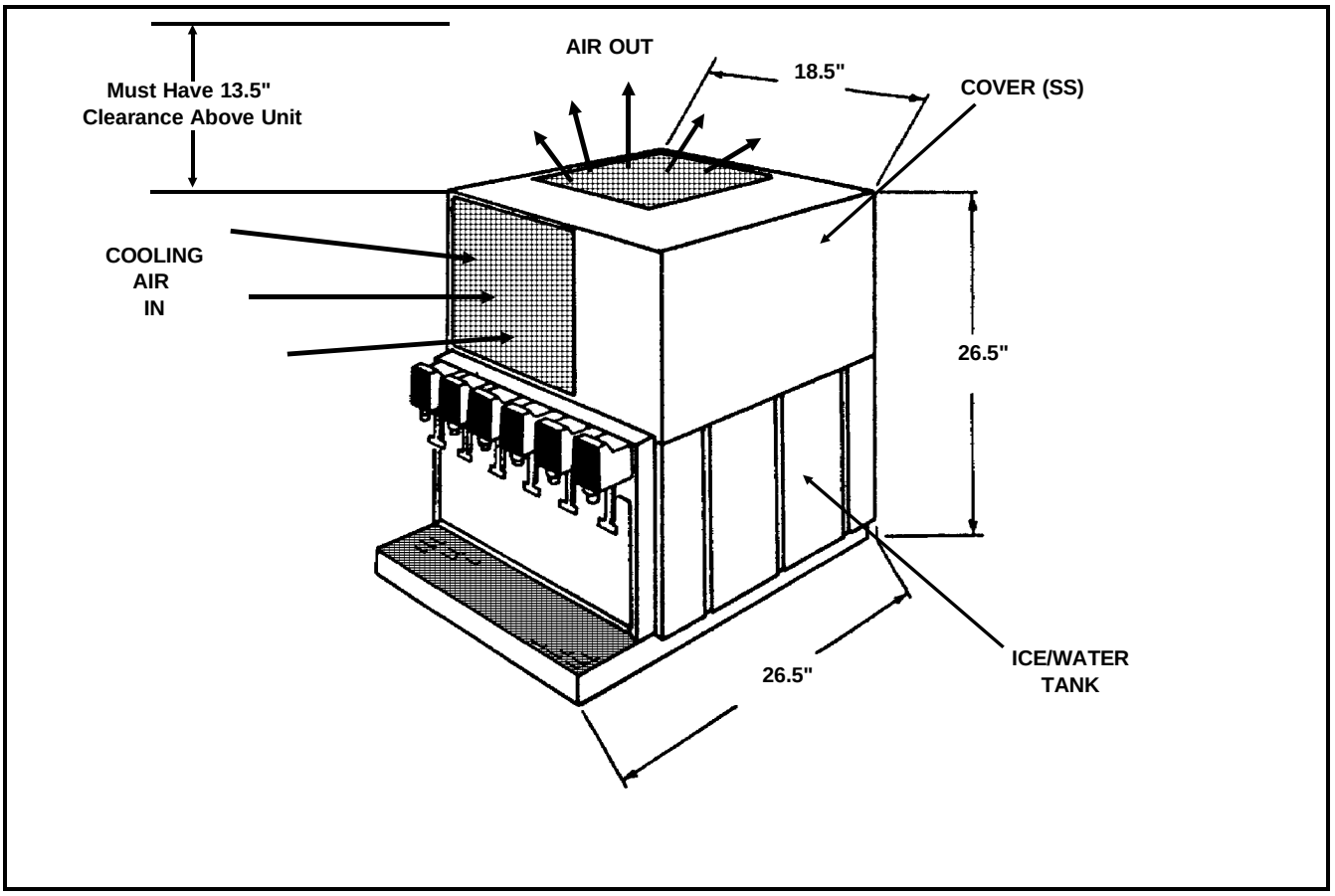
DD40 Introduction

To the owner or user: The service manual you are reading is intended to provide you and the maintenance or service technician with the information needed to install, start up, clean and service this ice system.
The DD40 is an ice bank with 6 electric post mix soda valves.

Table of Contents

Service Parts Lists and Wiring Diagrams are in the cneter of this manual, printed on yellow paper.

DD40 GENERAL INFORMATION



SPECIFICATIONS:

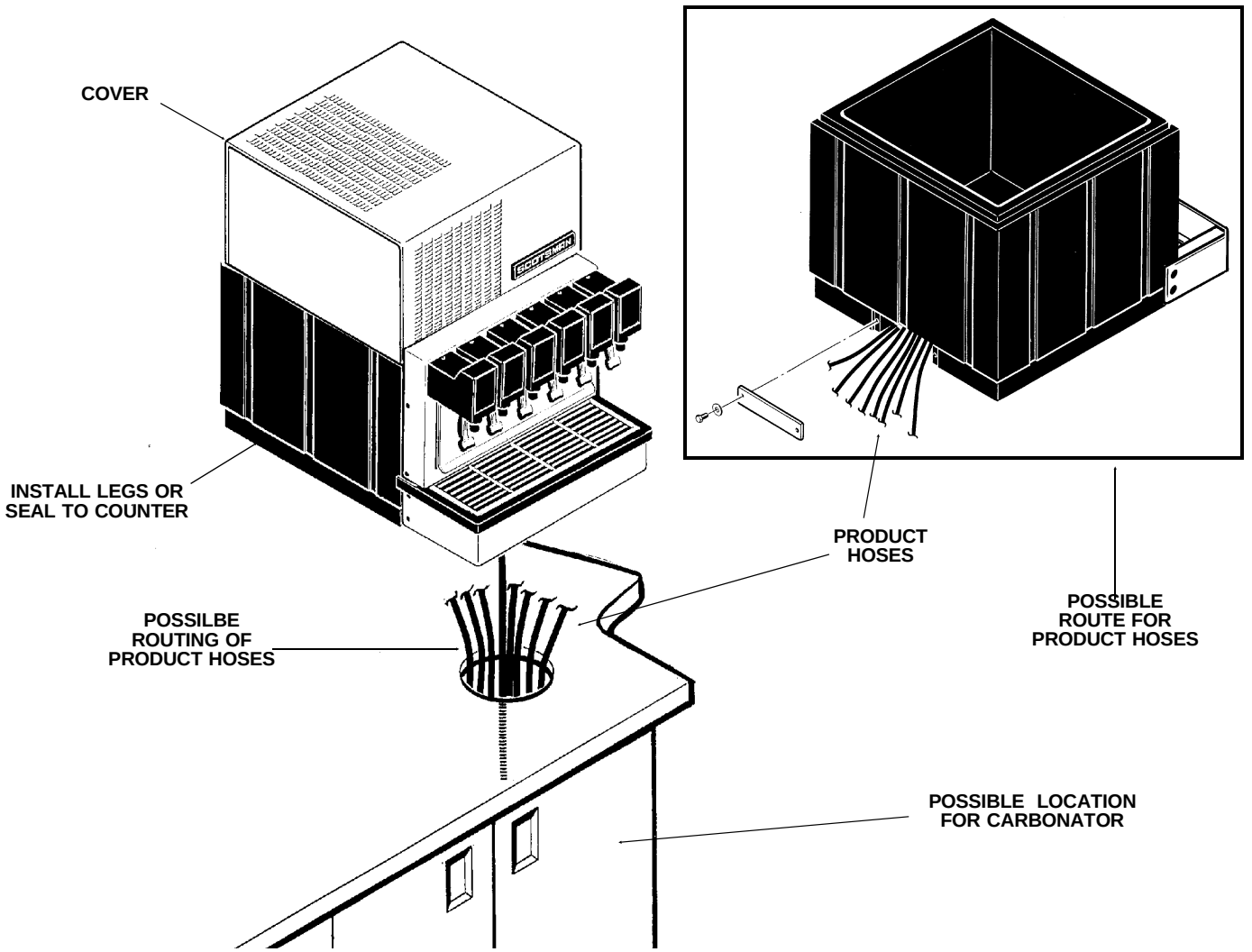
MODEL	DIMENSIONS H" X W" X D"	TANK FINISH	ELECTRCIAL	ICE BANK	COMPRESSOR H.P.	RECOVERY @ 75^0 F.	SHIPPING WEIGHT
DD40P+6B-1A DD40S+6B-1A	26.5 X 18.5 X 26.5 SAME	Twin Wall Plastic Stainless Steel	115/60/1 - 7 AMPS SAME	40 LB. SAME	1/3 SAME	3.5 HOUR SAME	150 LBS. SAME

