IMI CORNELIUS INC.
One Cornelius Place
Anoka, MN. 55303–6234
Telephone (800) 238–3600
Facsimile (612) 422–3232

Installation Instructions

DRAFT ARM
WITH SF-1 VALVE

Part No. 300168000
September 12, 1983
Revised: August 9, 1991

THIS DOCUMENT CONTAINS IMPORTANT INFORMATION
This Installation Manual must be read and understood before starting to install or operate this equipment.

Printed in U.S.A.

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GENERAL DESCRIPTION

IMPORTANT: To the user of this manual – This manual is a guide for installing, operating, and maintaining this equipment. Refer to Table of Contents for page location of detailed information pertaining to questions that arise during installation,operation, service and maintenance, or troubleshooting this equipment.

GENERAL DESCRIPTION

This section gives the description, theory of operation, and design data for the Draft Arm with SF–1 Valve (dispensing valve), hereafter referred to as a unit.

UNIT DESCRIPTION

The unit (see Figure 1) is compact and may be island–mounted or installed on a countertop. The unit may be used to dispense tea or may be connected into a post–mix system to dispense a carbonated or non–carbonated (still) drink. Adjustable water and syrup flow regulators, located in the dispensing valve, are easily accessible to control water flow rate and to adjust Water–to–Concentrate (tea) or syrup (post–mix) ‘‘Ratio” of dispensed product. An optional Draft Arm Base Kit (P/N 319314–039) with drip tray and drain hose is available.

Installation of unit on countertop, connection of unit to tea or post–mix system, and adjustment of dispensing valve water and syrup flow regulators for water flow rate and water–to–concentrate (tea) or syrup (post–mix) ‘‘Ratio” of dispensed product is all that is required for operation.

Table 1. Design Data

Unit Part Number	414019–000
Overall Dimensions:	
Height without base kit	14–3/8 inches
Height with base kit	16–inches
Width without base kit	1–3/4 inches
Width with base kit	6–1/4 inches
Depth without base kit	4–3/4 inches
Depth with base kit	8–inches
Shipping Weight	pounds
Dispensing Rate (continuous) nominal	1–1/2 oz/sec.
Ambient Operating Temperature	40°F to 100°F

FIGURE 1. DRAFT ARM WITH SF-1 VALVE (SHOWN WITH OPTIONAL BASE KIT)

THEORY OF OPERATION (see Figure 2)

UNIT USED AS A TEA DISPENSER (see Figure 2)

A nitrogen (N) gas cylinder delivers gas through an adjustable nitrogen gas regulator to the concentrate tank. Gas pressure exerted upon contents inside concentrate tank pushes concentrate from tank to dispensing valve. At the same time, plain water is pushed by city water line pressure to the dispensing valve. Concentrate and plain water pass through adjustable water and syrup (concentrate) regulators in the dispensing valve and meet simultaneously at the valve nozzle resulting in finished product being dispensed.

UNIT CONNECTED TO A POST–MIX SYSTEM

The unit may be connected into a post–mix system to dispense a carbonated or a non–carbonated (still drink). The unit is shipped from the factory with Baffle Tube Extension (P/N 300097–000) and Baffle (P/N 318754–011) installed on the dispensing valve and is intended to dispense tea. If unit will be connected into post–mix system, tube extension and baffle should be removed and BAFFLE (item 12) should be installed on valve for better mixing of dispensed product.

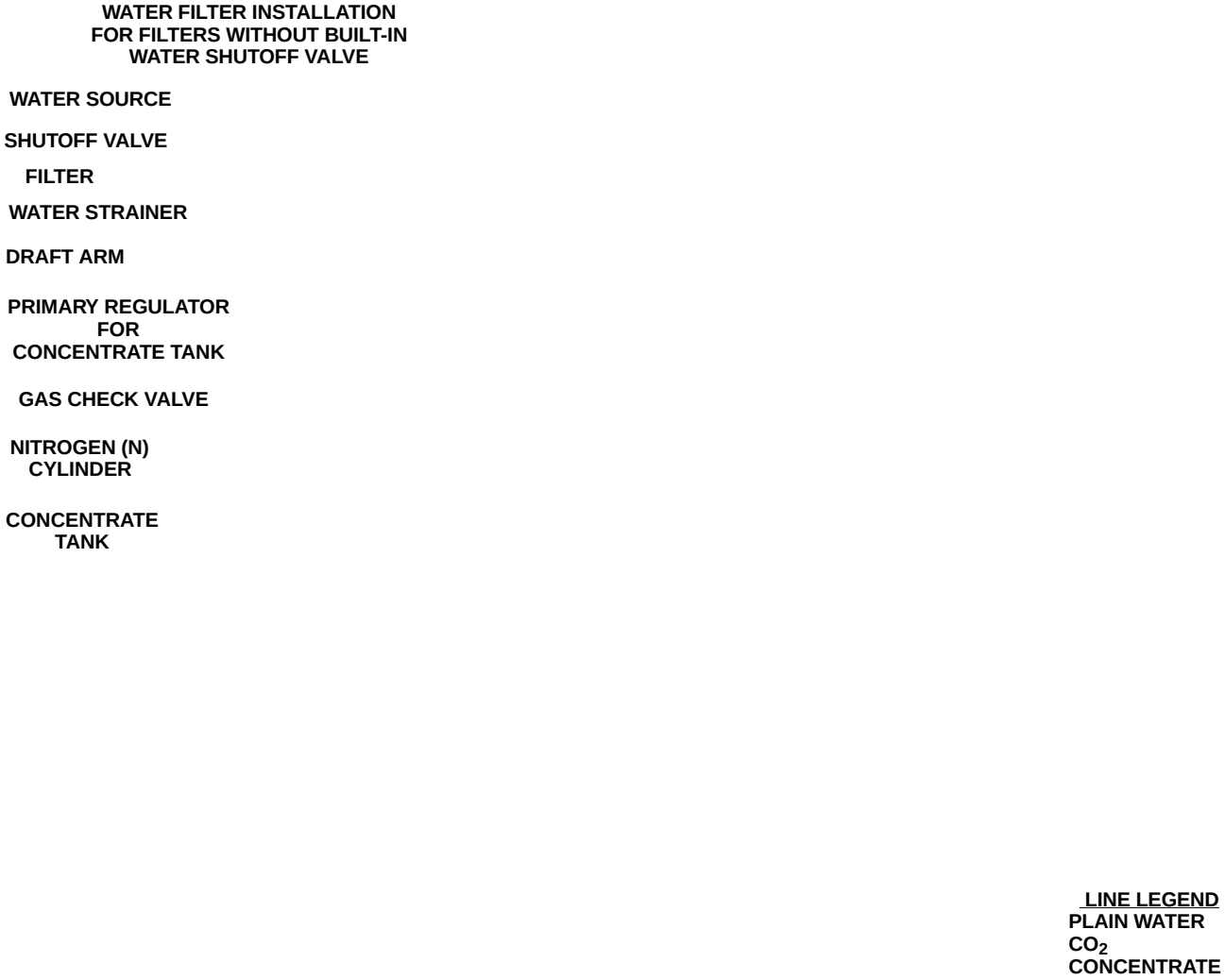

FIGURE 2. FLOW DIAGRAM (TEA SYSTEM)

INSTALLATION

This section covers unpacking and inspection, identification of LOOSE–SHIPPED PARTS, selecting location, installing unit, preparing for operation, and operation.

