BetaJet
Proportioning System
Installation and Operating Manual

SAFETY NOTES

Wear safety goggles and gloves whenever working on the dispenser.

Clean up any chemical or water spills immediately to reduce the risk of slipping.

Isolate the system from the water supply prior to performing maintenance.

Let the system cool if it's had hot water run through it recently.

INTRODUCTION

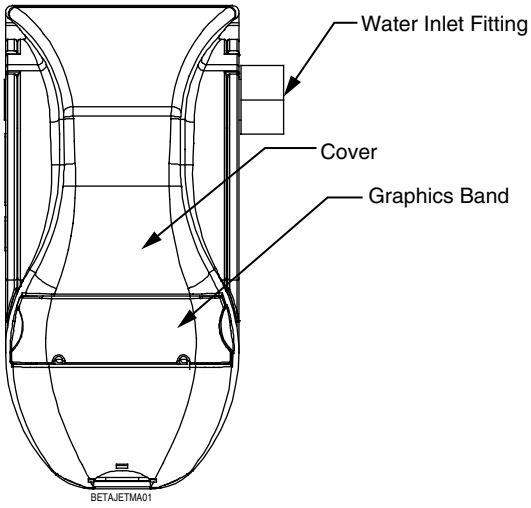


Figure 1. BetaJet

The BetaJet comes in a variety of configurations. The low-flow proportioners are for bottle fill applications, and high-flow proportioners are for sink or bucket applications. Each proportioner comes with an approved backflow-prevention device, either an A-gap or an R-gap. BetaJet is fitted to mains water supply and is activated using the front cabinet as the on/off switch. It can be installed to most water supplies in the world. For locations with water pressure below 1 bar (14 psi), low-pressure versions of the A-gap will be available.

BetaJet is field convertible from high flow to low flow, from A-gap to R-gap, and from momentary dispensing to lock-on dispensing.

Material in this manual is subject to change without notice. Manual revisions will be made on an as needed basis. Special circumstances involving important design, operation or application information will be released via Equipment Technical Bulletins.

This manual describes how to use the BetaJet. If the equipment is used in a manner not specified by Beta Technology, the protection provided by the equipment may be impaired.

A-GAP

A-gaps (air gaps) protect the water supply by forcing the water through an open space prior to mixing it with the chemical; if any part downstream becomes clogged or blocked, the water will flow out of the open air gap, rather than creating backflow. Low flow A-gaps (AGLF) use an anti-foam tube inside the discharge tube, to delay the point where chemical is exposed to the full turbulence of the water steam, and thereby reduce foaming. The anti-foam tube is not required with high flow or Rgap units.

R-GAP

R-gaps are devices that comprise a rubber sleeve that opens up and allow water to flow through when the water valve is opened. The rubber sleeve acts to prevent backflow of chemical into the mains water supply. R-gaps are used in areas of poor water quality where debris could effect the performance of A-gaps. They should only be used where local water regulations permit.

OPERATION

For bottle fill, place the bottle over the chemical tube and press the BetaJet cover. For bucket fill, put the discharge tube in the bucket and press the cover. For sink fill, put the discharge tube in the sink (if it isn't permanently mounted) and press the cover.

With high-flow proportioners that have been converted to lock-on for sink fill applications, press the cover once to turn the flow on and press the cover again to turn the flow off.

SPECIFICATIONS

DIMENSIONS

Height	Width	Depth
8.5 in	4 in	4 in
22 cm	10 cm	10 cm

WEIGHT

15 oz (2 kg)

MATERIALS

Cabinet
Polypropylene

Backplate & Graphics band
ABS

Eductor body
Polypropylene (40% talc)

Valve
Acetal

Bottle-fill tube
Vinyl

Bottle fill arm
Polypropylene (40% talc)

