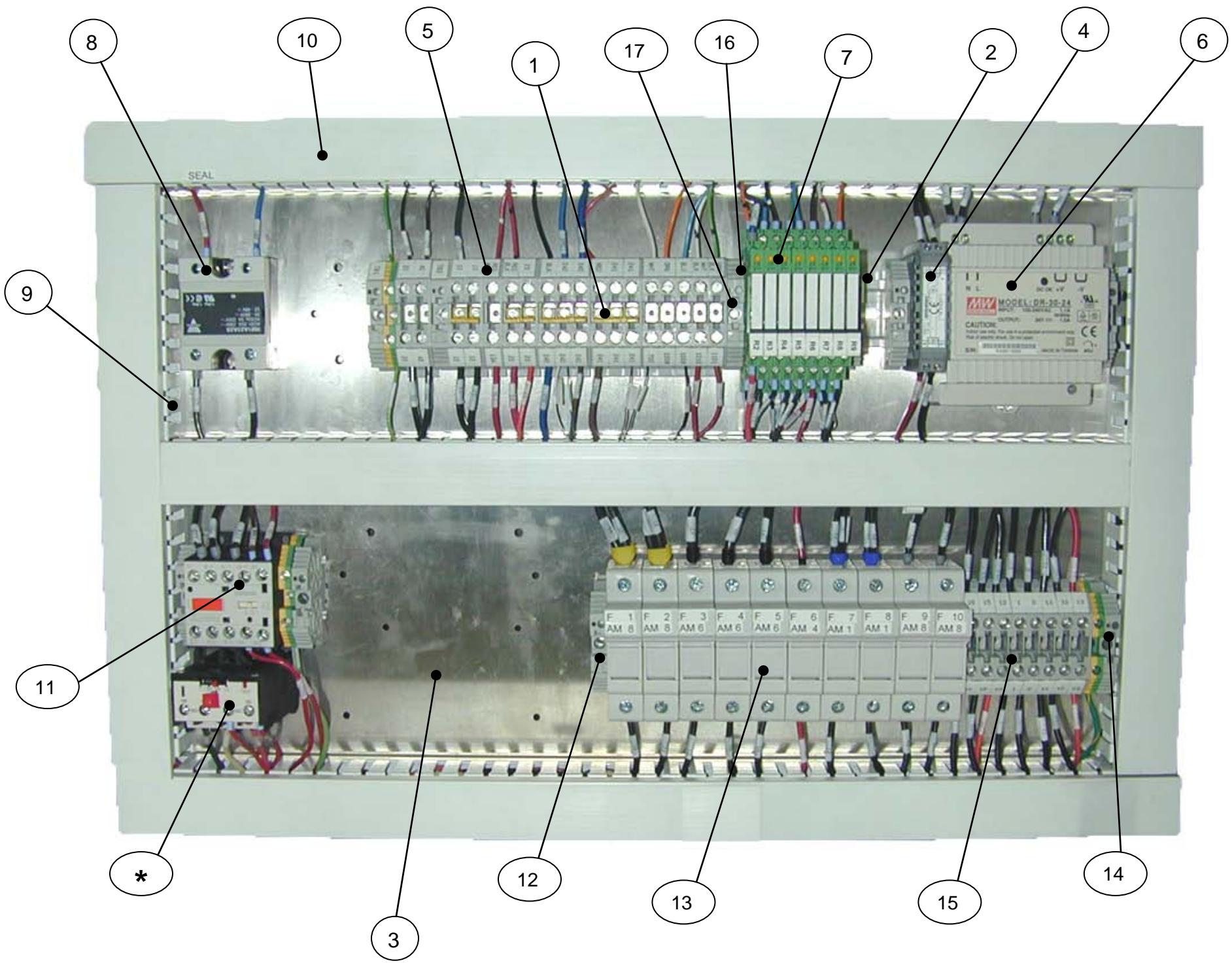
## Type AM Fuse List

M-Tek Part No.:	Description
71400701	Fuse, 1 Amp, Type AM
71400801	Fuse, 2 Amp, Type AM
71400901	Fuse, 4 Amp, Type AM
71401001	Fuse, 6 Amp, Type AM
71401101	Fuse, 8 Amp, Type AM
71401201	Fuse, 10 Amp, Type AM
71402501	Fuse, 16 Amp, Type AM
71401401	Fuse, 20 Amp, Type AM
71401501	Fuse, 25 Amp, Type AM
71401601	Fuse, 32 Amp, Type AM



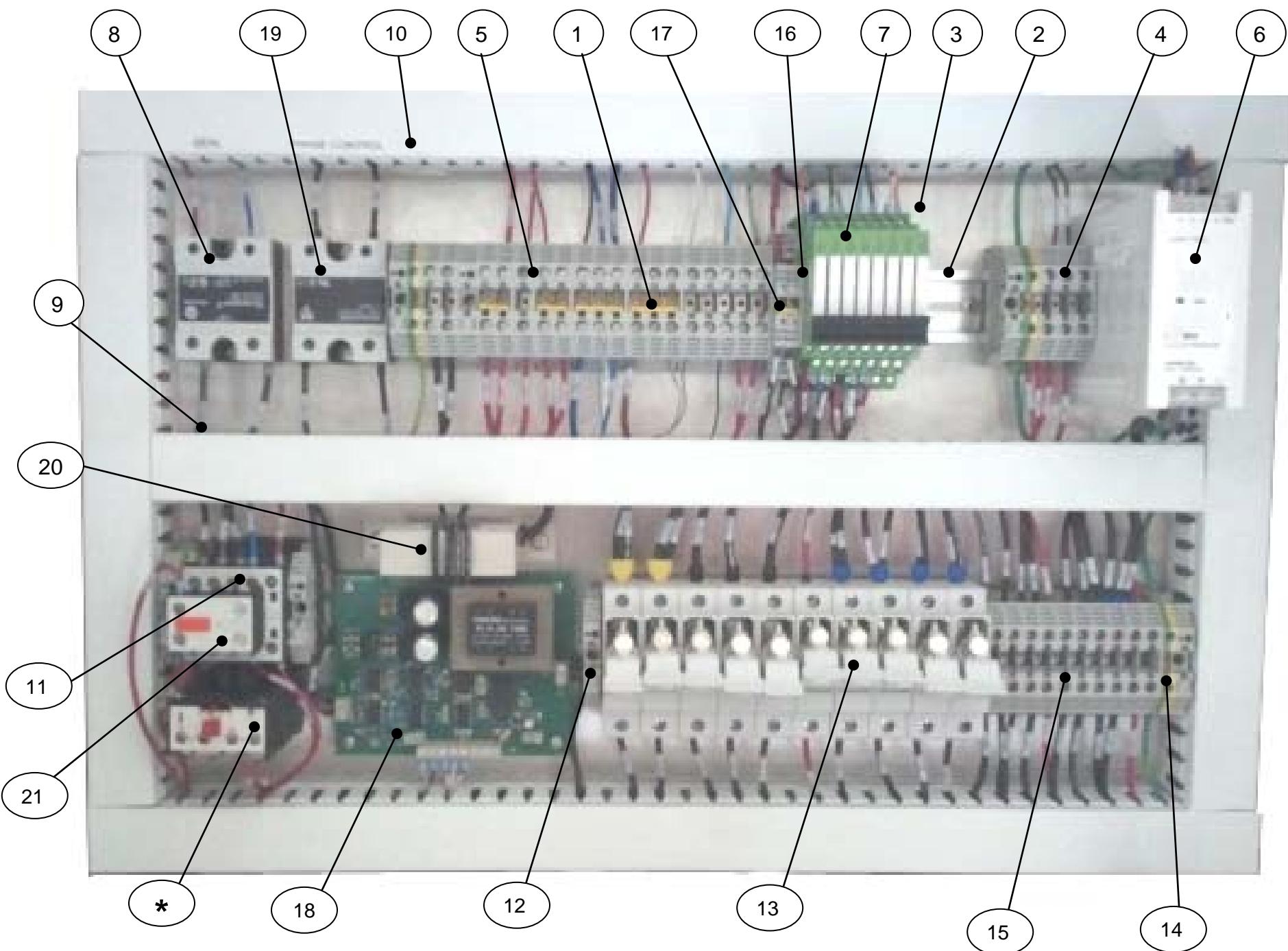
# Display Enclosure, Integrated-Controls

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
1	71002701	Rail, DIN 34 mm Wide (Meters).....	0.13
2	71604701	90 Degree Conduit Connector .....	1
3	71023001	Display PLC Combo.....	1
4	71104402	Latch.....	1
5	71105402	Button, Red 22 mm, E-Stop .....	1
6	71105802	Contact Block, 22 mm 1 NC/1NO .....	3
7	71106102	Latch, 3 across.....	1
8	71109202	Switch, 2 Position Key.....	1
9	71112601	Anti-turn Washer Push Buttons.....	1
10	71604701	Cord Grip, .250-.375 ¾ 90 .....	1
11	71605601	End Anchor, DIN Rail .....	2
12	71607301	Locknut, 3/8 Conduit Square.....	3
13	71608101	Jumper, Center 10 Pole .....	2
14	71608201	End Barrier for AB .....	1
15	71608301	Terminal Block, 3 Level.....	10
16	71608601	Grounding Terminal Block .....	1
17	71608701	Terminal Block .....	2
18	71611601	Cord Grip, Small Dia 3/8 Grey .....	3
19	71612701	Grommet .....	1
20	75003001	Mount Base, Cable Tie.....	2
21	76128101	Internal Bracket, Button Box .....	1
22	81001201	Touch Pad, Display PLC Combo .....	1
23	81300901	Enclosure .....	1
24	71610701	¾ Conduit Locknut .....	1
25	75103701	¼-20 UNC Locknut w/Nylon insert .....	2
26	75119001	M6 x 10mm Button Head Cap Screw.....	2
27	75119001	Button Box Mount Bracket .....	1



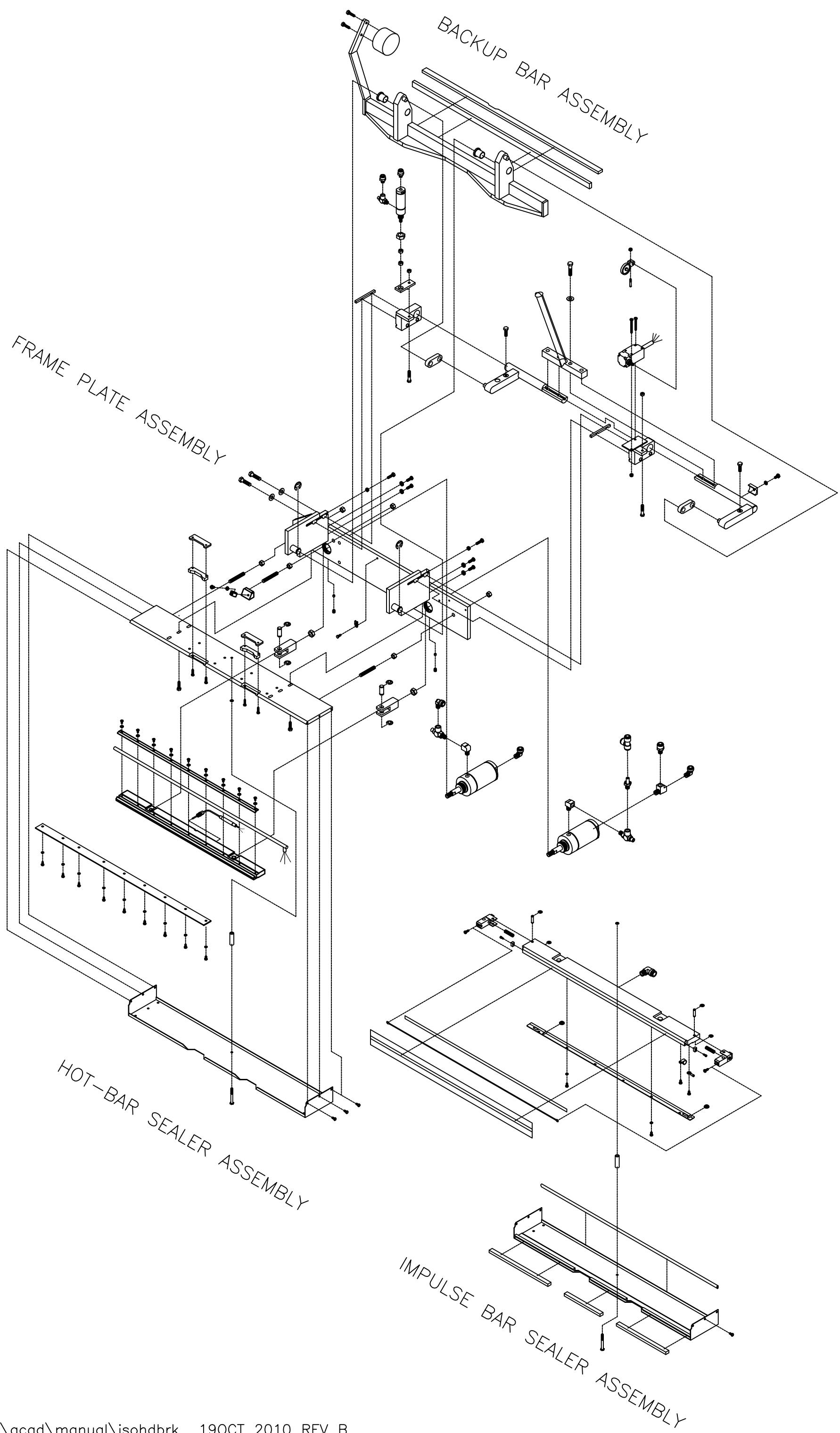
# Typical Electrical Panel, Integrated-Controller, MK III (Hot-Bar Sealer)

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
1	113069C1	AB Ctr Jumper 3-Pole J6 Block .....	2
2	71002701	DIN Rail, 34mm wide, 1 meter length (meters).....	0.8
3	76210601	Mark III Electrical Panel Remote Mount PLC.....	1
4	71003101	Rectifier AC-DC, up to 220 VAC .....	1
5	71022101	End Barrier Terminal Block, J6 .....	8
6	71022501	Power Supply 24VDC.....	1
7	71023201	Phoenix Contact.....	8
8	71104502	Relay, solid state 24-265VAC .....	1
9	71300801	Wire Duct, 1 X 1.5, White T&B .....	7.68
10	71300901	Wire Duct Cover, White, T&B .....	7.68
11	71404701	Contactor 24VAC .....	1
12	71605601	End anchor, DIN rail .....	10
13	71606501	Fuse block .....	10
14	71608601	Grounding terminal block .....	3
15	71608701	Terminal block.....	26
16	71608902	End barrier, terminal bloc.....	2
17	71612101	Jumper, center 2-pole .....	2
*		Overload Relay..... (Based on Motor Size)	1