UNPACKING AND INSPECTION

NOTE: The unit was thoroughly inspected before leaving the factory and the carrier has accepted and signed for it. Any damage or irregularities should be noted at time of delivery and immediately reported to the delivering carrier. Request a written inspection report from the claims inspector to substantiate any necessary claim. File claim with delivering carrier, not with IMI Cornelius Inc.

Table 2. Loose-Shipped Parts

Item No.	Part No.	Name	Qty.
1	317904–999	Flavor Decal (as specified by customer)	1
2	317905–999	Flavor Decal (as specified by customer)	1
3	311035	Water Strainer Ass'y	1
4	176107	Adapter Fitting, 1/4 NPT by 7/16–20	2
5	178025–100	Tapered Gasket, White	2
6	176035	Ferrule	2
7	176034	Nipple	2
8	176017	Nut	2
9	176193	Adapter Fitting, 7/16–20 male by 7/16–20 male	1
10	311577	Wing Nut	1
11	311584	Tube, Hold–Down	1
12	318523–027	Baffle (post–mix application)	1

IDENTIFICATION OF LOOSE–SHIPPED PARTS

1. FLAVOR DECAL (item 1) to be installed on back of dispensing valve cover.

2. FLAVOR DECAL (item 2) to be installed on front of dispensing valve cover.

3. WATER STRAINER ASS'Y (item 3) to be installed in plain water inlet supply line between water filter and unit if used as tea unit.

4. ADAPTER FITTINGS (item 4) to be installed in inlet and outlet of WATER STRAINER ASS'Y (item 3) prior to installing water strainer if used as tea unit.

5. TAPERED GASKETS, WHITE (item 5) are used to seal connections when connecting water inlet and outlet lines to WATER STRAINER ASS'Y (item 3) if used as tea unit.

6. NUT (item 8), NIPPLE (item 7), and FERRULE (item 6) to be installed on ends of unit inlet lines.

7. ADAPTER FITTINGS (item 9) used to connect line to swivel nut connector on end of unit inlet line.

8. TUBE, HOLD–DOWN (item 11) to be installed in bottom of unit, then unit to be secured to countertop with WING NUT (item 10).

9. BAFFLE (item 12) to be installed on dispensing valve if unit will be installed in post–mix system.

SELECTING LOCATION

This unit may be island–mounted or installed on a front or rear counter. Locate unit so the following requirements are satisfied.

Close to a cold (100°F max) plain water source capable of supplying water at 20 to 125–psig if used as a tea unit (see Figure 2). Water inlet supply line should include a water shutoff valve and a water filter.

Close to a permanent drain for connection of drain hose if optional Base Kit (P/N 319314–039) will be used.

INSTALLING UNIT

INSTALLING UNIT WITHOUT BASE

1. Drill 3/4–inch hole in countertop.

2. Route unit inlet lines out through hole in unit base plate.

3. Route unit inlet lines through TUBE, HOLD–DOWN (item 11).

4. Slide hold–down tube up on unit inlet lines, then screw tube into base plate in bottom of unit.

5. Route unit inlet lines and hold–down tube down through hole in countertop.

6. To comply with National Sanitation Foundation (NSF) requirements, unit base must be sealed to countertop and all access holes to inside of unit base must by sealed with Permagum or other sealant material. Proceed as follows to seal unit base.

   A. Tilt unit up to expose bottom of base.

   B. Liberally apply silastic sealant such as Dow Corning RTV 731 or equivalent on base bottom edges.

NOTE: Do not move unit after positioning or seal from unit base to countertop will be broken.

   C. Lower unit into operating position on countertop to complete seal from unit base to countertop.

   D. Slide WING NUT (item 10) up on unit inlet lines to hold–down tube, then secure unit to countertop with wing nut.

   E. Apply additional sealant around bottom of unit base. Seal must have a minimum radius of 1/2–inch to prevent crevices and to insure a complete seal.

   F. Seal all access holes to inside of unit base with permagum or other sealant material.

7. Install NUT (item 8), NIPPLE (item 7), and FERRULE (item 6) on ends of unit inlet lines. Crimp ferrules with IMI Cornelius Inc. crimping tool (P/N 274261–300) and die set No. 31.

INSTALLING UNIT WITH OPTIONAL BASE KIT (P/N 319314–039)

1. Tape loose–shipped template in place on countertop.

2. Drill holes indicated on template in countertop, then remove template.

3. Route unit inlet lines out through hole in unit base plate.

4. Route unit inlet lines through TUBE, HOLD–DOWN (item 11).

5. Slide hold–down tube up on unit inlet lines, then screw tube into base plate in bottom of unit.

6. Assemble base kit on unit.

7. Route unit inlet lines and drip tray drain hose through holes in countertop.

8. To comply with National Sanitation Foundation (NSF) requirements, unit base must be sealed to countertop and all access holes to inside of unit base must be sealed with Permagum or other sealant material. Proceed as follows to seal unit base.

   A. Tilt unit up to expose bottom of base.

   B. Liberally apply silastic sealant such as Dow Corning RTV 731 or equivalent on base bottom edges.

NOTE: Do not move unit after positioning or seal from unit base to countertop will be broken.

   C. Lower unit into operating position on countertop to complete seal from unit base to countertop.

   D. Fasten unit to countertop with loose–shipped parts.

   E. Apply additional sealant around bottom of unit base. Seal must have a minimum radius of 1/2–inch to prevent crevices and to insure a complete seal.

9. Install NUT (item 8), NIPPLE (item 7). and FERRULE (item 6) on ends of unit inlet lines. Crimp ferrules with IMI Cornelius Inc. crimping tool (P/N274261–300) and die set No. 31.

CONNECTING INLET SUPPLY LINES TO UNIT

UNIT USED AS TEA UNIT (see Figure 2)

1. Connecting Water Inlet Supply Line.

IMI Cornelius Inc. recommends that a water shutoff valve and a water filter be installed in the water inlet supply line connected to unit. A IMI Cornelius Inc. Water Filter (P/N 313860–000) and Quick Disconnect Set (P/N 313867–000) are recommended.

NOTE: The unit must be connected to a cold (100°F max) plain water source capable of supplying water at 20 to 125–psig. A Saddle Valve (P/N 315664–000) or equivalent may be used to tap into water source. Connect water inlet supply line to unit as follows:

   A. Install ADAPTER FITTINGS (item 4) in WATER STRAINER ASS'Y (item 3) inlet and outlet ports. Seal connections with thread sealant compound.

   B. Install water strainer assembly under countertop close enough to unit to allow unit water inlet line to be connected.

   C. Connect unit water inlet line to water strainer assembly outlet fitting. Seal connection with TAPERED GASKET, WHITE (item 5).

D. Before connecting water inlet supply line to water strainer assembly, open water shutoff valve for a period of time to flush out any metal shavings resulting from installing fitting or saddle valve.

E. Connect water inlet supply line to water strainer assembly inlet fitting. Seal connection with TAPERED GASKET, WHITE (item 5).

2. Connecting Concentrate Supply Line.

A. Install ADAPTER FITTING (item 9) in end of unit concentrate inlet line.

B. Connect concentrate supply line from concentrate tank location to unit concentrate inlet line.

UNIT CONNECTED TO POST–MIX SYSTEM

NOTE: Unit is shipped from factory with Baffle Tube Extension (P/N 300097–000) and Baffle (P/N 318754–011) installed on dispensing valve and is intended for dispensing of tea. Remove tube extension and baffle and install BAFFLE (item 12) for post–mix dispensing.

Connecting Water Inlet Supply Line.

Connect carbonated water for carbonated drink or plain water for non–carbonated (still drink) water inlet supply line from post–mix system to unit water inlet supply line. Seal connection with TAPERED GASKET, WHITE (item 5).

