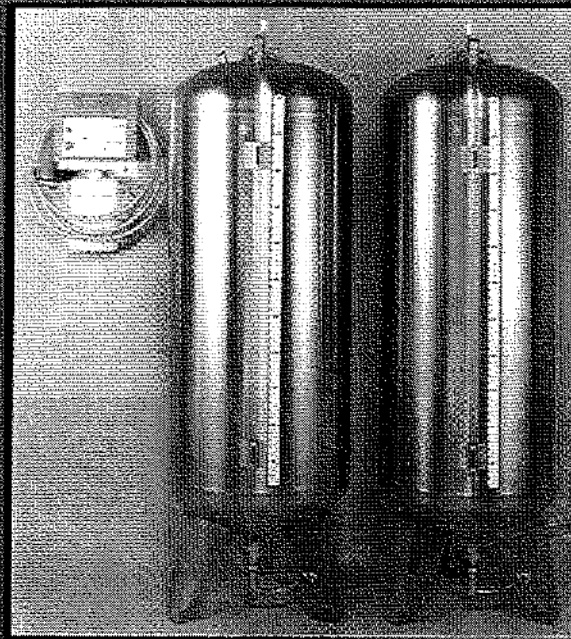

Service Manual



INTERNATIONAL
BULK SYRUP



I PREFACE

This manual covers the service of the Minnesota Valley Engineering International Bulk Syrup System, "InterBulk". The specific components of the InterBulk system described in this manual include:

- ◆ SPS-300L Bulk Syrup Tank (Part Number 99-2257-9)
- ◆ SPS-300L CB Mobile Bulk Syrup Tank (Part Number 99-2332-9)
- ◆ International Bulk Syrup Clean-In-Place Panel (Part Number 97-2310-9)
- ◆ Miscellaneous Installation Components Supplied By MVE

This manual is intended for use by experienced personnel only.

No attempt should be made to use or service this equipment until both this manual and the store operations manual have been read and fully understood.

To assure proper operation and reliability of the InterBulk system, it must be serviced in accordance with these instructions. Failure to do so may void the manufacturer's warranty. Deficiencies in the service are the responsibility of the service agent and/or the store owner or management.

ABBREVIATIONS

The following abbreviations are used throughout this manual:

A.C.	Alternating Current	l	Liters
ASV	Automatic Selector Valve	M	Male
BIB	Bag-In-Box	m	Meters
CIP	Clean-In-Place Panel	ml	Milliliters
CO ₂	Carbon Dioxide	mm	Millimeters
CRA	Customer Return Authorization	MPT	Male Pipe Thread (tapered thread)
ESJH	Emergency Syrup Junper Hose	ppm	Parts Per Million
F	Female	psi	Pounds per Square Inch
ft (or')	Feet	RFI	Reverse Flow Inhibitor
FL	Flare	SS	Stainless Steel
FPT	Female Pipe Thread (tapered thread)	SSH	Syrup Supply Hose
gal	U.S. Gallons	UNC	Unified National Course (straight thread)
HZ	Hertz (electrical cycle per second)	UNF	Unified National Fine (straight thread)
ID	Inside Diameter	V	Volts
OD	Outside Diameter	VA	Volt - Amps
in (or")	Inches	<	Less Than
Kg	Kilograms	>	Greater Than
kPa	Kilopascals		

AMERICAN SIZES

This equipment is made in the United States and has American sizes of hardware. All hardware metric conversions are approximate and can vary in size.

Coca-Cola®, Coca-Cola Classic®, and Coke® are the registered trademarks of the Coca-Cola Company.

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III SAFETY INFORMATION

SAFETY INFORMATION

The InterBulk system is designed for the storage, dispensing, and receiving of beverage syrup and for the sanitizing of the InterBulk syrup tanks. No modifications of the equipment should be made without the proper authorization of Minnesota Valley Engineering, Inc.

PRESSURE WARNING

Some components of InterBulk operate under water or gas pressures of up to 90 psi (6.2 bars). Before removing, disconnecting, or loosening any component which might be under pressure be sure to release any pressure in a safe manner and wear eye protection. Failure to do so may result in personal injury due to the sudden release of pressure.

CARBON DIOXIDE WARNING

InterBulk, and some of the related systems, such as BIB pumps, use carbon dioxide (CO₂) gas. Carbon dioxide is an asphyxiant; it does not support life. Concentrations of 10% or more can produce unconsciousness or death. Lower concentrations can cause headache, sweating, rapid breathing, increased heart rate, shortness of breath, or dizziness. CO₂ is an odorless gas and should be treated as a material with poor warning properties.

CO₂ is heavier than air so high concentrations may be found in low areas, such as basements. Excess use of CO₂ or exposure to CO₂ should be avoided.

RESCUE AND FIRST AID

Do not attempt to remove an individual without utilizing proper rescue equipment or you may also become a casualty.

If the exposed person is unconscious, obtain assistance and put into effect established emergency procedures.

If the person has inhaled large amounts of CO₂ and is exhibiting adverse effects, move the individual to fresh air immediately. If breathing has stopped, perform artificial respiration. Keep the exposed individual warm and at rest. Get medical attention as soon as possible.

For more information contact your CO₂ supplier or the Compressed Gas Association, 1235 Jefferson Davis Highway, Arlington, Virginia 22202, USA.

INTERBULK INTRODUCTION IV

The International Bulk Syrup System, InterBulk, is designed to provide sanitary storage and continuous supply of Coca-Cola® syrup in conjunction with a bag-in-a-box (BIB) pump and automatic selector valve (ASV) system. InterBulk consists of two or more stainless steel bulk syrup tanks. Each tank holds 300 liters of Coca-Cola® syrup and replaces the bag-in-a-box (BIB) boxes or other syrup packages. The InterBulk system also features an automated clean-in-place panel (CIP) for sanitizing the syrup tanks before refilling.

InterBulk works with the BIB pumps and the automatic selector valve (ASV). Syrup is withdrawn from one syrup tank at a time and fed to the beverage machine upon demand by the BIB pumps. When one tank empties, the system automatically switches to the next full tank. The supply of syrup is continuous and requires no changing of empty boxes or tanks.

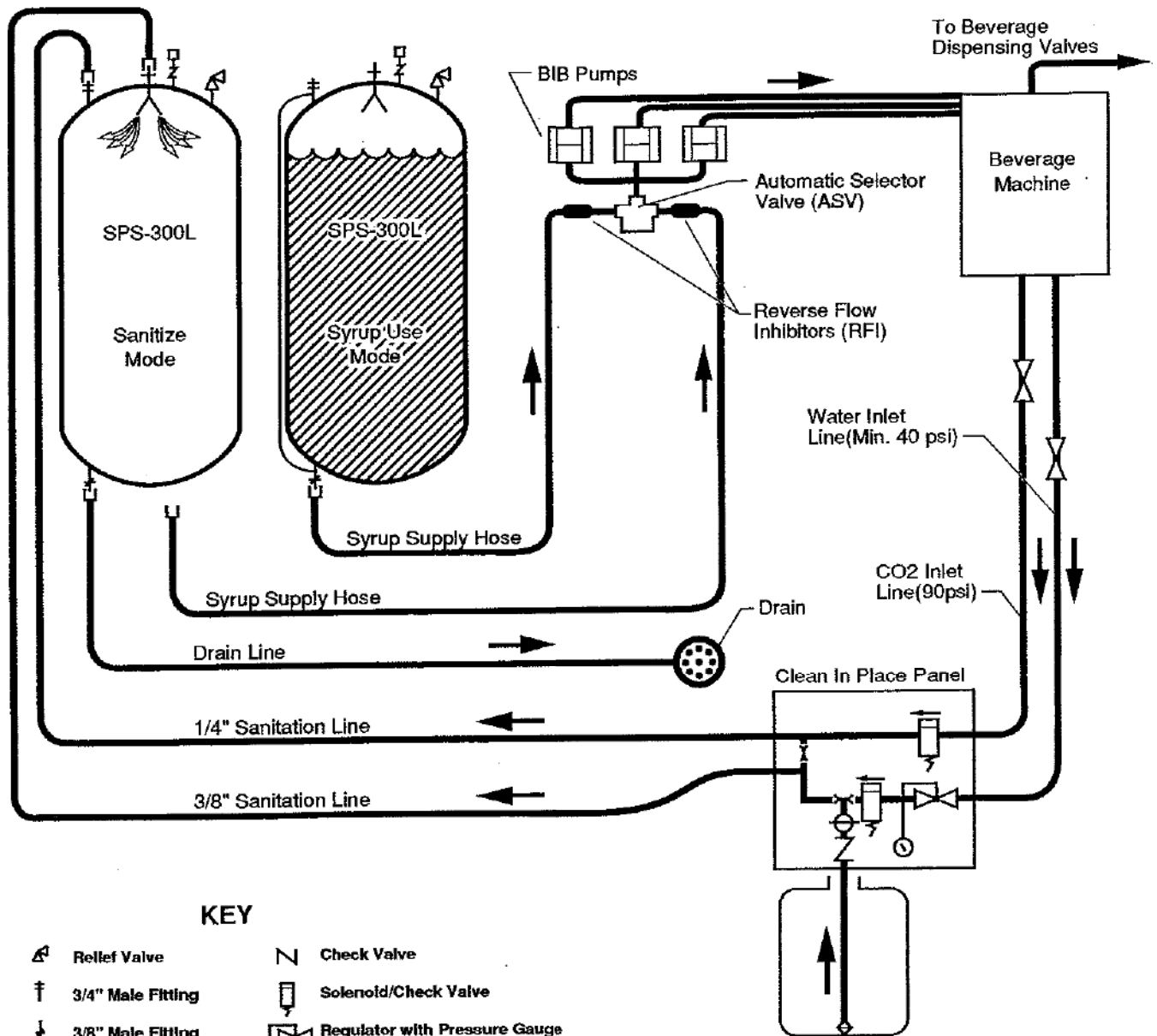
Before refilling an empty syrup tank, it must be sanitized. The empty tank is connected to the clean-in-place panel (CIP), which automatically rinses and sanitizes the tank, preparing it for the next bulk syrup delivery.

InterBulk syrup deliveries are part of the store's regular delivery service. The sanitized InterBulk tank is connected by a syrup delivery hose to a 300 liter bulk delivery tank located on the delivery truck. The InterBulk tank is automatically refilled with 300 liters of Coca-Cola® syrup during each bulk syrup delivery.

There are two models of InterBulk tanks. The first is the permanently installed, nonmobile, model SPS-300L, which is the most commonly used model. The second model is the SPS-300L CB, which is a mobile tank mounted on a caster base with a handle bar. The portable SPS-300L CB operates exactly the same as the SPS-300L, except it can be moved within the store for filling, sanitizing, or syrup dispensing.

Coca-Cola®, Coca-Cola Classic®, and Coke® are the registered trademarks of the Coca-Cola Company.

V OPERATING PRINCIPLES



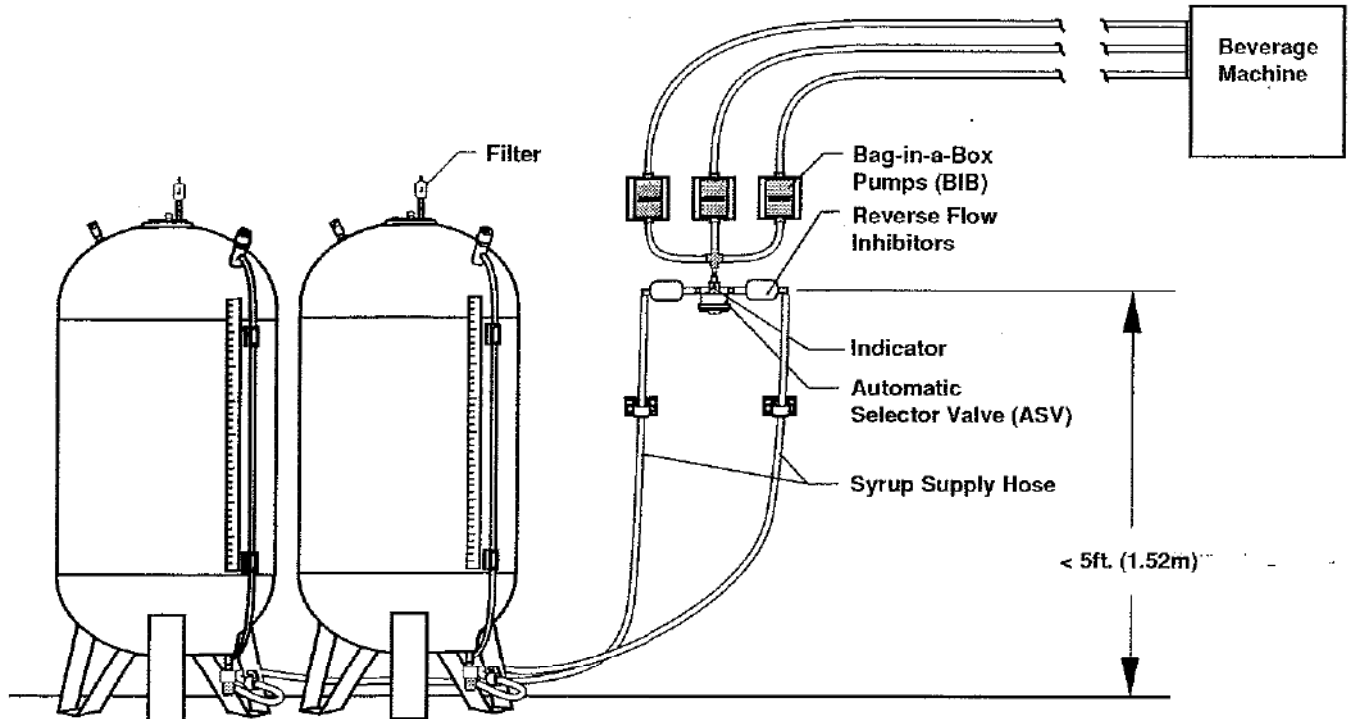
KEY

- | | |
|---------------------|---------------------------------|
| △ Relief Valve | ∇ Check Valve |
| † 3/4" Male Fitting | ⊞ Solenoid/Check Valve |
| ‡ 3/8" Male Fitting | ⊞ Regulator with Pressure Gauge |
| † 2 Pin Fitting | ⊞ Venturi |
| ⊞ Air Intake Filter | ⊞ Needle Valve |
| ⊞ Isolation Valve | ⊞ Orifice |
| ⊞ Female Coupler | |

OPERATING PRINCIPLES V

InterBulk has three operating modes: (1) syrup use, (2) sanitizing, and (3) syrup delivery. to provide good quality service. Read the Introduction section of this manual and

the InterBulk System Operating Modes section of the user's manual as well as the following operating principles before servicing the InterBulk system.



SYRUP USE MODE

In the syrup use mode syrup is withdrawn from one InterBulk tank at a time, through the ASV, and pumped to the beverage dispensing area by the action of the BIB pumps. In the process three components affect the successful operation of the InterBulk system and its ability to supply syrup whenever a drink is to be dispensed. Two of the components are not actually part of the InterBulk system (the BIB pumps and the Automatic Selector Valve or ASV), but will be discussed because of their importance to the operation of the beverage system.

BIB PUMPS

The BIB pumps supply the power to move InterBulk syrup. They suck the syrup from the tanks, pull it through the ASV, and push it to dispensing valves. To operate the BIB pumps need either compressed air or CO₂ gas at 60 psi (4.1 bars). Without a demand for syrup, sufficient gas pressure, and properly operating pumps the InterBulk and beverage systems will not work. To learn more about the BIB pumps see the pump manufacturer's manual.

AUTOMATIC SELECTOR VALVE (ASV)

The ASV is the controller for the InterBulk system. Like a traffic policeman managing traffic at an intersection, it determines which syrup supply hose (SSH) and syrup tank will supply syrup to the BIB pumps and beverage system. The ASV operates by sensing the amount of vacuum (or relative negative pressure or pressure drop or resistance to flow) that exists as syrup is pulled through it by the BIB pumps. When the vacuum gets too high (approximately 18 inches of mercury or 9 psi or 0.62 bar) in one syrup supply hose (SSH), the ASV switches to the other SSH.

There are three important implications to be understood from the way the ASV works. First, if the BIB pumps are not pumping no switch-over will occur. Second, if the vacuum between the BIB pumps and the syrup tanks is too high due to improper operations, layout or installation of the system, then the ASV will tend to switch prematurely. Some of the things that cause "high vacuum" are: syrup lines which are too long or too small in diameter, too high a flow rate, the SSH not connected to the tank, the shut-off device in the tank sealed, or BIB pumps or

V OPERATING PRINCIPLES

ASV mounted too high above the tanks. And third, if a vacuum does not develop in the SSH no switch-over will occur.

The ASV has one other functional peculiarity that should be understood. The ASV must reset itself between switch-overs. (To reset the vacuum in the SSH and ASV must drop to 5 inches or less of mercury.) This means that the ASV must not be mounted above the 300 liter mark on the tanks (i.e. about 5 ft or 1.52 m), that the vacuum in the SSH must be relieved between switch-overs (which occurs automatically in a properly installed and operated system), and that the BIB pumps must cease pumping at least briefly before a reset can occur.

INTERBULK SYRUP TANKS

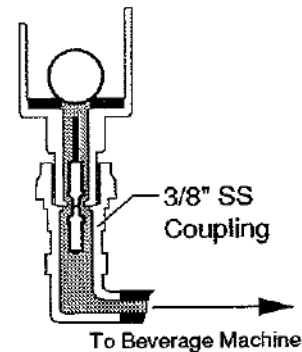
In addition to being the reservoir that holds the syrup, the InterBulk tanks perform two other functions that are important during the syrup use mode.

First, as syrup is withdrawn from the tank, air must be allowed into the tank to prevent a vacuum from developing and a premature switch-over by the ASV. The filter on top of the tank allows air into the tank and cleans it of any airborne particles larger than 4.5 microns, which includes bacteria.