Bucket-fill tube& Product pick-up tube
Flexible clear PVC

Footvalve
Polypropylene

Sinker
Ceramic

MOUNTING

Wall mounted with three screws

APPROVALS

ANSI/ASSE 1055-B

UPC

OPERATING PARAMETERS

	Pressure		Temperature	Dilution		Flow Rate		
	Min	Max	Max	Min	Max	Min	Max	Nominal
Low Flow A-gap (normal pressure)	1.0 bar (14 PSI)	5.5 bar (78 PSI)	65°C (149°F)	4:1	120:1	3 l/m @ 1.0 bar (14 psi)	6 l/m @ 5.5 bar (78 psi)	4 l/m @ 2/5 bar (36 psi)
Low Flow A-gap (low pressure)	0.6 bar (9 PSI)	3.0 bar (43 PSI)	65°C (149°F)	4:1	120:1	3 l/m @ 1.0 bar (14 psi)	6 l/m @ 5.5 bar (78 psi)	4 l/m @ 2/5 bar (36 psi)
High Flow A-gap (normal pressure)	1.0 bar (14 PSI)	5.5 bar (78 PSI)	65°C (149°F)	11:1	400:1	8 l/m @ 1.0 bar (14 psi)	18 l/m @ 5.5 bar (78 psi)	14 l/m @2.5 bar (36 psi)
High Flow A-gap (low pressure)	0.6 bar (9 PSI)	3.0 bar (43 PSI)	65°C (149°F)	11:1	400:1	8 l/m @ 1.0 bar (14 psi)	18 l/m @ 5.5 bar (78 psi)	14 l/m @2.5 bar (36 psi)
Low Flow R-gap	2.0 bar (28 PSI)	5.5 bar (78 PSI)	65°C (149°F)	4:1	120:1	3 l/m @ 1.0 bar (14 psi)	6 l/m @ 5.5 bar (78 psi)	4 l/m @ 2/5 bar (36 psi)
High Flow R-gap	2.0 bar (28 PSI)	5.5 bar (78 PSI)	65°C (149°F)	11:1	400:1	8 l/m @ 1.0 bar (14 psi)	18 l/m @ 5.5 bar (78 psi)	14 l/m @2.5 bar (36 psi)

INSTALLATION & SETUP

INSTALLATION

1. Open the BetaJet by inserting the "C"-shaped clip into the front cover and lifting upward, so the cover comes up off the rear mounting plate.
2. If you are installing more than one BetaJet, connect them together before proceeding.
   - Squeeze the venturi tab in to release each proportioner from its backplate and lift them out.
   - Position the backplates next to each other on a flat surface.
   - Remove red clips.
   - Remove adjoining units' water plugs and water inlet fittings using the interconnect to link them together.
   - Ensure that the units are pressed together firmly so the red clips fit completely back in place.
   - Put connected BetaJets into backplate all at once.
3. Position the BetaJet on the wall using a level, and drill three holes for either the horizontal mounting slots or the keyholes. We recommend using the horizontal mounting slots for hard-plumbed installations, because they allow the unit to slide as it is connected or disconnected from the water fitting. We recommend using the keyholes in instances when using a flexible water supply line (that can move an inch or so back and forth).

TECH NOTE *When mounting a group of BetaJets together, interconnect them prior to marking drill holes on the wall. If you don't, the spacing between the units may be wrong.*

4. Connect water supply, using a wrench. If necessary, you can switch the water inlet from the left side to the right as follows:
   - Squeeze the venturi tab in to release the proportioner from the backplate (see Figure 2).

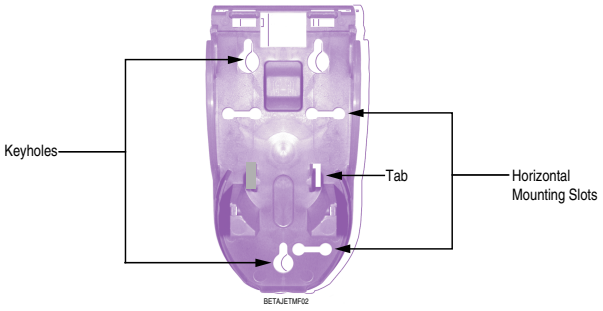


Figure 2. Releasing Venturi from Backplate.

