



DIVI Trouble Shooting Manual

REV 2

TABLE OF CONTENTS

SPECIFICATIONS / MAINTENANCE.....	3-5
SAFETY CONSIDERATIONS	3
TRANSPORT CONSIDERATIONS.....	3
LEVEL MACHINE	3
LUBRICATION	3
GENERAL CLEANING CONSIDERATIONS.....	3
FREEZER MAINTENANCE	4
SETUP INSTRUCTIONS - MONEY SYSTEMS	4
MONEY SYSTEM INSTALLATION MULTI-DROP BUS INTERFACE (MDB)	5
INITIAL POWER UP	5
BIN SETUP / PRODUCT LOADING.....	5
GENERAL CONSIDERATIONS	5
PROGRAMMING.....	6-7
INTRODUCTION	6
SERVICING THE DIVI VENDOR – SOLD OUTS AND BIN LOAD ERRORS	6
ERASE SOLD OUTS – RESET COUNTERS	6
FREE VENDING.....	6
SERVICE MENU OPTIONS.....	6
TROUBLESHOOTING	8-20
GLOSSARY OF USEFUL TERMS - TERM DEFINITION	8
ERRORS.....	8
TYPES OF ERRORS	8
APPENDIX.....	21-35
CALIBRATING THE ROBOT ARM	21
HEALTH TIMER NORMAL MODES OF OPERATION	22
LID LIFT MECHANISMREPLACEMENT INSTRUCTIONS	22
FREEZER LID LIFT ASSEMBLY	23
REMOVE THE VACUUM HOSE FROM THE ROBOT ARM.....	23
ROBOT ARM REMOVAL INSTRUCTIONS.....	25
REPLACE THE VACUUM HOSE.....	25
INSTALL THE ROBOT ARM.....	27
ROBOT ARM MALFUNCTION - QUICK CHECK	27
ROBOT ARM SLIPPAGE DIAGNOSE AND REPAIR	28
REPLACE ROBOT SHOULDER OR ELBOW MOTOR.....	30
REPLACE VACUUM HOSE DRIVE	31
FUSE TABLES	33
DIVI VMC BOARD CONNECTOR LOCATIONS	34
FASTCORP DIVI COMPLETE DIAGRAM REV	35

SPECIFICATIONS / MAINTENANCE

The cabinet serial plate indicates the proper Voltage and Amperage required for the vendor.

DIVI MODEL	USAGE	VOLTAGE	FREQUENCY (HZ)	AMPERAGE
FC01/FC03/FC05/FC07	DOMESTIC - N.A.	110-120	60	12
FC02/FC04/FC06/FC08	INTERNATIONAL	220-240	50	8



WARNING: The vendor must be plugged into a properly rated, single phase, grounded, AC (alternating current) outlet equipped with its own circuit protection (fuse/circuit breaker).

HEIGHT	72.5 - INCHES / 185 CENTIMETERS
WIDTH	41 - INCHES / 104 CENTIMETERS
DEPTH	37 - INCHES / 91 CENTIMETERS (WITHOUT BACK BRACE)
WEIGHT, NET	775 - POUNDS / 352 KILOGRAMS
WEIGHT, GROSS	800 - POUNDS / 363 KILOGRAMS
Machine Model Numbers: FC01=DIVI basic FC02=DIVI Basic 220VAC FC03= DIVI Refrigerated FC04= DIVI Refrigerated 220VAC FC05= DIVI Ambient FC06= DIVI Ambient 220VAC FC07= DIVI Combo (Refrigerated & Ambient) FC08= DIVI Combo (Refrigerated & Ambient) 220VAC	

SAFETY CONSIDERATIONS

The DIVI Vendor requires a dedicated 115V 15 Amp electrical power supply with ground to power the machine.

- Keep clear of robot path during vend cycles (inside cabinet or near robot arm assembly). When vending product, the robot advances towards the front center section of the cabinet known as the "Product Delivery Point." Standing or looking inside the cabinet while the robot arm is moving may result in injury.

TRANSPORT CONSIDERATIONS

Transporting or storing the DIVI Vendor on its side may allow the refrigerant oil to drain out of the freezer compressor. To avoid potential permanent damage to the vendor always transport the DIVI in an upright position.

Always install the shipping brackets provided with the machine from the factory and new tie wraps before the DIVI Vendor is transported. This will help to prevent damage to the Robot Arm and electronics. Store the shipping brackets and hardware in the cabinet so that they will always be available when necessary.

LEVEL MACHINE

After the skids have been removed, place a bubble level on the freezer lid and adjust the leveling legs on the base of the cabinet until the machine is level. Always ensure that the machine is level and does not rock.

NOTE: It is important to level the DIVI Vendor whenever the machine is moved to a new location. After leveling the machine and power up, perform test vends on each selection. If it is necessary, use Service Menu Option, 22) Verify Bins, to make adjustments.

LUBRICATION

Do not use oil, grease or any other lubricants on any moving parts. Minimal usage of dry lube is recommended on the shoulder and elbow bearings when binding or squeaking is evident. If dry lube is unavailable, 3-in 1 oil will work as well.

GENERAL CLEANING CONSIDERATIONS

NOTE: Do not use water, soap or any other liquid to clean inside the machine.

The exterior of the machine can be cleaned with a mild detergent.

SPECIFICATIONS / MAINTENANCE

FREEZER MAINTENANCE

Three or four hours after turning on the Main Power Supply, the freezer temperature should drop to -15°F / 26°C. Any temperature adjustment can be made at the thermostat, located on the front, bottom right side of the freezer. Turn the dial clockwise to make the temperature colder and counter-clockwise to make the temperature warmer. The temperature range is -25°F/-31°C to 15°F/-9°C (at 70°F/21°C ambient).

The standard chest freezer inside the DIVI Vendor does not self-defrost. The freezer chest requires maintenance when ice begins to affect vending, product loading, or closing the freezer. The refrigeration system does not require any maintenance. Depending on relative humidity and frequency of operation, frost and ice may accumulate around the top three to four inches of the freezer wall. The frost and ice can be scraped off as long as it does not accumulate on the freezer walls or underneath the bins. Excessive ice build-up may require bin removal and possible replacement.

Fastcorp recommends keeping a plastic ice scraper (provided with the machine), and a 9" by 11" piece of cardboard or plastic inside the machine for freezer maintenance. Place the plastic under the area to be scraped to catch the ice and to prevent it from falling into the bins. This entire process should take only a few minutes. A wet / dry vac may speed up the ice removal process.

Depending on usage, temperature and humidity, the freezer should be periodically defrosted and cleaned. Before defrosting the freezer, press the load button and remove all the bins and the bin matrix. Next, place the ice cream in a holding container. Scrape the frost and ice accumulation from the freezer walls and remove it from the freezer chest.

To rinse out the freezer chest, place a drain pan under the drain and remove the drain plugs (a standard screwdriver might be necessary to pry out the drain plugs). Finally, reload the old bins or replace with new ones. Perform test vends on each selection to confirm that the bins were returned to their proper positions. If the bins did shift, go to Service Menu Option # 22) Verify Bins, to make the corrections. The freezer will take about 3 to 4 hours to reach operating temperature.

Under normal conditions, the DIVI Vendor can be unplugged with the freezer door closed for up to 8 hours without harming the product. If the temperature inside the freezer reaches unsafe levels, a signal from the Thermistor Probe will force a Health Sensor Active condition, which will put the machine out of service. The Thermistor Probe is vertically mounted in a black plastic clamshell tube located above the step in the right rear corner of the freezer, behind the short bins.

When the display reads "Health Sensor Active," the DIVI Vendor will not vend until the freezer temperature has returned to a safe level. Press the * key to return the Display to 1) Change Price, Press the VAC button to enable the Service Keypad, Press Load and then Close buttons to clear the error and return the machine to operation. Inspect product and discard any that has spoiled. Machine error mode status has no effect on the power to the Freezer. The Freezer is plugged into an outlet on the left side of the Power Box behind the freezer. The Freezer's power supply status is governed by the position of the Power Box main power switch.

The Health Sensor can be bypassed for up to four hours by using the Health Timer at Service Menu Option #13. The Health Timer will allow the machine to operate normally while the Freezer is cooling down. After the freezer reaches operating temperature, the DIVI Vendor will automatically return to normal operating mode. If the machine does not reach operating temperature before the Health Timer has expired, the Health Sensor will become active.

SETUP INSTRUCTIONS - MONEY SYSTEMS

The DIVI Vendor supports the Multi-Drop Bus Interface (MDB) 24VDC Money Acceptance Systems. The DIVI Vendor is compatible with most MDB compliant Coin Mechanisms, Bill Acceptors and Card Readers.

The DIVI comes pre-wired with a DEX port. The DEX harness plugs into the Computer Board at J13 / DEX on the top left corner of the board. To retrieve DEX data, pull out the pin on the Service Interlock Switch located next to the T-Handle threads on the inside door. DEX requires that the machine be in "Please Insert Money" / Vend Mode.

SPECIFICATIONS / MAINTENANCE

MONEY SYSTEM INSTALLATION

MULTI-DROP BUS INTERFACE (MDB):

Turn **OFF** the power supply rocker switch (bottom of the door).

Open the inside door using the release latch.

Mount the Coin Mechanism onto the three coin mech mounting screws. Adjust the coin return actuator plate so that there is a $\frac{1}{8}$ - inch gap between the actuator and the lever on the coin mech.

To mount the Bill Acceptor, remove the left accessory blank (as seen from the rear), just below the Customer Keypad. Store the Accessory Port Blank inside the machine to be used if the bill acceptor fails and needs to be removed. The retainer nuts are $\frac{11}{32}$ - inch.

The right accessory port is available for the installation of a card reader.

After your MDB Money Acceptance Systems are installed, make all the necessary connections THEN turn **ON** the power supply power rocker switch.

INITIAL POWER UP

Plug the machine into a 115V 15A power source. Remove all Shipping Brackets and tie wraps. To avoid the risk of injury, make sure that the rocker switch on the Power Supply at the bottom of the door is turned OFF before turning ON the main power at the Power Box located on the rear cabinet wall.

If the robot does not move:

Confirm that shipping brackets and tie wraps have been removed.

Check for shipping damage. Review the previous sections and check for an error on the Digital Display. If the machine is out of order press the # key for an error message or press the VAC key to access the Error Log.

Confirm that all three Power switches are ON.

The resettable switch on the GFCI unit on the Power Supply cable.

The Power Box Rocker Switch on the rear cabinet wall.

The Power Supply Rocker Switch on the bottom of the door.

Turn the Power Supply Rocker Switch OFF (bottom of the door). This will disable the dynamic breaking feature on the Robot Motors and will allow the robot to move freely within the cabinet.

Check to see if there are obstructions preventing the robot from moving freely.

Manually move the robot in all directions. Check for smooth travel. Note any obstruction or gear binding.

Check to see if the lights are on. If not check the circuit breaker resets on the Power Box. Press the reset button if it has tripped.

Check all Power cords to make sure that they are plugged in and fully seated.

If the machine is still not working call Fastcorp service at 888-441-3278.

BIN SETUP / PRODUCT LOADING

The DIVI Vendor utilizes a bin system to hold product. The bin system is comprised of a number of individual bins (various shapes and sizes) in conjunction with spacers that fit together in such a way that the bins will not shift. The type and size of bin used depends on the size and shape of the product being vend. Every machine comes pre-configured with a specific bin layout or "Bin Configuration." The configuration can be customized at any time by changing individual bins. By changing the size of the bins, you can change the products that are being vend.

GENERAL CONSIDERATIONS

To keep track of products in a bin configuration, we recommend that a plan-o-gram form be filled out and attached to the inside of the machine. The selection number, product name, price and bin number should be included in the plan-o-gram and can also be written directly on each bin. The VMC Board can be programmed to leave one product at the bottom of each bin using the Service Menu Option #21, Up Down Travel Limits. Leaving one product in each bin will allow products to be more easily matched to the proper bins by the route driver when servicing the machine.

Always keep a back-up copy of each machine's bin plan-o-gram at the office for reference purposes. It may also be a good idea to take a photograph of the freezer after filling and secure the photo with the plan-o-gram inside the cabinet and also at the office.