And second, the bottom of the tank contains a shut-off device that closes when the tanks is empty. The shut-off device consists of a floating ball and an elastomer gasket with a hole in the center. When the tank contains syrup or sanitizer the ball floats above the gasket and allows liquid

to pass around it (See Figure 1) and through the hole. As the tank empties the ball settles until it rests in the hole in the gasket. When the ball covers the hole it stops the flow of syrup (and air) to the syrup supply hose (SSH), creates a vacuum, and causes the ASV to switch over to the next full tank. (See Figure 2.)

Figure 2



The operating principles of the shut-off device are important to servicing the system. For example, if the shut-off device fails to close when the tank goes empty then air will enter the syrup lines, no vacuum will occur, and the ASV will not switch over. Alternatively, if the shut-off device closes prematurely then the ASV will also activate prematurely. And finally, if the ball is held in a closed position, either by a residual vacuum or a mechanical problem, syrup cannot be withdrawn even if the tank is full of syrup when the ASV switches to it.

Figure 1

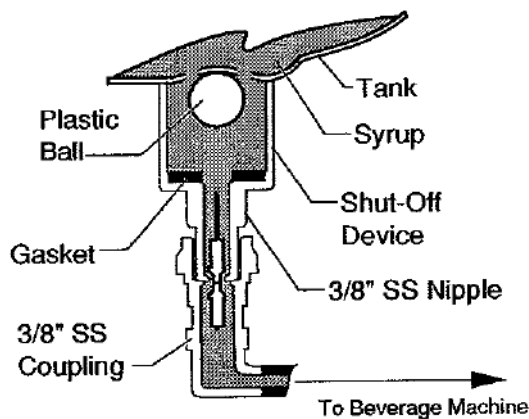
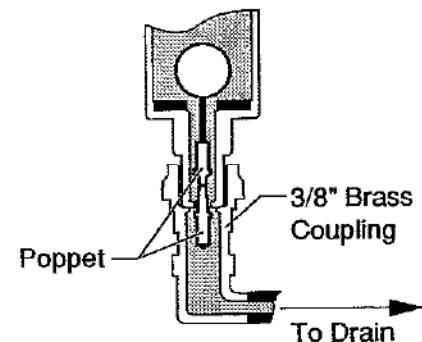
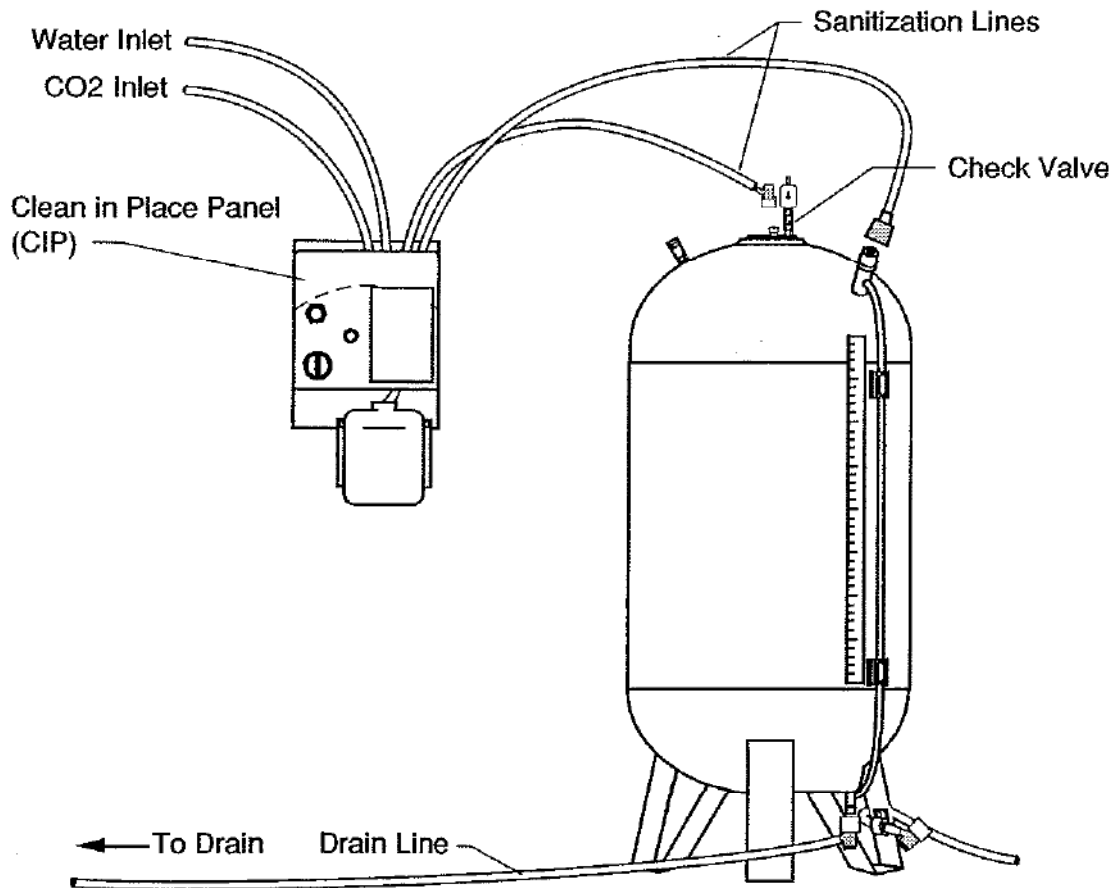


Figure 3



OPERATING PRINCIPLES V



SANITIZE MODE

In the sanitizing mode an empty tank is connected to the automated clean-in-place panel (CIP) and rinsed, sanitized, and purged before it is refilled with a new delivery of 300 liters of Coca-Cola Classic® syrup. Sanitizing is dependent upon the proper operation of both the CIP and the syrup tank.

INTERBULK SYRUP TANKS

During sanitizing the tank is connected to three lines: two sanitize lines from the CIP and the drain line. The 3/8" sanitize line with the 2-pin connector carries about 80% of the sanitizer solution to the spray head inside the tank. The spray head disperses the solution into a uniform umbrella-shaped pattern that covers the upper head of the tank and then spreads down the inside walls of the tank. The smaller 1/4" sanitize line with the large 3/4" brass quick coupler connects to the 3/4" SS fill/sanitize fitting and provides about 20% of the sanitize solution. The 1/4" sanitize line cleans both the 3/4" SS fill/sanitize fitting and the liquid level gauge tube. It is important that the

flow of the sanitizer solution through the lines or spray head not be obstructed by things, such as build up of waterborne minerals, pinched or crimped lines, or lines which are too long.

The third line connected to the tank during sanitizing is the drain line which must be connected to supply/drain fitting at the bottom of the tank. The brass drain coupler has an important function. The longer nose of the drain coupler's poppet pushes the shut-off ball out of the gasket hole so that all the sanitizer can be drained. (See Figure 3, Page 8.)

Finally, the check valve located between the air intake filter and the tank is important in sanitizing. During the two purge cycles as CO₂ gas rushes into the tank through the sanitize lines, the check valve closes to keep moisture from contaminating the filter and traps enough gas in the tank to force any residual syrup and sanitizer out of the tank and to the floor drain. If the check valve becomes stuck it can cause a vacuum in the tank and a premature ASV switch-over or prevent the tank from draining completely.

V OPERATING PRINCIPLES

CLEAN-IN-PLACE PANEL (CIP)

The function of the CIP is to mix and control the distribution of sanitizing solution and CO₂ to sanitize the syrup tanks. To accomplish this function the CIP relies on two processes.

The first process is the control of timing and the manifold block. Within the CIP this process is done by the electronic circuit board, the solenoid valves, and portions of the manifold block. The control process determines when the various cycles start, how long they last, which valves are opened or closed and the routing of the sanitize solution or CO₂ to the tank.

The control process divides the sanitize mode into six cycles: two rinse or sanitize cycles (when sanitize solution is injected into the tank), two purge cycles (when CO₂ is injected into the tank), and two drain cycles. The rinse and sanitize cycles are duplicates of each other and are controlled by the same timer (a potentiometer), solenoid valve, and portions of the manifold.

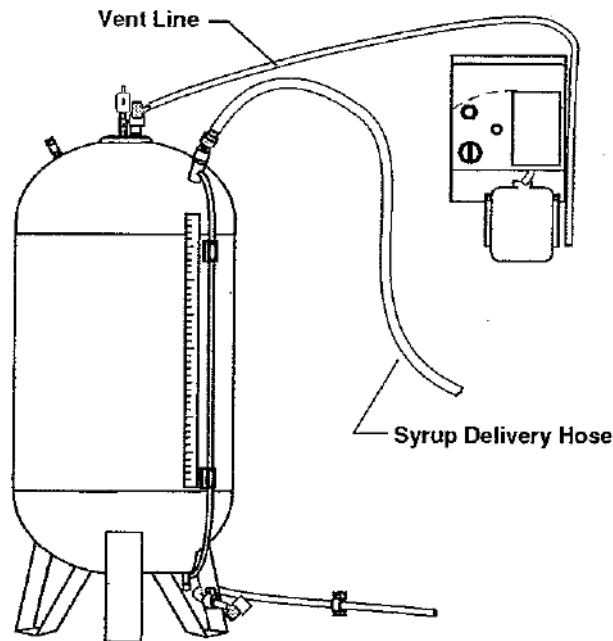
The purge and drain cycles are likewise duplicates of each other. In one sense, there are only three cycles, each of which has two repetitions. If a problem develops in one cycle or a change is made to one cycle (for example, changing the rinse cycle time) the problem or change will also be observed in its duplicate cycle (in the example, the change would also be reflected in a change to sanitize cycle time). The potentiometers which control the sanitize mode are factory set, but can be adjusted, if needed.

The second process is the mixing process during which a sanitizer concentrate is blended with water to make the sanitize solution that is sprayed into the tank. The mixing process uses a pressurized stream of water passing through a Venturi orifice to syphon the concentrate from its container at a controlled rate.

To achieve the correct blend (about 100 parts per million of chlorine solution) three factors must be in balance. The water flow from the water supply line must be at about 35 psi to 40 psi (2.42 bars to 2.76 bars) dynamic pressure (i.e. when the water is flowing). The pressure drop through the sanitize lines and spray head must be correct. The spray head is factory set and the lines and CIP location should be within the guidelines set in the Installation Manual. And, the syphon rate must be at a level to match the water pressure and the downstream pressure drop. The syphon rate can be adjusted, if needed, by means of a needle valve in the manifold block. (Of course, even if the blend is correct, but the timing is not, then the sanitize cycle will not meet the required standards and must be corrected.)

The CIP requires four inputs to operate. First, 24 volt A.C. electricity at 50 or 60 hertz and a minimum of 30 volt-amps. Second, clean potable water at sufficient pressure and flow to maintain 35 psi to 40 psi of dynamic water pressure. Third, CO₂ gas at a pressure of 90 psi (6.2 bars). Both the CO₂ and the water come to the CIP from the beverage machine. And fourth, the CIP needs the correct amount and blend of sanitizer concentrate which it syphons out of the sanitizer solution container.

OPERATING PRINCIPLES V



SYRUP DELIVERY MODE

During the syrup delivery mode an empty and sanitized InterBulk tank is filled with 300 liters of Coca-Cola® syrup via a syrup delivery hose supplied by the delivery driver. The syrup is *pushed* into the store's tank by compressed or other gas. The delivery process involves the store's tank and the delivery equipment supplied by the delivery company.

DELIVERY COMPANY EQUIPMENT

The operation and maintenance of the syrup delivery tank, the syrup delivery hose, and the compressed gas bottle are the responsibility of the delivery company and Coca-Cola® who owns the equipment.

Remember these points. First, the gas bottle must have sufficient pressure (about 50 psi to 60 psi or 3.45 bars to 4.14 bars of output pressure) and gas contents, otherwise the delivery time will be increased or may not be possible. Second, double or triple delivery hoses, cold syrup, increases in elevation from the delivery tank to the store tank, loose hose connections, or a leak in the delivery tank will all increase transfer times. And third, if the store personnel fail to *walk* (i.e. drain) the delivery hose before disconnecting it from the tanks, then the store will not receive a full 300 liters. (Coca-Cola® and its bottlers take great care to ensure that each delivery tank is properly filled with at least 300 liters of Coca-Cola Classic® syrup before it is delivered to the distribution center.)

INTERBULK SYRUP TANKS

Before syrup is transferred into a tank it must be empty and sanitized; the vent line must be connected; and the drain line and syrup supply hose (SSH) must be disconnected. If these steps have not been properly followed then immediate or subsequent problems can develop.

A tank which is not empty may contain either syrup or sanitizer solution. If the tank was not properly drained and purged during the sanitize mode (for example, the store failed to connect the drain line to the tank), then the residual sanitizer will contaminate the new syrup. Syrup which is suspected of being contaminated should not be used and should be tested by the Coca-Cola® bottler's laboratory. (Note, syrup contaminated with sanitizer solution may produce a beverage which has a peculiar *metallic* taste.)

If a tank contains syrup at the time of a delivery there are two possible causes. First, the store ordered a delivery before their tank was empty, which they are not supposed to do. Or alternatively, cross-flow or back-flow is occurring through the ASV. In the latter case, SHURflo reverse flow inhibitors should be added to each SSH or the ASV should be relocated.

The vent line allows for venting and overflow. During filling air must be allowed to escape from the tank as syrup is pushed into the tank. If the vent line is not connected the tank will fill very slowly. Air trapped in the tank will reach a near pressure equilibrium with the pressure in the delivery tank the only way out being through the relief valve. The second purpose is to allow overflow of syrup if, as described above, the tank is not empty when filling begins.

Both the drain line and the syrup supply hose must be disconnected from the tank during a syrup delivery. If the drain line is connected to the tank, syrup will come into the tank through the fill/sanitize fitting and flow immediately out of the tank through the drain line and onto the floor or down the drain.

The problem that may develop if the syrup supply hose (SSH) is left connected is less obvious and not immediately evident. If the tank is empty when a delivery starts, and if the ball in the shut-off device is resting in the hole of the gasket, and if SSH has a residual vacuum, then the shut-off ball may held in a closed or sealed position even as the tank is filled with syrup. In other words, the ball may not float because the force of the vacuum is stronger than the ball's buoyancy. When this happens and the other tank goes empty, the ASV will switch to the full tank but no syrup can be pumped out until the vacuum is eliminated and the shut-off ball is refloated.

VI SERVICE AND PARTS POLICIES

WARRANTY VERSUS NON-WARRANTY

Minnesota Valley Engineering's warranty to McDonald's Restaurants is presented in Section X of this manual. Service agents should be familiar with the terms of this warranty and its administration before making any statements regarding a possible warranty issue or submitting a warranty claim. MVE reserves for itself the right to make the final decision on any issue related to the application of its warranty. Service agents are advised to contact MVE for prior warranty approval if in doubt or for any possible claim which might exceed \$100.00 U.S. for parts and labor.

In basic terms, MVE's warranty covers manufacturer's defects in workmanship or materials for a period of one year from the date of purchase by the original purchaser. The warranty applies to parts and reasonable labor, as determined by MVE.

MVE's warranty does not cover the following:

1. Damage or losses which occur during shipping, in temporary or transit storage, or after leaving MVE's manufacturing or inventory facilities,
2. Normal wear and tear
3. Misuse or abuse
4. Damage or loss caused by acts of God
5. Unauthorized modification
6. Parts or labor not supplied by MVE, including from: installers, service agents, store personnel, or parts suppliers
7. Secondary, incidental, or consequential losses or damage, eg. lost syrup due to a leak
8. Taxes, duties, customs fees, fines, license fees, permits, or other governmental fees
9. Mileage, freight charges, forwarder's or broker's fees, storage or handling charges, etc.

WARRANTY CLAIMS PROCEDURE

1. Service agents are responsible for obtaining prior approval for any warranty claim whose cost of parts and labor might exceed \$100.00 U.S. or where doubt exists about warranty coverage. Prior authorization may be obtained by contacting MVE's Technical Service Group at:

Phone: 612-853-9600
Facsimile: 612-853-9661
Telex: 29-0571
Address: Minnesota Valley Engineering, Inc.
Technical Service Manager
Two Appletree Square, Suite 100
8011 34th Avenue South
Bloomington, MN 55425-1636 USA

2. Service agents are responsible to advise the store that the store will be invoiced by the agent for any service or parts that are not covered by warranty.
3. Agents are responsible for retaining any parts removed or replaced under warranty, along with appropriate supporting documentation, for a period of at least six (6) months after a warranty claim has been submitted to MVE or until MVE has advised the agent of the disposition of the parts. MVE may require the return of parts and copies of documentation in order to verify warranty coverage, or to inspect, to test, or to rebuild the parts. Any parts which MVE requests be returned should be shipped in accordance with the instructions supplied by MVE and include an MVE Customer Return Authorization (CRA) number.
4. The procedure for submitting a warranty claim is as follows:
 - A. Send the invoice for the completed service to MVE's technical service manager at the address shown in paragraph 1. The invoice should include:
 - (1) The total charges should be separated to indicate the costs for labor, parts, transportation, and taxes.
 - (2) The hourly rates charged.
 - (3) The address to which payment should be sent.
 - B. Include with the invoice a service report which contains the following information:
 - (1) A detailed description of the reason for the service visit and the work performed.
 - (2) An itemized list of parts, labor, and travel time.
 - (3) Model and serial number of the equipment serviced.
 - (4) The McDonald's store number, address, telephone number, and names of appropriate contact person(s).
 - (5) Name of the service agent who performed the work.

