INSTALLATION MANUAL

INSTALLATION INSTRUCTIONS

CORNELIUS VALVHOSES
WITH FLOW CONTROL MANIFOLDS

The Cornelius Flow Control Manifold is designed to maintain constant brix over a wide range of pressure fluctuations that arise in normal commercial post–mix beverage installations. Precise brix control assures the user of constant drink quality resulting in higher customer satisfaction and tighter inventory control. Each piece has been manufactured and tested to assure many years of trouble–free operation while delivering high performance standards.

ATTENTION INSTALLER – CAUTION!

To prevent damage and malfunctions to valvhose, please adhere to the following:

1. **DO NOT IMMERSE OR SANITIZE VALVHOSE IN HOT WATER. ALSO, DO NOT EXPOSE VALVHOSE TO ANY HEAT SOURCE.** Heat can damage the product lines and cause leaks.

2. **DO NOT INSTALL WATER INPUT LINE FROM DISCHARGE SIDE OF CARBONATOR PUMP.** This can apply excessive pressure to water line when carbonator recycles.

3. **THE CARBONATED WATER PRESSURE AT THE INLET TO THE VALVHOSE MUST NOT EXCEED 145 PSI STATIC PRESSURE.**

SPECIAL INSTALLATION INSTRUCTIONS TO NOTE:

1. **FOR CONVERTIBLE VALVHOSES:** CONVERTIBLE VALVHOSES HAVE MANY FEATURES AND ADVANTAGES OVER BAR–MASTER STANDARD VALVHOSES. **PLEASE READ THE ”CONVERTIBLE VALVHOSE INFORMATION & INSTRUCTIONS” INCLUDED IN THIS BOX.**

INSPECTION OF THE UNIT

Refer to the assembly view provided. Remove the two thumb screws and cover to expose the top of the manifold. You will see up to ten 3/8” diameter recessed shut–off screws; larger regulator tops with white adjusting screws protruding from them; and some white dummy caps. The shut–off screws are dual–purpose and used to provide a means of:

A. shutting off flow to the dispenser.

B. metering flow on non–regulated flavors such as juices.

The regulator tops with flow screws are provided to adjust regulated flow rates. The white dummy caps are provided on non–carbonated flavors, unless otherwise specified, because often these flavors are juices or other flavors containing solids that will foul the flow regulator.

INSTALLATION

1. At this time, it may be more convenient to connect the supply lines to the manifold prior to securing the assembly in place.

NOTE: Cornelius recommends the use of filtered water.

2. Using the (2) 1" long and (2) 2–1/2" long mounting screws provided, secure the manifold block and manifold bracket in place. Remove the manifold cover, if not already done, to access the mounting holes in the manifold block.

CAUTION – ALWAYS USE THE STAND–OFFS PROVIDED UNDER THE MANIFOLD BRACKET. FAILURE TO MOUNT THE MANIFOLD BRACKET SECURELY MAY RESULT IN A FAILURE OF THE MANIFOLD TO COUPLING BLOCK JOINT.

3. If not previously done, connect the supply lines to the manifold.

4. Before proceeding to the next section, inspect the installation to insure that all components of the supply system and valvhose mounting are correctly attached and secure.

SET–UP

1. Prior to pressurizing the system, adjust the white shut- off screws so that the tops of the screws are be- tween 1/32" above to flush with the top of the manifold block. Turn the white regulator screws fully count- er–clockwise out to their most closed position.

NOTE: ADJUSTING THE WHITE REGULATOR SCREWS IS OPPOSITE OF WHAT MAT BE EXPECTED. COUNTERCLOCKWISE ROTATION MOVEMENT OF THE WHITE ADJUSTING SCREWS (TURNED COMPLETELY OUT) WILL FULLY CLOSE THE FLOW UNIT, WHEREAS, CLOCKWISE (TURNED COMPLETELY IN) ADJUSTING SCREWS WILL FULLY OPEN THE FLOW CONTROL UNIT.

2. Pressurize the system. The **CO_2 PRESSURE REGULATOR SETTINGS** are as follows:

Soda: 100 PSI

Sugar Based Syrups: 40 PSI for the first 10-feet of run from the syrup tank to the dispenser. Add one PSI for each additional 10–feet plus one PSI for each 2-feet of vertical rise.

Diet Syrups: 10 PSI for the first 30 feet of run. Do not exceed 14 PSI.

3. Inspect the system for leaks and correct as required.

4. Connect the syrup tanks or BIB connectors then BRIX.

BRIXING

NOTE: SET SODA WATER FLOWRATE TO 1.25 OUNCES PER SECOND.
SET WATER FLOWRATE TO 1.0 OUNCE PER SECOND.

1. **SODA WATER:** Locate the soda position on the manifold block. Turn the soda flow control adjusting screw clockwise in 1/2–turn increments while operating the soda button on the valvhose until a flow rate of 1 to 1–1/4 ounces per second flow rate is achieved. TRYING TO EXCEED THIS FLOW RATE WILL GREATLY REDUCE THE EFFECTIVENESS OF THE FLOW CONTROL DEVICE. To test for proper regulation, reduce the soda pressure to 70 PSI and remeasure the flow rate. If the flow rate varies by more than +/– 3%, slightly reduce the flow rate (counterclockwise) and remeasure.

