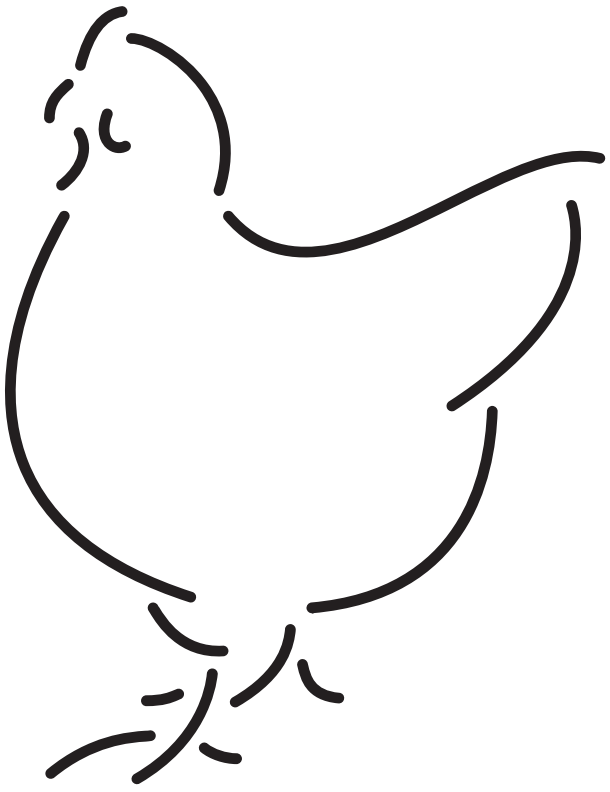
Watering Systems

Floor Watering

Installation Guide, Parts List, Operation Guide and Maintenance Instructions



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Installation Instructions and Part Identification

Operation and Management

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Planning

Hi, my name is Val. Congratulations. You have just purchased the finest watering system in the world. The first thing you need to do is check the parts you just received to make sure you have everything you ordered.

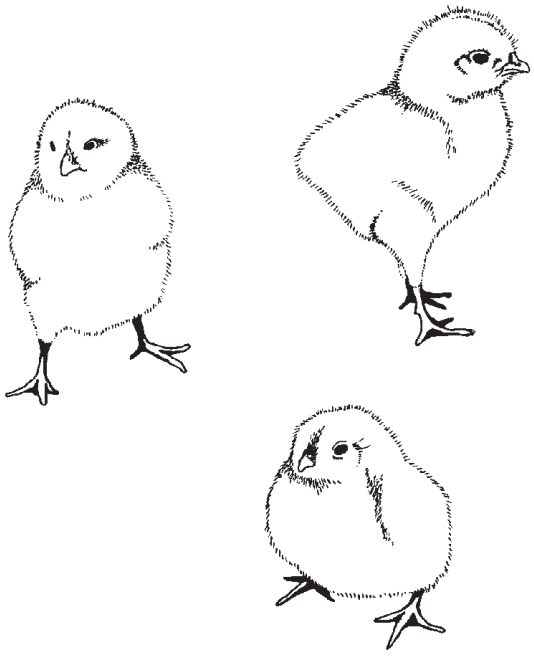
WARNING!

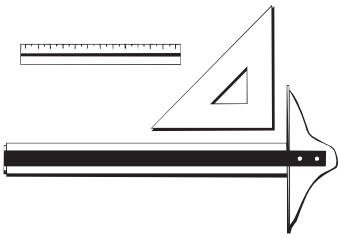
Do not use any oil-based products when installing or maintaining system. See the back of the booklet for more details.

Checklist

Tools you will need for your VAL-CO system:

- Hammer
- Screwdriver
- Crimping Tool
- Cable Cutters (VC300)
- Saw
- PVC Glue (VG125)
- Teflon Tape
- Pliers
- Measuring Tape
- PVC Pipe Cutter (VC100)



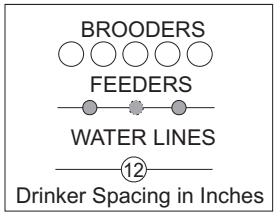


Broiler Floor Plans

1. Brood area, 30 birds per drinker for up to 10 days old.
2. Growout area, 15 birds per drinker.
3. Place water on both sides of feeders.
4. Place water lines 2-3 FT (61-91 CM) from feed.

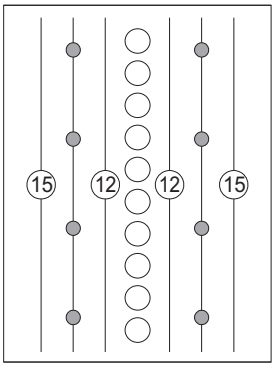
NOTE: In 1/2 or 1/3 house brooding, water lines may be sectioned off or continuous up to 400 FT (122 M) in length. Contact VAL-CO Watering Systems for technical advice on sloped houses or other floor plans desired.

LEGEND

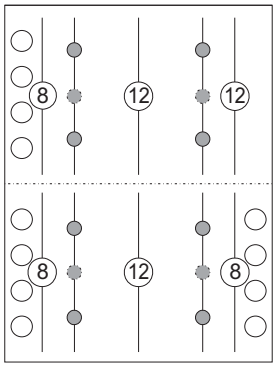


HOUSE WIDTH 36-38 FT (11-11.6 M)

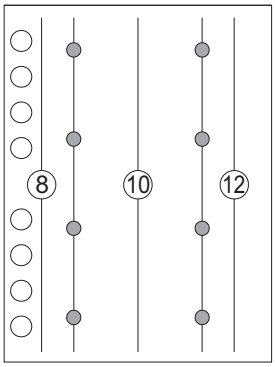
Note: House length not to scale



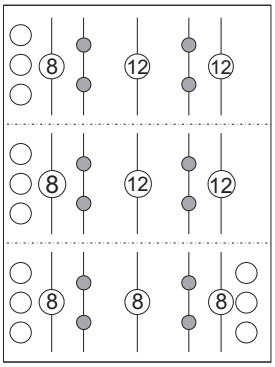
BROODERS (CENTER)
Space heat
full house brooding or
1/2 house brooding



BROODERS (SIDE)
1/2 house brooding



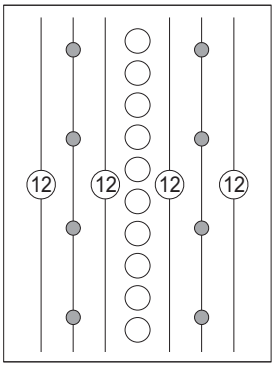
BROODERS (SIDE)
Full house brooding



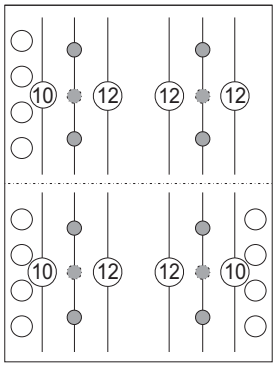
BROODERS (SIDE)
1/3 house brooding

HOUSE WIDTH 40-42 FT (12-12.8 M)

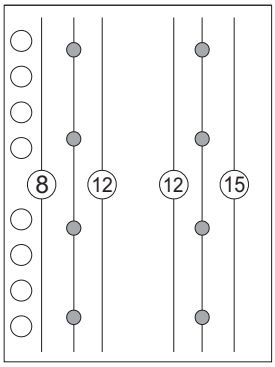
Note: House length not to scale



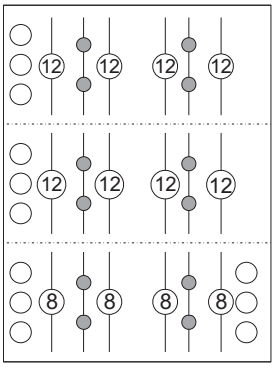
BROODERS (CENTER)
Space heat
full house brooding or
1/2 house brooding



