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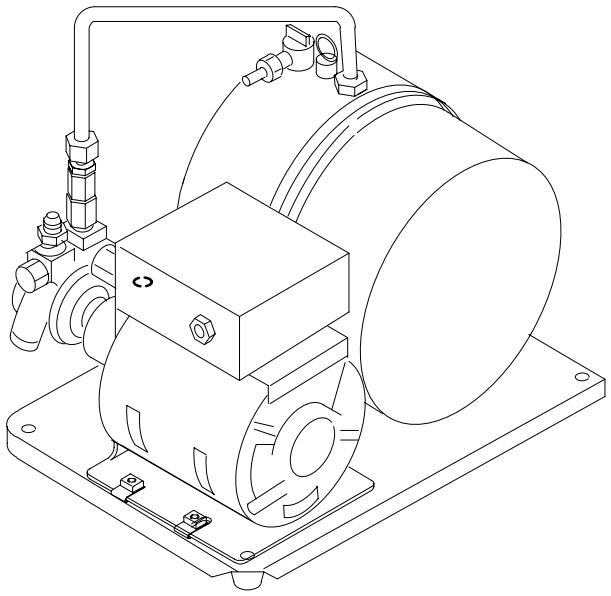
Installation/Service Manual
LOW-PROFILE LARGE RESERVE CARBONATOR

IMPORTANT:

It is the responsibility of the Service Person to ensure that the water supply to the dispensing equipment is provided with protection against backflow by an air gap as defined in ANSI/ASME A112. 1.2-1979; or an approved vacuum breaker or other such method as proved effective by test.

Water pipe connections and fixtures directly connected to a potable water supply shall be sized, installed, and maintained according to Federal, State, and Local laws.

When installing in an area regulated by the City of Los Angeles Plumbing and/or Mechanical Codes, a City of Los Angeles approved reduced pressure principle backflow preventer shall be installed on each potable water supply to each carbonator.



Part No. 319798001
April 4, 1985
Revised: July 9, 2002
Control Code C

THIS DOCUMENT CONTAINS IMPORTANT INFORMATION
This Manual must be read and understood before installing or operating this equipment

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SAFETY INFORMATION

Recognize Safety Information

This is the safety-alert symbol. When you see this symbol on our machine or in this manual, be alert to the potentially of personal injury.

Follow recommended precautions and safe operating practices.

Understand Signal Words

A signal word - ***DANGER, WARNING,*** *OR* ***CAUTION*** is used with the safety-alert symbol. ***DANGER*** identifies the most serious hazards.

Safety signs with signal word ***DANGER*** or ***WARNING*** are typically near specific hazards.

General precautions are listed on ***CAUTION*** safety signs. ***CAUTION*** also calls attention to safety messages in this manual.

Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Learn how to operate the machine and how to use the controls properly. Do not let anyone operate the machine without instructions. Keep your machine in proper working condition. Unauthorized modifications to the machine may impair function and/or safety and affect the machine life.

CO_2 (Carbon Dioxide) Warning

CO_2 Displaces Oxygen. Strict Attention *must* be observed in the prevention of CO_2 (carbon dioxide) gas leaks in the entire CO_2 and soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, *immediately* ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO_2 gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

Maximum CO_2 Operating Pressure 75–PSI

Shipping, Storing, Or Relocating Unit

CAUTION: Before shipping, storing, or relocating this Unit, the syrup systems must be sanitized and all sanitizing solution *must* be purged from the syrup systems. All water *must* also be purged from the plain and carbonated water systems. A freezing ambient temperature will cause residual water remaining inside the Unit to freeze resulting in damage to internal components of the Unit.

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GENERAL INFORMATION

TO THE USER OF THIS MANUAL

This Manual is a guide for installing and operating this equipment. Refer to Table of Contents for page location of detailed information pertaining to questions that may arise during installation or operation of this equipment. This Unit must be installed and serviced by a qualified Service Person. This Unit contains no user serviceable parts.

CLAIMS INSTRUCTIONS

Claims: In the event of shortage, notify the carrier as well as IMI Cornelius immediately. In the event of damage, notify the carrier. **IMI Cornelius is not responsible for damage occurring in transit, but will gladly render assistance necessary to pursue your claim. Merchandise must be inspected for concealed damage within 15 days of receipt.**

WARRANTY REFERENCE INFORMATION

Warranty Registration Date (to be filled out by customer)
Unit Part Number:
Serial Number:
Install Date:
Local Authorized Service Center:

DESIGN DATA

Table 1. Design Data	
Unit Part Numbers:	
115 VAC, 50/60 H_Z Unit (Liquid dual check valve)	41642400U
115 VAC, 50/60 H_Z Unit (Liquid dual check valve)	416424000
115 VAC, 50/60 H_Z Unit (Vented dual check valve)	1624
115 VAC, 50/60 H_Z Unit (Vented dual check valve)	411624102
220 VAC, 50 H_Z/230 VAC, 60 Hz Unit (Liquid dual check valve)	496424000
230 VAC, 50 H_Z Unit (Liquid dual check valve)	496424040
230 VAC, 50 H_Z Unit (Liquid dual check valve)	49642400U

Table 1. Design Data (cont'd)	
Overall Dimensions:	
Width	15-1/2 inches
Height	13 inches
Depth	11-1/4 inches
Weight:	
Dry	27 pounds
Shipping	32 pounds
Ambient Operating Temperature	40° F to 100° F
Maximum CO_2 Operating Pressure	125-PSI
Electrical Requirements:	
115 VAC, 50/60 H_Z Unit:	
Current Draw	8.1/6.5 Amps
Operating Voltage	115 VAC, 50/60 Hz
230 VAC, 50 H_Z Unit	
Current Draw	3.3 Amps
Operating Voltage	230 VAC, 50 Hz

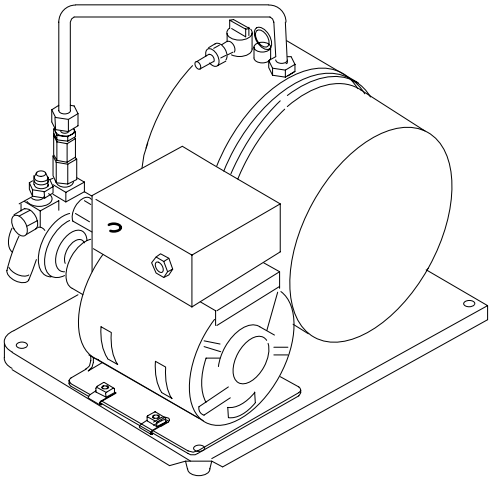

FIGURE 1. LOW PROFILE LARGE RESERVE CARBONATOR

UNIT DESCRIPTION

The carbonator is a compact Unit that may be installed in a remote location from where its carbonated water outlet is to be connected to post-mix dispenser or system. The purpose of the Unit is to mix plain water and carbon dioxide (CO_2) gas which results in and provides carbonated water for a post-mix dispenser or system. The Unit consists basically of a water pump, motor, and a carbonated water tank. The water pump has a liquid dual check valve (Unit Part No. 41642400U, 416424000, 49642400U, 496424000 and 496424040) or a Vented Dual-Check Valve (Unit Part No.1624 and 411624102) on its outlet to prevent carbonated water from back flowing into the city water system. The Vented-Dual Check Valve vents water and possibly CO_2 gas out of a vent port on failure of the Primary Check Valves. Should such venting occur, the Primary Check Valve should be replaced. The Unit CO_2 inlet has a single check valve to prevent carbonated water back flow into CO_2 regulator.

THEORY OF OPERATION

A CO_2 cylinder delivers CO_2 (carbon dioxide) gas through an adjustable CO_2 regulator to the carbonator water tank. At the same time, plain water is pumped into the carbonator water tank by the water pump and is carbonated by CO_2 gas also entering the tank. When carbonator water tank carbonated water level has been satisfied, liquid level sensing device inside the tank signals the liquid level control module which in turn shuts off the water pump motor and the water pump. As carbonated water is drawn and carbonated water level in the tank drops to a certain level, the liquid level sensing device inside the water tank signals the liquid level control module that carbonated water must be replenished which in turn starts the water pump motor and the pump.