Connecting Syrup Inlet Supply Line.

Connect syrup inlet supply line from post–mix system to unit syrup inlet supply line. Seal connection with TAPERED GASKET, WHITE (item 5).

CONNECTING (IF USED) DRIP TRAY DRAIN HOSE TO PERMANENT DRAIN

NOTE: Drip tray drain hose routed to a waste container is not recommended due to sanitation and cleaning problems. Connection of drain hose to permanent drain is recommended.

1. Preferably, route lower end of drip tray drain hose and connect to permanent drain.

2. Place cup rest in drip tray.

PREPARING FOR OPERATION

UNIT USED AS A TEA UNIT

1. Open water inlet supply line shutoff valve.

2. Dispense from dispensing valve until air is purged from water system. Check system for leaks and tighten or repair any loose connections.

3. Check, and if necessary, adjust dispensing valve for proper water flow rate as instructed.

4. Adjust concentrate tank nitrogen regulator as instructed.

5. Connect concentrate tank into system.

6. Dispense from dispensing valve until air is purged from concentrate system. Check for leaks and tighten or repair any loose connections.

7. Install FLAVOR DECALS (items 1 and 2) on dispensing valve cover.

UNIT CONNECTED TO A POST–MIX SYSTEM

1. Adjust post–mix system carbonator and syrup tanks CO_2 regulators as instructed.

2. Activate post–mix system carbonated water and plain water supplies.

3. Dispense from dispensing valve until air is purged from water system. Check for leaks and tighten or repair any loose connections.

4. Check and if necessary, adjust dispensing valve for proper water flow rate as instructed.

5. Activate post–mix system syrup supply.

6. Dispense from dispensing valve until air is purged from syrup system. Check for leaks and tighten or repair any loose connections.

7. Adjust Water–to–Syrup ‘‘Ratio’’ of dispensed product as instructed.

8. Install FLAVOR DECALS (items 1 and 2) on dispensing valve cover.

9. Using insulating tape, insulate water and syrup or concentrate lines up to unit base.

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OPERATORS INSTRUCTIONS

This section covers operators instructions for operating controls, daily pre–operation check, adjustments, replenishing gas supply and concentrate or syrup supplies, and cleaning and sanitizing.

DISPENSING VALVE OPERATION (see Figure 3)

Dispensing valve lever, located below dispensing valve, need only to be pressed with cup or glass to dispense product.

DAILY PRE–OPERATION CHECK

1. Tea System Nitrogen Gas Pressure Supply.

   Note pressure reading on nitrogen gas pressure regulator assembly high–side gage which indicates nitrogen cylinder pressure. When high–side pressure gage reading approaches low–side gage operating pressure reading, nitrogen cylinder is almost empty and should be replaced.

   Post–Mix System CO_2 Gas Pressure Supply.

   Make sure CO_2 cylinder gas pressure regulator assembly 1800–psi gage indicator is not in shaded (“change CO_2 cylinder”) portion of dial. If so, CO_2 cylinder is almost empty and must be replaced.

2. Sufficient concentrate (tea) or syrup (post–mix). If not, replenish concentrate or syrup supply.

3. If unit is equipped with base kit, make sure drip tray is clean and cup rest is in place in drip tray.

ADJUSTMENTS

ADJUSTING DISPENSING VALVE WATER FLOW RATE

Amount of water dispensed in four seconds should be approximately five–ounces. If necessary to adjust water flow rate, adjust as instructed.

ADJUSTING WATER–TO–CONCENTRATE (TEA) OR SYRUP (POST–MIX) “RATIO” OF DISPENSED PRODUCT

Unit Used as a Tea Dispenser.

Water–to–Concentrate “Ratio” of dispensed product should be checked periodically and if necessary, adjusted as instructed.

Unit Connected to a Post–Mix System.

Water–to–Syrup “Ratio” of dispensed product should be checked periodically and if necessary, adjusted as instructed.

ADJUSTING GAS PRESSURE REGULATOR

Tea System.

Concentrate Tank Nitrogen Gas Pressure Regulator –Nitrogen gas pressure regulator should be checked periodically for proper pressure setting and if necessary, adjusted as instructed.

Post–Mix System.

Syrup tanks CO_2 Gas Pressure Regulator – Syrup tanks CO_2 gas pressure regulator should be checked periodically for proper pressure setting and if necessary, adjusted as instructed.

Carbonator CO_2 Gas Pressure Regulator – Carbonator CO_2 gas pressure regulator should be checked periodically for proper pressure setting and if necessary, adjusted as instructed.

REPLENISHING GAS SUPPLY

TEA SYSTEM

Nitrogen gas supply should be checked daily and if necessary, replenished as instructed.

POST–MIX SYSTEM

CO_2 gas supply should be checked daily and if necessary, replenished as instructed.

REPLENISHING CONCENTRATE (TEA SYSTEM) OR SYRUP (POST–MIX SYSTEM) SUPPLY

Concentrate (tea system) or syrup (post–mix system) supply should be checked daily and if necessary, replenished as instructed.

CLEANING AND SANITIZING

DAILY CLEANING OF UNIT

Daily cleaning of unit should be performed at end of daily operation as instructed.

WEEKLY CLEANING OF DISPENSING VALVE

Dispensing valve should be cleaned at least once a week as instructed.

SANITIZING SYSTEM

System should be sanitized as instructed every 90 days following Sanitizer Manufacturer’s recommendations.

SERVICING WATER STRAINER SCREEN (TEA SYSTEM)

The water strainer screen (see Figure 2 and 5) must be inspected and serviced at least once a year under normal circumstances and after any disruptions (plumbing work, earthquake, etc.) to the water supply system that might cause turbulent (erratic) flow of water through the system. Service water strainer screen as instructed.

CLEANING SYSTEM GAS CHECK VALVE (see Figure 2 and 6)

The CO_2 system gas check valve must be inspected and serviced at least once a year under normal conditions and after any CO_2 system servicing or disruption as instructed.

SERVICE AND MAINTENANCE

This section covers service and maintenance procedures to be performed on the unit.

IMPORTANT: Only qualified personnel should service unit or system components.

PERIODIC INSPECTION

1. Check dispensing valve for dripping that indicates a leak and repair as necessary.
2. Check concentrate (tea system) or syrup (post–mix system) supply and if necessary, replenish as instructed.
3. Tea System Nitrogen Gas Pressure Supply.

   Note pressure reading on nitrogen gas pressure regulator assembly high–side gage which indicates nitrogen cylinder pressure. When high–side pressure gage reading approaches low–side gage operating pressure reading, nitrogen cylinder is almost empty and should be replaced as instructed.

   Post–Mix System Gas Pressure Supply.

   Make sure CO_2 cylinder gas regulator assembly 1800–psi gage indicator is not in shaded (“change CO_2 cylinder”) portion of dial. If so, CO_2 cylinder is almost empty and must be replaced as instructed.

ADJUSTMENTS

ADJUSTING DISPENSING VALVE WATER FLOW RATE (see Figure 4)

1. Remove quick disconnect from concentrate (tea system) or syrup (post–mix system) tank outlet.
2. Loosen dispensing valve cover screw until screw disengages from valve, then remove cover.
3. Hold large chamber of ratio cup under dispensing nozzle.
4. Open dispensing valve for exactly four seconds. Approximately 5–ounces of water should have been dispensed in ratio cup.
5. If amount of water dispensed in four seconds was incorrect, turn dispensing valve water flow regulator labeled “WATER” adjusting screw to the left (counterclockwise) no more than 1/4–turn at a time for less water or to the right (clockwise) for more water.
6. Test for amount of water dispensed and adjust dispensing valve water flow regulator until proper amount of water is dispensed.