BROODERS (SIDE)
1/2 house brooding



BROODERS (SIDE)
Full house brooding

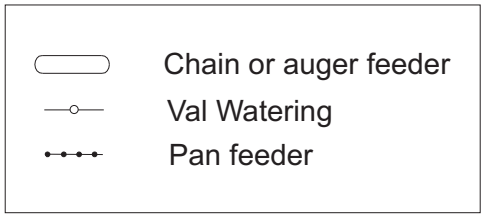


BROODERS (SIDE)
1/3 house brooding

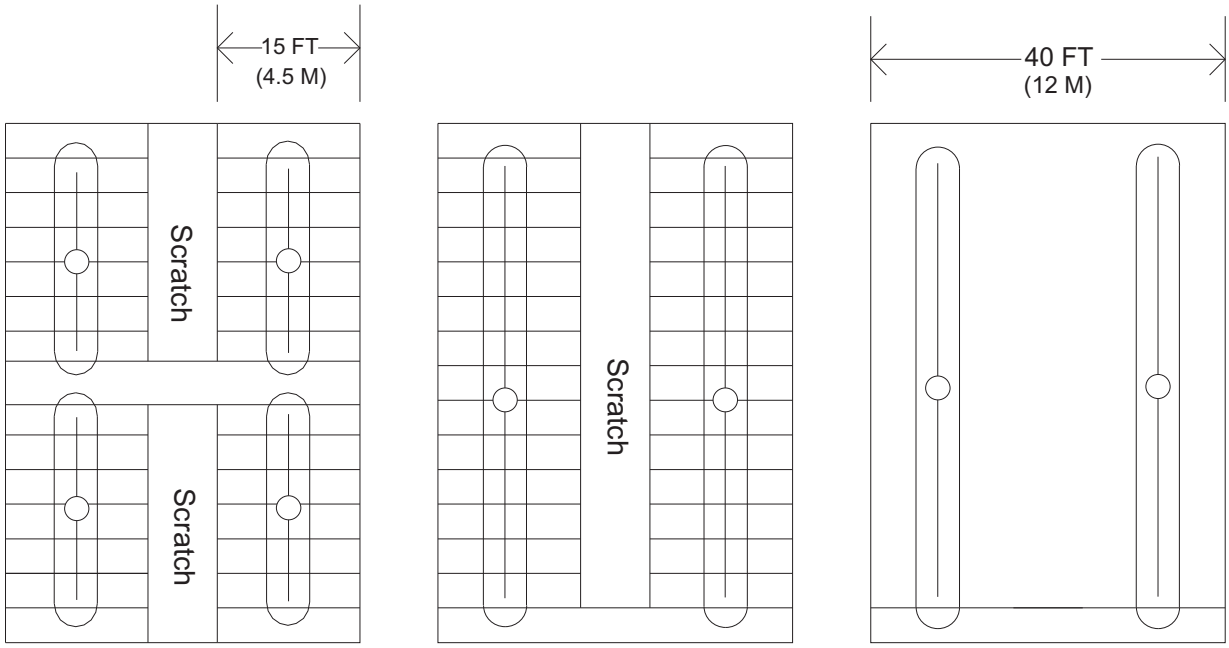
Breeder Floor Plans

1. All birds (males and females), 10-12 per drinker.
2. Drinker spacing not to be below 10 inches apart.
3. Place water lines 2-3 FT (61-91 CM) from feed.
4. Nipples can be placed in scratch area for males (usually not necessary).

LEGEND



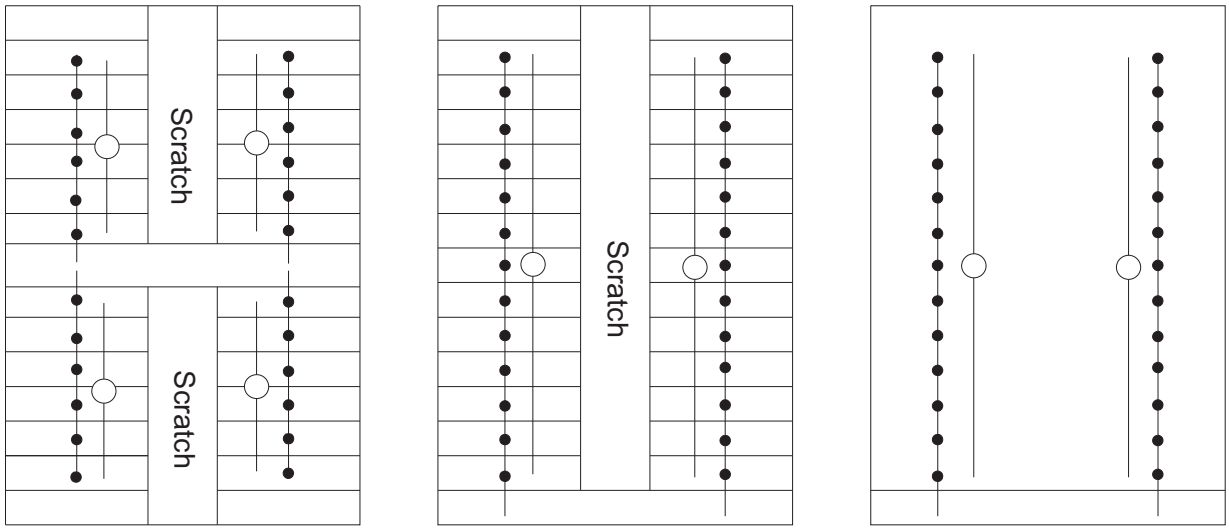
House lengths not to scale.



Half-house with slats

Full house with slats

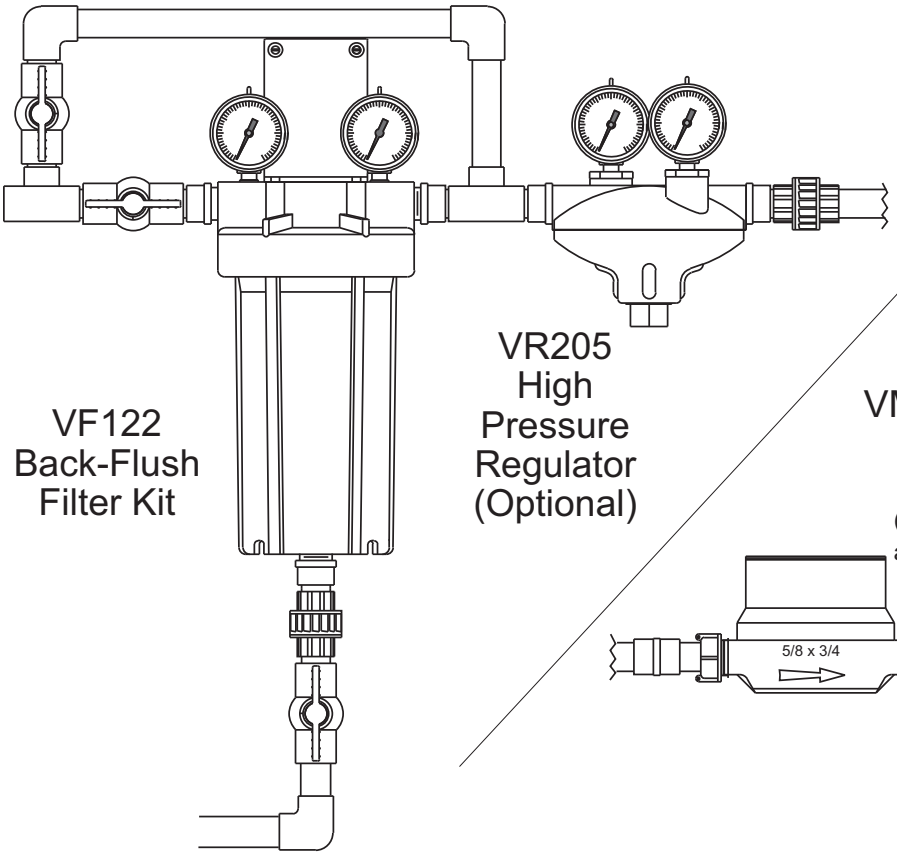
Full house with litter



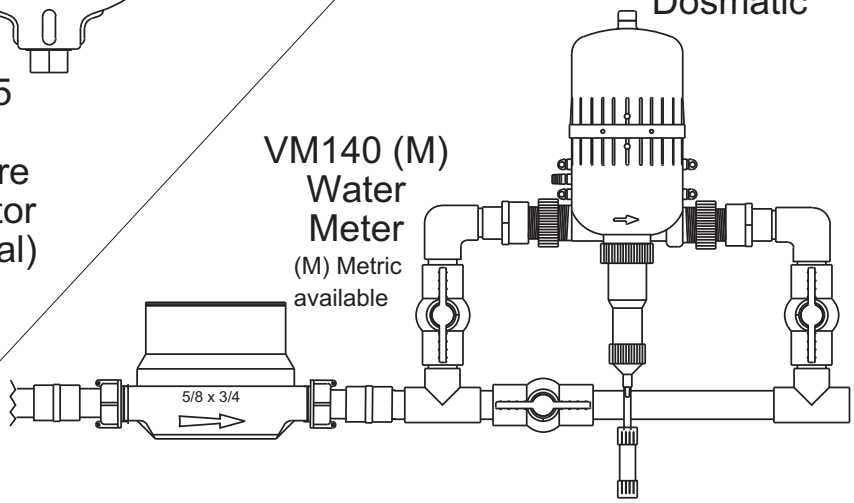
Installation Instructions and Part Identification

Review all instructions before starting installation procedures and gather all tools required first.

Header Kit



In low pressure setups (3-10 PSI) the water meter should be installed before the filter.



Backflush Filter Installation Instructions

1.Attach mounting bracket (VF126) to cap (VF129) with lag screws (VF127).

2.Apply 4 or 5 turns of thread sealing tape to male pipe threads of each fitting.

3.Assemble all fittings by hand to ensure proper fit. Tighten with wrench to snug fit. **DO NOT OVERTIGHTEN.**

4.Wrap 4 or 5 turns of thread seal tape around gauges and tighten into top of regulator with a 9/16" wrench. **DO NOT TIGHTEN BY HAND**. Snip the ends off the vent plugs.

5.Cut pipe to length and glue ends into place.

6.Assemble all parts. Check for water leaks. Rewrap any threads that are leaking with more turns of teflon tape.