Legs are included. Carbonator (Carb100) and installation kit (KINSDD) not included.

REFRIGERATION CAPACITY: Number of 12-0z. drinks at or below 40^0 F.		
Drinks per minute	@ 75^0 product, water and ambient	@ 90^0 F. product, water and ambient
4	150	80
6	110	45

Scotsman Ice Systems are designed and manufactured with the highest regard for safety and performance. They meet or exceed the standards of UL and NSF.
Scotsman assumes no liability or responsiblity of any kind for products manufactured by Scotsman that have been altered in any way, including the use of parts and/or other components not specifically approved by Scotsman.
Scotsman reserves the right to make design changes and/or improvements at any time. Specifications and designs are subject to change without notice.

DD40
Installation



1. Locate dispenser on the counter. Allow 13.5 inches vertical clearance above unit for the removal of the cover, and for air circulation.

In order to comply with National Sanitation Foundation (NSF) requirements, this unit must be either elevated above the countertop sufficiently to provide space for cleaning under the unit **or** sealed to the countertop.

Elevating the unit may be accomplished by using the included legs. They will screw into threaded holes in the base of the unit.

Sealing may be accomplished by the use of room temperature vulcanizing (RTV) rubber sealant such as General Electric IS 808 Industrial Sealant, Dow Corning 731 (Scotsman part number 19-0529-01) or the equivalent.

With the unit located on the counter as desired:

A. Tilt or lift the unit to expose the bottom flanges of the base frame.

B. Apply the sealant to cover the bottom flanges of the base frame.

C. Return the unit to the desired position on the countertop.

D. Add sealant around the base frame and countertop to provide a seal with a radius of 1/2". Follow the sealant manufacturer's instructions on the package for working with the sealant, and cleaning up.

E. Seal around all access holes in the countertop with Permagum or Mortite caulk or an equivalent material.

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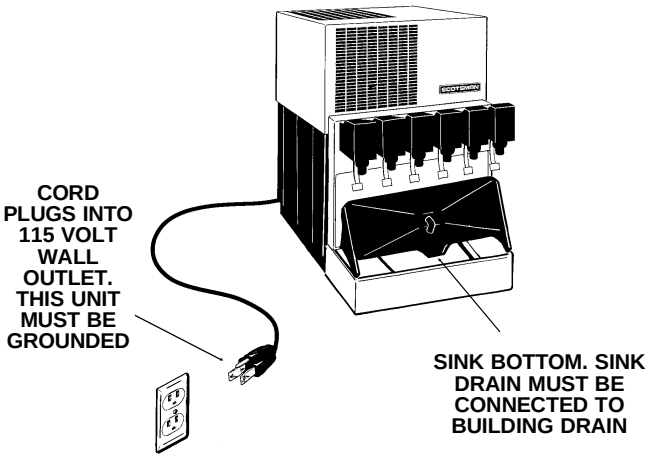
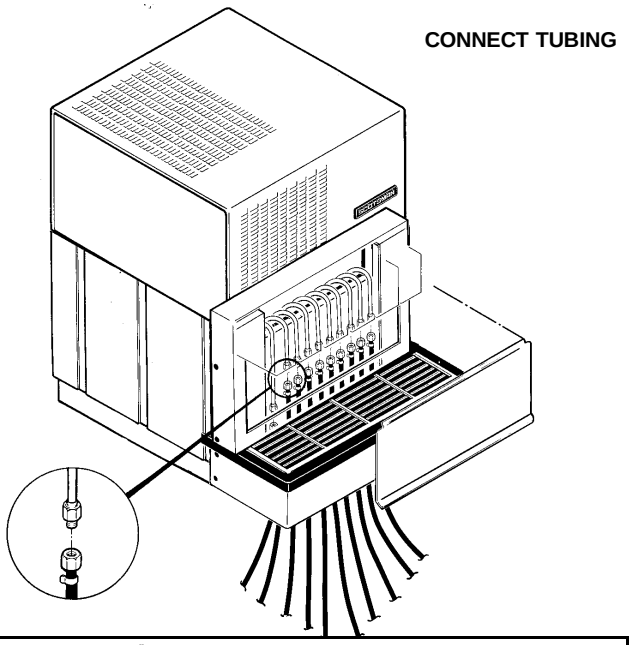
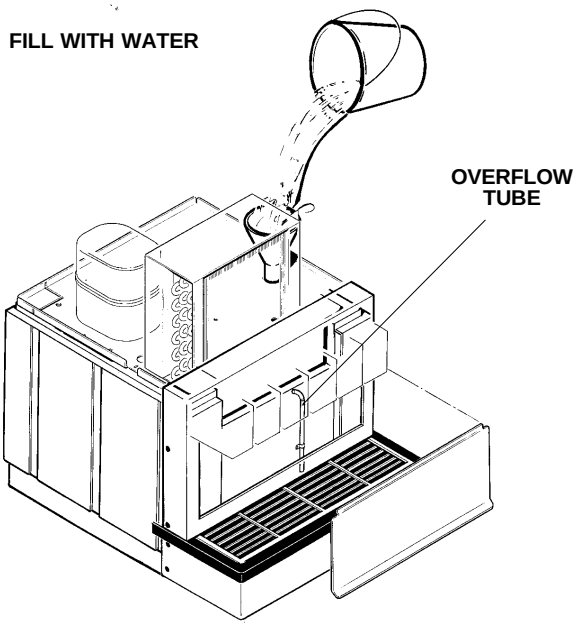
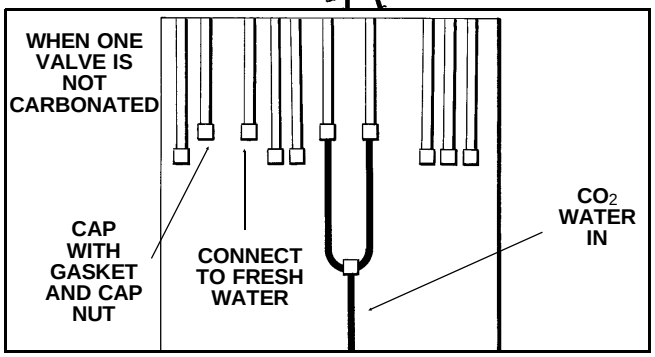
Installation