   - Lift the proportioner out of the mounting plate, and remove it from the enclosure.
   - Remove the red plastic retaining clips on the far left and far right.
   - Pull the water inlet fitting out of the left side, and the plug from the right side, reinserting them in the opposite ends.
   - Replace the red plastic retaining clips.
   - Lower the proportioner back into position on the mounting plate.
5. If a low flow A-gap unit, connect the translucent anti-foam tube (120 mm/4.7") to the metal spigot protruding from the bottom of the venturi. Use diagonal sidecutters to cinch the metal clamp onto the tube so it will be secure attached to the spigot. Note the anti-foam tube isn't required with the low flow Rgaps, as they reduce the water velocity and foaming, and the anti-foam tube is only included with the low flow A-gap units.
6. Route discharge tube (over any anti-foam tube) to the large barb, as shown in Figure 3, and secure onto barb with tie wrap.

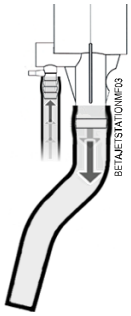


Figure 3. Connecting Tubing

7. Connect chemical pickup tubing to the small barb as shown in Figure 3.

NOTE *It's extremely unlikely that you'll have to disconnect the chemical lines, because the unit can be serviced with them connected.*

8. Place a ceramic weight over the end of the chemical pickup tube and then insert the footvalve. It is important to add the footvalve, because without it the tube will lose prime when the metering peg is removed.

NOTE *Do not run a chemical supply tube through a Y fitting to two BetaJets. One BetaJet will simply pull air through the other rather than pulling chemical through the foot valve.*

9. Turn on the water supply to the unit.
10. Put the A-D metering peg in as shown in Figure 4, with the A on the bottom. Hold down the cover long enough to fill the pickup tube with chemical.

NOTE *The metering peg works under vacuum, and will work the same whether it's inserted gently or pressed firmly into place. It may be more difficult to pull out if it is pressed in hard; if this happens, it is still easy to pull out with one hand if you press on the venturi with your thumb while pulling on the peg with your fingers.*

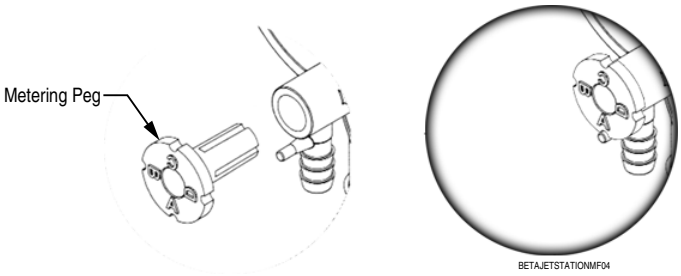


Figure 4. Inserting Metering Peg, "A" Facing Down

11. Select the metering peg that offers the desired dilution, using the following chart for reference. Place the letter that is the desired setting on the bottom, where the lock pin holds the metering peg in place (see Figure 4).

Dilution Ratio Chart		
	Low Flow	High Flow
Peg Setting	**1 GPM**	**3 GPM**
A	4:1	11:1
B	5:1	15:1
C	8:1	20:1
D	12:1	40:1
E	15:1	43:1
F	22:1	63:1
G	36:1	121:1
H	46:1	143:1
I	56:1	165:1
J	78:1	235:1
K	120:1	400:1
L	not used	not used

Actual ratios and flow rates will vary depending on water pressure, chemical viscosity, and the length of the pickup line.

After selecting the peg setting, calibrate the dilution ratio to be sure it meets your requirements.

12. Calibrate the dilution ratio as follows:
    - Fill a measuring/graduated cylinder with chemical.
    - Write down the amount of chemical that is in the cylinder.
    - Turn on the proportioner, filling a gallon/meter jug (high flow) or a 16-oz/500 ml measuring cup (low flow).
    - Write down the amount of **water : chemical** to calculate the dilution. If necessary, repeat with a different peg setting to get the dilution you need.
13. Replace the cover, taking care to position it correctly so the plastic tabs that connect it to the backplate aren't damaged.