2. **STILL WATER:** Locate the water position on the manifold block. Turn the flow control adjusting screw clockwise in 1/2–turn increments while operating the water button on the bar valve until a flow rate of 1 ounce per second flow rate is achieved.

NOTE: The flow controls for still water are effective at 1 oz. per second from 50 to 120 PSI. If your installation has plain water delivered at pressures lower than 60 PSI static, reduce the still water flow rate 0.1 oz. per second for every 10 PSI below 60 PSI. To check for proper operation, reduce the pressure 10 PSI and recheck the flow rate. Adjust as described above and recheck.

3. Using the syrup manufacturer's recommended brix setting as a guide, adjust the syrup metering screw until the correct ratio of syrup to soda (or water) is achieved. This may be checked by two methods:

   A. Volumetric ratio – Setting the volume of soda (or water) to concentrate using a separator nozzle and graduated cup. The separator nozzle splits the syrup and soda streams during dispensing so that the volume of each may be measured for correct brix.

   B. Refractometer – Reads the sugar content directly from the mixed drink. A few drops of dispensed product is put on a clean refractometer slide using a clean straw or pipette. Adjust the metering screw for more or less syrup as required. Clean the slide and straw with fresh water, dry, and resample. Always follow the refractometer's manufacturer's instructions for use. Although this method is accurate, it is not suitable for dietetic and some fruit concentrates.

4. SYRUPS for CARBONATED DRINKS: Turn the corresponding flavor flow control adjusting screw clockwise by 1/4– to 1/2–turn increments until brix is achieved. Follow the syrup manufactures'brix ratio recommendation. Proper regulation may be checked by increasing or decreasing syrup pressures 10 to 20 PSI greater for sugar, 2 to 4 PSI for diets, and remeasuring the brix. Variations in flow should be less than 3% of set flow rate.

5. SYRUPS FOR NON–CARBONATED DRINKS: To set syrup flow rates for NON–CARBONATED products or other products using a white dummy cap, instead of a regulator, use the shut–off screws provided as brixing screws.

CAUTION: DO NOT OVER–TIGHTEN SHUT–OFF SCREWS OR SEVERE DAMAGE MAY OCCUR TO THE MANIFOLD BLOCK.

NOTE: If you are regulating a NON–CARB syrup see #3 above.

6. 6. Reinstall cover and thumb screws to complete the job.

WORKING RANGE OF FLOW CONTROL UNITS

1. Convertible 36" Bar–Master Flow Control Valvhoses meet Industry Specs for Soda water regulation between 40 – 110 PSIG at 1.25 oz/second flow rate (overall flow rate of 1.5 oz/s with sugar syrup).

2. Convertible 48" Bar–Master Flow Control Valvhoses meet Industry Specs for Soda water regulation between 50 – 110 PSIG at 1.25 oz/s flow rate. However, at 1 oz/s Bar–Master Flow Controls meet Industry Specs from 40 – 110 PSIG.

3. Convertible 60" Bar–Master Flow Control Valvhoses meet Industry Specs for Soda water regulation between 60 – 110 PSIG. However, at 1 oz/s Bar–Master Flow Controls meet Industry Specs from 50 – 110 PSIG.

A rule of thumb for regulation is for every approximate foot of tubing past 36" the flow control loses 10 PSIG of in spec. regulation on the low end when attempting to achieve 1.25 oz/s of soda water flow. However, if the soda water flow rate is dropped to 1 oz/s (overall flow of 1.2 oz/s) the 48" Flow Controls work within the full range of the Industry Spec but the 60" Flow Controls lose the lower 10 PSIG.

The actual Industry Spec. is +/– 5% BRIX variation based on volumetric flow rate over a wide pressure range, this relates to =/–4.88% BRIX variation on a mass flow rate. Bar–Master uses +/2.44% error based on mass flow rate for soda water and syrups. This splits the possible error range down the middle. The Industry pressure range for the BRIX variation is 40–110 PSIG on soda water and 20–80 PSIG on syrups.