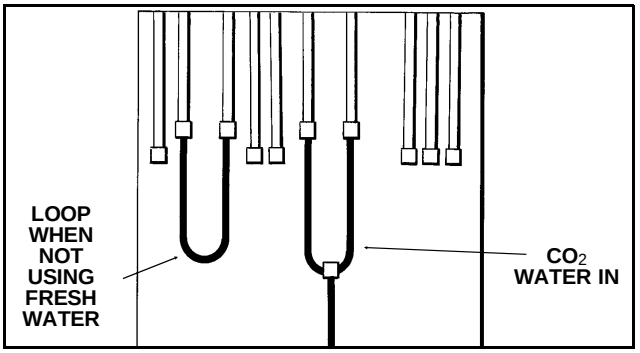


Remove the cover by removing one screw on the top of the cover.
If installing a remote carbonator, locate it nearby.
2. Connect the drain line between drain pan and building drain.
3. Plug electrical supply cord into 115 volt outlet so ice bank can begin to form. Do not turn on the carbonator at this time.
4. Fill water bath until water flows out of overflow tube.
5. Connect water supply line (field supplied) from the remote carbonator to the dispenser.
Connect **both** inlet C02 water lines to CO2 water from the carbonator.
Connect water supply line (field supplied) from building source to carbonator.
Connect syrup lines to dispenser, and install disconnect sockets.
6. Connect primary CO2 regulator to CO2 tank. Secure secondary regulators to wall or other stationary surface.
7. Connect CO2 line between outlet of primary regulator and inlet of secondary regulators.
8. Connect CO2 lines between outlets of secondary regulators and syrup tanks.
INSTALL DISCONNECT SOCKETS









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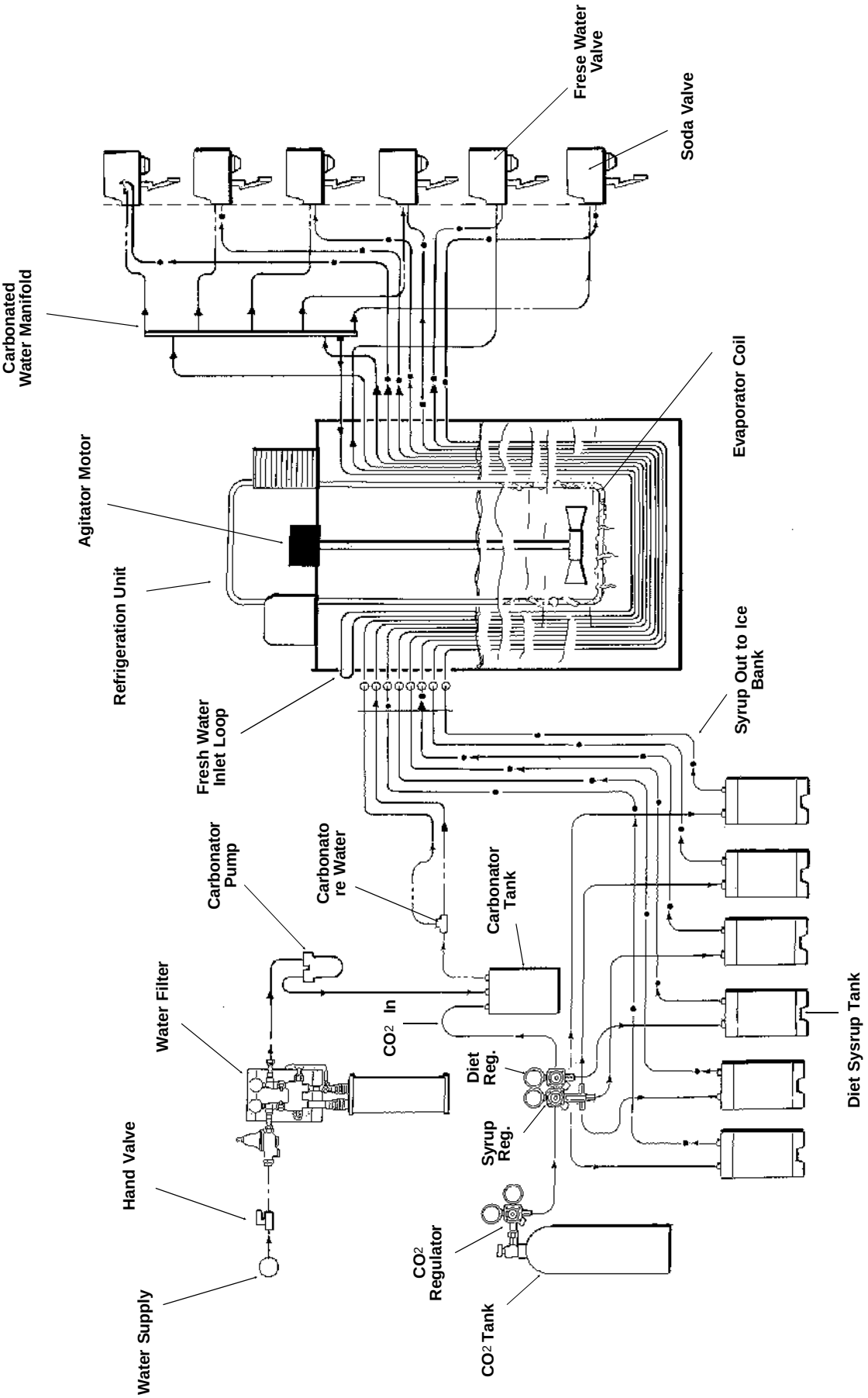
Soda Schematic