CHANGING FROM A-GAP TO R-GAP

- Squeeze the venturi tab in to release the ventui from its backplate. (See Figure 2.)
- Lift the proportioner up out of the mounting plate, and remove it from the enclosure.
- Twist venturi part on the bottom to disconnect it from the upper-valve part of the proportioner.
- Remove the nozzle from the bottom of the valve, prying gently with a screwdriver if necessary.
- Remove anti-foam tube from the bottom of the venturi, prying the anti-foam clamp open if necessary.
- Replace nozzle with R-gap, and twist venturi back onto the valve.
- Remount the proportioner on the mounting plate.

NOTE

When changing a low flow unit from Rgap to Agap for a foamy product, you should install an anti-foam tube in the discharge tube. The anti-foam tube is not required on high flow units.

CHANGING FROM MOMENTARY "HOLD ON" TO "LOCK ON" ACTIVATION

CAUTION!

Be careful of sharp edges.

- Remove the BetaJet cover.
- Pull out the valve disk by inserting screwdriver under the bottom part of the disk and gently pulling it outward. If you have a valve disk removal tool, put the notched end under the valve disk and push down to leverage the valve disk out.

CAUTION!

Because the corners of the valve assembly near the bottom of the disk are sharp, and the spring can jump across the room, it is best to put a rag, a piece of cardboard or other material over the valve disk before removing it.

- Turn valve disk around 180 degrees and re-insert. Keep the magnet visible on the outside side of the valve disk, because it is required to lock the valve disk in place. If the magnet is left on the inside side of the valve disk, the valve disk will eventually fall off. (Refer to Figure 5.)

Figure 5. Changing Momentary "Hold ON" Button to "Lock ON" Button.

MAINTENANCE

Wear gloves and safety glasses and turn off water before servicing.

Periodic maintenance can improve system performance and prevent service calls, especially in areas with hard water where A-gaps are required, old buildings, or locations with debris in the water supply. We recommend the following procedure be performed about once a year, depending on the water supply:

- Check dilution rate, wiping or rinsing metering peg clean if chemical residue has dried in the groove (see Figure 6).

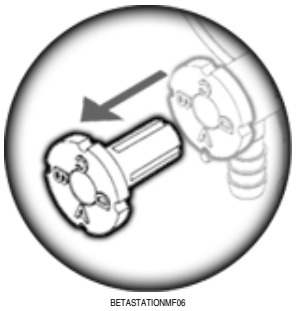


Figure 6. Removing Metering Peg.

- Verify foot valve screen is neither clogged nor damaged.
- Check water filter for debris (see Figure 7).

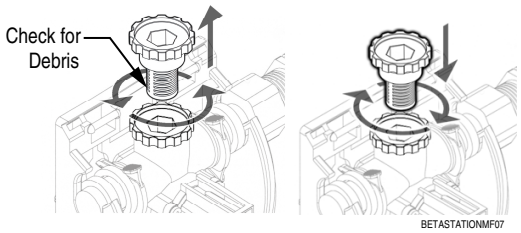


Figure 7. Checking Water Filter for Debris.

- Check nozzle (if A-gap) for scale, and replace nozzle screen if scaled. Rinse nozzle if it is blocked with debris (see Figure 8).

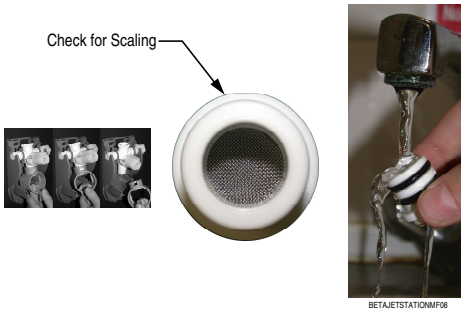
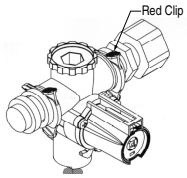


Figure 8. Checking Nozzle for Scaling, Rinsing.