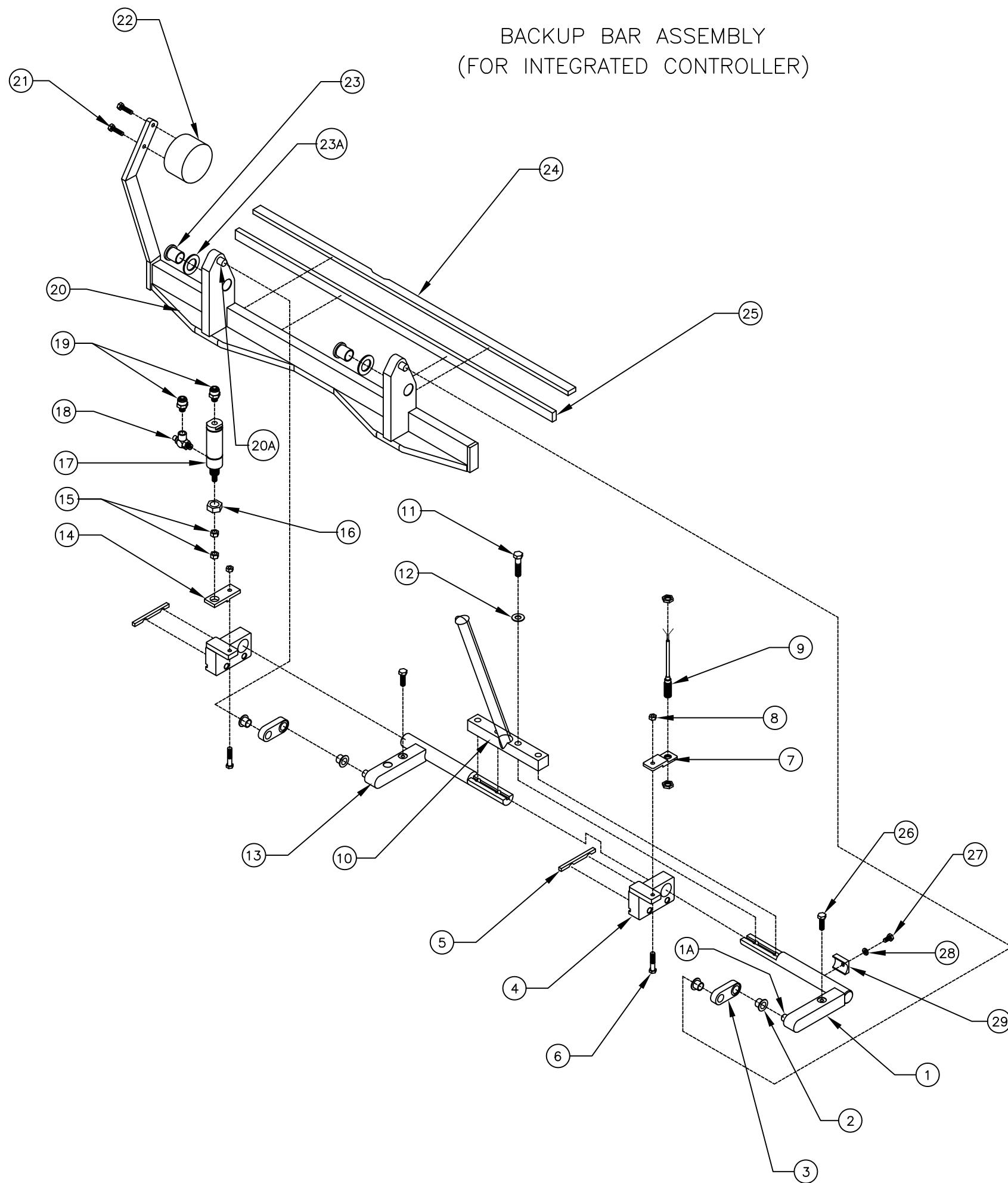


# Typical Electrical Panel, Integrated-Controller, MK III (Impulse Bar Sealer)

Ref.	M-Tek No.:	Part No.:	Description:	Qty.:
1		113069C1	AB Ctr Jumper 3-Pole J6 Block .....	2
2		71002701	DIN Rail, 34mm wide, 1 meter length (meters).....	0.8
3		76210601	Mark III Electrical Panel Remote Mount PLC.....	1
4		71610601	Rectifier AC-DC, up to 220 VAC .....	1
5		71022101	End Barrier Terminal Block, J6 .....	8
6		71022501	Power Supply 24VDC.....	1
7		71023201	Phoenix Contact.....	8
8		71104502	Relay, solid state 24-265VAC .....	1
9		71300801	Wire Duct, 1 X 1.5, White T&B .....	7.68
10		71300901	Wire Duct Cover, White, T&B .....	7.68
11		71404701	Contactor 24VAC .....	1
12		71605601	End anchor, DIN rail .....	10
13		71606501	Fuse block .....	10
14		71608601	Grounding terminal block .....	3
15		71608701	Terminal block.....	26
16		71608902	End barrier, terminal bloc .....	2
17		71612101	Jumper, center 2-pole .....	2
18		71003301	Impulse Control Board .....	1
19		71106401	Analog relay (phase control module) .....	2
20		71106501	Current transformer.....	1
21		71405501	Auxiliary Contactor (only used with water ring pump option) .....	1
		71404901	Overload 0.9-1.5 Amp .....	
		71405001	Overload 1.4-2.3 Amp .....	
		71405101	Overload 2.3-3.0 Amp .....	
		71405201	Overload 3.0-5.0 Amp .....	
		71405301	Overload 4.5-7.5 Amp .....	
		71405401	Overload 9.0-15.0 Amp .....	
		71405501	Auxiliary Contactor 2NO for BG09 .....	
*			Overload Relay.....	1
			(Based on Motor Size)	



BACKUP BAR ASSEMBLY  
(FOR INTEGRATED CONTROLLER)



# Backup Bar Assembly (For Integrated-Controller)

Ref.	M-Tek No.: Part No.:	Description:	30" Head (760 mm) Qty.:	54" Head (1,370 mm) Qty.:	61½" Head (1,560 mm) Qty.:
1		Pivot Shaft RH.....	1.....	1.....	1.....
	76104401	Pivot Shaft RH 30" .....	X		
	76104601	Pivot Shaft RH 54/61½" .....		X.....	X.....
1A	76101101	Pin, Pivot Shaft To Link, Std. ....	2.....	2.....	2.....
	76101102	Pin, Pivot Shaft To Link, Oversized Weld  Diameter (As Req'd For Service)			
2	79101201	Flanged Bearing Sleeve For Link, Plastic .....	4.....	4.....	4.....
3	66100101	Link With Flanged Sleeves .....	2.....	2.....	2.....
4	76103801	Bearing Block, LH/RH Pivot Shaft.....	2.....	2.....	2.....
5	76102401	Key, Bearing Block/Buttress.....	2.....	2.....	2.....
6	75106901	1/4 -28 X 1-1/4 Hex Head Cap Screw S/S.....	2.....	2.....	2.....
7	76119401	Bracket, Proximity Switch Mounting.....	1.....	1.....	1.....
8	75103901	1/4-28 Hex Nut Finished S/S.....	2.....	2.....	2.....
9	71109701	Proximity Switch, Inductive, CE.....	1.....	1.....	1.....
10	76104201	Handle, Pivot Shaft.....	1.....	1.....	1.....
11	75108101	3/8-16 X 1-1/2 Hex Head Cap Screw S/S.....	4.....	4.....	4.....
12	75103401	3/8 Flat Washer S/S.....	4.....	4.....	4.....

## Backup Bar Assembly (For Integrated-Controller)

Ref. No.:	M-Tek Part No.:	Description:	30" Head (760 mm) Qty.:	54" Head (1,370 mm) Qty.:	61½" Head (1,560 mm) Qty.:
13		Pivot Shaft LH .....	1	1	1
	76104301	Pivot Shaft LH 30" .....	X		
	76104501	Pivot Shaft LH 54/61½" .....		X	X
14	76102101	Bracket, Mtg. Auto Jaw Cylinder .....	1	1	1
15	75102901	5/16-18 Hex Nut Finished S/S.....	2	2	2
16	75104401	5/8-18 Hex Nut Finished S/S.....	1	1	1
17	73200401	Cylinder, Auto Jaw Opener .....	1	1	1
18	73501701	Flow Control, 1/8 NPT .....	1	1	1
19	74202701	1/4 Tube X 1/8 NPT Male Conn. Plastic .....	2	2	2
20		Backup Bar Complete .....	1	1	1
	76110301	Backup Bar Complete 30" Hot-Bar Sealer .....	X		
	76110302	Backup Bar Complete 29" Impulse Bar Sealer .....	X		
	76110401	Backup Bar Complete 54" Hot-Bar Sealer .....		X	
	76110402	Backup Bar Complete 53" Impulse Bar Sealer .....		X	
	76106901	Backup Bar Complete 61½" Hot-Bar Sealer .....			X
	76106902	Backup Bar Complete 60½" Impulse Bar Sealer .....			X
20A	76101801	Pin, Backup Bar To Link, Std .....	2	2	2
	76101802	Pin, Backup Bar To Link, Oversized  Weld Diameter (As Req'd For Service)			
21	75106801	1/4-28 X 1 Hex Head Cap Screw S/S .....	2	2	2
22	76103701	Counter Weight For Backup Bar .....	1	2	2

## Backup Bar Assembly (For Integrated-Controller)

Ref. No.:	M-Tek Part No.:	Description:	30" Head (760 mm) Qty.:	54" Head (1,370 mm) Qty.:	61½" Head (1,560 mm) Qty.:
23		Bushing .....	2	2	2
	79100101	Bushing, Bronze 3/4" ID X 7/8" OD, Backup Bar Pivot, Standard			
	79101301	Bushing, Plastic ¾" ID X 7/8" OD, Backup Bar Pivot, Dairy Option			
23A	75114001	7/8 Flat Washer, .100 Thick, S/S, Dairy Option .....	2	2	2
24	79500302	Rubber, Bag Clamp, Front Probe Seal .....	2	2	2
25		Rubber, Seal Bar .....	1	1	1
	79500403	Rubber, Seal Bar 30"	X		
	79501102	Rubber, Seal Bar 54" & 61½"		X	X
26	75107701	5/16-18 X 1 Hex Head Cap Screw S/S .....	2	2	2
27	75106601	1/4-28 X 1/2 Hex Head Cap Screw S/S .....	1	1	1
28	75102601	1/4 Lock Washer, Med. Split S/S .....	1	1	1
29		Stop, Pivot Shaft .....	1	1	1
	76103101	Stop, Pivot Shaft #1 (.406) 1/4 Bolt			
	76103102	Stop, Pivot Shaft #2 (.468) 1/4 Bolt			
	76103103	Stop, Pivot Shaft #3 (Blank) 1/4 Bolt			

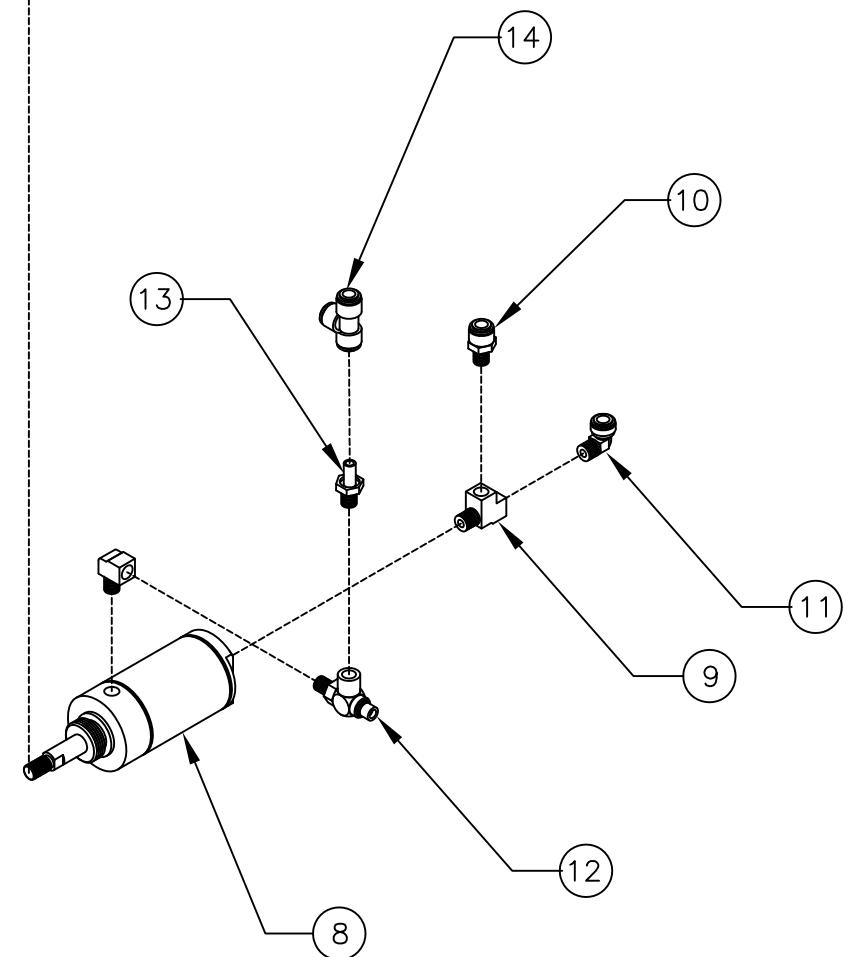
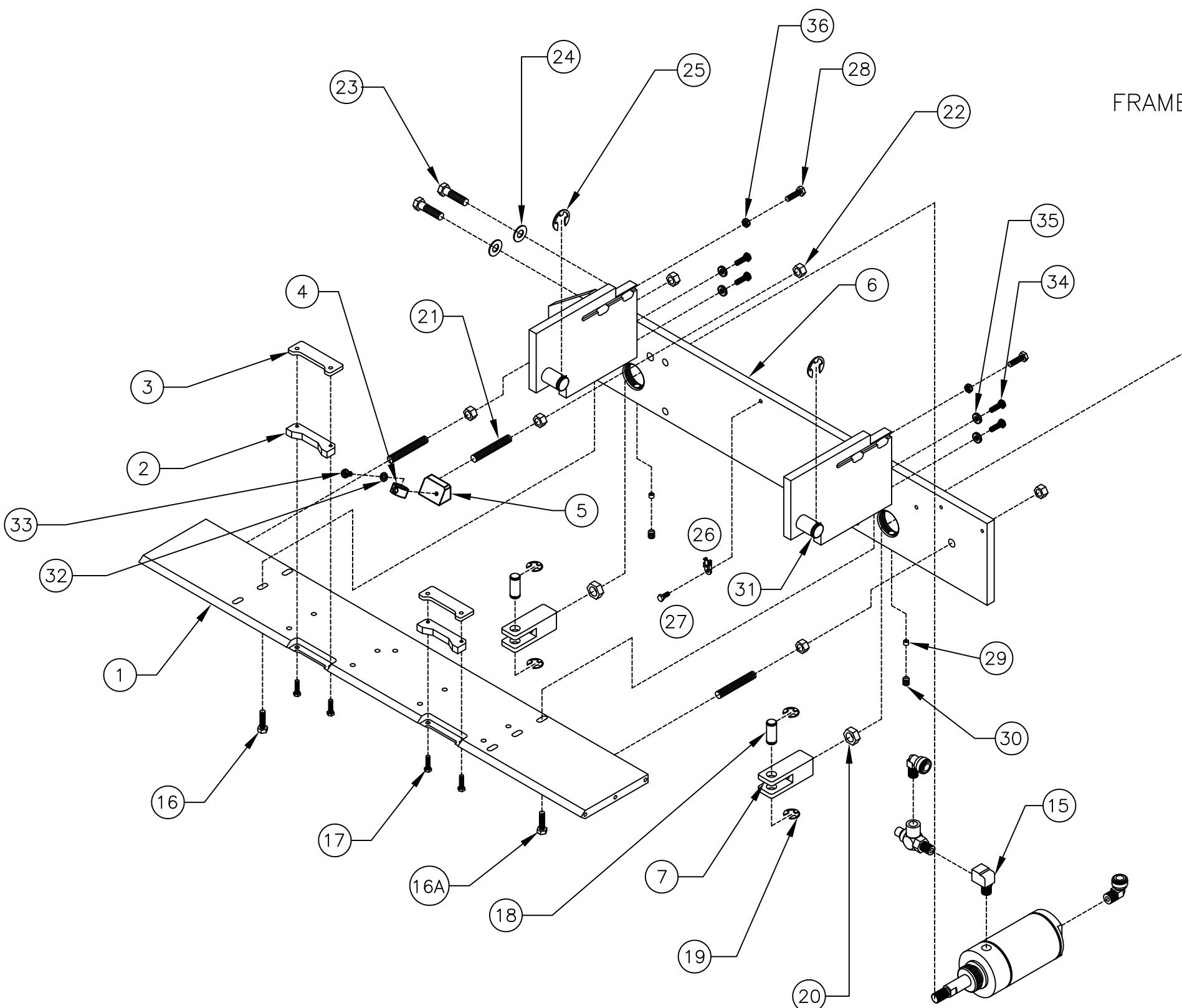
BBIC 20 OCT 2010