There should always be a $\frac{1}{4}$ -inch space between the product and bin in every direction. Use the appropriate bins and the proper spacers to ensure successful product retrieval.

Always place the most popular items in the center of the freezer. This will shorten the distance the robot must travel and reduce vend cycle time.

PROGRAMMING

INTRODUCTION

The DIVI Vendor unless otherwise arranged, is shipped from the factory without any preset selection numbers or bin locations in memory. All information is entered during initial set-up. Programming is completely menu driven and user friendly. Simply scroll through the menus by pressing the Customer Keypad "*" Key until the desired function is reached, then press the Customer Keypad "#" Key to enter. The Display will prompt the user to enter the required information.

SERVICING THE DIVI VENDOR – SOLD OUTS AND BIN LOAD ERRORS

Programming Menus must be accessed in Service Mode. The machine enters Service Mode when the cabinet door is opened. If there are bin and sold-out messages in memory, these messages will be displayed when the door is first opened. Use the "#" Key to scroll through the sold-out messages, then press the "*" Key to exit. The Digital Display will then read, "1) Change Price."

ERASE SOLD OUTS – RESET COUNTERS

To erase the "sold out" messages, Press the "*" key to go to 1) Change Price, Press the "VAC" key to enable the Service Keypad, then, Press the Service Keypad "Load" key, which will open the Freezer Lid, then, press the Service Keypad "Close" Key, which will close the Freezer Lid. This resets the counters and sends a message to the Computer Board that the Freezer has been filled.

FREE VENDING

After programming is complete, it is important to perform a test to make sure that the machine is programmed correctly. By pressing "Free Vend" on the Service keypad and then pulling out on the Service Switch, the machine will allow menu selections to be vended without money and without affecting the sales meters. To deactivate this feature, push the Service Switch back in, Press the "*" key, the VAC key and then press "Free Vend" again. The Display will read, "Free Vend is Off."

SERVICE MENU OPTIONS

- 1. CHANGE PRICE:** Allows the prices to be changed.
- 2. SALES METERS:** Allows sales data to be viewed.
- 3. EDIT SELECTION:** Allows existing selections and bin positions to be edited. Allows bins to be added to existing selections.
- 4. CREATE SELECTION:** Allows a selection to be created.
- 5. DELETE SELECTION:** Allows a selection to be deleted.
- 6. SELECTION NUMBERS:** Allows programmed selection numbers to be viewed. (Use to check for erroneous selections)
- 7. SET DATE & TIME:** Allows date and time to be set or viewed.
- 8. AUTO VENDS:** Used internally to cycle-vend machines under test.
- 9. SERVICE PHONE #:** Allows service phone number to be set. The number is displayed when the machine is out-of-order. (Do not use Fastcorp's phone number)
- 10. SALES PIN CODE:** Allows PIN code to be set and viewed for machine auditing. # 2) Sales Meters may be accessed from outside the machine without opening the door.
- 11. VEND BLOCK:** Allows the machine to be disabled for up to 4 predetermined periods of time.
- 12. VEND BLOCK PIN CODE:** Allows a PIN code to be set to access the vend block function without opening the door.
- 13. HEALTH TIMER:** Suspends Health Control for 1,2,3 or 4 hours; Set freezer temperature scale to display in either Fahrenheit or Centigrade; Set mode for Health Sensor: NAMA Ice Cream, NAMA Refrigerated, Chilled, Frozen Food, Super Cold or MMM.
- 14. PROGRAM VERSION:** Displays version of Boot loader Program and Firmware Revision installed on VMC.
- 15. DISPLAY LANGUAGE:** Allows the programmer to choose the language displayed on the screen. Choose from English, German or Spanish. One additional language may be added to memory if necessary.
- 16. LINE MODE:** Shortens vend time by leaving the freezer lid open between vends. Lid opens when currency has been detected. Lid will close if there is no activity for 20 seconds.
- 17. MACHINE SERIAL NUMBER:** Allows the programmer to enter up to a 10-digit serial number for machine identification during DEXing.
- 18. FILL / DISPENSE:** Allows coins to be dispensed from tubes while displaying a coin count.
- 19. TOKENS & COUPONS:** Allows coupons and tokens to be recognized as free or valued vends and records sales in appropriate DEX fields.

PROGRAMMING

20. FIELD TEST: Allows the machine to run in a diagnostic mode to allow for quick troubleshooting.

21. UP/DOWN TRAVEL LIMITS: This feature allows the customer to adjust how deep the Picker Tip will descend into both tall and short bins.

NOTE: Increasing the number will cause the vacuum pump to travel further into the bin. Changing this value by 5 represents a change in travel of 1.

22. VERIFY ALL BINS: Automatically moves robot over each bin position. Allows user to verify and edit bin programming.

23. MDB SETTINGS: Allows specific settings for currency system:

Force Vend - Customer cannot use vendor for the purpose of changing bills. If a bill is inserted and the coin return button is pressed, it is ignored. A selection must be chosen. Only exception is when the selection is sold out.

No Cheat - Money is not accepted if there is a possibility where the customer will be short-changed. Bills are not accepted if there is not adequate change for a failed vend.

Change Bill - Similar to forced vend but focuses only on bills that have been accepted, whereas force vend is also concerned with coins.

Hold Lost Credit - Funds that could not be returned to a customer during a vending are available for another transaction.

Multi Vend - Change is not automatically returned after a transaction, but held for another transaction. Press the coin return button to receive your change.

Lev 2 Coin Mech - When set to "N" (default), the coin mechanism will determine optimum change. If set to "Y", the VMC will determine what coins to give back as change, regardless of the capabilities of the coin mechanism. Power to the VMC must be cycled off and back on after changing this setting.

Instant Reveal - When set to "Y" (default), a stored value cashless device can receive revaluation credit as soon as coin or cash is inserted into the vendor. When option is set to "N", revaluation occurs when a major action is taken such as pressing the coin return. This option is only necessary for older cashless systems where the number of revaluations per credit device is limited.

24. SOFT DROP: Allows enabling and setting the "Soft-Drop" feature that lowers the product before it releases it into the product chute. Delay time is how long the picker tip waits at delivery position to allow vacuum to dissipate and product to release from picker tip.

TROUBLESHOOTING

GLOSSARY OF USEFUL TERMS - TERM DEFINITION

- **Controller** - The Computer Board or VMC (Vending Machine Controller).
- **Encoder & Encoder Pulses** - A device used to send a given number of pulses per gear rotation which can then be interpreted by software to determine distance and location; allows the controller to calculate position of any bin and product drop point relative to the true home position. Encoders are built into the Shoulder Joint, the Elbow Joint, the Up / Down Axis and the Freezer Lid Lift Motor.
- **Home on the Z-axis** The relative home position indicated by the Up/Down Home Switch; picker head is in the full up position.
- **Home Position or (True) Home Position** - The home coordinate on all axes; located at the front/center position of the cabinet.
- **Product Drop Point** - Coordinates where the robot drops product into the product delivery chute; located in the front/center area of the cabinet.
- **VAC Error & VAC key** - Log used by the computer to store machine errors that had rendered the machine out of service. Use the VAC key on the Service Keypad to view the VAC error log. The computer will store the last ten out of service errors with the date and time that they occurred. The VAC key is also used to enable the Service Keypad.

ERRORS

Out of service errors are errors that will put the machine out-of-order. Bin errors will only put a specific bin out-of-order.

TYPES OF ERRORS:

1. **Bin Errors** - Once the DIVI is programmed and is operating in the field, any
 - **Out Of Product** errors that occur will be displayed on the digital display when the door is opened and the machine enters Service Mode. These are localized errors that put a specific bin out-of-order without taking the machine off line. The customer keypad functions “# = Next” can be used to scroll through each error. Out Of Product occurs when the robot reaches the “virtual bottom” of the bin. (2 programmable encoder distances on the Z-axis: one for tall and one for short bins) Press the * key to exit.
 - **Bin Load Error** - Occurs after the robot makes 3 unsuccessful attempts to vend product from a single bin (vacuum seal is lost/ product dropped) and puts that bin out-of-order. Typically, due to robot programming, misalignment, improper loading or using the wrong bin for a product. Use menu option 3) EDIT SELECTION if a selection location needs to be realigned.
- NOTE:** It is important to view all Out of Product and Bin Load errors and to check each problem bin by performing a Free Vend. Do not press “* = Exit” before viewing all bin errors. To scroll through the list of all bin errors including selection and bin number, use the “# = Next” key on the customer keypad. Once viewed, these errors can be cleared by pressing “* = Exit” on the Customer Keypad.
2. **Warning Messages** either reported on the MDB Bus or presented on the Digital Display. No action taken.
 - **Please Make Another Selection:** Result of a “Sold Out” condition on the product that was selected. Press coin return is unstated option.
 - **Please Use Exact Change:** Displayed when the coin changer is depleted of coins.
 - **Vending is Off Until...:** Machine programing is set to Vend Block.
- Explanation:** Vend Block allows vending to be suspended for predetermined periods of time during which a message will be displayed informing customers that the machine is under intelligent control and stating when the machine will return to normal operation.
- **Selection Not Found:** Selection chosen that does not exist in programming. Explanation: Choose valid selection from display on the front of the vendor.
 - **Sublvl Errors:** Error is displayed by the controller and more sub level details are available.
 - **Invalid Date:** Invalid date is entered, for instance Feb. 31. Explanation: Corrected by entering a valid date.
 - **Invalid Price:** Invalid price is entered that is not divisible by 5. Explanation: Corrected by entering a valid price.
 - **Invalid Time:** Invalid time is entered, for instance 25:00. Explanation: Corrected by entering a valid time.

TROUBLESHOOTING

- **Bill Sensor:** Bill Mechanism may need maintenance.
- **Changer Sensor:** Coin Mechanism may need maintenance.
- **Open Box:** Cash Box may have been left open or not installed properly.
- **Invalid Card:** Card incapable of performing a transaction.
- **Jammed Bill:** Bill Mechanism may need maintenance.
- **Jammed Card:** Card Reader may need maintenance.
- **Jammed Tube:** Coin Mechanism may need maintenance.
- **Reader Error:** Card Reader may need maintenance.
- **Stacker Full:** Bill Mechanism magazine full.

Explanation: Self corrects when stacker is emptied.

- **Products Cleared:** When the “Reset” key is depressed to Calibrate the Robot Arm to the VMC Board, the first message will read “This Forces Resetup”, the next message will read, “Arm Uncalibrated.” Normally the “Reset” button would be released at this point to continue the Calibration process, but if the Reset button is not released, the next and final message will be “Products Cleared.” This will erase all the programmed selection numbers and return all setting to the defaults. (except for time and date)

3. **Out of service Errors** are errors that put the entire machine out-of-order to prevent further component damage. When the machine is out of order, the error can be displayed by pressing the “#” key.

- **Out of Service:** Controller determines that the machine is inoperable. Explanation: Vendor operation disabled due to a critical error defined when the “#” button is pressed or when the VAC Error Log is accessed.
- **Out of Product:** Occurs when the robot reaches the “Virtual Bottom” of every bin or selection in the entire machine indicating that there is no product.
- **Freezer Jam:** Current monitoring on the Freezer Lid Lift Motor has exceeded limits.

Explanation:

- Faulty Freezer Lid Lift Motor.
- Incorrect Motor Adjustment.

- Broken Output shaft gear.
- Faulty or Incorrect Adjustment on Freezer Closed Switch.
- Open fuse on the Fuse Block.
- Ice accumulation or object preventing freezer closure.
- Vapor Lock preventing freezer opening.
- Faulty connection or wiring.
- **Elbow Jam:** Current monitoring on the Elbow Motor has exceeded limits.

Explanation:

- Faulty Elbow Motor.
- Incorrect motor adjustment.
- Loose or binding slipper clutch on the Elbow Shaft.
- Loose gear on the Elbow motor.
- Open F2 Fuse in the fuse block.
- Faulty connection or wiring to the Elbow motor.

- **Shoulder Jam:** Current monitoring on the Shoulder Motor has exceeded limits.

Explanation:

- Faulty Shoulder Motor.
- Incorrect motor adjustment.
- Loose or binding slipper clutch on the Shoulder Shaft.
- Loose gear on the shoulder motor.
- Open F1 Fuse in the fuse block.
- Faulty connection or wiring to the shoulder motor.