SERVICE AND PARTS POLICIES VI

- (6) Date the service was performed.
 - (7) Signature of the McDonald's store manager or owner who approved the service work.
 - (8) The date and name of the person at MVE who authorized warranty coverage, if appropriate.
 - (9) The Customer Return Authorization (CRA) number obtained from MVE for the return of any defective parts, if appropriate.
- C. Claims which are not properly documented or which are not legible will either be returned for completion or require additional time to process. In either case, incomplete claims will delay reimbursement.
- D. Reimbursement guidelines:
- (1) MVE, at its option, will reimburse, credit or replace defective parts covered under warranty, provided:
 - a. The parts were originally purchased from MVE.
 - b. If requested by MVE, the defective parts are returned to MVE in accordance with MVE's instructions.
 - (2) MVE will pay for a maximum of one (1) hour travel time. Any travel time over one hour must be approved by MVE in advance.
 - (3) MVE will not pay for:
 - a. Finance charges
 - b. Travel or similar charges when warranty service is performed in conjunction with other service work
 - c. Any charges which are also billed to another party, i.e. double billing
 - d. Multiple service visits caused by the fact that the service agent did not have service parts on hand
 - e. Overtime or holiday charges
 - f. Syrup or CO₂
 - g. Labor charges for time spent calibrating gauges or instruments, studying manuals, or cleaning
 - h. Margins for parts supplied by MVE
 - (4) Any items charged on the service agent's invoice, but not covered under MVE's warranty, will be deducted from the invoice and a written description of the change will be provided.
 - (5) Normal processing time for a complete warranty claim is at least 30 days from receipt of the invoice. If additional information is required because the claim is incomplete, then the processing time is substantially increased.

HOW TO ORDER PARTS

For prompt parts service contact the local MVE distributor or the local Coca-Cola® service/parts department or bottler. For information about local distributors or if no local distributor is available, then contact MVE's Technical Service Group at:

Telephone: 612-853-9600
Facsimile: 612-853-9661
Telex: 29-0571

To ensure prompt and accurate processing of the order, list each item separately, being careful to specify the quantity, the part number, the description and item number of each part being ordered.

All orders should clearly state a ship-to address, billing address, name of a contact person, shipping instructions, telephone and facsimile numbers and any additional information needed by the distributor to process your order.

TERMS OF SALE AND PAYMENT

Local distributors and Coca-Cola® establish their own terms and are not obligated to use the terms set by MVE.

The terms or conditions of payment for all orders are subject to the approval of MVE's credit manager prior to acceptance or shipment. Prices are ex-works and are payable in U.S. dollars. All taxes, duties, bank charges, transportation costs, and insurance are the responsibility of the buyer. Prices, terms, designs, materials, specifications, weights, and dimensions for equipment and parts are subject to change without prior notice.

VI SERVICE AND PARTS POLICIES

METHOD OF SHIPMENT

All equipment and parts quoted or sold by MVE are priced as EX-WORKS or EX-FACTORY. All shipments are carefully packed and labeled to prevent damage or loss. Orders whose routing is not specified by the purchaser will be shipped at MVE's discretion via the best method available without liability on MVE's part for such selection. Purchasers are advised to insure their orders against damage or loss during shipment.

DAMAGED OR LOST SHIPMENTS

MVE's responsibility for damage or losses ceases upon acceptance of the equipment or parts in good condition by the carrier. Any damage or losses sustained in transit are the responsibility of the purchaser or the carrier. Shipments should be inspected upon delivery for damage or missing boxes or crates and any problems should be reported to the carrier immediately. A detailed inspection of the contents should be made as soon as possible. In many cases carriers set very brief limits on the time allowed to submit a valid claim.

DEFECTIVE OR MISSING PARTS

Minnesota Valley Engineering has a rigorous quality assurance program; however, it is still possible for parts or kits to arrive with defects or missing parts. When this occurs MVE is anxious to know about it. Defective or missing parts should be reported to the supplier from whom they were purchased. A copy of the report should be sent to MVE's Technical Service Manager at the address or telephone/facsimile number shown in this section of the manual.

MVE will replace missing or defective parts which are determined to be the result of a manufacturer related failure. Any parts whose defects are felt to be manufacturer related should be retained pending MVE's determination about the return of the defective part. MVE will not cover the labor, transportation, or other incidental or consequential costs related to the installation of the replacement parts.

MVE will not replace, credit, or reimburse service agents for losses or damage which occur after the parts have left MVE's possession. Agents should inspect all deliveries promptly and report any losses or damage to the carrier.

RETURN POLICY

1. No parts, equipment, or kits are to be returned to MVE without prior approval of MVE's Technical Service Manager. (See telephone, facsimile, and address listed in this section.)

2. All merchandise being returned must include a Customer Return Authorization Number (CRA #), which is provided by MVE at the time that the approval is granted.

- A. The CRA number should be printed on the outside of the return packaging and any accompanying documentation.

- B. If MVE has provided a copy of the CRA form prior to return of the merchandise, include a copy of the form with the returned merchandise.

- C. The absence of the CRA number will cause delays in resolving claims or returns.

3. All merchandise must be returned in compliance with MVE's instructions. In most cases, returned merchandise should be sent to our factory at the following address:

Cryogenic Services, Inc.
Division of Minnesota Valley Engineering
Interstate 575 and Airport Drive
Canton, Georgia 30114 USA
Facsimile No.: 404-479-4603

4. MVE is not responsible for any merchandise not returned in accordance with MVE's instructions.

5. The service agent or purchaser must prepay the transportation costs for all returned merchandise.

6. Merchandise returned for credit or reimbursement:

- A. Acceptance of merchandise for reimbursement or credit is subject to the prior approval and post receiving inspection by MVE.

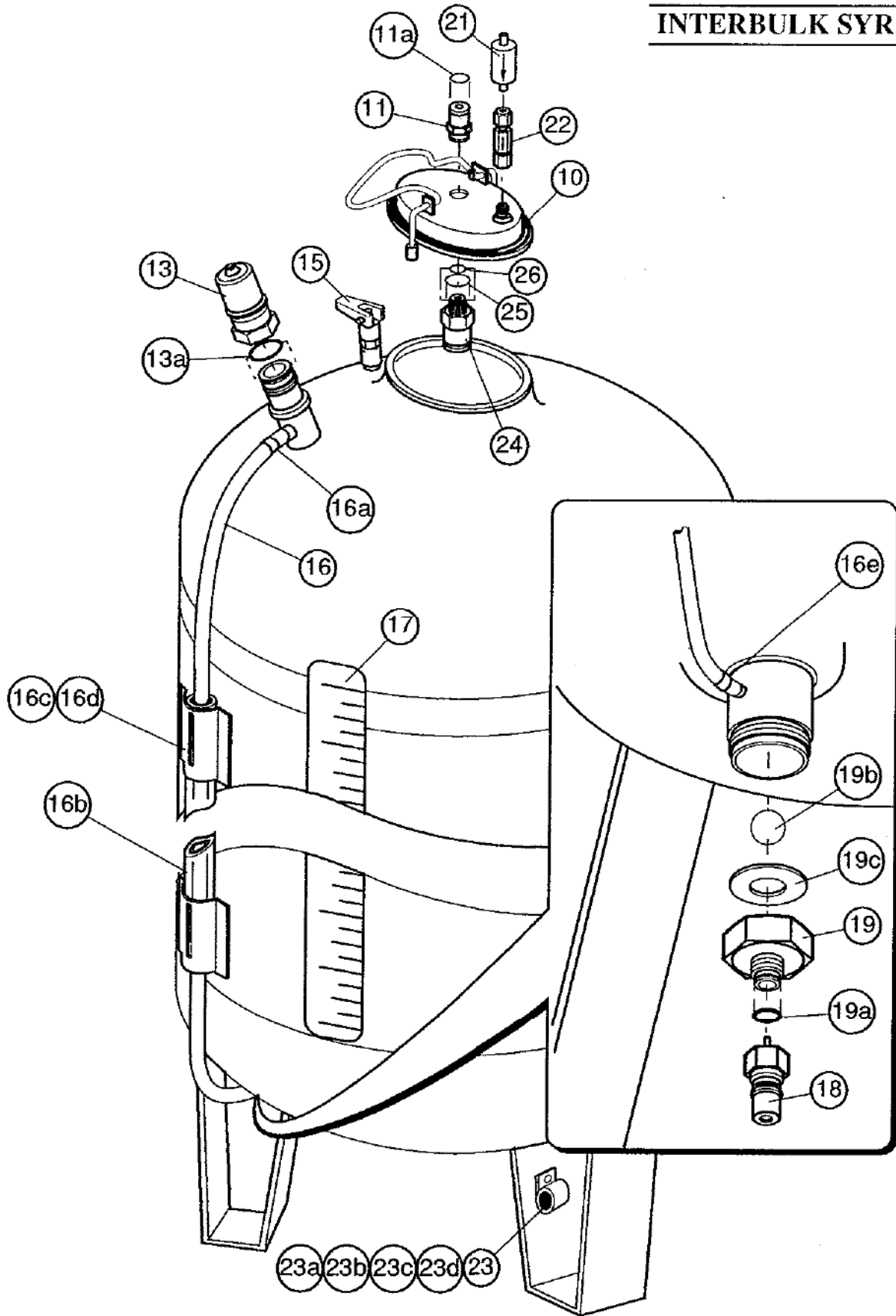
- B. Merchandise must be in NEW, unused, saleable condition and in its original packaging. (This does not apply to defective parts being returned for inspection at MVE's request.)

- C. No credit or reimbursement will be made for merchandise not purchased from MVE.

- D. Credit or reimbursement will be allowed in an amount equal to the original purchase price from MVE or MVE's current selling price, whichever is the lesser, less a 15% restocking charge with a minimum charge of \$20.00 U.S. for each return. Any costs incurred by MVE to bring the merchandise into saleable condition will also be deducted from the credit.

INTERBULK SERVICE PARTS VII

INTERBULK SYRUP TANK



VII INTERBULK SERVICE PARTS

InterBulk Syrup Tanks: SPS-300L (99-2257-9) and SPS-300L CB (99-2332-9)

ITEM NO.*	PART NO.	DESCRIPTION	QTY	FUNCTION
21	49-1051-6	Air Intake Filter	1	Filters air inhaled into the syrup tank during syrup use.
22	17-1924-1	Air Intake Check Valve	1	Protects the air filter against syrup contamination.
9	56-1858-9	Tank Closure with 1/4" MPT nipple	1	Closure for syrup tank to which air filter, check valve, 2-pin quick connector and spray head attach.
10	23-0001-1	O-Ring for tank closure (1/4" thick * 4" dia.)	1	Seals tank closure to tank.
24	85-1352-1	Spray Head	1	Disperses sanitizer within syrup tank.
26	47-1061-9	O-Ring on threads of spray head	1	Seals between spray head and 2-pin connector
25	10526971	Gasket (O-Ring) for spray head	1	Interface seal between spray head and tank closure.
11	65-1163-1	2-Pin Male Quick Connector (Sanitizer/Vent Fitting)	1	Connector for sanitizing and venting the tank.
11a	10526989	O-Ring on 2-pin male connector	1	Interface seal between 2-pin connector and sanitize and vent couplers.
12	39-1091-6	Dust Cap for 2-pin male connector	1	Protects 2-pin male quick connector.
15	18-1286-9	Relief Valve (3-1/2 psi or 0.24 bar)	1	Safety device set at 3-1/2 psi (0.24 bar).
13	65-1166-1	3/4" Male Quick Connect Nipple (Syrup Fill/Sanitize Fitting)	1	Connector for filling and sanitizing the tank.
13a	23-0002-9	O-ring for 3/4" male quick connect nipple.	1	Interface seal between 3/4" quick nipple and tank at threads.
14	39-1090-6	Dust Cap for 3/4" male quick connector	1	Protects 3/4" male quick connector.
17	38-3537-9	Liquid Level Label	1	Indicates syrup contents in liters (35 l to 300 l).
16	28-1216-6	1/4" ID Clear Beverage Tubing for liquid level gauge	1	Displays syrup contents.
16a	34-1219-4	Ferrule for 1/4" beverage tubing (0.525" ID x 0.718 long)	1	Secures 1/4" clear tubing to the top of the tank.
16b	28-1142-6	5/8" ID Clear Acrylic Tube (0.625" ID x 36" long)	1	Protects 1/4" clear beverage tubing sight gauge.
16c	90-9573-1	Support Bracket for sight gauge protector	2	Supports 5/8" clear acrylic tubing at top and bottom.
16d	10526997	Double Sided Tape	2	Attaches support brackets to the tank.

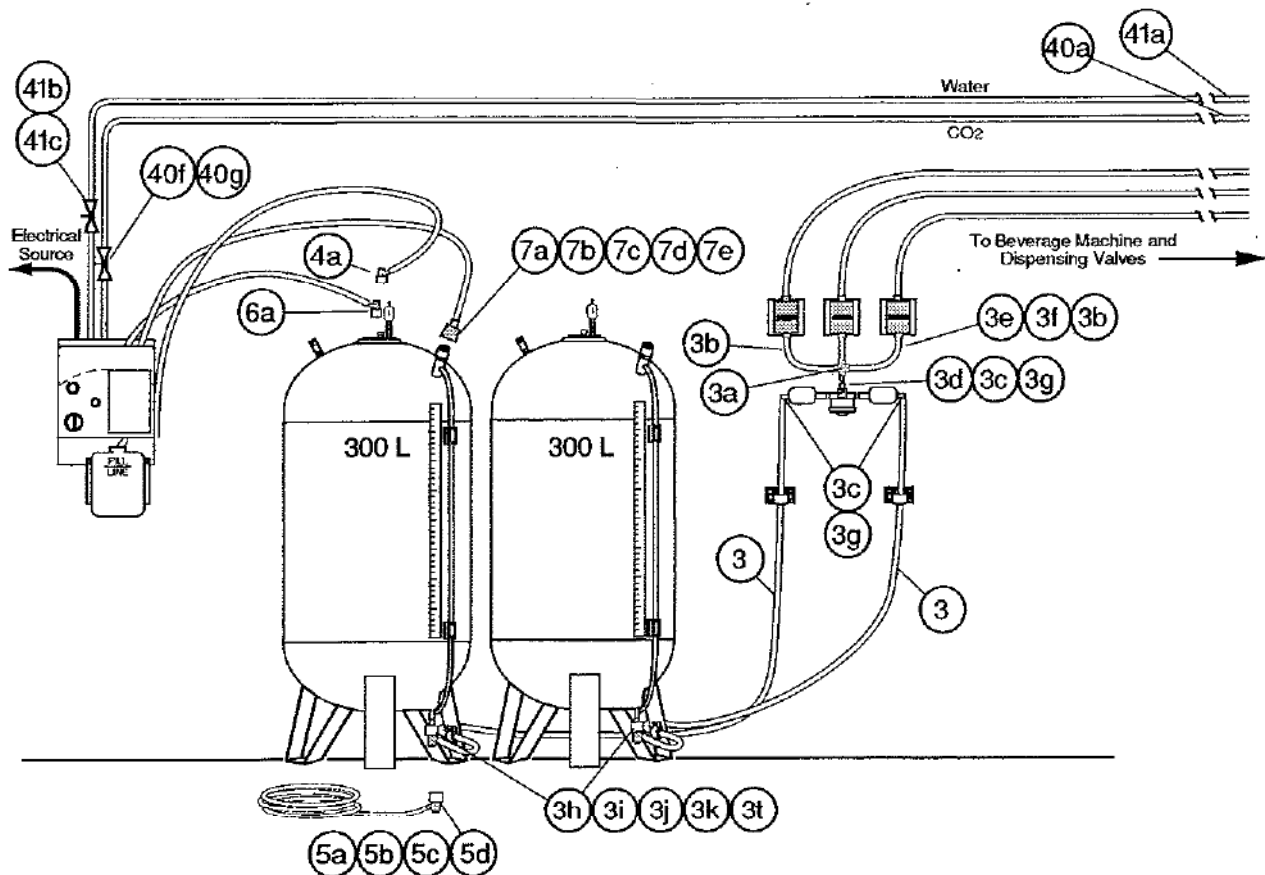
* ITEM NO. corresponds to the numbering sequence used in the InterBulk User's Manual and the InterBulk Installation Manual. Service parts which are a part of or are associated with a master component identified in the User's Manual share the same item number as the master component along with an alphabetical identifier. For example, item no. "7" is listed in the User's Manual as the 1/4" sanitize line, so all parts which share the item no. "7", such as: 7a, 7b, 6/7/40, etc., are part of or associated with the 1/4" sanitize line.

INTERBULK SERVICE PARTS VII

InterBulk Syrup Tanks: SPS-300L (99-2257-9) and SPS-300L CB (99-2332-9) (continued)

ITEM NO.*	PART NO.	DESCRIPTION	QTY	FUNCTION
16e	34-1132-1	1/4" Stepless Clamp (Oetiker)	2	Secures 1/4" clear tubing to the bottom of the tank.
19	12-1423-1	Adapter, stainless steel (1.875" F UNF x 0.875" M UNF)	1	Outer body of shut-off device and connects 3/8" supply/drain fitting to the tank.
19a	23-0003-9	O-Ring for SS adapter	1	Interface seal between threads on adapter and 3/8" male quick connect fitting.
19b	85-1353-6	Plastic Ball (1.000" Dia.)	1	Inner portion of shut-off device.
19c	47-1126-6	Gasket (0.100" x 0.750" ID x 1.750" OD)	1	Seat for shut-off device.
18	65-1227-1	3/8" Male Quick Connect Nipple (Supply/Drain Fitting)	1	Connection for withdrawing syrup and sanitizer from the tank.
20	39-1167-6	Dust Cap for 3/8" male quick connector	1	Protects 3/8" male quick connector.
1u		Sanitation Placard, Plastic	1	Record of sanitation procedures.
SPS-300L Stationary Syrup Tank (only)				
23	34-1204-6	Hose Support Loop, Plastic	1	Supports syrup supply hose and quick coupler when attached to tank leg.
23a	29-1097-1	Round Head Machine Screw (10-32 x 0.50" long x 18-8, SS)	1	Attaches hose support loop to tank leg.
23b	29-1099-1	Flat Washer (#10, 18-8, SS)	2	Part of hose support loop attachment.
23c	29-1107-1	Split Lock Washer (#10, 18-8, SS)	1	Part of hose support loop attachment.
23d	29-1064-1	Hex Nut (10-32, 18-8, SS)	1	Part of hose support loop attachment.
SPS-300L CB Portable Syrup Tank (only)				
1h	43-1079-9	Pulling Handle	1	For moving the portable tank.
1i	43-1080-9	Plastic Handle Grips	2	Hand grips for the handle.
1j	10504798	Quick Release Pin (3/8" x 1" long)	2	Secures handle to tank caster base
1k	55-0105-1	Handle Latch, SS	1	Holds handle upright on tank.
1L	29-1050-1	Hex Head Bolt, SS (1/4-20 x 5/8", 18-8)	1	Secures handle to latch.
1m	29-1059-1	Flat Washer, SS (1/4" ID)	1	Secures handle latch.
1n	29-1407-1	Locknut, SS with nylon insert (1/4-20)	1	Secures handle latch.
1o	31-1059-9	Swivel Caster with brake, 5" OD	2	Front caster for turning and braking.
1p	31-1060-9	Fixed Caster, 5" OD x 2"	2	Rear caster
1q	29-1471-1	Carriage Bolt, SS (3/8-16 x 1-1/4" long, 18-8)	16	Secures casters to tank base.
1r	29-1371-1	Flat Washer, SS (3/8" ID x 1" OD)	16	Secures casters to tank base.
1s	29-1367-1	Locknut, SS with nylon insert (3/8-16, 18-8)	16	Secures casters to tank base.
1t	47-1092-9	Neoprene Plate (0.125" x 3.75" x 4.62")	4	Mounts between casters and tank base.