M-TEK INCORPORATED  
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Fax: 847-741-3569

Elgin, Illinois 60123 USA  
E-mail: mtek@mtekcorp.com

FRAME PLATE ASSEMBLY



# Frame Plate Assembly

<b>Ref.</b>	<b>M-Tek No.: Part No.:</b>	<b>Description:</b>	<b>30" Head (760 mm) Qty.:</b>	<b>54" Head (1,370mm) Qty.:</b>	<b>61½" Head (1,560 mm) Qty.:</b>
1		Pinch Plate .....	1.....	1.....	1.....
	76108701	Pinch Plate 9.25 inch/235.0 mm CL.....		X	
	76107102	Pinch Plate 9.25 inch/235.0 mm CL .....			X
	76107103	Pinch Plate 15.00 inch/381.0 mm CL.....			X
	76107104	Pinch Plate 18.00 inch/457.2 mm CL .....			X
	76107105	Pinch Plate 16.00 inch/406.4 mm CL.....			X
	76107106	Pinch Plate 12.00 inch/304.8 mm CL.....			X
	76107107	Pinch Plate 9.25 inch/235.0 mm CL w/4.125 inch/104.8 mm offset .....			X
	76107108	Pinch Plate 7.50 inch/190.5 mm CL.....			X
	76112502	Pinch Plate 9.25 inch/235.0 mm CL.....			X
	76112503	Pinch Plate 15.00 inch/381.0 mm CL.....			X
	76112504	Pinch Plate 18.00 inch/457.2 mm CL .....			X
2	79500202	Rubber, Rear Probe Seal (Qty. Per Probe) .....	1.....	1.....	1.....
3	76102001	Clamp, Rear Probe Seal (Qty. Per Probe) .....	1.....	1.....	1.....
4	79500902	Bumper, Pivot Shaft .....	1.....	2.....	2.....
5	76110101	Bumper Mounting Block, Pivot Shaft .....	1.....	2.....	2.....
6		Frame Plate Complete .....	1.....	1.....	1.....
	76110201	Frame Plate 30" Complete.....		X	
	76108801	Frame Plate 54" Complete.....			X
	76106701	Frame Plate 61½" Complete .....			X
7		Clevis, Heat Seal Bar .....	2.....	4.....	4.....
	76102601	Clevis, Heat Seal Bar (Std)			
	76102701	Clevis, Heat Seal Bar (1/8 Offset)			
	76102801	Clevis, Heat Seal Bar (1/16 Offset)			
8	73200101	Cylinder, Seal Bar .....	2.....	4.....	4.....

Frlassy 23 Dec 1998

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E-mail: mtek@mtekcorp.com

# Frame Plate Assembly

Ref. No.:	M-Tek Part No.:	Description:	30" Head (760 mm) Qty.:	54" Head (1,370mm) Qty.:	61 1/2" Head (1,560 mm) Qty.:
9	74305901	1/4 NPT Male Run Tee, Extruded Brass.....	1.....	2.....	2.....
10	74203001	3/8 Tube X 1/4 NPT Male Conn, Plastic .....	1.....	4.....	4.....
11	74204201	3/8 Tube X 1/4 NPT Fixed Elbow, Male, Plastic .....	3.....	1.....	1.....
12	73501101	Flow Control, 1/4 NPT .....	2.....	2.....	2.....
13	74204601	3/8 Tube X 1/4 NPT Stem Adapter, Plastic.....	1.....	4.....	4.....
14	74203501	3/8 Tube Union Tee, Plastic.....	1.....	4.....	4.....
15	74304401	1/4 NPT Street Elbow, Extruded Long, Brass .....	2.....	3.....	3.....
16	75106801	1/4 - 28 X 1 Hex Head Cap Screw S/S .....	4.....	6.....	6.....
16A	75106701	1/4 - 28 X 3/4 Hex Head Cap Screw S/S .....	2.....		
17	75106201	10-32 X 3/4 Hex Head Cap Screw Trimmed S/S (Qty. Per Probe).....	2.....	2.....	2.....
18	76102501	Pin, Seal Bar Clevis .....	2.....	4.....	4.....
19	75102201	E-Ring Retainer For 1/2 Rod .....	4.....	8.....	8.....
20	75105101	1/2 - 20 Hex Jam Nut S/S .....	2.....	4.....	4.....
21	75108501	3/8 - 16 X 2.25 inch/57.2 mm Long Threaded Rod S/S .....	3.....	6.....	6.....
22	75104201	3/8 - 16 Hex Nut Finished S/S .....	3.....	12.....	12.....
23	75108101	3/8 - 16 X 1 1/2 Hex Head Cap Screw S/S .....	4.....	4.....	4.....
24	75103401	3/8 Flat Washer S/S .....	4.....	4.....	4.....
25	75102301	E-Ring Retainer For 3/4 Rod.....	2.....	2.....	2.....
26	75000401	Mount Plate, T & B Cable Tie .....	1.....	1.....	1.....
27	75110701	10-32 X 1/2 Hex Head Cap Screw S/S .....	1.....	1.....	1.....
28	75106801	1/4 - 28 X 1 Hex Head Cap Screw S/S .....	2.....	2.....	2.....
29	75001301	Spacer Nylon .25 inch/6.4 mm OD X .188 inch/4.76 mm Long .....	2.....	4.....	4.....
30	75101701	5/16 - 18 X 3/8 Set Screw Cup Point W/Nylon Patch .....	2.....	4.....	4.....
31	76101701	Pin, Buttress to Backup Bar .....	2.....	2.....	2.....

Frplassy 23 Dec 1998

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E-mail: mtek@mtekcorp.com

## Frame Plate Assembly

Ref. No.:	M-Tek Part No.:	Description:	30" Head (760 mm) Qty.:	54" Head (1,370mm) Qty.:	61½" Head (1,560 mm) Qty.:
32	75110201	1/4 Flat Washer (0.265 I.D. x 0.500 O.D.) S/S .....	1.....	2.....	2
33	75106001	1/4 - 28 X 1/2 Pan Head Machine Screw S/S .....	1.....	2.....	2
34	75169601	1/4 - 28 X 7/8 Hex Head Cap Screw S/S .....	4.....	4.....	4
35	110554C1	1/4 Flat Washer (0.281 I.D. x 0.625 O.D.x 0.125 THK) S/S .....	4.....	4.....	4
36	75103901	1/4 - 28 Hex Nut Finished S/S .....	2.....	2.....	2

Frplassy 23 Dec 1998

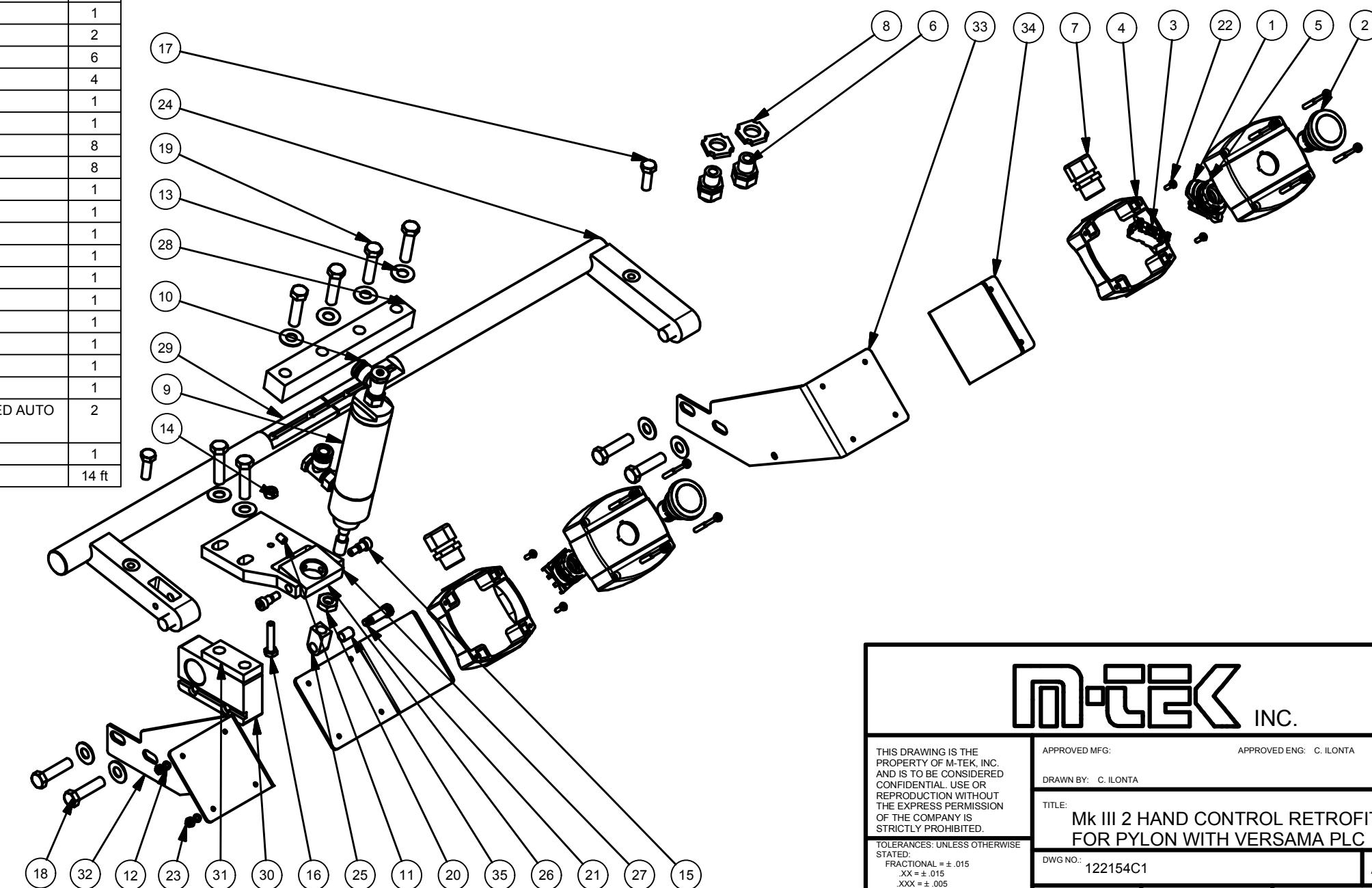
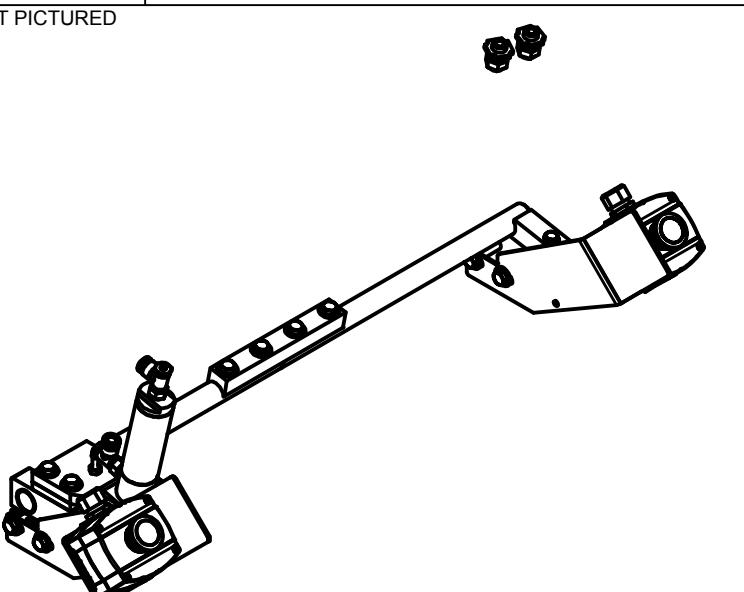
M-TEK INCORPORATED  
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1675 Todd Farm Drive  
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Elgin, Illinois 60123 USA  
E-mail: mtek@mtekcorp.com

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	71106102	LATCH, 22mm 3 ACROSS	2
2	71113901	GREEN PUSH BUTTON 40mm MUSHROOM HEAD W/LATCH	2
3	71114001	CONTACT BLOCK N.O.	2
4	71301201	ENLCOSURE, PLASTIC YELLOW PUSH BUTTON	2
5	71601401	1/2 NPT SELING NUT	2
6	71605001	CORD GRIP GREY 3/8 NPT STANDARD DIAMETER GROMMENT	2
7	71605101	.20-.35 DIA. CORD GRIP, 1/2 NPT	2
8	71607301	3/8 NPT CONDUIT SQUARE LOCKNUT	2
9	73200601	AIR CYLINDER, JAW CLOSER	1
10	73501101	1/4 NPT X 3/8 TUBE FLOW CONTROL	2
11	75101901	1/4-20 UNC X 3/8 LG. SOCKET SETSCREW, CUP POINT	1
12	75102401	#8 MED SPLIT LOCK WASHERS, S/S	8
13	75103401	3/8 FLAT WASHER (.406 I.D. X .875 O.D. X .047 THK.)	10
14	75103901	1/4-28 HEX NUT, S/S	1
15	75104601	Ø5/16 X 5/16 SOCKET HEAD SHOULDER SCREW, S/S	2
16	75107001	1/4-28 X 1-1/4 LNG HEX HEAD CAP SCREW, S/S, (FULL THD)	1
17	75107701	5/16-18 X 1 LNG HEX HEAD CAP SCREW, S/S	2
18	75108101	3/8-16 X 1-1/2 LNG HEX HEAD CAP SCREW, S/S	6
19	75108201	3/8-16 X 1-1/2 LNG SPECIAL 7/8 SHANK HEX HEAD CAP SCREW, S/S	4
20	75111401	7/16-20 HEX JAM NUT, S/S	1
21	75111501	FIN SEAL BAR SHOULDER BOLT	1
22	75120101	#6-32 X 1/2 PAN HEAD, SLOTTED, S/S	8
23	75200401	#6-32 HEX NUT, S/S	8
24	76104601A	PIVOT SHAFT RIGHT HAND 54 / 61-1/2	1
25	76118501A	CLEVIS, JAW CLOSER CYLINDER	1
26	76118600	TRUNNION BLOCK, JAW CLOSER CYLINDER	1
27	76118701A	TRUNNION BRACKET, JAW CLOSER CYLINDER	1
28	76118801	TIE BAR, PIVOT SHAFT, USED W/JAW CLOSER	1
29	76118901A	PIVOT SHAFT LH 54/61-1/2 W/JAW CLOSER	1
30	76119001A	BEARING BLOCK, LH PIVOT SHAFT W/JAW CLOSER	1
31	76119301A	SPACER, TRUNNION BRACKET, JAW CLOSER CYLINDER	1
32	76120701A	SWITCH BRACKET, HEAD MOUNTED, AUTO JAW CLOSER CONTROL, LH	1
33	76120801A	SWITCH BRACKET, HEAD MOUNTED, AUTO JAW CLOSER CONTROL, RH	1
34	76120901A	GUARD, SWITCH BRACKET, LEFT HAND AND RIGHT HAND, HEAD MOUNTED AUTO JAW CLOSER CONTROL	2
35	79101001	BEARING SLEEVE, JAW CLOSER CYLINDER CLEVIS	1
36*	71604401	CORD, 18/2 SJOWW, BLK	14 ft