- **Vacuum Jam:** Current monitoring on Vacuum Motor has exceeded limits.

Explanation:

- Error message exists in memory but will typically present itself as a “No Vacuum Response” error.

- **Up Down Jam:** Current monitoring on the Z Axis Motor has exceeded limits.

Explanation:

- Faulty Z Axis Motor.
- Incorrect motor adjustment.
- Loose gear on the output shaft of the Z Axis Motor.
- Faulty connection or wiring to Z Axis Motor or Board.
- Faulty Z Home Switch.

TROUBLESHOOTING

- **No Up Down Encoder:** Encoder pulses either not present or stopped before the Up Down motor destination is reached.

Explanation:

- Faulty Z Axis Motor.
 - Slippage due to incorrect motor adjustment.
 - Slippage due to a loose gear on the output shaft of the Z Axis Motor.
 - Faulty connection or wiring to Z Axis Motor or Board.
 - White gears on front of robot separated/not meshing.
 - Faulty Z Axis Board.
- **No Vacuum Response (Display “Wait 15 Minutes”):** Firmware error.

Explanation:

- Upgrade firmware to FCh137.bi2.
- **Freezer Switch Error:** Faulty switch or Out-of-Adjustment condition on either the Freezer Open Switch or the Freezer closed switch.
 - Incorrect switch wiring or faulty wiring.
 - **Products Cleared:** The last message generated when Reset button is depressed.
 - **Health Sensor:** Freezer Temperature has reached an unsafe level for 15 minutes or more based on Health Timer Parameter Settings.

Explanation:

- Incorrect Thermostat setting.
 - Incorrect Health Timer Parameter setting.
 - Thermistor plugged into “Ambient” connector instead of “Freezer.”
 - Faulty Thermistor.
 - Faulty wiring.
 - Faulty freezer.
 - Inadequate voltage.
- **Freezer Temperature:** Error indicating that either the temperature sensor circuit is open or unplugged or that the freezer temperature is colder than the stated range defined by the indicated Health Sensor parameter.
 - **Machine Not Set Up:** Machine has not been calibrated.
 - **Explanation:** Warning message displayed to remind the operator that the VMC Board has not been calibrated to the Robot Arm.

- **No Freezer Encoders:** Encoder pulses either not present or stopped before the freezer lid lift motor reaches its destination.

Explanation:

- Faulty Lid Lift Motor. (80450155001)
- Broken gear (49500406) on the Lid Lift Motor.
- Binding due to incorrect motor adjustment.
- Binding due to interference from harnessing.
- Binding due to incorrect mechanism adjustment.
- Faulty connection or wiring.

TROUBLESHOOTING TIPS

- Service Menu Option 20) Field Test is an optimum starting point for the troubleshooting process if the solution isn't immediately apparent. Press the # key at the Field Test menu heading. At this point Switches, Vacuum Motor Operation, Robot Arm Motor Operation, Encoder Operation and circuit continuity can be inspected.
- The VMC Board can often be considered in the list of possible causes for a machine fault but can be difficult to troubleshoot in some cases. It is always an option to send a questionable board to Fastcorp or inspection.
- When checking continuity, both ends of the harness to be tested should be unplugged unless otherwise noted else the results may be inaccurate.
- The freezer's temperature control is mounted on the front, right lower corner of the freezer. Turn the dial clockwise to make the temperature inside the freezer colder, and counter clockwise to make it warmer.
- The DIVI Vendor uses some parts in multiple locations. These parts may be swapped during the troubleshooting process to determine if the suspected part is faulty. These parts include the 24VDC motors (shoulder and elbow locations) and the freezer limit switches.
- Always keep a small jumper wire or small paperclip in your toolbox for troubleshooting.
- Unless otherwise noted, ALWAYS remove power from the machine before testing to avoid electrical shock.

TROUBLESHOOTING

- **ALWAYS turn OFF** the 27 VDC power rocker switch at the Power Supply on the bottom of the door before removing or installing any money acceptance systems (coin mech, bill acceptors, card readers, etc.) or unplugging any VMC Board connectors to avoid damaging the board.
- Anytime the display reads “Out of Order”, press the “#” key to view the error message.
- If you require troubleshooting assistance, please have the serial number, the error as displayed and a description of the problem available before calling. The toll-free number is 1-888-441-3278 and press option 3 for Technical Support.
- If your meter does not have a continuity setting, set it to read OHMS (Ω). Hold the leads apart, the meter should read 1 or OL. This means the circuit is open (no continuity). Touch the two leads together, the display should show 0 (or something close to 0 like .0001). This means the circuit is closed (has continuity). If you touch each lead to an end of a wire, you can determine if the wire is intact or broken.

Always troubleshoot using logical, progressive steps so that the maintenance and repair procedure runs smoothly and efficiently. Most failures may have minor causes such as loose connectors or dirty contacts.

Always check the following before replacing any parts:

- Check GFCI, Power Supply and Power Box switches to confirm that the machine is powered “ON.”
- Check that all the plugs and connections are seated firmly in their receptacles:
 - Power Box connectors (rear cabinet wall);
 - Fuse and Circuit Breakers.
 - Power Supply connectors (bottom of door);
 - VMC connectors;
 - Vacuum Box connectors;
 - Robot Arm connectors;
 - Freezer Lid Lift connectors.
- Check that there is continuity in the wires.
- Check that the connector pins are not bent or broken.
- Confirm that all motors move freely and are adjusted correctly.
- Check gears for slippage or broken teeth (lid lift motor).

- Determine if the robot will home itself if moved away from the home position and the machine is reset.
- Check the vacuum hose for holes.

THE ERROR LOG / VAC LOG is the error history and can be viewed by pressing the VAC button on the service keypad while in Service Mode. The VAC log will store up to 10 out of service errors with the most recent errors displayed first. Scroll through the error log by repeatedly pressing the VAC. Press “*” to exit.

*You may find one error stored in the VAC error log for any given vend cycle. However, this same error may be logged multiple times within a very short time span. The machine may attempt to reset itself and either secure the freezer or continue operation several times before finally going out of service.

TROUBLESHOOTING

Freezer Jam	Faulty Freezer Lid Lift Motor	<ol style="list-style-type: none"> 1. Press “Load” button. If no response, check F1 fuse on the VMC Board. If the fuse has failed, there will be an LED illuminated to the right of the fuse. Replace fuse. 2. If F1 fuse is good, check Fuse Block fuse F4. If open, find a 5A replacement in the attached bag. 3. Inspect connections at F4 on the Fuse Block. 4. Inspect J3 connector on the VMC Board and the connector at the motor. 5. Inspect continuity from Connector J3 at the VMC Board Pins 1 through 5 to motor connector. 6. Replace Motor (P/N 80450155001).
	Incorrect Motor Adjustment	<ol style="list-style-type: none"> 1. Turn OFF the rocker switch at the Power Supply 6 (bottom of door). 2. Manually open the freezer and slowly lift the Freezer Lid Lift Arm. If motor is locked up or clicking replace motor (80450155001). 3. If the motor is binding and not locked up, adjust motor.
	Broken Output shaft gear	<ol style="list-style-type: none"> 1. Inspect white nylon gear on the motor output shaft. If any teeth are broken, replace the gear (49500406).
	Faulty Freezer Closed Switch or incorrect switch adjustment	<ol style="list-style-type: none"> 1. Go to Menu 20) Field Test and press the “#” key to enter. 2. Manually lift the Freezer Lid while watching the display. 3. If switch does not send message to the display check the adjustment. Adjust if necessary. 4. If switch is adjusted and does not react to opening and closing the Lid replace the switch (P/N 49500566).
	Open fuse on fuse block	<ol style="list-style-type: none"> 1. If fuse on Fuse Block F4 is open replace fuse. 2. If fuse fails again, inspect wiring for damage. 3. Replace motor (P/N 80450155001).
	Ice accumulation or foreign object on top of freezer chest preventing freezer closure	<ol style="list-style-type: none"> 1. If ice accumulation on the top of the freezer chest is preventing the freezer lid from closing, use the ice scraper to remove the ice from the top of the freezer or remove foreign object. 2. Recheck the Freezer Closed Switch operation.
	Vapor Lock preventing the freezer from opening	<ol style="list-style-type: none"> 1. The freezer lid may create a suction seal when closing that may prevent the lid from opening. 2. Tape a small piece of tubing across the freezer lid seal and remove the caulking from around the Thermistor lead then retest.
	Faulty connection or wiring	<ol style="list-style-type: none"> 1. Inspect connector at J3 on the VMC Board and the connection at the motor. 2. Make sure that all pins are firmly seated into the connectors and the connectors are seated at the board and the motor. 3. Inspect harnessing for damage. 4. Check continuity between J3 on the VMC Board pins 1 through 5 and the connector at the motor. 5. Check continuity from J3 pins 7, 8 to Freezer Open Switch and Pins 9, 10 to Freezer Closed Switch. 6. Check connections at the Fuse Block F4. Repair if necessary.

TROUBLESHOOTING

Elbow Jam	Faulty Elbow Motor	<ol style="list-style-type: none"> 1. Go to 20) Field Test and Press the “#” key to enter. 2. Press the “Elbow Left” and “Elbow Right” Keys. 3. If no response, check F1 fuse on the VMC Board. If the fuse has failed, there will be an LED illuminated to the right of the fuse. Replace fuse. 4. If F1 on the VMC Board is good, check the 800mA fuse at Fuse Block F2. Replace if necessary. 5. Check connections at F2 on the Fuse Block. 6. If fuse is good, while still in Field Test, plug Shoulder Motor connector into the Elbow Motor. Press “Shoulder Left” and “Shoulder Right” keys. 7. If no reaction, replace Elbow Motor (P/N F003-A04151).
	Incorrect Motor Adjustment	<ol style="list-style-type: none"> 1. Check drive belt torque at motor. Tighten if necessary.
	Open Fuse at Fuse Block F2	<ol style="list-style-type: none"> 1. Check F2 fuse at the Fuse Block. 2. Replace if necessary.
	Binding at the Elbow Shaft	<ol style="list-style-type: none"> 1. If the Elbow Joint is binding, lubricate the 4 large bearings using a very small amount of Dry Lube. If none is available, use a small drop of 3 in 1 oil on each bearing and manually move the Robot Arm Elbow Joint left and right until it moves freely. 2. If binding persists, replace the Robot Arm (P/N F003-A07877).
	Looseness at the Elbow Shaft	<ol style="list-style-type: none"> 1. If the Elbow Joint compared to the Shoulder Joint is exceptionally loose, see instructions for tightening the Robot Joint. 2. Else, replace the Robot Arm (P/N F003-A07877).
	Loose Gear on Elbow Motor	<ol style="list-style-type: none"> 1. Using a 2mm Allen wrench tighten the 2 set screws onto the flat areas of the motor output shaft. Take care not to strip the threads by over tightening.
Elbow Jam	Faulty connection or wiring	<ol style="list-style-type: none"> 1. Go to “20) Field Test”, press “#” to enter. 2. Press “Shoulder Left” then “Shoulder Right” to make sure that the Shoulder Motor is working correctly. 3. Plug the Elbow Motor harness into the Shoulder Motor. 4. Press “Elbow Left” then “Elbow Right.” If the Shoulder Motor does not move, check continuity from VMC Board J5 pins 5 and 6 to the Elbow Motor Connector. 5. Check connections. 6. Replace VMC Board (P/N 3000021-1).