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INSTALLATION

UNPACKING AND INSPECTION

NOTE: The Unit was thoroughly inspected before leaving the factory and the carrier has accepted and signed for it. Any damage or irregularities should be noted at time of delivery (or not later than 15 days from date of delivery) and immediately reported to the delivering carrier. Request a written inspection report from Claims Inspector to substantiate any necessary claim. File claim with the delivering carrier, not with IMI Cornelius Inc.

1. After Unit has been unpacked, remove shipping tape and other packing material. Check for obvious damage and follow procedure in preceding NOTE if damage is evident.

2. Unpack LOOSE-SHIPPED PARTS. Make sure items are present and in good condition.

Table 2. Loose-Shipped Parts

Item No.	Part No.	Name	Qty.
1	178025100	Tapered Gasket, White	1
2	311304000	Tapered Gasket, Black	2

IDENTIFICATION OF LOOSE-SHIPPED PARTS

1. TAPERED GASKET, WHITE (item 1) used to seal connection when connecting regulated CO_2 source inlet line to check valve in carbonator tank CO_2 inlet.

2. TAPERED GASKETS, BLACK (item 2) used to seal connections when connecting plain water inlet line to water pump inlet tee fitting and carbonated water line to carbonator tank carbonated water outlet fitting.

SELECTING LOCATION

Locate the Unit so the following requirements are satisfied.

1. Locate the Unit in a cool area close to a properly grounded electrical outlet with proper electrical requirements fused at 15-amps (slow-blow). For accessibility, the electrical outlet *must* not be located behind the Unit. No other electrical appliance should be connected to this circuit. ALL WIRING MUST CONFORM TO NATIONAL AND ELECTRICAL CODES.

2. Locate the Unit close to a plain water source line with requirements as outlined in CAUTION note under CONNECTING PLAIN WATER INLET LINE TO UNIT. Plain water inlet line from plain water source line to the Unit should be 3/8-inch I.D. (minimum) food-grade plastic.

3. Locate the Unit close to a permanent drain if installing Unit part numbers 1624, 8984, or 411624102. These Units are equipped with vented Dual-Check Valves which *must* have their vent tube routed to a permanent drain.

INSTALLING UNIT

PLACING UNIT IN OPERATING LOCATION

CAUTION: This Unit must not be installed in an unsheltered outdoor location where it will be exposed to the elements.

1. Place carbonator in operating location meeting requirements of SELECTING LOCATION. MAKE SURE CARBONATOR IS SITTING IN LEVEL POSITION FOR PROPER OPERATION.

2. Unit Part No. 1624, and 411624102.

IMPORTANT: A vented dual-check valve assembly is installed in the carbonator between the water pump outlet and the water inlet to the carbonator tank as shown in Figure 2. The vented dual-check valve assembly vents carbonated water, and possibly CO_2 gas out of a vent port upon failure of the primary check valves. Should such venting occur, the vented dual-check valve assembly *must* be replaced.

CAUTION: Route free end of the vented dual-check valve vent tube to a permanent drain to avoid serious water damage in the event of a check valve failure.

Route free end of the vented dual-check valve vent tube to a permanent drain. **TO AVOID POSSIBLE BACK-SUCTION FROM THE PERMANENT DRAIN, LOCATE THE END OF THE VENTED DUAL-CHECK VALVE VENT TUBE ABOVE THE DRAIN OR AS REQUIRED BY THE LOCAL PLUMBING CODE.**

CONNECTING PLAIN WATER INLET SUPPLY LINE TO UNIT

(see Figure 2)

NOTE: IMI Cornelius Inc. recommends that a water shutoff valve and water filter be installed in the plain water inlet supply line. A Cornelius Water Filter (P/N 313860000) and QUICK DISCONNECT SET (P/N 313867000) are recommended.

CAUTION: Check minimum flow rate and maximum pressure of the plain water inlet supply line. MINIMUM FLOW RATE MUST BE AT LEAST 100-GALLONS PER HOUR. If flow rate is less than 100-gallons per hour, starving of the carbonator water pump will occur. Starving will allow the carbonator water pump to overheat causing the safety thermostat on the pump outlet to stop the water pump motor. Overheating could occur if the plain water inlet supply line flow rate drops below 100-gallons per hour. INCOMING PLAIN WATER INLET SUPPLY LINE WATER PRESSURE MUST REMAIN A MINIMUM OF 10-PSI BELOW THE the CARBONATOR CO_2 OPERATING PRESSURE. (Example: Carbonator CO_2 operating pressure is 80-psi and the maximum water pressure can be no more than 70-psi, etc.)Water over pressure (higher than CO_2 operating pressure) can cause carbonator flooding, malfunction, and leakage through the carbonator relief valve. If water is exceeding maximum pressure specifications, a Water Pressure Regulator Kit (P/N 310150000) or equivalent must be installed in the plain water inlet supply line. If fitting connector is not available, tap into the plain water supply line with a 3/8-flare saddle valve (P/N 315664000) or equivalent.

1. Make sure food grade flexible plastic plain water inlet supply line provides adequate water flow rate and pressure as outlined in CAUTION note.

2. Before connecting plain water inlet supply line to Unit, open water line for a period of time to flush out any metal shavings resulting from connecting water line to fitting connector or saddle valve.

3. Remove shipping cap from 3/8-inch flare (5/8-18) male fitting on tee fitting in water pump inlet port.

4. Install TAPERED GASKET, BLACK (item 2) in plain water inlet supply line swivel nut, then connect water line to tee fitting in water pump inlet port.

CONNECTING CO_2 INLET SUPPLY LINE

(see Figure 2)

1. Remove shipping cap from CO_2 inlet 1/4-inch flare (7/16-20) male fitting on top of the carbonator water tank.

2. Connect CO_2 inlet supply line, from CO_2 regulator, to CO_2 inlet fitting on top of the carbonator water tank.

CONNECTING CARBONATED WATER OUTLET LINE

(see Figure 2)

WARNING: Under no circumstances should copper tubing, copper fittings, or brass fittings be used to connect Unit carbonated water outlet to post-mix dispenser or system. CO_2 gas contact with copper tubing, copper fittings, or brass fittings will cause a health hazard.

1. Remove cap nut from one of the carbonated water 3/8-inch flare (5/8-18) outlet fittings on the carbonator water tank.
2. Make up carbonated water line by extending length of food grade flexible plastic tubing from the Unit carbonated water outlet to the carbonated water inlet of a post-mix dispenser or system.
3. Connect carbonated water line to post-mix dispenser or system carbonated water inlet.
4. Connect other end of carbonated water line to 3/8-inch flare (5/8-18) water outlet fitting on carbonator water tank. Seal connection with TAPERED GASKET, BLACK (item 2).

PERMANENT ELECTRICAL POWER CONNECTION TO UNIT IF REQUIRED BY LOCAL CODES

(see Figure 2 and 8)

1. Remove screws securing the control box cover, then remove the cover.
2. Disconnect power cord ground electrical wire from under ground terminal connection hex nut located inside the control box.
3. Disconnect applicable black or brown and white or blue electrical wires from terminals on the control module.
4. Remove the power cord and strain relief from the control box.

WARNING: This Unit must be electrically grounded to avoid possible fatal electrical shock or serious injury to operator. A ground terminal is provided inside control box to connect ground wire which electrically grounds Unit.

5. Connect 115 VAC, 50/60 Hz or 220–240 VAC, 50/60 Hz electrical power from disconnect switch (not furnished) fused at 15-Amps to Unit with No. 16 AWG wire in suitable conduit or BX sheath. Make sure power source ground wire is installed under ground terminal hex nut located inside the control box as shown in Figure 8. ALL WIRING MUST CONFORM TO NATIONAL AND LOCAL ELECTRICAL CODES.
6. Install control box cover and secure with screws.