\* NOT PICTURED

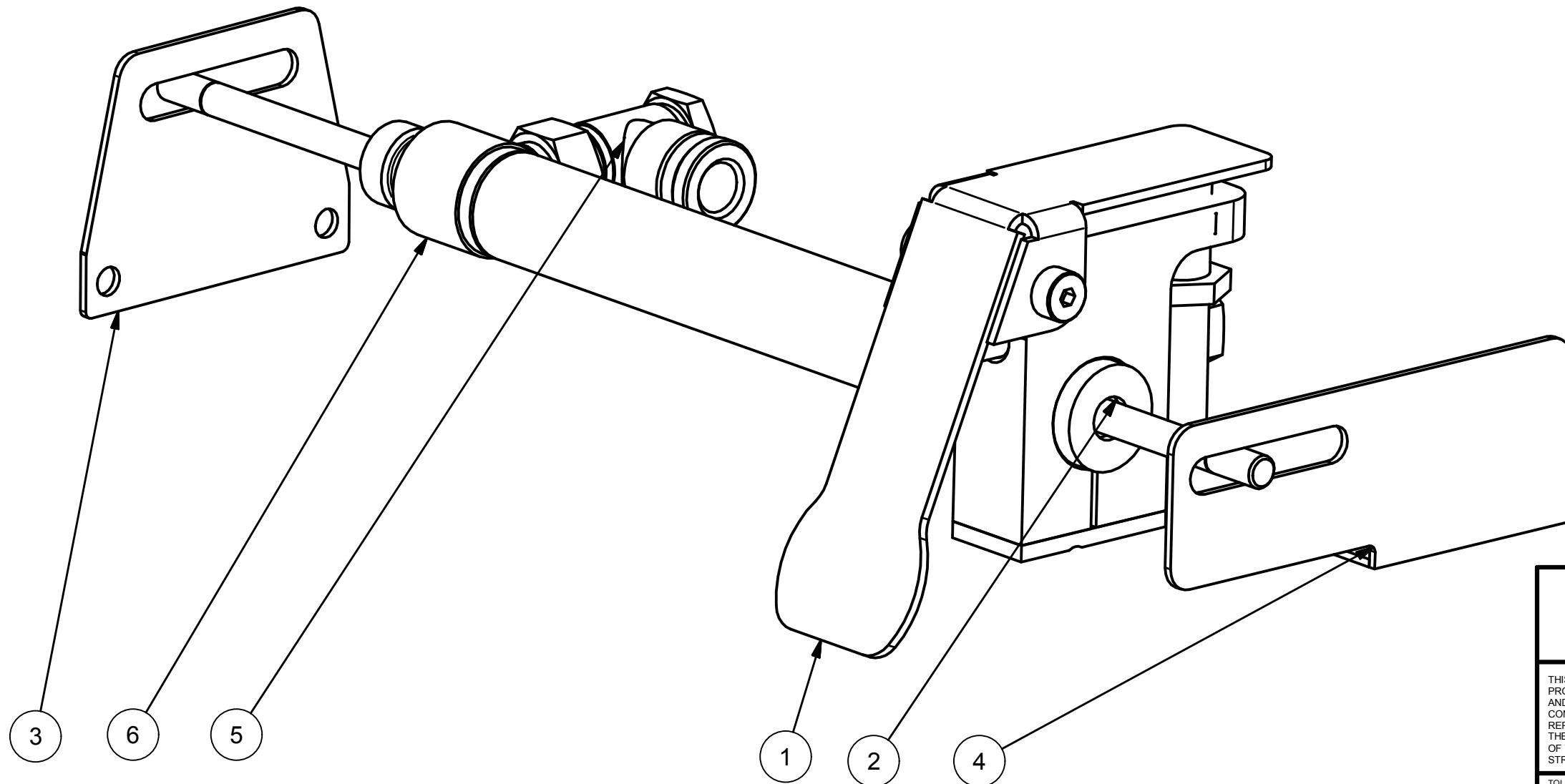


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TOLERANCES: UNLESS OTHERWISE STATED: FRACTIONAL = ± .015 .XX = ± .015 .XXX = ± .005 .XXXX = ± .0005 DRILLED HOLE- STANDARD S.A.E.	TITLE: Mk III 2 HAND CONTROL RETROFIT FOR PYLON WITH VERSAMA PLC DWG NO.: 122154C1 SCALE: N/A DATE: 2/23/2016 SHEET 1 OF 1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	02/23/2016	N.B

PARTS LIST

ITEM	PART NO.	DESCRIPTION	QT
1	122673C1	BAG STRETCHER	1
2	76126801A	CYLINDER MOUNTING ADAPTER	1
3	76126501A	END SUPPORT	1
6	73201201	CYLINDER FOR BAG STRETCHER	1
4	76126901A	PINCH PLATE SUPPORT LH	1
5	73501101	1/4 NPT X 3/8 TUBE FLOW CONTROL	2



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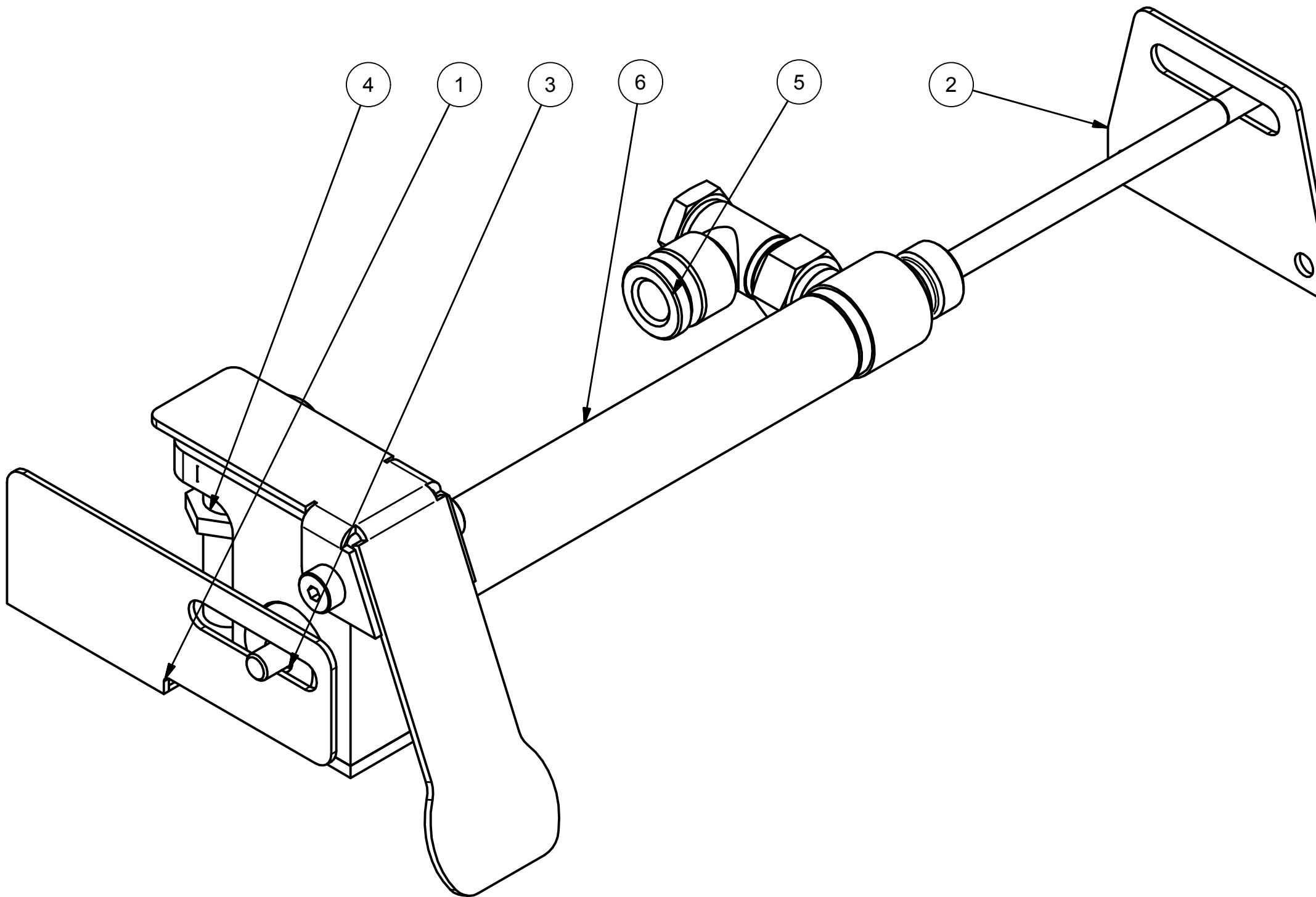
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APPROVED MFG:	APPROVED ENG:
DRAWN BY: T. Liakopoulos	
TITLE:	
BAG STRETCHER LH SIDE	
DWG NO.: 122674C1	
SCALE: N/A	DATE:
SHEET 1 OF 1	

TOLERANCES: UNLESS OTHERWISE  
STATED  
FRACTIONAL = ± .015  
XX = ± .015  
XXX = ± .005  
DRILLED HOLE: STANDARD S.A.E.

PARTS LIST

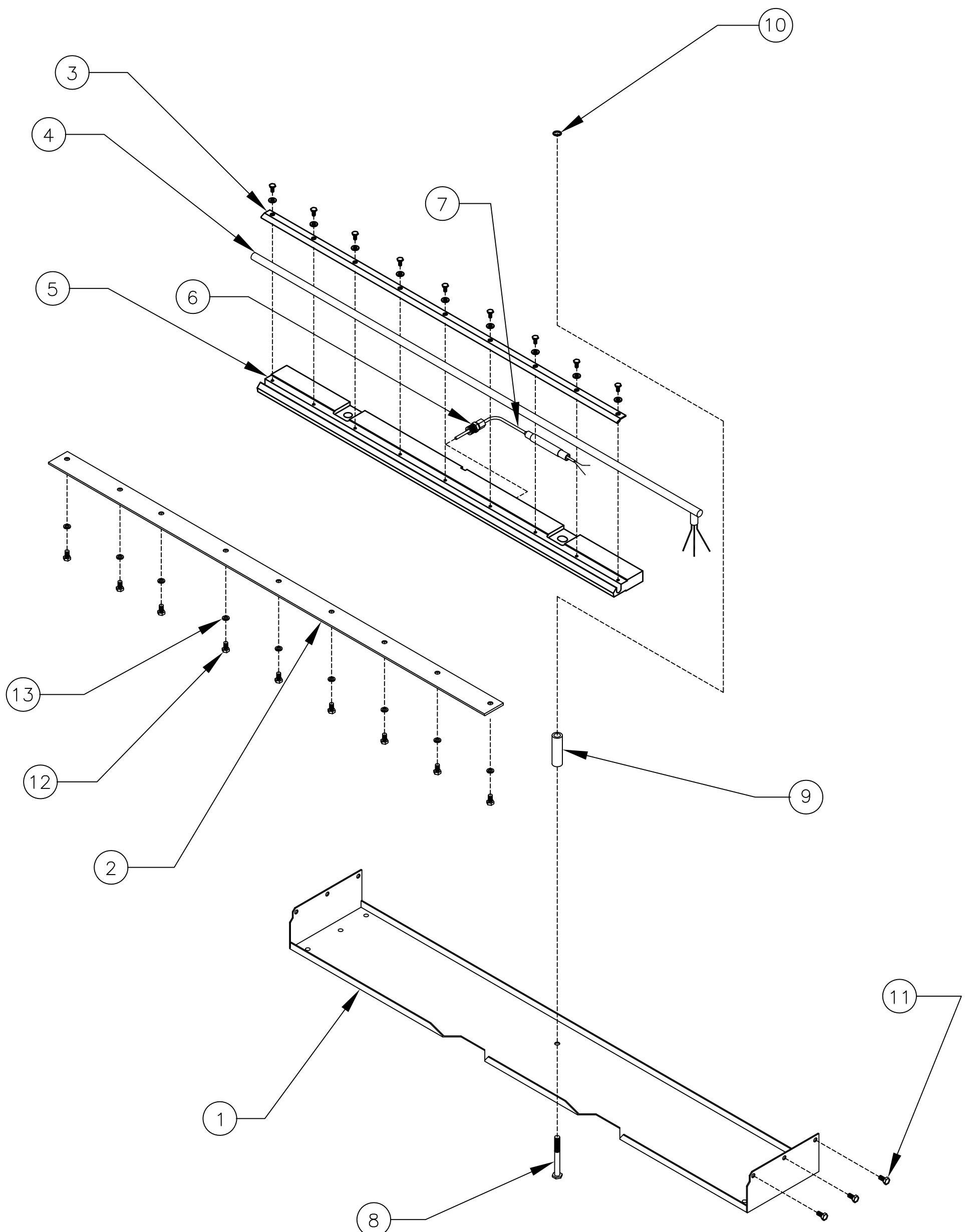
ITEM	PART NO.	DESCRIPTION	QT
4	122673C1	BAG STRETCHER	1
6	73201201	CYLINDER FOR BAG STRETCHER	1
5	73501101	1/4 NPT X 3/8 TUBE FLOW CONTROL	2
2	76126501	END SUPPORT	1
1	76126601	PINCH PLATE SUPPORT RH	1
3	76126801	CYLINDER MOUNTING ADAPTER	1



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DRAWN BY: T. Liakopoulos		
TITLE:		
BAG STRETCHER RH SIDE		
DWG NO.: 122675C1		
SCALE: N/A	DATE:	SHEET 1 OF 1