TROUBLESHOOTING

Shoulder Jam	Faulty Shoulder Motor	<ol style="list-style-type: none"> 1. Go to 20) Field Test, and press the “#” key to enter. 2. Press the “Shoulder Left” and “Shoulder Right” keys. 3. If no response, check F1 fuse on the VMC Board. If the fuse has failed, there will be an LED illuminated to the right of the fuse. Replace fuse. 4. If F1 on the VMC Board is good, check the 800mA fuse at Fuse Block F1. Replace if necessary. 5. Check connections at F1 on the Fuse Block. 6. If the fuse is good, while still in Field Test, plug the Elbow Motor connector into the Shoulder Motor. Press “Elbow Left” and “Elbow Right” keys. 7. If no reaction, replace the Shoulder Motor (P/N F003-A04151).
	Incorrect Motor Adjustment	<ol style="list-style-type: none"> 1. Check Drive Belt Tension at motor. Adjust if necessary.
	Faulty Fuse at Fuse Block F1	<ol style="list-style-type: none"> 1. Check F1 Fuse at the Fuse Block. 2. Replace if Necessary.
	Looseness at the Shoulder Shaft	<ol style="list-style-type: none"> 1. If the Shoulder Joint compared to the Elbow Joint is exceptionally loose, see instructions for tightening the Robot Joint. 2. Else, replace the Robot Arm (P/N F003-A07877).
	Binding at the Shoulder Shaft	<ol style="list-style-type: none"> 1. If the Shoulder Joint is binding, lubricate the 4 large bearings using a small amount of Dry Lube. If none is available, use a small drop of 3 in 1 oil on each bearing and manually move the Robot Arm at the Shoulder Joint left and right until it moves freely. 2. If binding persists, replace the Robot Arm (P/N f003-A07877).
	Loose Gear on Shoulder Motor	<ol style="list-style-type: none"> 1. Using a 2mm Allen wrench, tighten the 2 set screws onto the flat areas of the motor output shaft. Take care not to strip the threads by over tightening.
	Faulty Connection or Wiring	<ol style="list-style-type: none"> 1. Go to “20) Field Test” and press “#” to enter. 2. Press “Elbow Left” and “Elbow Right” to make sure that the Elbow Motor is working correctly. 3. While still in Field Test, Plug the Shoulder Motor harness into the Elbow Motor. 4. Press “Shoulder Left” then “Shoulder Right.” If the Elbow Motor does not move, check continuity from VMC Board J5 pins 8 and 9 to the Shoulder Motor Connector. 5. Replace the VMC Board (P/N 3000021-1).
	Faulty Connection or Wiring.	<ol style="list-style-type: none"> 1. Go to “20) Field Test” and press “#” to enter. 2. Press “Elbow Left” and “Elbow Right” to make sure that the Elbow Motor is working correctly. 3. While still in Field Test, Plug the Shoulder Motor harness into the Elbow Motor. 4. Press “Shoulder Left” then “Shoulder Right.” If the Elbow Motor does not move, check continuity from VMC Board J5 pins 8 and 9 to the Shoulder Motor Connector. 5. Replace the VMC Board (P/N 3000021-1).

TROUBLESHOOTING

Vacuum Jam	Vacuum Jam	1. See “No Vacuum Response.”
Up/Down Jam	Faulty Up/Down Motor	<ol style="list-style-type: none"> 1. Go to “(20) Field Test” and press the “#” key to enter. 2. Press the “Down” and “Up” keys. 3. If no response, check F1 fuse on the VMC Board. If the fuse has failed, there will be an LED illuminated to the right of the fuse. Replace fuse. 4. If F1 on the VMC Board is good, check Fuse Block 2A fuse at F5. Replace if necessary. Check connections at F5 on the Fuse Block. 5. If motor hums and belt does not move, check the gear on the output shaft to make sure that it’s tightened onto the flat areas of the motor output shaft. 6. If gear is tight, replace the Z Axis Motor (P/N F003-A07862).
	Faulty Connection or Wiring	<ol style="list-style-type: none"> 1. If Fuses are good and the motor is not vibrating or humming, inspect the harness for the Up/Down Motor as it enters and exits the IGUS Chain. Look for breaks or damage in the wires. 2. Check continuity between J5 pins 1 and 2 and the connector at the Up / Down Motor. Repair if necessary. 3. Check connections at the Fuse Block F5. Repair if necessary. 4. Check connections at the Z Axis Board. Reset if necessary.
	Incorrect Motor Adjustment	<ol style="list-style-type: none"> 1. Check Drive Belt Tension at the motor. Tighten if necessary.
	Loose Gear on the Output Shaft of the Up/Down Motor	<ol style="list-style-type: none"> 1. Use a 2mm Allen wrench to make sure that the two set screws on the gear are tightened onto the flat areas of the motor’s output shaft.
	Faulty Vacuum Hose Drive	<ol style="list-style-type: none"> 1. If motor is turning but the hose is not, remove the front Robot Arm Cover and inspect the engagement of the large white gears. 2. If the teeth on the white gears are not meshing, replace the Vacuum Hose Drive (P/N F003-A04171).
	Faulty Up/Down Home Switch	<ol style="list-style-type: none"> 1. Inspect Up/Down Home Switch for damage. Make sure that the contact arms are intact. 2. Adjust switch if necessary. 3. Check continuity on the switch leads. 4. If leads are broken or arms are missing, replace the switch (P/N 1200076).

TROUBLESHOOTING

Up/Down Jam	Faulty Up/Down Home Switch	<ol style="list-style-type: none"> 1. Inspect Up/Down Home Switch for damage. Make sure that the contact arms are intact. 2. Adjust switch if necessary. 3. Check continuity on the switch leads. 4. If leads are broken or arms are missing, replace the switch (P/N 1200076).
No Up/Down Encoder	Faulty Up/Down Encoder Board	<ol style="list-style-type: none"> 1. Go to Menu "24) Soft Drop" and press the "#" key. 2. The Vacuum Hose should lower to the level that was programmed. If the vacuum hose does not lower or if all of the hose is unspooled, set the hose level using the "Up" or "Down" keys then press "#" to save the setting. 3. Press the "#" key again. If no response or the hose unspools again, replace the Up / Down Encoder Board (P/N 10-0208-00). Else replace the VMC Board P/N 3000021-1.
	Faulty Up/Down Motor	See: Up/Down Jam
No Vacuum Response	Firmware Error	<ol style="list-style-type: none"> 1. Upgrade Firmware to firmware revision FCH137.bi2.
	Check Fuses	<ol style="list-style-type: none"> 1. Go to "20) Field Test" and press the "#" key. 2. Press the "VAC" key. If there is no vacuum response, check F2 fuse on the VMC Board. If the fuse has failed, there will be an LED illuminated to the right of the fuse. Replace fuse. 3. If F2 on the VMC Board is good, check Fuse Block 5A fuse at F6. Replace if necessary. 4. Check fuse at Power Supply. (bottom of door) 5. Check for 27VDC at pins 1 & 2 at VMC Board J1.
	Faulty Connection or Wiring	<ol style="list-style-type: none"> 1. Check Connections at J1 (P/N 1200009) and J4(1200008) on the VMC Board and at the Power Supply (bottom of the door). 2. Check connections at Vacuum Box under the delivery bin. 3. Check connections at F6 on the Fuse Block.
	Faulty Vacuum	<ol style="list-style-type: none"> 1. If Vacuum turns on but does not react to product, check vacuum hose for leaks. 2. If Robot Arm completes the vend cycle but does not create a suction seal with a product and delivers nothing, check Vacuum nozzle and hose for an obstruction.
	Vacuum Switch Failure	<ol style="list-style-type: none"> 1. Test for continuity across Vacuum Switch leads when vacuum turns on. If continuity but vend failed, replace the Vacuum Switch (P/N 3000194).
	Vacuum Box Failure	<ol style="list-style-type: none"> 1. Replace Vacuum Box (P/N F003-A05431).

TROUBLESHOOTING

Freezer Switch Error	Out-of-Adjustment – Freezer Open Switch	<ol style="list-style-type: none"> 1. Go to “20) Field Test” and press the “#” key. 2. Press the “Load” key. The lid will open about 6 inches. Press “Load” repeatedly until the lid is completely open. Observe the Display at that point. It will show “Freezer Open Y.” If no message, manually open the Freezer Lid, raise the Lift Arm a few inches and tilt the arm toward the back of the cabinet. The arm will pivot outwards at the bottom exposing the bottom of the arm and the Freezer Open Actuator Bracket. Loosen the 2 screws using a ¼ inch wrench or Phillips screwdriver and raise the bracket then re-tighten the screws. 3. Close the Freezer Lid and check again. If no response, check continuity from VMC Board J3 pins 7 & 8 to the switch. Check connections and connectors. Reset connections or repair wiring if necessary. 4. If still no response, replace the Switch (P/N 49500566).
	Out-of-Adjustment – Freezer Closed Switch	<ol style="list-style-type: none"> 1. If a Vend Cycle is initiated and the Robot Arm begins to move but the Freezer Lid does not open, check the Freezer Closed Switch. Adjust if necessary. 2. If the switch is adjusted properly, go to “20) Field Test” and press the “#” key. 3. Lift the Freezer Lid and observe the display. If no response check continuity from VMC Board J3 pins 9&10 to the switch. Check connections and connectors. Reset connections or repair wiring if necessary. 4. Replace Switch (P/N 49500566).

TROUBLESHOOTING

Health Sensor	Incorrect Thermostat Setting	<ol style="list-style-type: none"> 1. Check the Thermostat Setting. If the product inside the freezer is soft and the Thermostat is set to a low value, adjust the setting. "6" to "7" are the typical settings for a Frozen machine.
	Incorrect Health Timer Setting	<ol style="list-style-type: none"> 1. Check to make sure that the Health Timer Setting is correct for the product being vended. Check to see if the freezer temperature is warmer than the defined temperature for the Health Timer Setting.
	Inadequate Voltage	<ol style="list-style-type: none"> 1. Check voltage at the wall receptacle. Optimally the machine should be on a dedicated 115VAC outlet. 2. The machine should not be on an extension cord or a shared outlet.
	Thermistor Plugged into the Incorrect Connector	<ol style="list-style-type: none"> 1. Each machine has two potential thermistor connector leads, "Freezer" and "Ambient." Make sure the Thermistor is plugged into the lead that is labeled "Freezer."
	Faulty Wiring or Faulty Connectors	<ol style="list-style-type: none"> 1. Check continuity between the VMC Board J3 pins 11 & 12 and the Thermistor lead labeled Freezer. Check connections and connectors. Reset connections or repair wiring if necessary. 2. Check voltage at the Power Box left side outlet for 115VAC. Power Box (P/N 1200013).
	Faulty Thermistor	<ol style="list-style-type: none"> 1. Press "Load" then "Close" to reset the Health Sensor Error. 2. Pull out the Service/Interlock Switch and press the "*" key to retrieve the freezer temperature. 3. Use a thermometer to compare temperatures. 4. Replace Thermistor (P/N 80492557001).
	Faulty Thermostat	<ol style="list-style-type: none"> 1. After making all other checks and inspections, bypass the Thermostat and determine if the compressor comes on line (see instructions). If temperature starts decreasing replace thermostat with an electronic component else replace the Freezer.
Freezer Temp	Incorrect Health Timer Setting	<ol style="list-style-type: none"> 1. Check to make sure that the Health Timer Setting is correct for the product being vended. 2. If the Freezer temperature is colder than the defined temperature for the Health Timer Setting, Press "Load" then "Close" to reset the error message then adjust the thermostat setting slightly warmer. It will take a few hours for the temperature to adjust.

TROUBLESHOOTING

Freezer Temp	Faulty Wiring or Faulty Connectors	<ol style="list-style-type: none"> 1. Check to make sure that the Thermistor is plugged in to the “Freezer” lead. 2. Check continuity from the VMC Board J3 to pins 11 & 12 to the Thermistor “Freezer” lead.
Machine Not Set Up	Machine Not Calibrated	<ol style="list-style-type: none"> 1. This is a warning message to indicate that the VMC Board has not been “Calibrated” to the Robot Arm. 2. If any motor related instructions are presented to the machine, the Robot Arm will not respond correctly and will force itself into a wall or a corner. 3. See Instructions for “Calibrating the Robot Arm.”
Erratic Robot Arm Movement	Robot Arm Control Issues	<ol style="list-style-type: none"> 1. Follow Instructions for “Calibrating the Robot Arm.” 2. If calibrating did not improve the control issues, then go to “Menu 20) Field Test” and press the “#” key to enter. 3. Press “Shoulder Left” and “Shoulder Right” keys. If no response then go to “Shoulder Jam” troubleshooting section. 4. Press “Elbow Left” then “Elbow Right” keys. If no response then go to “Elbow Jam” Troubleshooting Section. 5. Press the “*” key to view “S” and a value and “E” and a value. Move the Elbow and Shoulder joints one at a time and observe the values. The encoder values should increase and decrease gradually as the arm is moved left and right. If there are no encoder pulses or if there are large gaps in the encoder value progression then check the large grey ribbon cable (10 wire) connection at the robot encoder, at the robot mount and at J7 on the VMC Board.
No Freezer Encoders	Faulty Fuse	<ol style="list-style-type: none"> 1. Go to “20) Field Test” and press the “#” key to enter. 2. Press the “Load” key. 3. If no response, check F1 fuse on the VMC Board. If the fuse has failed, there will be an LED illuminated to the right of the fuse. Replace fuse. 4. If F1 on the VMC Board is good, check Fuse Block 5A fuse at F4. Replace if necessary.