ADJUSTING WATER–TO–CONCENTRATE (TEA SYSTEM) OR SYRUP (POST–MIX SYSTEM) “RATIO” OF DISPENSED PRODUCT (see Figure 4)

NOTE: Make sure dispensing valve water flow rate is as desired before adjusting valve for Water–to–Concentrate or Syrup “Ratio” of dispensed product.

Adjust Water–to–Concentrate (tea) or syrup (post–mix) “Ratio” of dispensed product by using “Ratio” Cup (P/N 311100–000) and Syrup Diversion Tube Assembly (P/N 319540–000) as follows (see Figure 4).

1. Loosen dispensing valve cover screw until screw disengages from valve, then remove cover.
2. Install syrup diversion tube assembly on dispensing valve by pushing rubber end of syrup diversion tube up on baffle inside nozzle.

**NOTE: Refer to concentrate (tea) or syrup (post–mix) manufacturer’s recommendations on package for Water–to–Concentrate (tea) or syrup (post–mix)
“Ratio”.**

3. Hold container under dispensing valve. Open dispensing valve and dispense just enough to fill syrup diversion tube with syrup or concentrate.
4. Hold large chamber of ratio cup under dispensing valve nozzle. Place free end of syrup diversion tube into syrup chamber marked for proper ratio. Open dispensing valve and dispense approximately five ounces of water into ratio cup. Water and syrup or concentrate levels should be even in ratio cup.
5. If water and syrup or concentrate levels are not even in ratio cup, turn dispensing valve syrup flow regulator labeled “SYRUP” adjusting screw to the left (counterclockwise) no more than 1/4–turn at a time for less syrup or concentrate or to the right (clockwise) no more than 1/4–turn at a time for more syrup or concentrate.
6. Repeat Water–to–Concentrate (tea) or syrup (post–mix) “Ratio” test and adjust syrup flow regulator as many times as necessary until proper ratio of dispensed drink is achieved.
7. Remove syrup diversion tube assembly from dispensing valve.
8. Install dispensing valve cover and secure with screw.

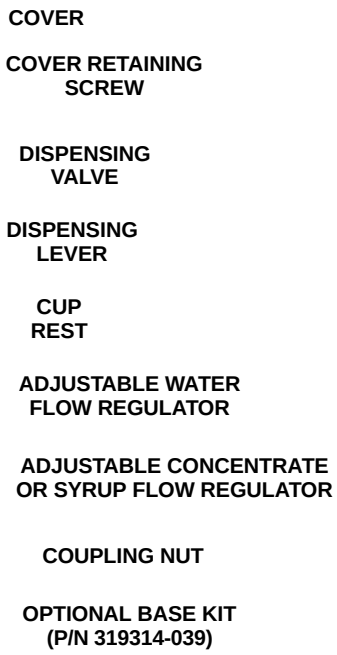


FIGURE 3. PARTS IDENTIFICATION (SHOWN WITH OPTIONAL BASE KIT)

ADJUSTING GAS PRESSURE REGULATOR

Tea System. (see Figure 2)

Set concentrate tank nitrogen gas regulator at 30–psi plus one pound for every five feet over ten feet of concentrate line length and one pound for every two feet of vertical lift. For example: If total concentrate line length is 20 feet and total vertical lift is 6 feet, then 30–psi (initial) + 2–psi (1 pound for every 5 feet over 10 feet of length which is 20 feet) + 3–psi (1 pound for every 2 feet of vertical lift which is 6 feet); total equal 35–psi nitrogen regulator setting.

Post–Mix System.

Syrup tanks CO_2 Regulator

Adjust syrup tanks CO_2 regulator at 40–psig for syrup lines up to 10–feet in length plus one pound for each 2–feet of vertical lift. For example: if syrup line total length is 30–feet and total vertical lift is 6–feet, then 40–psig + 2–psig (1–pound for every 10–feet of length over 10–feet which is 20–feet) + 3–psig (1–pound for every 2–feet of vertical lift which is 6–feet); total 40 + 2 + 3 = 45–psig CO_2 regulator setting.

Carbonator CO_2 Regulator.

Refer to manual provided with remote carbonator to adjust carbonator CO_2 regulator operating pressure.

REPLENISHING GAS SUPPLY

TEA SYSTEM

NOTE: Note pressure reading on nitrogen gas pressure regulator assembly high–side gage which indicates nitrogen cylinder pressure. When high–side pressure gage reading approaches low–side gage operating pressure reading, nitrogen cylinder is almost empty and should be replaced.

1. Fully close (clockwise) nitrogen cylinder valve shutoff valve.

2. Slowly loosen nitrogen regulator assembly coupling nut allowing nitrogen pressure to escape, then remove regulator from empty nitrogen cylinder.

3. Unfasten safety chain and remove empty nitrogen cylinder.

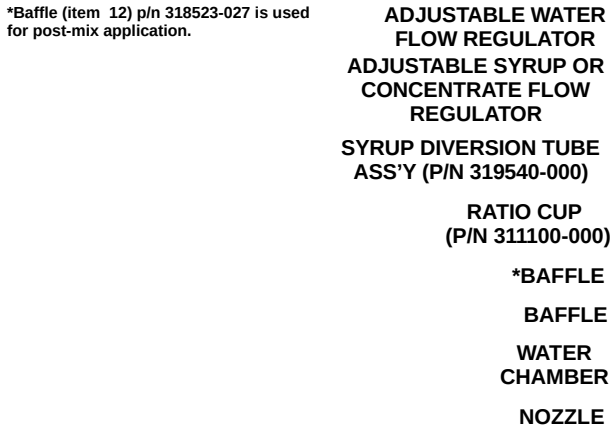


FIGURE 4. RATIO CUP AND SYRUP DIVERSION TUBE ASSEMBLY

WARNING: To avoid personal injury and/or property damage, always secure nitrogen gas cylinder with safety chain to prevent it from falling over. Should the valve become accidentally damaged or broken off, nitrogen cylinder can cause serious personal injury.

4. Position nitrogen cylinder and secure with safety chain.
5. Install nitrogen gas pressure regulator assembly on nitrogen cylinder.
6. Open (counterclockwise) nitrogen cylinder shut-off valve slightly to allow lines to slowly fill with gas, then open valve fully to back–seat valve. (Back–seating valve prevents gas leakage around valve shaft).
7. Check for nitrogen gas leaks and tighten any loose connections.

POST–MIX SYSTEM

NOTE: When indicator on CO_2 cylinder regulator assembly 1800–psig gage is in shaded ("change CO_2 cylinder") portion of dial, CO_2 cylinder is almost empty and should be changed.

1. Fully close (clockwise) CO_2 cylinder valve.
2. Slowly loosen CO_2 regulator assembly coupling nut allowing CO_2 pressure to escape, then remove regulator assembly from empty CO_2 cylinder.

WARNING: To avoid personal injury and/or property damage, always secure CO_2 cylinder with safety chain to prevent it from falling over. Should the valve become accidentally damaged or broken off, CO_2 cylinder can cause serious personal injury.

3. Position CO_2 cylinder and secure with safety chain.
4. Make sure gasket is in place inside CO_2 regulator coupling nut, then install regulator on CO_2 cylinder.
5. Open (counterclockwise) CO_2 cylinder valve slightly to allow lines to slowly fill with gas, then open valve fully to back–seat valve. (Back–seating valve prevents leakage around valve shaft.)
6. Check CO_2 connections for leaks. Tighten loose connections.