Regulator Installation Instructions

1.Wrap 4 or 5 turns of thread seal tape around each 3/4" male adaptor and screw 1 each into INLET and OUTLET of regulator (VR205). **CAUTION:** Do not overtighten as you could crack regulator top housing.

2.When using in regulator kits VR205-1 and VR205 wrap 4 or 5 turns on thread seal tape around 1/4" NPT plugs (VRP59) and tighten with wrench.

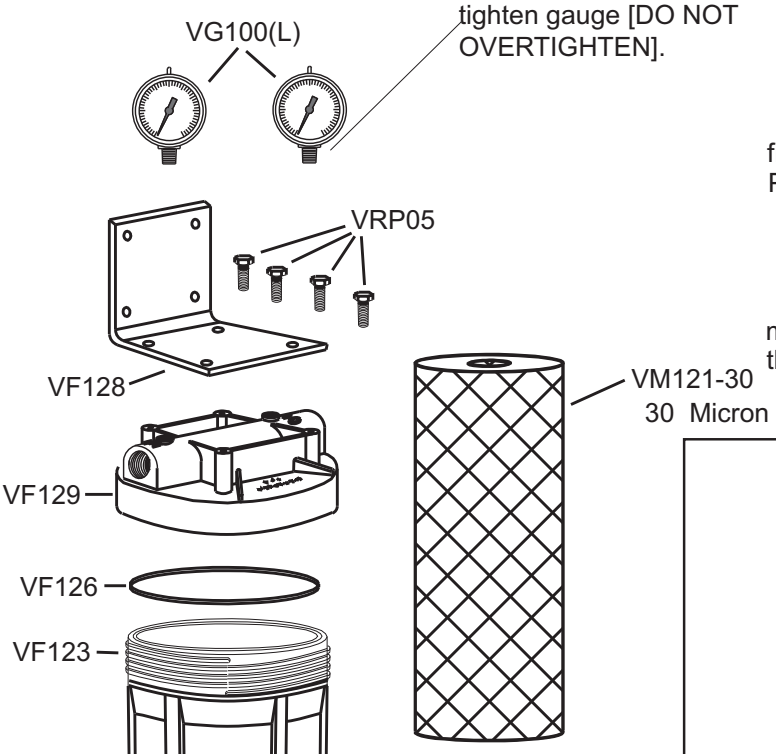
3.Wrap 4 or 5 turns of thread seal tape around gauge(s) and tighten into top of regulator with a 9/16" wrench. **DO NOT TIGHTEN BY HAND**. Snip the ends off the vent plugs.

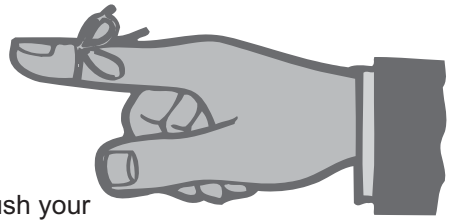
4.Install in line after the filter system and before any medicator or water treatment system.

5.To maintain even pressure in all low pressure lines in poultry house, always set high pressure regulator lower or at least as low as lowest pump pressure setting. The ideal pressure out is 25 PSI.

Back Flush Filter

VF122(L)

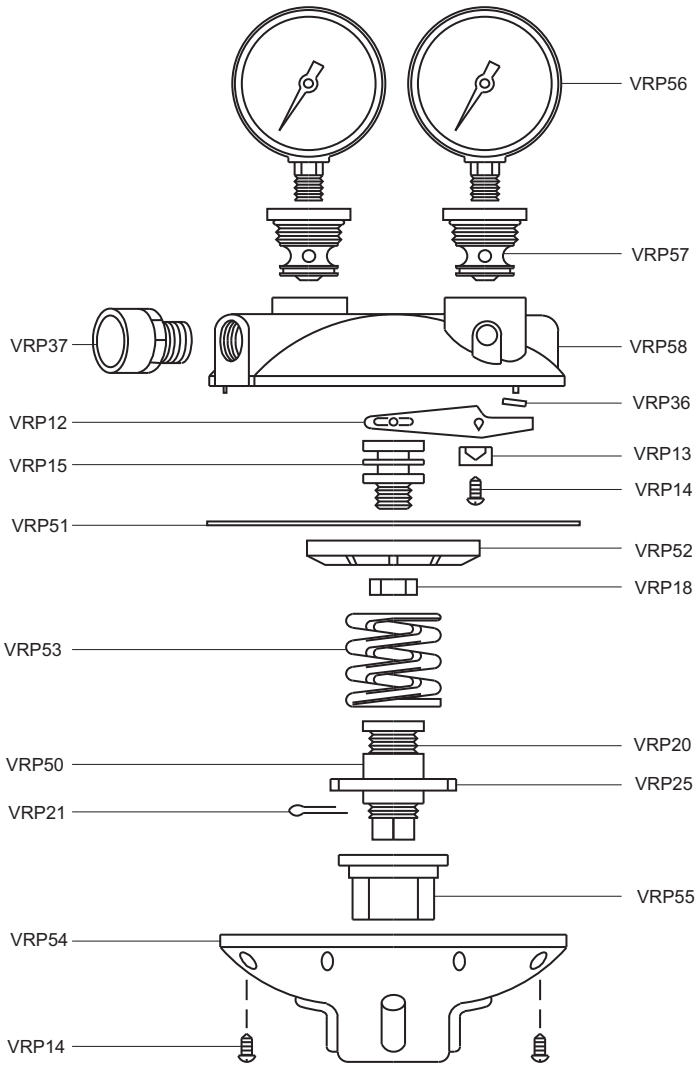




Don't forget to flush your filter whenever you read 10 PSI difference between the two gauges or at regular intervals (for low pressure systems [below 10 PSI] use a 50 micron filter and flush when there is a 1 PSI difference).

High Pressure Regulator

VR205



The high pressure regulator should be used when incoming water fluctuates more than 20 PSI (1.7 Bar). Set the outlet pressure at least as low as the lowest pump pressure setting, which will maintain an even outlet pressure. Do not set regulator pressure below 25 PSI.

Medicator

Tips

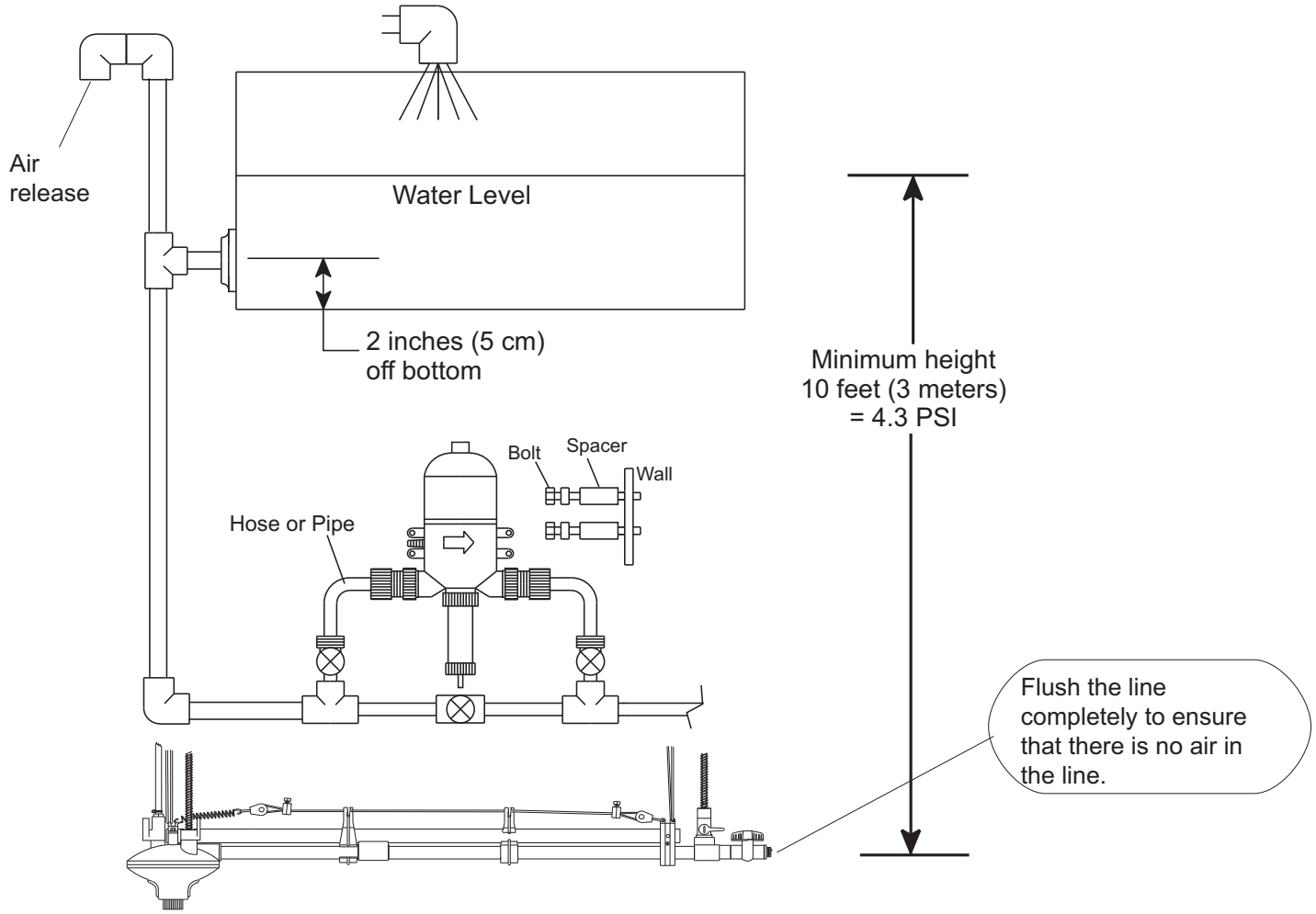
- Hard water will crystalize when coming into contact with chlorine and may cause excessive wear on mechanical parts.