SCOTSMAN FLOAT CARBONATOR "CARB100" INSTALLATION

1. Remove from carton, inspect for freight damage. If damaged file a claim with the freight company immediately.
2. Locate the carbonator on a flat surface.
3. Connect the water supply to the water "in" (3/8" male flare on pump body) Use 3/8" or larger line.
4. Connect carbonated water line from to carbonated water "out" (on tank) to the ice bank CO2 water "in".
5. Install CO2 regulator on CO2 tank.
6. Connect CO2 line from the high pressure CO2 regulator to CO2 "in" fitting on the carbonator tank.
7. Install tank disconnects on the end of the CO2 lines.
8. Turn on CO2 tank, set the high pressure gauge at 80-100 psi.
Set low pressure gauge at 45 psi. (Diet to 8-15 psi).
9. Check all fittings with soapy water for possible gas leaks.
10. Turn on water to carbonator.
11. Plug electrical cord into properly grounded 115 volt outlet.

NOTE: Grounded outlet must be used for safety. If local codes require hard wiring, follow these steps.

REMOVE: Cord plug from 115 volt outlet.

Wiring compartment cover from motor.

Wire nut from power supply wire, quick disconnect terminal from motor terminal, and ground wire fastener.

Cord from motor.

INSTALL: Appropriate bushing into conduit hole in motor.

Permanent wiring to motor through bushing into wiring compartment.

One conductor to switch cord with wire nut removed in step 3 above.

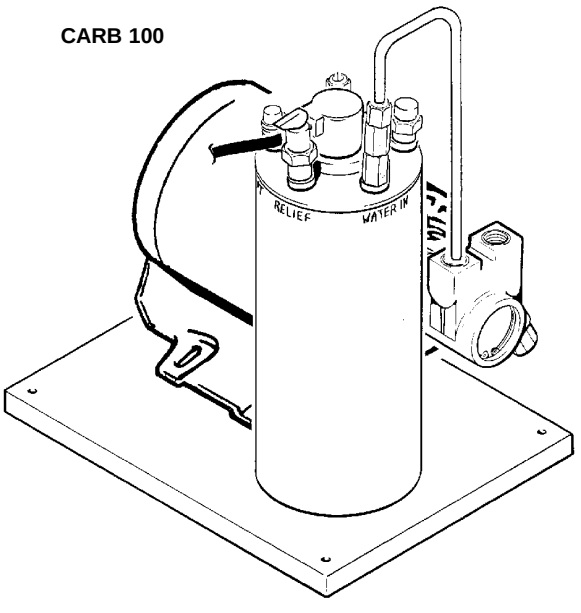
Other conductor to terminal from power cord was removed.

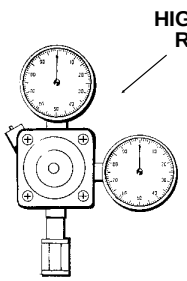
Ground wire to motor housing with green grounding screw.

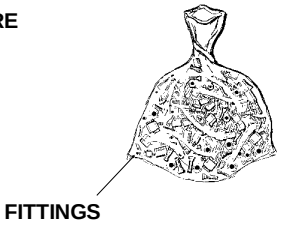
Wiring compartment cover.

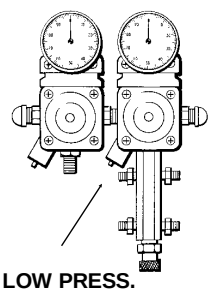
Purge CO2 pressure from carbonator once or twice while filling by pulling up on pressure relief valve on the top of the carbonator tank.

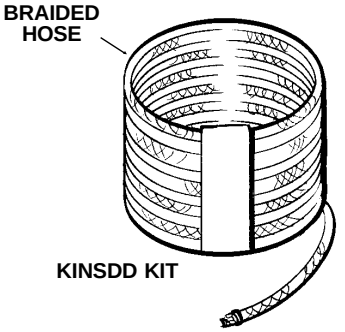
12. Connect syrup lines from syrup tanks to dispensing lines on ice bank (located behind the front panel).
13. Connect gas to syrup tanks.
14. Adjust soda valves for proper mix.
15. CO2 tanks should always be secured to prevent them from falling over.











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Start Up

(Only after ice bank has formed)

1. Turn CO2 on.

2. Set high pressure regulator to 80-100 PSI

3. Set low pressure regulator to 40-50 PSI

4. Set diet pressure regulator (if used) to 8-10 psi.

5. Connect syrup tanks and gas disconnects to syrup tanks.

6. Check for CO2 leaks by turning CO2 tanks off for 4-5 minutes. If the high pressure guage drops, there is a CO2 leak. Then check each fitting with a soap solution.

7. Turn on the water.

8. Plug in or switch on the carbonator.

9. Purge CO2 gas pressure from the carbonator once or twice while filling by pulling up on pressure relief valve on the top of the carbonator.

10. Actuate each valve until both water and syrup flow.

11. Check each valve for proper adjustment. Flow rate per valve should be 1.25 oz. per second of carbonated water, and .25 oz. per second syrup for standard valves. For a fast flow valve, flow rate should be 2.5 oz. per second of carbonated water, and .5 oz. per second syrup.