PREPARATION FOR OPERATION

CAUTION: To prevent a fire hazard, no object should be placed or stored on top of the Unit.

CAUTION

THIS WATER TUBE IS NOT A HANDLE LIFTING BY THIS TUBE CAN RESULT IN WATER LEAKS AND FLOODING.

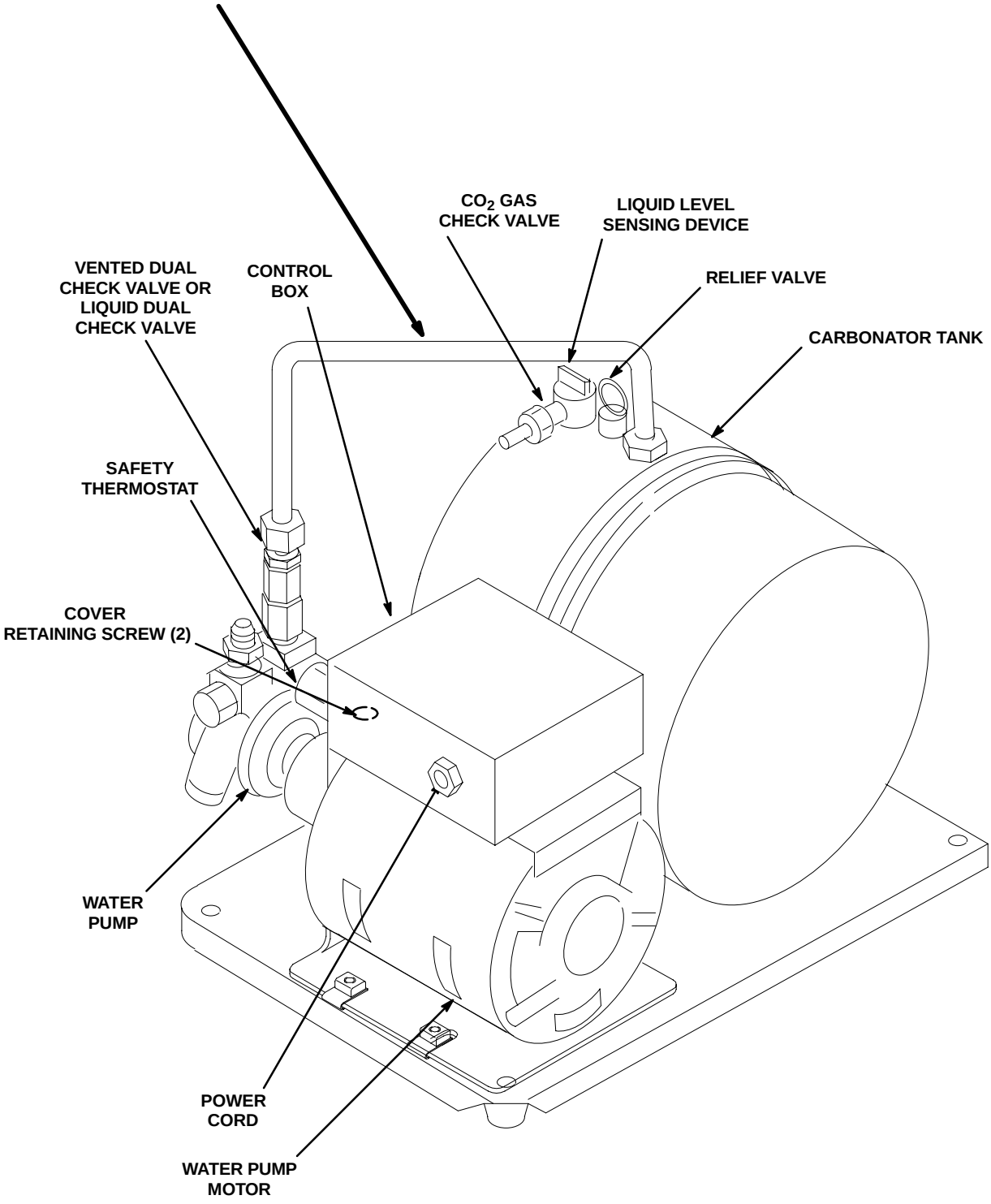

FIGURE 2. CARBONATOR ASSEMBLY COMPONENTS

ADJUST CARBONATOR CO_2 REGULATOR AND TURN WATER INLET SUPPLY LINE ON

CAUTION: Before connecting CO_2 regulator assembly to CO_2 cylinder, turn regulator adjusting screw to the left (counterclockwise) until all tension is relieved from adjusting screw spring.

1. Open (counterclockwise) CO_2 cylinder valve slightly to allow lines to slowly fill with gas, then open the valve fully to back-seat the valve. (Back-seating the valve prevents leakage around the valve shaft).
2. Adjust carbonator CO_2 regulator to a nominal 80-psi.
3. Open one of the post-mix system dispensing valves to exhaust trapped air inside the carbonator tank.

CAUTION: Never operate the carbonator with the water inlet supply line shutoff valve closed. “Dry running” the water pump will burn out the pump. A pump damaged in this manner is not covered by warranty.

4. Open water inlet supply line shutoff valve.

UNIT OPERATION

WARNING: The Unit must be electrically grounded to avoid possible fatal electrical shock or serious injury to the operator. The Unit power cord is equipped with a three-prong plug. If a three-hole (grounded) electrical outlet is not available, use an approved method to ground the Unit.

1. Connect electrical power to the Unit. The water pump will start and fill the carbonator tank with carbonated water. The water pump will stop when the carbonator tank is full.
2. Check for water and CO_2 leaks and tighten any loose connections.

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SERVICE AND MAINTENANCE

This section describes service and maintenance procedures to be performed on the Unit.

IMPORTANT: Only qualified personnel should service internal components or electrical wiring.

WARNING: Disconnect electrical power to the carbonator to prevent personnel injury before attempting any internal maintenance.

CAUTION: Never operate the carbonator with the water inlet supply line shutoff valve closed. "Dry running" the water pump will burn out the pump. A pump damaged in this manner is not covered by warranty.

WARNING: Strict attention must be observed in the prevention of CO_2 (carbon dioxide) gas leaks in the entire CO_2 soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, immediately ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentrations of CO_2 gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

CAUTION: To prevent a fire hazard, no object should be placed or stored on top of the Unit.

PREPARING UNIT FOR SHIPPING, STORING, OR RELOCATING

IMPORTANT: All water must be purged from the Unit if exposed to a freezing temperature. A freezing ambient will cause residual water inside the Unit to freeze resulting in damage to internal components. Damage of this type will void the warranty. Perform the following procedure to purge water from the Unit.

1. Disconnect electrical power from the Unit.
2. Close water inlet supply line shutoff valve.
3. Disconnect water inlet supply line from the Unit.
4. Dispense from one of the dispensing valves until all carbonated water has been dispensed from the carbonator water tank.
5. Shut off CO_2 supply to the Unit, then disconnect CO_2 inlet supply line.
6. Connect filtered dry compressed air (50-psi max) to the Unit water inlet. DO NOT USE CO_2 GAS WHICH COULD CAUSE A HEALTH HAZARD.
7. Dispense from one of the dispensing valves until all residual water has been blown from the Unit and lines.
8. Disconnect filtered dry compressed air from the Unit water inlet.
9. Disconnect carbonated water outlet line from the Unit.
10. The Unit is now ready for shipping or relocating.

LUBRICATION

The water pump motor bearings must be oiled periodically. Refer to oiling instructions on the motor. DO NOT OVER OIL.

ADJUSTING CARBONATOR CO_2 REGULATOR

NOTE: To readjust the CO_2 regulator to a lower setting, loosen the adjusting screw lock nut, then turn the screw to the left (counterclockwise) until the pressure gage reads 5-psi lower than the new setting will be. Turn the adjusting screw to the right (clockwise) until the gage registers new setting, then tighten the lock nut.