- Always run clean water through your medicator after any use.

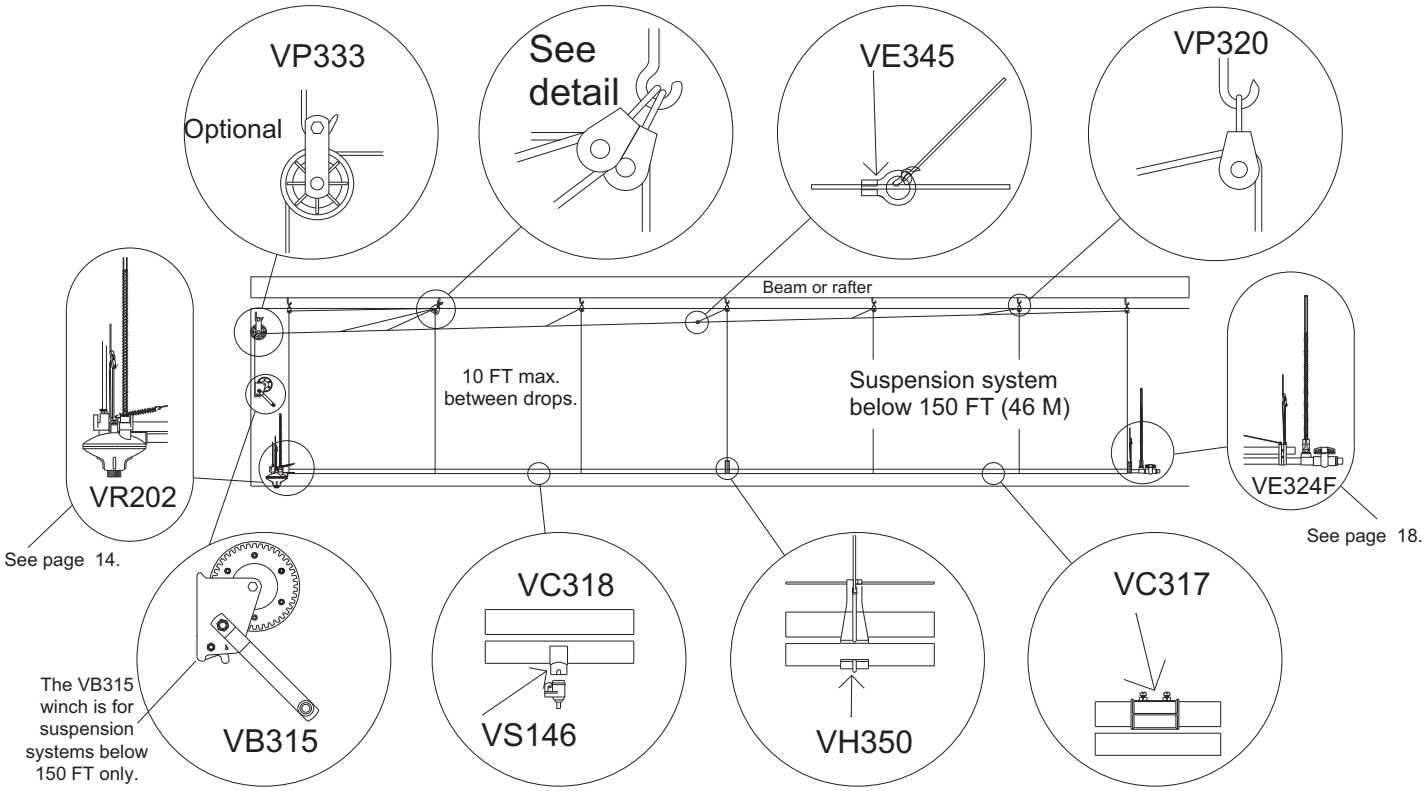
Please refer to your medicator manual for detailed instructions on maintenance, operation and troubleshooting.
See page 30 for medicating procedures.
See page 29 for line cleaning procedures.

Tank or Gravity Feed

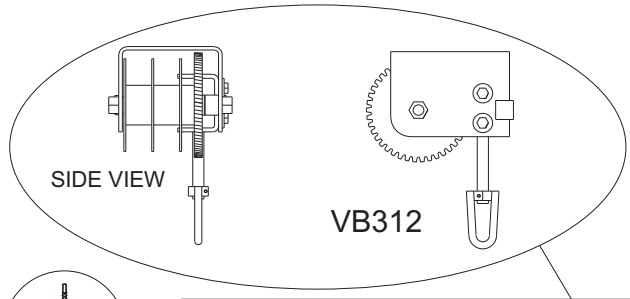
The minimum height requirement is from the water level in the tank down to the middle of the nipple line. **NOTE:** The water line must be full of water for the proper pressure to be created. Any air between the tank and the nipple line will decrease the effectiveness of the medicator.