12. Replace cover and screws.

13. Check that the CO2 tanks are secure from falling over.

14. If water noise occurs, add water to bath.

15. Allow machine to build ice bank before dispensing product at maximum draw rate.

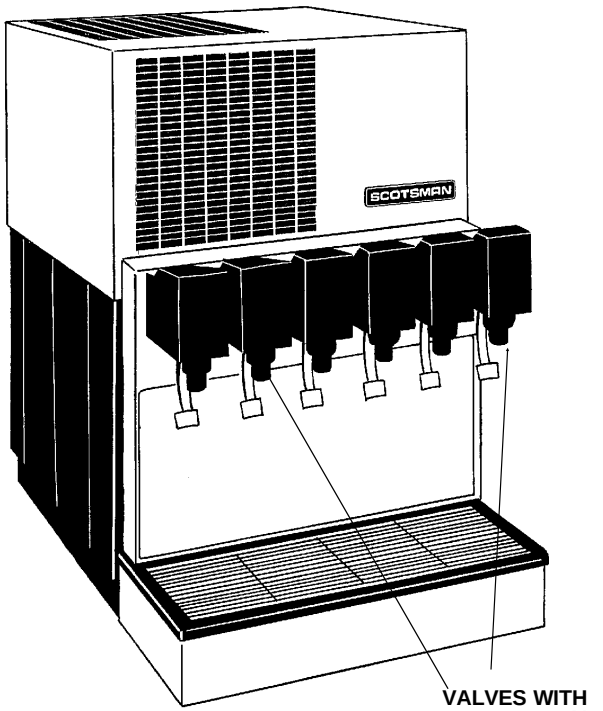
DD40

FOR THE OPERATOR

This section covers operating controls, daily pre-operation check, unit operation, adjustments, replenishing CO2 and syrup supplies, and daily cleaning.

Operating Controls.

Dispensing valve levers, located below the dispensing valves, need only to be pressed with a cup or glass to dispense product. Dispensing carbonated water only. On two of the valves there is a separate lever for dispensing water only. On the carbonated valve, actuating this lever will cause the valve to dispense carbonated water only. If there is a non-carbonated valve, activating it will dispense plain water.



Daily Check

1. Make sure that the CO2 cylinder primary regulator assembly 1800 psi gauge is not in the shaded ("change CO2 cylinder") portion of the dial. If so, CO2 cylinder is almost empty, and must be replaced.
2. Sufficient syrup supply in all syrup tanks. If not, replenish syrup supply.
3. Make sure drip tray and grill are clean.
4. Make sure soda valve nozzles are clean.

Replenishing CO2 Supply

Note: When indicator on CO2 cylinder regulator 1800 psi gauge is in the shaded area, the cylinder is almost empty and should be changed.

1. Fully close (clockwise) CO2 cylinder valve.
2. Slowly loosen CO2 regulator assembly coupling nut allowing CO2 pressure to escape, then remove regulator assembly from CO2 cylinder.
3. Unfasten safety chain and remove empty CO2 cylinder.

////////////////////////////WARNING////////////////////////////
To avoid personal injury and/or property damage, always secure CO2 cylinder with a safety chain to prevent it from falling over. Should the valve become accidentally damaged or broken off, CO2 cylinder can cause serious personal injury.
//

4. Position CO2 cylinder and secure with safety chain.
5. Make sure gasket is in place inside CO2 regulator coupling nut, then install regulator on CO2 cylinder.
6. Open (counterclockwise) CO2 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.)
7. Check CO2 connections for leaks. Tighten loose connections.

Replenishing Syrup Supply.

1. Remove CO2 disconnect (grey) and syrup disconnect (black) from empty syrup tank, then remove tank.
2. Place full syrup tank in position, then connect CO2 disconnect (grey) and syrup disconnect (black) to full syrup tank.

Syrup Flavor Change.

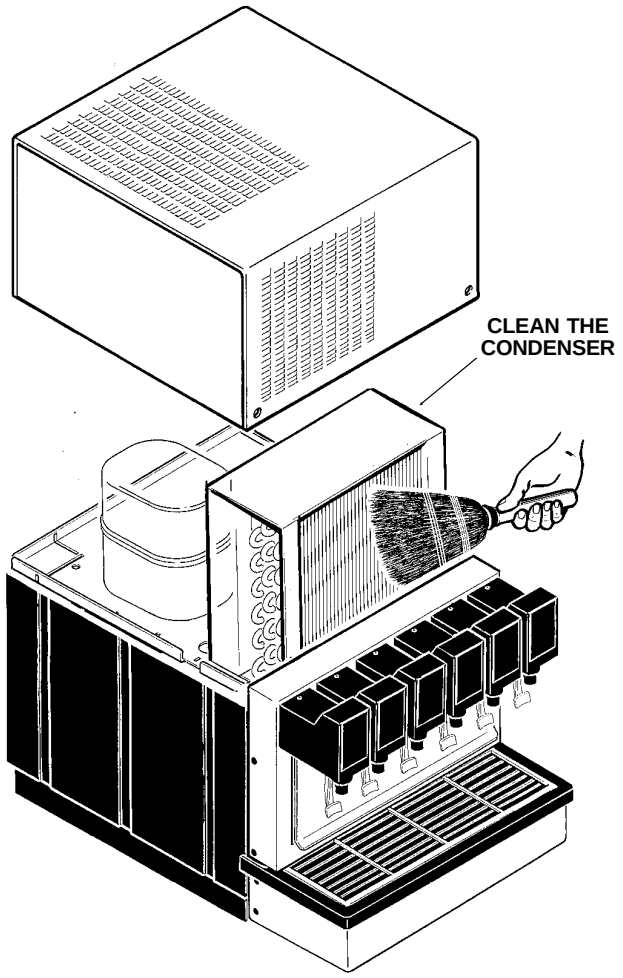
Sanitize applicable syrup system as instructed, then install full tank of new flavor syrup.

Cleaning and sanitizing

1. Remove grill from sink.
2. Wash out sink, and then rinse with warm water allowing water to run down the drain.
3. Wash the grill, then rinse with clean water. Place back in sink.
4. Clean all exterior surfaces of the unit with a sponge. Rinse out the sponge with clean water, wring excess water out of the sponge, and wipe off external surfaces of the unit. Wipe unit with a clean soft cloth. Do NOT use abrasive type cleaners.
5. Clean valve nozzles. Looking down from the top of the unit, turn the nozzle clockwise and down to remove it. Clean with soap and water, rinse with clean hot water, and allow to air dry. Replace on the valve.

Clean the condenser twice per year.