VII INTERBULK SERVICE PARTS



Installation Kit (97-2309-9)

ITEM NO.	PART NO.	DESCRIPTION	QTY	FUNCTION
7a	65-1177-2	3/4" Female Brass Quick Connector Coupling	1	Primary component in 3/4" sanitizer coupling assembly.
7b	23-0006-R	O-Ring for interface in 3/4" female brass quick coupling.	1	Seals connection between 3/4" brass quick coupler and fill/sanitize fitting when components are engaged.
7c	12-1004-2	Bushing, Brass Hex (3/4" MPT x 1/4" FPT)	1	Component in sanitizer coupling assembly.
7d	16-1132-2	Hose Barb Connector, Brass (1/4" MPT x 1/4" barb)	1	Component in sanitizer coupling, assembly to which 1/4" ID sanitize line from CIP attaches.
7e	39-1160-6	3/4" Dust Plug, Rubber	1	Protects 3/4" female sanitize assembly quick connector.
3a	16-1142-1	Barbed Hose Cross, SS (1/2" x 3/8" x 3/8" x 3/8")	1	Connects between 3 BIB pumps and automatic selector valve (ASV)
41a	16-1155-2	3/8" Barbed Hose Tee (3/8" x 3/8" x 3/8")	1	Inserts into 3/8" water line of beverage machine to supply water to the CIP.
5a	65-1229-2	3/8" Female Brass Quick Connect Coupling	1	Primary component in 3/8" drain coupling assembly.

INTERBULK SERVICE PARTS VII

Installation Kit (97-2309-9) (continued)

ITEM NO.	PART NO.	DESCRIPTION	QTY	FUNCTION
5b/3i	10527009	O-Ring for interface in 3/8" female brass quick coupling	2	Seals connection between 3/8" brass quick coupling and syrup supply/drain fitting when engaged.
5c	16-1160-2	90° Brass Elbow with hose barb (3/8" MPT x 3/8" Barb)	1	Component in brass drain coupling assembly to which 3/8" drain line attaches.
5d/3t	39-1161-6	3/8" Dust Plug, Rubber	3	Protects 3/8" female quick connectors.
40a	16-1161-2	1/4" Barbed Hose Tee (1/4" x 1/4" x 1/4")	1	Inserts into 1/4" 90 psi (6.2 bar) CO ₂ line to supply CO ₂ to CIP.
3b	16-1211-1	3/8" SS Barbed Hose Elbow with double o-ring for BIB pumps	3	Connects 3/8" tubing to BIB pumps (1 per pump).
3c	16-1212-6	1/2" Plastic Barbed Hose Elbow for ASV and RFIs	3	Connects 1/2" tubing to ASV outlet and RFI inlets.
41b	16-1216-2	3/8" Hose Barb (1/4" MPT x 3/8" Barb)	2	Connectors water isolation valve into water supply line to CIP.
41c	17-1492-2	Isolation/Shut-off Valve, 3/8" ID (1/4" FPT x 1/4" FPT)	1	Shuts off water flow to CIP in water supply line.
40f	16-1132-2	1/4" Hose Barbs (1/4" MPT x 1/4" Barb)	2	Connects CO ₂ isolation valve into CO ₂ supply line to CIP.
40g	17-1697-2	Isolation/Shut-off Valve, 1/4" ID (1/4" FPT x 1/4" FPT)	1	Shuts off CO ₂ flow to CIP in CO ₂ supply line.
3d	28-1213-6	1/2" Clear Beverage Tubing (1/2" ID x 3/4" OD)	5ft	Tubing to connect ASV outlet to SS barbed hose cross located between ASV and BIB pumps.
3e	28-1214-6	3/8" Clear Beverage Tubing (3/8" ID x 5/8" OD)	20ft	Tubing to connect S.S. barbed cross to BIB pump inlets.
3f	34-1133-1	3/8" Stepless Hose Clamp (Oetiker)	28	Clamps 3/8" clear beverage tubing to barbs.
3g	34-1134-1	1/2" Stepless Hose Clamp (Oetiker)	10	Clamps 1/2" clear beverage tubing to barbs.
1a	38-1883-9	Label: Number "1"	1	Attaches to syrup tank #1.

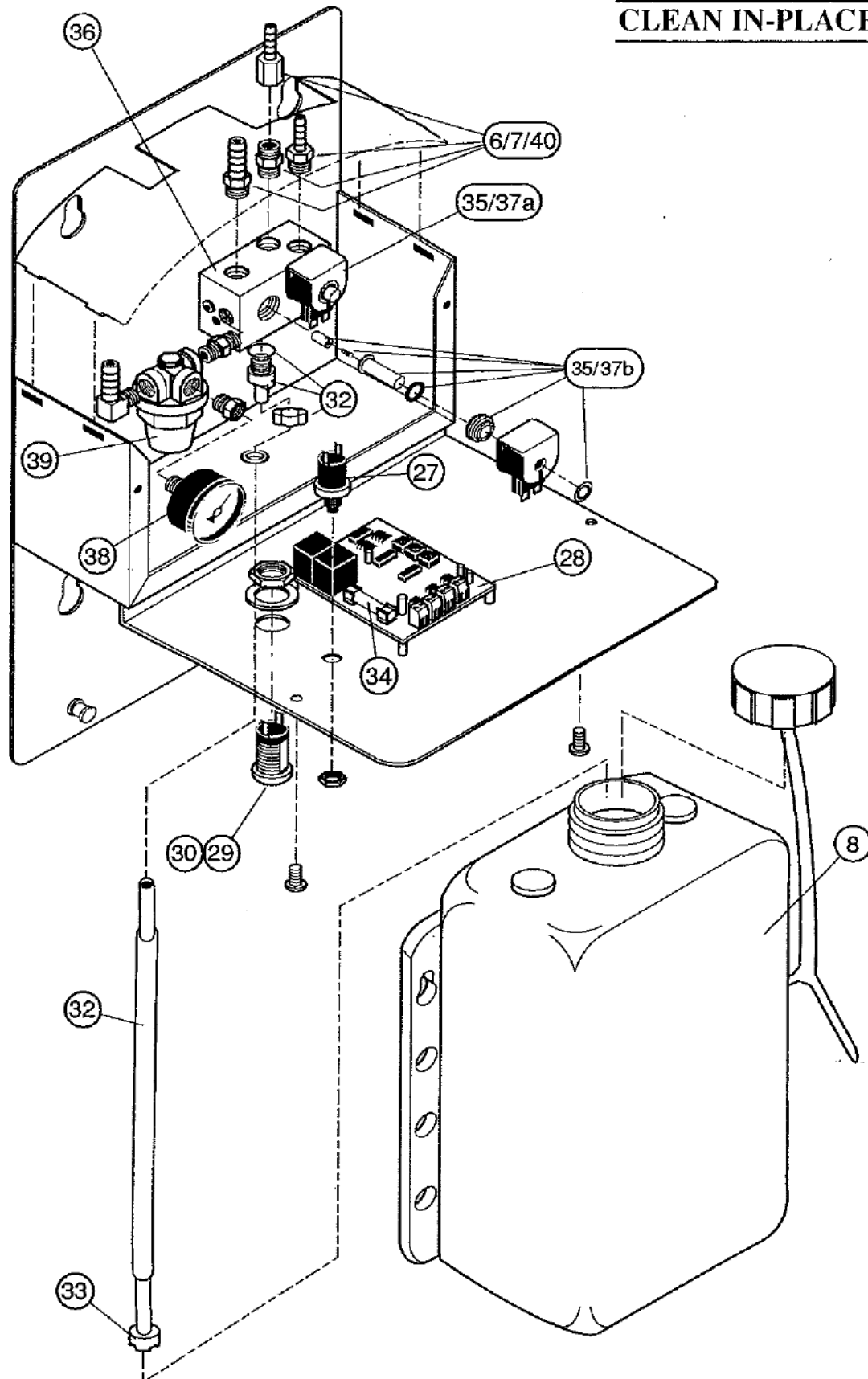
VII INTERBULK SERVICE PARTS

Installation Kit (97-2309-9) (continued)

ITEM NO.	PART NO.	DESCRIPTION	QTY	FUNCTION
1b	38-1884-9	Label: Number "2"	1	Attaches to syrup tank #2.
1c	38-1885-9	Label: Number "3"	1	Attaches to syrup tank #3, if store has a third tank.
	46-1037-9	Cable Tie	10	Secures hose labels to hoses and miscellaneous line attachments.
	46-1340-9	Cable Tie - 12"	40	Miscellaneous line attachments.
	46-1574-6	Cable Tie Holders with adhesive and screw hole (1-1/8" x 1-1/8")	10	Miscellaneous line attachments.
4a	65-1170-6	Female 2-Pin Beverage Coupling with 1/4" barb	1	Coupling for 1/4" vent line.
6a	65-1230-6	Female 2-Pin Beverage Coupling with 3/8" barb	1	Coupling for 3/8" sanitize line from CIP.
3	97-2316-9	Syrup Supply Hose (1/2") with 3/8" SS female quick coupling and rubber dust plug (initial uncut length 20 ft)	2	Connects syrup tanks to ASV inlet and BIB pump system.
3h	65-1228-1	3/8" SS Female Quick Connect Coupling	2	Part of the syrup supply hose which connects to tank's syrup supply/drain fitting.
3i/5b	10527009	O-Ring for interface of 3/8" SS female quick coupling.	2	Seals connection between 3/8" SS quick coupling and syrup supply /drain fitting when engaged.
3j	10527017	90° SS Barbed Elbow, 7/8"-14 UNF x 1/2" barb	2	Joins 3/8" SS quick coupling to 1/2" syrup supply hose.
3k	23-0009-9	O-Ring for 90° SS barbed elbow.	2	Interface seal on threads between SS elbow and 3/8" SS quick coupling.
3q	10526786	Reverse Flow Inhibitor (RFI), SHURflo	2	Prevents cross or back flow of syrup through ASV. Two RFI's required per ASV.
2	97-2310-9	Clean-in-Place Panel (CIP)	1	Cleans syrup tanks between refills.

VII INTERBULK SERVICE PARTS

CLEAN IN-PLACE PANEL



VII INTERBULK SERVICE PARTS

Clean In Place Panel (97-2310-9)

ITEM NO.	PART NO.	DESCRIPTION	QTY	FUNCTION
8	10526954	Sanitation Solution Container	1	Holds sanitizer solution used to sanitize bulk syrup tanks.
27	46-1422-R	Manual CO ₂ Purge Button	1	Activates the manual (non-automatic) purge process to flush any remaining sanitizer from syrup tank.
29	46-1390-R	Key Switch Assembly	1	Turns power ON and OFF.
30	46-1391-R	Key	2	Operates the key switch assembly.
32	10526962	Sanitizer Inlet Tube Kit with clamp, barbed connector, tubing, o-ring, and check ball	1	Permits siphoning of sanitizer into the CIP.
33	10527025	Sanitizing Strainer	1	Eliminates particles from CIP.
28	10526938	Circuit Board with timer light and electrical fuse	1	Controls the timing and operation of the CIP.
35/37 a	10526946	Electric Solenoid Coil with clip	2	Activates the solenoid valves for water and CO ₂ .
35/37 b	10526920	Solenoid Valve Kit with hex spanner nut, clip, retaining nut, o-ring, stem tube, spring and plunger	2	Controls the flow of water or CO ₂ used in sanitizing process.
36	10526911	Manifold Block Kit with mounting screws, syphon needle, 2 valves, 3 barbs, extension, and regulator nipple	1	Routes water, sanitizer solution and CO ₂ during sanitizing.
38	10526903	Water Pressure Gauge, 0-60 psi, Kit with mounting bushing	1	Indicates inlet water pressure.
39	10526891	Water Pressure Regulator Kit with mounting nipple and barbed elbow	1	Regulates incoming water pressure.
6/7 /40	10526882	Barbed Connector Kit with (1) 3/8" and (2) 1/4" barbs and (1) nipple extension	1	Connects CO ₂ supply line and two sanitizer lines to manifold block.
34	46-1506-9	Electrical Fuse, 5 AMP	1	Protects electrical circuit. Supplied with circuit board (10526938).
35/37 c	10526874	Hex Spanner Nut.		Tool needed to remove or install solenoid valves. (Also supplied as part of solenoid valve kit, part no. 10526920.)
39 a	10526866	Rebuild Kit for water regulator		Internal replacement parts for water regulator.

INTERBULK SERVICE PARTS VII

Optional and Special Installation Parts

ITEM NO.	PART NO.	DESCRIPTION	QTY	FUNCTION
		Syrup Delivery Hose Union, SS, 3/4" male x 3/4" male with displacement bars		Joins two (2) syrup delivery hoses together for extended distance deliveries.
3L		Emergency Syrup Jumper Hose (ESJH) Kit with quick coupler nipple, hose splicer, 3-pin coupling, 3/8" hose clamps, and depressurizer vent		Connects emergency syrup supply from BIB or 5 Gal into InterBulk syrup supply hose (SSH) coupling.
3m		ESJH 3/8" Q.C. Nipple without poppet and with displace bar		Part of ESJH which connects into SSH coupler.
3n		Barbed Hose Splicer, SS, 3/8" x 3/8"		Part of ESJH kit used to join pieces of 3/8" clear beverage tubing.
3o		Female 3-Pin Coupling with 3/8" barb		Part of ESJH kit used to connect liquid withdrawal fitting on 5 Gal.
3p		Depressurizer, Vent, Coca-Cola, 5 Gal		Part of ESJH kit used to allow air into 5 Gal as syrup is withdrawn.
3r	16-1168-1	Barbed Tee, SS, 3/8" x 1/2" x 3/8"		Joins 1/2" and 3/8" clear tubing between ASV and 2 BIB pumps only.
40b	11-1157-2	Tee, 1/4" F Fl swivel x 1/4" M Fl x 1/4" M flare		Connects into CO ₂ line on some beverage machines at pressure sensor switch. Use with flared hose barb and swivel nut for CO ₂ supply line.

VII INTERBULK SERVICE PARTS

Clean In Place Panel (97-2310-9)

ITEM NO.	PART NO.	DESCRIPTION	QTY	FUNCTION
40c	10-1406-2	Tee, 3/8" ID compression x 1/4" MPT x 1/4" M flare		Connects into CO ₂ line on some beverage machines at back of A-B switch-over valve. Use with flared hose barb and swivel nut for CO ₂ supply line.
40d	16-1148-1	Flared Hose Barb, S 1/4" x F Fl, S		Used with swivel nut and tee to connect CO ₂ line into beverage machine.
40e	16-1147-1	Swivel Nut, 1/4" F Fl, SS		Used with flared hose barb and tee to connect CO ₂ line into beverage machine.
41d	10528327	Tee, 3/4" compression x 3/4" MPT x 3/4" compression, brass		Connects into 3/4" OD water line in some beverage machines for water supply line to CIP. Use with reducer adapter and hose barb with pipe thread.
41e	10528335	Reducer Adapter, 3/4" FPT x 1/2" MPT, brass		Used with tee and hose barb to connect water supply line.
41f	10528343	3/8" Hose Barb with 1/2" FPT		Used with tee and reducer adapter to connect water supply line.

INTERBULK SERVICE PARTS VII

InterBulk Label Kit (Part number dependent upon language)

ITEM NO.	PART NO.	DESCRIPTION	QTY	FUNCTION
31		Label for InterBulk CIP	1	Identifies CIP parts and basic procedures.
1d		Notice Label for InterBulk tanks	2	Contains operational notices.
1e		Sanitize/Vent Label for tank sanitize/vent fitting	2	Identifies sanitize/vent fitting.
1f		Syrup Fill Label for tank syrup fill/sanitize fitting	2	Identifies syrup fill/sanitize fitting.
1g		Syrup Supply/Drain Label for tank syrup supply/drain fitting	2	Identifies syrup supply/drain fitting and special notices.
3s		Syrup Supply Label for hoses	2	Identifies syrup supply hoses.
6/7		Sanitize Tank Label for sanitize lines	2	Identifies sanitizing lines.
4b		Vent Tank Label for vent line	1	Identifies vent line.
5e		Drain Tank Label for drain line	1	Identifies drain line.