- Check dilution rate to ensure re-calibration is not necessary.

TROUBLESHOOTING

Problem	Cause	Solution
1. No discharge	a. No water b. Magnetic valve not functioning c. Excessive water pressure d. Eductor clogged	a. Open water supply. b. Install valve parts kit. c. Install regulator if water pressure exceeds 4.2 bar (78 psi) d. Clean (descale) or replace.
2. No concentrate drawn up	a. Blocked foot valve b. Metering peg or eductor has scale build-up. c. Low water pressure d. Concentrate container empty e. Inlet hose threads not screwed into eductor tightly. f. Clogged water inlet strainer g. Water inlet gasket missing h. Wrong eductor i. Chemical supply goes through “Y” fitting	a. Clean or replace b. Clean (descale) or replace c. Ensure water pressure meets minimum requirements. If using an R-gap, and the water pressure is insufficient for an R-gap but sufficient for an A-gap, switch out A-gap nozzles for R-gaps. d. Replace with full container e. Tighten, but do not overtighten. If using NPT fitting adapter, use Teflon pipe tape. f. Turn off water supply, remove strainer, and clean or replace “mesh” sock that fits over strainer. g. Insert new gasket. h. If high flow nozzle/R-gap, verify that eductor is white. If low flow, verify eductor is gray. i. Have a separate chemical supply tube and foot valve for each unit because one unit will pull air from another if they are both connected to a “Y” fitting.
3. Excess concentrate draw	a. Wrong metering peg channel selected	a. Check dilution chart and recalibrate with lower dilution setting.
4. Failure of unit to turn off	a. Water valve parts dirty or defective b. Valve disk magnet doesn’t fully return. c. Cabinet cover stuck d. Excessive water pressure e. Unit is set to latch on/off	a. Clean or replace with valve parts kit. b. Make sure valve disk magnet moves freely. c. Realign cabinet. d. Install regulator if pressure exceeds 4.2 bar (61 psi). e. Turn the valve disk around to disable this feature per the “Changing Momentary ‘Hold On’ Buttons to ‘Lock On’ Buttons” section.
5. Excess foam in discharge	a. Air leak in pickup tube b. Inner discharge anti-foam tube not in place (A-gap unit only) c. Inner discharge anti-foam tube not long enough	a. Tighten inlet hose barb and/or secure pickup tube with tie wrap or hose clamp on hose barb. b. Reinstall anti-foam inner discharge tube. (the tube inside the discharge tube, onto spigot sticking out from the bottom of the venturi) Ensure metal clamp is cinched down on tube so it will remain tight on spigot. c. Use 4mm bulk tubing to make the tube longer by a few inches.
6. Splashing from A-gap, or water discharge from R-gap vents	a. Restricted discharge hose b. High water pressure c. Dirty A-gap nozzle d. Nozzle loose e. R-gap rubber problems f. Wrong eductor	a. Ensure discharge tube is not kinked, immersed or elevated, and that no solution is trapped in the discharge tube when dispensing begins. b. Install pressure regulator if pressure exceeds 4.2 bar (61 psi) with unit operating. c. Replace nozzle d. Push nozzle firmly up into valve body. e. Disassemble R-gap, checking rubber for damage. If damaged, replace. If not, put rubber on plastic cone, cartridge over rubber and insert into valve assembly. Attach eductor last. Note that having the rubber misaligned/askew between the plastic core and outer cartridge can cause leaks. f. If high flow nozzle/R-gap, verify that eductor is white. If low flow, verify eductor is gray.

