Manual Prepared for:

Company:

Location:

Customer PO#:

Order Date:

Total Binders: 1 *Of* 1

This page has been left blank intentionally

CV·TEK

Cutting edge technology from the leader in modified atmosphere packaging



V-45

Maintenance and Spare Parts Manual

CV·TEK

MIDERA FOOD PROCESSING
440 S McLean Blvd ELGIN, IL, 60123

parts@cv-tek.com
TELEPHONE: 847-741-3500
FAX: 847-741-3569

MIDERA™
FORMERLY MIDDLEBY FOOD PROCESSING

This page has been left blank intentionally

Table of Contents

CHAPTER 1: MACHINE SPECIFICATIONS 1-1

1.1. Machine Specifications 1-2

M-TEK Model 1-2
Serial Number 1-2
Year of Manufacture 1-2
Electrical Requirements 1-2
Minimum Compressed Air Requirements 1-2
Minimum Compressed Gas Requirements 1-2

CHAPTER 2: CUSTOMER SERVICE 2-1

2.1. Spare Parts 2-2
2.2. Technical Assistance 2-2
2.3. Preventative Maintenance 2-2

CHAPTER 3: GENERAL INFORMATION 3-1

CHAPTER 4: SAFETY NOTICE 4-1

4.1. Operating the Machine 4-2
4.2. Using this Manual 4-3

CHAPTER 5: TECHNICAL DATA AND MACHINE LAYOUT 5-1

5.1. Technical Data 5-2

Machine Dimensions 5-2
Weight 5-2
Utilities 5-3
Working Characteristics 5-3

5.2. Machine Layout 5-4

CHAPTER 6: INSTALLATION 6-1

6.1. General Delivery Notes 6-2

Inspection 6-2

6.2. Unloading and Positioning the Machine 6-3

Removing the Crate 6-3
Placement of Conveyor 6-4
Stop Switch Position 6-4
Start Switch Position 6-5
Machine Positioning 6-5
Lock-Out 6-5
Technical Assistance 6-5

6.3. Service Connections 6-6

Compressed Air 6-6

Power Supply 6-6
Checking the Direction of the Vacuum Pump 6-7
Gas Supply 6-8

CHAPTER 7: ADJUSTMENT PROCEDURES 7-1

7.1. HMISTU855 oPERATOR inTERFACE 7-2
TFT Color Touch Display 7-2

7.2. Operator's Pushbuttons and Lights 7-3
Empty Bag / Standby / Full Bag Selector Switch 7-3
Empty Bag Mode 7-3
Standby 7-3
Full Bag Mode 7-3
Standby/Run Pilot Light 7-3
Internal/External Sync Selector Switch 7-4
Internal 7-4
External 7-4
Track Left/Track Right Pushbuttons 7-4
Cleaning Mode On/Off Selector Switch 7-4
Run/Program Selector Switch 7-4
Emergency Stop Pushbutton 7-5
Off/On Rotary Disconnect Switch 7-5

7.3. Programming – General 7-6

7.4. HmiSTU855 Display Screen Descriptions 7-7
Marquee Screen 7-7
Run Screen 7-7
Edit Recipes 7-10
Recipe Pages 7-10
Roll Info Page 1 7-11
Roll Info Page 2 7-12
Maintenance Page 1 7-13
Maintenance Page 2 7-13
Maintenance Page 3 7-14
Configuration Menu 7-15
Configuration Page 1 7-16
Configuration Page 2 7-17
Configuration Page 3 7-17
Configuration Page 4 7-18
Configuration Page 5 7-19
Configuration Page 6 7-19
Configuration Page 7 7-20
Configuration Page 8 7-22
Configuration Page 9 7-23
Configuration Page 10 7-24
Configuration Page 11 7-25
Configuration Page 12 7-25
Configuration Page 13 7-26

7.5. Printed Film Setup 7-28

Printed Film Setup 7-28
7.6. Password Setup 7-29
Password Setup 7-29
7.7. Recipe Parameters 7-31
Recipe 1 – Page 1 7-31
Recipe 1 – Page 2 7-32
Recipe 1 – Page 3 7-32
Recipe 1 – Page 4 7-33
7.8. Programming Example 7-35
Recipe 1 – Page 1 7-35
Recipe 1 – Page 2 7-36
Recipe 1 – Page 3 7-36
Recipe 1 – Page 4 7-37
CHAPTER 8: OPERATING PROCEDURES 8-37
8.1. Starting and Stopping the Machine 8-38
Conditions to Start the Machine 8-38
Start 8-38
Stop 8-38
8.2. On the Fly Recipe Editing Procedure 8-40
Step 1 8-40
Step 2 8-40
Step 3 8-41
Step 4 8-41
Step 5 8-41
8.3. Viewing Run Stats Procedure 8-41
Run Stats 8-41
Step 1 8-41
Step 2 8-42
Current Stats 8-43
Previous Stats Page 1 And 2 8-43
Production Stats 8-45
CHAPTER 9: DAILY / WEEKLY / MONTHLY CHECKS 9-46
9.1. Daily Checks Before Operating Machine 9-47
9.2. Weekly Checks Before Operating Machine 9-48
9.3. Monthly Checks Before Operating Machine 9-49
CHAPTER 10: ALARMS 10-1
10.1. Display Fault Messages – Summary 10-2
Active Alarms 10-2
Alarm History 10-2
10.2. Alarms 10-3
Emergency Stop Active 10-3

Auxiliary Equipment Down 10-3
Film Unwind PowerFlex4 Drive Faulted 10-3
Safety Guard Open 10-3
Vertical Seal Upper Temperature Limit Exceeded 10-3
Vertical Seal Lower Temperature Limit Exceeded 10-4
Low Gas Pressure 10-4
Low Air Pressure 10-4
Low Vacuum 10-4
Jaw Not Detected As Open 10-4
Jaw Open Proximity Switch Fault (I: 0/5) 10-4
Jaw Not Detected As Closed 10-4
Servo Drive Fault Restart Machine 10-5
Vacuum Pump Motor Starter Not On 10-5
Infeed Conveyor PowerFlex4 Drive Faulted 10-5
Take-A-Way Conveyor PowerFlex4 Drive Faulted 10-5
Inner Jaw Seal Temperature Too Low 10-5
Inner Jaw Seal Temperature Too High 10-5
Outer Jaw Seal Temperature Too Low 10-5
Outer Jaw Seal Temperature Too High 10-6
Vertical Seal Runaway Overtemp Fault 10-6
Inner Jaw Seal Runaway Overtemp Fault 10-6
Outer Jaw Seal Runaway Overtemp Fault 10-6
Vertical Seal RTD Open Fault 10-6
Inner Jaw Seal RTD Open Fault 10-6
Outer Jaw Seal RTD Open Fault 10-6
Unwind Film Fault – the Dancer Did Not Move 10-7
Slurry Dispenser Not Ready Activate a Valid Program on the Slurry Dispenser 10-7
Slurry Dispenser Faulted 10-7
AMCI Stepper Card Command Fault 10-7
Film Feed on Too Long Fault 10-7
Plugged Funnel Fault 10-7

CHAPTER 11: TROUBLESHOOTING 11-1

11.1. Power On Checks 11-2

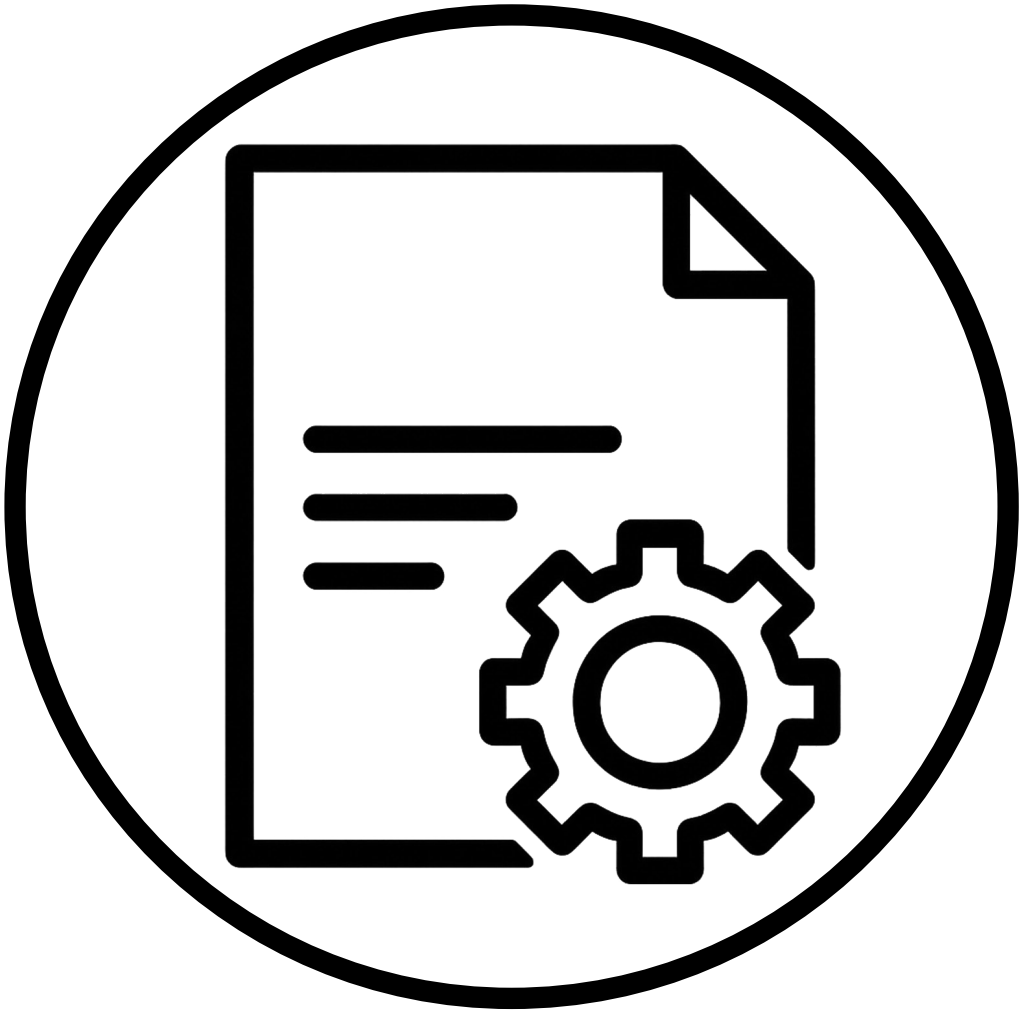
Programmable Logic Controller (PLC) Checks 11-2
HMISTU855 Operator Interface Checks 11-2

11.2. Troubleshooting 11-3

Film Will Not Advance 11-3
Jaw Will Not Close 11-3
Tracking Motor Will Not Move 11-4
Banner Switch or Photo Eyes 11-4
Relay 15 Machine Ready Handshake Inoperable 11-4
Heaters Inoperable 11-5
Front Doors are closed, but Alarm on the Display Does Not Go Away 11-6
Side Doors are closed, but Alarm on the Display Does Not Go Away 11-6
'E-Stop' Fault 11-7

Vacuum Pump Will Not Run 11-7
None of the Air Solenoids Will Work 11-7
Film Belts will not Index 11-8
Unsatisfactory Horizontal Seals 11-10
Unsatisfactory Vertical Seals 11-11
Analog Proximity Dancer Sensor 11-12
Ultrasonic Sensor 11-12
11.3 Fault Codes 11-14
11.3. Knife Problems / Service 11-16
Knife Does Not Cut the Bag 11-16
Knife Keeps Breaking 11-16
For Optimum Knife Service Life 11-16
11.4. B79 Programming 873P Programmable Ultrasonic Sensors 11-18
11.5. B80 Banner SLE30 Slot Sensor Teaching 11-20
11.6. B88 V45 Safety Information: Clearing the Jaws of the Machine 11-21
CHAPTER 12: PARTS 12-1
CHAPTER 13: BULLETINS 13-51
CHAPTER 14: SCHEMATICS 14-1
CHAPTER 15: ASSEMBLY DRAWINGS 16-31
CHAPTER 16: PARTS LISTS 17-41

Chapter 1: Machine Specifications



1.1. MACHINE SPECIFICATIONS

M-TEK Model	V45
Serial Number	
Year of Manufacture	
Electrical Requirements	440-480 VAC 3Ø 60 Hz 30 AMPS
Minimum Compressed Air Requirements	80 psig / 5.5 bar
Minimum Compressed Gas Requirements	10 cfm / 283 l/min @ 100 psig / 7 bar

Chapter 2: Customer Service



Thank you for purchasing the M-TEK V45. 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

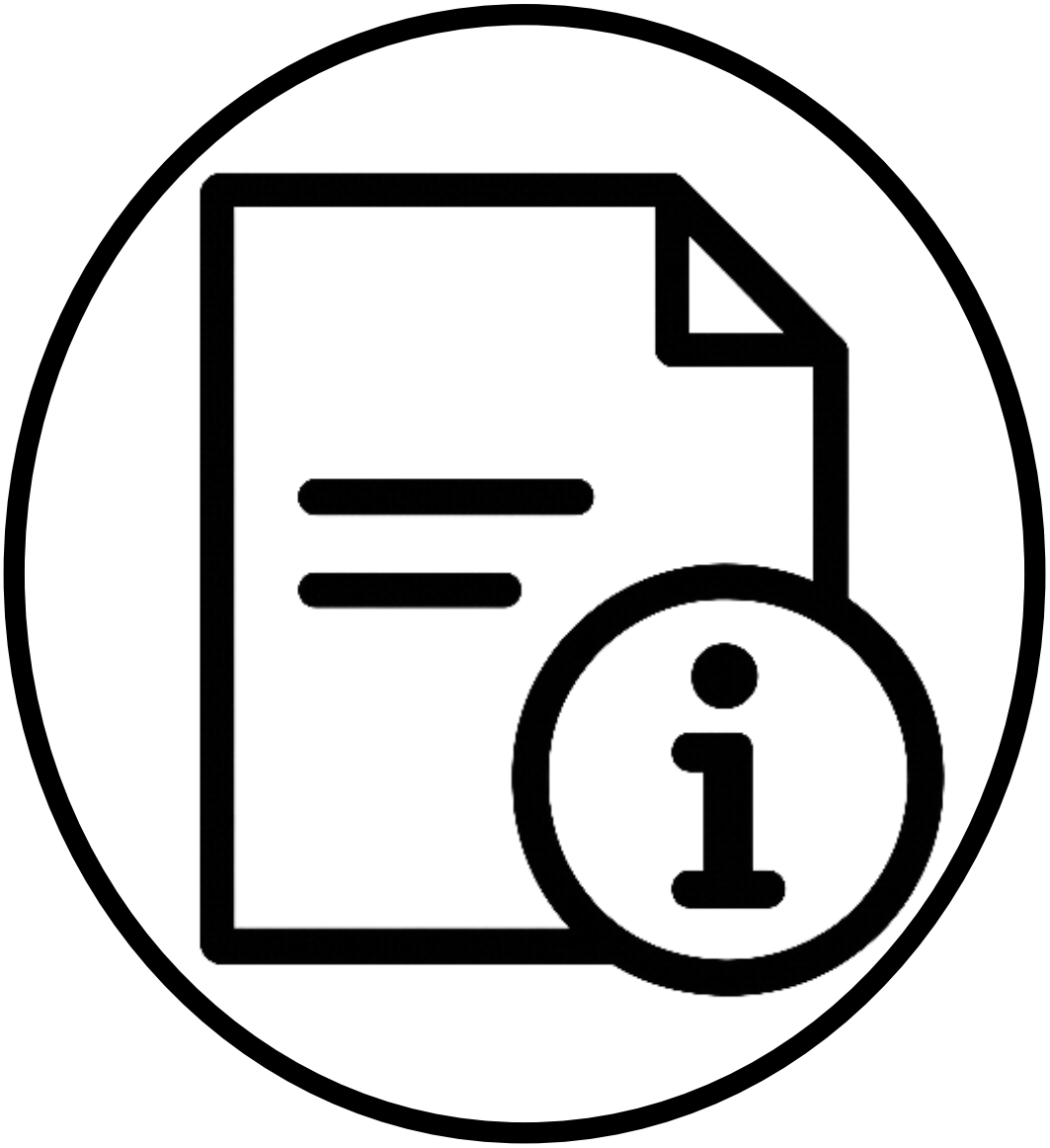
When requesting technical assistant, please have the following information ready:

- 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 is this manual will assist you in getting the best from your V45 machine. 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 Notice



M-TEK makes every possible effort to ensure that the machines it supplies are designed and constructed to be safe and without risk to health when used properly. In accordance with EU Law they are marked with the CE symbol, which is our guarantee to you that they comply with all relevant European safety and hygiene requirements. However, like any other machines, they can cause injury if you are careless and do not follow the operating instructions properly.

4.1. OPERATING THE MACHINE

Never attempt to run a machine without the proper safety guards (if applicable) in place or with the built-in safety systems overridden. These features are there to protect you; do not abuse them.

Ensure that you and all others working nearby know the location of the machine controls and how to use them; especially the emergency stop buttons.

For your own safety, never use or work on any equipment unless you have had proper training and are skilled in that type of work.

Do not turn on electrical power at the machine if the safety doors are not closed and latched.

Do not use any gas or gas mixture containing anything but carbon dioxide or nitrogen in a standard V45 machine. Use of poisonous, flammable or explosive gases is strictly prohibited.

Do not use any gas or gas mixture containing more that 21% oxygen (by volume), unless the machine is high oxygen rated and maintained (designated by –O at the end of the machine's serial number). If the machine is high oxygen rated, ensure the supply hoses, pressure regulators, valves, etc. are suitable for oxygen service.

Do not use two operators for a machine. This will prevent any possibility that one operator might accidentally start a machine function which would endanger the other operator.

Disconnect the machine from all energy sources when it is not being used.

The V45 is equipped with approved safety-rated sensors for the front and side doors. When the doors are open, lock-out/tag-out is not required.

The V45 is equipped with electric and pneumatic lock-out/tag-out disconnects.

Specific safety warnings and cautions are given in the manual where necessary and their significance is explained in the following paragraph.

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!

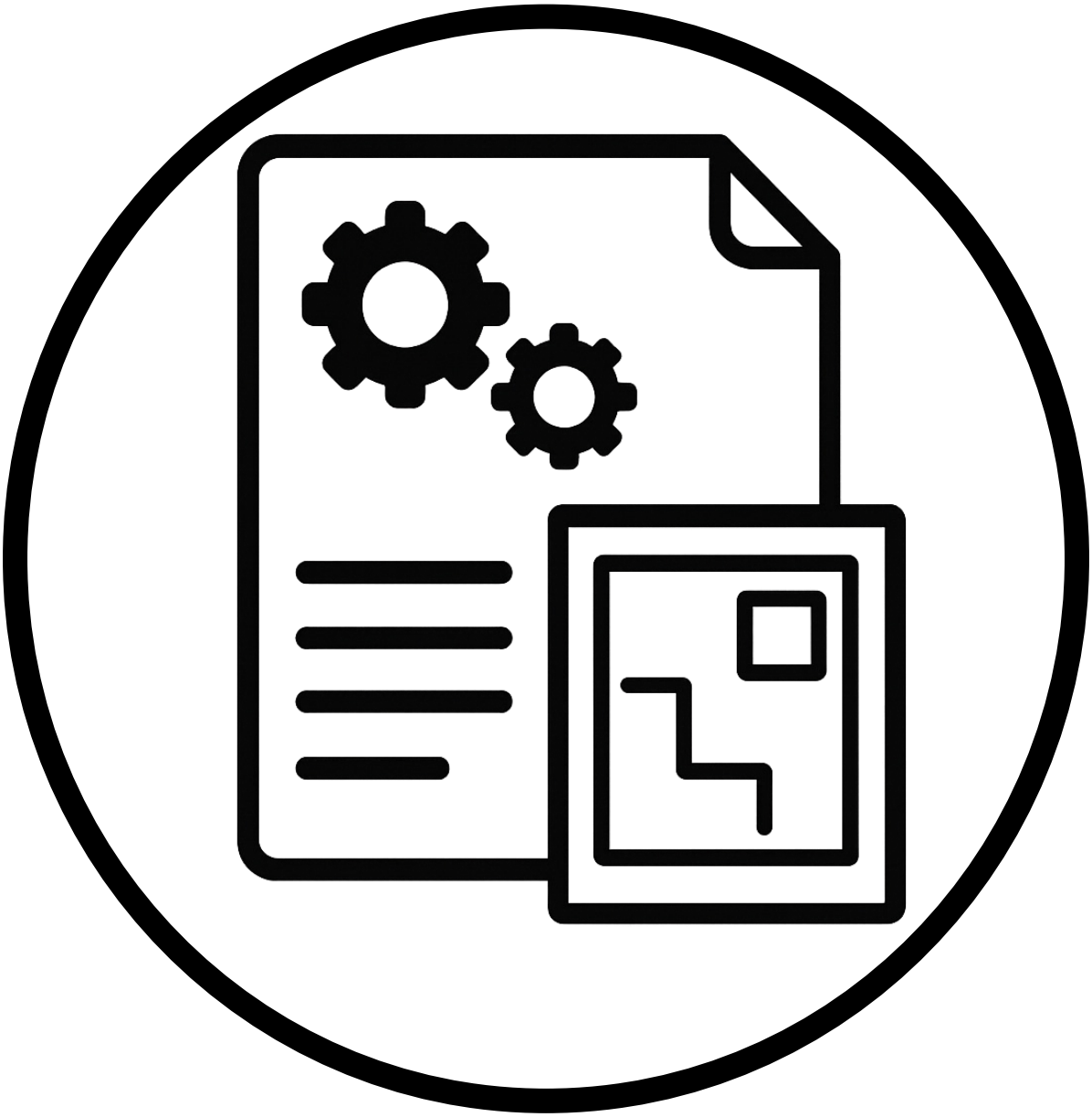
A caution alerts the reader to recommendations or instructions. The non-observance of which could cause damage to the machine or product.

Note:

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

This page has been left blank intentionally

Chapter 5: Technical Data and Machine Layout



5.1. TECHNICAL DATA



Machine Dimensions

Length, Width, Height	See Machine Layout in Section 5.2

Weight

Approximate lbs.	2,500
Approximate kg.	1,137

Utilities



Compressed Air

Air Type	Clean and dry
Pressure	80 psig / 5.5 bar
Supply Pipe Diameter	1” I.D. line
Consumption	2.8 cfm / 80 l/min
Connection Fitting	¾” NPT



Electrical

Voltage	480 V
No. of Phases	3 +earth
Frequency	50-60 Hz
Installed Power	14.4 kW
Current Protection	30 A



Vacuum

Main Pump	10 cfm / 283 l/min



Gas Flushing

Flow	10 cfm / 283 l/min
Pressure	100 psig / 7 bar
Connection Fitting	3/8 O.D. Tube or ¼ NPT

Working Characteristics

Roll Stock

Up to 32” width x 24” diameter (813 mm width x 610 mm diameter)

Seal Bar (constant heat, Teflon®-coated

Length	450 mm
Height	5 mm

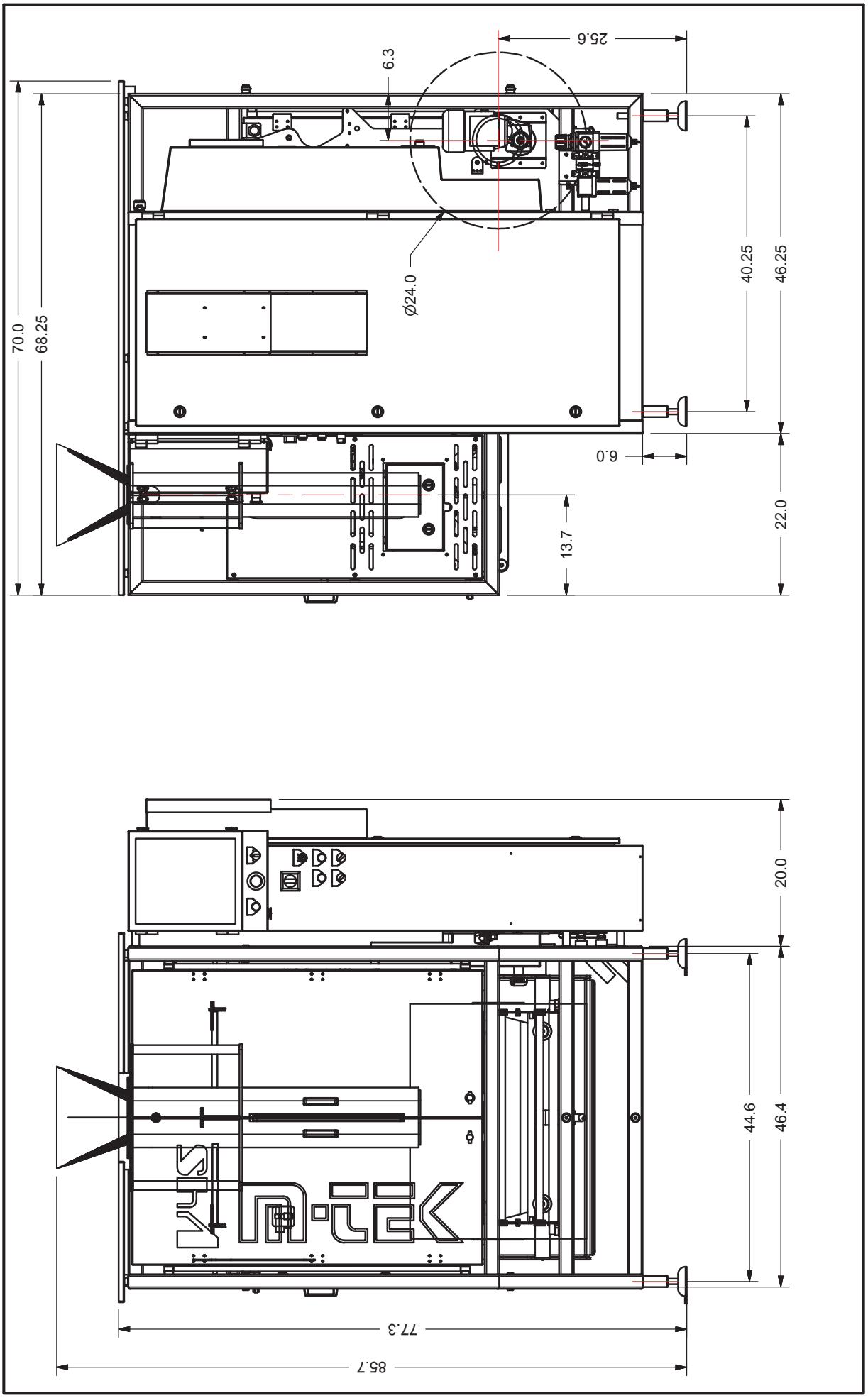
Bag Details

Length	Variable
Width	Variable
Bag Type	Non-shrink, Heat Resistant with Heat Sealable Inner Layers

Functional Details

Heating Time	15 min.
Working Speed	Up to 35 cycles/min
No. of Operators	1

5.2. MACHINE LAYOUT



Chapter 6: Installation



6.1. 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.

Check the packaging list to make sure all components have been delivered. Should a discrepancy between components delivered and the packing list be detected, please contact the M-TEK sales office.

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.

6.2. UNLOADING AND POSITIONING THE MACHINE

If this is your first V45 machine, 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 provide 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 any parts or accessories which may have been taped to the exterior of the machine.

6. Open the doors at the back of the machine and remove all parts which are packed inside. Close and securely latch the doors.

7. Remove the bolts which fasten the machine to the base of the crate.

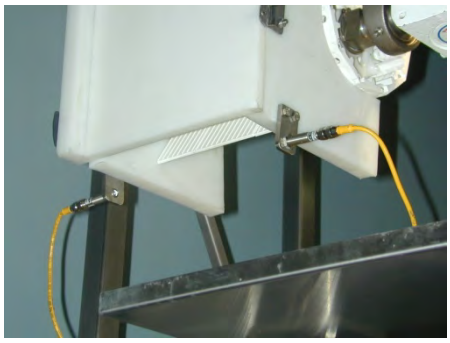
8. Un-wrap the machine 'feet' packed inside the machine.

9. 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.

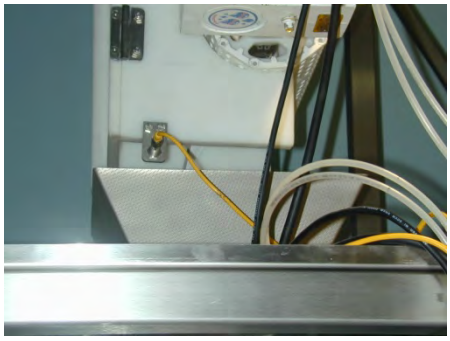
Placement of Conveyor

Conveyor flights should be placed in position as required for correct timing, i.e., from injector funnel as well as flight dump position into M-TEK V45 funnel.

The preferred flight angle during the release of product should allow product to impact the side of funnel and slide down into product horn as shown.







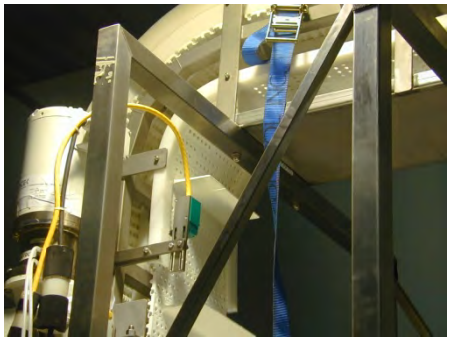
Conveyor front door should be aligned no more than ¾" inside the funnel edge.

This allows for any drainage to be contained within the funnel.

Stop Switch Position

Depending upon the conveyor manufacturer, switch must be located so that the switch is not in contact with the flight in the idle position.

The switch uses the N.O. contacts. Once the switch is tripped, the delay time is set to stop the pocket in the correct position.



This delay time is set on the V45 Configuration Page 3, 'Conveyor Index Step Delay'. The stop switch is pre-wired to T28-28.

Start Switch Position

M-TEK supplies a roller switch which uses the N.O. contacts. This switch is not pre-wired and must be connected to T28-27 with the same requirements as the stop switch.

In the idle position on the injector belt, the flight is not in contact with the switch.

On some injectors (MEPSCO/Wolf-Tec electronic machines), there can be a signal from the internal PLC driven relay, which can also be used.

Additionally, the Configuration Page 3, 'Conveyor Index Start Delay' is adjusted to allow product to completely drop before conveyor index is started.

Machine Positioning

The V45 should be level on the horizontal plane, but should be tilted slightly back to allow for drainage and for film to lean away from hot bar in idle position, keeping the heat from melting the bag.

Lock-Out

M-TEK furnishes a dry contact relay for e-stop/ready signal, labeled 'relay 17'.

This contact closes upon start of full bag/clean-out and opens in standby or e-stop mode.

The contact may delay closing depending on gas purge time set in recipe. If no gas is selected, then relay will close as soon as full bag is selected.

Note:
All machine settings and calibrations must be met before usage.

Technical Assistance

For immediate technical assistance, please contact an M-TEK machinery specialist at 847-741-3500 – press #3 for Service, or call direct via cell phone:

Mike Piecko Cell 847-404-5603
Dale Landwer Cell 847-909-2879

6.3. SERVICE CONNECTIONS

Compressed Air



Warning!

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

Under no circumstances should compressed air be supplied to the machine at pressure above 123 psi. Over-pressure may cause mechanical failure in the FRL and could be dangerous.

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 TECHNICAL DATA section of this manual for compressed air requirements.

2. Compressed air should be supplied to the inlet port (left-hand end) in the FRL.

3. Set the FRL pressure regulator to 80 psi.

Power Supply

Warning!

Electrical work should only be performed by trained personnel. It is your responsibility to ensure that 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 top, rear right-side of the electrical enclosure. 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 provide 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 on the sub-panel below the main disconnect.

4. Before energizing the machine's main 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.

5. 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.

    - 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.

Checking the Direction of the Vacuum Pump

Remove the plastic vacuum exhaust tube at the vacuum pump and verify exhausting AI.

Use manual contactor switch carefully to check rotating vacuum pump. If you feel pressure at the end of the plastic fitting, pump is running correctly.

To reverse the rotation, proceed as follows:

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

1. Turn off the power at the main rotary disconnect switch.

2. 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.

3. Turn on the power to the machine and retest to check that the pump is running correctly.

Gas Supply



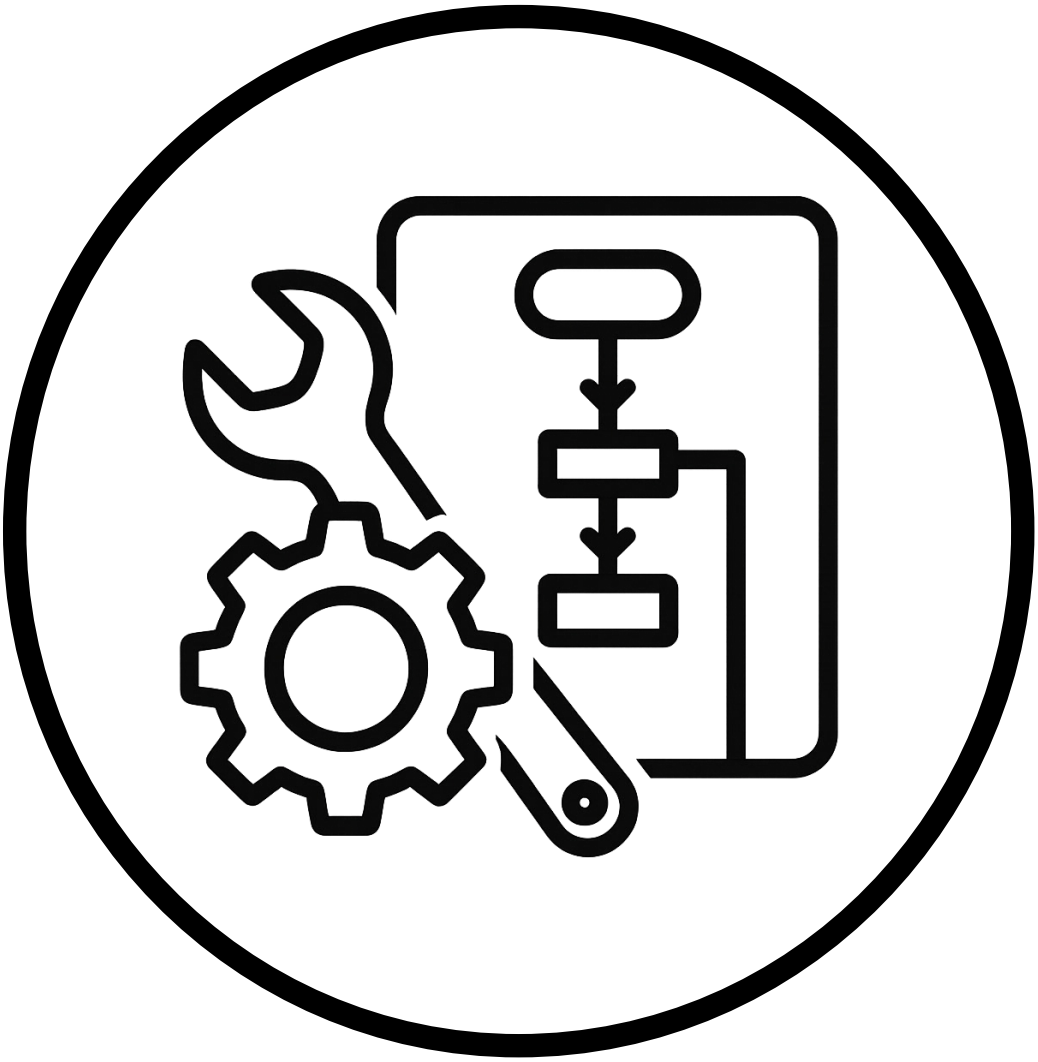
Warning!

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.

Under no circumstances should compressed gas be supplied to the machine at a pressure above 123 psi. Overpressure may cause mechanical failure in the machine and could be dangerous.

All gas connections are located on the left end wall (as viewed from the machine's front) of the machine body. Check the Technical Data section (5) of this manual for compressed gas requirements.

Chapter 7: Adjustment Procedures



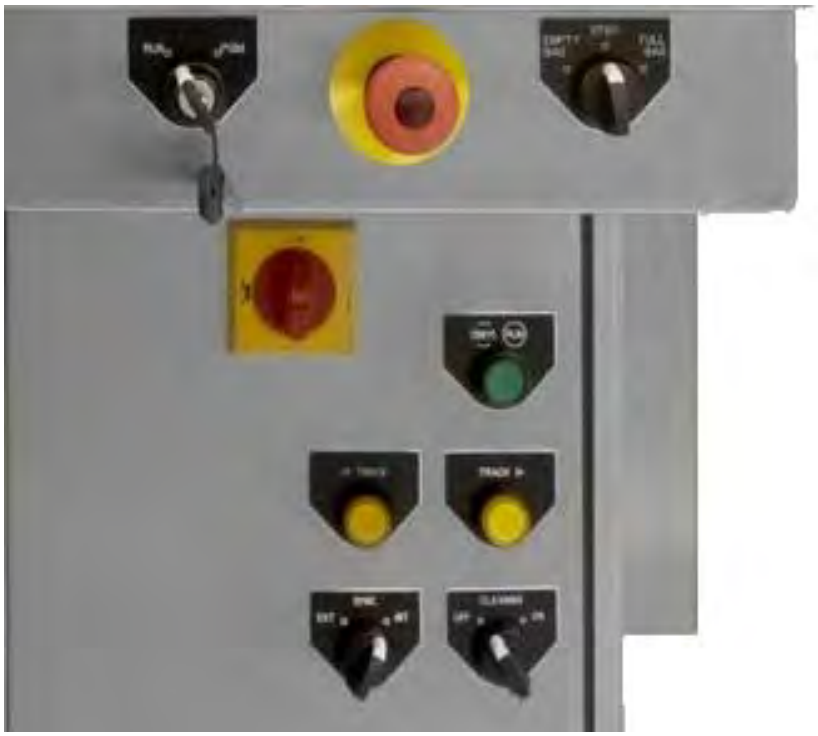
7.1. HMISTU855 OPERATOR INTERFACE



TFT Color Touch Display

Displays the various screens to operate and setup the machine and also displays any active alarm messages. Please see the Operator Interface Screen Description section for a detailed explanation of each screen.

7.2. OPERATOR'S PUSHBUTTONS AND LIGHTS



Empty Bag / Standby / Full Bag Selector Switch

This three position selector switch selects the Machine Run Mode.

Empty Bag Mode

The machine will operate in normal fashion except it disables the infeed conveyor. Since the infeed conveyor is disabled no product falls and the machine produces empty bags.

Standby

The machine will sit idle with the infeed conveyor off. The vertical seal will maintain or hold the set temperature setting.

Full Bag Mode

The infeed conveyor will index continuously and the machine will cycle only when the photoelectric switch senses product dropping into the chute from the infeed conveyor.

Standby/Run Pilot Light

This green pilot light will illuminate when the machine is cycling in either empty bag mode or full bag mode. The light will shut off when the mode selector switch is placed in

standby. The light will flash if the machine is being starved from the infeed conveyor or the vertical seal is over or under the set temperature window.

Internal/External Sync Selector Switch

This switch is an interlock for the upstream equipment associated with the machine.

Internal

The upstream machinery will operate regardless if the bagger is ready. The internal switch is also used for product run-out from the machine in conjunction with full bag mode.

External

The upstream machinery will only operate when the bagger is ready.

Track Left/Track Right Pushbuttons

These pushbuttons are used to adjust the lateral position of the film roll in relation to the product chute assuring a proper vertical seal on the bag. Briefly pressing the button will run the tracking motor for a preset amount of time. The pushbutton will illuminate as the tracking motor is operating. There are internal left and right travel limit switches. If one is reached the tracking motor will no longer move in that direction.

Cleaning Mode On/Off Selector Switch

The Cleaning Mode Selector switch is used to run both the infeed and take-a-way conveyors continuously. This facilitates cleaning the conveyors during the wash down process. The Empty Bag/Standby/Full Bag selector switch must be in the middle standby position for Cleaning Mode to activate. The front safety doors may be opened while Cleaning Mode is active. A Cleaning Mode Active message will display on the HMI when Cleaning Mode is active.

Run/Program Selector Switch

This is a keyed selector switch used to access the machine setup screens. The machine cannot cycle if the switch is placed in the Program position. When the switch is placed in the Program position the display will jump to the Supervisors Mode screen. From there, recipes can be edited. Film Roll information can be viewed.

Maintenance screens are available to manually actuate machine motions. Configuration screens are available to set machine parameters. The alarm history can be viewed and cleared. All of these functions will be explained in detail in Section 7.4 HMISTU855 Display Screen Descriptions.

Emergency Stop Pushbutton

When pressed all internal power to all machine motions is released and no machine motion can occur. The pushbutton is a push/pull button, so when pressed it stays

Emergency Stop Pushbutton

When pressed all internal power to all machine motions is released and no machine motion can occur. The pushbutton is a push/pull button, so when pressed it stays depressed. Pulling the pushbutton out will reset Emergency Stop. When the pushbutton is in the normal out position, it will be illuminated.

Off/On Rotary Disconnect Switch

When in the OFF position, all electrical power is removed from the machine. Please observe all Lockout/Tag out procedures before qualified maintenance persons enter the electrical/pneumatic enclosure.

7.3. PROGRAMMING – GENERAL



All programming options are explained in the following section of the manual. The V45 is controlled by an Allen Bradley Micro 1500 Programmable Logic Controller (PLC).

All machine programming is done via a Schneider HMISTU855 Operator Interface Terminal.

Almost all machine functions can be operated and/or programmed from the HMISTU855 Terminal.

7.4. HMISTU855 DISPLAY SCREEN DESCRIPTIONS

Marquee Screen

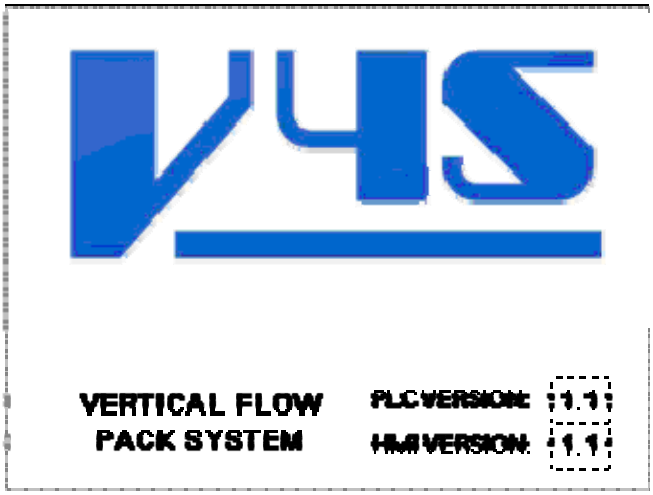


Figure 1

When the *OFF/ON Rotary Disconnect Switch* is turned to the on position, power is supplied to the Programmable Logic Controller (PLC) and the Operator Interface (OI). With the *STANDBY/RUN* selector switch in standby, the default screen will appear as shown in Figure 1. This screen is displayed for a few moments as the machine is powering up from being turned off. This screen has no bearing on the operation of the machine.

After the machine has completed the power up function, the display will jump to the Run Screen. The current version of the Programmable Logic Controller (PLC) and Human Machine Interface (HMI) programs are displayed for reference.

Please record the program versions as these are required when purchasing a new or spare HMI and or a PLC memory module.

Run Screen

The Run Screen is the default screen that is displayed during normal machine operation. Starting from the top down is a description of the items being displayed.

Recipe#

This displays the current active recipe loaded from memory. There are four recipes to choose from. To choose the active recipe press one of the white buttons numbered (1…4) on the HMI touchscreen.

BPM

This is an abbreviation for Bags per Minute. This sets the speed at which the machine will run. The valid range this can be set is 5 – 35 Bags per minute.

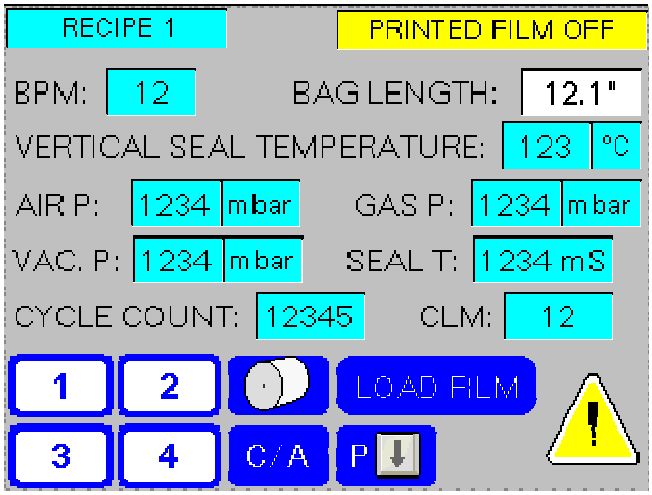


Figure 2

Bag Length

This displays the current length of the bag being run in inches. This is the only item that can be edited while the Run Screen is displayed. To edit the bag length, perform the following procedure:

- Press the white numeric entry data display next to the verbiage marked “BAG LENGTH:” A numerical entry screen will pop up showing the allowable value that can be entered.
- Using the numerical entry keys on the HMI, enter in the desired length.
- Once the new value is entered, press the “ENTER” key. This stores the new value in memory, closes the numeric keypad and the new value will be displayed in the “BAG LENGTH:” white numeric entry data display.

Note:
When the bag length is changed from the Run Screen, the new length is only active when the Run Screen is displayed. If you go to a recipe edit screen and back to the Run Screen, the bag length value will revert back to the value set in the active recipe.

Vertical Seal Temperature

This is displaying the real-time temperature of the Vertical Seal Bar. The default units are degrees Fahrenheit (°F).

Air P

This displays the incoming Compressed Air Pressure in psig.

Gas P

This displays the incoming Gas Pressure in psig.

Vac P

This displays the Vacuum pressure in inHG.

Seal T

This displays the seal time in milliseconds for the last machine cycle. The seal time is varied by the time amount set in the parameter on Configuration Page 9 in relation to the temperature error present on the Jaw Seal Bars. Please see the Configuration Page 9 section of this manual on Page 7-19 for more detail.

Cycle Count

This displays the amount of cycles the machine has run. To reset the counter turn the RUN/PROGRAM keyed selector switch to PROGRAM. The Supervisors Mode screen will pop up on the display. Scroll the cursor down to Maintenance and press the Enter button. Press the Page down button to get to Maintenance Page 2. Press the Clear/Acknowledge button to clear the counter. Turn the RUN/PROGRAM selector switch back to RUN. The machine is now ready to run with the counter reset to zero.

CLM

This displays the number of cycles executed per minute and is updated once per minute.

Supervisors Mode Screen

The Supervisors Mode Screen is the default screen that is displayed when the RUN/PROGRAM keyed selector switch is switched to PROGRAM. Press the Arrow Down or Arrow Up buttons to scroll to the desired item.

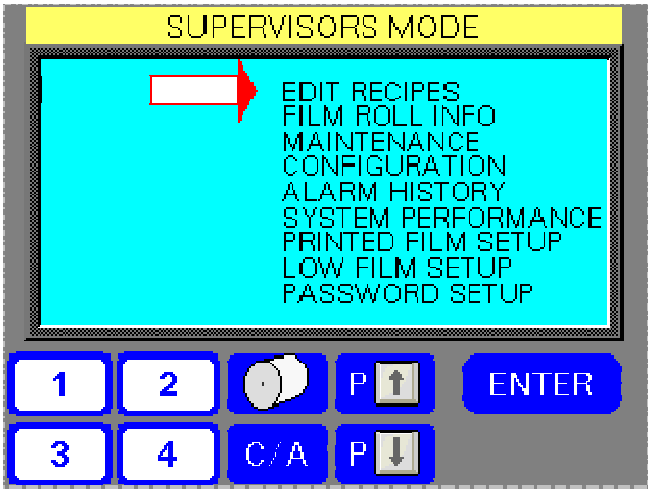


Figure 3

Once the cursor is on the desired item press the Enter button and the display will jump to that screen. Once the RUN/PROGRAM keyed selector switch is switched to RUN the display will jump back to the Run Screen.

Edit Recipes

These screens allow you to edit Recipe parameters. Please see the Recipe Parameter section of the manual for an explanation of each recipe parameter.



Figure 4

Edit Recipe Procedure

From the Edit Recipes screen touch the screen in the box displaying the recipes. Each time the screen is pressed the arrow will move down to the next recipe number. When it reaches the bottom of the list, it will rollover to the top of the list.

Once the cursor is at the desired recipe, press the Enter button. The display will jump to Page 1 of the selected Recipe.

Recipe Pages

Each recipe has four pages of parameters that can be edited.

Press the Page Down or Page Up buttons to go to the desired page of the recipe.

If the Page Up button is pressed while on Page 1 of the recipe the display will jump back to the Edit Recipes screen.

If the Page Up button is pressed while on the Edit Recipes screen the display will jump back to the Supervisors Mode screen.

Once the desired Recipe page is displayed, press the white numeric entry data display next to the parameter to be edited.

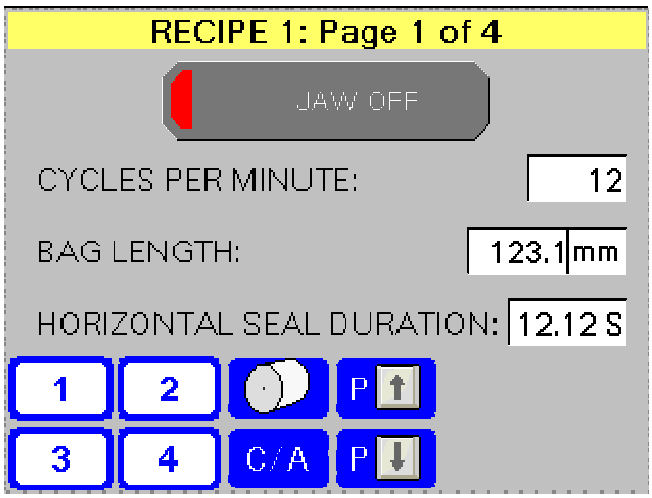


Figure 5

Once the numeric entry data display is pressed for the desired parameter, a numerical keypad will be displayed. The display will show the allowable value that can be entered. Use the numerical buttons to enter the new value. If a wrong button is pressed, press the Backspace/Delete button to delete the wrong entry. Once the new value is entered, press the Enter button to accept the change. The display will go back to the previous recipe Page that was displayed.

Once all of the edits to the recipe have been completed, switch the RUN/PROGRAM keyed selector switch to the Run position. The display will jump back to the Run Screen. To activate or store the changes the appropriate Recipe button must be pressed. For example if edits were made to Recipe 1 the “1” Recipe button would be pressed. This will store the edits and the machine is ready for operation with the new Recipe parameters.

Roll Info Page 1

This screen allows maintenance personnel to view the status of the Film Roll. This is a read-only screen. No data can be changed.

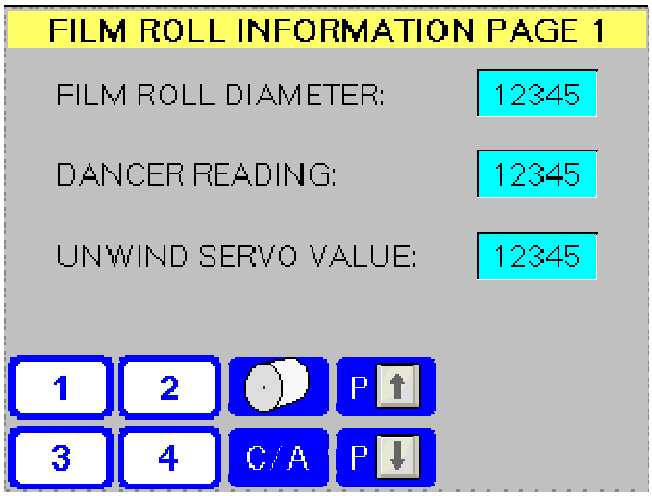


Figure 6

Roll Diameter
This displays the current roll diameter of the Film. It is calculated using an ultrasonic switch with an analog output.

Example values:
10,000 +/- = full roll
100 +/- = small roll

Dancer Reading
This displays the current position of the Dancer Bar.

Example values:
16,000 +/- = high
100 +/- = low

Unwind Servo Value
This displays the value used by the PLC to calculate the speed of the unwind servo.

Roll Info Page 2

This screen allows maintenance personnel to view the status of the Dancer Bar. This is a read-only screen. No data can be changed.

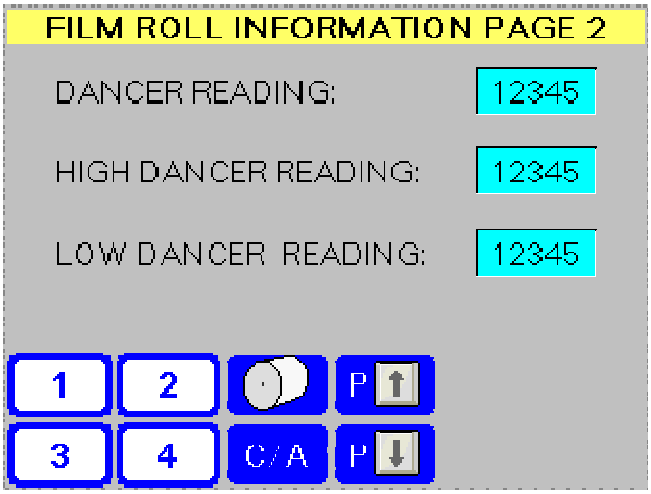


Figure 7

Dancer Reading

This displays the current position of the Dancer Bar.

High Dancer Reading

This displays the highest reading that the Dancer Bar has raised while film is being fed through the machine. The position of the Dancer Bar is calculated using an ultrasonic switch with an analog output.

Low Dancer Reading

This displays the lowest reading that the Dancer Bar has lowered after film has been fed through the machine.

Maintenance Page 1

This screen allows maintenance personnel to:

- Disable the Knife
- View the current temperatures of the Inner and Outer Jaw

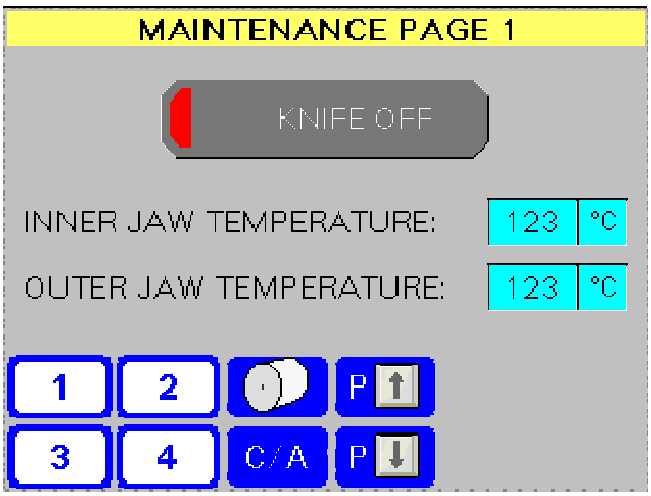


Figure 8

Knife Off/On

The Knife can be disabled using this function. Pressing the Knife On button will disable the Knife. The screen will then display Knife Off. Pressing the Knife Off button will enable the Knife. The screen will then display Knife On.

Inner Jaw Temp

This displays the current temperature of the Inner Jaw Sealing Bar. The default reading is in Fahrenheit degrees.

Outer Jaw Temp

This displays the current temperature of the Outer Jaw Sealing Bar. The default reading is in Fahrenheit degrees.

Maintenance Page 2

This screen allows maintenance personnel to:

- Manually actuate the Jaw
- Manually retract and extend the Knife
- Manually open and close the Vertical Seal

- From Screen 2, the Cycle Counter can be reset.

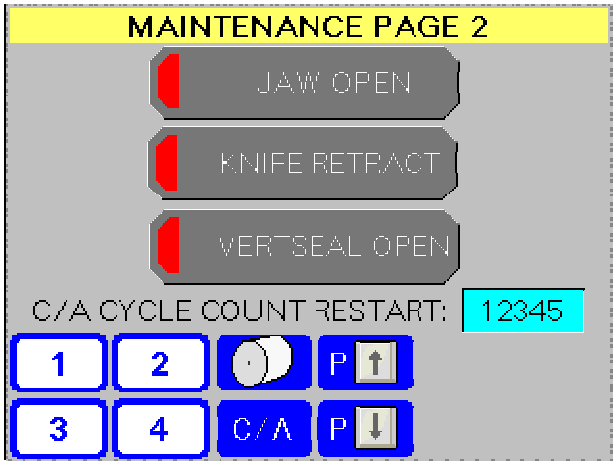


Figure 9

Jaw Open/Close

The Jaw can be manually opened and closed from this window. Pressing the Jaw Close button will close the Jaw. Pressing the Jaw Open button will open the Jaw. If you have closed the Jaw from this screen and you switch the RUN/PROGRAM keyed selector switch to RUN the Jaw will open.

Knife Retract/Extend

The Knife can be manually retracted and extended from this window. Pressing the Knife Retract button will retract the Knife. Pressing the Knife Extend button will extend the Knife. If you have extended the Knife from this screen and you switch the RUN/PROGRAM keyed selector switch to RUN the Knife will retract.

Vertseal Open/Close

The Vertical Seal can be manually opened and closed from this window. Pressing the Vertseal Open button will open the Vertical Seal. Pressing the Vertseal Close button will close the Vertical Seal. If you have closed the Vertical Seal from this screen and you switch the RUN/PROGRAM keyed selector switch to RUN the Vertical Seal will open.

Cycle Count Reset

Press the Clear/Acknowledge button to reset the Cycle Counter.

Maintenance Page 3

This screen allows maintenance personnel to:

- View the Jaw close and open times
- View the Conveyor restart time

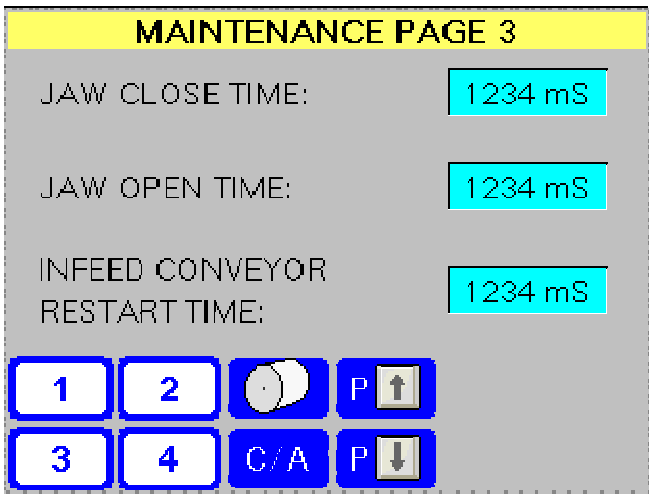


Figure 10

Jaw Close Time

This displays the Jaw close time from the turn on of the Jaw Close solenoid to the turn on of the Jaw closed switch. The display units are in milliseconds.

Jaw Open Time

This displays the Jaw open time from the turn off of the Jaw Close solenoid to the turn on of the Jaw opened switch. The display units are in milliseconds.

Conveyor Restart Time

This displays the time from the index of the Infeed Conveyor to the next index of the Infeed Conveyor. The display units are in milliseconds. This can also be considered the total cycle time of the machine to run one bag of product.

Configuration Menu

The Configuration Menu screen is the first screen that is displayed when Configuration is selected from the Supervisors Mode Screen. Press the cyan colored box area to move the arrow down to scroll to the desired item. Once the cursor is on the desired item, press the Enter button and the display will jump to that screen.

When the selected Configuration screen is displayed, press the blue Page Up button to navigate to the previous Configuration page. Press the blue Page Down button to navigate to the next Configuration page.

Pressing the blue Clear/Acknowledge button will take you back to the Configuration Menu page.

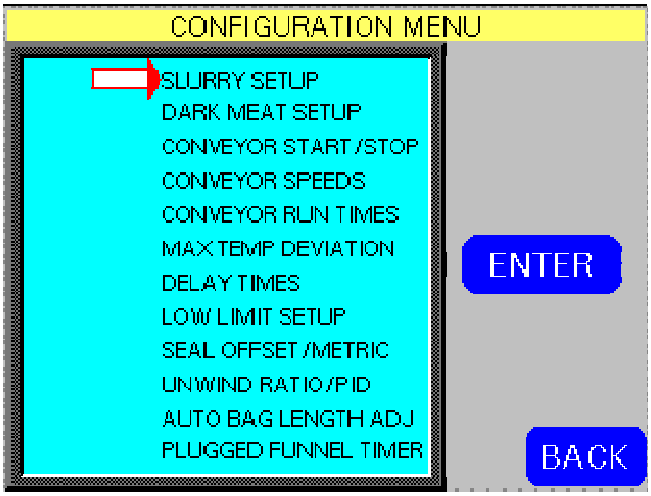


Figure 11

Configuration Page 1

This screen allows maintenance personnel to edit machine operation described below.

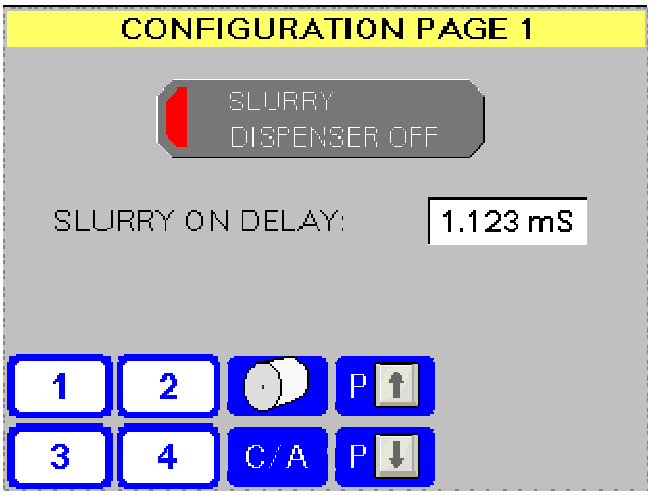


Figure 12

There are multiple windows on this page, so the cursor must be moved to select the desired parameter to edit. The cursor is a line on the left side of the parameter value window.

Slurry Dispenser Settings

The V45 machine may be purchased with an optional Fluid Research Slurry Dispenser. This screen is used to enable the Slurry Dispenser. If your machine did not come with a Slurry Dispenser ALWAYS leave the Slurry Dispenser OFF.

Slurry Dispenser On/Off Selector

When set to ‘On’ the machine will operate with the Slurry Dispenser. The machine will only run if the Slurry Dispenser is ‘Ready’ and not ‘Faulted’. Ready means that that the Slurry Dispenser is not faulted and a valid program is activated on the Slurry Dispenser.

If the Slurry Dispenser is faulted please refer to the proper Fluid research Documentation for troubleshooting.

Slurry On Delay

The Slurry Dispenser is triggered to cycle when the jaw begins to open. The On Delay parameter delays the Start signal to the Slurry Dispenser in milliseconds. This parameter can be set from (0.000…2.000) milliseconds.

Configuration Page 2

This screen allows maintenance personnel to edit machine operation described below.

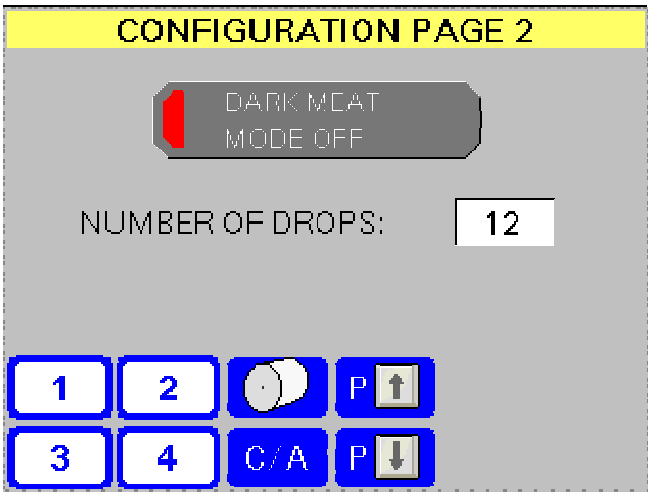


Figure 13

There are multiple windows on this page, so the cursor must be moved to select the desired parameter to edit. The cursor is a line on the left side of the parameter value window.

Dark Meat Mode On/Off Selector

When set to 'On', the machine will count the amount of triggers received from the Injector on the PLC Input I: 2/10 before the Infeed Conveyor will index. This allows multiple drops into the **same** pocket on the Infeed Conveyor from the Injector.

Number of Drops

This parameter sets the amount of triggers received from the Injector on PLC Input I: 2/10 before the Infeed Conveyor will index. The amount this parameter can be set is from (1…10) drops.

Configuration Page 3

This screen allows maintenance personnel to edit machine operation parameters described below.

Conveyor Index Start Delay

This parameter sets the time delay the Infeed Conveyor clutch solenoid is energized when movement of the Conveyor is required. A conveyor index is activated by a change in switch state from upstream machinery. The parameter units are hundredths of seconds.

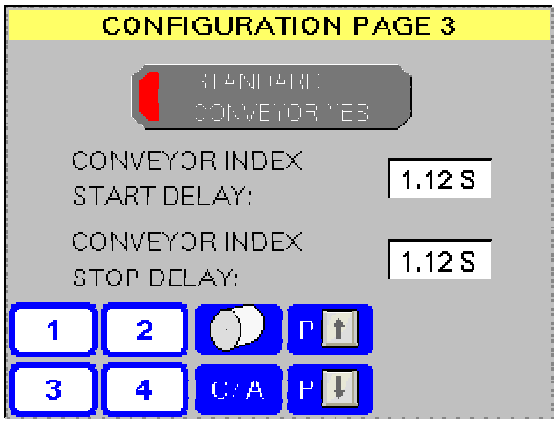


Figure 14

Conveyor Index Stop Delay

This parameter sets the time delay the Infeed Conveyor clutch solenoid is de-energized when the Conveyor Stop Proximity switch is detected. The parameter units are hundredths of seconds.

The standard conveyor is controlled by the V45. Non-standard conveyors are not controlled by the V45

Configuration Page 4

This screen allows maintenance personnel to edit machine operation parameters described below.

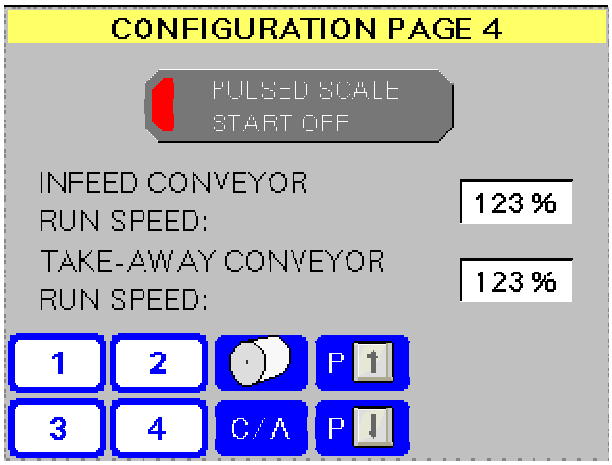


Figure 15

Pulsed scale starts transmit a 400ms signal when on. When off leaves a signal Hi till reset

Infeed Conveyor Run Speed

This parameter sets the speed the Infeed Conveyor motor will run at. The parameter units are percent of full speed.

Take-A-Way Conveyor Run Speed

This parameter sets the speed the Take-A-Way Conveyor motor will run at. The parameter units are percent of full speed.

Configuration Page 5

This screen allows maintenance personnel to edit machine operation parameters described below.

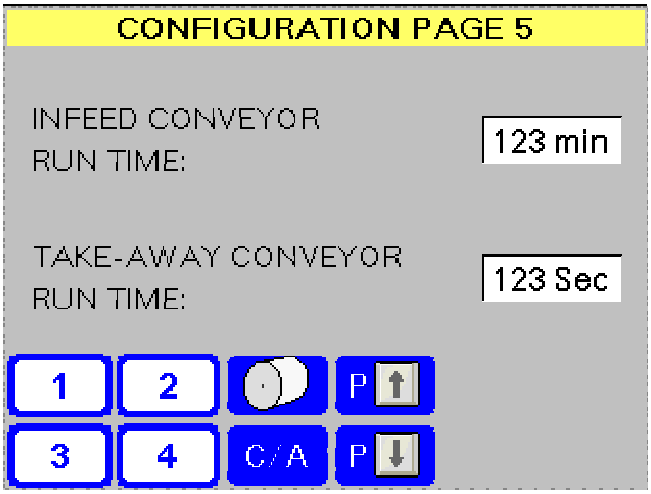


Figure 16

Infeed Conveyor Run Time

This parameter sets the amount of time the Infeed Conveyor motor will run after the machine has been switched out of Full Bag mode. The parameter units are minutes. The maximum amount this parameter can be set is 60 minutes.

Take-A-Way Conveyor Run Time

This parameter sets the amount of time the Take-A-Way Conveyor motor will run after the machine has been switched out of Full Bag or Cleanout mode. The parameter units are seconds. The maximum amount this parameter can be set is 60 seconds.

Configuration Page 6

This screen allows maintenance personnel to edit machine operation parameters described below.

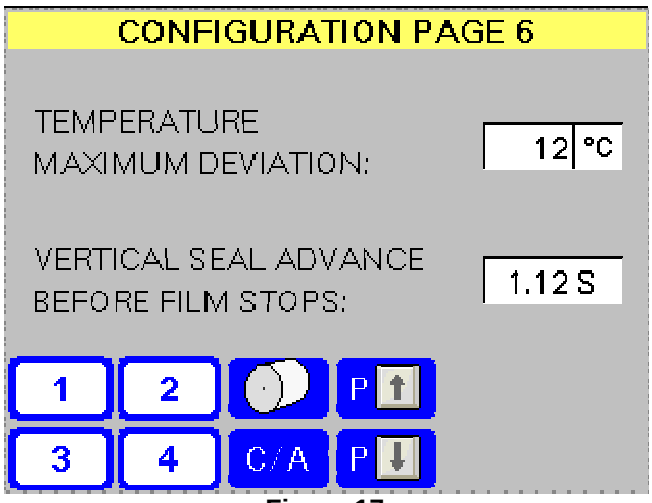


Figure 17

Temperature Maximum Deviation

This parameter sets the allowable (±) temperature deviation from set point the Vertical Seal Bar temperature must maintain. If the actual Vertical Seal Bar temperature is outside of this range a 'Fault' occurs and the machine cannot run in Full Bag mode. The parameter units are Degrees.

Vertical Seal Advance before Film Stops

This parameter sets the time the Vertical Seal Bar advances onto the Film as the Film is being stopped. The parameter unit is hundredths of seconds.

Configuration Page 7

This screen allows maintenance personnel to edit machine operation parameters described below.

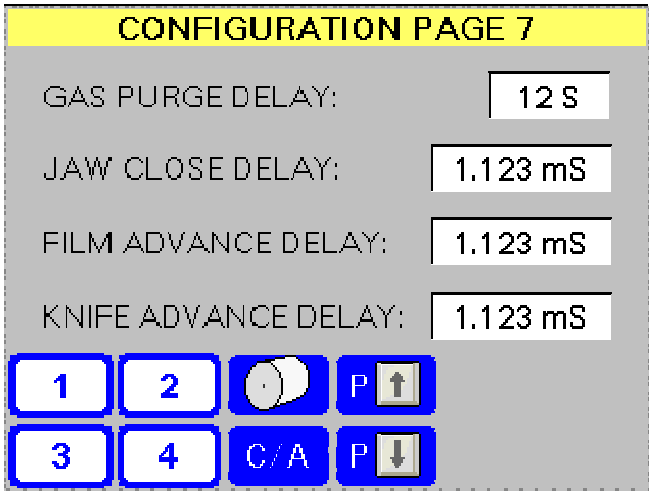


Figure 18

Gas Purge Delay

This parameter is the time the machine will wait to start cycling when first started in Full Bag mode and Gas On is enabled in the recipe. The parameter units are in seconds.

Jaw Close Delay

This parameter sets the amount of time in milliseconds that is subtracted from the calculated Film Feed time. This ensures that the Film Feed is complete before the Jaws will close. The maximum amount of time this parameter can be set is 100 milliseconds.

Film Advance Delay

This parameter sets the amount of time in milliseconds that delays the Film Advance. This allows the Jaws to open slightly before the Film starts to Advance. The maximum amount of time this parameter can be set is 100 milliseconds.

Note:

Both of these parameters reduce the amount of time allowed for the Film Advance.

For example: Bags per Minute and Seal time are calculated to factor the amount of time left in the cycle for the Film to advance to the programmed Bag Length. Programming too much time into these parameters can cause the Film Advance Belts to stutter or not move at all. This is caused by the calculated time allowed for the Film Advance requires a velocity and acceleration/deceleration rates that exceeds the performance envelope of the Film Advance Stepper motors and drives.

Knife Advance Delay

This parameter sets the amount of time in milliseconds that delays the Knife Advance. This ensures the Jaws are fully closed before the Knife starts to Advance. The maximum amount of time this parameter can be set is 100 milliseconds.

Configuration Page 8

This screen allows maintenance personnel to edit machine operation parameters described below.

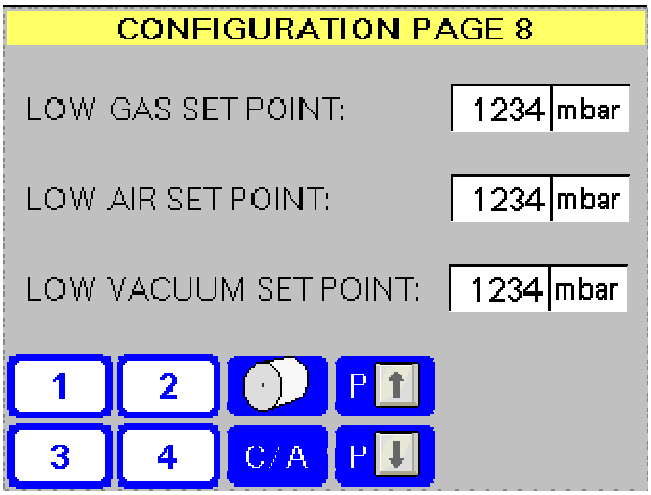


Figure 19

Low Gas Set

This parameter sets the lower limit the Gas Pressure must be before a Gas Pressure fault occurs. The parameter units are PSI.

Low Air Set

This parameter sets the lower limit the Air Pressure must be before an Air Pressure fault occurs. The parameter units are PSI.

Low Vacuum Set

This parameter sets the lower limit the Vacuum Pressure must be before a Vacuum Pressure fault occurs. The parameter units are inHg.

Configuration Page 9

This screen allows maintenance personnel to edit machine operation described below.

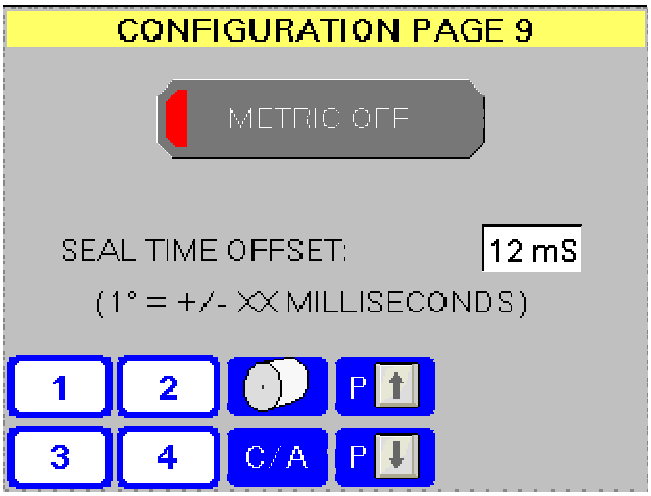


Figure 20

Seal Offset

This Parameter will offset the Total Seal Time in milliseconds by the amount of the temperature error present on the Inner and Outer Sealing Jaws.

If the actual Temperature is below the Set point time will be added to the Seal Time. If the actual Temperature is above the Set point time will be subtracted from the Seal Time.

The minimum Seal Time is 400 milliseconds and the maximum Seal Time is 800 milliseconds.

For the example below, the offset parameter has been set to 30 milliseconds and the base Seal Time is 600 milliseconds which are set in the Recipe.

The **Set** Temperature for the Inner and Outer Jaws = **235** degrees
The **Actual** Temperature for the Inner and Outer Jaws = **231** degrees
235 – 231 = 4 degree under temperature error
4 X 30 = 120 millisecond offset
600 + 120 = 720 millisecond total Seal Time

Metric

When set to on, the Bag Length, Seal Bar Temperatures, Air Pressure, Gas Pressure and Vacuum Pressure are displayed in Metric values. Bag Length is displayed and programmed in millimeters.

The Seal Bar temperatures are displayed and programmed in degrees Celsius (°C). Air and Gas pressures are displayed in millibar (mBar). The vacuum value is also displayed in millibar.

When you activate or deactivate Metric Mode the machine will automatically recalculate all the above displayed and programmed values between Metric and Imperial.

The Low Limits set on Configuration Page 8 are also automatically adjusted for Metric and Imperial values.

Configuration Page 10

This screen allows maintenance personnel to edit machine operation described below.

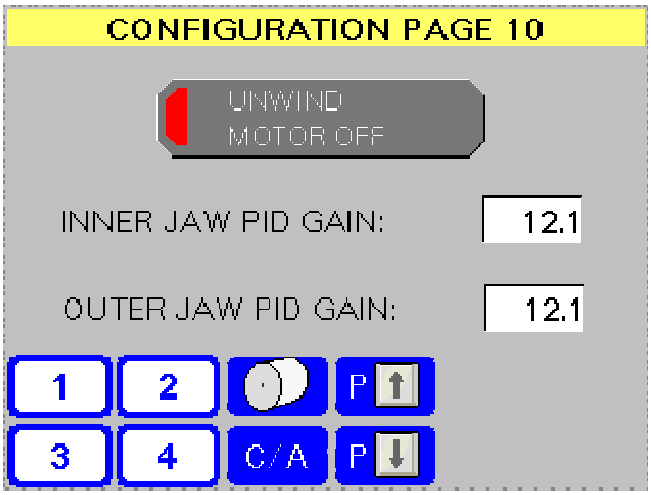


Figure 21

60:1 Unwind Motor

This Parameter when set to 'UNWIND MOTOR ON' will activate parameters in the PLC program that will accommodate running the new unwind motor with a 60:1 gear ratio.

Inner Jaw PID Gain

The value entered in this parameter is ONLY active when the Slurry Dispenser is 'On'. This is used to boost the Gain or response of the PID control to help keep the Jaw temperature at set point. The range of values that can be entered is (35.0…50.0).

Outer Jaw PID Gain

The value entered in this parameter is ONLY active when the Slurry Dispenser is 'On'. This is used to boost the Gain or response of the PID control to help keep the Jaw temperature at set point. The range of values that can be entered is (39.0…50.0).

Configuration Page 11

For poly film, it may be necessary to cool the film after sealing the bag. Enabling this feature will drive the output for the air valve to cool the film.

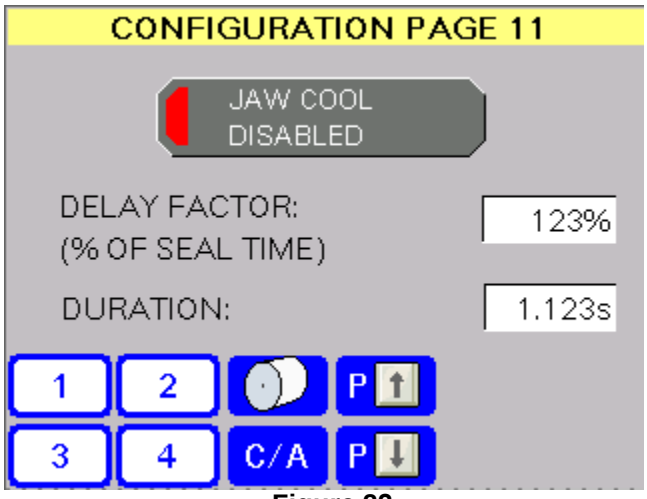


Figure 22

DELAY FACTOR

Setting the DELAY FACTOR to 100% will start the air cooling at the moment the seal portion of the cycle is finished, and the jaw is beginning to open. Setting DELAY FACTOR to less than 100% may be necessary to get the airflow moving ahead of the jaw opening.

DURATION

Set the duration of the film cooling to be approximately 600ms, so that the machine is cooling the sealed film as the jaws are opening. Longer time may be necessary for lower delay factor, so that the cooling air is still flowing as the jaws are opening.

Configuration Page 12

This screen is used to set the time for the Plugged Funnel Fault. If the Product present Photo Eyes are blocked any longer than the time entered the Plugged Funnel fault will be displayed and the machine will stop.

The time is entered in milliseconds and the acceptable range is (0.500…5.000) seconds.

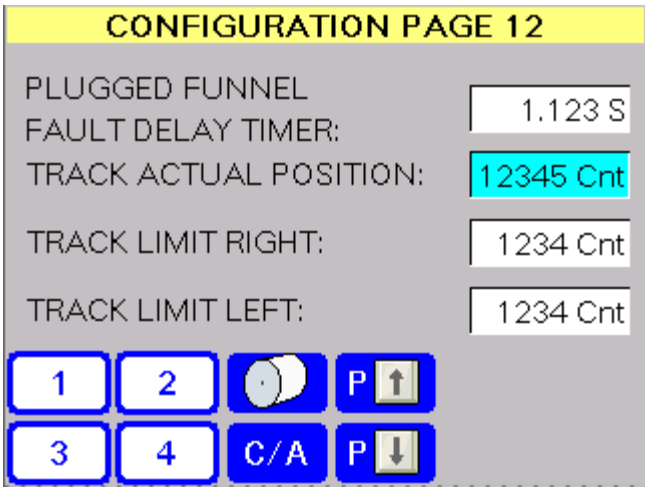


Figure 23

Configuration Page 13

This screen allows maintenance personnel to edit machine operation described below.

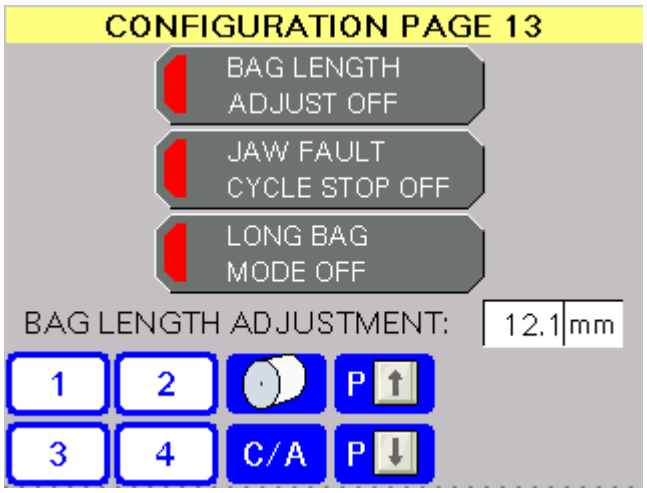


Figure 24

Bag Length Adjust

When set to 'On' the machine will automatically add to the programmed Bag Length when there are two Jaw Not Closed faults within 25 cycles of the machine.

Jaw Not Closed Adjust Amount

This Parameter sets the length amount the machine will add to the programmed Bag Length. The total maximum amount that will be added is 1 inch or 26 millimeters. The value entered and displayed will either be in inches or millimeters depending on whether Metric Mode is active.

Stop Machine with Jaw Fault

When the “JAW FAULT CYCLE STOP” is set to ‘On’ the machine will cycle stop if the fault occurs. When the “JAW FAULT CYCLE STOP” is set ‘Off’ the machine will continue to cycle even if this fault occurs. The fault message will still be displayed on the HMI Alarm screen.

7.5. PRINTED FILM SETUP

Printed Film Setup

This screen allows maintenance personnel to edit machine operation described below.

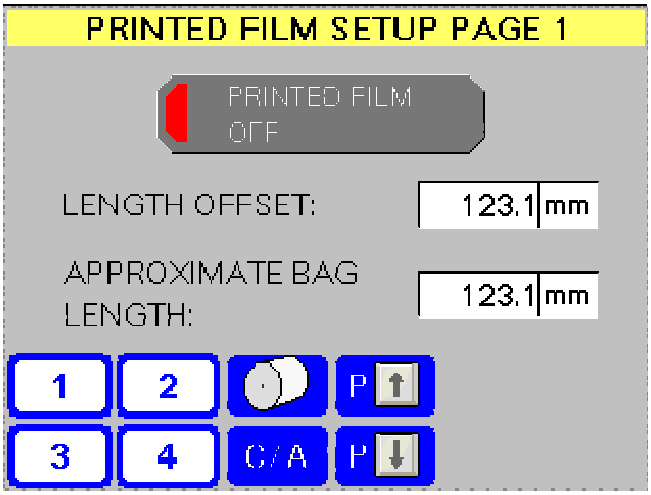


Figure 25

Printed Film Mode On/Off Selector

When set to 'On', the machine will operate with printed film. When a film feed is called for, the belts will run at a set speed until the registration mark is detected by the photoelectric switch, PLC input (I: 2/8). Once the registration mark is detected, the film belts will travel the distance set in the Length Offset parameter.

Length Offset

The value entered in this parameter is used to set the distance the film will feed once the registration mark is detected. This parameter will allow you to align the end of the bag with the print or pattern on the film. There is a minimum value calculated in the PLC that can be entered. This is because the distance allowed must be longer than the deceleration distance required by the servo motor to come to a complete stop. If a value is entered that is less than the calculated distance, the display will default to the minimum distance.

Approximate Bag Length

The value entered in this parameter is used to set the speed of the film feed. The length between the leading edge of the registration marks on the film should be entered. The longest length that may be entered is 17.5 inches.

The bag length should be entered using a value that is 1-1/2"~2" less than the actual bag length

7.6. PASSWORD SETUP

Password Setup

This screen is used to setup a new password or enable and disable password – protection for the On-The-Fly Recipe screens.

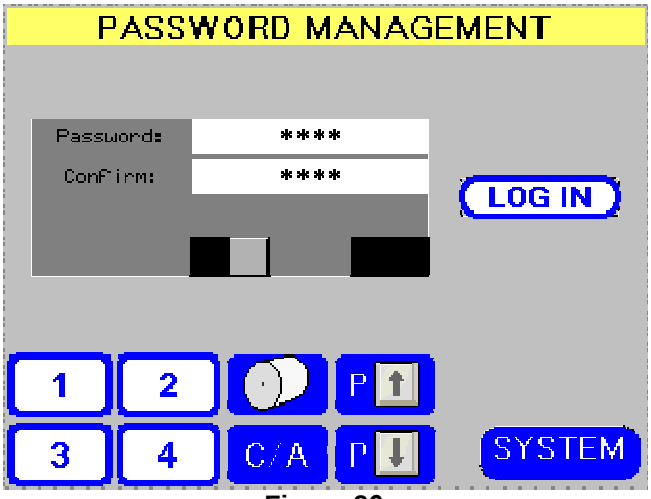


Figure 26

How to Use this Screen

To change the password for a given level of protection, the user must be logged in. Press the 'LOG IN' button on the HMI. A pop up window will appear as shown in Figure 27.

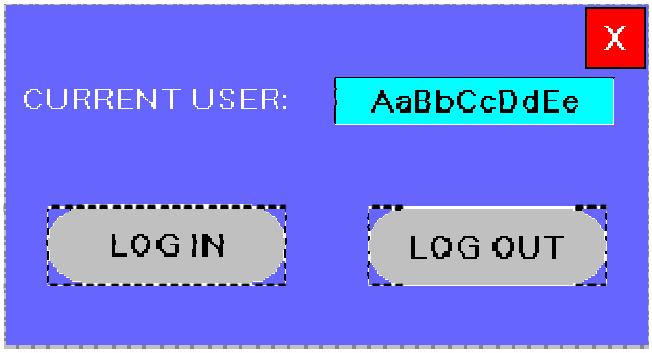


Figure 27

This window will display the current user. To change the user, press the 'LOG IN' button. An alpha numeric keypad will be displayed. Enter the supervisory password and press 'Enter'. The pop up window will automatically close, displaying only the 'PASSWORD MANAGEMENT' screen.

Change the password by touching the box next to the verbiage 'Password:' An alpha numeric keypad will pop up. Enter a new password and press 'Enter'. Confirm the change by repeating the above step by touching the box next to the verbiage 'Confirm:'

Security is automatically disabled after three minutes of inactivity. Security may also be disabled by pressing the lower right button in the password change box (mannequin walking towards door).

7.7. RECIPE PARAMETERS

Recipe 1 – Page 1

This screen allows maintenance personnel to edit recipe parameters described below.

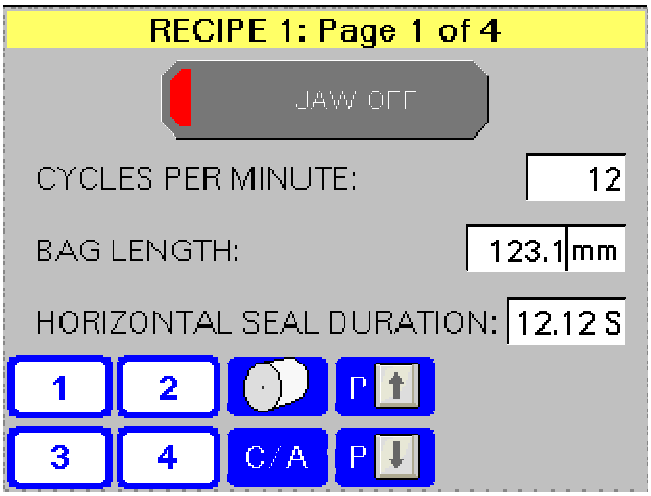


Figure 28

Jaw On/Off

This button when set to OFF will disable the jaw from cycling. This would be used if the machine is bulk filling.

Cycle/Min

This parameter sets the speed at which the machine will run in cycles or bags per minute.

Bag Length

This parameter sets the length of the bag to be filled with product in inches. The entry range for this parameter is 4.0 to 17.5 inches.

Seal Duration

This parameter sets the time the jaws will remain closed. This parameter is set in hundredths of seconds. The entry range for this parameter is 0.00 to 9.99 seconds.

Recipe 1 – Page 2

This screen allows maintenance personnel to edit recipe parameters described below.

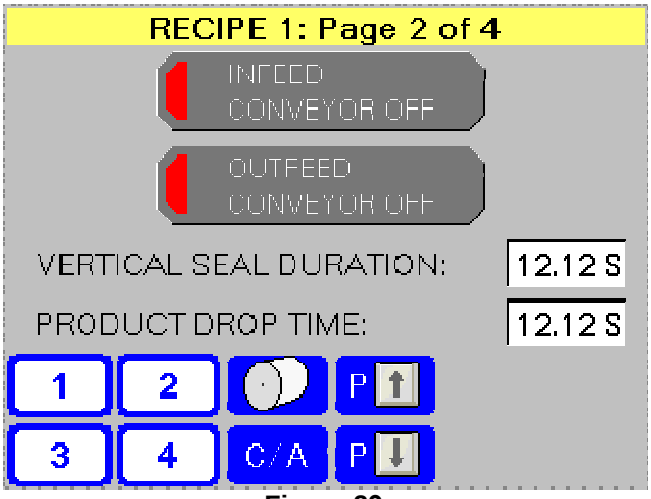


Figure 29

Vertical Seal Duration

This parameter sets the time the Vertical Seal will cycle. This parameter is set in hundredths of seconds. The range this parameter can be set is (0.00…9.99) Seconds.

Infeed Conveyor On/Off

This parameter when set to OFF will disable the Infeed Conveyor in Full Bag Mode.

Outfeed Conveyor On/Off

This parameter when set to OFF will disable the Take-A-Way Conveyor.

Recipe 1 – Page 3

This screen allows maintenance personnel to edit recipe parameters described below.

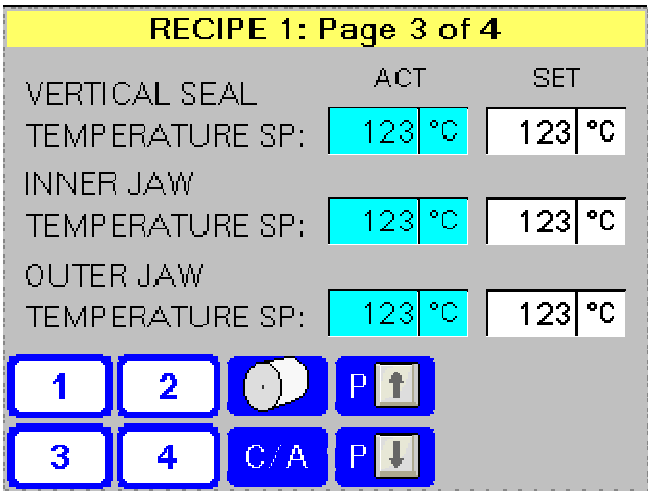


Figure 30

Vertical Seal Temperature Set and Actual

This parameter sets the Vertical Seal temperature set point. The set point is entered in Fahrenheit degrees (°F). The acceptable range for this parameter is (35…450) °F.

Inner Jaw Temperature Set and Actual

This parameter sets the Inner Jaw Seal temperature set point. The set point is entered in Fahrenheit degrees (°F). The acceptable range for this parameter is (35…450) °F.

Outer Jaw Temperature Set and Actual

This parameter sets the Outer Jaw Seal temperature set point. The set point is entered in Fahrenheit degrees (°F). The acceptable range for this parameter is (35…450) °F.

Recipe 1 – Page 4

This screen allows maintenance personnel to edit recipe parameters described below.

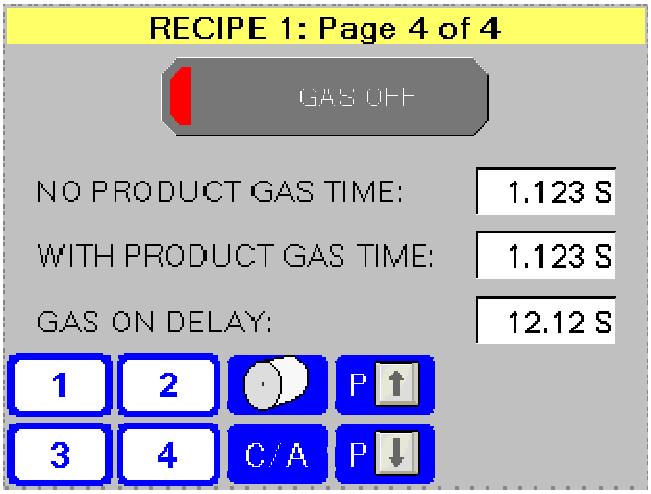


Figure 31

Gas On/Off

This parameter turns the Gas ON or OFF during the operation of the machine. It is normal to run with the Gas ON. The incoming Gas Pressure is monitored by the machine and must be of sufficient pressure or a fault will occur.

Note: The Low pressure limit is set on Page 2 of the Configuration Screens.

No Product Gas Time

This parameter sets the amount of time the gas solenoid will turn on when the infeed conveyor indexes and no product is sensed by the photo electric switch. The value entered is in milliseconds and the acceptable range for this parameter is (0.000…2.000) seconds.

With Product Gas Time

This parameter sets the amount of time the gas solenoid will turn on when the infeed conveyor indexes and product is sensed by the photo electric switch. The value entered is in milliseconds and the acceptable range for this parameter is (0.000…2.000) seconds.

7.8. PROGRAMMING EXAMPLE

Recipe 1 – Page 1

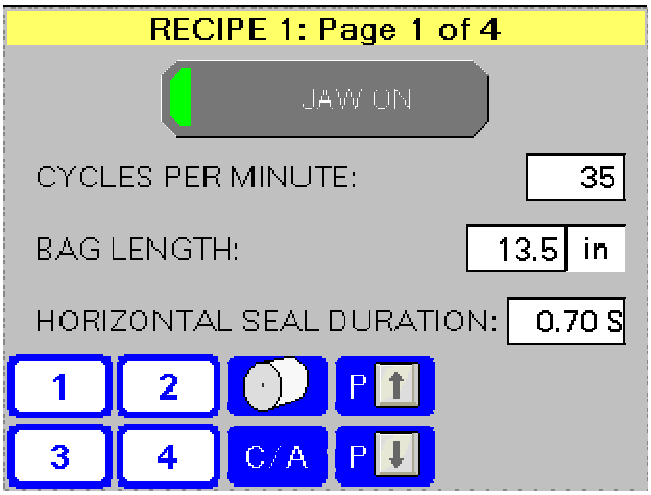


Figure 32

Jaw On/Off = On

The jaw will operate normally.

Cycles/Min = 35

The machine will run at the speed of 35 bags per minute.

Bag Length = 13.50

The machine will produce bags 13.50 inches long.

Seal Duration = 0.70

The upper and lower seal heat will be on for 0.70 seconds.

Recipe 1 – Page 2

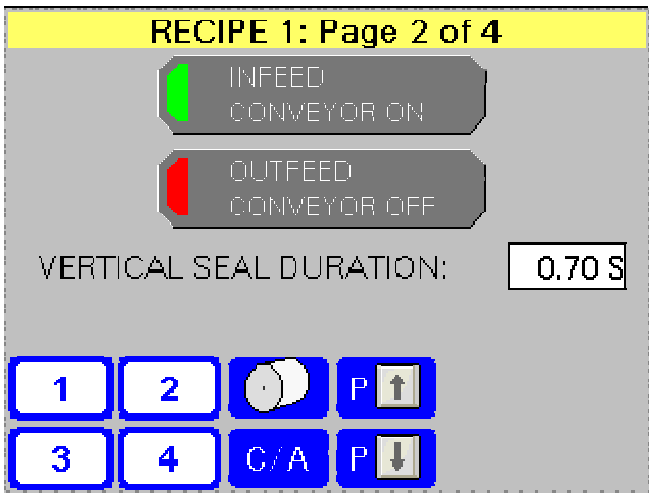


Figure 33

Infeed Conveyor On/Off = On

The infeed conveyor will cycle.

Outfeed Conveyor On/Off=Off

The outfeed conveyor will not cycle.

Vertical Seal Duration = 0.70

The vertical seal cycle is 0.70 seconds.

Recipe 1 – Page 3

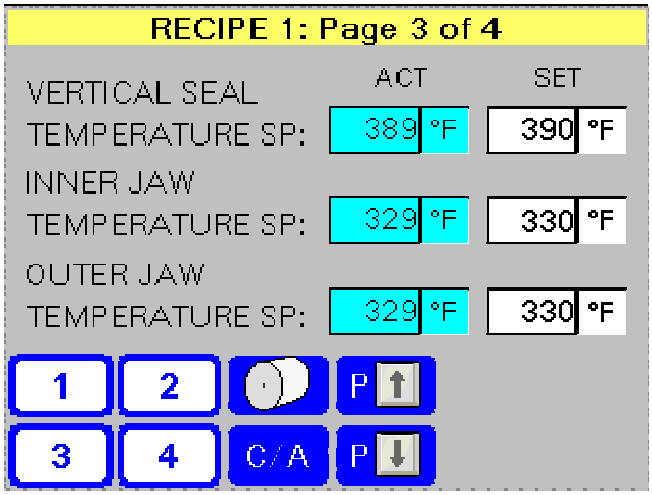


Figure 34

Vertical Seal Temp = 390

The vertical seal bar will heat to 390 degrees.

Inner Jaw Temp = 330

The upper jaw will heat to 330 degrees.

Outer Jaw Temp = 330

The lower jaw will heat to 330 degrees.

Recipe 1 – Page 4

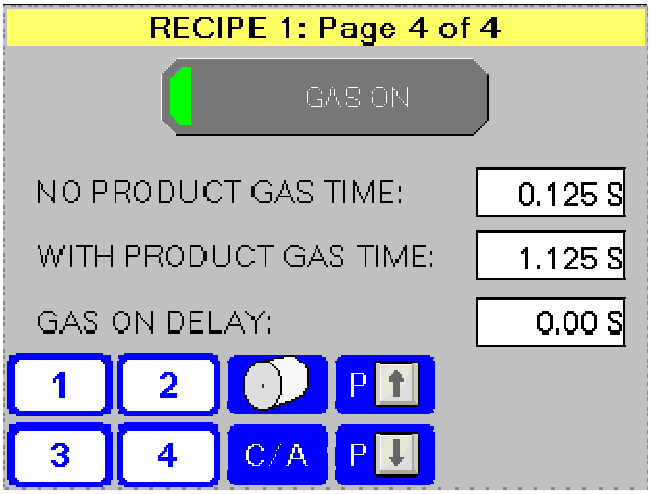


Figure 35

Gas On/Off = On

The machine will run with Gas Enabled.

No Product Gas Time = 0.125

The Gas solenoid will energize for 0.125 seconds when there is No Product sensed when the Infeed Conveyor indexes.

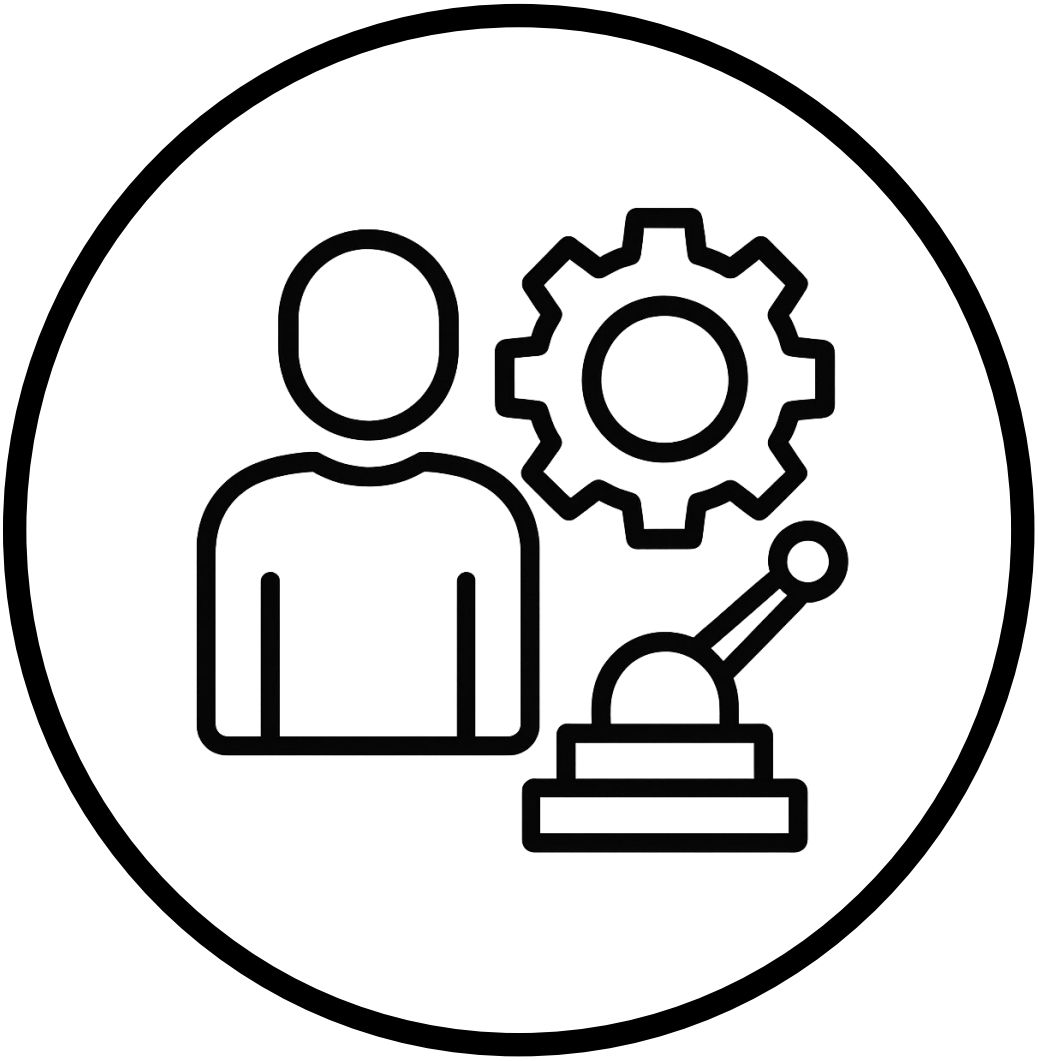
With Product Gas Time = 1.125

The Gas solenoid will energize for 1.125 seconds when product is sensed when the Infeed Conveyor indexes.

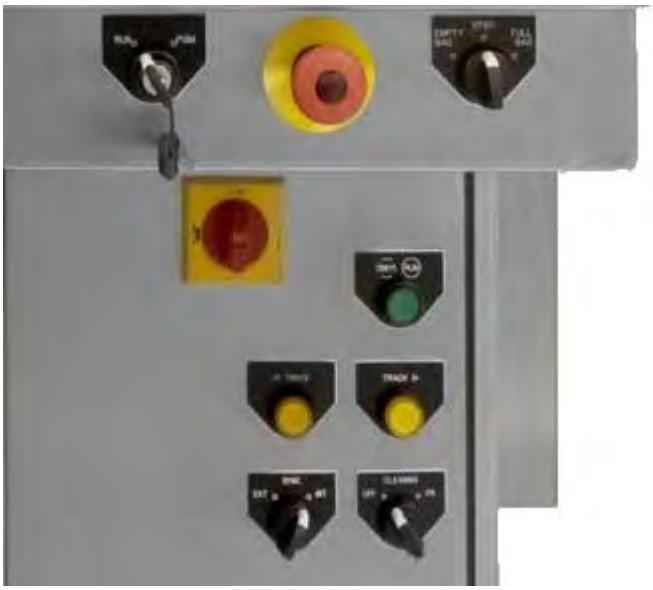
Gas On Delay= 0.00

The start of the gas purge will be delayed by 0.00 seconds (no delay).

Chapter 8: Operating Procedures



8.1. STARTING AND STOPPING THE MACHINE



Conditions to Start the Machine

The following conditions must be true for the machine to start:

- Main Power On
- Emergency Stop Pushbutton pulled out and illuminated
- All Guard Doors closed
- Main Air supply pressure sufficient
- Gas pressure sufficient if enabled in recipe
- Run/Program selector switch in Run position

If all of the above conditions are true the machine is ready for operation.

Start

Switch the 3 position Empty Bag / Standby / Full Bag selector switch to the Empty Bag position to run the Machine in Empty Bag mode or to the Full Bag position to run the Machine in Full Bag mode. The Machine will start cycling immediately.

Stop

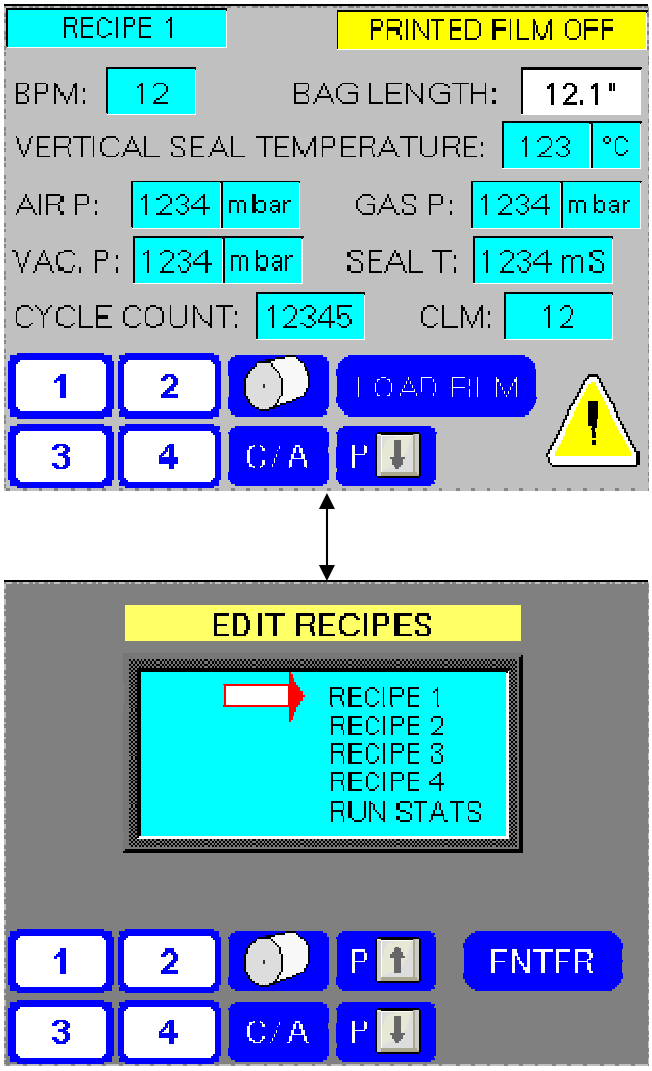
Switch the three position Empty Bag / Standby / Full Bag selector switch to the Standby position. The Machine will stop cycling.

Note:
If it is necessary to stop the machine cycle at any time, push the EMERGENCY STOP BUTTON in. All Circuits will immediately return to an ‘idle’ state.
To restart the machine, pull the EMERGENCY STOP BUTTON to it’s out position. At this point, the Emergency Stop button should illuminate and a film feed and vertical seal will occur. Run one or two empty bag cycles to get the machine back into sequence. The machine should now be ready to cycle in full bag mode.

8.2. ON THE FLY RECIPE EDITING PROCEDURE

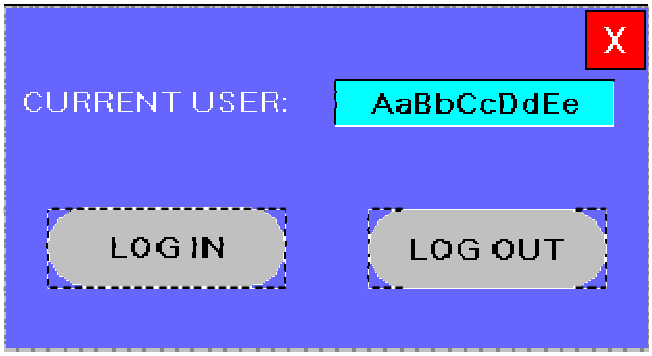
Step 1

From the Run Screen press the Page Down button. The display will jump to the Edit Recipes screen.



Step 2

Press anywhere in the cyan colored box to move the cursor to the recipe that requires a change. Press the *ENTER* button. Unless the user is logged in, the *LOG IN* screen will pop up. Log in and press *ENTER.*



Step 3

Each Recipe has four pages of parameters that can be edited. Refer to Figure 31-34.

Press the Page Up or Page Down buttons to go to the desired page of the Recipe.

If the Page Up button is pressed while Page 1 of the Recipe is displayed, the display will jump back to the Edit Recipes screen.

If the Page Up button pressed when the Edit Recipes page is displayed, the display will jump back to the Run Screen.

Step 4

Once the desired Recipe Page is displayed, press the numeric entry data display next to the parameter to edit. A numeric keypad will pop up. Enter the new value and press ENTER. If a wrong button is pressed, press the back/delete or CLR button to delete the wrong entry. After pressing the ENTER button, the numeric keypad will close and the new value will be displayed in the numeric entry data display.

Step 5

To activate or store the edits that have just been made, the appropriate Recipe button must be pressed. For example: If edits were made to Recipe 1, the Recipe 1 button would be pressed. Once the Recipe button is pressed the edits take effect immediately.

8.3. VIEWING RUN STATS PROCEDURE

Run Stats

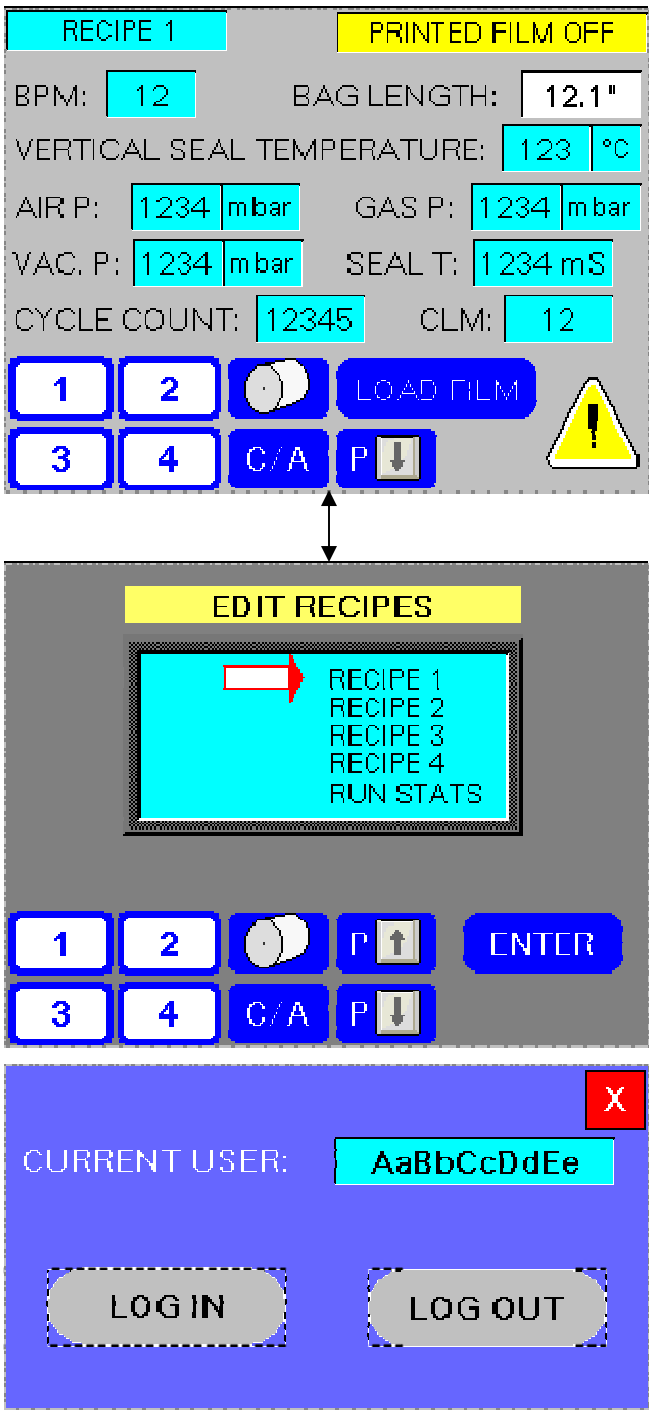
Run Statistics is a quick way to view production statistics while the Machine is running in Full Bag Mode.

Run Stats is a count of Infeed Conveyor cycles and Jaw closing cycles.

A comparison is done of the two counts to calculate the efficiency the machine is running at. There are four screens in total. Below is an explanation of each screen and how to navigate to them.

Step 1

From the Run Screen press the Page Down button. The display will jump to the Edit Recipes screen.



Step 2

Press anywhere in the cyan colored box to move the cursor to the RUN STATS position. Press the *ENTER* button. Unless the user is logged in, the *LOG IN* screen will pop up. Log in and press *ENTER.* The display will jump to the Current Stats page.

Current Stats

Current Statistics is a 15 minute running count of Infeed Conveyor cycles and Jaw closing cycles. The counts are compared and the percent efficiency is calculated and displayed.

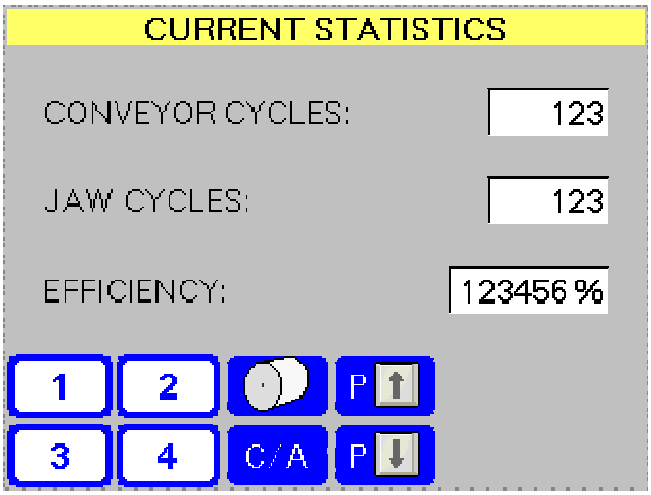


Figure 35

This is 15 minutes of the machine running in Full Bag Mode. If there is an alarm that stops the machine, the 15 minute timer will stop but not reset.

Once the alarm is cleared and the machine is restarted, the 15 minute timer will resume where it left off. When the 15 minute timer is complete the stats are stored and displayed on the next page titled Previous Stats Page 1.

Press the Page Down button to jump to Previous Stats Page 1. Pressing the Page Up button while the Current Stats page is displayed will take you back to the Edit Recipes screen.

Previous Stats Page 1 And 2

Previous Statistics Page 1 and 2 display the two previous 15 minute production runs.

Pressing the Clear/Acknowledge button while either page is displayed will reset the count on both pages.

Press the Page Down button to go to Previous Stats Page 2 while on Page 1. Pressing the Page Down button while the Previous Stats Page 2 is displayed will take you to the Production Stats Page.

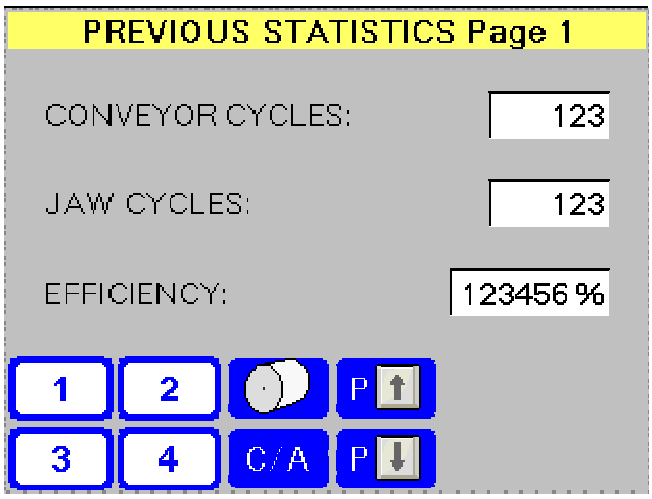


Figure 36

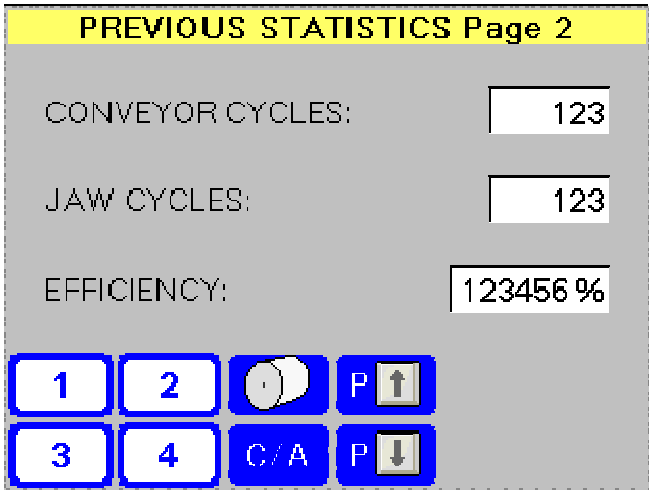


Figure 37

Production Stats

Production Statistics is a continuous running count of Infeed Conveyor cycles and Jaw closing cycles. The counts are compared and the percent efficiency is calculated and displayed.

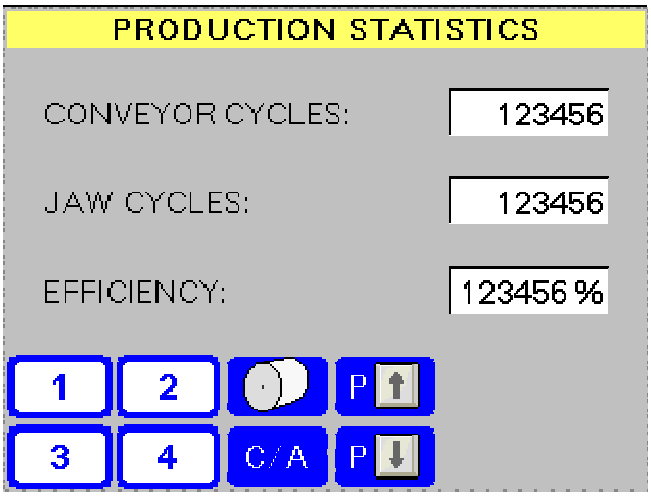


Figure 38

The Production Stats are only counting Full Bag Mode cycles. This page is intended to be used as shift production counter to obtain Production counts for an entire day of operation.