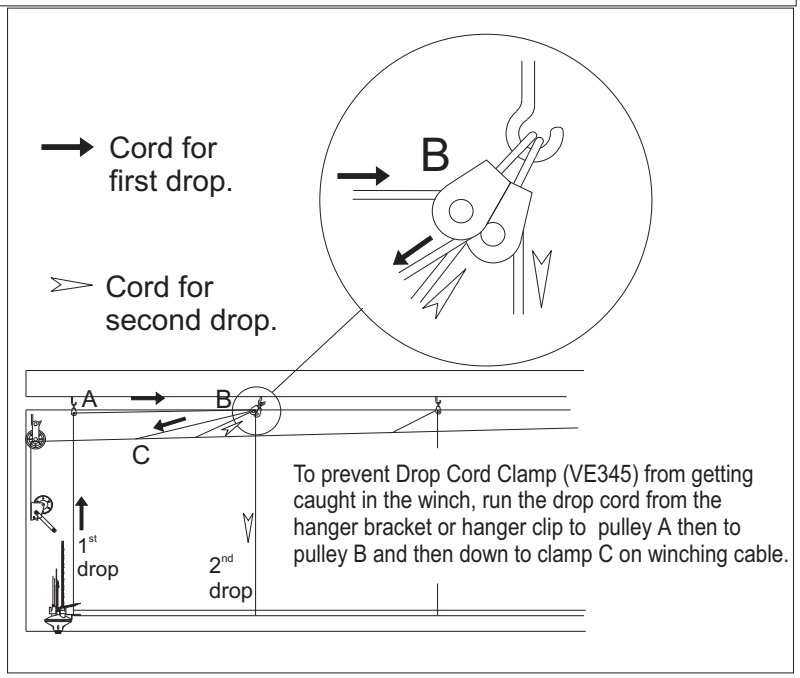


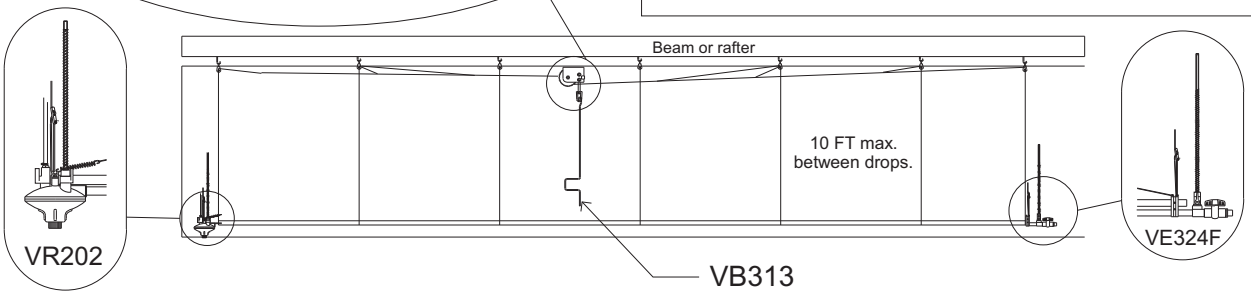
Winching Overview



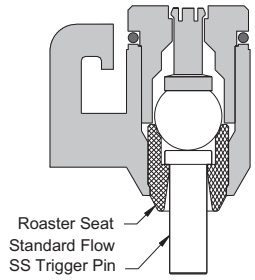
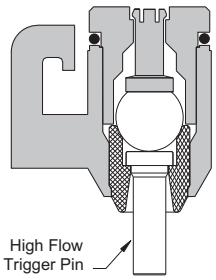
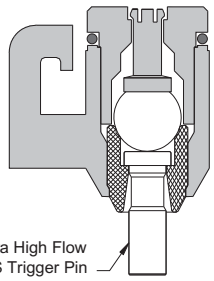
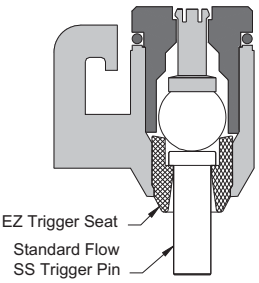
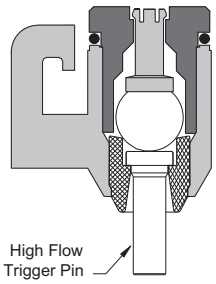
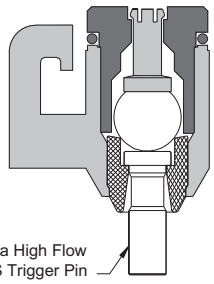
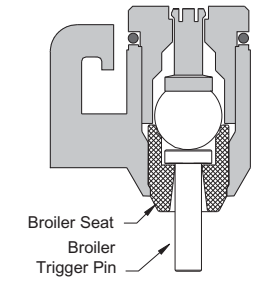
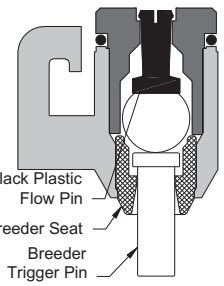
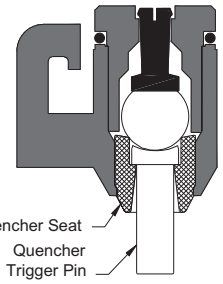
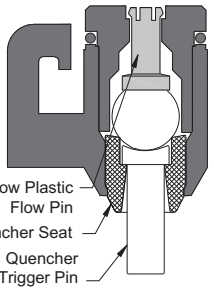
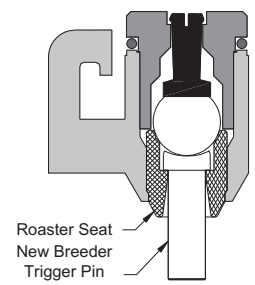
Split winch (VB312) should be used for suspension systems 150 FT (46 M) and over.







Nipple Drinker Matrix

	Standard Flow Green O-Ring (VO140G)	High Flow Black O-Ring (VO140B)	Extra High Flow Red O-Ring (VO140R)
Standard Roaster Yellow Housing & Yellow Cap	 VR150 Roaster, Standard Flow	 VR150H Roaster, High Flow	 VR150HX Roaster, Extra High Flow
Precision Feather Action Yellow Housing & Green Cap	 VR150PFA EZ Trigger Roaster, Standard Flow	 VR150HPFA EZ Trigger Roaster, High Flow	 VR150HXPFA EZ Trigger Roaster, Extra High Flow
Broiler & Duck Drinkers	 VB150 Broiler Drinker, Standard Flow	 VR150D Duck Drinker, High Flow	
Quencher Green Housing & Green Cap		 VQ150HPFA Quencher Drinker, High Flow	 VQ150HXPFA Quencher Drinker, Extra High Flow
Breeder Drinkers	 VR150BN Breeder Drinker, Standard Flow		

Conduit Suspension

1. Install winching system so that the water lines will be hanging 30"-36" (76-91 CM) away from feed. Winch pulleys, 7 x 19 winching cable, drop cord (rope or wire), maximum drop cord span 10 FT.

2. Place 1" conduit (VC316) under drop cord and join together total distance of desired water line.

3. Snap yellow hanger brackets (VH355) onto conduit at drop cords.

4. Place drop cord thru bracket (VH355) and attach to adjustment straps (VS341) which should be placed about 4" (10 CM) maximum above hanger bracket so that it will not interfere by hitting the hanger pulley and obstruct maximum winching capability.

5. Winch conduit approximately 3 FT (91 CM) off house floor, slide brackets (VH350) so that the drop cord is perpendicular to house floor and level conduit within 1/2" (1.3 CM) with adjustment straps.

6. Winch conduit to workable height and snap additional hanger brackets (VH350) every 2 FT (61 CM). **Reverse every other hanger bracket** (this holds the pipe more securely).

7. Attach regulator (VR202) to metal conduit by means of pipe clamp (VRP06) and 2 pipe clamp screws **[DO NOT OVERTIGHTEN]** (see page 14 for more regulator instructions).

8. Snap pipe into hanger brackets (VH355) total distance of suspended conduit. Twist 10 FT PVC pipe section when assembling.
NOTE: Cut first section of PVC pipe in half (5 FT) to start each row, so that the conduit ends and the plastic water pipe coupler are not in the same location.

9. Snap Hanger Bracket Clips (VH356) [2 per bracket] into the brackets.

10. Twist nipples into saddles with nipple tool. Nipples can also be inserted before hanging pipe.

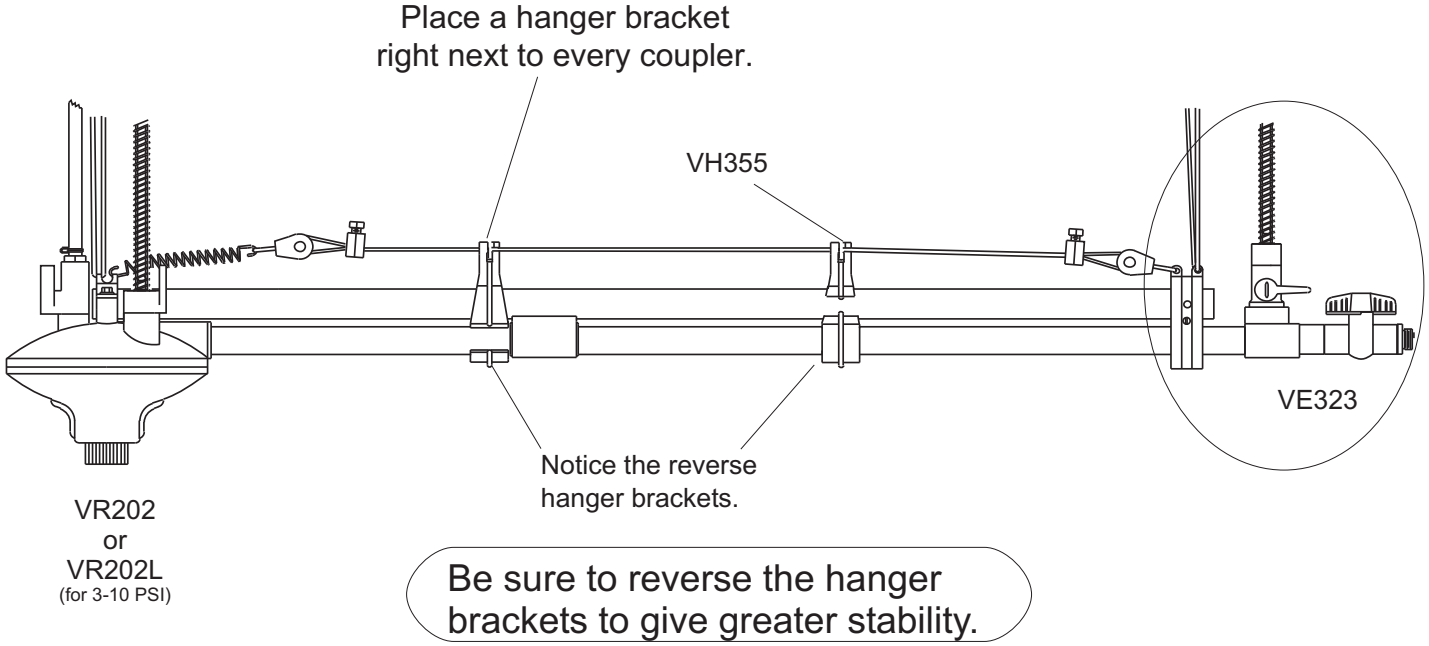
11. Replace last (VH350) hanger bracket in each line with an aluminum bracket (VH309) around conduit and plastic pipe at the end of each line. The aluminum bracket should also be installed at any mid-line assembly (see page 17 for illustration).

12. See page 20 for illustration of shocking wire assembly.

13. Assemble end assembly (VE323) as shown and glue to PVC pipe (see page 18). **NOTE:** Make sure there is a 2-1/2" (6.5 CM) space between the aluminum holding bracket (VH309) and the end assembly.

IMPORTANT!

An S-hanger bracket must be placed next to every coupler, preferably on the O-ring side. This means flush against the coupler. NOTE: Remember to cut the first piece of PVC pipe in half to allow you to do this.



Be sure to reverse the hanger brackets to give greater stability.

Aluminum Extrusion Suspension

1. Install winching system so that the water lines will be hanging 30"-36" (76-91 CM) away from feed. Winch pulleys, 7 x 19 winching cable, drop cords (rope or wire), maximum drop cord span 10 FT.

2. Place drop cord thru hanger clip (VA600) and attach to adjustment strap (VS341)which should be placed about 4" (10 CM) maximum above hanger clip so that it will not interfere by hitting the hanger pulley and obstruct maximum winching capability.