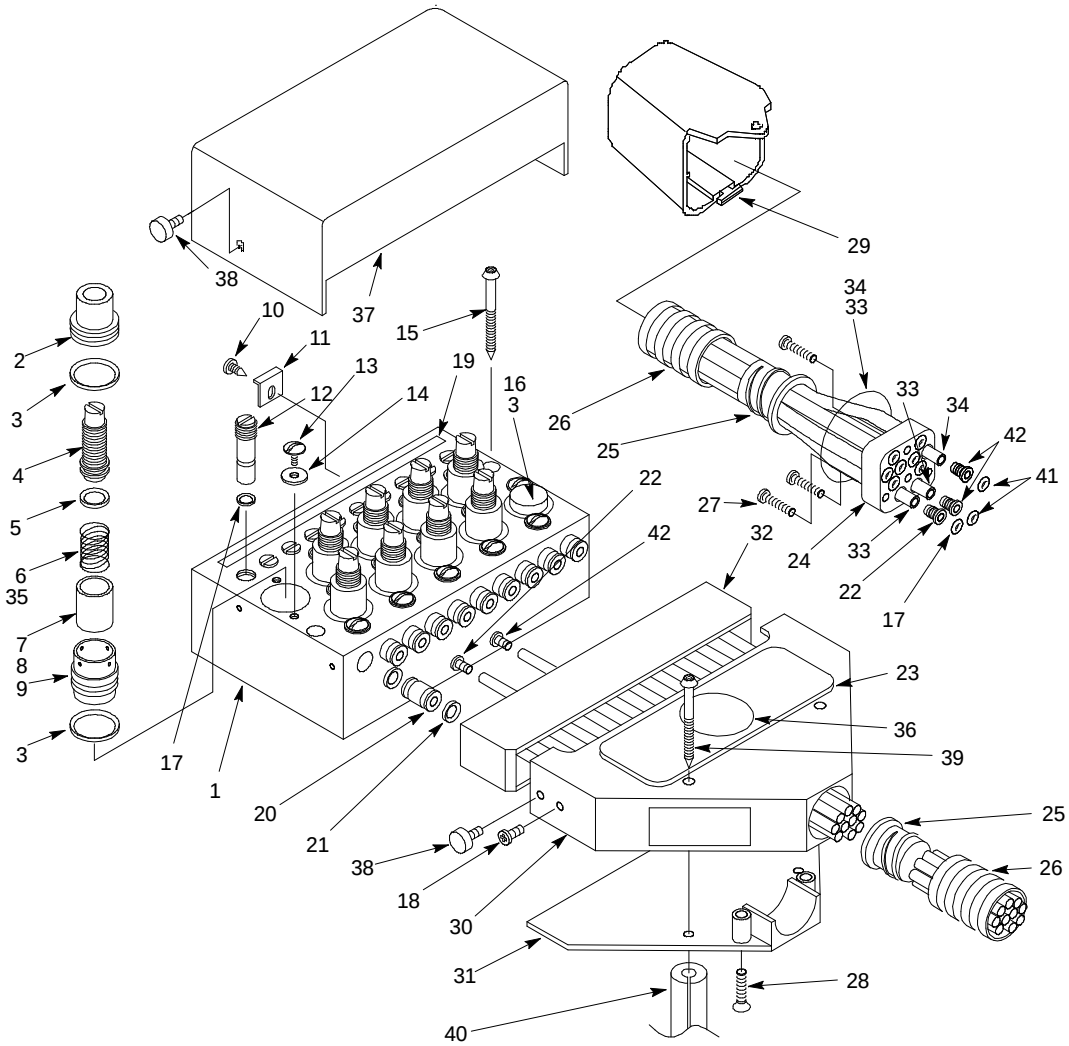

FIGURE 1. 8-10 BUTTON CONVERTIBLE FLOW CONTROL MANIFOLD (SLIM LINE)

Item No.	Part No.	Name
1	319449060	Manifold Block
2	319133051	Flow Control Top
3	318455051	O-Ring, No. 17
4	310632051	Adjusting Screw
5	221000014	O-Ring, No. 12
6	316996050	Spring, Flow Control, Syrup
7	310480011	Piston, Syrup
8	310754011	Piston, Soda and Water
9	317431011	Sleeve, Flow Control
10	317000053	Screw, No. 6-32 By 5/16-In. Long
11	317901001	Clip, Input
12	318305065	Screw, Shutoff
13	309760053	Screw, No. 8-32 By 3/8-In. Long
14	309760054	Washer, 7/16
15	316992051	Mounting Screw, No. 8 By 1 3/4-In. Long
16	300715000	Dummy Cap
17	316991000	O-Ring, No. 8
18	317902000	Screw, No. 6 By 3/8-In. Long
19	99022	Decal, Flavor, 8-Button
	99023	Decal, Flavor, 10-Button
20	318305057	Coupling, Long
21	91010	O-Ring, No. 10
22	300721000	Wedge, Soda and Water

Item No.	Part No.	Name
23	1272	Cover Plate
24	770000106	Head Manifold
25	1230	Flex Sleeve, 7/8-In.
26	1225	Flex, 1-In.
27	317994000	Screw, No. 6-32 By 3/4-In. Long
28	300695000	Screw, No. 8-32 By 1-In. Long
29	770000149	Tail Piece, Black
	770000324	Tail Piece, Red
	770500101	Tail Piece, Blue
30	8103	Manifold Bracket, Top
31	8014	Manifold Bracket, Bottom
32	300723002	Coupling Block, Flow Control
33	770000119	Tube, Soda and Water
34	302001090	Tube, Syrup
35	310482000	Spring, Flow Control, Soda and Water
36	319450066	Patent Decal
37	300709000	Cover, Flow Control
38	770000153	Cover, Thumb Screw
39	300942000	Mounting Screw, No. 8 By 2 1/2-In. Long
40	302001080	Nylon Spacer, Convertible, F/C
41	316997000	O-Ring
42	316986003	Wedge, Syrup