Pressing the Clear/Acknowledge button will reset the count when the Production Stats Page is displayed. The counters will reset to zero if 13760 is reached to prevent a PLC fault.

Press the Page Up button to jump to Previous Stats Page 2. Pressing the Page Down button while the Production Stats page is displayed will take you back to the Edit Recipes screen.

Chapter 9: Daily / Weekly / Monthly Checks



9.1. DAILY CHECKS BEFORE OPERATING MACHINE

☐ Drain water from the filter regulator unit using the manual drain.

☐ Check the compressed air pressure minimum setting of 80 PSIG (5.5 bar) using the regulator pressure gauge.

☐ Check the oil level in the lubricator unit using the sight gauge. Refill 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 one drop for every 3 to 5 packages, at the normal packaging speed. If not, adjust the small needle valve screw, which is located in a recessed well in the clear plastic dome where you can observe the oil drip rate.

☐ Check horn wear and input roller alignment. Adjust roller if necessary. Check preload rod for broken bolts and condition of bone guard flaps.

☐ Check to see if the vertical fin seal bar and the cross seal bars are clean and not damaged.

☐ Check to see if the Teflon tape is in good condition or if it should be replaced. Do not scrape or use abrasives to clean the seal bars, as this will damage the coating.

☐ Check fin seal bar assembly for proper operation.

☐ Clean all vertical and horizontal heater bars with a brass brush. NOTE: Do not use a stainless steel or steel brush – this will damage coating.

☐ Check to see if there are any broken operation buttons or switches.

☐ Check all safeties including door switches and ‘E’ stop button.

☐ Check all operator switches.

☐ Check banner switches for proper operation.

☐ Check vacuum level with film in machine, which should be between 14-16 Hg. Adjust if necessary.

☐ Check condition of bag compressor plastic. Change if broken.

☐ Check film unwind support bearings.

☐ During wash-down, direct water in the topside holes of the horn to flush out all refuse.

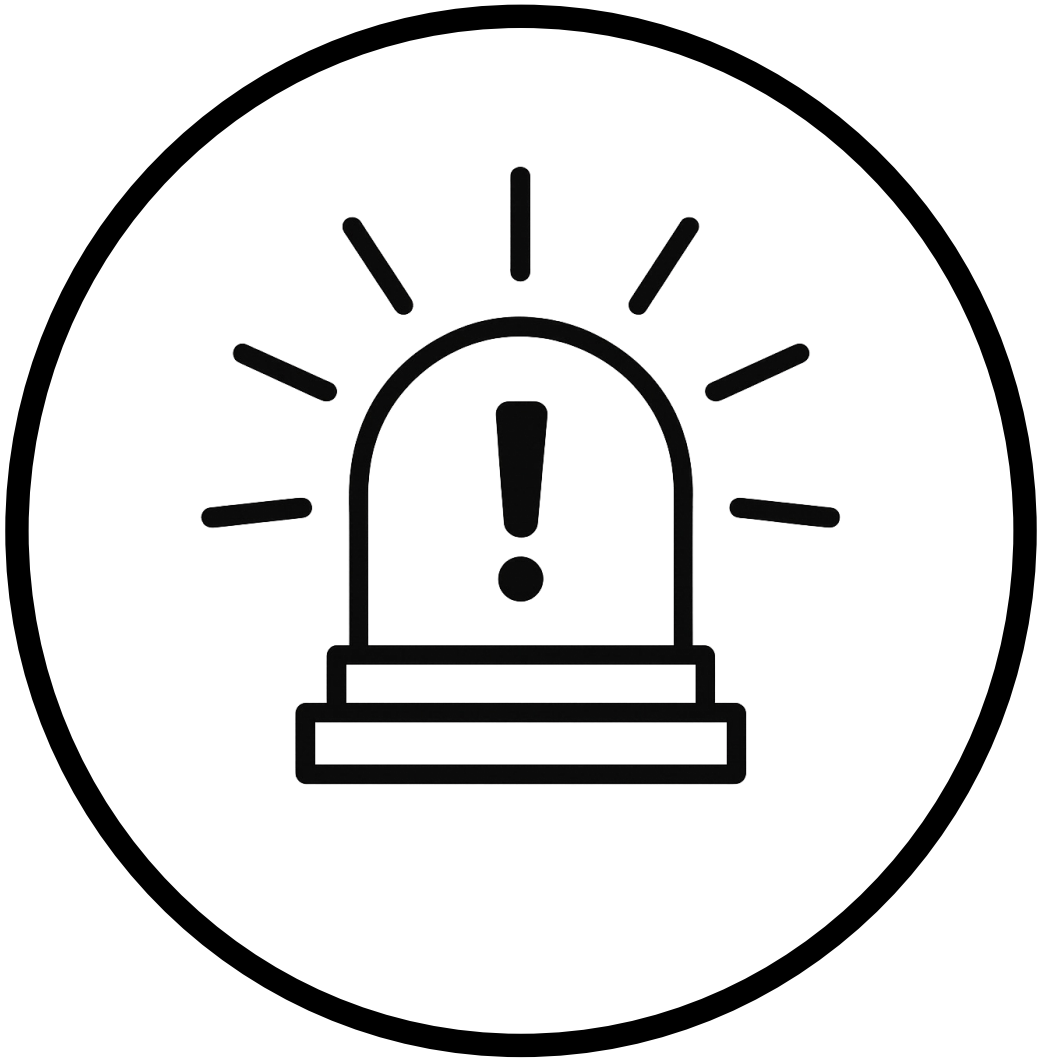
9.2. WEEKLY CHECKS BEFORE OPERATING MACHINE

- ☐ Check airflow to stepper motors. Adjust flow control or replace flow control if necessary.
- ☐ Check knife couplings, bolts and cylinders. Replace if necessary.
- ☐ Check seal bar alignment, bushings and springs. Adjust and replace if necessary.
- ☐ Check vacuum drive assemblies for proper alignment and movement. Check tension and wear on belts. Adjust or replace for proper operation.
- ☐ Check pinch rubber and replace as necessary.
- ☐ Check cooling fan. Replace if not operating.
- ☐ Check all shock absorbers for position and verify function.
- ☐ Check all proximity switches and alignment.
- ☐ Check film drive motor gears, bolts, keys and key slots. Replace as needed.
- ☐ Check CO^2 control valve for leakage and proper operation.
- ☐ Check electrical door cabinet seal.
- ☐ Check V-rollers for film carriage for breakage. Replace if damaged.
- ☐ Remove the horn from the machine, separate the inner liner from the horn and wash both. Re-assemble the parts and install the horn on the machine. Adjust the horn and drive belt assembly.
- ☐ Clean all refuse from seal bar knife grooves.
- ☐ Remove the rear access panel and remove any refuse that has fallen on wires and hoses.
- ☐ Remove the rear access panel and remove any water from the vacuum filter jars.

9.3. MONTHLY CHECKS BEFORE OPERATING MACHINE

- ☐ Check A-B Power Flex 4, switches and parameters. Change if incorrect.
- ☐ Check jaw cylinder for proper alignment and excessive bushing wear. Correct or replace if necessary.
- ☐ Check all bushings, wheels and bearings. Replace if necessary.
- ☐ Check fin seal bar assembly for cracks on support bars and springs. Clean as needed to ensure bar movement.
- ☐ Check sealing assembly for worn parts and replace defective ones.
- ☐ Recalibrate ultrasonic sensors for film and dancer as needed.

Chapter 10: Alarms



10.1. DISPLAY FAULT MESSAGES – SUMMARY

Active Alarms

The Alarm Banner will pop up on the display anytime there is an alarm or fault condition present.

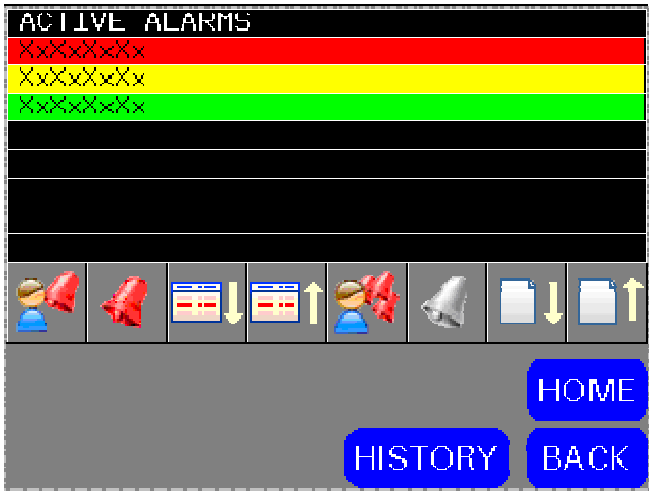


Figure 39

Clear

The Alarm Banner Clear button removes the Alarm Banner from the display but does not acknowledge the alarm. Pressing the Clear button DOES NOT clear or reset the alarm condition.

Acknowledge

The Alarm Banner Acknowledge button removes the Alarm Banner from the display and marks the alarm as acknowledged in the Alarm History list.

Pressing the Acknowledge button DOES NOT clear or reset the alarm condition.

Alarm History

In addition to the active alarm screen is the ALARM HISTORY screen.

Each alarm is recorded as they occurred. A maximum of 100 alarms are retained at one time. When this number is exceeded, the first alarm is removed, first in first out.

There are four buttons on this screen. A up and down button to move the cursor up or down one line at a time and a up and down button to move the cursor up or down a page at a time.

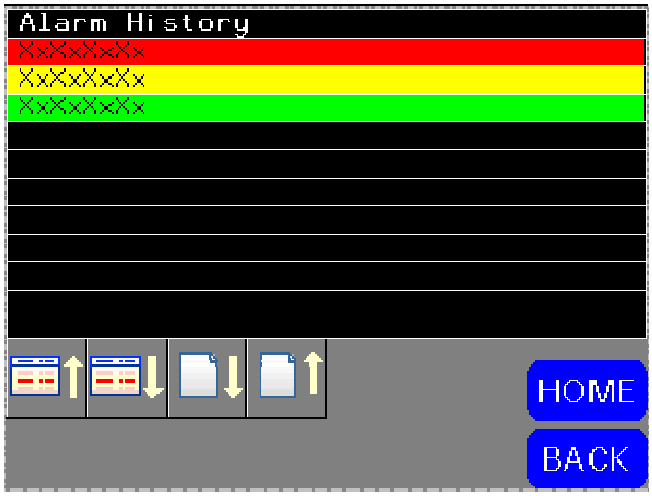


Figure 40

10.2. ALARMS

Emergency Stop Active

This alarm indicates the Emergency Stop pushbutton has been pressed. Pull out the Emergency Stop pushbutton to reset.

Auxiliary Equipment Down

This alarm indicates that a downstream piece of equipment is not ready for the machine to run in Full Bag mode. At this time all machines shipped have this feature jumpered (I: 0/2).

Film Unwind PowerFlex4 Drive Faulted

This alarm indicates the Allen Bradley PowerFlex4 Drive for the Unwind motor has a fault condition. Power down the machine by turning the rotary disconnect switch to the OFF position. Wait at least 30 seconds to turn the machine back on.

Safety Guard Open

This alarm indicates that one or both of the access doors are open. Close the doors to run the machine.

Vertical Seal Upper Temperature Limit Exceeded

This alarm indicates the temperature of the Vertical Seal Bar is outside the upper limit set in the Recipe parameter and the limit set in Configuration Page 6. This alarm may be caused by changing to a different Recipe with a different Vertical Seal temperature

setting that is outside the value set in Configuration Page 6. Wait for the Temperature to drop to within the limit.

Vertical Seal Lower Temperature Limit Exceeded

This alarm indicates the temperature of the Vertical Seal Bar is outside the lower limit set in the Recipe parameter and the limit set in Configuration Page 6. This alarm may be caused by the machine just being powered on. Wait for the Temperature to rise to within the limit.

Low Gas Pressure

This alarm indicates there is insufficient Gas Pressure. The Gas pressure is lower that the Low Limit set on Configuration Page 8. Verify the Gas On solenoid is operating correctly.

Low Air Pressure

This alarm indicates there is insufficient Compressed Air Pressure. The Air pressure is lower that the Low Limit set on Configuration Page 8. Verify the manual shut off on the incoming air filter regulator is open.

Low Vacuum

This alarm indicates there is insufficient Vacuum Pressure. The Vacuum pressure is lower that the Low Limit set on Configuration Page 8. Verify the Vacuum pump is operating correctly.

Jaw Not Detected As Open

This alarm indicates that the Jaw was commanded to open but the Jaw Open switch did not turn on in the proper time. If the Jaw is opened check the proximity switch. If the Jaw is not open and the Air pressure is OK, check the Jaw solenoid for proper function.

Jaw Open Proximity Switch Fault (I: 0/5)

This alarm indicates the Jaw Open Switch has remained on while the Close Jaw Solenoid has energized. This alarm can also indicate that the Close Jaw Solenoid is off and the Jaw Open Switch has not turned on.

Jaw Not Detected As Closed

This alarm indicates that the Jaw was commanded to close but the Jaw Closed switch did not turn on ever in the proper time. If the Jaw is closed check the proximity switch. If the Jaw will not close and the Air pressure is OK, check the Jaw solenoid for proper function.

Servo Drive Fault Restart Machine

This alarm indicates that either the servo drive amplifier faulted or that the Safe Torque Off has been activated. The Safe Torque Off stops the drive from operating and requires the servo amplifier to be reset. To reset the servo amplifier, activate the EMERGENCY STOP function and then pull out the EMERGENCY STOP button. The servo amplifier should reset itself. If the servo amplifier fails to reset, power down the machine by turning the rotary disconnect switch to the OFF position. Wait at least 30 seconds to turn the machine back on.

Vacuum Pump Motor Starter Not On

This alarm indicates that the Vacuum Pump Motor Starter Overload has tripped. A qualified maintenance person must be called to reset the overload.

Infeed Conveyor PowerFlex4 Drive Faulted

This alarm indicates the Allen Bradley PowerFlex4 Drive for the Infeed Conveyor motor has a fault condition. Power down the machine by turning the rotary disconnect switch to the OFF position. Wait at least 30 seconds to turn the machine back on.

Take-A-Way Conveyor PowerFlex4 Drive Faulted

This alarm indicates the Allen Bradley PowerFlex4 Drive for the Take-A-Way Conveyor motor has a fault condition. Power down the machine by turning the rotary disconnect switch to the OFF position. Wait at least 30 seconds to turn the machine back on.

Inner Jaw Seal Temperature Too Low

This alarm indicates the temperature of the Inner Jaw Seal Bar is under the lower limit set in the recipe parameter and the limit set in Configuration Page 6. This alarm may be caused by the machine just being powered on. Wait for the temperature to rise to within the limit. This alarm can only occur if the machine is in Full Bag Mode.

Inner Jaw Seal Temperature Too High

This alarm indicates the temperature of the Inner Jaw Seal Bar is over the upper limit set in the recipe parameter and the limit set in Configuration Page 6. This alarm may be caused by changing to a different recipe with a different Inner Jaw Seal temperature setting that is outside the value set in Configuration Page 6. Wait for the temperature to drop to within the limit. This alarm can only occur if the machine is in Full Bag Mode.

Outer Jaw Seal Temperature Too Low

This alarm indicates the temperature of the Outer Jaw Seal Bar is under the lower limit set in the recipe parameter and the limit set in Configuration Page 6. This alarm may be caused by the machine just being powered on. Wait for the temperature to rise to within the limit. This alarm can only occur if the machine is in Full Bag Mode.

Outer Jaw Seal Temperature Too High

This alarm indicates the temperature of the Outer Jaw Seal Bar is over the upper limit set in the recipe parameter and the limit set in Configuration Page 6. This alarm may be caused by changing to a different recipe with a different Inner Jaw Seal temperature setting that is outside the value set in Configuration Page 3. Wait for the temperature to drop to within the limit. This alarm can only occur if the machine is in Full Bag Mode.

Vertical Seal Runaway Overtemp Fault

This alarm indicates the temperature of the Vertical Seal Bar has risen to 50 degrees above the set point temperature. This alarm should only occur if a resistance temperature detector (RTD) is wired to the wrong input. If this alarm does occur, all three heaters are disabled until the fault is cleared.

Inner Jaw Seal Runaway Overtemp Fault

This alarm indicates the temperature of the Inner Jaw Seal Bar has risen to 50 degrees above the set point temperature. This alarm should only occur if a resistance temperature detector (RTD) wired to the wrong input. If this alarm does occur, all three heaters are disabled until the fault is cleared.

Outer Jaw Seal Runaway Overtemp Fault

This alarm indicates the temperature of the Outer Jaw Seal Bar has risen to 50 degrees above the set point temperature. This alarm should only occur if a resistance temperature detector (RTD) wired to the wrong input. If this alarm does occur, all three heaters are disabled until the fault is cleared.

Vertical Seal RTD Open Fault

This alarm indicates the Allen Bradley RTD Input Card has sensed the RTD is not present or has failed for the Vertical Seal. Replace the RTD if necessary. If this alarm does occur, all three heaters are disabled until the fault is cleared.

Inner Jaw Seal RTD Open Fault

This alarm indicates the Allen Bradley RTD Input Card has sensed the RTD is not present or has failed for the Inner Jaw Seal. Replace the RTD if necessary. If this alarm does occur, all three heaters are disabled until the fault is cleared.

Outer Jaw Seal RTD Open Fault

This alarm indicates the Allen Bradley RTD Input Card has sensed the RTD is not present or has failed for the Outer Jaw Seal. Replace the RTD if necessary. If this alarm does occur, all three heaters are disabled until the fault is cleared.

Unwind Film Fault – the Dancer Did Not Move

This alarm indicated that a Film feed occurred but there was no change in the dancer position. Verify the Film is fed correctly in the machine. This could also indicate that the Ultra-Sonic switch for the Dancer position has failed.

Slurry Dispenser Not Ready Activate a Valid Program on the Slurry Dispenser

This alarm indicates that the Ready signal is not present from the Slurry Dispenser. Go to the Slurry Dispenser and activate a valid program. This Alarm will only occur if the Slurry Dispenser is turned on in Configuration Page 1 (Figure 12) and the machine is placed into Full Bag Mode.

Slurry Dispenser Faulted

This alarm indicates that the Fault signal is present from the Slurry Dispenser. Please refer to the Slurry Dispenser documentation to reset. This Alarm will only occur if the Slurry Dispenser is turned on in Configuration Page 1 (Figure 12) and the machine is placed into Full Bag Mode.

AMCI Stepper Card Command Fault

This alarm indicates that an illegal command has been sent to the AMCI stepper control card from the PLC. Turning the Empty/Full Bag Mode selector switch into the Standby position will reset this alarm.

Film Feed on Too Long Fault

This alarm indicates that a film feed is occurring and the registration mark has not been detected by the photoelectric switch in the proper amount of time. Verify that the photoelectric switch is functioning properly or is out of adjustment. This alarm can only occur when the Printed Film Mode is ON.

Plugged Funnel Fault

This alarm indicates that the Product Present Photo Eye switch has been blocked for a longer amount of time that was entered on Configuration Page 11 (Figure 22).

The entire product must be removed from the funnel and horn before the machine may operate again.

This page has been left blank intentionally

Chapter 11: Troubleshooting



11.1. POWER ON CHECKS

Programmable Logic Controller (PLC) Checks

When you turn on the electrical power to the machine, two green status lights should illuminate on PLC.

1. The PWR (power) light should turn on immediately. If not, check the following:

    - Check for 24VDC across PLC power input terminals +24V and COM. If power is present, then the PLC most likely has failed.

    - If there is no power across +24V and COM, check the input voltage to fuses F12 and F13. If 240VAC is present across F12 and F13, check the output of F12 and then F13 to ground. Replace the fuse(s) if either measurement reads 0VAC.

    - If there is no input voltage to F12 or F13, check the input and output voltage at F9 and F10. There should be 240VAC across the fuses and 115VAC to ground per leg. Replace the fuse(s) if necessary.

2. The Run light also flashes at the moment that the machine is turned on. However, it should flash for approximately 3 seconds, and then show as a steady light. The control is loading the program from the Memory Module. If it fails to go to a steady light condition or fails to illuminate, the PLC must be replaced with a factory pre-programmed unit.

HMISTU855 Operator Interface Checks

When you turn on the electrical power to the machine, the HMISTU855 screen will illuminate and go through a boot-up procedure. After the boot procedure is complete, the run screen will be displayed.

If the HMISTU855 displays “Failed to open connection to PLC.” communication with the micro-controller has failed”, verify the communication cable between the HMISTU855 and micro-controller is plugged in on both ends.

11.2. TROUBLESHOOTING

Film Will Not Advance

1. Do the belts move?
   - Yes, continue with this section.
   - No, see '**Film Belts Will Not Index**' section below.
2. Check that there is a vacuum reading on the display (12~14 inHg).
3. Check that the belt is not pushed against the horn.
4. Make sure that the horn or film is not wet.
5. Check that the films unwind motor is working.
6. Check that the input horn roller is not rubbing on the horn.
7. Check that the film is correctly fed through the machine.
8. Check to see if the 'E-Stop' switch is pulled out.
9. Check that the front and side doors are closed.
10. Check that there is nothing but green lights on the 'E-Stop' and front and side door monitor modules, and that the servo amplifier displays 'Run' not 'Flt'.
11. Check that the 'Clean Out' switch is in the 'OFF' position (I: 2/7 off).

Jaw Will Not Close

1. Check to see if the 'E-Stop' switch is pulled out.
2. Check that the front and side doors are closed.
3. Check that the air is 'ON'.
4. Check that the jaw open switch is made (I: 0/5 on).
5. Check that the Empty Bag/Standby/Full Bag selector switch is working correctly. Check that (I: 0/3) is on when empty bag is selected and (I: 0/4) is on when full bag is selected. Verify that neither input is on when standby is selected.
6. Check that the 'Run/Program' key switch is in the 'Run' position. (I: 0/15) should be on.
7. Turn the key switch to 'PGM' (program) and select 'Maintenance' (refer to Figure 3). Select the Maintenance Page 2 screen. Press the 'Jaw Open' switch to activate the jaw.
8. Press the 'Jaw Open' switch to de-activate the jaw.
9. Check that the lights on the output card in Slot 4 (O: 0/0) and relay R0 change state when manual cycling the jaw.

10. Check the 24VAC supply (wires 23A~12).
11. Check the 24VDC power supply (wires 241~240).

Tracking Motor Will Not Move

1. Check that the ‘Left’ tracking pushbutton brings on input (I: 2/5) when depressed. Check that the ‘Right’ tracking pushbutton brings on input (I: 2/6) when depressed.
2. Check that when the ‘Left’ tracking pushbutton is depressed that output (O: 7/3) flashes. This output pulses SSR703 which enables the linear actuator to move to the left incrementally. If the motor does not move, it is possible that the internal limit has been reached. Try the ‘Right’ tracking pushbutton to see if the motor will move to the right.
3. Check that when the ‘Right’ tracking pushbutton is depressed that output (O: 7/3) flashes and that output (O: 3/12) is on and Relay 16 is energized. Output (O: 7/3) pulses SSR703 which enables the linear actuator to move and output (O: 3/12) reverses the direction of the motor to the right. If the motor does not move, it is possible that the internal limit has been reached. Try the ‘Left’ tracking pushbutton to see if the motor will move to the right.
4. If while depressing either the ‘Left’ or ‘Right’ tracking pushbuttons and the motor is inoperable, check the motor circuit wiring first. Replace SSR703 if output (O: 7/03) is flashing but there is no output from SSR703 to the motor. Replace Relay 16 if output (O: 3/12) is on but the relay has failed to energize.

Banner Switch or Photo Eyes



1. On the banner amp, check that the red signal light is ‘ON’ and the red load
   light is ‘OFF’. Check connections to the emitter switch and the emitter switch on the funnel. Check connections to the receiver switch
2. Check for a plugged funnel alarm on the display with no chicken. Clean materials from receiver and emitter eyes and refer back to #1
3. Check dip switches on banner amp; if amp has been changed, all dip switches should be ‘ON’, except #4

Relay 15 Machine Ready Handshake Inoperable

1. Check that the selector switch is in full bag mode, and the gas purge has timed out (15~20 sec) or ‘Clean Out’ has been selected.
2. Check to see if the ‘E-Stop’ switch is pulled out.
3. Check that the front and side doors are closed and the door module lights are all green.
4. Check that the output (O: 3/15) is on.

Heaters Inoperable



1. Check the following outputs on PLC. Output (O: 0/2) vertical seal bar heater; output (O: 0/3) inner jaw seal heater; output (O: 0/4) outer jaw seal heater. All three outputs should be flashing on occasion.
2. Check that the energized LED on the heater SSR's are flashing as well (SSR1 vertical seal bar; SSR2 inner jaw seal heater; SSR3 outer jaw seal heater).
3. Check that there is an AC voltage coming out of the SSRs when their energized LED is lit. If there is no output voltage out of any given SSR, check the corresponding fuse (F3&F4 vertical seal bar heater; F5&F6 inner jaw seal heater; F7&F8 outer jaw seal heater). Replace fuse(s) as necessary.
4. Check the temperature data display on the HMI. If the data displays read only ambient temperature, check if there is a RTD alarm fault on the 'Alarm Active' page.
5. Ensure that the 1769-IR6 Resistance Input Module status 'OK' green-light is 'ON'.
6. Check that each heater cartridge is pulling between 5 and 10 amps (it may necessary to cool down the heater elements before checking the current draw. This is to ensure that the SSR's are on100% duty cycle.
7. Remove the power from each heater element. Disconnect the heater cartridge leads from their terminals. Using an ohm meter, measure the resistance between the black wires of each heater and then one black lead to the grounding conductor. The vertical seal bar heater cartridge should measure approximately 53Ω across the black conductors and ∞across each of the black conductors and the grounding conductor. The inner and outer jaw seal heater cartridges should measure around 65Ω across the black conductors and ∞across each black conductor and the grounding conductor.

Front Doors are closed, but Alarm on the Display Does Not Go Away

1. Ensure that the machine is in ‘Standby’ mode.
2. Check that the right door brings on the output and input 2 green lights on the door module.
3. Check that the left door brings on the output and input 1 green light on the door module.
4. Check that there is not a fault light on the module. Check if there is a blinking light. The input 2 light means that the right door switch is not working correctly. Check the switch orientation. The input 1 light means that the left door switch is not working correctly. Check the switch orientation.
5. If fault light is blinking, one or both switches are bad
6. With both doors closed, check the door module. If the output light is out and the rest of the lights are on or output light is blinking, verify that the dip switches are all ‘ON’.

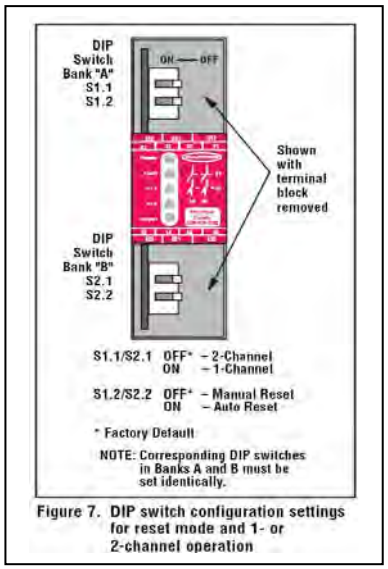


Figure 7. DIP switch configuration settings for reset mode and 1- or 2-channel operation

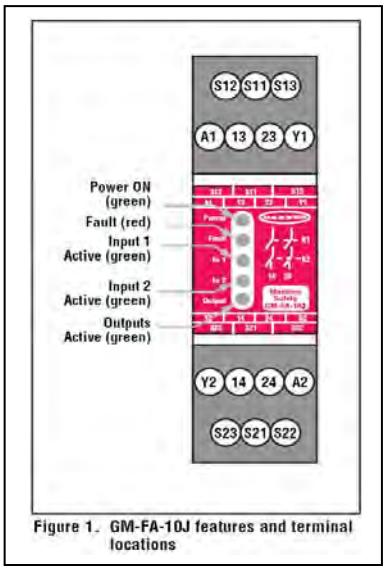


Figure 1. GM-FA-10J features and terminal locations

Side Doors are closed, but Alarm on the Display Does Not Go Away

Repeat Steps 1-6 as stated for the front door but for the side doors listed above.

'E-Stop' Fault

1. Ensure that the 'E-Stop' switch is pulled out to its default position.
2. Check that the Safety Module Power ON indicator is lit.
3. Verify that the PLC input (I: 0/0) is on.
4. Ensure that all three green LED's of the Safety Module are on.
   - Power ON
   - K1 energized
   - K2 energized

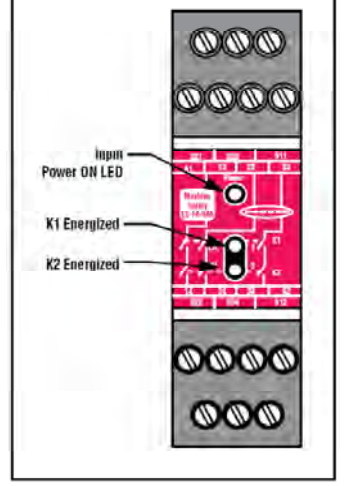


Figure 1. ES-FA-9AA status indicators

Vacuum Pump Will Not Run

1. Ensure that the 'E-Stop' switch is pulled out to its default position.
2. Check to see if there are any active alarms, specifically 'Low Vacuum' or 'Vacuum Pump Motor Starter Not On'. Check if the Vacuum Pump motor starter overload is tripped. Reset the overload by depressing the reset button as shown in the picture.
3. Check PLC output (O: 3/10) and relay R10 on the PCB relay board. They both should be 'ON'. Check the fuse on R10 by pulling the fuse out and checking continuity with an ohm meter. Replace the fuse if necessary.
4. With the power 'OFF', check to see if the pump fan will turn freely; if not, check the pump vanes.
5. Check the branch protection fuses F23, F24 and F25. Replace fuse(s) if necessary.



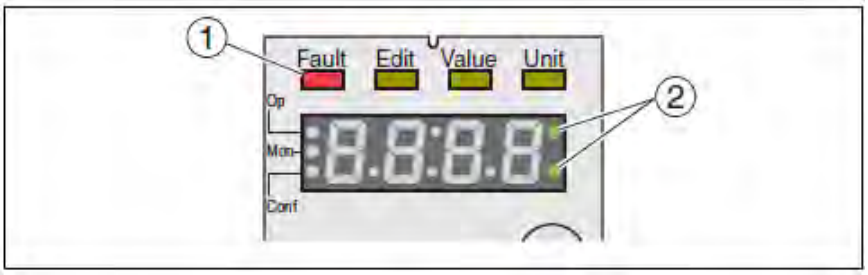
None of the Air Solenoids Will Work

1. Check to see if there is sufficient air pressure at the FRL.
2. Verify that there is 24VAC across wire numbers 23A and 12. If there is no voltage, check the status of the Safety Modules.
3. Check the voltage across wire numbers 23 and 12. If 24VAC is not present, check the voltage at the input and output of fuse F11. If there is 24VAC present on the input side but not the output side of fuse F11, replace the fuse.
4. Ensure that the 'E-Stop" switch is pulled out to its default position.

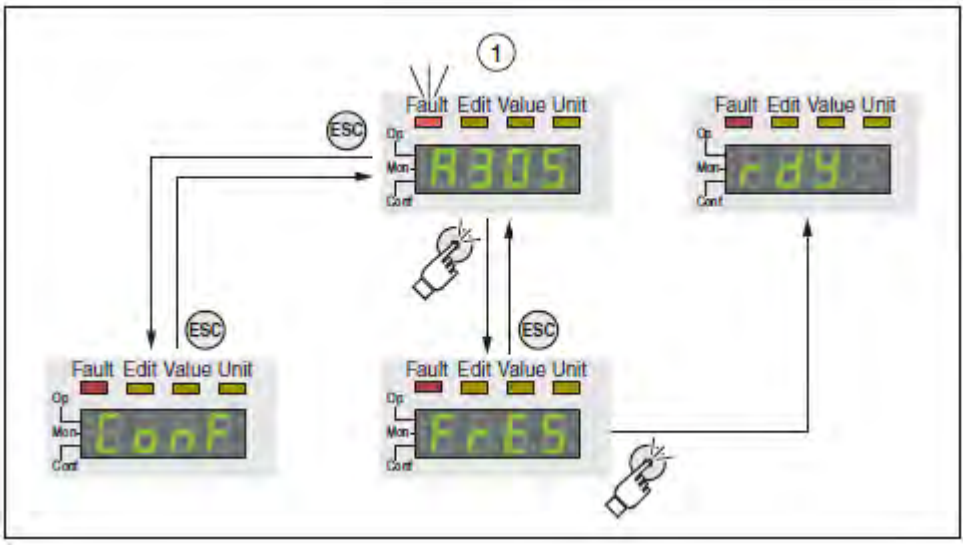
Film Belts will not Index



1. Remove power from the machine. Verify that the belts move freely. If the belts do not move freely the servo motor may be at fault or there is an issue with the gear reduction assembly.
2. Verify that there are no active faults that relate to the Stepper Module or Servo Motor.
3. Check for a fault on the AMCI 3601 Stepper Module located in Slot 1 next to the PLC base unit.
4. Verify that the Module power LED is on.
5. Check the status of the *Axis OK* and *Axis Error LED.*
    - Alternating Blinking Green & Red: Module failed power up diagnostics
    - Blinking Together Green & Red: Communications lost between the 3601's CPU and the backplane ASIC.
6. Check the status of the *Axis OK LED* only.
    - Solid Green: Module OK, no motion in progress.
    - Blinking Green: Module OK, motion occurring or Encoder Follower Mode is enabled.
7. Check the status of the *Axis Err LED* only.
    - Solid Red: Communication between module and PLC interrupted
    - Blinking Red: Configuration Error, Command Error, Input Error, Home Invalid Error, or an Invalid Profile Error.
8. Check for a fault on the Schneider LXM32C Servo Motor Amplifier.



9. If there are warnings, the two dots to the right of the 7-segment display (2) flash.
10. If the *Fault* (1) indicator is lit the drive is in an operating state fault. When an operating fault occurs, either a *Stop* or *Flt* and the error code will alternately be displayed.



11. To acknowledge the error, follow the pictorial above. Press the navigation button. The 7 segment display shows *FrES.* Press the navigation button to acknowledge the error. The servo amplifier will switch to operating state 4 Ready to Switch On.
12. To clear the error, depress the ‘E-Stop” switch. Pull out the ‘E-Stop’ switch to its default position. The servo amplifier should reset and the 7-segment display shows *run.*

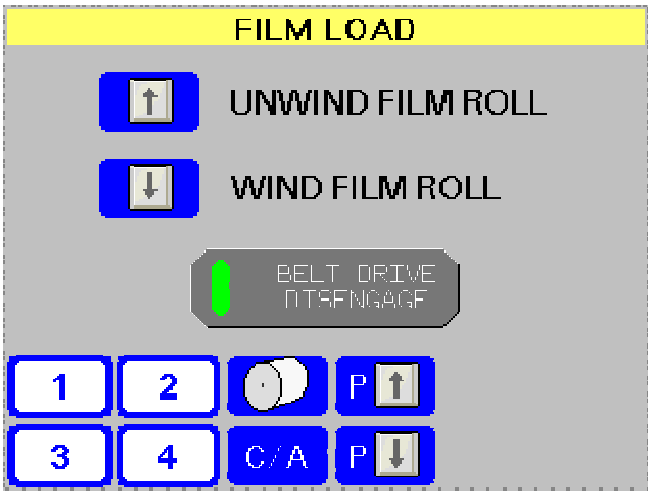


Figure 41

13. If the servo amplifier faults immediately disengage the belt advance mechanism from the forming horn. This is done by pressing the *Load Film* button on the *Run* page (Figure 2) and then pressing the *Belt Drive Disengage* button (Figure 41). After the belt mechanism is disengaged, repeat Step 12.

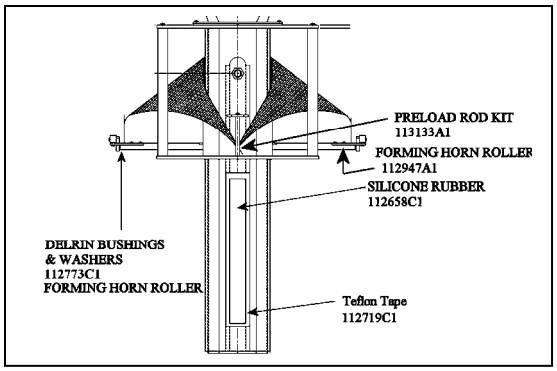
14. If the servo amplifier faults immediately, there is an issue with the servo motor, cable assemblies, servo amplifier or a parameter(s) in the recipe file. Record the error displayed on the servo amplifier and contact M-Tek Service Department for assistance.

Unsatisfactory Horizontal Seals

1. Check the temperature on all heater cartridges.
2. Check seal duration (Figure 27).
3. Check air pressure on the display (regulator should be set for 80 psi).
4. Check for oil in the FRL.
5. Check seal bar alignment.
6. Check that the bag size is not too small and hitting product.
7. Check that the cross seal support tie rods are tight.
8. Check that the coupling block for the main cylinder is not loose.
9. Check that the jaw springs (inner and outer) are not broken and move when closed.
10. Check that the spring is adjusted with bulletin number B82 (see index for page number).
11. Check that the pinch bar rubber is good (not packed in and moves freely).
12. Check that the jaw close sensor is set correctly.
13. Check that the seal bars are clean.
14. Check that the seal bar insulating washers are installed correctly.
15. Check the main cylinder for air leaking through internally / externally and acting evenly
16. Check that jaw close shock absorbers are installed correctly and function evenly.
17. Check that the knife cylinder is not leaking air around the cylinder shaft and cooling the seal bars. (This usually shows up as sealed on one edge of the bag and open on the other).

Unsatisfactory Vertical Seals

1. Check temperature readout on screen. Make sure it is not too hot or cold.
2. Make sure that the heater cartridge is locked in and not moving or loose.
3. Make sure that the RTD is in the seal bar all the way with set screws lightly holding it in place.
4. Check air pressure on the display (regulator should be set for 80 psi).
5. Check that the bar is clean and replace tape if necessary.
6. Check vertical seal duration (Figure 28).
7. Check horn deviation.
8. Check that the preload rod is not broken or has broken bolts.



9. Check the horn rubber; make sure it is smooth and not broken or stretched.
10. Check that the horn rubber is taped.
11. Check that the air going to the seal bar is correct and tube is not damaged.
12. Check that the clearance between the seal bar and the horn is correct when the bar is all the way out.
13. Check that the vertical cylinder is not leaking internally or externally.
14. Check that the horn is clean on the bottom between the inner and outer tubes to allow the excess gas to escape out of the bag.
15. Check that the film stops moving before the vertical seal bar starts to seal.
16. Check that the CO_2 flow is correct and not freezing the tube or backup rubber.
17. If the vertical seal bar will not move check the following:
    - Turn the key switch to ‘PGM’ (program) and select, ‘MAINTENANCE PAGE 2’ (Figure 9). Press the VERTSEAL button to energize the vertical seal air solenoid.
    - Check that PLC output (O: 3/2) is on and that the R2 LED on the Relay PCB is lit.
    - Using a volt meter check that there is 24VAC present across the solenoid valve. If no voltage is present, remove the fuse from R2 and check it with an ohm meter.
    - Press the VERTSEAL button to de-energize the vertical seal air solenoid.

Analog Proximity Dancer Sensor

1. If the analog dancer proximity sensor fails, the film unwind motor will run all the time
2. If the dancer is not responding correctly:
   - Check dancer information by turning the key switch to 'PGM' (program) and select, 'Film Roll Information Page 1'.
   - The dancer measured analog value with the dancer in its lowest position is approximately 700.
   - The dancer measured analog value with the dancer all the way up to the locking detent is approximately 17000.
3. If dancer read out is not correct, check the gap between the analog proximity sensor face and the dancer plate. This gap should be as small as possible without the face of the sensor touching the plate (0.010"). If the range of the proximity sensor cannot be achieved after adjusting the sensor, replace the sensor.

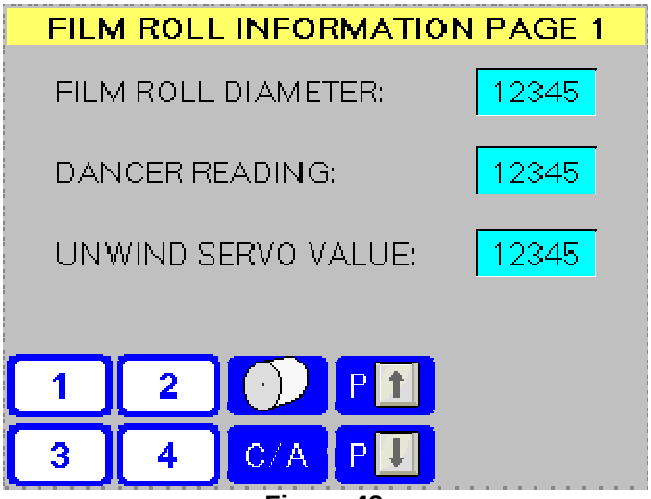


Figure 42

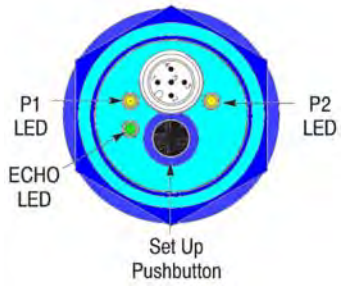
Ultrasonic Sensor

Film Roll Sensor

1. If the unwind motor turns too slow with a roll less than full, check for water on top of the sensor.
2. If the unwind motor response is too slow, check for worn shaft keys on the unwind motor shaft.
3. Check dancer information for calibration by turning the key switch to 'PGM' (program) and select, 'Film Roll Information Page 1'.
   - Film read out for full roll of film should be 9500~10000
   - Film read out for empty roll of film should be 6~12

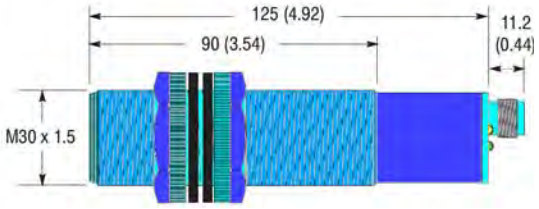
4. If film read out is not correct, calibrate the sensor.

Connector View



Dimensions—mm (inches)

1500mm



11.3 FAULT CODES



To clear a fault, press the 'Stop' key, cycle power or set A100 [Fault Clear] to 1 or 2.

No.	Fault	Description
F2	Auxiliary Input *	Check remote wiring.
F3	Power Loss	Monitor the incoming AC line for low voltage or line power interruption.
F4	Under Voltage *	Monitor the incoming AC line for low voltage or line power interruption.
F5	Over Voltage *	Monitor the AC line for high line voltage or transient conditions. Bus over voltage can also be caused by motor regeneration. Extend the decal time or install dynamic brake option.
F6	Motor Stalled *	Increase [Accel Time x] or reduce load so drive output current does not exceed the current set by parameter A089 [Current Limit].
F7	Motor Overload *	An excessive motor load exists. Reduce load so drive output current does not exceed the current set by parameter P033 [Motor OL Current].
F8	Heatsink OvrTmp *	Check for blocked or dirty heat sink fins. Verify that ambient temperature has not exceeded 40ºC (104ºF) for IP 30/NEMA 1/UL Type 1 installations or 50ºC (122ºF) for Open type installations. Check fan.

No.	Fault	Description
F12	HW OverCurrent *	Check programming. Check for excess load, improper DC boost setting, DC brake volts set too high or other causes of excess current.
F13	Ground Fault	Check the motor and external wiring to the drive output terminals for a grounded condition.
F33	Auto Rstrt Tries	Correct the cause of the fault and manually clear.
F38	Phase U to Gnd	Check the wiring between the drive and motor. Check motor for grounded phase. Replace drive if fault cannot be cleared.
F39	Phase V to Gnd	
F40	Phase W to Gnd	
F41	Phase UV Short	Check the motor and drive output terminal wiring for a shorted condition. Replace drive if fault cannot be cleared.
F42	Phase UW Short	
F43	Phase VW Short	
F48	Params Defaulted	The drive was commanded to write default values to EEPROM. Clear the fault or cycle power to the drive. Program the drive parameters as needed.
F63	SW OverCurrent *	Check load requirements and A098 [SW Current Trip] setting.
F64	Drive Overload	Reduce load or extend Accel Time.
F70	Power Unit	Cycle power. Replace drive if fault cannot be cleared.
F71	Net Loss	The communication network has faulted.
F81	Comm Loss	If adapter was not intentionally disconnected, check wiring to the port. Replace wiring, port expander, adapters or complete drive as required. Check connection. An adapter was intentionally disconnected. Turn off using A105 [Comm Loss Action].
F100	Parameter Checksum	Restore factory defaults.
F122	I/O Board Fail	Cycle power. Replace drive if fault cannot be cleared.
* Auto-Reset/Run type fault. Configure with parameters A092 and A093.		

11.3. KNIFE PROBLEMS / SERVICE

Knife Does Not Cut the Bag

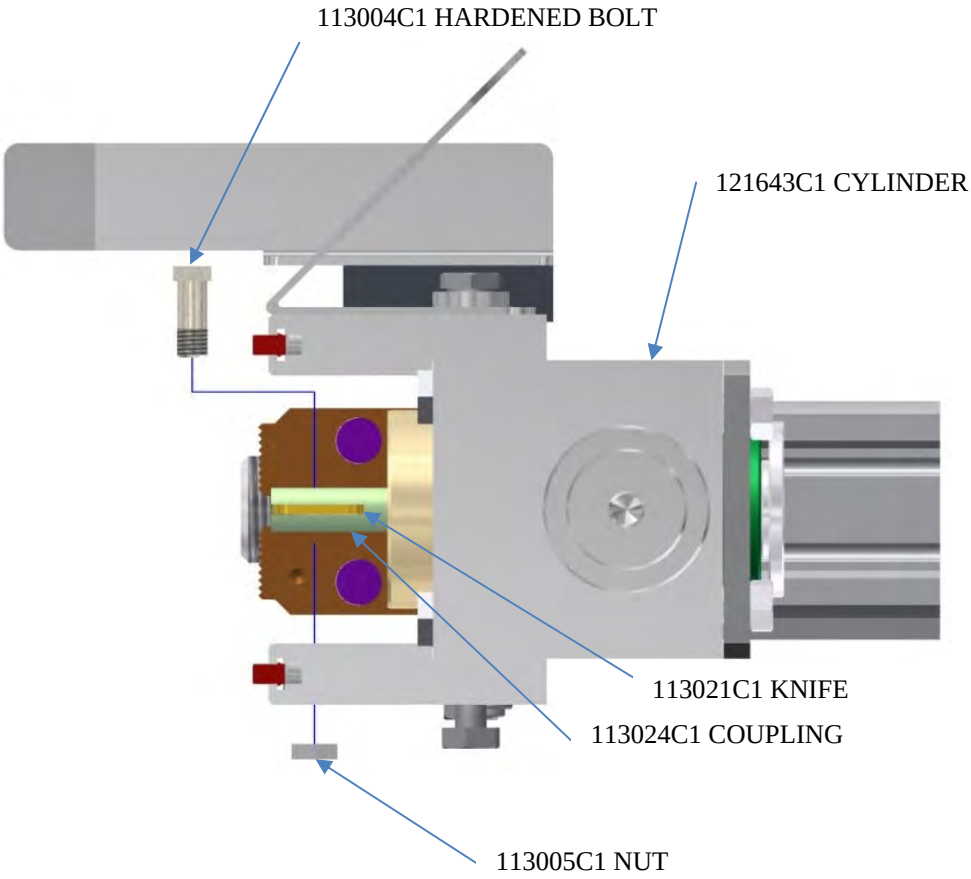
1. Check that the jaw close proximity switch is made.
2. With the air 'OFF', check that the knife can move back and forth freely.
3. Check that the knife moves from the screen by turning the key switch to 'PGM' (program) and select, 'Maintenance'. Select page 2.
4. Check that the output module Slot 3, (O: 3/1) is 'ON'. Check R1 light is lit and the fuse is good.
5. Activate the 'Manual' button on the knife SOL-2 MAC valve to move the knife
6. Check in configuration that the knife delay is not set too long or knife is turned off in maintenance.
7. Clean the blade or replace if necessary.

Knife Keeps Breaking

1. If knife is breaking on one side or hitting back of seal bar, check for wrong cylinders.
2. If knife is breaking in the middle and hitting product, bag needs to be lengthened.
3. Check to see if the cylinders are tight.

For Optimum Knife Service Life

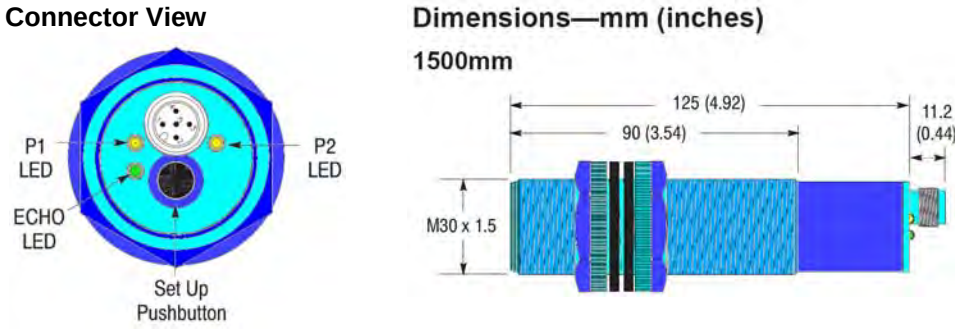
1. Install the knife with the beveled side down and the flat side facing upward
2. Install the correct knife bolts from the top with the nuts on the bottom
3. Use only the hardware provided with the knife; do not substitute with other fasteners
4. Remove any debris that may have collected in the knife slot in both seal bars
5. Assure that the jam nuts for the knife couplings are properly positioned on the knife cylinder shafts (nuts are bottomed on the shafts minus a half turn)
6. Assure the couplings are fully tightened against the jam nuts. The front faces of the couplings should be flush with or behind the sealing face of the seal bar when the knife cylinders are retracted (see illustration below)
7. so that it can expand as it is heated by the seal bar
8. Remove and clean the knife at regular intervals to prolong cutting life
9. If the thread-locker on the knife bolts wears off, replenish with removable thread-locker such as Loctite 242 or Vibratite VC3 or use fresh knife mounting bolts, ordered from M-TEK, Inc.


113004C1 HARDENED BOLT
121643C1 CYLINDER
113021C1 KNIFE
113024C1 COUPLING
113005C1 NUT

11.4. B79 PROGRAMMING 873P PROGRAMMABLE ULTRASONIC SENSORS

These sensors will require programming using the push button at the rear of the sensor.

- Set point P1 indicator is the yellow P1 LED
- Set point P2 indicator is the yellow P2 LED
- Echo/Alignment indicator is the green LED and indicates that the sensor is receiving the proper signal from a target



- Set point (P1) corresponds to the 0V DC or 4 ma analog output for Pin 5
- Set point (P2) corresponds to the 10V DC or 20 ma analog output for Pin 5
- The analog output can be programmed P1 will be farther from the sensor than set point P2 and P2 will be closer to the sensor than set point P1

Set Point (P1)

1. Place the target at the P1 position
2. To set P1, depress the pushbutton until the P1 and green echo LEDs are blinking simultaneously and then release the button
3. Insure target position and depress the push button and release to program the P1 switch point. After releasing the button, the P1 LED should be solid yellow

Set Point (P2)

1. Place the target at the P2 position
2. To set P2, depress the pushbutton until the P2 and green echo LEDs are blinking alternately and then release the button
   NOTE: the P1 and green echo LED will start blinking first and then the P2 and green echo LED will start blinking
3. Depress the pushbutton to program the P2 switch point, then release the pushbutton to end the P2 programming mode

Notes

- You have approximately 1-minute to set either P1 or P2 once you are in the programming mode. After 1-minute, the sensor will exit the programming mode

- After the set points have been programmed into the sensor, they are stored in the sensor memory (EEPROM). Loss of power will NOT cause the sensor to lose these set points

- To change the set point distances after they have been programmed requires reprogramming the sensor. Reprogramming each set point can be done independent of the other

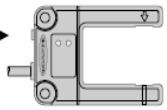
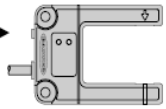
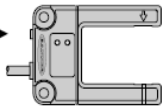
- The set points can be programmed in any order

- Roll sensor P1 to be programmed with empty cardboard core, then P2 with full diameter roll

- Dancer P1 should be approximately 2.5” from bottom of the slot and P2 13.5” from the bottom of the slot

11.5. B80 BANNER SLE30 SLOT SENSOR TEACHING

113008C1

Push Button		Resulting Indicator Status
Press and hold until the bi-color (green/red) indicator begins to flash red, or turns OFF	**Push and Hold ≥ 2 Seconds** 	Yellow: ON Red: Pulses to indicate relative received signal strength
TEACH Condition #1 (Output ON state). Put the film mark over the sensor and push a single click	**Single-Click**  **Sensing Condition #1 (Output ON State)**	Yellow: ON Red: Pulses to indicate relative received signal strength
TEACH Condition #2 (Output OFF state). Put the clear film over the sensor and push a single click	**Single-Click**  **Sensing Condition #2 (Output OFF State)**	If contrast in acceptable, the sensor returns to RUN mode; otherwise it will return to TEACH Condition #1. Green: ON (or flashes if signal is close to the switching threshold). Yellow: OFF, until the sensing condition changes

Note:

The sensor will return to RUN mode if the first TEACH condition is not registered within 90 seconds. TEACH mode may be cancelled before either condition #1 or #2 by holding the push button depressed for ≥2 seconds.

Clicks are meant to be pressed firmly then quickly released. Indicators go ON or OFF after a brief delay; do not wait until LEDs change status before releasing push button. (If push button is pressed for 2 seconds or longer, sensor will automatically return to RUN mode.)

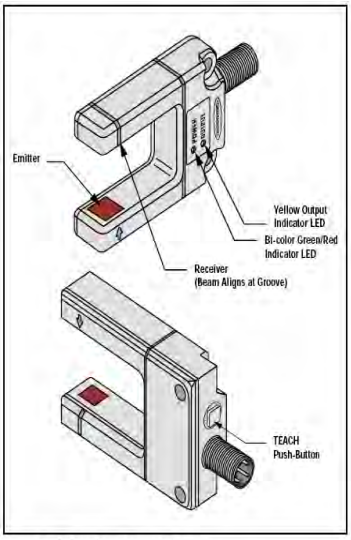
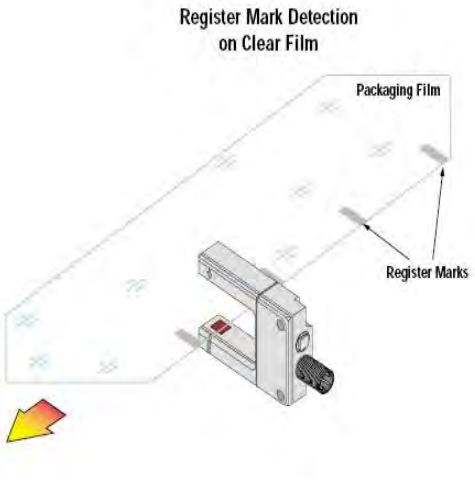


Figure 1. SLE30 *Expert* Series features



11.6. B88 V45 SAFETY INFORMATION: CLEARING THE JAWS OF THE MACHINE

Warnin!

Do not perform any maintenance, adjustments, repairs, etc. on this machine without first disconnecting all energy sources (electricity, compressed air and/or gas) to protect yourself from injury. Be sure to follow all manufacturers' safety instructions for any tools you will be using.

Caution!

At no time should anything be put in the jaw area when the machine is in "FULL BAG" mode, except film.

1. Put the machine in standby, **"STBY"** and wait at least 60 seconds for all machine operation to stop.

DO NOT HIT THE "E" STOP BUTTON.



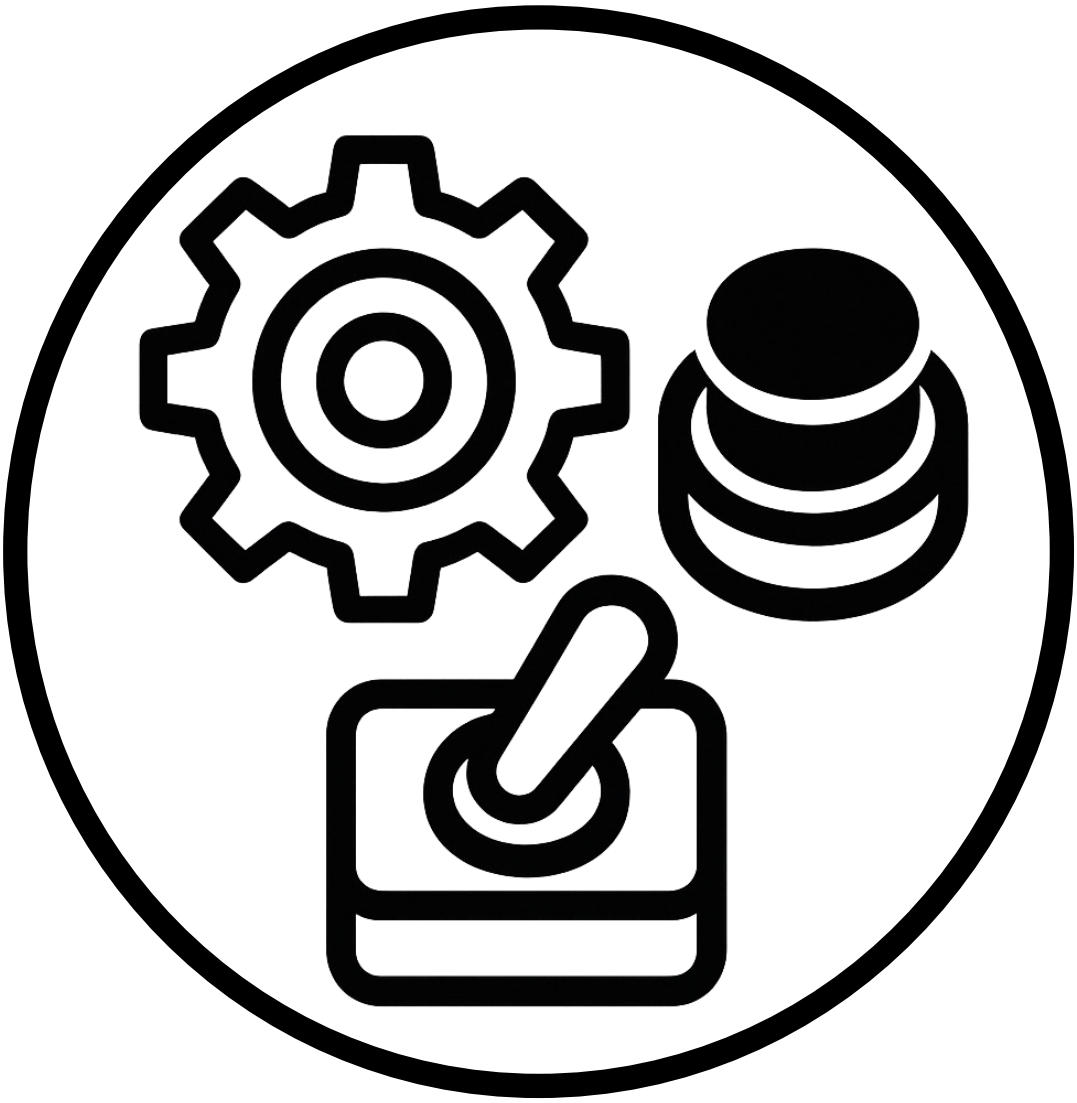
2. Open both front doors. This will remove the run capability of the jaw.

3. Clear the problem from the jaw; close the doors. Push and pull the “E” stop button if necessary. This will advance the film and make a vertical seal on the bag. Repeat the operation again if necessary.

4. Activate the **“EMPTY BAG SWITCH”** one time and return the switch to standby, **“STBY”** and then remove the empty bag. Repeat the operation again if necessary.

5. When finished, return the machine to normal operation.

Chapter 12: Spare Parts, Switches/Pushbuttons



START-UP SPARE PARTS LIST

Quantity	M-TEK Part #	Description
1	71103401	RELAY, 2 POLE, 24VAC
1	71500401	FAN, ROUND 6.75 24VDC
1	72105201	PUMP, 10 CFM, OILLESS DRY VANE
2	110254C1	VACUUM DRIVE BELT
1	110324C1	RELAY, SOLID STATE, 24VAC 3A
1	110505C1	RELAY, SOLID STATE, 480VAC 10A
1	110865C1	SWITCH, MAGNET STYLE, 30mm BARREL, SAFETY INTERLOCK
1	110867C1	GATE MONITORING SAFETY MODULE
1	111068C1	INTEGRAL WORM GEARED MOTOR 1/3HP, 230V, 3PH, 60HZ 26:1 RATIO, OUTPUT SPEED 65RPM
1	112500C1	SENSOR, ULTRASONIC
1	112592C1	MOTOR CONTROL, 440VAC 3 PH,. 1HP
1	112641C1	SHOCK ABSORBER, 1-12 UNF
1	112658C1	FORMING HORN RUBBER 1/8 THK
1	112685C1	PLASTIC FLAP, CROSS SEAL BAG COMPRESSOR SILICONE RUBBER CARRIER
1	112704C1	CROSS SEAL PINCH RUBBER
2	112860C1	CROSS SEAL BAG CUSHION, V32 BAG COMPRESSOR
2	112966C1	CARTRIDGE HEATER V32 CROSS SEA
2	113004C1	PLOW BOLT, HEX HEAD, CUSTOM
2	113005C1	NUT, CUSTOM, 1/4-28 X .125
1	113021C1	KNIFE CUTOFF V32 2X2 SEAL BAR
1	114224C1	VALVE SOLENOID 4-WAY
1	114369C1	BRUSH
1	114711C1	CARTRIDGE HEATER -CABLE-CONNECTOR SPECIFICATION
1	120296C1	RTD 3"LONG, M8 CONNECTOR
1	120498C1	SCHNEIDER INDUCTIVE PROXIMITY SWITCH
1	120600C1	SILICONE O- RING, AS568A DASH NUMBER 420, PACKS OF 5
1	120962C1	D8 LOWER BOOT AND TIES (SET OF 2)
1	121308C1	COLORWISE, SR, SINGLE CH., M12
1	121628C1	MOTOR, 100MM PI54 KEY ENCODER, SINGLE 16 ANG
12	121635C1	SEAL BAR INSULATOR BARREL JAW - L.H./R.H.
1	121643C1	FLAT CYLINDER, 32MM BORE, 22MM STK, 45.6MM EXT, S/S
1	130630C1	112513C2 CYLINDER, REPAIR KIT

SELECTOR SWITCHES / PUSHBUTTON PARTS LIST

Quantity	*M-TEK Part #*	*Description*
		Empty Bag / Standby / Full Bag Selector Switch
1	71105702	SWITCH, SELECTOR, 3-POSITION MAINTAINED, BLACK, NON-ILLUMINATED
2	71105802	CONTACT BLOCK, 22MM 1 NC/ 1 NO
1	112208C1	EMPTY BAG / STANDBY / FULL BAG SIGN
1	71106102	MOUNTING COLLAR; PUSH BUTTON, ACCESSORIES, 22MM
		Standby/Run Pilot Light
1	71105302	PUSH BUTTON MOMENTARY, EXTENDED, GREEN
1	71104403	LIGHT MODULE LED GREEN, MOUNTING COLLAR, 24VAC/24VDC
1	112209C1	STANDBY/RUN PILOT SIGN
		Internal/External Sync Selector Switch
1	71105602	SWITCH, SELECTOR, 2-POSITION MAINTAINED, BLACK, NON-ILLUMINATED
1	71105802	CONTACT BLOCK, 22MM 1 NC/ 1 NO
1	112959C1	INTERNAL/EXTERNAL SYNC SELECTOR SIGN
1	71106102	MOUNTING COLLAR; PUSH BUTTON, ACCESSORIES, 22MM
		Track Left Right Pushbuttons
1	112211C1	TRACK LEFT (ARROW) PLATE FOR 22.5MM KNOCKOUT
1	71105802	CONTACT BLOCK, 22MM 1 NC/ 1 NO
1	71105502	PUSH BUTTON MOMENTARY, EXTENDED, AMBER
1	71104404	LIGHT MODULE LED WHITE, MOUNTING COLLAR, 24VAC/24VDC
		Track Right Pushbuttons
1	112212C1	TRACK RIGHT (ARROW) PLATE FOR 22.5MM KNOCKOUT
1	71105802	CONTACT BLOCK, 22MM 1 NC/ 1 NO
1	71105502	PUSH BUTTON MOMENTARY, EXTENDED, AMBER
1	71104404	LIGHT MODULE LED WHITE, MOUNTING COLLAR, 24VAC/24VDC
		Cleaning Mode On/Off Selector Switch
1	71105602	SWITCH, SELECTOR, 2-POSITION MAINTAINED, BLACK, NON-ILLUMINATED
1	71105802	CONTACT BLOCK, 22MM 1 NC/ 1 NO
1	112960C1	CLEANING MODE ON/OFF SELECTOR SIGN
1	71106102	MOUNTING COLLAR; PUSH BUTTON, ACCESSORIES, 22MM

SELECTOR SWITCHES / PUSHBUTTON PARTS LIST

Quantity	*M-TEK Part #*	*Description*
		Run/Program Selector Switch
1	71109202	KEY SWITCH, 2-POSITION MAINTAINED, BLACK, KEY (NO. 3825)
1	71105802	CONTACT BLOCK, 22MM 1 NC/ 1 NO
1	112214C1	RUN/PROGRAM SELECTOR SIGN
1	71106102	MOUNTING COLLAR; PUSH BUTTON, ACCESSORIES, 22MM
		Emergency Stop Pushbutton
1	71105402	SWITCH, EMERGENCY STOP, MAINTAINED, RED
2	71106102	CONTACT BLOCK, 22MM 1 NC/ 1 NO
1	71104402	LIGHT MODULE LED RED, MOUNTING COLLAR, 24VAC/24VDC
		Off/On Rotary Disconnect Switch
1	113562A1	BUSSMAN DISCONNECT SWITCH AND HANDLE ASSEMBLY
		Wind Film Roll Switch
1	121764C1	WIND LEGEND PLATE FOR 22.5MM KNOCKOUT
1	71105802	CONTACT BLOCK, 22MM 1 NC/ 1 NO
1	71105502	PUSH BUTTON MOMENTARY, EXTENDED, AMBER
1	71106102	MOUNTING COLLAR; PUSH BUTTON, ACCESSORIES, 22MM
		Unwind Film Roll Switch
1	121763C1	UNWIND LEGEND PLATE FOR 22.5MM KNOCKOUT
1	71105802	CONTACT BLOCK, 22MM 1 NC/ 1 NO
1	71105502	PUSH BUTTON MOMENTARY, EXTENDED, AMBER
1	71106102	MOUNTING COLLAR; PUSH BUTTON, ACCESSORIES, 22MM

Chapter 13: Bulletins



B8 GAST 23 SERIES OIL-LESS VACUUM PUMP

Part No. 70 - 290 G375PL (Rev-H)
23 Series Oil-Less Vacuum Pumps & Compressors
Operation & Maintenance Manual


Model #0523-101 Shown


Model #1023-V103 Shown


Model #1023-101Q Shown

Thank you for purchasing this Gast product. It is manufactured to the highest standards using quality materials. Please follow all recommended maintenance, operational and safety instructions and you will receive years of trouble free service.

⚠ WARNING

PLEASE READ THIS MANUAL COMPLETELY BEFORE INSTALLING AND USING THIS PRODUCT. SAVE THIS MANUAL FOR FUTURE REFERENCE AND KEEP IN THE VICINITY OF THE PRODUCT.

General information

- Clearances:
  Model 0323/0523
  Top: .0015"
  End: .0015"
  Model 0823/1023
  Tops .003"
  End : .002"
- Vane Life: 5,000-15,000 hours depending upon application
- Model numbers ending in "X" have automatic thermal protectors which protect the motor by shutting the motor off if it overheats. The motor will automatically restart once the motor has cooled.

Product Use Criteria

1. Pump only clean, dry air.
2. Operate at 32ºF - 104ºF (0ºC - 40ºC).
3. Protect unit from dirt & moisture.
4. Do not pump flammable or explosive gases or use in an atmosphere that contains such gases.
5. Protect all surrounding items from exhaust air. This exhaust air can become very hot.
6. Corrosive gases and particulate material will damage unit. Water vapor, oil-based contaminants or other liquids must be filtered out.
7. Consult your Gast Distributor before using at high altitudes.
8. Oil-Less rotary-vanes require NO lubrication.
9. Sealed bearings are grease packed.
10. Use of petroleum or hydrocarbon products will reduce carbon-vane service life.

GAST ISO 9001 & 14001 CERTIFIED
A Unit of IDEX Corporation

®Registered Trademark/™Trademark of Gast Manufacturing Inc., Copyright ©2001 Gast Manufacturing Inc. All Rights Reserved.

Your safety and the safety of others is extremely important.

We have provided many important safety messages in this manual and on your product. Always read and obey all safety messages.

This is the safety alert symbol. This symbol alerts you to hazards that can kill or hurt you and others. The safety alert symbol and the words "DANGER" and "WARNING" will precede all safety messages. These words mean:

DANGER

You will be killed or seriously injured if you don't follow instructions.

WARNING

You can be killed or seriously injured if you don't follow instructions.

All safety messages will identify the hazard, tell you how to reduce the chance of injury, and tell you what can happen if the safety instructions are not followed.

INSTALLATION

WARNING



Electrical Shock Hazard

Disconnect electrical power at the circuit breaker or fuse box before installing this product.

Install this product where it will not come into contact with water or other liquids.

Install this product where it will be weather protected.

Electrically ground this product.

Failure to follow these instructions can result in death, fire or electrical shock.

Correct installation is your responsibility. Make sure you have the proper installation conditions and that installation clearances do not block air flow.

Blocking air flow over the product in any way can cause the product to overheat.

Mounting
This product can be installed in any orientation. Mounting the product to a stable, rigid operating surface and using shock mounts will reduce noise and vibration.

Plumbing
Remove plugs from the IN and OUT ports. Connect with pipe and fittings that are the same size or larger than the product's threaded ports.

Accessories
The product's intake and exhaust filters will provide adequate filtration in most applications. Consult your Gast representative for additional filter recommendations. Install relief valves and gauges at inlet or outlet, or both, to monitor performance. Check valves are required to prevent back streaming through the pump.

Motor Control
It is your responsibility to contact a qualified electrician and assure that the electrical installation is adequate and in conformance with all national and local codes and ordinances.

Determine the correct overload setting required to protect the motor (see motor starter manufacturer's recommendations). Select fuses, motor protective switches or thermal protective switches to provide protection. Fuses act as short circuit protection for the motor, not as protection against overload. Incoming line fuses help to withstand the motor's starting current. Motor starters with thermal magnetic overload or circuit breakers protect motor from overload or reduced voltage conditions.

The wiring diagram attached to the product provides required electrical information. Check that power source is correct to properly operate the dual-voltage motor.

OPERATION

WARNING

Injury Hazard

Product surfaces become very hot during operation, allow product surfaces to cool before handling.

Air stream from product may contain solid or liquid material that can result in eye or skin damage, wear proper eye protection.

Failure to follow these instructions can result in burns, eye injury or other serious injury.

It is your responsibility to operate this product at recommended pressures or vacuum duties and room ambient temperatures.

Model numbers ending in "X" have automatic thermal protectors which protect the motor by shutting the motor off if it overheats. The motor will automatically restart once the motor has cooled.

Start Up
If motor fails to start or slows down significantly under load, shut off and disconnect from power supply. Check that the voltage is correct for motor and that motor is turning in the proper direction. Vane life will be drastically reduced if motor is not operating properly. Vanes can break or be damaged if motor/pump runs in the wrong direction.

MAINTENANCE

WARNING



Electrical Shock Hazard

Disconnect electrical power supply cord before performing maintenance on this product.

If product is hard wired into system, disconnect electrical power at the circuit breaker or fuse box before performing maintenance on this product.

Failure to follow these instructions can result in death, fire or electrical shock.

WARNING

Injury Hazard

Product surfaces become very hot during operation, allow product surfaces to cool before handling.

Air stream from product may contain solid or liquid material that can result in eye or skin damage, wear proper eye protection.

Flush this product in a well ventilated area.

Failure to follow these instructions can result in burns, eye injury or other serious injury.

It is your responsibility to:

- **Regularly inspect and make necessary repairs to product in order to maintain proper operation.**
- **Make sure that pressure and vacuum is released from product before starting maintenance.**

Check intake and exhaust filters after first 500 hours of operation. Clean filters and determine how frequently filters should be checked during future operation. This one procedure will help to assure the product's performance and service life.

General Maintenance

1. Remove end cap and filters. Inspect filters for rips,tears, cuts, brittleness and excessive foreign material.
2. Clean filters if in good condition with compressed air. Re-inspect for wear conditions. Set filters aside.
3. Check filter/muffler (#11) for compacted debris. If debris is present, replace filter/muffler.
4. Check condition of O-ring. It should be soft and flexible. Replace if it is not.
5. Remove and inspect muffler box. Clean box. Set box aside. (Not all models have a muffler box.)
6. Check gasket for cracks or tears. Install new gasket if any cracks or tears appear. Replace gasket.
7. Replace muffler box.
8. Reinstall filters or install new filters if required. Reinstall end cap.

Flushing

Flushing this product to remove excessive dirt, foreign particles, moisture or oil that occurs in the operating environment will help to maintain proper vane performance. There are 2 options for this operation. If Option 1 does not remedy your problem, go on to Option 2.

Use only Gast AH255B Flushing Solvent or other non-petroleum based flushing solvent. Do Not use kerosene or ANY other combustible solvents to flush product.

Option 1

You will need 2 pipe nipples at least 4 inches long with 1/4" NPT for 0323 and 0523 products, or 3/8" NPT on one end for 0823 and 1023 products. No nipples are needed if the unit does not have a muffler box.

1. Remove filter and muffler cap (#9).
2. Remove 5 bolts. Use a small hammer to tap on muffler box to remove it. Attach pipe nipples where muffler caps were removed.
3. Start product and add flushing solvent to the inlet port. If using liquid solvent, pour several tablespoons directly into the inlet port. If using Gast AH255B, spray solvent for 5-10 seconds into inlet port. Place towel over exhaust port to clean up solvent.
4. Plug inlet port for 20-30 seconds. Listen for changes in the sound of the pump. If pump sounds smooth, go to next step. If pump does not sound like it is running smoothly, installing a Service Kit will be required (See Service).
5. Release vacuum.
6. Repeat steps 3-5 three or four times.

If Option 1 is not successful, remove the end plate and examine.

Option 2

1. Remove six end plate bolts. (See exploded view.)
2. Use a small hammer to carefully tap on end plate to remove. Do not use a screwdriver to pry off.
3. Check that vanes are moving freely in and out of vane slots. Replace vanes if more than 50% of the vane extends past the vane slot.
4. Remove vanes and clean both sides with fine emery cloth. Clean end-plate with fine emery cloth.
5. Flush vanes with AH255B solvent and remove all solvent from vanes.
6. Flush body, rotor and end plate with AH255B solvent, then remove all solvent from each part.
7. Check body, rotor and end plate for scoring. If each part is clean and shows no signs of scoring, re-install parts. If scoring appears, send unit to factory or replace with new part(s).

Check that all external accessories such as relief valves and gauges are attached to cover and are not damaged before re-operating product.

SHUTDOWN PROCEDURES

It is your responsibility to follow proper shutdown procedures to prevent product damage.
NEVER ADD OIL TO THIS OIL-LESS PUMP.

1. Disconnect plumbing.
2. Operate product for at least five minutes without plumbing.
3. Run at maximum vacuum for 10-15 minutes.
4. Repeat step 2.
5. Disconnect power supply.
6. Plug open ports to prevent dirt or other contaminants from entering product.

SERVICE KIT INSTALLATION

⚠ WARNING



Electrical Shock Hazard

Disconnect electrical power supply cord before installing Service Kit.

If product is hard wired into system, disconnect electrical power at the circuit breaker or fuse box before installing Service Kit.

Vent all air lines to release pressure or vacuum.

Failure to follow these instructions can result in death, fire or electrical shock.

Gast will NOT guarantee field-rebuilt product performance. For performance guarantee, the product must be returned to a Gast-authorized facility.

Service Kit contents vary. Most contain vanes, gaskets and filter parts.

1. Remove filter/muffler parts from front of muffler box.
2. Remove the 5 muffler box bolts.
3. Use a small hammer to tap on box to remove. Do not use a screwdriver.
4. Remove the 6 end plate bolts.
5. Remove end plate. Check direction of bevel edges of vanes then remove vanes.
6. Clean body and rotor slots.
7. Check end plate, rotor and body for scoring. Severe scoring or worn bearings will require service at a Gast-authorized facility.

DO NOT remove rotor or motor bolts.

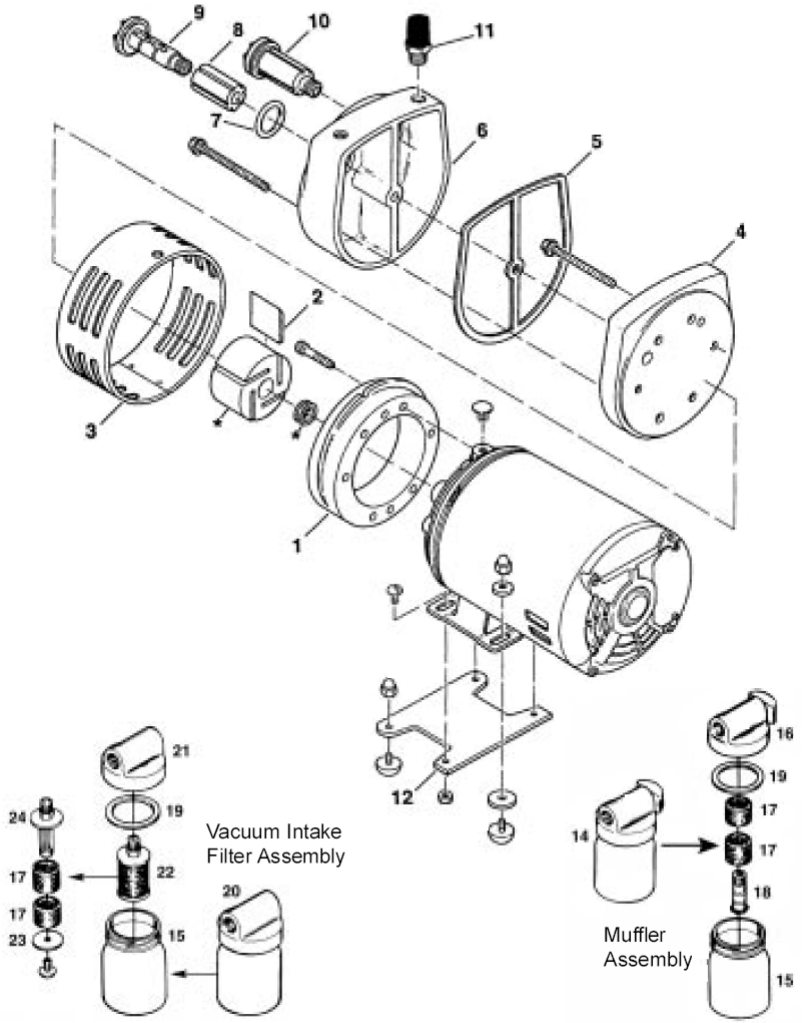
8. Insert vanes, checking that the bevel edges are in the correct direction.
9. Replace end plate. Torque bolts to 90-120 in. lb.
10. Check gasket for damage.
11. Reinstall muffler box. Torque bolts to 90-120 in. lb.

Check that all external accessories such as relief valves and gauges are attached and are not damaged before re-operating product.

EXPLODED PRODUCT VIEW, PARTS & ORDERING INFORMATION

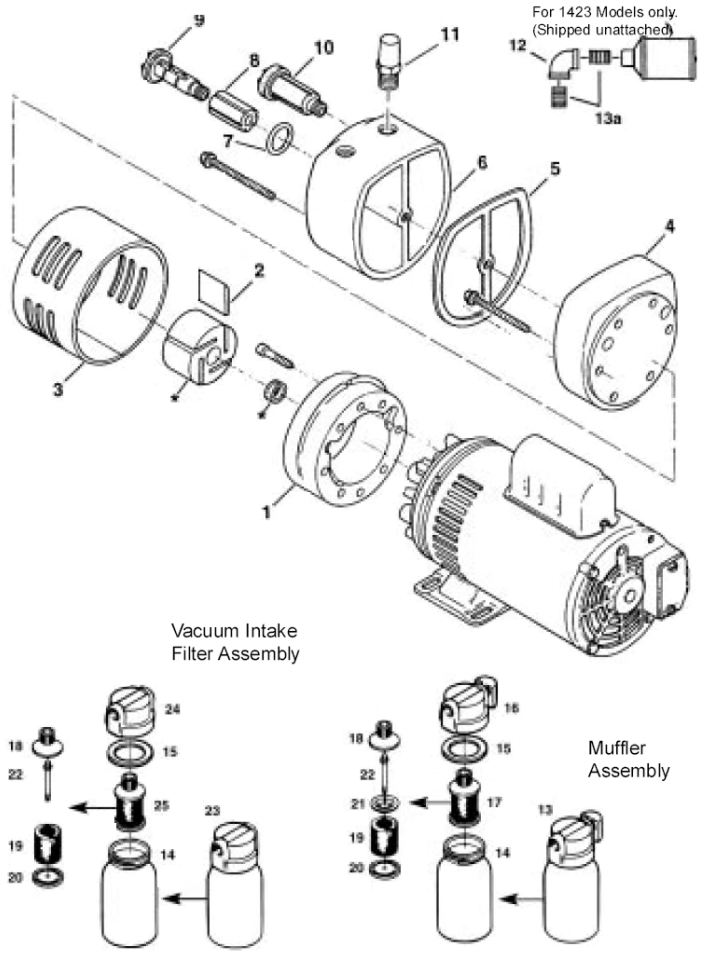
REF	DESCRIPTION	QTY	0323-101	0323-101Q	0523-101	0523-101Q	0523-V103
1	BODY	1	AK503	AK503	AK505	AK505	AK505
2 *	VANE	4	AH850A	AH850A	AH850A	AH850A	AH850A
3	SHROUD	1	AK502	AK502	AK502	AK502	AK502
4	END PLATE	1	AK516A	AK501	AK516A	AK501	AK516A
5 *	GASKET	1		AK521		AK521	
6	MUFFLER BOX	1		AK519		AK519	
7 *	O-RING	2		AK473		AK473	
8 *	FELT	2		AK524		AK524	
9	END CAP	2		AK510		AK510	
10	END CAP ASSEMBLY	2		AK526		AK526	
11	FILTER / MUFFLER	1		AK840A		AK840A	
12	FOOT SUPPORT	1		AC136		AC136	
13	ELBOW ***	2					AD997
14	MUFFLER ASSEMBLY	1					V425L
15	JAR	2					AA125A
16	COVER	1					AV427APC
17	FELT FILTER	4					B344A
18	SUPPORT	1					B345A
19	COVER GASKET	2					B62A
20	FILTER ASSEMBLY	1					V400G
21	COVER	1					AV402CPC
22	FILTER ASSEMBLY	1					B343B
23	SCREEN CAP	1					AJ571
24	FELT SUPPORT	1					B347
	SERVICE KIT	1	K478A	K478	K478A	K478	K559

* Denotes parts included in the Service Kit. Parts listed are for stock models.
** No Service Kit available, order parts separately. *** Not shown.
For specific OEM models, please consult the factory.
When corresponding or ordering parts, please give complete model and serial numbers.



EXPLODED PRODUCT VIEW, PARTS & ORDERING INFORMATION

REF	DESCRIPTION	QTY	0823-101	0823-101Q	1023-101	1023-101Q	1023-V103	1423-101Q
1	BODY	1	AK517	AK517	AK518	AK518	AK518	AL283
2 *	VANE	4	AK513	AK513	AK513	AK513	AK513	AL284
3	SHROUD	1	AK511	AK511	AK511	AK511	AK511	AL281
4	END PLATE	1	AK515A	AK514	AK515A	AK514	AK515A	AK514
5 *	GASKET	1		AK522		AK522		AK522
6	MUFFLER BOX	1		AK520		AK520		AK520
7 *	O-RING	2		AK473		AK473		AK473
8 *	FELT	2		AK524		AK524		AK524
9	END CAP	2		AK510		AK510		AK510
10	END CAP ASSEMBLY	2		AK526		AK526		AK526
11	FILTER / MUFFLER	1		AK840		AK840		AC432
12	ELBOW	1						BA206
12	ELBOW ***	2					AF272	
13	MUFFLER ASSEMBLY	1					AB599B	
13 a	NIPPLE	2						BA714
14	JAR	2					AA805	
15	COVER GASKET	2					AA405	
16	COVER ASSEMBLY	1					AV805BPC	
17	MUFFLER ASSEMBLY	1					AC434-1	
18	COUPLING	2					AC391	
19	CARTRIDGE	2					AC393	
20	END CAP ASSEMBLY	2					AC394	
21	MUFFLER PLATE	1					AC395	
22	STUD	2					AC396	
23	FILTER ASSEMBLY	1					AB599	
24	COVER ASSEMBLY	1					AV805APC	
25	FILTER ASSEMBLY	1					AC433-1	
	SERVICE KIT	1	K479A	K479	K479A	K479	K479A	K575A



* Denotes parts included in the Service Kit. Parts listed are for stock models.
** No Service Kit available, order parts separately. *** Not shown.
For specific OEM models, please consult the factory. When corresponding or ordering parts, please give complete model and serial numbers.

WARRANTY

Gast finished products, when properly installed and operated under normal conditions of use, are warranted by Gast to be free from defects in material and workmanship for a period of twelve (12) months from the date of purchase from Gast or an authorized Gast Representative or Distributor. In order to obtain performance under this warranty, the buyer must promptly (in no event later than thirty (30) days after discovery of the defect) give written notice of the defect to Gast Manufacturing Incorporated, PO Box 97, Benton Harbor Michigan USA 49023-0097 or an authorized Service Center (unless specifically agreed upon in writing signed by both parties or specified in writing as part of a Gast OEM Quotation). Buyer is responsible for freight charges both to and from Gast in all cases.

This warranty does not apply to electric motors, electrical controls, and gasoline engines not supplied by Gast. Gast's warranties also do not extend to any goods or parts which have been subjected to misuse, lack of maintenance, neglect, damage by accident or transit damage.

THIS EXPRESS WARRANTY EXCLUDES ALL OTHER WARRANTIES OR REPRESENTATIONS EXPRESSED OR IMPLIED BY ANY LITERATURE, DATA, OR PERSON. GAST'S MAXIMUM LIABILITY UNDER THIS EXCLUSIVE REMEDY SHALL NEVER EXCEED THE COST OF THE SUBJECT PRODUCT AND GAST RESERVES THE RIGHT, AT ITS SOLE DISCRETION, TO REFUND THE PURCHASE PRICE IN LIEU OF REPAIR OR REPLACEMENT.

GAST WILL NOT BE RESPONSIBLE OR LIABLE FOR INDIRECT OR CONSEQUENTIAL DAMAGES OF ANY KIND, however arising, including but not limited to those for use of any products, loss of time, inconvenience, lost profit, labor charges, or other incidental or consequential damages with respect to persons, business, or property, whether as a result of breach of warranty, negligence or otherwise. Notwithstanding any other provision of this warranty, BUYER'S REMEDY AGAINST GAST FOR GOODS SUPPLIED OR FOR NON-DELIVERED GOODS OR FAILURE TO FURNISH GOODS, WHETHER OR NOT BASED ON NEGLIGENCE, STRICT LIABILITY OR BREACH OF EXPRESS OR IMPLIED WARRANTY IS LIMITED SOLELY, AT GAST'S OPTION, TO REPLACEMENT OF OR CURE OF SUCH NONCONFORMING OR NON-DELIVERED GOODS OR RETURN OF THE PURCHASE PRICE FOR SUCH GOODS AND IN NO EVENT SHALL EXCEED THE PRICE OR CHARGE FOR SUCH GOODS. GAST EXPRESSLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE OR PURPOSE WITH RESPECT TO THE GOODS SOLD. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTIONS SET FORTH IN THIS WARRANTY, notwithstanding any knowledge of Gast regarding the use or uses intended to be made of goods, proposed changes or additions to goods, or any assistance or suggestions that may have been made by Gast personnel.

Unauthorized extensions of warranties by the customer shall remain the customer's responsibility.

CUSTOMER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF GAST PRODUCTS FOR CUSTOMER'S USE OR RESALE, OR FOR INCORPORATING THEM INTO OBJECTS OR APPLICATIONS WHICH CUSTOMER DESIGNS, ASSEMBLES, CONSTRUCTS OR MANUFACTURES.

This warranty can be modified only by authorized Gast personnel by signing a specific, written description of any modifications.

MAINTENANCE RECORD

DATE	PROCEDURE PERFORMED

PART NO. 70 - 290 G375PL (REV-H)

TROUBLESHOOTING CHART

Low		High		Pump	Motor	Reason and remedy
Vacuum	Pressure	Vacuum	Pressure	Overheat	Overload	for problem.
●	●	At pump		●	●	Filter dirty. Clean or replace.
	●		At pump	●	●	Muffler dirty. Clean or replace.
●		At pump		●	●	Vacuum line collapsed. Repair or replace.
			●	●	●	Relief valve set too high. Inspect and adjust.
●	●					Relief valve set too low. Inspect and adjust.
●	●	At pump	At pump	●	●	Plugged vacuum/pressure line. Inspect and repair.
●	●					Vanes sticking. Clean or replace.
●	●					Vanes worn. Replace.
●	●					Shaft seal worn. Replace.
●	●			●	●	Dust or offset powder in pump. Inspect and clean.
●	●			●	●	Motor not wired correctly. Check wiring diagram and line voltage.

World Headquarters
P.O. Box 97
2550 Meadowbrook Rd.
Benton Harbor, MI 49023-0097
Ph: 269/926-6171
FAX: 269/925-8288
www.gastmfg.com

Service Center
P.O. Box 97
2300 M-139 Highway.
Benton Harbor, MI 49023-0097
Ph: 269/926-6171
FAX: 269/925-8288
www.gastmfg.com

European Sales & Service Headquarters
Beech House Knaves Beech
Business Centre
Loudwater, High Wycombe Bucks,
England HP10 9SD
Tel: +44 1628 551500
Fax: +44 1628 551590
www.gastltd.com

Gast Hong Kong
Unit 12, 21/F, Block B
New Trade Plaza
6, On Ping Street, Shatin
N. T. Hong Kong
Ph: (852) 2690 1008
Fax: (852) 2690 1012
www.gasthk.com
FAX: 269/925-8288

GAST
A Unit of IDEX Corporation

ISO 9001 & 14001 CERTIFIED **www.gastmfg.com**

NORGREN

F74G

General Purpose Filter - Parts

In the following parts list, assemblies are printed in capital letters. Parts that are included with an assembly are listed and indented directly beneath it. When an assembly is ordered, the assembly and all parts indented beneath it are included in the shipment.

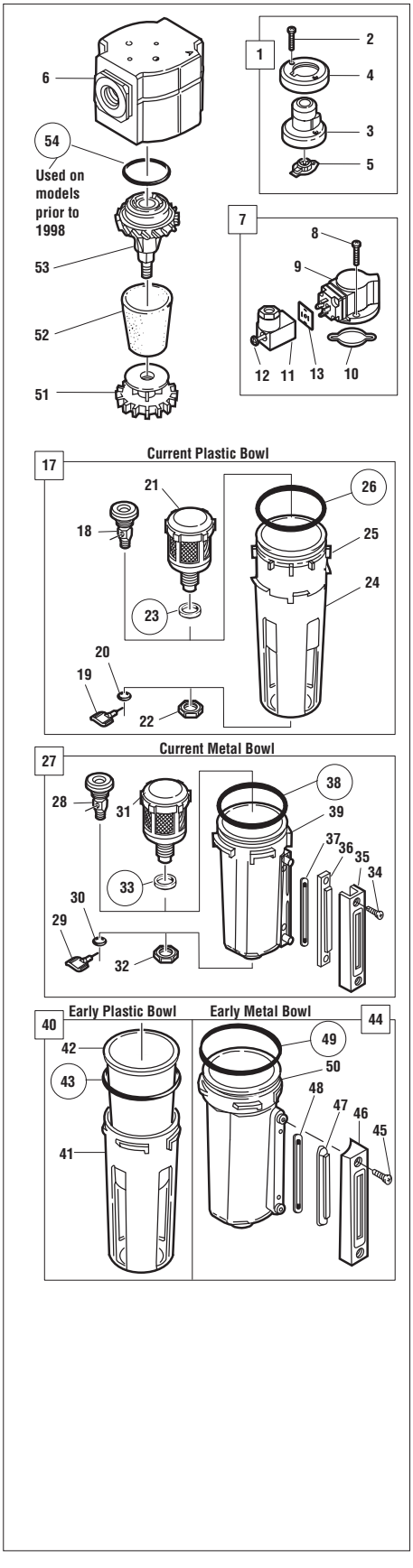
When an assembly lists a letter code in the **USED ON** column, parts that list the same letter code are used in that assembly. Parts coded **A** are used in the Assembly coded **A**, parts coded **B** are used in the Assembly coded **B**, etc.

ITEM	DESCRIPTION	PART NO.	QTY	USED ON
1	OPTIONAL MECHANICAL SERVICE INDICATOR ASSY	5797-50	1	
2	• Screw	9F08-15	2	
3	• Body, nylon	Not available separately-order item 1	1	
4	• Ring support	Not available separately-order item 1	1	
5	• Diaphragm	Not available separately-order item 1	1	
6	Body	Not normally replaced	1	
7	OPTIONAL ELECTRICAL SERVICE INDICATOR ASSY	4020-51R	1	
8	• Screw	9F08-13	2	
9	• Switch	Not available separately-order item 7	1	
10	• Seal	Not available separately-order item 7	1	
11	• CONNECTOR ASSY	4346-01R	1	
12	• • Screw	Not available separately-order item 11	1	
13	• • Seal	Not available separately-order item 11	1	
	Items 14 through 16 are not used in this parts list			
17	**PLASTIC BOWL & GUARD ASSY, 1/4 turn manual drain**	**4325-51R**	**1**	**A**
17	**PLASTIC BOWL & GUARD ASSY, automatic drain**	**4325-52R**	**1**	**B**
18	• MANUAL DRAIN ASSY, 1/4 turn	619-50	1	A
19	• • Valve, drain	617-89	1	A
20	• • O-ring	2307-05	1	A
21	• AUTOMATIC DRAIN ASSY, 1/8 PTF Outlet *	3000-10	1	B
22	• • Nut	2797-89	1	B
23	• • Gasket (service kit item)	2811-01	1	B
24	• Guard, bowl	4326-01	1	AB
25	• Bowl, plastic	Not normally replaced	1	AB
26	• O-ring (service kit item)	2316-38	1	AB
27	**METAL BOWL ASSY, sight glass, 1/4 turn manual drain**	**4303-51R**	**1**	**C**
27	**METAL BOWL ASSY, sight glass, automatic drain**	**4303-52R**	**1**	**D**
28	• MANUAL DRAIN ASSY, 1/4 turn	619-50	1	C
29	• • Valve, drain	617-89	1	C
30	• • O-ring	2307-05	1	C
31	• AUTOMATIC DRAIN ASSY, 1/8 PTF Outlet *	3000-10	1	D
32	• • Nut	2797-89	1	D
33	• • Gasket (service kit item)	2811-01	1	D
34	• Screw (service kit item)	9P06-12	2	CD
35	• Clamp, sight glass	4323-01	1	CD
36	• Lens, sight glass (service kit item)	4321-88	1	CD
37	• Seal, sight glass lens (service kit item)	4322-87	1	CD
38	• O-ring, bowl (service kit item)	2316-38	1	CD
39	• Bowl, metal	Not normally replaced	1	CD
40	PLASTIC BOWL & GUARD, early models	Not available - order item 17	1	
41	• Guard, bowl	Not available - order item 17	1	
42	• Bowl, plastic	Not available - order item 17	1	
43	• O-ring (service kit item)	2316-38	1	
44	METAL BOWL, early models	Not available - order item 27	1	
45	• Screw	Not available	2	
46	• Clamp, sight glass	Not available	1	
47	• Lens, sight glass	Not available	1	
48	• Seal, sight glass lens	Not available	1	
49	• O-ring, bowl (service kit item)	2316-38	1	
50	• Bowl, metal	Not available - order item 27	1	
51	Baffle	3140-88	1	
52	Element, 5-micron	4338-04	1	
	Element, 25-micron	4338-07	1	
	Element, 40-micron	4338-05	1	
	Element, screen, 75-micron	4338-10	1	
53	Louver - center post	4334-89	1	
54	O-ring, used only on models manufactured prior to 1998 (service kit item)	2305-25	1	

SERVICE KITS & ACCESSORIES

Service kit - includes items circled on exploded view	4380-700
Current metal bowl liquid level lens kit - Items 34, 36, 37, 38	4380-050
Universal wall mounting bracket kit	4324-50

* For optional low flow automatic drain with 1/8 PTF outlet, specify 3000-11.
For standard automatic drain with ISO G1/8 outlet, specify 3000-97.

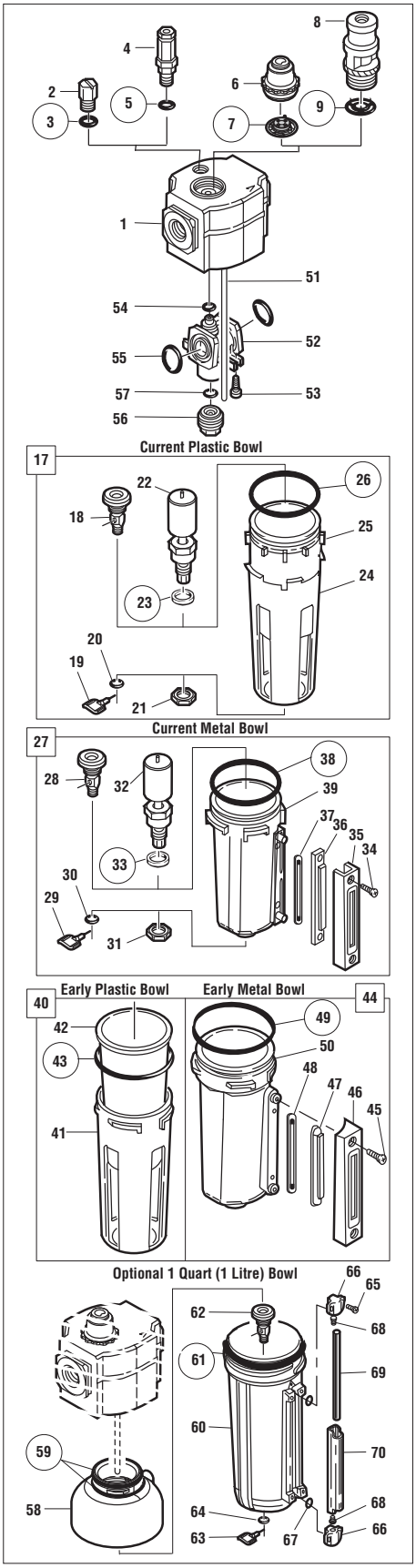


© Norgren 1998

In the following parts list, assemblies are printed in capital letters. Parts that are included with an assembly are listed and indented directly beneath it. When an assembly is ordered, the assembly and all parts indented beneath it are included in the shipment.

When an assembly lists a letter code in the **USED ON** column, parts that list the same letter code are used in that assembly. Parts coded **A** are used in the Assembly coded **A**, parts coded **B** are used in the Assembly coded **B**, etc.

ITEM	DESCRIPTION	PART NO.	QTY	USED ON
1	Body	Not normally replaced	1	
2	FILL PLUG ASSY, ALUMINUM	5301-55	1	
3	• O-ring (service kit item)	2305-13	1	
4	QUICK FILL CAP ASSY	18-011-024	1	
5	• O-ring (service kit item)	2305-13	1	
6	SIGHT FEED DOME ASSY, red, plastic, Micro-fog models	4055-50	1	
	SIGHT FEED DOME ASSY, green, plastic, Oil-fog models	4055-51	1	
7	• Seal (service kit item)	4052-89	1	
8	SIGHT FEED DOME ASSY, Pyrex	5605-50	1	
9	• Seal (service kit item)	5769-89	1	
	Items10 through 16 are not used in this parts list			
17	**PLASTIC BOWL AND GUARD ASSY, 1/4 turn manual drain**	**4325-50R**	**1**	**A**
17	**PLASTIC BOWL AND GUARD ASSY, remote fill**	**4325-54R**	**1**	**B**
18	• MANUAL DRAIN ASSY, 1/4 turn	619-50	1	A
19	• • Valve, drain	617-89	1	A
20	• • O-ring	2307-05	1	A
21	• Nut	2797-89	1	B
22	• REMOTE FILL ASSY	5335-50	1	B
23	• • Gasket (service kit item)	2811-01	1	B
24	• Guard, bowl	4326-01	1	AB
25	• Bowl, plastic	Not normally replaced	1	AB
26	• O-ring (service kit item)	2316-38	1	AB
27	**METAL BOWL ASSY, sight glass, 1/4 turn manual drain**	**4303-50R**	**1**	**C**
27	**METAL BOWL ASSY, sight glass, remote fill**	**4303-54R**	**1**	**D**
28	• MANUAL DRAIN ASSY, 1/4 turn	619-50	1	C
29	• • Valve, drain	617-89	1	C
30	• • O-ring	2307-05	1	C
31	• Nut	2797-89	1	D
32	• REMOTE FILL ASSY	5335-50	1	D
33	• • Gasket (service kit item)	2811-01	1	D
34	• Screw (service kit item)	9P06-12	2	CD
35	• Clamp, sight glass	4323-01	1	CD
36	• Lens, sight glass (service kit item)	4321-88	1	CD
37	• Seal, sight glass lens (service kit item)	4322-87	1	CD
38	• O-ring, bowl (service kit item)	2316-38	1	CD
39	• Bowl, metal	Not normally replaced	1	CD
40	PLASTIC BOWL & GUARD, early models	Not available - order item 17	1	
41	• Guard, bowl	Not available - order item 17	1	
42	• Bowl, plastic	Not available - order item 17	1	
43	• O-ring (service kit item)	2316-38	1	
44	METAL BOWL, early models	Not available - order item 27	1	
45	• Screw	Not available	2	
46	• Clamp, sight glass	Not available	1	
47	• Lens, sight glass	Not available	1	
48	• Seal, sight glass	Not available	1	
49	• O-ring, bowl (service kit item)	2316-38	1	
50	• Bowl, metal	Not available - order item 27	1	
51	Siphon Tube			
	Standard bowl, cut to 106.4mm (4.19")	5655-01	1	
	Optional 1 quart (1 litre) bowl, cut to 255.5mm (10.06")	5655-01	1	
52	RED CARTRIDGE ASSY, Micro-Fog models	4356-50R	1	
	GREEN CARTRIDGE ASSY, Oil-Fog models	4356-51R	1	
53	• Screw	9F08-13	2	
54	• O-ring	705-01	1	
55	• O-ring	2305-20	2	
56	• Fog generator (Micro-fog models)	5240-52	1	
	• Check valve (Oil-fog models)	5244-50	1	
57	• O-ring (Micro-fog models)	421-01	1	

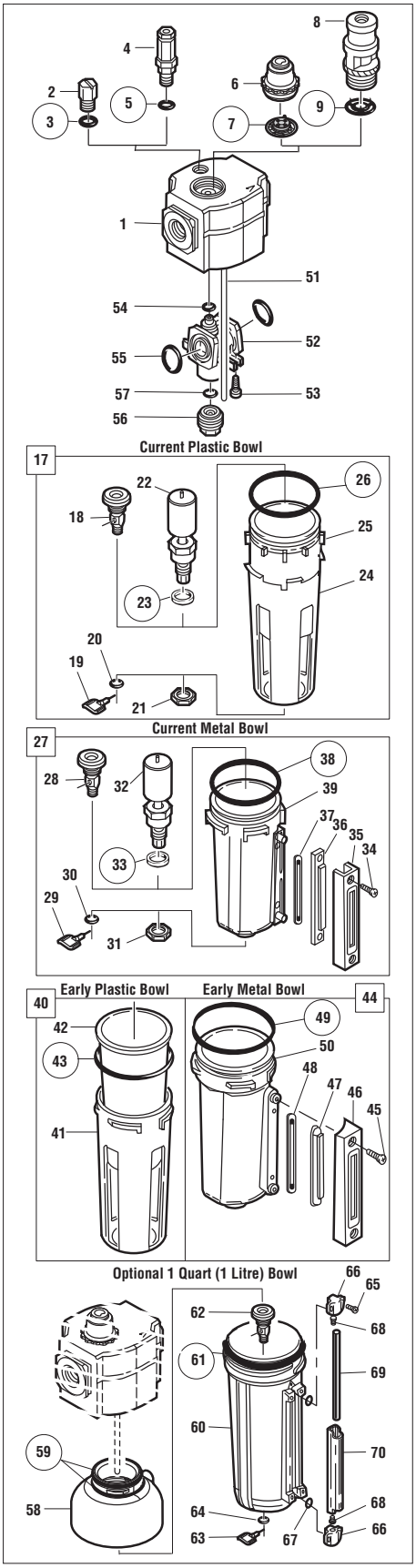


© Norgren 1998

ITEM	DESCRIPTION	PART NO.	QTY
58	Adapter, 1 litre (1 quart) reservoir	Not normally replaced	1
59	O-ring (service kit item)	2316-38	2
60	METAL RESERVOIR ASSY, 1 litre (1 quart) with sight glass and drain	5390-45	1
61	• O-ring (service kit item)	2306-53	1
62	• MANUAL DRAIN ASSY, 1/4 turn	619-50	1
63	• • Valve, drain	617-89	1
64	• • O-ring	2307-05	1
65	• Screw (service kit item)	9P06-10	4
66	• Bracket	3778-89	2
67	• O-ring (service kit item)	706-01	2
68	• Seal (service kit item)	5873-83	2
69	• Sight glass (service kit item)	5872-03	1
70	• Sight glass guard (service kit item)	1218-89	1

SERVICE KITS & ACCESSORIES

Service kit - includes items circled on exploded view 4382-700
Liquid level lens kits:
Current metal bowl - Items 34, 36, 37, 38 4380-050
Optional 1 litre (1 quart) metal bowl - Items 61, 65, 67 thru 70 2273-22
Wall mounting bracket kit for use with standard bowls 4324-50
Wall mounting bracket kit for use with optional 1 quart (1 litre) bowl 4324-51



© Norgren 1998

Programming 30mm Programmable Ultrasonic Sensors

112500C1

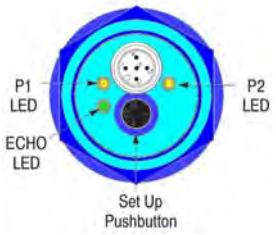
Warning!

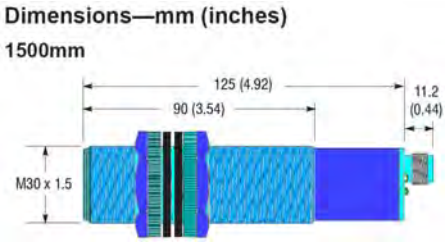
Do not perform any maintenance, adjustments, repairs, etc. on this machine without first disconnecting all energy sources (electricity, compressed air and/or gas) to protect yourself from injury. Be sure to follow all manufacturers' safety instructions for any tools you will be using.

These sensors will require programming using the pushbutton at the rear of the sensor.

- Set point P1 indicator is the yellow P1 LED
- Set point P2 indicator is the yellow P2 LED
- Echo/Alignment indicator is the green LED and indicates that the sensor is receiving the proper signal from a target.

Connector View



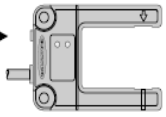
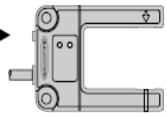
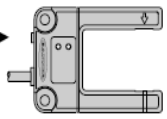


- Set point (P1) corresponds to the 0V DC or 4 ma analog output for Pin 5
- Set point (P2) corresponds to the 10V DC or 20 ma analog output for Pin 5
- The analog output can be programmed P1 will be farther from the sensor than set point P2 and P2 will be closer to the sensor than set point P1
- Set point (P1)—Place the target at the P1 position
- To set P1 depress the pushbutton until the P1 and green Echo LEDs are blinking simultaneously. Then release the button
- Insure target position and depress the push button and release to program the P1 switch point. After releasing the button, the P1 LED should be solid yellow
- Set point (P2)—Place the target at the P2 position
- To set P2 depress the pushbutton until the P2 and green Echo LEDs are blinking alternately and then release the button. Note: that the P1 and green Echo LEDs will start blinking first and then the P2 and green Echo LED will start blinking
- Depress the pushbutton to program the P2 switch point. Then release the pushbutton to end the P2 programming mode
- You have approximately one minute to set either P1 or P2 once you are in the programming mode. After one minute, the sensor will exit the programming mode
- After the set points have been programmed into the sensor, they are stored in the sensor memory (EEPROM). Loss of power will NOT cause the sensor to lose these set points
- To change the set point distances after they have been programmed requires reprogramming the sensor. Reprogramming each set point can be done independent of the other
- The set points can be programmed in any order
  Note: Roll sensor P1 to be programmed with empty cardboard core then P2 with full diameter roll
- Dancer P1 should be approximately 2.5" from bottom of the slot and P2 13.5" from the bottom of the slot

If you have any questions or problems, please contact an M-TEK machinery specialist at: 847-741-3500 press 3 for Service

M-TEK INCORPORATED 1675 Todd Farm Drive Elgin, Illinois 60123 USA
Telephone: 847-741-3500 Fax: 847-741-3569 E-mail: mtek@mtekcorp.com

BANNER SLE30 SLOT SENSOR TEACHING

Push Button		Resulting Indicator Status
Press and hold until the bi-color (green/red) indicator begins to flash red, or turns OFF	**Push and Hold ≥ 2 Seconds** 	Yellow: ON Red: Pulses to indicate relative received signal strength
TEACH Condition #1 (Output ON state) Put the film mark over the sensor and push a single click	**Single-Click**  **Sensing Condition #1 (Output ON State)**	Yellow: ON Red: Pulses to indicate relative received signal strength
TEACH Condition #2 (Output OFF state) Put the clear film over the sensor and push a single click	**Single-Click**  **Sensing Condition #2 (Output OFF State)**	If contrast is acceptable, the sensor returns to RUN mode. Otherwise, it will return to TEACH Condition #1. Green: ON (or flashes if signal is close to the switching threshold) Yellow: OFF, until the sensing condition changes

Note:

The sensor will return to RUN mode if the first TEACH condition is not registered within 90 seconds. TEACH mode may be cancelled before either condition #1 or #2 by depressing the push button for ≥2 seconds.

Clicks are meant to be pressed firmly; then quickly released. Indicators go ON or OFF after a brief delay. Do not wait until LEDs change status before releasing push button (if push button is pressed for 2 seconds or more, sensor will automatically return to RUN mode.)

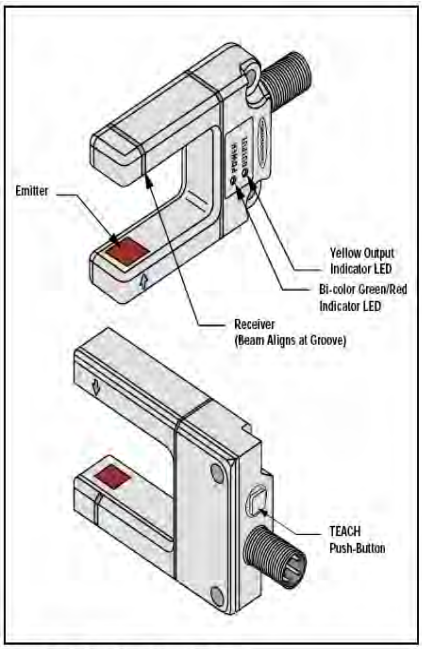
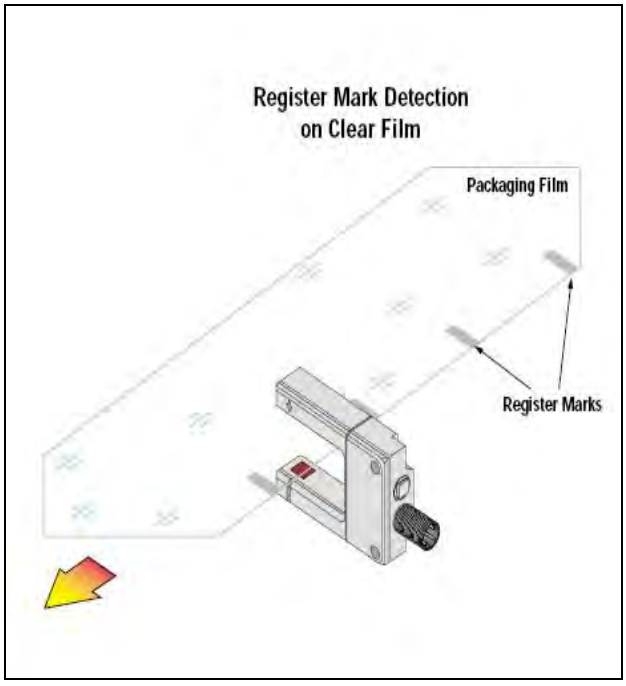


Figure 1. SLE30 *Expert* Series features



B81

Presto LIFTS™
worldwide material handling
and ergonomic solutions



Foot Operated Lifts
M100, M200, M300 & M400

Installation, Operation and Service Manual

Model Number _____

Serial # _____

Date placed in service _____

IMPORTANT: READ CAREFULLY
BEFORE INSTALLING OR OPERATING LIFT

Part orders are subject to a $50 miminum charge.

April 2008

This manual was current at the time of printing. To obtain the latest, most updated version, please contact Presto Lifts Customer Service Department or go to our website: www.PrestoLifts.com -- you will find a complete list of current owner's manuals to print.

CONTENTS

SECTION 1:
Introduction 4
SECTION 2:
Safety 4
SECTION 3:
Installation 4
SECTION 4:
Operation 4
SECTION 5:
Maintenance 5
SECTION 6:
Service 6
SECTION 7:
Troubleshooting 6

RESTOCKING POLICY 18

RETURN GOODS AUTHORIZATION (RMA) PROCEDURES 19

ORDERING REPLACEMENT PARTS 20

WARRANTY ..... BACK COVER

LIST OF FIGURES:

Table 1: Hydraulic Oil Specifications 5
Figure 1: Wheel Identification 7
Figure 2: Chain Roller Assembly 7
Complete Cylinder breakdown by Part Number (Text) 8-9
Figure 3: M100-10 Pump Body Complete 10
Figure 4: M400-20 Cylinder Assembly Repair Kit 11
Figure 5: M400-30 Pump Plunger Assembly 12
Figure 6: M400-40 Cylinder Packing Kit 13
Figure 7: M400-50 Release Pin Assembly 14
Figure 8: Backplate Assembly 15
Figure 9: Platform Assembly 16
Figure 10: Stacker Assembly 17

SECTION 1

INTRODUCTION

This manual attempts to provide all of the information necessary for the safe and proper installation, operation and maintenance of Presto Lifts Inc.'s MSeries Stackers. It is important that all personnel involved with the installation, maintenance or operation of the stacker read this manual. Where unique situations arise, that are not covered in this manual call Presto Lifts for further instructions. Additional manuals are available upon request or on our web site at www.prestolifts.com.

The stacker has a nameplate that provides the load capacity ratings, serial number and model identifications. Please refer to these numbers when ordering parts or requesting further information.

WHERE UNIQUE SITUATIONS ARISE, THAT ARE NOT COVERED IN THIS MANUAL, CALL PRESTO LIFTS SERVICE DEPARTMENT FOR FURTHER INSTRUCTIONS.

SECTION 2

SAFETY

The M Series stackers are very capable of causing serious injury or damage if adequate precautions are not taken. By reading and following this manual, operator injury may be prevented.

DO NOT INSTALL OR OPERATE THESE LIFTS WITHOUT CAREFULLY READING THIS MANUAL. In order to provide for the safe operation of these stackers, Presto Lifts Inc. has identified certain hazards that may occur during the installation, maintenance and use of these lifts.

WARNING!

- Do not perform any repair work on lifts if there is a load on the platform or forks are in the raised or lowered position.
- All personnel must stand clear of the lift when the lift is in motion.
- Do not put hands or feet under forks or platform while in motion.
- Do not put hands or feet on or near the mast while the forks or platform is in motion.
- Do not stand, sit or climb on the lift.
- Do not exceed the load capacity.
- Place all loads centrally located on the lift forks or platform.
- Do not place a load on a moving lift.
- Do not use the lift on soft, uneven or unstable surfaces.
- Do not shock load the forks or platform. Materials must be carefully placed rather than dropped.

SECTION 3

INSTALLATION

INSTALLATION

When the stacker arrives on a pallet the following steps are to be followed:

1. Through the use of a forklift or overhead hoist, pick the stacker unit up taking into consideration the center of gravity. The center of gravity of the unit should be adequately supported.

2. Once the unit is lifted from the pallet by a couple of inches, remove the pallet from under the stacker.

3. Follow the next sections to ensure proper operation.

SECTION 4

OPERATION

METHOD OF OPERATION:

In order to operate the lift follow these operating procedures.

1). To raise the platform or forks, pump foot pedal until platform reaches desired height.

2). To lower lift, press release pedal down. Pressure on release pedal controls speed of descent of load.

SECTION 5

MAINTENANCE

ROUTINE MAINTENANCE:

1). Grease wheels and casters at least once a month to maintain easy roll of lift.

2). Do not overload the lift. All foot operated Presto Manual Stackers have a maximum rated capacity of 1000 lbs.

3). Use only hydraulic oil in the hydraulic system. NEVER USE HYDRAULIC BRAKE FLUID.

Table 1 – Hydraulic Oil Specifications

If the lift will be used at normal ambient temperatures, Presto Lifts supplies the unit with Citgo AW 32 oil. This may be replaced by any other good quality oil with 150 SSU at 100° F and rust and oxidation inhibitors and anti-wear properties.

If the lift will be used at ambient temperatures below 0°F, use aircraft hydraulic oil. Use Type 15 aircraft hydraulic oil.

The following are equivalent to CITGO AW32:

TYPE	MANUFACTURER
DTE 24	EXXON/MOBIL
NUTO H32	EXXON/MOBIL
AMOCO AW32	CHEVRON (AMOCO CO.)

CAUTION!

It is very important to keep the hydraulic oil free of dirt, dust, metal chips, water, and other contamination. Most of the problems with hydraulic systems are caused by contamination in the oil.

SECTION 6

SERVICE

To remove cylinder from lift:
1. Pump lift to above 12" height and then prop platform or forks up to keep it in raised position.

2. Step on release pedal and push ram down by hand until it reaches its lowest point.

3. Slip chain off pulley and remove pulley assembly.

4. Take off two bottom cap screws that hold cylinder in place and slide cylinder forward towards the base legs of the lift. The cylinder can now easily be removed.

To replace ram chevron set in hydraulic cylinder assembly:
1. Remove hydraulic cylinder from lift and remove Vent Plug (Part No. M427) and Oil Level Plug (Part No. 428) and drain oil from cylinder.