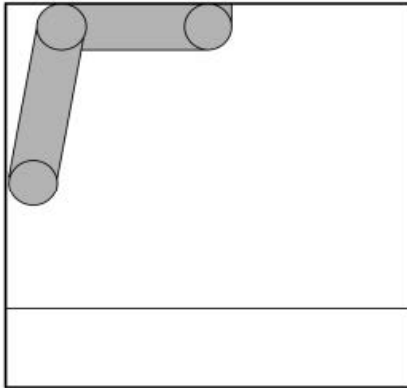
TROUBLESHOOTING

No Freezer Encoders	Broken Gear	<ol style="list-style-type: none"> 1. Broken gear on the output shaft of the lid lift motor. Replace gear (P/N 49500406).
	Binding Due to Interference on Side of Freezer	<ol style="list-style-type: none"> 1. Inspect the right side of the freezer for interference in the form of harnessing. 2. Observe the mechanism adjustment to make sure that the Lift Arm is not catching on louvers on the side of the Freezer.
	Binding Due to Incorrect Motor Adjustment or Faulty Motor	<ol style="list-style-type: none"> 1. Turn OFF the rocker switch at the Power Supply (bottom of the door). 2. Manually open the Freezer Lid and lean it against the rear cabinet wall. 3. Slowly raise the Lid Lift Arm. There should be a minimum of resistance. Adjust if necessary. 4. There should be no clicking or locking up while raising or lowering the Lift Arm. 5. Replace Motor (P/N 80450155001).
	Faulty Connections or Wiring	<ol style="list-style-type: none"> 1. Check continuity between VMC Board J3 Pins 1 through 5 and connector at Lid Lift Motor. 2. Check connections at the Fuse Block F4. 3. Check connections and connectors. Inspect harnessing for damage. Reset connections or repair wiring if necessary. 4. Check capacitor connection between VMC Board J3 pins 3 and 5. 5. Replace Lid Lift Mechanism (P/N 1100124).
Out Of Product Product still in bins	Incorrect Up/Down Travel Limits Adjustment	<ol style="list-style-type: none"> 1. Press the "*" Key and then press "Load" and then "Close." This will reset the counters to bring all of the product levels back to "Full." 2. Go to 21) up/down travel limits and press the "up" key at 5 pulse increments to gradually increase the bin depth. Use the "Free Vend" feature to check the settings and adjust as necessary. Warning" An incorrect setting may result in a vended bin or a bin raised high enough to prevent the freezer lid from closing.
	Broken or Damaged Vacuum Hose	<ol style="list-style-type: none"> 1. If Travel Limits are set correctly and Product levels are reset to "Full" and if the Vacuum Hose descends to the product and shuts off, inspect the Vacuum Hose for leaks. 2. Go to "Menu 20 Field Test" and press the "#" key. Press a rigid piece of cardboard under the blue suction tip then press the "VAC" key. The Vacuum will turn on. Move the hose in different directions while inspecting for leaks. 3. Vacuum Hose (P/N 49200130).

APPENDIX

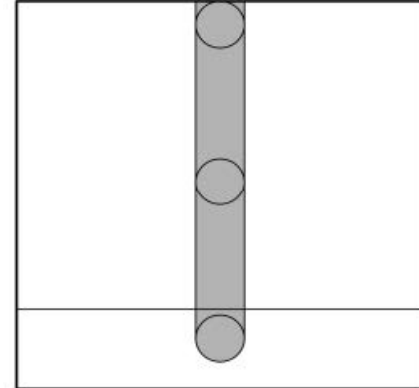
CALIBRATING THE ROBOT ARM:

FIGURE 9A MINIMUM POSITION



FRONT OF MACHINE

FIGURE 9B DELIVERY POSITION



FRONT OF MACHINE

The Robot Arm may be re-calibrated without losing programmed information, but take care to follow the instructions, precisely.

Press the VAC button on the Service Keypad to release the security locking feature.

Go to the Service Menu and press the "*" key repeatedly until the display reads, "4) Create Selection." **Press and hold the Reset button.** The VMC will beep as you hold the Reset button.

The display will immediately read:

THIS FORCES RE-SETUP

*-Next D-Back #-Yes

Continue holding the Reset button. The VMC will continue to beep. The display will change to:

Arm Uncalibrated

*-Next D-Back #-Yes

When you see ARM Uncalibrated on the display screen, release the reset button immediately and then press the #-Yes button. You will be prompted to "SET ARM AT LEFT WALL". Position the arm as shown in figure 9A in the previous section. Press the "#" key to accept. Display will show "SELECTION STORED."

1. Now you will be prompted to "SET ARM AT DELIVERY." Position the arm as shown in figure 9B in the previous section. Press the "#" key to accept. Display will show "SELECTION STORED."
2. Press "LOAD" and the Freezer Lid will open and the Robot Arm will move to the center rear. Press "CLOSE" and the Robot Arm will return to the center front Delivery Position and the Freezer Lid will close. These commands and the resulting machine's reactions confirm that the Calibration process was performed successfully.

APPENDIX

HEALTH TIMER NORMAL MODES OF OPERATION

<u>Setting</u>	<u>Temperature Range</u>
NAMA Ice Cream	Operates between -40 and 0° F
Frozen Food	Operates between -40 and +15° F
Super Cold	Operates between (No Lower Limit) and -25° F
Chilled	Operates between +20 and +125° F
NAMA Refrigerated	Operates between +20 and 41° F
MMM (Mini Melts Mode)	Adjustable Upper/Lower limits
	Upper Limit range -65 to 0°F
	Lower Limit -125 to -15°F
	NOTE: If lower limit is set to -126°F there is no detection of a disconnected probe.
	Defaults are -10 and -120°F

LID LIFT MECHANISM

REPLACEMENT INSTRUCTIONS

Necessary Tools and Accessory Items:

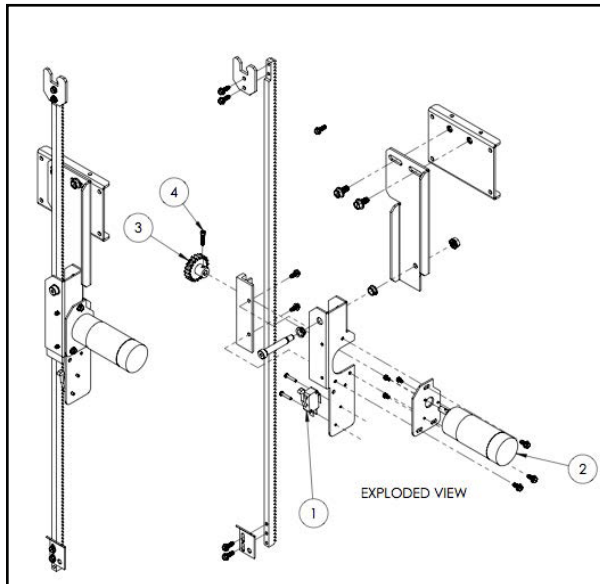
- ¼" Wrench
- ⅜" & ⅝" Ratchet Wrenches
- Cutting Pliers
- (8) Cable Ties – 7 - ½"

The **Fastcorp DIVI Lid Lift Mechanism** can be removed and replaced in approximately 30 to 45 minutes.

- A. Locate the power switch on the Power Supply on the left side of the delivery bin and turn it "OFF" to remove power to the VMC Board and the Freezer Lid Lift Mechanism.
 - B. Reach down behind the freezer to unplug the 2-pin connector for the circulation fan.
 - C. Reach behind the freezer (right rear corner) to unplug the 2-pin thermistor connector. The harness will be labeled, "freezer." Be careful of sharp edges inside the cabinet.
 - D. Remove the cover from the Freezer Closed Switch Assembly (right front corner of Freezer). Make note of how the harness is plugged into the switch (common and normally open) and then unplug the switch. Use a pair of pliers and unplug by pulling on the connector. Do not pull on the wire.
 - E. Note how the Freezer Lid Lift Harness is routed and where the cable ties are positioned. Mark each location on the cabinet and the harness. Follow the harness to the VMC Board and disconnect the connector at J3.
 - F. Carefully cut and remove the cable ties that hold the harness in place.
- G. Manually open the Freezer Lid to access, mark the position and remove the two (2) Freezer Lid Lift Mechanism retaining screws using a ⅜" wrench. These screws will be used over again to install the new mechanism.
 - H. Remove wires for the lid lift in the Fuse Block F4 location, by inserting an ⅛ inch flat screw driver into the fuse block wire port to release the wire. If this screw driver is not available, cut and wire nut the wires to the new harness.
 - I. Remove the Lid Lift Mechanism and carefully pull the harness through the holes in the cabinet reinforcement bracket.
 - J. Reverse the above instructions to install the new Freezer Lid Lift Mechanism. Take care not to damage the wiring harness when threading it through the holes in the cabinet reinforcement bracket.
 - K. Adjust the lift arm so that the Lift Pin on the right side of the Freezer Lid will drop into the center of the fork on the top of the Lift Arm. You may have to raise the lift arm slightly. The Lid Lift Mechanism is adjustable front and back.
 - L. There is an adjustment at the bottom of the Lift Arm which determines how far the Freezer Lid will open before the Freezer Lid "Open" Switch is activated. Manually open the Freezer Lid. Tilt the top of the lift arm towards the back of the machine. The bottom of the arm will pivot outwards. You will need a ¼" wrench or nut driver to loosen the (2) screws. If necessary, raise the actuator plate to allow the "Open" Switch to activate sooner.

APPENDIX

FREEZER LID LIFT ASSEMBLY



1100124 - Freezer Lid Lift Assembly		
1	49500566	Switch, Limit, Freezer Open
2	80450155001	Motor
3	49500406	Gear, Sprocket
4	48909121	6-32x5/8" Screw

REMOVE THE VACUUM HOSE FROM THE ROBOT ARM

Necessary tools: #2 Phillips Screwdriver; ½" Socket Wrench; ⅜" Allen Wrench

- Locate the power switch on the Power Supply to the left of the delivery bin and turn it OFF to remove power from the VMC Board and Robot Arm.
- Tape or tie-wrap the vacuum hose to the rear section of the Robot Arm to prevent it from retracting into the back wall.
- Remove the 4 screws from the front cover of the Robot arm and then remove.



APPENDIX

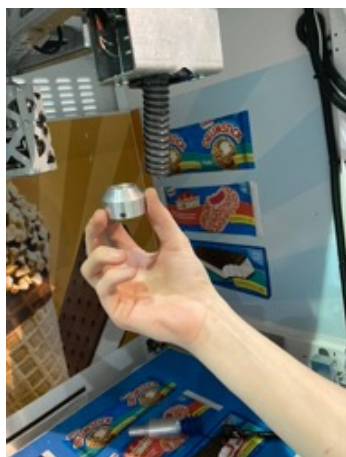
- D. Use the $\frac{1}{2}$ " socket wrench on one of the large white gears to ratchet down the hose to expose the two set screws on the top of the Picker Head Nozzle.
- E. Use a $\frac{3}{32}$ " Allen Wrench to loosen the two set screws on the Picker Head Nozzle. Be careful not to lose the screws.



- F. Unscrew the top section of the nozzle clockwise up the hose while gently twisting and pulling the lower section off the hose.

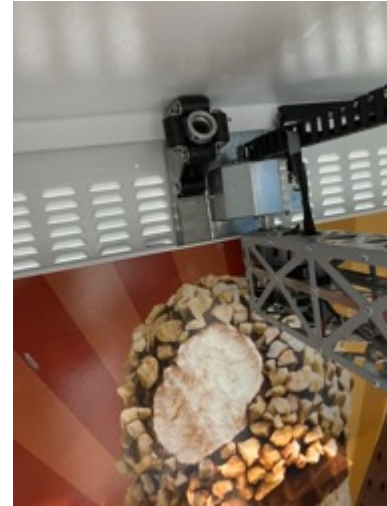


- G. Unscrew the top section of the nozzle.
- H. Use the $\frac{1}{2}$ " socket wrench to rotate the white gear on the front of the Robot Arm. Hold on to the hose above the gray rollers while raising the hose out of the Robot Arm. Be careful to hold onto the hose and don't let it reel back into the wall!!!