Loosen the CO_2 regulator adjusting screw lock nut. Turn the carbonator CO_2 regulator adjusting screw to the right (clockwise) until the regulator gage reads nominal 80-psig, then tighten the lock nut. DO NOT EXCEED 125-PSIG.

WATER PUMP YEARLY MAINTENANCE (OR AFTER WATER SYSTEM DISRUPTIONS)

WARNING: The carbonator water pump water inlet strainer screen and the liquid dual check valve (Unit Model No. 416424000, 41642400U, 496424000, 49642400U and 496424040) *must* be inspected and serviced at least once a year under normal circumstances, and after any disruptions (plumbing work, earthquake, etc.) to the water supply system that might cause turbulent (erratic) flow of water through the system. If the system has a Vented Dual–Check Valve (Unit Model No. 1624, and 411624102), clean the carbonator water pump water inlet strainer screen and flush the system. A carbonator water pump with no screen or a defective screen in the strainer would allow foreign particles to foul the double-check valve. CO_2 gas could then back flow into the water system and create a health hazard in the water system.

SERVICING WATER PUMP WATER INLET STRAINER SCREEN

(see Figure 5)

1. Disconnect electrical power from the Unit.
2. Close the Unit water inlet supply line shutoff valve.
3. Note pressure setting on the carbonator CO_2 regulator. Loosen the lock nut and turn the CO_2 regulator adjusting screw to the left (counterclockwise) until the regulator gage reads 0-psi.
4. Remove quick disconnect from outlet side of the soft drink tank.
5. Place container under the applicable dispensing valve of syrup system soft drink tank was disconnected from. Open dispensing the valve and dispense carbonated water until the carbonator tank CO_2 pressure has been released.
6. Loosen the screen retainer, then pull the screen retainer and strainer screen from the water pump.
7. Pull strainer screen from the screen retainer. Clean any sediment from the screen retainer and the water pump screen retainer port.
8. Inspect the strainer screen for holes, restrictions, corrosion, and other damage. Discard damaged strainer screen.

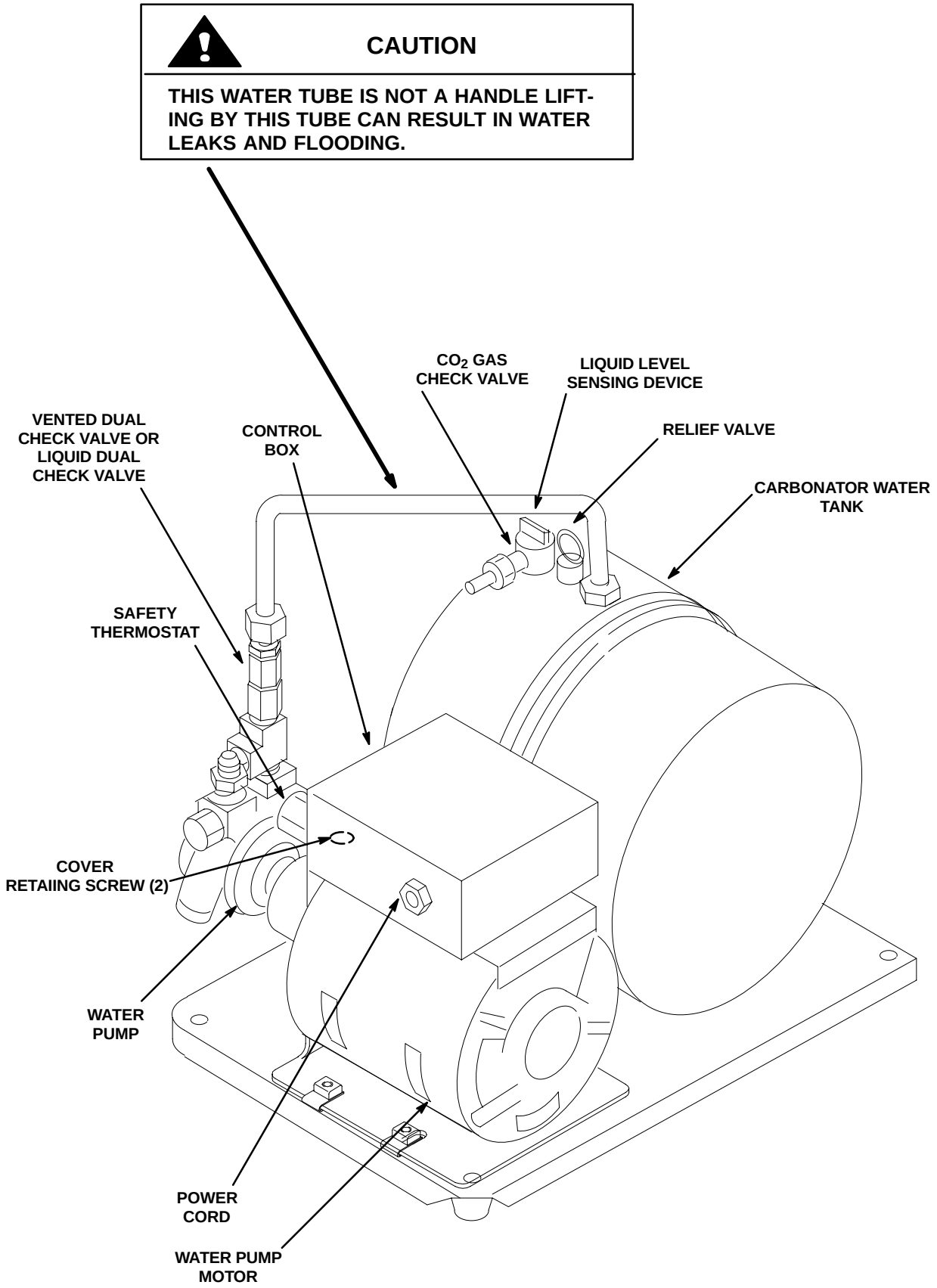


FIGURE 3. CARBONATOR ASSEMBLY COMPONENTS

9. Check O-Ring on the screen retainer. Replace worn or damaged O-Ring (P/N 315349000).

NOTE: A strainer screen should always be used, otherwise particles could foul the liquid double check valve.

10. Install good or new strainer screen (P/N 315348000) in the screen retainer, then screw the retainer into the water pump and tighten securely.

11. Service liquid double check valve (refer to next paragraph, SERVICING LIQUID DUAL CHECK VALVE).

SERVICING LIQUID DUAL CHECK VALVE

(see Figure 3 and 5)

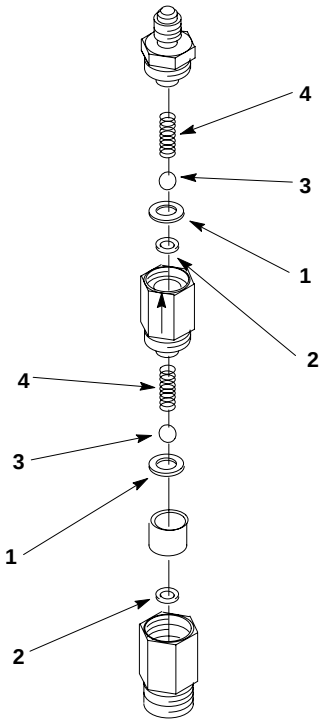
1. Service the water strainer screen as instructed in previous paragraph, SERVICING WATER PUMP STRAINER SCREEN before servicing the liquid dual check valve.

2. Disconnect the water tank inlet line from the water tank inlet and from the liquid dual check valve assembly outlet. Remove the check valve assembly from the water pump outlet port.

3. Disassemble each check valve as shown in Figure 4.

4. Wipe each part with clean lint-free cloth. Inspect each part, especially the ball for burrs, nicks, corrosion, deterioration, and other damage. Discard the ball seat and any damaged or suspicious parts and replace with new parts during reassemble.