2. Clamp pump body in vise, unscrew top hex nut and remove outer cylinder.

3. Remove inner cylinder from pump making sure not to distort or mar cylinder. ***Note: Do not use pipe wrench.***

4. Remove ram and replace chevron set.

5. Push ram into inner cylinder -- chevron end last!

6. Reassemble and fill with clean hydraulic jack oil.

SECTION 7

TROUBLESHOOTING

If lift does not rise to full height:
It probably requires oil. (Check with lift in down position.) To fill cylinder with oil, follow these instructions.

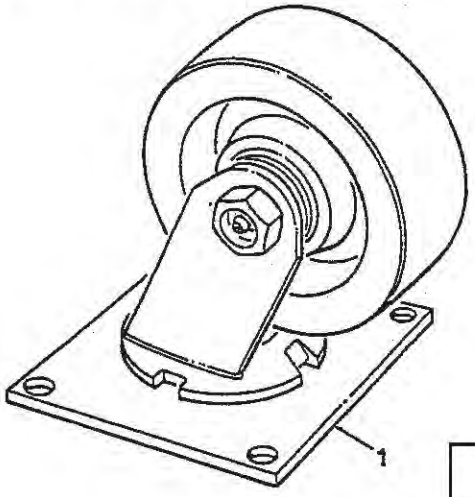
There are two pipe plugs in the cylinder, Part No. M427 (Vent Plug) and part No. M428 (Oil Level Plug). Remove both plugs.

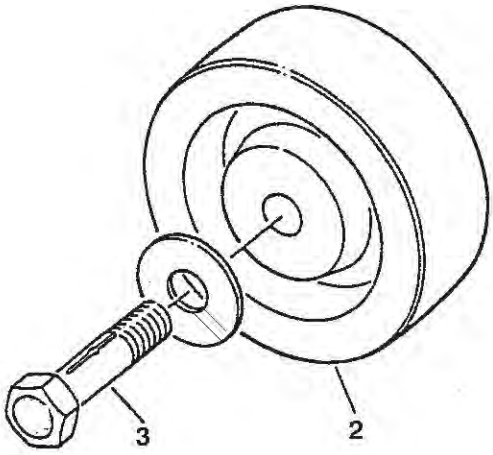
Put a good grade of hydraulic jack oil in the cylinder through the top hole. When the oil reaches the level of the bottom hole, replace both plugs. TOP PLUG IS A BREATHER PLUG, BE SURE TO REPLACE PLUGS IN THEIR PROPER PLACES.

If lift does not hold load, or tends to drift downward under a load:
Dirt particle may be obstructing seating of the valve, allowing leakage.

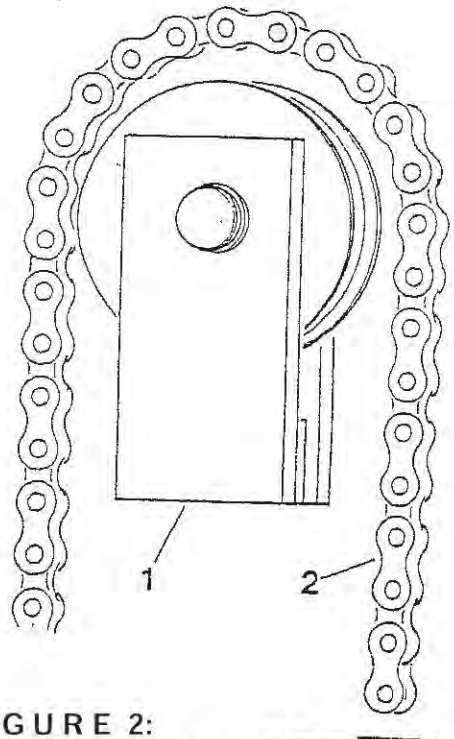
If dirt particle is obstructing seating of the valve:
Open release valve by pressing down on release pedal. At the same time, pump foot lever three or four strokes. Do this three or four times. Then place some weight on the platform or forks and pump foot lever until platform reaches its full height. Now, lower lift six inches to a foot at a time. This should dislodge dirt and lift should work properly.

FIGURE 1:
WHEEL IDENTIFICATION





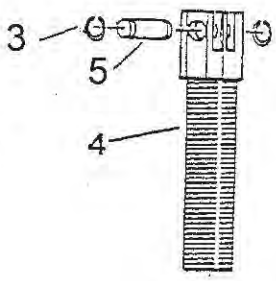
WHEEL IDENTIFICATION		
ITEM NO.	PART NUMBER	DESCRIPTION
1	C101PH2	Swivel Caster Assembly
2	C102PH	Rigid Phenolic Wheel
3	C103	Mounting Hardware



CHAIN ROLLER ASSEMBLY		
ITEM NO.	PART NUMBER	DESCRIPTION
1	0584-VR	Single Chain Assembly
2	C104**	Chain
3	C106B	Lock Ring
4	C106C	Chain Socket 3/4" Adjustable
5	C106A	Clevis Pin

** SPECIFIC MODEL NUMBER REQUIRED WHEN ORDERING FOR CORRECT CHAIN LENGTH

FIGURE 2:
CHAIN ROLLER ASSEMBLY



RECOMMENDED CYLINDER SPARE PARTS LISTING

M SERIES STACKERS - PAGE 1

PART #	DESCRIPTION	AVAILABILITY	KIT#
M400**	Hydrualic Cylinder Assy. Complete		
M402	Release Lever	A	
M403	Release Lever Pin	A	
M404	Pump Plunger Clip	A	
M407	N/A see 0457	K	
M410	Pump Body	K	1 & 2
N1200	Pump Body Plug	A	1 & 2
M412	Pump Check Ball	K	1 & 2
M413	Pump Check Spring	K	1 & 2
M414	Pump Valve/Release Gaket	A	1 & 2
M415	Pump Valve Bolt	K	1 & 2
M416	Release Ball & Poppet	K	1 & 2
M417	Release Spring	K	1 & 2
M419	Release Bolt	K	1 & 2
M420	O Ring Reservoir Seal	K	4 & 2
M422	Pump Lever Bracket	A	
M423	Pump Lever Bracket Pins	A	
M424	Ram O Ring Seal	K	4 & 2
M425	Cylinder Nut	A	
M426**	Outer Cylinder	N	
M427	Vent Plug	A	
N1200	Oil Lever Plug	A	
M429	Pump Lever Return Spring	A	
M430**	Inner Cylinder	N	
M431**	Ram	N	
M432	Ram Guide Bearing Plate	K	4 & 2
M433-01	Ram Chevron Set	A	4 & 2
M434	Ram Chevron Set Washer	K	4 & 2

RECOMMENDED SPARE PARTS LISTING

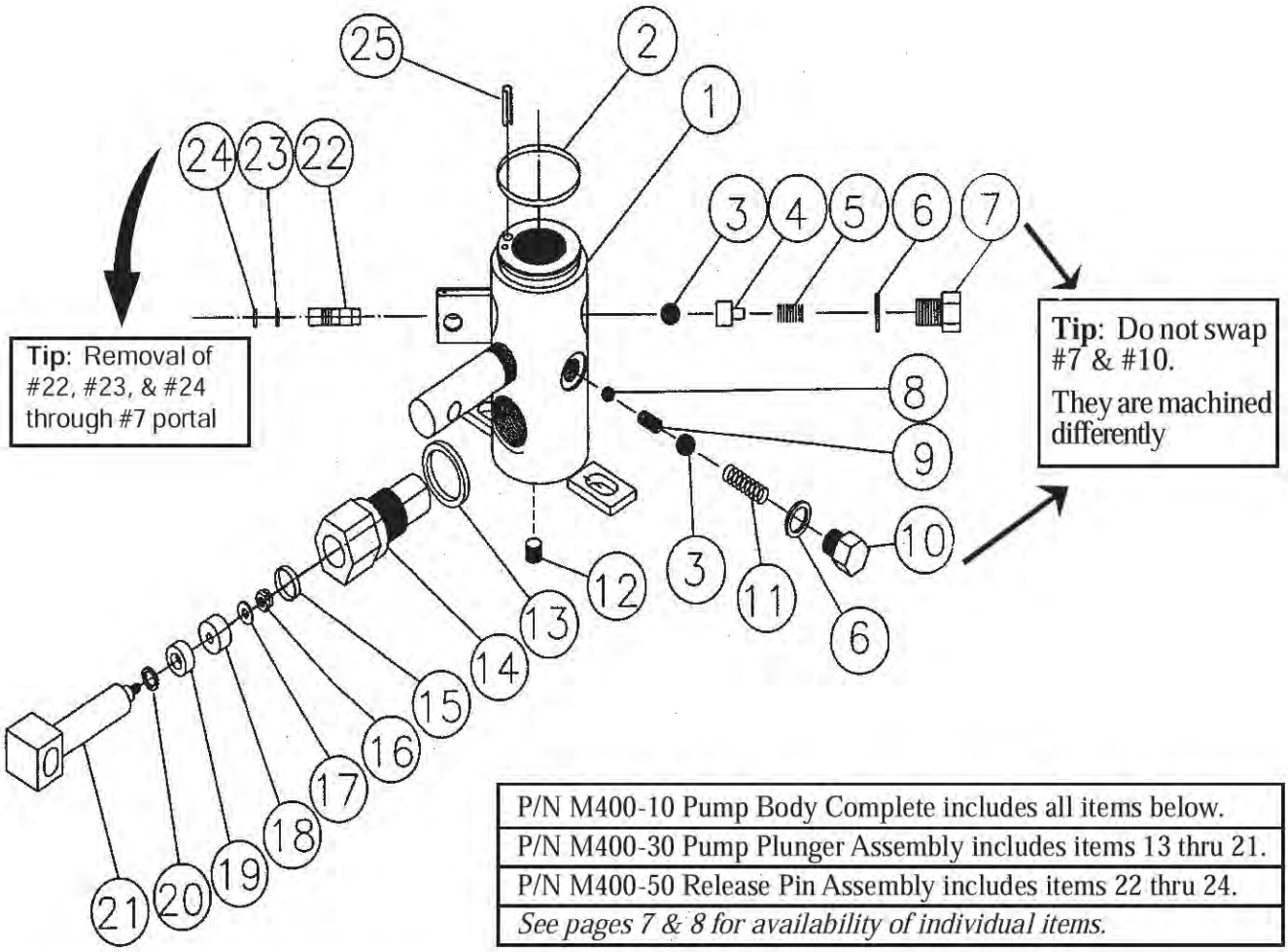
M SERIES STACKERS - PAGE 2

PART #	DESCRIPTION	AVAILABILITY	KIT#
M435	Ram Cup Nut	K	4 & 2
M436	Foot Lever	A	
M437	Foot Lever Pad	A	
M438	Pump Intake Spring	K	1 & 2
M439	Pump Intake Ball	A	1 & 2
M440	Release Pin O Ring	K	5 & 2
M441	Release Pin Back-Up Ring	K	5 & 2
M442	Release Pin	K	5 & 2
M443	Plunger Sleeve Gasket	A	1-3 & 2
M444	Plunger Sleeve	K	1-3 & 2
M445	Plunger O Ring	A	1-3 & 2
M446	Plunger Nut	A	1-3 & 2
M447	Plunger Washer	A	1-3 & 2
M448	Plunger Cup	A	1-3 & 2
N0040	Nut	A	
N0810	Bolt	A	
0457	Square Pump Plunger	K	1-3 & 2

** SPECIFIC MODEL NUMBER REQUIRED

NOTE:
A = AVAILABLE
N = NOT AVAILABLE; Must buy complete Cylinder
K = In a kit only.
Kit Number: 1 = M400-10
Kit Number: 2 = M400-20
Kit Number: 3 = M400-30
Kit Number: 4 = M400-40
Kit Number 5 = M400-50

FIGURE 3: M400-10 PUMP BODY COMPLETE



P/N M400-10 Pump Body Complete includes all items below.
P/N M400-30 Pump Plunger Assembly includes items 13 thru 21.
P/N M400-50 Release Pin Assembly includes items 22 thru 24.
See pages 7 & 8 for availability of individual items.

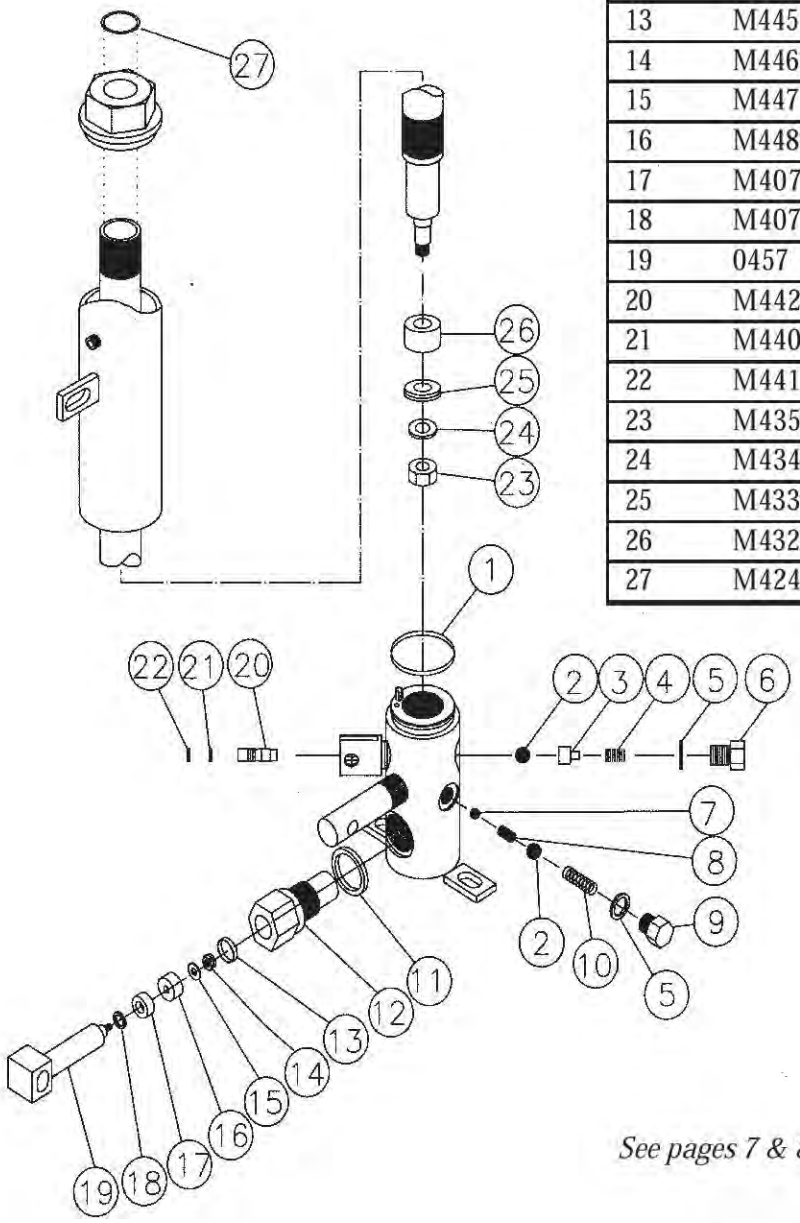
ITEM NO.	PART NO.	QTY	DESCRIPTION
1	M410	1	Pump Body
2	M420	1	Reservoir Seal O Ring
3	M412	2	Pump Check Ball
4	M416A	1	Poppet
5	M417	1	Release Spring
6	M414	2	Gasket
7	M419	1	Release Bolt
8	M439	1	Pump Intake Ball
9	M438	1	Pump Intake Spring
10	M415	1	Pump Valve Bolt
11	M413	1	Pump Check Spring
12	M411	1	Plug
13	M443	1	Gasket
14	M444	1	Plunger Sleeve

ITEM NO.	PART NO.	QTY	DESCRIPTION
15	M445	1	Plunger O Ring
16	M446	1	Plunger Nut
17	M447	1	Washer
18	M448	1	Plunger Cup
19	M407A	1	Plunger Guide Brg.
20	M407B	1	Seal O Ring
21	0457	1	Pump Plunger
22	M442	1	Release Pin
23	M440	1	Release Pin O Ring
24	M441	1	Release Pin Back Up Ring (Split)
25	M410-D	1	Pin, Spring Roll

FIGURE 4:

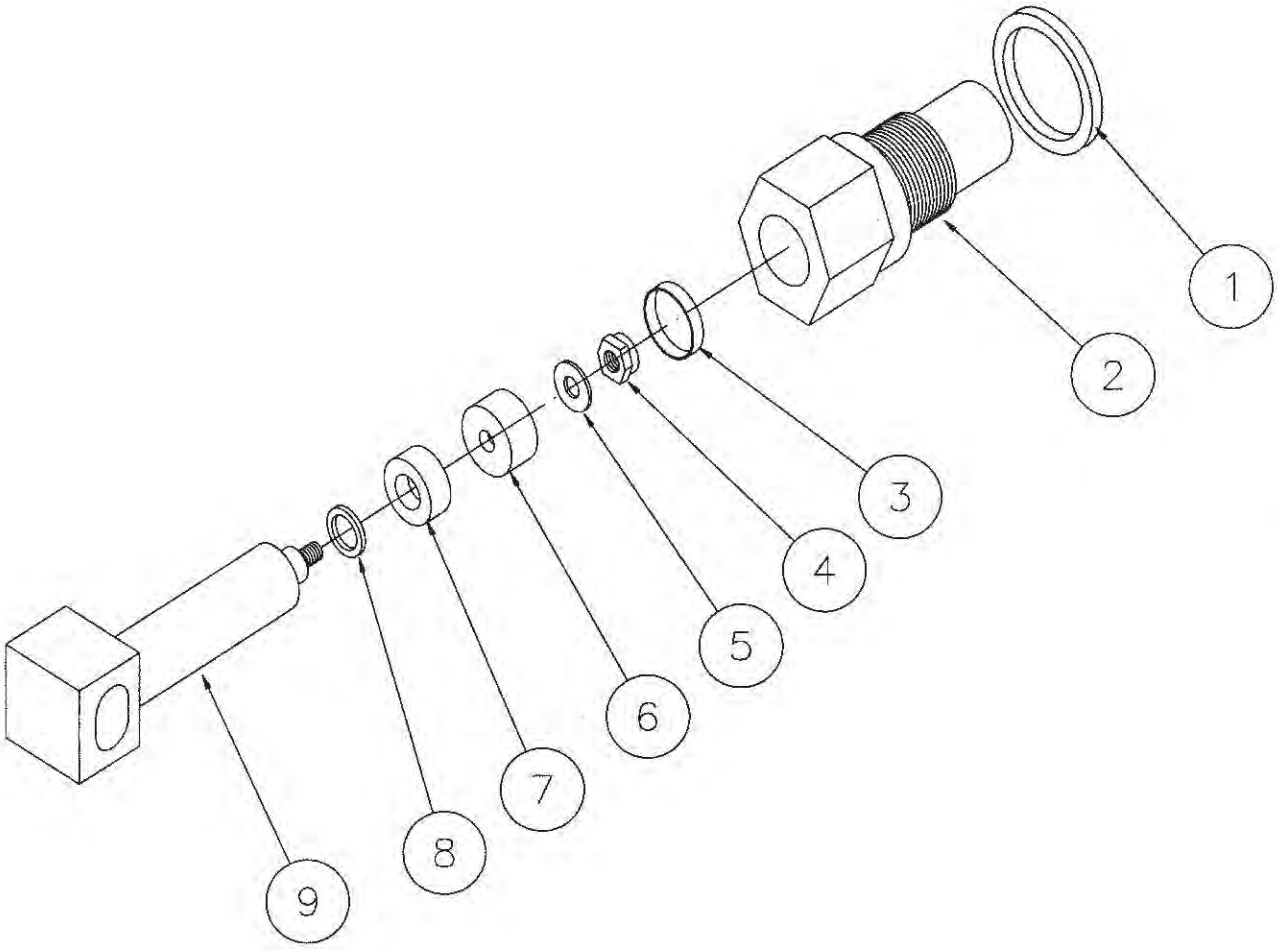
M400-20 CYLINDER ASSEMBLY REPAIR KIT

ITEM#	P/N	DESCRIPTION	Qty
1	M420	Reservoir Seal O Ring	1
2	M412	Pump Check Ball	2
3	M416A	Poppet	1
4	M417	Release Spring	1
5	M414	Gasket 3/32 OD x 1/2 ID x 3/32 thk	2
6	M419	Release Bolt	1
7	M439	Pump Intake Ball	1
8	M438	Pump Intake Spring	1
9	M415	Pump Valve Bolt	1
10	M413	Pump Check Spring	1
11	M443	Gasket	1
12	M444	Plunger Sleeve	1
13	M445	Plunger O Ring	1
14	M446	Plunger Nut	1
15	M447	Washer	1
16	M448	Plunger Cup	1
17	M407A	Plunger Guide Bearing	1
18	M407B	Seal O Ring	1
19	0457	Plunger, Pump 1000/2000	1
20	M442	Release Pin	1
21	M440	Release Pin O Ring	1
22	M441	Release Pin Back Up Ring (Split)	1
23	M435	Nut, Ram Cup	1
24	M434	Washer, Ram	1
25	M433-01	Seal, Deep Z	1
26	M432-01	Plate, Ram Guide Bearing	1
27	M424	O Ring, Ram Seal, 813 ID x 1.06	1



See pages 7 & 8 for availability of individual items.

FIGURE 5: M400-30 PUMP PLUNGER ASSEMBLY

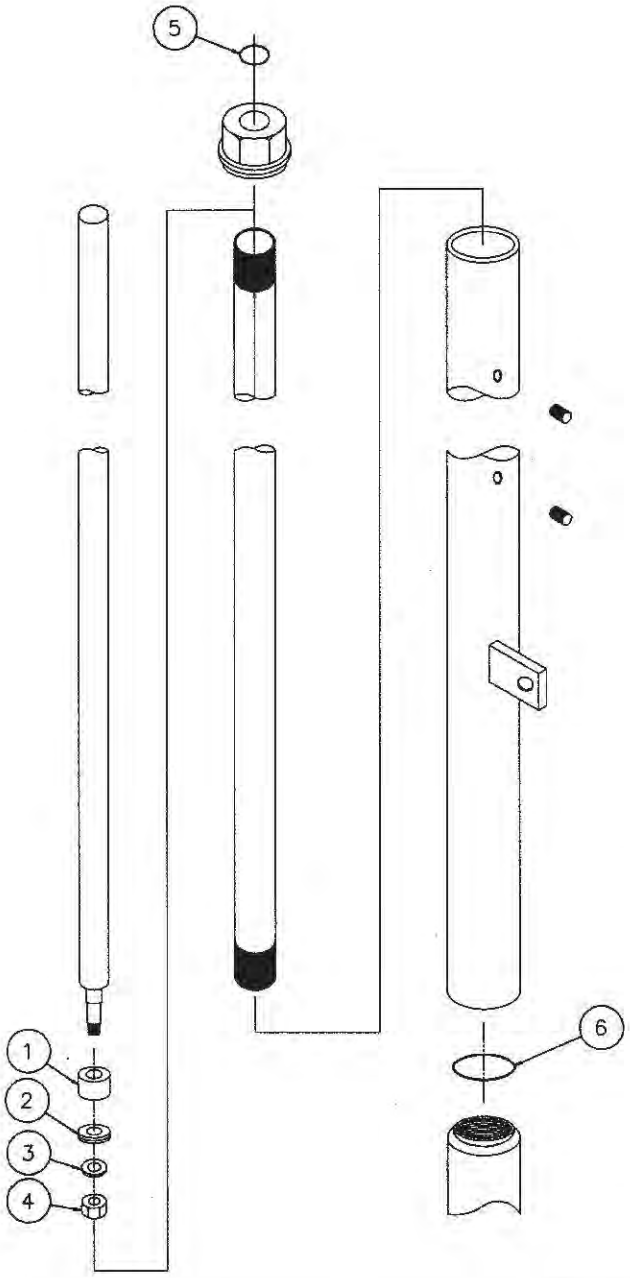


See pages 7 & 8 for availability of individual items.

ITEM #	P/N	QTY	DESCRIPTION
1	M443	1	Gasket
2	M444	1	Plunger Sleeve
3	M445	1	Plunger O Ring
4	M446	1	Plunger Nut
5	M447	1	Washer
6	M448	1	Plunger Cup
7	M407A	1	Plunger Guide Bearing
8	M407B	1	Seal O Ring
9	0457	1	Pump Plunger

FIGURE 6:

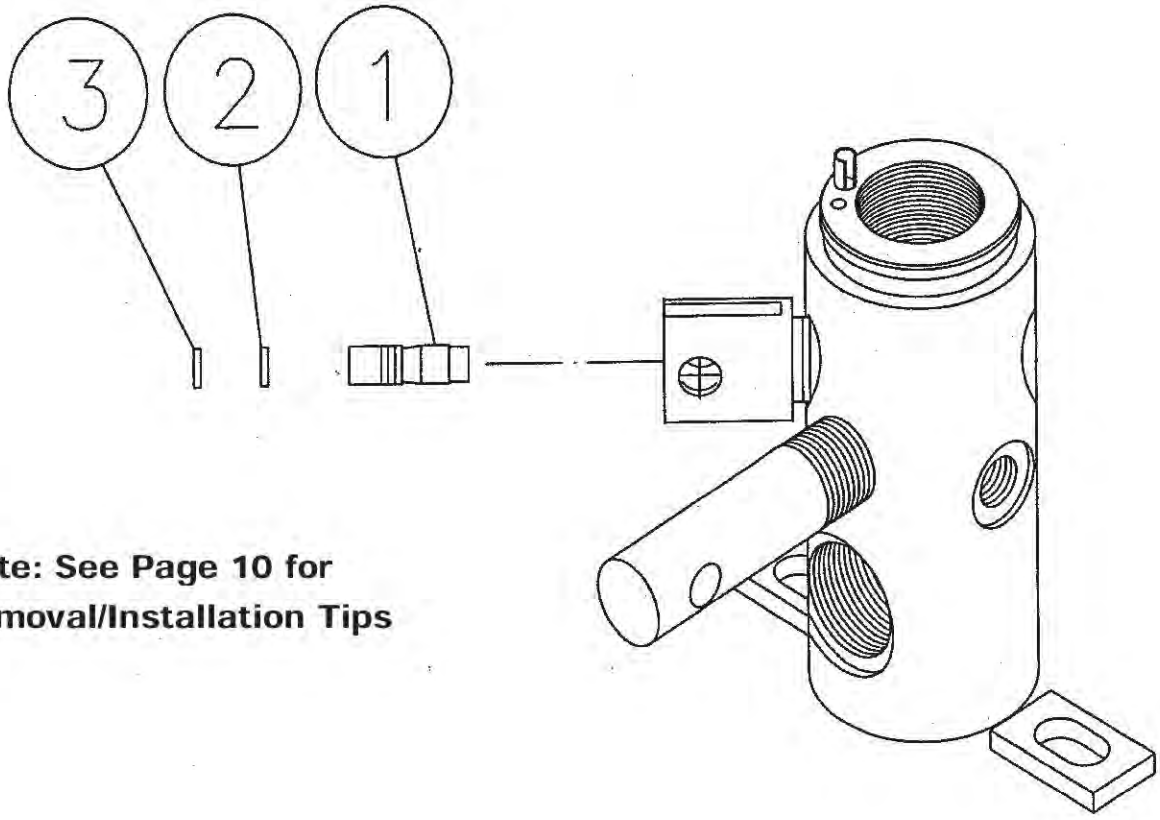
M400-40 CYLINDER PACKING KIT



ITEM#	P/N	DESCRIPTION	Qty
1	M432-01	Plate, Ram Guide Bearing	1
2	M433-01	Seal, Deep Z	1
3	M434	Washer, Ram	1
4	M435	Nut, Ram Cup	1
5	M424	O Ring, Ram Seal, 813 ID x 1.06	1
6	M420	Reservoir Seal O Ring	1

See pages 7 & 8 for availability of individual items.

FIGURE 7: M400-50 RELEASE PIN ASSEMBLY



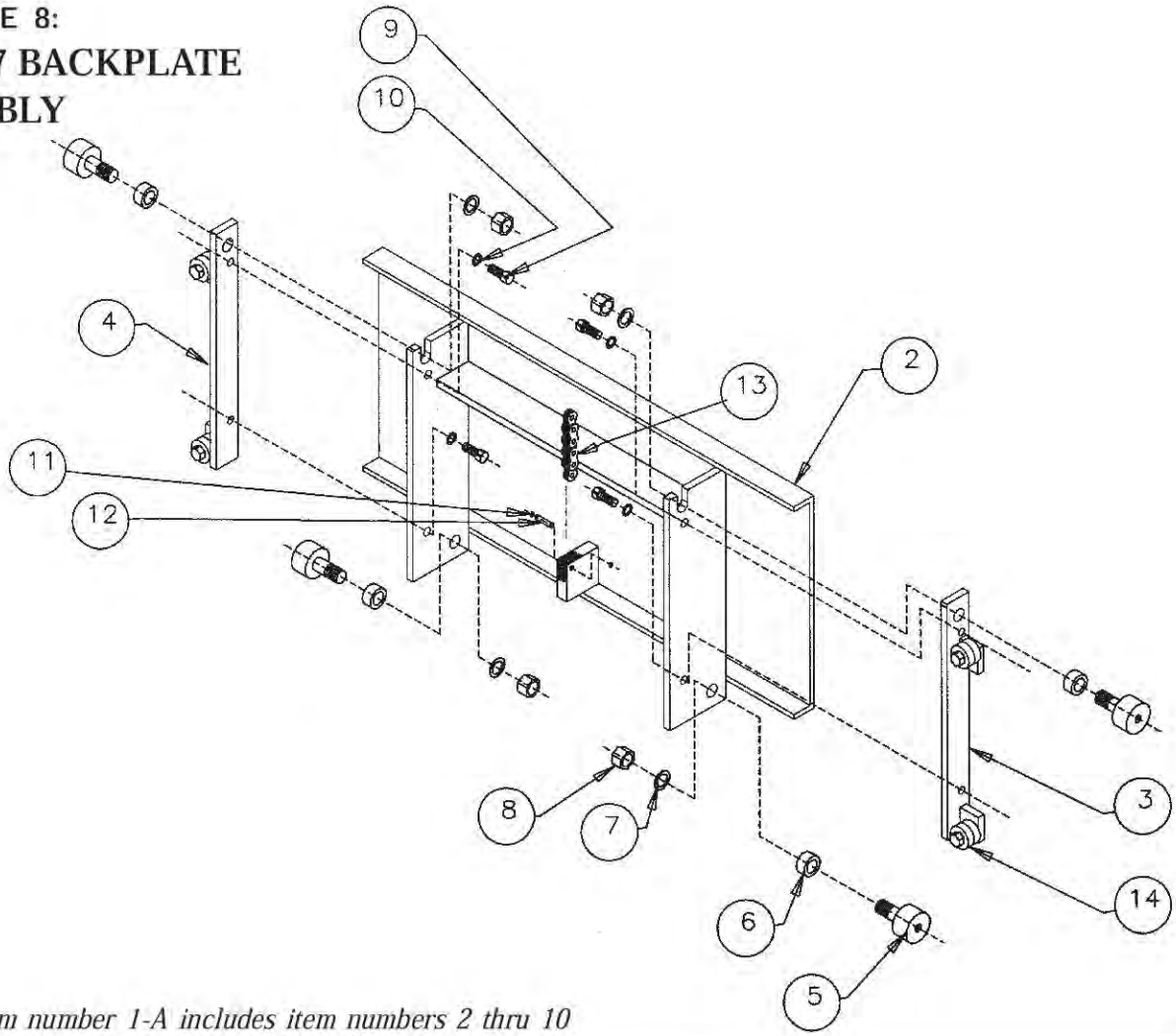
Note: See Page 10 for Removal/Installation Tips

ITEM#	P/N	QTY	DESCRIPTION
1	M442	1	Release Pin
2	M440	1	Release Pin O Ring
3	M441	1	Release Pin Back Up Ring (Split)

See pages 7 & 8 for availability of individual items.

FIGURE 8:

C118B27 BACKPLATE ASSEMBLY

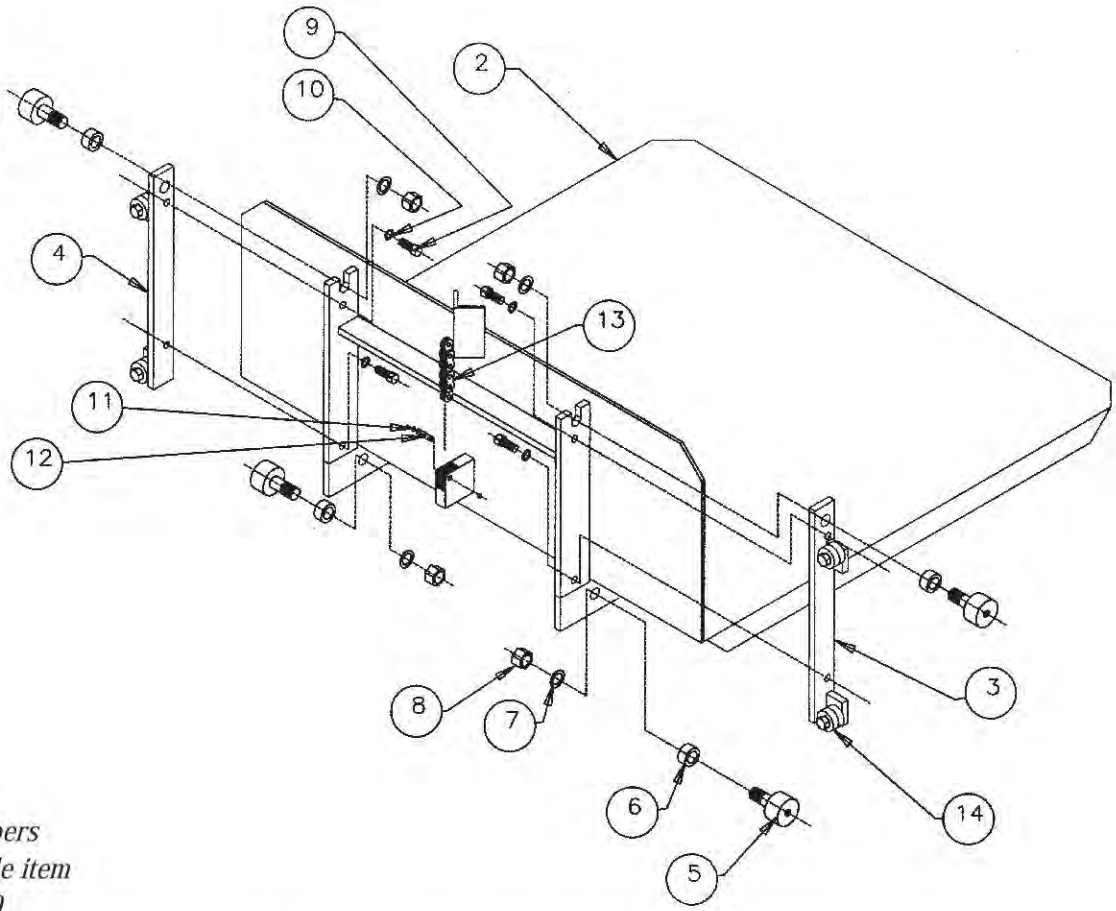


NOTE: Item number 1-A includes item numbers 2 thru 10

ITEM#	P/N	QTY	DESCRIPTION
1-A	C118B27-1000AVR	1	Backplate Assembly Complete 1000#
3	C111VR	1	Side Thrust Bearing Assembly R/S
4	C112VR	1	Side Thrust Bearing Assembly L/S
		Item Numbers 3 & 4 Include Item Number 14	
5	C107	4	Bearing
6	C108	4	Hood Bearing Spacer
7	N0427	4	5/8 Internal Lockwasher
8	N0180	4	5/8-16 Hex Nut
9	N0920	4	3/8-16 X 1" Screw, Cap HH CR2
10	N0260	4	3/8 Lockwasher
11	C106B	2	Lock Rings
12	C106A	1	Clevis Pin
13	C104-XX**	1	Lift Chain
14	C114	8	Bearing

*** Specific Model No. Required*

FIGURE 9:
C117E PLATFORM ASSEMBLY



NOTE: Item numbers 1-A thru -B include item numbers 2 thru 10

ITEM#	P/N	QTY	DESCRIPTION
1-A	C117E24-1000AVR	1	Platform Assembly 24 X 24" 1000#
-B	C117E32-1000AVR	1	Platform Assembly 32 X 30" 1000#
3	C111VR	1	Side Thrust Bearing Assembly R/S
4	C112VR	1	Side Thrust Bearing Assembly L/S Item Numbers 3 & 4 include Item Number 14
5	C107	4	Bearing
6	C108	4	Hood Bearing Spacer
7	N0427	4	5/8 Internal Lockwasher
8	N0180	4	5/8-18 Hex Nut
9	N0920	4	3/8-16 X 1" Screw, Cap HH CR2
10	N0260	4	3/8 Lockwasher
11	C106B	2	3/8 Lock Rings
12	C106A	1	Clevis Pin
13	C104**	1	Lift Chain
14	C114	8	Bearing

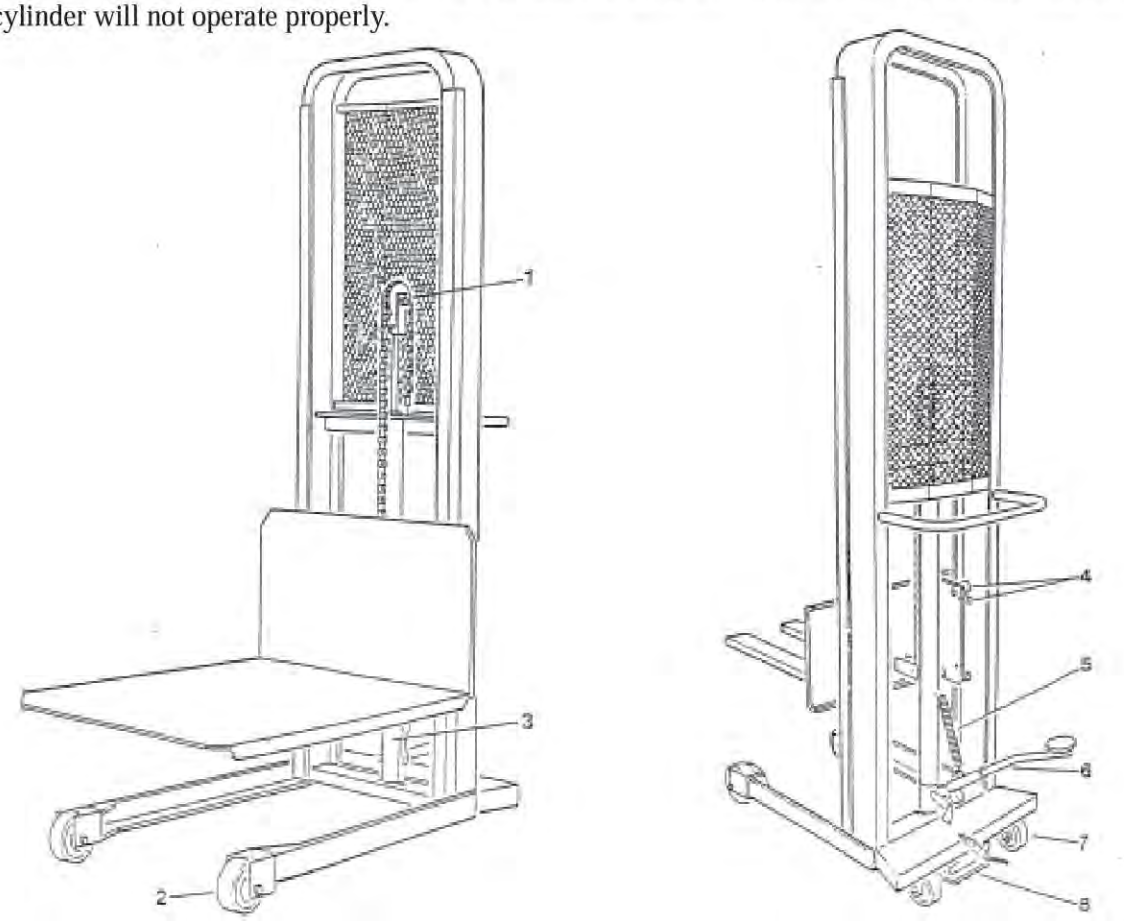
*** Specifc model number required.*

FIGURE 10: STACKER ASSEMBLY

ITEM#	QUANTITY	P/N	DESCRIPTION
1	1	0584-VR	Chain Roller Assembly
2	2	C102PH	Rigid Phenolic Wheel
3	1	M400**	Cylinder Assembly
4	4	C107	Roller Kit
5	1	M429	Return Spring
6	1	M436	Foot Lever (pad M437)
7	2	C101PH2	Swivel Wheel Assembly
8	1	C100	Floor Lock
** *Specific Model Number Required*			

When purchasing any M400-xx series cylinder make sure to purchase the breather plug, p/n M427, also.

All M400-xx series cylinders need to have the NPT shipping plug removed from the top hole after being installed in the lift, and replaced with the NPT breather plug (p/n M427). If this step is not completed, the cylinder will not operate properly.

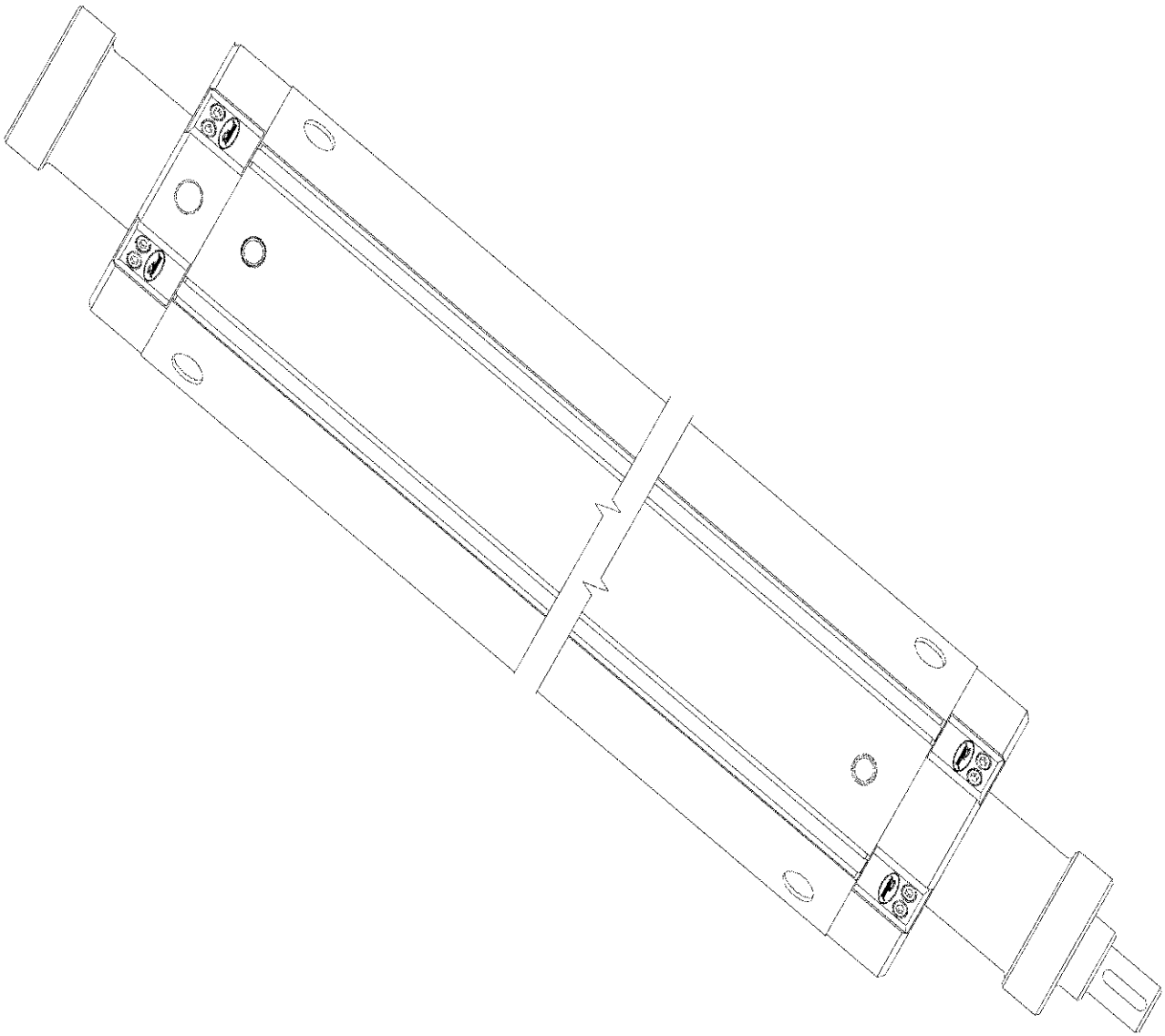


B94

Series 800/850

External Element Air Shaft

Installation, Operation and Maintenance



Series 800
GL External Element
GE External Element
GX Ultra-Lightweight External Element
Series 850
GS Spiral External Element

TABLE OF CONTENTS

Caution 2
Recommended Tools 2
Important Safety Instructions 3
Assembly Diagram and Part Identification 4
Installation 5
  Core Stops 5
Operation 5
  To Inflate Shaft 5
  To Deflate Shaft 5
Maintenance 6
  General Information 7
  To Replace Rubber External Element and Bladder (Straight or Spiral) 8
  To Replace Rubber External Element with Folded Bladder 10
  To Replace Aluminum External Element and Bladder 12
  To Remove and Replace Valves 14
    Non-Isolation Quick Release 14
    Isolation Valve (3-way or 4-way) 14
  Air Circuits 15
Troubleshooting 16
Spare Parts 18
  Element End Clamps 18
  Valves 18
  Core Stops 19
  Hole Punch Guides 19
Mini GL Shafts 20

CAUTION

- Wear eye protection when using tools or compressed air.
- Follow all shaft safety precautions (page 3).
- Petroleum-based products will damage bladders and rubber elements – DO NOT USE.



TIDLAND CUSTOMER SERVICE

1-800-426-1000 www.tidland.com

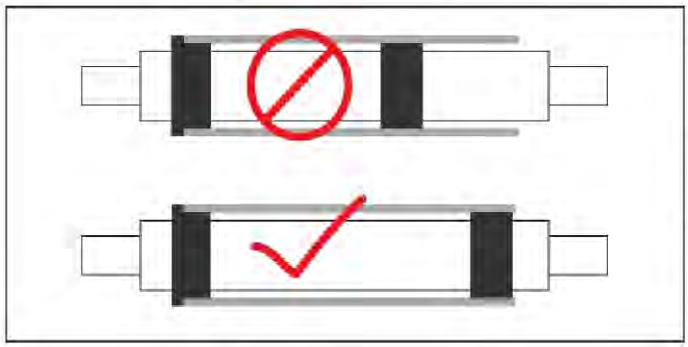
RECOMMENDED TOOLS

- Tidland Inflation Tool (P/N 128052)
- Tidland Air Release Tool (P/N 111630)
- Tidland Hole Punch Tool (P/N 560345)
- Tidland Hole Punch Guides (P/N 577980 or 577982: See *Miscellaneous*, page 19)
- Hex wrenches: 2.5mm, 3mm, 1/8"
- Thin wall socket wrench: 7/16", 3/4" (may be required during valve replacement)
- *LOCTITE™ 222*
- *AERVOE® Crown 8035 Slix-it* silicone spray (recommended)

IMPORTANT SAFETY INSTRUCTIONS

When using this Tidland product, basic safety precautions should always be followed to reduce the risk of personal injury. Your company's safety instructions and procedures should always be followed. When using this product with any other equipment or machinery, all safety requirements stipulated by that equipment or machinery manufacturer must be followed. Compliance with local, state, and federal safety requirements is your responsibility. No part of these or the following instructions should be construed as conflicting with or nullifying the instructions from other sources. Be familiar with the hazards and safety requirements in your work environment and always work safely.

1. Read and understand all instructions and shaft design application limits before operation.
2. Never use this product for a purpose or in a machine that it was not specifically designed for. See Product Safety Data Sheet (PSDS).
3. Do not exceed the operation loads for this shaft as noted on its PSDS, Product Safety Data Sheet.
4. Follow all warnings and instructions marked on the product and on the PSDS.
5. Inspect the shaft for wear and/or other safety and functional deficiencies daily, before each use.
6. Wear safety glasses or proper eye protection when inflating or deflating or otherwise operating the air system.
7. Do not remove or otherwise alter any setscrews or fastening devices prior to using this product.
8. Do not operate this product if any setscrews or fastening devices are missing.
9. Do not lift shaft manually if it is beyond your capacity. Loads over 1/3 your body weight may be prohibitive. Consult your company safety policy.
10. When lifting a shaft, use proper lifting techniques, keeping back straight and lifting with the legs.
11. Do not carry or lift this product over wet or slippery surfaces.
12. Use appropriate mechanical lifting devices, such as a hoist or shaft puller, for heavier shafts.
13. When performing maintenance or repair procedures, do not pressurize the shaft if journal setscrews are loose or missing.
14. When performing maintenance procedures, do not pressurize the shaft if the journal is missing.
15. All replacement parts used on this product should be made to original Tidland specifications.
16. All maintenance and repair procedures performed on this product should be done to Tidland specifications by qualified personnel.



- **When using chucks on this shaft, always locate chucks as shown.**
- **Improper placement of chucks will reduce life cycle of the shaft.**
- **Questions about installation, application or load calculations? Call Tidland Customer Service.**

ASSEMBLY DIAGRAM AND PART IDENTIFICATION

Tidland Series 800/850 shafts are available in many configurations. **See *Spare Parts* at the end of this publication for more information about part numbers specific to your model.** Please have your serial number available when you contact Tidland Customer Service. 1-800-426-1000

This publication covers installation, operation and maintenance for the following products:

Series 800

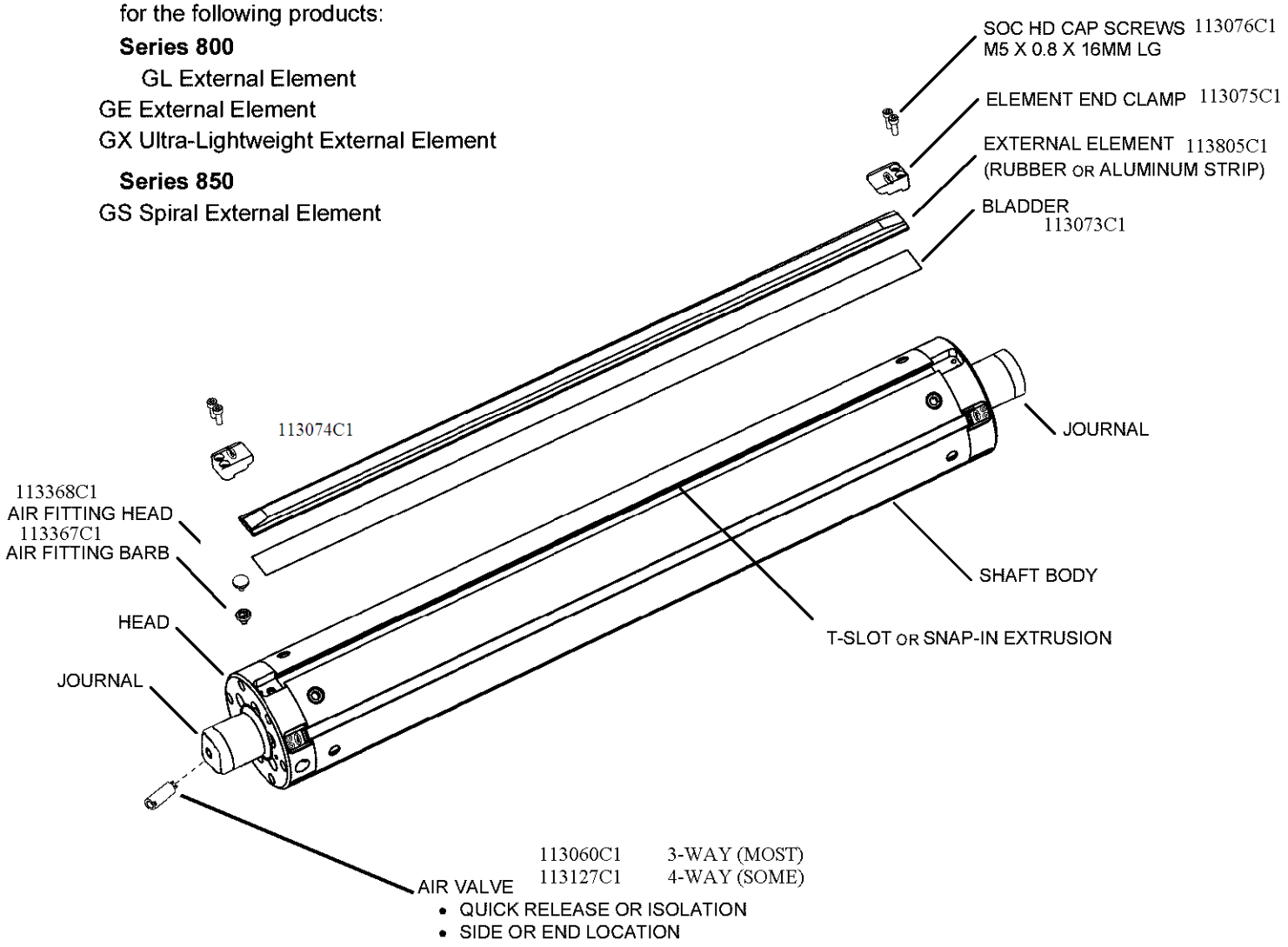
GL External Element

GE External Element

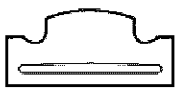
GX Ultra-Lightweight External Element

Series 850

GS Spiral External Element



Bladder end clamps vary by shaft model and serial number. See *Spare Parts* at the end of this publication or call your Tidland Customer Service Representative for numbers. Please have your serial number ready when you call. **(1-800-426-1000)**



The one-piece external element configuration is obsolete for the Series 800/850. Tidland can help you update your shaft to the new design that uses a separate polyurethane bladder and external element.

INSTALLATION

Install the shaft as required for your specific application.

Core Stops

There are many configurations for the Tidland Series 800/850 shafts, some of which include core stops. Basic core stop installation is covered below. Call Tidland Corporation Customer Service for part numbers if you need replacement parts. (1-800-426-1000)

Fig. 1 – Core Stop (Dovetail): Loosen – do not remove – the two socket head capscrews in the top piece of the core stop. Slide the dovetail into the groove in the shaft until it is aligned as required for your application. Tighten the bolts to 55-60 in·lbs.

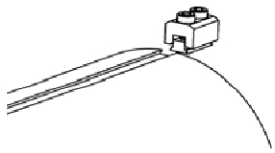


Fig. 1

Fig. 2 – Core Stop (Ring): Loosen – do not remove – the socket head bolt in the core stop ring until the ring can slide over the shaft. **Make sure the seam in the ring is not aligned directly over a rubber element.** Position the ring along the shaft as required for your application, then tighten the bolt to 55-60 in·lbs.

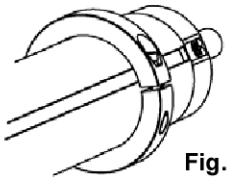


Fig. 2

OPERATION

To Inflate Shaft

1. Use only the Tidland Inflation Tool.
2. Push the air nozzle firmly into the valve receiver, which will depress both the valve button and the tip of the inflation tool.
3. Inflate the shaft until the line pressure air gauge indicates a minimum of 80 psig (5.5 bar). Do not exceed the maximum air pressure of 120 psig (8.2 bar).

   Note: Keep the shaft pressure above 80 psig (5.5 bar) to ensure optimal safety and performance.



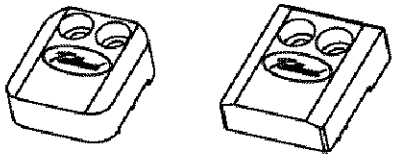
Do not inflate while the shaft is rotating.
To deflate, only use the Tidland air release tool. Do not use finger to release air.
Do not deflate while the shaft is rotating.

To Deflate Shaft

1. Using the air release tool, push in the quick release air valve and allow the air to escape through the hole in the center of the button.
2. Remove the shaft from the roll/core.

MAINTENANCE

The Tidland Series 800/850 shafts come in many configurations. Maintenance procedures are similar for each model. Specific part numbers are on page 18.

IF YOU HAVE THIS ELEMENT CLAMP	USE INSTRUCTIONS ON
 with an aluminum strip element	Page 12

- Keep shaft clean and free from grit and scratches.
- The external rubber element and the bladder underneath it can be replaced without removing the shaft from the machine.
- Do not remove the aluminum T-slot extrusion from the shaft when replacing external element and bladder.
- To check for leaks after replacing bladders and elements, inflate shaft to operating pressure, spray end clamps with soapy water and check for bubbles.
- Read page 7 for important general information about replacing shaft elements.

MAINTENANCE

General Information

Fig. 3 – The Tidland Series 800/850 External Element shafts are fitted with two different element end clamps. One clamp is for the non-valve end and the other has a recess that accommodates the air fitting at the valve end. The clamps are not interchangeable from end to end.

Fig. 4 – Element end clamps with UHMW strip must be used on spiral strip shafts.

Fig. 5 – Use these end clamps ONLY for bladders that are folded over the air fitting.

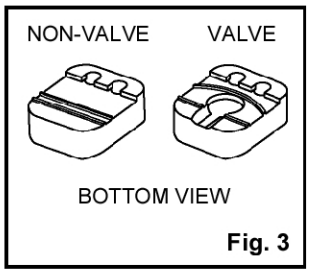


Fig. 3

Fig. 6 – Cut bladders and elements square across the ends so there is a flush fit at the end clamp. **Bladders cut at an angle are at risk for leaks.**

Fig. 7 – Use the Tidland Hole Punch and Tidland Hole Punch Guide to punch holes for air fittings in the bladder. Punch the hole in **one wall only** of the bladder. (Hole punch and guide not available for "Mini GL Shafts.")

Fig. 8 – Make sure that the element end clamps completely cover the ends of the bladders. Using the correct Hole Punch Guide will ensure that the bladder ends are long enough to be secured under the end clamps.

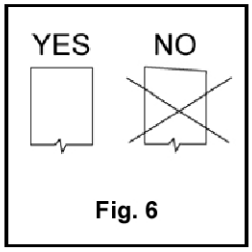


Fig. 6

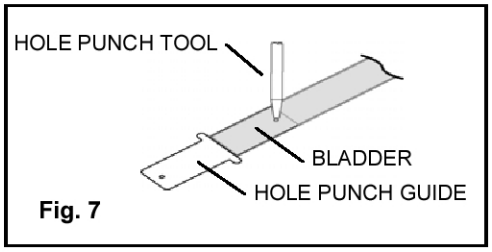


Fig. 7

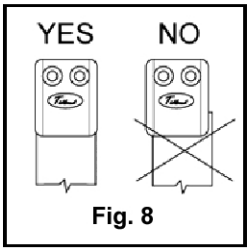
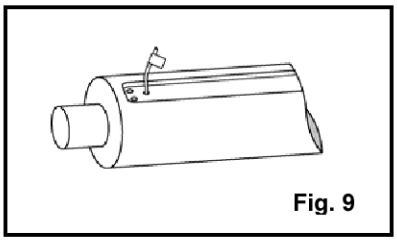
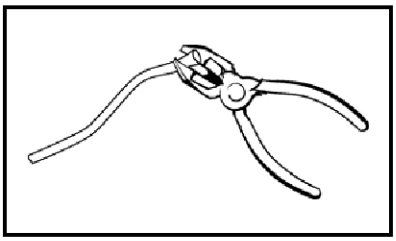


Fig. 8

Fig. 9 – If the barbed end of the air fitting comes out of the port and detaches from the air hose, there is a risk of the hose falling back inside the shaft body. If the air hose is exposed, wrap a piece of tape around it as a precaution.

Important: If at any time an air hose is pulled off an air fitting barb, note that the end of the air hose will be stretched or damaged. **Do not reuse the hose without cutting off the damaged portion.**


Fig. 9



To Replace Rubber External Element and Bladder (Straight or Spiral)

Tidland recommends replacing the element and bladder at the same time.

Before replacing shaft components, refer to page 7 for general information to aid in leak-free operation.

The one-piece rubber element is obsolete. Tidland can help you update your shaft to the new design that uses a separate polyurethane bladder and external element.
1-800-426-1000.

Remove the Rubber Element

1. Remove screws from end clamps and remove the clamps from each end of the shaft.
2. Pry up the rubber element and pull it from the slot.

Remove the Bladder

3. Lift the bladder out of the slot, carefully removing the air fitting from its port in the slot.
4. Remove the air fitting "head" from the bladder and set aside.
5. Clean the shaft and slot with a soft cloth. A rag damp with mild solvent, such as rubbing alcohol, is acceptable.

NOTICE	Petroleum-based products will damage bladders. Do not use.

Install Valve End of Bladder

Note: Bladder material supplied for replacement may be longer than the required finished length. Do not cut to length until Step 16.

6. Square off one end of the bladder. (Bladders cut at an angle are at risk for leaks.)
7. Insert the Tidland Hole Punch Guide (blue) into the end of the bladder. With the Tidland Hole Punch Tool, punch a hole in one wall only of the bladder.
8. Insert air fitting "head" into the hole in the bladder wall (Fig. 10).

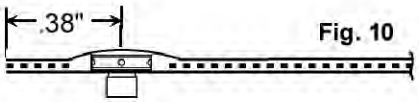
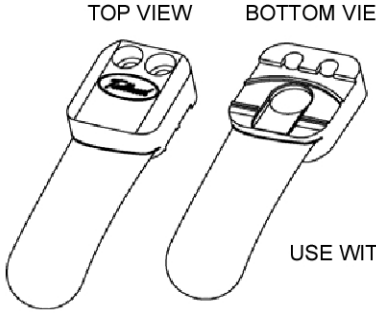


Fig. 10

9. Install the bladder along the length of the slot and connect the air fitting head with the other half of the air fitting in the slot.
10. Apply a small amount of *LOCTITE 222* to the end clamp screw threads and install the valve end clamp, securing the bladder underneath it.
11. Using 2.5mm hex wrench, tighten end clamp screws to 55-60 in·lbs.



USE WITH STRAIGHT EXTERNAL ELEMENTS
(RUBBER OR ALUMINUM)



USE WITH SPIRAL ELEMENTS

(Continued on next page.)

Rubber External Element and Bladder – Straight or Spiral *(continued)*

Note: Use silicone spray to ease installation of bladder and external elements. **Do not use** petroleum-based lubricants.

12. Square off one end of the rubber element. This will be the leading end for installation.
13. Spray the bladder in the slot **and** all sides of the new rubber element with silicon spray.
14. Starting at the non-valve end of the shaft slot, hold the loose end of the bladder material securely and begin to push the rubber element into the slot.
    Note: Do not stretch the bladder, but keep it taut under the rubber element.
15. Push and pull the rubber element along the length of the slot until the leading end contacts the end clamp at the air end of the shaft. Apply silicone spray as needed.
    Note: For **spiral shafts**, the rubber element should slide over the top of the UHMW strip on the end clamp.

Install Non-Valve End of Bladder

16. At the non-valve end, mark the bladder at a point 0.140" from the end clamp screw hole centers (Fig. 11). Do not stretch the bladder.
17. Cut square across the end of the bladder at the mark.
18. Apply a small amount of *LOCTITE 222* to the end clamp screw threads and install the non-valve end clamp, securing the bladder underneath it.
    Note: For **spiral shafts**, always use the end clamp with the UHMW strip attached. The strip will be in between the bladder and the rubber element when assembly is complete.

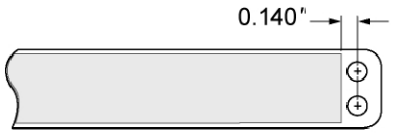
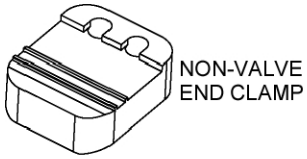


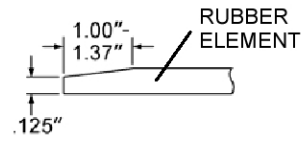
Fig. 11



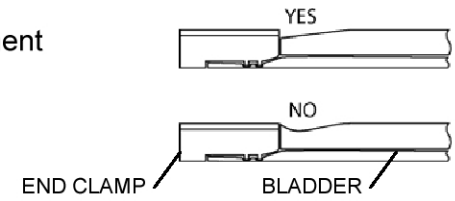
19. Using 2.5mm hex wrench, tighten end clamp screws to 55-60 in·lbs.

Chamfer the Rubber Element

20. After all elements are installed, inflate shaft to operating pressure.
21. With a grinder, carefully chamfer the ends of the element next to the clamps so that they fully collapse below the body OD when the shaft is deflated.



Note: Make sure to chamfer clear to the end of the element



To **check for leaks** after replacing bladders and elements, inflate shaft to operating pressure, spray end clamps with soapy water and check for bubbles.

To Replace Rubber External Element with Folded Bladder

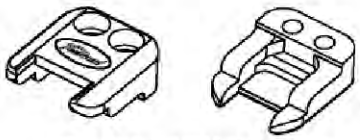
Tidland recommends replacing external element and bladder at the same time.

Before replacing shaft components, refer to page 7 for general information to aid in leak-free operation.

Note: For easier, leak-free assembly, the folded bladder style can be updated to the non-folded, flat configuration by converting to a new end clamp. Call Tidland for assistance. 1-800-426-1000

Remove the Rubber Element

1. Remove screws from end clamps and remove the clamps from each end of the shaft.
2. Pry up the rubber element and pull it from the slot.
3. Inspect the element for wear; look for slits, gouges or grooves at the core ends.



TOP AND BOTTOM VIEWS

THIS CLAMP STYLE IS INTERCHANGEABLE FROM END TO END.

Remove the Bladder

4. Lift the bladder out of the slot, carefully removing the air fitting from its port in the slot.
5. Remove the air fitting "head" from the bladder and set aside.
6. Clean the shaft and slot with a soft cloth. A rag damp with mild solvent, such as rubbing alcohol, is acceptable.

NOTICE	Petroleum-based products will damage bladders. Do not use.

Install Valve End of Bladder

Note: Bladder material supplied for replacement may be longer than the required finished length. Do not cut to length until Step 18.

7. Square off one end of the bladder. (Bladders cut at an angle are at risk for leaks.)
8. Insert the Tidland Hole Punch Guide (red) into the end of the bladder. With the Tidland Hole Punch Tool, punch a hole in one wall only of the bladder.
9. Insert air fitting "head" into the hole in the bladder wall (Fig. 12).

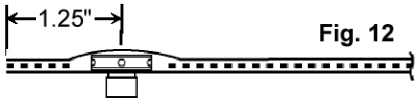


Fig. 12

(ILLUSTRATION NOT TO SCALE)

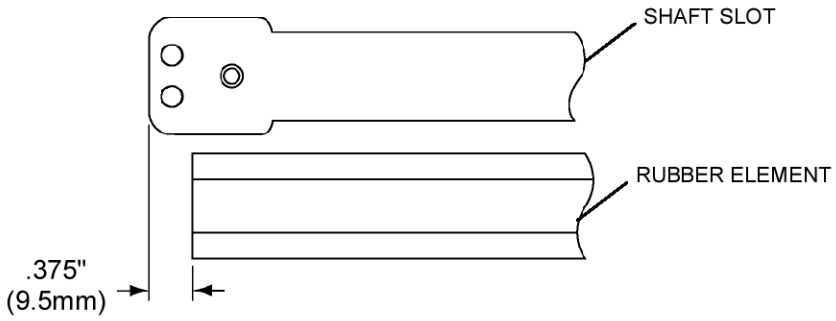
10. Install the bladder along the length of the slot and connect the air fitting head with the other half of the air fitting in the slot. The excess length at the valve end will be folded back over the air fitting when the external element is installed.

(Continued on next page.)

Rubber External Element with Folded Bladder *(continued)*

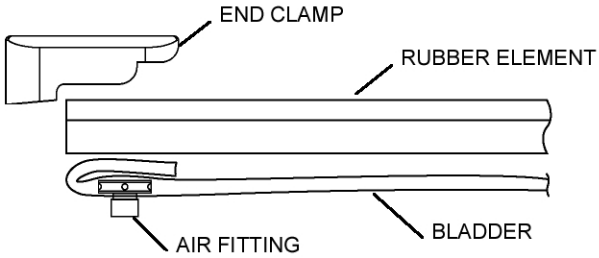
Note: Use dry silicone spray to ease installation of bladder and external elements. **Do not use** petroleum-based lubricants.

11. Square off the leading end of the rubber element.
12. At the non-valve end of the shaft slot, hold the loose end of the bladder material securely and begin to push the rubber element into the slot.
    Caution: Do not stretch the bladder, but keep it taut under the rubber element.



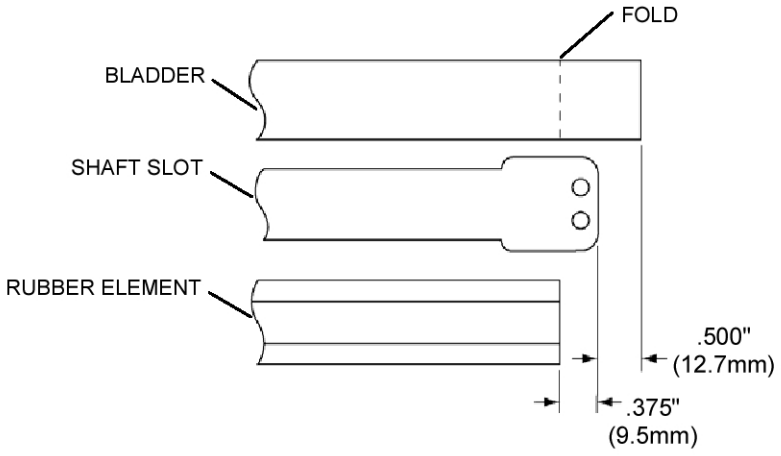
13. Push and pull the rubber element along the length of the slot until the leading end is .375" (9.5mm) from the outside edge of the end clamp pocket.

14. Fold the end of the bladder back and tuck it underneath the rubber element.
15. Apply a small amount of *LOCTITE 222* to the end clamp screw threads and install the end clamp, securing the bladder and rubber element underneath it.
16. Using 2.5mm hex wrench, tighten end clamp screws to 55-60 in·lbs.



Install Non-Valve End of Bladder

17. At the non-valve end, cut the bladder to length .500" past the end of the shaft slot.
18. Cut the rubber element square .375" short of the end of the shaft slot.
19. Lift the end of the rubber element and fold the bladder back underneath.
20. Apply a small amount of *LOCTITE 222* to the end clamp screw threads and install the non-valve end clamp, securing the bladder and element underneath it.



21. Using 2.5mm hex wrench, tighten end clamp screws to 55-60 in·lbs.

To **check for leaks** after replacing bladders and elements, inflate shaft to operating pressure, spray end clamps with soapy water and check for bubbles.

To Replace Aluminum External Element and Bladder

When replacing bladders, inspect aluminum elements for wear. Replace if necessary.

Before replacing shaft components, refer to page 7 for general information to aid in leak-free operation.

Remove End Clamps

1. Remove screws from end clamps and remove the clamps from each end of the shaft.

Remove Aluminum External Element

2. Grasp the wave springs at one end and pull them from the slot.
3. Pull the aluminum external element from the slot.
4. Inspect the element for wear; look for cracks or grooves.

Remove the Bladder

5. Lift the bladder out of the slot, carefully removing the air fitting from its port in the slot.
6. Remove the air fitting "head" from the bladder and set aside.
7. Clean the shaft and slot with a soft cloth. A rag damp with mild solvent, such as rubbing alcohol, is acceptable.

NOTICE	Petroleum-based products will damage bladders. Do not use.

Install Valve End of Bladder

Note: Bladder material supplied for replacement may be longer than the required finished length. Do not cut to length until Step 17.

8. Square off one end of the bladder. (Bladders cut at an angle are at risk for leaks.)
9. Insert the Tidland Hole Punch Guide (blue) into the end of the bladder. With the Tidland Hole Punch Tool, punch a hole in one wall only of the bladder.
10. Insert air fitting "head" into the hole in the bladder wall (Fig. 13).

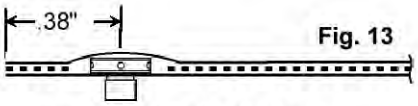
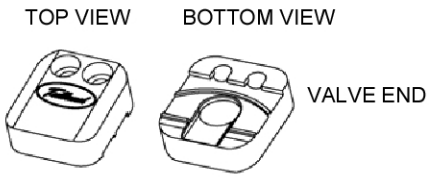


Fig. 13

(ILLUSTRATION NOT TO SCALE)

11. Install bladder in slot and connect the air fitting head with the other half of the air fitting in the slot.
12. Apply a small amount of *LOCTITE 222* to the end clamp screw threads and install the valve end clamp, securing the bladder underneath it.
13. Using 2.5mm hex wrench, tighten end clamp screws to 55-60 in·lbs.



USE WITH STRAIGHT EXTERNAL ELEMENTS
(RUBBER OR ALUMINUM)

(Continued on next page.)

Aluminum External Element and Bladder *(continued)*

14. Starting at the non-valve end of the shaft slot, hold the loose end of the bladder material securely and slide the aluminum external element into the slot until it contacts the end clamp at the valve end.
    Note: Do not stretch the bladder, but keep it taut under the aluminum strip.
15. Install the wave springs on top of each side of the aluminum external element (Fig. 14).

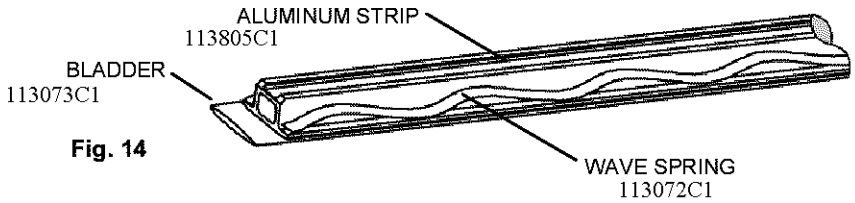


Fig. 14

Install Non-Valve End of Bladder

16. At the non-valve end, mark the bladder at a point 0.140" from the end clamp screw hole centers (Fig. 15). Do not stretch the bladder.
17. Cut square across the end of the bladder.
18. Apply a small amount of *LOCTITE 222* to the end clamp screw threads and install the non-valve end clamp, securing the bladder underneath it.
19. Using 2.5mm hex wrench, tighten end clamp screws to 55-60 in·lbs.

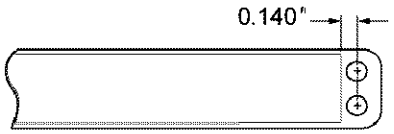
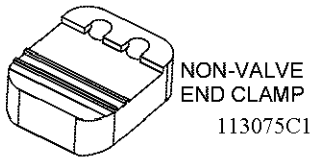


Fig. 15



To **check for leaks** after replacing bladders and elements, inflate shaft to operating pressure, spray end clamps with soapy water and check for bubbles.

To Remove and Replace Valves

There are several styles of valves used on the Tidland Series 800/850 shafts, installed either in the end or the side of the shaft, depending on your application.

Ensure that the shaft is completely deflated before removing the valve.

After removing a valve, remove damaged portion of air hoses before reconnecting them to the valve.

To check for air leaks after reinstalling valves, inflate shaft to operating pressure, spray valve with soapy water and watch for bubbles.

Non-Isolation Quick Release

Use a socket wrench to unscrew the valve
from its side or end location in the shaft.
Thin wall socket wrench: 7/16", 3/4" (may be required)

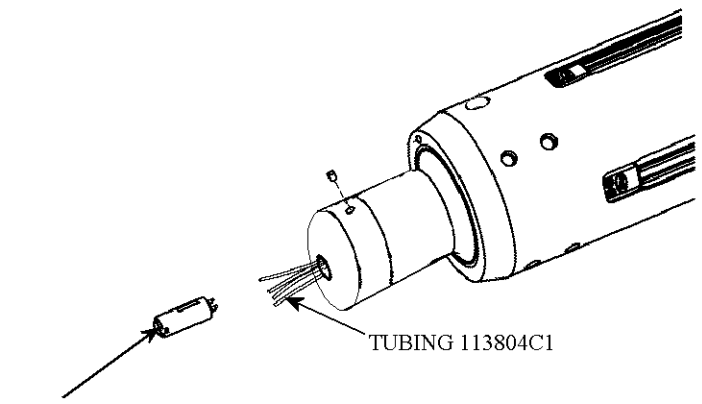
Isolation Valve (3-way or 4-way)

End or Side Location

1. Remove set screw.
2. Pull valve from shaft carefully and disconnect air hoses.
3. Cut off damaged ends of hoses.
4. Attach air hoses to new valve.
5. Reinstall valve in shaft.
6. Reinstall setscrew.

Side Location Bolt-in

1. Remove socket head bolt.
2. Pull valve from shaft carefully and disconnect air hoses.
3. Cut off damaged ends of hoses.
4. Attach air hoses to new valve.
5. Reinstall valve in shaft.
6. Reinstall socket head bolt.



113060C1 3-WAY (MOST)
113127C1 4-WAY (SOME)

Before operation:

- Check for proper inflation and deflation.
- If there is a problem, check air hoses for kinks or disconnects.
- See *Troubleshooting* on page 16.

Air Circuits

Air circuits vary in configuration for the Tidland Series 800/850 shaft designs. In most cases, the air fitting at the end of each external element (underneath the element clamp) attaches to a hose inside the shaft.

For **single circuit valves**, internal hoses attach to separate barbs on a plug installed either in the journal or on the side of the shaft. Air is delivered through the valve to the plug.

Some single circuit shafts have no hoses. Air is routed through drilled holes from valve to the air fitting under the rubber elements.

Isolation valves connect directly to the internal air hoses.

Maintenance for some air circuit hoses may require removal of shaft journals.

Hoses may feed out the end of the shaft into the journal or out the side of the shaft, depending upon the type of valve used. Wrap a piece of tape around exposed hoses to prevent them from slipping back inside the shaft body. (Journal removal may be required to retrieve them.)

After removing an air fitting, **always** clip off the damaged end of an air hose before reconnecting it to the fitting.

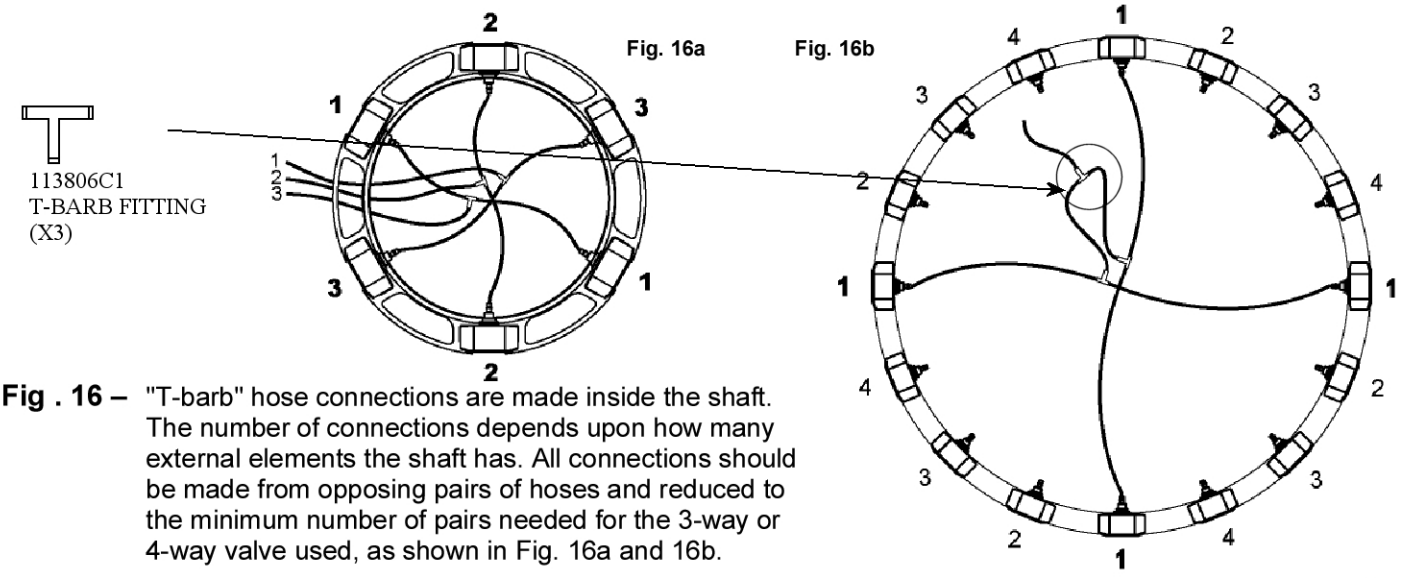


Fig . 16 – "T-barb" hose connections are made inside the shaft. The number of connections depends upon how many external elements the shaft has. All connections should be made from opposing pairs of hoses and reduced to the minimum number of pairs needed for the 3-way or 4-way valve used, as shown in Fig. 16a and 16b.

Fig . 17 – Hoses originating from end clamps in the shaft "head" must feed back into the shaft body before feeding out through the end of the shaft (to prevent being crushed by the journal).

Note: Check air flow through hoses during assembly. Hose kinking can prevent inflation or deflation.

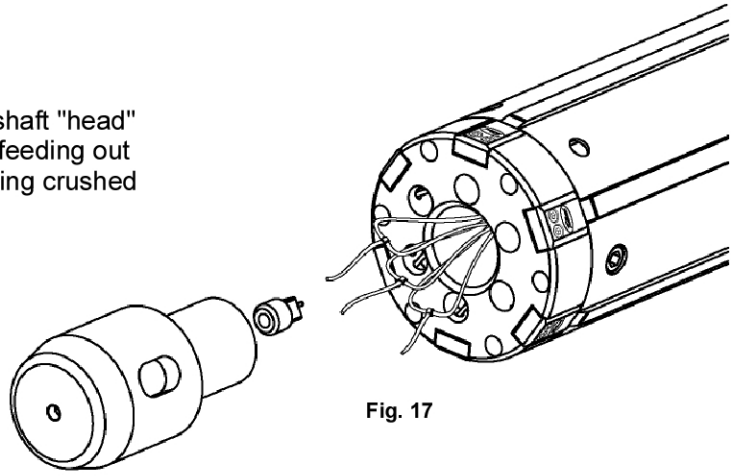


Fig. 17

TROUBLESHOOTING

See page 6 to determine which set of instructions to use for the Recommended Solution.

To **check for leaks** after replacing bladders and elements, inflate shaft to operating pressure, spray end clamps with soapy water and check for bubbles.

Problem	Possible Cause	Recommended Solution
Air Leak	Element end clamps not tight	Tighten end clamps at both ends of shaft to 55-60 in·lbs. Use 29 in·lbs for the Mini GL Shafts.
	End clamps not centered over bladder	Ensure that the end clamps completely cover the end of the bladder. Bladder must be cut square across its end in order for the end clamp to make contact across the full width of the bladder.
	End clamp with UHMW strip installed incorrectly.	**Spiral external element only** – ensure that element end clamp with UHMW strip is installed **between** the bladder and the external element.
	Hole for air fitting in bladder is deformed	Remove end clamp and check the bladder around the air fitting. If the hole is deformed or the bladder is torn, replace the bladder. Use the Tidland Hole Punch Tool and Hole Punch Guide for best results when installing air fittings in a new bladder.
	Air hose connection to the air fitting has failed.	Remove end clamps and confirm that the air fitting is connected to the internal air hose. Check that the fitting is seated correctly in its hole.
	Valve is leaking	Access the valve and confirm that air hoses are attached. If valve is leaking from the center, replace the valve.
	Ruptured bladder	Remove external element and inspect bladder for cracks. **Aluminum external element only** – ensure that wave springs are correctly installed (Fig. 14, page 13). They should sit on **top** of the aluminum strip.

TROUBLESHOOTING

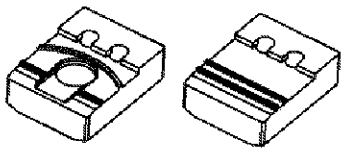
Problem	Possible Cause	Recommended Solution
External element will not collapse completely	Fiber or dust buildup in element slot is causing scraping along edges of slot	Clean along slot. If necessary, remove and replace external element and bladder.
	Cold flow of rubber element	Replace rubber element and bladder.
	Wave springs installed incorrectly (aluminum external element style only)	Wave springs must be installed along the top edges of the aluminum external element.
	Kinked hoses	Check hose installation: ▪ Under element end clamps ▪ At valve ▪ In shaft body (may require journal removal)
Elements difficult to install	Buildup in slot	Clean slot with mild **non-petroleum based solvent** and dry thoroughly. Spray slot and elements with dry silicone lubricant.
External element extrudes out of slot	Element is over-lubricated with dry silicone spray.	Remove element and wipe clean. Reinstall, lubricating only as necessary.
Core will not fit on shaft	Element end clamps extending past shaft O.D.	Inspect bladder length under clamp. If it is too long, it will push up on clamp. Trim small amount from bladder and reinstall clamp.
Core is slipping	Elements not gripping core	▪ Check inflation pressure. ▪ Ensure that the external element is expanding completely. ▪ Check for leaks. ▪ Check for worn elements. ▪ Ensure correct core size.*

* Recommended core clearance on non-inflated shaft is less than .06" for maximum torque capacity.

SPARE PARTS

Call Tidland Customer Service for assistance with choosing the correct replacement parts for your shaft. Please have the shaft serial number ready. 1-800-426-1000. (Parts not to scale.)

Element End Clamps



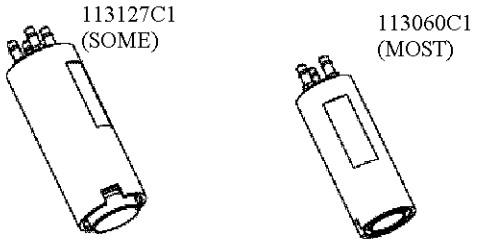
VALVE END
646882
113074C1

NON-V END
646883
113075C1

- Use only with the folded bladder design.
- Clamp is the same for valve and non-valve end.
- For easier, leak-free assembly, this clamp should be updated to the current non-folded style

Valves

ISOLATION

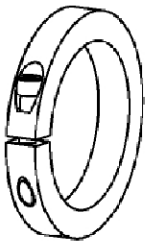


132403
4-WAY, SIDE OR END

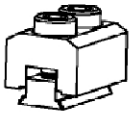
132520
3-WAY, END

SPARE PARTS

Core Stops

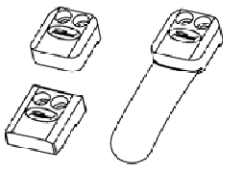


Call for replacement part number.



647911
w/ Soc Hd CpScr
M6 x 1.00 x 8mm LG (2 ea)

Hole Punch Guides

	If your shaft uses this element end clamp, you will need the **blue** Tidland hole punch guide. Part No. 577982
	If your shaft uses this element end clamp, you will need the **red** Tidland hole punch guide. Part No. 577980
	If your shaft uses this element end clamp, you will need the hole punch kit for Tidland "Mini" GL shafts. Part No. 538908

Miscellaneous

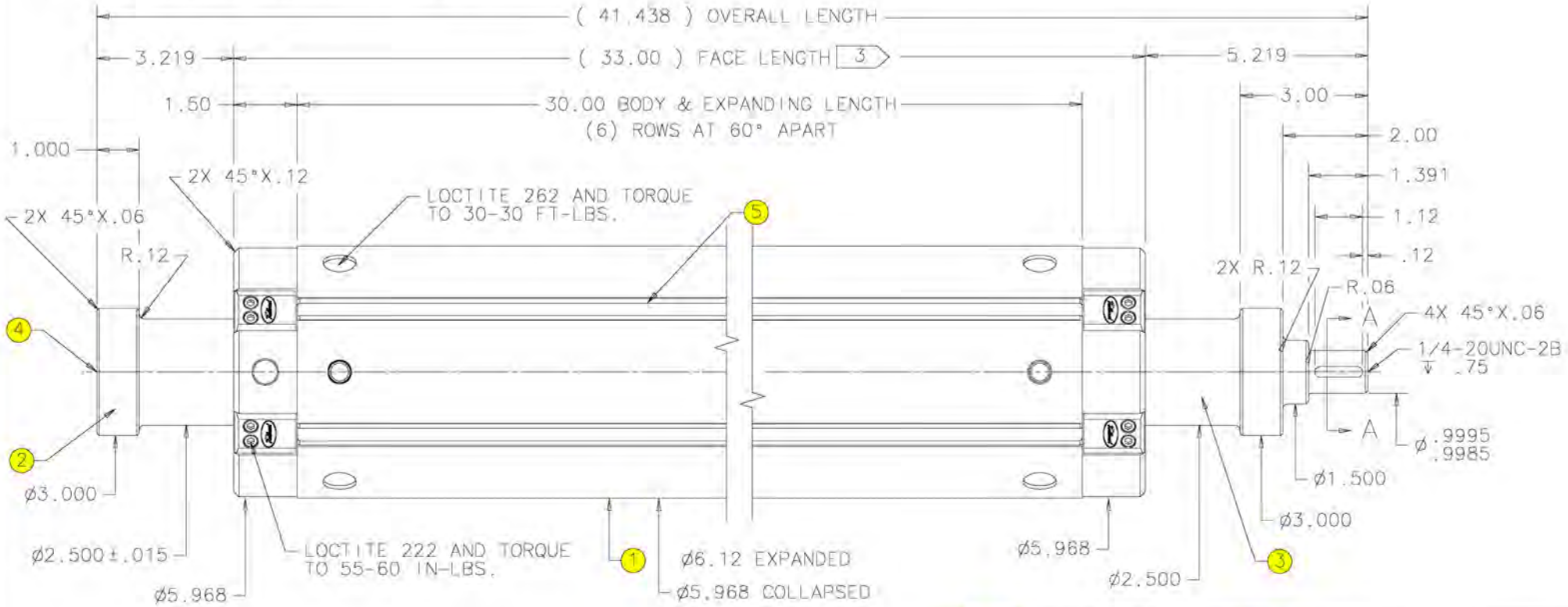
QUANITY PER UNIT	NAME	TIDLAND #	M-TEK #
6	Air Fitting Mushroom Head	562024	113368C1
6	Air Fitting Mushroom Barb	516618	113367C1
100"	Air Hose,Poly,⅛ ODX 1/16 ID, Blue	132556	113804C1
6@32.625"	Bladder, Polyurethane	576711	113073C1
	Deflation Tool	111630	
6	External Element, Aluminum	587827	113805C1
	Hole Punch Tool	560345	
	Hole Punch Guide For Straight Strip	577982	
	Inflation Tool	128052	
12@28.25"	Springs, Wave	617952	113072C1
3	T-Barb Hose Connectors	250501	113806C1
6	Clamp Bladder Valve End	646882	113074C1
6	Clamp Bladder Non-Valve End	646883	113075C1
24	Socket Head Cap Screw M5X0.8X16mm long	132583	113076C1

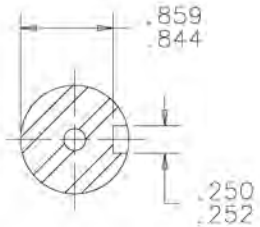
NOTES:

1. FOR USE WITH Ø6.00 I.D. FIBER CORES.
2. REF M-TEK DWG. NO. 112558C1 REV A

3. CLEAR ANODIZED.

REVISION STATUS				
REV	ECN	DESCRIPTION	DATE	BY
A	X.	WAS HARDCOAT	08 FEB 07	JL





SECTION A-A
SCALE 2:1

ITEM	PART	QTY	DESCRIPTION
5	587827	6	EXPANDING ALUMINUM STRIP X 30.00 LG.
4	132520	1	AIR VALVE ISOLATION
3	655615	1	NON-V JOURNAL STAINLESS STEEL
2	645355	1	VALVE JOURNAL STAINLESS STEEL
1	645354	1	BODY ALUMINUM W/ ALUMINUM HEADS

CONFIDENTIAL
THIS DRAWING IS THE PROPERTY OF TIDLAND CORPORATION AND MUST NOT BE LOANED, COPIED IN WHOLE OR IN PART, OR TO BE USED FOR MANUFACTURING OR TENDERING PURPOSES WITHOUT WRITTEN CONSENT. IT MUST BE RETURNED ON DEMAND. © TIDLAND CORPORATION.

DEFAULT TOLERANCES
X.XX = ±.02
X.XXX = ±.005
ANGULAR = ±.25°
SURFACE FINISH = 63

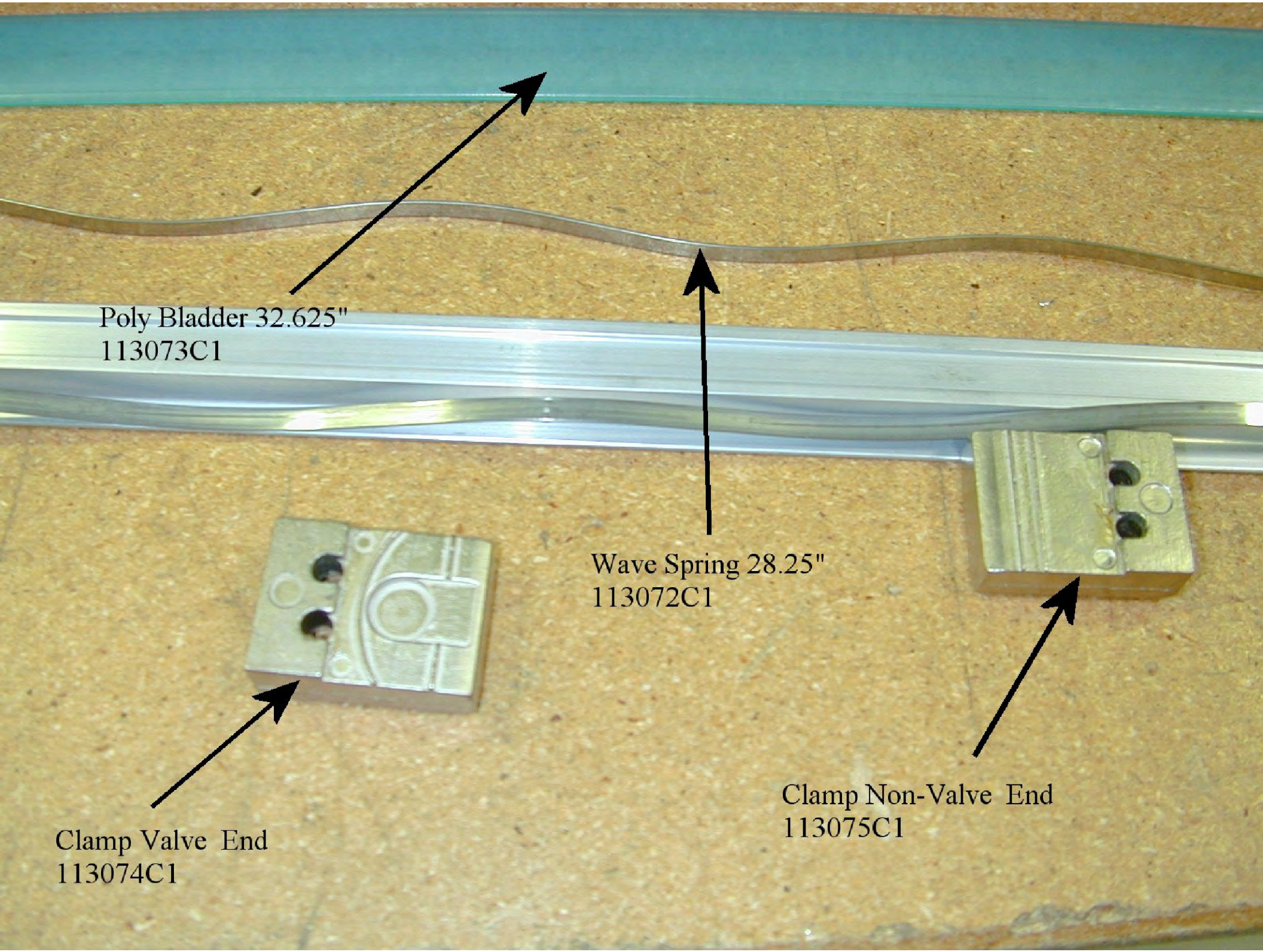
DRAWN M. COLVIN
REVIEWED J.L.
DATE 25 JUL 2006
SCALE 7:16
EST WT 45.0
RD-000000

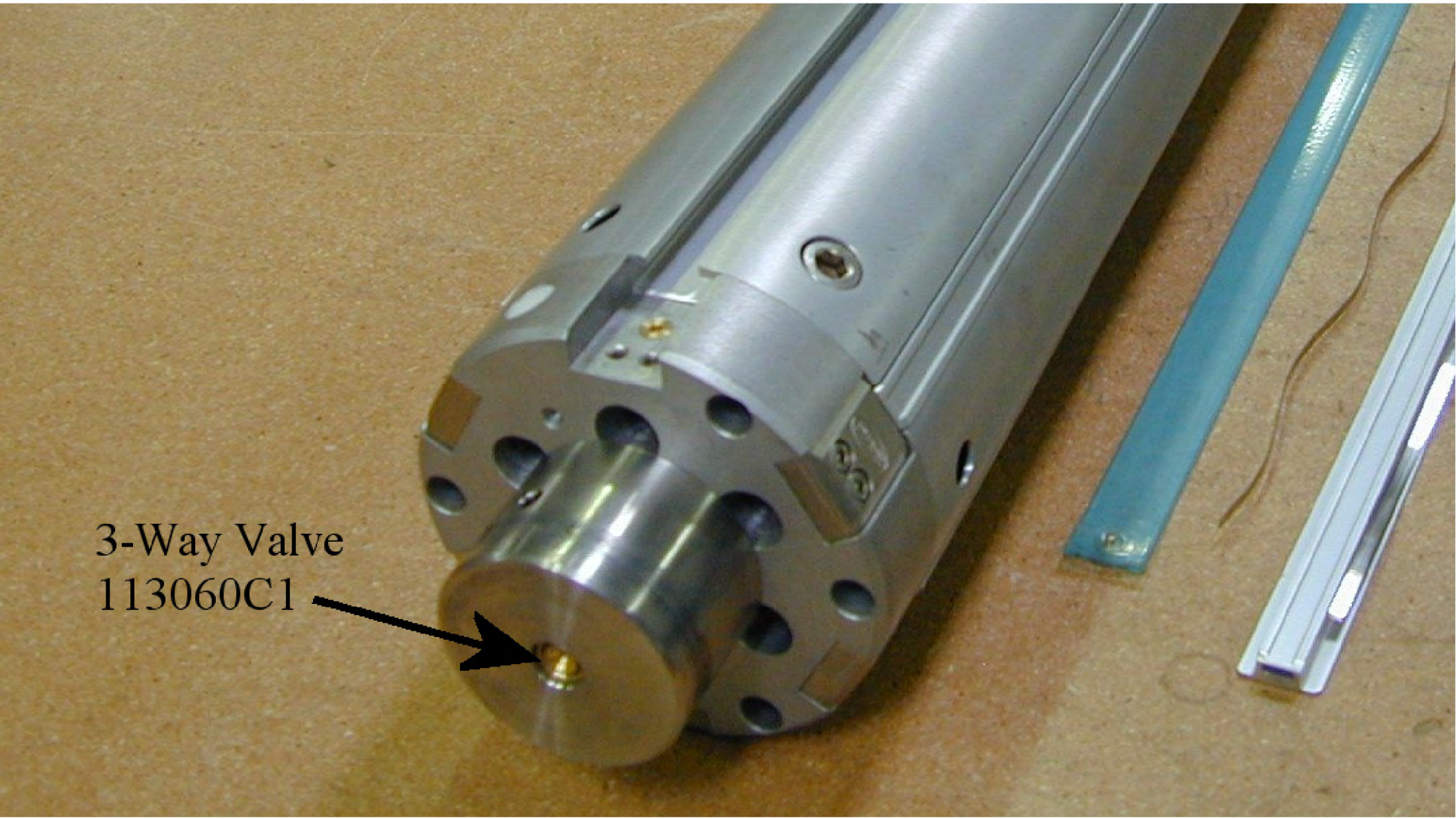
TIDLAND CORPORATION
2305 SE 8TH AVENUE
CAMAS, WASHINGTON
360-834-2345
800-426-1000
WWW.TIDLAND.COM

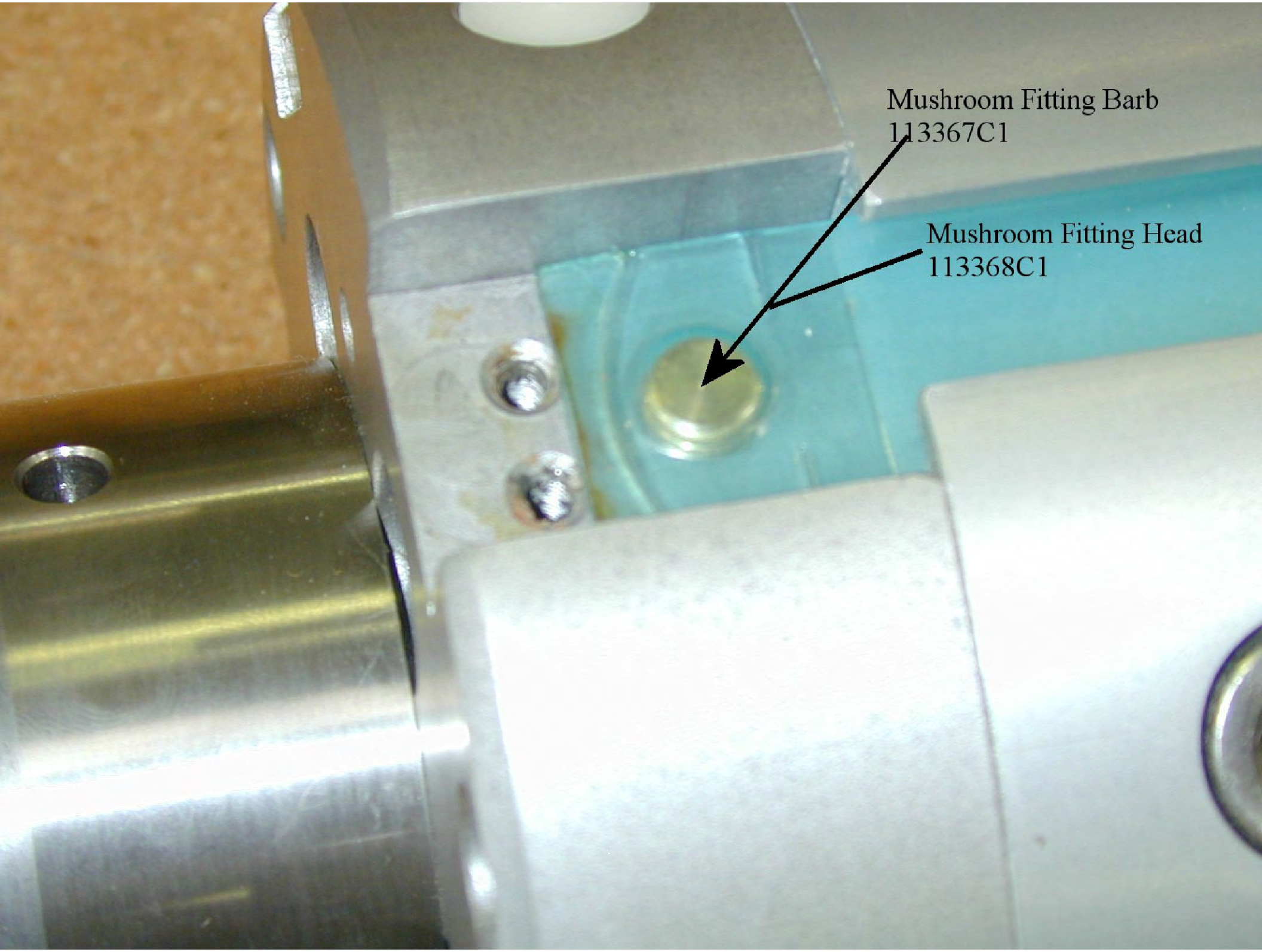
ASSEMBLY
800 GX SHAFT
DETAILS

CUSTOMER NAME M-TEK INC.

B | 655160 | SHEET 1 of 1

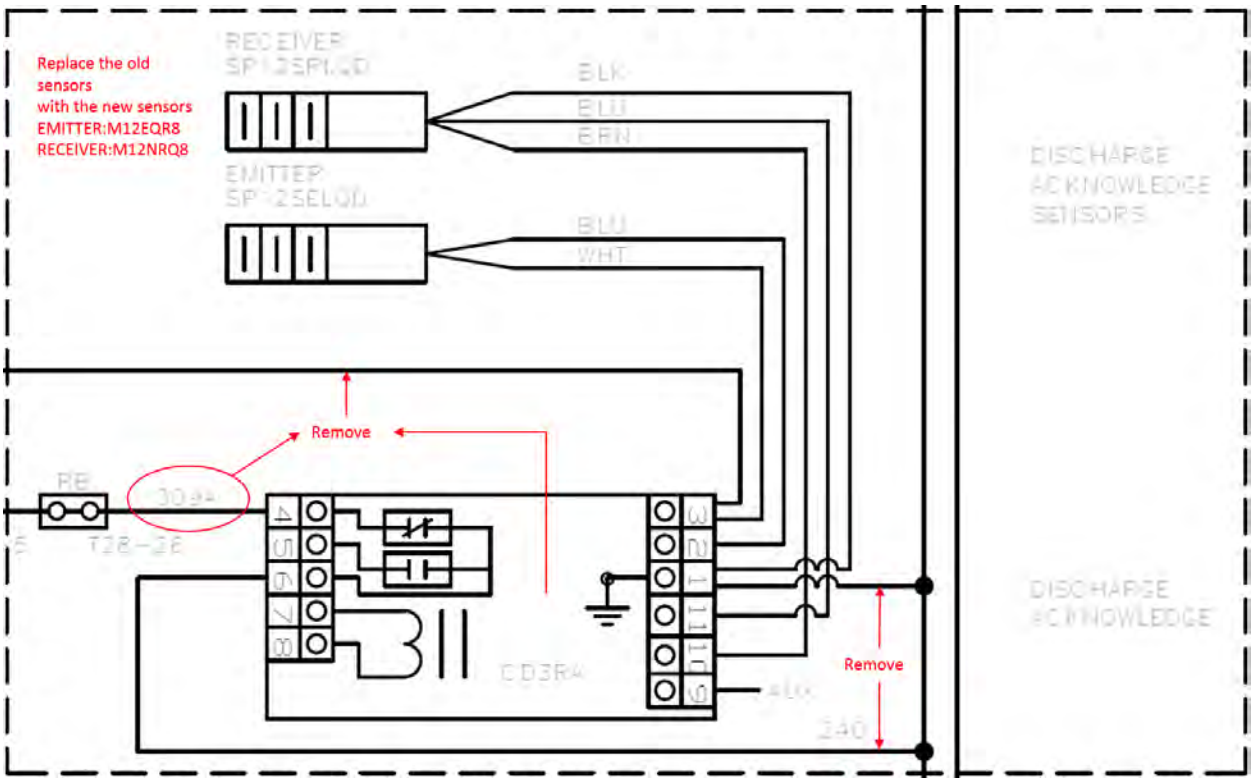

Poly Bladder 32.625"
113073C1
Wave Spring 28.25"
113072C1
Clamp Valve End
113074C1
Clamp Non-Valve End
113075C1


3-Way Valve
113060C1

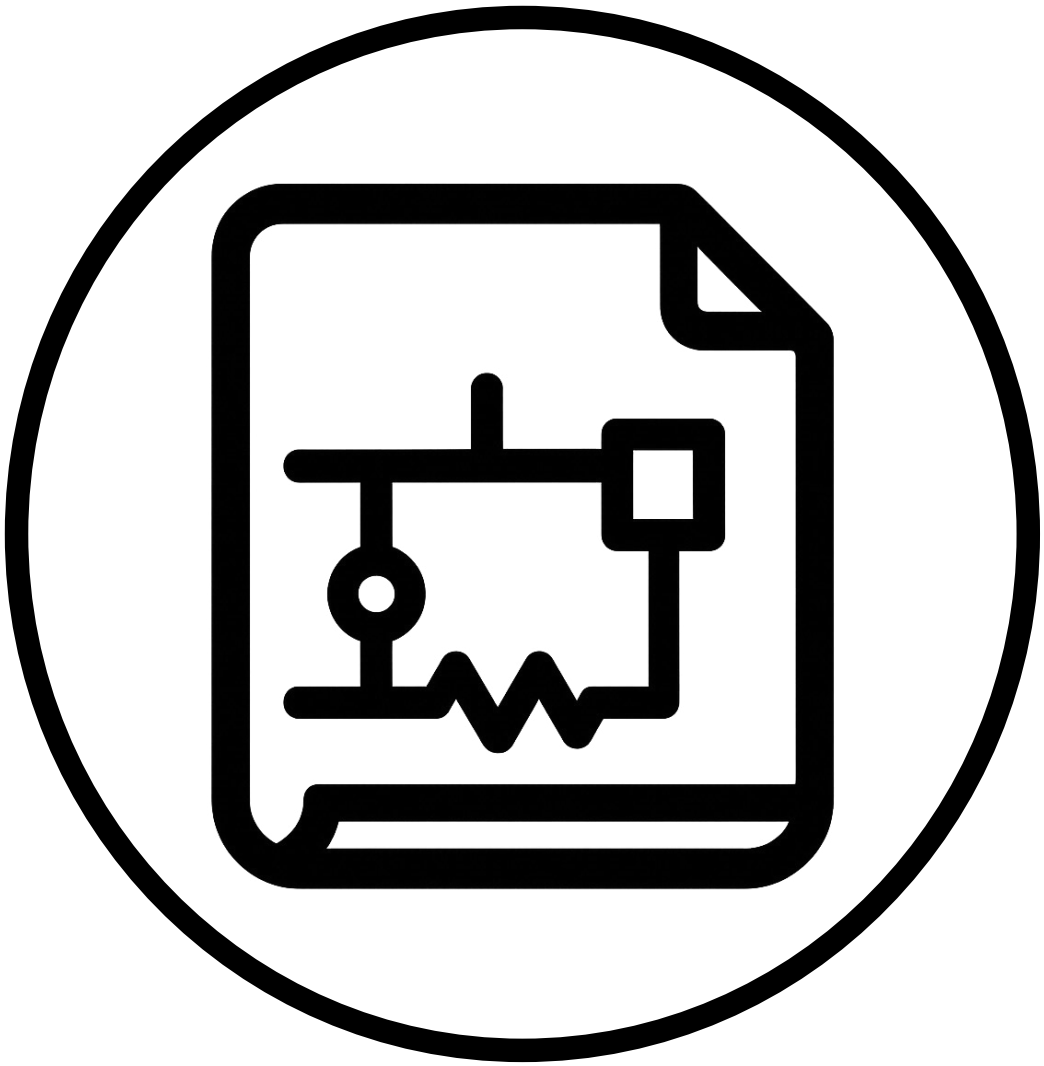

Mushroom Fitting Barb
113367C1
Mushroom Fitting Head
113368C1

V45 Product Drop Sensor Upgrade Instructions

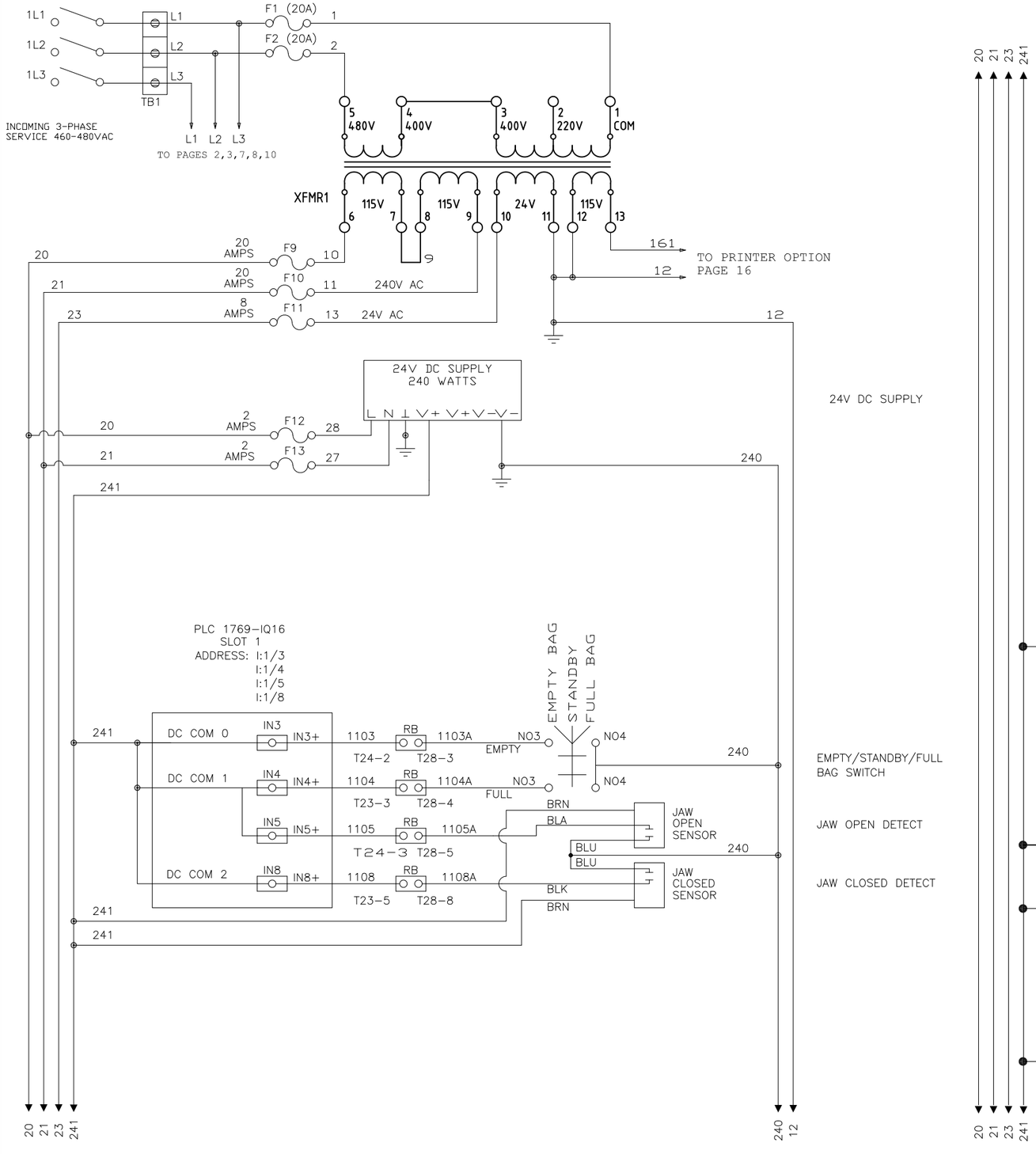
1. Turn **OFF** power to the machine.
2. Replace the old banner receiver (SP12SRLQD) and emitter (SP12SELQD) with the new receiver (M12NRQ8) and emitter (M12EQ8).
3. Remove **RED** wire **309A** from T-28 on the relay board and replace it with the **BLACK** wire from the new Banner **M12NRQ8** receiver.
4. Land the **BROWN** and **BLUE** wires for both the Banner **M12EQ8** emitter and **M12NRQ8** receiver into empty screw terminals on **+24VDC** and **0VDC** rails below T-28 on the relay board.
5. Remove the yellow Banner maxi-amp CD3RA module.
6. Remove the **241** and **240** wires going into the blue octal base for the Banner maxi-amp **CD3RA** module.
7. Turn **ON** power to the machine.
8. Use the yellow dial on the **M12NRQ8** receiver to adjust gain until required performance is achieved.