APPENDIX

- I. Screw the top section of the Picker Head Nozzle back onto the Vacuum Hose. Remove the tape or Ty-Wrap from the back of the Robot Arm and then gently release the Vacuum Hose back onto the rollers on the rear cabinet wall.



- J. Reverse the procedure to install the hose into the Robot Arm, ALWAYS being careful not to lose the hose into the back wall.

ROBOT ARM REMOVAL INSTRUCTIONS

Necessary Tools: #2 Phillips screwdriver; $\frac{7}{16}$ " Socket Wrench

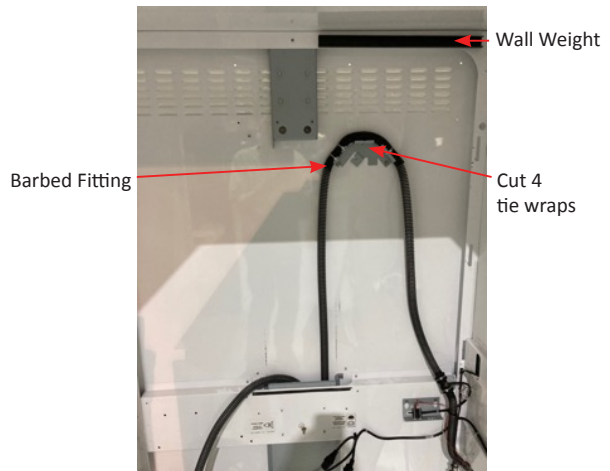
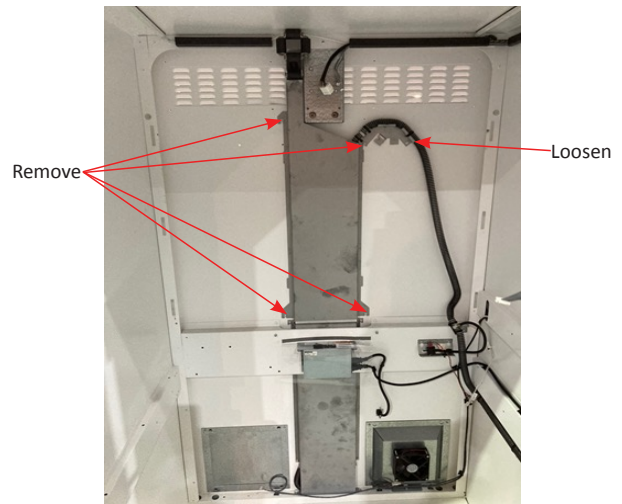
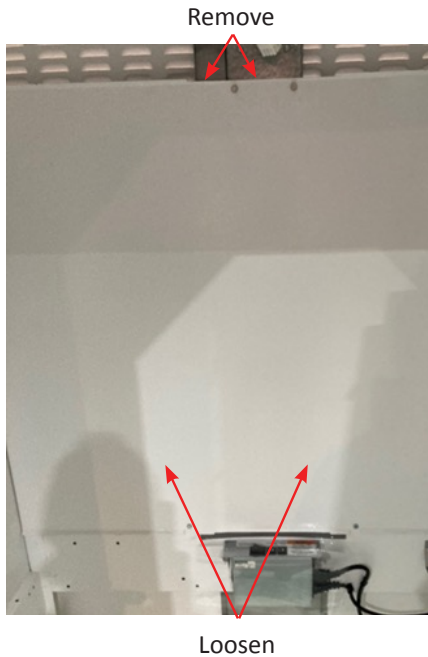
- A. Carefully unplug the two gray ribbon cables from the Rear Robot Arm Mount Cover (Mask).
- B. Remove the large white connector from the Mask. It helps to use a flat blade screwdriver to pry the two parts of the connector apart while squeezing the two ears of the locking latches.
- C. Remove the two Phillips screws from the left and right side of the Mask. Reverse the Mask and balance it on top of the Robot Arm.
- D. Remove the two lower Robot Arm retaining nuts using the ratchet, a short extension and $\frac{7}{16}$ " socket. Loosen the top two nuts.
- E. Support the Robot Arm on your shoulder while you remove the final two Robot Arm retaining nuts and then the arm is free to remove from the machine.

REPLACE THE VACUUM HOSE

Necessary Tools: $\frac{5}{16}$ " and $\frac{3}{8}$ " Socket Wrenches; 4 Cable Ties; 1 Vacuum Hose, 130" P/N 49200130

- A. Loosen the two screws at the bottom of the rear cabinet wall panel and remove the two screws at the top center of the rear cabinet wall panel using a $\frac{5}{16}$ " socket wrench and then lift the panel up and out of the machine.

APPENDIX



- A. Remove the Mid- Vacuum Hose Cover Panel using the $\frac{3}{8}$ " socket wrench.
- B. Disconnect the Vacuum hose from the barbed fitting on the right side of the Mid- Vacuum Hose Cover Panel and cut the tie wraps from the arched retainer bracket.
- C. Lift the Vacuum Hose out of the well in the center of the cabinet wall and remove the wall weight. Disconnect the hose nozzle and then remove the hose.
- D. Connect the new hose to the barbed fitting and loop the hose over the mounting bracket on the back wall. Attach one tie wrap over the hose on

- each side of the barbed fitting and then tighten them and neatly trim them.
- E. Thread the hose through the rollers and screw the top of the hose nozzle onto the end of the hose. Lower the hose into the well and then lower the wall weight onto the hose. Lift the hose and let it go a few times to make sure that it moves freely.
- F. Install the Mid-Vacuum Hose Cover Panel.
- G. Reinstall the rear wall panel making sure that the blades are all attached and the panel is tight against the wall. Install the top screws and tighten the lower ones.

APPENDIX

INSTALL THE ROBOT ARM

Necessary Tools: #2 Phillips screwdriver; ½" and ⅞" Socket Wrenches; ⅜" Allen Wrench

- A. Rest the Robot Arm on your shoulder and line up the holes in the mount with the four studs in the center of the rear cabinet wall.
- B. Start the two top nuts by hand. Let the mount slide to the bottom of the slots and then use the ⅞" socket wrench to tighten them. Install the two bottom nuts and tighten them.
- C. Install the Mask (Robot Mount Cover) using the two Phillips screws.
- D. Carefully align the ribbon cable connectors with their sockets and snap them into place. Plug in the large white connector. Make sure the latches are locked into place.
- E. Pull the hose out of the back wall roller assembly and either tape or tie wrap the hose to the back of the Robot Arm.
- F. Unscrew the top part of the Vacuum Nozzle. Center the hose over the orange wheels at the top of the Robot Arm and thread the hose into and through the wheels while turning the white gears on the front of the robot arm with the ½" ratchet wrench. Continue until about 6 inches of hose has extended out the bottom of the Robot Arm. Remove the tape or tie wrap that is holding the hose onto the back of the Robot Arm.
- G. Screw the top of the Picker Head Nozzle onto the hose to the end of the threads and no further. Insert the Picker Head Nozzle into the hose with a pushing and twisting motion. When the hose is all the way into the Picker Head Nozzle, screw the top part of the nozzle into it and then tighten the two set screws using the ⅜" Allen wrench.
- H. Make sure that the Service Door Switch is in the middle (Service) position and then turn the machine back on. The Display should read "Change Price."
- I. Go to the Calibrate Section and follow the instructions for Calibrating the Robot Arm to the VMC Board.

ROBOT ARM MALFUNCTION - QUICK CHECK

Symptoms:

Hitting walls or not going to correct bins or losing accuracy.

Causes and Fixes:

- VMC Board Replaced and not calibrated.
 - Calibrate New VMC Board.
 - Verify Bins.
- Board Failure (current limiting resistors for Motors).
 - Troubleshoot and replace faulty Motor.
 - Replace VMC Board and calibrate.
 - Verify Bins.
- Fuse Failure for Shoulder or Elbow Motor.
 - Replace Fuse and faulty Motor.
- Lost Calibration.
 - Calibrate VMC Board.
 - Verify Bins.
- Slipper Clutch Loose.
 - Re-torque Slipper Clutch.
 - Verify Bins.
- Set Screws on Ball Bearing Retainer loose.
 - Dismantle Slipper Clutch. Tighten set screws.
 - Re-torque Slipper Clutch
 - Verify Bins.

APPENDIX

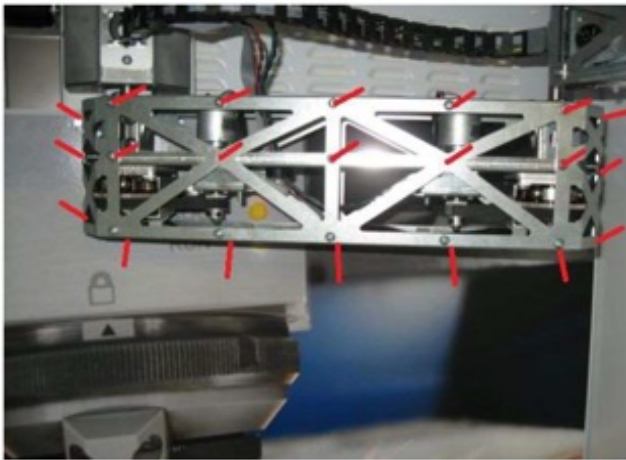
- Timing Belt Loose.
 - Tighten Belt.
- Motor Failure (Shoulder or Elbow).
 - Replace faulty Motor.
- Motor wiring failure (Shoulder or Elbow).
 - Troubleshoot robot arm and repair faulty wiring.
- Encoder Failure (Shoulder or Elbow).
 - Check connections. Reseat as necessary.
 - Replace VMC Board.
 - Replace Robot Harness.
 - Replace Encoder Board.
 - Replace Intermediate Encoder Board.
 - Replace Ribbon Cable, 10 pin wire.
- Encoder Harness failure (Shoulder / Elbow).
 - Replace Encoder Harness.
- Encoder Harness connector partially unplugged or plugged in incorrectly at robot, mask or VMC Board.
 - Reseat harness as necessary.
 - Inspect and straighten pins if necessary.

ROBOT ARM SLIPPAGE DIAGNOSE AND REPAIR

- Robot Arm that cannot be calibrated.
- Arm may hit the walls when attempting to operate.
- Arm may be able to vend from some areas of the cabinet but not others.
- Shoulder or Elbow Joints may be loose and may lack resistance.
- Has working shoulder and elbow motors.
- Has working encoders.

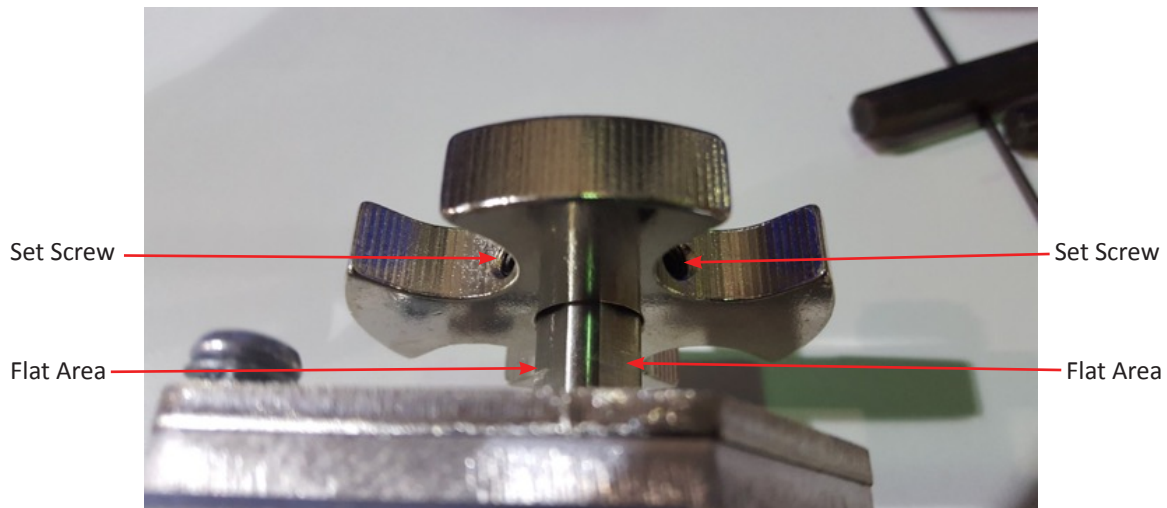
Check jam nuts:

- Turn Off the machine at the Power Supply at the bottom of the door.
- Remove the bottom and one side of the Robot Arm cage to expose the encoder bracket.