Problem	Cause	Solution
7. Cover doesn't fit on dispenser	a. Proportioners are not properly locked into place.	a. Push on each proportioner to ensure they are locked in place by the venturi tabs. The tabs will make a "click" sound when the proportioner is snapped into place.
8. Water inlet fitting is leaking	a. Fitting is not fully inserted into valve assembly.	a. Ensure fitting is fully inserted into valve assembly, and red retaining clip is in place as shown in Figure 9.  *Figure 9. Inserting Inlet Fitting into Valve Assembly.*
	b. Water inlet/garden hose not connected properly	b. Tighten water inlet fitting/garden hose thread connection. Do not over-tighten, as this can damage the threads. If using a garden hose to NPT adapter, tighten NPT connection. Add Teflon pipe tape to male NPT threads if it still leaks.
	c. Water inlet fitting threads damaged	c. Replace fitting.
	d. No gasket in water inlet fitting	d. Insert gasket.
	e. O-rings not assembled properly	e. Check that O-rings are in the innermost two grooves on the water inlet fitting. If they aren't, replace fitting. The third groove is for the red clip; if the O-ring from the second groove has shifted or been moved to the third groove, lift it up with a screwdriver and move it back to the middle grove.
9. Water leak from water strainer	a. Strainer not fully screwed in	a. Tighten strainer.
	b. O-ring sticking out	b. Remove strainer, reposition O-ring, and replace strainer. If O-ring is damaged, replace strainer assembly.
	c. Valve threads stripped	c. Replace valve.

ORDERING INFORMATION

The items listed in this section provide you with quick reference numbers for some of the major parts and accessories. A complete exploded assembly drawing is located in the back of the manual.

FINAL ASSEMBLIES

BetaJet, low-flow, A-gap	1200653
BetaJet, low-flow, R-gap	1200655
BetaJet, low-flow for low water pressure, A-gap	1202328
BetaJet, high-flow, A-gap	1200652
BetaJet, high-flow, R-gap	1200654
BetaJet, high-flow for low water pressure, A-gap	1202034

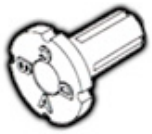
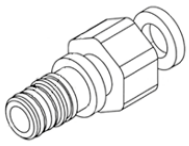
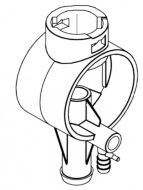
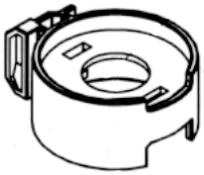
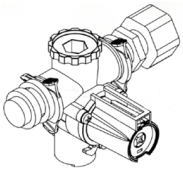
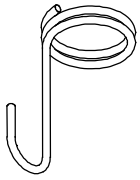
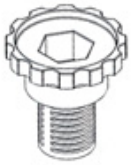
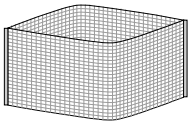
All models include installation kit consisting of garden hose connection, chemical feed line, foot valve, ceramic weight, and discharge tube. Low flow models include one hand bottle fill arm.

ACCESSORIES

Garden hose, M-F brass fittings, 3/4" ID, 6 feet long	027806
Labels janitorial	1202694
Labels kitchen	1202018
Graphics band kit	1202016
Interconnect (to join two BetaJets together)	1202026
Ultra dilution capillary tube	1202174
4 x 1 quart wire rack	1202173
1 x 1 gallon wire rack	1202171
4 x 1 gallon wire rack	1202172

SPARES

All spares include any necessary O-rings. All O-rings come lubricated. O-rings for different parts are slightly different size and are not interchangeable.

Nozzle (A-gap only)		R Gap		Backplate
Lo  Code #1202024	Hi  Code #1202025	Lo  Code #1202023	Hi  Code #1202019	 Code #1200513
Metering Peg	**Interconnect**	**Water Inlet Fitting**	**Retaining Clip**	**Water Plug Fitting**
 Set of pegs A-L Code #1200659	 Code # 1202026	 Garden Hose Code #1202027 BSP Code #1202016	 Code # 1200525	 Code #1202389
Venturi	**Valve Disk**	**Foot Valve**	**Ceramic Feed Tube Weight**	**Proportioner Valve Assembly**
 Code #1200512 (low flow, gray) Code # 1200755 (high flow, white		 Code #027580	 Code #1200552	 w/Garden hose fitting: Code #1200639 w/BSP fitting: Code #1200632
Bucket Fill Hook	**Strainer**	**Strainer Sock**		
 Code #1202067	 Code #1202388	 Code #1202201 (Bag of 10)		