InterBulk Label Kit – English (97-2325-9)

ITEM NO.	PART NO.	DESCRIPTION	QTY	FUNCTION
31	10469945	Label for InterBulk CIP	1	Identifies CIP parts and basic procedures.
1d	38-3536-9	Notice Label for InterBulk tanks	2	Contains operational notices.
1e	38-3587-9	Sanitize/Vent Label for tank sanitize/vent fitting	2	Identifies sanitize/vent fitting.
1f	38-3592-9	Syrup Fill Label for tank syrup fill/sanitize fitting	2	Identifies syrup fill/sanitize fitting.
1g	38-3590-9	Syrup Supply/Drain Label for tank syrup supply/drain fitting	2	Identifies syrup supply/ drain fitting and special notices.
3s	38-1835-9	Syrup Supply Label for hoses	2	Identifies syrup supply hoses.
6/7	38-1831-9	Sanitize Tank Label for sanitize lines	2	Identifies sanitizing lines.
4b	38-1833-9	Vent Tank Label for vent line	1	Identifies vent line.
5e	38-1834-9	Drain Tank Label for drain line	1	Identifies drain line.

VIII TROUBLESHOOTING

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TROUBLESHOOTING VIII

PROBLEM: NO SYRUP TO ANY OF THE COCA-COLA DISPENSING VALVES

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Syrup tanks empty.	No syrup visible in liquid level gauges of any syrup tanks.	Order syrup and refill tanks.
		Switch to an emergency syrup supply.
Syrup supply hose(s) not connected to tank with syrup.	Tank(s) contain syrup, ASV indicator pointing to tank with syrup, and SSH coupler not connected or loose.	Firmly connect syrup supply hose coupler(s) to supply/drain fitting on partial or full tanks.
No CO ₂ or compressed air to BIB pumps.	No gas pressure to BIB pumps	Open gas isolation/shutoff valve to pumps.
		Change CO ₂ cylinder or switch to back-up CO ₂ cylinder.
		Check for empty CO ₂ cylinders, faulty air compressor, faulty pressure regulator, leaking air lines, or loose connections.
Syrup supply hose bent, obstructed, or compressed.	Syrup unable to flow through hose.	Straighten hose or remove obstruction or object compressing the hose.
Automatic Selector valve (ASV) will not switch from empty tank to full tank.	One tank connected to ASV is empty, second tank is full and ASV indicator points at empty tank even when BIB pumps operate.	NOTE: Never attempt to switch the automatic selector valve (ASV) by pushing or applying pressure to the indicator arrow.
		NOTE: ASV will not switch until BIB pump(s) start pumping.
		Reset ASV by releasing excess vacuum in the syrup supply hoses by removing each SSH from tanks and briefly depressing the poppet in the inside center of the coupler with a flat dull object, eg. finger tip. Be careful not to damage the o-ring on the poppet inside the coupler. Reconnect SSH to tank with syrup while leaving SSH to empty tank disconnected. Draw 2 or more Coke drinks at the dispensing valves to cause ASV to switch over to full tank.

(Continued on next page.)

VIII TROUBLESHOOTING

PROBLEM: NO SYRUP TO ANY OF THE COCA-COLA DISPENSING VALVES (Continued)

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Automatic Selector valve (ASV) will not switch from empty tank to full tank. (continued)	One tank connected to ASV is empty, second tank is full and ASV indicator points at empty tank even when BIB pumps operate. (continued)	Check to ensure shut-off device ball is not being held closed. Briefly depress the poppet in supply/drain fitting to see if syrup flows freely as it should.
		Check to ensure no causes of excessively high vacuum exist in the system from the tank to BIB pumps.
		If ASV will not switch over to full tank and air appears in SSH or between ASV and BIB pumps, then see next problem about air in syrup lines.
		Replace faulty ASV.
Shut-off device ball held closed by residual vacuum or is stuck.	Tank contains syrup (probably full), ASV indicator points to full tank, and if SSH is disconnected and poppet in supply/drain fitting is depressed then syrup does not flow freely.	<ol style="list-style-type: none"> 1. Disconnect the syrup supply hose from the full tank. 2. Take the drain line and hold the open end (end without coupler) of the drain line above the top of the tank. 3. Connect the drain line coupler for 2-3 seconds to the tank's supply/drain fitting to release the vacuum and refloat the ball. 4. Carefully disconnect the drain line and drain any syrup which has entered the line into the drain or sink. 5. Reconnect the syrup supply hose to the tank.
		NOTE: This problem can be avoided by connecting the syrup supply hose to the tank only after the syrup tank has been refilled.
		Transfer syrup to clean tank, remove shut-off device adapter, inspect ball and gasket for damage or defects which cause the ball to be held in the closed position, and replace parts as needed.

TROUBLESHOOTING VIII

PROBLEM: NO SYRUP TO ANY OF THE COCA-COLA DISPENSING VALVES (Continued)

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Vacuum developed in syrup tank as syrup was withdrawn	ASV indicator arrow points to partially full tank, syrup supply hose is connected, and air can be heard entering the tank if the relief valve is opened.	<ol style="list-style-type: none"> 1. Lift the handle on relief valve until pressure equalizes. 2. Remove air intake filter/check valve assembly. 3. Inspect filter and replace if dirty or congested. See service procedures. 4. Shake check valve while listening for a rattling sound, if no sound is heard, rinse check valve in clean warm water until shaking produces a rattling sound and then shake check valve dry. See service procedures. 5. Reassemble air intake filter and check valve and reattach to tank.
		Replace filter and/or check valve if required. See service procedures.
BIB pump(s) are inoperative.	Pumps fail to operate properly.	Follow troubleshooting procedures supplied by manufacturer.
		Replace BIB pump(s) as needed.
Beverage system inoperative.	Component(s) in beverage system fail to operate properly.	Follow troubleshooting procedures supplied by manufacturer(s).
		Repair or replace as appropriate.

VIII TROUBLESHOOTING

PROBLEM: BIB PUMPS ARE PUMPING AIR INTO BEVERAGE LINES

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
<p>Shut-off device did not close or seal when tank went empty.</p>	<p>ASV indicator arrow points to empty tank, syrup supply hose is full of air, and BIB pumps may be pumping rapidly.</p>	<ol style="list-style-type: none"> 1. Disconnect syrup supply hose from empty tank (ASV should switch to full tank when pumps are activated). 2. Inspect shut-off device on tank for defect or damage preventing ball from sealing against gasket. See service procedures.
		<p>If disconnecting SSH fails to cause ASV to switch, then crimp the syrup supply hose to force ASV switch over.</p>
		<p>Check plumb of tank to ensure tank is standing vertically and adjust if needed.</p>
		<p>Replace gasket and/or ball, if needed. See service procedures.</p>
<p>Air leak in syrup supply hose, ASV, BIB pumps, or their couplers, lines, connections or joints.</p>	<p>ASV indicator points to tank which probably contains syrup, may be evidence of a syrup leak, and air enters syrup hoses downstream of tank</p>	<p>Inspect InterBulk system from tanks to BIB pumps for leaks, loose connections, defective o-rings, or breaks.</p>
		<p>Switch to another tank of syrup or to the other syrup supply hose.</p>
		<p>Repair or replace appropriate component(s). See service procedures for InterBulk components.</p>

TROUBLESHOOTING VIII

PROBLEM: AIR OR NO SYRUP COMING FROM SOME, BUT NOT ALL, DISPENSING VALVES

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Leak in beverage system downstream of SS cross between ASV and BIB pumps.	Air entering only one or two syrup lines, but not all the lines. (If leak is upstream of ASV, all valves will be affected.)	Check for air leaks between the SS cross above the ASV and the affected dispensing valves. Repair or replace faulty parts as needed.
Obstruction or fault preventing syrup flow between BIB pumps and affected dispensing valves.	Inability to dispense syrup from only a limited number of dispensing valves. (If cause is upstream of BIB pumps all valves will be affected.)	Check for cause between affected dispensing valve(s) and BIB pumps. Repair or replace parts as needed.

PROBLEM: SYRUP LEAKING FROM TANK SUPPLY/DRAIN FITTING

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Poppet in supply/drain fitting is stuck partially open.	Syrup supply hose is not connected, tank contains syrup, and syrup leaks from fitting. Tank and components may contain a build up of syrup residue.	Connect and disconnect syrup supply hose coupler to clear the poppet.
		If the leak is substantial and cannot be stopped, connect a syrup supply hose and use syrup until tank is empty.
		When tank is empty, sanitize 1 or more times to eliminate syrup residue that may have stuck fitting open if tank was not sanitized regularly.
		When tank is empty remove 3/8" quick connect nipple and repair or replace as appropriate. See service procedures.
Poppet is stuck open by foreign object. (Continued on next page)	Foreign object may be visible protruding from or within fitting.	Attempt to remove the object by depressing the poppet with finger and gently pulling out the object.
		If the leak is substantial and cannot be stopped, connect a syrup supply hose and use syrup until tank is empty.

VIII TROUBLESHOOTING

PROBLEM: SYRUP LEAKING FROM TANK SUPPLY/DRAIN FITTING (Continued)

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Poppet is stuck open by foreign object. (Continued)	Foreign object may be visible protruding from or within fitting.	<p>When tank is empty remove the 3/8" quick connect nipple and carefully remove the foreign object. Visually inspect the nipple, poppet, and poppet o-ring for signs of damage. See service procedures.</p> <p>NOTE: the nipple can only be disassembled and reassembled by the manufacturer.</p>
O-ring seal between supply/ drain fitting and syrup supply hose is faulty.	Syrup leaks from joint between fitting and SSH and interface o-ring inside SSH quick coupler may be missing, twisted, or damaged.	If nipple or its components show any signs of damage or deformation, then replace the nipple. See service procedures.
		If interface o-ring is missing, replace it with manufacturer's specified part and ensure o-ring is properly seated in its groove and not twisted or cut. See service procedures.
		If o-ring is present, replace if damaged, cut, or deformed or untwist and/or reposition in its groove as appropriate. See service procedures.
Supply/drain fitting and/or shut-off adapter are loose.	Leakage is evident around the supply/drain fitting and/or shut-off device and parts may feel loose.	Tighten fitting and shut-off device. (Excessive force is not needed as seals are made with o-rings.)
		When tank is empty, examine o-rings, gasket, and threads for evidence of defects or wear and replace as appropriate. See service procedures.

TROUBLESHOOTING VIII

PROBLEM: SYRUP TANK FILLS SLOWLY OR NOT AT ALL DURING SYRUP DELIVERY

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Vent line not properly connected to receiving tank.	Flow of syrup gradually slows down and air begins to vent from relief valve.	Firmly connect female 2-pin tank vent line connector to sanitize/vent fitting on syrup tank.
Syrup delivery hose not properly connected to syrup tank.	Syrup delivery hose coupler is loose and syrup may be leaking.	Firmly connect delivery hose coupler to syrup fill/sanitize fitting on syrup tank.
Syrup delivery hose bent, crimped or compressed.	Delivery hose is bent sharply or being crushed.	Straighten hose or remove the obstruction.
Syrup delivery system or delivery hose are not properly connected or are inoperative.	Syrup is not exiting the delivery tank as fast as usual.	Notify delivery driver.

PROBLEM: SYRUP OR SANITIZER COMING FROM VENT LINE DURING SYRUP DELIVERY

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Tank being filled contained syrup when filling began (more than 15 liters).	Tank was not empty prior to syrup delivery and syrup is coming from the vent line.	<ol style="list-style-type: none"> 1. Immediately disconnect syrup delivery hose from tank. 2. Deliver remaining syrup into another sanitized empty tank, if available. 3. Notify distribution center so syrup can be tested if there is any concern about contamination of the syrup by sanitizer solution or water.
		Fill only sanitized and empty tanks.
Tank being filled contains sanitizer solution.	Tank was not properly drained after sanitizing, syrup coming from vent line, and beverages made with contaminated syrup may have a "metallic" taste.	<ol style="list-style-type: none"> 1. Immediately disconnect syrup delivery hose from tank. 2. Deliver remaining syrup into another sanitized empty tank, if available. 3. Notify distribution center so syrup can be tested for contamination. 4. Do NOT use contaminated syrup.
		Fill only sanitized and empty tanks. Ensure tank is drained and purged before disconnecting drain line during sanitize mode.

VIII TROUBLESHOOTING

PROBLEM: SYRUP SUPPLY HOSE OR DRAIN LINE COUPLER WILL NOT CONNECT PROPERLY

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Collar of coupler is clogged with syrup.	Collar contains syrup residue and collar does not move easily.	Soak coupler in clean warm water to wash off syrup residue and test to ensure collar moves freely.
Collar, coupler, or tank fitting is damaged.	Signs of damage, such as: deformed collar, missing ball bearings on coupler, or dents.	Inspect all related components for evidence of damage, replace or repair affected parts, and replace any interface or thread o-rings. See service procedures.

PROBLEM: AUTOMATIC SELECTOR VALVE (ASV) SWITCHES BEFORE TANK IS EMPTY

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Irregular vacuum surge due to flow or obstruction	No other obvious problems or history of premature switch over and possible high level of beverage use for brief period.	<ol style="list-style-type: none"> 1. Disconnect syrup supply hose from tank currently supplying syrup. 2. Draw one or more drinks from dispensing valve at tower so ASV will switch. 3. Reconnect syrup supply hose to tank. 4. Inspect for other possible causes.
Faulty automatic selector valve (ASV)	No evidence of excess pressure drop in system, shut-off device works properly, and no recent surge in syrup use.	<p>Follow troubleshooting procedures supplied by manufacturer.</p> <p>Repair or replace ASV.</p>
Excess pressure drop (vacuum) in the BIB system.	Syrup supply hose and lines too long or small diameter, too many bends, ASV and/or pumps located too high, etc.	To correct this chronic problem the layout and installation of the InterBulk system from the tanks to the BIB pumps will have to be evaluated and reinstalled in accordance with the installation guidelines contained in Installation Manual.

TROUBLESHOOTING VIII

PROBLEM: TANKS APPEAR TO GAIN OR LOSE SYRUP INAPPROPRIATELY

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Cross-flow or back-flow occurring through SSHs and ASV	SSHs connected to tanks after sanitize and before syrup delivery and syrup seems to go from tank with more syrup to tank with less syrup. No RFIs installed prior to ASV or installed backwards.	<p>Temporary/partial solutions:</p> <ol style="list-style-type: none"> 1. Leave SSH disconnected from empty tank until it is refilled. 2. Switch ASV back to tank with least syrup to use it up first. 3. Raise ASV to level of 300 liter mark on tank. <p>Install SHURflo reverse flow inhibitors (RFI) on both SSHs just prior to the ASV inlet ports.</p>
Syrup or something else is being added to the tank contents.	Tank closure may show evidence of having been opened and volume changes may not be from most full to least full tank.	<ol style="list-style-type: none"> 1. Advise store management of possible contamination. 2. If liquid being added is not known, then store should contact distribution center to arrange a test for possible contamination.
Water from 1 or more sanitize lines connected to tank and CIP turned ON.	Sanitize line(s) connected to tank and key in ON position.	<ol style="list-style-type: none"> 1. Disconnect sanitizer line(s) from tank. 2. Advise store management of possible contamination. 3. Test syrup for possible contamination.

VIII TROUBLESHOOTING

PROBLEM: TIMER LIGHT AND SOLENOIDS ON CIP FAIL TO OPERATE

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
24 volt transformer is not properly connected.	No electricity at CIP.	<p>Ensure transformer is plugged in and that no wires have been broken or disconnected.</p> <p>Repair or replace defective transformer and/or lines.</p>
Electrical fuse or circuit breaker in store's electrical system has failed.	No electricity to transformer.	<ol style="list-style-type: none"> 1. Replace fuse or reset circuit breaker in building. 2. Correct electrical problem that caused the fuse or circuit breaker to open. 3. Repeat sanitation mode.
CIP inoperative.	CIP receiving correct electrical current, but electrical functions do not occur when switch is ON.	<p>Check and test following components for operation and replace as needed:</p> <ul style="list-style-type: none"> (a) key switch (b) circuit board fuse (c) all wires and connections (d) manual purge button (e) solenoid coils. <p>If these items operate properly and problem still persists then replace the circuit board. See service procedures.</p>

TROUBLESHOOTING VIII

PROBLEM: SANITIZE CONTAINER CONTAINS MORE THAN 1/2 LITER OF SOLUTION AFTER SANITIZE MODE IS COMPLETED

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Sanitize solution container was over-filled at start of sanitize mode.	Sanitize container accidentally over-filled.	No action required. (In the future fill sanitize solution container only to "fill line" with sanitizer solution.)
Strainer on sanitizer inlet tube is plugged	Holes in strainer are obstructed.	Remove container and clean strainer with warm water and soft brush.
		Replace strainer.
		Ensure McD Sink Pak Sanitizer (HCS) is thoroughly dissolved before starting sanitation cycle.
		Repeat sanitation mode.
Sanitizing Inlet Tube was either bent, damaged, obstructed, or not placed in sanitize solution container.	Tube is bent, crimped or obstructed.	1. Inspect inlet tube for damage or obstructions. 2. If tube is functional, repeat sanitation mode, making sure inlet tube is in the container.
		Replace damaged inlet tube. See service procedures.
Power to CIP was interrupted	Blown fuse or circuit breaker, loss of power, or key turned OFF.	See troubleshooting section above on Timer Light and repeat sanitation mode.
One or both sanitize lines not properly connected to tank.	One or both lines not fully connected to tank.	1. Remove sanitize lines from tank fittings, inspect, and firmly reconnect. 2. Check both connections by giving a light pull on couplers. 3. Repeat sanitation mode.
Sanitize line(s) bent or obstructed.	Evidence of sharp bends, crimping, or compression in line(s).	1. Check lines. 2. Eliminate any obstructions, bends, or crimping. 3. Repeat sanitation mode.
Spray head inside tank damaged or plugged. (Continued on next page)	Evidence of mineral build-up, diffusion plate bent, or liquid or air will not flow through spray head.	1. Remove tank closure from tank and examine spray head. See service procedures. 2. Remove spray head from closure and 2-pin connector, do not lose o-ring gasket and inspect and clean ports. (Continued on next page)

VIII TROUBLESHOOTING

PROBLEM: SANITIZE CONTAINER CONTAINS MORE THAN 1/2 LITER OF SOLUTION AFTER SANITIZE MODE IS COMPLETED (Continued)

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Spray head inside tank damaged or plugged. (continued)	Evidence of mineral build-up, diffusion plate bent, or liquid or air will not flow through spray head. (continued)	<ol style="list-style-type: none"> 3. Reassemble parts, put water into CIP sanitize container, connect sanitize line to 2-pin connector on closure, hold the closure and spray head in a bucket or sink, turn CIP key to ON, observe the spray head pattern, and then clean spray head again or replace if spray pattern is not correct. See service procedures. 4. Reassemble closure into tank.
Timing for rinse/sanitize cycles is too short.	Time of rinse and sanitize cycles is less than 3 minutes 45 seconds each.	<ol style="list-style-type: none"> 1. Repeat steps 1 to 5 of sanitation mode instructions contained in User's Manual. 2. Turn key switch ON and start timing rinse cycle. 3. Stop timing when CO₂ purge begins. 4. If time is less than 3 minutes 45 seconds, adjust water (rinse/sanitize) timer (potentiometer) on CIP circuit board. See service procedures.
Insufficient water flow or pressure to CIP.	Water pressure gauge in CIP reads less than 40 psi when CIP is not operating and/or gauge reads less than 35 psi when CIP is operating in the rinse or sanitize cycles.	<p>Open water isolation/shut-off valve from beverage system.</p> <ol style="list-style-type: none"> 1. Inspect water pressure gauge inside CIP. 2. Insure at least 40 psi (2.8 bars) of water pressure is coming from beverage machine when water is not flowing and at least 35 psi (2.5 bars) when the water is flowing into CIP during rinse and sanitize cycles. See service procedures. <p>Adjust water pressure regulator until water pressure gauge reads 35 psi to 40 psi during rinse/sanitize cycles. See service procedures.</p> <p>If water pressure is still too low, then either increase water supply line size, connect water supply line into a higher pressure source, or install a water pressure boost pump.</p>

TROUBLESHOOTING VIII

PROBLEM: SANITIZE CONTAINER CONTAINS MORE THAN 1/2 LITER OF SOLUTION AFTER SANITIZE MODE IS COMPLETED (continued)

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
CIP inoperative.	All other options have been excluded.	<ol style="list-style-type: none">1. Prepare tank and CIP to perform a test sanitize, open front panel of CIP, and start sanitize mode.2. Check the following:<ol style="list-style-type: none">(a) solenoid valves are opening(b) water is flowing through the regulator(c) sanitizer is being syphoned up the inlet tube(d) syphon control needle valve is not improperly adjusted. See service procedures.3. Adjust or replace components or CIP as needed. See service procedures.