1. Disconnect electrical power.
2. Remove one screw, and the cover.
3. Remove condenser filter, and clean it with water.
4. Inspect condenser fins, if light cannot be seen through the fins, the condenser needs to be cleaned by either vacuum, compressed air, or coil cleaner. Do Not use a wire brush.
5. Replace the filter, and the cover.
6. Reconnect the electrical power.

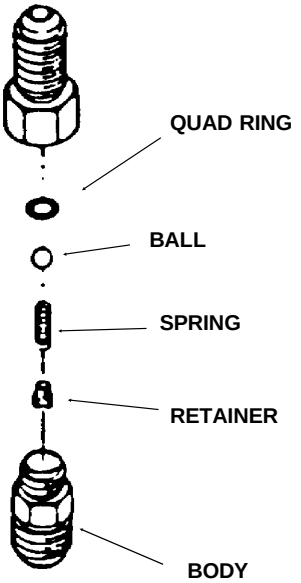


GAS CHECK VALVES

(At the low pressure outlet of the CO_2 tank regulator).

The CO_2 system gas check valves must be inspected and serviced at least one per year under normal conditions, and always after any servicing or disruption of the CO_2 system.

Always replace the quad ring seal each time the gas check valves are serviced.



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Adjustments

There is an adjustment for both the water and the syrup.
Adjustment screws are located under the valve cover, and behind the solenoid.
1. Facing the valve, the screw on the right hand side is the syrup adjustment. The screw on the left hand side is the water adjustment.
2. Turn either screw counter clockwise to increase flow.

Valve service

To remove:
Push release lever up (located under the cover on the right side of the valve, near the back) and pull out the valve. There are ball checks to automatically shut off the water and syrup.
Pull apart the electical connectors to the valve, and remove the valve.

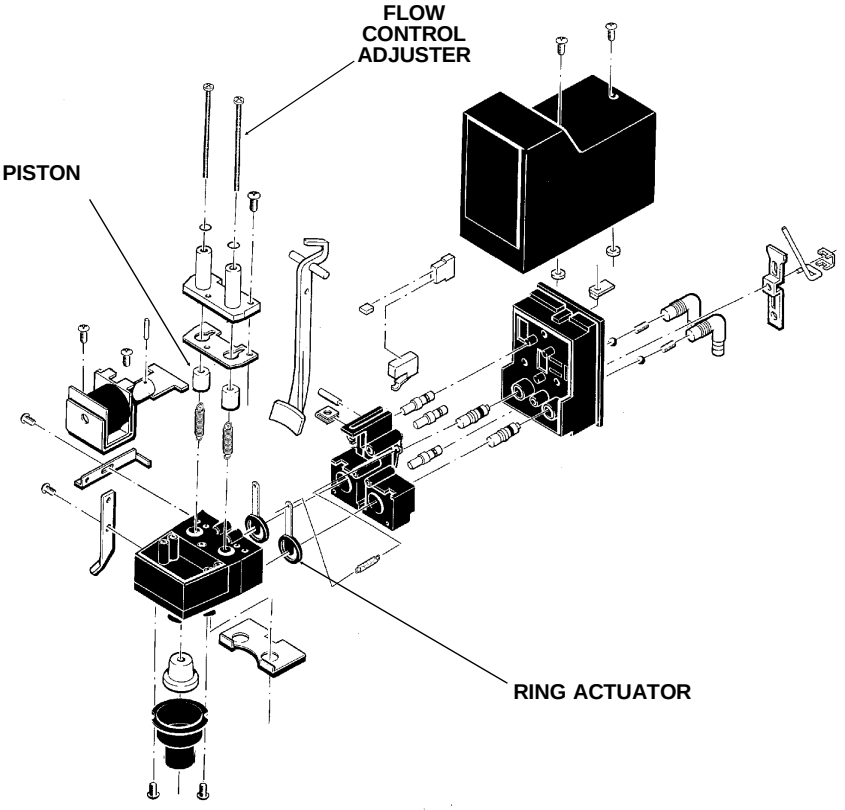
To service:

- Rubber Seats(ring actuators):

Remove the four screws in the back of the rear section. This will let the front and rear section seperate and expose the ring actuators.
The ring actuators are reversable, and interchangeable. When either reversing, or replaceing them, place the rings of the actuators into the groves and align the stainless steel lever of the actuator with the center of the notch in the front section. Replace the rear section, be sure that the ring actuators seat in the groves of the front and rear section.

- Flow Controls:

The adjusting screws and springs may be removed by first removing solenoid and then the entire top plate. The adjusting screws and springs are interchangeable.
To remove pistons, remove the entire top plate, then remove the retaining spring on the tip of the adjusting screw. The spring piston should slide off. Pistons are color coded:
Water is green
Syrup is red
Diet syrup is grey.



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SANITIZING

The dispenser's syrup systems should be sanitized periodically as prescribed by the local health authority or the syrup supplier, whichever has jurisdiction.

Recommended sanitizing agents are "Chlor-tergent" (Oakite Products Co.) or "Diversal CX" (Diversey-Wyandotte Chemical Co.)

Use an empty, clean syrup product tank in which to mix the sanitizing solution.

Prepare the sanitizing solution by dissolving the required amount of concentrate to supply 200 PPM (parts per million) available sanitizer in enough water to flush and sanitize the number of circuits to be cleaned; five gallons of sanitizer should be adequate for sanitizing a five flavor dispenser. Water temperature should be between 750F. and 1250F.

To sanitize syrup systems:

1. Remove quick disconnect sockets from syrup product tank. Wash sockets in warm potable water, connect sockets to tank containing sanitizing solution.
2. Open dispensing valve to allow sanitizing solution to push syrup out of product line, cooling coil, and valve. Continue drawing until sanitzing solution has purged all syrup from system and then close valve.
3. Allow sanitizing solution to remain in system for ten (10) minutes.
4. To remove sanitizing solution from system, remove tank containing solution and connect a tank containing clean, uncontaminated syrup. Operate dispensing valve until all sanitizing solution has been removed from the system.

//////////////////////////Caution//////////////////////////////
Failure to remove all sanitizer could create a health hazard.
//

Repeat sanitizing procedure for each syrup system (valve) in the dispenser.

////////////////////////////WARNING////////////////////////
To Avoid Possible Personal Injury Or Property Damage, Do Not Attempt To Remove Cover From The Pressurized Tank Until All Pressure Has Been Released From The Tank.
//

Clean, rinse, and dry utensils. Store them for future use.