Chapter 14: Schematics



REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
	REVISIONS B–D NOT USED		
E	EXPAND L1–3, COMBINE XFMR1 PIN 12 TO WIRE 12	M.S.	7/8/2021
F	CHANGED RELAY BOARD WIRE LOCATIONS TO START AT ZERO	M.EVANS	8/18/2021
G			
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021



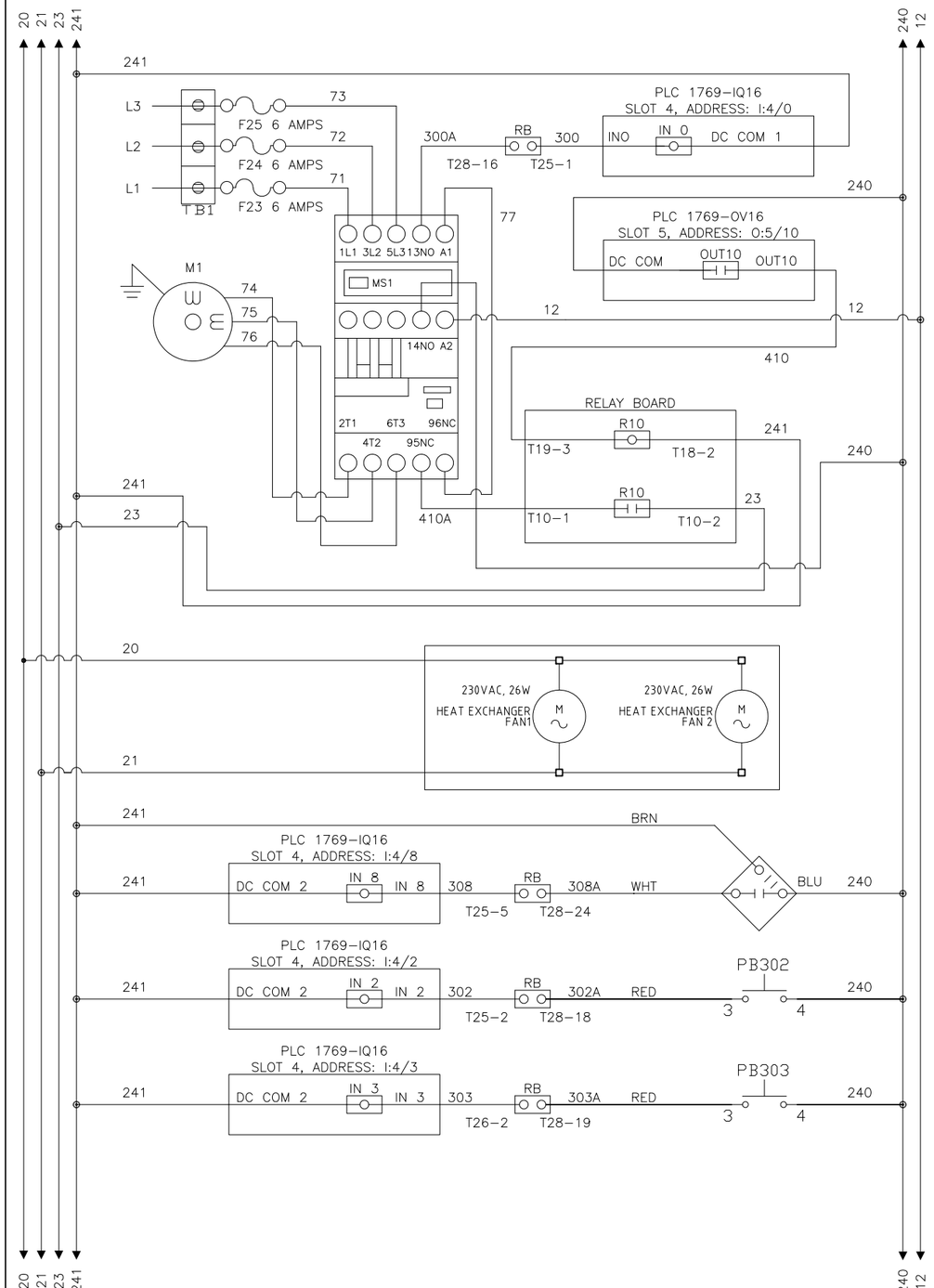
M-TEK INC.
THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

PROJECT: V45
TITLE: POWER
DWG NO: V45 01 Power.dwg

DRAWN BY: BRB
APPROVED ENG: ENG
REVISIONS:

DATE: 2021-12-9
PAGE: 1

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
B	CHANGED RELAY BOARD WIRE LOCATIONS TO START AT ZERO	M. EVANS	8/18/2021
–	REVISIONS C–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021



VACUUM PUMP
MOTOR STARTER
MS1

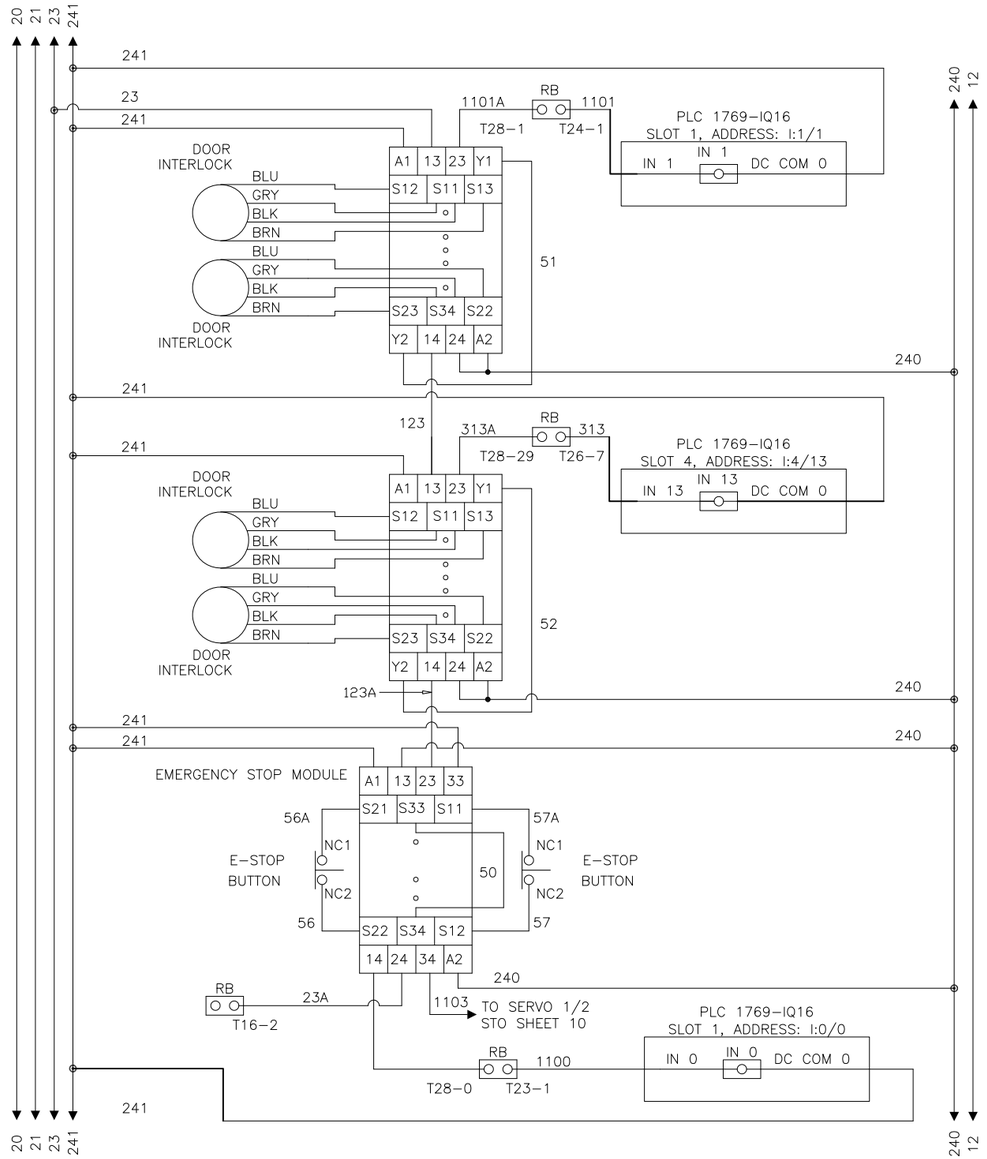
M1 VACUUM PUMP MOTOR
480VAC, 1.7A, 3ϕ, 60HZ
0.75HP, 0.5595KW

HEAT EXCHANGER

FILM REGISTRATON
MARK SENSOR
(OPTIONAL)

FILM ROLL
UNWIND PUSHBUTTON

FILM ROLL
WIND PUSHBUTTON



SAFETY MODULE
SIDE DOORS

SAFETY MODULE
FRONT DOORS

SAFETY MODULE
E–STOP

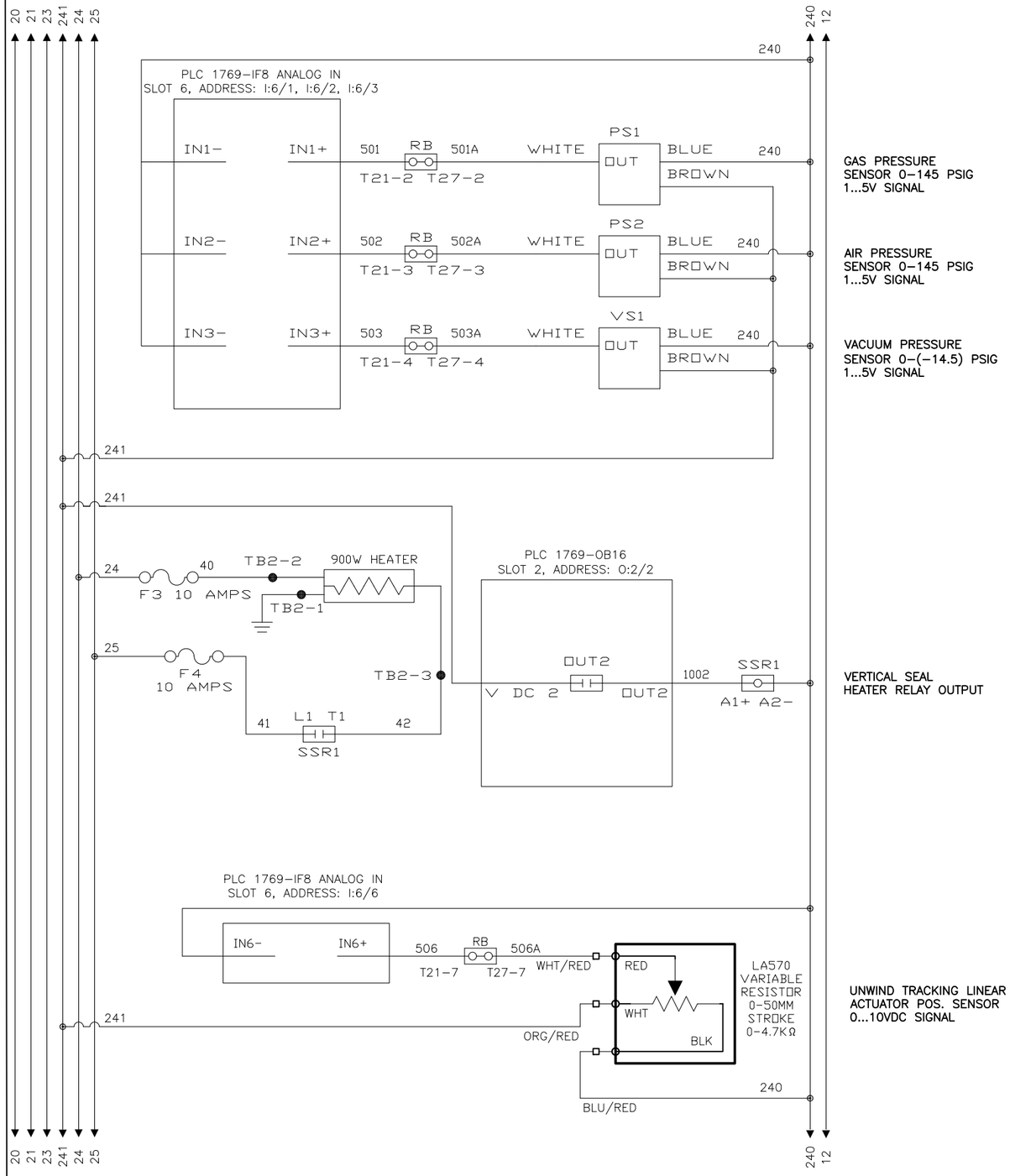
THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

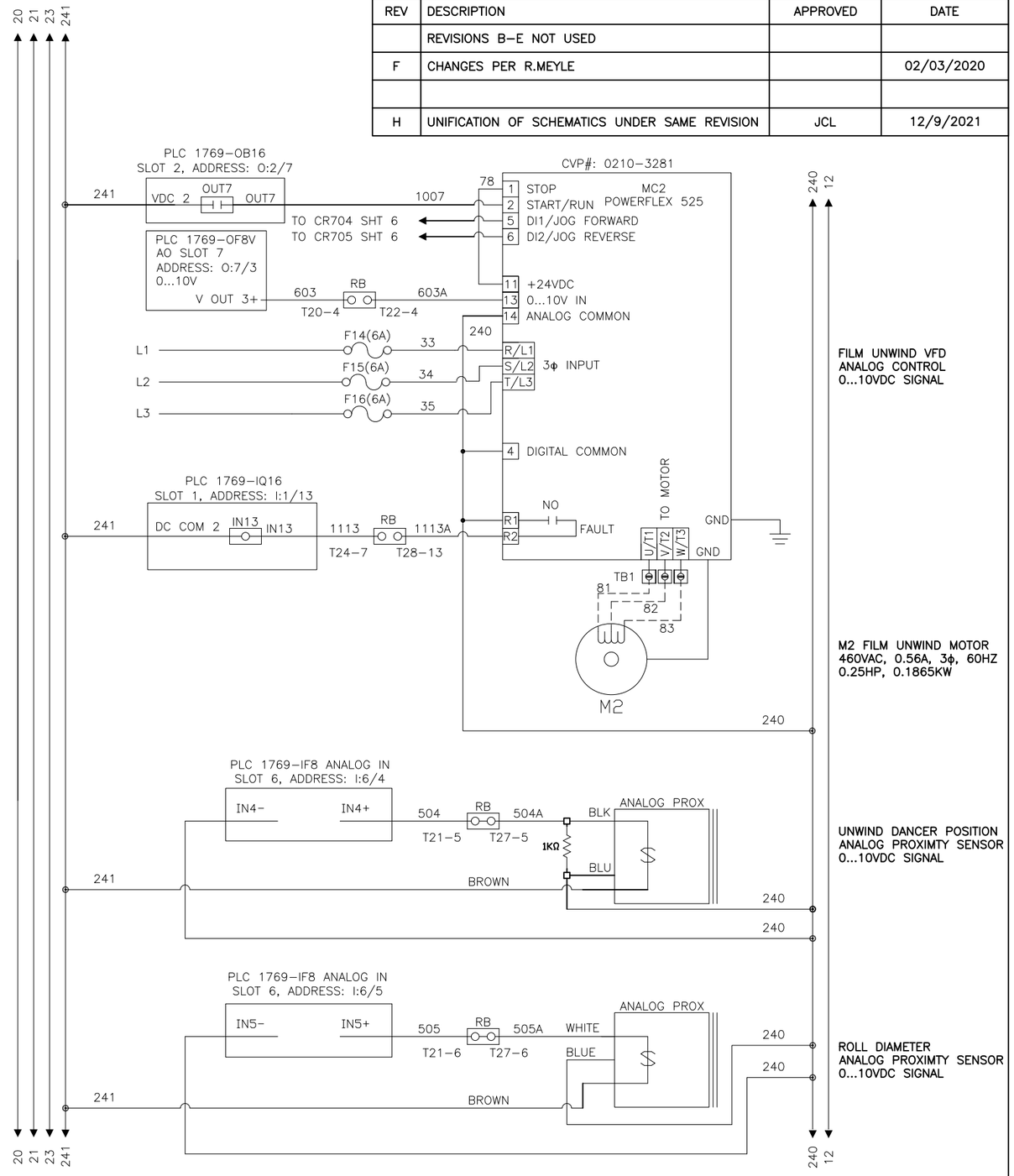
PROJECT: V45
TITLE: VAC SAFETY
DWG NO: V45 02 Vac Safety.dwg

DRAWN BY: BRB
APPROVED ENG: ENG
REVISIONS:

DATE: 2014-11-13
PAGE: 2

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
	REVISIONS B–E NOT USED		
F	CHANGES PER R.MEYLE		02/03/2020
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021





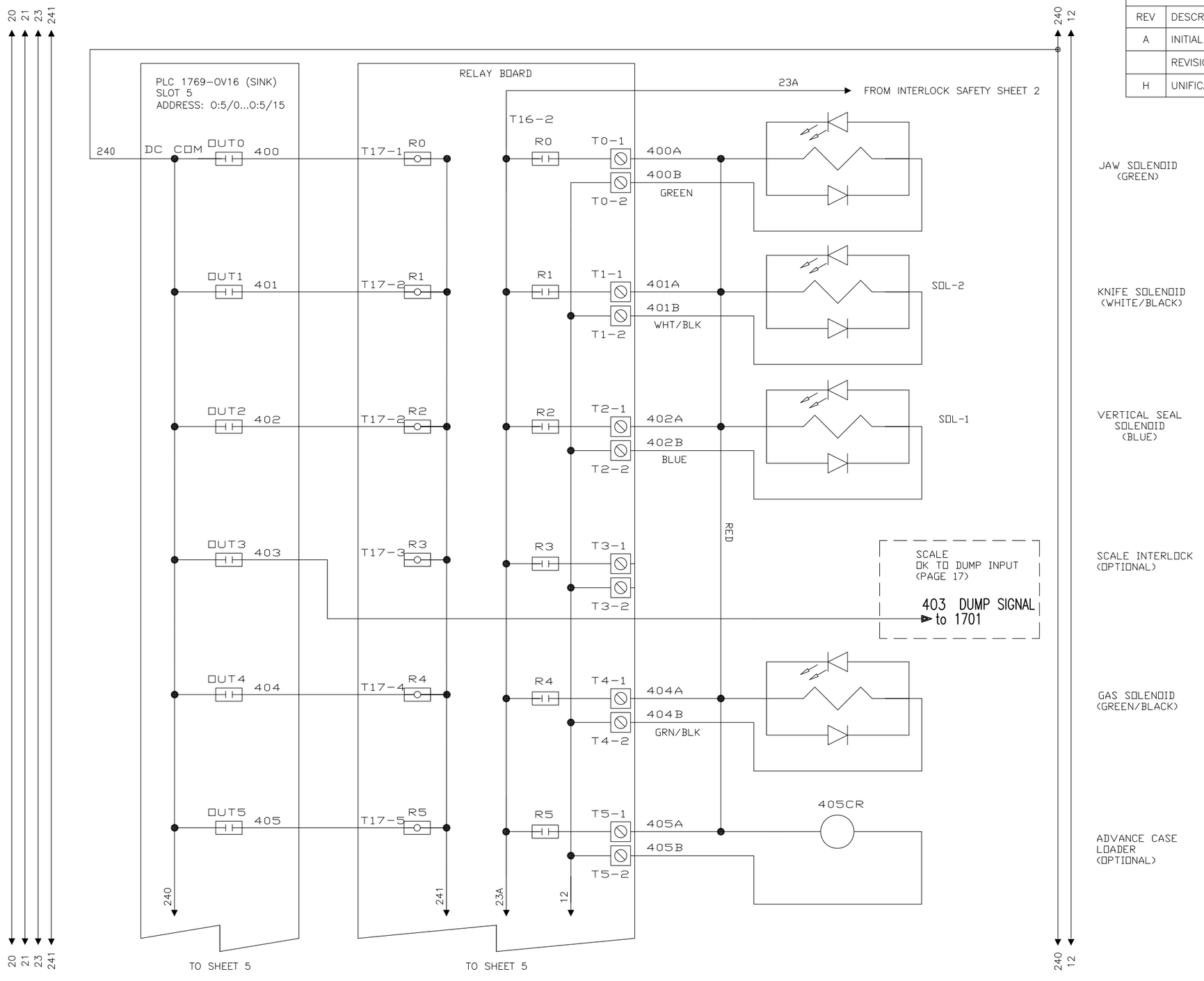
M-TEK INC.
THIS DRAWING IS THE PROPERTY OF M–TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

PROJECT: V45
TITLE: ANALOG
DWG NO: V45 03 Analog.dwg

DRAWN BY: BRB
APPROVED ENG: ENG
REVISIONS:

DATE: 2021-12-09

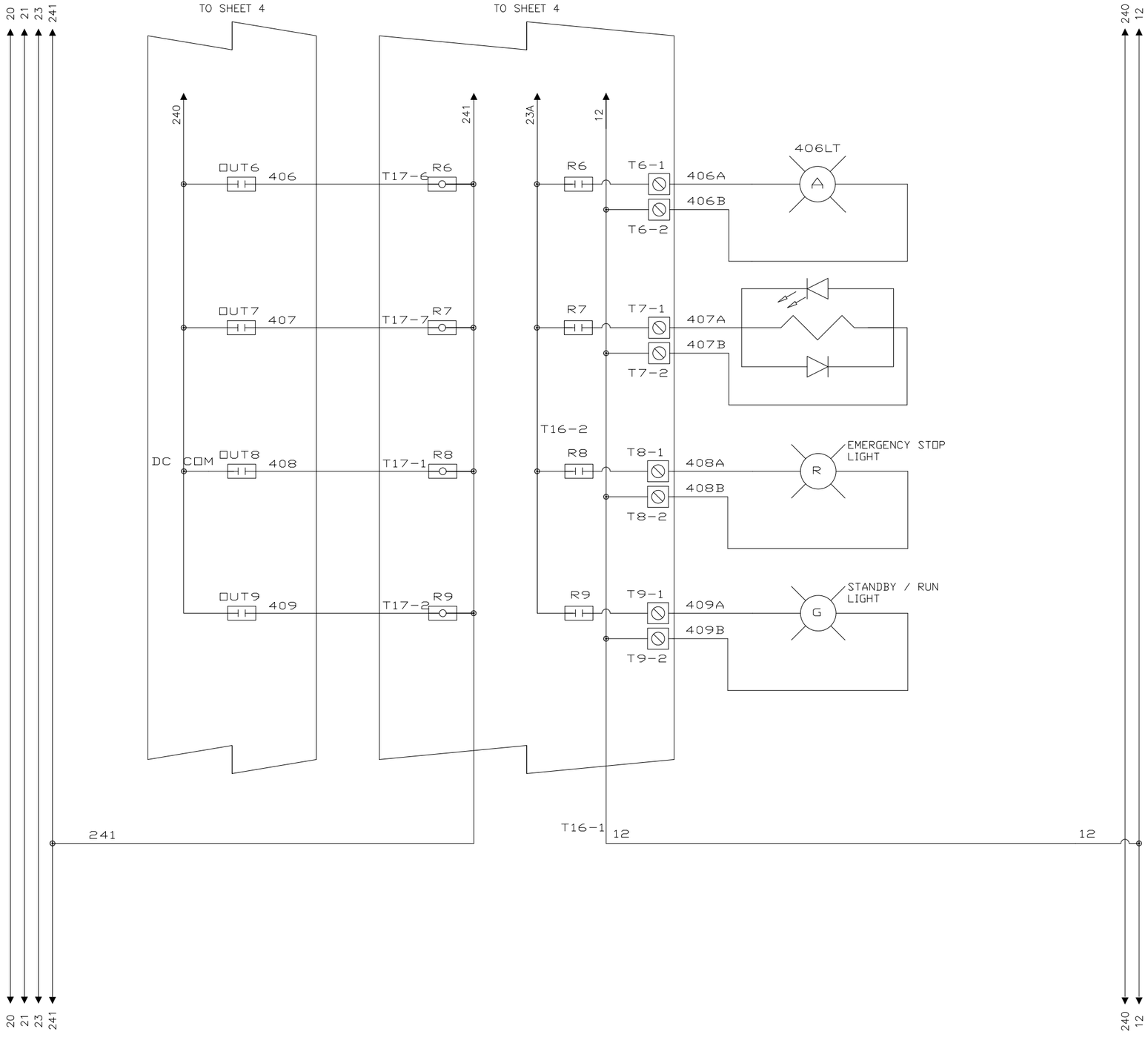
REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
	REVISIONS B–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021



M-TEK INC.	THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.	PROJECT: V45 TITLE: DIGITAL OUTS 1 DWG NO: V45 04 Digital Outs.dwg	DRAWN BY: BRB APPROVED ENG: ENG

DATE: 2021-12-09
PAGE: 4

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
	REVISIONS B–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021



FILM ROLL LOW
BEACON LIGHT
(OPTIONAL)

ADVANCE BAG
PLEATER SOL
(OPTIONAL)

EMERGENCY STOP OK

STANDBY / RUN

M-TEK INC.

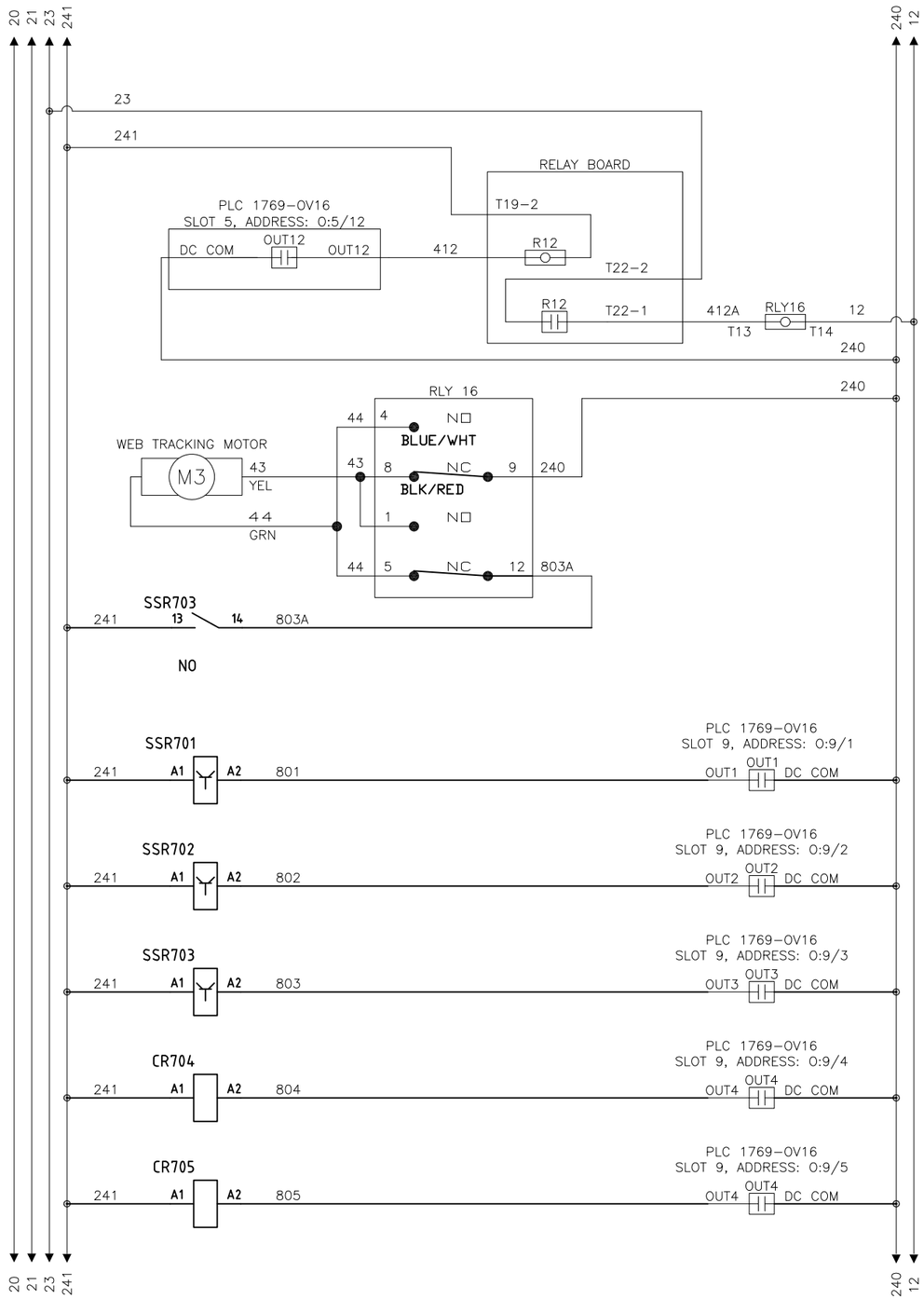
THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

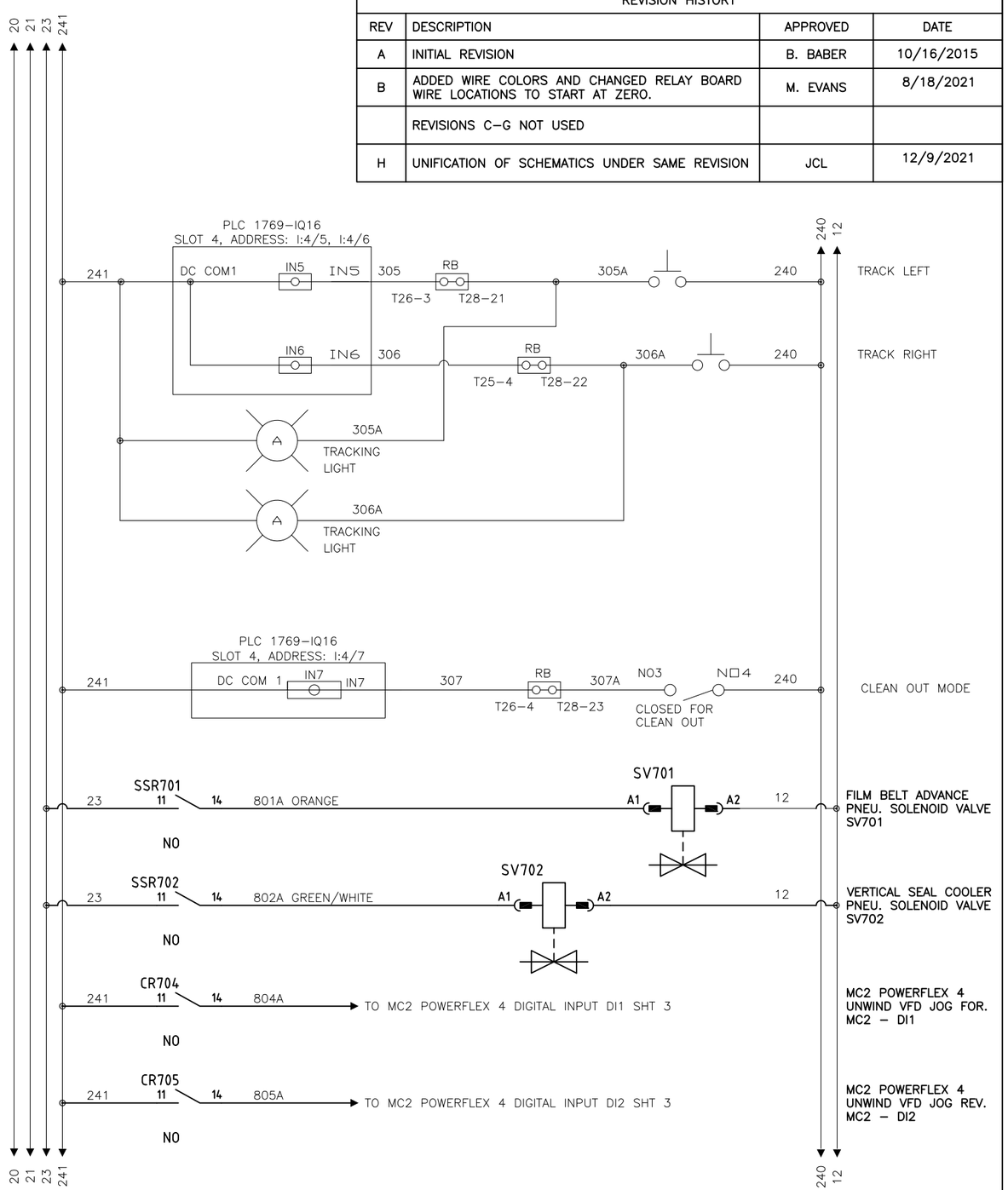
PROJECT: V45
TITLE: DIGITAL OUTS 2
DWG NO: V45 05 Digital Outs 2.dwg

DRAWN BY: BRB
APPROVED ENG: ENG

DATE: 2021-12-09

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
B	ADDED WIRE COLORS AND CHANGED RELAY BOARD WIRE LOCATIONS TO START AT ZERO.	M. EVANS	8/18/2021
	REVISIONS C–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021





M-TEK INC.

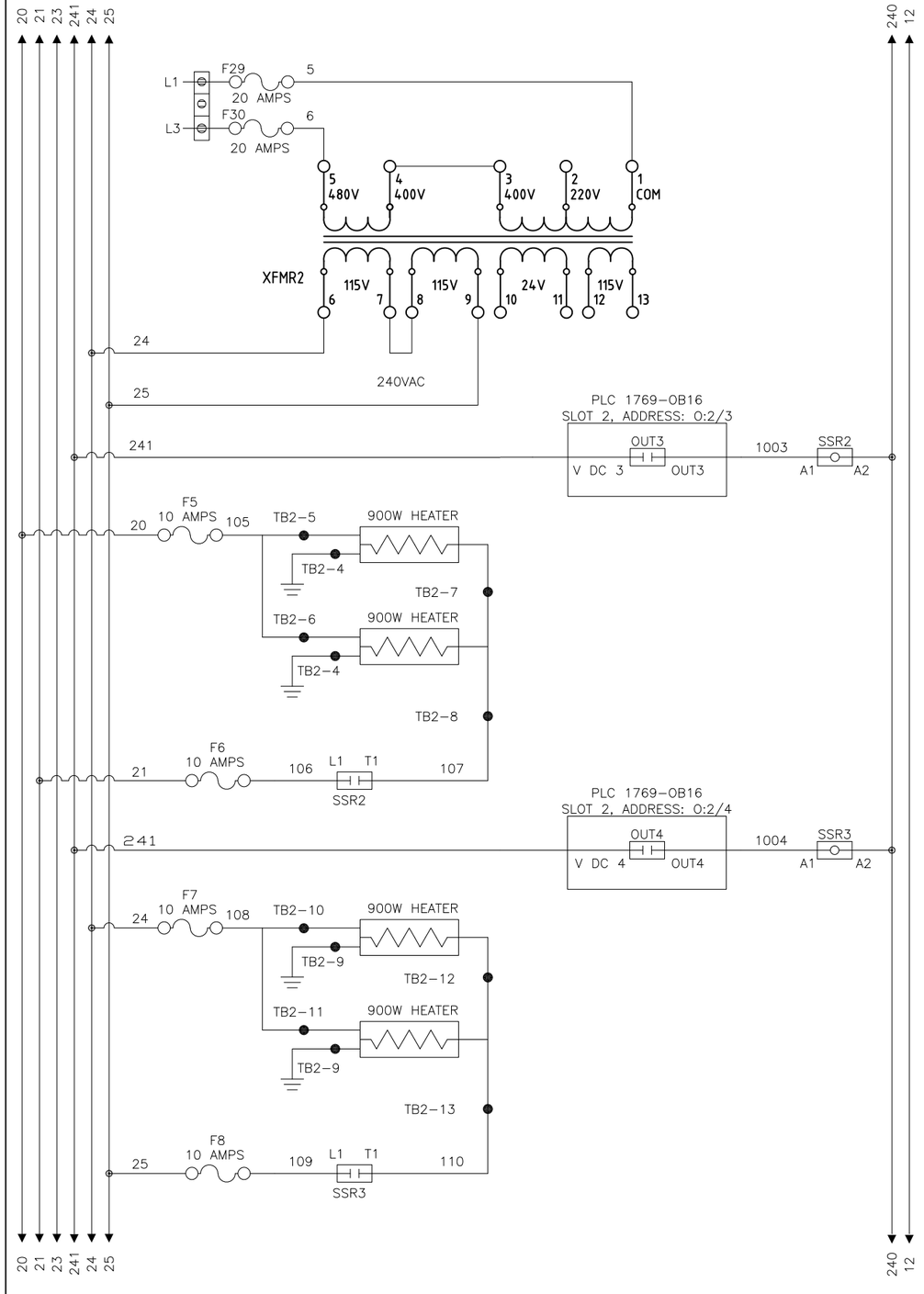
THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

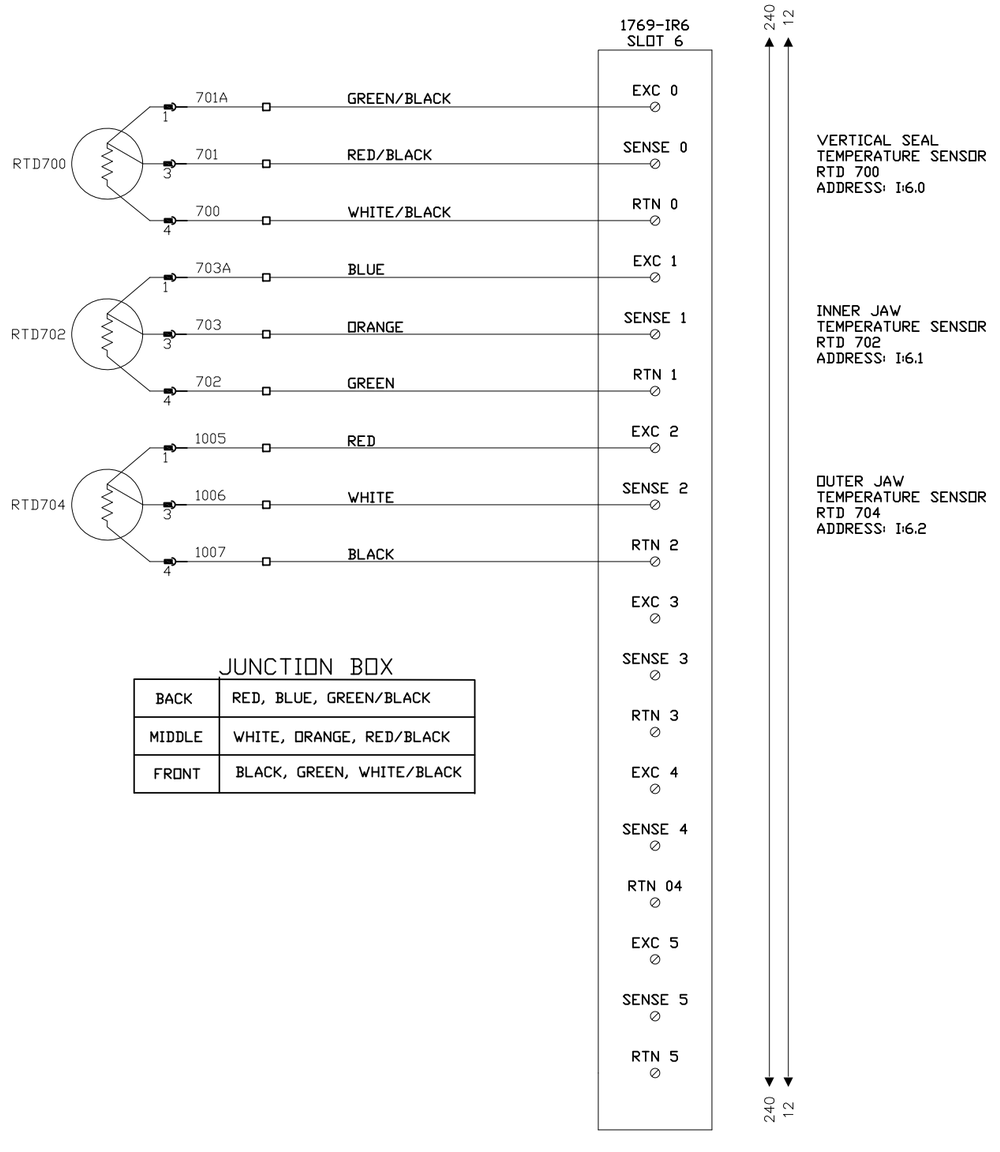
PROJECT: V45
TITLE: TRACKING
DWG NO: V45 06 Tracking.dwg

DRAWN BY: BRB
APPROVED ENG: ENG

DATE: 2021-12-09

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
	REVISIONS B–C NOT USED		
D	ADD FUSES FOR XFMR2 (F28,29 REASSIGN)	M.S.	7/8/2021
E	UPDATED FUSES FOR XFMR2	JCL	9/13/2021
	REVISIONS F–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021





JUNCTION BOX

BACK	RED, BLUE, GREEN/BLACK
MIDDLE	WHITE, ORANGE, RED/BLACK
FRONT	BLACK, GREEN, WHITE/BLACK

M-TEK INC.

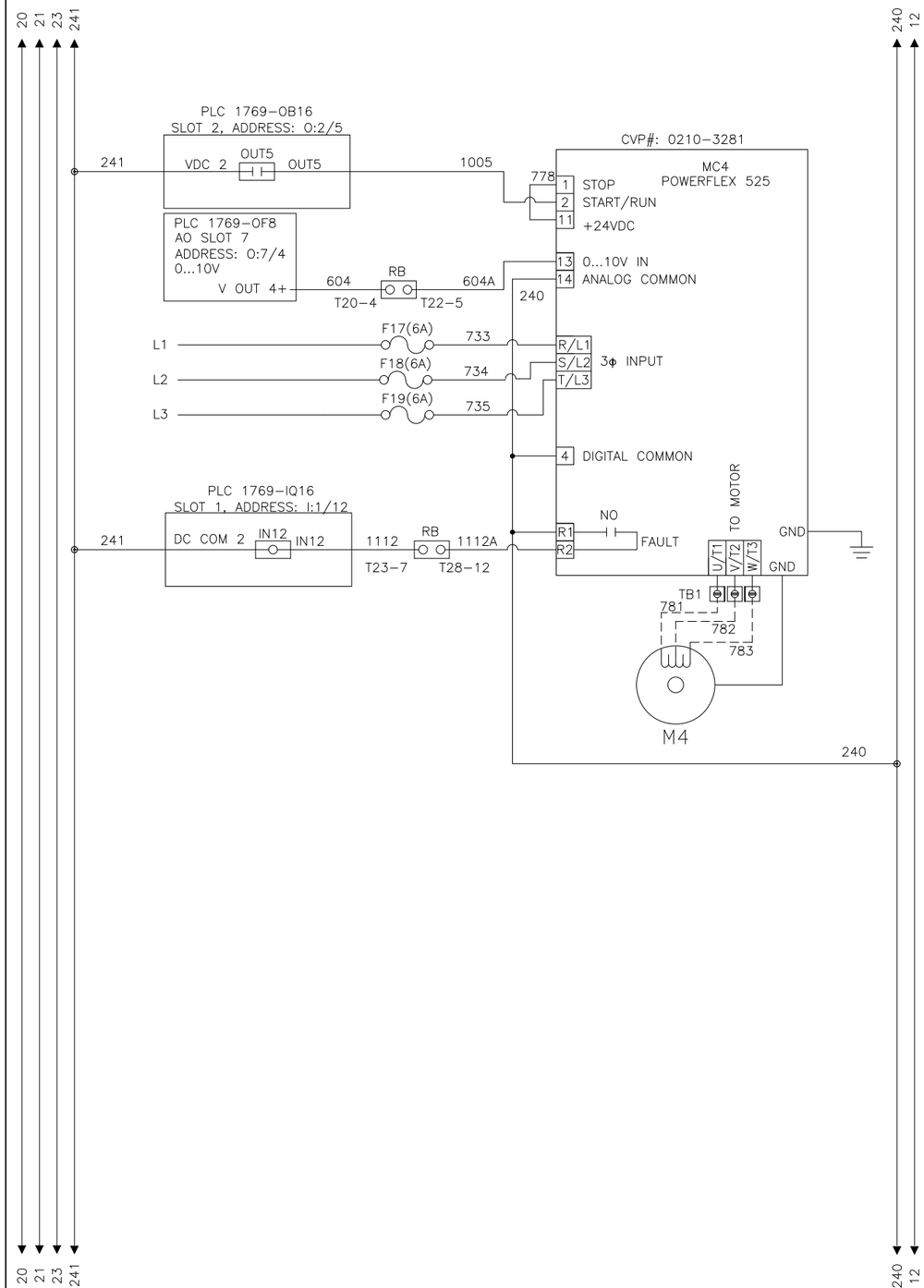
THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

PROJECT: V45
TITLE: HEATERS
DWG NO: V45 07 Heaters.dwg

DRAWN BY: BRB
APPROVED ENG: ENG

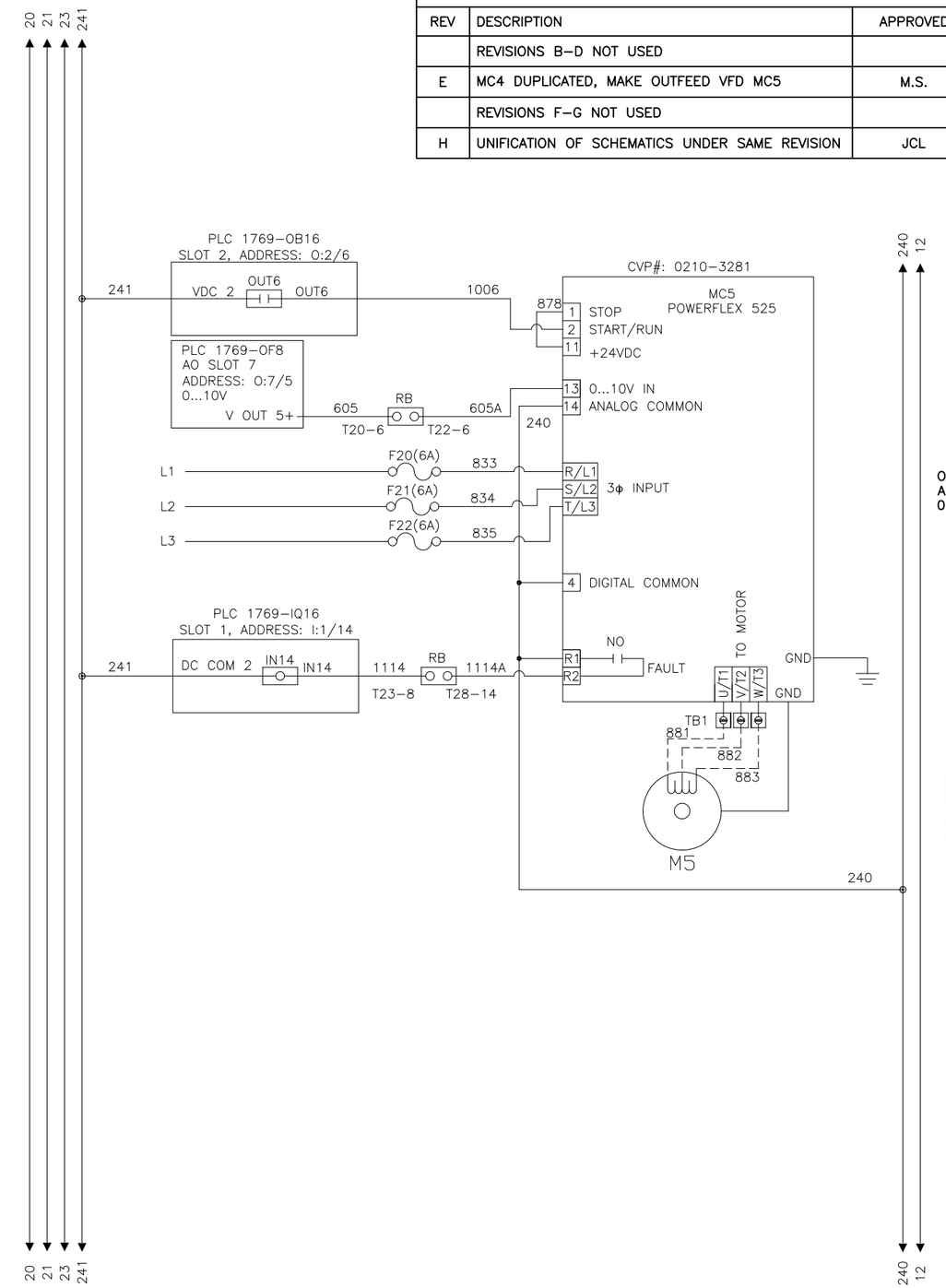
DATE: 2021-12-09

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
	REVISIONS B–D NOT USED		
E	MC4 DUPLICATED, MAKE OUTFEED VFD MC5	M.S.	7/8/2021
	REVISIONS F–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021



INFEED CONVEYOR VFD
ANALOG CONTROL
0...10VDC SIGNAL

M4 INFEED CONVEYOR MTR.
460VAC, 1.5A, 3ϕ, 60HZ
1.0HP, 0.746KW



OUTFEED CONVEYOR VFD
ANALOG CONTROL
0...10VDC SIGNAL

M5 OUTFEED CONVEYOR
MOTOR
460VAC, 0.56A, 3ϕ,
60HZ
0.25HP, 0.1865KW

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

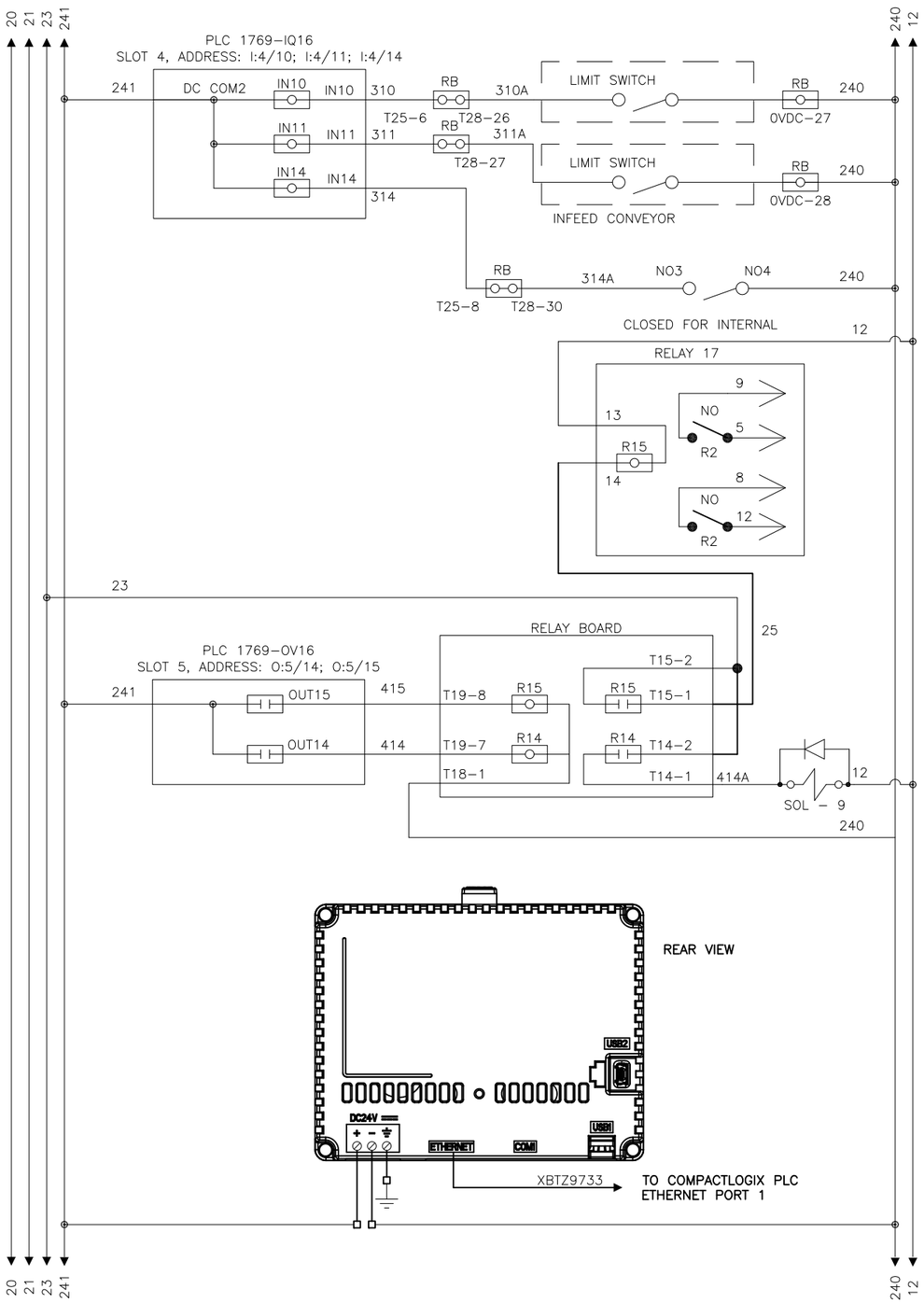
PROJECT: V45
TITLE: CONVEYORS
DWG NO: V45 08 Conveyors.dwg

DRAWN BY: BRB
APPROVED ENG: ENG

REVISIONS:

DATE: 2021-12-09

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
B	POLY JAW COOLING OUTPUT	B. BABER	12/14/2015
C	CHANGED RELAY BOARD WIRE LOCATIONS TO START AT ZERO.	M. EVANS	8/19/2021
	REVISIONS D–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021



START CONVEYOR

STOP CONVEYOR
(FLIGHT PICKUP)

INTERNAL/EXTERNAL SYNC
SELECTOR SWITCH

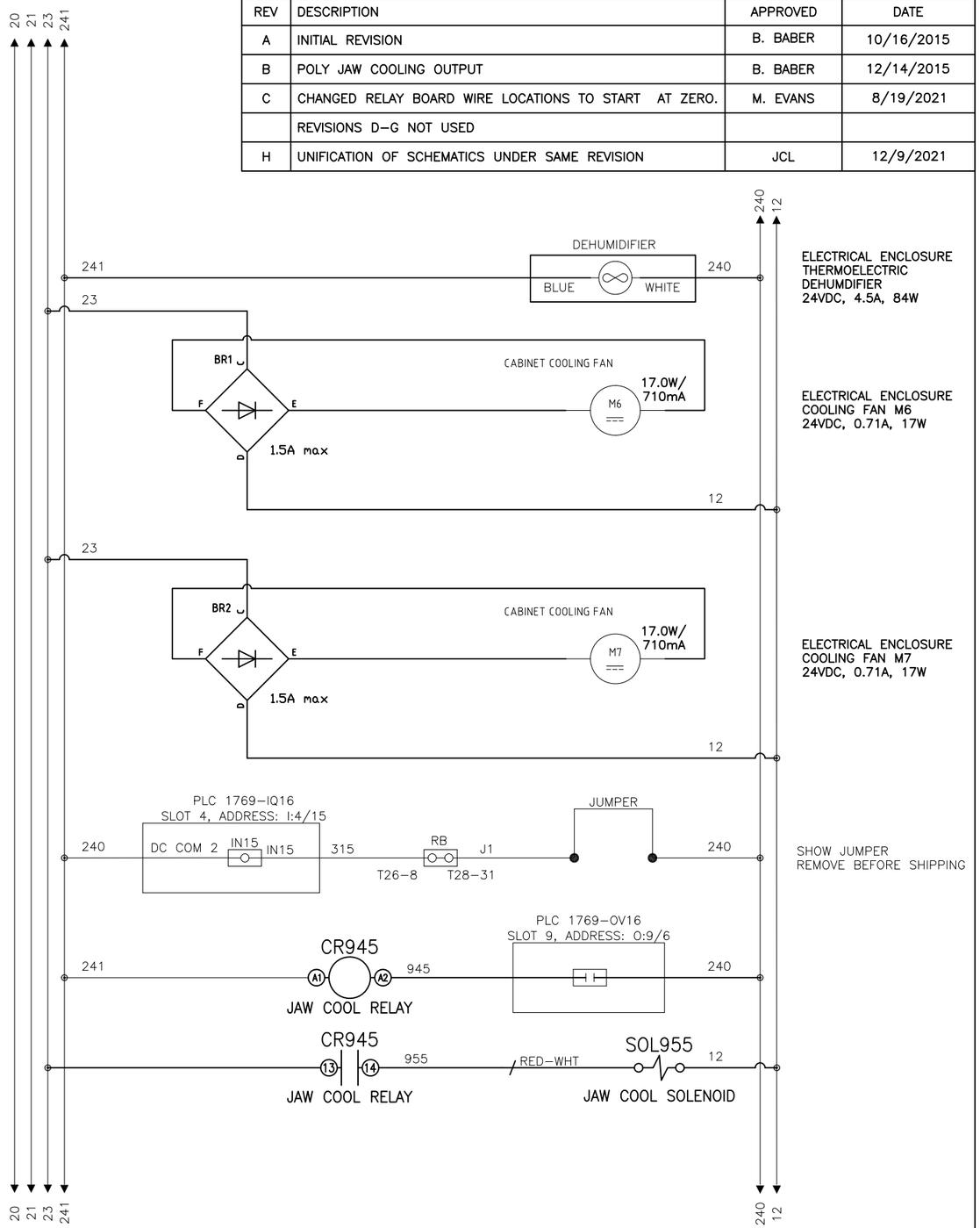
MACHINE READY TO CUSTOMER
EQUIPMENT UP STREAM

MACHINE READY

CONVEYOR CLUTCH

OPERATOR INTERFACE
TOUCH SCREEN
ETHERNET COMMUNICATION

10.10.10.150



ELECTRICAL ENCLOSURE
THERMOELECTRIC
DEHUMDIFIER
24VDC, 4.5A, 84W

ELECTRICAL ENCLOSURE
COOLING FAN M6
24VDC, 0.71A, 17W

ELECTRICAL ENCLOSURE
COOLING FAN M7
24VDC, 0.71A, 17W

SHOW JUMPER
REMOVE BEFORE SHIPPING

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M–TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

PROJECT: V45
TITLE: MISC
DWG NO: V45 09 Misc Cooling.dwg

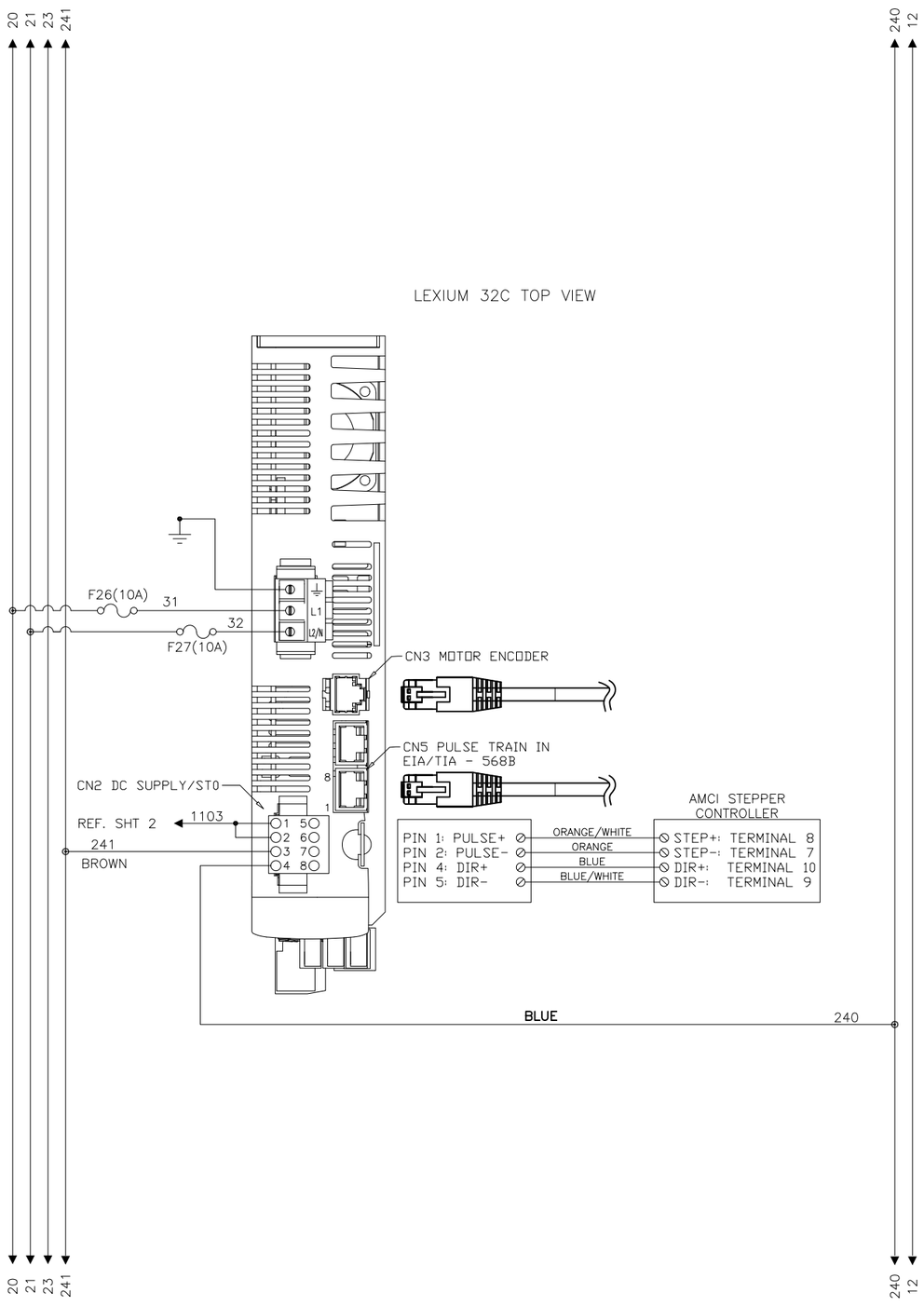
DRAWN BY: BRB
APPROVED ENG: ENG

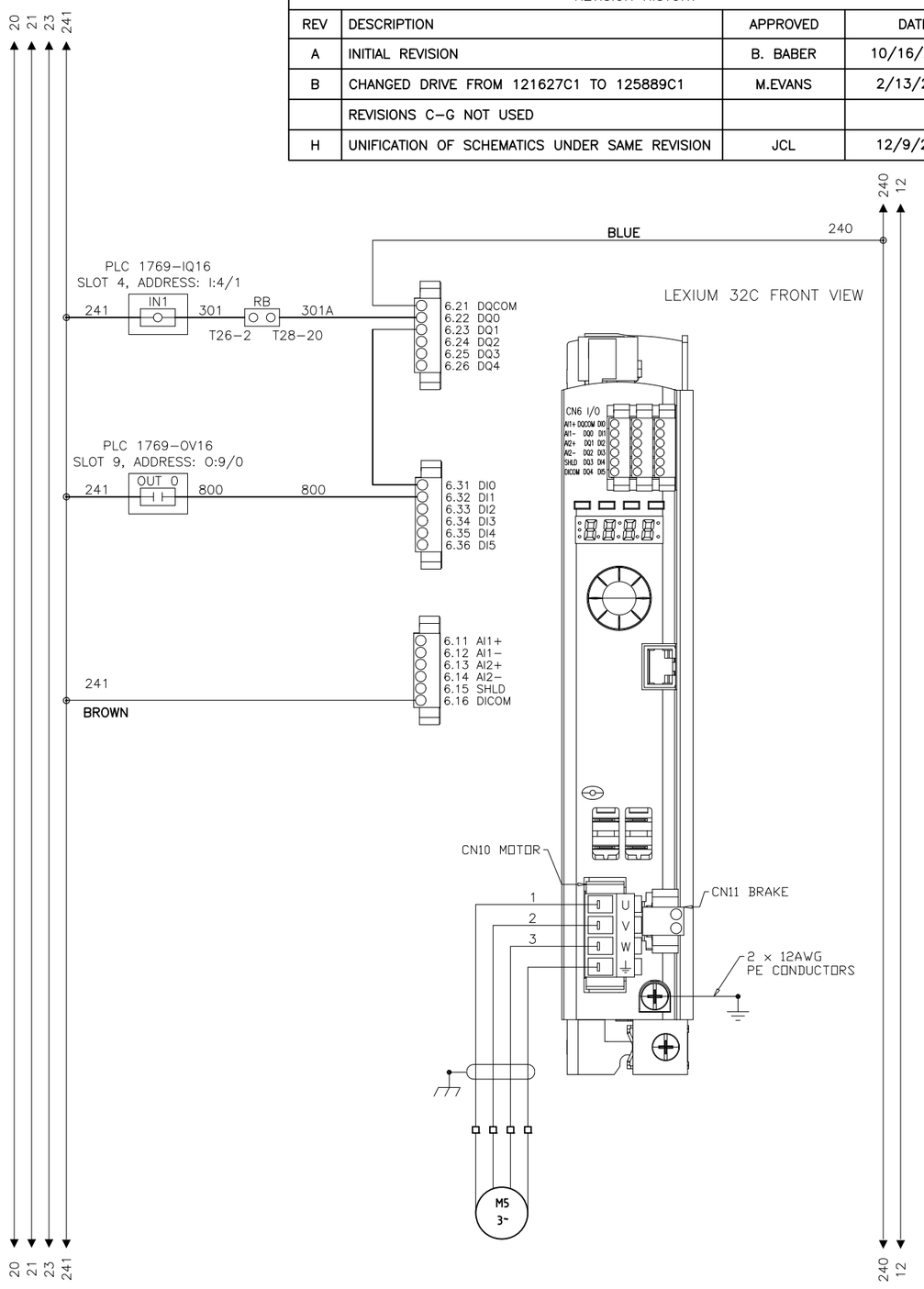
REVISIONS:

DATE: 2021-12-09

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
B	CHANGED DRIVE FROM 121627C1 TO 125889C1	M.EVANS	2/13/2021
	REVISIONS C–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021

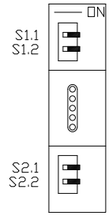
LEXIUM 32C TOP VIEW





LEXIUM 32C FRONT VIEW

BANNER GM-FA-10J
GATE MONITORING SAFETY MODULE



S1.1 - ON - 1-CHANNEL
S1.2 - ON - AUTO RESET
S2.1 - ON - 1-CHANNEL
S2.2 - ON - AUTO RESET

BANNER MAXI-AMP EYE CONTROLLER



SW 1 - ON - MODULATION FREQ. B
SW 2 - ON - 15 MILLISECOND RESPONSE
SW 3 - ON - 15 MILLISECOND RESPONSE
SW 4 - OFF - DARK OPERATE - ON WHEN BLOCKED

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
	REVISIONS B-C NOT USED		
D	FUSE REFERENCE TABLE ADDED	M.S.	07/08/2021
E	CHANGED FILM UNWIND PARAMETER P033 FROM .5 TO .7	M. EVANS	8/19/2021
F	UPDATED FUSE TABLE, ADDED P039 SETTING TO VFDS	JCL	9/13/2021
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021

FUSE REFERENCE

ID	AMPS	FUNCTION	SOURCE	DESTINATION
F1	20	XFMR1 PRIMARY	L1	1
F2	20	XFMR1 PRIMARY	L2	2
F3	10	VERT. SEAL BAR	24	40
F4	10	VERT. SEAL BAR	25	41
F5	10	INNER JAW SEAL BAR	20	105
F6	10	INNER JAW SEAL BAR	21	106
F7	10	OUTER JAW SEAL BAR	24	108
F8	10	OUTER JAW SEAL BAR	25	109
F9	20	XFMR1 2NDARY 230 VAC	10	20
F10	20	XFMR1 2NDARY 230 VAC	11	21
F11	8	XFMR1 2NDARY 24 VAC	13	23
F12	2	24V POWER SUPPLY INPUT	20	28
F13	2	24V POWER SUPPLY INPUT	21	27
F14	6	MC2 FILM UNWIND VFD	L1	33
F15	6	MC2 FILM UNWIND VFD	L2	34
F16	6	MC2 FILM UNWIND VFD	L3	35
F17	6	MC4 INFEED CONV. VFD	L1	733
F18	6	MC4 INFEED CONV. VFD	L2	734
F19	6	MC4 INFEED CONV. VFD	L3	735
F20	6	MC5 OUTFEED CONV. VFD	L1	833
F21	6	MC5 OUTFEED CONV. VFD	L2	834
F22	6	MC5 OUTFEED CONV. VFD	L3	835
F23	6	MS1 VACUUM PUMP	L1	71
F24	6	MS1 VACUUM PUMP	L2	72
F25	6	MS1 VACUUM PUMP	L3	73
F26	20	KINETIX 5700 SERVOS	L1	7
F27	20	KINETIX 5700 SERVOS	L2	8
F28	20	KINETIX 5700 SERVOS	L3	9
F29	20	XFMR2 PRIMARY	L1	4
F30	20	XFMR2 PRIMARY	L3	6
F31	2	PRINTER 12V P.S. OPTION	161	162

SB - POWER FLEX 525 - FOR FILM UNWIND

P031 MOTOR NP VOLTS	20 TO DRIVE RATED VOLTS	460V
P032 MOTOR NP HERTZ	10 TO 240 HZ	60 HZ
✳ P033 MOTOR OL CURRENT	0.0 AMPS TO (DRIVE RATED AMPS X 2) IN UNITS OF 0.1 AMPS	0.7 AMPS *
P039 TORQUE PERF MODE	5 SETTINGS; V/Hz, SVC, ECONOMIZE, VECTOR, PM CONTROL, SYNRM	0 = V/Hz
P043 MINIMUM FREQ	0.0 TO 240.0 HZ	0.0 HZ
P044 MAXIMUM FREQ	0.0 TO 240.0 HZ	60.0 HZ
P046 START SOURCE 1	6 SETTINGS; KEYPAD, 3-WIRE, 2-WIRE, 2-WIRE LEVEL SENSITIVE, 2-WIRE HIGH SPEED, COMM PORT	2 = TB
P045 STOP MODE	8 SETTINGS; RAMP-CLEAR FAULT, COAST-CLEAR FAULT, DC BRAKE-CLEAR FAULT, DC DRAKE W/SHUTOFF-CLEAR FAULT, RAMP COAST, DC BRAKE, DC BRAKE W/SHUTOFF	0 = RAMP-CLEAR FAULT
P047 SPEED REFERENCE 1	6 SETTINGS; DRIVE POTENIOMETER, INTERNAL FRQ, 0-10V INPUT/REMOTE POTENTIOMETER, 4-20 MA INPUT, PRESET FREQ 0-3, COMMUNICATIONS PORT	5 = 0-10 INPUT
P041 ACCEL TIME 1	0.0 TO 600.0 SECONDS	1.0 SECS
P042 DECEL TIME 1	.01 TO 600.0 SECONDS	1.8 SECS
T065 DIGITAL IN1 SEL	DEFAULT: 4 "PRESET FREQ"	09 "JOG FORWARD"
T066 DIGITAL IN2 SEL	DEFAULT: 4 "PRESET FREQ"	10 "JOG REVERSE"
A431 JOG FREQUENCY	DEFAULT: 10.0 HZ; MIN/MAX: 0.0/P035 [MAXIMUM FREQUENCY]; DISPLAY: 0.1 HZ	10.0 HZ
A432 JOG ACCEL/DECEL	DEFAULT: 10.0 SECS; MIN/MAX: 0.1/600.0 SECS; DISPLAY: 0.1 SECS	5.0 SECS
T062	DIGITAL IN TB2	48 = 2 WIRE FWD

✳NOTE: SET OL CURRENT TO 0.5 AMPS FOR 60:1 MOTOR - 0.6 AMPS FOR 26:1 MOTOR

SB - POWER FLEX 525 - FOR INFEED CONVEYOR

P031 MOTOR NP VOLTS	20 TO DRIVE RATED VOLTS	460V
P032 MOTOR NP HERTZ	10 TO 240 HZ	60 HZ
✳ P033 MOTOR OL CURRENT	0.0 AMPS TO (DRIVE RATED AMPS X 2) IN UNITS OF 0.1 AMPS	1.6 AMPS✳
P039 TORQUE PERF MODE	5 SETTINGS; V/Hz, SVC, ECONOMIZE, VECTOR, PM CONTROL, SYNRM	0 = V/Hz
P043 MINIMUM FREQ	0.0 TO 240.0 HZ	0.0 HZ
P044 MAXIMUM FREQ	0.0 TO 240.0 HZ	70.0 HZ
P046 START SOURCE 1	6 SETTINGS; KEYPAD, 3-WIRE, 2-WIRE, 2-WIRE LEVEL SENSITIVE, 2-WIRE HIGH SPEED, COMM PORT	2 = TB
P045 STOP MODE	8 SETTINGS; RAMP-CLEAR FAULT, COAST-CLEAR FAULT, DC BRAKE-CLEAR FAULT, DC DRAKE W/SHUTOFF-CLEAR FAULT, RAMP COAST, DC BRAKE, DC BRAKE W/SHUTOFF	0 = RAMP-CLEAR FAULT
P047 SPEED REFERENCE 1	6 SETTINGS; DRIVE POTENIOMETER, INTERNAL FRQ, 0-10V INPUT/REMOTE POTENTIOMETER, 4-20 MA INPUT, PRESET FREQ 0-3, COMMUNICATIONS PORT	5 = 0-10 INPUT
P041 ACCEL TIME 1	0.0 TO 600.0 SECONDS	1.0 SECS
P042 DECEL TIME 1	.01 TO 600.0 SECONDS	1.5 SECS
T062	DIGITAL IN TB2	48 = 2 WIRE FWD

SB - POWER FLEX 525 - FOR TAKE-A-WAY CONVEYOR

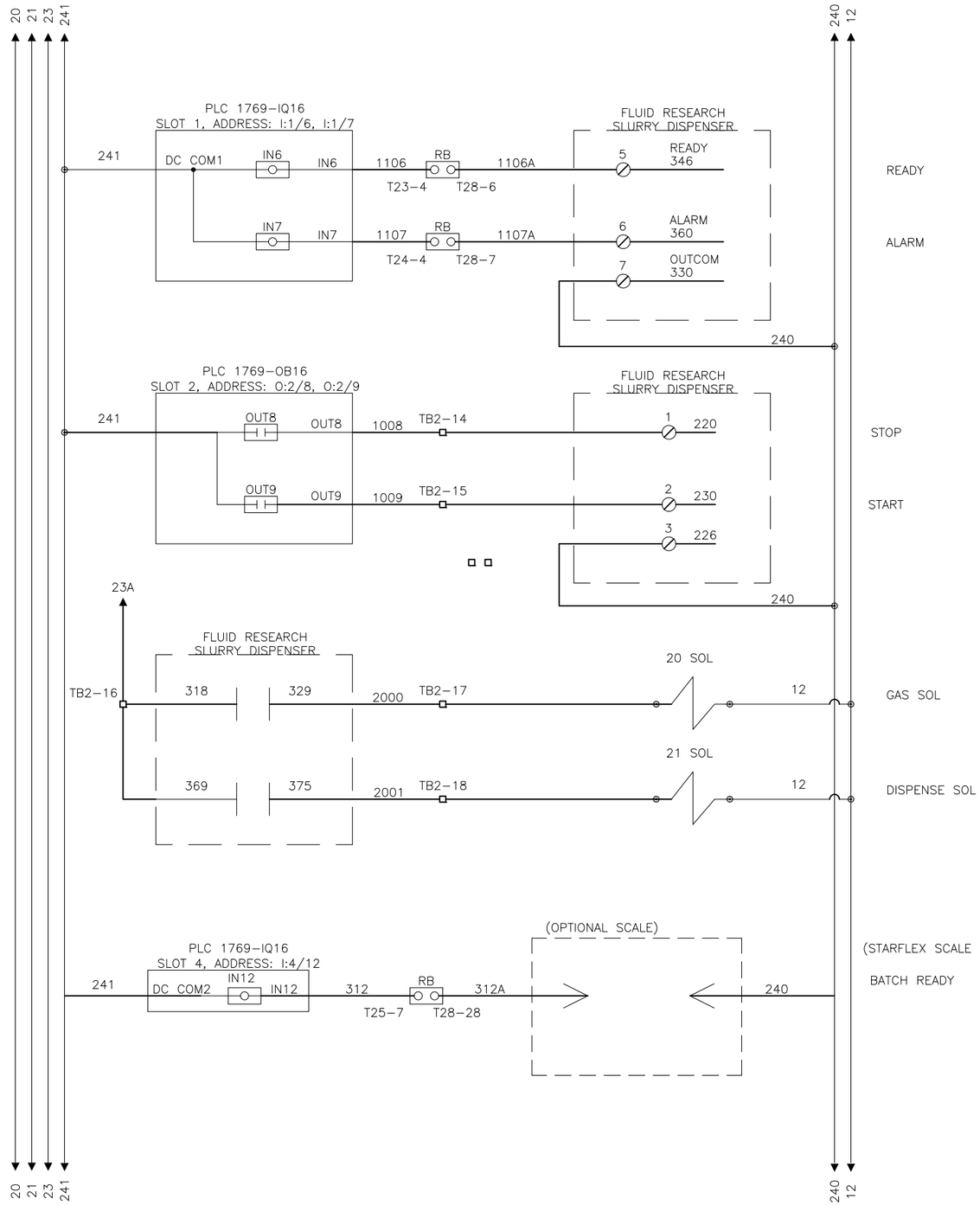
P031 MOTOR NP VOLTS	20 TO DRIVE RATED VOLTS	460V
✳ P032 MOTOR NP HERTZ	10 TO 240 HZ	60 HZ
P033 MOTOR OL CURRENT	0.0 AMPS TO (DRIVE RATED AMPS X 2) IN UNITS OF 0.1 AMPS	0.7 AMPS *
P039 TORQUE PERF MODE	5 SETTINGS; V/Hz, SVC, ECONOMIZE, VECTOR, PM CONTROL, SYNRM	0 = V/Hz
P043 MINIMUM FREQ	0.0 TO 240.0 HZ	0.0 HZ
P044 MAXIMUM FREQ	0.0 TO 240.0 HZ	60.0 HZ
P046 START SOURCE 1	6 SETTINGS; KEYPAD, 3-WIRE, 2-WIRE, 2-WIRE LEVEL SENSITIVE, 2-WIRE HIGH SPEED, COMM PORT	2 = TB
P045 STOP MODE	8 SETTINGS; RAMP-CLEAR FAULT, COAST-CLEAR FAULT, DC BRAKE-CLEAR FAULT, DC DRAKE W/SHUTOFF-CLEAR FAULT, RAMP COAST, DC BRAKE, DC BRAKE W/SHUTOFF	0 = RAMP-CLEAR FAULT
P047 SPEED REFERENCE 1	6 SETTINGS; DRIVE POTENIOMETER, INTERNAL FRQ, 0-10V INPUT/REMOTE POTENTIOMETER, 4-20 MA INPUT, PRESET FREQ 0-3, COMMUNICATIONS PORT	5 = 0-10 INPUT
P041 ACCEL TIME 1	0.0 TO 600.0 SECONDS	3.0 SECS
P042 DECEL TIME 1	.01 TO 600.0 SECONDS	3.0 SECS
T062	DIGITAL IN TB2	48 = 2 WIRE FWD

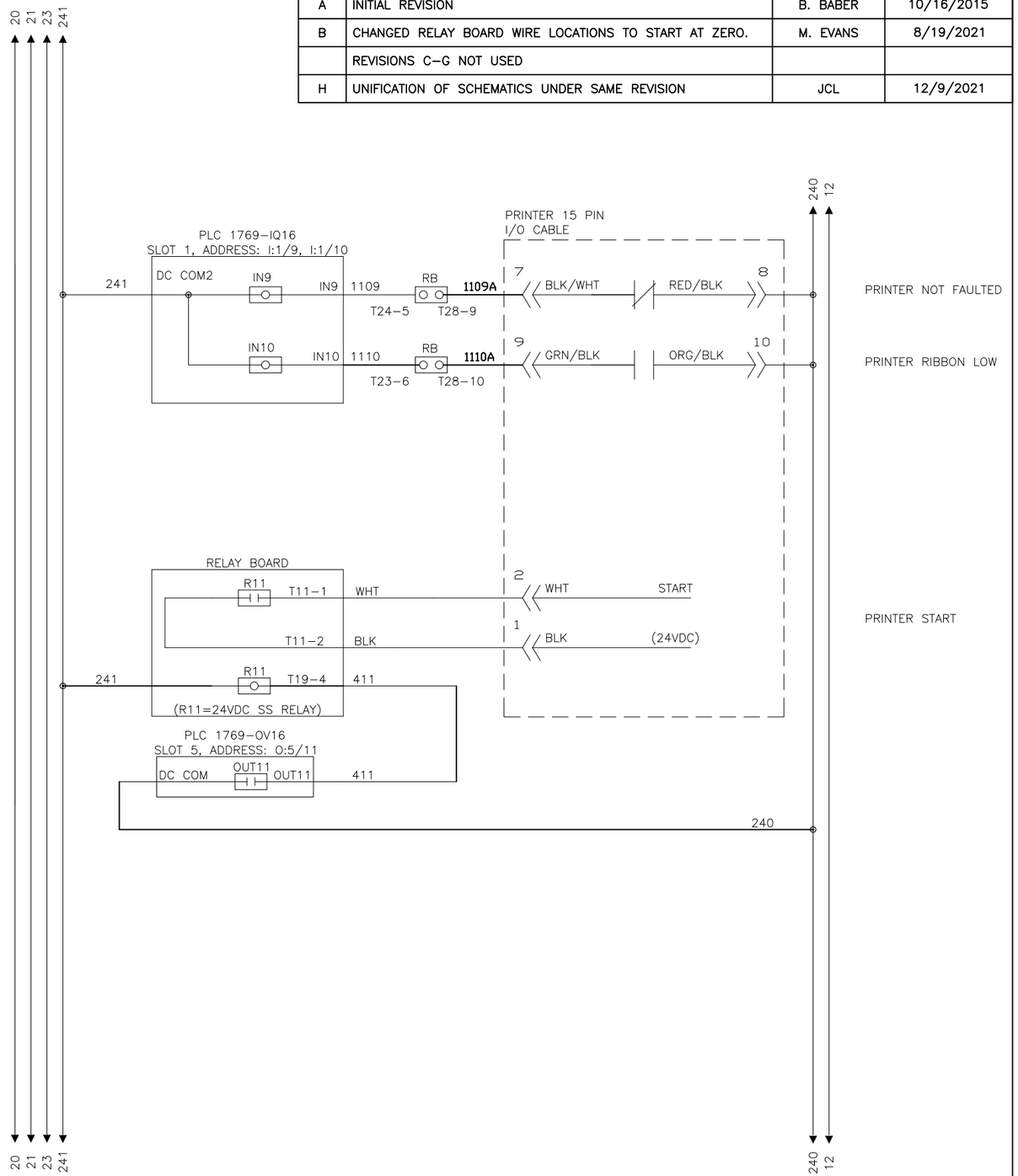
✳ - P033 VALUES FOR BOTH CUSTOMER SUPPLIED CONVEYORS MUST BE SET BASED ON THE RATED AMPS OF EACH MOTOR

M-TEK INC.
THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

PROJECT: V45
TITLE: SETTINGS
DWG NO: V45 11 Settings.dwg
DRAWN BY: BRB
APPROVED ENG: ENG
REVISIONS:
DATE: 2021-12-09

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
B	CHANGED RELAY BOARD WIRE LOCATIONS TO START AT ZERO.	M. EVANS	8/19/2021
	REVISIONS C–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021





M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M–TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

PROJECT: V45
TITLE: BASIC IO
DWG NO: V45 12 Basic IO.dwg

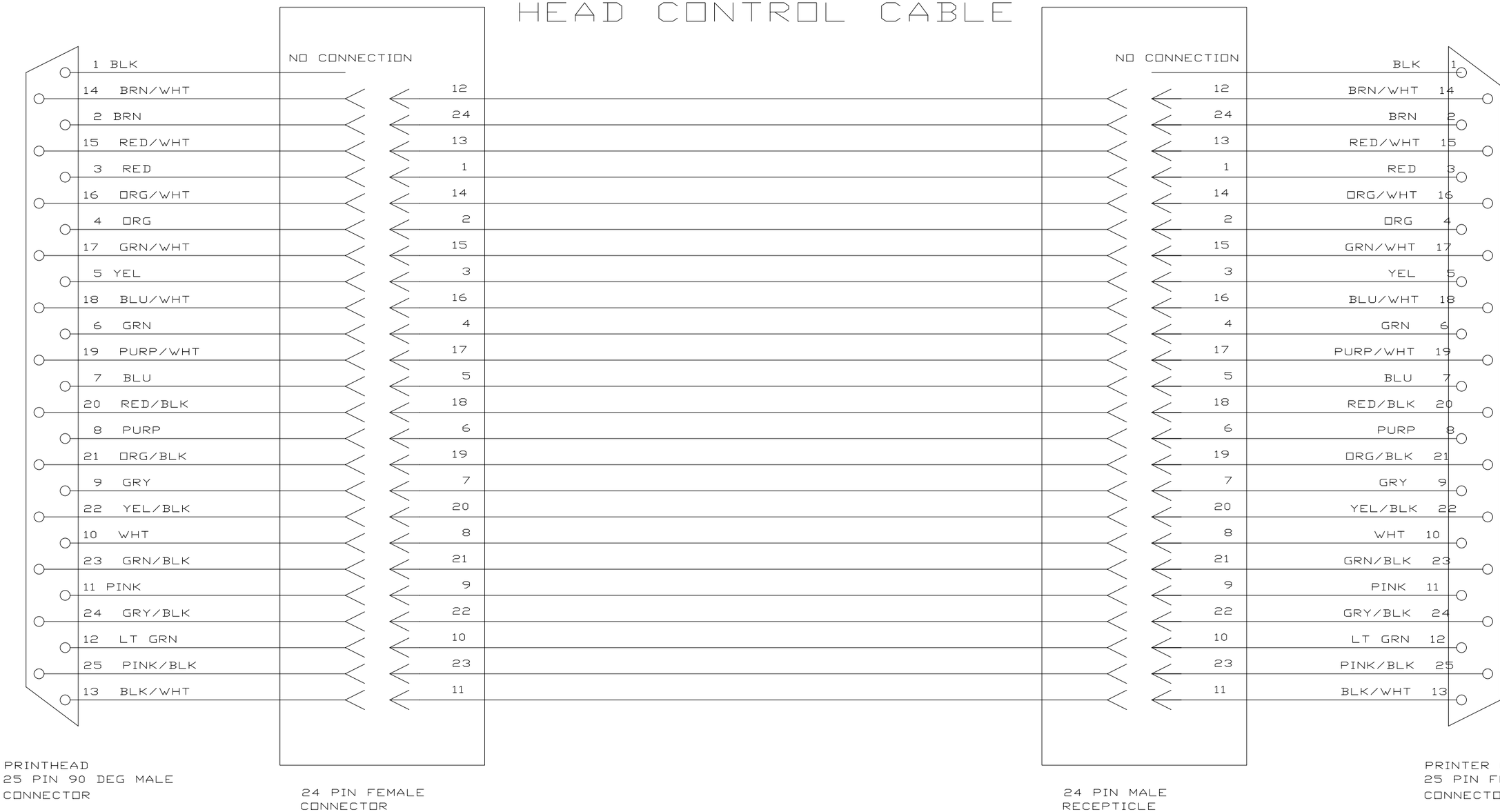
DRAWN BY: BRB
APPROVED ENG: ENG
REVISIONS:

DATE: 2021-12-09

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
	REVISIONS B–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021

MARKEM PRINTER

HEAD CONTROL CABLE



PRINTHEAD
25 PIN 90 DEG MALE
CONNECTOR

24 PIN FEMALE
CONNECTOR

24 PIN MALE
RECEPTICLE

PRINTER CONTROLLER
25 PIN FEMALE
CONNECTOR

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

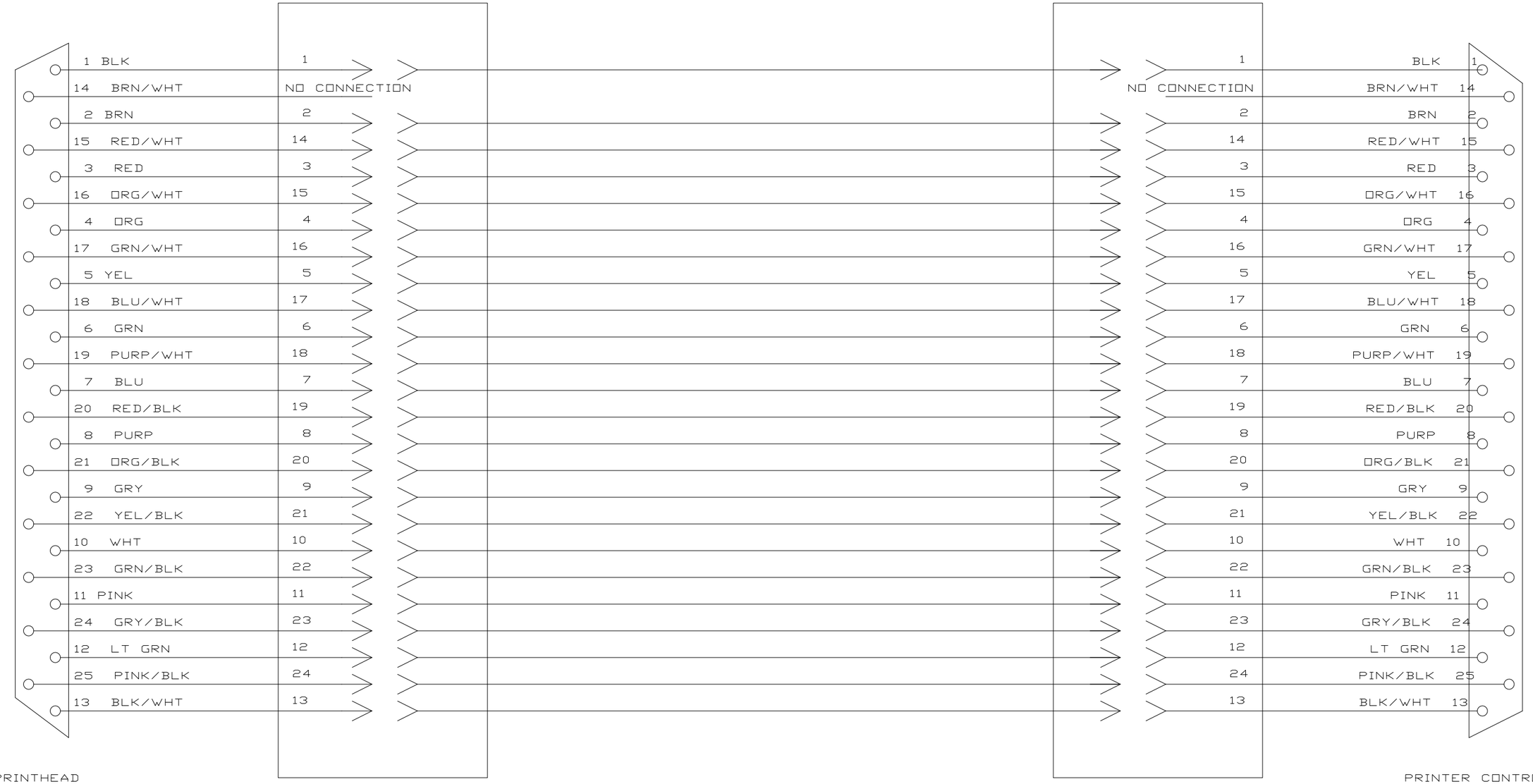
PROJECT: V45
TITLE: PRINTER CABLE CONTROL
DWG NO: V45 13 Printer Cable Control.dwg

DRAWN BY: BRB
APPROVED ENG: ENG
REVISIONS:

DATE: 2021-12-09

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
	REVISIONS B–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021

MARKEM PRINTER
HEAD POWER CABLE



PRINTHEAD
25 PIN 90 DEG FEMALE
CONNECTOR

24 PIN MALE
CONNECTOR

24 PIN FEMALE
RECEPTICLE

PRINTER CONTROLLER
25 PIN MALE
CONNECTOR

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

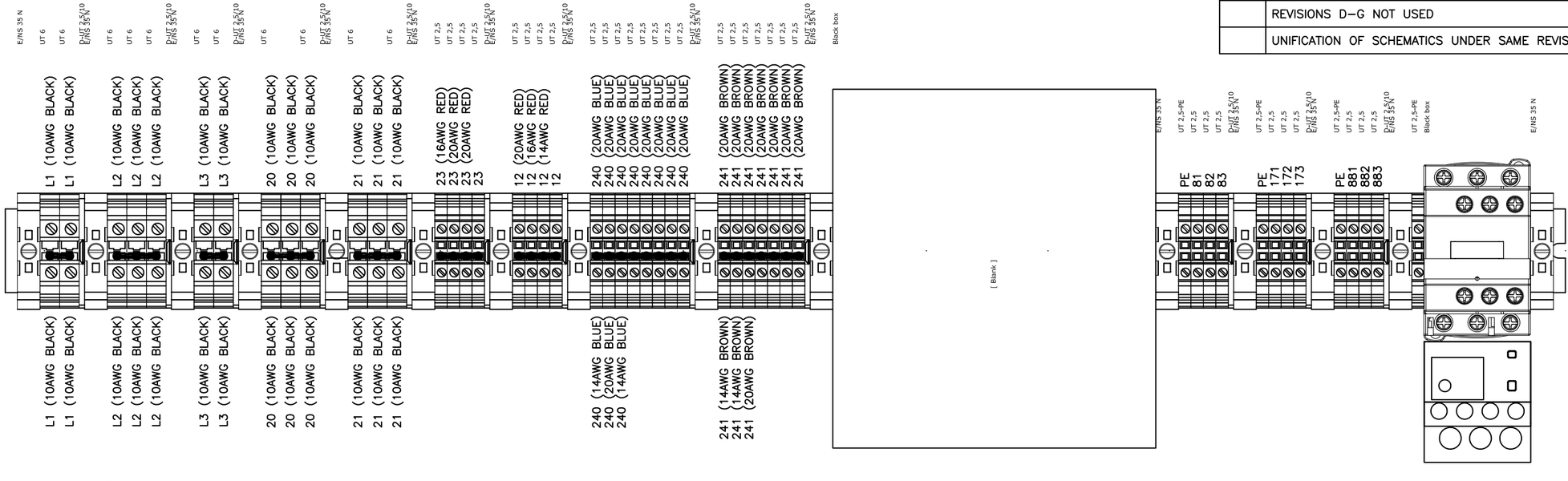
PROJECT: V45
TITLE: PRINTER CABLE POWER
DWG NO: V45 14 Printer Cable Power.dwg

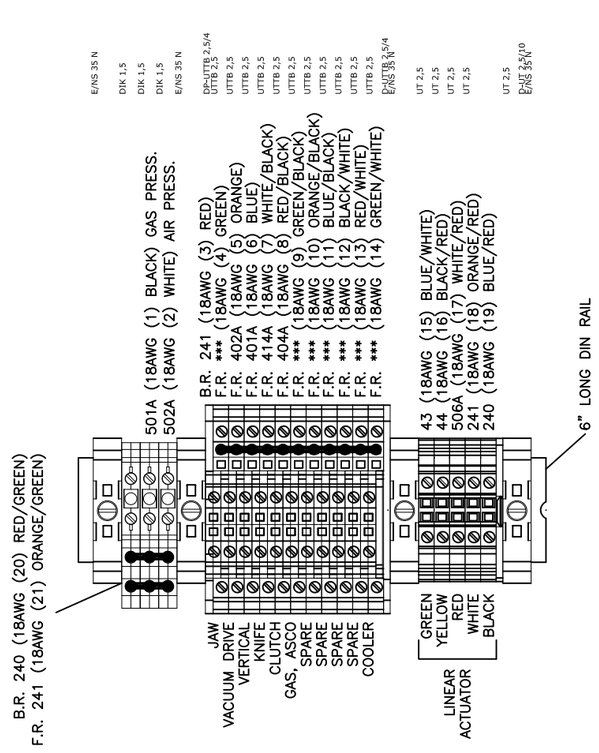
DRAWN BY: BRB
APPROVED ENG: ENG

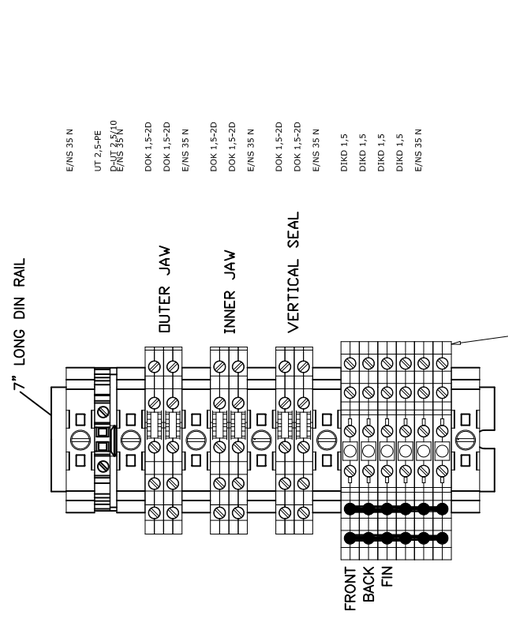
REVISIONS:

DATE: 2021-12-09

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
B	UPDATED PER SHOP NOTES	M. STEVENSON	12/15/2020
C	ADDED TERMINAL BLOCKS TO 20 AND 21	M. EVANS	8/19/2021
	REVISIONS D–G NOT USED		
	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021







Jaw Outer	Jaw Inner	Vertical Seal	Feeder
Red	Blue	Green/Black	No Connnection
White	Orange	Red/Black	No Connnection
Black	Green	White/Black	No Connnection

1	Black	Black	Black	No Connnection
2	Brown	Brown	Brown	Brown
3	Blue	Blue	Blue	Black

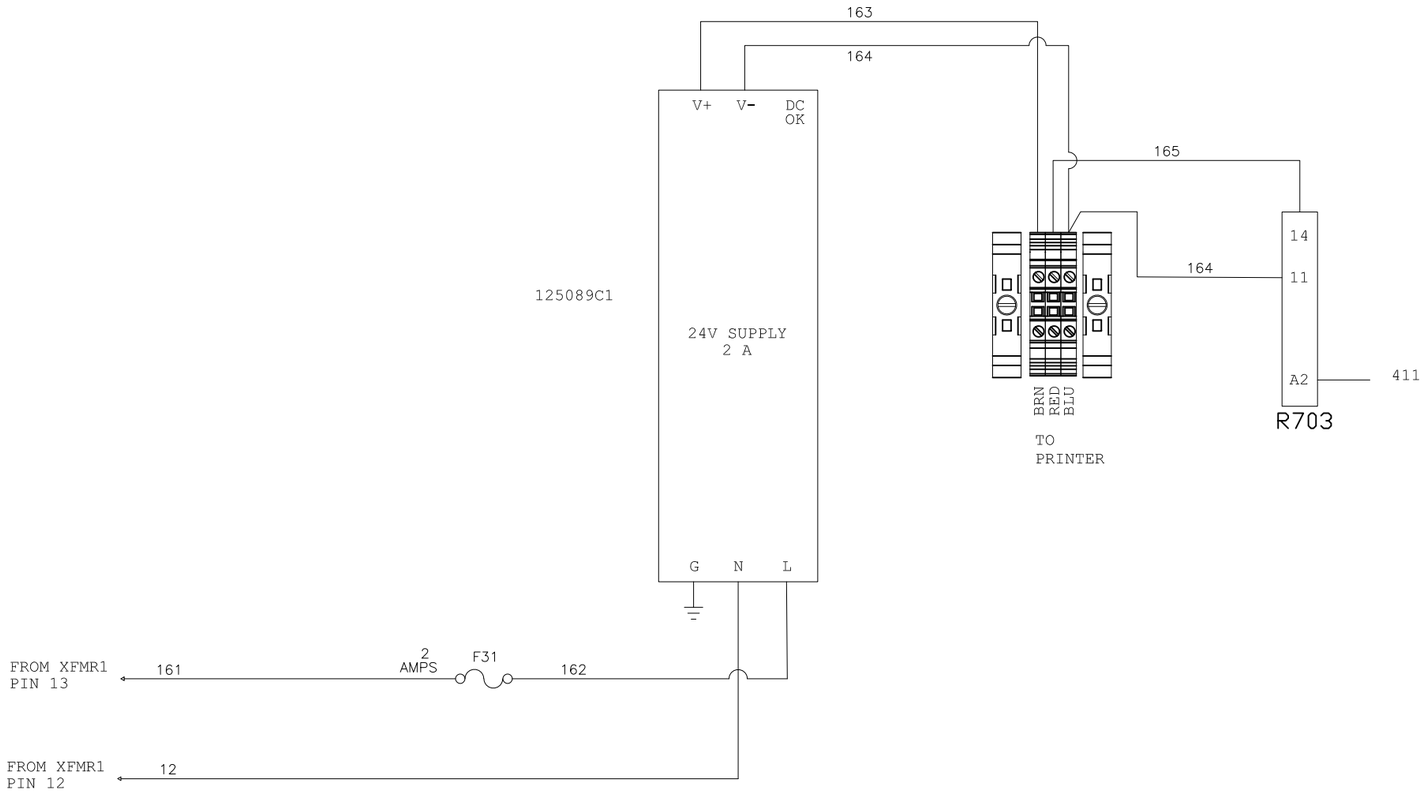
M-TEK INC.
THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

PROJECT: V45
TITLE: TB LAYOUT
DWG NO: V45 15 TB Layout.dwg

DRAWN BY: BRB
APPROVED ENG: ENG
REVISIONS:

DATE: 2021-12-09

REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
	REVISIONS B–D NOT USED		
E	SINGLE FUSING FOR 12V P.S.	M.S.	7/8/2021
F	UPDATED WIRE LABELS	JCL	9/15/2021
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021



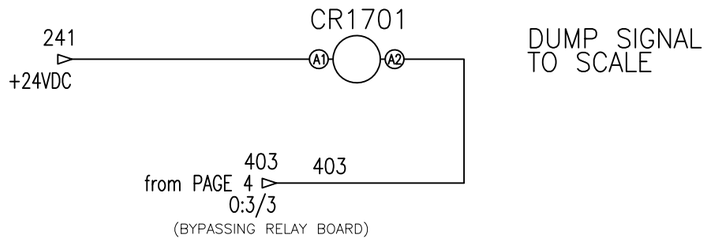
THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

PROJECT: V45
TITLE: PRINTER
DWG NO: V45 16 Printer Signal.dwg

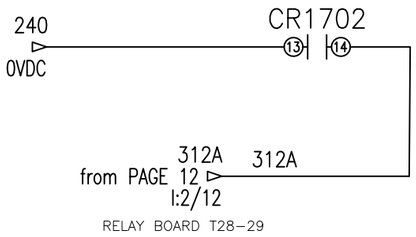
DRAWN BY: BRB
APPROVED ENG: ENG
REVISIONS:

DATE: 2021-12-09

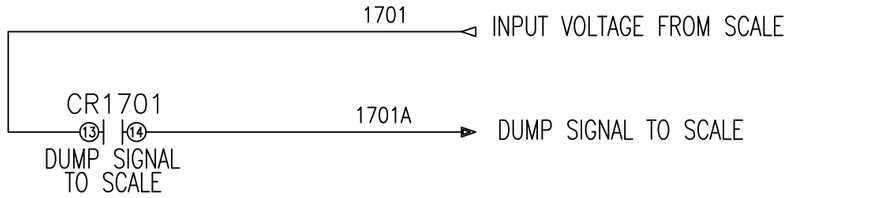
REVISION HISTORY			
REV	DESCRIPTION	APPROVED	DATE
A	INITIAL REVISION	B. BABER	10/16/2015
	REVISIONS B–G NOT USED		
H	UNIFICATION OF SCHEMATICS UNDER SAME REVISION	JCL	12/9/2021

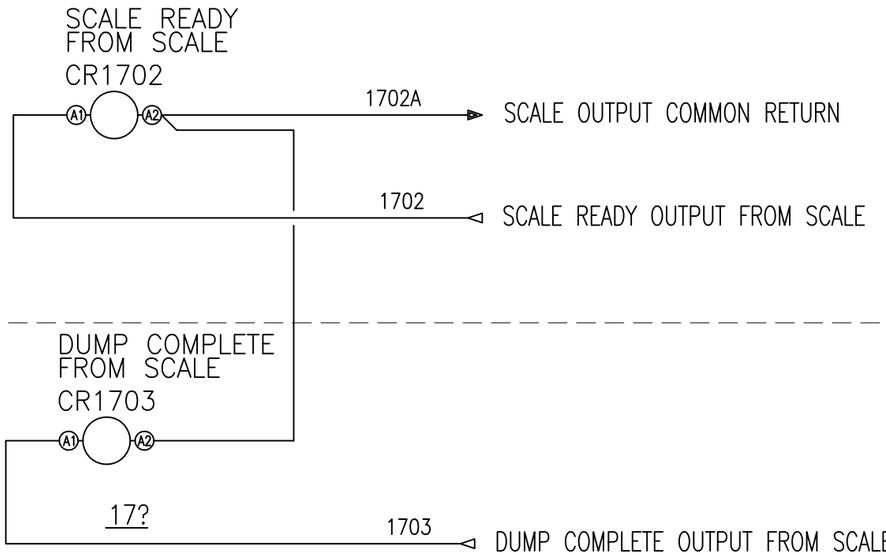


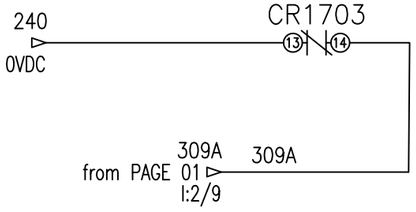
DUMP SIGNAL
TO SCALE



SCALE READY
FROM SCALE







DUMP COMPLETE
FROM SCALE

OPTIONAL
CAN USE DUMP COMPLETE
SIGNAL FROM SCALE INSTEAD
OF PRODUCT DROP SENSORS
(PAGE 1)

M-TEK INC.

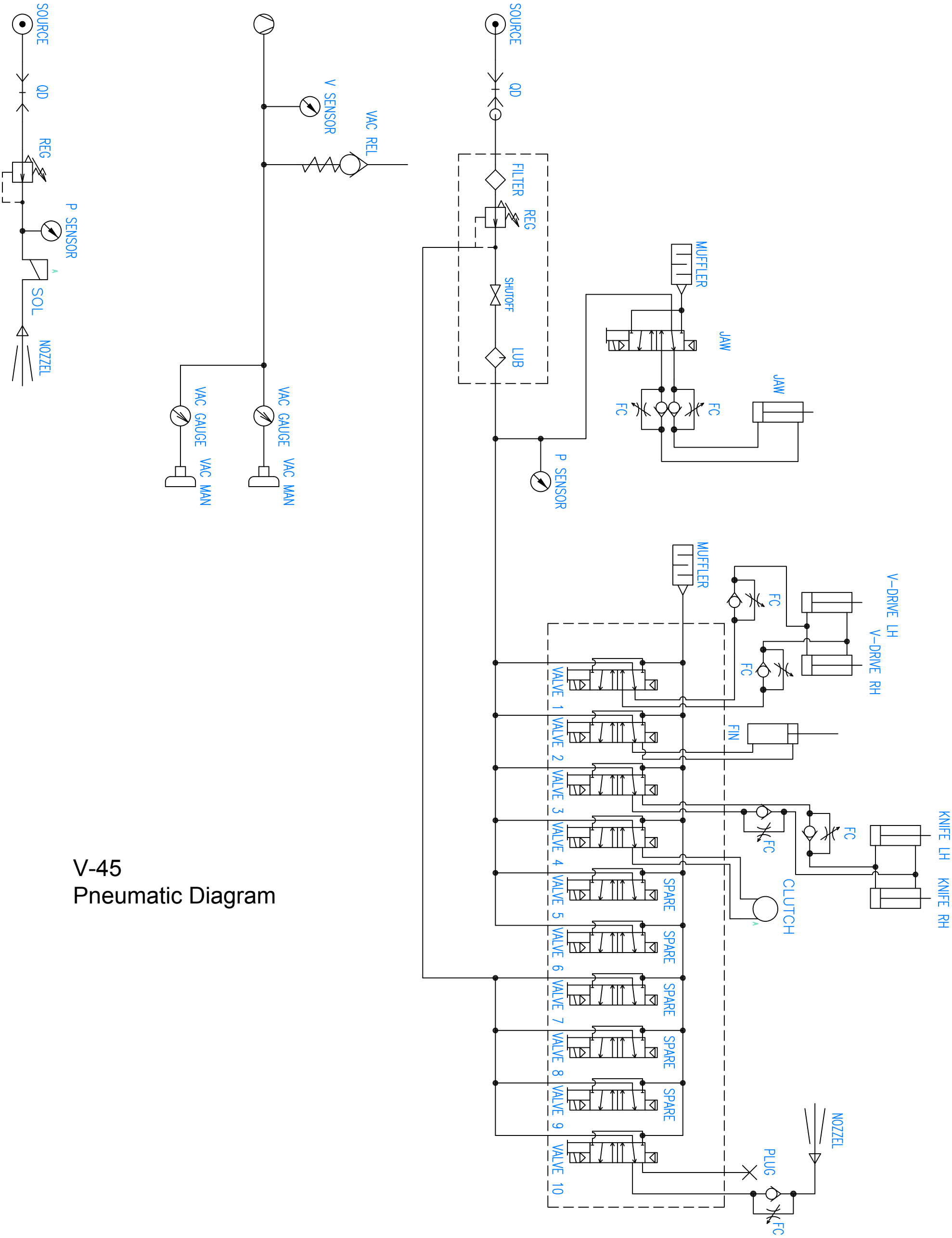
THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

PROJECT: V45
TITLE: SCALE INTERLOCK
DWG NO: V45 17 SCALE INTERLOCK.DWG

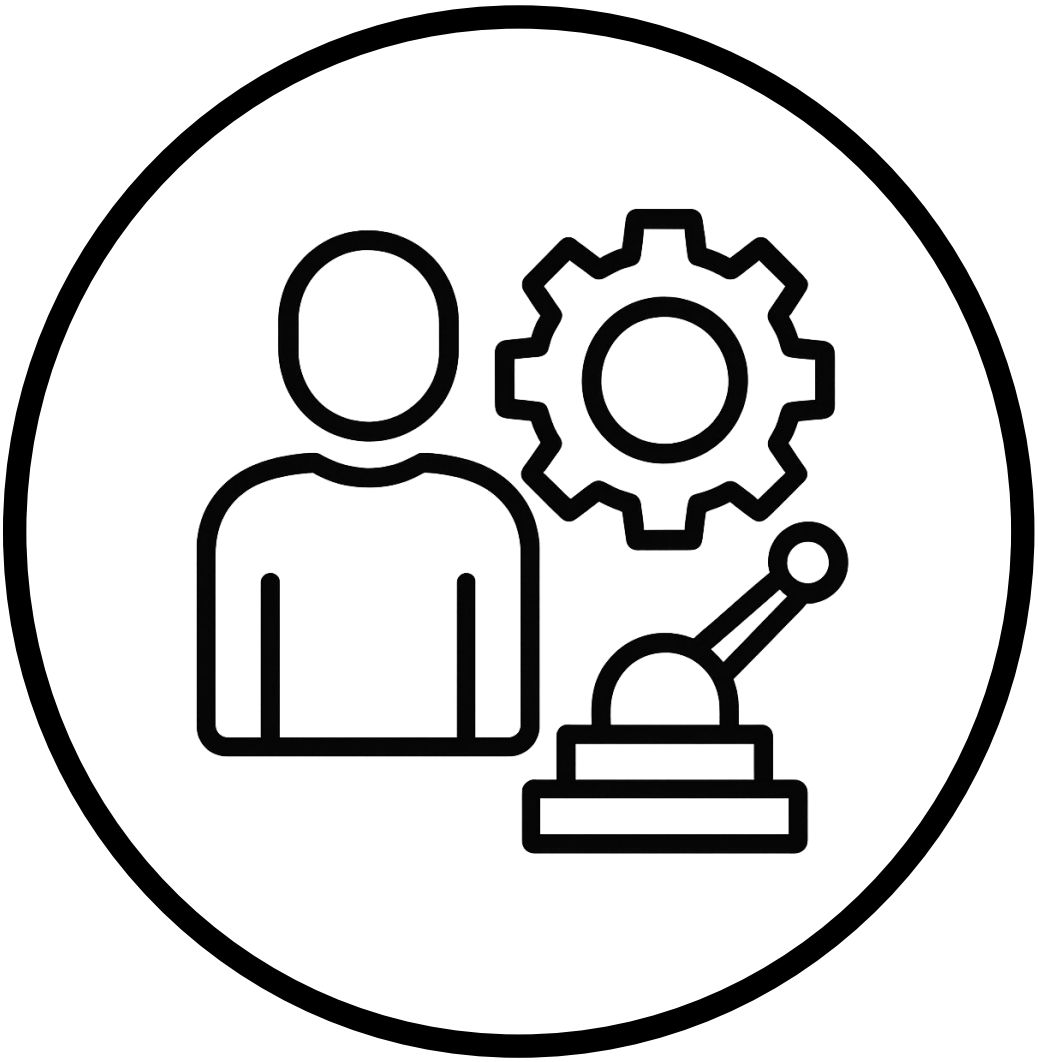
DRAWN BY: BRB
APPROVED ENG: ENG
REVISIONS:

DATE: 2021-12-09

V-45
Pneumatic Diagram

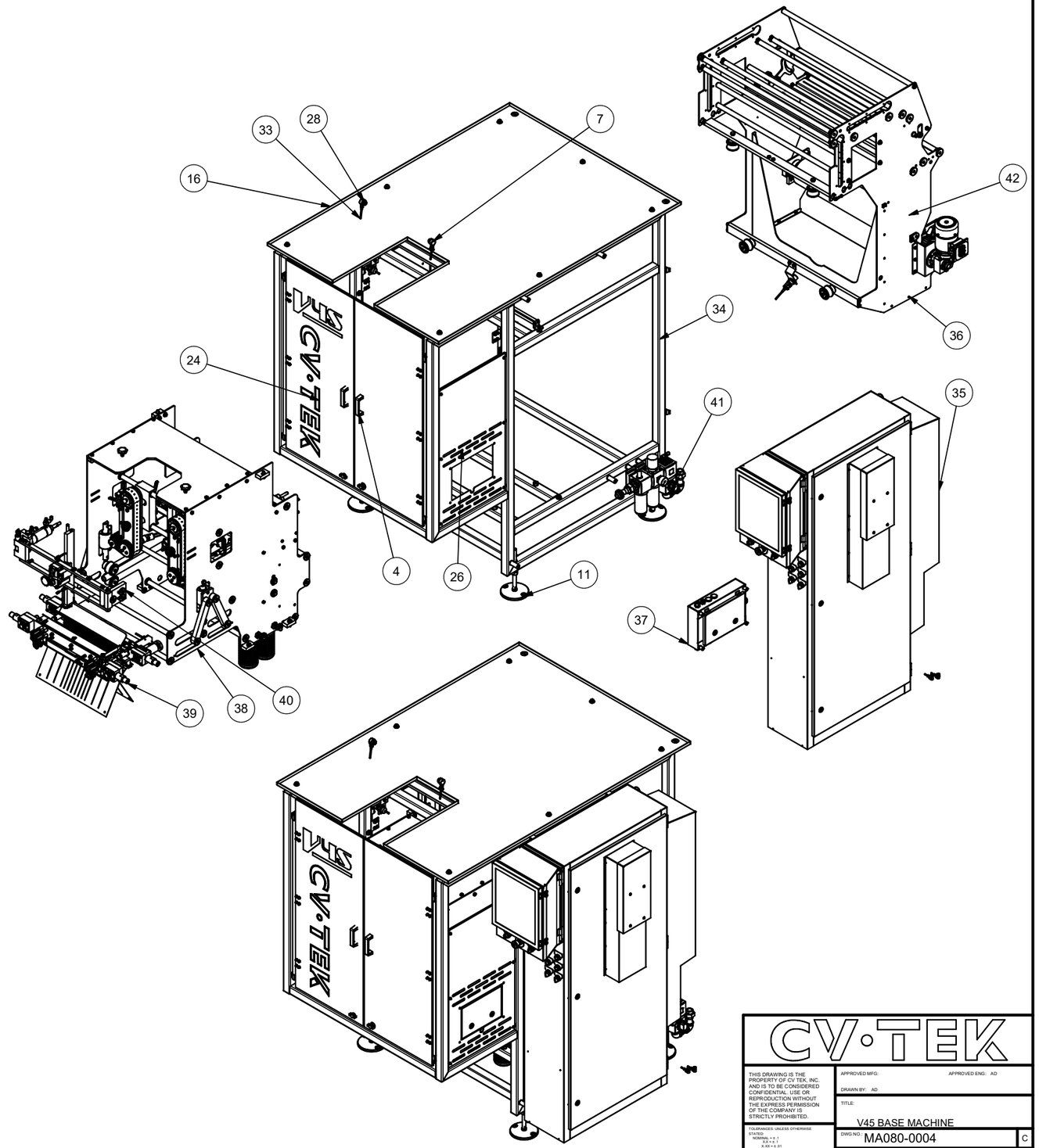


Chapter 15: Assembly Drawings



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	108533C1	3/8 FLAT WASHER, 1.000 O.D., 0.093 THCK, UHMW	8
2	108733C1	3/8-16 X 3/4 LNG HEX HEAD CAP SCREW, S/S	8
3	108745C1	3/8 FLAT WASHER, 0.875 O.D., 0.14 THCK, S/S	8
4	108957C1	VALU GUIDE-631-14, DOOR HANDLE BLACK	4
5	108978C1	1/4 NYLON FLAT WASHER (.260 I.D. x .687 O.D. x .062 THK.)	54
6	109065C1	5/16 FLAT WASHER, 0.570 O.D., 0.07 THCK, S/S	16
7	110407C2	Banner EZ Beam Emitter	1
8	110640C1	1/4-20 X 3/4 Long Stainless Steel 6 Point Flange Head Cap Screw	12
9	110697C1	1/4-20 X 1 inch Long Stainless Steel 6 Point Flange Head Cap Screw	48
10	110866C1	BANNER CODED MAGNET SAFTEY SWITH	4
11	112456C1	ADJUSTABLE BOLT DOWN MACHINE FEET	4
12	112535C1	EMKA 1/4 TURN WING KNOB ASSEMBLY W/ STAINLESS STEEL	4
13	114222C1	BLOCK PIVOT DOOR	8
14	114846C1	DOOR FRONT	1
15	114848C1	DOOR SIDE	1
16	114849C1	DRIP PAN WELDMENT	1
17	114858C1	FIXED SIDE GUARD	1
18	114860C1	BRACKET SWITCH	4
19	114873C1	SHAFT REGISTRATION	2
20	114874C1	BRACKET REGISTRATION MOUNT	2
21	114956C1	DOOR PIVOT	4
22	120564C1	5/16-18 X 1-1/8 LNG HEX HEAD CAP SCREW, S/S	16
23	120633C1	PAN DRAIN TUBE SUPPORT	4
24	125762C1	DOOR WITH LOGO, FRONT, V45	1
25	125763C1	DOOR WITH LOGO, SIDE, V45	1
26	121696C1	GUARD JUNCTION BOX SIDE WELDMENT	1
27	121732C1	SAFTEY INTERLOCK SENSOR	4
28	129240C1	Banner Beam Receiver	1
29	75109501	1/4-20 X 1/2 LNG HEX HEAD CAP SCREW, S/S	4
30	75110201	1/4 FLAT WASHER, 0.500 O.D., 0.07 THCK, S/S	54
31	75111801	1/4-20 ACORN NUT, S/S	48
32	75112501	3/8-16 X 1/2 LNG HEX HEAD CAP SCREW, S/S	6
33	7707-1741	CABLE, 5-PIN, 10M	7
34	MA010-0004	MAIN FRAME	1
35	MA020-0003	MAIN ELECTRICAL ENCLOSURE	1
36	MA060-0007	V45 UNWIND FILM ASSEMBLY W/ BEARINGS	1
37	MA030-0004	JUNCTION BOX ASSEMBLY	1
38	MA030-0006	V45 HEAD ASSEMBLY	1
39	MA030-0016	V45 HOT BAR JAW ASSEMBLY	1
40	MA040-0008	V45 FIN SEAL ASSEMBLY	1
41	MA029-0014	V45 FRL ASSEMBLY	1
42	MA062-0001	SHAFT FILM ASSEMBLY (6 INCH CORE)	1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL CREATION	12/17/2015	BB
B	FRAME MODIFIED	5/11/2018	AD
C	MA029-0014 REPLACED MA029-0013	1/24/2023	PV



THIS DRAWING IS THE PROPERTY OF CV TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED
X = ± 1
XX.X = ± .2
X.XX = ± .01
X.XXX = ± .005
DRILLED HOLE: STANDARD ISO