5. Reassemble check valves as shown in Figure 4. ALWAYS INSTALL NEW BALL SEAT (O-RING) ITEM 2 AND FLAT WASHER (ITEM 1).



INDEX NO.	PART NO.	NAME
1	*560000480	FLAT WASHER
4	312419000 560000481	BALL SPRING
2	*560000432	BALL SEAT (O-RING)

*** INSTALL NEW BALL SEAT (ITEM 2) AND FLAT WASHER (ITEM 1) AT EACH SERVICING**

NOTE: Make sure when assembling the check valves together, the FLAT WASHER (item 1) is in place inside female end of the check valve.

FIGURE 4. LIQUID CHECK VALVE ASSEMBLY

6. Assemble the check valves together. DO NOT OVERTIGHTEN.

7. Install the liquid dual check valve assembly in the water pump outlet port.

8. Connect the water tank water inlet line between the water tank water inlet and the liquid dual check valve assembly outlet. DO NOT OVER TIGHTEN.

9. Turn the carbonator CO_2 regulator adjusting screw to the right (clockwise) until the gage indicates pressure setting noted in step 3 of SERVICING WATER PUMP WATER STRAINER SCREEN. Tighten the adjusting screw lock nut.

10. Open the Unit water inlet supply line shutoff valve.

11. Connect electrical power to the Unit. The water pump will start and fill the carbonator water tank. Check for water leaks and tighten any loose connections.

12. Install quick disconnect on the soft drink tank outlet.

THE VENTED DUAL CHECK VALVE ASSEMBLY

(see Figure 5)

A vented dual check valve assembly is installed in the carbonator between the water pump outlet and the water inlet to the carbonator water tank as shown in Figure 7. The vented dual check valve assembly vents carbonated water, and possibly CO_2 gas out of a vent port upon failure of the primary check valves. *Should such venting occur, the vented dual check valve assembly must be replaced.*

CLEANING CARBONATOR CO_2 GAS CHECK VALVE

(see Figures 3 and 6)

The carbonator tank CO_2 gas check valve must be inspected and serviced at least once a year under normal conditions and after any servicing or disruption of the CO_2 system. ALWAYS REPLACE QUAD RING SEAL EACH TIME GAS CHECK VALVE IS SERVICED. Proceed as follows:

1. Disconnect electrical power from the Unit.

2. Note pressure setting on the carbonator CO_2 regulator.

3. Loosen the CO_2 regulator adjusting screw lock nut, then turn the screw to the left (counterclockwise) until the pressure gage reads 0-psi.

4. Relieve CO_2 pressure from the carbonator water tank by pulling up on the pressure relief valve plastic cap on top of the water tank.

5. Disconnect the CO_2 inlet line from the CO_2 check valve inlet, then remove the CO_2 check valve from the carbonator water tank.

6. Disassemble check valve as shown in Figure 6.

7. Wipe each part with a clean lint-free cloth. Inspect each part, especially the ball for burrs, nicks, corrosion, deterioration, and other damage.

8. Reassemble the check valve as shown in Figure 6. ALWAYS INSTALL NEW QUAD RING SEAL.

9. Install CO_2 check valve in the carbonator water tank inlet fitting. MAKE SURE THE SHORTEST THREADED END OF THE CHECK VALVE IS SCREWED INTO THE CARBONATOR WATER TANK INLET FITTING FOR PROPER VALVE OPERATION.

10. Connect CO_2 inlet line to CO_2 check valve.

11. Turn the carbonator CO_2 regulator adjusting screw to the right (clockwise) until the pressure gage registers pressure noted in step 2 preceding, then tighten the adjusting screw lock nut.

12. Connect electrical power to the carbonator.

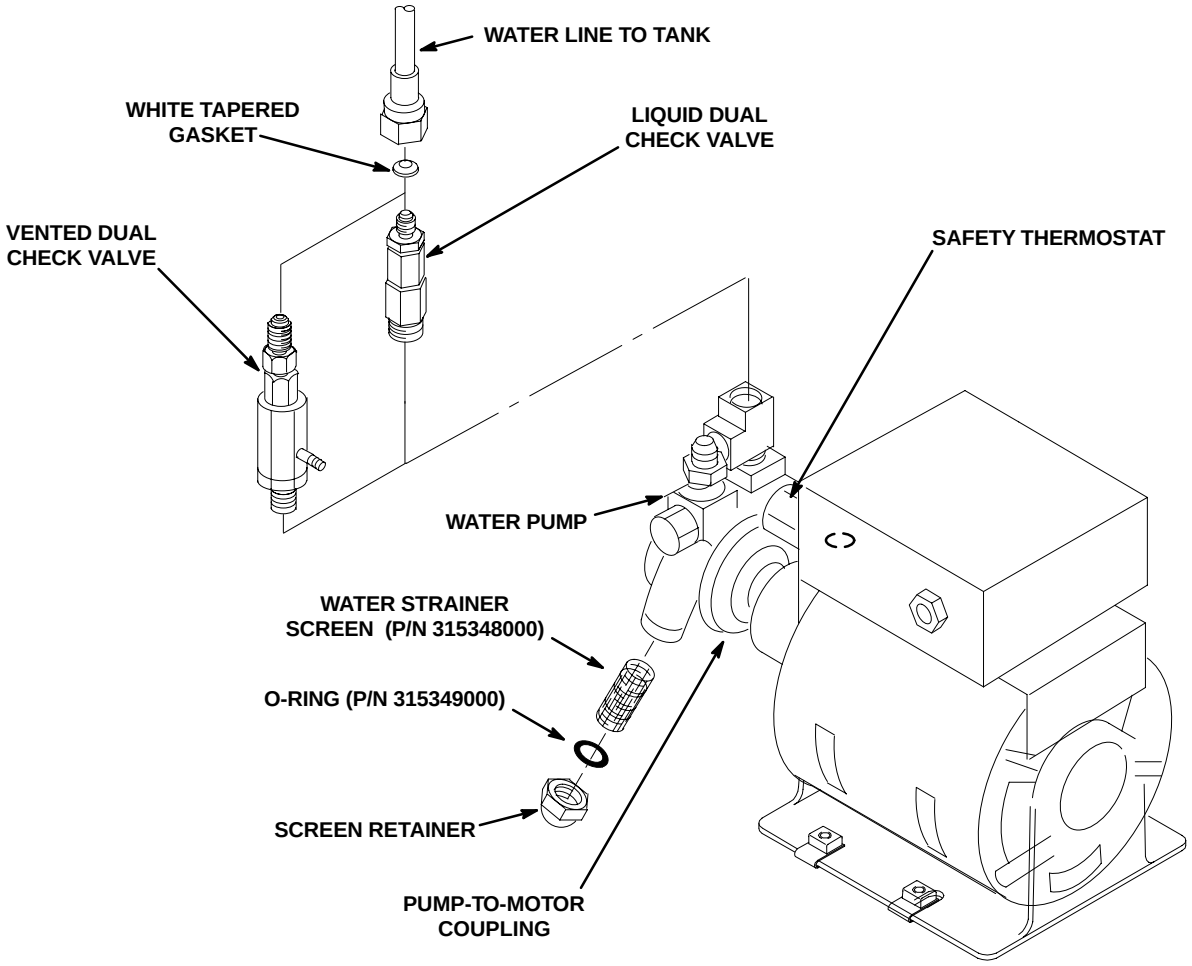


FIGURE 5. WATER STRAINER SCREEN AND LIQUID DUAL CHECK VALVE

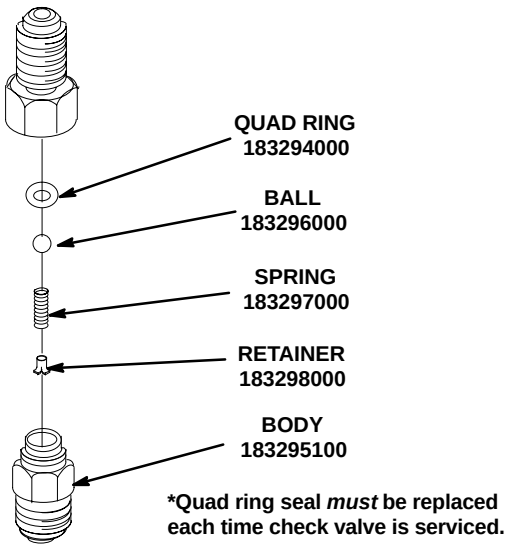


FIGURE 6. CO_2 GAS CHECK VALVE

REPAIR AND REPLACEMENT

WATER PUMP

(see Figures 3 and 5)

Removal.