REPLENISHING CONCENTRATE (TEA SYSTEM) OR SYRUP (POST–MIX SYSTEM) SUPPLY

1. Remove gas disconnect (grey) and syrup or concentrate disconnect (black) from empty tank, then remove tank.
2. Place full tank in position, then connect gas disconnect (grey) and syrup or concentrate disconnect (black)to tank.

CONCENTRATE (TEA SYSTEM) OR SYRUP (POST–MIX SYSTEM) FLAVOR CHANGE

Sanitize system as instructed, then install full tank of new flavor concentrate or syrup.

CLEANING AND SANITIZING

DAILY CLEANING OF UNIT (DO NOT USE ABRASIVE TYPE CLEANERS)

Unit should be thoroughly cleaned at end of daily operation as follows:

1. If unit is equipped with base kit, remove cup rest from drip tray. Wash cup rest in plain water, then wipe dry with a clean soft cloth.
2. Wipe unit exterior and drip tray interior (if applicable) with damp cloth, then wipe dry with clean soft cloth.
3. Install cup rest in drip tray.

WEEKLY CLEANING OF DISPENSING VALVE

1. Loosen dispensing valve cover screw until screw disengages from valve, then remove cover.

2. Remove nozzle, baffle, and baffle tube extension (if dispensing tea) from dispensing valve.

3. Wash removed parts, including valve cover, in warm water.

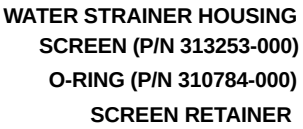


FIGURE 5. WATER STRAINER

4. Hold appropriate container under dispensing valve, then slowly pour warm water over valve.

5. Install baffle, baffle tube extension (if applicable), nozzle, and cover on dispensing valve.

SANITIZING UNIT

IMPORTANT: Only qualified personnel should perform sanitizing procedure.

The unit should be sanitized at least weekly following Sanitizer Manufacturer's recommendations. Use Chlor–Tergent (Oakite Products, Inc.) or equivalent sanitizer. Proceed as follows to sanitize unit.

1. Remove quick disconnects from concentrate to syrup tank. Wash quick disconnects in warm water.

2. Following Sanitizer Manufacturer's instructions, prepare two gallons of sanitizing solution in clean empty concentrate or syrup tank.

3. Connect tank containing sanitizing solution into tea or syrup system.

4. Place waste container under dispensing valve nozzle. Dispense from dispensing valve to permit sanitizing solution to push concentrate or syrup out of system and valve. Continue to dispense until only sanitizing solution is dispensed, then close valve.

5. Follow Sanitizer Manufacturer's application instructions.

6. Remove tank containing sanitizing solution and install tank containing concentrate or syrup into concentrate or syrup system.

WARNING: Flush sanitizing solution from system as instructed. Residual sanitizing solution left in system could create a health hazard.

7. Place waste container under dispensing valve. Open valve to permit concentrate or syrup to purge sanitizing solution from system and until only syrup is dispensed, then close valve.

WARNING: To avoid possible personal injury or property damage, do not attempt to remove tank cover until gas pressure has been released from tank.

8. Thoroughly rinse inside and outside of tank that was used for sanitizing solution to remove all solution residue.

SERVICING WATER STRAINER SCREEN

(see Figures 2 and 5)

The water strainer screen must be inspected and serviced at least once a year under normal circumstances and after any disruptions (plumbing work, earthquake, etc.) to the water supply system that might cause turbulent (erratic) flow of water through the system. Service water strainer screen as follows:

1. Close unit water inlet line shutoff valve.

2. Loosen water strainer screen retainer, then pull screen retainer and screen from water strainer housing.

3. Pull screen from screen retainer. Clean any sediment from screen retainer and port in water strainer housing.

4. Inspect screen for holes, restrictions, corrosion, and other damage. Discard damaged screen.

5. Install good or new screen (P/N 313253–000) in screen retainer, then screw screen retainer into water strainer housing. Tighten retainer only finger tight.

6. Open unit water inlet line shutoff valve, then check for water leaks.

CLEANING GAS CHECK VALVE (see Figures 2 and 6)

The system gas check valve must be inspected and serviced at least once a year under normal conditions and after any servicing or disruption of the system. ALWAYS REPLACE QUAD RING SEAL EACH TIME GAS CHECK VALVES ARE SERVICED.

QUAD RING
183294-000

BALL
183296-000

SPRING
183297-000

RETAINER
183298-000

BODY
183295-100

***Quad ring seal *must* be replaced each time check valve is serviced.**

FIGURE 6. GAS CHECK VALVE

REMOVE AND REPLACEMENT PROCEDURES

DISPENSING VALVE ASSEMBLY (see Figure 3)

Removal.

1. Loosen dispensing valve cover until screw disengages from valve, then remove cover.

2. Using spanner wrench, loosen and remove coupling nut from dispensing valve. Remove dispensing valve from unit.

Installation.

1. Install dispensing valve by reversing removal procedure. Tighten coupling nut using spanner wrench.

2. Adjust water flow regulator for water flow rate, then adjust syrup flow regulator for Water–to–Concentrate (tea) or syrup (post–mix) ‘‘Ratio’’ of dispensed product as instructed.

SYRUP, CONCENTRATE, OR WATER FLOW REGULATOR (see Figures 3 and 7)

Removal.

1. Loosen dispensing valve cover screw until screw disengages from dispensing valve, then remove cover.

2. Using spanner wrench, loosen and remove coupling nut from dispensing valve. Remove dispensing valve from unit.

3. Remove two SCREWS (item 9) securing PLATE (item 8) that secures water flow or syrup or concentrate flow regulator in dispensing valve BODY (item 15), then remove plate.

4. Pull TOP FLOW CONTROL (item 11), SPRING (item 12), PISTON (item 13) up out of CYLINDER (item 14).

IMPORTANT: If more than one syrup or concentrate or water flow regulator will be disassembled at one time, do not mix pistons and cylinders as they are precision matched sets.

5. The CYLINDER (item 14) normally need not be removed from BODY (item 15). If need to remove cylinder should arise, pull cylinder up out of body, ALWAYS INSTALL NEW O–RING (item 10) P/N 317816–000 ON CYLINDER BEFORE INSTALLING CYLINDER IN BODY.

Installation.

1. Install TOP FLOW CONTROL (item 11), SPRING (item 12), and PISTON (item 13) in CYLINDER (item 14).

2. Secure water flow or syrup or concentrate flow regulator in dispensing valve BODY (item 15) with PLATE (item 8) and SCREWS (item 9).

3. Install dispensing valve by reversing removal procedure. Tighten coupling nut using spanner wrench.

4. Water Flow Regulator Removed.

   If water flow regulator was removed from dispensing valve, water flow rate of valve must be checked and if necessary, regulator must be adjusted as instructed.

   Syrup or Concentrate Flow Regulator Removed.

   If syrup or concentrate flow regulator was removed from dispensing valve, Water–to–Concentrate (tea) or syrup (post–mix) ‘‘Ratio’’ of dispensed product must be checked and if necessary, adjusted as instructed.

5. Install dispensing valve cover and secure with screw.

INLET VALVE (see Figures 3 and 7)

Removal.