DD40
SERVICE DIAGNOSIS

Symptom

.....Probable Cause
.....Remedy

Water to syrup ratio too low or too high

.....1. Dispensing valve syrup flow regulator not properly adjusted.
.....1. Adjust Water to Syrup ratio.
.....2. CO2 gas pressure to syrup tanks insufficient to push syrup out of the tank
.....2. Adjust syrup tanks secondary CO2 regulator as instructed.

Adjustment of dispensing valve syrup flow regulator does not increase to desired water to syrup ratio.

.....1. No syrup supply
.....1. Replenish syrup supply as needed.
.....2. Syrup tank quick disconnects not secure
.....2. Secure quick disconnects
.....3.Syrup tanks secondary CO2 regulator out of adjustment
.....3.Adjust syrup tanks secondary CO2 regulator.
.....4.Dispensing valve, syrup tank quick disconnect, or syrup line restricted.
.....4.Sanitize syrup system as instructed.

Dispensed product carbonation too low.

.....1. Carbonator primary CO2 regulator out of adjustment for existing water conditions or
.....temperature.
.....1. Adjust carbonator primary CO2 regulator
.....2. Air in carbonator tank
.....2. Vent air out of carbonator tank through relief valve. Actuate dispensing valve
.....carbonated water lever to make carbonator pump cycle on.
.....3. Water, oil, or dirt in the CO2 supply.
.....3. Remove contaminated CO2. Clean CO2 system (lines, regulators, etc.) using a
..... mild detergent. Install a clean CO2 supply.

Dispensed product produces foam as it leaves dispensing valve.

.....1. No ice in ice bank.
.....1. Check if overusing, if not, refrigeration system may have a dirty condenser. If the
.....condenser is clean, and the agitator motor is running, the refrigeration system
.....may need service.
.....2. Carbonator CO**2** regulator pressure too high for existing water conditions or temperature
.....2. Reduce carbonator CO**2** regulator pressure setting.
.....3. Syrup over carbonated with CO**2** as indicated by bubbles in inlet syrup lines leading
..... to the unit.
.....3. Remove syrup tanks quick disconnects. Relieve tank CO**2** pressure, shake tank
..... vigorously, then relieve tank CO**2** pressure as many times as necessary to remove
..... over carbonation.
.....4. Dispensing valve restricted or dirty.
.....4. Sanitize syrup system as instructed.
.....5. Dirty water supply.
.....5. Check water filter. Replace cartridge. NOTE: If the water supply is dirty, be sure
.....to flush lines & carbonator completely. If needed, remove lines to carbonator tank,
.....invert tank and flush tank and all inlet lines to remove any foreign particles or dirt.

DD40
SERVICE DIAGNOSIS

No product (only water) dispensing from all valves.

.....1. Out of CO2
.....1. Check CO**2** supply.

Must push cup lever further back than normal to dispense product.

.....1. No power to unit.
.....1. Check that it is plugged in.
.....2. Coil in valve not working.
.....2. Replace coil.
.....3. Micro switch not working.
.....3. Replace microswitch.
.....4. Disconnected or broken wiring to dispensing valves.
.....4. Connect or replace wiring.
.....4. Transformer not working.
.....4. Replace transformer.

Only carbonated water dispensed.

.....1. Quick disconnects not secure on syrup tanks.
.....1. Secure quick disconnects on syrup tanks.
.....2. Out of syrup.
.....2. Replenish syrup supply as instructed.
.....3. Syrup tanks secondary CO2 regulator not properly adjusted.
.....3. Adjust syrup tanks secondary CO2 regulator.
.....4. Inoperable dispensing valve.
.....4. Repair dispensing valve.
.....5. Dispensing valve syrup flow regulator not properly adjusted.
.....5. Adjust dispensing valve.
.....6. Dispensing valve, syrup tank quick disconnects, or syrup lines restricted.
.....6. Sanitize syrup system.

Only Syrup Dispensed

.....1. Plain water inlet supply line shutoff valve closed.
.....1. Open plain water inlet supply line shutoff valve.
.....2. Carbonator power cord unplugged from the electrical outlet.
.....2. Plug carbonator in.
.....3. Carbonator primary CO2 regulator not properly adjusted.
.....3. Adjust carbonator primary CO2 regulator.

Dispensed product comes out of the dispensing valve clear but foams in the cup or glass.

.....1. Oil film or soap scum in cup or glass.
.....1. Use clean cups or glasses.
.....2. Ice used for finished drink is too cold.
.....2. Do not use ice directly from a freezer. Allow the ice to become "wet" before using

DD40 REMOVAL AND REPLACEMENT

////////////////////WARNING////////////////////////////
Disconnect Electrical Power before beginning work on the machine.
//

Ice Thickness Thermostat:
1. Unplug machine from the power source.
2. Remove the cover.
3. Remove the thermostat cover.
4. Pull bulb and capillary line out of bulb well.
5. Disconnect wires from thermostat.
6. Remove screws holding body to frame, remove thermostat from ice bank.
7. Reverse to reassemble.

Agitator Motor:
1. Unplug machine from power source.
2. Remove cover.
3. Disconnect wires from motor at junction plug.
4. Remove two screws, and pull motor up and out of the ice bank.
5. Reverse to reassemble.

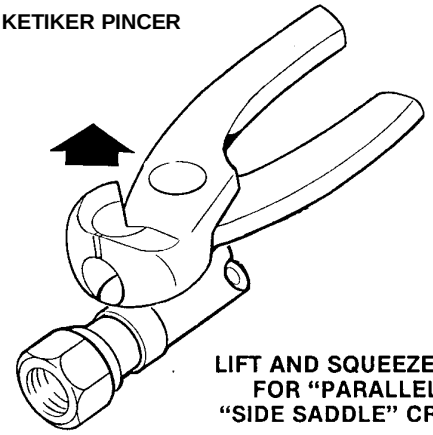
Soda Valve:
1. Switch off Carbonator
2. Turn off Water.
3. Unplug ice bank.
4. Turn off CO2, and at a working valve, dispense until syrup/water stops.
5. At the valve to be removed:
Remove two screws, pull valve cover up and off
Move metal lever found in valve up.
Pull valve body out of the mounting block.
Disconnect electrical wires at the junction plug.
6. After repair or replacement of the valve, reverse to reassemble.