3. Place 10 FT aluminum extrusion under drop cords. Cut 10 FT section of aluminum in half to start each row. This way the aluminum connector and plastic water pipe coupler are not at the same location.

4. Place 8" aluminum connector (VA317) in 10 FT aluminum extrusion (VA318) about 1/8" (32 MM) as shown and twist until you hear 2 clicks. Slide aluminum connector in 10 FT extrusion about 4" (10 CM) and clamp.

5. Snap next 10 FT section into same connector in step 4, then slide both 10 FT sections together. Repeat steps 4 & 5 until 1 line of suspension is complete. Go back over the line with an electric drill and screw the 2 provided hexhead self-drilling screws (VA319) at each aluminum 10 FT connection, as shown in the sketch below.

6. Push hanger clip (VA600) onto aluminum suspension as shown (clip may be tapped on with hammer). Make sure clip is placed on aluminum suspension right under drop cord pulley.

7. Winch suspension to workable height. Move hanger clips (VA600) so that all drop cords are perpendicular to aluminum suspension.

8. Bolt regulator to aluminum suspension with 2 aluminum clamps (make sure edge of aluminum extrusion is about 1/2" from clamps) (see page 14 for more regulator installation instructions.).

9. Twist nipples into saddles on PVC pipe (they can also be inserted after pipe has been hung).

10. Place pipe clamps (VA500) on water pipe, approximately every 2 FT (5 per pipe). **NOTE:** Each pipe must have 1 of the pipe clamps (VA500) within 1" - 2" (2.5-5 CM) of all pipe couplers.

11. Push while simultaneously twisting pipe into regulator and only snap the 3 closest pipe clamps (VA500) into aluminum suspension before pushing and twisting next pipe into coupler. Snap remaining 2 pipe clamps (VA500) on the first pipe and proceed down the line. **NOTE:** Coupler automatically aligns nipple correctly.

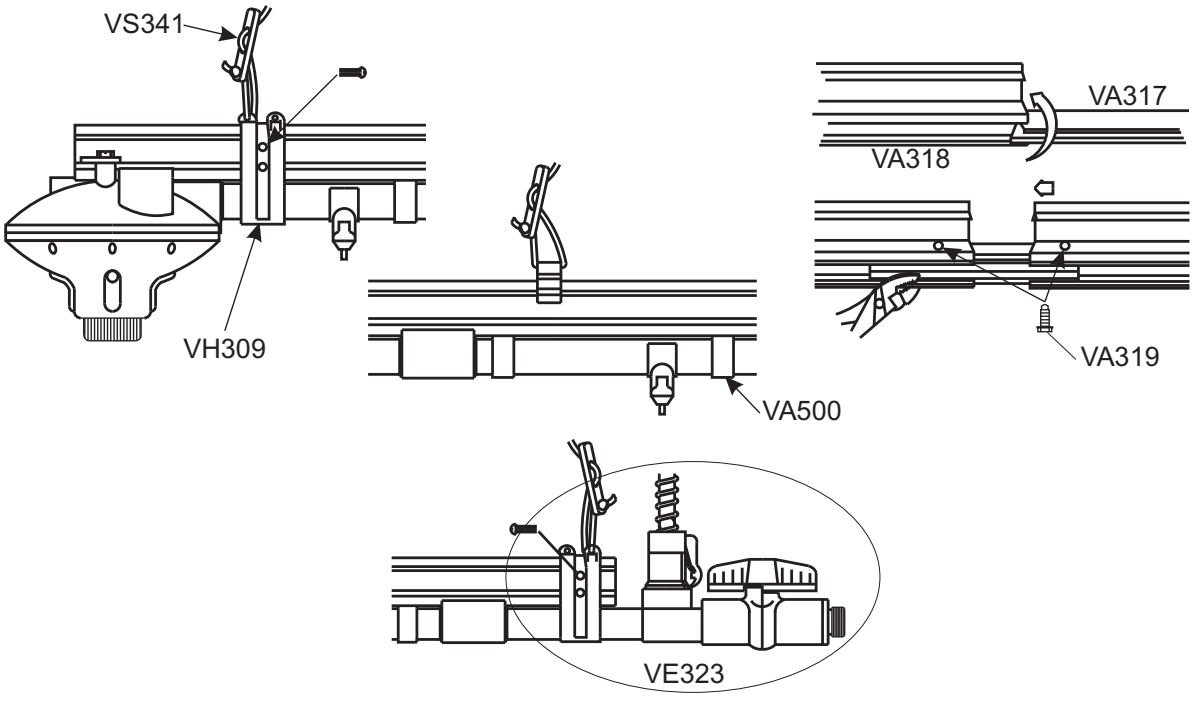
12. Cut last piece of pipe so that it extends 2-1/2" (6.5 CM) past the end of aluminum suspension.

13. Take half of aluminum holding bracket (VH309), hold up to aluminum extrusion as shown on sketch below and and mark hole. Drill 1/4" (63.5 MM) hole through aluminum extrusion and bolt holding bracket as shown, holding PVC pipe rigid to aluminum extrusion.

14. See page 20 for illustration of shocking wire assembly.

15. Assemble end assembly (VE323) as shown and glue to PVC pipe (see page 18). **NOTE:** Make sure there is a 2-1/2" (6.5 CM) space between the aluminum holding bracket (VH309) and the end assembly.

Important: Do not use aluminum extrusion with breeder birds.



Double-Wall Pipe

1. *If using conduit suspension* with double-wall pipe, follow installation instructions for floor watering systems for conduit suspension on page 11 after reading steps #3 thru 5 here.

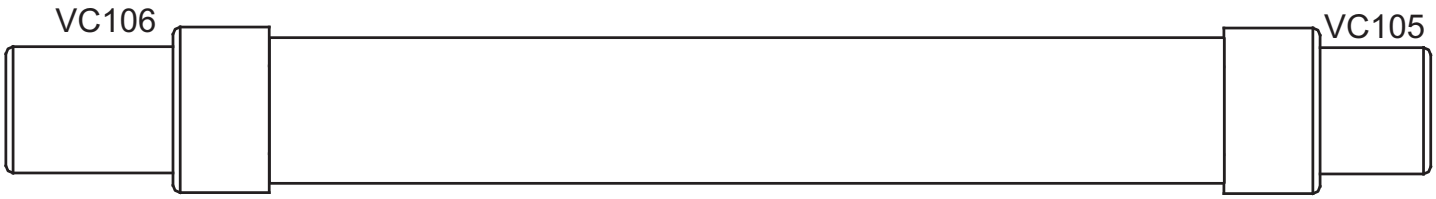
2. *If using aluminum suspension* with double-wall pipe, follow installation instructions for floor watering systems for aluminum suspension on page 12 after reading steps #3 thru 7 here.

3. All double-wall pipe has the same outside diameter as standard watering pipe.

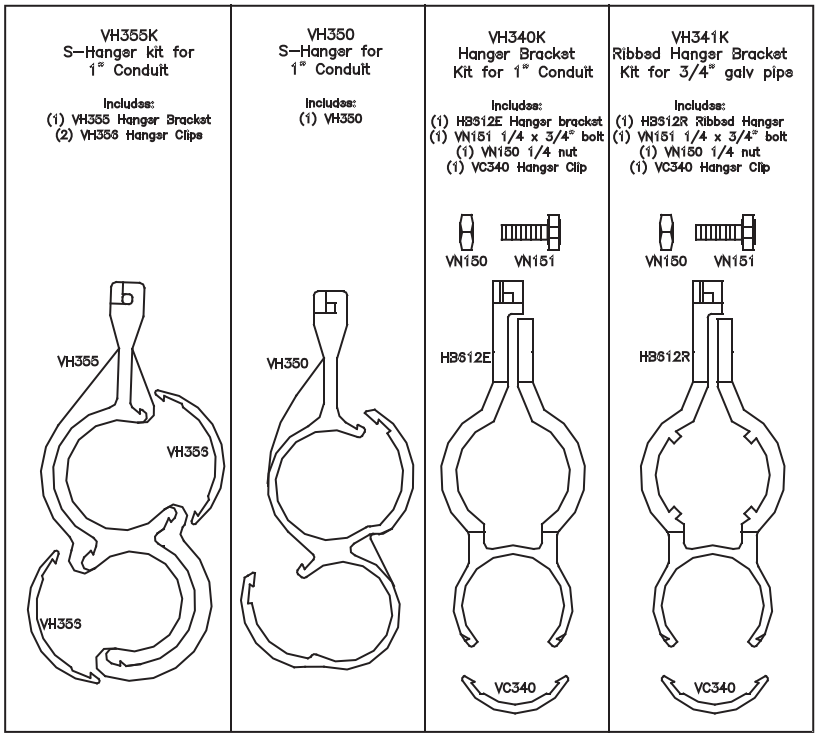
4. The double-wall pipe needs to have adapters glued on each end to prevent water from entering the insulating wall. The shorter adapter [VC105] is for glued ends and the longer adapter [VC106] is for the regulator and the O-ring ends of couplers.

5. If high pressure well water sources are used, pipes and tanks above ground should be insulated R4 or better to keep water as cool as possible, to drop hose of regulator.
NOTE: Drop hose of insulated regulator kit supplied by VAL-CO is insulated.