1. Loosen dispensing valve cover screw until screw disengages from dispensing valve, then remove cover.

2. Using spanner wrench, loosen and remove coupling nut from dispensing valve. Remove dispensing valve from unit.

3. Turn dispensing valve upside down, then disconnect SPRINGS (item 3) from INLET VALVES (item 4).

4. Remove four SCREWS (item 1) securing dispensing valve BOTTOM COVER (item 2) and VALVE BLOCK (item 6) to BODY (item 15), then separate valve block from body.

5. Remove inlet valve from valve block.

6. Remove NIB (item 5) from inlet valve.

NOTE: Short nib is for syrup or concentrate inlet valve and long nib is for water inlet valve.

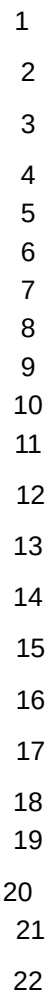
Installation.

1. Install inlet valve and assemble dispensing valve by reversing disassembly procedure.

2. Install dispensing valve by reversing removal procedure. Tighten coupling nut using spanner wrench.

NOTE: It may be necessary to adjust inlet valves so water and syrup or concentrate dispensing start at same time and stop at same time by turning SETSCREWS (item 7).

3. Install dispensing valve cover and secure with screw.



ADJUSTABLE CONCENTRATE OR SYRUP AND WATER FLOW REGULATORS PARTS TERMINOLOGY ARE THE SAME.

***BAFFLE (P/n 318523-027), loose-shipped with unit, is used in post-mix application of unit.**

Item No.	Description	Item No.	Description
1	Screw, Thread Cutting	12	Spring
2	Bottom Cover	13	Piston
3	Spring	14	Cylinder
4	Inlet Valve	15	Body
5	Nib, Short, Syrup	16	O–Ring
	Nib, Long, Water	17	Baffle
6	Valve Block	18	O–Ring
7	Setscrew, Hex Socket	19	Nozzle
8	Plate	20	Baffle Tube Extension
9	Screw, Thread Cutting	21	Cover Ass'y
10	Screw, Thread Cutting	22	Machine Screw
11	Top Flow Control		

FIGURE 7. DISPENSING VALVE ASSEMBLY

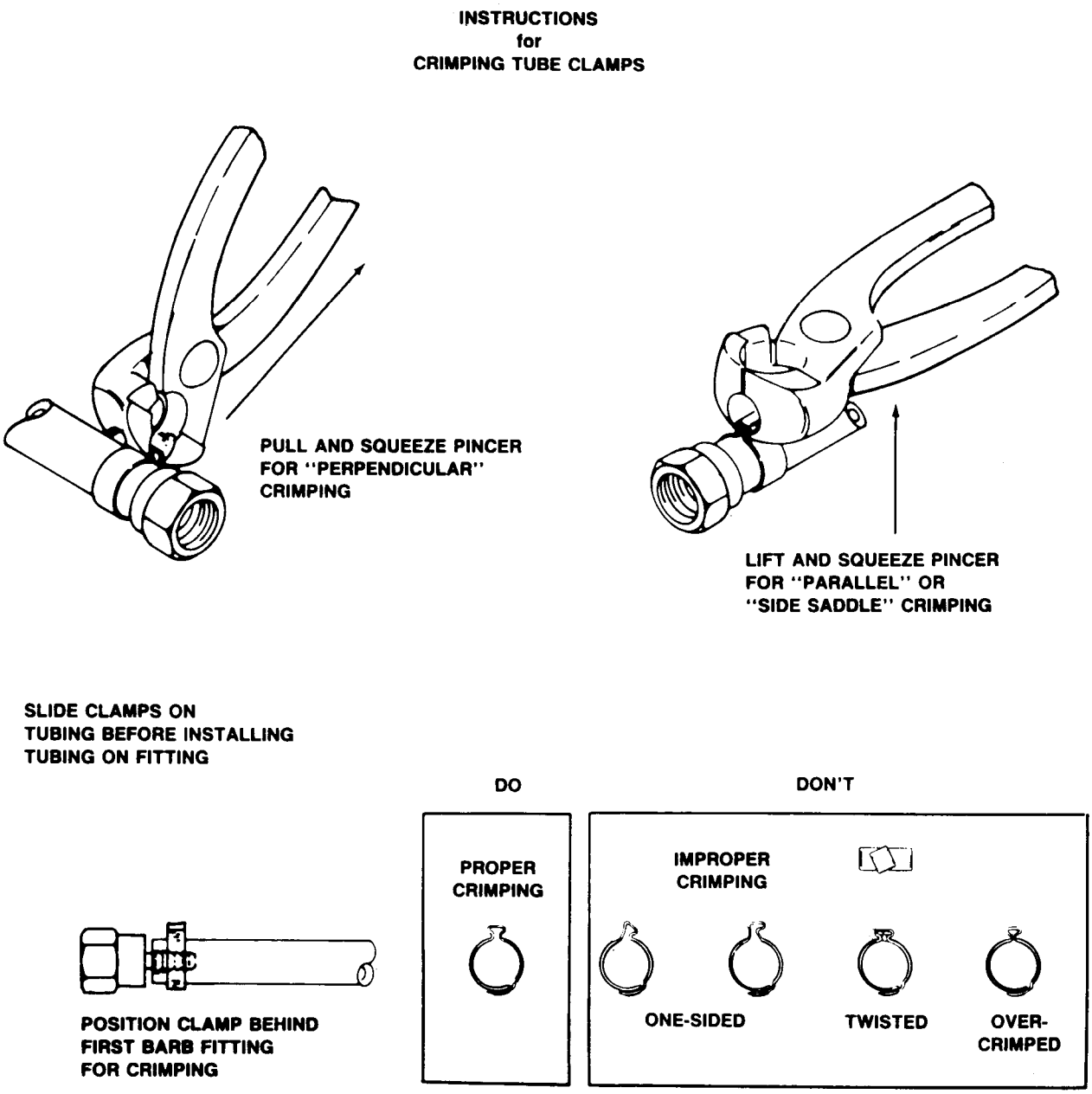


FIGURE 8. INSTRUCTIONS FOR CRIMPING TUBE CLAMPS

TROUBLESHOOTING

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

WARNING: If repairs are to be made to carbonated water system, disconnect electrical power to Cooling Unit, shut off plain water and CO_2 supplies, and relieve the carbonated water system pressure before proceeding. If repairs are to be made to syrup system, remove quick disconnects from applicable syrup tank, then relieve the system pressure before proceeding. If repairs are to be made to CO_2 system, stop dispensing, shut off CO_2 supply, then relieve the system pressure before proceeding.
If repairs are to be made to an existing Remote Condensing unit, disconnect the power to the condensing unit before proceeding

TROUBLESHOOTING TEA SYSTEM

Trouble	Probable Cause	Remedy
ONLY WATER DISPENSED.	A. Quick disconnects not secure on concentrate tank.	A. Secure quick disconnects on concentrate tank.
	B. Out of concentrate.	B. Replenish concentrate supply as instructed.
	C. Concentrate tank nitrogen regulator not properly adjusted.	C. Adjust concentrate tank nitrogen regulator as instructed.
	D. Inoperable dispensing valve.	D. Repair dispensing valve.
	E. Dispensing valve concentrate flow regulator not properly adjusted.	E. Adjust dispensing valve concentrate flow regulator as instructed.
	F. No nitrogen supply.	F. Replenish nitrogen supply as instructed.
	G. Dispensing valve concentrate flow regulator, concentrate tank quick disconnect, or concentrate lines restricted.	G. Sanitize concentrate system as instructed (see IMPORTANT note).
	IMPORTANT: If necessary to disassemble and clean dispensing valve flow regulators, do not intermix their pistons and cylinders as they are precision matched sets.	
ONLY CONCENTRATE DISPENSED.	A. Water inlet supply line shutoff valve closed.	A. Open water inlet supply line shutoff valve.
	B. Water filter clogged.	B. Replace water filter.
	C. Water strainer clogged.	C. Service water strainer as instructed.
	D. Inoperable dispensing valve.	D. Repair dispensing valve.
NO CONCENTRATE OR WATER DISPENSED.	A. Inoperable dispensing valve.	A. Repair dispensing valve.
WATER–TO–CONCENTRATE ‘‘RATIO’’ TOO LOW OR TOO HIGH.	A. Dispensing valve concentrate flow regulator not properly adjusted.	A. Adjust Water–to–Concentrate ‘‘Ratio” as instructed.
	B. Nitrogen gas pressure to concentrate tanks insufficient to push concentrate out of tank.	B. Adjust nitrogen regulator for concentrate tanks or replenish nitrogen supply as instructed.