1. Disconnect electrical power from the Unit.
2. Close the CO_2 cylinder shutoff valve, then close the shutoff valve in the water inlet supply line.
3. Pull up on the carbonator water tank relief valve plastic cap to release CO_2 pressure from the water tank.
4. Disconnect the water inlet supply line from the water pump water inlet fitting. Be careful not to lose the black tapered gasket inside the swivel nut.
5. Disconnect the water tank water inlet line from the water tank inlet fitting and the liquid dual check valve assembly outlet or the vented dual check valve assembly outlet.
6. Remove the liquid dual check valve assembly or the vented dual check valve assembly from the water pump outlet port.
7. Note position of the safety thermostat on the water pump outlet, then remove the thermostat from the pump.
8. Remove fitting from the water pump inlet port.
9. Loosen screw on the pump-to-motor coupling enough to remove the water pump from the motor.

Installation.

1. Disassemble and clean the liquid dual check valve assembly as instructed in steps 3 through 6 of SERVICING LIQUID DUAL CHECK VALVE.
2. Install the new water pump by reversing the Removal procedure and use the following instructions.
   A. Make sure pipe thread sealing compound is used on the fittings threads when installing the liquid dual check valve assembly or the vented dual check valve assembly and fitting in the inlet and outlet ports of the new water pump.
   B. Make sure drive tang on the water pump and slot in the pump motor shaft are properly lubricated and aligned when installing the water pump on the motor.
3. Open the CO_2 cylinder shutoff valve, then open the Unit water inlet supply line shutoff valve.
4. Connect electrical power to the Unit.
5. Dispense carbonated water from one of the dispensing valves to make the Unit cycle on. Check for water leaks and tighten or repair any loose connections.

WATER PUMP MOTOR

(see Figures 3 and 5)

Removal.

1. Disconnect electrical power from the Unit.
2. Loosen screw on the pump-to-motor coupling to disconnect the water pump from the motor, then remove pump from the motor.
3. Remove screws securing the control box cover, then remove the cover.
4. Disconnect the black and white pump motor electrical wires from the L1 and L2 terminals on the control module.
5. Tag the pump motor electrical wires for identification, then disconnect wires from the motor terminals.
6. Remove conduit fitting securing the control box to the pump motor, then remove the control box from the motor and lay off to one side.
7. Remove screw and clamp securing the water pump motor to the base, then remove old motor.

Installation.

1. Install new pump motor by reversing the Removal procedure.
2. Make sure tang on the water pump and slot in the pump motor shaft are properly lubricated and aligned when installing the water pump on the motor.
3. Make sure all wiring is correct (see Figure 8).
4. Install the control box cover and secure with screws.
5. Connect electrical power to the Unit.

CARBONATOR TANK LIQUID LEVEL SENSING DEVICE

(see Figure 3)

Removal.

1. Disconnect electrical power from the Unit.
2. Close the Unit water inlet supply line shutoff valve.
3. Note pressure setting on the carbonator CO_2 regulator, then loosen the lock nut and turn the CO_2 regulator adjusting screw to the left (counterclockwise) until the regulator gage reads 0-psi.
4. Remove quick disconnect from outlet side of the soft drink tank.
5. Place container under the applicable dispensing valve of the syrup system the soft drink tank was disconnected from. Open the dispensing valve and dispense carbonated water until the carbonator water tank CO_2 pressure has been released.
6. Disconnect electrical polarized plug from the liquid level sensing device electrical connector.
7. Remove the threaded liquid level sensing device from the carbonator water tank.

Installation.

1. Install new liquid level sensing device in the carbonator water tank by reversing the Removal procedure.
2. Connect the electrical polarized plug to the new liquid level sensing device electrical connector.
3. Restore the carbonator CO_2 regulator to the pressure noted in step 3 of Removal.
4. Open the Unit water inlet supply line shutoff valve.
5. Connect electrical power to the Unit.

CARBONATOR TANK LIQUID LEVEL CONTROL MODULE

(see Figure 3)

Removal.

1. Disconnect electrical power from the Unit.
2. Remove screws securing the control box cover, then remove the cover.
3. Remove screws securing the liquid level control module inside the control box.
4. Label the electrical wires connected to the liquid level control module for identification, then disconnect wires from the module.

Installation.

1. Install new liquid level control module by reversing the Removal procedure.
2. Make sure electrical wires are correctly connected to the control module (see Figure 8).
3. Install the control box cover and secure with screws.
4. Connect electrical power to the Unit.

SAFETY THERMOSTAT

(see Figure 3)

Removal.

1. Disconnect electrical power from the Unit.
2. Remove screws securing the control box cover, then remove the cover.
3. Disconnect safety thermostat wires from the control module terminals.
4. Pull safety thermostat wires out of the control box.
5. Note position of the safety thermostat on the water pump outlet, then remove the thermostat.

Installation.

1. Install new safety thermostat by reversing the Removal procedure.
2. Make sure the safety thermostat electrical wires are properly connected (see Figure 8).
3. Install the control box cover and secure with screws.
4. Connect electrical power to the Unit.

VENTED DUAL CHECK VALVE

(see Figure 5)

Removal.

1. Disconnect electrical power from the unit.
2. Close the CO_2 cylinder shutoff valve then close shutoff valve in the water inlet supply line.
3. Pull up on the carbonator water tank relief valve plastic cap to release CO_2 pressure from the tank.
4. Disconnect water tank inlet line from the vented dual check valve assembly.
5. Remove vent line from the vented dual check valve assembly.
6. Remove the vented dual check valve assembly from the water pump outlet port.

Installation.

1. Install new vented dual check valve in the water pump outlet port. (be sure flow direction arrow points up).
2. Using tapered gasket connect water line from the water tank to the top of the vented dual check valve. Tighten fittings.
3. Attach vent line to the vented dual check valve.
4. Open CO_2 cylinder shutoff valve, then open water inlet supply line shutoff valve.
5. Check carefully for leaks and repair if evident.
6. Connect electrical power to the Unit.
7. Allow the Unit to cycle several times while observing for correct operation.