# HOT-BAR SEALER ASSEMBLY



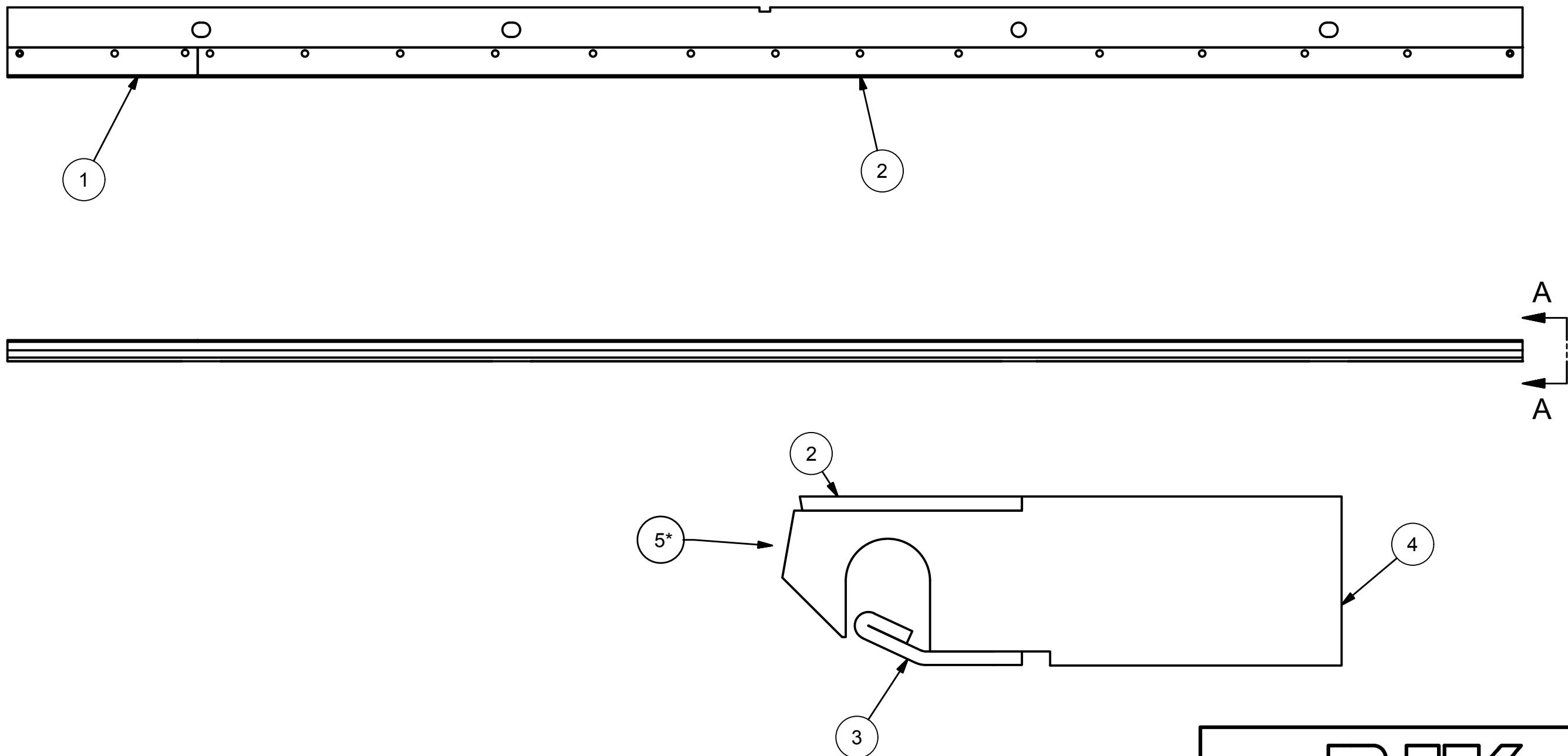
## Hot-Bar Sealer Assembly

Ref. No.:	M-Tek Part No.:	Description:	30" Head (760 mm) Qty.:	54" Head (1,370 mm) Qty.:	61½" Head (1,560 mm) Qty.:
1		Guard, Seal Bar .....	1	1	1
	76106301	Guard, Seal Bar 30" (9.25 inch/235.0 mm CL) .....	X		
	76106302	Guard, Seal Bar 30" LH Probe Only .....	X		
	76106303	Guard, Seal Bar 30" RH Probe Only.....	X		
	76106304	Guard, Seal Bar 30" (7.50 inch/190.5 mm CL) .....	X		
	76105902	Guard, Seal Bar 53/54" (9.25 inch/235.0 mm CL) .....			X
	76105903	Guard, Seal Bar 53/54" (15.00 inch/381.0 mm CL) .....			X
	76105904	Guard, Seal Bar 53/54" (18.00 inch/457.2 mm CL) .....			X
	76105905	Guard, Seal Bar 53/54" (16.00 inch/406.4 mm CL) .....			X
	76105906	Guard, Seal Bar 53/54" (12.00 inch/304.8mm CL). .....			X
	76105907	Guard, Seal Bar 53/54" (9.25inch/235.0mm CL w/4.125 inch/104.8mm offset).....			X
	76105908	Guard, Seal Bar 53/54" (7.50 inch/190.5 mm CL) .....			X
	76105909	Guard, Seal Bar 53/54" (11.00 inch/279.4 mm CL) .....			X
	76105910	Guard, Seal Bar 53/54" (14.00 inch/355.6 mm CL) .....			X
	76105911	Guard, Seal Bar 53/54" (15.875 inch/403.2 mm CL) .....			X
	76112302	Guard, Seal Bar 61½" (9.25 inch/235.0 mm CL) .....			X
	76112303	Guard, Seal Bar 61½" (15.00 inch/381.0 mm CL) .....			X
	76112304	Guard, Seal Bar 61½" (18.00 inch/457.2 mm CL) .....			X
	76112305	Guard, Seal Bar 61½" (13.00 inch/330.2 mm CL) .....			X
		Heater Cartridge Retainer (Assembled With Item 2 or 3)			
2	79102301	54" Chisel Face Cool Edge L.H. .....			X
	79102302	54" Chisel Face Cool Edge R.H. .....			X
	79102401	61 ½" Chisel Face Cool Edge L.H. .....			X
	79102402	61 ½" Chisel Face Cool Edge R.H. .....			X

# Hot-Bar Sealer Assembly

Ref.	M-Tek No.: Part No.:	Description:	30" Head (760 mm) Qty.:	54" Head (1,370 mm) Qty.:	61½" Head (1,560 mm) Qty.:
3	76125701	30" Heater Cartridge Retainer .....	X		
	76125801	54" Heater Cartridge Retainer.....		X	
	76125901	61-1/2" Heater Cartridge Retainer .....			X
4		Heater Cartridge.....	1	1	1
	71200201	Heater Cartridge 30" 240 VAC 750 Watts .....	X		
	71200101	Heater Cartridge 54" 240 VAC 1500 Watts. ....		X	
	71200401	Heater Cartridge 61½" 240 VAC 1730 Watts .....			X
5		Seal Bar .....	1	1	1
	76126101	Chisel Face, Cool Edge 30" Seal Bar with Teflon .....	X		
	79601201	Tape, Teflon (2 inch/51 mm X 32 inch/813 mm) (Optional).....	X		
	76126201	Chisel Face, Cool Edge 54" Seal Bar with Teflon .....		X	
	79600401	Tape, Teflon (2 inch/51 mm X 56/1422 mm) (Optional) .....		X	
	76106602	Chisel Face Seal Bar, 61½" S/S With Teflon .....			X
	79601001	Tape, Teflon (2 inch/51 mm X 64 inch/1626 mm) (Optional).....			X
6	74100101	Compression Fitting 1/8 Tube X 1/8 NPT, Drill 9/64 For Thermocouple .....	1	1	1
7	71000101	Thermocouple, Special AF.....	1	1	1
8	75100501	Bolt, Seal Bar Guard, 1/4 - 28 X 2 - 1/4 Modified S/S .....		2	2
9	76102201	Spacer, Seal Bar Guard 1.688 inch/42.86 mm Long .....		2	2
10	75102001	Circular Push-On For 7/32" Rod .....		2	2
11	75106101	10 - 32 X 3/8 Hex Head Cap Screw, Trimmed S/S.....	6	6	6
12	75106101	10 - 32 X 3/8 Hex Head Cap Screw, Trimmed S/S.....	9	16	18
13	75102801	#10 Flat Washer S/S (If Assembled With Item 2) .....	9	16	18
14	75102501	#10 Med Split Lock Washer S/S (If Assembled With Item 3) .....	9	16	18

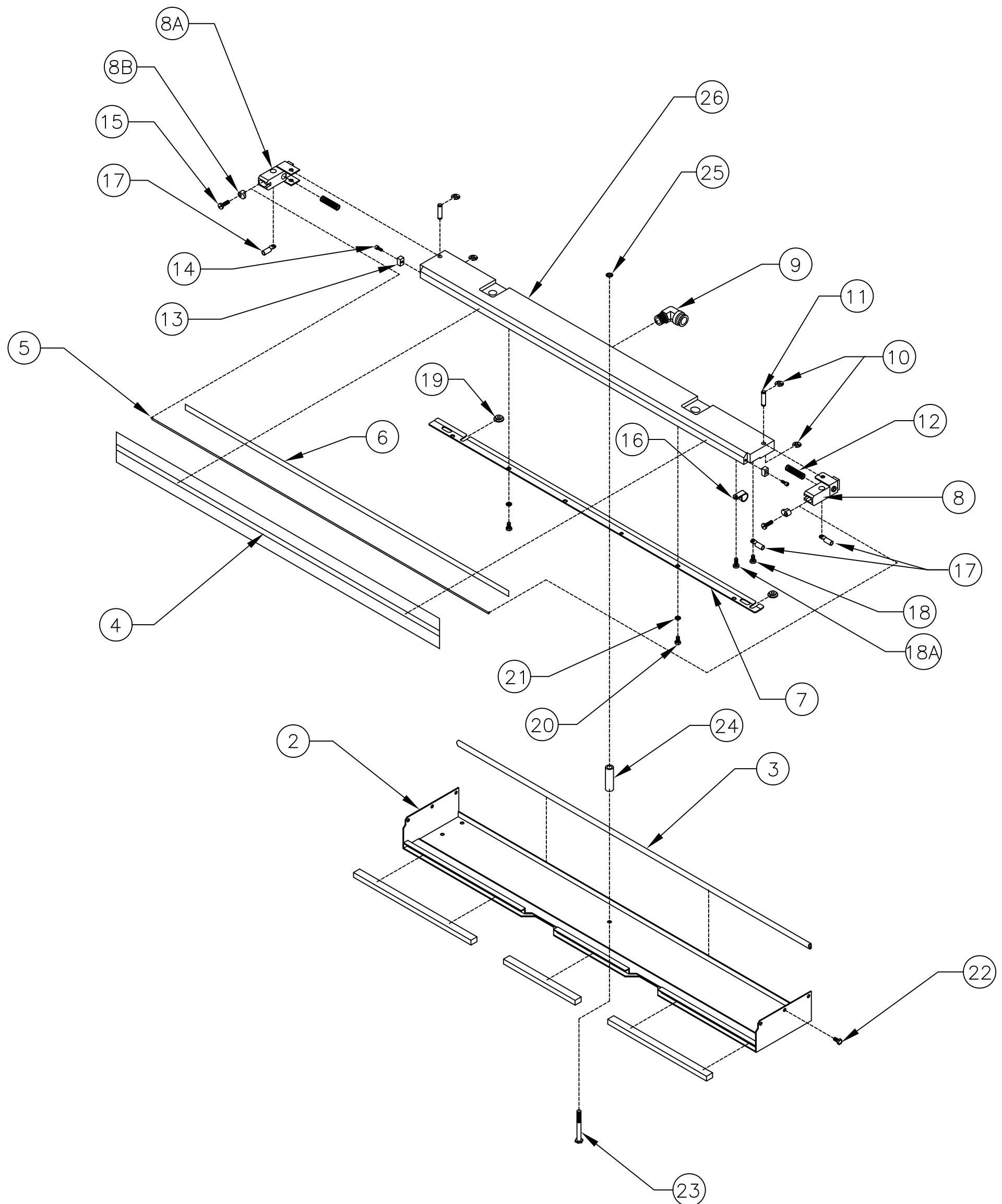
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		N.B



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	79102301	Left Hand 54 Inch Chisel Face Cool Edge Chisel Face, Cool Edge Seal Bar	1
2	79102302	Right Hand 54 Inch Chisel Face Cool Edge Chisel Face, Cool Edge Seal Bar	1
3	76125801	54 Inch Cartridge Retainer Stainless Steel for Chisel Face, Cool Edge Seal Bar	1
4	86106201	Chisel Face, Cool Edge 54 Inch Seal BarL	1
5*	79600103	Teflon Tape 1-3/4"	1

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	DRAWN BY: TomJr	
TITLE: 54 CHISEL FACE SEAL BAR ASSEMBLY		
DWG NO.: 54 CHISEL FACE BAR A		
SCALE: N/A	DATE: 2/3/2016	SHEET 1 OF 1

IMPULSE BAR SEALER ASSEMBLY  
1/8 SERIES B BAND OR 3/16 HIGH ENERGY BAND



# Impulse Bar Sealer Assembly

## 1/8 Series B Band or 3/16 High Energy Band

Ref.	M-Tek		29" Head (735 mm)	53" Head (1,345 mm)	60½" Head (1,535 mm)
No.:	Part No.:	Description:	Qty.:	Qty.:	Qty.:
2		Guard, Seal Bar .....	1	1	1
	76112101	Guard, Seal Bar 29" W/ Lower Bag Clamp (9.25 inch/235.0 mm CL) .....	X		
	76106301	Guard, Seal Bar 29/30" (9.25 inch/235.0 mm CL).....	X		
	76106302	Guard, Seal Bar 29/30" (Left Side Probe Only).....	X		
	76106303	Guard, Seal Bar 29/30" (Right Side Probe Only).....	X		
	76106304	Guard, Seal Bar 29/30" (7.50 inch/190.5 mm CL).....	X		
	76105902	Guard, Seal Bar 53/54" (9.25 inch/235.0 mm CL) .....	X		
	76105903	Guard, Seal Bar 53/54" (15.00 inch/381.0 mm CL).....	X		
	76105904	Guard, Seal Bar 53/54" (18.00 inch/457.2 mm CL) .....	X		
	76105905	Guard, Seal Bar 53/54" (16.00 inch/406.4 mm CL).....	X		
	76105906	Guard, Seal Bar 53/54" (12.00 inch/304.8 mm CL).....	X		
	76105907	Guard, Seal Bar 53/54" (9.25 inch/235.0 mm CL w/ 4.125 inch/ 104.8mm offset).....	X		
	76105908	Guard, Seal Bar 53/54" (7.50 inch/190.5 mm CL).....	X		
	76105909	Guard, Seal Bar 53/54" (11.00 inch/279.4 mm CL).....	X		
	76105910	Guard, Seal Bar 53/54" (14.00 inch/355.6 mm CL).....	X		
	76105911	Guard, Seal Bar 53/54" (15.875 inch/403.2 mm CL).....	X		
	76112302	Guard, Seal Bar 60½/61½" (9.25 inch/235.0 mm CL).....	X		
	76112303	Guard, Seal Bar 60½/61½" (15.0 inch/381.0 mm CL).....	X		
	76112304	Guard, Seal Bar 60½/61½" (18.0 inch/457.2 mm CL).....	X		
	76112305	Guard, Seal Bar 60½/61½" (13.0 inch/330.2 mm CL).....	X		

# Impulse Bar Sealer Assembly

## 1/8 Series B Band or 3/16 High Energy Band

Ref.	M-Tek No.: Part No.:	Description:	29" Head (735 mm) Qty.:	53" Head (1,345 mm) Qty.:	60½" Head (1,535 mm) Qty.:
3	79101101	Wear Strip Nylon, General Purpose, Impulse Pan (Cut To Fit) .....	1		
4		Tape, Teflon W/Zone .....	1	1	1
	79600201	Tape, Teflon W/Zone 29" Impulse.....		X	
	79600701	Tape, Teflon W/Zone 53" Impulse.....			X
	79601401	Tape, Teflon W/Zone 60½" Impulse.....			X
5		Band, Impulse .....	1	1	1
	71200801	½ Series B Band, Impulse 29" .....		X	
	71201101	3/16 High Energy Band, Impulse 29" .....		X	
	71200901	½ Series B Band, Impulse 53" .....			X
	71201201	3/16 High Energy Band, Impulse 53" .....			X
	71201301	3/16 High Energy Band, Impulse 60½" .....			X
6		Tape, Kapton .....	1	1	1
	79600501	Tape, Kapton 29" 5 mil .....		X	
	79600601	Tape, Kapton 53" 5 mil .....			X
	79601501	Tape, Kapton 60½" 5 mil .....			X
7		Cover, Impulse Cooling Channel .....	1	1	1
	76107401	Cover, 29" Impulse Cooling Channel .....		X	
	76111701	Cover, 53" Impulse Cooling Channel .....			X
	76124401	Cover, 60½" Impulse Cooling Channel .....			X
8	76124001	Impulse Term Blk Assy RH .....	1	1	1
8A	76124101	Impulse Term Blk Assy LH .....	1	1	1
8B	76124201	Impulse Band Retainer.....	2	2	2
9	74103001	½ Tube X ¾ NPT Male Elbow, Brass .....	1	1	1
10	75102101	E-Ring Retainer For 1/4 Rod.....	4	4	4