Trouble	Probable Cause	Remedy
WATER–TO–CONCENTRATE ‘‘RATIO’’ TOO LOW OR TOO HIGH. (cond’t)	C. Water pressure too low (must be minimum of 20–psig).	C. Correct water pressure problem.
ADJUSTMENT OF DISPENSING VALVE CONCENTRATE FLOW REGULATOR DOES NOT INCREASE TO DESIRED WATER–TO–CONCENTRATE ‘‘RATIO’’.	A. No concentrate supply	A. Replenish concentrate supply as instructed.
	B. Concentrate tanks quick disconnects not secure.	B. Secure concentrate tanks quick disconnects.
	C. Concentrate tank nitrogen regulator out of adjustment.	C. Adjust concentrate tank nitrogen regulator as instructed.
	D. Dispensing valve concentrate flow regulator, concentrate tank quick disconnect, or concentrate line restricted.	D. Sanitize concentrate system as instructed.
	E. Water flowasher obstructed or tapered nylon washer inside tube swivel nut connection distorted from being over–tightened.	E. Clean or replace flowasher or replace tapered nylon washer and make sure it seats properly.
	F. Improper Baume of concentrate.	F. Replace concentrate supply as instructed.
	G. Dirty or inoperative piston or spring in dispensing valve concentrate flow regulator.	G. Disassemble and clean dispensing valve concentrate flow regulator (see IMPORTANT note).
	IMPORTANT: If necessary to disassemble and clean dispensing valve flow regulators, do not intermix their pistons and cylinders as they are precision matched sets.	
ADJUSTMENT OF DISPENSING VALVE CONCENTRATE FLOW REGULATOR DOES NOT DECREASE TO DESIRED WATER–TO–CONCENTRATE ‘‘RATIO’’.	A. Dirty or inoperative piston or spring in dispensing valve concentrate flow regulator.	A. Disassemble and clean dispensing valve concentrate flow regulator (see IMPORTANT note).
	B. Water pressure too low (must be minimum of 20–psig).	B. Correct water pressure problem.
	IMPORTANT: If necessary to disassemble and clean dispensing valve flow regulators, do not intermix their pistons and cylinders as they are precision matched sets.	

TROUBLESHOOTING POST–MIX SYSTEM

WATER–TO–SYRUP ‘‘RATIO’’ TOO LOW OR TOO HIGH.	A. Dispensing valve syrup flow regulator not properly adjusted.	A. Adjust Water–to–Syrup ‘‘Ratio’’ as instructed.
	B. CO_2 gas pressure to syrup tank insufficient to push syrup out of tank.	B. Adjust syrup tank CO_2 regulator as instructed.

Trouble	Probable Cause	Remedy
ADJUSTMENT OF DISPENSING VALVE SYRUP FLOW REGULATOR DOES NOT INCREASE TO DESIRED WATER–TO–SYRUP ‘‘RATIO’’.	A. No syrup supply.	A. Replenish syrup supply as instructed.
	B. Syrup tank quick disconnects not secure.	B. Secure quick disconnects.
	C. Syrup tank CO_2 regulator out of adjustment.	C. Adjust syrup tank CO_2 regulator as instructed.
	D. Dispensing valve syrup flow regulator, syrup tank quick disconnect, or syrup line restricted.	D. Sanitize syrup system as instructed.
	E. Improper syrup Baume.	E. Replace syrup supply as instructed.
	F. Dirty or inoperative piston or spring in dispensing valve syrup flow regulator.	F. Disassemble and clean dispensing valve syrup flow regulator (see IMPORTANT, note).
	G. Tapered nylon washer inside tube swivel nut connector distorted from being overtightened.	G. Replace nylon washer and make sure it seats properly.
	IMPORTANT: If necessary to disassemble and clean dispensing valve flow regulators, do not intermix their pistons and cylinders as they are precision matched sets.	
ADJUSTMENT OF DISPENSING VALVE SYRUP FLOW REGULATOR DOES NOT DECREASE TO DESIRED WATER–TO–SYRUP ‘‘RATIO’’.	A. Dirty or inoperative piston or spring in dispensing valve syrup flow regulator.	A. Disassemble and clean dispensing valve syrup flow regulator (see IMPORTANT, note).
	IMPORTANT: If necessary to disassemble and clean dispensing valve flow regulators, do not intermix their pistons and cylinders as they are precision matched sets.	
DISPENSED PRODUCT CARBONATION TOO LOW.	A. Carbonator CO_2 regulator out of adjustment for existing water conditions or temperature.	A. Adjust carbonator CO_2 regulator (Reference manual provided with carbonator).
	B. Air in carbonator tank.	B. Vent air out of carbonator tank through relief valve. Actuate dispensing valve to make carbonator pump cycle on.
	C. Water, oil, or dirt, in CO_2 supply.	C. Remove contaminated CO_2. Clean CO_2 system (lines, regulators, etc.) using mild detergent. Install clean CO_2 supply.

Trouble	Probable Cause	Remedy
DISPENSED PRODUCT COMES OUT OF DISPENSING VALVE CLEAR BUT FOAMS IN CUP OR GLASS.	A. Oil film or soap scum in cup or glass.	A. Use clean cups and glasses.
	B. Ice used for finished drink is sub–cooled.	B. Do not use ice directly from freezer. Allow ice to become “wet” before using. (Refer to following NOTE).
	NOTE: Crushed ice also causes dispensing problems. When finished drink hits sharp edges of ice, carbonation is released from dispensed drink.	
DISPENSED PRODUCT PRODUCES FOAM AS IT LEAVES DISPENSING VALVE.	A. Recovery rate of refrigeration unit exceeded, ice bank depleted.	A. Allow ice bank to recover.
	B. Carbonator CO_2 regulator pressure adjusted too high for existing water conditions or temperature.	B. Reduce carbonator CO_2 regulator pressure setting. Reference manual provided with carbonator.
	C. Syrup over–carbonated with CO_2 as indicated by bubbles in inlet syrup lines.	C. Remove syrup tanks quick disconnects shake tank vigorously, then relieve tank CO_2 pressure as many times as necessary to remove over–carbonation.
	D. Dispensing valve restricted or dirty.	D. Sanitize syrup system as instructed.
	E. Tapered nylon washer inside carbonated water line swivel nut connector distorted restricting carbonated water flow.	E. Replace nylon washer. Make sure it is properly seated.
	F. Dirty water supply.	F. Check water filter. Replace cartridge. (see NOTE)
	NOTE: If water supply is dirty, be sure to flush lines and carbonator completely. It may be necessary to remove lines to carbonator tank, invert tank, and flush tank and all inlet lines to remove any foreign particles or dirt.	
ONLY CARBONATED WATER DISPENSED.	A. Quick disconnects not secure on syrup tank.	A. Secure quick disconnects on syrup tank.
	B. Out of syrup.	B. Replenish syrup supply as instructed.
	C. Syrup tank CO_2 regulator not properly adjusted.	C. Adjust syrup tank CO_2 regulator as instructed.
	D. Inoperable dispensing valve.	D. Repair dispensing valve.
	E. Dispensing valve syrup flow regulator not properly adjusted.	E. Adjust dispensing valve syrup flow regulator (Water–to–Syrup “Ratio”) as instructed.