APPROVED MFG: APPROVED ENG: AD

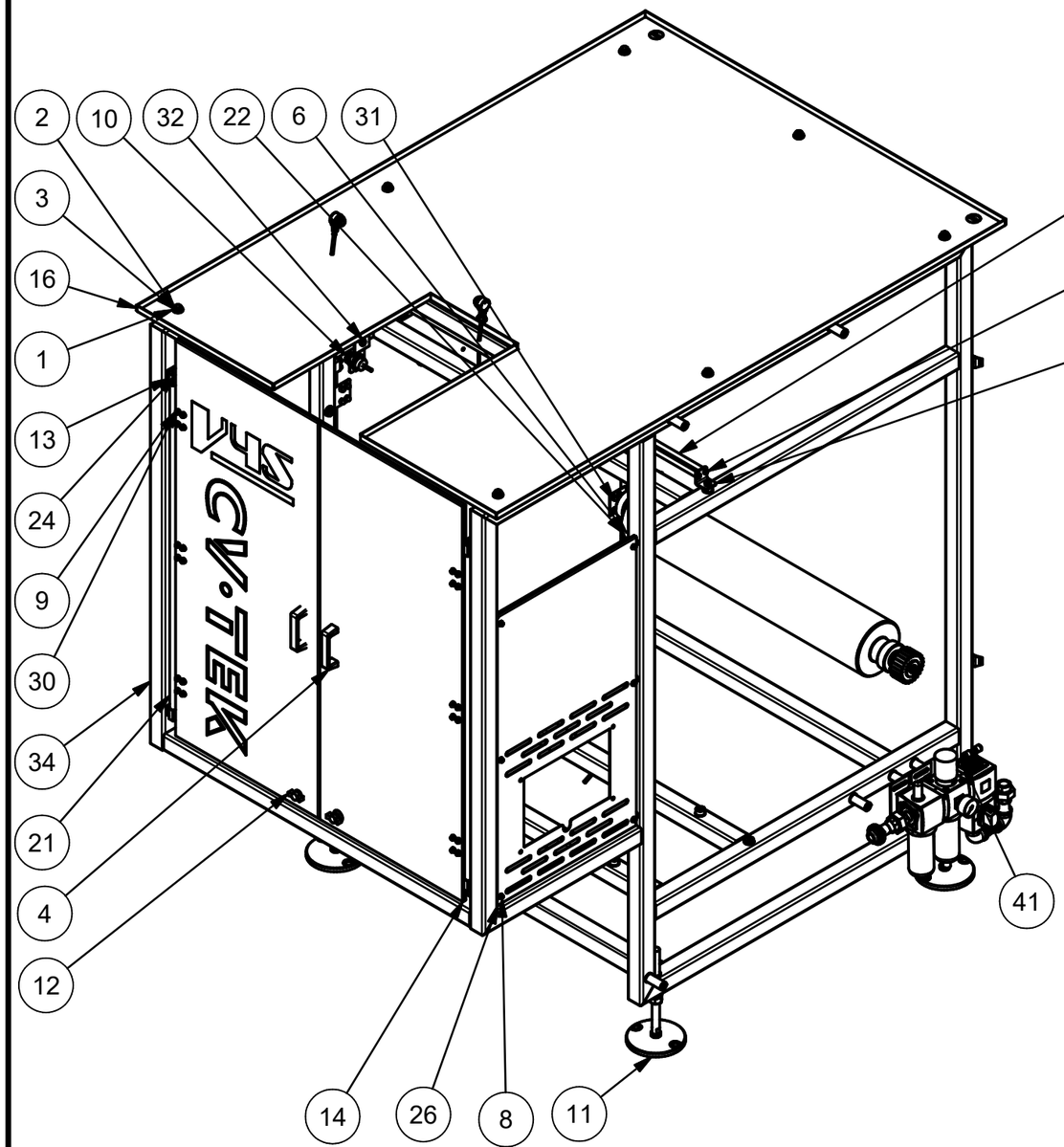
DRAWN BY: AD

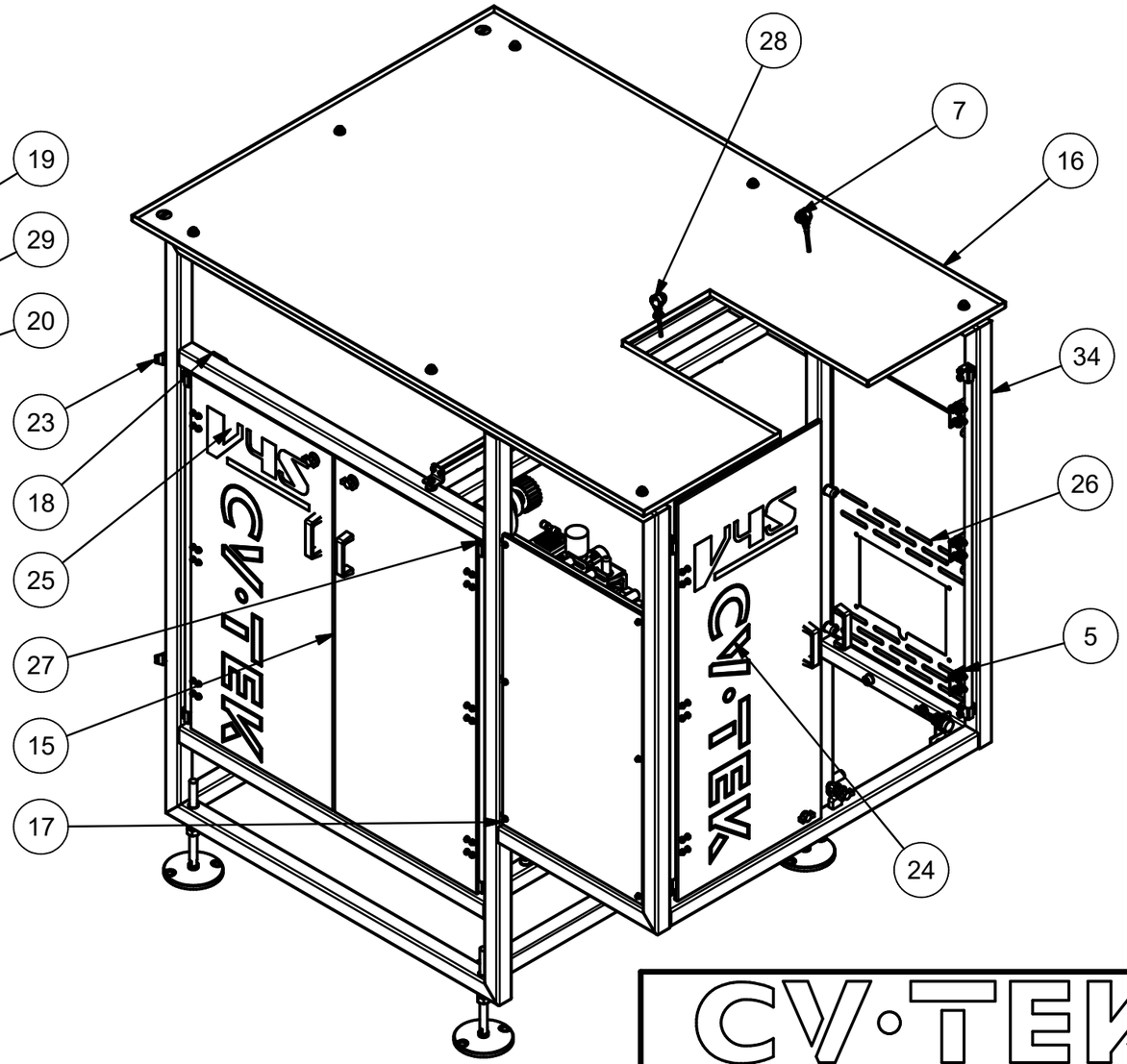
TITLE: V45 BASE MACHINE

DWG NO: MA080-0004 C

SCALE: N/A | DATE: 1/24/2023 | SHEET 1 OF 2

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL CREATION	12/17/2015	BB
B	FRAME MODIFIED	5/11/2018	AD
C	MA029-0014 REPLACED MA029-0013	1/24/2023	PV





CV·TEK

THIS DRAWING IS THE PROPERTY OF CV TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
NOMINAL = ± .1
X.X = ± .1
X.XX = ± .01
X.XXX = ± .005
DRILLED HOLE: STANDARD ISO

APPROVED MFG: APPROVED ENG: AD

DRAWN BY: AD

TITLE:

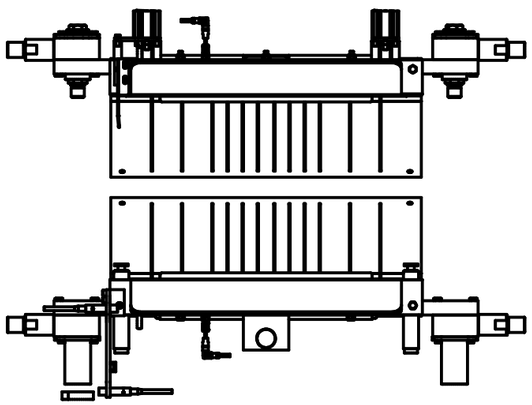
V45 BASE MACHINE

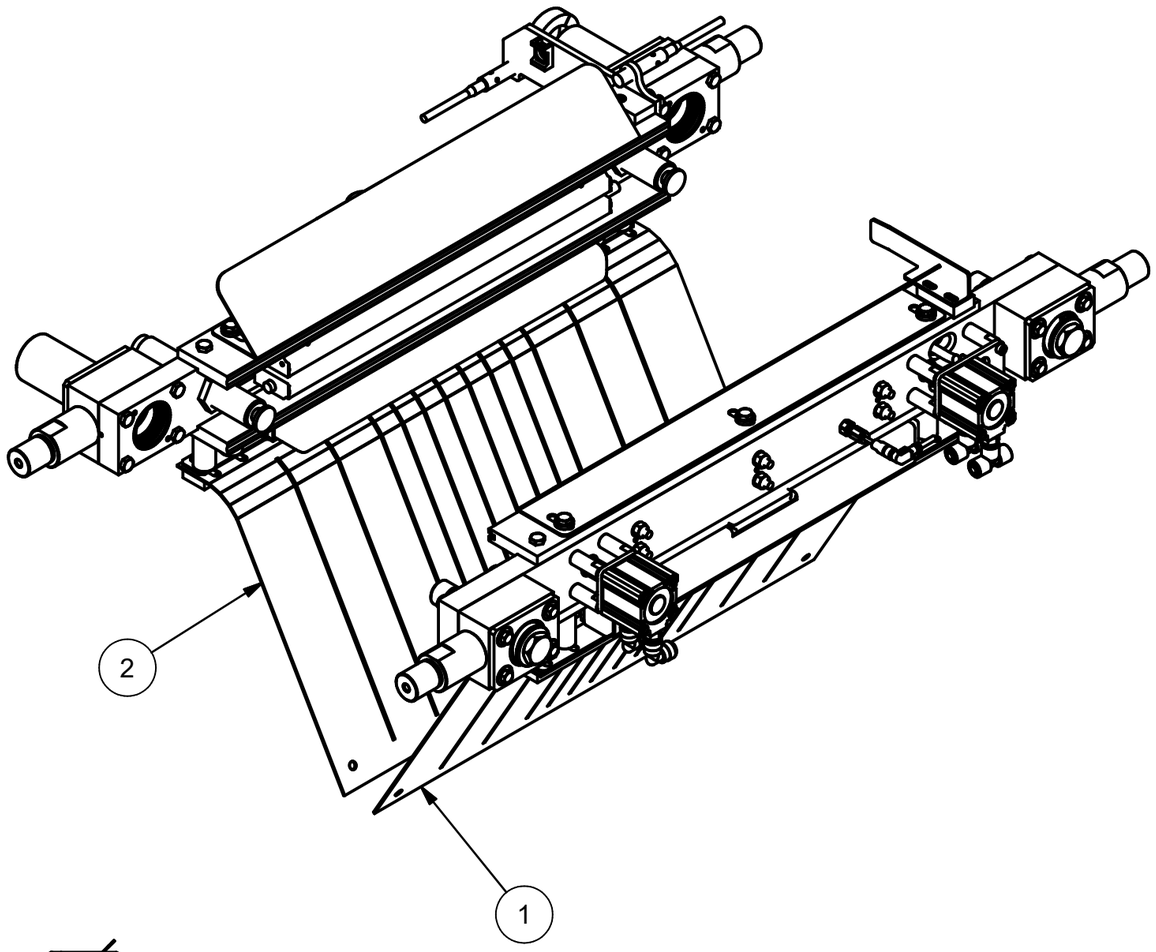
DWG NO.: MA080-0004 C

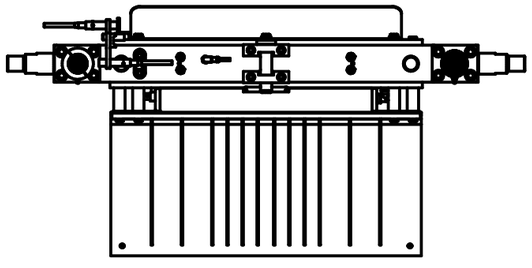
SCALE: N/A | DATE: 1/24/2023 | SHEET 2 OF 2

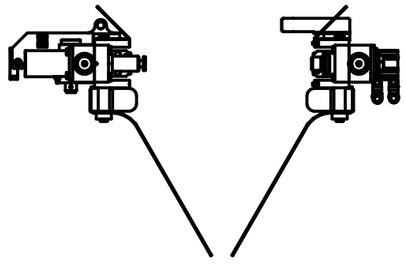
PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	121656C1	OUTER JAW SEAL BAR ASSEMBLLY, V45	1
2	121657C1	INNER JAW SEAL BAR ASSEMBLY, V45	1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	5/4/2018	N.B









CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE- STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: cilonta

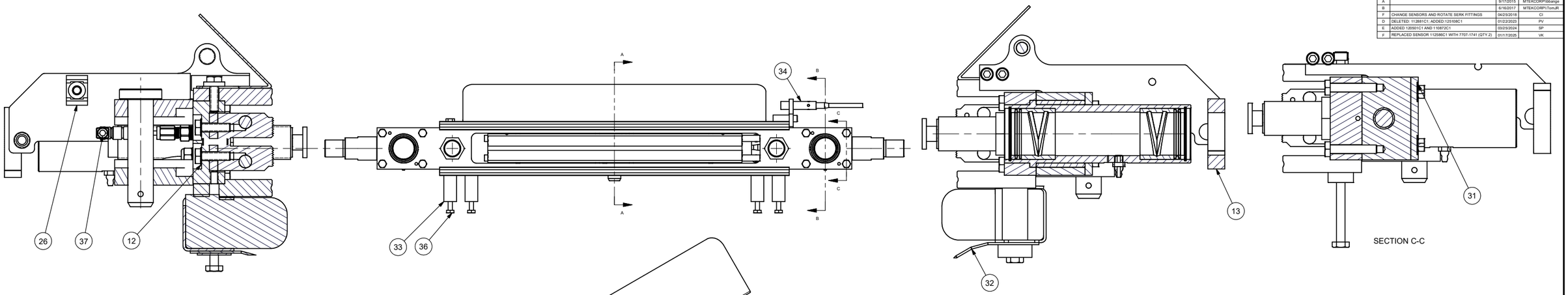
TITLE:

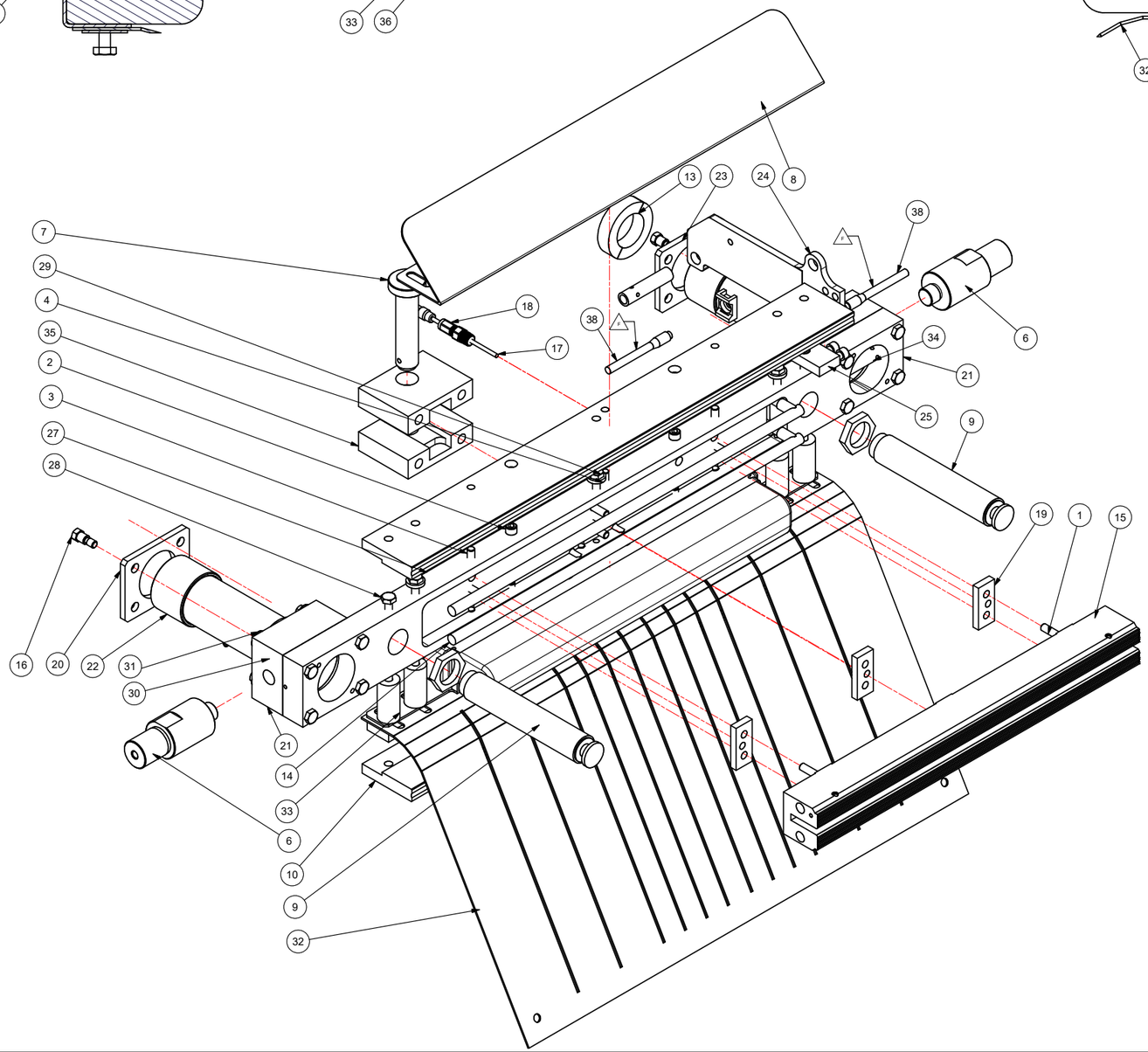
V45 HOT BAR JAW ASSEMBLY

DWG NO.: MA030-0016 A

SCALE: N/A DATE: SHEET 1 OF 1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A		5/17/2015	MTEKCORP\Bdange
B		6/16/2017	MTEKCORP\TomJR
F	CHANGE SENSORS AND ROTATE SERK FITTINGS	04/25/2018	CI
D	DELETED: 112681C1; ADDED:125108C1	01/23/2023	PV
E	ADDED 120501C1 AND 110872C1	03/25/2024	SP
F	REPLACED SENSOR 112586C1 WITH 7707-1741 (QTY 2)	01/17/2025	VK





PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	114353C1	1/4-20 x 1 1/4 STUD	4
2	108736C1	1/4-20 X 5/8 SOCKET HEAD CAP SCREW, S/S	6
3	109033C1	Ø1/4 X 3/4 DOWEL PIN, S/S	9
4	110554C1	1/4 FLAT WASHER, 0.625 O.D., 0.125 THCK, S/S	3
5	110595C1	1/4-20 X 1 SOCKET HEAD CAP SCREW, S/S	1
6	112128C1	SEAL BAR SUPPORT PIN	2
7	112152C1	CYLINDER PIN - REAR CROSS SEAL BEAM	1
8	112443C1	FRONT AND BACK BAG SUPPORT	1
9	112641C1	1-12 UNF THREADED BODY, SHOCK ABSORBER	2
10	112878C1	PINCH BAR, REAR V32 CARTRIDGE HOT BAR OPTION	2
11	112903C1	5/16-18 X 2 SOCKET HEAD CAP SCREW, S/S	4
12	112904C1	BELLEVILLE WASHER Ø1/2 x 0.255 x 0.022, S/S	6
13	112964C1	TWO PIECE CLAMP ON COLLAR 1-1/4 ID, 2 OD S/S	1
14	112966C2	3/8 DIA X 16 INCH LONG CARTRIDGE HEATER V32 HOT BAR CROSS SEAL W/HEAT SHRINK	2
15	113022C1	SEAL BAR SERRATED, V32 2 X 2 SEAL BAR	1
16	113377C1	SHOULDER BOLT, BEARING PLATE, BARREL JAW	8
17	120296C1	RTD 3"LONG, M8 CONNECTOR	1
18	120297C1	COUPLING 1/8"	1
19	121635C1	SEAL BAR INSULATOR BARREL JAW - L.H./R.H.	3
20	121636C1	BUSHING PINCH PLATE, BARREL JAW	1
21	121655C1	REAR CROSS BAR ASSEMBLY, V45	1
22	121658C1	SPACER, REAR SHAFT SUPPORT BLOCK	2
23	121698C1	BUSHING PINCH PLATE, BARREL JAW, FLOAT SIDE	1
24	121714C1	JAW OPEN SENSOR PLATE V45	1
25	121721C1	JAW CLOSED SENSOR BLOCK	1
26	75003001	CABLE TIE MOUNTING BASE, 1/4 SCREW SIZE, PANDUIT #TM3S25-C	1
27	75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT	4
28	75106401	1/4-20 X 3/4 LNG HEX HEAD CAP SCREW, S/S	1
29	75109601	1/4-20 X 7/8 LNG HEX HEAD CAP SCREW, S/S	5
30	MA037-0003	SLIDE BEARING ASSEMBLY, 1.25 SHAFT, SEALING JAW	2
31	113472C1	BELLEVILLE WASHER Ø5/8 x 0.317 x 0.022, S/S	8
32	MA150-0003	RIGID BAG COMPRESSOR ASSEMBLY	1
33	112867C1	STAND OFF RIGID RETAINER BRACKET	4
34	121795C1	INDUCTIVE PROXIMITY SWITCH, NPN, M12, DIAM:12, THREADED M12X1	2
35	125108C1	V45 COUPLING BLOCK	2
36	110872C1	1/4-20 X 2-3/4 LNG HEX HEAD CAP SCREW, S/S	4
37	120501C1	SCHNEIDER I/O CABLE 5M 90 DEG 3PIN M3 IP67	1
38	7707-1741	CABLE, 5-PIN, 10M	2

THIS DRAWING IS THE PROPERTY OF M-TEK, INC., AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF M-TEK, INC. IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL ± .015
.XX ± .030
.XXX ± .005
DRILLED HOLE STANDARD S.A.E.

M-TEK INC.

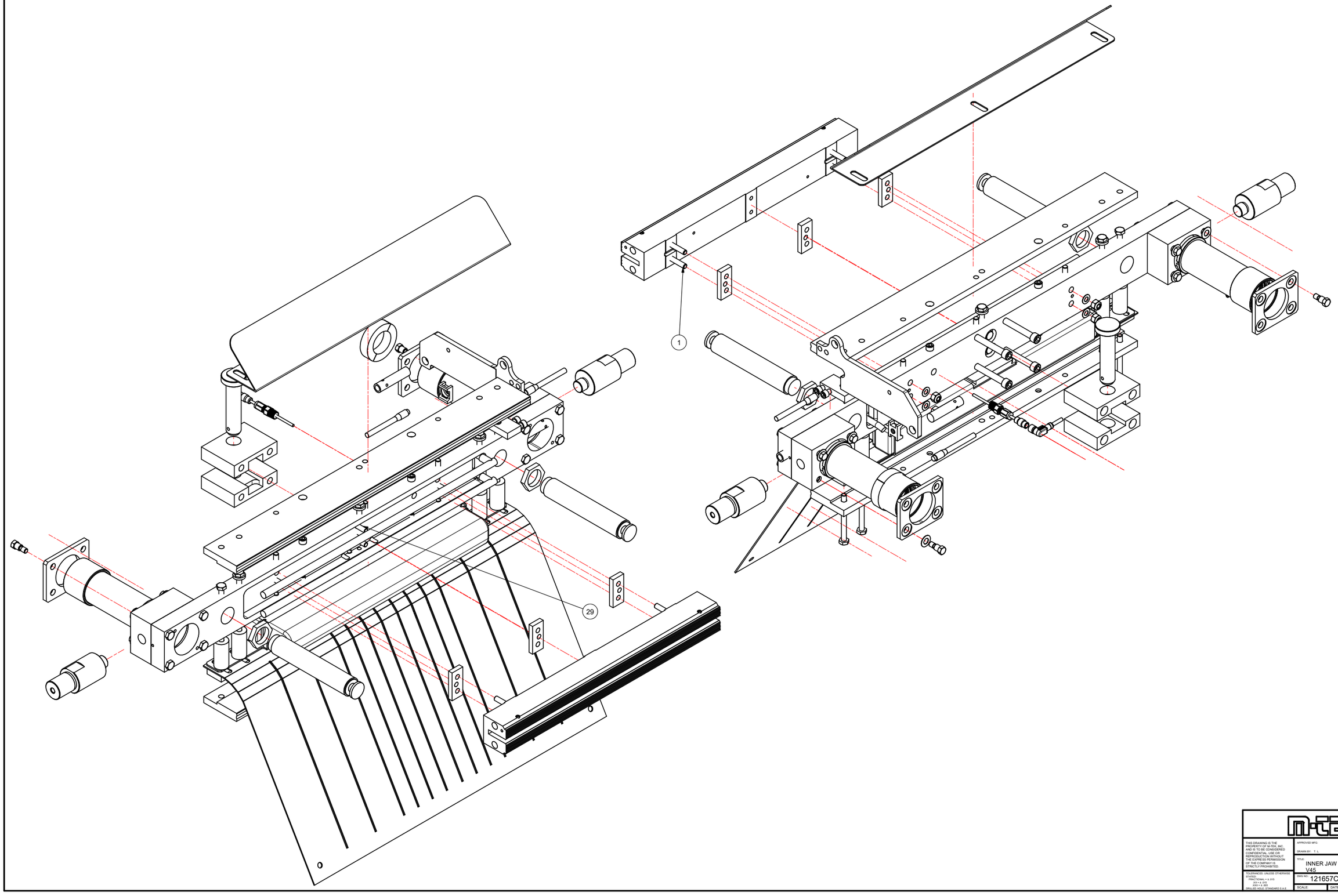
APPROVED MFG: APPROVED ENG:

DRAWN BY: T. L.

TITLE: INNER JAW SEAL BAR ASSEMBLY, V45

DWG NO: 121657C1 F

SCALE: DATE: SHEET 1 OF 2



M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED
FRACTIONAL ± .015
.XX ± .01
.XXX ± .005
DRILLED HOLE STANDARD S.A.E.

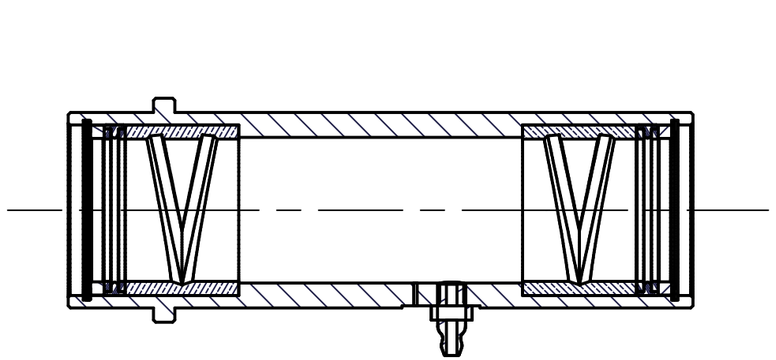
APPROVED MFG: APPROVED ENG:

DRAWN BY: T. L.

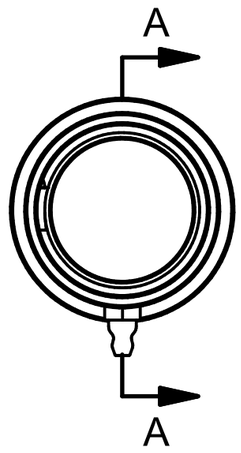
TITLE: INNER JAW SEAL BAR ASSEMBLY, V45

DWG NO: 121657C1 F

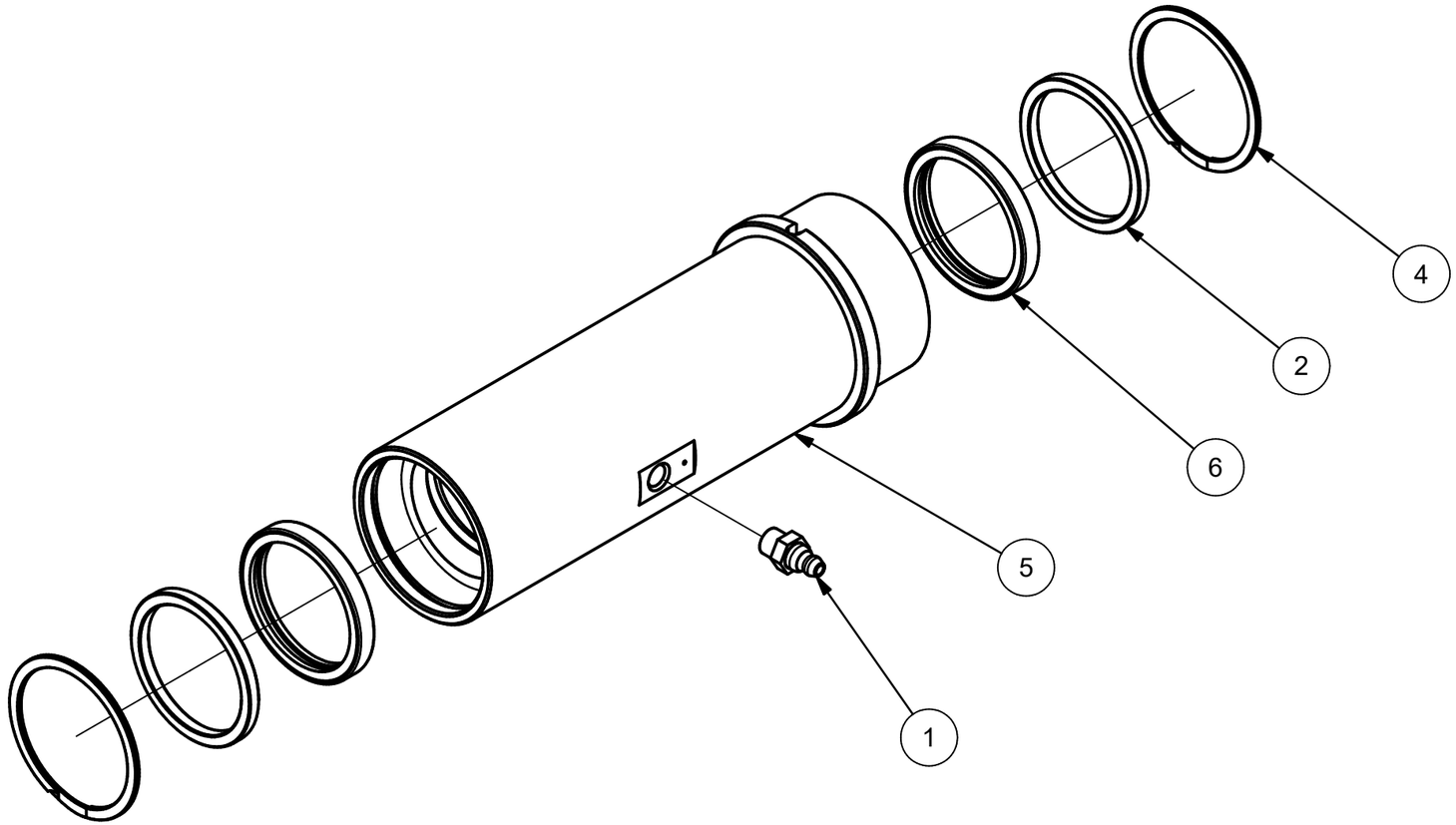
SCALE: DATE: SHEET 7 OF 7



SECTION A-A



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	113225C1	GREASE FITTING, 1/4-28 NPT, SS, STRAIGHT 10 PCS	1
2	114283C1	WASHER, SEAL SUPPORT 1 1/2 ID	2
4	114290C1	RETAINING RING 1 1/2 ID,.05 THK, SS	2
5	121645C1	HOUSING SEAL SLIDE, MACHINING	1
6	114284C2	1-1/4 T-SEAL	2



M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. LIAKOPOULOS

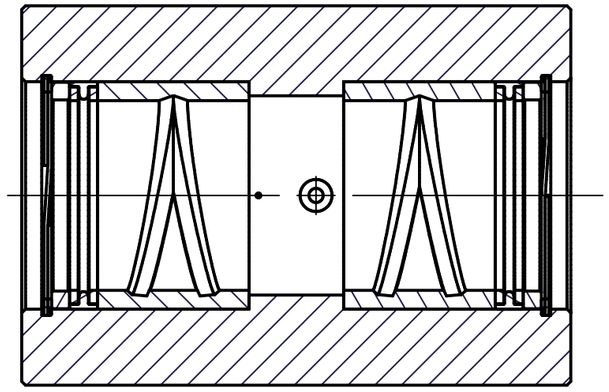
TITLE: SLIDE BEARING ASSEMBLY, 1.25 SHAFT, SEALING JAW

DWG NO.: MA037-0003

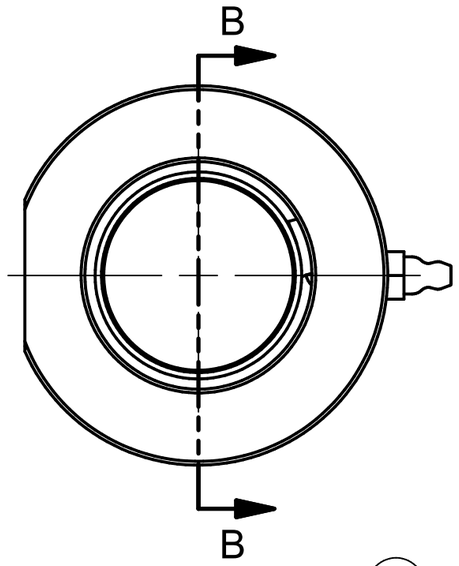
SCALE: 0.75 : 1 | DATE: | SHEET 1 OF 1

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	121648C1	CENTERING BUSHING HOUSING, MACHINING V45	1
2	114283C1	WASHER, SEAL SUPPORT 1 1/2 ID	2
3	114290C1	RETAINING RING 1 1/2 ID,.05 THK, SS	2
4	114284C2	1-1/4 T-SEAL	2
5	113225C1	GREASE FITTING, 1/4-28 NPT, SS, STRAIGHT 10 PCS	1

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	10/25/2012	T. LIAKOPOULOS
B	ADDED: 113225C1	3/21/2024	PV



SECTION B-B
SCALE 1 : 1



CV•TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. LIAKOPOULOS

TITLE:

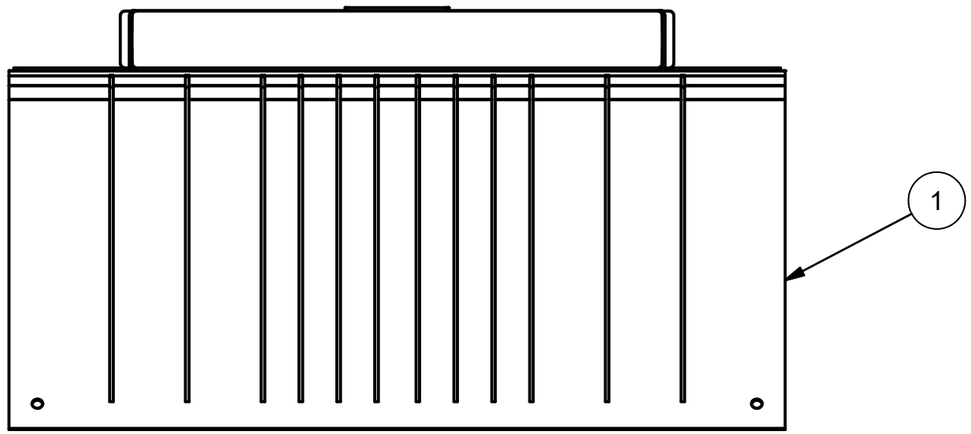
CENTER BUSHING HOUSING, V45

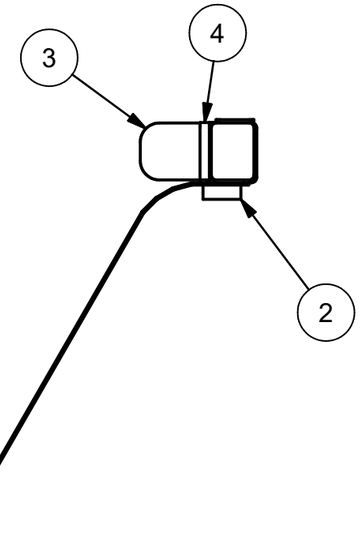
DWG NO.: MA037-0004 B

SCALE: N/A DATE: SHEET 1 OF 1

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QT
1	112685C1	PLASTIC FLAP, CROSS SEAL BAG COMPRESSOR SILICONE RUBBER CARRIER	1
2	112699C1	BAG COMPRESSOR SUPPORT BAR	1
3	112860C1	CROSS SEAL BAG CUSHION, V32 BAG COMPRESSOR	1
4	112866C1	BAG COMPRESSOR SUPPORT BAR MODIFIED	1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		N.B





M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

APPROVED MFG: APPROVED ENG:

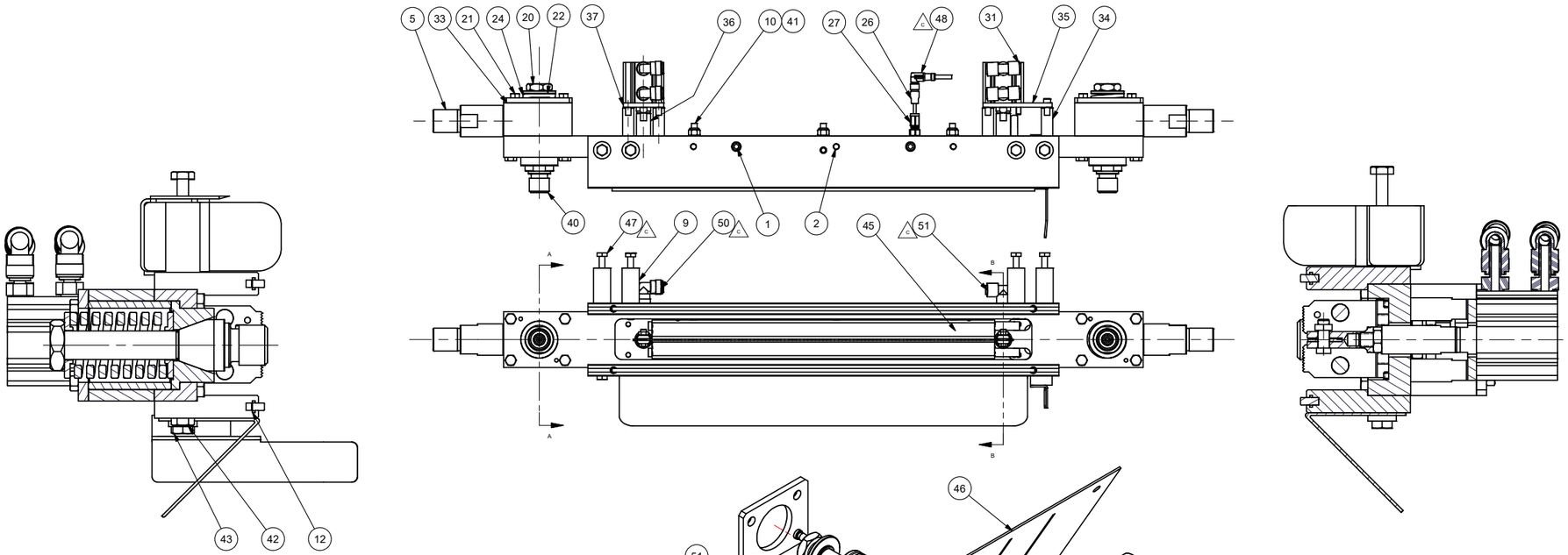
DRAWN BY: jmatschke

TITLE: RIGID BAG COMPRESSOR ASSEMBLY

DWG NO.: MA150-0003

SCALE: N/A | DATE: | SHEET 1 OF 1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	OUTER JAW SEAL BAR ASSEMBLLY, V45	9/17/2015	MTEKCORP\bbange
B	OUTER JAW SEAL BAR ASSEMBLLY, V45	4/6/2017	MTEKCORP\bbange
C	ADDED MOUNTING HARDWARE FOR RIGID BAG COMPRESSOR ASSY, ADDED AIR FITTING FOR KNIVES, ADDED CORD FOR RTD	03/25/2024	SP



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	108736C1	1/4-20 X 5/8 SOCKET HEAD CAP SCREW, S/S	4
2	109033C1	Ø1/4 X 3/4 DOWEL PIN, S/S	9
3	110554C1	1/4 FLAT WASHER, 0.625 O.D., 0.125 THCK, S/S	4
4	110595C1	1/4-20 X 1 SOCKET HEAD CAP SCREW, S/S	1
5	112128C1	SEAL BAR SUPPORT PIN	2
6	112371C1	#10-24 X 5/8 SOCKET HEAD CAP SCREW, S/S	2
7	112443C1	FRONT AND BACK BAG SUPPORT	1
8	112704C1	112704C1, CROSS SEAL PINCH RUBBER, 40 DUROMETER, 18.5 INCHES LONG	2
9	112867C1	STAND OFF RIGID RETAINER BRACKET	4
10	112874C1	1/4-20 UNC X 1-3/4 INCH LONG FULLY THREADED ROD 18-8 STAINLESS STEEL	6
11	112879C1	PINCH BAR FRONT, V32 CARTRIDGE HOT BAR OPTION	2
12	112894C1	#8-32 X 3/8 SOCKET HEAD CAP SCREW, S/S	4
13	112904C1	BELLEVILLE WASHER Ø1/2 x 0.255 x 0.022, S/S	6
14	112966C2	3/8 DIA X 16 INCH LONG CARTRIDGE HEATER V32 HOT BAR CROSS SEAL W/HEAT SHRINK	2
15	113004C1	KNIFE MOUNT BOLT, CUSTOM	2
16	113005C1	NUT, CUSTOM 1/4-28 X .125, 3/8 HEX, V32 HOT BAR OPTION	2
17	113022C1	SEAL BAR SERRATED, V32 2 X 2 SEAL BAR	1
18	113024C1	COUPLING, .078 KNIFE, V32 2X2 SEAL BAR	2
19	113373C1	TAPERED BUSHING, BARREL JAW	2
20	113376C1	SHOULDER BOLT, JAW SPRING, BARREL JAW	2
21	113377C1	SHOULDER BOLT, BEARING PLATE, BARREL JAW	8
22	113387C1	SPRING LOCATE WASHER, BARREL JAW	4
23	113393C1	KNIFE, 301 FH SS .062 THK, V32 JAW	1
24	113459C2	DIE SPRING, VINYL COATED, 1.5OD 3/4ID 3L 376 LB/IN	2
25	113472C1	BELLEVILLE WASHER Ø5/8 x 0.317 x 0.022, S/S	8
26	120296C1	RTD 3"LONG, M8 CONNECTOR	1
27	120297C1	COUPLING 1/8"	1
28	120658C1	ROUND SS WIRE SNAP RING .625 DIA	2
29	121635C1	SEAL BAR INSULATOR BARREL JAW - L.H./R.H.	3
30	121639C1	BUSHING PINCH PLATE, BARREL JAW	2
31	121643C1	FLAT CYLINDER, 32MM BORE, 22MM STK, 45.6MM EXT, S/S	2
32	121653C1	SPACER, FRONT SHAFT SUPPORT BLOCK	2
33	121654C1	FRONT CROSS BAR ASSEMBLY, V45	1
34	121700C1	KNIFE CYCLINDER SPACER	8
35	121703C1	JAW KNIFE CYCLINDER MOUNTING PLATE, CABLE SIDE	1
36	121704C1	KNIFE CYCLINDER ROD EXTENDER	2
37	121705C1	JAW KNIFE CYCLINDER MOUNTING PLATE	1
38	121722C1	JAW CLOSED FLAG BLOCK	1
39	121723C1	JAW CLOSED FLAG	1
40	124965C1	TAPERED SHAFT END,JAW	2
41	75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT	6
42	75106401	1/4-20 X 3/4 LNG HEX HEAD CAP SCREW, S/S	2
43	75109601	1/4-20 X 7/8 LNG HEX HEAD CAP SCREW, S/S	3
44	75112401	5/16-24 HEX JAM NUT, S/S	2
45	75119901	#10-24 X 2 SOCKET HEAD CAP SCREW, S/S	16
46	MA150-0003	RIGID BAG COMPRESSOR ASSEMBLY	1
47	110872C1	1/4-20 X 2-3/4 LNG HEX HEAD CAP SCREW, S/S	4
48	120501C1	SCHNEIDER I/O CABLE 5M 90 DEG 3PIN M3 IP67	1
49	74204501	1/4 O.D. X 1/8 NPT STEM ADAPTER PLASTIC	4
50	74203701	FITTING 1/4 X 1/4	2
51	74203401	1/4 O.D. TUBE, UNION TEE, PLASTIC	2

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. ANY REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED
FRACTIONAL= ± .015
XX= ± .010
XXX= ± .005
UNLESS NOTED, STANDARD S.A.E.

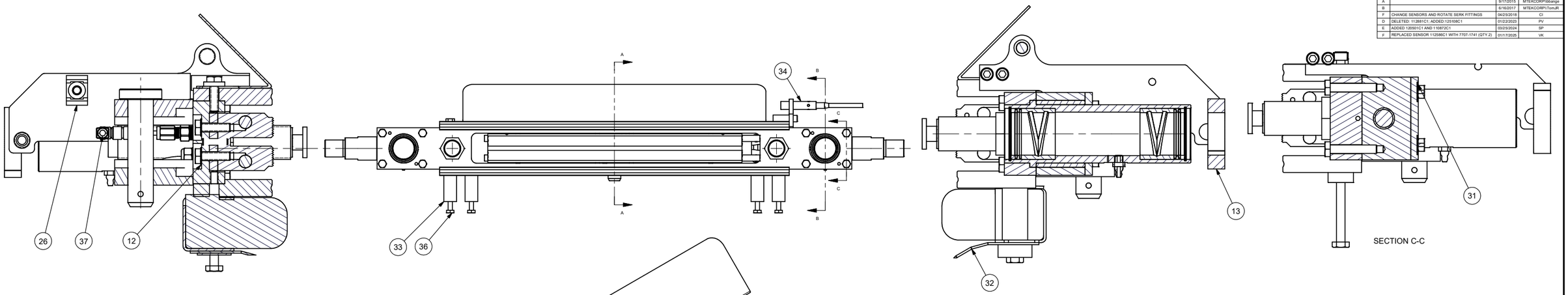
APPROVED MFG: APPROVED ENG:
DRAWN BY: T. L.

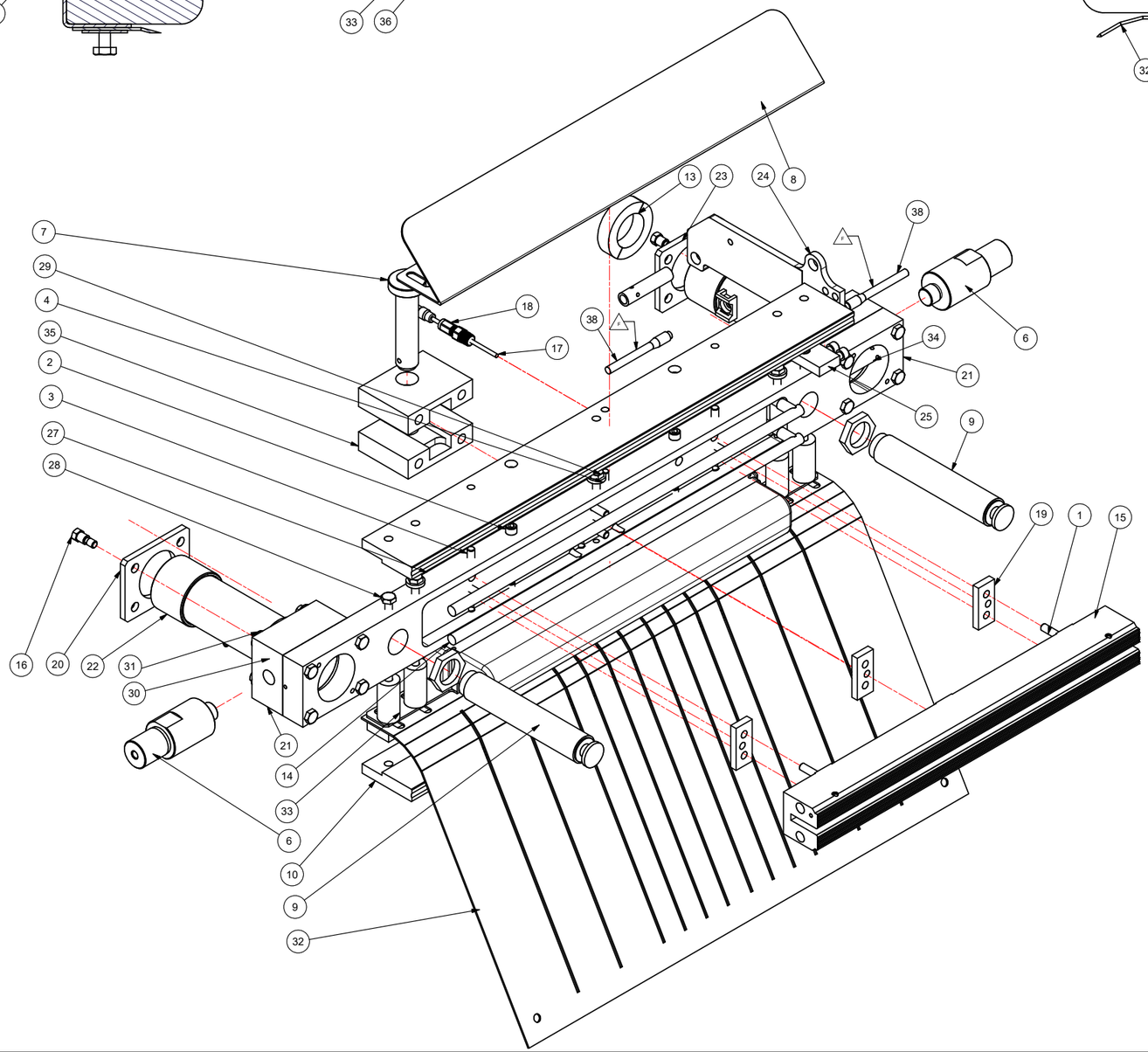
TITLE: OUTER JAW SEAL BAR ASSEMBLLY, V45

DWG NO: 121656C1 C

SCALE: DATE: SHEET 1 OF 3

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A		5/17/2015	MTEKCORP\Bdange
B		6/16/2017	MTEKCORP\TomJR
F	CHANGE SENSORS AND ROTATE SERK FITTINGS	04/25/2018	CI
D	DELETED: 112681C1; ADDED:125108C1	01/23/2023	PV
E	ADDED 120501C1 AND 110872C1	03/25/2024	SP
F	REPLACED SENSOR 112586C1 WITH 7707-1741 (QTY 2)	01/17/2025	VK





PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	114353C1	1/4-20 x 1 1/4 STUD	4
2	108736C1	1/4-20 X 5/8 SOCKET HEAD CAP SCREW, S/S	6
3	109033C1	Ø1/4 X 3/4 DOWEL PIN, S/S	9
4	110554C1	1/4 FLAT WASHER, 0.625 O.D., 0.125 THCK, S/S	3
5	110595C1	1/4-20 X 1 SOCKET HEAD CAP SCREW, S/S	1
6	112128C1	SEAL BAR SUPPORT PIN	2
7	112152C1	CYLINDER PIN - REAR CROSS SEAL BEAM	1
8	112443C1	FRONT AND BACK BAG SUPPORT	1
9	112641C1	1-12 UNF THREADED BODY, SHOCK ABSORBER	2
10	112878C1	PINCH BAR, REAR V32 CARTRIDGE HOT BAR OPTION	2
11	112903C1	5/16-18 X 2 SOCKET HEAD CAP SCREW, S/S	4
12	112904C1	BELLEVILLE WASHER Ø1/2 x 0.255 x 0.022, S/S	6
13	112964C1	TWO PIECE CLAMP ON COLLAR 1-1/4 ID, 2 OD S/S	1
14	112966C2	3/8 DIA X 16 INCH LONG CARTRIDGE HEATER V32 HOT BAR CROSS SEAL W/HEAT SHRINK	2
15	113022C1	SEAL BAR SERRATED, V32 2 X 2 SEAL BAR	1
16	113377C1	SHOULDER BOLT, BEARING PLATE, BARREL JAW	8
17	120296C1	RTD 3"LONG, M8 CONNECTOR	1
18	120297C1	COUPLING 1/8"	1
19	121635C1	SEAL BAR INSULATOR BARREL JAW - L.H./R.H.	3
20	121636C1	BUSHING PINCH PLATE, BARREL JAW	1
21	121655C1	REAR CROSS BAR ASSEMBLY, V45	1
22	121658C1	SPACER, REAR SHAFT SUPPORT BLOCK	2
23	121698C1	BUSHING PINCH PLATE, BARREL JAW, FLOAT SIDE	1
24	121714C1	JAW OPEN SENSOR PLATE V45	1
25	121721C1	JAW CLOSED SENSOR BLOCK	1
26	75003001	CABLE TIE MOUNTING BASE, 1/4 SCREW SIZE, PANDUIT #TM3S25-C	1
27	75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT	4
28	75106401	1/4-20 X 3/4 LNG HEX HEAD CAP SCREW, S/S	1
29	75109601	1/4-20 X 7/8 LNG HEX HEAD CAP SCREW, S/S	5
30	MA037-0003	SLIDE BEARING ASSEMBLY, 1.25 SHAFT, SEALING JAW	2
31	113472C1	BELLEVILLE WASHER Ø5/8 x 0.317 x 0.022, S/S	8
32	MA150-0003	RIGID BAG COMPRESSOR ASSEMBLY	1
33	112867C1	STAND OFF RIGID RETAINER BRACKET	4
34	121795C1	INDUCTIVE PROXIMITY SWITCH, NPN, M12, DIAM:12, THREADED M12X1	2
35	125108C1	V45 COUPLING BLOCK	2
36	110872C1	1/4-20 X 2-3/4 LNG HEX HEAD CAP SCREW, S/S	4
37	120501C1	SCHNEIDER I/O CABLE 5M 90 DEG 3PIN M3 IP67	1
38	7707-1741	CABLE, 5-PIN, 10M	2

THIS DRAWING IS THE PROPERTY OF M-TEK, INC., AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF M-TEK, INC. IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL ± .015
.XX ± .030
.XXX ± .005
DRILLED HOLE STANDARD S.A.E.

M-TEK INC.

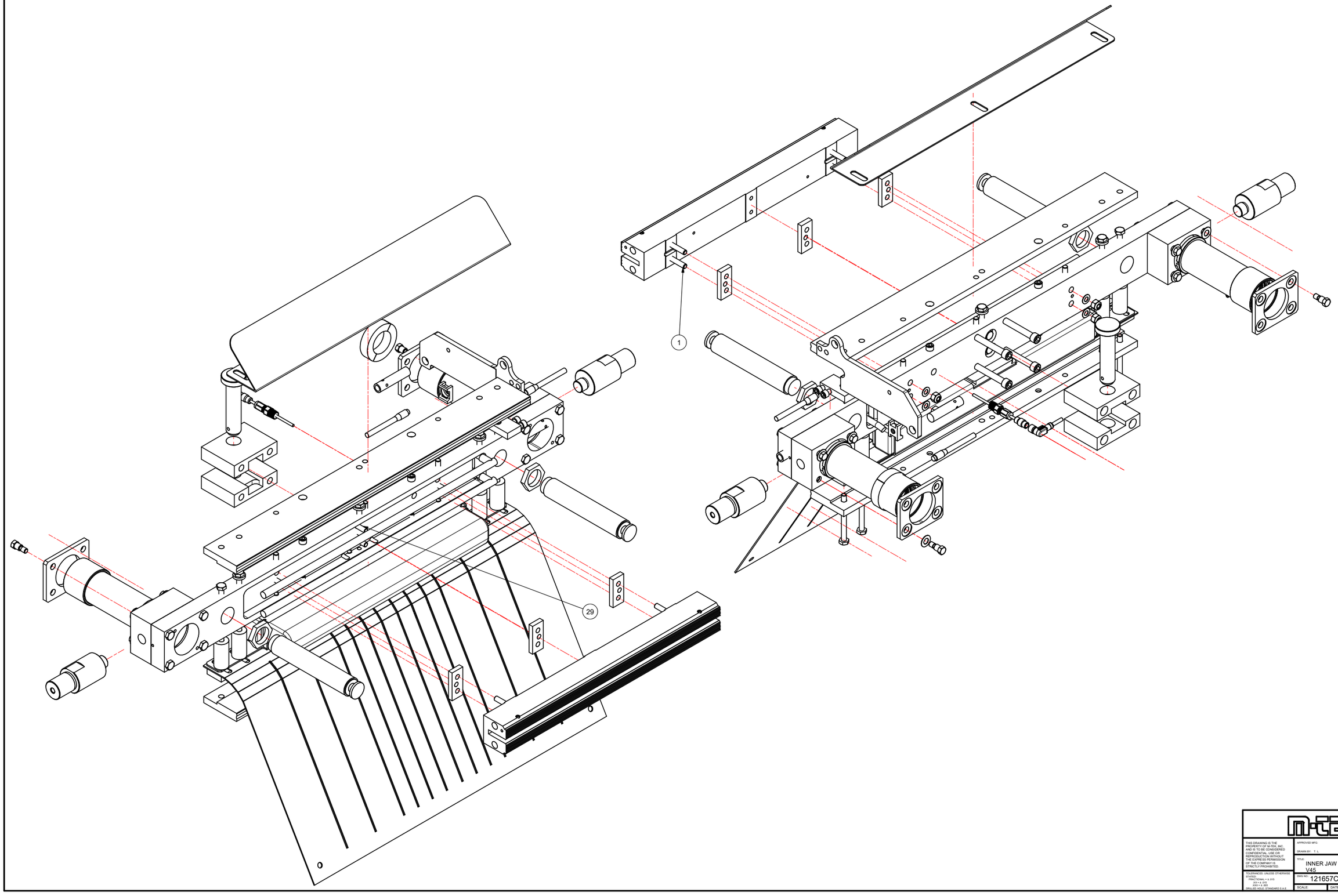
APPROVED MFG: APPROVED ENG:

DRAWN BY: T. L.

TITLE: INNER JAW SEAL BAR ASSEMBLY, V45

DWG NO: 121657C1 F

SCALE: DATE: SHEET 1 OF 2



M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED
FRACTIONAL ± .015
.XX ± .01
.XXX ± .005
DRILLED HOLE STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. L.

TITLE: INNER JAW SEAL BAR ASSEMBLY, V45

DWG NO: 121657C1 F

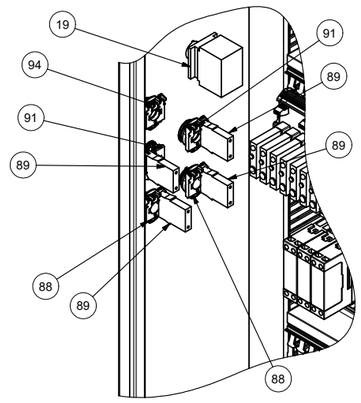
SCALE: DATE: SHEET 7 OF 7

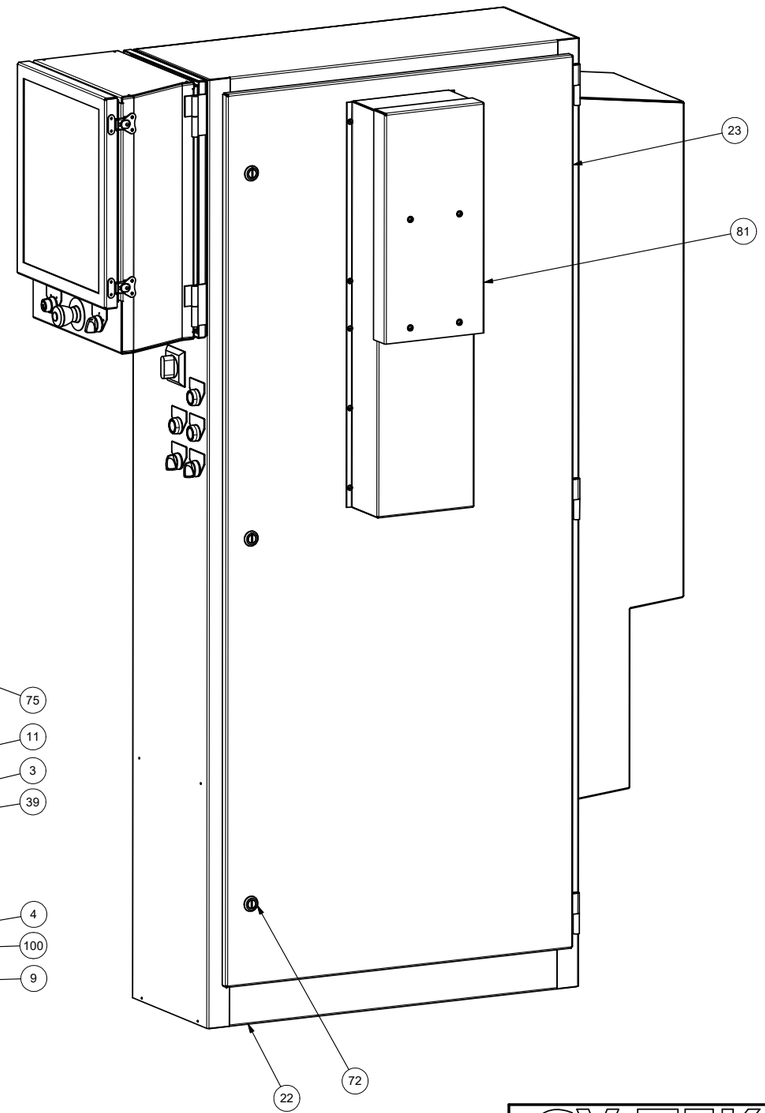
ITEM	QTY	PART NO.	DESCRIPTION
1	16	108586C1	1/4-20 X 5/8 LNG HEX HEAD CAP SCREW, S/S
2	5	108733C1	3/8-16 X 3/4 LNG HEX HEAD CAP SCREW, S/S
3	1	110517C1	1/2 MALE TUBE O.D. x 1/2 TUBE PLUG IN ELBOW, PLASTIC
4	4	110556C1	1/2 NPT AMLE X 1/2 STEM ADAPTER SWIVEL
5	1	110606C1	Grommet Black Rubber 1.250 ID, .094 Groove Width, .375 Thick, 1.875 O.D.
6	1	112050C1	.391 ID SHAFT LOAD DISK
7	1	112211C1	LEFT (ARROW) -TRACK LEGEND PLATE FOR 22.5MM KNOCKOUT
8	1	112212C1	TRACK - RIGHT (ARROW) LEGEND PLATE FOR 22.5MM KNOCKOUT
9	4	112283C1	1-14 HEX JAM NUT 18-8 STAINLESS STEEL, 35/64 HEIGHT
10	2	112286C1	5/8 NYLON FLAT WASHER .656 ID, 1.750 OD, .100 THICK
11	1	112308C1	S.S. BULK FITTING
12	2	112308C1A	3/8 NPTF X 3/8 NPTF X 1-14 UNS
13	4	112309C1A	1/2 NPTF X 1/2 NPTF X 1-14 UNS, 1-5/16 LONG STAINLESS STEEL BULKHEAD FITTING
14	2	112458C1	PIAB AIR EXHAUST MUFFLER 3/4 INCH NPS
15	1	112552C1	MAC VALVE 3/8 PORT 24 VAC
16	2	112637C1	3/4 MALE X 1/2 FEMALE REDUCING HEX BUSHING SCHEDULE 80 CPVC GRAY
17	1	112959C1	EXT - SYNC - INT LEGEND PLATE FOR 22.5MM KNOCKOUT
18	1	112960C1	OFF - CLEANING - ON LEGEND PLATE FOR 22.5MM KNOCKOUT
19	1	113562A1	Disconnect Switch and Handle Assembly
20	1	114124C1	ACTUATOR LINEAR
21	2	114357C1	.25 X 1.25 SHOULDER SCREW
22	1	114739C1	V55 ELECTRICAL CABINET BASE WELDMENT
23	1	114740C1	V55 ELECTRICAL CABINET DOOR WELDMENT
24	1	114746C1	V45 TRANSFORMER COVER WELDMENT
25	1	114771C1	UNWIND ACTUATOR BRACKET
26	1	114772C1	UNWIND ACTUATOR ROD
27	1	114785C1	STEPSEAL 2K, 1.25 ID
28	1	114947C1	V55 ELECTRICAL CABINET ACTUATOR SEAL
29	1	120615C1	ELECTRICAL CABINET ADAPTER PLATE
30	1	120625C1	ELECTRICAL CABINET ADAPTER GASKET
31	11	120716C1	TWO TIER TERMINAL BLOCK
32	1	120717C1	PARTITION PLATE FOR TWO TIER TERMINAL BLOCK
33	1	120742C1	3 TIER FEED THROUGH TERMINAL BLOCK; AWG: 24 - 12; W: 6.2MM; GRAY
34	1	120743C1	3 TIER SENSOR TERMINAL BLOCK; AWG: 24 - 12; W: 6.2MM; GRAY
35	5	120746C1	1 TIER FEED THROUGH TERMINAL BLOCK; AWG: 26-12; W; 5.2MM; GRAY
36	1	120747C1	END COVER, L: 65.4 MM, W: 2.2 MM, H: 47.5 MM, COLOR: GRAY
37	4	120752C1	END CLAMP, WIDTH: 9.5 MM, COLOR: GRAY
38	1	121049C1	VACUUM SENSOR 30PSIG 0-5VDC OUT
39	1	121301C1	PRESSURE SENSOR, ASHCROFT
40	3	121666C1	PLASTIC EDGE TRIM 14GA.

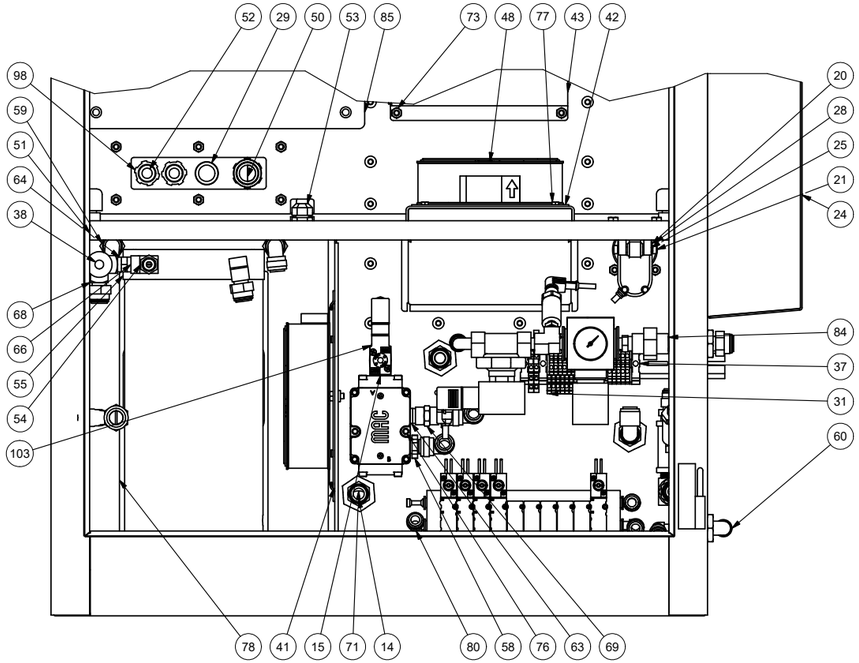
ITEM	QTY	PART NO.	DESCRIPTION
41	1	121669C1	FAN PLATE WELDMENT
42	1	121731C1	ELECTRICAL CABINET FAN ADAPTER PLATE
43	1	121742C1	V45 DUCT VENT COVER BASE
44	1	125761C1	NAME PLATE V45 CV TEK
45	1	121762C1	UNWIND LOADING BUTTON PLATE GASKET
46	1	121777C1	UNWIND LOADING BUTTON PLATE
47	1	71002702	34 MM WIDE DIN RAIL, 7IN LONG
48	2	71500401	FAN, ROUND 6.75 24VDC
49	3	71500701	GUARD, FAN
50	1	71603301	90 DEG LIQUIDTITE CONNECTOR
51	4	71604801	CORD GRIP,.375-.437, 3/4 WOOD
52	3	71605101 1	.20-.35 DIA. CORD GRIP, 1/2 NPT
53	3	71611601	CORD GRIP, SMALL DIA., 3/8 NPT GREY
54	1	72102301	VACUUM RELIEF VALVE 3/8 NPT BRASS
55	1	72105201	PUMP, 10 CFM, OILLESS DRY VANE
56	7	74203101	1/2 OD TUBE X 3/8 NPT MALE CONNECTOR, PLASTIC
57	6	74203901	1/2 O.D. TUBE UNION EBOW, PLASTIC
58	2	74204801	1/2 O.D. TUBE X 3/8 NPT STEM ADAPTER, PLASTIC
59	4	74204901	1/2 O.D. TUBE x 1/2 NPT STEM ADAPTER, PLASTIC
60	1	74205201	3/8 OD TUBE x 3/8 NPT MALE FIXED ELBOW, PLASTIC
61	1	74300901	3/4 NPT FEM TEE FORGED
62	2	74302401	3/4 NPT MALE X 1/2 NPT FEMALE HEX HEAD BUSHING
63	1	74303201	3/8 NPT CLOSE NIPPLE
64	1	74303901	3/8 HEX NIPPLE
65	1	74304501	3/8 STREET ELBOW
66	1	74306001	3/8 NPT MALE RUN TEE
67	1	74306701	1/8 STREET ELBOW, 45 DEG
68	1	74308001	3/8 FEMALE ELBOW EXTRUDED
69	1	74309001	3/8 FEMALE HEX COUPLING
70	2	74500401	1/2 NPT X 1/2 NPT X 1-1/8 INCH LONG THREADED PIPE NIPPLE SCHEDULE 80 DARK GREY PVC
71	2	74502301	3/4 NPT FEMALE X 3/4 NPTFEMALE 45 DEGREE ELBOW SCHEDULE 80 DARK GRAY PVC
72	3	75002801A	CABINET DOOR LATCH, 1/4 TURN FLAT HEAD SLOTTED
73	14	75103801	1/4-20 HEX NUT, S/S
74	4	75109101	3/8 MED SPLIT LOCK WASHERS, S/S
75	19	75109501	1/4-20 X 1/2 LNG HEX HEAD CAP SCREW, S/S
76	2	75111801	1/4-20 ACORN NUT, S/S
77	4	75117401	#10-24 X 1/4 LNG HEX HEAD MACHINE SCREW, S/S
78	1	76201401	GAST PUMP MOUNTING RAIL
79	1	76203201A	DOOR VENT COVER, MKIII/MKIV Hi OXYGEN
80	1	MA020-0005	VALVE BLOCK

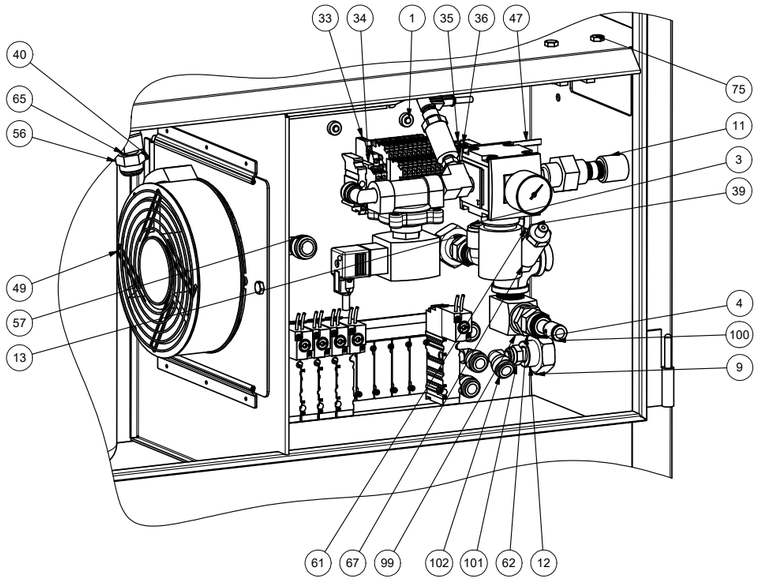
ITEM	QTY	PART NO.	DESCRIPTION
81	1	MA020-0014	ELECTRICAL CABINET HEAT EXCHANGER
82	1	MA020-0016	V45 DUCT ASSEMBLY
83	1	MA025-0010	V45 MAIN ELECTRICAL ENCLOSURE
84	1	MA028-0001	GAS VALVE ASSEMBLY
85	1	MA110-0030	V45 ELECTRICAL PANEL ASSEMBLY
86	1	MA110-0031	V45 FUSE PANEL ASSEMBLY
87	2	71105602	2 - POSITION SWITCH
88	4	71106102	LATCH, 22mm 3 ACROSS
89	6	71105802	CONTACT BLOCK, 22 mm 1NC/1NO
90	4	71105502	PUSH BUTTON, MOMENTARY, AMBER
91	2	71104404	LED & COLLAR ASS'Y, WHITE
92	1	112209C1	STBY - RUN LEGEND PLATE FOR 22.5MM KNOCKOUT
93	1	71105302	PUSH BUTTON, MOMENTARY, GREEN
94	1	71104403	LED & COLLAR ASS'Y, GREEN
95	1	121764C1	WIND LEGEND PLATE FOR 22.5 MM KNOCKOUT
96	1	121763C1	UNWIND LEGEND PLATE FOR 22.5MM KNOCKOUT
97	3	111008C1	TRANSFORMER
98	3	71601401	1/2 NPT SELING NUT
99	1	74304602	3/4 STREET ELBOW EXTRUDED
100	1	110529C1	1/2 STEM O.D. X 3/8 TUBE O.D. REDUCER
101	1	74203201	3/8 NPT MALE X 3/8 O.D. TUBE
102	1	74204001	3/8 OD TUBE x 3/8 OD PLUG IN ELBOW, PLASTIC
103	1	71607503	MAC VALVE 11mm CABLE 3M LONG
104	2	121501C1	M12 5-5 PIN 90DEGREE 1.5METER BLACK CABLE (FOR ASHCROFT)
105	2	71500601	FAN CORD; 6.7 DC FAN

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	DRAWING CREATED	9/17/2015	B.B.
B	DELETED 3 X 71010501, ADDED 3 X 111008C1	4/14/2022	P.V.
C	ADDED 3 X 71601401	1/31/2023	P.V.
D	FIXED ITEMS BALOONS ; ADDED 121501C1, 7150601, 110529C1, 110556C1, 74302401, 74304602, 74203201, 74204001	3/26/2024	J.R.S.









CV·TEK

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF M-TEK, INC. IS STRICTLY PROHIBITED.

TOLERANCES UNLESS OTHERWISE STATED:
FRACTIONAL= ± 0/1
XX= ± .01
XXX= ± .005
DRILLED HOLE: STANDARD S.A.E.

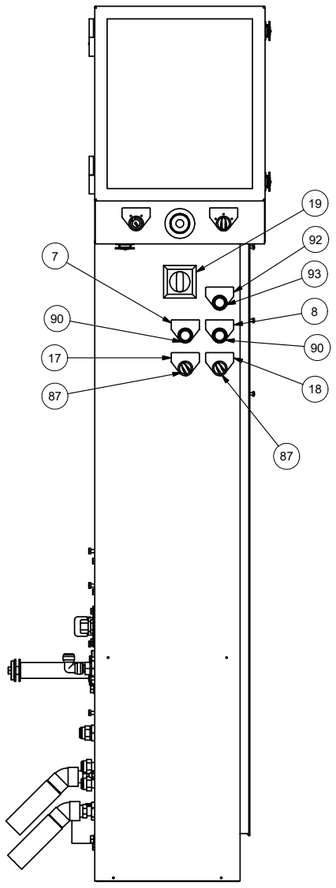
APPROVED MFG: APPROVED ENG: A. DEJKOVIC

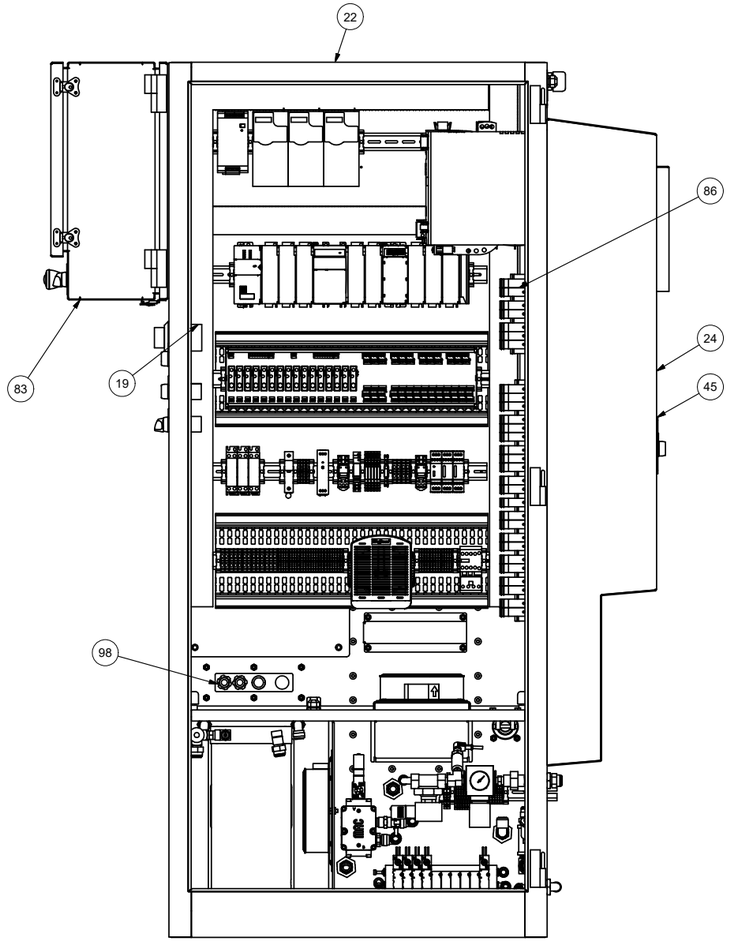
DRAWN BY: A.D.

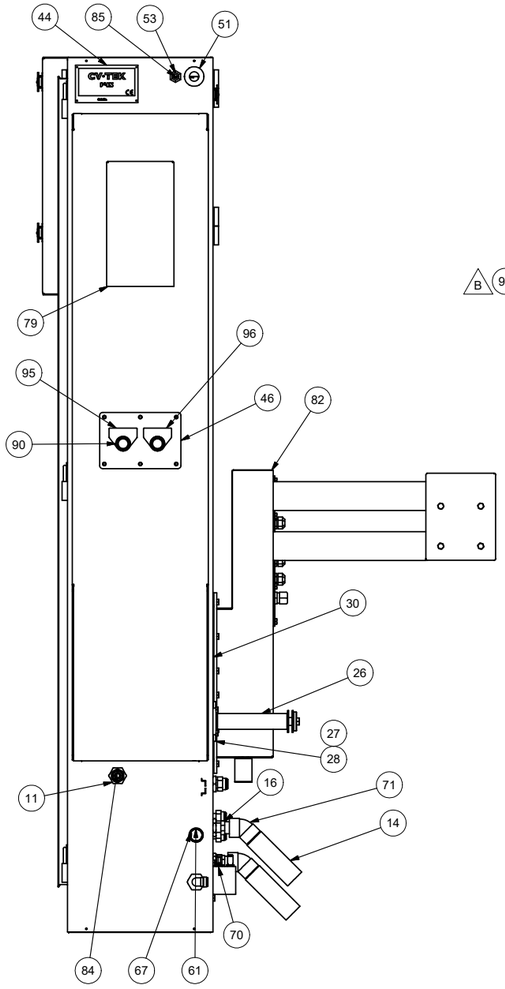
TITLE: MAIN ELECTRICAL ENCLOSURE

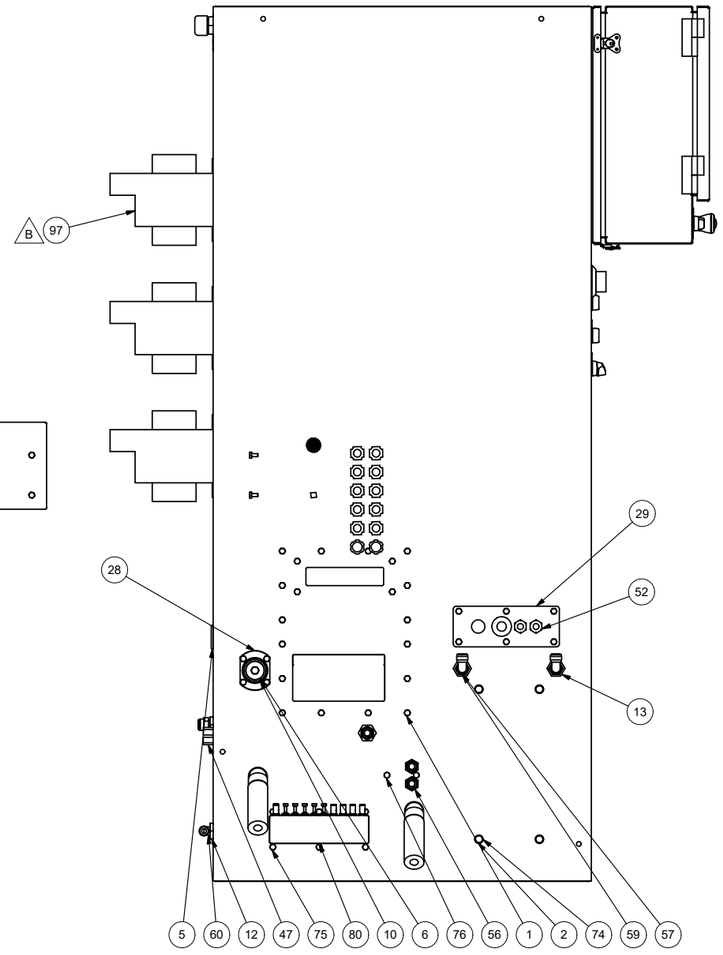
DWG NO: MA020-0003 D

SCALE: N/A | DATE: 12/7/2010 | SHEET 1 OF 2









CV·TEK

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF M-TEK, INC. IS STRICTLY PROHIBITED.

TOLERANCES UNLESS OTHERWISE STATED
FRACTIONAL = ± 1/16
XX = ± .015
XXX = ± .005
UNLESS NOTED, STANDARD S.A.E.

APPROVED MFG: APPROVED ENG: A. DEJKOVIC

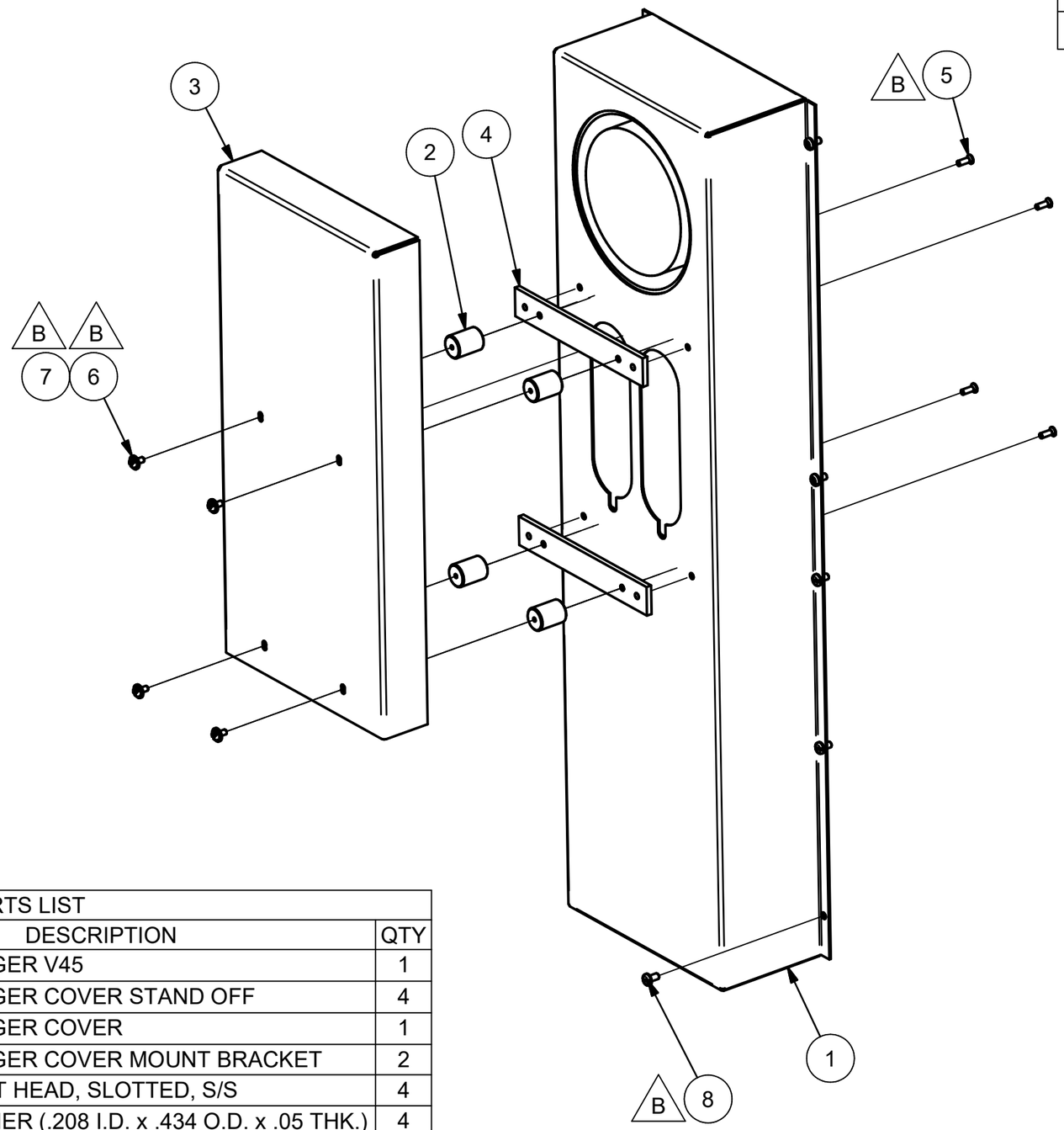
DRAWN BY: A.D.

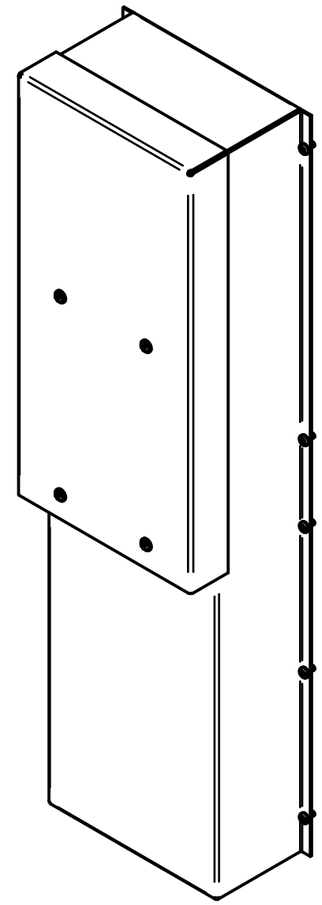
TITLE: MAIN ELECTRICAL ENCLOSURE

DWG NO: MA020-0003 D

SCALE: N/A | DATE: 12/7/2010 | SHEET 2 OF 2

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	6/5/2013	T. LIAKOPOULOS
B	ADDED: 4X 124009C1, 4X 75102801, 4X 75105501, 10X 75112101; REPLACED 122023C1 WITH 121630C2	3/22/2024	PV





PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	121630C2	HEAT EXCHANGER V45	1
2	122021C1	HEAT EXCHANGER COVER STAND OFF	4
3	122020C1	HEAT EXCAHNGER COVER	1
4	122022C1	HEAT EXCHANGER COVER MOUNT BRACKET	2
5	124009C1	#8-32 X 1/2 FLAT HEAD, SLOTTED, S/S	4
6	75102801	#10 FLAT WASHER (.208 I.D. x .434 O.D. x .05 THK.)	4
7	75105501	8-32 X .375 LG PAN HEAD SCREW SS	4
8	75112101	#10-32 X 3/8 PAN HEAD, SLOTTED, S/S	10

CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. LIAKOPOULOS

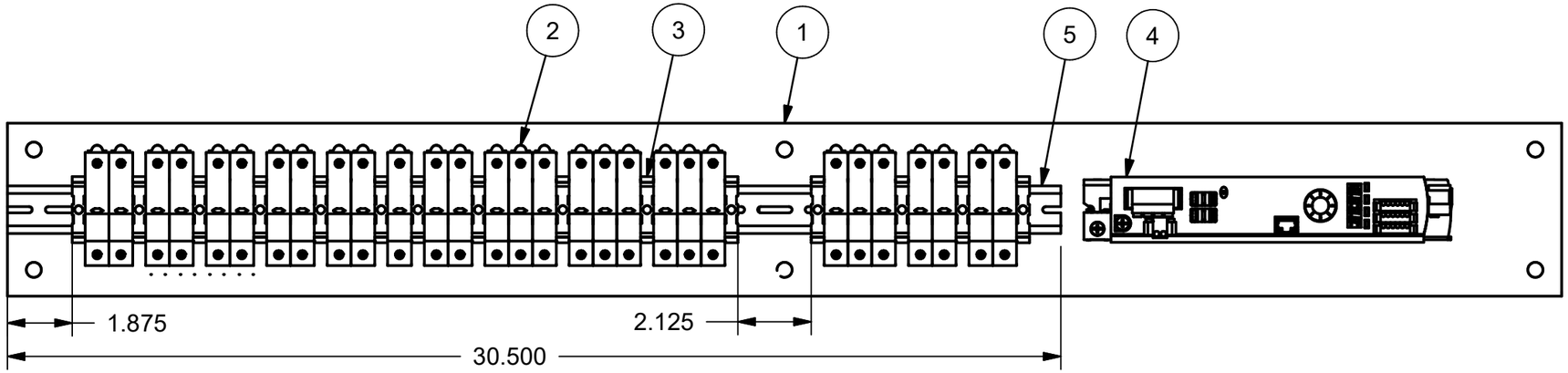
TITLE: ELECTRICAL CABINET HEAT EXCHANGER

DWG NO.: MA020-0014

SCALE: N/A | DATE: | SHEET 1 OF 1

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	120449C1	FUSE SUB PLATE	1
2	120475C2	FUSE BLOCK, MIDGET FUSE, 600V 32AMP	29
3	120752C1	END CLAMP, WIDTH: 9.5 MM, COLOR: GRAY	15
4	125889C1	AC SERVO DRIVE +/-10V, 30A, RMS PEAK 1PH 230V	1
5	71002701	RAIL, DIN 34 mm WIDE (METERS)	1
6	71401601	Fuse 32 amp type aM	2
7	71401201	Fuse 10 amp type aM	8
8	71401401	Fuse 20 amp type aM	2
9	71401101	Fuse 8 amp type aM	1
10	71400801	Fuse 2 amp type aM	2
11	71401001	Fuse 6 amp type aM	14

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		N.B
B	ADDED: 2X 71400801, 14X 71401001, 71401101, 8X 71401201, 2X 71401401, 2X 71401601	4/8/2024	PV



CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: TomJR

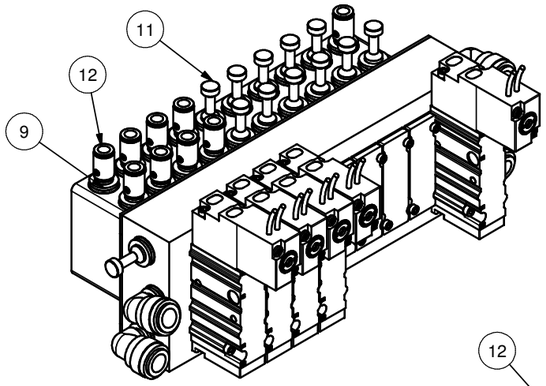
TITLE:

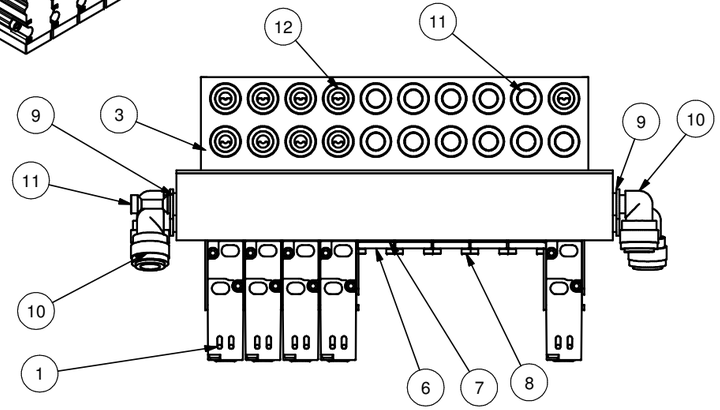
V45 FUSE PANEL ASSEMBLY

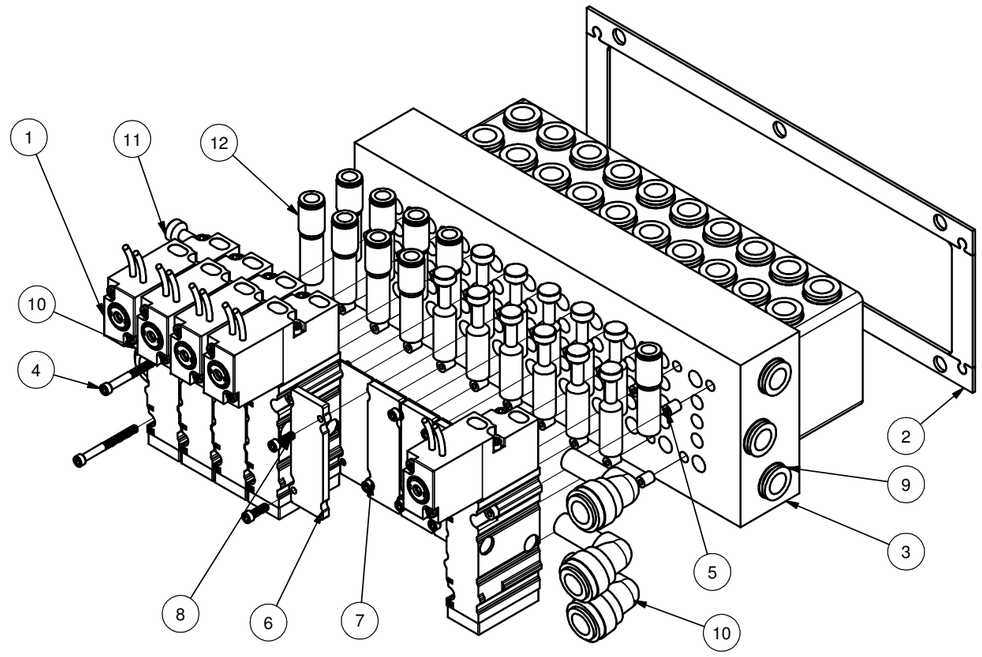
DWG NO.: MA110-0031 B

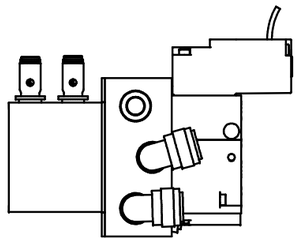
SCALE: N/A | DATE: 4/26/2018 | SHEET 1 OF 1

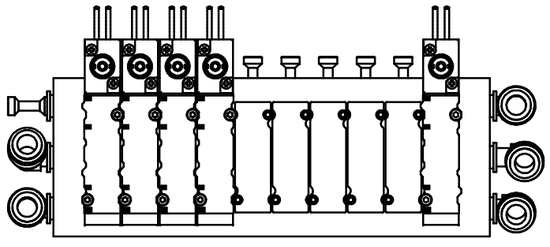
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	VALVE BLOCK ASSEMBLY	9/15/2015	BB
B	ADDED ONE ITEM 74204001 AND ONE ITEM 74203301, REMOVED ONE ITEM 74103501	03/21/2024	SP

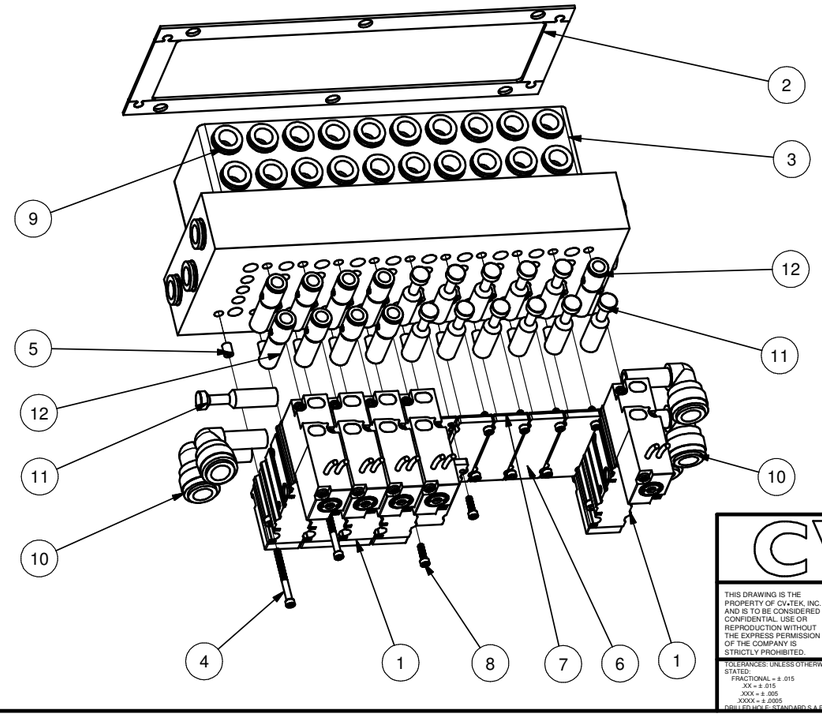












PARTS LIST			
ITEM	QTY	PART NO.	DESCRIPTION
1	5	114224C1	VALVE SOLENOID 4-WAY
2	1	114954C1	VALVE BLOCK GASKET
3	1	120064C1	PLASTIC VALVE BLOCK
4	8	120283C1	4-40 X 1 1/4" SOCKED HEAD CAP SCREW
5	20	120284C1	4-40 THREADED INSERT, PRESS-FIT FOR PLASTIC 15/64" LONG 18-8 STAINLESS STEEL
6	5	120336C1	VALVE MANIFOLD BLOCK PLATE
7	5	120337C1	VALVE MANIFOLD BLOCK GASKET
8	10	120338C1	4-40 X 3/8" SOCKET HEAD CAP SCREW
9	26	74204401	3/8 O.D. TUBE HALF CARTRIDGE STAINLESS STEEL
10	5	74204001	3/8 OD TUBE x 3/8 OD PLUG IN ELBOW, PLASTIC
11	12	74203301	3/8 O.D. TUBE PLUG, PLASTIC, ALKON
12	9	74103501	1/4 X 3/8 Reducer, plastic

CV·TEK

THIS DRAWING IS THE PROPERTY OF CV-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILL FOLLOW F STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

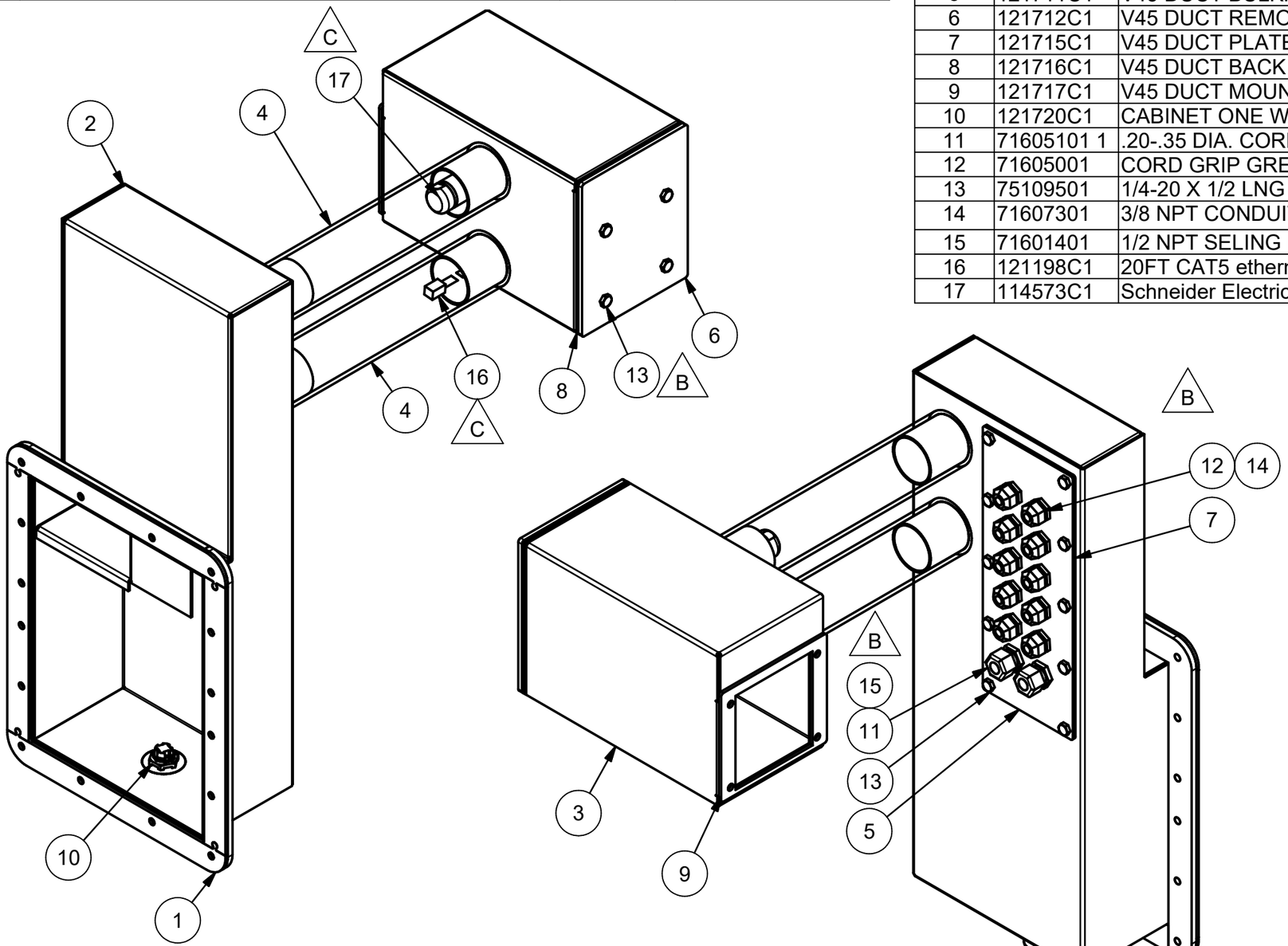
DRAWN BY: T. LIAKOPOULOS

TITLE: VALVE BLOCK

DWG NO.: MA020-0005 B

SCALE: N/A DATE: SHEET 1 OF 2

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	4/5/2013	T. LIAKOPOULOS
B	ADDED: 4X 75109501, 10X 71607301, 2X 71601401	3/22/2024	PV
C	ADDED CAT5 CABLE 121198C1 AND POWER CABLE CONNECTOR 114573C1	1/29/2025	VK



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	120372C1	ELECTRICAL DUCT GASKET	1
2	121689C1	V45 DUCT BASE WELDMENT	1
3	121690C1	V45 DUCT REMOTE WELDMENT	1
4	121694C1	V45 DUCT 2.00 DIA. TUBE	2
5	121711C1	V45 DUCT BULKHEAD PLATE REAR	1
6	121712C1	V45 DUCT REMOTE BACK PLATE	1
7	121715C1	V45 DUCT PLATE GASKET	1
8	121716C1	V45 DUCT BACK PLATE GASKET	1
9	121717C1	V45 DUCT MOUNTING GASKET	1
10	121720C1	CABINET ONE WAY DRAIN VALVE	1
11	71605101 1	.20-.35 DIA. CORD GRIP, 1/2 NPT	2
12	71605001	CORD GRIP GREY 3/8 NPT STANDARD DIAMETER GROMMENT	10
13	75109501	1/4-20 X 1/2 LNG HEX HEAD CAP SCREW, S/S	14
14	71607301	3/8 NPT CONDUIT SQUARE LOCKNUT	10
15	71601401	1/2 NPT SELING NUT	2
16	121198C1	20FT CAT5 ethernet patch cabl	1
17	114573C1	Schneider Electric Power Cable - Connector Model	1

CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. L.

TITLE:

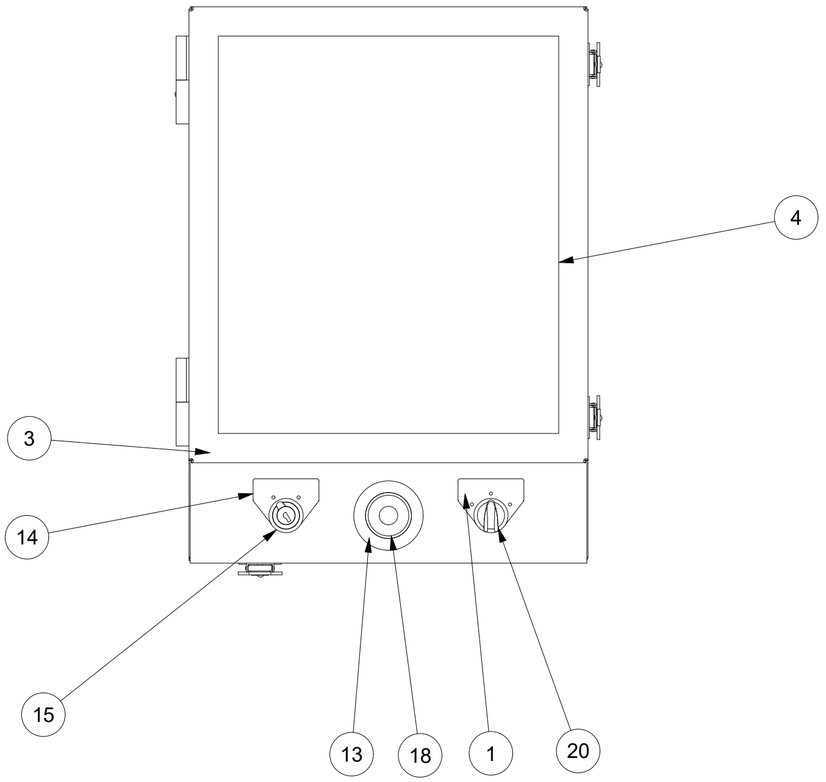
V45 DUCT ASSEMBLY

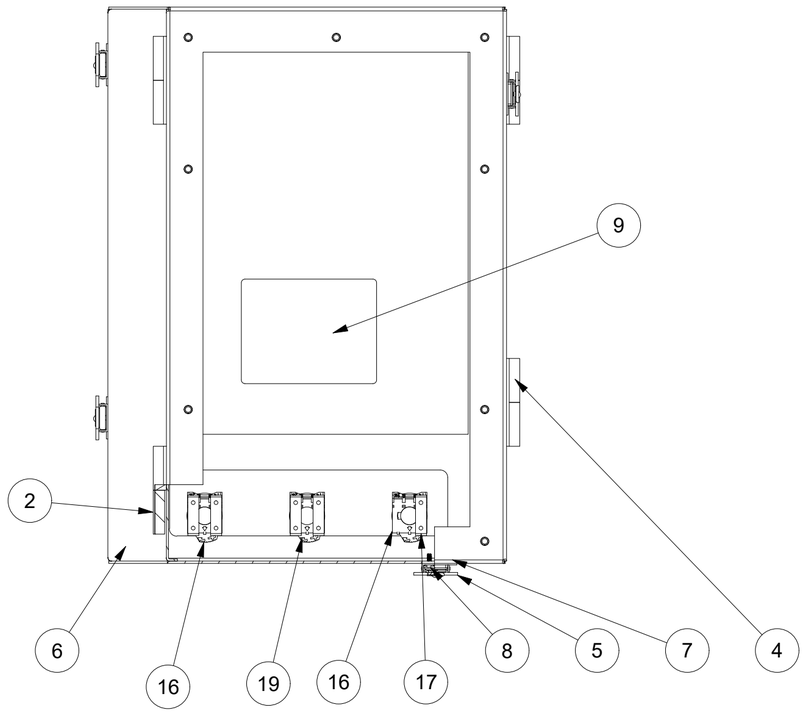
DWG NO.: MA020-0016 C

SCALE: N/A DATE: SHEET 1 OF 1

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	112208C1	EMPTY BAG - STBY - FULL BAG LEGEND PLATE FOR 22.5MM KNOCKOUT	1
2	120120C1	DISPLAY ENCLOSURE MOUNT BASE WELDMENT	1
3	120131C1	DISPLAY ENCLOSURE LEXAN WINDOW	1
4	120134C1	DISPLAY ENCLOSURE DOOR WELDMENT	1
5	120144C1	DRAW LATCH	4
6	120149C1	DISPLAY ENCLOSURE BODY WELDMENT	1
7	120394C1	DISPLAY ENCLOSURE GASKET	1
8	120401C1 1	6-32 X 3/8 PAN HEAD SEALING SCREW	8
9	121096C1	HMI 855 STU DISPLAY, SCHNEIDER	1
10	121737C1	V45 DISPLAY SUBPLATE	1
11	121738C1	V45 DISPLAY BOX STICKER	1
12	125759C1	CV TEK DISPLAY BOX STICKER	1
13	71105201	LEGEND, YELLOW ROUND 60MM	1
14	112214C1	RUN - PGM LEGEND PLATE FOR 22.5MM KNOCKOUT	1
15	71109202	2-POSITION KEY SWITCH	1
16	71106102	LATCH, 22mm 3 ACROSS	2
17	71105802	CONTACT BLOCK, 22 mm 1NC/1NO	5
18	71105402	E-STOP BUTTON, ILLUMINATED, RED	1
19	71104402	RED LED AND 3 ACROSS LATCH	1
20	71105702	3-POSITION SWITCH	1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		N.B
B	UPDATED BUTTONS & SWITCHES	2/10/2021	MS





CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. LIAKOPOULOS

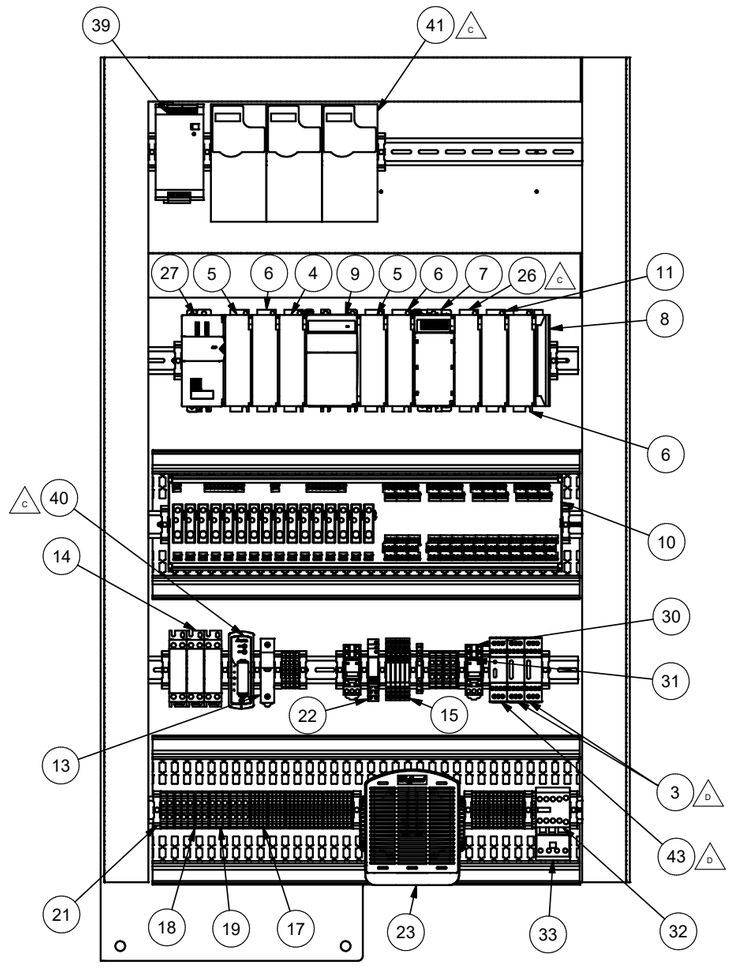
TITLE: V45 MAIN ELECTRICAL ENCLOSURE

DWG NO.: MA025-0010 B

SCALE: N/A | DATE: | SHEET 1 OF 1

PARTS LIST				PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY	ITEM	PART NO.	DESCRIPTION	QTY
1	110324C1	PHOENIX SOLID STATE RELAY OPTO 22 GE AC OUTPUT 5-60VAC, 24VAC 3A	15	26	112055C1	AB EIGHT ANALOG OUTPUTS +/- 10.V	1 C
2	110524C1	PHOENIX SOLID STATE RELAY OPTO 22 GE DC OUTPUT 5-60VDC, 24VDC 3A	1	27	125104C1	PLC ALLEN BRADLEY COMPACT LOGIX	1
3	110867C1	BANNER GATE MONITERING MODULE	2	28	71002701	RAIL, DIN 34 mm WIDE (METERS)	5
4	112008C1	3601, AMCI MICROLOGIX STEPPER CONTROL MODULE	1	29	71023801	PHOENIX RELAY ONLY 2961105	3
5	112053C1	AB SIXTEEN INPUTS	2	30	71102501	OMRON SOCKET, 2 POLE RELAY #PYF08AE	2
6	112054C1	AB SIXTEEN 24 DC SINK OUTPUTS	3	31	71103401	OMROM RELAY, 2 POLE, 24VAC #MY2-AC24	2
7	112056C1	AB EIGHT ANALOG INPUTS +/-10.0V	1	32	71404701	MINI CONTACTOR 24VAC	1
8	112064C1	AB RIGHT END CAP TERMINATOR	1	33	71405001	OVERLOAD 1.4-2.3 AMP	1
9	112071C1	AB POWER SUPPLY 24 VDC	1	34	110499C1	2" DUCT COVER - 22.134 in LONG	2
10	112924A1	RELAY BOARD ASSEMBLY	1	35	110499C1	2" DUCT COVER - 42 in LONG	2
11	113498C1	RTD INPUT CARD	1	36	113723C1	3" HEIGHT PANELMAX DIN WIRING DUCT WHITE, H1, 21.792"	2
12	114751C1	V55 ELECTRICAL PANEL	1	37	120452C1	2 x 3 WIRE DUCT	2
13	120475C2	FUSE BLOCK, MIDGET FUSE, 600V 32AMP	1	38	120452C1	2 x 3 WIRE DUCT	2
14	120486C2	SCHNEIDER SSRELAY	3	39	112081C1	POWER SUPPLY, 24VDC 240W	1
15	120561C1	TERMINAL BLOCK BASE / SCREW SOCKET 12/24 AC/DC RELAY	5	40	125089C1	2 AMP DIN MOUNT POWER SUPPLY	1
16	120562C1	RELAY FOR RSLZVA1 (120561C1)	2	41	0210-3281	AC DRIVE, 1HP, 480V 3PH	3 C
17	120746C1	1 TIER FEED THROUGH TERMINAL BLOCK; AWG: 26-12; W; 5.2MM; GRAY	36	42	71400801	Fuse 2 amp type aM	1
18	120747C1	END COVER, L: 65.4 MM, W: 2.2 MM, H: 47.5 MM, COLOR: GRAY	15	43	110868C1	BANNER TWO CHANNEL E-STOP MODULE	1 D
19	120749C1	1 TIER FEED THROUGH TERMINAL BLOCK; AWG: 24-8; W; 8.2MM; GRAY	17				
20	120751C1	1 TIER PE FEED THROUGH TERMINAL BLOCK; AWG:26-12; W:5.2MM; GRN/YEL	5				
21	120752C1	END CLAMP, WIDTH: 9.5 MM, COLOR: GRAY	25				
22	121306C1	SOLID-STATE-RELAISMODUL - PLC-OSC- 24DC/ 24DC/ 5/ACT	1				
23	121719C1	CABINET DEHUMIDIFIER	1				
24	121733C1	TERMINAL BLOCK, DIN RAIL TERMINALK BLOCKS	1				
25	121734C1	TERMINAL BLOCK, END COVER	1				

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		N.B
B	UPDATES PER DAVE	3/5/2020	N.B.
C	DELETED: 124247C1, 125096C1, 3x 112592C1; ADDED: 125089C1, 112055C1, 3x 0210-3281	4/25/2022	PV
D	DELETED: 110868C1, ADDED: 110867C1, 71400801	4/11/2024	PV



THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

CV•TEK

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. LIAKOPOULOS

TITLE: V45 ELECTRICAL PANEL ASSEMBLY

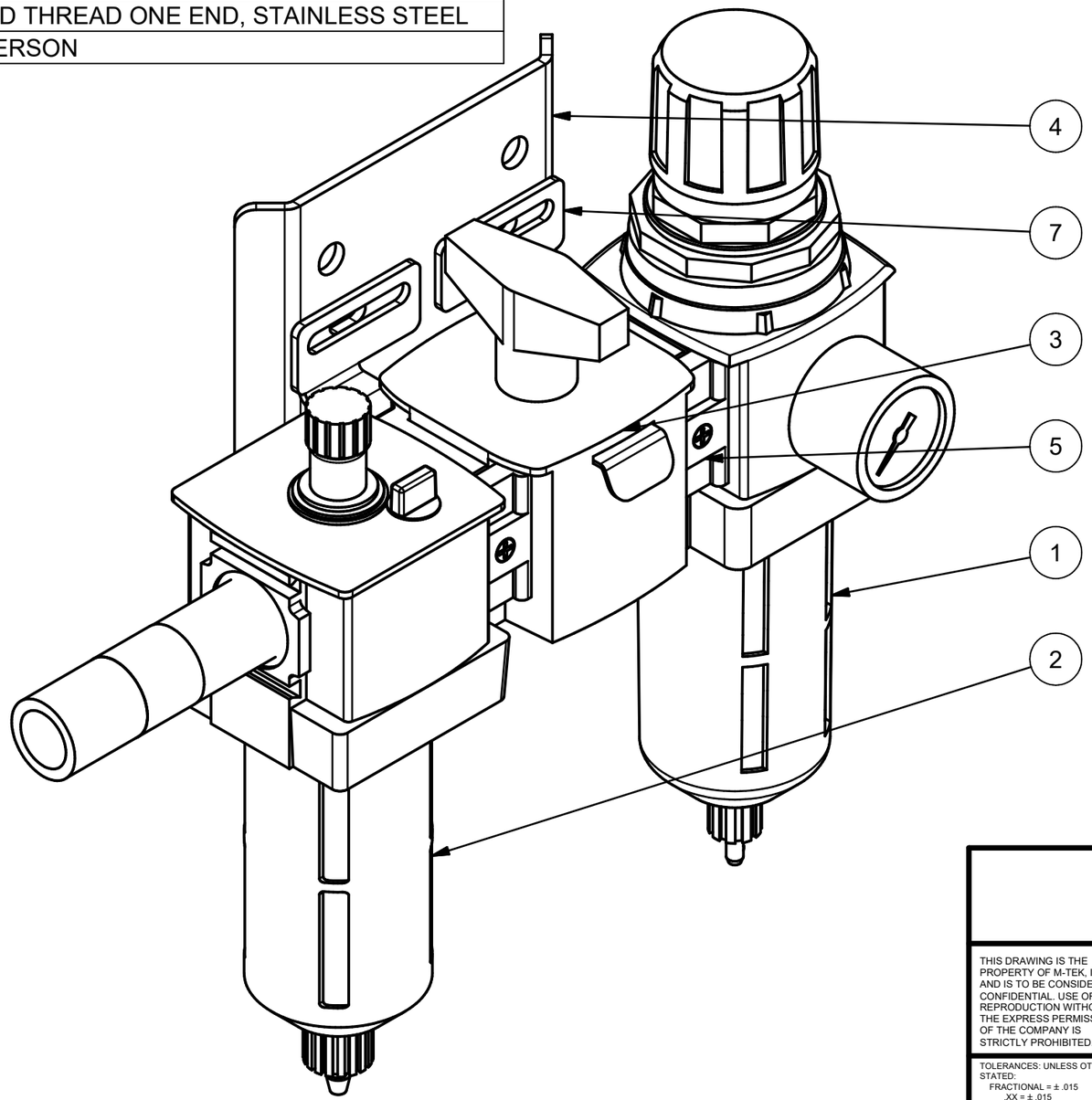
TOLERANCES: UNLESS OTHERWISE STATED
FRACTIONAL ± .015
.XX ± .015
.XXX ± .005
.XXXX ± .0005
DRILL FOLLOW C-STANDARD S.A.E.