VIII TROUBLESHOOTING

PROBLEM: SANITIZE SOLUTION CONTAINER EMPTIES BEFORE SANITIZE CYCLE ENDS

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Container was not filled to the "fill line."	Insufficient sanitize solution.	Repeat sanitation mode making sure to properly fill the sanitize solution container to "fill line".
Timing for rinse/sanitize cycles is too long.	Time for rinse and sanitize cycles are each longer than 4 minutes 15 seconds.	<ol style="list-style-type: none"> 1. Repeat steps 1 to 5 of sanitation instructions contained in the User's Manual. 2. Turn key switch ON and start timing the rinse cycle. See service procedures. 3. Stop timing when CO₂ purge begins. 4. If time is more than 4 minutes 15 seconds, adjust the water (rinse/sanitize) timer (potentiometer) on the CIP circuit board. See service procedures.
Water flow or inlet pressure is too high.	Water pressure during rinse and sanitize cycles is greater than 40 psi when water is flowing.	<p>If water pressure gauge inside the CIP reads above 40 psi (275 kPa) during rinse/sanitize cycles (when water is flowing), adjust water regulator pressure down to between 35 psi to 40 psi. See service procedures.</p> <p>If pressure into CIP water regulator is above 90 psi then install an additional water regulator upstream of the CIP and lower incoming pressure to about 60 psi (4.14 bars).</p>
Syphon rate of sanitize solution into CIP is too high.	Flow rate of sanitize solution up syphon is too fast.	Adjust the syphon control needle valve located on the CIP manifold block until approximately 200 ml remains in the container at the conclusion of the sanitize mode. See service procedures.

TROUBLESHOOTING VIII

PROBLEM: SANITIZE SOLUTION NOT DRAINING OR PURGING FROM TANK(S)

POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Drain line is not connected to tank during sanitation mode.	Drain line not connected to supply/drain fitting and tank contains about 40 liters of sanitizer solution.	<ol style="list-style-type: none"> 1. Connect drain line to supply/drain fitting on tank. 2. Push manual purge button several times and allow tank to drain/purge until empty. 3. Repeat sanitation mode instructions starting with step 7 as shown in the User's Manual. <p>NOTE: Do not disconnect drain line from tank until tank is thoroughly drained and manually purged.</p>
Relief Valve on tank is open.	Tank relief valve handle is in the UP or OPEN position.	Move relief valve handle to the DOWN or CLOSED position and manually purge the tank.
No CO ₂ for purging.	No pressure in sanitize lines or gas flow sounds during purge or manual purge cycles.	Open CO ₂ isolation/shut-off valve.
		<p>Change CO₂ cylinder or switch to back-up CO₂ cylinder.</p> <ol style="list-style-type: none"> 1. Push manual purge button with sanitize line connected and listen for gas flow. 2. If gas flows properly, then cause is probably in the electric circuit board or the setting on the timer (potentiometer) for the purge cycles. Adjust, repair or replace as necessary. See service procedures. 3. If gas fails to flow properly, cause could be in electronics, timer, or solenoid valve for gas supply. Adjust, repair, or replace as necessary. See service procedures.
Drain line is obstructed.	Line is bent, crimped, compressed, or blocked, perhaps at the drain end.	Clear obstruction.

VIII TROUBLESHOOTING

PROBLEM: SANITIZE SOLUTION NOT DRAINING OR PURGING FROM TANK(S) (Continued)

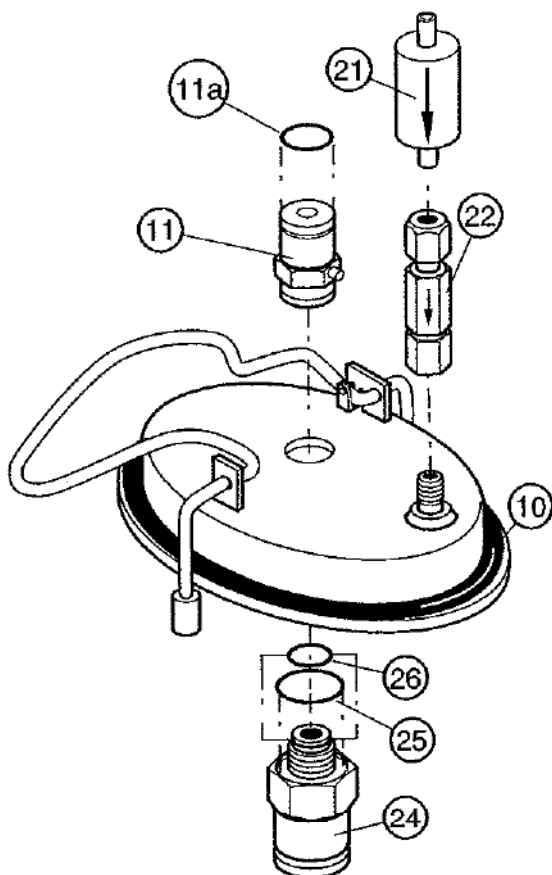
POSSIBLE CAUSE	SYMPTOM	CORRECTIVE ACTION
Air intake check valve is not closing during CO ₂ purge.	Air comes out of the check valve and/or filter when purging.	<ol style="list-style-type: none"> 1. Remove air intake filter/check valve assembly from tank. 2. Inspect filter and replace if dirty or damaged. See service procedures. 3. Shake check valve and listen for a rattling sound. 4. If no rattling is heard, rinse valve (only) in warm water until shaking produces rattling. See service procedures. 5. Shake valve until dry. 6. Reassemble filter and check valve and reattach to tank.
Tank closure is OPEN.	Bail handle on closure is OPEN and/or closure o-ring is missing or not in place.	<p>CLOSE tank closure using bail handle.</p> <p>Replace tank closure o-ring if missing and close tank closure.</p>
Tank shut-off device or supply/drain fitting are obstructed or malfunctioning.	When tank is pressurized and contains sanitizer, no sanitizer flows out when poppet on supply/drain fitting is fully depressed.	<ol style="list-style-type: none"> 1. Carefully remove 3/8" supply/drain fitting and drain tank contents into open container. 2. Inspect fitting for obstruction or damage and repair or replace, parts as needed. See service procedures. 3. If necessary, remove and inspect shut-off adapter for obstructions, defects or damage, and repair or replace as needed. See service procedures.

SERVICE PROCEDURES IX

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IX SERVICE PROCEDURES



REPLACE THE AIR INTAKE FILTER

1. Remove air intake check valve and filter from tank closure.
2. Loosen compression nut on the check valve enough so the filter stem can be pulled out easily.
3. Remove the air intake filter from the check valve.
4. Insert the stem of the new filter into the compression nut with the arrow on the filter pointing towards the check valve. (If the white plastic ferrule [or collar] under the compression nut shifts out of alignment with the hole in the nut, remove the nut, slip the nut over the filter stem, next slip the ferrule onto the filter stem and then thread the nut back onto the check valve.)
5. Tighten the compression nut only enough to hold the filter stem firmly.
6. Replace the check valve and filter back on the tank closure.

INSPECT AND CLEAN THE AIR INTAKE CHECK VALVE

1. Remove the air intake check valve and air intake filter from the tank closure.
2. Follow the procedures outlined for replacing the air intake filter for disassembling and reassembling the filter to the check valve.
3. After the filter is removed place the check valve in clean warm water and agitate the check valve to cause water to flow through the valve ports.
4. Remove the check valve from the water and shake it while listening for the rattling sound of the ball inside.
5. If the ball moves freely, then rinse the check valve in a sanitize solution (50 to 100 ppm chlorine), and shake dry. If the ball does not move freely, then repeat the washing or replace the check valve as needed.
6. Reassemble the filter and reattach the air intake check valve to the tank closure.

TEST THE SANITIZE SPRAY PATTERN

1. Put clean water into the sanitizer solution container; 1 or 2 liters is sufficient.
2. Remove the tank closure from the syrup tank. (Be careful not to drop the tank closure o-ring into the syrup tank when removing the closure.)
3. Connect the 3/8" sanitize line onto the 2-pin connector on the closure.
4. Hold the closure assembly in a sink or large bucket with the spray head facing down.
5. Turn ON the key switch on the CIP.
6. Watch the spray pattern produced by the water as it leaves the spray head. The water spray pattern should:
 - ◆ Cover 360 degrees
 - ◆ Be symmetrical and uniform
 - ◆ Be a gentle spray and
 - ◆ Reach a distance of 11" to 12" (280mm to 305mm).

SERVICE PROCEDURES IX

7. If the sprayer does not have all of the above characteristics, then clean or replace the spray head. Follow the procedure to clean and/or replace the spray head.
8. Turn OFF the key switch.

CLEAN AND/OR REPLACE THE SPRAY HEAD

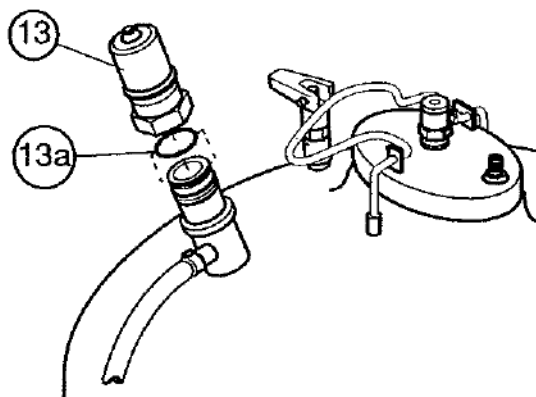
1. Remove the air intake filter and check valve from the tank closure.
2. Remove the tank closure from the syrup tank. (Be careful not to drop the tank closure o-ring into the syrup tank when removing the closure.)
3. Remove the spray head from the closure by unscrewing the spray head and the 2-pin connector. Use a 1" and 13/16" open end wrench.
4. Examine all o-rings and replace if needed.
5. Examine the spray head by looking into the threaded end of the spray head. Look for contamination or mineral deposit build-up especially in the small orifices at the bottom of the spray head.
6. Remove all contamination or replace with a new spray head.
7. Install all o-rings and reassemble spray head, 2-pin connector, and closure.
8. Test spray head by following the procedure to test the sanitizer spray pattern.
9. Reinstall tank closure into syrup tank and replace the filter and check valve.

INSPECT AND/OR REPLACE THE RELIEF VALVE

NOTE: This inspection and test should be done when the tank contains no syrup to avoid accidental contamination.

1. Remove the relief valve by unscrewing it from the tank.
2. Examine the inside of the relief valve for signs of corrosion, syrup residue, swollen or damaged o-ring, or other contamination. Test the relief valve piston to ensure it moves freely.
3. Rinse the relief valve in clean warm water and shake dry.
4. Reattach the relief valve to the tank, making sure the handle is in the DOWN or CLOSED position.

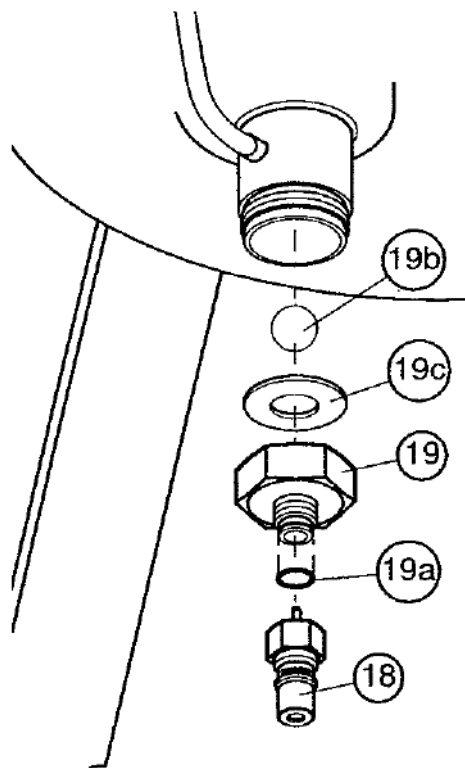
5. Attach the 3/8" sanitize line to the 2-pin connector on the closure.
6. Push the manual purge button on the CIP (do not turn the key switch ON) for 60 to 90 seconds and observe if the relief valve starts to vent. If the relief valve fails to relieve then it should be replaced. (If the check valve does not close then no pressure will build in the tank to activate the relief valve.)
7. Disconnect the 3/8" sanitize line and briefly connect the vent line to fully depressurize the tank.



INSPECT AND/OR REPLACE THE 3/4" FILL/SANITIZE FITTING

1. Remove the dust cap and then the 3/4" SS fill/sanitize fitting by unscrewing it.
2. Examine the exposed threaded nipple welded to the tank and its o-ring for damage to the threads or o-ring. Replace the o-ring if needed.
3. Inspect the outside and inside of the fitting for residual syrup build-up, damage to the interface surface and threads, swollen or defective o-ring on the poppet, or damage or faulty operation of the poppet. If any defects or dysfunctional items are observed the fitting should be replaced. (The fitting, its poppet, and the poppet o-ring cannot be repaired in the field; the fitting must be returned to the original supplier to be rebuilt.)
4. Wash the fitting and dust cap in clean warm water to remove all syrup residue and rinse in a sanitizer.
5. Reattach the fitting to the threaded nipple on the tank and replace the dust cap.

IX SERVICE PROCEDURES



INSPECT AND/OR REPLACE THE 3/8" SUPPLY/DRAIN FITTING

NOTE: The syrup tank must be empty to perform this procedure.

1. Ensure the tank is empty by carefully examining the liquid level gauge.
2. Remove the dust cap.
3. Hold the shut-off device adapter in place with one wrench/spanner while removing the supply/drain fitting by unscrewing it.
4. Examine the threads and o-ring on the adapter for damage or swelling of the o-ring.
5. Inspect the outside and inside of the fitting for residual syrup build-up, damage to the interface surface and threads, swollen or defective o-ring on the poppet, or damage or faulty operation of the poppet. If any defects or dysfunctional items are observed the fitting should be replaced. (The fitting, its poppet, and the poppet o-ring cannot be repaired in the field; the fitting must be returned to the original supplier to be rebuilt.)

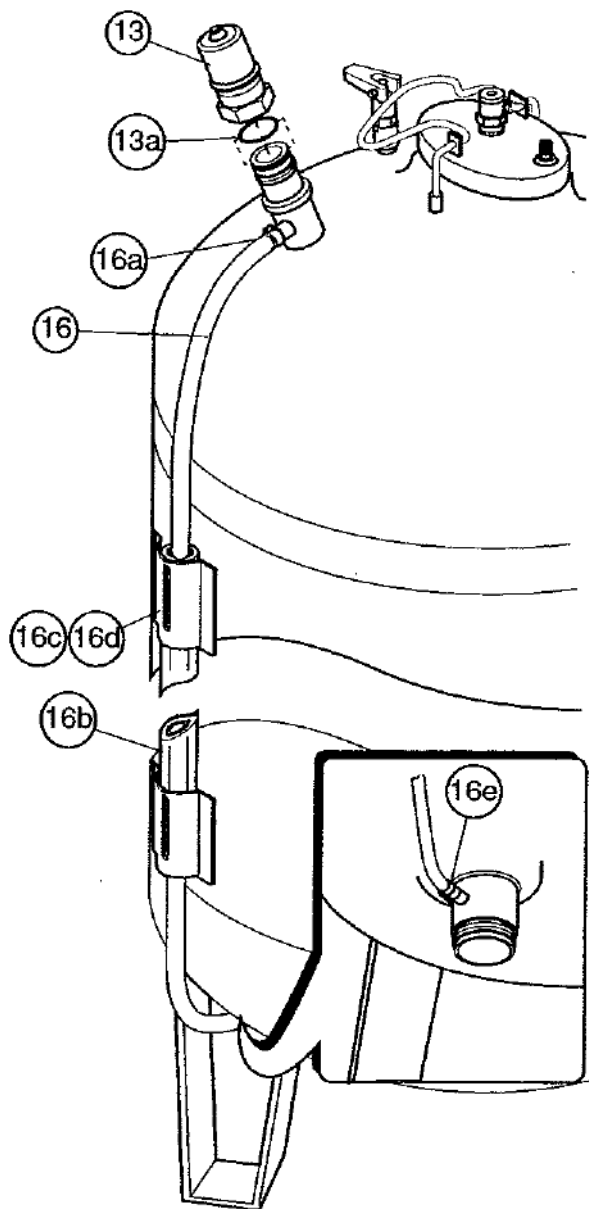
6. Wash the fitting and dust cap in clean warm water to remove all syrup residue and rinse in a sanitizer.
7. Reattach the fitting to the threaded nipple on the shut-off device adapter and replace the dust cap.
8. Pressurize the tank (using the CIP, 3/8" sanitize line and the manual purge button) and check for leaks by bubble testing.