APPENDIX

- Loosen the 4 Fillister Head Phillips screws to loosen the motor and remove the appropriate drive belt.
- Remove the two Encoder Mounting Bracket Phillips retaining screws.
- Inspect the jam nuts at the base of the shaft. If they are loose, then they should be torqued to 35 In/lbs. The socket size is 15mm.
- If they are not loose, then carefully remove the nuts and lower the 60-tooth gear. Remove the 4 ball bearings.
- Rotate the bearing holder to expose the two set screw access holes.
- Use a $\frac{7}{64}$ " Allen wrench to torque the two set screws to 4.5 in/lbs.
- It is important to tighten the set screws onto the two flat faces of the shaft as illustrated in the photo below.
- After tightening both set screws, go back and double check the torque setting of both screws since they have a tendency to loosen up.

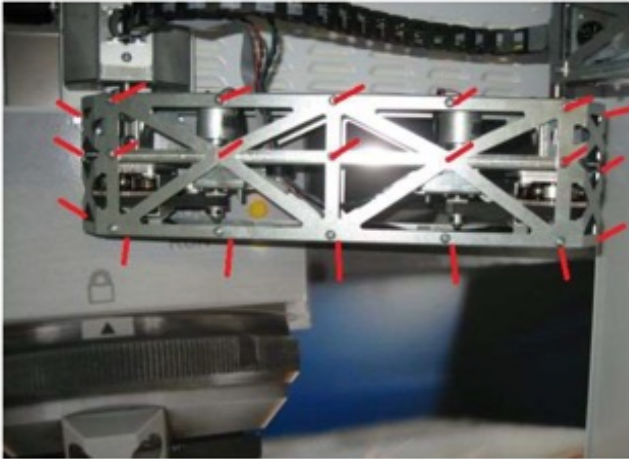


- Install the 60-tooth large timing / traction gear and then carefully slide the 4 ball bearings back into place.
- Install the jam nuts and use Loctite 242 or an equivalent thread locker. Torque the jam nuts to 35 to 40 in /lbs. while constantly moving the joint and ball bears.
- Install the Magnetic Encoder Assembly onto the end of the shaft.
- Reinstall the motor drive belt and adjust the motor.
- Compare the resistance at both the shoulder and elbow joints with the machine powered ON.
- If, after setting the torque and powering up the machine, there is too much resistance at the joint, it may be necessary to remove the two encoder bracket screws, slide the encoder bracket down and out of the way, loosen the two jam nuts to a point where the joint relaxes and begin the torque process over again.
- Only after the proper torque setting has been achieved should the robot "cage" be reinstalled.

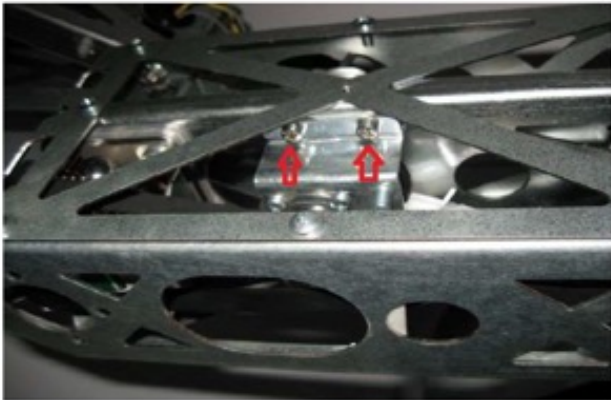
APPENDIX

REPLACE ROBOT SHOULDER OR ELBOW MOTOR:

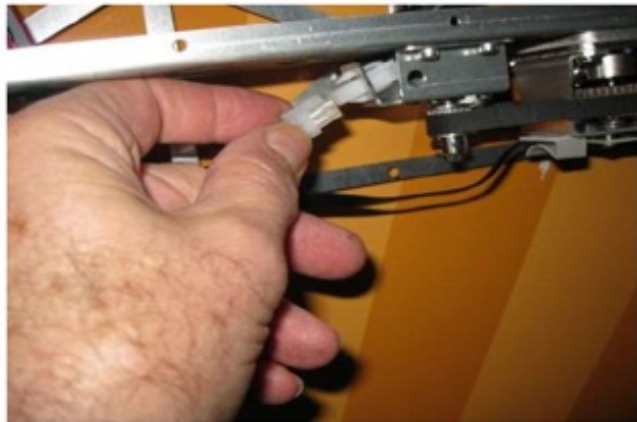
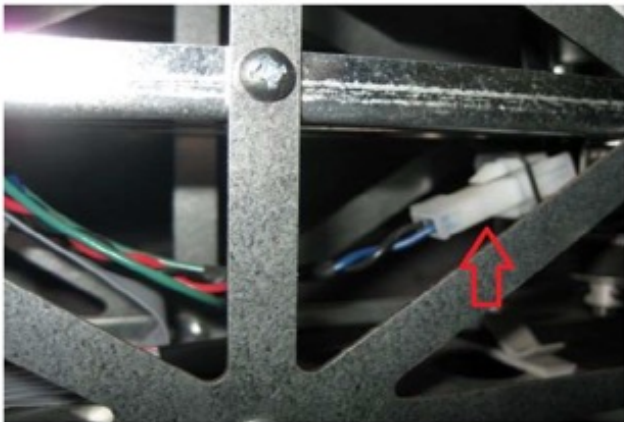
- Turn off the machine at the Power Supply at the bottom of the door.
- Remove the bottom and one side of the Robot Arm cage.



- Remove the four motor retainer screws (red arrows). Once the motor fasteners have been removed, the clips will be able to move freely.



- Squeeze the latch on the connector and unplug the motor F003-A04151.



- Position the new motor under the mounting holes. Position one of the retainer clips over one of the mounting holes, hold it in place with a finger and insert one screw. Snug up one screw and use a pick or a small line-up pin to align the remaining hole and then insert the screw. Follow the same procedure for the other side. Install and tension the belt. The belt tension should be snug but not extremely tight.

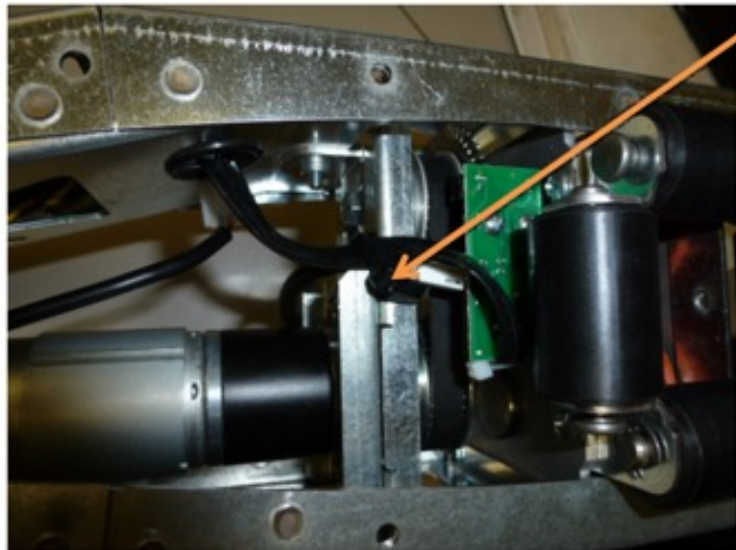
APPENDIX



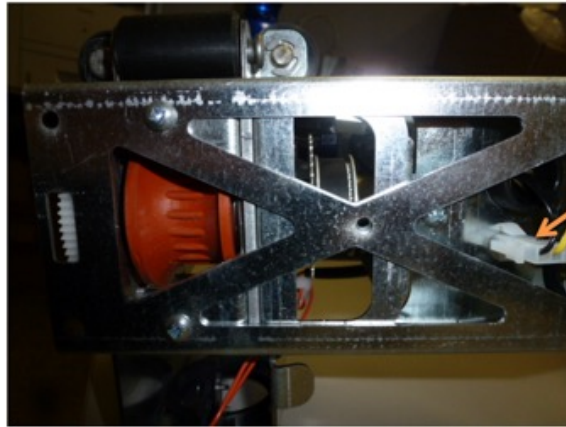
- Move the robot joint through its full range of motion and check belt tension. Perform a few vend cycles. The belt tension may loosen as the belt becomes seated. Adjust if necessary and tighten the 4 screws using a drill driver.
- Reinstall the robot “cage” using the original screws.

REPLACE VACUUM HOSE DRIVE

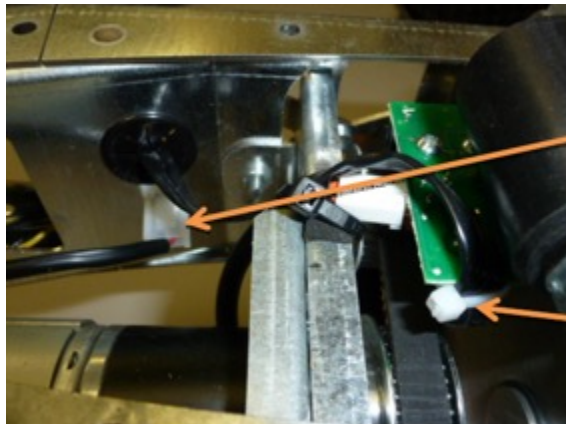
- Power down the machine using the rocker switch on the Power Supply at the bottom of the door to the left of the Delivery Bin.
- Follow the instructions in the previous Section IV to remove the Vacuum Hose from the Robot Arm.
- Carefully, cut the wire ty-wrap securing the wires onto the encoder board. Unplug the connector from the encoder board.



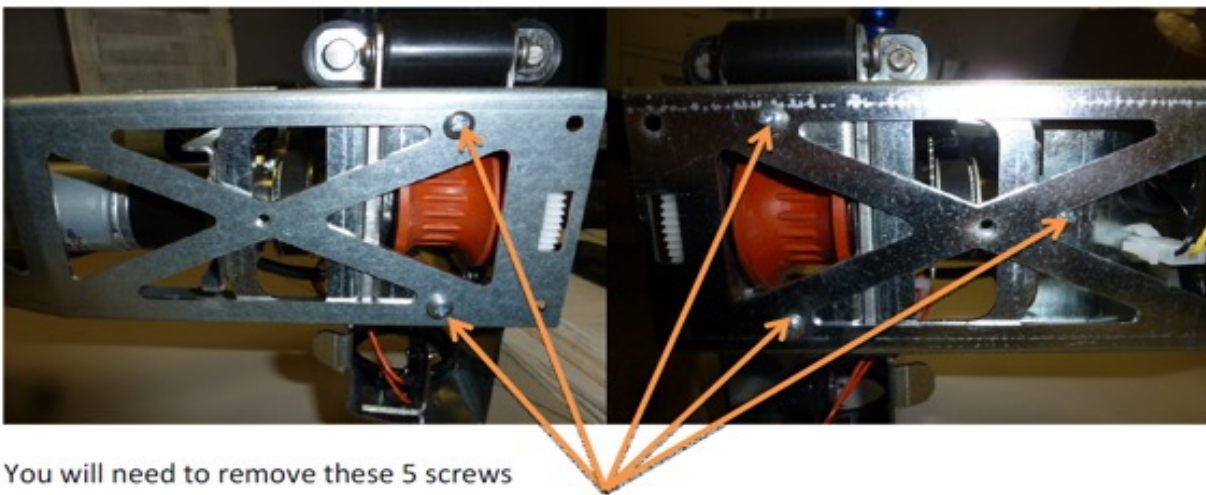
APPENDIX



Squeeze the latch and unplug the motor connector.



- Remove the other half of the motor connector from the robot frame by squeezing the locking tabs on the sides of the connector.
- Cut the white ty-wrap and unplug the ribbon cable from the encoder board.