DWG NO.: MA110-0030 D

SCALE: N/A | DATE: 4/19/2018 | SHEET 1 OF 1

PARTS LIST			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	114052C1	FILTER REGULATOR COMBO UNIT 3/4 PORT
2	1	114053C1	LUBRICATOR 3/4 NPT PORTS, INTEGRAL SIGHT DOME ADJ, MAN. DRAIN
3	1	114054C2	LOCKOUT BALL VALVE 3/4 NPT 28 SERIES
4	1	120539C1	REGULATOR BRACKET
5	2	120542C1	JOINER SET 28 SERIES
6	1	74305702	3/4 X 4 NIPPLE W/2-1/2 EXTENDED THREAD ONE END, STAINLESS STEEL
7	2	76110701	BRACKET, ADAPTING FOR WILKERSON

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	INTIAL RELEASE		
B	CHANGE LOCKOUT VALVE AND BRACKETS	8/23/2017	CI



M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

APPROVED MFG: APPROVED ENG: M. FIALKO

DRAWN BY: M. FIALKO

TITLE: V45 FRL ASSEMBLY

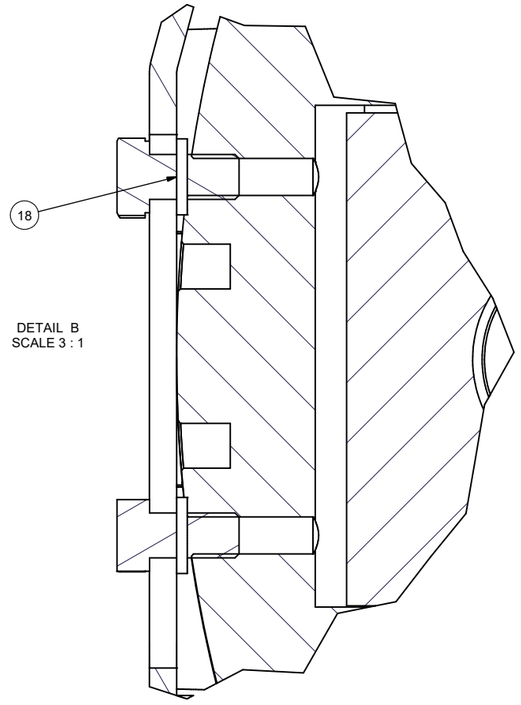
DWG NO.: MA029-0004

SCALE: DATE: 8/25/2011 SHEET 1 OF 1

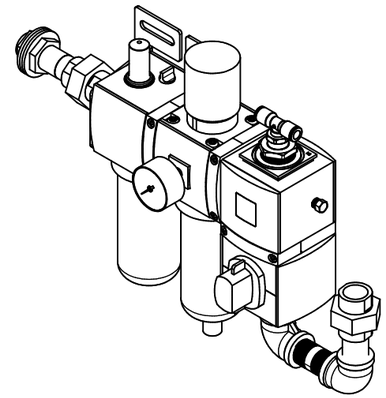
PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	272P-06-08	1/2NPT x 3/8OD PUSH IN TEE	1
2	110158C1	1 FLAT WASHER (1.062 ID x 2.00 OD x .125 THK.)	2
3	110699C1	3/4 NPT UNION, S/S	2
4	114192C1	3/4 X 2" S/S PIPE NIPPLE	1
5	129580C1	AVENTICS SHUT OFF	1
6	129581C1	AVENTICS LUBRICATOR	1
7	129582C1	AVENTICS FILTER REGULATOR	1
8	129595C1	AVENTICS CONNECTOR	3
9	129771C1	LUBRICATOR VINYL CAP	1
10	129852C1	AVENTICS 653 DIVERTER BLOCK	1
11	130203C1	1"NPT TO 1/2" NPT BUSHING	1
12	130270C1	V45 AVENTICS FRL BRACKET	1
13	130271C1	V45 AVENTICS FRL BRACKET	1
14	74300702	3/4 NPT FEMALE ELBOW, FORGED, S/S	2
15	74303402	3/4 NPT CLOSE NIPPLE, S/S	3
16	74305602	3/4 NPT x 3 LONG NIPPLE w/1-1/2 EXTENDED 3/4 NPSM STRAIGHT THREAD ONE END, S/S	1
17	74400201A	3/4 NPSL HEX LOCK NUT, S/S	2
18	75102501	#10 MED SPLIT LOCK WASHERS, S/S	2
19	MM5X0.8X10	M5x0.8x10 HEX BOLT	2
20	SP1/8NPT	1/8" NPT HEX PLUG	1
21	ASP-3	MUFFLER, 3/8 NPT	1

C

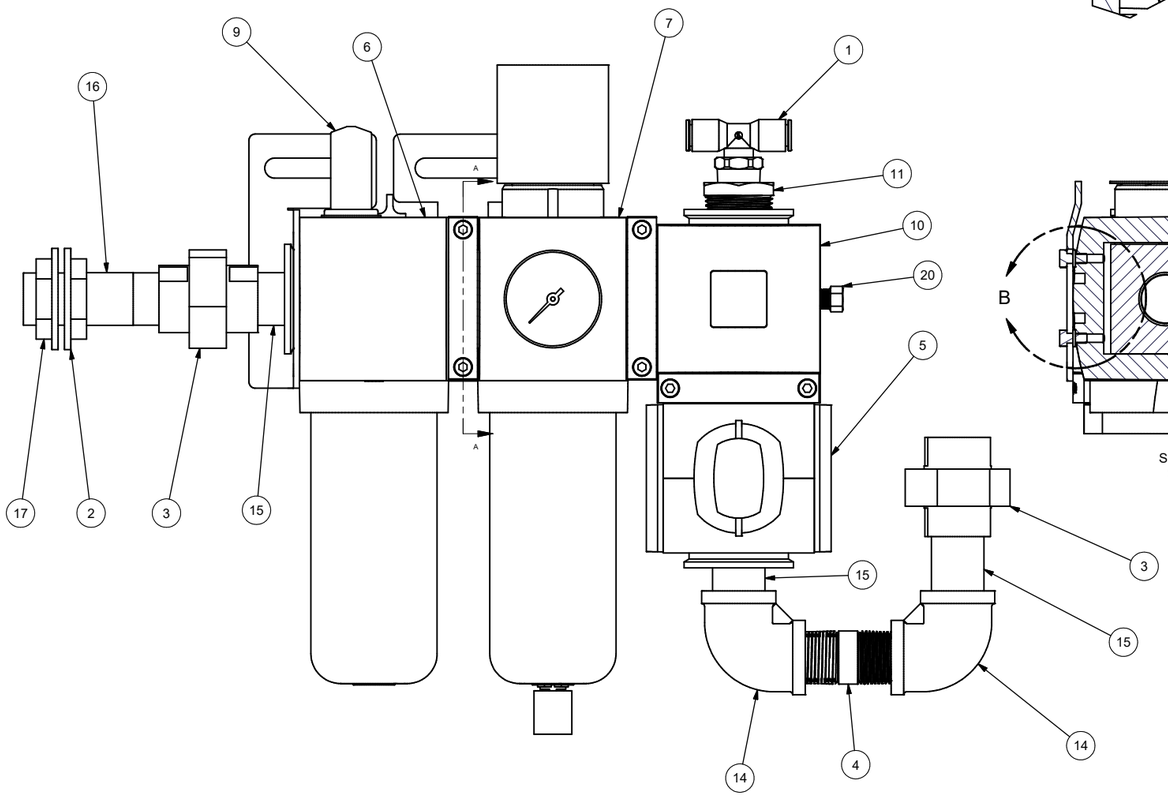
REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	9/29/2021	AOK
B	NEW MOUNTING BRACKETS	10/8/2021	AOK
C	ADDED ASP-3 MUFFLER, 3/8 NPT	1/24/2023	PV

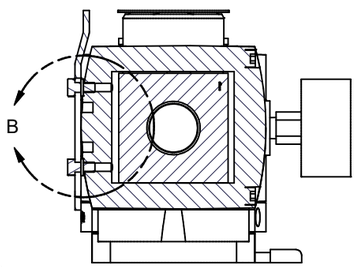


DETAIL B
SCALE 3 : 1

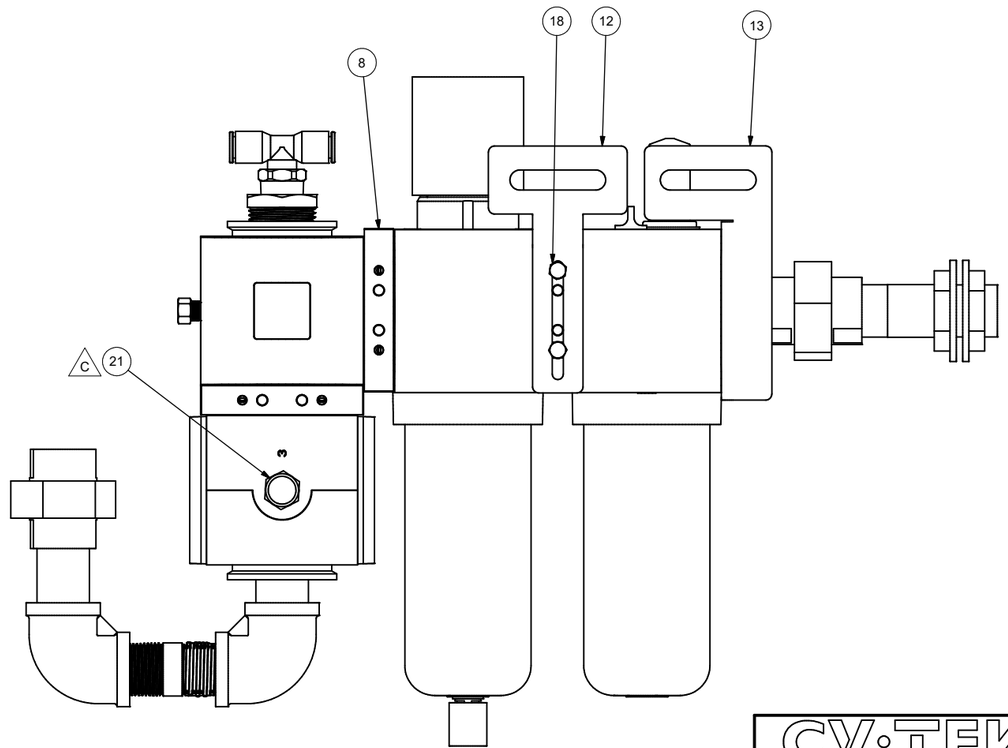


← **FLOW FROM 1 TO 2**





SECTION A-A
SCALE 2/3



CV·TEK

THIS DRAWING IS THE PROPERTY OF CV-TEK, INC AND IS TO BE CONSIDERED CONFIDENTIAL USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED
FRACTIONAL ± ½ .015
.XX ± .010
.XXX ± .005
.XXXX ± .0005
DRAWN TO ASME Y14.5

APPROVED MFG: APPROVED ENG:

DRAWN BY: mevans

TITLE: V45 FRL ASSEMBLY

DWG NO: MA029-0014 C

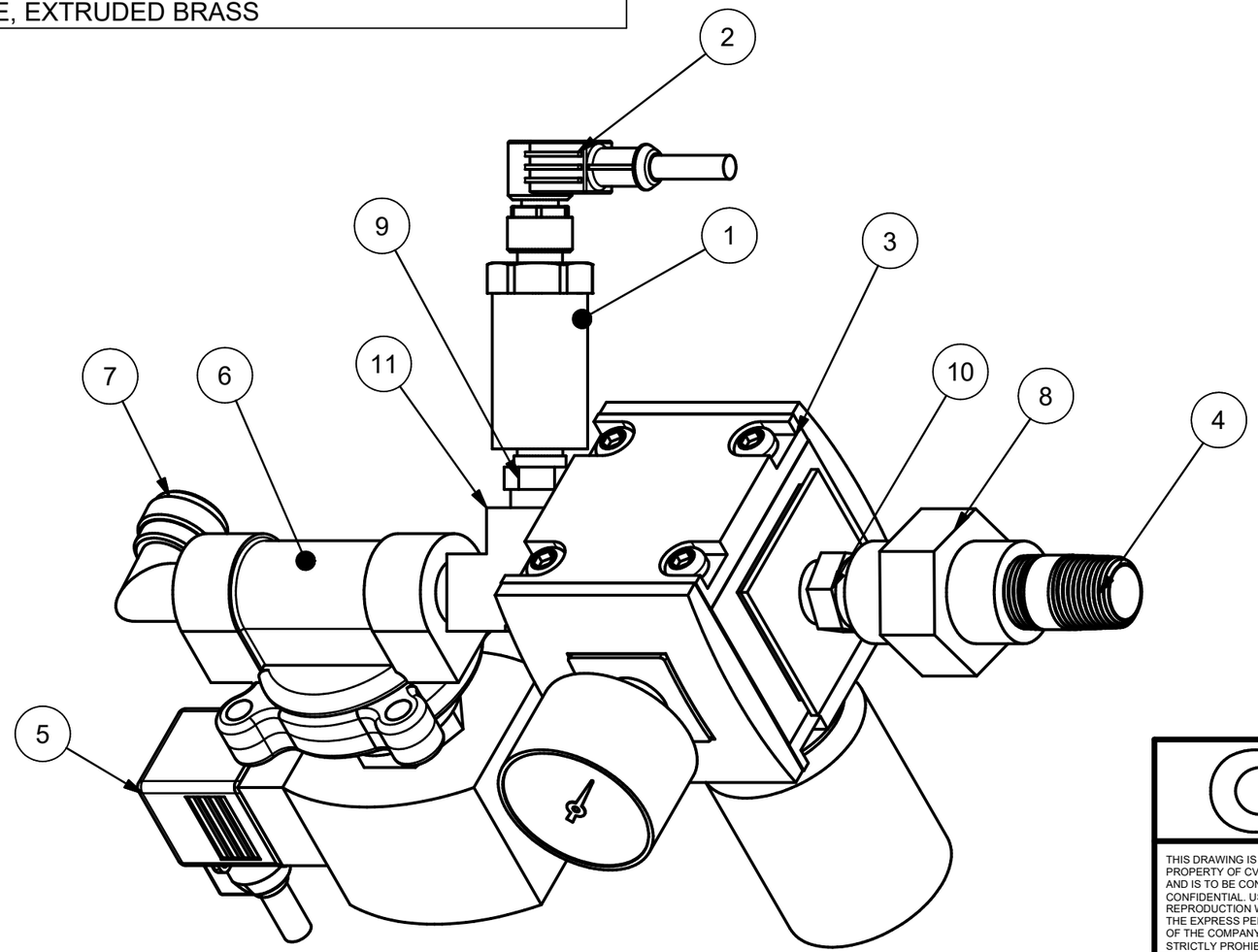
SCALE: N/A DATE: SHEET 1 OF 1

PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION
1	1	121301C1	PRESSURE SENSOR, ASHCROFT
2	1	121501C1	M12 5-5 PIN 90DEGREE 1.5METER BLACK CABLE (FOR ASHCROFT)
3	1	129508C1	REGULATOR
4	1	129585C1	3/8NPT NIPPLE, 2" LONG
5	1	71607403	ASCO VALVE PLUG CABLE 18mm 3m
6	1	73103701	3/8 NPT BRASS N.C. 24 VAC
7	1	74204201	3/8 O.D. TUBE X 1/4 NPT FIXED ELBOW, MALE, PLASTIC
8	1	74301301	3/8 NPT UNION, MACHINED
9	1	74302501	1/4 NPT MALE X 1/8 NPT FEMALE HEX HEAD BUSHING
10	2	74303501	3/8 NPT MALE X 1/4 NPT MALE HEX REDUCER NIPPLE, HEX
11	1	74305901	1/4 NPT MALE RUN TEE, EXTRUDED BRASS

REVISION HISTORY

REV	DESCRIPTION	DATE	APPROVED
C	CHANGED TO AVENTICS REGULATOR	5/28/2021	M.E.
D	DELETED 2X74303901, 74306001, 74301001, 74204201 ADDED 2X 74303501, 74305901, 74302501, 74203101	3/11/2022	P.V.
E	ADDED 121501C1, ADDED 71607403	8/15/2024	S.P.



CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: T.L.

TITLE:

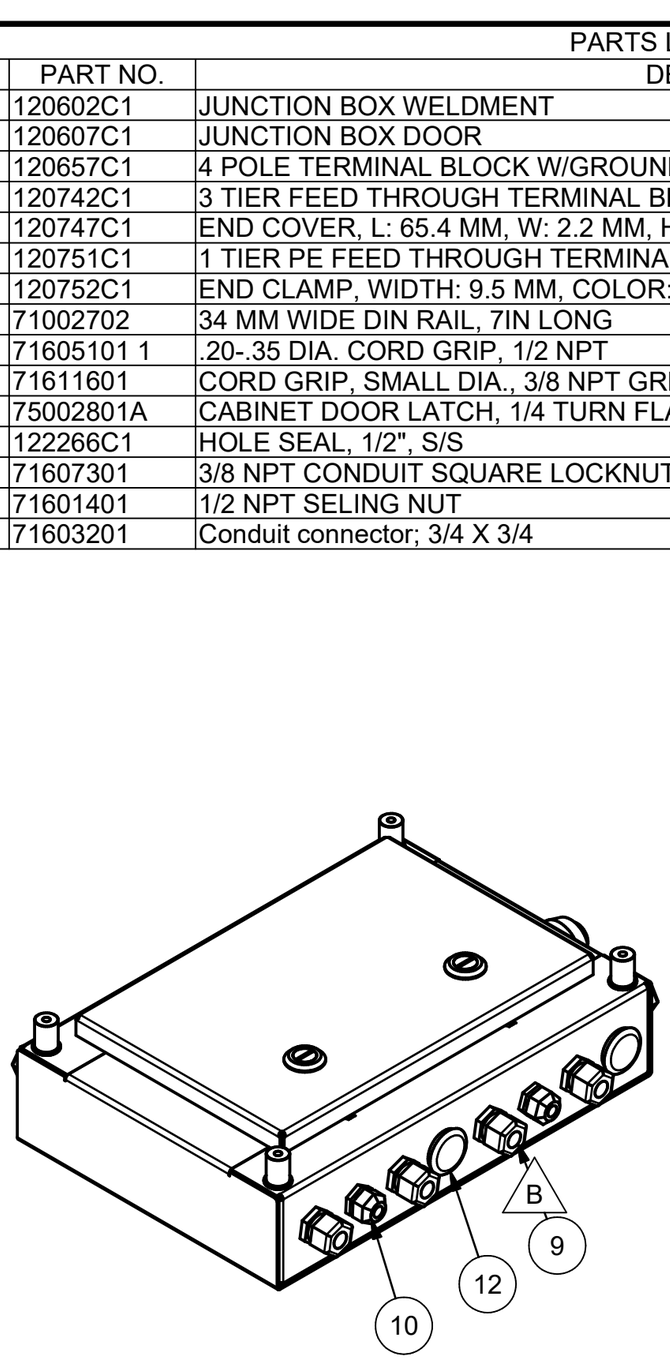
GAS VALVE ASSEMBLY

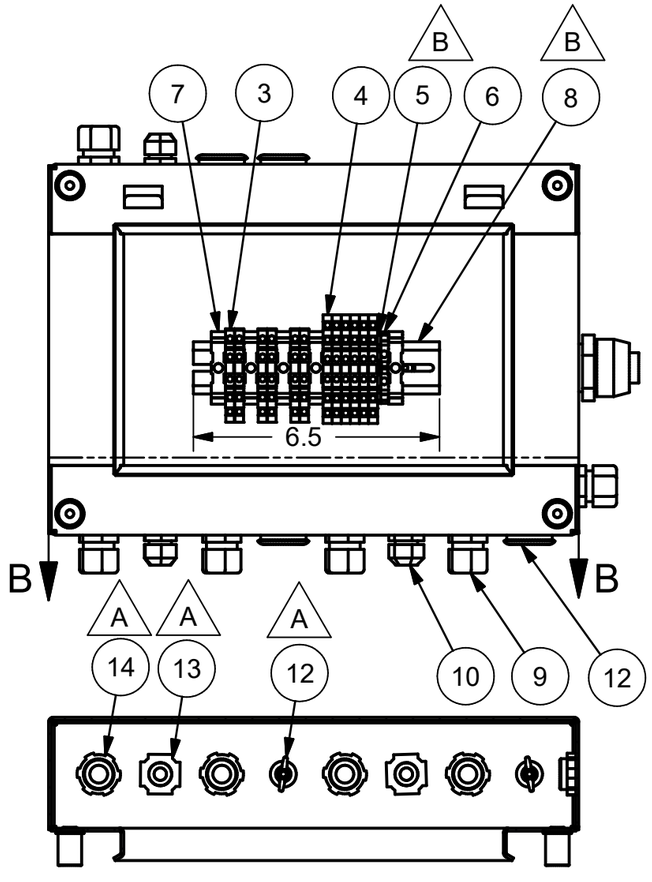
DWG NO.: MA028-0001 E

SCALE: N/A DATE: SHEET 1 OF 1

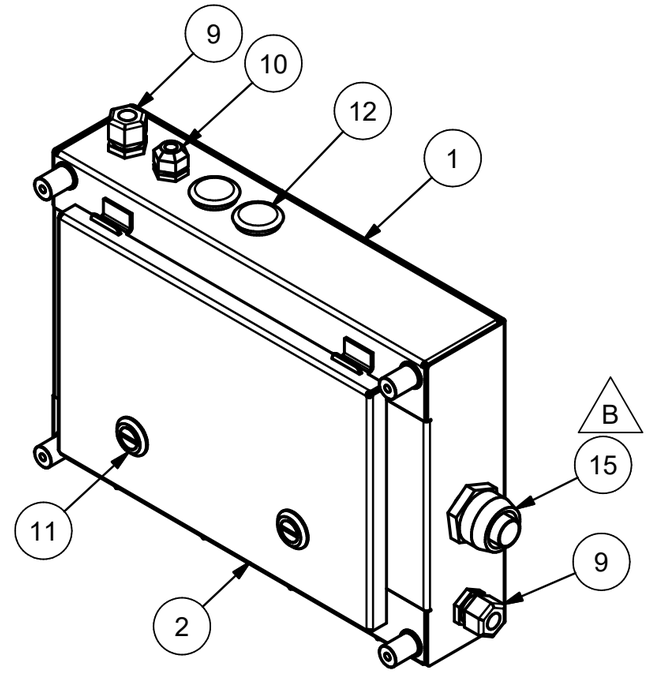
PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	120602C1	JUNCTION BOX WELDMENT	1
2	120607C1	JUNCTION BOX DOOR	1
3	120657C1	4 POLE TERMINAL BLOCK W/GROUND	6
4	120742C1	3 TIER FEED THROUGH TERMINAL BLOCK; AWG: 24 - 12; W: 6.2MM; GRAY	6
5	120747C1	END COVER, L: 65.4 MM, W: 2.2 MM, H: 47.5 MM, COLOR: GRAY	1
6	120751C1	1 TIER PE FEED THROUGH TERMINAL BLOCK; AWG:26-12; W:5.2MM; GRN/YEL	1
7	120752C1	END CLAMP, WIDTH: 9.5 MM, COLOR: GRAY	5
8	71002702	34 MM WIDE DIN RAIL, 7IN LONG	1
9	71605101 1	.20-.35 DIA. CORD GRIP, 1/2 NPT	6
10	71611601	CORD GRIP, SMALL DIA., 3/8 NPT GREY	3
11	75002801A	CABINET DOOR LATCH, 1/4 TURN FLAT HEAD SLOTTED	2
12	122266C1	HOLE SEAL, 1/2", S/S	4
13	71607301	3/8 NPT CONDUIT SQUARE LOCKNUT	3
14	71601401	1/2 NPT SELING NUT	6
15	71603201	Conduit connector; 3/4 X 3/4	1

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	4/5/2013	TL
B	Deleted 120501C1(3x), 71603301, 71611601(3x), 120752(1x); Added 71605101-1(3x), 71603201, 122266C1(4x), 71601401(6x), 71607301(3x), 120742C1(2X)	3/26/2024	SP





SECTION B-B
SCALE 1 / 4



CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: TL

TITLE: JUNCTION BOX ASSEMBLY

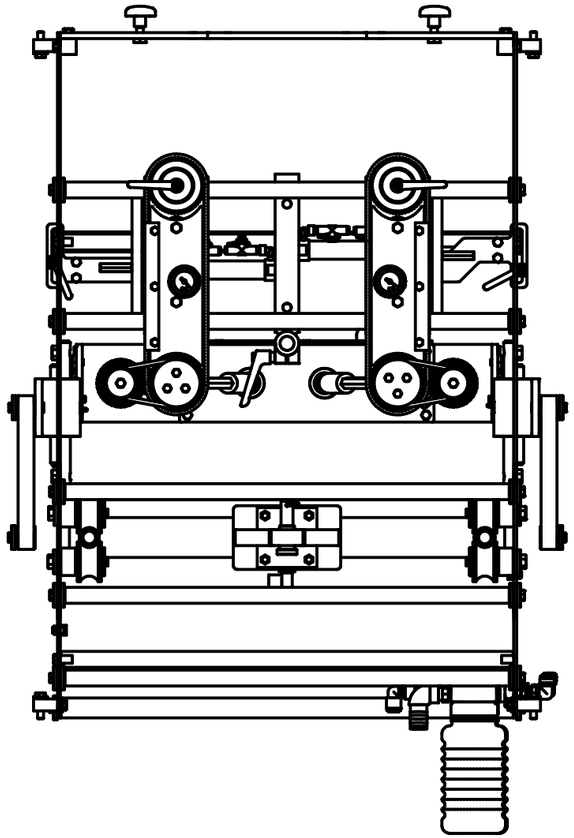
DWG NO.: MA030-0004 B

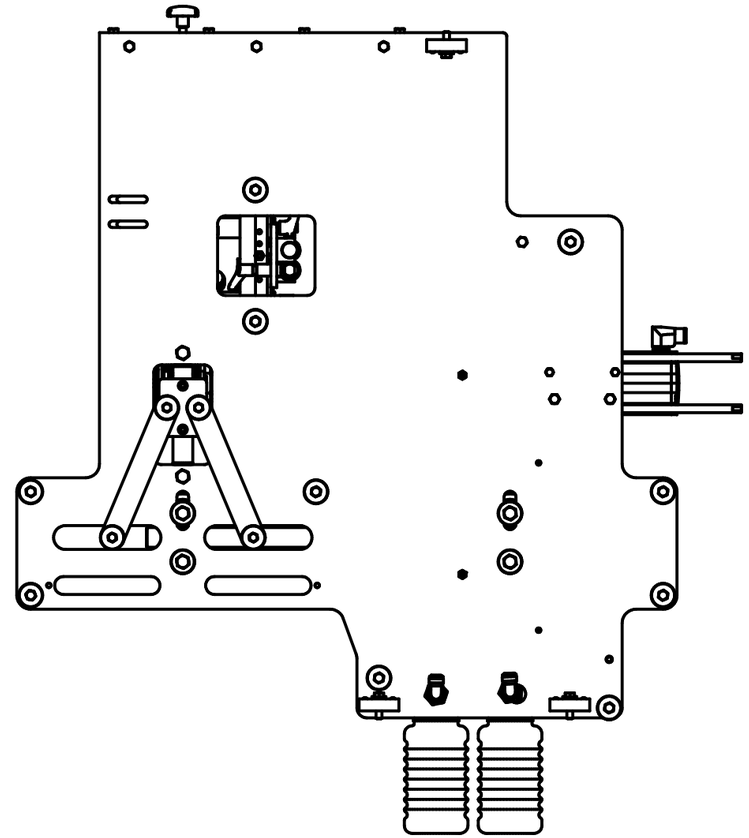
SCALE: N/A DATE: SHEET 1 OF 1

PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	108667C1	3/8-16 X 1-3/4 LNG HEX HEAD CAP SCREW, S/S	4
2	108677C1	1/4-20 X 1 LNG HEX HEAD CAP SCREW, S/S	4
3	108733C1	3/8-16 X 3/4 LNG HEX HEAD CAP SCREW, S/S	21
4	108745C1	3/8 FLAT WASHER, 0.875 O.D., 0.14 THCK, S/S	18
5	110845C1	1/2-13 X 3/4 LNG HEX HEAD CAP SCREW, S/S	12
6	112044C1	TIMING BAR LINER IGLIDE L280 FLANGE BUSHING #LFI-1618-08 1.000 I.D. X .5 INCH LONG	16
7	112048C1	5/16-18 X 1/2 SOCKET HEAD CAP SCREW, S/S	4
8	112050C1	.391 ID SHAFT LOAD DISK	20
9	112127C1	CENTERING LINK STUB SHAFT	4
10	112129C1	CENTERING LINK	4
11	112181C1	3/8-16 X 1-3/8 LNG HEX HEAD CAP SCREW, S/S, (FULL THD)	26
12	112258C1	.516 ID SHAFT LOAD DISK	8
13	112259C1	0.328 ID SHAFT LOAD DISK VERTICAL	8
14	112628C1	LOWER ROLLER STUB SHAFT CROSS SEAL (BALL BEARING)	4
15	112629C1	UPPER ROLLER STUB SHAFT CROSS SEAL (BALL BEARING)	4
16	112630C1	5/16 FW LARGE DIA.11/32 ID 1.75 OD 1/8 THK SS	8
17	112643C1	SHAFT LOCATING LOAD DISK	16
18	113049A1	CROSS SEAL CYLINDER ASSEMBLY	1
19	114869C1	MOUNTING BLOCK	6
20	114892C1	TOP PLATE	1
21	114942C1	BAR HORN PLATE	2
22	120209C1	SPACER, GEAR BOX MTG	4
23	120210C1	SPACER, GEAR BOX MTG	4
24	120232C1	CROSS ROLLER SHAFT	2
25	120233C1	SHAFT, CROSS BAR	6
26	120234C1	CLAMP, ROLLER	2
27	120520C1	PLATE HOLDER	2
28	121637C1	V45 HEAD SIDE PLATE RH	1
29	121638C1	V45 HEAD SIDE PLATE LH	1
30	121650C1	JAW CENTERING SLIDE ROD, V45	2
31	121651C1	CENTERING PLATE, V45	2
32	121662C1	FRONT / REAR JAW LINEAR SHAFT, RIGID MTG., V45	2
33	124447C1	VIM5 HEAD HORN GUIDE PINS	2
34	124470C1	SS 3/8"-16, 7 LOBE KNOB	2
35	75003001	CABLE TIE MOUNTING BASE, 1/4 SCREW SIZE, PANDUIT #TM3S25-C	4
36	75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT	4
37	75106001	1/4-20 X 1/2 PAN HEAD MACHINE SCREW, SLOTTED S/S	4
38	75107501	5/16-18 X 1/2 LNG HEX HEAD CAP SCREW, S/S	8
39	75107601	5/16-18 X 3/4 LNG HEX HEAD CAP SCREW, S/S	8
40	75107901	3/8-16 X 1 LNG HEX HEAD CAP SCREW, S/S	8
41	MA034-0006	VACUUM DRIVE ASSY.	1
42	MA036-0005	V45 JAW ROLLER ASSEMBLY	8
43	MA037-0004	CENTER BUSHING HOUSING, V45	2
44	MA043-0001	REAR CROSS SEAL ASSEMBLY, V45	1
45	MA050-0004	VACUUM PULL BELTS ASSEMBLY	1
46	MA101-0016	VACUUM JAR2 ASSY.	1
47	MA101-0015	VACUUM JAR1 ASSY.	1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
D	ADDED 112258C1 TO THE MAIN ASSEMBLY	4/7/17	T.L.
E	REPLACE MA040-0003 WITH MA040-0008, ADDED PARTS FROM 48-56, JAWS MOVED ONE LEVEL UP	05/04/2018	C.I.
F	ADDED VACUUM JAR 1 AND VACUUM JAR 2 ASSEMBLIES	3/19/2024	SP





M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

APPROVED MFG: APPROVED ENG:

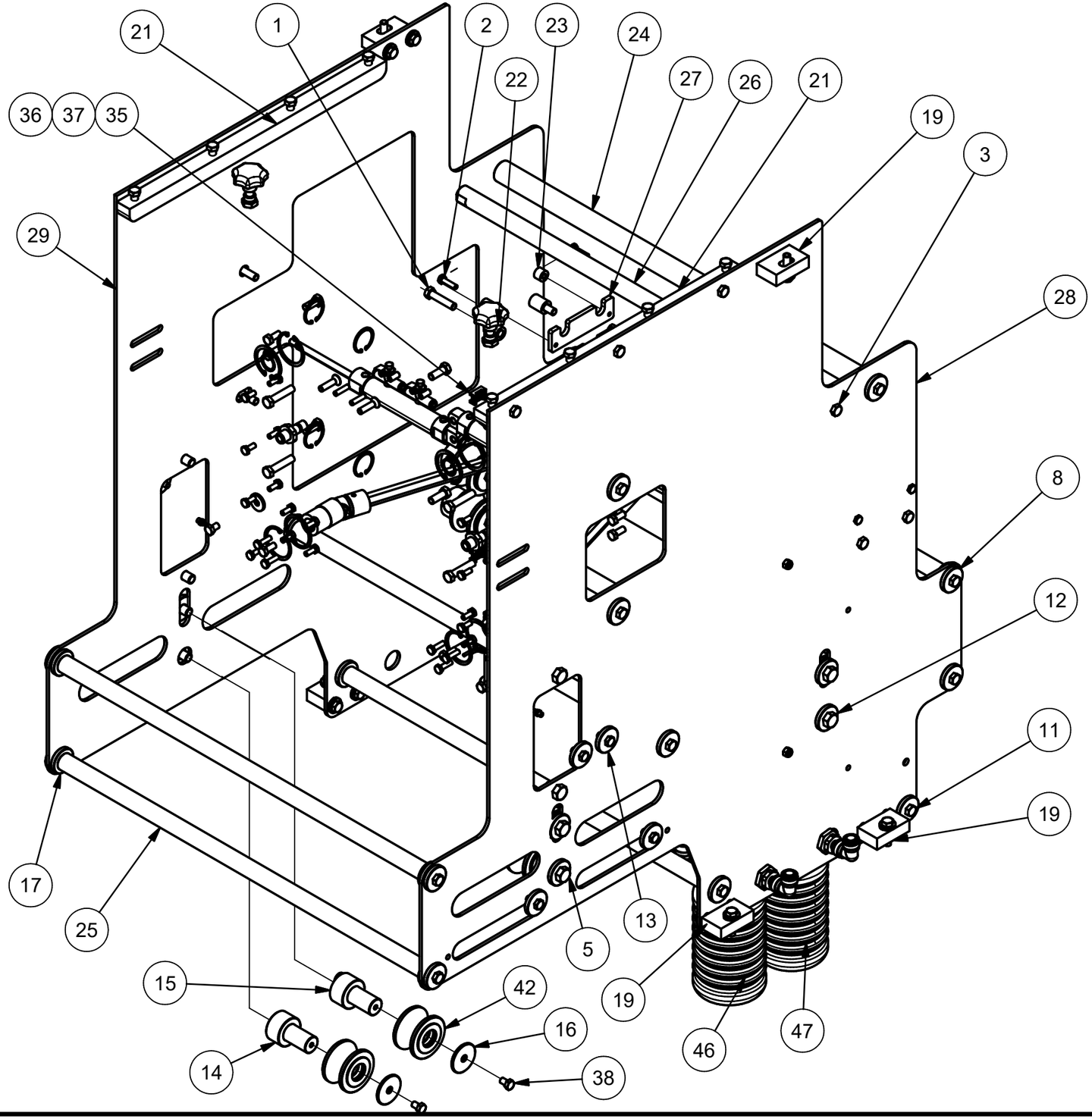
DRAWN BY: T L

TITLE: V45 HEAD ASSEMBLY

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

DWG NO.: MA030-0006 F

SCALE: 0.1 : 1 DATE: SHEET 1 OF 7



PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	108667C1	3/8-16 X 1-3/4 LNG HEX HEAD CAP SCREW, S/S	4
2	108677C1	1/4-20 X 1 LNG HEX HEAD CAP SCREW, S/S	4
3	108733C1	3/8-16 X 3/4 LNG HEX HEAD CAP SCREW, S/S	21
4	108745C1	3/8 FLAT WASHER, 0.875 O.D., 0.14 THCK, S/S	18
5	110845C1	1/2-13 X 3/4 LNG HEX HEAD CAP SCREW, S/S	12
8	112050C1	.391 ID SHAFT LOAD DISK	20
11	112181C1	3/8-16 X 1-3/8 LNG HEX HEAD CAP SCREW, S/S, (FULL THD)	26
12	112258C1	.516 ID SHAFT LOAD DISK	8
13	112259C1	0.328 ID SHAFT LOAD DISK VERTICAL	8
14	112628C1	LOWER ROLLER STUB SHAFT CROSS SEAL (BALL BEARING)	4
15	112629C1	UPPER ROLLER STUB SHAFT CROSS SEAL (BALL BEARING)	4
16	112630C1	5/16 FW LARGE DIA.11/32 ID 1.75 OD 1/8 THK SS	8
17	112643C1	SHAFT LOCATING LOAD DISK	16
19	114869C1	MOUNTING BLOCK	6
21	114942C1	BAR HORN PLATE	2
22	120209C1	SPACER, GEAR BOX MTG	4
23	120210C1	SPACER, GEAR BOX MTG	4
24	120232C1	CROSS ROLLER SHAFT	2
25	120233C1	SHAFT, CROSS BAR	6
26	120234C1	CLAMP, ROLLER	2
27	120520C1	PLATE HOLDER	2
28	121637C1	V45 HEAD SIDE PLATE RH	1
29	121638C1	V45 HEAD SIDE PLATE LH	1
33	124447C1	VIM5 HEAD HORN GUIDE PINS	2
34	124470C1	SS 3/8"-16, 7 LOBE KNOB	2
35	75003001	CABLE TIE MOUNTING BASE, 1/4 SCREW SIZE, PANDUIT #TM3S25-C	4
36	75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT	4
37	75106001	1/4-20 X 1/2 PAN HEAD MACHINE SCREW, SLOTTED S/S	4
38	75107501	5/16-18 X 1/2 LNG HEX HEAD CAP SCREW, S/S	8
39	75107601	5/16-18 X 3/4 LNG HEX HEAD CAP SCREW, S/S	8
40	75107901	3/8-16 X 1 LNG HEX HEAD CAP SCREW, S/S	8
42	MA036-0005	V45 JAW ROLLER ASSEMBLY	8
46	MA101-0016	VACUUM JAR2 ASSY.	1
47	MA101-0015	VACUUM JAR1 ASSY.	1

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

APPROVED MFG: APPROVED ENG:

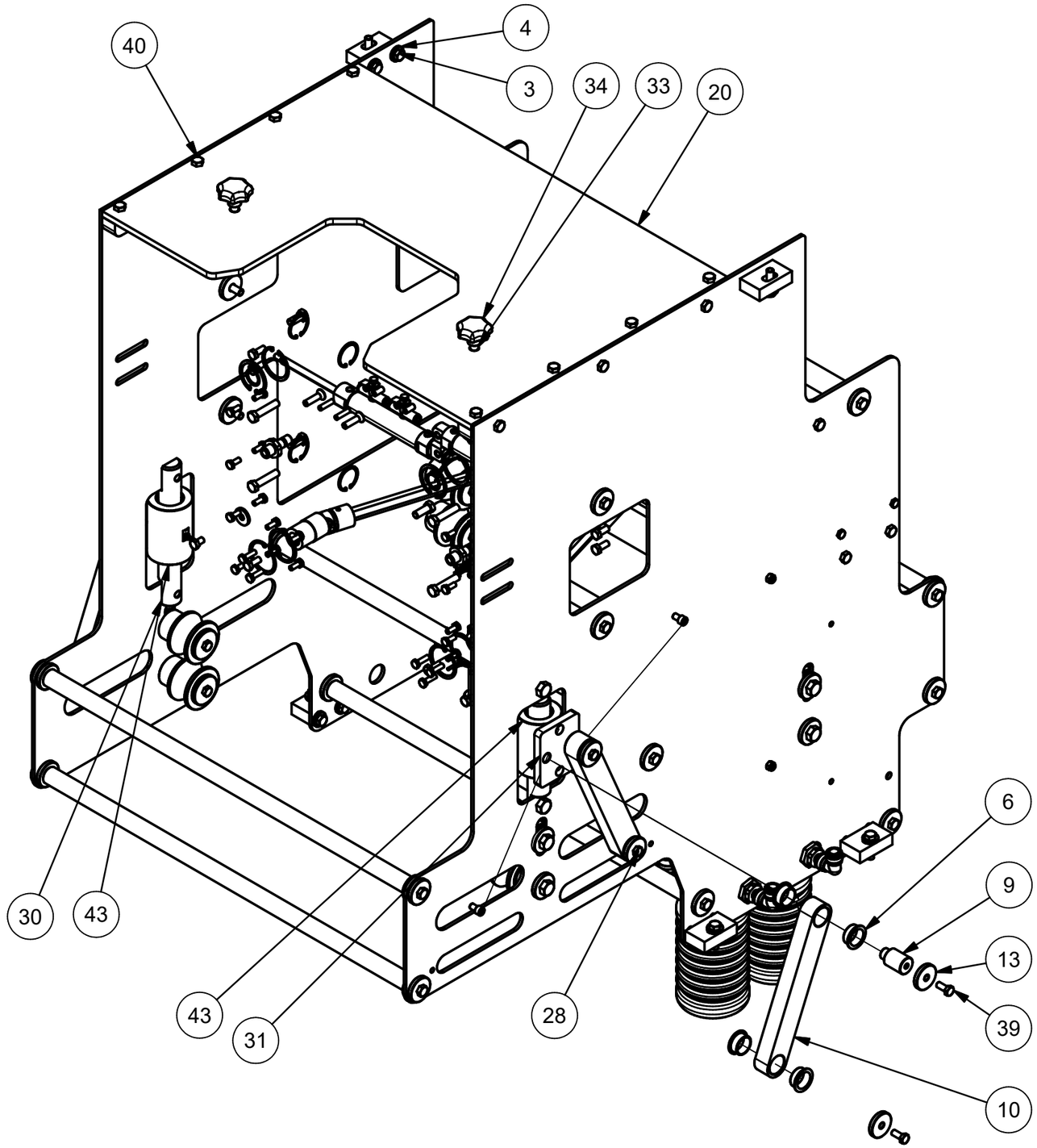
DRAWN BY: T L

TITLE: V45 HEAD ASSEMBLY

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

DWG NO.: MA030-0006 F

SCALE: 0.1 : 1 DATE: SHEET 2 OF 7



PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
3	108733C1	3/8-16 X 3/4 LNG HEX HEAD CAP SCREW, S/S	21
4	108745C1	3/8 FLAT WASHER, 0.875 O.D., 0.14 THCK, S/S	18
5	110845C1	1/2-13 X 3/4 LNG HEX HEAD CAP SCREW, S/S	12
6	112044C1	TIMING BAR LINER IGLIDE L280 FLANGE BUSHING #LFI-1618-08 1.000 I.D. X .5 INCH LONG	16
7	112048C1	5/16-18 X 1/2 SOCKET HEAD CAP SCREW, S/S	4
9	112127C1	CENTERING LINK STUB SHAFT	4
10	112129C1	CENTERING LINK	4
11	112181C1	3/8-16 X 1-3/8 LNG HEX HEAD CAP SCREW, S/S, (FULL THD)	26
20	114892C1	TOP PLATE	1
30	121650C1	JAW CENTERING SLIDE ROD, V45	2
31	121651C1	CENTERING PLATE, V45	2
33	124447C1	VIM5 HEAD HORN GUIDE PINS	2
34	124470C1	SS 3/8"-16, 7 LOBE KNOB	2
39	75107601	5/16-18 X 3/4 LNG HEX HEAD CAP SCREW, S/S	8
40	75107901	3/8-16 X 1 LNG HEX HEAD CAP SCREW, S/S	8
43	MA037-0004	CENTER BUSHING HOUSING, V45	2

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

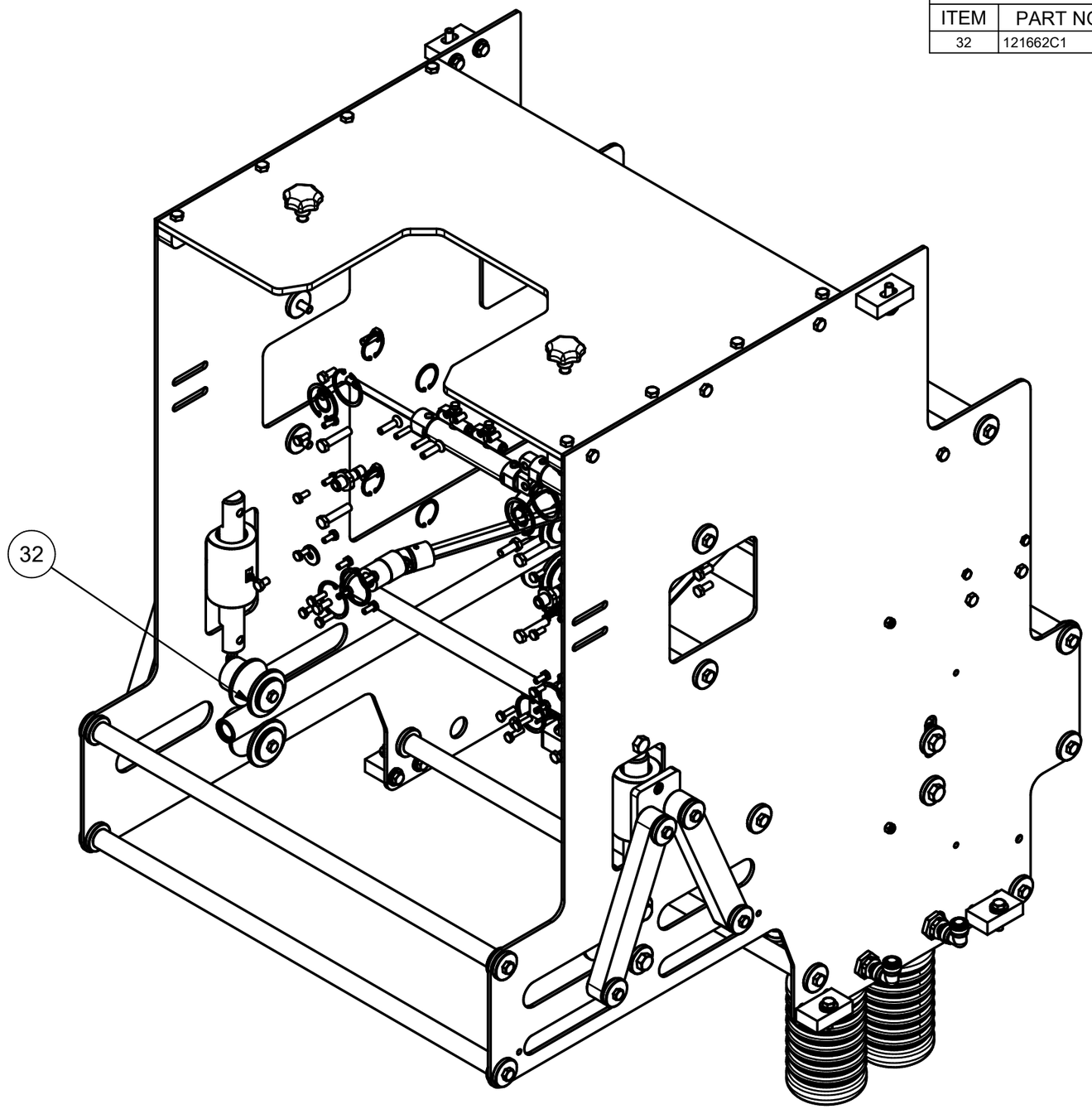
APPROVED MFG: APPROVED ENG:

DRAWN BY: T L

TITLE: V45 HEAD ASSEMBLY

DWG NO.: MA030-0006 F

SCALE: 0.1 : 1 DATE: SHEET 3 OF 7



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
32	121662C1	FRONT / REAR JAW LINEAR SHAFT, RIGID MTG., V45	2

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

APPROVED MFG: APPROVED ENG:

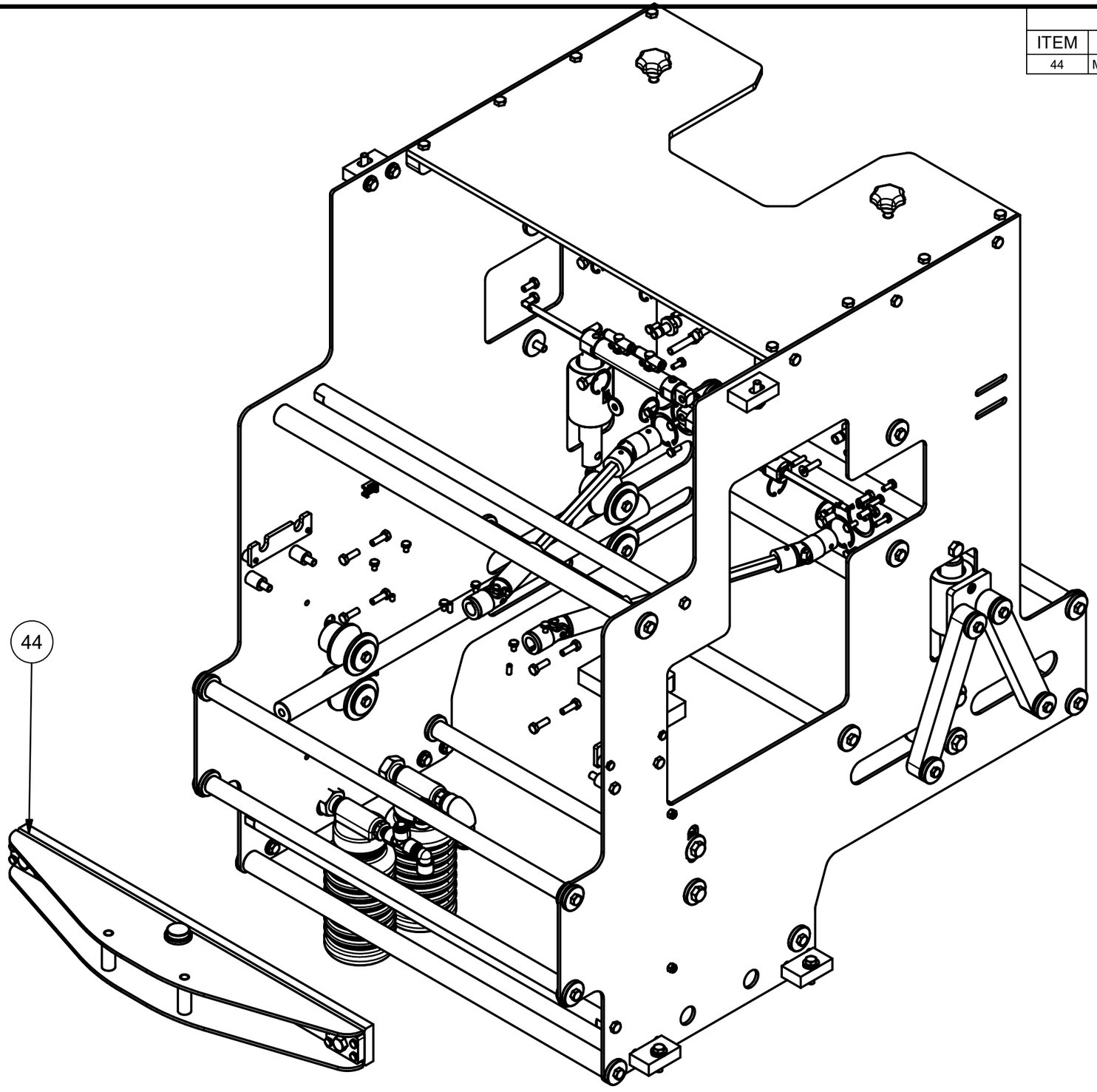
DRAWN BY: T L

TITLE: V45 HEAD ASSEMBLY

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

DWG NO.: MA030-0006 F

SCALE: 0.1 : 1 DATE: SHEET 4 OF 7



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
44	MA043-0001	REAR CROSS SEAL ASSEMBLY, V45	1

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

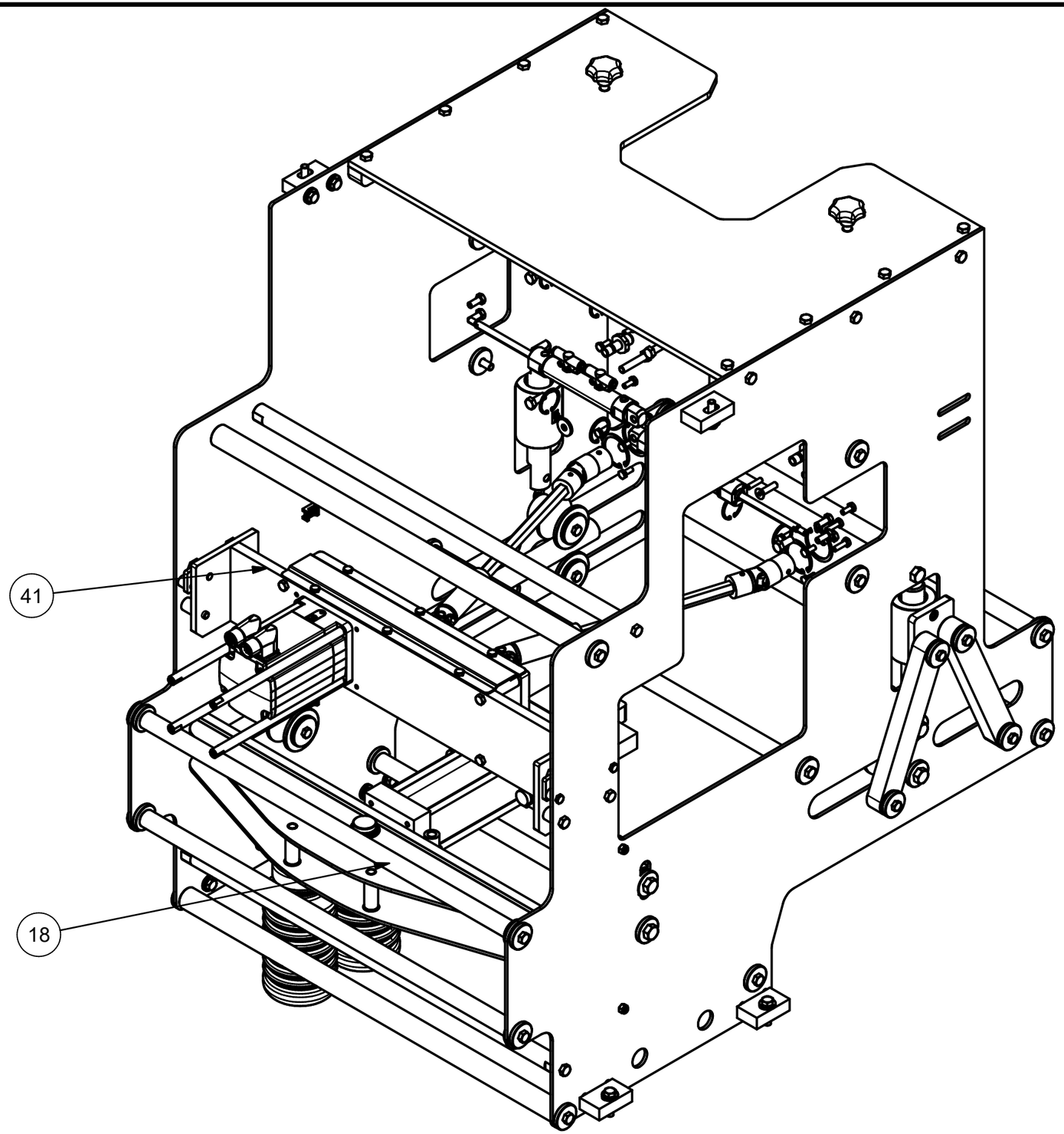
APPROVED MFG: APPROVED ENG:

DRAWN BY: T L

TITLE: V45 HEAD ASSEMBLY

DWG NO.: MA030-0006 F

SCALE: 0.1 : 1 DATE: SHEET 5 OF 7



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
18	113049A1	CROSS SEAL CYLINDER ASSEMBLY	1
41	MA034-0006	VACUUM DRIVE ASSY.	1

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

APPROVED MFG: APPROVED ENG:

DRAWN BY: T L

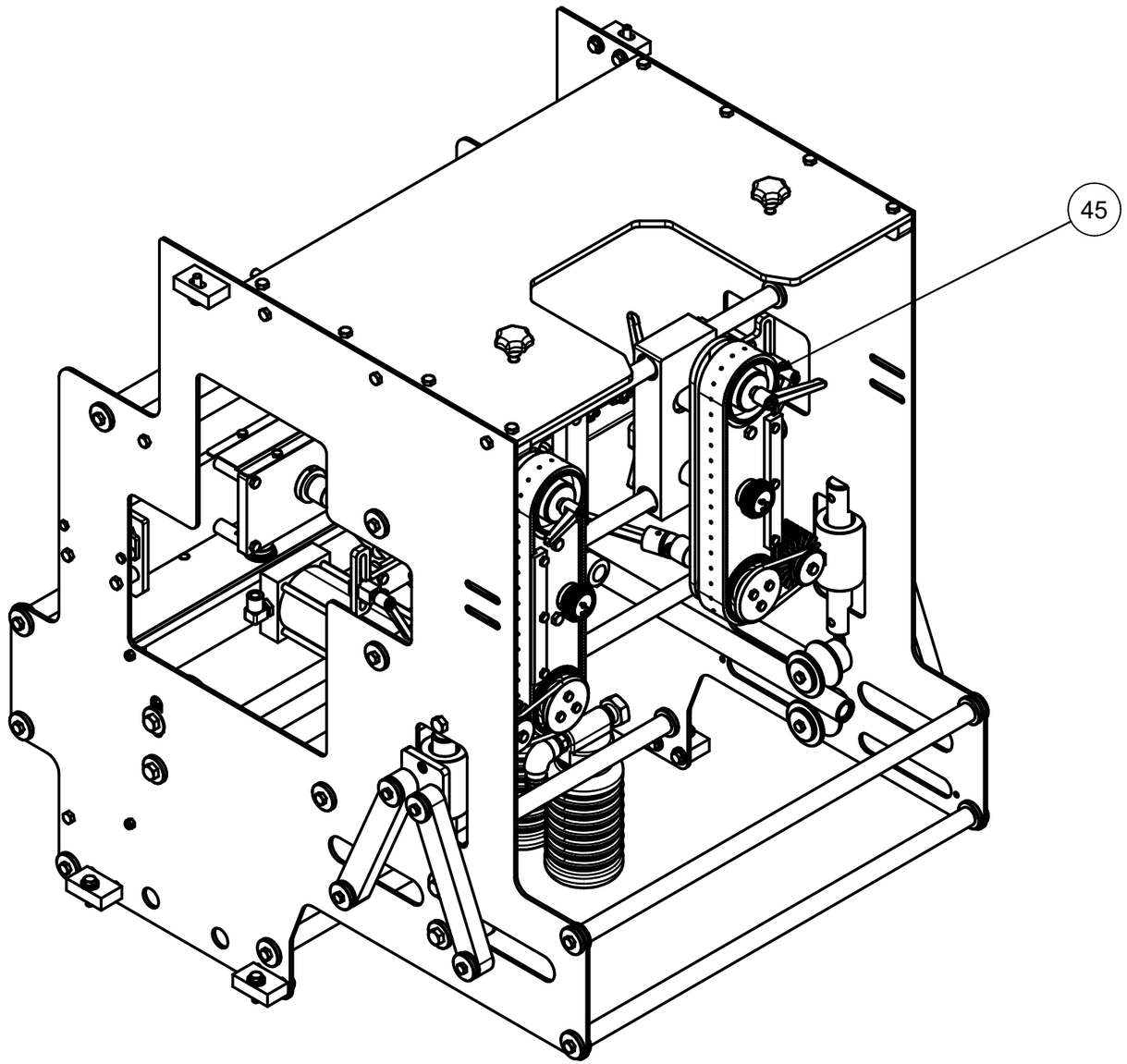
TITLE:

V45 HEAD ASSEMBLY

DWG NO.: MA030-0006 F

SCALE: 0.1 : 1 DATE: SHEET 6 OF 7

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
45	MA050-0004	VACUUM PULL BELTS ASSEMBLY	1



M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

APPROVED MFG: APPROVED ENG:

DRAWN BY: T L

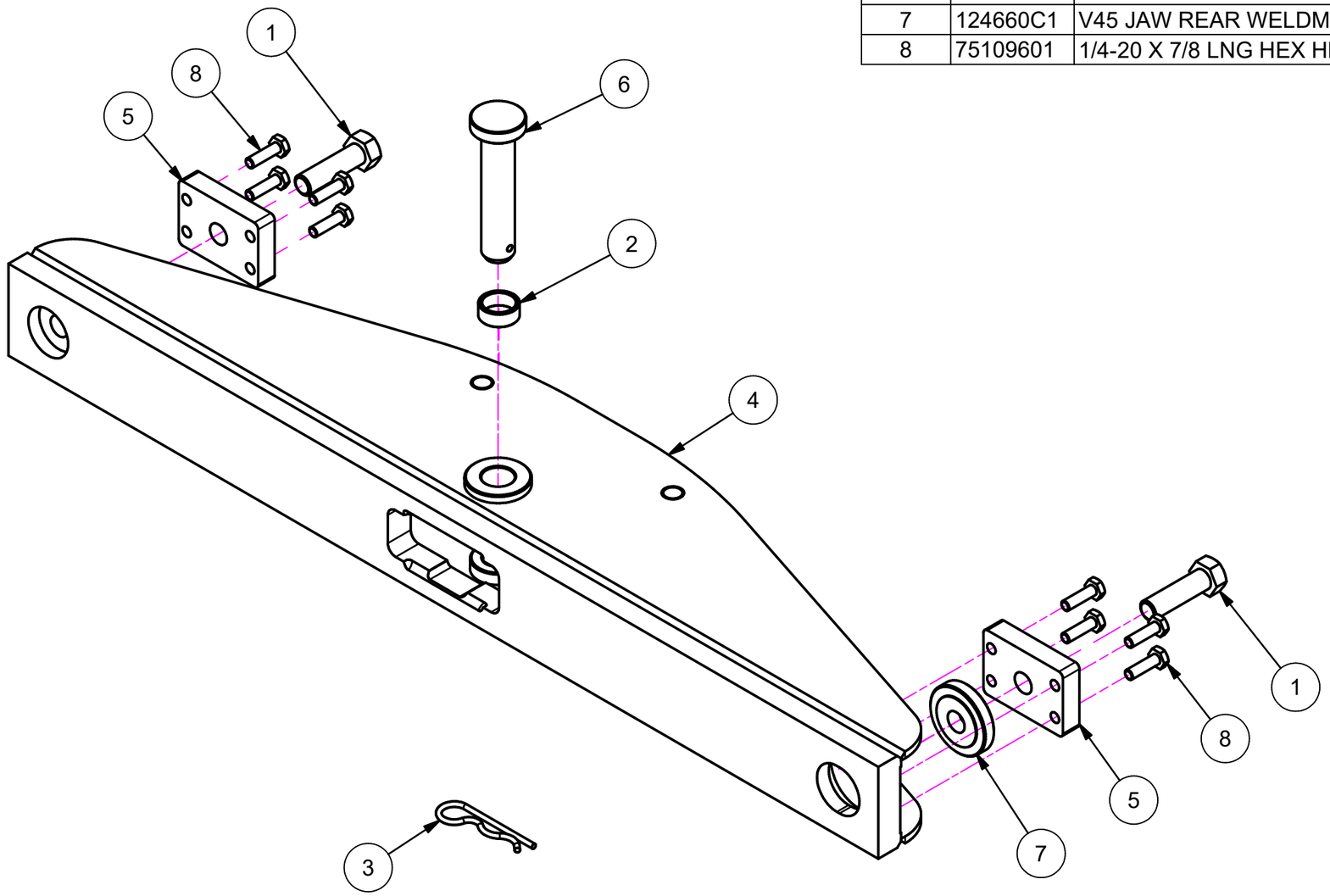
TITLE:

V45 HEAD ASSEMBLY

DWG NO.: MA030-0006 F

SCALE: 0.1 : 1 DATE: SHEET 7 OF 7

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	9/17/2015	C. MROZ
B	REMOVED 114083C1, 121672C1, 121682C1, 121686C1, AND 121687C1; QTY 2 FOR 121685C1 WAS QTY 1;	07/16/2016	TW
C	REVISED VAULT ASSEMBLY	08/11/2016	TW
D	DELETED: 108917C1	3/21/2024	PV



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	109031C1	1/2-13 X 1-3/4 LNG HEX HEAD CAP SCREW, S/S	2
2	112153C1	CYLINDER PIN SPACER	1
3	112163C1	HITCH PIN CLIP (HAIRPIN) 5/8-7/8 INCH SHAFT DIA RANGE, .125 WIRE DIA., 2-1/2 INCH OVERALL LENGTH 18-8 STAINLESS STEEL	1
4	121663C1	REAR CROSS SEAL BEAM, V45, EARLY STYLE	1
5	121685C1	REAR CROSS SEAL BEAM RETAINER, RIGID, V45	2
6	121827C1	CYLINDER PIN - REAR CROSS SEAL BEAM, V45, SHORT STYLE	1
7	124660C1	V45 JAW REAR WELDMENT FLOAT SPACER	1
8	75109601	1/4-20 X 7/8 LNG HEX HEAD CAP SCREW, S/S	8

CV•TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

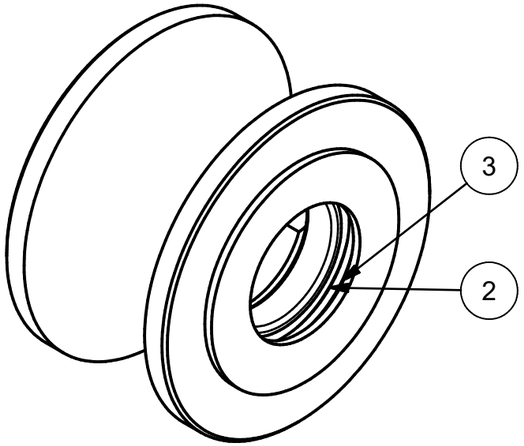
DRAWN BY: C. MROZ

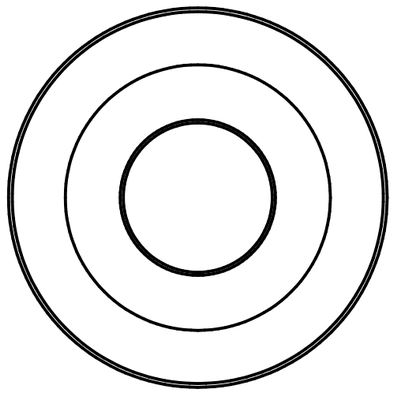
TITLE:

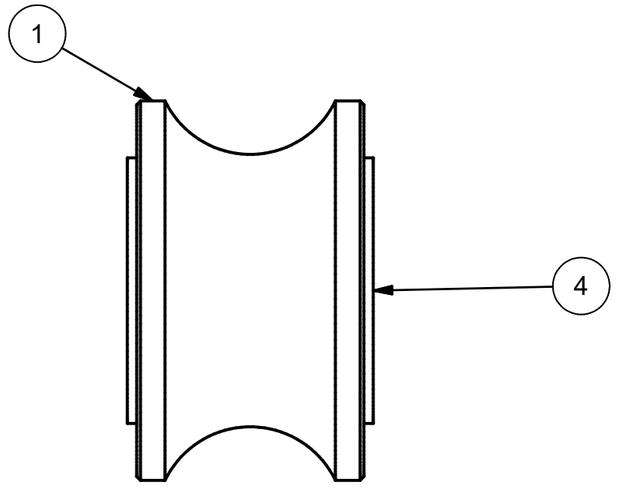
REAR CROSS SEAL ASSEMBLY, V45

DWG NO.: MA043-0001 D

SCALE: N/A DATE: 9/17/2015 SHEET 1 OF 1







PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	112627C1	BLACK WHEEL, CROSS SEAL SUPPORT ROLLER	1
2	112201C1	25 MM BALL BEARING 25 MM ID, 37 MM OD, 7 MM WIDE, STAINLESS STEEL TWO SEALS WITH GREASE	2
3	112203C1	USE 112203C1 - N1300-143AS, 1-7/16 INCH INTERNAL RETAINING RING STAINLESS STEEL	2
4	112072C1	1 INCH DELRIN (ACETAL) FLAT WASHER 1.025 ID X 1.750 OD X .062 THICK	2

REVISIONS

REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		N.B

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. LIAKOPOULOS

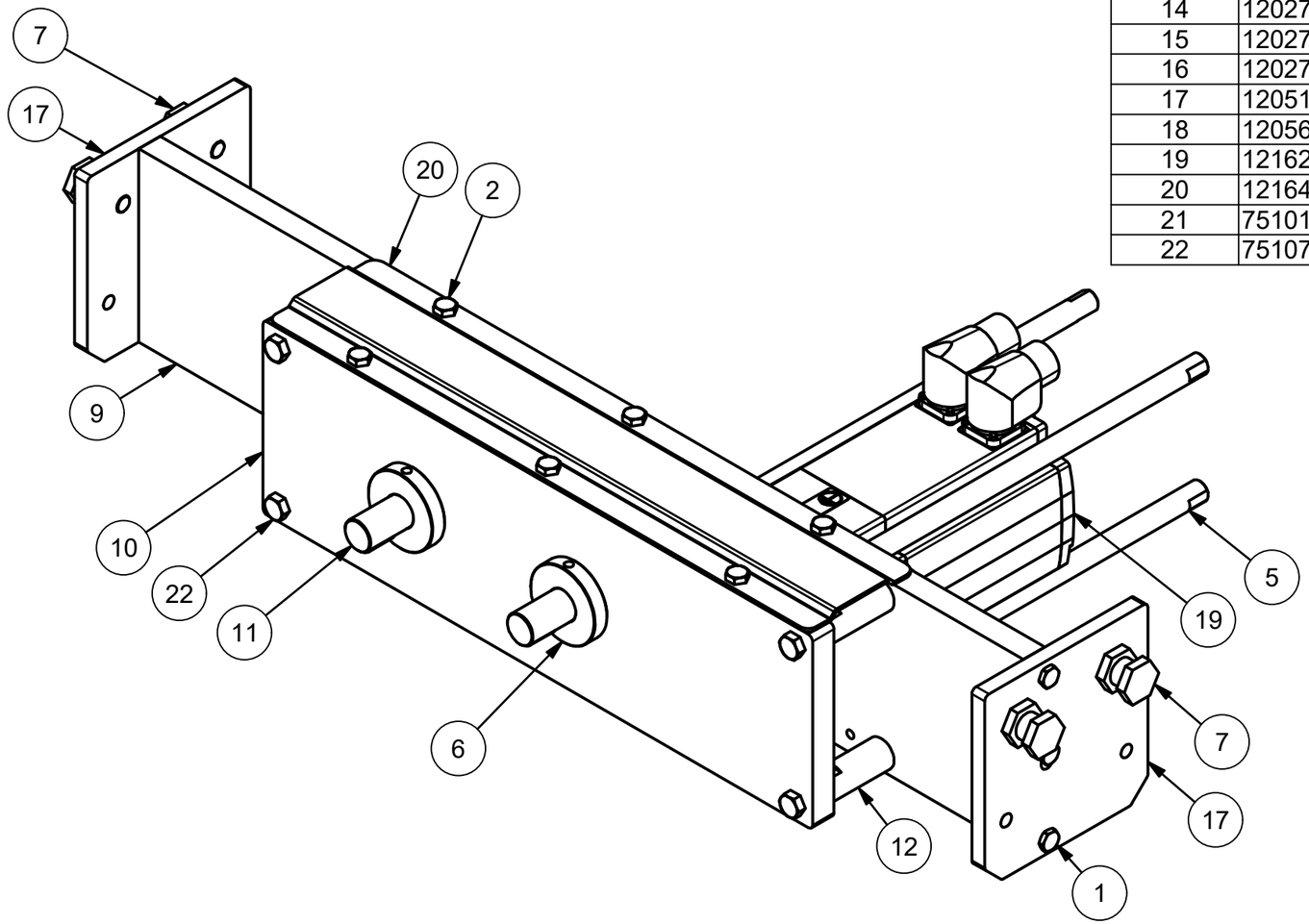
TITLE:

V45 JAW ROLLER ASSEMBLY

DWG NO.: MA036-0005

SCALE: N/A | DATE: 12/17/2015 | SHEET 1 OF 1

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	6/22/2011	M. FIALKO
B	DELETED: 120581C1; ADDED SOME BALLONS FOR CLARITY	3/20/2024	PV



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	108944C1	5/16-18 X 7/8 HEX HEAD CAP SCREW S/S	6
2	110519C1	1/4-20 X 3/8 LNG HEX HEAD CAP SCREW, S/S	6
3	110629C1	BALL BEARING .7500 ID 1.625 OD .4375 WIDE STAINLESS STEEL TWO SEALS WITH GREASE	4
4	112334C1	1/4-20 X 5/8 SOCKET SET SCREW CUP POINT, S/S	2
5	114802C1	STUD COVER SERVO MOTOR	4
6	114891C1	BEARING COVER/COLLAR, SHIELD	2
7	120205C1	PIN, GUIDE GEAR BOX	4
8	120235C1	GEAR SPUR METRIC, 60 TH, M 2,SS/ACETAL	2
9	120236C1	PLATE MOUNTING, DRIVE	1
10	120237C1	PLATE HOUSING, DRIVE	1
11	120238C1	SHAFT, GEAR DRIVE	2
12	120239C1	STAND OFF, DRIVE ASSY	4
13	120240C1	KEY 1/4 X 1/4 X 1 3/8 SS	2
14	120275C1	SPACER, GEAR	2
15	120277C1	GEAR SPUR METRIC, 21 TH, M 2,SS	1
16	120278C1	RET. RING MED DUTY 1.625 OD- SS	2
17	120519C1	PLATE DRIVE SUPPORT	2
18	120567C1	KEY SS STEEL SQ. 3/16 7/8 LG	2
19	121628C1	MOTOR, 100MM PI54 KEY ENCODER, SINGLE 16 ANG	1
20	121642C1	V45 VACUUM DRIVE COVER (V45)	1
21	75101901	1/4-20 X 3/8 SOCKET SET SCREW CUP POINT, S/S	1
22	75107701	5/16-18 X 1 LNG HEX HEAD CAP SCREW, S/S	8

SHEET -1-

CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

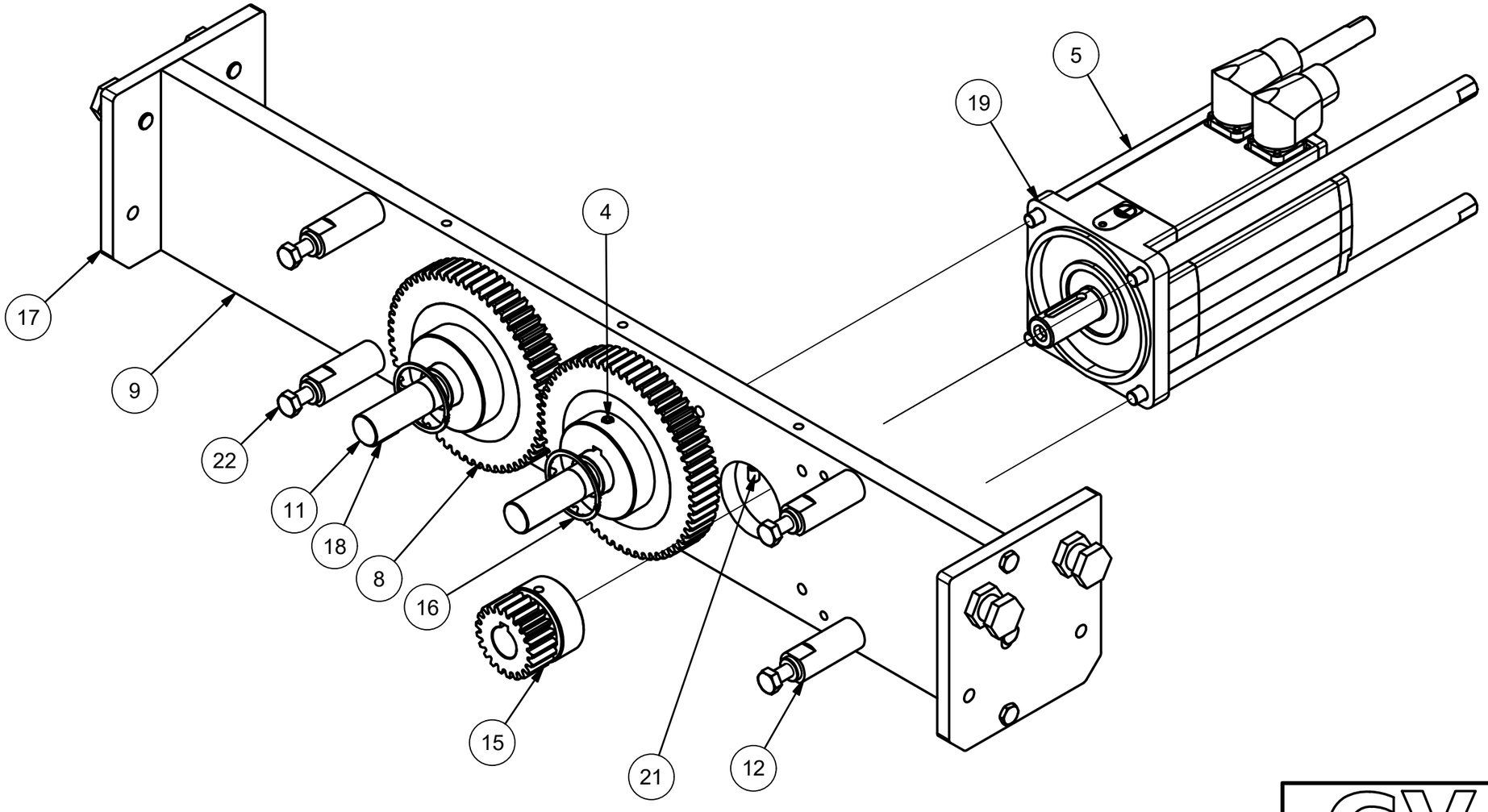
APPROVED MFG: APPROVED ENG: M. FIALKO

DRAWN BY: M. FIALKO

TITLE: VACUUM DRIVE ASSY.

DWG NO.: MA034-0006 B

SCALE: N/A | DATE: 6/22/2011 | SHEET 1 OF 3



SHEET -2-

CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE- STANDARD S.A.E.

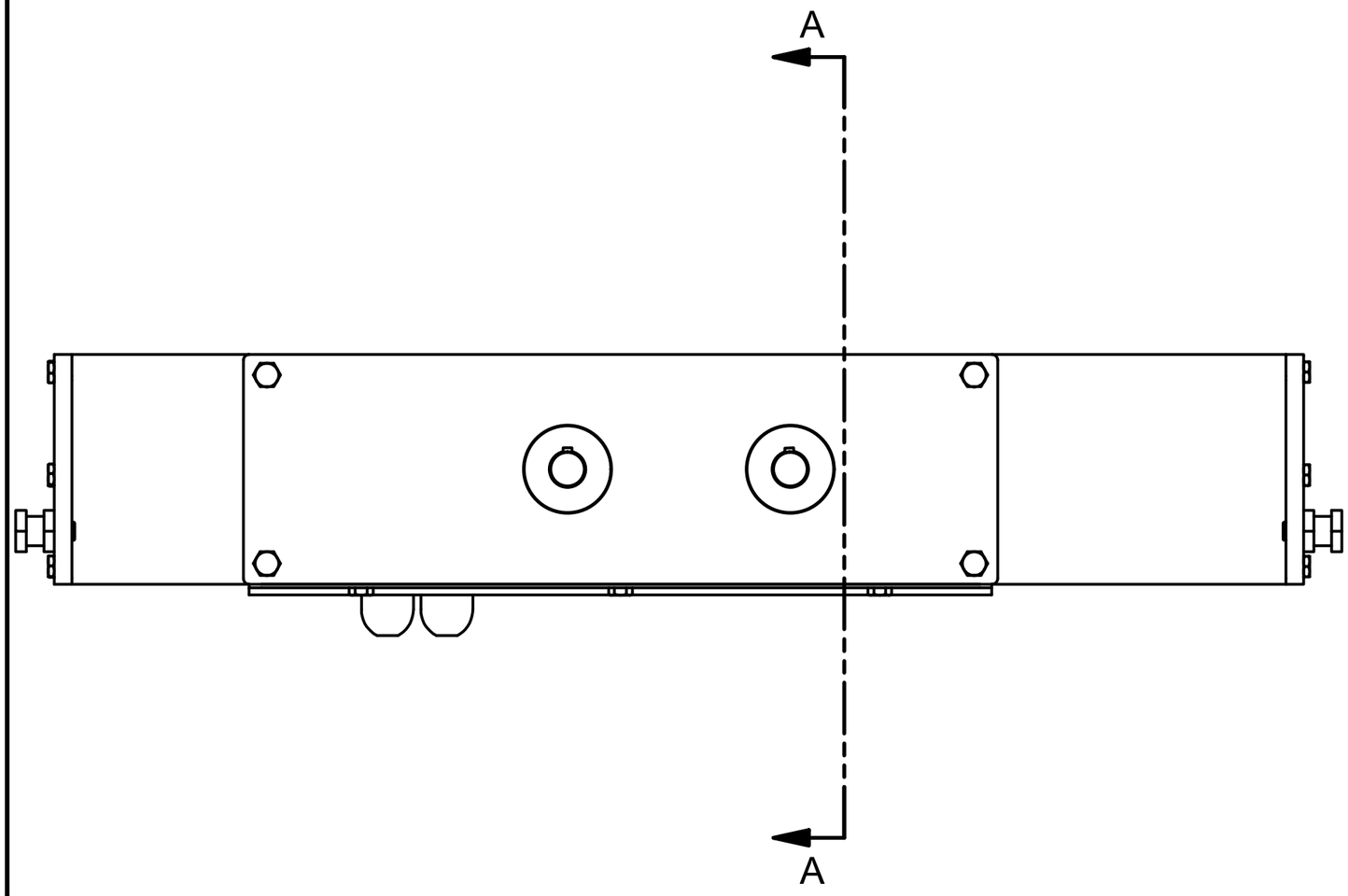
APPROVED MFG: APPROVED ENG: M. FIALKO

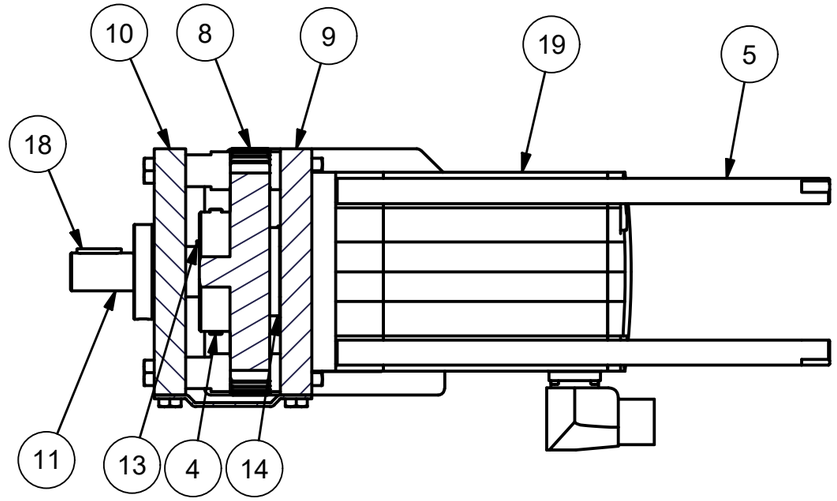
DRAWN BY: M. FIALKO

TITLE: VACUUM DRIVE ASSY.

DWG NO.: MA034-0006 B

SCALE: N/A | DATE: 6/22/2011 | SHEET 2 OF 3





SECTION A-A
SCALE 1:3

SHEET -3-

CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE= STANDARD S.A.E.

APPROVED MFG: APPROVED ENG: M. FIALKO

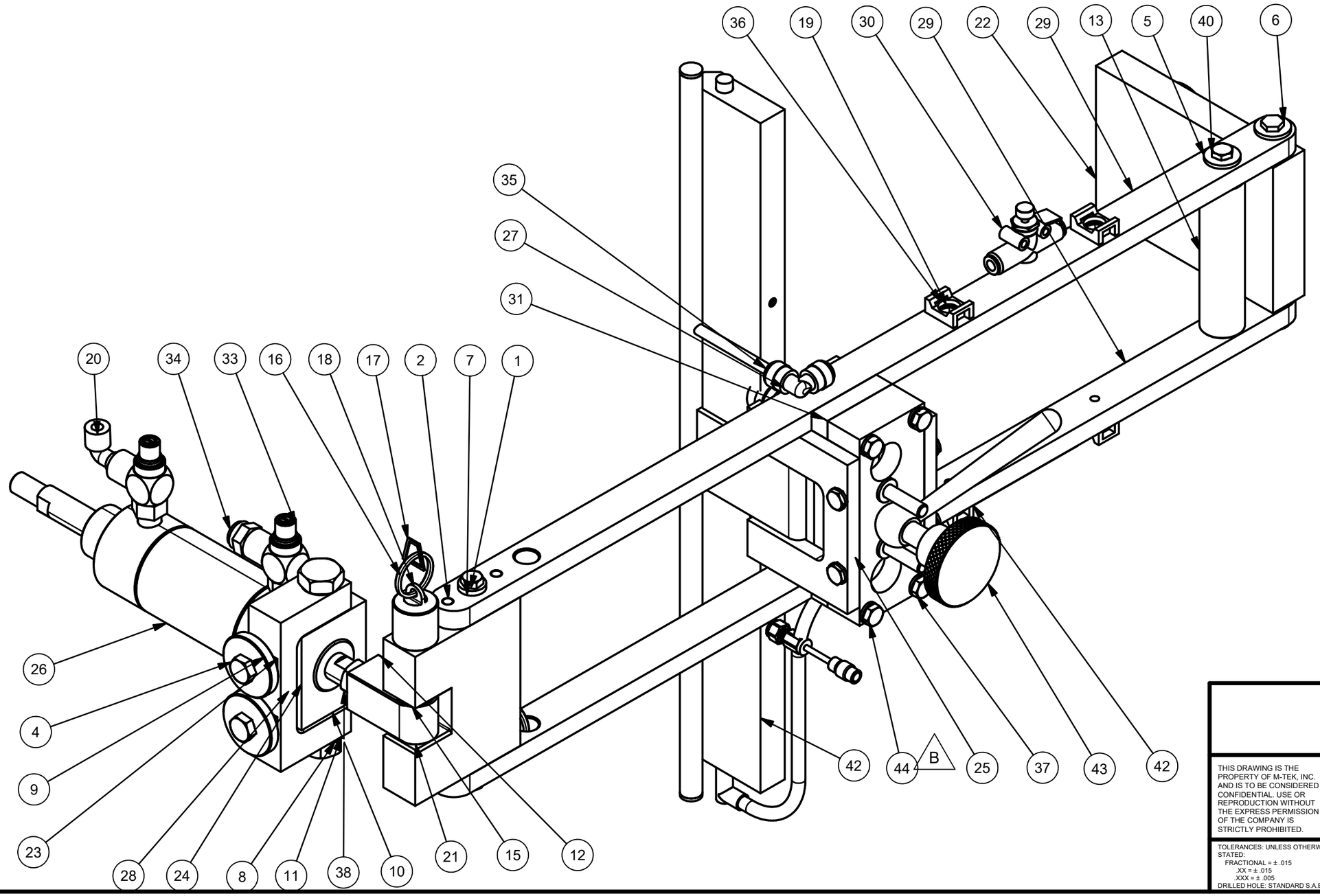
DRAWN BY: M. FIALKO

TITLE: VACUUM DRIVE ASSY.

DWG NO.: MA034-0006 B

SCALE: N/A | DATE: 6/22/2011 | SHEET 3 OF 3

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	COPIED FROM MA040-0003	04/19/2018	CI
B	DELETED: 4X 108702C1, ADDED: 4X 75115901	1/24/2023	PV



THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

M-TEK INC.

APPROVED MFG:

APPROVED ENG: A. DEJKOVIC

DRAWN BY: A. DEJKOVIC

TITLE:

V45 FIN SEAL ASSEMBLY

DWG NO.: MA040-0008

SCALE:

DATE: 8/22/2011

SHEET 1 OF 2

PARTS LIST

ITEM	QTY	PART NO.	DESCRIPTION
1	2	108240C1	1/4-20 UNC x 1 1/4 LG. - HHCS
2	4	108679C1	1/4 DIA. x 1" LG. DOWEL PIN
4	2	108733C1	3/8-16 UNC x 3/4 LG. - HHCS
5	4	110290C1	1/4 SPECIAL FLAT WASHER, 18-8 STAINLESS STEEL, .810 O.D., .266 I.D. MINIMUM, .089 THICK
6	2	110519C1	1/4-20 UNC X 3/8 LONG HEX HEAD CAP SCREW, STAINLESS STEEL
7	2	110554C1	1/4 FLAT WASHER (.281 I.D. x .625 O.D. x .125 THK.)
8	2	111120C1	98017A209, 1/2 MILITARY WASHER AN960-C816L, .515 ID X .875 OD X .031 THICK STAINLESS STEEL
9	5	112050C1	.391 ID SHAFT LOAD DISK
10	2	112057C1	LFI-0607-06, IGUS IGLIDE L-280 FLANGE BUSHING .375 ID X .375 LONG
11	2	112162C1	CYLINDER TRUNION BOLT
12	1	112310C1	FIN SEAL CYLINDER CLEVIS
13	1	112312C1	FIN SEAL SUPPORT ARM SPACER
14	1	112313C1	FIN SEAL HINGE PIN
15	1	112314C1	FIN SEAL TRUNION BLOCK
16	2	112317C1	316-STAINLESS STEEL SPLIT RING 1.070 IN OD, .930 IN ID, .14 IN THICK
17	1	112318C1	3610T32, STAINLESS STEEL SASH CHAIN TYPE 304 TRADE SIZE 35
18	1	112325C1	FIN SEAL CLEVIS PIN
19	4	112391C1	1/4-20 UNC X 1/4 LONG SLOTTED PAN HEAD MACHINE SCREW STAINLESS STEEL
21	2	112752C1	FIN SEAL CYLINDER CLEVIS SLEEVE BEARING / BUSHING
22	1	112909C1	HINGE BLOCK - FIN SEAL
23	1	112910C1	CYLINDER TRUNION BLOCK
24	1	112911C1	CYLINDER MOUNT BLOCK
25	2	112914C1	5/8 X 2 SHOULDER BOLT WITH 1/2-13 THREADS
26	1	112915C1	FIN SEAL CYLINDER, PC-311.5-DXDE, CYLINDER, 2 BR, 1.5 STR, D-ACT, D-END, SS
27	2	112916C1	FIN SEAL SPRING, 72483S 2 IN FL .98 OD .162 WD 248 LB/IN, SS
28	1	113065C1	18-8 STAINLESS STEEL SHIM .020 IN THICK, 1-3/8 IN I.D., 1-7/8 IN O.D., PACKS OF 10
29	2	120273C1	FIN SEALER SUPPORT
31	2	122024C1	FIN SEAL SPACER BLOCK
32	2	124227C1	V45 POLY JAW FIN SPRING SPACER
34	1	74202801	1/4 OD TUBE x 1/4 NPT MALE CONNECTOR, PLASTIC
36	4	75003001	CABLE TIE MOUNTING BASE, 1/4 SCREW SIZE, PANDUIT #TM3S25-C
37	4	75102601	1/4 MEDIUM SPLIT LOCK WASHER STAINLESS STEEL
38	1	75105101	1/2-20 HEX JAM NUT S/S
39	3	75107901	3/8-16 UNC x 1 LG. - HHCS
40	2	75109501	1/4-20 UNC x 1/2 LG. - HHCS
41	2	79101201	FLANGED BEARING SLEEVE, 1/2ID 19/32 OD 1/2 LONG (LINK & V32)
42	1	MA041-0002	VERTICAL SEAL BAR
43	1	MA041-0003	ADJUSTING PLATE ASSY. V60 FIN
20	1	112665C1	NORGREN 1/4 TUBE X 1/4 NPT FIXED ELBOW, PLASTIC
33	2	73501101	1/4 NPT FLOW CONTROL VALVE
30	1	120645C1	FLOW CONTROL ONE TOUCH IN LINE VALVE ,1/4" TUBE
35	1	74203701	FITTING 1/4 X 1/4
44	4	75115901	1/4-20 X 2 LNG HEX HEAD CAP SCREW, S/S

B

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

APPROVED MFG: APPROVED ENG:

DRAWN BY:

TITLE:

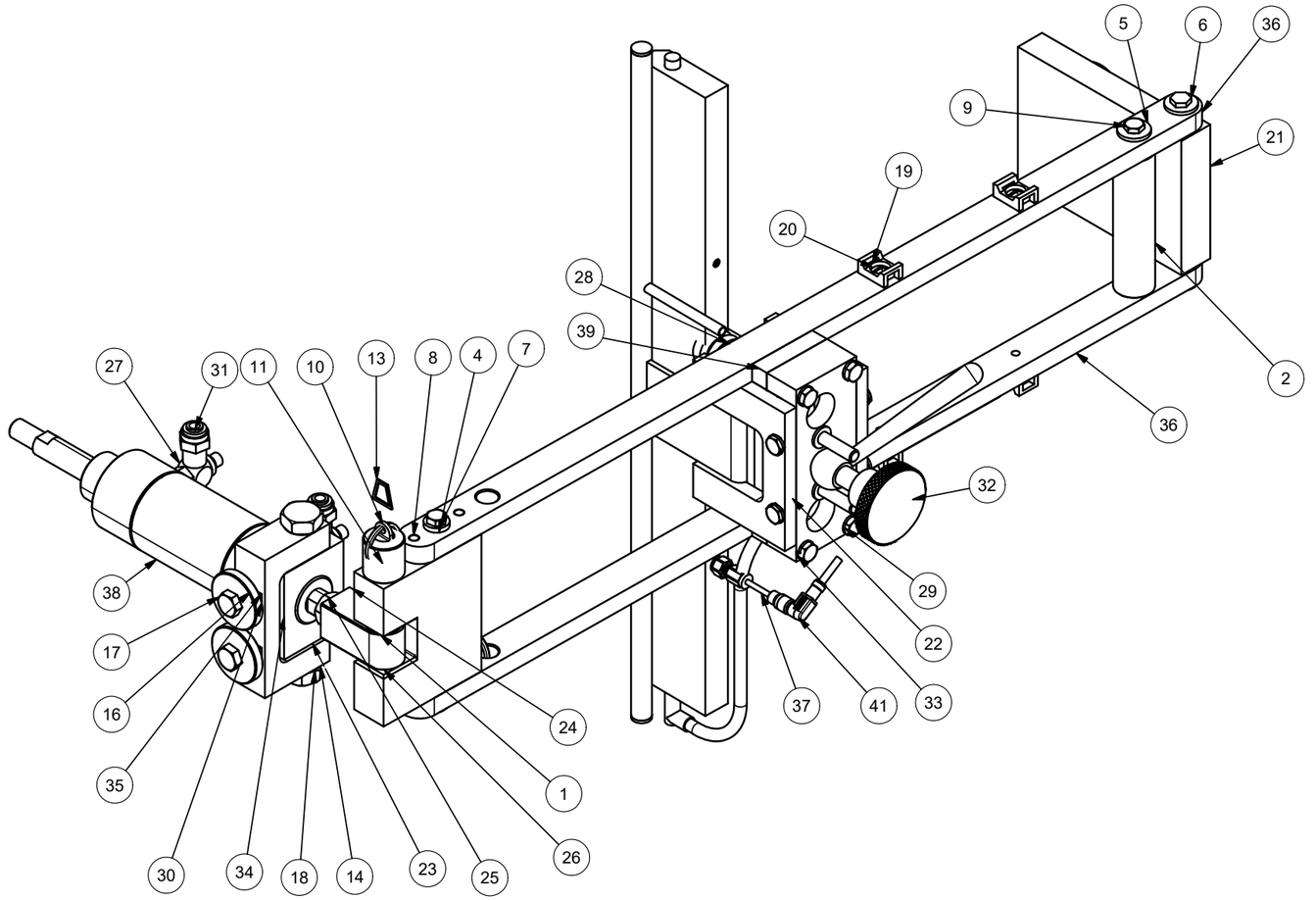
TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
DRILLED HOLE: STANDARD S.A.E.

DWG NO.:

SCALE: DATE: SHEET 2 OF 2

PARTS LIST			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	112314C1	FIN SEAL TRUNION BLOCK
2	1	112312C1	FIN SEAL SUPPORT ARM SPACER
3	1	112313C1	FIN SEAL HINGE PIN
4	2	110554C1	1/4 FLAT WASHER (.281 I.D. x .625 O.D. x .125 THK.)
5	4	110290C1	1/4 SPECIAL FLAT WASHER, 18-8 STAINLESS STEEL, .810 O.D., .266 I.D. MINIMUM, .089 THICK
6	2	110519C1	1/4-20 UNC X 3/8 LONG HEX HEAD CAP SCREW, STAINLESS STEEL
7	2	108240C1	1/4-20 UNC x 1 1/4 LG. - HHCS
8	4	108679C1	1/4 DIA. x 1" LG. DOWEL PIN
9	2	75109501	1/4-20 UNC x 1/2 LG. - HHCS
10	1	112325C1	FIN SEAL CLEVIS PIN
11	2	112317C1	316-STAINLESS STEEL SPLIT RING 1.070 IN OD, .930 IN ID, .14 IN THICK
12	2	79101201	FLANGED BEARING SLEEVE, 1/2ID 19/32 OD 1/2 LONG (LINK & V32)
13	1	112318C1	3610T32, STAINLESS STEEL SASH CHAIN TYPE 304 TRADE SIZE 35, 175 LB LOAD, ONE-FOOT LONG PIECES, PRICED PER FOOT
14	2	112162C1	CYLINDER TRUNION BOLT
15	3	75107901	3/8-16 UNC x 1 LG. - HHCS
16	5	112050C1	.391 ID SHAFT LOAD DISK
17	2	108733C1	3/8-16 UNC x 3/4 LG. - HHCS
18	2	111120C1	98017A209, 1/2 MILITARY WASHER AN960-C816L, .515 ID X .875 OD X .031 THICK STAINLESS STEEL
19	4	75003001	CABLE TIE MOUNTING BASE, 1/4 SCREW SIZE, PANDUIT #TM3S25-C
20	4	112391C1	1/4-20 UNC X 1/4 LONG SLOTTED PAN HEAD MACHINE SCREW STAINLESS STEEL
21	1	112909C1	HINGE BLOCK - FIN SEAL
22	2	112914C1	5/8 X 2 SHOULDER BOLT WITH 1/2-13 THREADS
23	2	112057C1	LFI-0607-06, IGUS IGLIDE L-280 FLANGE BUSHING .375 ID X .375 LONG
24	1	112310C1	FIN SEAL CYLINDER CLEVIS
25	1	75105101	1/2-20 HEX JAM NUT S/S
26	2	112752C1	FIN SEAL CYLINDER CLEVIS SLEEVE BEARING / BUSHING
27	2	73501701	1/8 N.P.T. FLOW CONTROL
28	2	112916C1	FIN SEAL SPRING, 72483S 2 IN FL .98 OD .162 WD 248 LB/IN, SS
29	4	75102601	1/4 MEDIUM SPLIT LOCK WASHER STAINLESS STEEL
30	1	113065C1	18-8 STAINLESS STEEL SHIM .020 IN THICK, 1-3/8 IN I.D., 1-7/8 IN O.D., PACKS OF 10
31	2	74202801	1/4 OD TUBE x 1/4 NPT MALE CONNECTOR, PLASTIC
32	1	MA041-0003	ADJUSTING PLATE ASSY. V60 FIN
33	4	108702C1	1/4-20 UNC x 1 1/2 LG. - HHCS
34	1	112911C1	CYLINDER MOUNT BLOCK
35	1	112910C1	CYLINDER TRUNION BLOCK
36	2	120273C1	FIN SEALER SUPPORT
37	1	MA041-0002	VERTICAL SEAL BAR
38	1	112915C1	FIN SEAL CYLINDER, PC-311.5-DXDE, CYLINDER, 2 BR, 1.5 STR, D-ACT, D-END, SS
39	2	122024C1	FIN SEAL SPACER BLOCK
40	2	124227C1	V45 POLY JAW FIN SPRING SPACER
41	1	120501C1	SCHNEIDER I/O CABLE 5M 90 DEG 3PIN M3 IP67

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	DRAWING CREATED	8/22/2011	CM
B	ELEVEN OBSOLETE PARTS HAVE BEEN REPLACED WITH LATEST VERSION	1/24/2025	SP



CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

APPROVED MFG: APPROVED ENG: A.D.

DRAWN BY: A.D.

TITLE: V32 RETROFIT FIN SEAL

TOLERANCES UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
XX = ± .015
XXX = ± .005
XXXX = ± .0005
DRILLED HOLE STANDARD S.A.E.

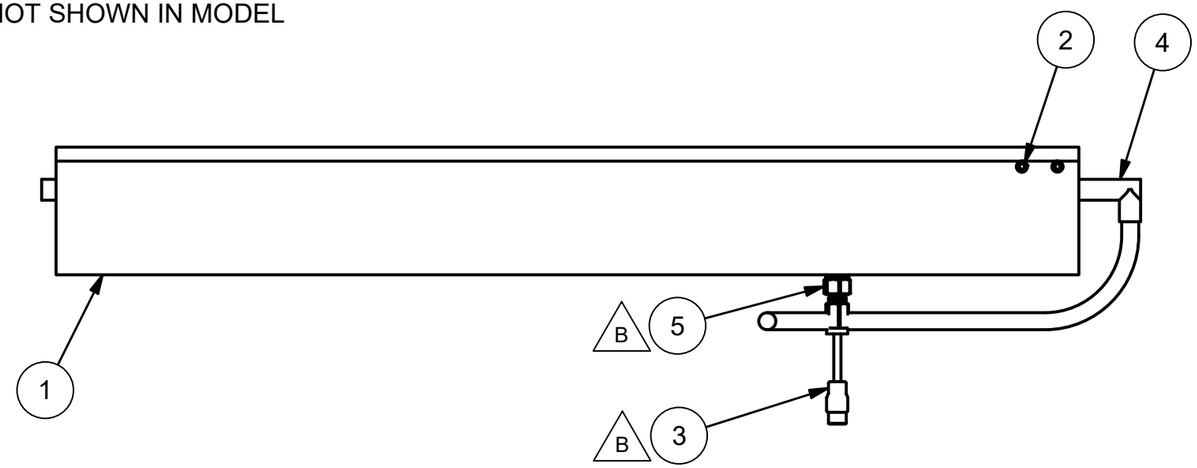
DWG NO. MA040-0003 B

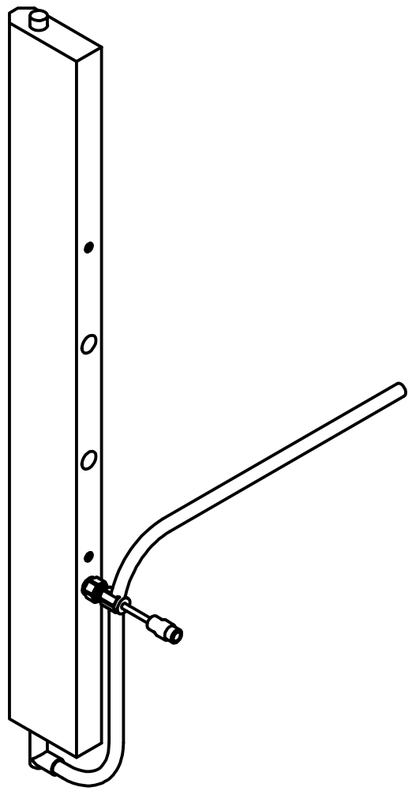
SCALE: N/A DATE: 8/22/2011 SHEET 1 OF 1

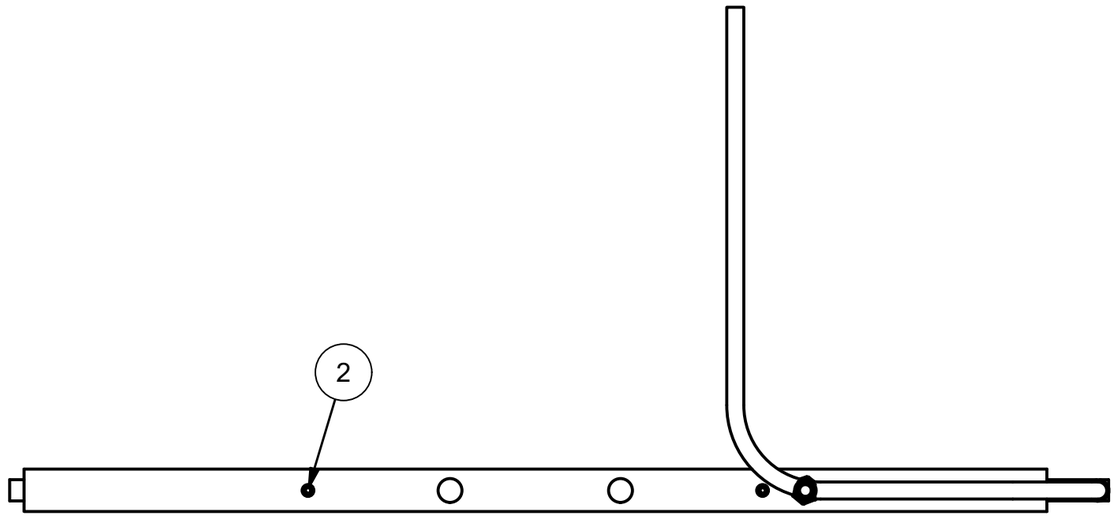
PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	112928A1	18" FIN SEAL BAR - GUN DRILLED V32 VERTICAL SEAL	1
2	112891C1	10-32 X 3/16 SET SCREW 18-8 STAINLESS STEEL WITH BRASS FLAT POINT	4
3	120296C1	RTD 3"LONG, M8 CONNECTOR	1
4	112726C2	18.5" HEATER CARTRIDEG w/HEAT SHRINK	1
5	120297C1	COUPLING 1/8"	1
6	120501C1	SCHNEIDER I/O CABLE 5M	1

NOTE: ITEM #6 NOT SHOWN IN MODEL

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	8/22/2011	adejkovic
B	ADDED: 120297C1, MOVED LOCATION OF 120296C1	3/20/2024	PV
C	ADDED BOM ITEM #6 NOTE	1/27/2025	GW
D	UPDATE CABLE FROM 120616c1 TO 120501C1 PER ECN # 405	6/17/2026	CI







CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG: A. DEJKOVIC

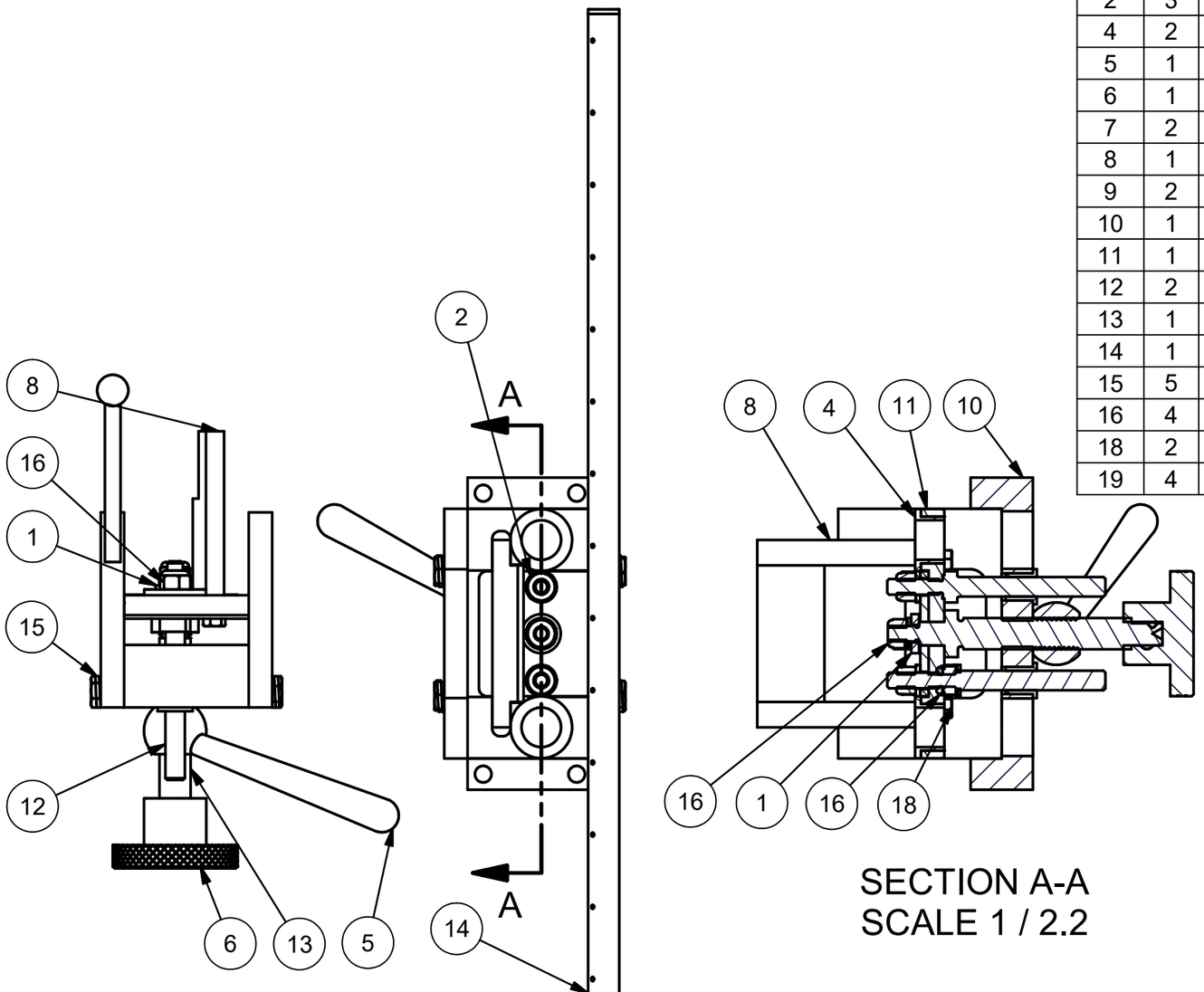
DRAWN BY: T. LIAKOPOULOS

TITLE:

VERTICAL SEAL BAR

DWG NO.: MA041-0002 D

SCALE: N/A | DATE: 8/22/2011 | SHEET 1 OF 1



SECTION A-A
SCALE 1 / 2.2

PARTS LIST			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	110554C1	1/4 FLAT WASHER (.281 I.D. x .625 O.D. x .125 THK.)
2	3	110824C1	1/4 FLAT WASHER (ARP .265 I.D. x .500 O.D. x .063 THK.)
4	2	112918C1A	BUSHING CUSTOM FIN SEAL BAR MOUNT, BRONZE
5	1	114008C1	4-1/32" HANDLE, 1/2"-13 TH, SS
6	1	114009C1	2" KNOB, KNURLED, 3/8" HOLE
7	2	114010C1	SLEEVE BEARING, FLANGE, ID 5/16", OD 7/16", FLANGE D 9/16"
8	1	114012C1	GUIDE BLOCK, ADJUSTABLE FIN SEAL BAR
9	2	114013C1	SIDE GUIDE BLOCK, ADJUSTABLE FIN SEAL BAR
10	1	114014C1	GUIDE BLOCK
11	1	114015C1	MOUNT BLOCK
12	2	114016C1	5/16" GUIDE PIN
13	1	114017C1	1/2"-13 THREADED ROD, ADJUSTABLE FIN SEAL
14	1	120523C1	FIN SEAL COOLING BAR WELDMENT 19.5
15	5	75102601	1/4 MEDIUM SPLIT LOCK WASHER STAINLESS STEEL
16	4	75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT
18	2	108671C1	10-24 UNC x 1/2 LG. - HHMS
19	4	75106401	1/4-20 X 3/4 LNG HEX HEAD CAP SCREW, S/S

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

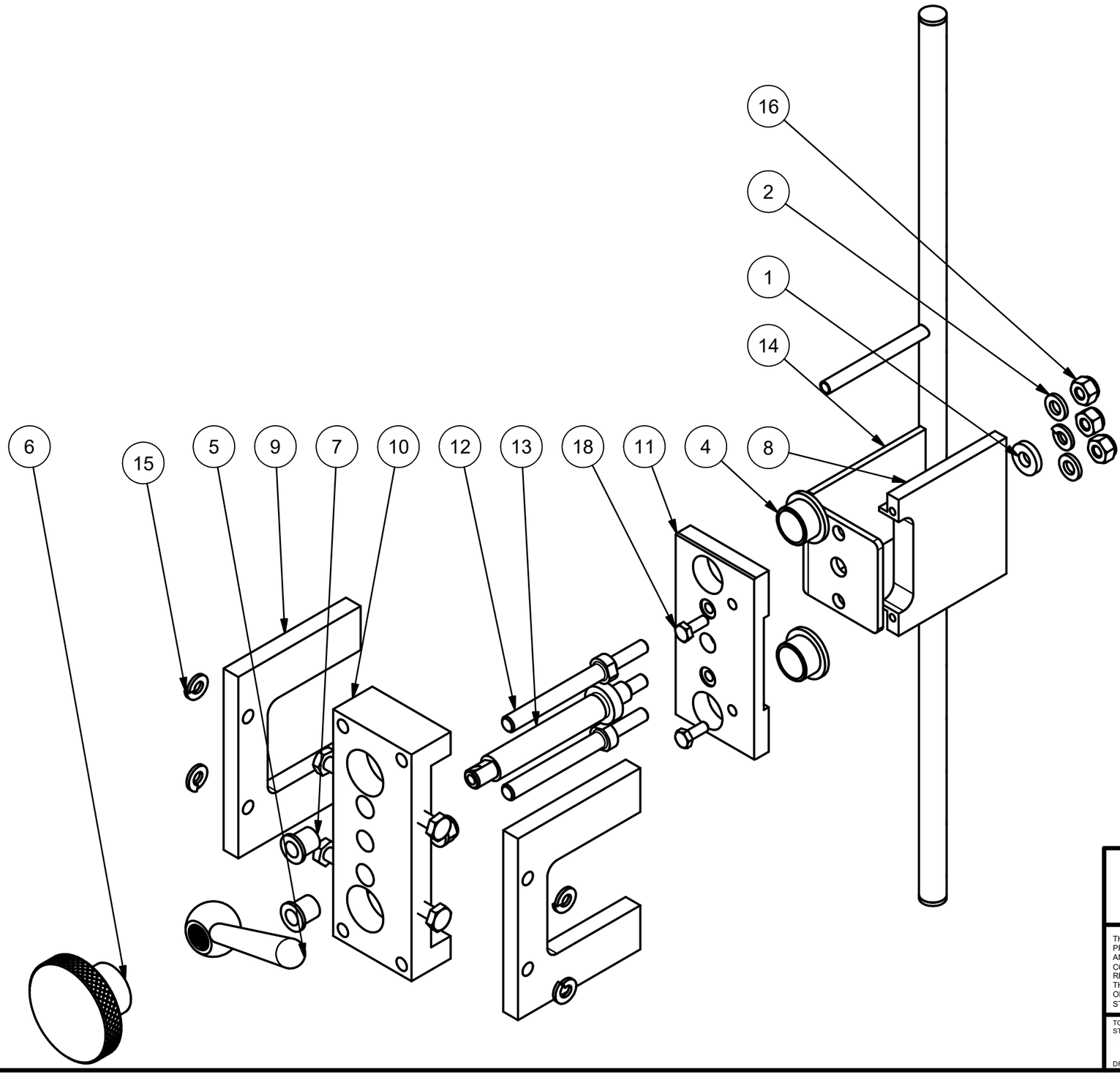
APPROVED MFG: APPROVED ENG: A. DEJKOVIC

DRAWN BY: A. DEJKOVIC

TITLE: ADJUSTING PLATE ASSY. V60 FIN

DWG NO.: MA041-0003

SCALE: 1 : 2 | DATE: 8/22/2011 | SHEET 1 OF 2



M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

APPROVED MFG:

APPROVED ENG: A. DEJKOVIC

DRAWN BY: A. DEJKOVIC

TITLE:

ADJUSTING PLATE ASSY. V60 FIN

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

DWG NO.: MA041-0003

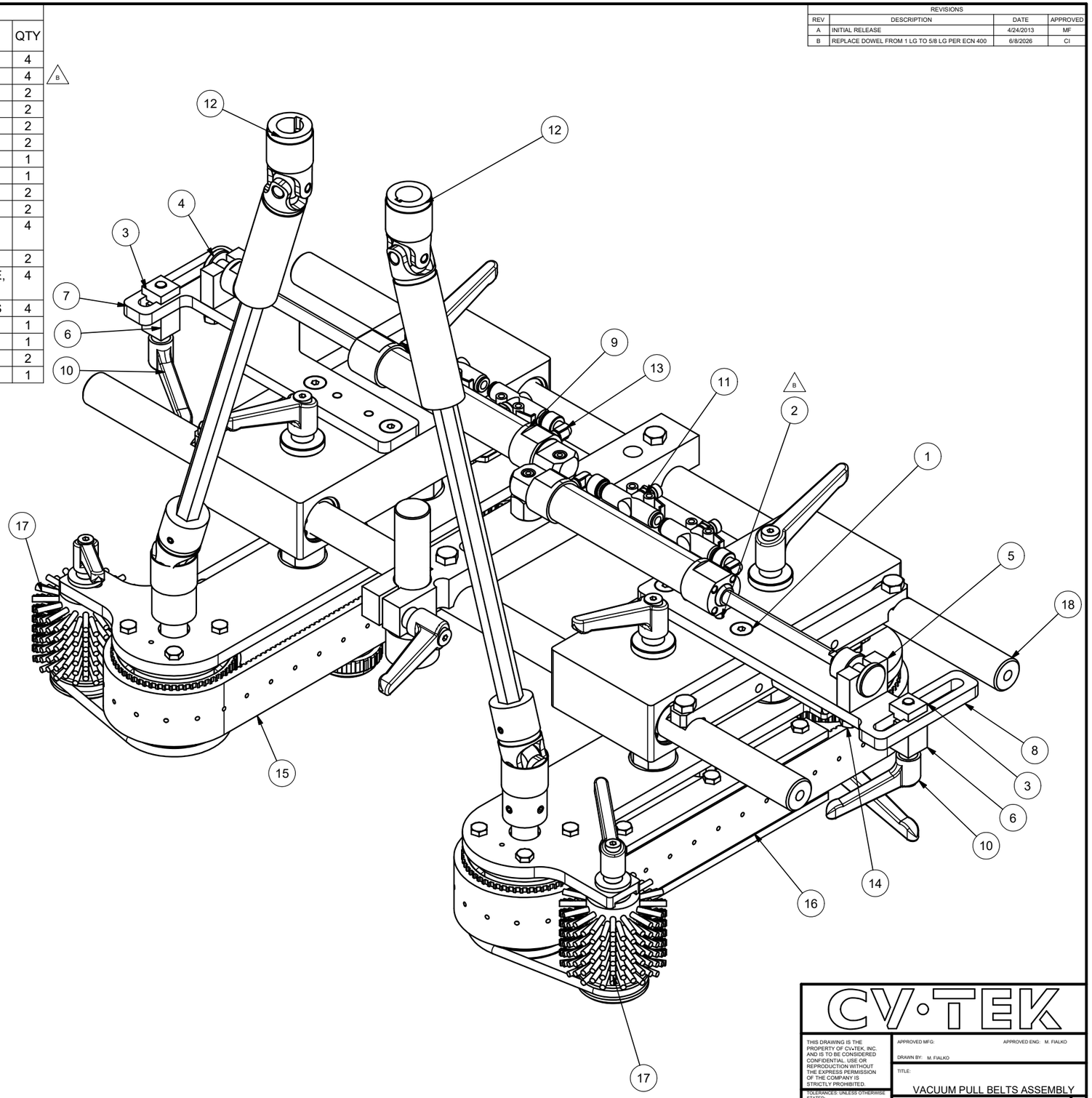
SCALE: 1 : 2

DATE: 8/22/2011

SHEET 2 OF 2

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	108689C1	5/16-18 X 1-1/4 FLAT HEAD, SOCKET, S/S	4
2	108767C1	Ø1/4 X 5/8 DOWEL PIN, S/S	4
3	114390C1	NUT BELT STOP	2
4	114391C1	JOINT FLOATING	2
5	114392C1	PLATE JOINT FLOATING	2
6	114393C1	STOP BELT ADJUSTMANT	2
7	114394C1	BRACKET CYLINDER LH	1
8	114395C1	BRACKET CYLINDER RH	1
9	114396C1	CYLINDER 25MMBX100MMSTR	2
10	120202C1	HANDLE 5/16-18 X 1.57"	2
11	120645C1	FLOW CONTROL ONE TOUCH IN LINE VALVE ,1/4" TUBE	4
12	121045C1	HALF SHAFT V60 DRIVE	2
13	74204101	1/4 O.D. TUBE X 1/8 NPT, FIXED ELBOW MALE, PLASTIC	4
14	75107601	5/16-18 X 3/4 LNG HEX HEAD CAP SCREW, S/S	4
15	MA051-0009	VACUUM PULL BELT RH ASSEMBLY	1
16	MA051-0010	VACUUM PULL BELT LH ASSEMBLY	1
17	MA051-0011	BRUSH PULLEY RH ASSEMBLY	2
18	MA054-0004	SUPPORT VACUUM BELT PULL	1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	4/24/2013	MF
B	REPLACE DOWEL FROM 1 LG TO 5/8 LG PER ECN 400	6/8/2026	CI