End view of the Double-Wall Pipe [VP001DW]



Hanger Brackets (for all pipe and conduit)



Regulator

1. If installing rigid standpipe place blue ball (VRP03) in standpipe, glue and push cap (VSC750) on.

2. If installing flex standpipe place blue ball (VRP03F) in standpipe and push cap (VSC250) on.

3. Screw standpipe assembly into the OUTLET side of regulator (if installing slope regulator [VR204] screw the intake standpipe [the one that isn't flat on the bottom] into the INLET side).

4. Screw hose connector into 3/4" NPT pipe fitting (VRP66) in the ceiling (Do not overtighten). **NOTE:** Wrap with 3-4 turns of teflon tape first.

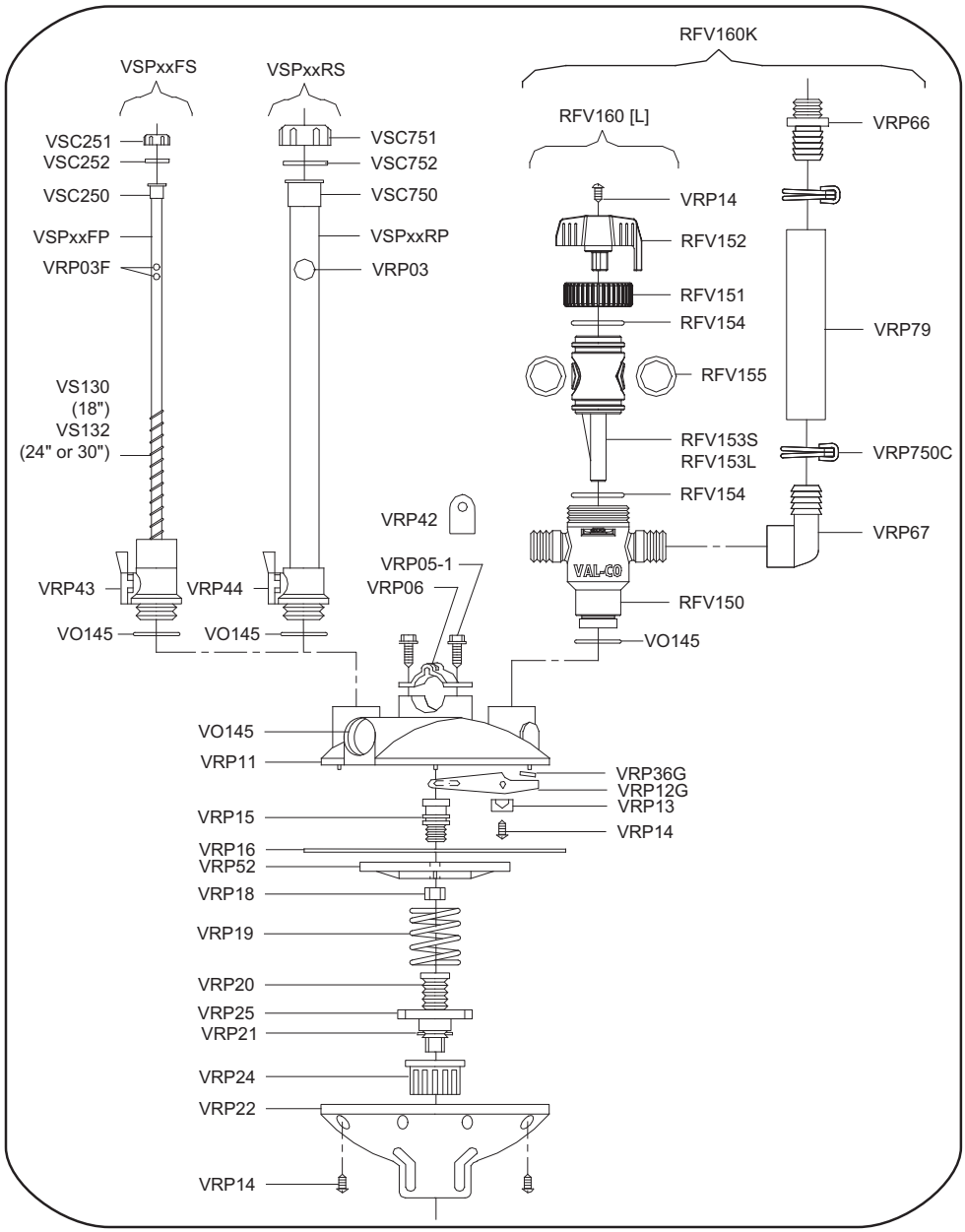
5. Push hose onto hose barb at the water source. **NOTE:** Don't forget to add the hose clamp (VRP750C) first.

6. Push other end of hose onto the barbed end of drop hose intake with shutoff.

7. Make sure pipe ends are beveled before twisting and pushing pipe into regulator INLET or OUTLET.

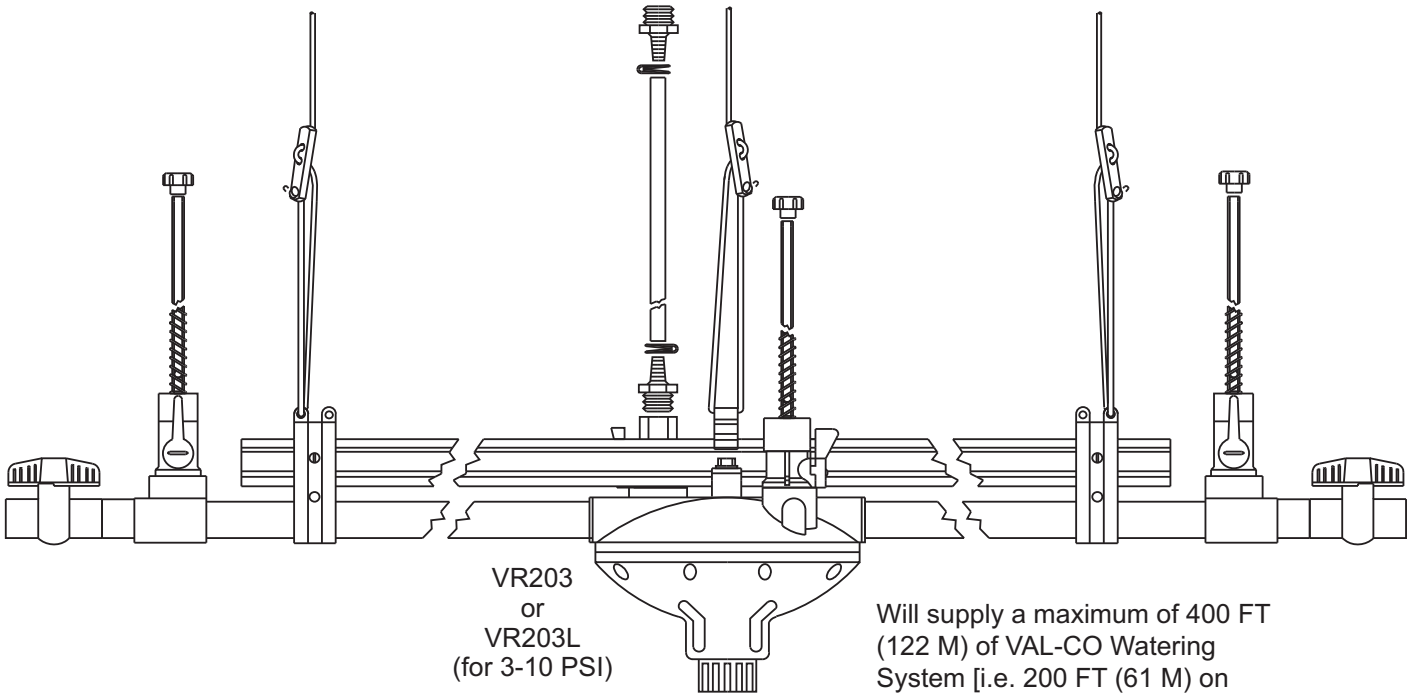
8. Standpipe plugs (VRP01) should be used when standpipes are removed to keep dirt out of regulator.

9. When clamping the regulator to conduit or aluminum, **do not** overtighten the screws. Just snug the clamp or tabs against the metal. **NOTE:** Bracket VRP06 does **not** need to contact regulator body.



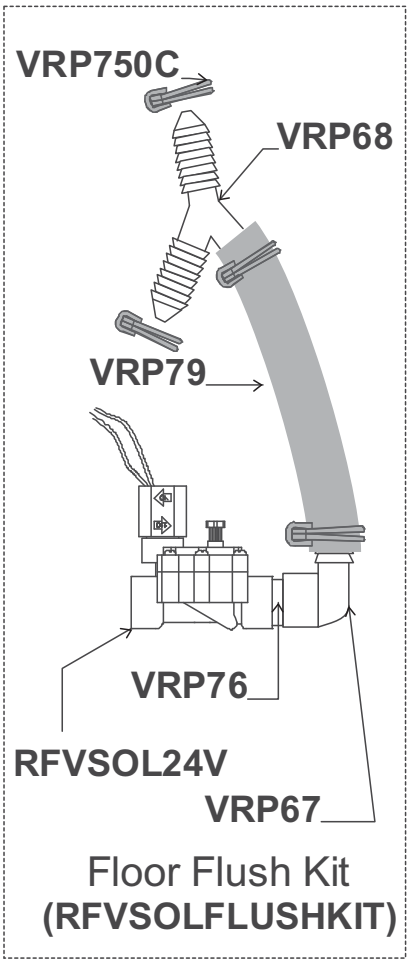
The VAL-CO regulator will supply a maximum length of 400 FT (122 M) of VAL-CO Watering System.