INSPECT AND/OR REPAIR THE SHUT-OFF DEVICE (ADAPTER, BALL & GASKET)

NOTE: The syrup tank must be empty to perform this procedure.

1. Ensure the tank is empty by carefully examining the liquid level gauge and release any pressure by raising the handle on the relief valve.
2. Remove the shut-off device adapter from the tank by unscrewing it, being careful not to damage the 3/8" supply/drain fitting during removal.
3. Examine the ball for any signs of damage, roughness, or being out of round. Replace if needed.
4. With the gasket still in position in the bottom of the adapter, examine the gasket for swelling, shrinking, conical deformation (gasket should be flat), unevenness in the edge of the gasket hole, roughness, cuts, nicks, discoloration, or any other signs that the gasket might not seal effectively with the ball.
5. Remove the gasket and examine both sides for any signs of defects. If the gasket shows any signs of wear or defects, replace it.
6. Wash all three parts (adapter, ball and gasket) in clean warm water to remove any residual syrup and rinse in a sanitizer.
7. Reassemble the three parts starting by placing the gasket in the adapter, then placing the ball on top of the gasket and finally screwing the adapter onto the tank.
8. Pressurize the tank (using the CIP, 3/8" sanitize line and the manual purge button) and check for leaks by bubble testing.

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REPLACE A BROKEN LIQUID LEVEL GAUGE PROTECTOR

NOTE: This procedure should be done when the tank is empty.

1. Ensure the tank is empty by inspecting the liquid level gauge.
2. Use a screwdriver to pry open the locking tabs on the two hose clamps located at the bottom of liquid level tube. If needed, use a pliers to assist in opening the clamps. (The top of the tube is fastened with a ferrule and is more difficult to remove.)

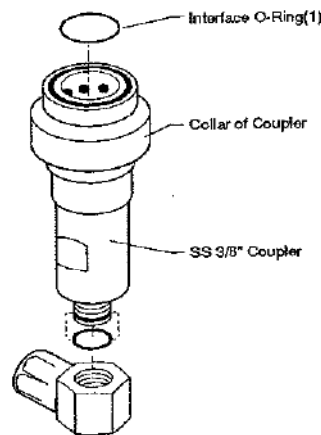
3. Pry the hose off the barb at the bottom of the tank being careful not to damage either the barb or the liquid level tube.
4. Pull the tube out of the old or broken protector and remove the old protector.
5. Pull the tube through the new protector and position the new protector in the brackets.
6. Place two new hose clamps on the end of the tube, reattach the tube to the barb, and tighten the clamps over the tube and barb with a crimping tool.
7. Pressurize the tank and bubble test the tube and barbs for leaks.

REPLACE THE LIQUID LEVEL GAUGE TUBE

NOTE: This procedure should only be done when the tank is empty.

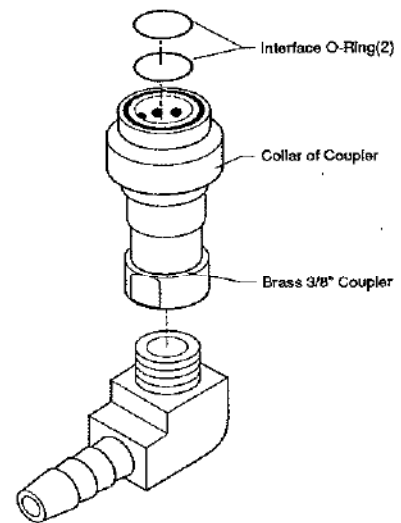
1. Ensure the tank is empty.
2. Open and remove the two hose clamps at the bottom of the tube as described above.
3. Using a screwdriver, pliers, and sharp nose metal cutters, pry the ferrule at the top of the tube loose so the tube can be pried or cut off the top barb. Be very careful not to damage the barb or its weld joint by applying too much force.
4. Either pull the old tube from the protector or replace the protector as may be necessary.
5. Pull the new tube through the protector, place two hose clamps over the bottom end of the tube, reattach the tube to the bottom barb, and crimp the clamps over the tube and barb with a crimping tool.
6. Slip two hose clamps over the top end of the tube, stretch the tube up to the top barb, attach the tube to the top barb, and crimp the clamps over hose and barb.
7. Pressurize the tank and bubble test the hose and barbs for leaks.
8. Sanitize the tank and new liquid level gauge tube.

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INSPECT AND/OR REPLACE THE SYRUP SUPPLY HOSE COUPLER

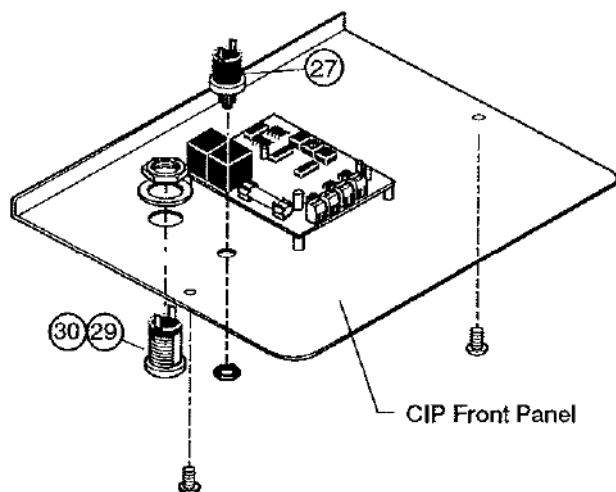
1. Switch to syrup supply hose (SSH) which is not being repaired so syrup is not interrupted.
2. Disconnect SSH coupler from the supply/drain fitting and the SSH from the hose support loop on tank leg.
3. Squeeze off or crimp the SSH to eliminate syrup leakage.
4. Hold the SS 90° barbed elbow firmly with a wrench or spanner while unscrewing the 3/8" SS female quick coupler.
5. Inspect the barbed elbow and its o-ring for damage, swelling, cuts, or other items which might result in leakage around the threads or at the barb. Replace the o-ring or elbow if needed.
6. Inspect the outside and inside of the coupler for residual syrup build-up, damage to the interface surface and threads, missing, swollen or defective o-rings on the interface surface and on the poppet, or damage or faulty operation of the poppet or the outer collar. If any defects or dysfunctional items are observed, except for the interface o-ring, the coupler should be replaced. (The coupler, its poppet, and the poppet o-ring cannot be repaired in the field; the coupler must be returned to the original supplier to be rebuilt. The interface o-ring can be replaced by a service agent.)
7. Wash the coupler and dust plug in clean warm water to remove all syrup residue and then rinse in a sanitizer.
8. Reassemble the dust plug, coupler, elbow, and hose support loop.



INSPECT AND/OR REPLACE THE DRAIN LINE COUPLER

1. Hold the brass barbed elbow on the drain line firmly with a wrench or spanner and unscrew the brass quick coupler.
2. Remove any Teflon tape from the threads and inspect the brass elbow for damage or leakage. Replace the brass elbow if needed.
3. Inspect the outside and inside of the coupler for residual sanitizer or syrup build-up, damage to the interface surface and threads, missing, swollen or defective o-rings on the interface surface and on the poppet, or damage or faulty operation of the poppet or the outer collar. If any defects or dysfunctional items are observed, except for the interface o-ring, the coupler should be replaced. (The coupler, its poppet, and the poppet o-ring cannot be repaired in the field; the coupler must be returned to the original supplier to be rebuilt. The interface o-rings can be replaced by a service agent.)
4. Wash the coupler and dust plug in clean warm water to remove all residue and dirt and then rinse in a sanitizer.
5. Reassemble the dust plug, coupler, and elbow, using Teflon tape to seal the threaded joint between the coupler and the elbow.

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REPLACE THE KEY SWITCH ASSEMBLY ON THE CLEAN-IN-PLACE PANEL (CIP)

NOTE: Electrical power, CO₂ and water supplies to the CIP should be shut OFF before this procedure is performed.

1. Shut off the CO₂ supply line and water supply lines to the CIP and either turn off or disconnect the electrical power to the CIP.
2. Open the front of the CIP cabinet by removing the screws in the front panel.
3. Before disconnecting the wires from the switch, note the location of the electrical wires and the key switch terminals. Disconnect the wires to the terminals on the back of the key switch with a screwdriver. Be careful not to misplace the screws and lock washers.
4. Loosen and remove the key switch retaining nut on the back side of the switch.
5. Pull the switch out the front of the panel, being careful not to disturb the circuit board or purge button.
6. Insert the new key switch through the front of the panel, being sure to position the switch right side up when the panel is closed.
7. Reconnect the retaining nut and tighten and reattach the electrical wires to the correct terminals.
8. Close the CIP cabinet and secure with the screws.

9. Turn on the electrical power to the CIP and then turn on the key switch while observing the timer light to verify the switch and CIP are operating.

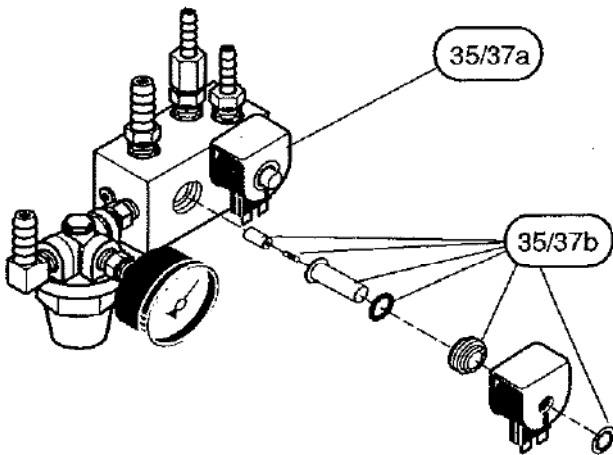
10. Open the CO₂ and water supply lines to the CIP.

REPLACE THE MANUAL PURGE BUTTON IN THE CIP

NOTE: Electrical power, CO₂ and water supplies to the CIP should be shut OFF before this procedure is performed.

1. Shut off the CO₂ supply line and water supply lines to the CIP and either turn off or disconnect the electrical power to the CIP.
2. Open the front of the CIP cabinet by removing the screws in the front panel.
3. Disconnect the electrical wires from the terminals on the back of the purge button by using a soldering iron to soften the solder. Be careful not to damage the wires, circuit board, or key switch with the hot soldering iron or solder. Note the location of wires and terminals.
4. Loosen and remove the purge button retaining nut from the front of the button and pull the button out the back of the panel.
5. Insert the new button and replace and tighten the retaining nut.
6. Reconnect the wires to the button terminals using 60-40 rosin core solder.
7. Close and secure the CIP front panel using the screws.
8. Turn on the electrical power to the CIP.
9. Test the new manual purge button by pressing the button several times and listening for the clicking sound as the solenoid valve opens and closes.
10. Open the CO₂ and water supply lines to the CIP.

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REPLACE THE SOLENOID COIL

NOTE: Electrical power to the CIP should be shut OFF before this procedure is performed.

1. Turn OFF or disconnect the electrical power to the CIP.
2. Open the front panel of the CIP by removing the two screws.
3. Disconnect the two electrical wires from the terminals on the old coil.
4. Use a small screwdriver and carefully pry the retaining clip off the solenoid valve stem tube.
5. Remove the old coil and replace it with the new coil.
6. Replace the coil retaining clip.
7. Reconnect the two wire leads to the terminals on the new coil.
8. Close the front panel of the CIP and secure with the screws.
9. Turn ON or reconnect the electrical power to the CIP and test the solenoid and coil operation.

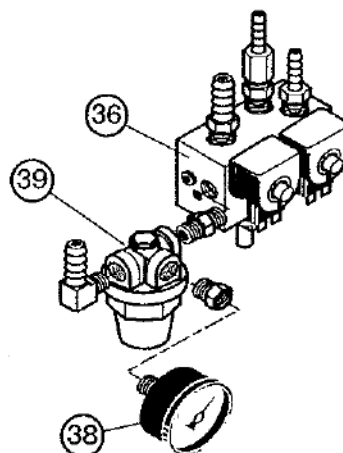
REPLACE THE SOLENOID VALVE

NOTE: Electrical power, water, and CO₂ should be shut OFF during a major portion of this procedure.

1. Turn OFF the water supply to the CIP.
2. Ensure the key switch is in the OFF position and then purge the manifold block and both sanitize lines of any liquid.
 - a. Either connect both sanitize lines to an empty unsanitized tank (if the tank is already sanitized it should be sanitized after completion of this procedure) or have several people hold the sanitize line quick couplers over a sink, drain, or bucket with the poppets held open.
 - b. Press the manual CO₂ purge button for 5 to 10 seconds to purge out any liquid. (Individuals holding the couplers with the poppets open can expect to get wet!)
3. Turn OFF the CO₂ supply to the CIP.
4. Press the manual purge button for 5 to 10 seconds to relieve pressure. (The sanitize lines must still be connected to the tank or at least one sanitize line coupler poppet must be OPEN.)
5. Open the front panel of the CIP by removing the screws.
6. Turn the key switch ON and OFF several times until the water pressure gauge reads 0 psi.
7. Turn OFF or disconnect the electrical power to the CIP.
8. Use a small screwdriver and carefully pry off the solenoid coil retaining clip from the solenoid valve stem tube.
9. Remove the coil from the stem tube, leaving the electrical wire attached.
10. Slide the hex spanner nut onto the stem tube with the teeth pointing towards the manifold block until the teeth engage the slots on the solenoid retaining nut.
11. Place a wrench or spanner onto the hex spanner nut and then loosen and remove the solenoid retaining nut.

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12. Remove the solenoid valve components from the cavity in the manifold block.
13. Inspect the cavity to ensure that it is empty and clean.
14. Insert the new solenoid valve assembly into the cavity.
15. Replace and tighten the retaining nut using the hex spanner nut. Tighten the retaining nut to hand tight plus 1/4 turn.
16. Replace the coil on the stem tube and secure it with the coil retaining clip.
17. Turn ON or reconnect the electrical power to the CIP.
18. Turn the key switch ON and OFF several times to test the operation of the solenoid valve.
19. Turn ON the water and CO₂ supplies to the CIP.
20. Turn ON the key switch and inspect the area around the solenoid for water or gas leaks, depending upon which valve is replaced.
21. Close the CIP panel and secure with the screws.
22. Disconnect the sanitize lines or perform a sanitize procedure on the empty tank, if appropriate or needed.

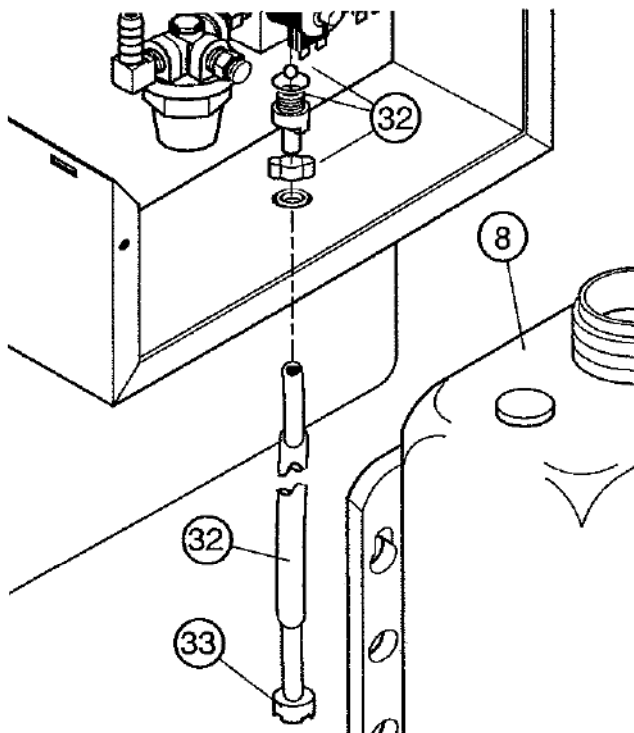


REPLACE THE WATER REGULATOR IN THE CIP

1. Turn OFF water supply to the CIP.
2. Open the front panel of the CIP by removing the 2 access screws and remove the top curved panel.
3. Turn the key switch "ON" and "OFF" several times until the pressure gauge reads 0 psi.
4. Remove water pressure gauge and pipe bushing from the water regulator by unscrewing them.
5. Remove CIP panel from the wall. (This must be done to gain access to the manifold block mounting screws at the back of the CIP cabinet.)
6. Remove the 4 manifold block mounting screws with a 1/8" hex key wrench.
7. Use a 9/16" open end wrench to loosen the pipe nipple between the water regulator and the manifold block. Unscrew the nipple from the manifold block and remove the nipple and water regulator.
8. Clean out any contaminants from the threads and water port of the manifold block.
9. Screw the new water regulator and pipe nipple into the manifold block.
10. Tighten pipe nipple hand tight plus 2 full turns.
11. Orient the water regulator so pressure gauge port faces towards the front of the CIP cabinet.
12. Clean the old Teflon tape off of the pipe bushing attached to pressure gauge.