SHEET 1: BOM & ISOMETRIC VIEW
SHEET 2: STANDARD VIEWS

CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRAFT ANGLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG: M. FIALKO

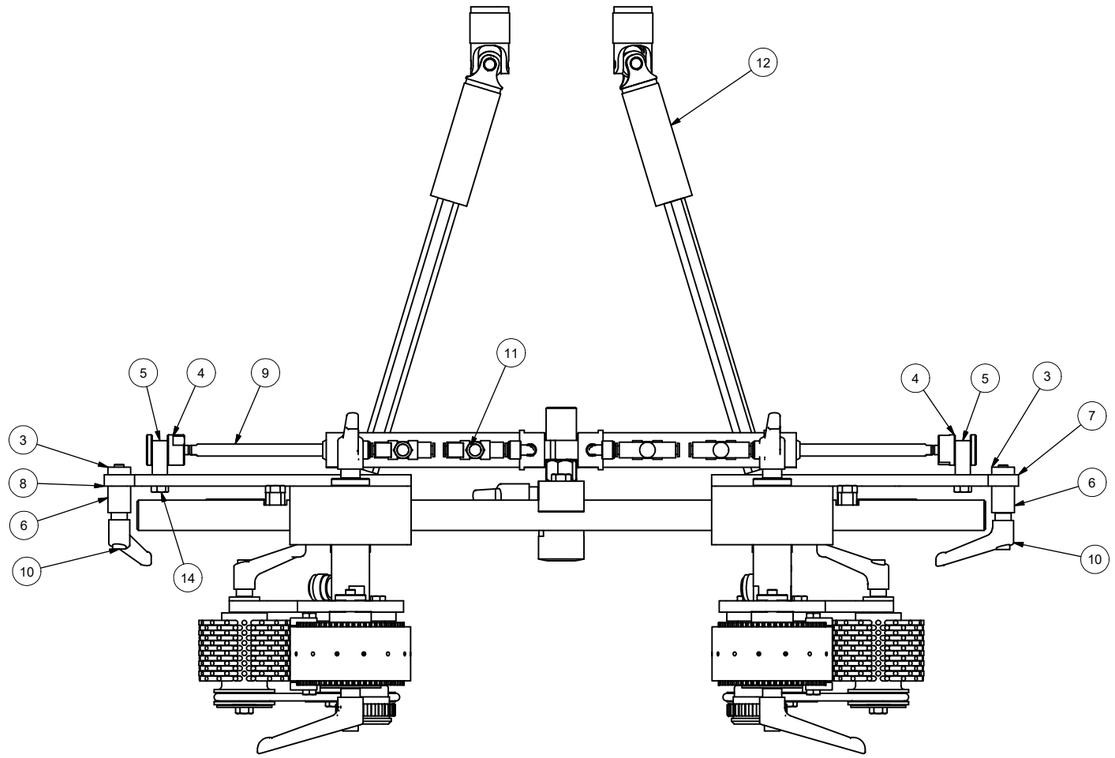
DRAWN BY: M. FIALKO

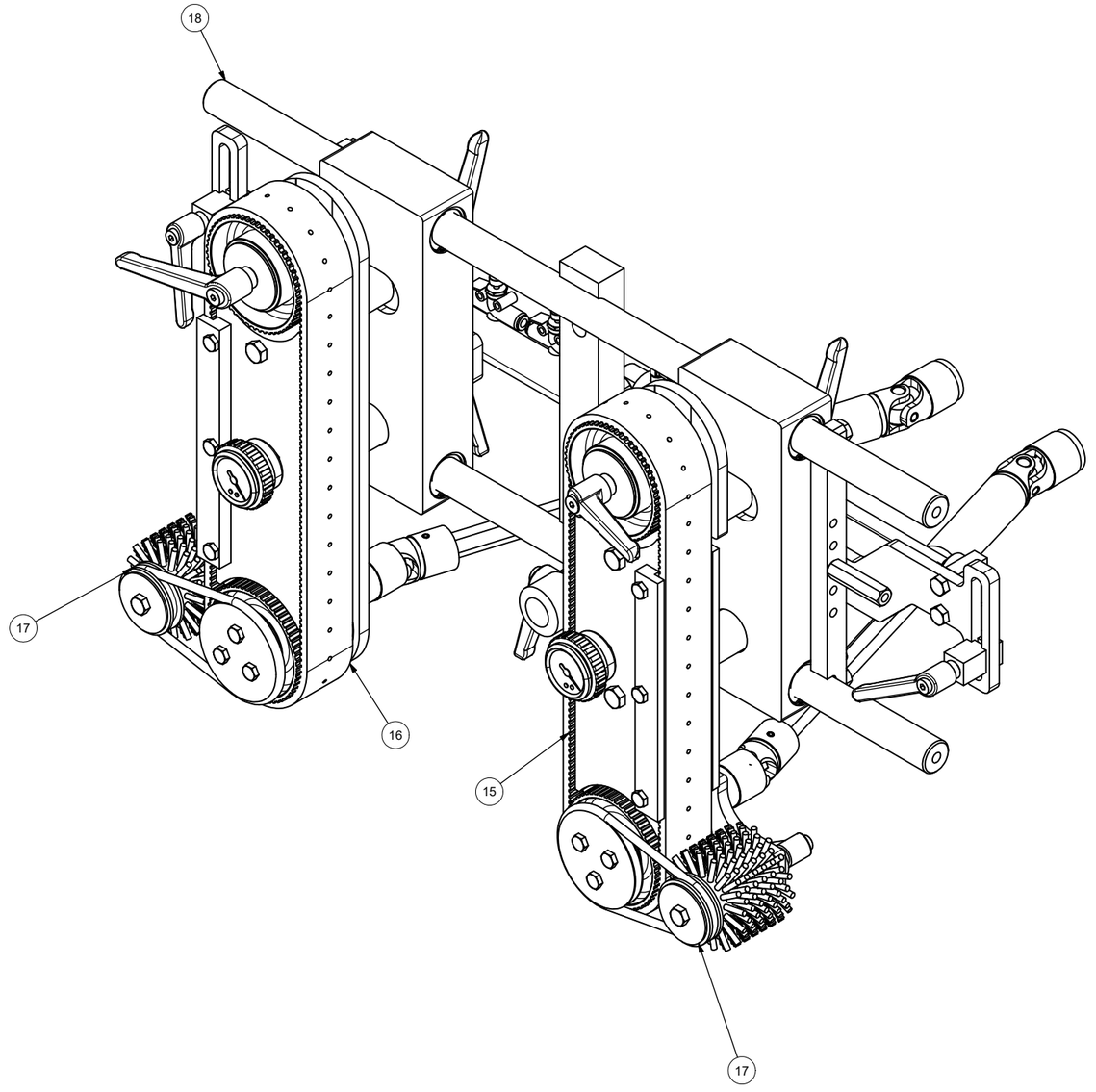
TITLE:

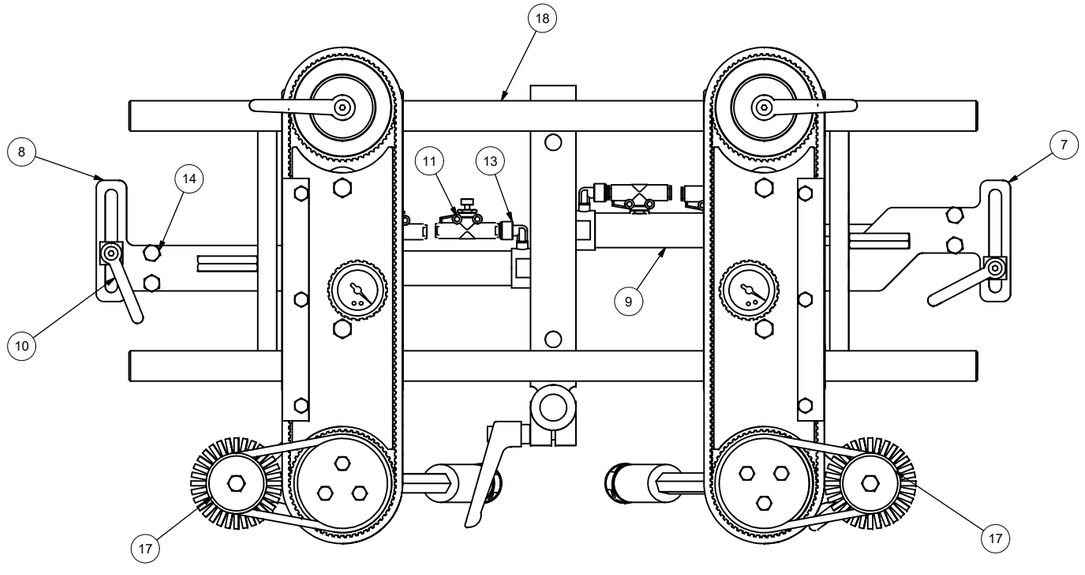
VACUUM PULL BELTS ASSEMBLY

DWG NO: MA050-0004 B

SCALE: N/A DATE: 7/14/2011 SHEET 1 OF 2







CY·TEK

THIS DRAWING IS THE PROPERTY OF CV-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

DO NOT SCALE THIS DRAWING

UNLESS OTHERWISE STATED:
FRACTIONAL ± .015
.XX ± .010
.XXX ± .005
.XXXX ± .0005
ANGULAR ± 1° UNLESS OTHERWISE STATED

APPROVED MFG: APPROVED ENG: M. FIALKO

DRAWN BY: M. FIALKO

TITLE:

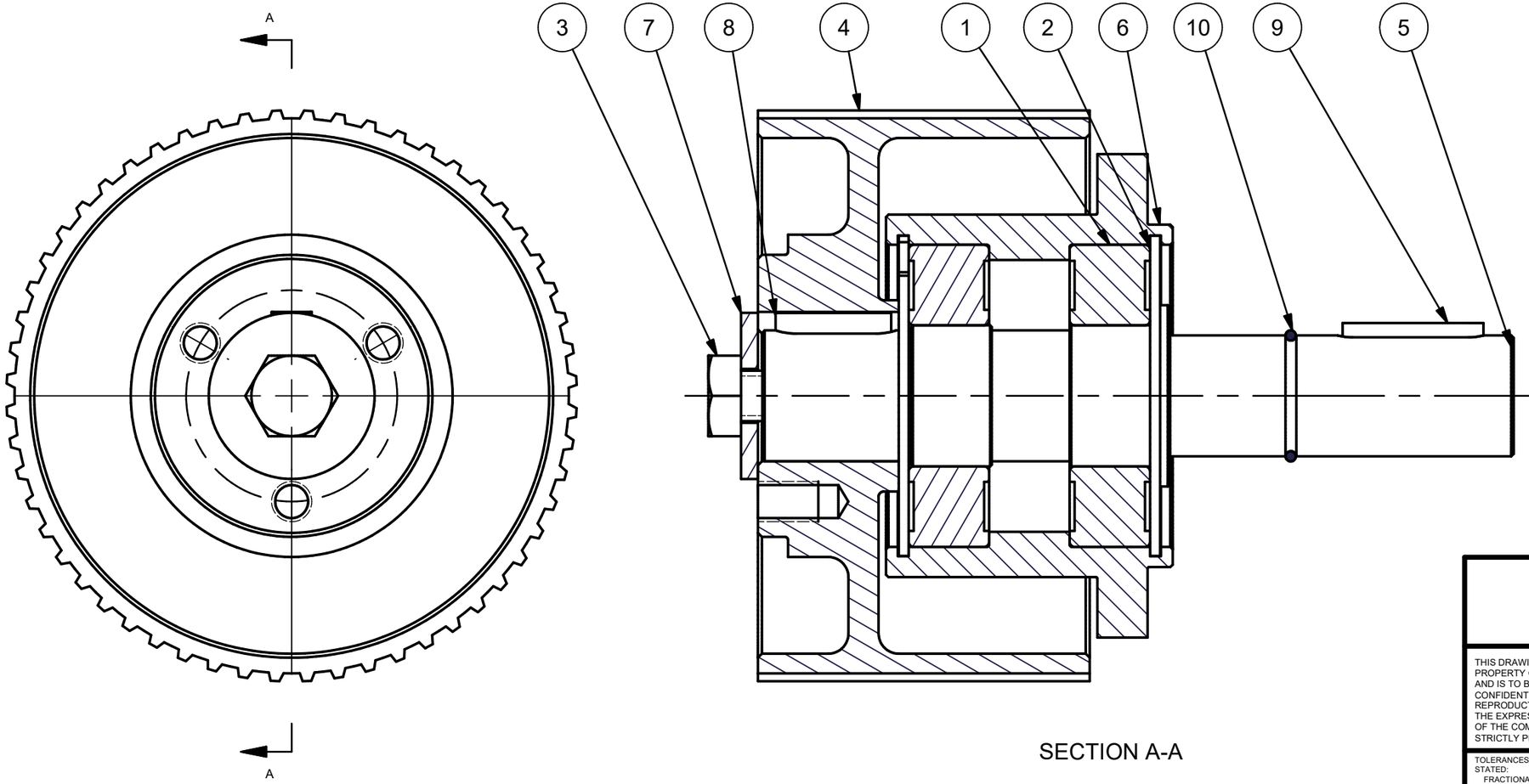
VACUUM PULL BELTS ASSEMBLY

DWG NO.: MA050-0004 B

SCALE: N/A | DATE: 7/14/2011 | SHEET 2 OF 2

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	110250C1	BALL BEARING, .8750 I.D., 1.8750 O.D., .5000 WIDE STAINLESS STEEL, TWO SEALS WITH GREASE	2
2	110281C1	Ø1-7/8 RETAINING RING,INT, S/S	2
3	75107601	5/16-18 X 3/4 LNG HEX HEAD CAP SCREW, S/S	1
4	120349C1	PULLEY DRIVE 56 T, VACUUM BELT DRIVE	1
5	120350C1	SHAFT DRIVE, VACUUM BELT	1
6	120353C1	HOUSING PULLEY DRIVE, VACUUM BELT	1
7	120354C1	WASHER, VACUUM BELT	1
8	120557C1	KEY SS STEEL SQ 1/4 X 1/4- .718 LG	1
9	120567C1	KEY SS STEEL SQ. 3/16 7/8 LG	1
10	120569C1	ROUND SS WIRE SNAP RING .75 DIA	1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	ADD REVISION TABLE	1/24/2025	VK



SECTION A-A

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

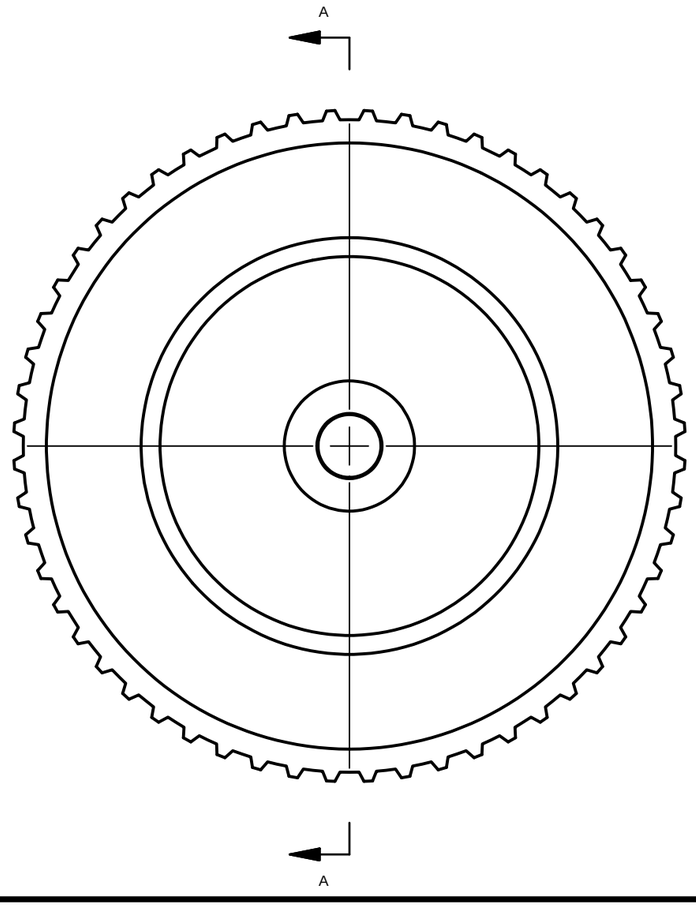
APPROVED MFG:
APPROVED ENG: M. FIALKO
DRAWN BY: M. FIALKO

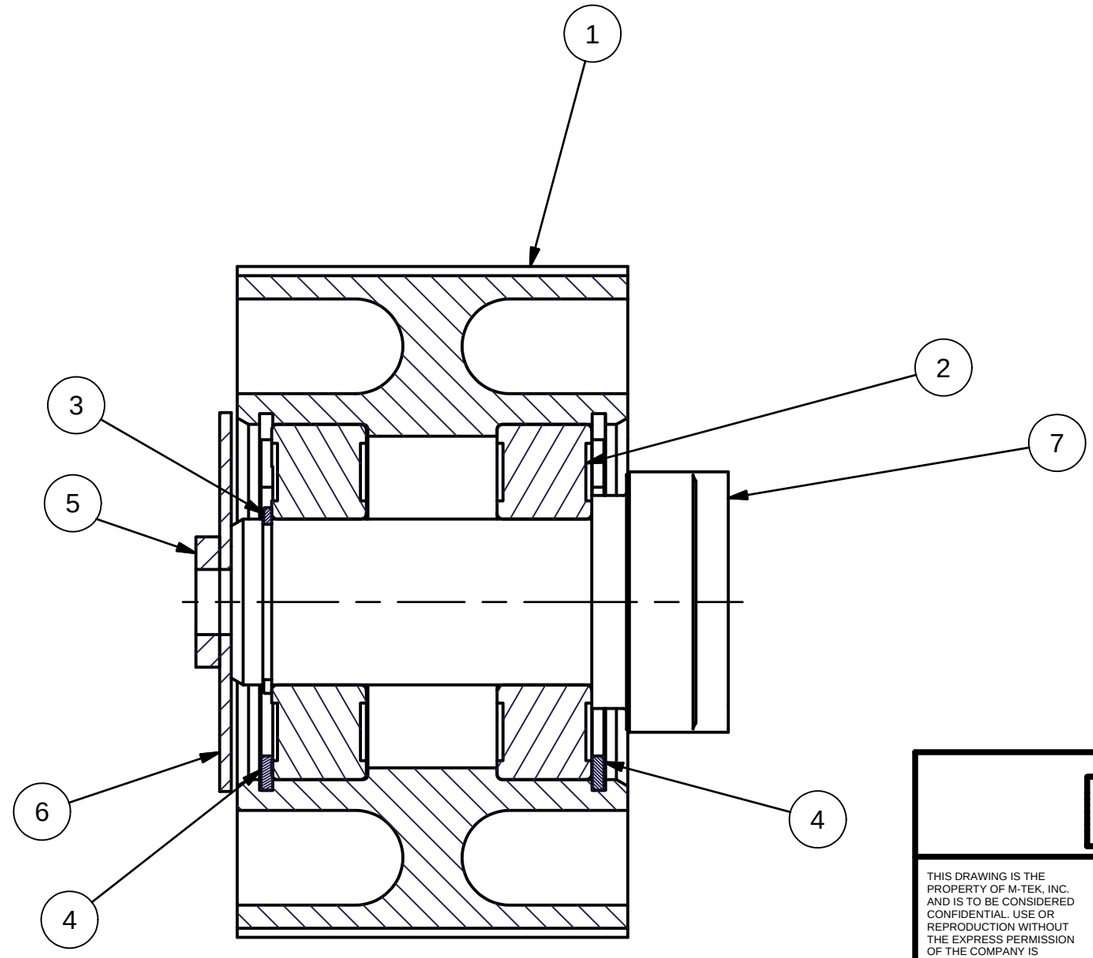
TITLE: DRIVE PULLEY, VACUUM PULL BELT ASSEMBLY

DWG NO.: MA051-0007 A

SCALE: 1.25 : 1 | DATE: 7/8/2011 | SHEET 1 OF 1

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QT
1	110247C1	VACUUM BELT IDLER PULLEY 56T	1
2	110250C1	BALL BEARING, 0.875 I.D., 1.875 O.D., 0.50 WIDE	2
3	110253C1	7/8 SHAFT EXTERNAL RETAINING RING	1
4	110281C1	1 7/8 BORE INTERNAL RETAINING RING , S/S	2
5	110555C1	5/16 FLAT WASHER (.344 I.D. X .688 O.D. X .125 THK.)	1
6	112774C1	5/16 FLAT WASHER (.344 ID x 2.00 OD x .062 THK)	1
7	120355C1	SHAFT TENSIONER,VACUUM BELT	1





SECTION A-A

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

APPROVED MFG: APPROVED ENG: MF

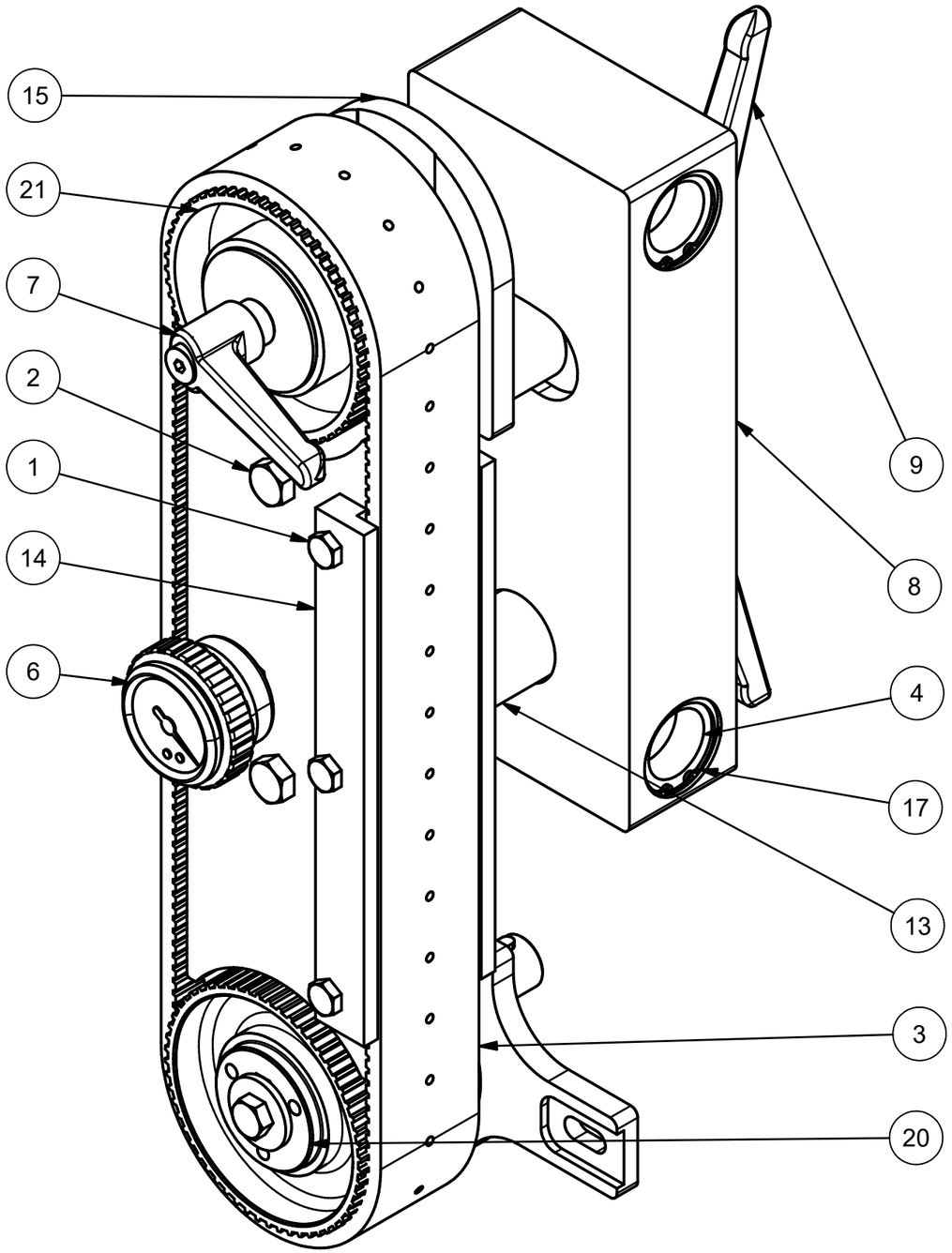
DRAWN BY: MF

TITLE:

TENSIONING PULLEY ASSEMBLY

DWG NO.: MA051-0008

SCALE: 1.25 : 1 | DATE: 7/8/2011 | SHEET 1 OF 1



REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	CHANGED 74203101 TO 74204801	3/4/2024	RB

PARTS LIST			
ITEM	QT	PART NO.	DESCRIPTION
1	10	108586C1	1/4-20 X 5/8 LNG HEX HEAD CAP SCREW, S/S
2	2	108667C1	3/8-16 X 1-3/4 LNG HEX HEAD CAP SCREW, S/S
3	1	110254C1	VACUUM DRIVE BELT, 180T, .200 PITCH, 36.00 LONG, 1.78 WIDE
4	4	112044C1	TIMING BAR LINER IGLIDE L280 FLANGE BUSHING #LFI-1618-08 1.000 I.D. X .5 INCH LONG
5	2	112634C1A	0.391 ID, 1.25 OD, .25 THICK LOAD DISK
6	1	113483C1	VACUUM GAUGE
7	1	114385C1	HANDLE 5/16-18" FEMALE, BLACK
8	1	114387C1	BLOCK SLIDING PULL BELT
9	2	120132C1	HANDLE, 3/8-16, FEMALE, BLACK
10	1	120357C1	PLATE DISTRIBUTOR R.H. VACUUM PULL BELT
11	1	120360C1	NUT IDLER
12	1	120377C1	STUD 5/16 X 18 -3.78 LG SS
13	2	120391C1	VACUUM DRIVE SPACER SHAFT
14	2	120393C1	VACUUM DRIVE BELT GUIDE
15	1	120400C1	PLATE BELT SUPPORT R.H., VAC DRIVE
16	1	120650C1	PLUG HEX SOCKET SS 1/4 NPT
17	4	121646C1	Ø1-3/8 RETAINING RING,INT, S/S
19	1	74203901	1/2 O.D. TUBE UNION EBOW, PLASTIC
20	1	MA051-0007	DRIVE PULLEY, VACUUM PULL BELT ASSEMBLY
21	1	MA051-0008	TENSIONING PULLEY ASSEMBLY
22	1	74204801	1/2 O.D. TUBE X 3/8 NPT STEM ADAPTER, PLASTIC

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

APPROVED MFG: APPROVED ENG: M. FIALKO

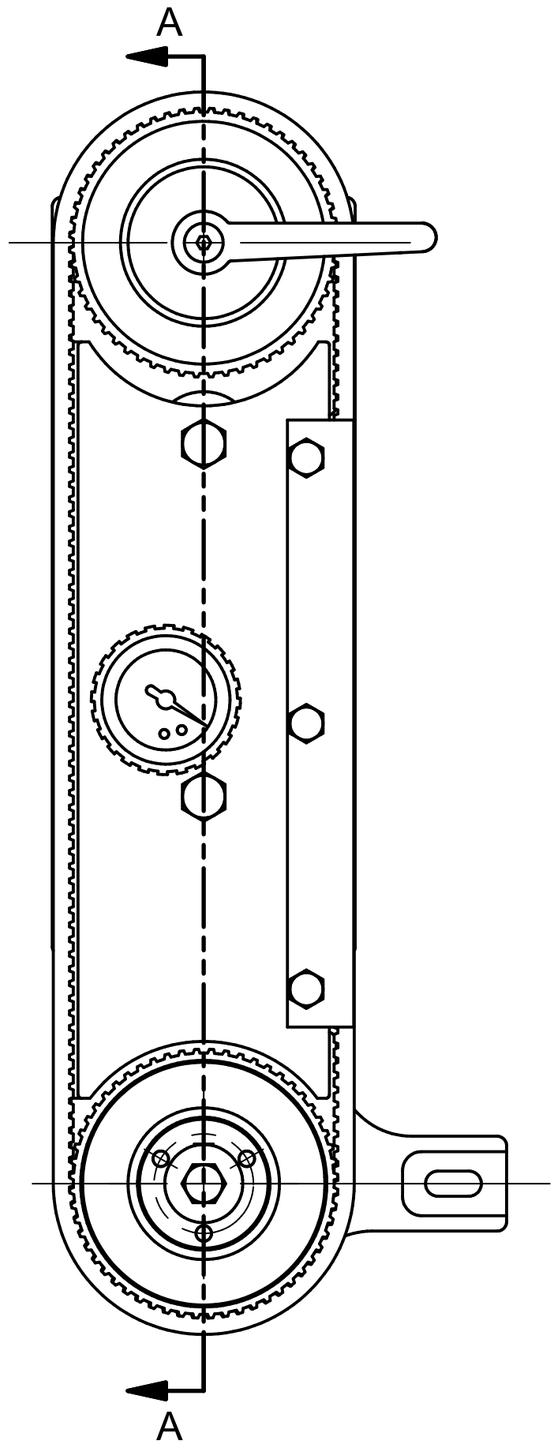
DRAWN BY: M. FIALKO

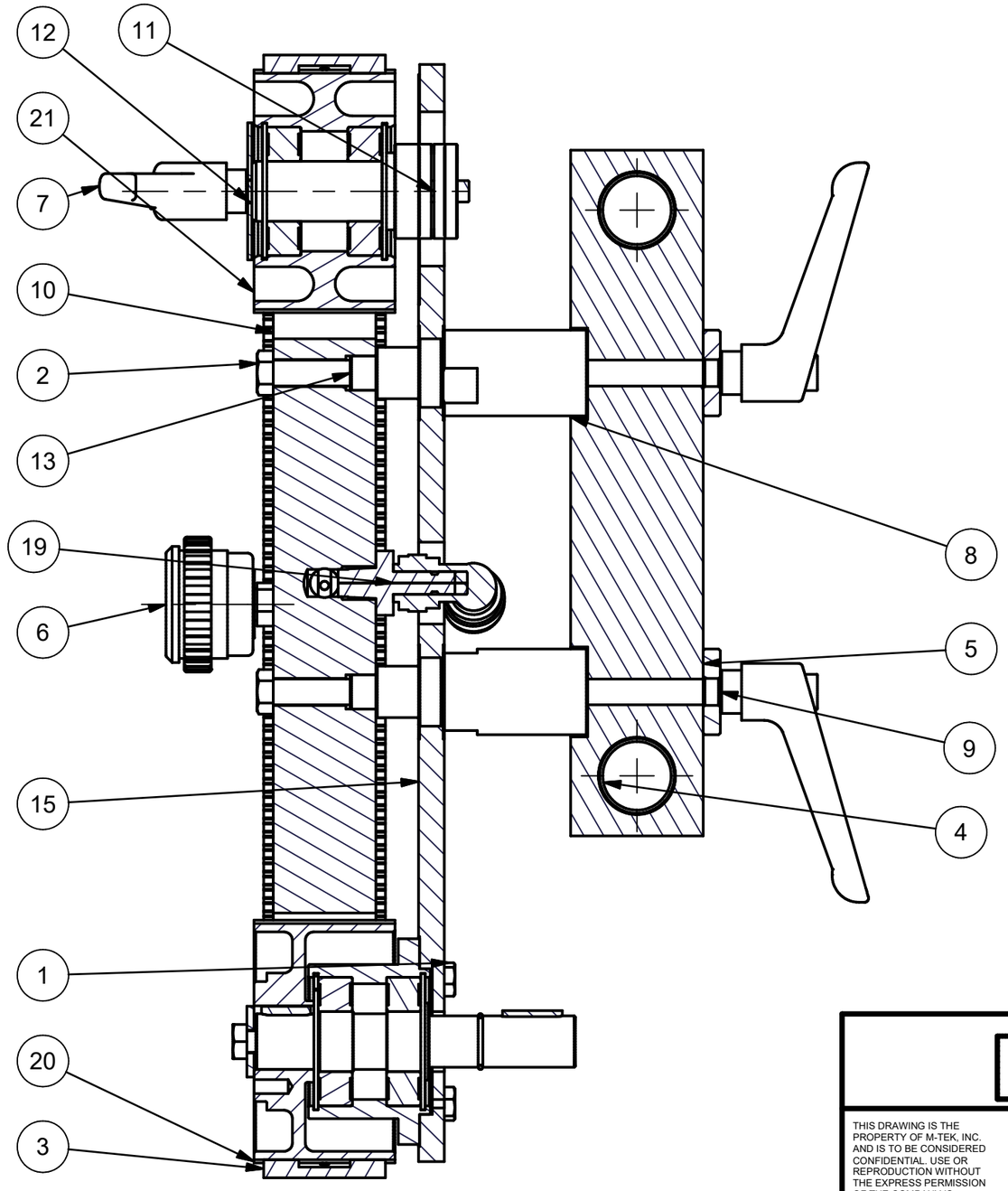
TITLE: VACUUM PULL BELT RH ASSEMBLY

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

DWG NO.: MA051-0009 A

SCALE: 0.55 : 1 DATE: 7/11/2011 SHEET 1 OF 2





SECTION A-A

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

APPROVED MFG:

APPROVED ENG: M. FIALKO

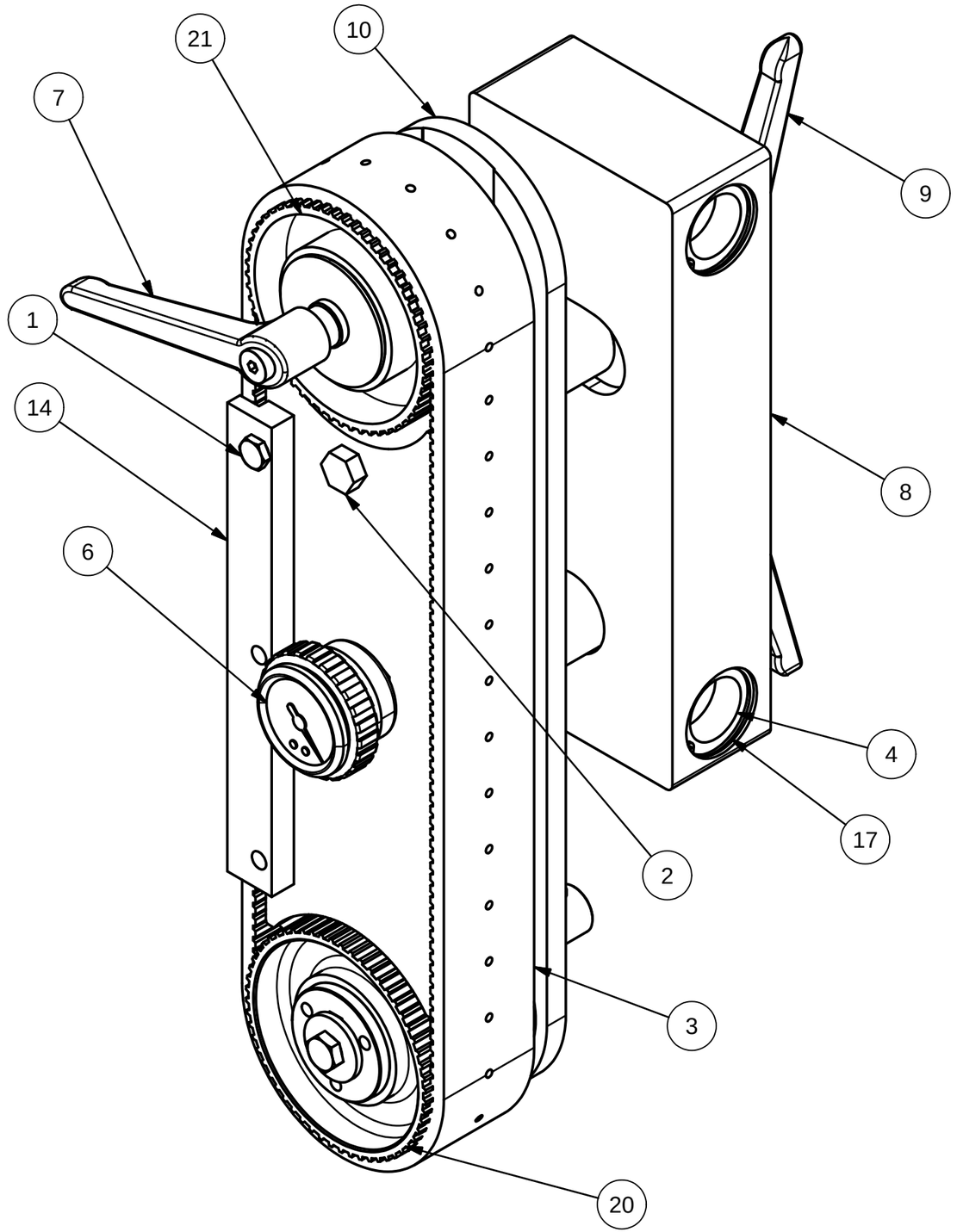
DRAWN BY: M. FIALKO

TITLE:

VACUUM PULL BELT RH ASSEMBLY

DWG NO.: MA051-0009 A

SCALE: 0.55 : 1 | DATE: 7/11/2011 | SHEET 2 OF 2



PARTS LIST

ITEM	QT	PART NO.	DESCRIPTION
1	6	108586C1	1/4-20 UNC x 5/8 LG. - HHCS
2	2	108667C1	3/8-16 UNC x 1 3/4 LG. - HHCS
3	1	110254C1	VACUUM DRIVE BELT, 180T, .200 PITCH, 36.00 LONG, 1.78 WIDE
4	4	112044C1	TIMING BAR LINER BUSHING, 1.00 ID X .50 LNG
5	2	112634C1	.391 I.D. SHAFT LOAD DISK (1.25 O.D. x .25 THK.)
6	1	113483C1	VACUUM GAUGE
7	1	114385C1	HANDLE 5/16" FEMALE, BLACK
8	1	114387C1	BLOCK SLIDING PULL BELT
9	2	120132C1	HANDLE, 3/8-16, FEMALE, BLACK
10	1	120359C1	PLATE BELT SUPPORT L.H.,VAC. DRIVE
11	1	120360C1	NUT IDLER
12	1	120377C1	ROD THREADED SS 5/16-18- 3.78 LG
13	2	120391C1	VACUUM DRIVE SPACER SHAFT
14	2	120393C1	VACUUM DRIVE BELT GUIDE
15	1	120439C1	PLATE DISTRIBUTOR LH, VACUUM PULL BELT
16	1	120650C1	PLUG SS 1/4 NPT
17	4	121646C1	1 3/8 INTERNAL RETAINING RING
18	1	74203101	3/8 NPT MALE X 1/2 O.D. TUBE
19	1	74203901	1/2 O.D. TUBE, UNION ELBOW, PLASTIC
20	1	MA051-0007	DRIVE PULLEY,VACUUM PULL BELT ASSEMBLY
21	1	MA051-0008	TENSIONING PULLEY ASSEMBLY

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

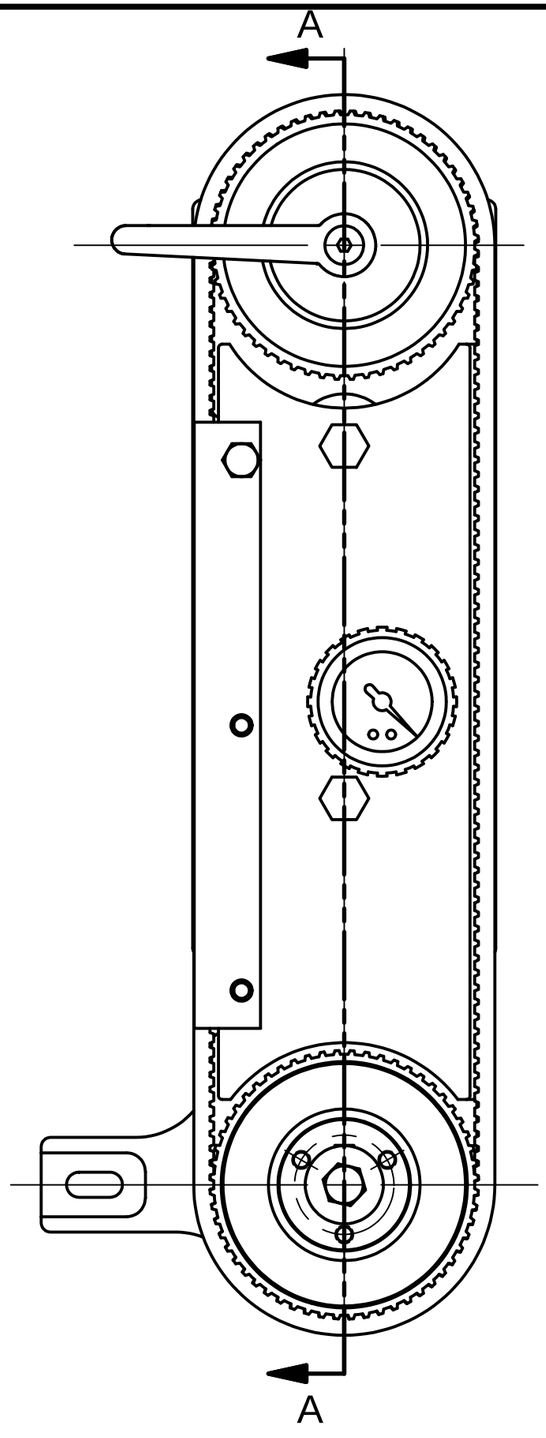
APPROVED MFG: APPROVED ENG: MF

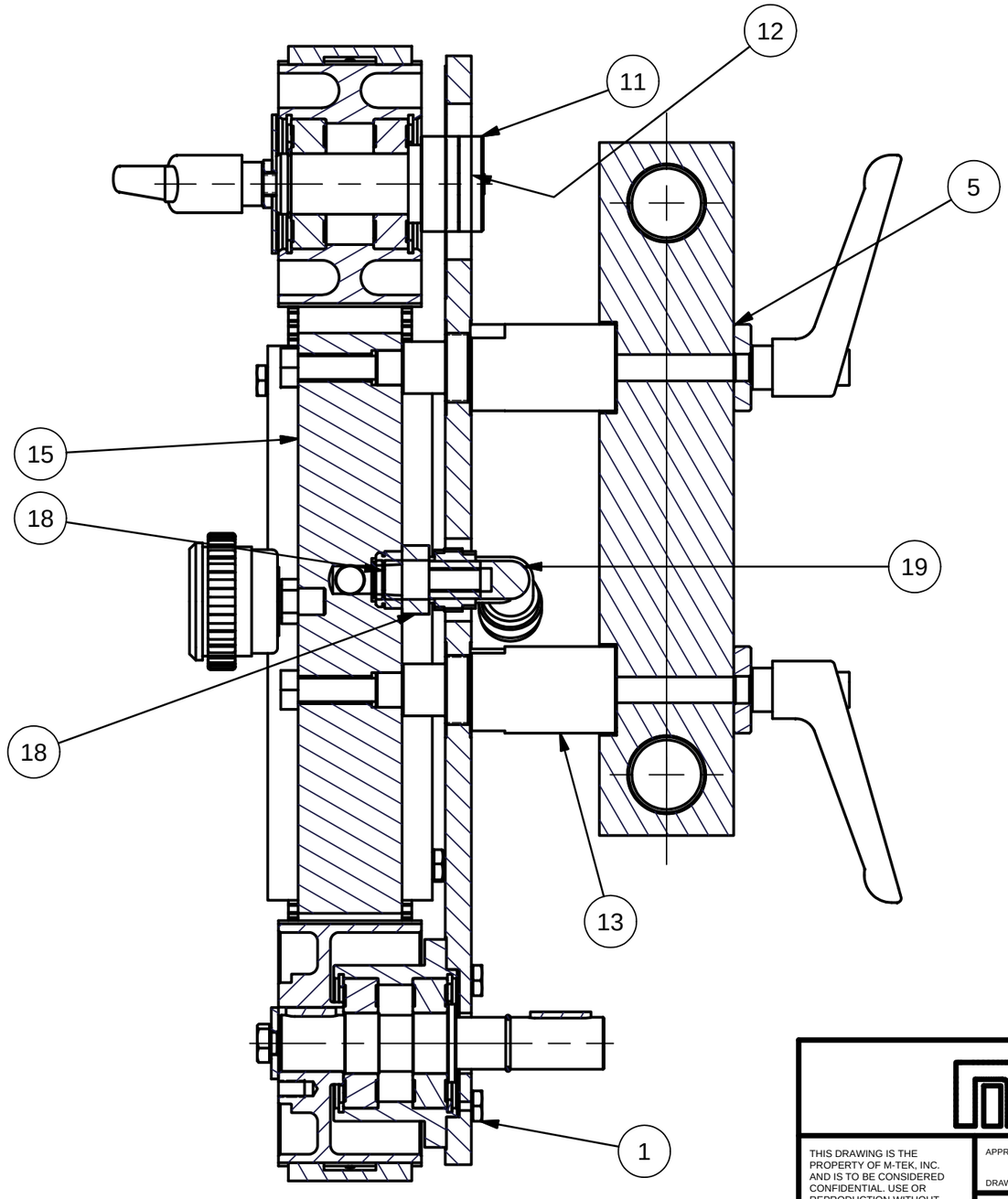
DRAWN BY: MF

TITLE: VACUUM PULL BELT LH ASSEMBLY

DWG NO.: MA051-0010

SCALE: 1 : 2 | DATE: 7/13/2011 | SHEET 1 OF 2





SECTION A-A

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

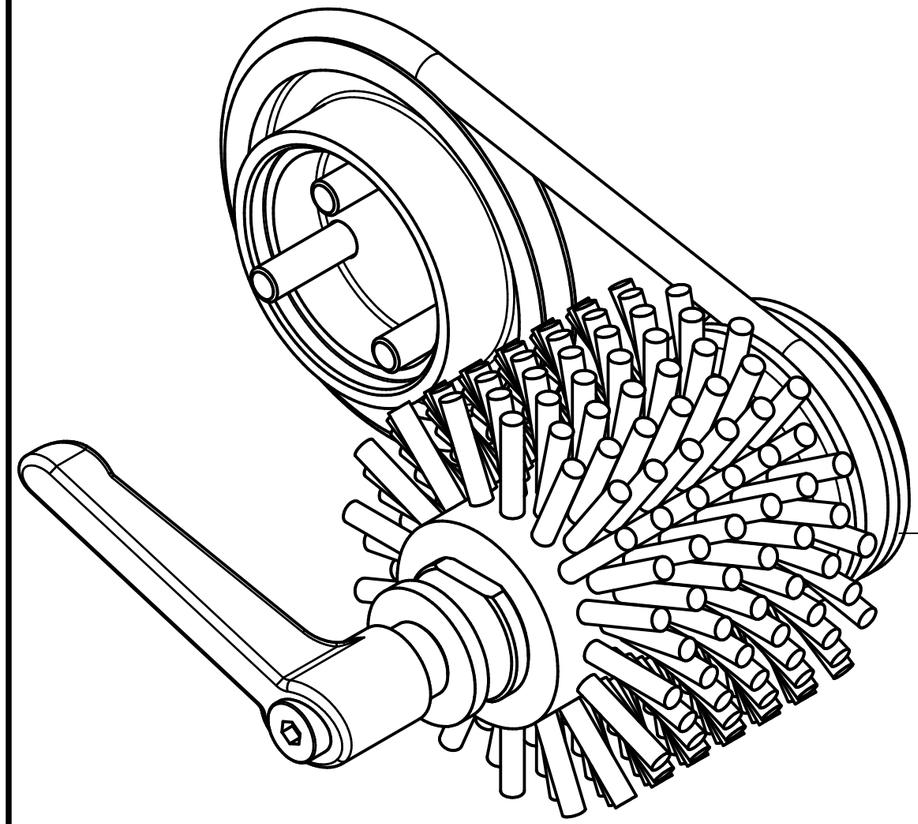
TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
DRILLED HOLE: STANDARD S.A.E.

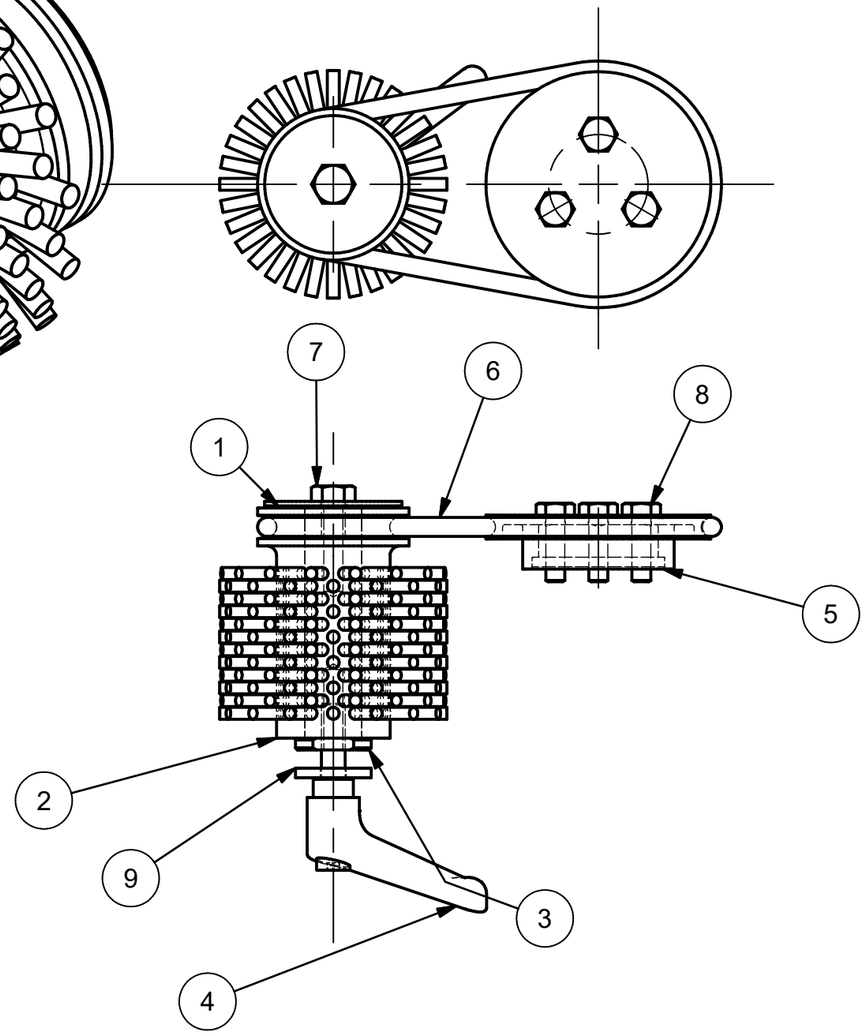
APPROVED MFG:
APPROVED ENG: MF
DRAWN BY: MF

TITLE:
VACUUM PULL BELT LH ASSEMBLY

DWG NO.: MA051-0010

SCALE: 1 : 2 | DATE: 7/13/2011 | SHEET 2 OF 2





PARTS LIST			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	113441C1	5/16 FLAT WASHER (.344 ID x 1.8120D x .062 THK)
2	1	114369C1	BRUSH
3	1	114371C1	BRUSH SHAFT, V60
4	1	114389C1	HANDLE 5/16-18 X .98"
5	1	120352C1	PULLEY BRUSH,BELT DRIVE
6	1	120600C1	SILICONE O- RING, AS568A DASH NUMBER 420, PACKS OF 5
7	1	75107501	5/16-18 X 1/2 LNG HEX HEAD CAP SCREW, S/S
8	3	75109601	1/4-20 X 7/8 LNG HEX HEAD CAP SCREW, S/S
9	1	112630C1	5/16 FLAT WASHER, 1.000 O.D., 0.125 THCK, S/S

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

APPROVED MFG: APPROVED ENG: M. FIALKO

DRAWN BY: M. FIALKO

TITLE:

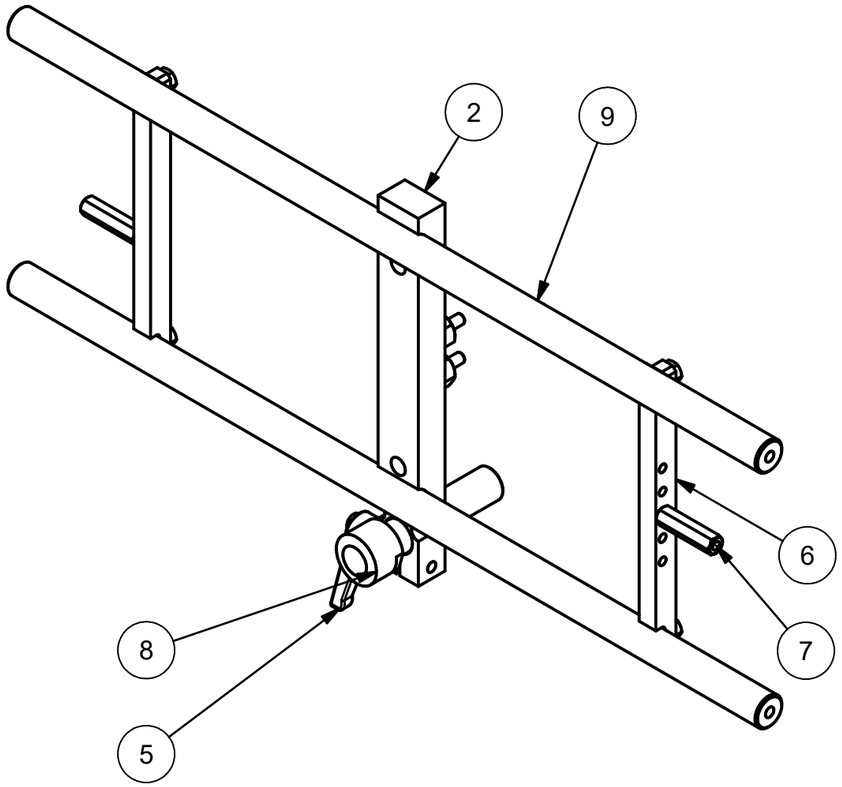
BRUSH PULLEY RH ASSEMBLY

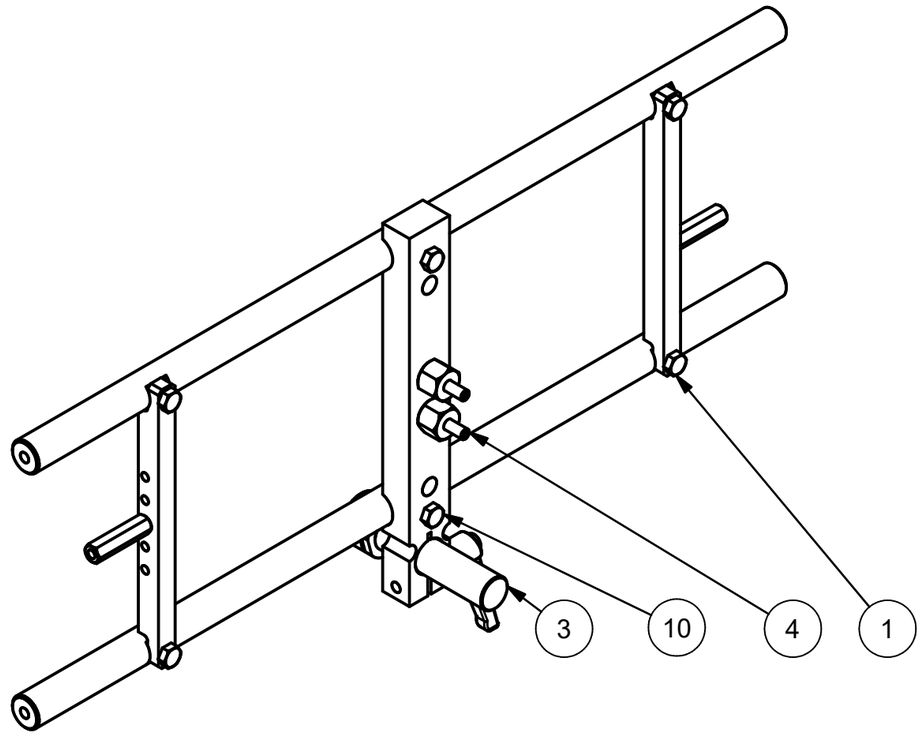
DWG NO.: MA051-0011

SCALE: 1 : 2 | DATE: 7/14/2011 | SHEET 1 OF 1

PARTS LIST			
ITEM	QTY	PART NO.	DESCRIPTION
1	4	108690C1	3/8-16 X 7/8 LNG HEX HEAD CAP SCREW, S/S
2	1	114339C1	BAR VERTICAL TUBE STOP
3	1	114340C1	STUD TUBE STOP
4	2	114341C1	STUD CYLINDER MOUNT
5	1	114342C1	HANDLE 3/8-16 BLACK
6	2	114355C1	BAR BELT STOP
7	2	114356C1	STUD BELT STOP
8	1	114656C1	FORMING HORN FIN SEAL SUPPORT
9	2	114958C1	BAR, CROSS BELT PULL
10	2	75107901	3/8-16 X 1 LNG HEX HEAD CAP SCREW, S/S

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	9/17/2015	BB
B	ADD PARTS	04/25/2018	CI





M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

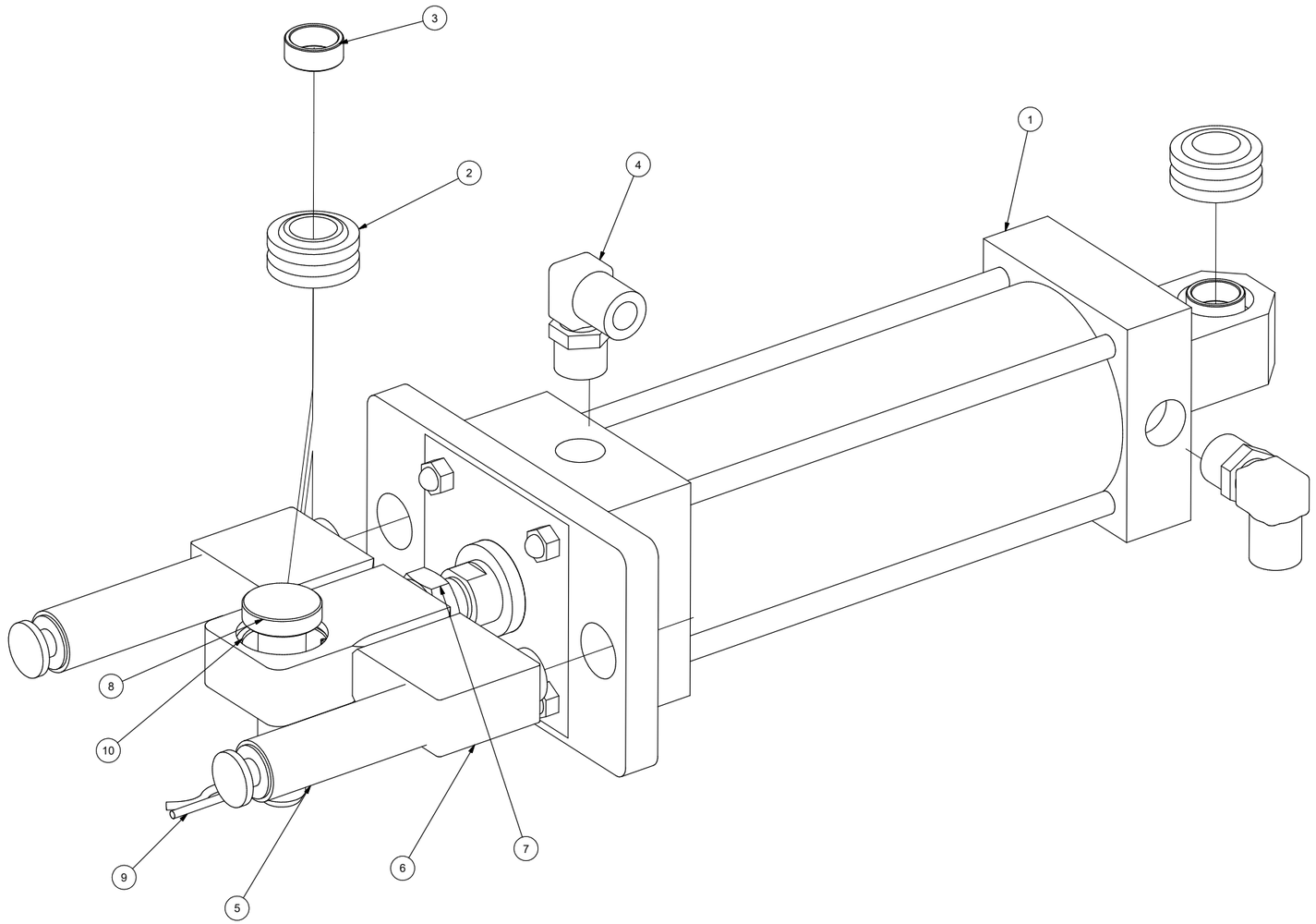
APPROVED MFG:
APPROVED ENG: A. DEJKOVIC
DRAWN BY: A. DEJKOVIC

TITLE:
SUPPORT VACUUM BELT PULL

DWG NO.: MA054-0004

SCALE: 0.46 : 1 | DATE: 4/20/2011 | SHEET 1 OF 1

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A		1/27/2025	



Parts List			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	112513C1	CROSS SEAL CYLINDER
2	2	112131C1	SPHERICAL BEARING (.7500 I.D., 1.4375 O.D.)
3	4	112153C1	CYLINDER PIN SPACER
4	2	112656C1	1/2 O.D. TUBE x 1/2 NPT MALE ELBOW, S/S
5	2	112641C1	1-12 UNF THREADED BODY, SHOCK ABSORBER
6	1	112145C1	CROSS SEAL CYLINDER PLATE, .750 DIA BALL JOINT ROD END 3/4-16 UNF FEMALE THREADED END
7	1	108653C1	3/4-16 HEX JAM NUT, S/S
8	1	112152C1	CYLINDER PIN - REAR CROSS SEAL BEAM
9	1	112163C1	HITCH PIN CLIP (HAIRPIN) 5/8-7/8 INCH SHAFT DIA RANGE , .125 WIRE DIA., 2-1/2 INCH OVERALL LENGTH 18-8 STAIN LESS STEEL
10	2	112203C1	USE 112203C1 - N1300-143AS, 1-7/16 INCH INTERNAL RET AINING RING STAINLESS STEEL

CV·TEK

THIS DRAWING IS THE PROPERTY OF CV-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED
FRACTIONAL ± 0.015
XX ± 0.030
XXX ± 0.005
DRILLED HOLE STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. LIAKOPOULOS

TITLE: CROSS SEAL CYLINDER ASSEMBLY

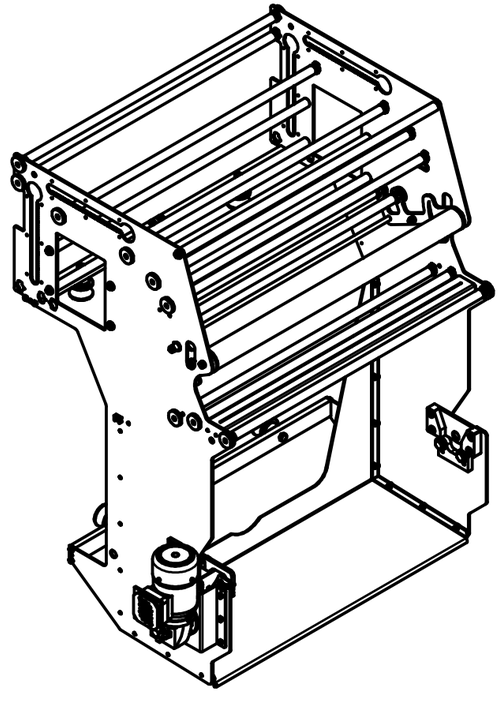
DWG NO: 113049A1 B

SCALE: N/A DATE: SHEET 1 OF 1

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	108501C1	PLASTIC FLANGE BUSHING .375 ID, .469 OD, .687 FLANGE DIAMETER, .250 LONG, IGLIDE 280	2
2	108733C1	3/8-16 X 3/4 LNG HEX HEAD CAP SCREW, S/S	22
3	108745C1	3/8 FLAT WASHER, 0.875 O.D., 0.125 THCK, S/S	10
4	108829C1	1/2-13 X 1-1/4 LNG HEX HEAD CAP SCREW, S/S	4
5	109271C1	1/4-20 X 1-3/4 LNG HEX HEAD CAP SCREW, S/S	1
6	110519C1	1/4-20 X 3/8 LNG HEX HEAD CAP SCREW, S/S	2
7	110555C1	5/16 FLAT WASHER, 0.688 O.D., 0.125 THCK, S/S	16
8	110613C1	1/4 FLAT WASHER, 1.000 O.D., 0.125 THCK, S/S	4
9	112072C1	1 FLAT WASHER, 1.750 O.D., 0.07 THCK, ACETAL	8
10	112073C1	5/16 FLAT WASHER, 1.500 O.D., 0.08 THCK, S/S	4
11	112465C1	UNWIND SHAFT POSITIONING BLOCK	1
12	112628C1	LOWER ROLLER STUB SHAFT CROSS SEAL (BALL BEARING)	2
13	113132A1	IDLE SIDE, ROLL SUPPORT ASSEMBLY	1
14	113517C1	Ø1/4 X 1/2 DOWEL PIN, S/S	4
15	113850A1	U WHEEL ROLLER ASSEMBLY	4
16	114101C1	PAN BOTTOM	1
17	114103C1	MECHANICAL SPLICE	1
18	114120C1	BALL PLUNGER 5/8-11	2
19	114593C1	SCREW SHOULDER 3/8" RH	2
20	114770C1	BAR CROSS	2
21	114795C1	UNWIND SHAFT POSITIONING BLOCK LH REAR	1
22	114796C1	UNWIND SHAFT POSITIONING BLOCK LH	1
23	114893C1	BRACKET SWITCH	1
24	114934C1	SHAFT, SPACER	5
25	120187C1	BALL DETENT MOUNTING BLOCK	2
26	120499C1	INDUCTIVE PROXIMITY SENSOR	1
27	120553C1	STUD BUMPER	2
28	120555C1	ROLLER URETHANE	2
29	120592C1	ROLLER SHAFT	2
30	121695C1	UNWIND DANCER SPACER	2
31	123544C1	V45 UNWIND SIDE PLATE WELDMENT	1
32	123545C1	V45 UNWIND SIDE PLATE OPP WELDMENT	1
33	123571C1	DANCER WELDMENT	1
34	123574C1	1 1/4 ID O-RING	22
35	124964C1	SICK ULTRASONIC SENSOR	1
36	125876C1	SS SEALED 12MM ID BEARING	22
37	125877C1	V45 UNWIND ROLLER BUSHING W/ BEARING	18
38	125879C1	V45 UNWIND ROLLER WELDMENT BEARING VERSION	9

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
39	125891C1	V45 UNWIND DANCER ROLLER BUSHING BEARING VERSION	4
40	125892C1	V45 UNWIND DANCER ROLLER WELDMENT	2
41	75003001	CABLE TIE MOUNTING BASE, 1/4 SCREW SIZE, PANDUIT #TM3S25-C	1
42	75103301	1/4 FLAT WASHER, 0.625 O.D., 0.06 THCK, S/S	6
43	75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT	1
44	75106001	1/4-20 X 1/2 PAN HEAD MACHINE SCREW, SLOTTED S/S	1
45	75107501	5/16-18 X 1/2 LNG HEX HEAD CAP SCREW, S/S	29
46	75109501	1/4-20 X 1/2 LNG HEX HEAD CAP SCREW, S/S	4
47	75111801	1/4-20 ACORN NUT, S/S	1
48	75116701	3/8-16 ACORN NUT, S/S	2
49	75119401	5/16-18 X 3/8 LNG HEX HEAD CAP SCREW, S/S	8
50	MA061-0003	MOTOR SIDE, ROLL SUPPORT ASSEMBLY	1
51	MA061-0013	V45 UNWIND ROLL DRIVE ASSEMBLY V2	1
52	MA064-0002	FILM ROLL ARM LOCK ASSEMBLY	1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	CHANGED PARTS FOR BEARING VERSION, BUSHINGS AND SHAFTS	06/04/2019	N.U.



CV•TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

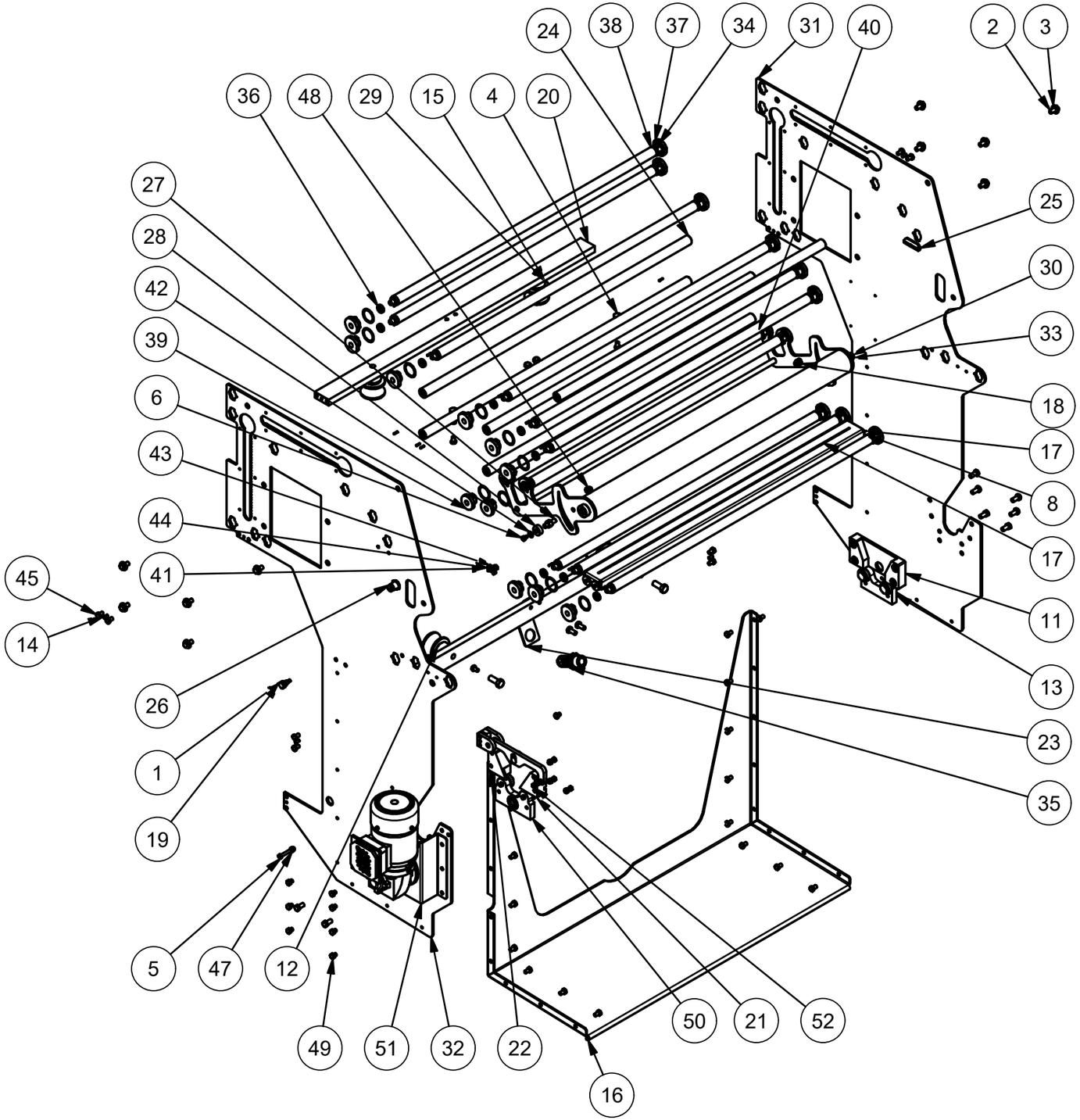
APPROVED MFG: APPROVED ENG: N.URSEI

DRAWN BY: C.ILONTA

TITLE: V45 UNWIND FILM ASSEMBLY W/ BEARINGS

DWG NO.: MA060-0007 A

SCALE: N/A DATE: 6/4/2019 SHEET 1 OF 4



CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

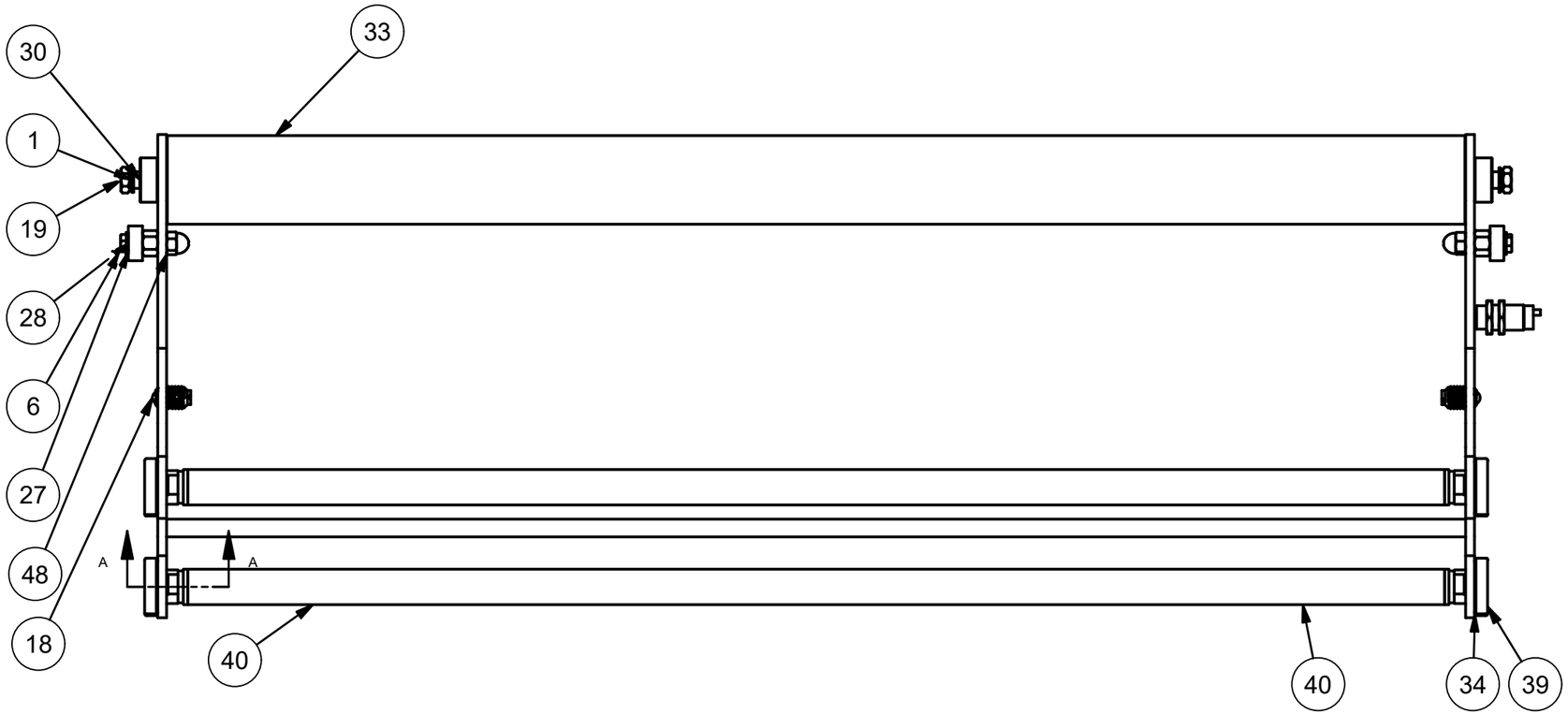
APPROVED MFG: APPROVED ENG: N.URSEI

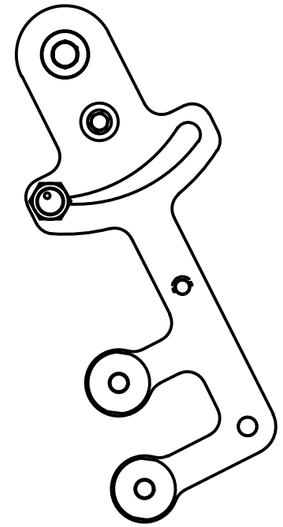
DRAWN BY: C.ILONTA

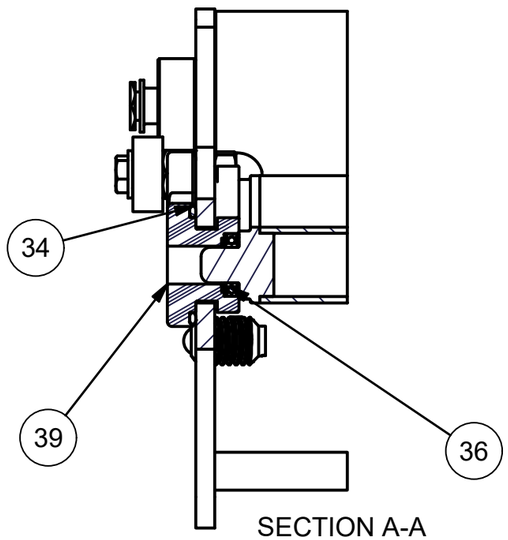
TITLE: V45 UNWIND FILM ASSEMBLY W/ BEARINGS

DWG NO.: MA060-0007 A

SCALE: N/A DATE: 6/4/2019 SHEET 2 OF 4







SECTION A-A
SCALE 1 /2

CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

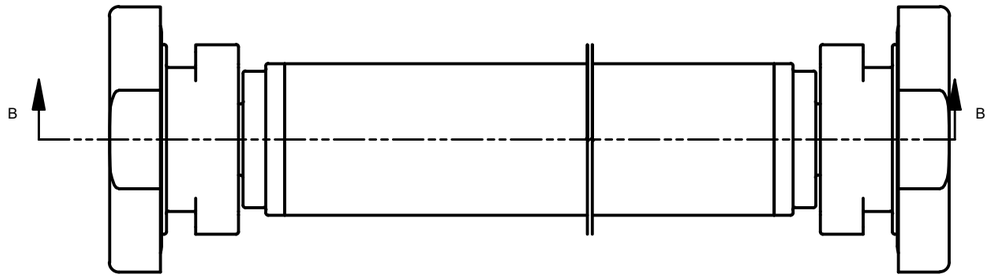
TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

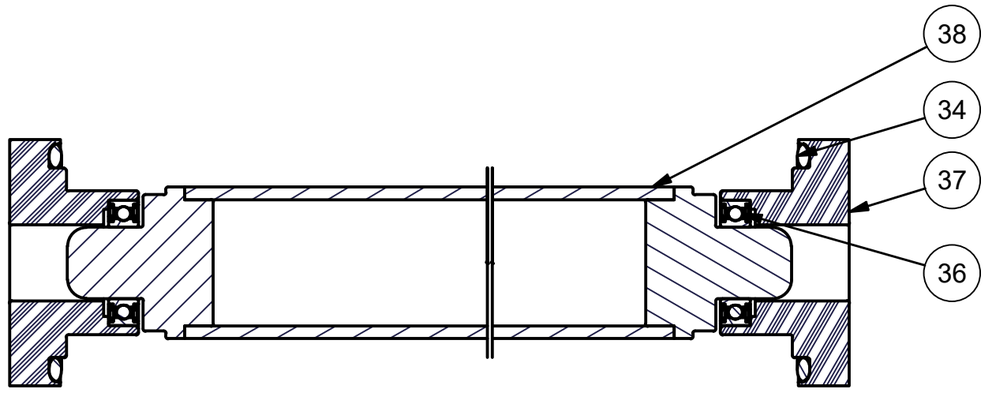
APPROVED MFG:
APPROVED ENG: N.URSEI
DRAWN BY: C.ILONTA

TITLE: V45 UNWIND FILM ASSEMBLY W/ BEARINGS

DWG NO.: MA060-0007 | A

SCALE: N/A | DATE: 6/4/2019 | SHEET 3 OF 4





SECTION B-B
SCALE 1:1

CV•TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG: N.URSEI

DRAWN BY: C.ILONTA

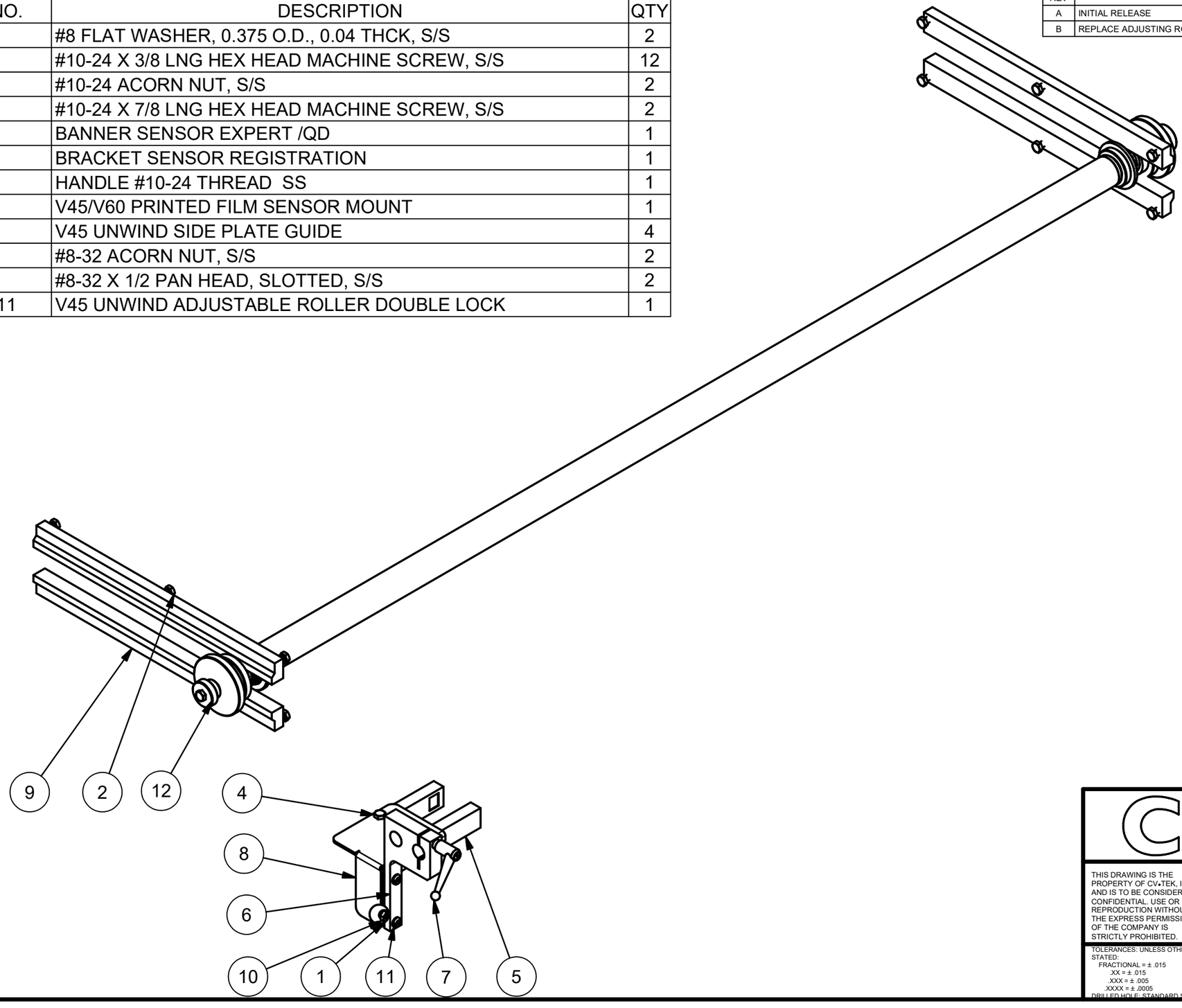
TITLE: V45 UNWIND FILM ASSEMBLY W/ BEARINGS

DWG NO.: MA060-0007 A

SCALE: N/A DATE: 6/4/2019 SHEET 4 OF 4

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	109253C1	#8 FLAT WASHER, 0.375 O.D., 0.04 THCK, S/S	2
2	110221C1	#10-24 X 3/8 LNG HEX HEAD MACHINE SCREW, S/S	12
3	112372C1	#10-24 ACORN NUT, S/S	2
4	112728C1	#10-24 X 7/8 LNG HEX HEAD MACHINE SCREW, S/S	2
5	113008C1	BANNER SENSOR EXPERT /QD	1
6	114148C1	BRACKET SENSOR REGISTRATION	1
7	114151C1	HANDLE #10-24 THREAD SS	1
8	121948C1	V45/V60 PRINTED FILM SENSOR MOUNT	1
9	123548C1	V45 UNWIND SIDE PLATE GUIDE	4
10	124524C1	#8-32 ACORN NUT, S/S	2
11	75109401	#8-32 X 1/2 PAN HEAD, SLOTTED, S/S	2
12	MA123-0011	V45 UNWIND ADJUSTABLE ROLLER DOUBLE LOCK	1

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	05/08/2018	CI
B	REPLACE ADJUSTING ROLLER MA123-0009 WITH MA123-0011	05/13/2019	CI



THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

CV•TEK

APPROVED MFG: APPROVED ENG:

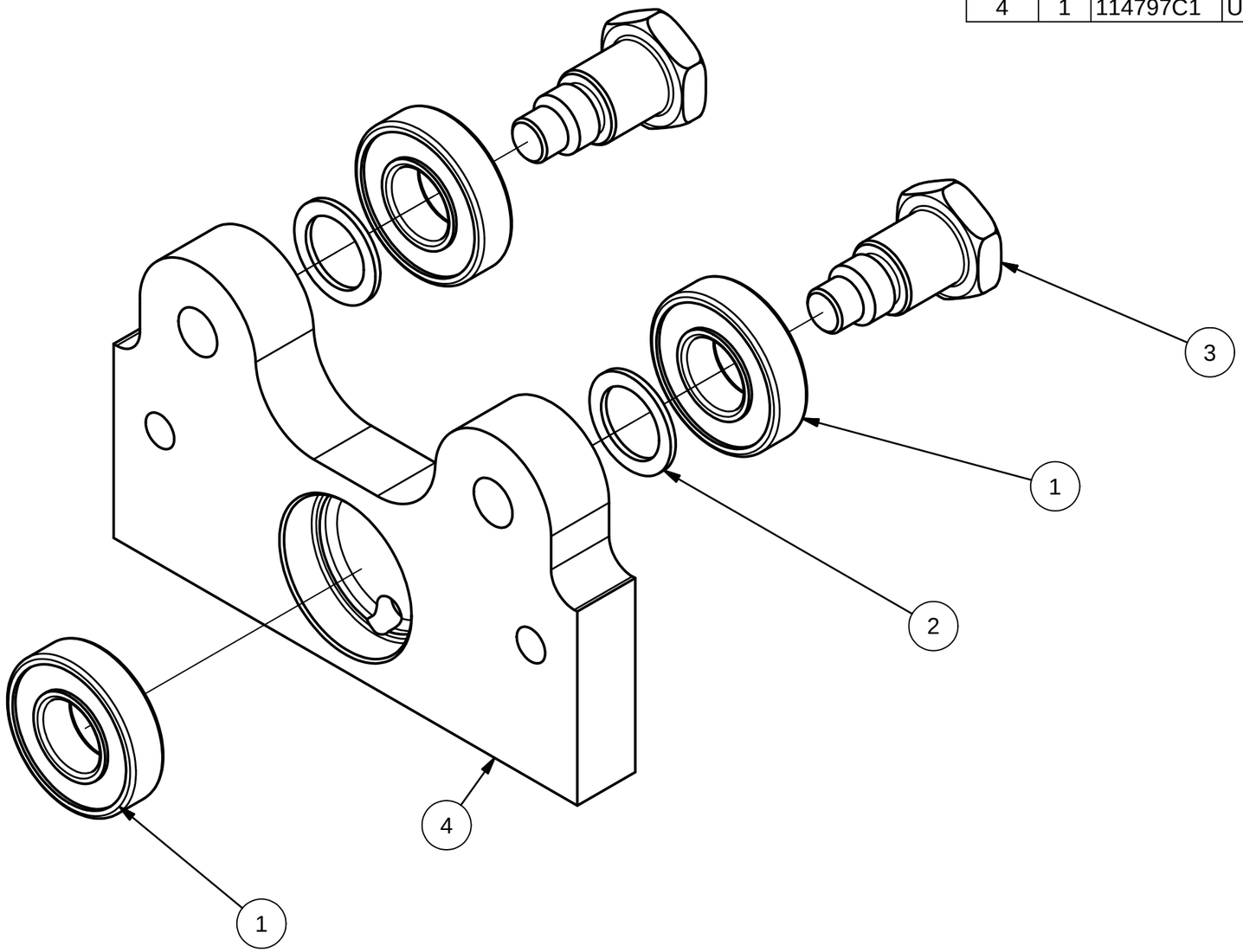
DRAWN BY: C.ILONTA

TITLE: V45 REGISTRATION SENSOR ASSEMBLY

DWG NO.: MA070-0007 B

SCALE: N/A | DATE: | SHEET 1 OF 1

PARTS LIST			
ITEM	QT	PART NO.	DESCRIPTION
1	3	108990C1	BALL BEARING, .6250 I.D., 1.3750 O.D., .3438 WIDE
2	2	110090C1	5/8 FLAT WASHER (.628 I.D. x .875 O.D. x .054 THK.)
3	2	112462C1	UNWIND BEARING SPACER
4	1	114797C1	UNWIND SHAFT BEARING BLOCK



M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

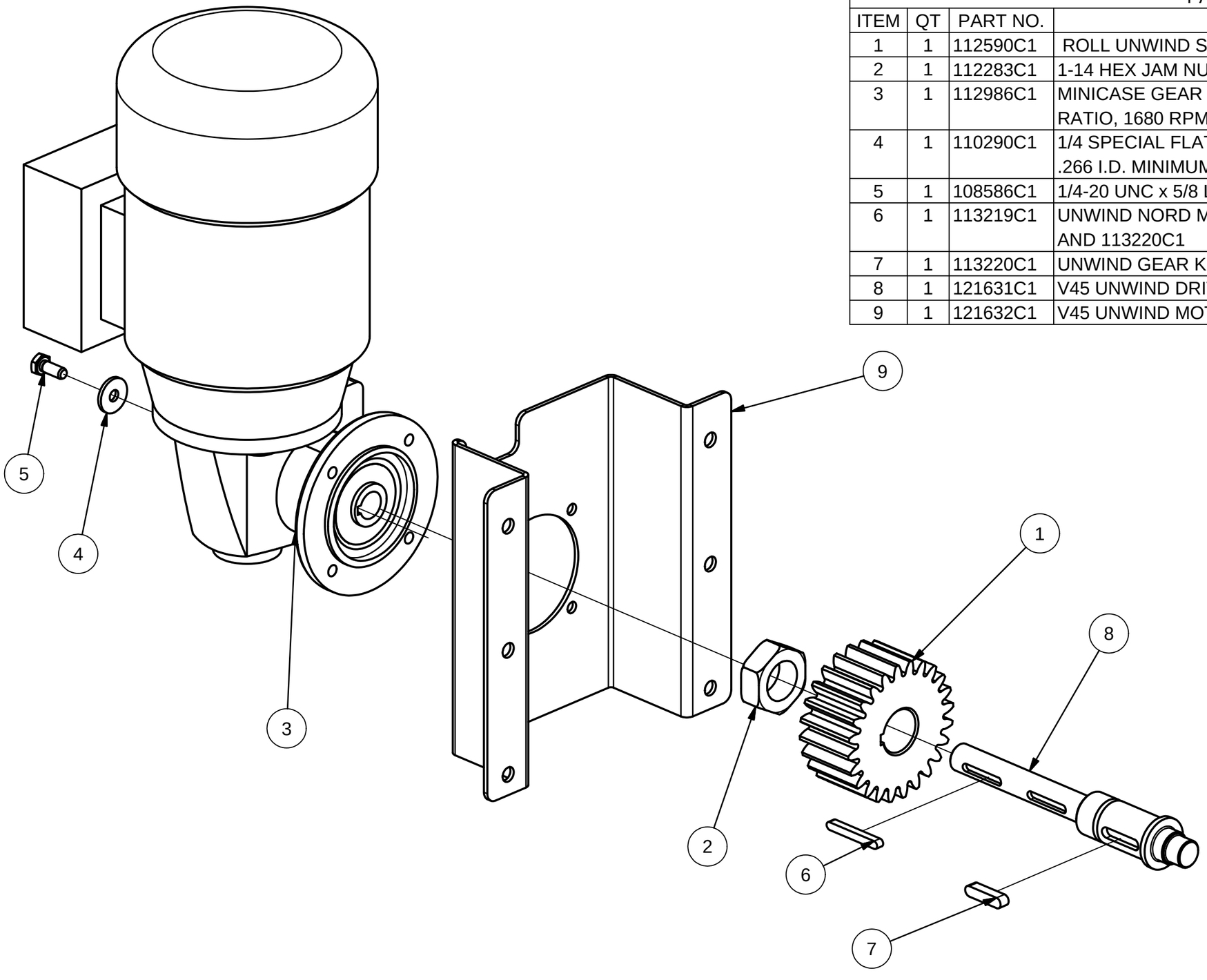
APPROVED MFG: APPROVED ENG: AD

DRAWN BY: MF

TITLE: MOTOR SIDE, ROLL SUPPORT ASSEMBLY

DWG NO.: MA061-0003

SCALE: 1 : 1 | DATE: 4/19/2011 | SHEET 1 OF 1



PARTS LIST

ITEM	QT	PART NO.	DESCRIPTION
1	1	112590C1	ROLL UNWIND S/S GEAR 24T, 8 D.P., 20 DEG P.A.
2	1	112283C1	1-14 HEX JAM NUT 18-8 STAINLESS STEEL, 35/64 HEIGHT
3	1	112986C1	MINICASE GEAR MOTOR 0.25 HP, 230/460V, 3-PHASE, 60:1 RATIO, 1680 RPM, w/ KEY #113219C1, INCLUDE B-77
4	1	110290C1	1/4 SPECIAL FLAT WASHER, 18-8 STAINLESS STEEL, .810 O.D., .266 I.D. MINIMUM, .089 THICK
5	1	108586C1	1/4-20 UNC x 5/8 LG. - HHCS
6	1	113219C1	UNWIND NORD MOTOR DRIVE SHAFT V32 B, W/ KEY 113219C1 AND 113220C1
7	1	113220C1	UNWIND GEAR KEY
8	1	121631C1	V45 UNWIND DRIVE SHAFT
9	1	121632C1	V45 UNWIND MOTOR MOUNT BRACKET

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. LIAKOPOULOS

TITLE: V45 UNWIND ROLL DRIVE ASSEMBLY

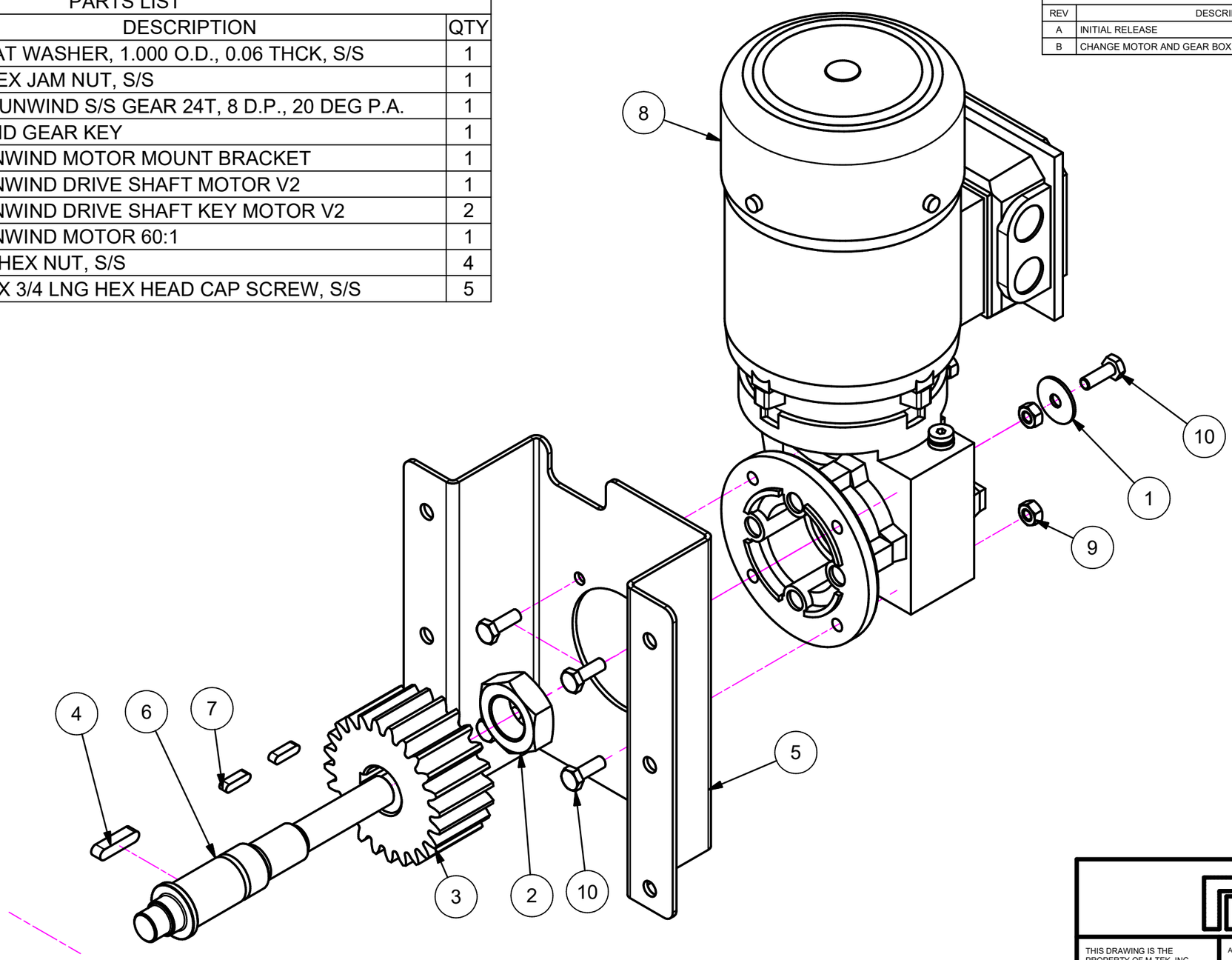
DWG NO.: MA061-0010

SCALE: DATE: SHEET 1 OF 1

PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY
1	108573C1	1/4 FLAT WASHER, 1.000 O.D., 0.06 THCK, S/S	1
2	112283C1	1-14 HEX JAM NUT, S/S	1
3	112590C1	ROLL UNWIND S/S GEAR 24T, 8 D.P., 20 DEG P.A.	1
4	113220C1	UNWIND GEAR KEY	1
5	121632C1	V45 UNWIND MOTOR MOUNT BRACKET	1
6	125087C1	V45 UNWIND DRIVE SHAFT MOTOR V2	1
7	125088C1	V45 UNWIND DRIVE SHAFT KEY MOTOR V2	2
8	125812C1	V45 UNWIND MOTOR 60:1	1
9	75103801	1/4-20 HEX NUT, S/S	4
10	75106401	1/4-20 X 3/4 LNG HEX HEAD CAP SCREW, S/S	5

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		N.B
B	CHANGE MOTOR AND GEAR BOX FROM 125086C1 TO 125812C1	3/12/2019	CI



THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

M-TEK INC.

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. LIAKOPOULOS

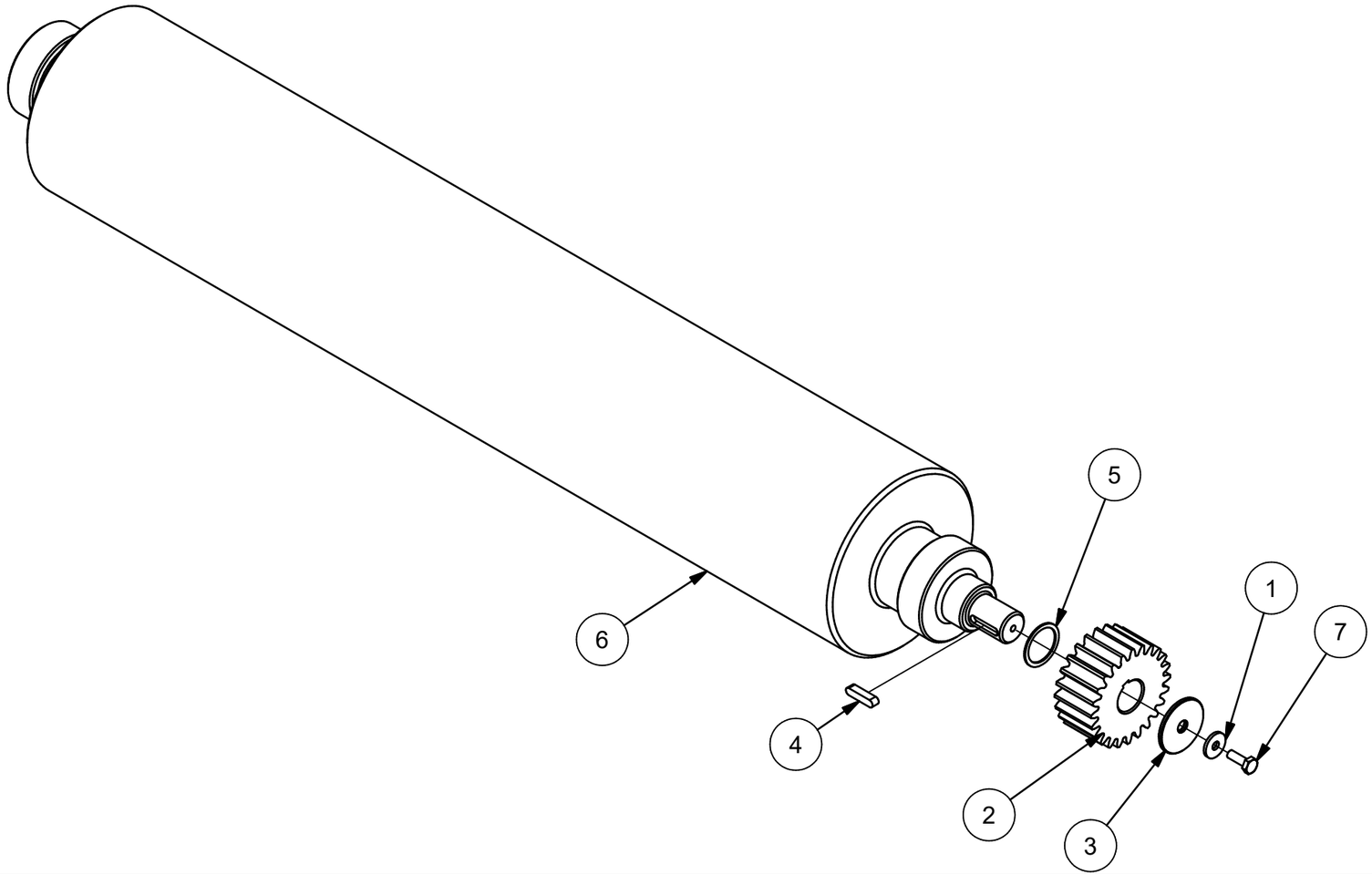
TITLE: V45 UNWIND ROLL DRIVE ASSEMBLY V2

DWG NO.: MA061-0013 B

SCALE: N/A DATE: 5/22/2017 SHEET 1 OF 1

Parts List			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	110290C1	1/4 SPECIAL FLAT WASHER, .266 ID, X .810 OD X .089 THICK, 18-8 S/S
2	1	112590C1	ROLL UNWIND S/S GEAR 24T, 8 D.P., 20 DEG P.A.
3	1	112630C1	5/16 FW LARGE DIA.11/32 ID 1.75 OD 1/8 THK SS
4	1	113220C1	UNWIND GEAR KEY
5	1	113855C1	SPACER WASHER, SPINDLE GEAR - V32 BOLTED UNWIND
6	1	114122C1	ROLL UNWIND SHAFT AIR EXPANSION CAM/LUG V60
7	1	75106401	1/4-20 X 3/4 LNG HEX HEAD CAP SCREW, S/S
8	1	110888C1	Blow Gun Non-Restricted 1/4 NP
9	1	110889C2	Rubber Tip Nozzle for Blow Gun
10	1	74203001	3/8 X 1/4 male conn. plastic

REVISION HISTORY			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL CREATION	4/17/2013	TL
B	ADDED PART TO CAD BOM TO MATCH INFOR	2/3/2025	SP



CV•TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

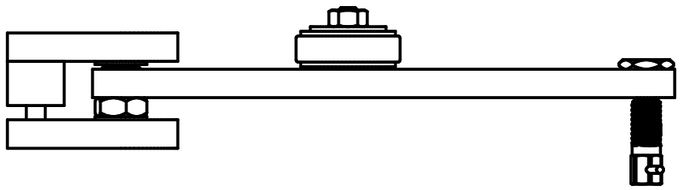
APPROVED MFG: APPROVED ENG:

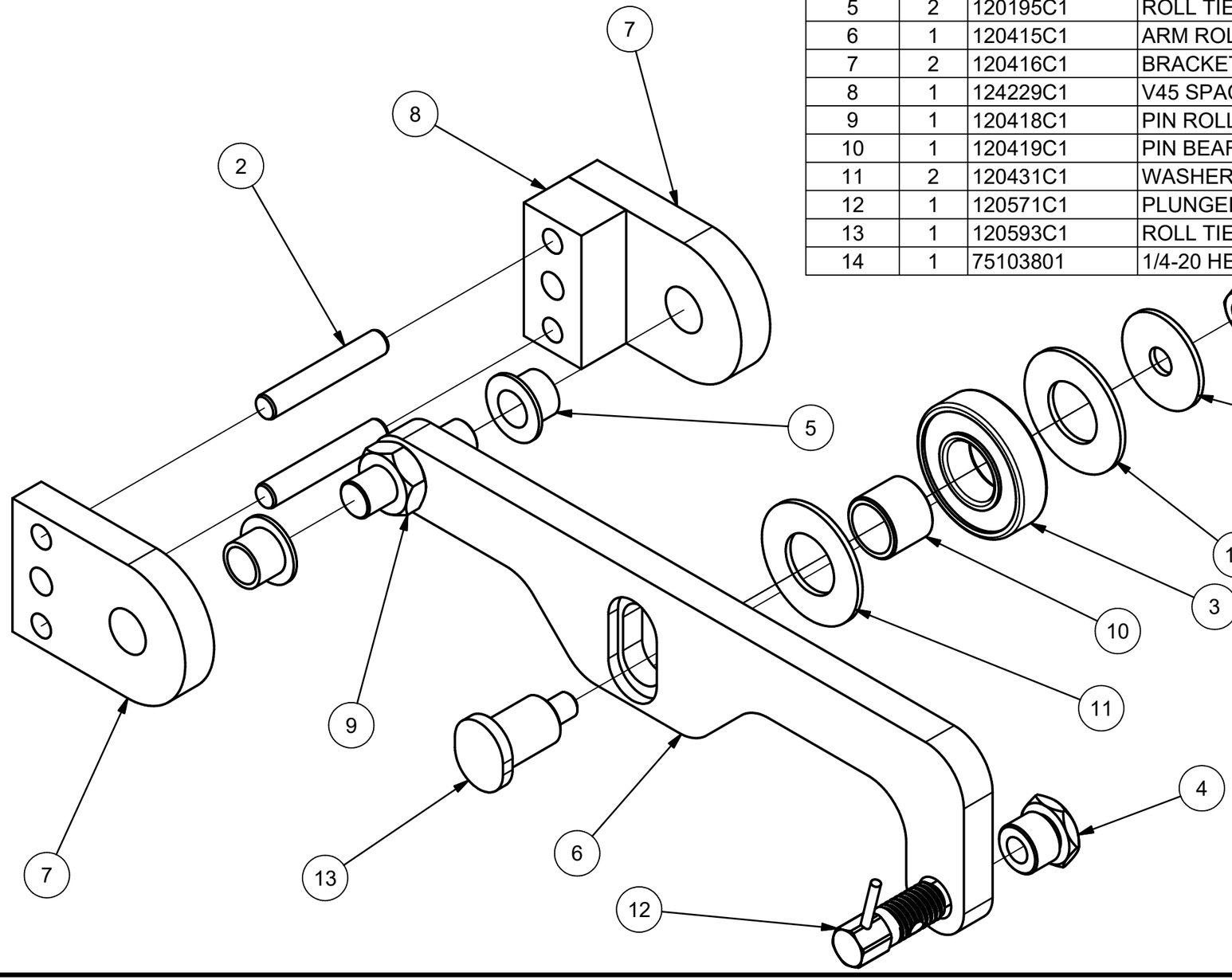
DRAWN BY: T. L.

TITLE: SHAFT FILM ASSEMBLY (6 INCH CORE)

DWG NO.: MA062-0001 B

SCALE: N/A DATE: SHEET 1 OF 1





PARTS LIST			
ITEM	QTY	PART NO.	DESCRIPTION
1	1	108573C1	1/4 FLAT WASHER, 1.000 O.D., 0.06 THCK, S/S
2	2	108896C1	Ø1/4 X 1-1/2 DOWEL PIN, S/S
3	1	108990C1	BALL BEARING, .6250 I.D., 1.3750 O.D., .3438 WIDE STAINLESS STEEL, TWO SEALS WITH GREASE
4	1	120194C1	ROLL TIE DOWN PIN SPACER
5	2	120195C1	ROLL TIE DOWN BUSHING
6	1	120415C1	ARM ROLL LOCK
7	2	120416C1	BRACKET ROLL LOCK
8	1	124229C1	V45 SPACER ROLL LOCK
9	1	120418C1	PIN ROLL LOCK
10	1	120419C1	PIN BEARING ROLL LOCK
11	2	120431C1	WASHER PLASTIC
12	1	120571C1	PLUNGER PIN 3/8
13	1	120593C1	ROLL TIE DOWN SHAFT
14	1	75103801	1/4-20 HEX NUT, S/S

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

APPROVED MFG: APPROVED ENG: A. DEJKOVIC

DRAWN BY: A. DEJKOVIC

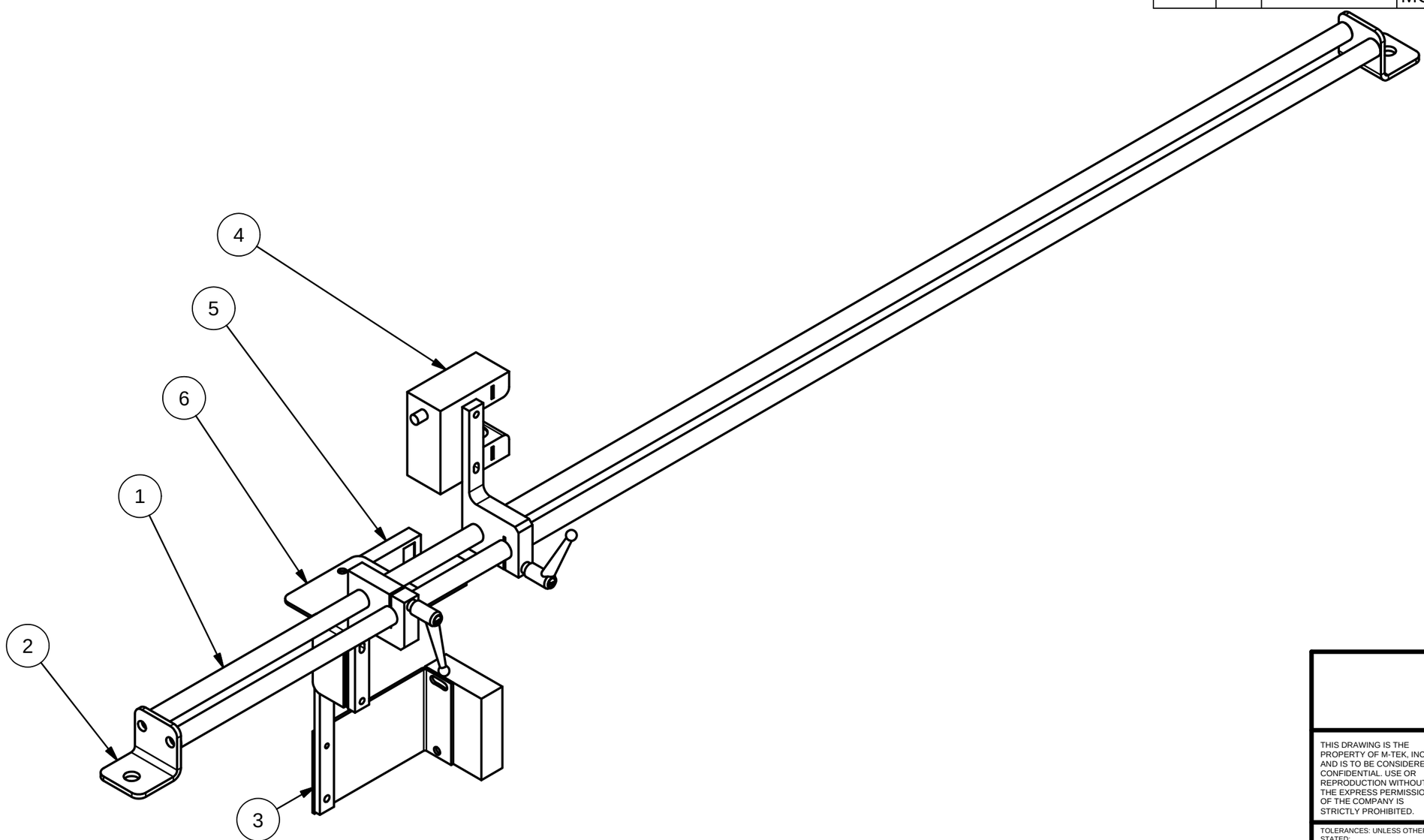
TITLE:

FILM ROLL ARM LOCK ASSEMBLY

DWG NO.: MA064-0002

SCALE: 1 : 2 | DATE: 7/27/2011 | SHEET 1 OF 1

PARTS LIST			
ITEM	QT	PART NO.	DESCRIPTION
1	2	114873C1	SHAFT REGISTRATION
2	2	114874C1	BRACKET REGISTRATION MOUNT
3	1	MA070-0004	REGISTRATION SENSOR ASSEMBLY
4	1	MA070-0005	TRACKING SENSOR ASSEMBLY
5	1	113008C1	SLOT SENSOR
6	1	121948C1	V45/V60 PRINTED FILM SENSOR MOUNT



M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

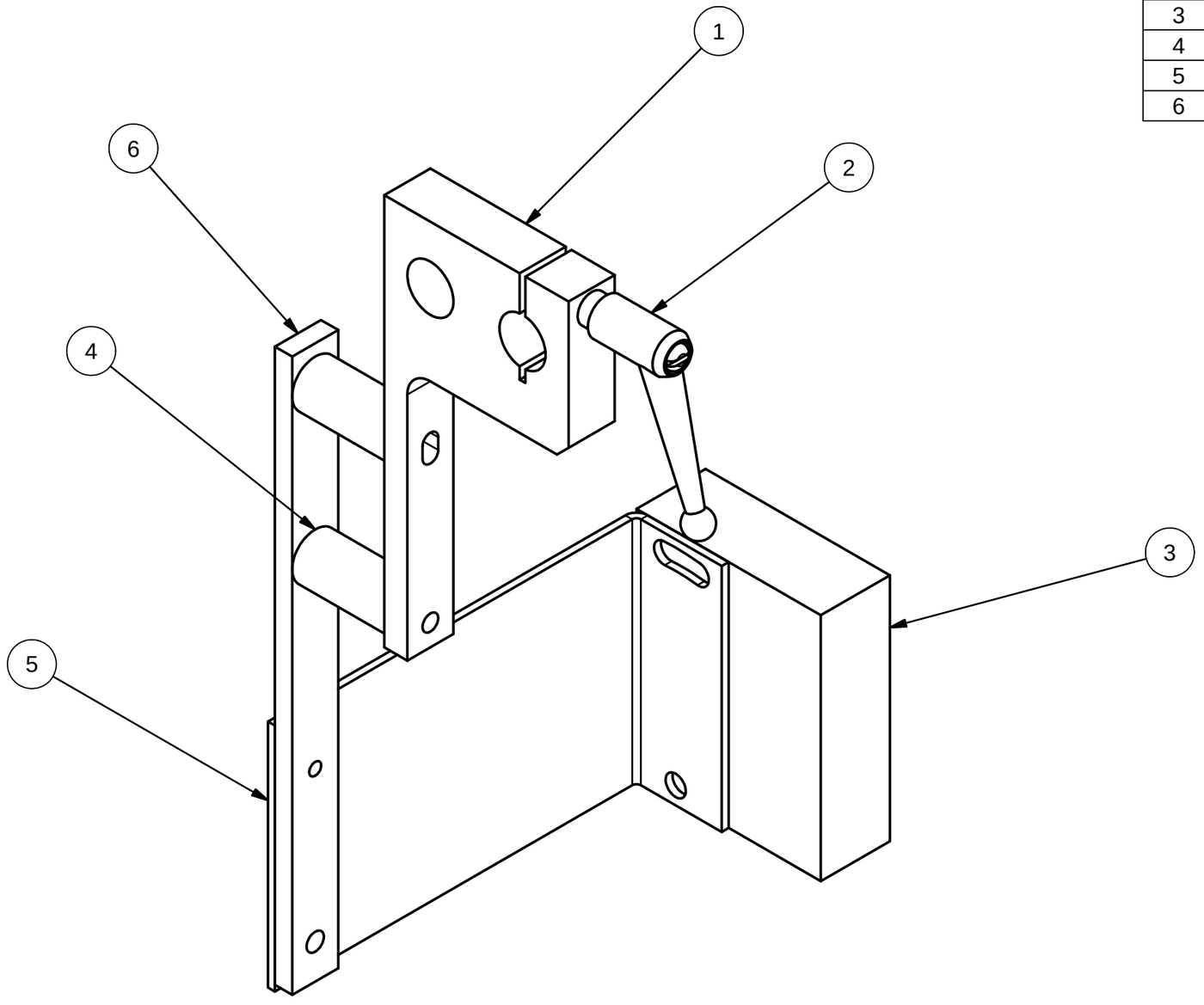
APPROVED MFG: APPROVED ENG: AD

DRAWN BY: AD

TITLE: EDGE DETECT SENSOR ASSEMBLY

DWG NO.: MA070-0003

SCALE: 0.35 : 1 | DATE: 4/8/2011 | SHEET 1 OF 1



PARTS LIST			
ITEM	QT	PART NO.	DESCRIPTION
1	1	114148C1	BRACKET SENSOR REGISTRATION
2	1	114151C1	HANDLE #10-24 THREAD SS
3	1	121308C1	COLOR SLOT SENSOR, REGISTRATION
4	2	121618C1	SPACER FOR SENSOR BRACKET
5	1	121619C1	BRACKET FOR SENSOR
6	1	121620C1	VERTICAL BRACKET FOR SENSOR

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

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

APPROVED MFG: APPROVED ENG: MF

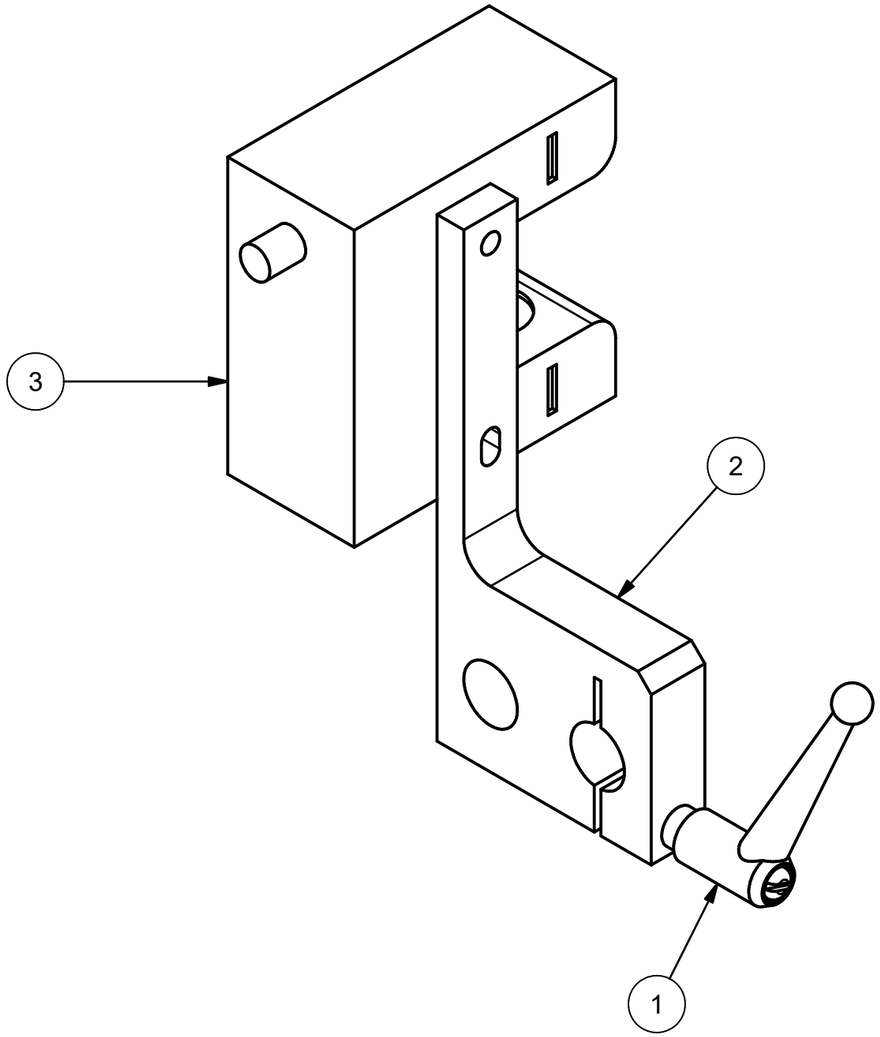
DRAWN BY: MF

TITLE: REGISTRATION SENSOR ASSEMBLY

DWG NO.: MA070-0004

SCALE: 1 : 1 | DATE: 10/6/2011 | SHEET 1 OF 1

REVISIONS				
ECO	REV	DESCRIPTION	DATE	APPROVED



PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QT
1	114151C1	HANDLE #10-24 THREAD SS	1
2	114148C1	BRACKET SENSOR REGISTRATION	1
3	120811C1	TRACKING SENSOR	1

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

APPROVED MFG: APPROVED ENG:

DRAWN BY: T. LIAKOPOULOS

TITLE:

TRACKING SENSOR ASSEMBLY

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

DWG NO.: MA070-0005

REV: -

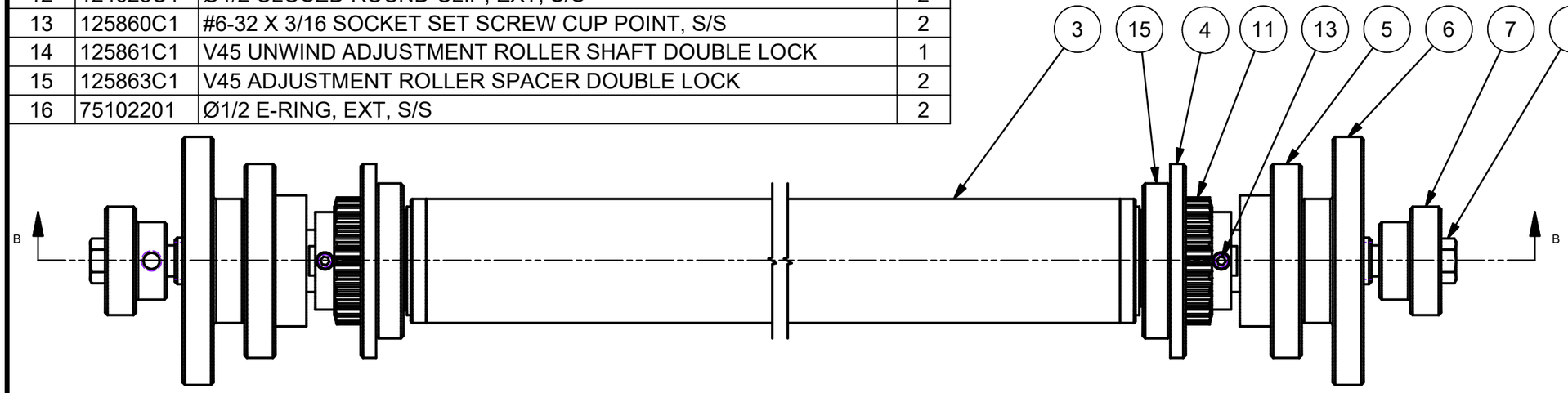
SCALE: 1 = 1

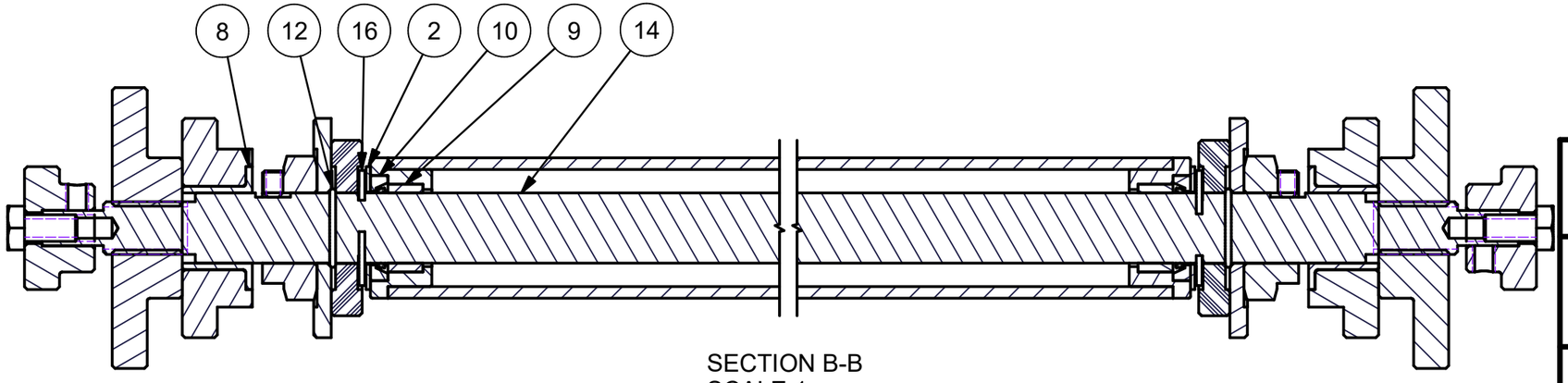
DATE: 10/02/12

SHEET 1 OF 1

PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	110221C1	#10-24 X 3/8 LNG HEX HEAD MACHINE SCREW, S/S	2
2	111120C1	98017A209, 1/2 MILITARY WASHER AN960-C816L, .515 ID X .875 OD X .031 THICK STAINLESS STEEL	2
3	123556C1	V45 UNWIND ADJUSTMENT ROLLER WELDMENT	1
4	123561C1	V45 UNWIND ADJUSTMENT ROLLER GEAR CLAMP	2
5	123562C1	V45 UNWIND ADJUSTMENT ROLLER T-SLOT	2
6	123563C1	V45 UNWIND ADJUSTMENT ROLLER STOP NUT	2
7	123564C1	V45 UNWIND ADJUSTMENT ROLLER KNOB	2
8	123565C1	1/2 ID TOP HAT BUSHING.	2
9	123566C1	1/2 ID X 1/4 LONG BUSHING	2
10	123567C1	1/2 ROD SEAL	2
11	123569C1	24T SPUR GEAR UNWIND MOD	2
12	124628C1	Ø1/2 CLOSED ROUND CLIP, EXT, S/S	2
13	125860C1	#6-32 X 3/16 SOCKET SET SCREW CUP POINT, S/S	2
14	125861C1	V45 UNWIND ADJUSTMENT ROLLER SHAFT DOUBLE LOCK	1
15	125863C1	V45 ADJUSTMENT ROLLER SPACER DOUBLE LOCK	2
16	75102201	Ø1/2 E-RING, EXT, S/S	2

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	05/07/2019	N.U.