Refrigeration Chassis:
1. The refrigeration section of the DD40 can be removed from the soda lines, valves and main body. This is useful when taking it to the shop for repair or cleaning.
A. Disconnect electrical power.
B. Remove cover.
C. Unplug refrigeration power from the connection at the right front of the unit.
D. Unplug the low voltage (transformer to soda valves) connection at the junction plug at the right front of the machine.
E. Remove 4 screws holding the chassis to the base.
F. Lift up and remove chassis.
2. After repair or cleaning, reverse to reassemble.

BRAIDED TUBING INSTALLATION
When installing the braided tubing using the kit KINSDD, note that the kit contains two types of clamps; oetiker an ferrule.
If using the oetiker clamps, a pincer specifically designed for this is recommended.

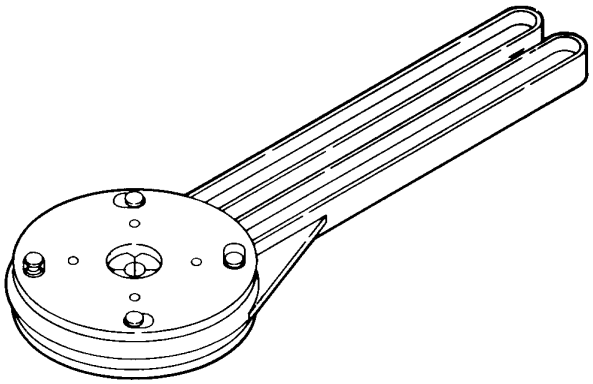
When using the ferrule type, the use of a special crimp tool is mandatory.
Instructions are porvided with the tool.
Die set No. 47 works well with the ferrule and tubing provided with the kit.

KETIKER PINCER

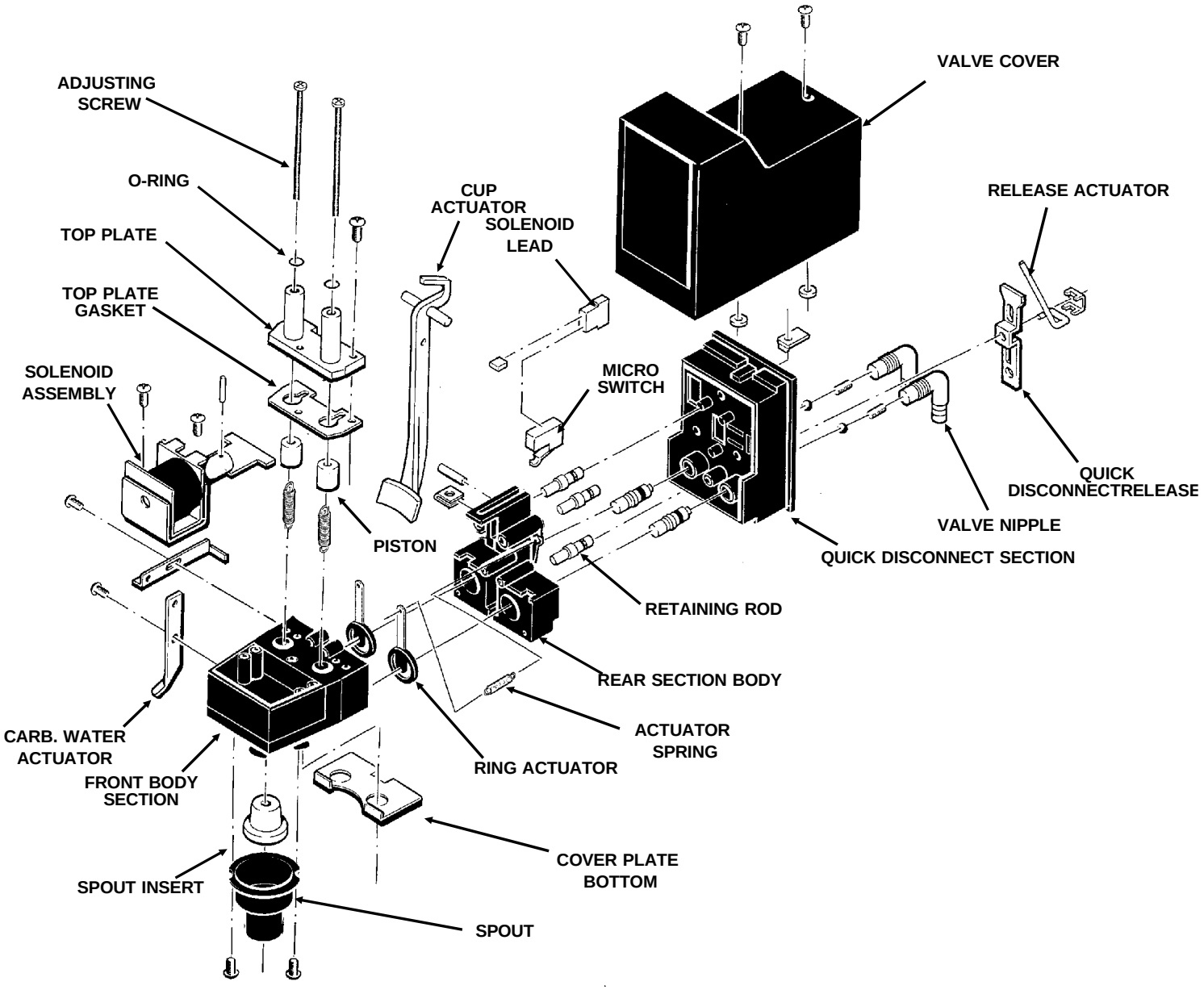


LIFT AND SQUEEZE PINCER FOR "PARALLEL" OR "SIDE SADDLE" CRIMPING

FERRULE CRIMP TOOL



DD40
BOOTH VALVE



CARB100 REMOVAL AND REPLACEMENT

(OPTIONAL EQUIPMENT)

////////////////////////WARNING////////////////////////////////
Disconnect electrical power before beginning to work on the unit.
//

1. Unplug Carbonator.
2. Turn off CO2
3. Turn off water.
4. Bleed CO2 pressure off at soda valve or relief valve on carbonator tank.
5. Any component in the Carbonator may now be removed and replaced, including:

Float Control, disconnect wires at the motor, and remove three screws from the collar at the top of the carbonator tank, pull float control up and out.

Check Valves, unscrew selected valve from tank.

Carbonator pump, no internal service parts, remove and replace.

Carbonator motor, no internal service parts, remove and replace.

6. Reverse steps of removal to reassemble.