You will need to remove these 5 screws

- After these 5 screws have been removed, the Vacuum Hose Drive will be able to be removed from the front of the Robot Arm.
- Reverse the steps to install the replacement part.

APPENDIX

FUSE TABLES

110V FUSE TABLE.

FUSE TABLE / TABLEAU FUSIBLE	
ON CONTROL BOARD/SUR LE TABLEAU DE CONTRÔLE VMC F1 (5A Mini / ATM / APM) VMC F2 (7.5A Mini / ATM / APM)	
ON FUSE BLOCK/SUR BLOC FUSIBLE	
F1 - Shoulder Motor (0.8A TD) ● Épaule Moteur	F6 - Vacuum Motor (5A TD) En Haut / En Bas Moteur
F2 - Elbow Motor (0.8A TD) ● Coude Moteur	ON DOOR POWER SUPPLY BOX SUR LA BOÎTE D'ALIMENTATION DE LA PORTE
F3 - Fans (5A TD) Les Fans	F7 - VMC Fuse (10A TD)
F4 - Lid Lift Motor (5A TD) Couvercle Du Moteur De Levage	F8 - DC Lighting Fuse (3A TD) D'Eclairage Fuse
F5 - Up/Down Motor (2A TD) ● Couvercle Du Moteur De Levage	ON REAR POWER BOX SUR BOÎTE DE PUISSANCE ARRIÈRE
	F9 - Main Power Fuse (12A TD) D'alimentation Principale
5mm x 20mm for Fuses F1 - F9	
FA = Fast Acting/Action Rapide TD = Time Delay/Temporisation	
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220V FUSE TABLE

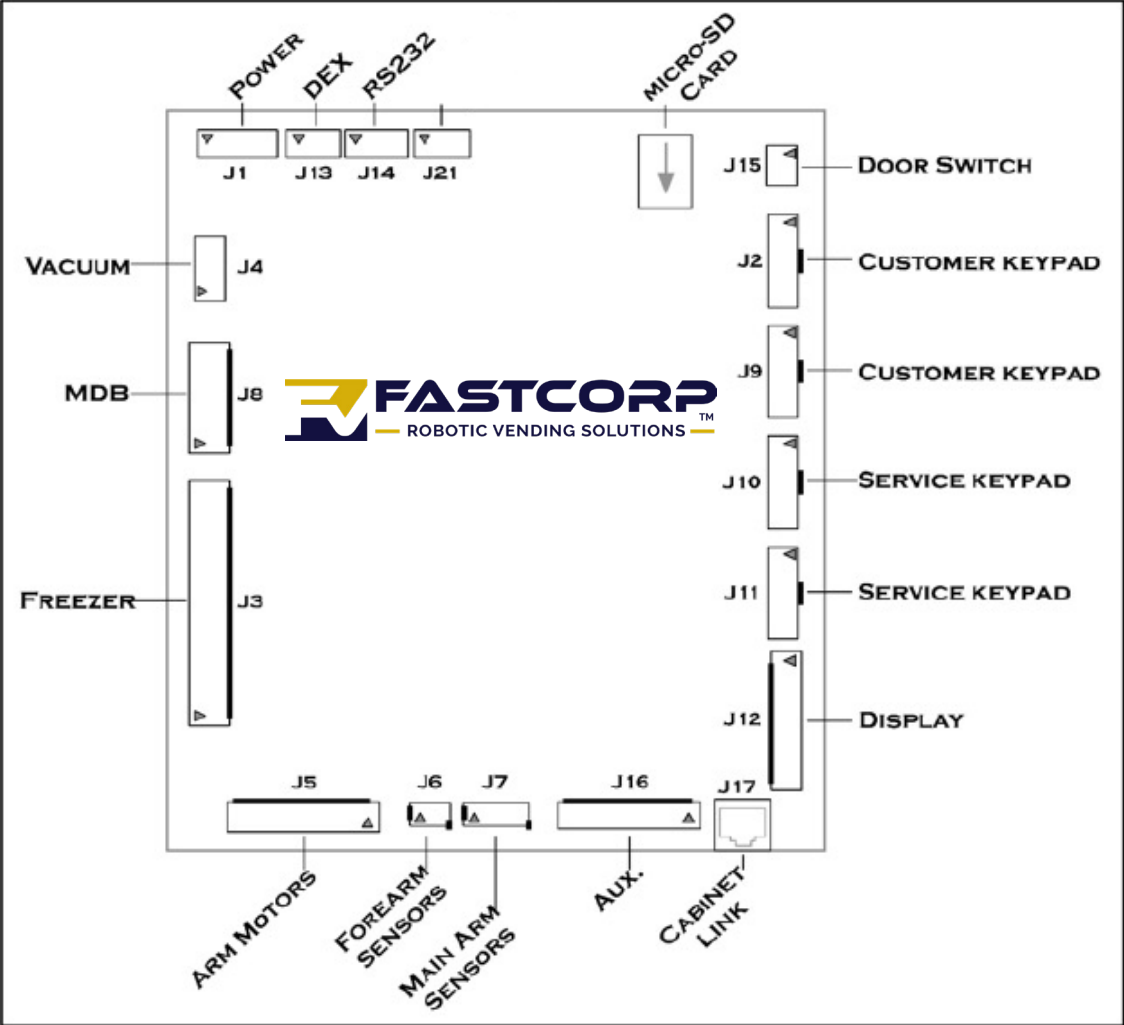
FUSE TABLE / TABLEAU FUSIBLE	
ON CONTROL BOARD/SUR LE TABLEAU DE CONTRÔLE VMC F1 (5A Mini / ATM / APM) VMC F2 (7.5A Mini / ATM / APM)	
ON FUSE BLOCK/SUR BLOC FUSIBLE	
F1 - Shoulder Motor (0.8A TD) ● Épaule Moteur	F6 - Vacuum Motor (5A TD) En Haut / En Bas Moteur
F2 - Elbow Motor (0.8A TD) ● Coude Moteur	ON DOOR POWER SUPPLY BOX SUR LA BOÎTE D'ALIMENTATION DE LA PORTE
F3 - Fans (5A TD) Les Fans	F7 - VMC Fuse (10A TD)
F4 - Lid Lift Motor (5A TD) Couvercle Du Moteur De Levage	F8 - DC Lighting Fuse (3A TD) D'Eclairage Fuse
F5 - Up/Down Motor (2A TD) ● Couvercle Du Moteur De Levage	ON REAR POWER BOX SUR BOÎTE DE PUISSANCE ARRIÈRE
	F9 - Main Power Fuse (8A TD) D'alimentation Principale
5mm x 20mm for Fuses F1 - F9	
FA = Fast Acting/Action Rapide TD = Time Delay/Temporisation	
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220V FUSE TABLE W/ CIRCUIT

FUSE TABLE / TABLEAU FUSIBLE	
ON CONTROL BOARD/SUR LE TABLEAU DE CONTRÔLE VMC F1 (5A Mini / ATM / APM) VMC F2 (7.5A Mini / ATM / APM)	
ON FUSE BLOCK/SUR BLOC FUSIBLE	
F1 - Shoulder Motor (0.8A TD) ● Épaule Moteur	F6 - Vacuum Motor (5A TD) En Haut / En Bas Moteur
F2 - Elbow Motor (0.8A TD) ● Coude Moteur	ON DOOR POWER SUPPLY BOX SUR LA BOÎTE D'ALIMENTATION DE LA PORTE
F3 - Fans (5A TD) Les Fans	F7 - VMC Fuse (10A TD)
F4 - Lid Lift Motor (5A TD) Couvercle Du Moteur De Levage	F8 - DC Lighting Fuse (3A TD) D'Eclairage Fuse
F5 - Up/Down Motor (2A TD) ● Couvercle Du Moteur De Levage	ON REAR POWER BOX SUR BOÎTE DE PUISSANCE ARRIÈRE
	Auto resetting circuit breakers 5A Freezer, 7A controls & vac / Réinitialisation automatique des disjoncteurs 5A Congélateur, 7A contrôles et vac
5mm x 20mm for Fuses F1 - F9	
FA = Fast Acting/Action Rapide TD = Time Delay/Temporisation	
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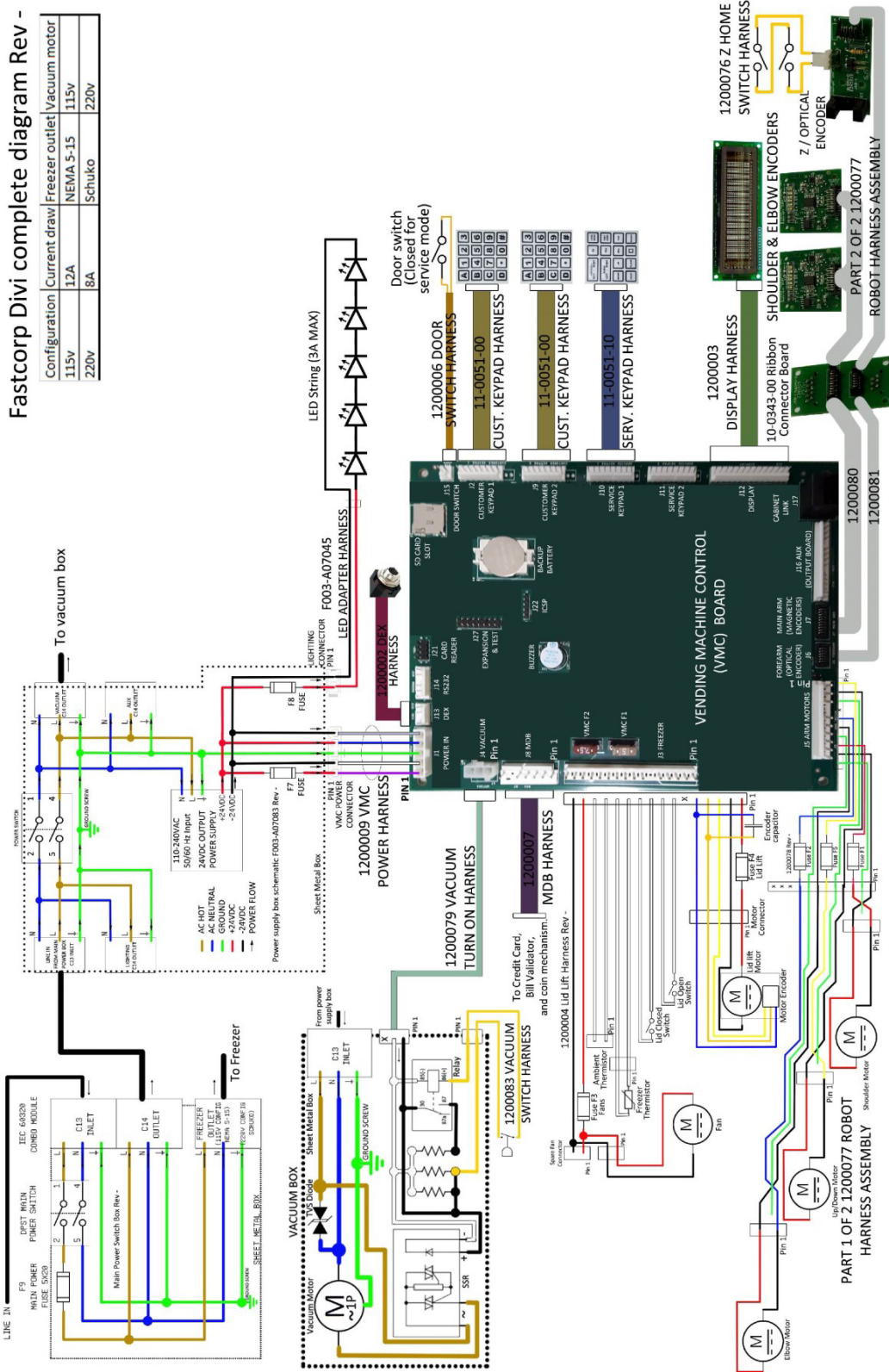
APPENDIX

DIVI VMC BOARD CONNECTOR LOCATIONS



APPENDIX

FASTCORP DIVI COMPLETE DIAGRAM REV





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203-739-0301 | info@fastcorp vending.com | fastcorp vending.com



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