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13. Apply new Teflon tape to the pipe bushing, 1-1/2 to 2 wraps.
14. Screw the pipe bushing into the water regulator.
15. Tighten pipe bushing hand tight plus 2 full turns.
16. Reattach the manifold block to the CIP cabinet using the 4 mounting screws.
17. Check for adequate clearance between pressure gauge and the CIP circuit board. A minimum of 3/32" (2 mm to 3 mm) is required between the gauge and board when the CIP front panel is closed.
18. Replace the top curved panel, close the front panel of the CIP and install the 2 access screws.
19. Turn ON the water supply to the CIP.
20. Check the water pressure on the pressure gauge. If the water pressure is not 40 psi then follow the procedure to adjust the water regulator pressure.



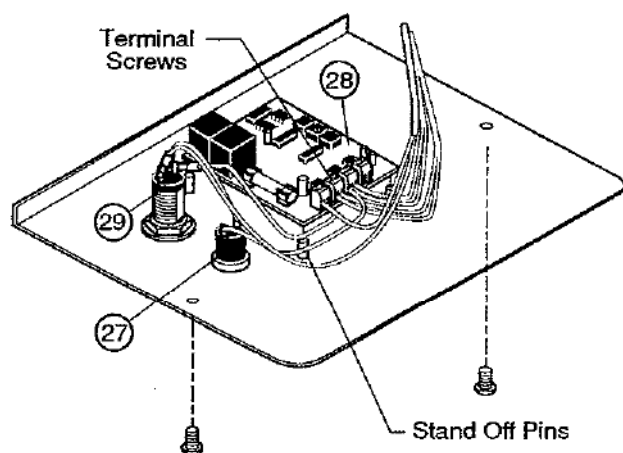
REPLACE THE SYPHON INLET TUBE

NOTE: Electrical power, CO₂ and water supplies to the CIP should be shut OFF before this procedure is performed.

1. Shut off the CO₂ and water supplies to the CIP and either turn off or disconnect the electrical power to the CIP.
2. Remove the sanitizer solution container from the CIP.
3. Open the front panel of the CIP by removing the 2 access screws.
4. Cut the flexible portion of the syphon inlet tube. The cut should be made inside the CIP and at a point on the tube close to the barb fitting that attaches the tube to the manifold block.
5. Pull the flexible hose through the grommet located at the bottom of the CIP cabinet.
6. Using a 1/2" open end wrench, unscrew the syphon tube barb fitting from the manifold block. A 5/32" diameter ball and an o-ring should either fall out or be removed from the cavity in the manifold block after the barbed fitting is removed.
7. Set aside all of the used parts. They are not to be reused.
8. Install the new o-ring supplied in the kit into the o-ring groove located on the new syphon tube barb fitting.
9. Place the new 5/32" diameter ball into the end of the syphon tube barb fitting.
10. Screw the syphon tube barb fitting into the manifold until it is hand tight plus 1/2 turn. (Install the ball and fitting from the bottom side of the manifold to prevent the ball from falling out during installation.)
11. Run the flexible sanitize hose through the rigid plastic pipe and then through the grommet in the bottom of the CIP cabinet.
12. Slide the 2-eared circle clamp over the end of the flexible inlet tube after it passes through the grommet.
13. Press the flexible inlet tube onto the syphon tube barb fitting.
14. Slide the hose clamp up until it is over the barb on the barb fitting.

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15. Crimp the hose clamp at each tab (2 places). After the first crimp, rotate the hose clamp 180 degrees in order to get to the second tab.
16. Close the front panel of the CIP and install the two access screws.
17. Reinstall the sanitizer solution container on the CIP.
18. Turn ON the CO₂ and water supplies and reconnect or turn ON the electrical power to the CIP.



REPLACE THE CIP CIRCUIT BOARD

NOTE: Electrical power to the CIP should be shut OFF before performing this procedure.

1. Turn off or disconnect electrical power to the CIP.
2. Open the front panel of the CIP by removing the 2 access screws.
3. Locate the 3 terminal blocks on the circuit board.
4. Diagram and mark the location of the seven electrical wire leads and their connection points on the terminal block.

5. Loosen the appropriate terminal screws that grip (hold) the wire leads into the terminal block.
6. Remove the wire leads from the terminal blocks.
7. Carefully pry the corners of the old circuit board up and off the four stand-off pins with your fingers. No tools should be used.
8. Align the new circuit board over the four stand-off pins and firmly press each corner down with your fingers. No tools should be used.
9. Insert the electrical wire leads into the terminal blocks on the new circuit board.
10. Tighten the hold-down screws on the terminal blocks.
11. Close the front panel of the CIP and install the 2 access screws.
12. Turn ON or reconnect the electrical power to the CIP panel.
13. Turn key switch ON and test the operation of the CIP.

VERIFY THE SANITIZE SOLUTION PROPORTIONS

NOTE: This procedure requires the use of an empty bulk syrup tank.

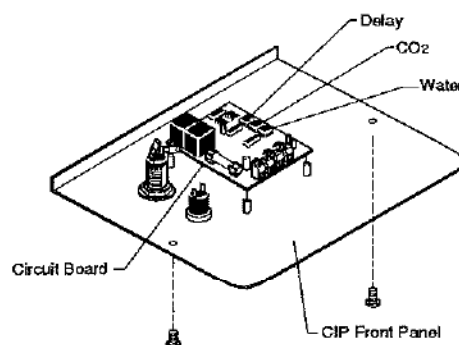
1. Perform a sanitize procedure with the following special changes:
 - a. Do NOT add McD Sink Pak Sanitizer (HCS) when preparing the sanitize solution container.
 - b. Do NOT connect the drain line to the tank.
 - c. Open the handle on the relief valve to allow gas to vent during the purging cycles. (The relief valve handle should be in the UP or raised position when the valve is open.)

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d. Consider adding about 1 liter (1 quart) of Coke® syrup into the tank before starting the sanitize procedure. This will improve the visibility of the sanitize solution when it is trapped in the tank. Remember sanitize solution is normally clear and will be very difficult to see inside the liquid level gauge, especially if the tanks are located in a poorly lighted area.

e. Time the rinse and sanitize cycles to verify timer settings.

2. After the sanitize procedure is complete, observe how much liquid still remains in the sanitize solution container on the CIP. Approximately 200 ml should remain; that is about 3/4" or 19 mm of liquid in the bottom when the container is level.
3. Use a flashlight or electric torch to back-light the liquid level gauge and observe the amount of sanitizer solution trapped or held in the syrup tank. The tank should contain approximately 35 to 36 liters.
4. If the liquid quantities are not as described in steps 2 and 3 above then the mixture ratios of sanitizer solution concentrate to water may not be correct or the timing of the cycles may be incorrect and adjustments may have to be made. See the Troubleshooting Guide for the corrective procedures to use. Always start by checking the rinse and sanitize cycle times before making any other adjustments.
5. Insert the drain line into the stand pipe at the floor drain.
6. Connect the drain line to the syrup supply/drain fitting on the tank.
7. Close the relief valve. The handle should be in the DOWN or lowered position when closed.
8. Press the manual purge button on the CIP for approximately 45 to 60 seconds.
9. Allow the tank to drain until empty.
10. After any adjustments or replacements are made and tested, perform a routine sanitize procedure to prepare the tank for the next syrup delivery.



SET TIMER(S) ON CIP CIRCUIT BOARD

1. Turn OFF water and CO₂ supplies to the CIP.
2. Open the front panel of the CIP by removing the 2 access screws.
3. Locate the 3 adjustable timers (potentiometers) on the right side of circuit board. They have red tamper-evident paint applied to the screw driver slots.
4. Find the timer (water, CO₂, or delay) that needs to be adjusted. See diagram or look on the circuit board next to the timers to identify the timers by location and function.

a. The timers/potentiometers operate in the following sequence when the CIP key switch is turned ON:

Cycle	Timer	Solenoid Valve Affected
1. Rinse	Water	Water
2. Purge	CO ₂	CO ₂
3. Drain	Delay	None
4. Sanitize	Water	Water
5. Purge	CO ₂	CO ₂
6. Drain	Delay	None

b. Note that adjusting the "water timer" adjusts both the rinse and sanitize cycles (numbers 1 and 4). Adjusting the "CO₂ timer" adjusts both the purge cycles (numbers 2 and 5). And adjusting the "delay timer" adjusts both the drain cycles (numbers 3 and 6).

c. Note that to adjust a timer the CIP must be turned ON and the timer to be adjusted must also be ON or operating in one of the cycles it controls.

5. Turn the key switch "ON". Wait for the cycle to change to the cycle that you want to adjust. For ex-

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ample, if you want to adjust the drain cycles (remember, changing the delay timer will change both drain cycles), wait until the rinse cycle (# 1) and the first purge cycle (#2) have completed and the first drain cycle (# 3) has begun.

6. After the cycle to be adjusted has begun, watch the red timer light on the front of the CIP panel and count the number of red timer light flashes in 1 minute. Repeat the count if necessary to ensure an accurate count.

7. Use the formula below to determine how long the cycle will run.

$$128 / (\# \text{ of flashes in 1 min.}) = \# \text{ of min. in cycle}$$

8. If the timer must be adjusted, then use the formula below to determine how many flashes must occur in 1 minute when you count them.

$$128 / (\# \text{ of min. wanted}) = \text{number of flashes in 1 min.}$$

9. Use a small screw driver to adjust the set screw in the appropriate timer.

10. Turn the set screw in the timer (potentiometer) CLOCKWISE to decrease the number of flashes. Turn the set screw COUNTER-CLOCKWISE to increase the number of flashes.

- a. Turn the set screw in small increments to avoid over adjusting.

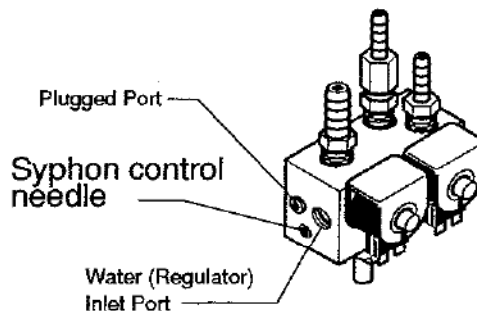
- b. Be careful when counting the number of flashes in 1 minute. An error in the count of one (1) flash will result in a variation of eight (8) seconds.

- c. Repeat the adjustments, and the counting of the flashes until the desired time is obtained. It may be necessary to repeat several cycles before the correct time and number of flashes is achieved.

11. Close the front panel of the CIP and install the 2 access screws.

12. Turn ON the water and CO₂ supplies to the CIP.

13. If an empty syrup tank is available, test the timer(s) by performing a sanitize procedure and measure the time of at least one cycle for the water, CO₂, and delay timers.



ADJUST THE SYPHON CONTROL NEEDLE IN CIP

NOTE: The sanitizer solution flow rate through the syphon inlet tube is factory set using a flowmeter and controlled conditions. The following "field" procedure must rely on care and the good judgement of the service agent to achieve accurate results. It is very important to keep the following guidelines in mind:

- ◆ Check all other options (or causes) which affect the mixing of the sanitizer solution (including: dynamic water pressure, the syphon inlet tube and strainer, the spray head, the correct positioning of InterBulk components according to the installation guidelines, electric power interruptions, etc.) before adjusting the syphon control needle.
- ◆ The needle adjustment is very sensitive! Turn or rotate the needle no more than 1/8 of a turn per adjustment!
- ◆ Perform a complete sanitize procedure to test the results of the last needle adjustment before making any more 1/8 turn adjustments.
- ◆ It is unlikely that a needle will require more than a 1/4 turn adjustment.

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- ◆ Turn the needle **CLOCKWISE** to reduce the flow or use of sanitizer solution concentrate from the solution container. Turn the needle **COUNTER-CLOCKWISE** to increase the syphon flow of sanitizer concentrate.
- ◆ Use a 4" long ball style hex key wrench to adjust the syphon control needle.

NOTE: This procedure cannot be performed without an empty syrup tank.

1. Open the front panel of the CIP by removing the 2 access screws.
2. Locate the syphon control needle.

* On most CIPs the syphon control needle will be located on the left side of the manifold block. The head of the needle contains a 1/8" hex or Allen head, is recessed slightly into the manifold block, and is located in the center of the block from back to front and about 3/4 of way down the side of the block. (The other two features located on the left side of the block are the water inlet port [where the water regulator is connected] and a plugged port used when machining portions of the manifold's internal system. The plugged port is located directly behind the water inlet, is larger than the control needle and protrudes slightly; it should not be confused with the control needle and should never be opened.)

- ◆ On a very small number of CIPs the syphon control needle is located on a separate brass adapter attached

to the bottom of the manifold block. In these CIPs the control needle is near the front of the brass adapter. The syphon inlet tube also is connected into this adapter at the bottom.

3. Insert an 1/8" hex wrench into the syphon needle socket.
4. Turn the hex wrench **CLOCKWISE** (to decrease) or **COUNTER-CLOCKWISE** (to increase) 1/8 turn.
5. Run a complete sanitize mode and then check the sanitizer level in the sanitizer solution container.
6. If the sanitizer level is too high or too low, adjust the syphon needle as outlined above in steps 1 through 5 until the level is correct.
7. Close the front panel of the CIP and install the 2 access screws.

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VERIFY AND/OR ADJUST THE PRESSURE ON THE WATER REGULATOR IN THE CIP

NOTE: This procedure should be done with electrical power ON and the water supply ON.

NOTE: The CIP has two water pressures that must be verified and may have to be adjusted. The first is the static water pressure, which is the pressure seen on the water pressure gauge when no water is flowing. The second pressure is the dynamic water pressure, which is the pressure seen on the pressure gauge when the water is flowing, i.e. during the rinse and sanitize cycles. Normally if the static pressure is correct at 40 psi, then the dynamic pressure will also be correct at between 35-40 psi. However, the dynamic water pressure is the most important of the two pressures and must be at the correct setting.

1. Connect the 3/8" sanitize line to an empty tank. (If an empty tank is not available, it will be necessary at a later step to have someone hold open the poppet on the 2-pin coupler on the 3/8" sanitize line over a drain, sink, or bucket.)
2. Open the front panel of the CIP by removing the 2 access screws.
3. Use the water pressure gauge on the water regulator to verify and monitor the water pressure.
4. Locate the 7/16" hex-head screw at the bottom of the water regulator.
5. With the CIP key switch in the OFF position, turn the hex-head screw CLOCKWISE (in) to increase water pressure or COUNTER-CLOCKWISE (out) to decrease water pressure to a static pressure of 40 psi.
6. Turn the key switch ON and OFF several times to verify the water pressure setting. (If an empty tank is not being used, it will be necessary to hold open the poppet on the 2-pin coupler on the 3/8" sanitize line during this step.)
7. Repeat steps 4, 5, and 6 if the static water pressure is not at 40 psi.
8. Verify the dynamic water pressure is between 35-40 psi by turning ON the key switch and observing the water pressure gauge during a portion of the rinse cycle. (Sanitize line must be connected to an empty tank or the poppet on the 2-pin coupler must be held open.)
9. If the dynamic pressure is not between 35-40 psi, then adjust the regulator by turning the hex-head screw either CLOCKWISE (in) to increase pressure or COUNTER-CLOCKWISE (out) to decrease the pressure. This step must be done during either the rinse or the sanitize cycle when water is flowing. (Sanitize line must be connected to an empty tank or the poppet on the 2-pin coupler must be held open.)
10. If the dynamic water pressure cannot be adjusted to a minimum of 35 psi and the sanitize solution is not properly mixed during the sanitize process, even after the hex-head screw has been turned completely in or CLOCKWISE, then consult the Installation Manual. The CIP is either receiving water at too low a pressure or at too low a flow rate or is incorrectly installed.
11. Close the front panel of the CIP and secure with the two screws.

X WARRANTY AND CLAIMS PROCEDURE

MINNESOTA VALLEY ENGINEERING ("MVE") warrants to McDonald's Restaurants (the Purchaser) the international bulk syrup (InterBulk) equipment for one (1) year after purchase, that said equipment shall be free from any defects in workmanship and materials.

Purchaser agrees that as a pre-condition to any MVE liability hereunder, Purchaser or its appointed agents shall fully inspect all goods immediately upon delivery and shall give MVE written notice of any claim or purported defect within ten (10) days after discovery of such defect. As a further pre-condition to any MVE liability hereunder, both part replacement and labor must be supplied by an approved MVE service company. MVE may elect to repair or replace such equipment or any defective component or part thereof which proves to be defective, or to refund the purchase price paid by the original Purchaser. Alterations or repairs by others or operation of such equipment in a manner inconsistent with MVE accepted practices and all operating instructions, unless pre-authorized in writing by MVE, shall void this Warranty. MVE shall not be liable for defects caused by the effects of normal wear and tear, erosion, corrosion, fire, explosion, misuse, or unauthorized modification.

MVE's sole and exclusive liability under this Warranty is to the Purchaser and shall not exceed the lesser of the cost of repair, cost of replacement, or refund of the net purchase price paid by the original Purchaser. MVE is not liable for any losses, damages, or costs of delays, including incidental or consequential damages. MVE specifically makes no warranties or guarantees, expressed or implied, including the warranties of merchantability or fitness for a particular purpose or use, other than those warranties expressed herein.

WARRANTY CLAIMS PROCEDURE

1. All warranty claims must be previously authorized by Minnesota Valley Engineering. Telephone/electronic approval may be obtained by contacting Technical Service at:

Telephone Numbers: 800-253-1769

612-882-5000

Fax Number: 612-882-5185

or by writing to the Technical Service Manager at:

MVE, Inc.

3505 Country Road 42 West

Burnsville, MN 55306-3803 USA

612-882-5000 • Fax: 612-882-5185

2. Authorization must be obtained from MVE prior to shipment of any equipment to our facilities.



MVE, Inc.
3505 County Road 42 West
Burnsville, MN 55306-3803 U.S.A.
(612) 882-5000 ♦ Fax: (612) 882-5185