Trouble	Probable Cause	Remedy
ONLY CARBONATED WATER DISPENSED. (cont'd)	F. Dispensing valve syrup flow regulator, syrup tank quick disconnect, or syrup lines restricted.	F. Sanitize syrup system as instructed. (See IMPORTANT, note).
	IMPORTANT: If necessary to disassemble and clean dispensing valve syrup flow regulators, do not intermix their pistons and cylinders as they are precision matched sets.	
ONLY SYRUP DISPENSED.	A. Water inlet supply line shutoff valve closed.	A. Open water inlet supply line shutoff valve.
	B. Carbonator power cord unplugged from electrical outlet.	B. Plug carbonated power cord into electrical outlet.
	C. Carbonator CO_2 regulator not properly adjusted.	C. Adjust carbonator CO_2 regulator (Reference manual provided with carbonator).

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IMI CORNELIUS INC.
One Cornelius Place
Anoka, MN. 55303–1592
Telephone (800) 238–3600
Facsimile (612) 422–3232

ILLUSTRATED PARTS BREAKDOWN

DRAFT ARM WITH SF-1 VALVE

Model Numbers
414019

September 12, 1983
Revised: October 8, 1986

ITEM NO.	PART NO.	NAME
	319201	Draft Arm Ass'y, Tea
1	176193	Fitting, 7/16–20
2	176034	Nipple
3	176017	Swivel Nut, 7/16–20
4	176035	Ferrule
5	176107	Fitting, 1/4 NPT by 7/16–20
6	178025–100	Tapered Gasket, White
7	311035	Strainer
8	311577	Wing Nut, 3/4–16
9	311584	Tube Hold Down
10	311580	Housing Cover
11	317884	Cover Ass'y (includes 12–14)
12	317881	Retaining Washer
13	317882	Machine Screw, Fl Sl Hd, Stainless Steel, No. 8–32 by 3/8–in.
14	317647	Cover
15	319200	Dispensing Valve Ass'y (see Figure 6–2)
16	*187244	Machine Screw, Sl Pan Hd, No. 6–32 by 1/4–in.
17	150199	Coupling Nut
18	319198	Adapter, Valve

ITEM NO.	PART NO.	NAME
19	319199	Housing Ass'y (includes 20–27)
20	319197	Manifold and Tube Ass'y
21	150058	O–Ring, .301 I.D.
22	180020	Spring
23	178019	Retainer Washer
24	180018–013	Seal
25	314224	Stem, Poppet
26	180025	O–Ring, .364 I.D.
27	314488	Housing
28	316541	Column
29	319314–039	Base Kit, Optional (includes 30–41)
30	151447	Cup Rest
31	140133	Drain Hose Clamp
32	**140598	Drain Hose, 1/2 I.D. by 36–in.
33	319313	Flange
34	319315	Gasket, Rubber
35	*150774	Wing Nut, 3/8–16
36	151140	Mounting Clip
37	*150777	Hex Nut, Jam, 3/8–16
38	150447	Flat Washer, Rubber
39	*150724	Carriage Bolt, 3/8–16 by 5–in.
40	311587	Reinforcing Plate
41	151718–039	Base

**Zinc–plated steel unless indicated otherwise.
**Sold in bulk quantity only.

FIGURE 9. TEA DRAFT ARM ASSEMBLY

ITEM NO.	PART NO.	NAME
	319200	Post–Mix Valve Ass'y, Tea Draft Arm
1	317884	Cover Ass'y, w/o Lever, (includes 2–4)
2	317882	Machine Screw, Fl Sl Hd, Stainless Steel, No. 8–32 by 3/8–in.
3	317881	Retaining Washer
4	317647	Cover, w/o Lever, Manual
5	317828	Thread Cutting Screw, Phil Rd Hd, Stainless Steel, No. 6–32 by 3/4–in.
6	317718	Cover, Bottom
7	317649	Nozzle
8	300097	Extension, Baffle (tea application)
9	318754–011	Baffle (tea application)
	318523–027	Baffle (see NOTE 2)
10	398033–013	O–Ring, .799 I.D. by .103 C.S.
11	317723	Spring
12	311355	Valve Inlet
13	310788	Nib, Short, Syrup
	317782	Nib, Long, Water
14	317639	Valve Block
15	*314813	Setscrew, Headless Hex Soc. Oval Pt., No. 8–32 by 1/2–in.
16	317819	Pin
17	317646	Lever

ITEM NO.	PART NO.	NAME
18	317895	Thread Cutting Screw, Phil Pan Hd, Stainless Steel, No. 10–32 by 1/2–in.
19	317645	Block, Threaded
20	317714	Plate
21	317784	Thread Cutting Screw, Phil Truss Hd, Stainless Steel, No. 8–32 by 5/16–in.
22	310632–007	Adjusting Screw
23	180025	O–Ring, .364 I.D. by .070 C.S.
24	317429	Top, Flow Control
25	317816	O–Ring
26	310482	Spring
27	318664	Cylinder and Piston Ass'y, Syrup (includes 28 and 29)
	318665	Cylinder and Piston Ass'y, Water (includes 28 and 29)
28	310754	Piston, Water (see NOTE 1)
	310480	Piston, Syrup (see NOTE 1)
29	317431	Cylinder (see NOTE 1)
30	317633	Body
31	319540	By–Pass Ass'y (includes 32 and 33)
32	319539	Nozzle
33	318755	Tube, By–Pass
34	319541	O–Ring, .157 I.D. by .038 C.S.

NOTE 1: Items 27 and 28 are a matched pair and cannot be inter–changed. Order item 26 for replacement.

**Zinc–plated steel unless indicated otherwise.

**Sold in bulk quantity only.

NOTE 2: If unit will be connected to post–mix system, remove existing tea baffle and baffle tube extension and install Baffle (P/N 318523–000)

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WARRANTY

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

IMI Cornelius Offices

AUSTRALIA ● P.O. 210, ● RIVERWOOD, ● NSW 2210, AUSTRALIA ● (61) 2 533 3122 ● FAX (61) 2 534 2166
AUSTRIA ● AM LANGEN FELDE 32 ● A-1222 ● VIENNA, AUSTRIA ● (43) 1 233 520 ● FAX (43) 1-2335-2930
BELGIUM ● BOSKAPELLEI 122 ● B-2930 BRAASCHAAT, BELGIUM ● (32) 3 664 0552 ● FAX (32) 3 665 2307
BRAZIL ● RUA ITAOCARA 97 ● TOMAS COELHO ● RIO DE JANEIRO, BRAZIL ● (55) 21 591 7150 ● FAX (55) 21 593 1829
ENGLAND ● TYTHING ROAD ALCESTER ● WARWICKSHIRE, B49 6 EU, ENGLAND ● (44) 789 763 101 ● FAX (44) 789 763 644
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USA ● ONE CORNELIUS PLACE ● ANOKA, MINNESOTA ● (612) 421-6120 ● FAX (612) 422-3255

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