SECTION B-B
SCALE 1

CV·TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

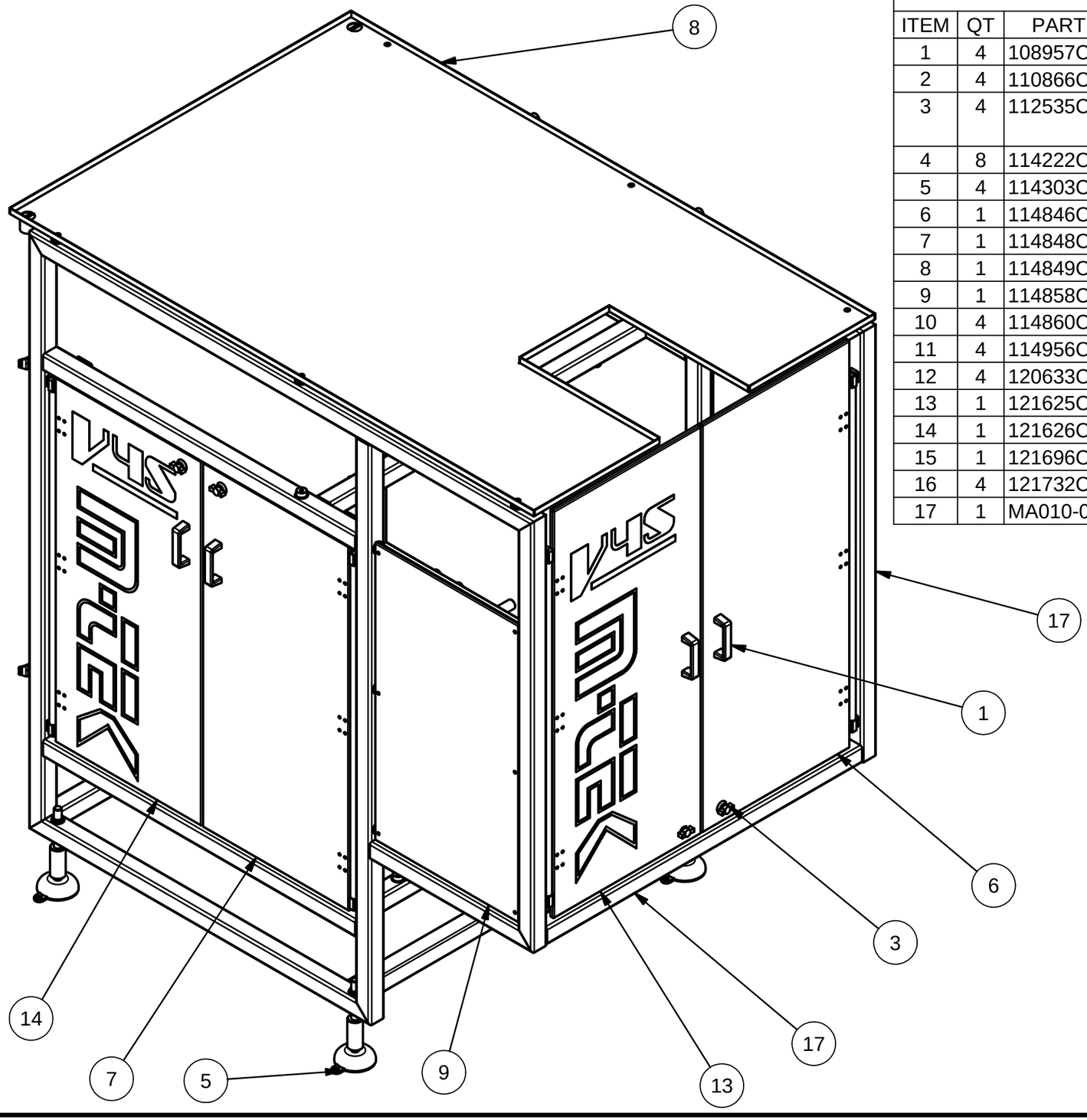
APPROVED MFG: APPROVED ENG: N.URSEI

DRAWN BY: C.ILONTA

TITLE: V45 UNWIND ADJUSTABLE ROLLER DOUBLE LOCK

DWG NO.: MA123-0011 A

SCALE: N/A DATE: 5/6/2019 SHEET 1 OF 1



PARTS LIST

ITEM	QT	PART NO.	DESCRIPTION
1	4	108957C1	VALU GUIDE-631-14, DOOR HANDLE BLACK
2	4	110866C1	BANNER CODED MAGNET SAFTEY SWITH
3	4	112535C1	EMKA 1/4 TURN WING KNOB ASSEMBLY W/ STAINLESS STEEL
4	8	114222C1	BLOCK PIVOT DOOR
5	4	114303C1	LEVELING PAD
6	1	114846C1	DOOR FRONT
7	1	114848C1	DOOR SIDE
8	1	114849C1	DRIP PAN WELDMENT
9	1	114858C1	FIXED SIDE GUARD
10	4	114860C1	BRACKET SWITCH
11	4	114956C1	DOOR PIVOT
12	4	120633C1	PAN DRAIN TUBE SUPPORT
13	1	121625C1	DOOR WITH LOGO, FRONT, V45
14	1	121626C1	DOOR WITH LOGO, SIDE, V45
15	1	121696C1	GUARD JUNCTION BOX SIDE WELDMENT
16	4	121732C1	SAFTEY INTERLOCK SENSOR
17	1	MA010-0004	MAIN FRAME

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

APPROVED MFG: APPROVED ENG: AD

DRAWN BY: adejkovic

TITLE: MACHINE GUARD

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

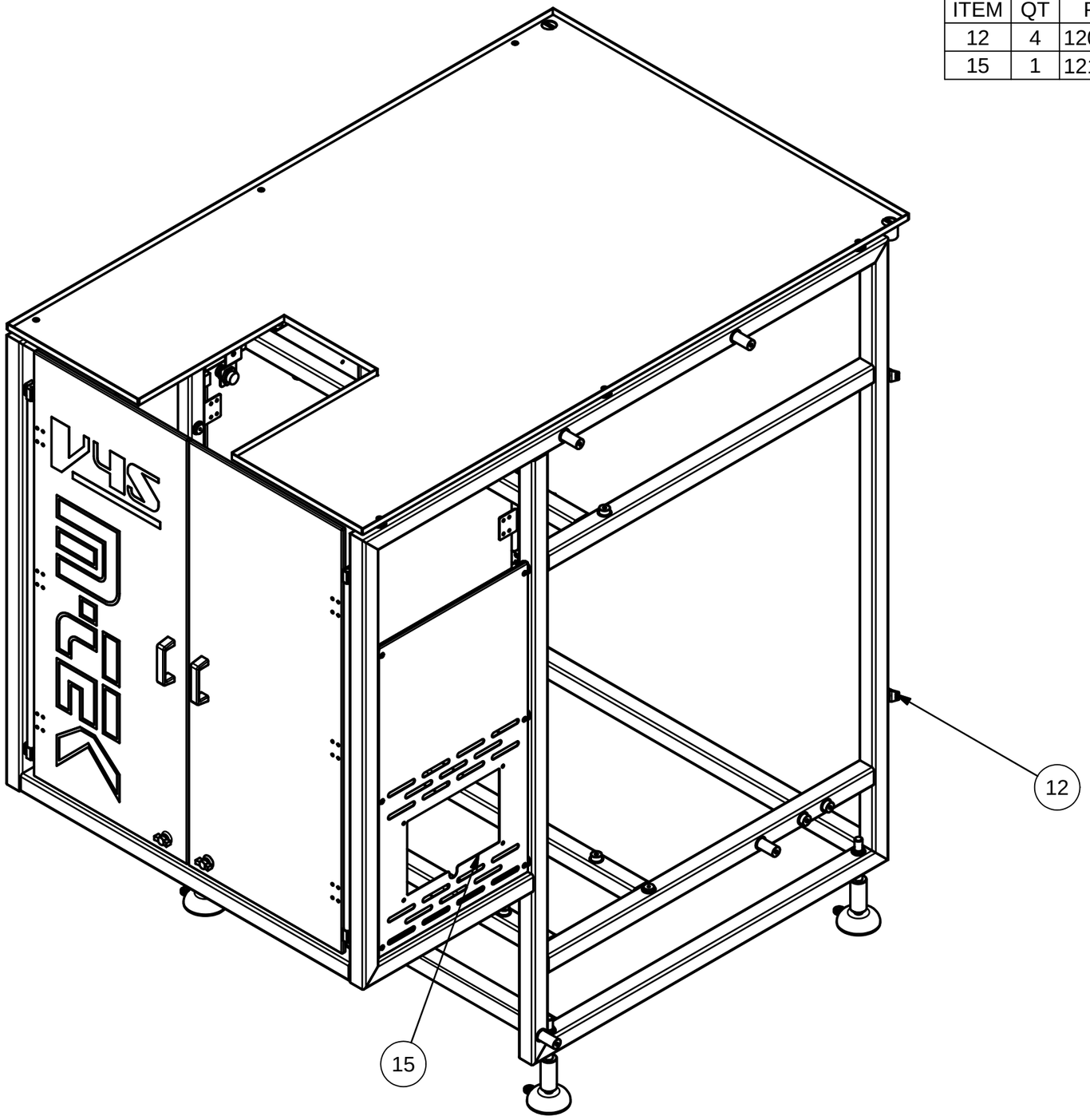
DWG NO.: MA080-0001

REV: A

SCALE: 0.09 : 1

DATE: 4/7/2011

SHEET 1 OF 3



PARTS LIST			
ITEM	QT	PART NO.	DESCRIPTION
12	4	120633C1	PAN DRAIN TUBE SUPPORT
15	1	121696C1	GUARD JUNCTION BOX SIDE WELDMENT

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

APPROVED MFG: APPROVED ENG: AD

DRAWN BY: adejkovic

TITLE: MACHINE GUARD

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

DWG NO.: MA080-0001

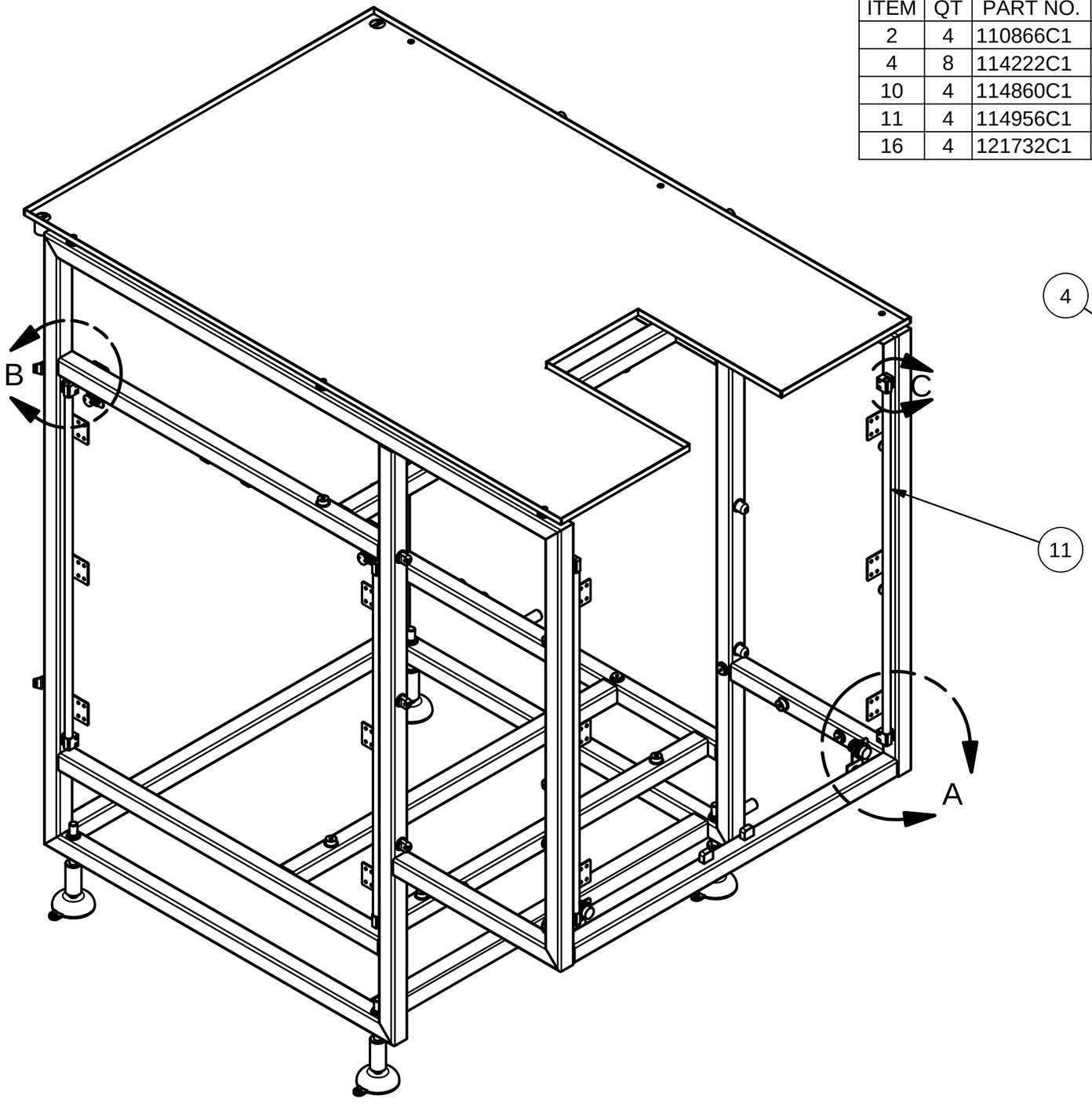
REV: A

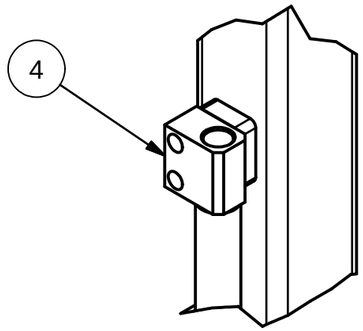
SCALE: 0.09 : 1

DATE: 4/7/2011

SHEET 2 OF 3

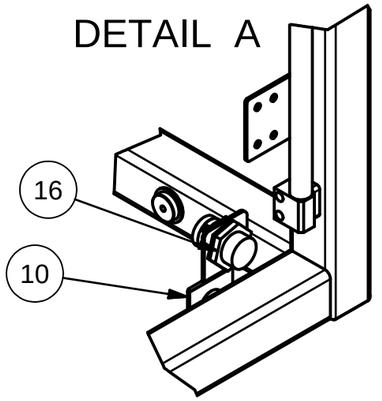
PARTS LIST			
ITEM	QT	PART NO.	DESCRIPTION
2	4	110866C1	BANNER CODED MAGNET SAFTEY SWITH
4	8	114222C1	BLOCK PIVOT DOOR
10	4	114860C1	BRACKET SWITCH
11	4	114956C1	DOOR PIVOT
16	4	121732C1	SAFTEY INTERLOCK SENSOR



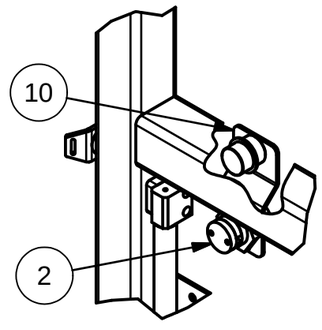


DETAIL C

DETAIL A



DETAIL B



M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

APPROVED MFG: APPROVED ENG: AD

DRAWN BY: adejkovic

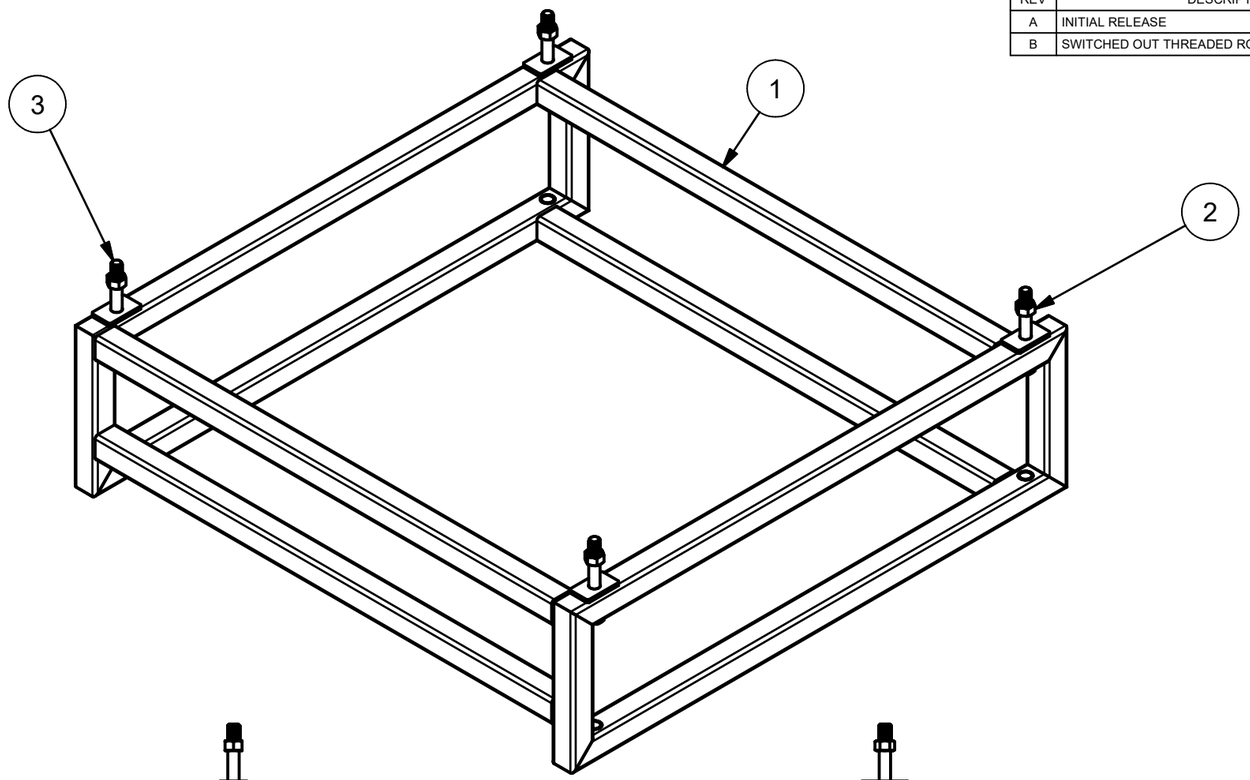
TITLE: MACHINE GUARD

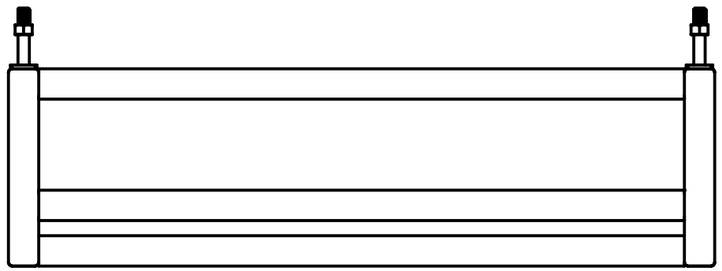
TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
DRILLED HOLE: STANDARD S.A.E.

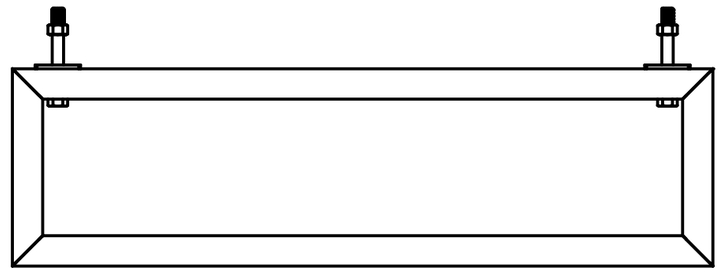
DWG NO.: MA080-0001 REV A

SCALE: 0.09 : 1 DATE: 4/7/2011 SHEET 3 OF 3

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE		N.B
B	SWITCHED OUT THREADED RODS FOR BOLTS	2/4/2021	MS







PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
1	124582C1	V45 FRAME RISER WELDMENT	1
2	75104501	3/4-10 HEX NUT, S/S	4
3	124670C1	3/4-10 X 6 LNG SS HHCS	4

M-TEK INC.

THIS DRAWING IS THE PROPERTY OF M-TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG:

DRAWN BY: Tomjr

TITLE: V45 CONVERSION STAND ASSEMBLY

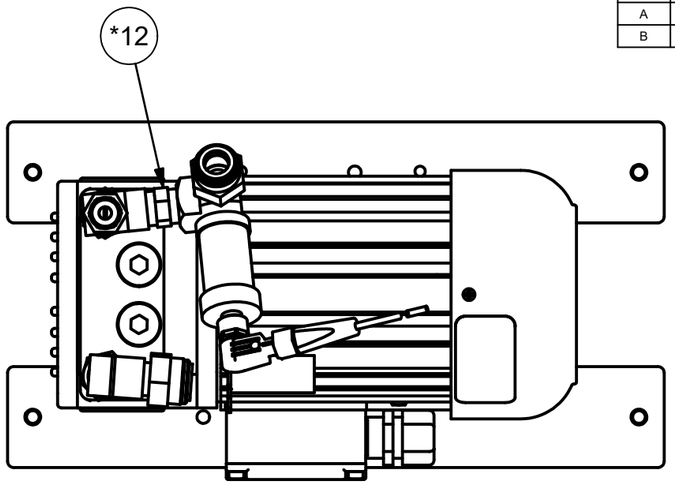
DWG NO.: MA010-0021 B

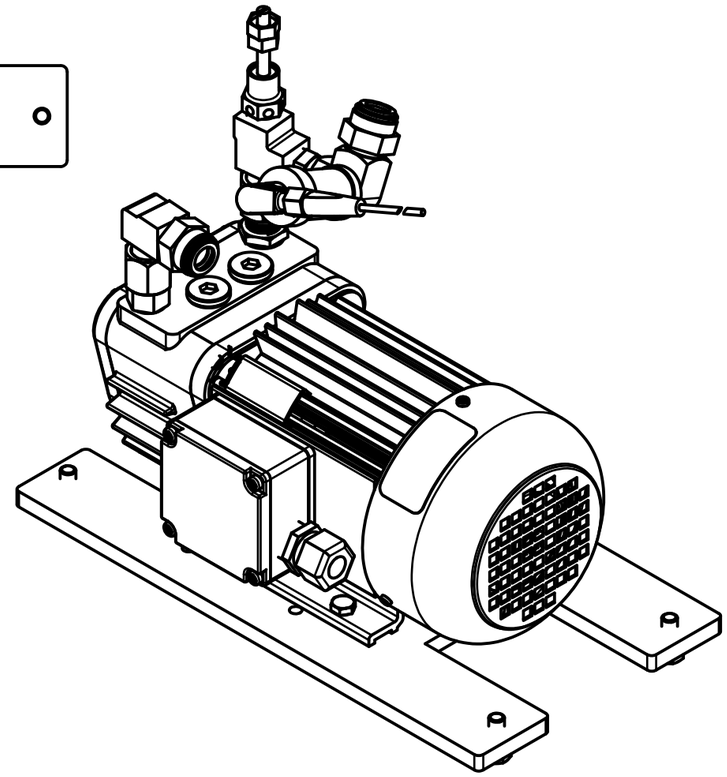
SCALE: N/A | DATE: 5/10/2018 | SHEET 1 OF 1

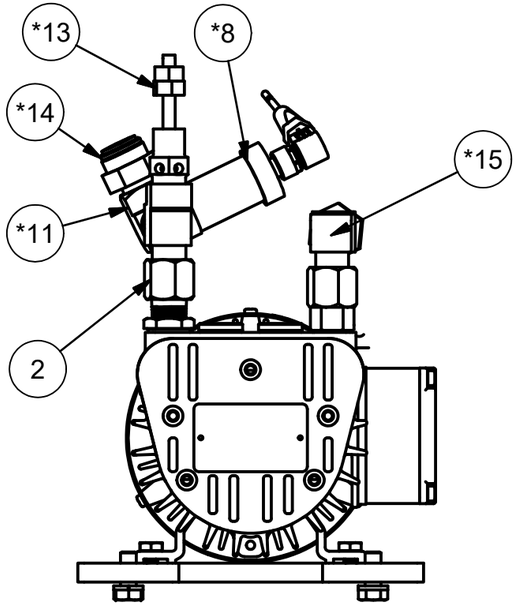
PARTS LIST			
ITEM	PART NO.	DESCRIPTION	QTY
2	140869C1	ADAPTER G3/8 TO 3/8NPT	2
3	141224C1	VACUUM PUMP - 7CFM - G3/8 TAPPED HOLES	1
4	141233C1	SCREW, HEX HEAD SS 1/4-20 X 9/16" LG	4
6	76201401	GAST PUMP MOUNTING RAIL	1
*7	9743-1045	CABLE, PHOTOEYE, 10M	1
*8	121302C1	ASHCROFT VACUUM SENSOR	1
*9	121501C1	M12 5-5 PIN 90DEGREE 1.5METER BLACK CABLE (FOR ASHCROFT)	1
*10	74203101	1/2 OD TUBE X 3/8 NPT MALE CONNECTOR, PLASTIC	2
*11	74308001	3/8 FEMALE ELBOW EXTRUDED	1
*12	74303901	3/8 HEX NIPPLE	1
*13	72102301	VACUUM RELIEF VALVE 3/8 NPT BRASS	1
*14	74306001	3/8 NPT MALE RUN TEE	1
*15	74304501	3/8 STREET ELBOW	1
16	71605201	CORD GRIP, .35 - .47 DIA., 1/2 NPT GREY	1
17	75107601	5/16-18 X 3/4 LNG HEX HEAD CAP SCREW, S/S	4
18	75102701	5/16 MED SPLIT LOCK WASHERS, S/S	4

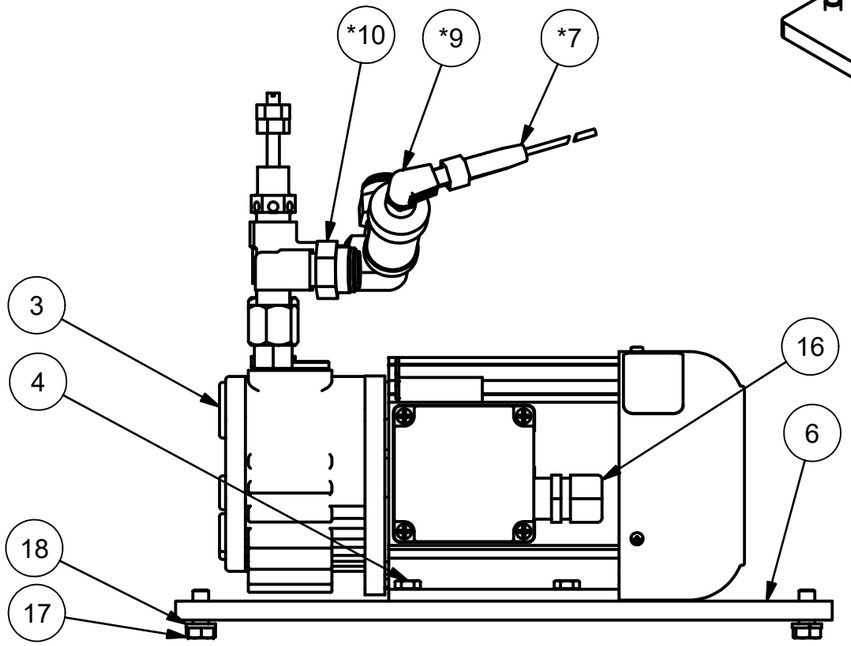
NOTES: ITEMS MARKED WITH * ARE EXISTING PARTS
THAT NEED TO BE REASSEMBLED AS SHOWN
SERVICE KIT FOR PUMP PART NUMBER 141314C1
SHIP WITH **B125**

REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
A	DRAWING CREATED	08/20/2025	S.P.
B	75109101 REPLACED WITH 75102701, 108733C1 REPLACED WITH 75107601	04/16/2026	R.B.









CV•TEK

THIS DRAWING IS THE PROPERTY OF CV•TEK, INC. AND IS TO BE CONSIDERED CONFIDENTIAL. USE OR REPRODUCTION WITHOUT THE EXPRESS PERMISSION OF THE COMPANY IS STRICTLY PROHIBITED.

TOLERANCES: UNLESS OTHERWISE STATED:
FRACTIONAL = ± .015
.XX = ± .015
.XXX = ± .005
.XXXX = ± .0005
DRILLED HOLE: STANDARD S.A.E.

APPROVED MFG: APPROVED ENG: A. DEJKOVIC

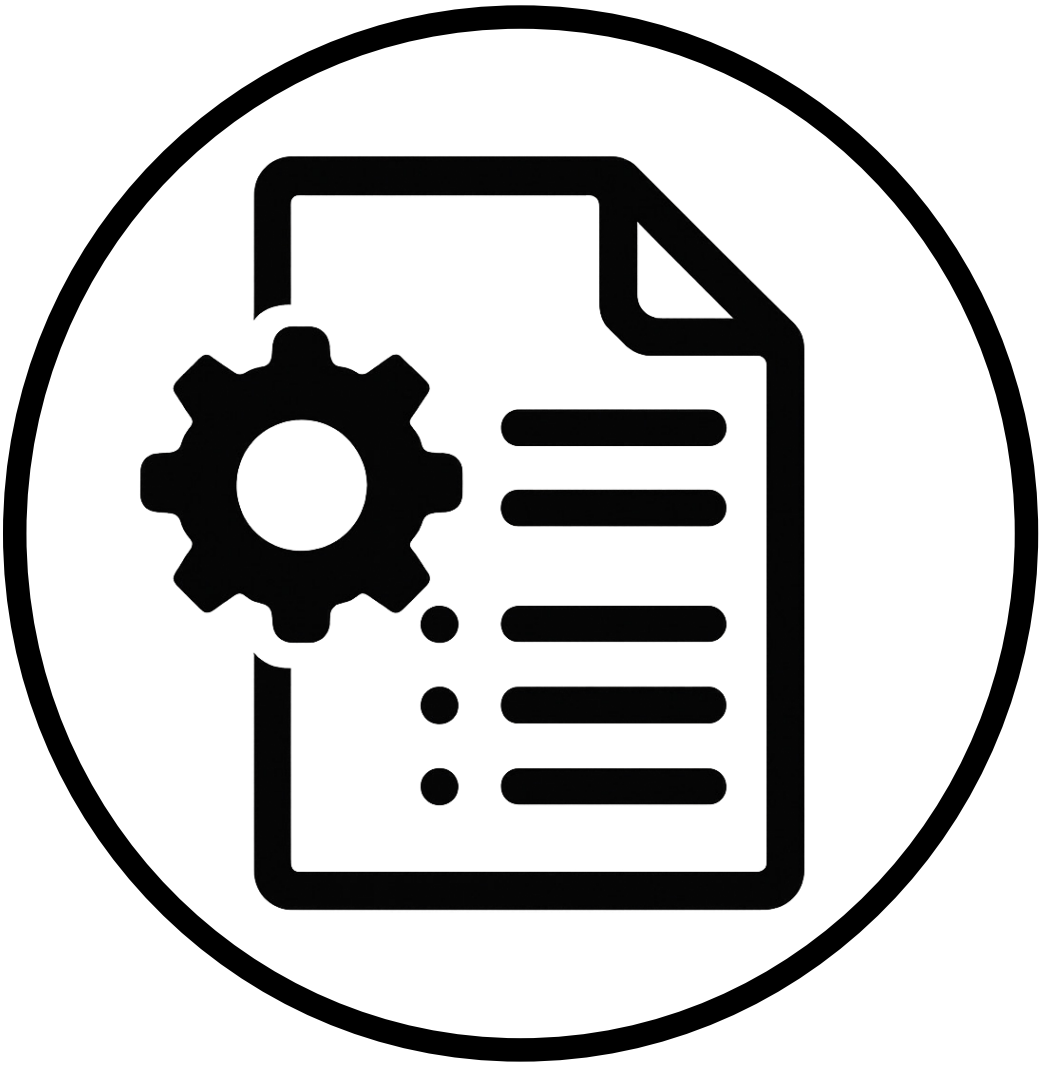
DRAWN BY: A.D.

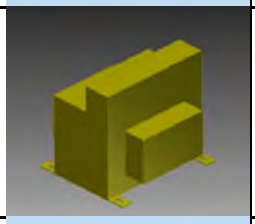
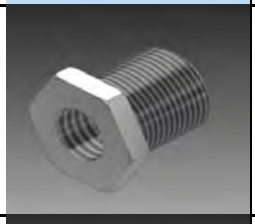
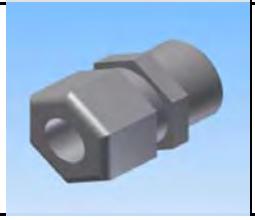
TITLE: V45 PUMP RETROFIT KIT

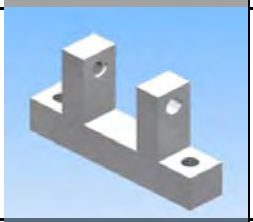
DWG NO.: MA250-0037 B

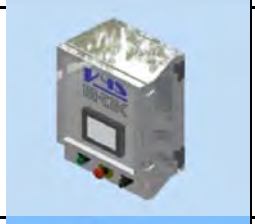
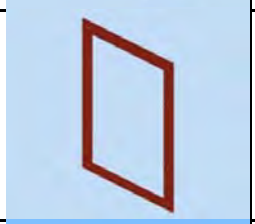
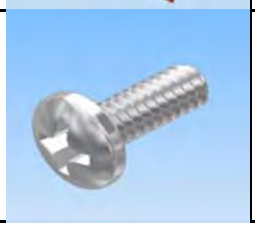
SCALE: N/A | DATE: 12/7/2010 | SHEET 1 OF 1

Chapter 16: Parts Lists



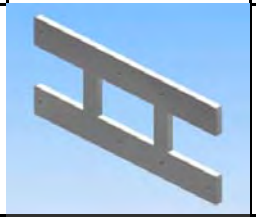
Item	Thumbnail	Part Number	Description	Quantity
1		MA020-0003 - V45	MAIN ELECTRICAL ENCLOSURE	1
1.1		75002801	DOOR LATCH	3
1.2		71010501	TRANSFORMER	2
1.3		112308C1	S.S. BULK FITTING	1
1.4		112309C1	FITTING	6
1.5		112458C1	3/4 NPT MUFFLER	2
1.6		71611601	CORD GRIP, SMALL DIA., 3/8 NPT GREY	3
1.7		71605101	.20-.35 DIA. CORD GRIP, 1/2 NPT	2

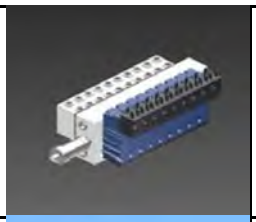
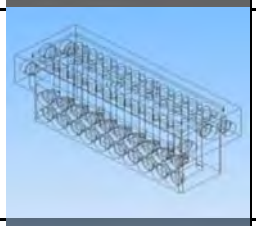
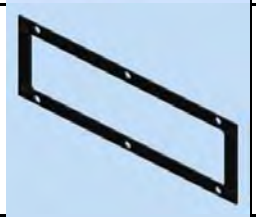
1.8		114739C1	ELECTRICAL CABINET BASE WELDMENT	1
1.9		114740C1	ELECTRICAL CABINET DOOR WELDMENT	1
1.10		72105201	10 CFM GAST VACUUM PUMP W/ODP MOTOR	1
1.12		114772C1	UNWIND ACTUATOR ROD	1
1.13		114357C1	.25 X 1.25 SHOULDER SCREW	2
1.14		114124C1	ACTUATOR LINEAR	1
1.15		114771C1	UNWIND ACTUATOR BRACKET	1
1.16		114785C1	STEPSEAL 2K, 1.25 ID, TRELLEBORG	1
1.17		114947C1	ELECTRICAL CABINET ACTUATOR SEAL	1

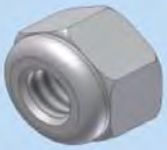
1.20		71002701	34 MM WIDE DIN RAIL (METER)	2
1.21		MA025-0005 - V45	HMI ENCLOSURE	1
1.21.1		120120C1	DISPLAY ENCLOSURE MOUNT BASE WELDMENT	1
1.21.2		120149C1	DISPLAY ENCLOSURE BODY WELDMENT	1
1.21.6		120131C1	DISPLAY ENCLOSURE WINDOW	1
1.21.7		120134C1	DISPLAY ENCLOSURE DOOR WELDMENT	1
1.21.8		120144C1	DRAW LATCH	4
1.21.9		120394C1	DISPLAY ENCLOSURE GASKET	1
1.21.10		120401C1	6-32 x 3/8 PAN HEAD SEALING SCREW	8

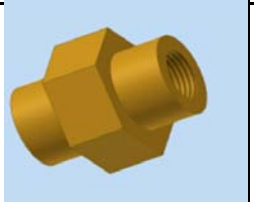
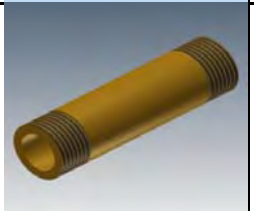
1.21.12		121096C1	5.7" DISPLAY	1
1.21.13		121737C1	V45 DISPLAY SUBPLATE	1
1.21.14		121738C1	V45 DISPLAY BOX STICKER	1
1.21.15		121740C1	M-TEK DISPLAY BOX STICKER	1
1.21.16		71105402	E-STOP BUTTON	1
1.21.17		71105702	3 POSITION SWITCH	1
1.21.18		71105302	GREEN PUSH BUTTON	1
1.21.19		71104402	RED LED AND 3 ACROSS LATCH	1
1.21.19.1		71106102	LATCH, 3 ACROSS	1

1.21.19.2		71104402	RED LED	1
1.21.20		71104403	GREEN LED AND 3 ACROSS LATCH	1
1.21.20.1		71106102	LATCH, 3 ACROSS	1
1.21.20.2		71104403	GREEN LED	1
1.21.21		71106102	LATCH, 3 ACROSS	1
1.21.22		71105802	CONTACT BLOCK	4
1.21.23		112209C1	SBY/RUN LEDEND PLATE	1
1.21.24		71105200	E-STOP STICKER	1
1.21.25		112208C1	3 POSTION SWITCH LEGEND PLATE	1

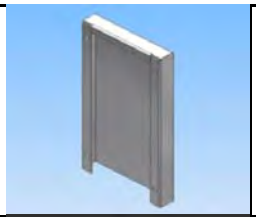
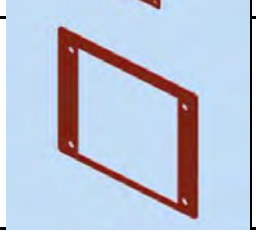
1.22		71604801	FITTING	1
1.23		74500401	1/2 NPT x 1 1/8" LG PLASTIC PIPE NIPPLE	2
1.24		112637C1	3/4 M x 1/2 F PLASTIC HEX REDUCER	2
1.25		74502301	3/4 NPT FEMALE PLASTIC 45 ELBOW	2
1.26		113562A1	DISCONNECT SWITCH	1
1.27		112286C1	5/8 PLASTIC FLAT WASHER	2
1.28		112050C1	.391 I.D. SHAFT LOAD DISK (1.5 O.D., .25 THK.)	1
1.29		108733C1	3/8-16 UNC x 3/4 LG. - HHCS	1
1.30		76201401	10 CFM PUMP BASE	1

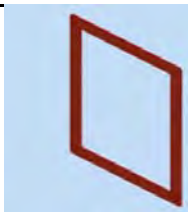
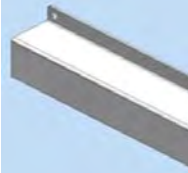
1.31		MA020-0005	VALVE BLOCK ASSEMBLY	1
1.31.1		120064C1	PLASTIC VALVE BLOCK	1
1.31.2		114224C1	VALVE SOLENOID 4-WAY	10
1.31.3		120283C1	4-40 UNC x 1 1/4 SOCKED HEAD CAP SCREW	20
1.31.4		120336C1	VALVE MANIFOLD BLOCK PLATE	1
1.31.5		120338C1	4-40 x 3/8" SOCKET HEAD CAP SCREW	2
1.31.6		120337C1	VALVE MANIFOLD BLOCK GASKET	1
1.31.7		120284C1	4-40 UNC THREADED INSERT	20
1.31.8		114954C1	VALVE BLOCK CABINET GASKET	1

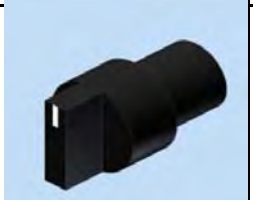
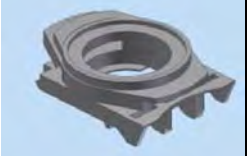
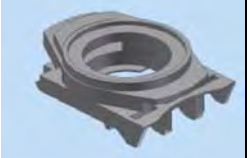
1.31.9		74204401	3/8 TUBE INSERT	26
1.31.10		121049C1	VACUUM SENSOR	1
1.32		114746C1	TRANSFORMER COVER	1
1.33		120449C1	FUSE SUB PLATE	1
1.34		75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT	1
1.36		120615C1	ELECTRICAL CABINET ADAPTER PLATE	1
1.37		120625C1	ELECTRICAL CABINET ADAPTER PLATE	1
1.38		71603301	90 DEG LIQUIDTITE CONNECTOR	1
1.40		112320C2	DISCONNECT	1

1.41		MA028-0001	GAS VALVE ASSEMBLY	1
1.41.1		73103701	ASCO VALVE 3/8 NPT N.C. 24 VAC BRASS	1
1.41.2		74303501	3/8M x 1/4M HEX REDUCER	2
1.41.3		73503601	Regulator R18-02-F0G0	1
1.41.4		73502701	NORGREN PRESSURE GAUGE, 0-160 PSI, 1/4 NPT REAR MOUNTING	1
1.41.5		74204201	3/8 OD TUBE x 1/4 NPT MALE FIXED ELBOW, PLASTIC	1
1.41.6		74301301	3/8 UNION	1
1.41.7		74307901	3/8 x 2 1/2 BRASS NIPPLE	1
1.41.8		121049C1	VACUUM SENSOR	1

1.42		MA020-0014	ELECTRICAL CABINET HEAT EXCHANGER	1
1.42.1		121630C1	HEAT EXCHANGER	1
1.43		71500401	FAN	2
1.44		121049C1	VACUUM SENSOR	1
1.45		112552C1	LARGE VALVE	1
1.46		121666C1	PLASTIC EDGE TRIM	3
1.47		121669C1	FAN PLATE WELDMENT	1
1.47.1		121664C1	ELECTRICAL CABINET FAN PLATE	1
1.47.2		121668C1	10-24 WELD NUT	3

1.48		76203201	DOOR VENT	1
1.49		MA020-0016	V45 DUCT	1
1.49.1		121689C1	V45 DUCT BASE WELDMENT	1
1.49.2		121694C1	V45 DUCT 2.00 DIA. TUBE	2
1.49.3		121690C1	V45 DUCT REMOTE WELDMENT	1
1.49.4		121711C1	V45 DUCT BULKHEAD PLATE REAR	1
1.49.5		121712C1	V45 DUCT REMOTE BACK PLATE	1
1.49.6		121715C1	V45 DUCT PLATE GASKET	1
1.49.7		121717C1	V45 DUCT MOUNTING GASKET	1

1.49.8		121716C1	V45 DUCT BACK PLATE GASKET	1
1.49.9		120372C1	DUCT GASKET	1
1.49.10		121720C1	CABINET ONE WAY DRAIN VALVE	1
1.50		121731C1	ELECTRICAL CABINET FAN ADAPTER PLATE	1
1.51		121742C1	V45 DUCT VENT COVER BASE	1
1.52		112211C1	Left (arrow) -Track Legend Plate for 22.5mm Knockout	1
1.53		112214C1	Run - Pgm Legend Plate for 22.5mm Knockout	1
1.54		112212C1	Track - Right (arrow) Legend Plate for 22.5mm Knockout	1
1.55		112959C1	Ext - Sync - Int Legend Plate for 22.5mm Knockout	1

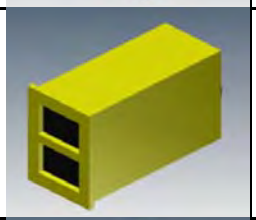
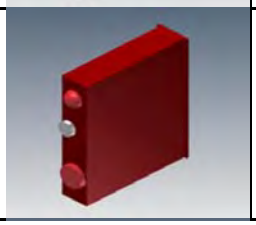
1.56		112960C1	CLEAN OUT	1
1.57		71105602	2 POSITION SWITCH	2
1.58		71104404	WHITE LED AND 3 ACROSS LATCH	4
1.58.1		71106102	LATCH, 3 ACROSS	1
1.58.2		71104404	WHITE LED	1
1.59		71105502	AMBER BUTTON	4
1.60		71109202	2 POSITION KEY SWITCH	1
1.61		71106102	LATCH, 3 ACROSS	3
1.62		71105802	CONTACT BLOCK	7

1.63		121762C1	UNWIND LOADING BUTTON PLATE GASKET	1
1.64		121763C1	UNWIND LEGEND PLATE FOR 22.5mm KNOCKOUT	1
1.65		121764C1	WIND LEGEND PLATE FOR 22.5mm KNOCKOUT	1
1.66		121777C1	UNWIND LOADING BUTTON PLATE	1
1.67		120475C2	FUSE BLOCK, MIDGET FUSE, 600V 32AMP	29
1.68		120752C1	END CLAMP	18
1.69		120747C1	END COVER FOR UT-2,5	1
1.70		120746C1	1 TIER FEED THRU TERMINAL B	5
1.71		121627C1	AC SERVO DRIVE	1

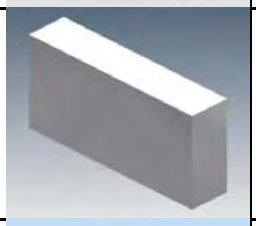
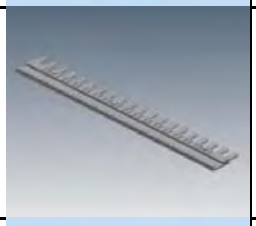
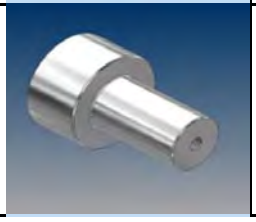
1.72		120716C1	TWO TIER TERMINAL BLOCK	11
1.73		120717C1	PARTITION PLATE FOR TWO TIER TERMINAL BLOCK	1
1.74		120742C1	2 TIER FEED THROUGH TERMINAL BLOCK	1
1.75		120743C1	3 TIER SENSOR FEED THROUGH TERMINAL BLOCK	1
1.76		121990C1	V45 ELECTRICAL PANEL ASSEMBLY	1
1.76.1		114751C1	ENCLOSURE PANEL	1
1.76.2		120660C1	3x7 DUCT	2
1.76.3		120659C1	2x3 DUCT	4
1.76.4		121719C1	CABINET DEHUMIDIFIER	1

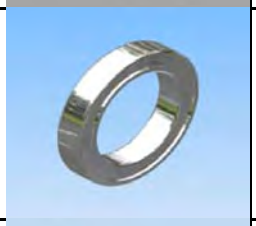
1.76.5		71002701	RAIL, DIN 34 mm WIDE (METERS)	5
1.76.6		120752C1	END CLAMP	21
1.76.7		120749C1	1 TIER FEED THRU TB UT6	11
1.76.8		120747C1	END COVER FOR UT-2,5	18
1.76.9		120746C1	1 TIER FEED THRU TERMINAL B	47
1.76.10		120751C1	GROUND BLOCK	4
1.76.11		110505C1	SOLID STATE RELAY	3
1.76.12		71102501	SOCKET, 2 POLE RELAY	2
1.76.13		71103401	RELAY, 2 POLE, 24VAC	2

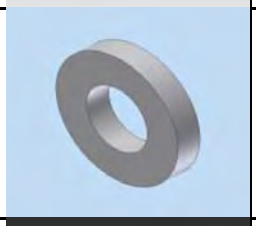
1.76.14		112592C1	AC MOTOR DRIVE	3
1.76.15		112081C1	POWER SUPPLY, 24VDC 240W	1
1.76.16		110868C1	TWO CHANNEL E-STOP MODULE	2
1.76.17		110867C1	GATE MONITORING MODULE	1
1.76.18		121733C1	FEED THRU RESISTER TB	1
1.76.19		121734C1	FEED THRU RESISTER TB, COVER	1
1.76.20		121306C1	HIGH SPEED SSR, 24 VDC	1
1.76.21		120561C1	TERMINAL BLCK SCRW SCKT RELAY	4
1.76.22		71023801	PLUG IN RELAY MODULE	2

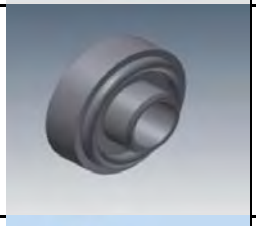
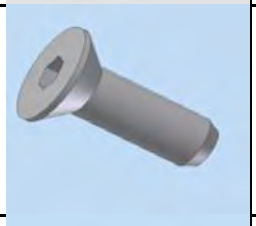
1.76.23		120562C1	PLUG IN RELAY MODULE	2
1.76.24		71003101	RECTIFIER AC/DC, UPTO 220 VAC	2
1.76.25		112594C1	11 PIN SOCKET	1
1.76.26		112585C1	AMPLIFIER MODULE	1
1.76.27		71404701	MINI CONTACTOR, 24 VAC	1
1.76.28		71405001	OVERLOAD 1.4-2.3 AMP	1
1.76.29		112924A1	RELAY BOARD ASSEMBLY	1
1.76.30		110324C1	24VAC 3A PLUG IN RELAY	15
1.76.31		110524C1	24VAC 3A PLUG IN RELAY	1

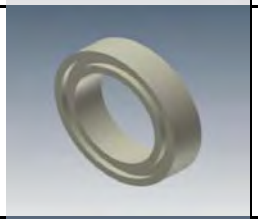
1.76.32		112071C1	POWER SUPPLY, 24 VDC	1
1.76.33		112053C1	16 DC INPUT CARD	1
1.76.34		112054C1	16, 24 DC SINK OUTPUTS	2
1.76.35		112056C1	8 ANALOG INPUTS +/-10.0	1
1.76.36		112055C1	8 ANALOG OUTPUTS +/- 10	1
1.76.37		113498C1	RTD INPUT CARD	1
1.76.38		112064C1	RIGHT END CAP TERMINATOR	1
1.76.39		112008C1	STEPPER/SERVO DRIVE CARD	1
1.76.40		112076C1	COMPACT I/O EXPANSION CABLE	1

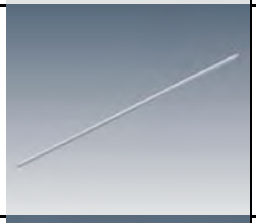
1.76.41		112052C1	PLC BASE UNIT	1
1.76.42		112063C1	PLC PROCESSOR UNIT	1
1.76.43		112530C1	MEMORY MODULE, 16K	1
1.76.44		110554C1	4 OR 5 WIRE QUICK DISCONNECT 5 METERS	2
1.76.45		120484C1	SS RELAY JUMPER	1
1.76.46		121501C1	M12 5 PIN 90 DEGREE CONNECTOR	3
1.76.47		120718C1	VERT POTENTIAL BRIDGE	1
3		MA060-0003 - V45	UNWIND FILM ASSEMBLY	1
3.1		112628C1	U ROLLER STUB SHAFT	2

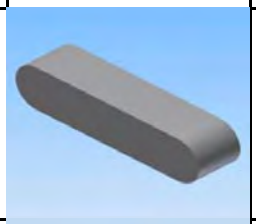
3.2		113850A1	U WHEEL ROLLER ASSEMBLY	4
3.2.1		112627C1	CROSS SEAL SUPPORT ROLLER	1
3.2.2		112201C1	BALL BEARING, 25 mm I.D., 37 mm O.D., 7 mm WIDE	2
3.2.3		112203C1	37 mm BORE INTERNAL RETAINING RING	2
3.3		112072C1	1" DELRIN FLAT WASHER (1.025 I.D. x 1.750 O.D. x .062 THK.)	8
3.4		112073C1	5/16 FLAT WASHER (.344 ID X 1.50 OD X .063 THK)	4
3.5		75107501	5/16-18 X 1/2 LG. - HHCS	4
3.6		114593C1	SCREW SHOULDER 3/8" RH	1
3.7		108501C1	PLASTIC FLANGE BUSHING .375 ID .469 OD .687 FLANGE DIAMETER .25 LNG	2

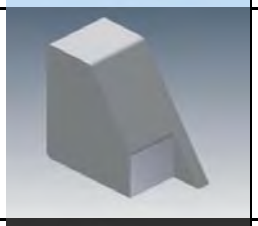
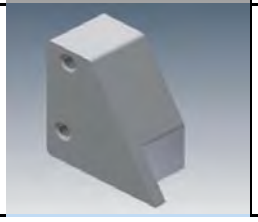
3.8		114594C1	SCREW SHOULDER 3/8" LH	1
3.9		114101C1	PAN BOTTOM	1
3.10		114760C1	DANCER WELDMENT	1
3.11		110555C1	5/16 FLAT WASHER (.344 I.D. X .688 O.D. X .125 THK.)	16
3.12		114770C1	BAR CROSS	2
3.13		114806C1	UNWIND SIDE PLATE	1
3.14		114809C1	UNWIND SIDE PLATE	1
3.15		MA123-0002	ADJUSTABLE ROLLER, UNWIND ASSEMBLY	2
3.15.1		114630C1	SPUR GEAR, 24 TH, MODIFICATION	2

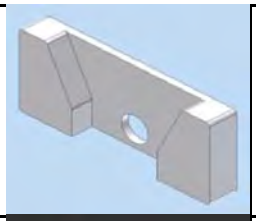
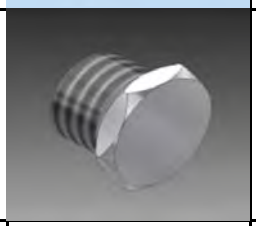
3.15.2		114853C1	UNWIND ADJUSTMENT KNOB	1
3.15.3		114903C1	UNWIND ROLLER HANDWHEEL STOP	1
3.15.4		120104C1	HOUSING BEARING,ROLLER UNWIND	2
3.15.5		120114C1	TUBE, ADJUSTABLE ROLLER UNWIND	1
3.15.6		120113C1	SHAFT,ADJUSTABLE ROLLER UNWIND	1
3.15.7		120106C1	BALL BEARING 12 X 18 X 4 SS	2
3.15.8		120123C1	END CAP, ADJUSTABLE ROLLER UNWIND	2
3.15.9		108734C1	Hexagon Socket Flat Countersunk Head Cap Screw	1
3.15.10		120651C1	ADJUSTMENT ROLLER LOCK DOWN WASHER	1

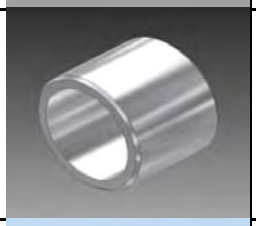
3.16		110613C1	1/4 FLAT WASHER (.281 I.D. x 1.000 O.D. x .125 THK.)	16
3.17		108767C1	1/4 DIA. x 5/8 LONG DOWEL PIN	4
3.18		114934C1	SHAFT, SPACER	5
3.19		MA123-0005	MAIN ROLLER, UNWIND ASSEMBLY	12
3.19.1		120105C1	SHAFT, MAIN ROLLER UNWIND	1
3.19.2		120103C1	END CAP,MAIN ROLLER UNWIND	2
3.19.3		120104C1	HOUSING BEARING,ROLLER UNWIND	2
3.19.4		120107C1	TUBE, MAIN ROLLER UNWIND	1
3.19.5		120106C1	BALL BEARING 12 X 18 X 4 SS	2

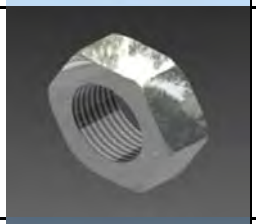
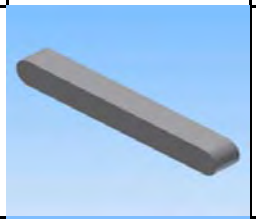
3.19.6		120115C1	O-RING .737 ID X .103 CS, #116	2
3.20		MA123-0006	DANCER ROLLER, UNWIND ASSEMBLY	2
3.20.1		120103C1	END CAP,MAIN ROLLER UNWIND	2
3.20.2		120104C1	HOUSING BEARING,ROLLER UNWIND	2
3.20.3		120106C1	BALL BEARING 12 X 18 X 4 SS	2
3.20.4		120108C1	TUBE, DANCER ROLLER UNWIND	1
3.20.5		120109C1	SHAFT, DANCER ROLLER UNWIND	1
3.20.6		120115C1	O-RING .737 ID X .103 CS, #116	2
3.21		114120C1	BALL PLUNGER 5/8-11	2

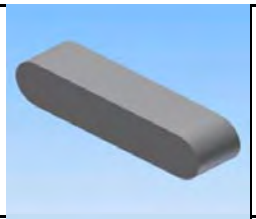
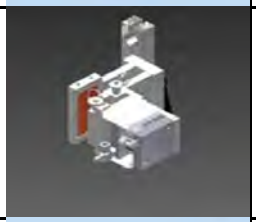
3.22		120187C1	DETENT MOUNTING BLOCK	2
3.23		120592C1	ROLLER SHAFT	2
3.24		114103C1	MECHANICAL SPLICE	1
3.25		MA062-0001	ROLL UNWIND SHAFT & GEAR ASSEMBLY	1
3.25.1		112590C1	ROLL UNWIND S/S GEAR	1
3.25.2		75106401	1/4-20 UNC x 3/4 LG. - HHCS	1
3.25.3		113220C1	1/4 SQ. x 1.115 LG. KEY - TWO RADIUS ENDS	1
3.25.4		110290C1	1/4 FLAT WASHER (.265 I.D. X .810 O.D. X .089 THK.)	1
3.25.5		112630C1	5/16 FLAT WASHER (.344 I.D. x 1.500 O.D. x .125 THK)	1

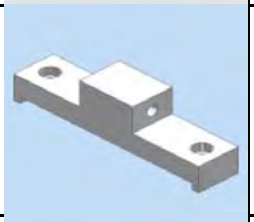
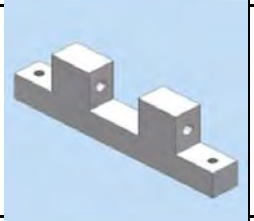
3.25.6		114122C1	ROLL UNWIND SHAFT AIR EXPANSION CAM/LUG V60	1
3.25.7		113855C1	SPACER WASHER, SPINDLE GEAR - V32 BOLTED UNWIND	1
3.26		114795C1	SHAFT POSITIONING FRONT BLOCK	1
3.27		MA061-0003	MOTOR SIDE, ROLL SUPPORT ASSEMBLY	1
3.27.1		110090C1	5/8 FLAT WASHER (.628 I.D. x .875 O.D. x .054 THK.)	2
3.27.2		108990C1	BALL BEARING, .6250 I.D., 1.3750 O.D., .3438 WIDE	3
3.27.3		112462C1	UNWIND BEARING SPACER	2
3.27.4		114797C1	UNWIND SHAFT BEARING BLOCK	1
3.28		114796C1	SHAFT POSITIONING FRONT BLOCK	1

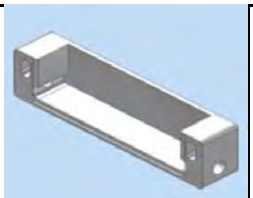
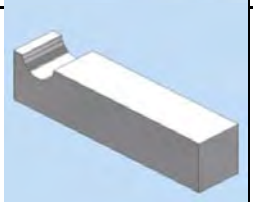
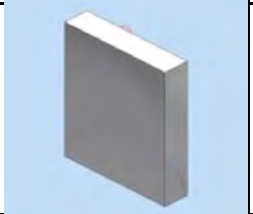
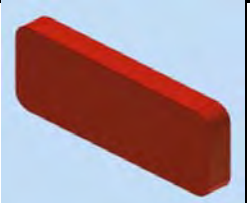
3.29		112465C1	UNWIND SHAFT POSITIONING BLOCK	1
3.30		MA064-0002	FILM ROLL ARM LOCK ASSEMBLY	1
3.30.1		120195C1	ROLL TIE DOWN BUSHING	2
3.30.2		108990C1	BALL BEARING, .6250 I.D., 1.3750 O.D., .3438 WIDE	1
3.30.3		120194C1	ROLL TIE DOWN PIN SPACER	1
3.30.4		108896C1	.250 DIA. x 1.500 lg. DOWEL PIN	2
3.30.5		120415C1	ARM ROLL LOCK	1
3.30.6		120416C1	BRACKET ROLL LOCK	2
3.30.7		120417C1	SPACER ROLL LOCK	1

3.30.8		120418C1	PIN ROLL LOCK	1
3.30.9		120419C1	PIN BEARING ROLL LOCK	1
3.30.10		108573C1	1/4 FLAT WASHER (.281 I.D. x 1.000 O.D. x .047 THK.)	1
3.30.11		120431C1	WASHER PLASTIC	2
3.30.12		120571C1	PLUNGER PIN 3/8	1
3.30.13		120593C1	ROLL TIE DOWN SHAFT	1
3.30.14		75103801	1/4-20 UNC HEX NUT	1
3.31		114893C1	BRACKET SWITCH	1
3.32		112500C1	ALLEN BRADLEY ULTRASONIC SENSOR	1

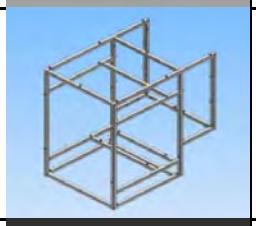
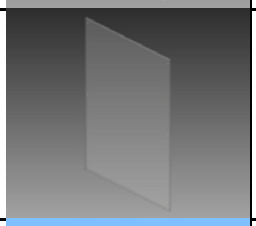
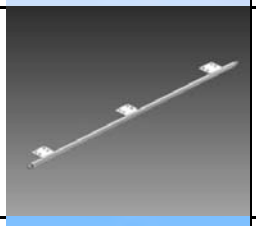
3.38		114615C1	GEAR RACK W / CUTOUT	4
3.39		120498C1	INDUCTIVE PROXIMITY SWITCH	1
3.40		MA061-0010	AC MOTOR DRIVE	1
3.40.1		112590C1	ROLL UNWIND S/S GEAR	1
3.40.2		112283C1	1-14 UNS HEX JAM NUT	1
3.40.3		112986C1	MINICASE GEAR MOTOR 0.25 HP, 230/460V, 3-PHASE, 60:1 RATIO, 1680 RPM, w/ KEY #113219C1, INCLUDE B-77	1
3.40.4		110290C1	1/4 FLAT WASHER (.266 I.D. x .812 O.D. x .0845 THK.)	1
3.40.5		108586C1	1/4-20 UNC x 5/8 LG. - HHCS	1
3.40.6		113219C1	UNWIND MOTOR KEY	1

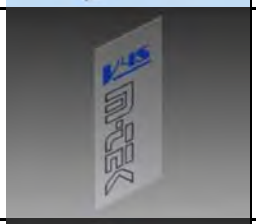
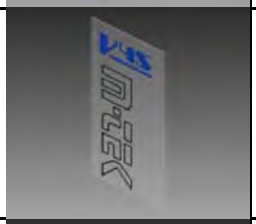
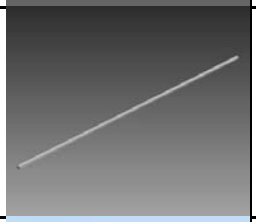
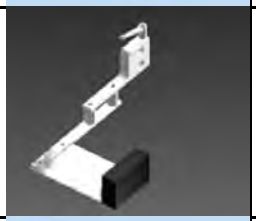
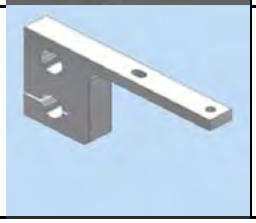
3.40.7		113220C1	1/4 SQ. x 1.115 LG. KEY - TWO RADIUS ENDS	1
3.40.8		121631C1	V45 UNWIND DRIVE SHAFT	1
3.40.9		121632C1	V45 UNWIND MOTOR MOUNT BRACKET	1
3.41		121695C1	UNWIND DANCER SPACER	2
3.42		MA130-0004	V45/V60 BAG CODER ASSEMBLY	1
3.42.1		120964C1	QUICK RELEASE PIN	1
3.42.2		120967C1	CODER CYLINDER PLATE WELDMENT	1
3.42.2.1		120968C1	CODER CYLINDER PLATE	1
3.42.2.2		120969C1	1/2-20 x 1.50" THREADED ROD	1

3.42.3		120970C1	GUIDE PLATE	2
3.42.4		120974C1	CODER CYLINDER BRACKET	1
3.42.5		120963C1	CODER CYLINDER	1
3.42.6		73501701	1/8 N.P.T. FLOW CONTROL	1
3.42.7		74204101	1/4 O.D. TUBE X 1/8 NPT, FIXED ELBOW MALE, PLASTIC	1
3.42.8		120972C1	HOLDING BRACKET	1
3.42.9		120971C1	CODER BRACKET	1
3.42.10		75002001	PIN, QUICK RELEASE	1
3.42.11		120966C1	CODER BLOCK COVER PLATE	1

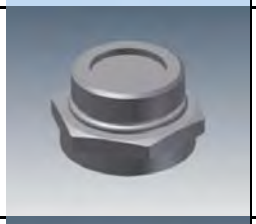
3.42.12		120965C1	BAG CODER, DUAL 1/4 CHARACTER HOLDER FOR 13 CHARACTERS	1
3.42.13		76112901	1/4 BAG CODER CHARACTER	1
3.42.14		75105101	1/2-20 UNF JAM NUT	1
3.42.15		121726C1	V45/V60 BAG CODER PLATEN	1
3.42.16		121727C1	V45/V60 BAG CODER SUPPORT BAR	1
3.42.17		121728C1	V45/V60 BAG CODER TIE PLATE	1
3.42.18		120976C1	SIDE RUBBER HOLDER	2
3.42.19		120977C1	RUBBER, CYLINDER BUMPER	1
3.42.20		121730C1	V45/V60 BAG CODER CLAMP	1

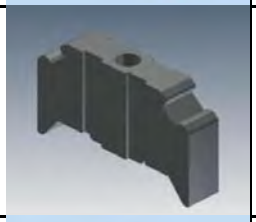
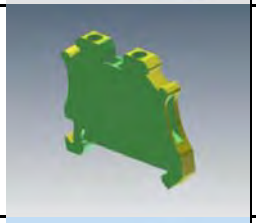
3.42.21		121729C1	V45/V60 BAG CODER CLAMP	1
3.42.22		120202C1	HANDLE, 5/16-18 X 1.57" BLACK	1
3.44		112050C1	.391 I.D. SHAFT LOAD DISK (1.5 O.D., .25 THK.)	10
3.45		121818P1		2
3.46		121819P1		2
5		MA080-0001 - V45	MACHINE GUARD	1
5.1		108957C1	DOOR HANDLE	4
5.2		110866C1	CODED MAGNET SENSOR SAFETY SWITCH	4
5.3		112535C1	S/S & PLASTIC QUARTER TURN WING KNOB LOCK	4

5.4		121732C1	SAFTEY INTERLOCK SENSOR	4
5.5		114222C1	BLOCK PIVOT DOOR	8
5.6		MA010-0004	MAIN FRAME WELDMENT	1
5.7		114846C1	DOOR FRONT	1
5.8		114848C1	DOOR SIDE	1
5.9		114858C1	FIXED SIDE GUARD	1
5.10		114860C1	BRACKET SWITCH	4
5.11		114956C1	DOOR PIVOT	4
5.14		114303C1	LEVELING PAD	4

5.15		114849C1	DRIP PAN WELDMENT	1
5.16		121696C1	GUARD JUNCTION BOX SIDE WELDMENT	1
5.17		121625C1	DOOR WITH LOGO, FRONT, V45	1
5.18		121626C1	DOOR WITH LOGO, SIDE, V45	1
6		MA070-0003	EDGE DETECT SENSOR ASSEMBLY	1
6.1		114873C1	SHAFT REGISTRATION	2
6.2		114874C1	BRACKET REGISTRATION MOUNT	2
6.3		MA070-0004	REGISTRATION SENSOR ASSEMBLY	1
6.3.1		114148C1	BRACKET SENSOR REGISTRATION	1

6.3.2		114151C1	HANDLE #10-24 THREAD SS	1
6.3.3		121618C1	SPACER FOR SENSOR BRACKET	2
6.3.4		121619C1	BRACKET FOR SENSOR	1
6.3.5		121620C1	VERTICAL BRACKET FOR SENSOR	1
6.3.6		121308C1	COLOR SLOT SENSOR, REGISTRATION	1
6.4		MA070-0005	TRACKING SENSOR ASSEMBLY	1
6.4.1		114151C1	HANDLE #10-24 THREAD SS	1
6.4.2		114148C1	BRACKET SENSOR REGISTRATION	1
6.4.3		120811C1	TRACKING SENSOR	1

6.5		113008C1	SLOT SENSOR	1
6.6		121948C1	V45/V60 PRINTED FILM SENSOR MOUNT	1
13		MA030-0004	JUNCTION BOX	1
13.1		75002801	DOOR LATCH	2
13.2		71002701	34 MM WIDE DIN RAIL (METER)	1
13.3		120601C1	3 PIN FEMALE RECEPTACLE	6
13.4		71611601	CORD GRIP, SMALL DIA., 3/8 NPT GREY	6
13.5		120602C1	JUNCTION BOX WELDMENT	1
13.6		71603301	90 DEG LIQUIDTITE CONNECTOR	1

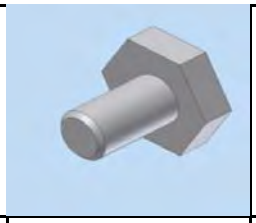
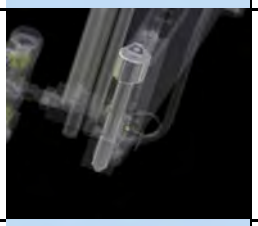
13.7		71605101	.20-.35 DIA. CORD GRIP, 1/2 NPT	1
13.8		120607C1	JUNCTION BOX DOOR	1
13.9		120657C1	4 POLE TERMINAL BLOCK W/GROUND	6
13.10		120752C1	END CLAMP, WIDTH: 9.5 MM, COLOR: GRAY	6
13.11		120742C1	2 TIER FEED THROUGH TERMINAL BLOCK	4
13.12		120747C1	END COVER FOR UT-2,5	1
13.13		120751C1	1 TIER PE FEED THROUGH TERMINAL BLOCK; AWG:26-12; W:5.2MM; GRN/YEL	1
15		MA030-0006	V45 HEAD ASSEMBLY	1
15.1		120232C1	SHAFT GUDE	2

15.2		112643C1	SHAFT LOCATING LOAD DISK	16
15.3		120234C1	CLAMP, ROLLER	2
15.4		120233C1	SHAFT, CROSS BAR	6
15.5		114869C1	MOUNTING BLOCK	6
15.6		112628C1	U ROLLER STUB SHAFT	4
15.7		112629C1	SLOTTED ROLLER STUB SHAFT	4
15.8		V45 Roller assy	JAW ROLLER ASSEMBLY	8
15.8.1		112627C1	CROSS SEAL SUPPORT ROLLER	1
15.8.2		112201C1	BALL BEARING, 25 mm I.D., 37 mm O.D., 7 mm WIDE	2

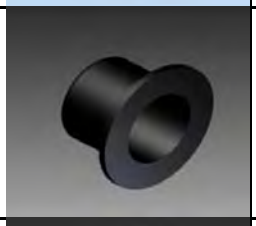
15.8.3		112203C1	37 mm BORE INTERNAL RETAINING RING	2
15.8.4		112072C1	1" DELRIN FLAT WASHER (1.025 I.D. x 1.750 O.D. x .062 THK.)	2
15.9		112630C1	5/16 FLAT WASHER (.344 I.D. x 1.500 O.D. x .125 THK)	8
15.10		75107501	5/16-18 X 1/2 LG. - HHCS	8
15.11		112129C1	CENTERING LINK ARM	4
15.12		112044C1	TIMING BAR LINER BUSHING, 1.00 ID X .50 LNG	16
15.13		112048C1	5/16-18 X 1/2" UNC SHCS	4
15.14		112127C1	CENTERING LINK STUB SHAFT	4
15.15		113049A1	CROSS SEAL CYLINDER ASSEMBLY	1

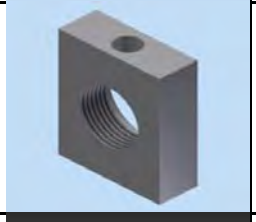
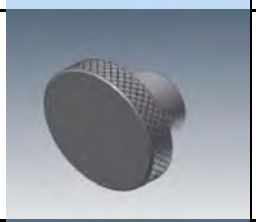
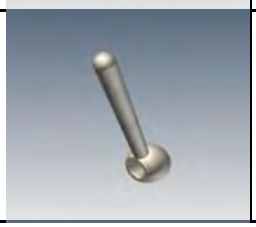
15.15.1		112513C1	CROSS SEAL CYLINDER (3.25 DIA., 7.25 STROKE)	1
15.15.1.1		112642C1	SHOCK ABSORBER MOUNTING PLATE	1
15.15.1.2		112512C1	CROSS SEAL CYLINDER (3.25 DIA., 7.25 STROKE)	1
15.15.2		112145C1	.750 DIA. BALL JOINT ROD END, 3/4-16 UNF FEMALE THREADED END	1
15.15.3		112131C1	SPHERICAL BEARING (.7500 I.D., 1.4375 O.D., .593 WIDE)	2
15.15.4		108653C1	3/4-16 UNF HEX JAM NUT (.431 THK.)	1
15.15.5		112144C1	1 7/16 BORE INTERNAL RETAINING RING	2
15.15.6		112153C1	CYLINDER PIN SPACER	2
15.15.7		112656C1	1/2 O.D. TUBE x 1/2 NPT MALE ELBOW, S/S POSITIONABLE	2

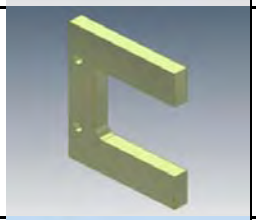
15.15.8		112641C1	SHOCK ABSORBER (1-12 UNF THREADED BODY)	2
15.16		114892C1	TOP PLATE	1
15.17		114942C1	BAR HORN PLATE	2
15.18		MA040-0003	ADJUSTABLE FIN SEAL, ASSY.	1
15.18.1		112314C1	FIN SEALER HINGE BLOCK	1
15.18.2		112312C1	FIN SEAL SUPPORTY ARM SPACER	1
15.18.3		112313C1	FIN SEAL HINGE PIN	1
15.18.4		110554C1	1/4 FLAT WASHER (.281 I.D. x .625 O.D. x .125 THK.)	2
15.18.5		110290C1	1/4 FLAT WASHER (.265 I.D. X .810 O.D. X .089 THK.)	4

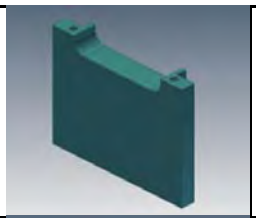
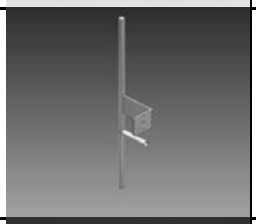
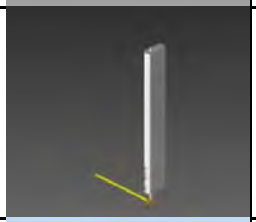
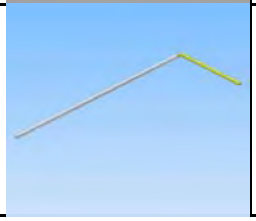
15.18.6		110519C1	1/4-20 UNC x 3/8 LG. - HHCS	2
15.18.7		108240C1	1/4-20 UNC x 1 1/4 LG. - HHCS	2
15.18.8		108679C1	1/4 DIA. x 1" LG. DOWEL PIN	4
15.18.9		75109501	1/4-20 UNC x 1/2 LG. - HHCS	2
15.18.10		112325C1	FIN SEAL CLEVIS PIN	1
15.18.10.1		112324C1	FIN SEAL CELVIS PIN BODY	1
15.18.10.2		112323C1	FIN SEAL CELVIS PIN ROD	1
15.18.11		112317C1	316 S/S SPLIT RINGS	2
15.18.12		79101201	FLANGED BEARING SLEEVE, 1/2ID 19/32 OD 1/2 LNG (LINK & V32)	2

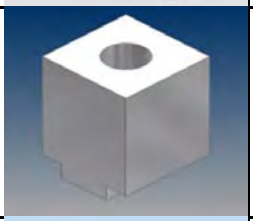
15.18.13		112318C1	304 S/S SIZE 35 WELDLESS CHAIN	1
15.18.14		112162C1	CYLINDER TRUNNION BOLT	2
15.18.15		75107901	3/8-16 UNC x 1 LG. - HHCS	3
15.18.16		112050C1	.391 I.D. SHAFT LOAD DISK (1.5 O.D., .25 THK.)	5
15.18.17		108733C1	3/8-16 UNC x 3/4 LG. - HHCS	2
15.18.18		111120C1	1/2 FLAT WASHER (.515 I.D. x .875 O.D. x .031 THK,)	2
15.18.19		75003001	MOUNTING BASE, CABLE TIE	4
15.18.20		112391C1	1/4-20 x 1/4 LG. PAN HEAD CAP SCREW	4
15.18.21		112909C1	HINGE BLOCK	1

15.18.22		112914C1	SCREW, SHOLDER, .625 X 2.75 LONG	2
15.18.23		112057C1	BUSHING, CYLINDER MOUNT TRUNION	2
15.18.24		112310C1	COUPLING	1
15.18.25		75105101	1/2-20 UNF JAM NUT	1
15.18.26		112752C1	FIN SEAL CYLINDER CLEVIS SLEEVE BEARING / BUSHING	2
15.18.27		73501701	1/8 N.P.T. FLOW CONTROL	2
15.18.28		112916C1	SPRING, SELF-ADJUST FIN SEAL	2
15.18.29		75102601	1/4 LOCK WASHER, MED., SPLIT S/S	4
15.18.30		113065C1	WASHER	1

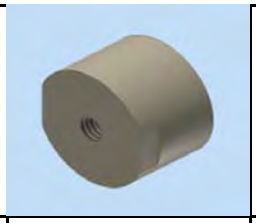
15.18.31		74202801	1/4 OD TUBE x 1/4 NPT MALE CONNECTOR, PLASTIC	2
15.18.32		108702C1	1/4-20 UNC x 1 1/2 LG. - HHCS	4
15.18.33		112911C1	CYLINDER MOUNT BLOCK	1
15.18.34		120273C1	FIN SEALER SUPPORT	2
15.18.35		MA041-0003	ADJUSTING PLATE, ASSY.	1
15.18.35.1		75110701	10-32 X 1/2 LG. - HHMS	2
15.18.35.2		75102601	1/4 LOCK WASHER, MED., SPLIT S/S	5
15.18.35.3		114009C1	2" KNOB, KNYRLED, 3/8" HOLE	1
15.18.35.4		114008C1	4-1/32" HANDLE, 1/2"-13 TH, SS	1

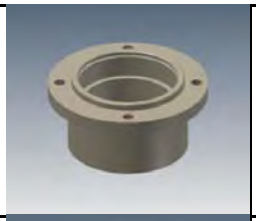
15.18.35.5		114010C1	SLEEVE BEARING, FLANGE, ID 5/16", OD 7/16", FLANGE D 9/16"	2
15.18.35.6		114014C1	GUIDE BLOCK	1
15.18.35.7		114016C1	5/16" GUIDE PIN	2
15.18.35.8		75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT	3
15.18.35.9		114017C1	1/2"-13 THREADED ROD	1
15.18.35.10		114013C1	SIDE GUIDE BLOCK	2
15.18.35.11		111070C1	1/4-20 X 7/8 LG. - HHCS, SPECIAL SHANK	4
15.18.35.12		110824C1	1/4 FLAT WASHER (ARP .265 I.D. x .500 O.D. x .063 THK.)	2
15.18.35.13		114015C1	GUIDE BLOCK	1

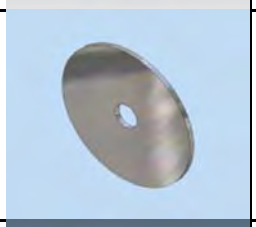
15.18.35.14		114012C1	GUIDE BLOCK - SEAL BAR	1
15.18.35.15		112918C1	BUSHING, CUSTOM	2
15.18.35.16		110554C1	1/4 FLAT WASHER (.281 I.D. x .625 O.D. x .125 THK.)	1
15.18.35.17		120523C1	BAR COOLING	1
15.18.36		MA041-0002	GUN DRILLED SEAL BAR, ASSY.	1
15.18.36.1		112891C1	10-32 x 3/16 LG BRASS TIP SET SCREW	4
15.18.36.2		112928A1	18" FIN SEAL BAR	1
15.18.36.3		120296C1	RTD 3"LONG, M8 CONNECTOR	1
15.18.36.4		112726C2	18.5" HEATER CARTRIDEG w/HEAT SHRINK	1

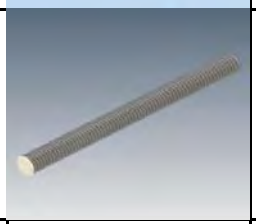
15.18.37		112910C1	CYLINDER TRUNION BLOCK	1
15.18.38		120563C1	CYLINDER TRUNION BLOCK	1
15.18.39		112915C1	CYLINDER, FIN SEAL, 2" BORE, 1.5 STR., DE, DA, SS	1
15.19		MA050-0004	VACUUM PULL BELTS ASSEMBLY	1
15.19.1		114390C1	NUT BELT STOP	2
15.19.2		114391C1	JOINT FLOATING	2
15.19.3		114392C1	PLATE JOINT FLOATING	2
15.19.4		114393C1	STOP BELT ADJUSTMANT	2
15.19.5		114394C1	BRACKET CYLINDER LH	1

15.19.6		114395C1	BRACKET CYLINDER RH	1
15.19.7		114396C1	CYLINDER 25mmBX100mmSTR	2
15.19.8		MA054-0004	SUPPORT VACUUM BELT PULL	1
15.19.8.1		114340C1	STUD TUBE STOP	1
15.19.8.2		114341C1	STUD CYLINDER MOUNT	2
15.19.8.3		114342C1	HANDLE 3/8-16 BLACK	1
15.19.8.4		114355C1	BAR BELT STOP	2
15.19.8.5		114356C1	STUD BELT STOP	2
15.19.8.6		114958C1	BAR, CROSS VACUUM BELT PULL	2

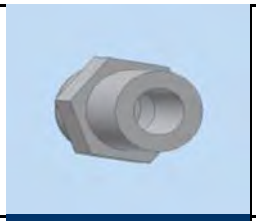
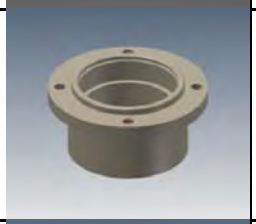
15.19.8.7		114656C1	FORMING HORN FIN SEAL SUPPORT	1
15.19.8.8		108690C1	3/8-16 UNC x 7/8 LG. - HHCS	4
15.19.8.9		114339C1	BAR VERTICAL TUBE STOP	1
15.19.9		108691C1	5/16-18 x 1.00 LG.SHCS	4
15.19.10		MA051-0009	VACUUM PULL BELT RH ASSEMBLY	1
15.19.10.1		113483C1	VACUUM GAUGE	1
15.19.10.2		74203101	3/8 NPT MALE X 1/2 O.D. TUBE	1
15.19.10.3		114385C1	HANDLE 5/16" FEMALE, BLACK	1
15.19.10.4		MA051-0007	DRIVE PULLEY,VACUUM PULL BELT ASSEMBLY	1

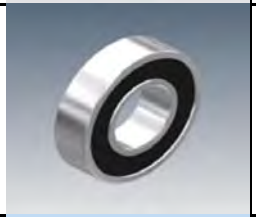
15.19.10.4.1		120353C1	HOUSING PULLEY DRIVE, VACUUM BELT	1
15.19.10.4.2		120349C1	PULLEY DRIVE 56 T, VACUUM BELT DRIVE	1
15.19.10.4.3		120350C1	SHAFT DRIVE, VACUUM BELT	1
15.19.10.4.4		120354C1	WASHER,VACUUM BELT	1
15.19.10.4.5		75107601	5/16-18 X 3/4 LG. - HHCS	1
15.19.10.4.6		110250C1	BALL BEARING, 0.875 I.D., 1.875 O.D., 0.50 WIDE	2
15.19.10.4.7		110281C1	1 7/8 BORE INTERNAL RETAINING RING , S/S	2
15.19.10.4.8		120557C1	KEY SS STEEL SQ.1/4 X 1/4 -.718 LG	1
15.19.10.4.9		120569C1	ROUND WIRE SNAP RING, .75 SHAFT SS	1

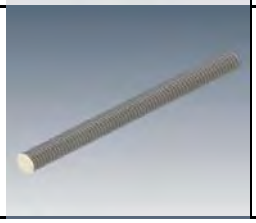
15.19.10.4.10		120567C1	KEY SS STEEL SQ.3/16 - 7/8 LG	1
15.19.10.5		MA051-0008	TENSIONING PULLEY ASSEMBLY	1
15.19.10.5.1		110247C1	VACUUM BELT IDLER PULLEY 56T	1
15.19.10.5.2		110281C1	1 7/8 BORE INTERNAL RETAINING RING , S/S	2
15.19.10.5.3		110250C1	BALL BEARING, 0.875 I.D., 1.875 O.D., 0.50 WIDE	2
15.19.10.5.4		110555C1	5/16 FLAT WASHER (.344 I.D. X .688 O.D. X .125 THK.)	1
15.19.10.5.5		110253C1	7/8 SHAFT EXTERNAL RETAINING RING	1
15.19.10.5.6		112774C1	5/16 FLAT WASHER (.344 ID x 2.00 OD x .062 THK)	1
15.19.10.5.7		120355C1	SHAFT TENSIONER,VACUUM BELT	1

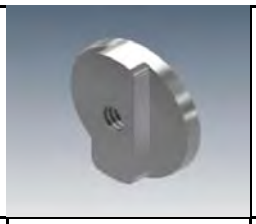
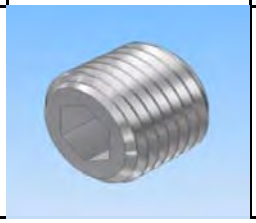
15.19.10.6		120357C1	PLATE DISTRIBUTOR RH, VACUUM PULL BELT	1
15.19.10.7		120360C1	NUT IDLER	1
15.19.10.8		114387C1	BLOCK SLIDING PULL BELT	1
15.19.10.9		112044C1	TIMING BAR LINER BUSHING, 1.00 ID X .50 LNG	4
15.19.10.10		112634C1	.391 I.D. SHAFT LOAD DISK (1.25 O.D. x .25 THK.)	2
15.19.10.11		120377C1	ROD THREADED SS 5/16-18- 3.78 LG	1
15.19.10.12		108586C1	1/4-20 UNC x 5/8 LG. - HHCS	6
15.19.10.13		120391C1	VACUUM DRIVE SPACER SHAFT	2
15.19.10.14		74203901	1/2 O.D. TUBE, UNION ELBOW, PLASTIC	1

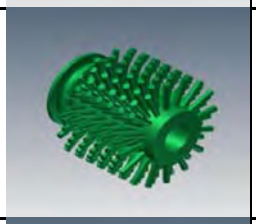
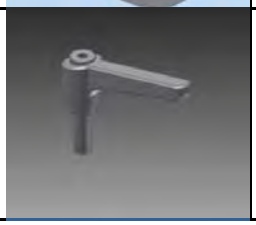
15.19.10.15		120132C1	HANDLE, 3/8-16, FEMALE, BLACK	2
15.19.10.16		120393C1	VACUUM DRIVE BELT GUIDE	2
15.19.10.17		110254C1	VACUUM DRIVE BELT, 180T, .200 PITCH, 36.00 LONG, 1.78 WIDE	1
15.19.10.18		120400C1	PLATE BELT SUPPORT R.H., VAC DRIVE	1
15.19.10.19		108667C1	3/8-16 UNC x 1 3/4 LG. - HHCS	2
15.19.10.20		120650C1	PLUG SS 1/4 NPT	1
15.19.10.21		121646C1	1 3/8 INTERNAL RETAINING RING	4
15.19.11		MA051-0010	VACUUM PULL BELT LH ASSEMBLY	1
15.19.11.1		113483C1	VACUUM GAUGE	1

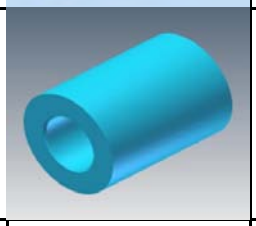
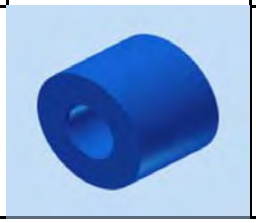
15.19.11.2		74203101	3/8 NPT MALE X 1/2 O.D. TUBE	1
15.19.11.3		114385C1	HANDLE 5/16" FEMALE, BLACK	1
15.19.11.4		110254C1	VACUUM DRIVE BELT, 180T, .200 PITCH, 36.00 LONG, 1.78 WIDE	1
15.19.11.5		MA051-0007	DRIVE PULLEY,VACUUM PULL BELT ASSEMBLY	1
15.19.11.5.1		120353C1	HOUSING PULLEY DRIVE, VACUUM BELT	1
15.19.11.5.2		120349C1	PULLEY DRIVE 56 T, VACUUM BELT DRIVE	1
15.19.11.5.3		120350C1	SHAFT DRIVE, VACUUM BELT	1
15.19.11.5.4		120354C1	WASHER,VACUUM BELT	1
15.19.11.5.5		75107601	5/16-18 X 3/4 LG. - HHCS	1

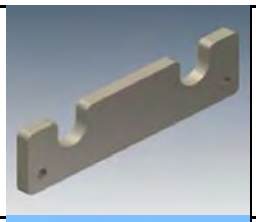
15.19.11.5.6		110250C1	BALL BEARING, 0.875 I.D., 1.875 O.D., 0.50 WIDE	2
15.19.11.5.7		110281C1	1 7/8 BORE INTERNAL RETAINING RING , S/S	2
15.19.11.5.8		120557C1	KEY SS STEEL SQ.1/4 X 1/4 -.718 LG	1
15.19.11.5.9		120569C1	ROUND WIRE SNAP RING, .75 SHAFT SS	1
15.19.11.5.10		120567C1	KEY SS STEEL SQ.3/16 - 7/8 LG	1
15.19.11.6		MA051-0008	TENSIONING PULLEY ASSEMBLY	1
15.19.11.6.1		110247C1	VACUUM BELT IDLER PULLEY 56T	1
15.19.11.6.2		110281C1	1 7/8 BORE INTERNAL RETAINING RING , S/S	2
15.19.11.6.3		110250C1	BALL BEARING, 0.875 I.D., 1.875 O.D., 0.50 WIDE	2

15.19.11.6.4		110555C1	5/16 FLAT WASHER (.344 I.D. X .688 O.D. X .125 THK.)	1
15.19.11.6.5		110253C1	7/8 SHAFT EXTERNAL RETAINING RING	1
15.19.11.6.6		112774C1	5/16 FLAT WASHER (.344 ID x 2.00 OD x .062 THK)	1
15.19.11.6.7		120355C1	SHAFT TENSIONER,VACUUM BELT	1
15.19.11.7		120359C1	PLATE BELT SUPPORT L.H.,VAC. DRIVE	1
15.19.11.8		114387C1	BLOCK SLIDING PULL BELT	1
15.19.11.9		112634C1	.391 I.D. SHAFT LOAD DISK (1.25 O.D. x .25 THK.)	2
15.19.11.10		112044C1	TIMING BAR LINER BUSHING, 1.00 ID X .50 LNG	4
15.19.11.11		120377C1	ROD THREADED SS 5/16-18- 3.78 LG	1

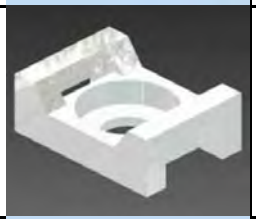
15.19.11.12		120360C1	NUT IDLER	1
15.19.11.13		108586C1	1/4-20 UNC x 5/8 LG. - HHCS	6
15.19.11.14		120391C1	VACUUM DRIVE SPACER SHAFT	2
15.19.11.15		120393C1	VACUUM DRIVE BELT GUIDE	2
15.19.11.16		74203901	1/2 O.D. TUBE, UNION ELBOW, PLASTIC	1
15.19.11.17		120132C1	HANDLE, 3/8-16, FEMALE, BLACK	2
15.19.11.18		120439C1	PLATE DISTRIBUTOR LH, VACUUM PULL BELT	1
15.19.11.19		108667C1	3/8-16 UNC x 1 3/4 LG. - HHCS	2
15.19.11.20		120650C1	PLUG SS 1/4 NPT	1

15.19.11.21		121646C1	1 3/8 INTERNAL RETAINING RING	4
15.19.12		MA051-0011	BRUSH PULLEY RH ASSEMBLY	2
15.19.12.1		120352C1	PULLEY BRUSH,BELT DRIVE	1
15.19.12.2		114369C1	BRUSH	1
15.19.12.3		113441C1	5/16 FLAT WASHER (.344 ID x 1.8120D x .062 THK)	1
15.19.12.4		114371C1	BRUSH SHAFT	1
15.19.12.5		75107501	5/16-18 X 1/2 LG. - HHCS	1
15.19.12.6		110614C1	5/16 FLAT WASHER (.344 I.D. X 1.000 O.D. X .125 THK.)	1
15.19.12.7		114389C1	HANDLE 5/16-18 X .98"	1

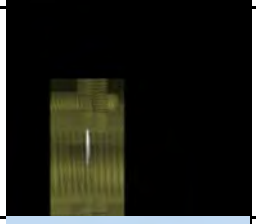
15.19.12.8		75109601	1/4-20 x 7/8 LG. - HHCS	3
15.19.12.9		120600C1	O-RING DASH# 420 SILICONE	1
15.19.13		109033C1	1/4 DIA. X 3/4 LG. DOWEL PIN	4
15.19.14		120202C1	HANDLE, 5/16-18 X 1.57" BLACK	2
15.19.15		74204101	1/4 O.D. TUBE X 1/8 NPT, FIXED ELBOW MALE, PLASTIC	4
15.19.16		120645C1	FLOW CONTROL, IN LINE 1/4 TUBE	4
15.20		120209C1	SPACER, GEAR BOX MTG	4
15.21		108667C1	3/8-16 UNC x 1 3/4 LG. - HHCS	4
15.22		120210C1	SPACER .50 LG, GEAR BOX MTG	4

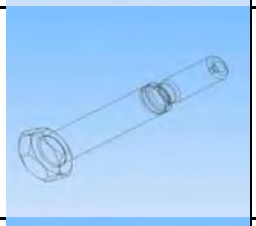
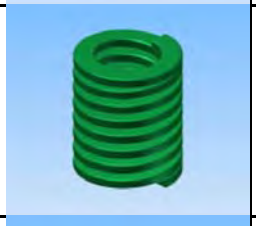
15.23		120520C1	PLATE, HOLDER	2
15.24		108677C1	1/4-20 UNC x 1 LG. - HHCS	4
15.25		MA034-0006	PULL BELT DRIVE, ASSY.	1
15.25.1		110629C1	BALL BEARING, .750 I.D., 1.625 O.D., .438 WIDE	4
15.25.2		114891C1	COLLAR, SHIELD	2
15.25.3		75107701	5/16-18 X 1" LG. - HHCS	8
15.25.4		120235C1	GEAR SPUR, 60 TH	2
15.25.5		120236C1	PLATE MOUNTING, DRIVE	1
15.25.6		120237C1	PLATE HOUSING, DRIVE	1

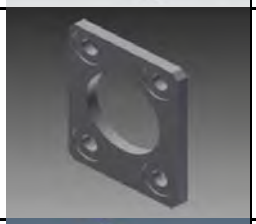
15.25.7		120238C1	SHAFT, GEAR DRIVE	2
15.25.8		120239C1	STAND OFF, DRIVE ASSY	4
15.25.9		120275C1	SPACER, GEAR	2
15.25.10		120240C1	KEY STEEL SQ.1/4 X 1/4 - 1.344 LG	2
15.25.11		120278C1	RET.RING 1.625 OD	2
15.25.12		114802C1	MOTOR SHIELD SPACER, SHORT	4
15.25.13		112334C1	1/4-20 UNC X 5/8 LG SOCKET SET SCREW	2
15.25.14		75101901	1/4-20 UNC X 3/8 LG. SOCKET SETSCREW, CUP POINT	1
15.25.15		120567C1	KEY SS STEEL SQ.3/16 - 7/8 LG	2

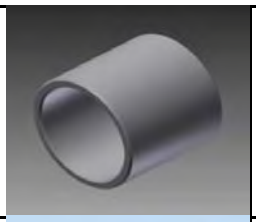
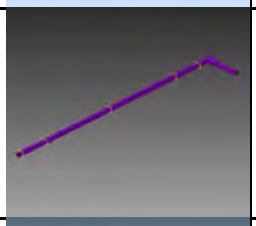
15.25.16		120277C1	GEAR, MOTOR	1
15.25.17		120581C1	SEAL SPRING LOADED 25 MM ID X 52 MM OD X8 MM THK	1
15.25.18		120205C1	PIN,GUIDE GEAR BOX	4
15.25.19		120519C1	PLATE DRIVE SUPPORT	2
15.25.20		108944C1	5/16-20 X 7/8 LG. -HHCS	6
15.25.21		121642C1	V45 VACUUM DRIVE COVER	1
15.25.22		121628C1	MOTOR, 100MM PI54 KEY ENCODER, SINGLE 16 ANG	1
15.25.23		120386C1	COVER DRIVE	1
15.26		75003001	MOUNTING BASE, CABLE TIE	4

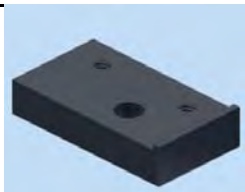
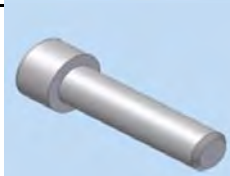
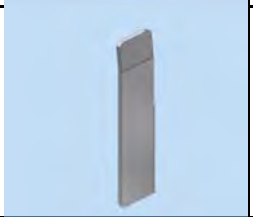
15.27		75106001	1/4-20 UNC x 1/2 LG. PAN HEAD SLOTTED SCREW	4
15.28		75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT	4
15.29		121637C1	V45 HEAD SIDE PLATE RH	1
15.30		121638C1	V45 HEAD SIDE PLATE LH	1
15.31		121656C1	CROSS SEAL 4mm & 12mm RUBBER CARRIER ASSY	1
15.31.1		112128C1	SEAL BAR SUPPORT PIN	2
15.31.2		112879C1	FILM PINCH BAR	2
15.31.3		109033C1	1/4 DIA. X 3/4 LG. DOWEL PIN	8
15.31.4		108736C1	1/4-20 X 5/8 LG., SHCS	4

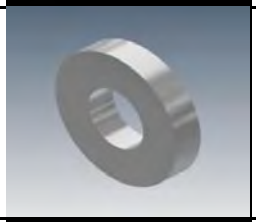
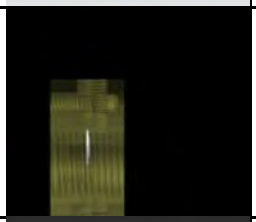
15.31.5		112443C1	BAG SUPPORT	1
15.31.6		112904C1	BELLVILLE SPRING WASHER	8
15.31.7		75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT	8
15.31.8		112894C1	#8-32 X 3/8 SOCKET HEAD CAP SCREW, S/S	4
15.31.9		110554C1	1/4 FLAT WASHER (.281 I.D. x .625 O.D. x .125 THK.)	3
15.31.10		108677C1	1/4-20 UNC x 1 LG. - HHCS	1
15.31.11		75106401	1/4-20 UNC x 3/4 LG. - HHCS	1
15.31.12		75109601	1/4-20 x 7/8 LG. - HHCS	3
15.31.13			1/4-20 x 1 3/4 STUD	8

15.31.14		112704C1	PINCH BAR RUBBER	2
15.31.15		120296C1	RTD 3"LONG, M8 CONNECTOR	1
15.31.16		120297C1	COUPLING 1/8"	1
15.31.17		113374C2	JAW CONE	2
15.31.18		113376C1	SHOULDER BOLT, JAW SPRING, BARREL JAW	2
15.31.19		113387C1	SPRING LOCATE WASHER, BARREL JAW	4
15.31.20		113459C2	DIE SPRING,VYNYL COATED 3/4 ID X 1.50 OD-3.0 LG	2
15.31.21		113393C1	KNIFE, 301 FH SS .062 THK, V32 JAW	1
15.31.22		113004C1	KNIFE MOUNT BOLT, CUSTOM	2

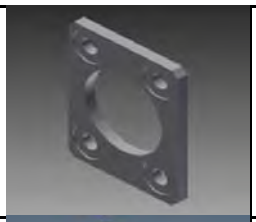
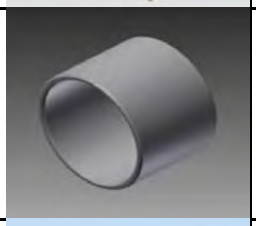
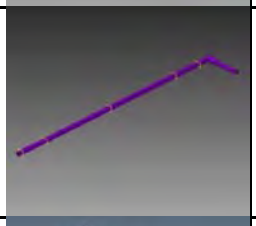
15.31.23		113005C1	5/16-24 THIN HEX JAM NUT	2
15.31.24		75112501	5/16-24 THIN HEX JAM NUT	2
15.31.25		113472C1	BELLEVILLE WASHER,.317 ID X .63 OD-.022THK	8
15.31.26		113377C1	SHOULDER SCREW, BEARING RETAINER SPECIAL	8
15.31.27		113024C1	KNIFE COUPLING FOR 078 KNIFE	2
15.31.28		121643C1	BIMBA EF1 FLAT CYLINDER, 32MM BORE, 22MM STROKE	2
15.31.29		121639C1	BUSHING PINCH PLATE, BARREL JAW	2
15.31.30		121635C1	SEAL BAR INSULATOR - L.H. / R.H.	3
15.31.31		121654C1	FRONT CROSS BAR ASSEMBLY	1

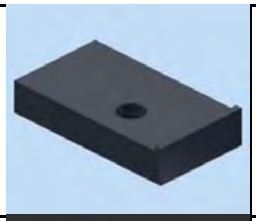
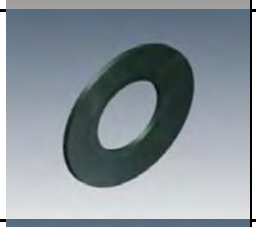
15.31.32		121653C1	SPACER, FRONT SHAFT SUPPORT BLOCK, V45	2
15.31.33		113022C1	2 x 2 SEAL BAR	1
15.31.34		120658C1	ROUND SS WIRE SNAP RING 5/8 DIA.	2
15.31.35		112966C1	HEATER CARTGRIDGE, 900 WATT	2
15.31.36		121700C1	KNIFE CYCLINDER SPACER	8
15.31.37		121703C1	JAW KNIFE CYCLINDER MOUNTING PLATE, CABLE SIDE	1
15.31.38		121704C1	KNIFE CYCLINDER ROD EXTENDER	2
15.31.39		121705C1	JAW KNIFE CYCLINDER MOUNTING PLATE	1
15.31.40		75119901	#10-24 X 2 SHCS, 18-8 S/S	1

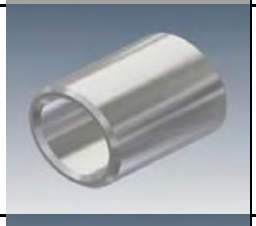
15.31.41		121722C1	JAW CLOSED FLAG BLOCK	1
15.31.42		110595C1	1/4-20 x 1 LG. HHCS	1
15.31.43		121723C1	JAW CLOSED FLAG	1
15.32		121657C1	INNER JAW SEAL BAR ASSEMBLY, V45	1
15.32.1		112128C1	SEAL BAR SUPPORT PIN	2
15.32.2		112878C1	PINCH BAR, REAR V32 CARTRIDGE HOT BAR OPTION	2
15.32.3		112881C1	UPPER COUPLING BLOCK	2
15.32.4		112641C1	SHOCK ABSORBER (1-12 UNF THREADED BODY)	2
15.32.5		75106401	1/4-20 UNC x 3/4 LG. - HHCS	1

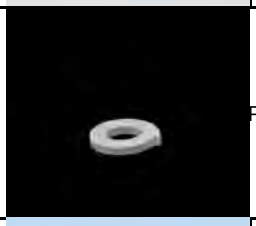
15.32.6		112903C1	5/16-27 x 2.00 lg.	4
15.32.7		75103701	1/4-20 UNC LOCKNUT W/NYLON INSERT	4
15.32.8		112893C1	1/4-20 x 1/2 LG. SSCH	4
15.32.9		112443C1	BAG SUPPORT	1
15.32.10		110554C1	1/4 FLAT WASHER (.281 I.D. x .625 O.D. x .125 THK.)	3
15.32.11		112904C1	BELLVILLE SPRING WASHER	6
15.32.12		112152C1	CYLINDER PIN - REAR CROSS SEAL BEAM	1
15.32.13		110595C1	1/4-20 x 1 LG. HHCS	1
15.32.14		108736C1	1/4-20 X 5/8 LG., SHCS	2

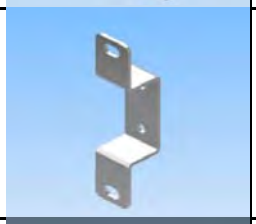
15.32.15		112964C	TWO PART SHAFT COLLAR	1
15.32.16		112586C1	PROXIMITY SENSOR CABLE	2
15.32.17		75109601	1/4-20 x 7/8 LG. - HHCS	5
15.32.18			1/4-20 x 1 1/4 STUD	4
15.32.19		109033C1	1/4 DIA. X 3/4 LG. DOWEL PIN	2
15.32.20		120296C1	RTD 3"LONG, M8 CONNECTOR	1
15.32.21		120297C1	COUPLING 1/8"	1
15.32.22		113472C1	BELLEVILLE WASHER,.317 ID X .63 OD-.022THK	1
15.32.23		113377C1	SHOULDER SCREW, BEARING RETAINER SPECIAL	5

15.32.24		121636C1	BUSHING PINCH PLATE, BARREL JAW	1
15.32.25		121635C1	SEAL BAR INSULATOR - L.H. / R.H.	3
15.32.26		121658C1	SPACER, REAR SHAFT SUPPORT BLOCK, V45	2
15.32.27		113022C1	2 x 2 SEAL BAR	1
15.32.28		MA037-0003	SLIDE BEARING ASSEMBLY, 1.25 SHAFT, SEALING JAW	2
15.32.29		112966C1	HEATER CARTGRIDGE, 900 WATT	2
15.32.30		121698C1	BUSHING PINCH PLATE, BARREL JAW, FLOAT SIDE	1
15.32.31		121714C1	JAW OPEN SENSOR PLATE	1
15.32.32		120498C1	INDUCTIVE PROXIMITY SWITCH	2

15.32.33		121721C1	JAW CLOSED SENSOR BLOCK	1
15.32.34		75003001	MOUNTING BASE, CABLE TIE	1
15.32.35		121655C1	REAR CROSS BAR ASSEMBLY, V45	1
15.33		121650C1	CENTERING LINK ROD	2
15.34		121651C1	CENTERING LINK PLATE	2
15.35		MA037-0004	CENTERING BUSHING HOUSING, V45	2
15.36		121662C1	FRONT / REAR JAW LINEAR SHAFT, V45	2
15.37		114039C1	BELLEVILLE WASHER .562 ID-1.125 OD-.038 THK	2
15.38		109007C1	1/2 FLAT WASHER (.562 I.D. x 1.375 O.D. x .098 THK.)	2

15.39		114038C1	SHOULDER SCREW .562-.75 LG	2
15.41		112050C1	.391 I.D. SHAFT LOAD DISK (1.5 O.D., .25 THK.)	18
15.42		MA043-0001		1
15.42.1		121685C1	REAR CROSS SEAL BEAM RETAINER, RIGID, V45	1
15.42.2		121686C1	REAR CROSS SEAL BEAM RETAINER, FLOAT, V45	1
15.42.3		LEE - 750-045-1500		1
15.42.4		121682C1	WASHER, LINEAR JAW SHAFT PRELOAD, V45	1
15.42.5		121672C1	SPACER, SHOULDER BOLT, LINEAR SHAFT, V45	1
15.42.6		108917C1	3/4 MILITARY WASHER S/S .765 ID, 1.312 OD, .10 THICK	1

15.42.7		121663C1	REAR CROSS SEAL BEAM, V45, EARLY STYLE	1
15.42.8		112153C1	CYLINDER PIN SPACER	1
15.42.9		112163C1	HITCH PIN CLIP (1/8 DIA., FOR 5/8 TO 7/8 DIA. SHAFTS)	1
15.42.10		121827C1	CYLINDER PIN - REAR CROSS SEAL BEAM, V45, SHORT STYLE	1
15.42.11		PLIT LOCK WASHER (7510		1
15.42.12		75103301	1/4 FLAT WASHER (.281 I.D. x .625 O.D. x .046 THK.)	1
15.42.13		108677C1	1/4-20 UNC x 1 LG. - HHCS	1
15.43		121045C1	HALF SHAFT V60 DRIVE	2
15.43.12		120962C1	LOWER BOOT AND TIE	2

16		MA029-0004	V45 FRL ASSEMBLY	1
16.1		120539C1	REGULATOR BRACKET	1
16.2		120542C1	JOINER SET GPA-96-601	2
16.3		120215C1	MOUNT BRACET	2
16.4		114052C1	FILTER REGULATOR	1
16.5		114053C1	LUBRICATOR	1
16.6		114054C1	SAFETY LOCKOUT VALVE	1
16.7		74305702	3/4 NPT X 4 LONG NIPPLEW/1 1/4 EXTENDED STRAIGHT THREAD, S/S	1