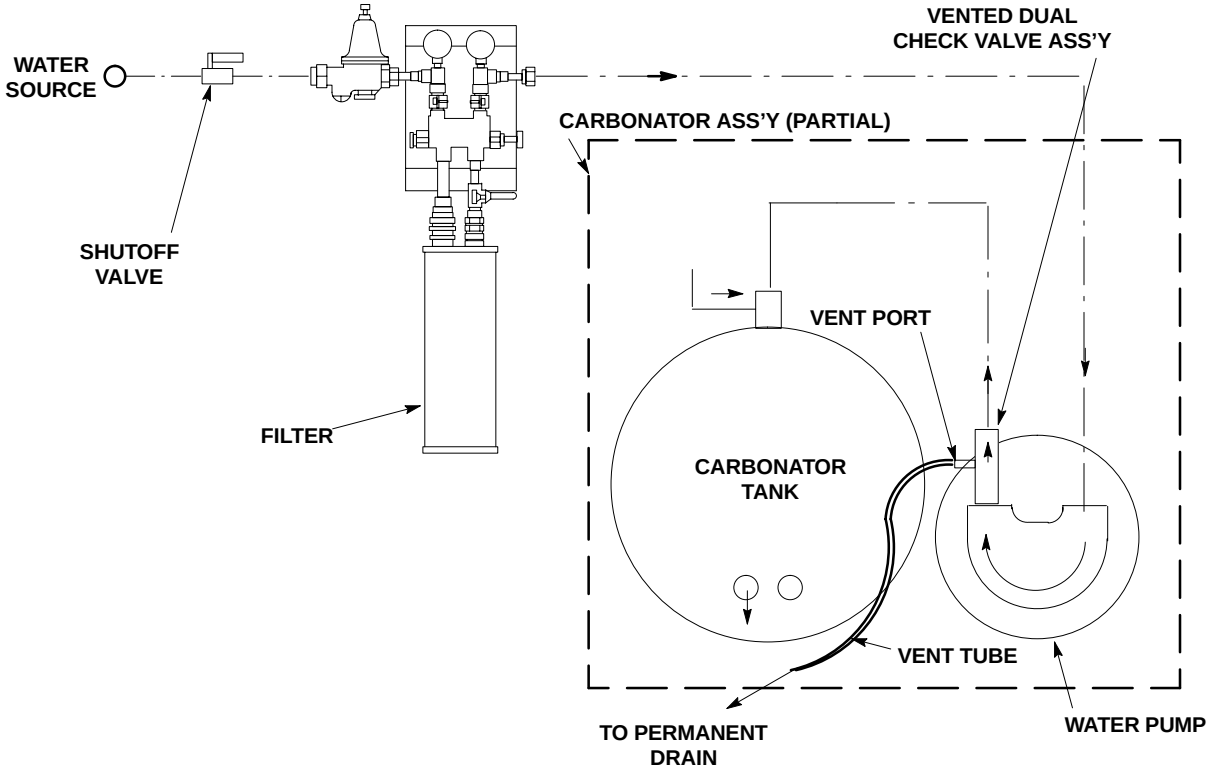
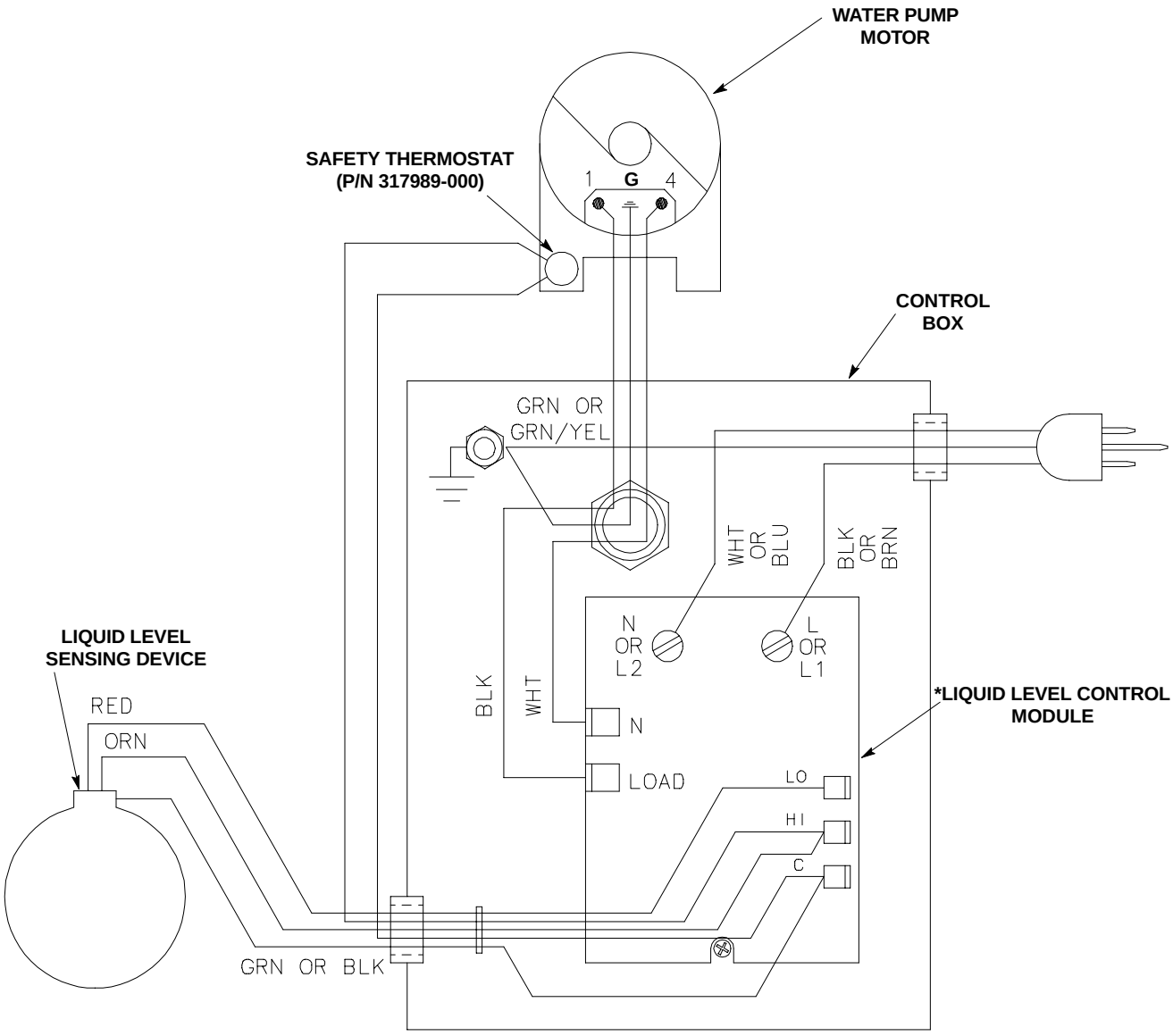
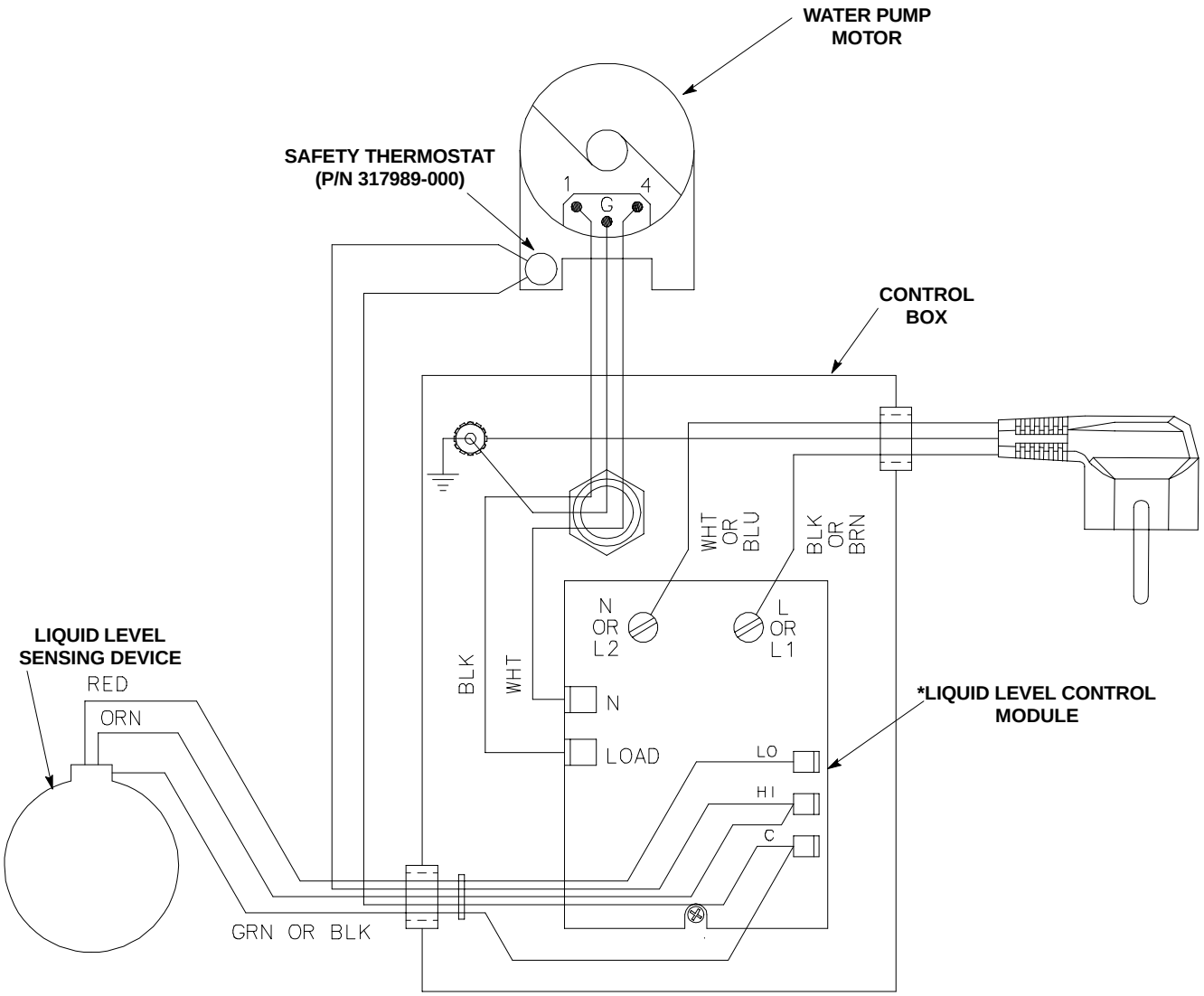