# Impulse Bar Sealer Assembly

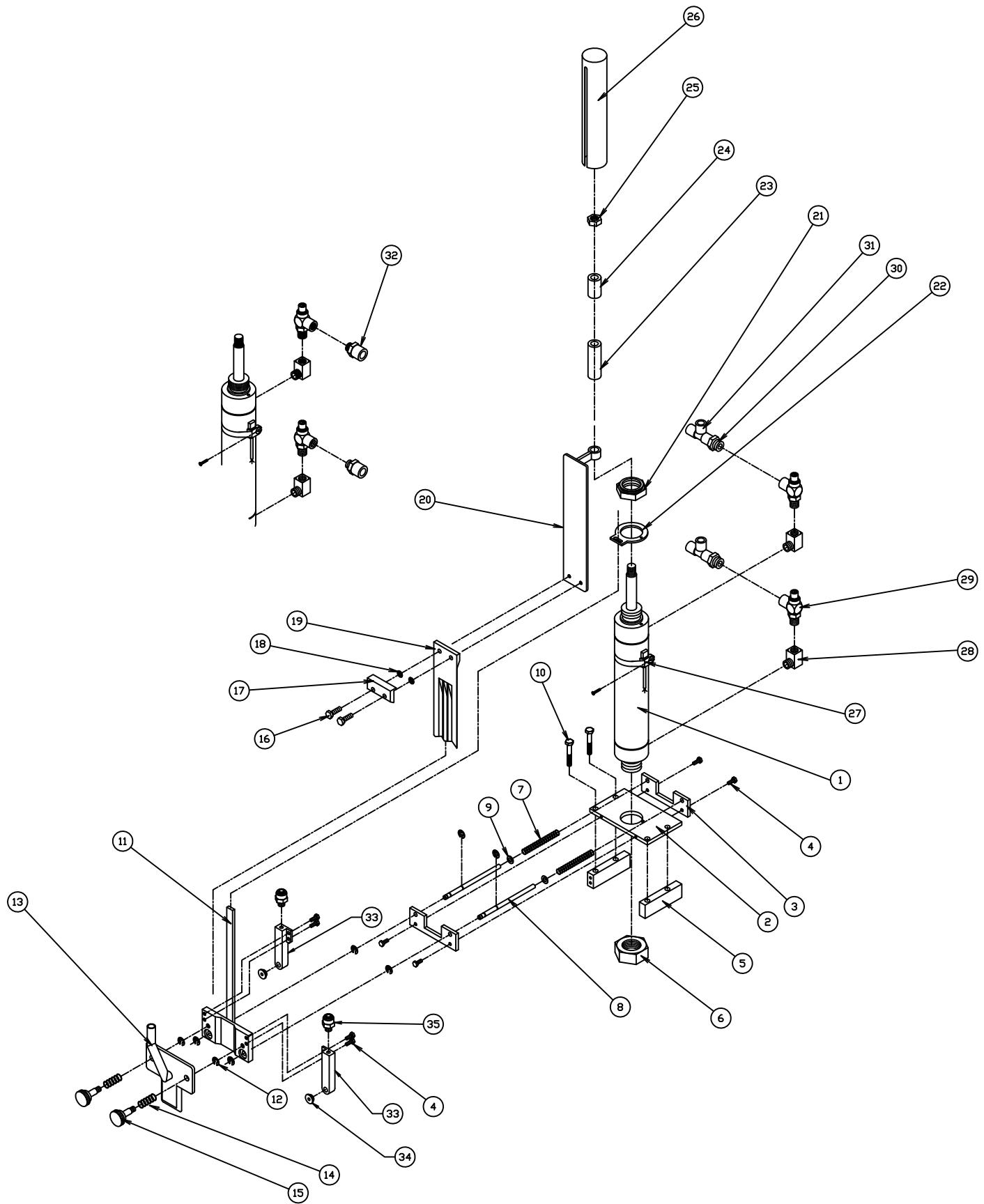
## 1/8 Series B Band or 3/16 High Energy Band

Ref.	M-Tek No.: Part No.:	Description:	29" Head (735 mm) Qty.:	53" Head (1,345 mm) Qty.:	60½" Head (1,535 mm) Qty.:
11	76111401	Pin, Impulse Terminal Pivot .....	2	2	2
12		Spring, Impulse Terminal .....	2	2	2
	75101501	Spring, Impulse Terminal .....	X	X	
	75117001	Spring, Impulse Terminal, 3/16 High Energy Band .....		X	
	75117101	Spring, Impulse Terminal, 3/16 High Energy Band .....			X
13	79100401	Insulator Block, For Impulse Bar Ends .....	2	2	2
14	75112201	6 - 32 X ¾, Socket Head Cap Screw S/S .....	2	2	2
15	75109801	10 - 32 X ⅝ Pan Head Machine Screw Slotted S/S .....	2	2	2
16	75000901	Tube Clamp, .375 inch/9.52 mm Plastic .....	1	1	1
17	71602701	Ring Terminal, #10 Yellow 10 Gauge .....	3	3	3
18	75106101	10 - 32 X ¾ Hex Head Cap Screw, Trimmed S/S .....	1	1	1
18A	75110701	10 - 32 X ½ Hex Head Cap Screw S/S .....	1	1	1
19	79500601	Plug Grommet ¾ .....	2	2	2
20	75106101	10 - 32 X ¾ Hex Cap Screw, Trimmed S/S .....	6	9	12
21	75102501	#10 Med Split Lock Washer S/S .....	6	9	12
22	75106101	10 - 32 X ¾ Hex Head Cap Screw, Trimmed S/S .....	6	6	6
23	75100501	Bolt, Seal Bar Guard ¼ - 28 X 2 - ¼ Modified S/S .....	1	2	2
24	76102201	Spacer, Seal Bar Guard 1.688 inch/42.86 mm Long .....	1	2	2
25	75102001	Circular Push-On for 7/32" Rod .....	1	2	2
26		Seal Bar, Impulse .....	1	1	1
	89100101	Seal Bar, 29" Aluminum Impulse .....	X		
	89100201	Seal Bar, 53" Aluminum Impulse .....		X	
	89101001	Seal Bar, 60½" Aluminum Impulse .....			X

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27 Dec 2002

COMPACT VACUUM PROBE TOWER ASSEMBLY  
AND OPTIONAL BAG GRIPPER  
(FOR INTEGRATED-CONTROLS)



# Compact Vacuum Probe Tower Assembly And Optional Bag Gripper (For Integrated-Controls)

<b>Ref.</b>	<b>M-Tek</b>			<b>Qty.:</b>
<b>No.:</b>	<b>Part No.:</b>	<b>Description:</b>		
1	73200502	Cylinder, Compact Probe Tower W/Delrin Ends.....	1 per Tower	
2	76105701	Cylinder Mtg Plate, Compact Probe Tower .....	1 per Cyl.	
3	76105201	Bearing Plate, Compact Probe Tower .....	2 per Cyl.	
4	75110701	10-32 X 1/2 Hex Head Cap Screw S/S.....	4 per Cyl.	
		(Optional Bag Gripper).....	2 per Bag Gripper	
5	76105801	Support Block, Compact Probe Tower .....	2 per Cyl.	
6	75100801	Cylinder Mounting Nut, Compact.....	1 per Cyl.	
7	75100701	Spring, Probe Ejector, Compact Probe Tower.....	2 per Cyl.	
		3.25 inch/82.6 mm Long For 1/4 Rod		
8	76105301	Guide Pin, Compact Probe Tower .....	2 per Cyl.	
9	75110201	Washer, Flat AN96OC416L .500 inch/12.7 mm OD X .....	2 per Cyl.	
		.265 inch/6.73 mm ID X .032 inch/.81 mm THK		
10	75110101	1/4-28 X 1-3/4 Hex Head Cap Screw S/S.....	4 per Cyl.	
11	76105101	Probe Guide, Compact Probe Tower.....	1 per Cyl.	
12	75102101	E-Ring Retainer For 1/4 Rod .....	8 per Cyl.	
13		Cover Plate, Probe.....	1 per Cyl.	
	76101001	Cover Plate, Probe		
	76119701	Cover Plate, Hi-Vacuum Probe		
14	75100201	Spring, Probe Cover Plate .....	2 per Cyl.	
15	75100401	Bolt, Probe Cover Plate .....	2 per Cyl.	
16	75109601	1/4-20 X 7/8 Hex Head Cap Screw S/S .....	2 per Cyl.	
17	76105601	Probe Clevis, Compact Probe Tower.....	1 per Cyl.	
18	75102001	Circular Push-On For 7/32 Rod .....	2 per Cyl.	

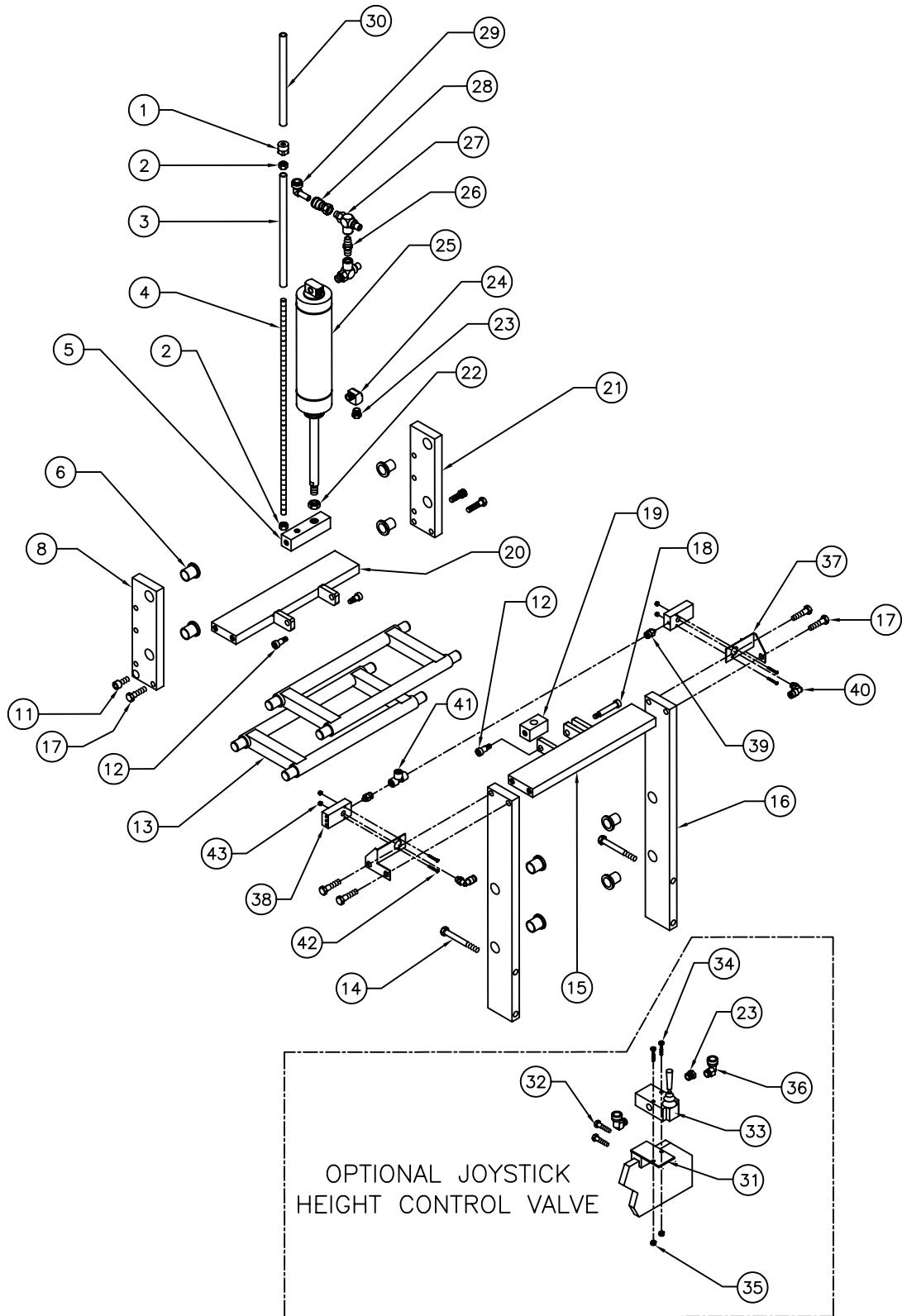
# Compact Vacuum Probe Tower Assembly And Optional Bag Gripper (For Integrated-Controls)

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
19		Probe .....	1 per Cyl.
	72400201	Probe, Teflon® Open Six 6.50 inch/165 mm Long Face Grooves Short Stroke: 3.75 inch/95.2 mm Long	
	72400202	Probe, Teflon® Open Six 8.75 inch/222 mm Long Face Grooves Long Stroke: 6.00 inch/152.4 mm Long	
	72400203	Probe, Teflon® Open Six 5.00 inch/127 mm Long Face Grooves Extra Short Stroke: 2.25 inch/57.2 mm Long	
	72400701	Probe, Teflon® Open Short Six 6.38 inch/162 mm Long Face Grooves Special Short Stroke: 3.62 inch/91.9 mm Long	
	72400101	Probe, Teflon® Dammed Six 8.75 inch/222 mm Long Face Grooves Long Stroke: 6.00 inch/152.4 mm Long	
	72400102	Probe, Teflon® Dammed Six 5.00 inch/127 mm Long Face Grooves Extra Short Stroke: 2.25 inch/57.2 mm Long	
	72400103	Probe, Teflon® Dammed Six 6.50 inch/165 mm Long Face Grooves Short Stroke: 3.75 inch/95.2 mm Long	
		Cover Plate Extender .....	1 per Cyl. (If Req'd)
	79100801	Cover Plate Extender	
	79100802	Cover Plate Extender With .500 inch/12.70mm Hole	
20	76105001	Probe Push Bracket Complete.....	1 per Cyl.
21	75100601	Rod Cover Nut, Compact Probe Tower .....	1 per Cyl.
22	76120601	Bracket, Probe Guide, Compact Probe Tower .....	1 per Cyl.
23	76101301	Spacer, Short Probe Stroke .....	1 per Cyl. (If Req'd)
24	76101201	Spacer, Extra Short Probe Stroke.....	1 per Cyl. (If Req'd)
25	75105101	½-20 Hex Jam Nut S/S .....	1 per Cyl.
26	76105401	Cylinder Rod Cover, Compact Probe Tower .....	1 per Cyl.

# Compact Vacuum Probe Tower Assembly And Optional Bag Gripper (For Integrated-Controls)

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
27	71109801	Switch, NPN Hall Effect, 12 foot/36.6 m Leads ..... With S/S Band Kit	1 per Cyl.
28	74304401	¼ NPT Street Elbow, Extruded Long Brass.....	2 per Cyl.
29	73501101	Flow Control, ¼ NPT.....	2 per Cyl.
30	74204601	¾ OD Tube X ¼ NPT Stem Adapter, Plastic .....	2 per Cyl.
31		Tee (or) Elbow	
	74203501	¾ OD Tube Union Tee, Plastic .....	2 (For 2 Tower Assy.)
	74203801	¾ OD Tube Union Elbow, Plastic.....	2 (For 1 Tower Assy.)
32	74203001	¾ OD Tube X 1/4 NPT Male Conn. Plastic.....	2
		Optional Bag Gripper	
33		Bag Gripper	
	76100701	Bag Gripper, Left Hand .....	1 or 0 (Per Tower Assy.)
	76100801	Bag Gripper, Right Hand.....	1 or 0 (Per Tower Assy.)
34	79500601	Plug Grommet ½.....	1 per Bag Gripper
35	74202701	¼ OD Tube X ⅛ NPT Male Conn., Plastic.....	1 per Bag Gripper