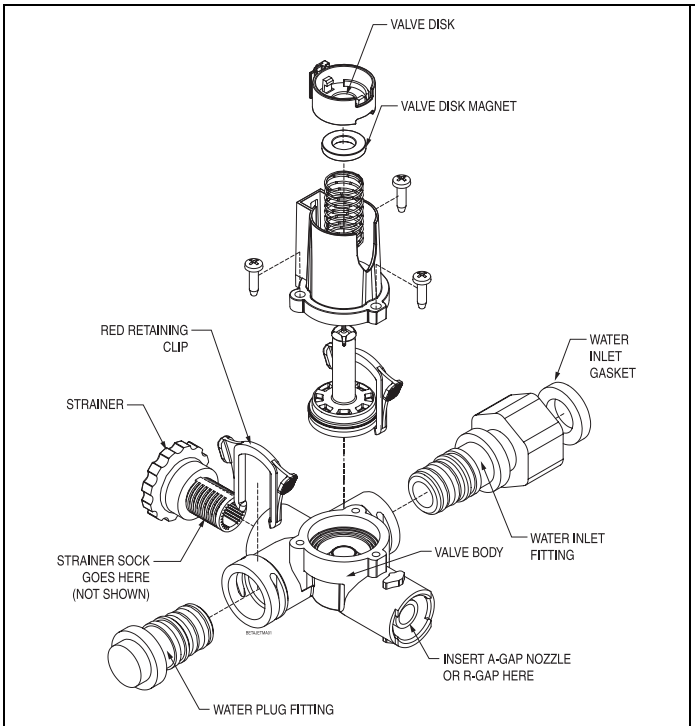
TECHNICAL ASSISTANCE

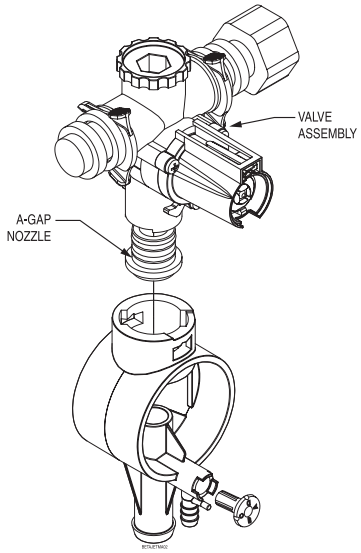
If you require additional technical information, contact our Technical Support Department at 1-800-468-4893. From Europe, please call 0800-052-4726.

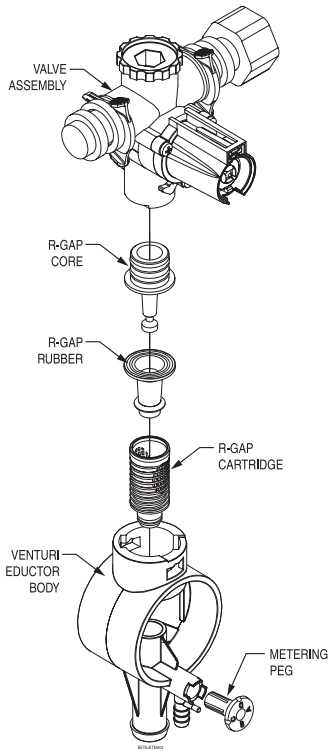
RETURNING EQUIPMENT FOR REPAIR

If you need to send an item back to be repaired, please call or write to obtain a Returned Authorization (R.A.) Number before sending it back. Please write the R.A. # on the outside of the box before sending it back. It is also very helpful to our repair department if you include a note inside the box explaining the nature of the problem. Failure to obtain an Return Authorization Number before sending an item in for repair or replacement may delay the return of your equipment, and will incur a $25 handling fee.

APPENDIX B: ASSEMBLY DRAWINGS







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