FIGURE 7. VENTED DUAL CHECK VALVE LOCATION



*** Actual location of "HI", "LO", "C", and "LOAD" terminals may vary on different brands of control modules.**

FIGURE 8. WIRING DIAGRAM (UNITS 1624, 416424000, 41642400U, 411624102, and 496424000)



*** Actual location of "HI", "LO", "C", and "LOAD" terminals may vary on different brands of control modules.**

FIGURE 9. WIRING DIAGRAM (UNITS 49642400U, AND 496424040)

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TROUBLESHOOTING

IMPORTANT: Only qualified personnel should service internal components or electrical wiring.

WARNING: If repairs are to be made to a product system, remove quick disconnects from the applicable product tank, then relieve the system pressure before proceeding. If repairs are to be made to the CO_2 system, stop dispensing, shut off the CO_2 supply, then relieve the system pressure before proceeding. If repairs are to be made to the refrigeration system, make sure electrical power is disconnected from the unit.

Trouble	Probable Cause	Remedy
CARBONATOR PUMP MOTOR WILL NOT OPERATE.	A. Unit power cord unplugged or circuit breaker open in panel box.	A. Plug in Unit power cord or reset circuit breaker.
	B. Inoperable pump motor.	B. Replace pump motor as instructed.
	C. Overheated motor cut off by thermal overload protector.	C. Check for proper line voltage. Check for restricted pump discharge.
	D. Inoperative liquid level control module.	D. Replace liquid level control module as instructed.
	E. Liquid level sensing device inside carbonator tank inoperable.	E. Replace sensing device as instructed.
	F. Loose electrical connection and/or open electrical circuit.	F. Tighten connection and/or repair open circuit. Check line voltage.
	G. Carbonator pump binding (new or replacement pumps only).	G. Remove carbonator pump from motor, rotate pump or motor shaft 180 degrees, then recouple pump to motor.
	H. Carbonator pump damaged.	H. Replace carbonator pump as instructed.
CARBONATOR PUMP MOTOR WILL NOT SHUT OFF.	A. Liquid level sensing device inside carbonator tank inoperable.	A. Replace sensing device as instructed.
	B. Loose electrical connection and/or open electrical circuit.	B. Tighten connection and/or repair open circuit.
	C. Inoperable liquid level control module.	C. Replace liquid level control module as instructed.
	D. Leak in carbonated water system.	D. Repair carbonated water system.
ERRATIC CYCLING OF CARBONATOR.	A. Liquid level sensing device inside carbonator tank inoperable.	A. Replace sensing device as instructed.
	B. Liquid level control module inoperable.	B. Replace liquid level control module as instructed.

Trouble	Probable Cause	Remedy
CARBONATOR PUMP CAPACITY TOO LOW.	A. Pump inlet water strainer screen dirty.	A. Clean or replace water strainer screen as instructed.
	B. Kinked plain water inlet supply line.	B. Straighten plain water inlet supply line.
	C. Foreign object in pump bypass.	C. Clean. (Note: Count number of turns bypass screw makes when removing and install same number of turns).
	D. Water pump worn out.	D. Replace water pump as instructed.
	E. Water filter clogged.	E. Replace water filter.
CARBONATOR PUMP MOTOR OPERATES BUT CARBONATOR PUMP DOES NOT PUMP.	A. Water pump inlet water strainer screen dirty.	A. Clean or replace water strainer screen as instructed.
	B. Water supply too low or turned off.	B. Inlet water supply must be a minimum of 100-gallons per hour with a maximum water pressure of 70-psi.
	C. Water filter clogged.	C. Replace water filter.
	D. Inoperative water pump.	D. Replace water pump as instructed.

WARRANTY

IMI Cornelius Inc. warrants that all equipment and parts are free from defects in material and workmanship under normal use and service. For a copy of the warranty applicable to your Cornelius, Remcor or Wilshire product, in your country, please write, fax or telephone the IMI Cornelius office nearest you. Please provide the equipment model number, serial number and the date of purchase.

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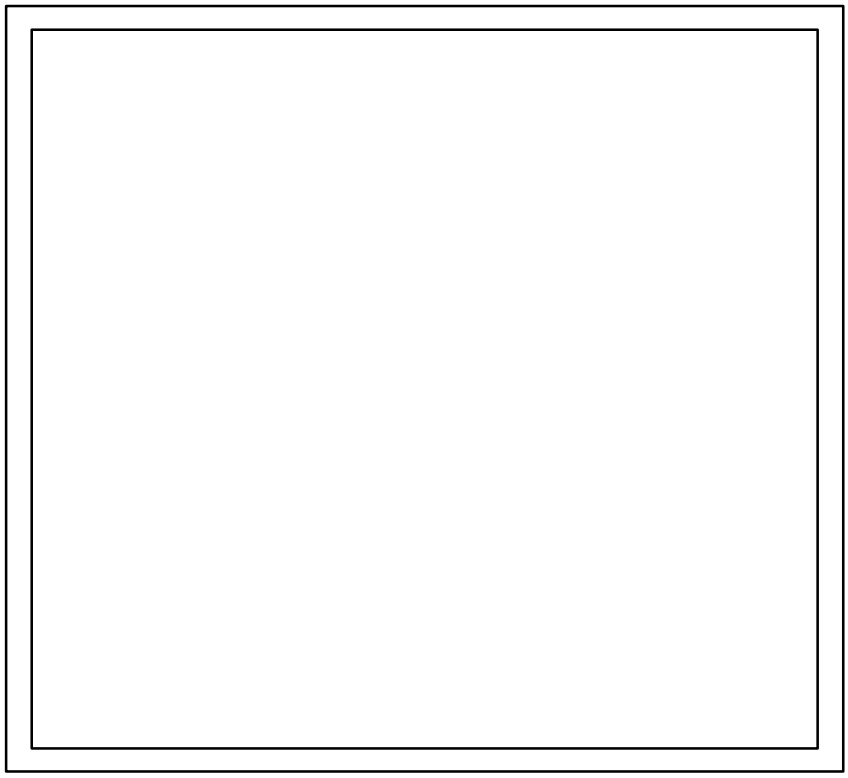

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