HI-LO HEAD ASSEMBLY  
WITH OPTIONAL JOYSTICK HEIGHT CONTROL VALVE  
OR OPTIONAL PIAB BAG GRIPPER



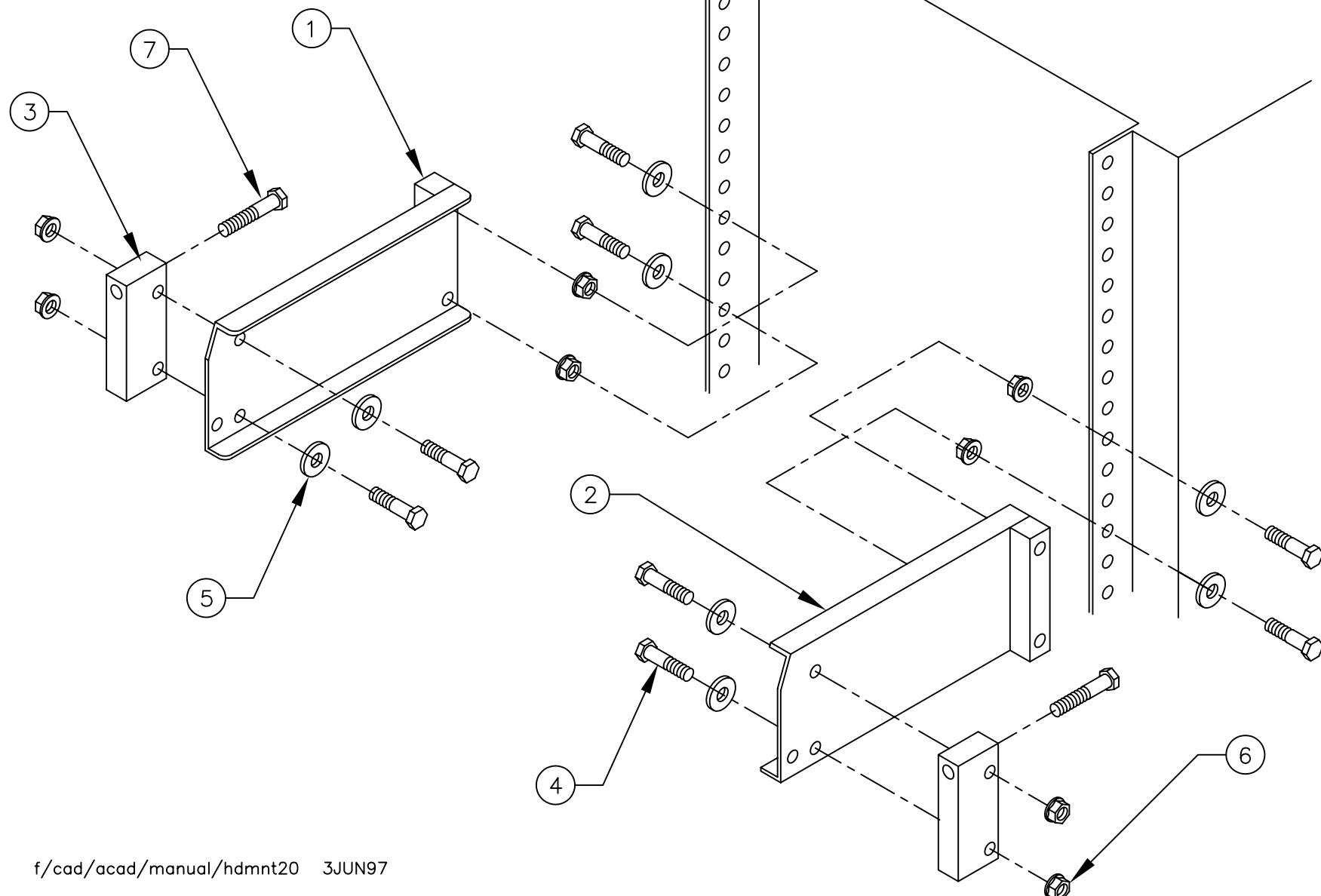
# Hi-Lo Head Assembly And Optional Joystick Height Control Valve

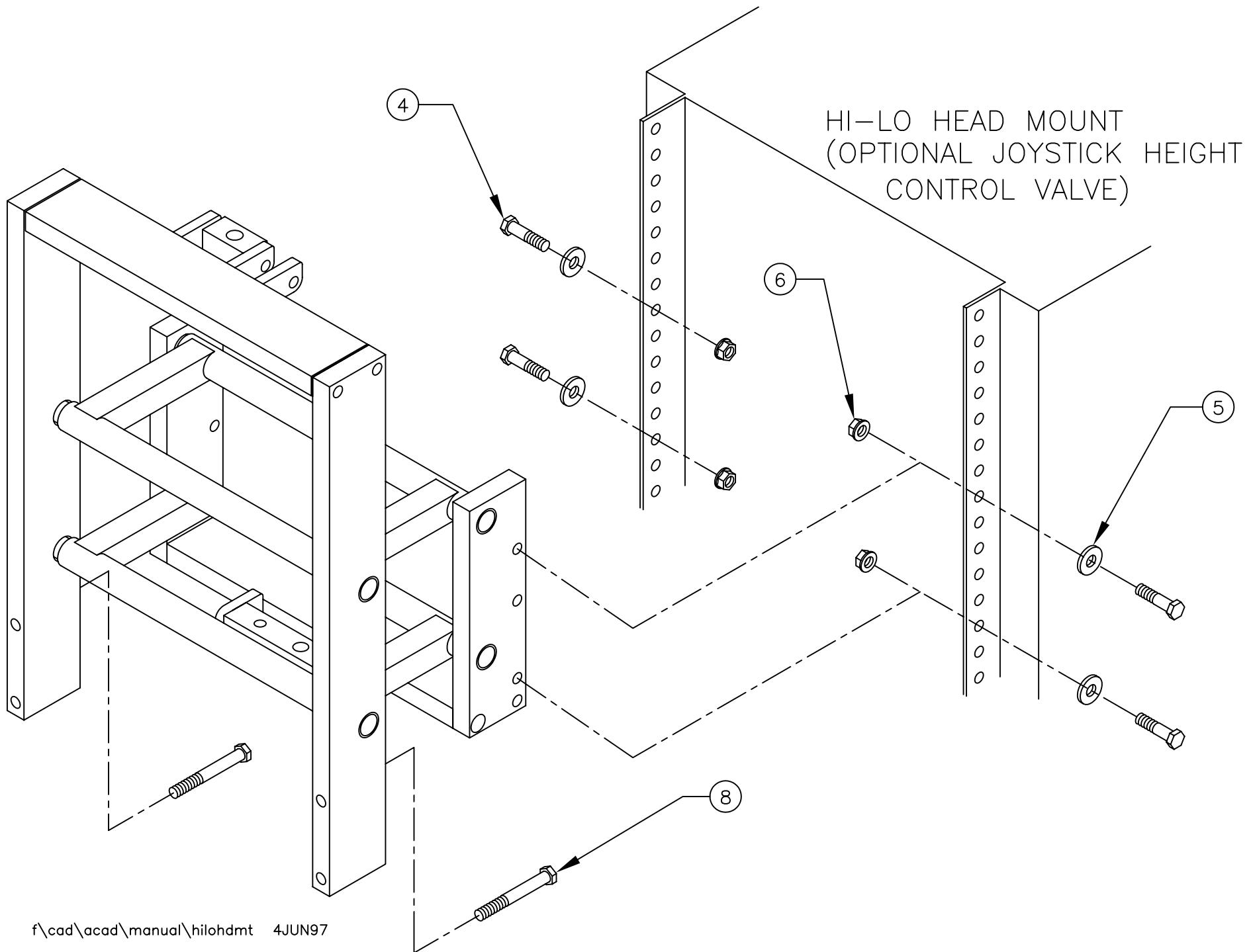
Ref. No.:	M-Tek Part No.:	Description:	Qty.:
1	76109201	Rod Stop Nut For Hi-Lo Head .....	1
2	75104201	¾-16 Hex Nut S/S .....	2
3	76108001	Support Tube, Hi-Lo Head .....	1
4	76118201	¾-16 X 19 ½" S/S Threaded Rod.....	1
5	76109101	Cylinder Rod Trunnion, Hi-Lo Head .....	1
6	79100101	¾ ID X ¾ OD Bronze Bushing .....	8
7			
8		Frame, Hi-Lo Head, LH Pylon Mount.....	1
	76107701	Frame, Hi-Lo Head, LH Pylon Mount, Mark I/II	
	76107702	Frame, Hi-Lo Head, LH Pylon Mount, Mark III/IV	
9			
10			
11	75108401	¾-16 X 1 Socket Head Cap Screw S/S.....	2
12	75104701	¾ X ½ Long Socket Head Shoulder Bolt w/5/16-18 Threads S/S.....	3
13	76107501	Parallel Link, Hi-Lo Head .....	2
14	75108301	¾-16 X 3" Hex Head Cap Screw S/S .....	2
15	76108101	Upper Cylinder Mtg Frame, Hi-Lo Head.....	1
16	76107601	Frame, Head Mount, Hi-Lo Head .....	2
17	75108101	¾-16 X 1½ Hex Head Cap Screw S/S .....	6
18	75104801	¾ X 1¼ Long Socket Head Shoulder Bolt w/5/16-18 Threads S/S.....	1
19	76109001	Stop Rod Trunnion, Hi-Lo Head.....	1
20	76107901	Lower Cylinder Mtg Frame, Hi-Lo Head.....	1
21		Frame, Hi-Lo Head, RH Pylon Mount .....	1
	76107801	Frame, Hi-Lo Head, RH Pylon Mount, Mark I/II	
	76107802	Frame, Hi-Lo Head, RH Pylon Mount, Mark III/IV	
22	75105101	½-20 Hex Jam Nut S/S .....	1
23	74300101	¼ NPT Breather Vent, Brass (Qty. 1 Used In Optional Joystick .....	2
		Control Valve)	

# Hi-Lo Head Assembly And Optional Joystick Height Control Valve

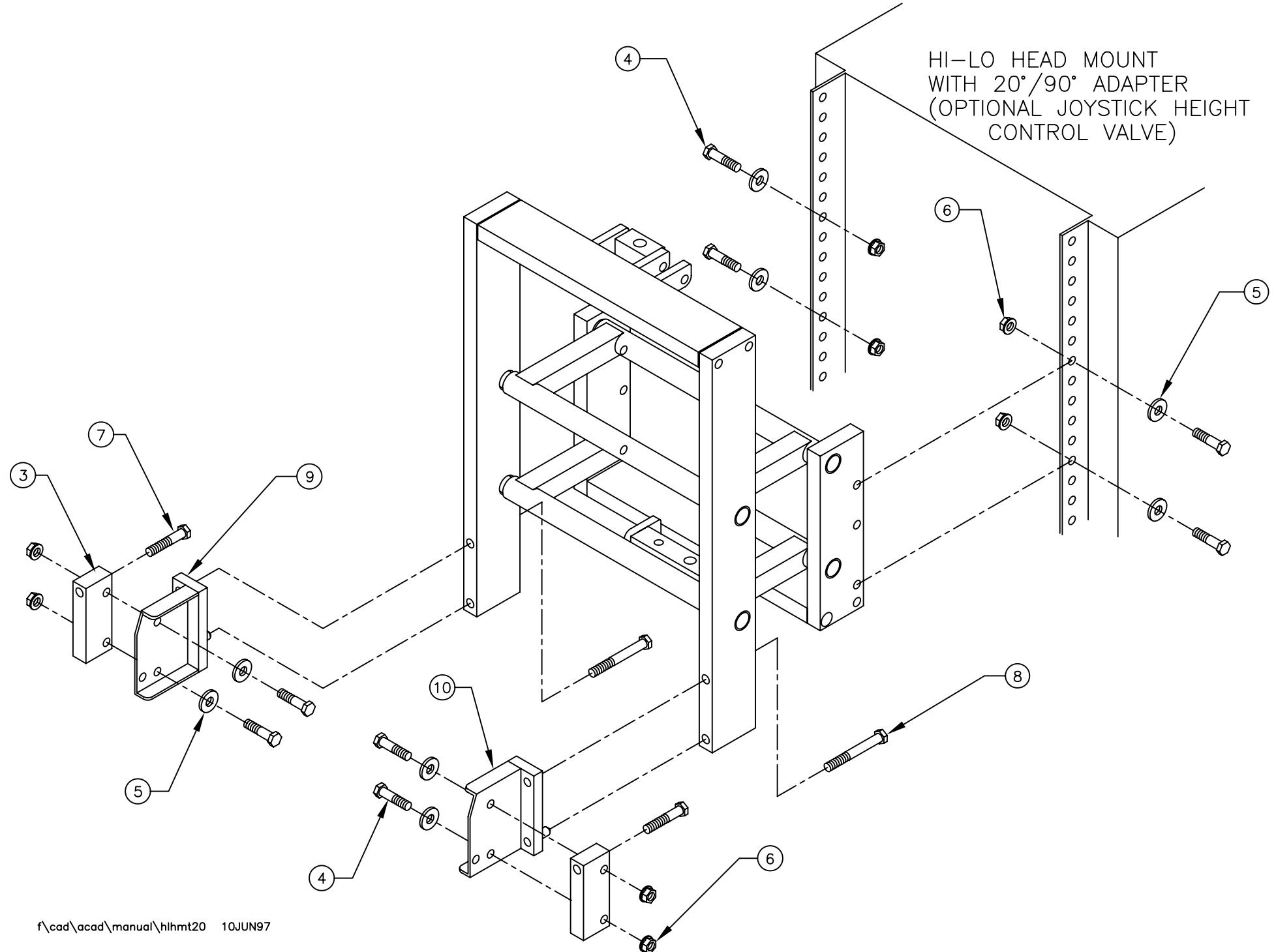
Ref. No.:	M-Tek Part No.:	Description:	Qty.:
24	74304401	1/4 NPT Street Elbow, Extruded Long Brass .....	1
25	73200301	Cylinder, Hi-Lo Head.....	1
26	74303701	1/4 NPT X 1 3/8 Long Hex Nipple .....	1
27	73501101	1/4 NPT Flow Control.....	2
28	74204301	3/8 Tube X 1/4 NPT Female Connector, Plastic .....	1
29	74204001	3/8 Tube X 3/8 Tube Plug In Elbow, Plastic.....	1
30	73300301	1/2 Tubing 1/2 OD X 3/8 ID X 8 inch/203 mm Long.....	1
OPTIONAL:			
31	76109701	Joystick Mounting Bracket .....	1
32	75106601	1/4-28 X 1/2 Hex Head Cap Screw S/S .....	2
33	73101501	Valve, Joystick Control, Optional .....	1
34	75105701	10-32 X 1 3/4 Pan Head Machine Screw S/S .....	2
35	75103601	10-32 Locknut W/Nylon Insert S/S .....	2
36	74204201	3/8 Tube X 1/4 NPT Fixed Elbow, Male, Plastic .....	2

HEAD MOUNT  
20° / 90° HEAD SPACER

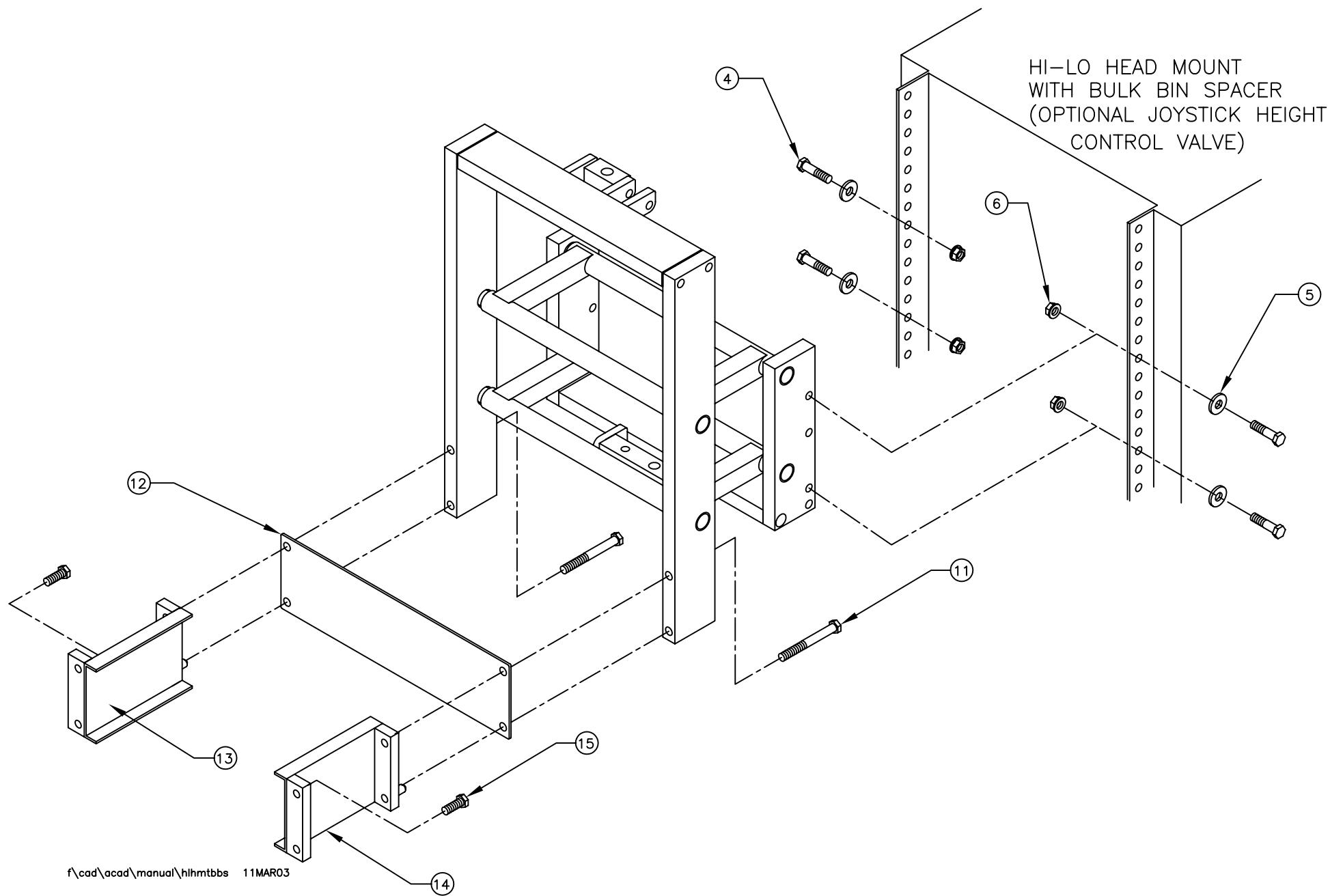




HI-LO HEAD MOUNT  
WITH 20°/90° ADAPTER  
(OPTIONAL JOYSTICK HEIGHT  
CONTROL VALVE)



HI-LO HEAD MOUNT  
WITH BULK BIN SPACER  
(OPTIONAL JOYSTICK HEIGHT  
CONTROL VALVE)



## Head Mounts

<b>Ref. No.:</b>	<b>M-Tek Part No.:</b>	<b>Description:</b>	<b>Head Mount 20°/90° Head Spacer Qty.:</b>	<b>Hi-Lo Head Mount (Optional Joystick Height Control Valve) Qty.:</b>	<b>Hi-Lo Head Mount With 20°/90° Adapter (Optional Joystick Height Control Valve) Qty.:</b>	<b>Hi-Lo Head Mount With Bulk Bin Spacer (Optional Joystick Height Control Valve) Qty.:</b>
1	76205101	Spacer, Head Rear LH MK III/IV 20°/90°	1			
2	76205001	Spacer, Head Rear RH MK III/IV 20°/90°	1			
3	76204901	Pivot Block, Head Spacer, Front MK III/IV	2		2	
4	75108201	3 $\frac{3}{8}$ -16 X 1 $\frac{1}{2}$ Hex Head Cap Screw, Special .88 inch.22.2 mm Long Shank S/S	8	4	8	4
5	75109301	$\frac{3}{8}$ Flat Washer, .125 inch/3.18 mm Thick S/S	8	4	8	4
6	75111101	$\frac{3}{8}$ -16 Small Flange Hex Nut, With Serrations S/S	8	4	8	4
7	75110601	$\frac{3}{8}$ -16 X 2 Hex Head Cap Screw S/S	2		2	

Hdmts 8 Dec 1988

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Fax: 847-741-3569

Elgin, Illinois 60123 USA  
E-mail: mtek@mtekcorp.com

## Head Mounts

Ref. No.:	M-Tek Part No.:	Description:	Head Mount 20°/90° Head Spacer Qty.:	Hi-Lo Head Mount (Optional Joystick Height Control Valve) Qty.:	Hi-Lo Head Mount With 20°/90° Adapter (Optional Joystick Height Control Valve) Qty.:	Hi-Lo Head Mount With Bulk Bin Spacer (Optional Joystick Height Control Valve) Qty.:
8	75108301	¾-16 X 3 Hex Head Cap Screw S/S		2	2	
9	76207001	Spacer, Head Mounting LH With Hi-Lo Head, MK III/IV 20°/90°			1	
10	76207101	Spacer, Head Mounting RH With Hi-Lo Head, MK III/IV 20°/90°			1	
11	75113201	¾-16 X 3½ Hex Head Cap screw S/S				2
12	76111601	Tie Bar, Hi-Lo Head Spacer				1
13	76202501	Spacer, 6 inch/152 mm Long, LH MK III Bulk Bin				1
14	76202401	Spacer, 6 inch/152 mm Long, RH MK III Bulk Bin				1
15	75107901	¾-16 X 1 Hex Head Cap Screw S/S				2

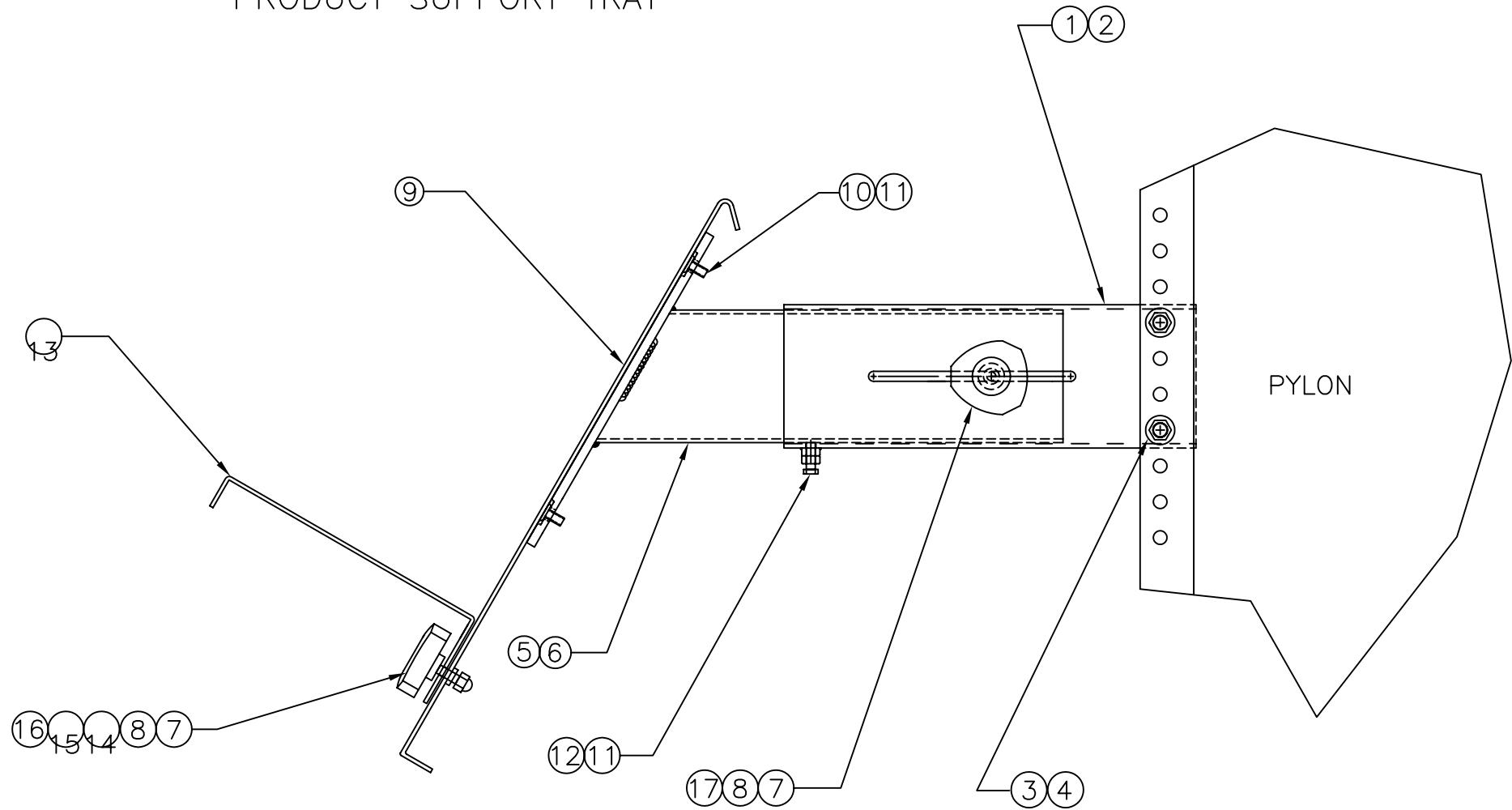
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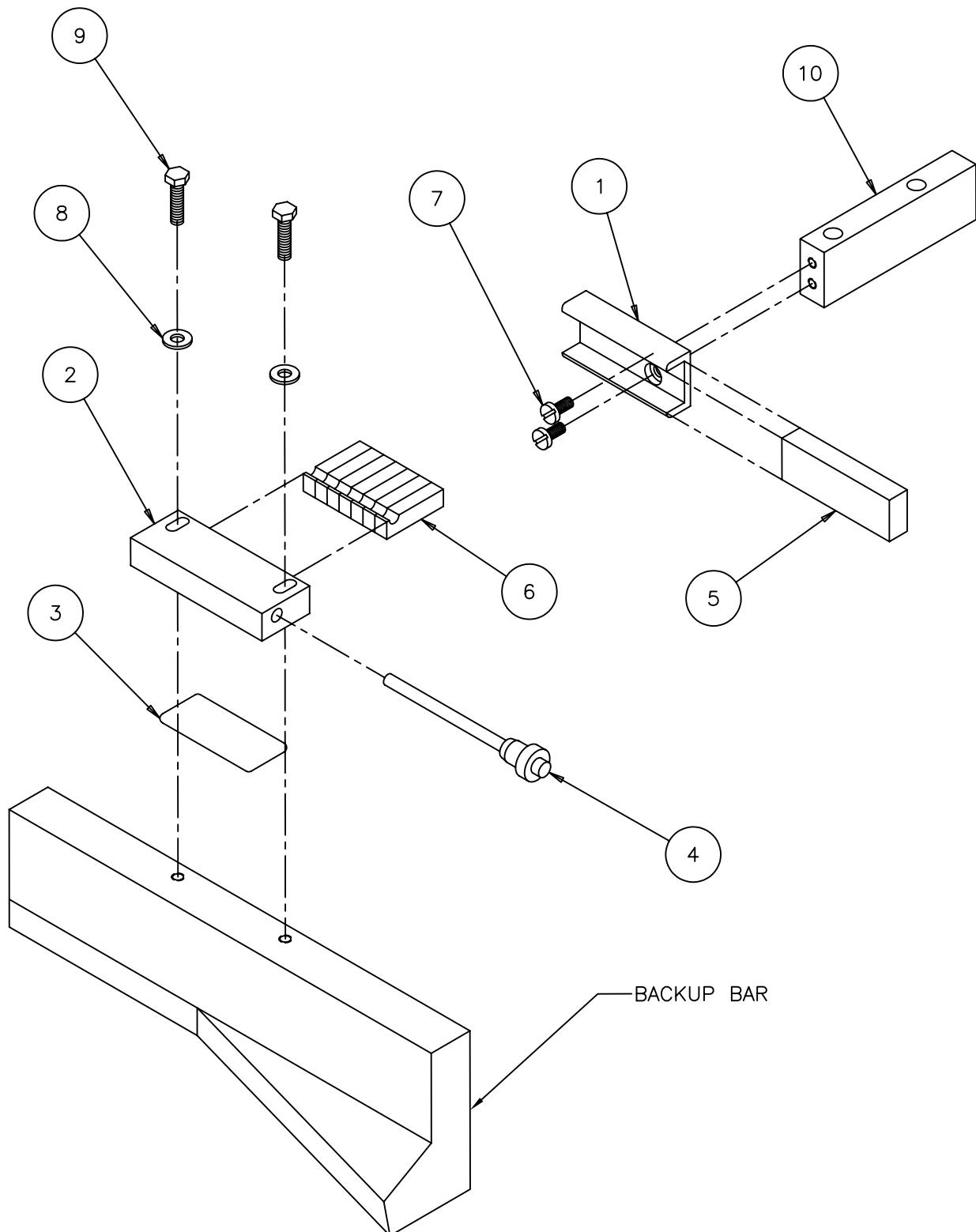
## PRODUCT SUPPORT TRAY



# Product Support Tray

<b>Ref. No.:</b>	<b>M-Tek Part No.:</b>	<b>Description:</b>	<b>Qty.:</b>
1	76206501	Bracket, Rear RH Product Support Tray, MK III/IV .....	1
2	76206601	Bracket, Rear LH Product Support Tray, MK III/IV.....	1
3	75109301	¾ Flat Washer, ½ Thick S/S .....	4
4	75101101	¾-16 X 1-1/16 Hex Head Cap Screw S/S .....	4
5	76203701	Bracket, Front RH Product Support Tray .....	1
6	76203801	Bracket, Front LH Product Support Tray.....	1
7	75103301	¼ Flat Washer S/S .....	5
8	75001201	Knob, Black ¼-20 Brass Insert.....	5
9	76201501	Back Rest, 46" Wide Product Support Tray .....	1
10	75102601	¼ Medium Split Lock Washer S/S.....	4
11	75103801	¼-20 Hex Nut Finished S/S.....	6
12	75106401	¼-20 X ¾ Hex Head Cap Screw S/S .....	2
13	76203601	Shelf, 46.0 inch/1168 mm Wide Product Support Tray .....	1
14	75110401	¼-20 T-Slot Nut, 5/16" Table Slot .....	3
15	75111801	¼-20 Acorn Nut S/S .....	3
16	75111701	¼-20 X 1½ Socket Setscrew, Cup Point.....	3
17	75108901	¼-20 X 1¼ Socket Setscrew, Cup Point.....	2

# BAG CODER ASSEMBLY



## Bag Coder Assembly

Ref. No.:	M-Tek Part No.:	Description:	Qty.:
1	76112001	Bag Coder Rubber Holder.....	1
2	76111801	Bag Coder ¼" Character Holder .....	1
3	76111901	Bag Coder Floor.....	1
4	75002001	Pin, Quick Release, 2.5 Grip 3/16 Diameter .....	1
5	79500801	Rubber, Bag Coder 2¼" Long .....	1
6	76112901	¼" Bag Coder Character "1" .....	5 in Standard Kit
	76113001	¼" Bag Coder Character "2" .....	4 in Standard Kit
	76113101	¼" Bag Coder Character "3" .....	3 in Standard Kit
	76113201	¼" Bag Coder Character "4" .....	2 in Standard Kit
	76113301	¼" Bag Coder Character "5" .....	2 in Standard Kit
	76113401	¼" Bag Coder Character "6 or 9" .....	2 in Standard Kit
	76113501	¼" Bag Coder Character "7" .....	2 in Standard Kit
	76113601	¼" Bag Coder Character "8" .....	2 in Standard Kit
	76113701	¼" Bag Coder Character "0" .....	4 in Standard Kit
	76113801	¼" Bag Coder Character "-" .....	2 in Standard Kit
	76116401	¼" Bag Coder Character Spacer.....	3 in Standard Kit
		Additional Characters Available On Request	
	79000901	Box, Bag Coder Kit, White Plastic.....	1
7	75105501	#8-32 UNC x ¾ Pan Head Machine Screw,..... Slotted, Stainless Steel	2
8	75102801	#10 Flat Washer, Stainless Steel .....	2
9	75106201	#10-32 UNF x ¾ Hex Head Cap Screw Trimmed .....	2
		Stainless Steel	
10	76105802	Support Block with Mounting Holes .....	1
		Compact Probe Tower	
		-Or-	
	76100602	Spacer Probe Tower Base with Mounting Holes..... (For Older Machines That Do Not Have Compact Style Probe Towers)	1