Inline Regulator



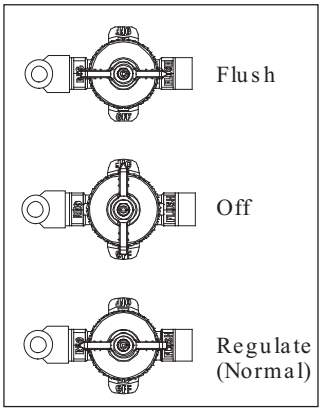
VR203
or
VR203L
(for 3-10 PSI)

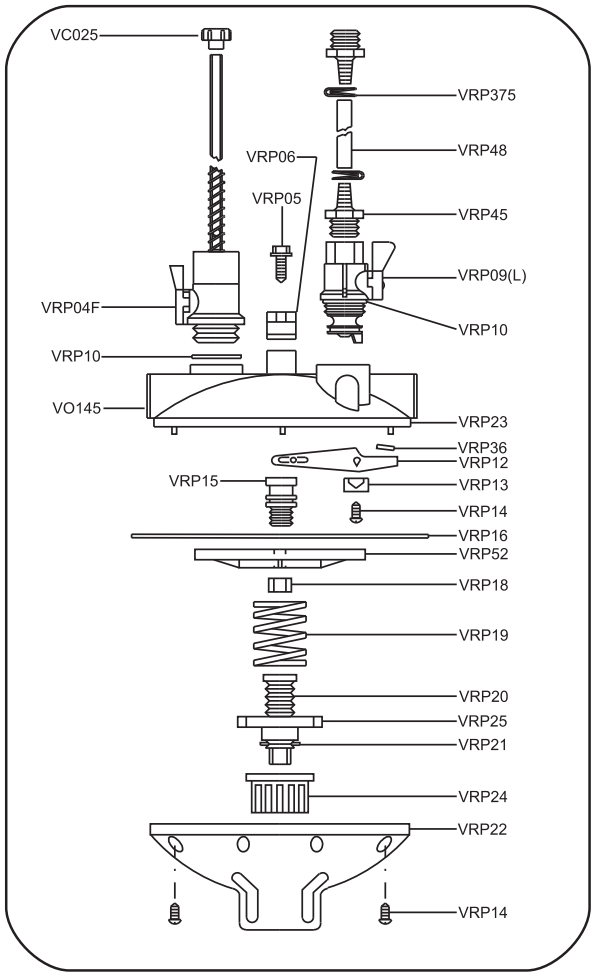
Will supply a maximum of 400 FT (122 M) of VAL-CO Watering System [i.e. 200 FT (61 M) on either side of regulator].



Floor Flush Kit
(RFVSOLFLUSHKIT)

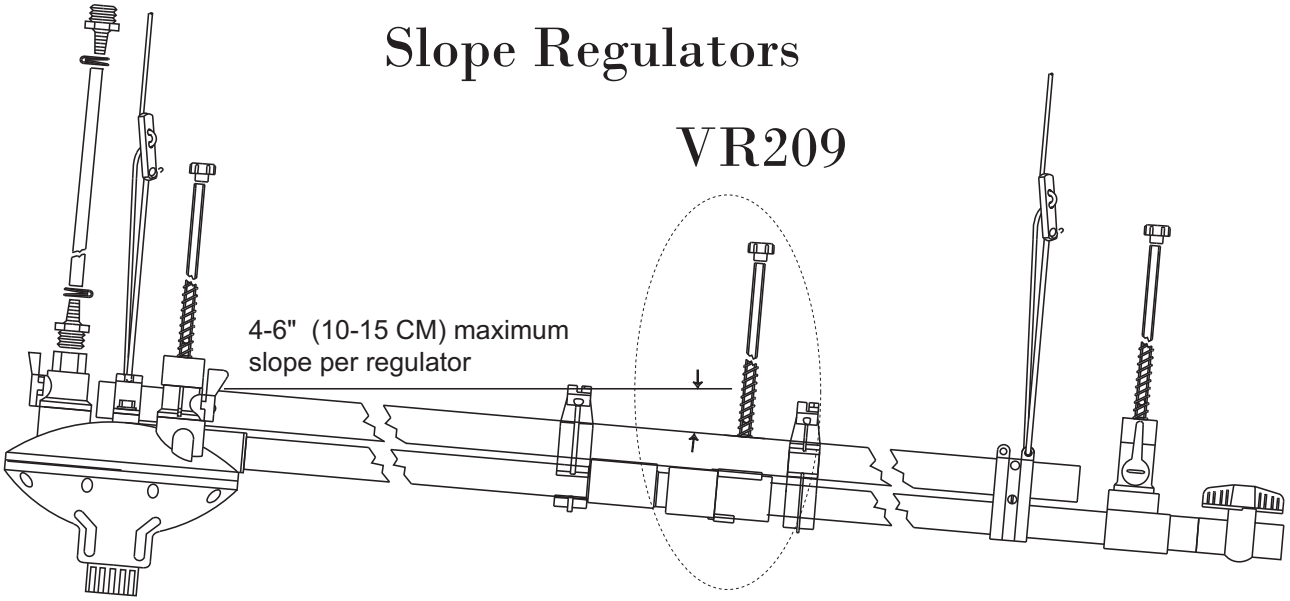
Automatic flush option for the new flush kit and a top view of the flush positions.



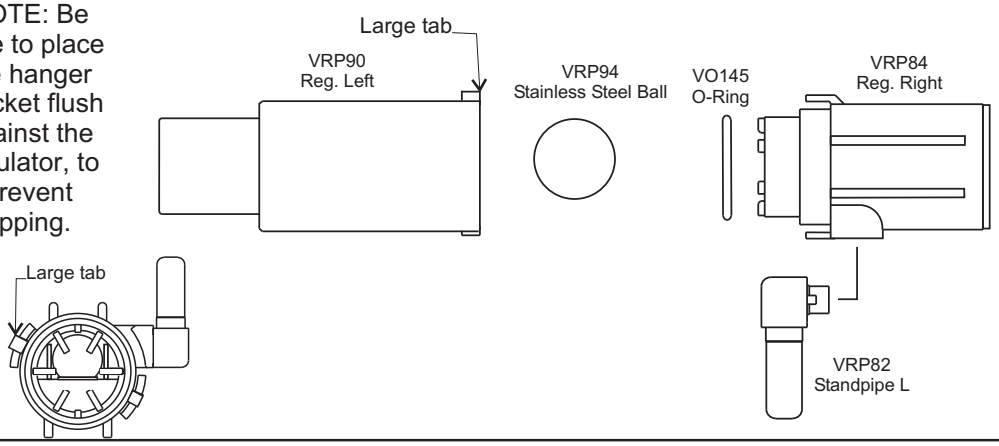


Slope Regulators

VR209



NOTE: Be sure to place the hanger bracket flush against the regulator, to prevent tipping.

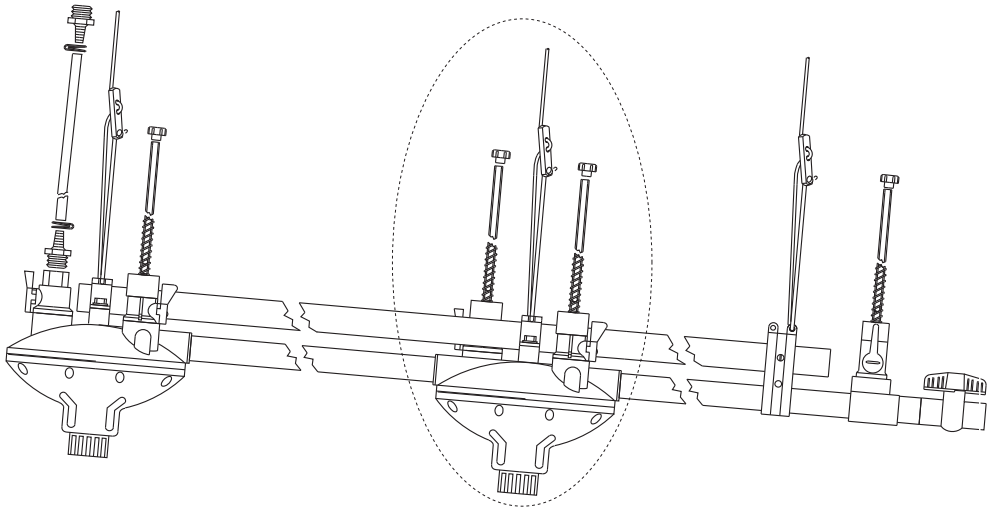


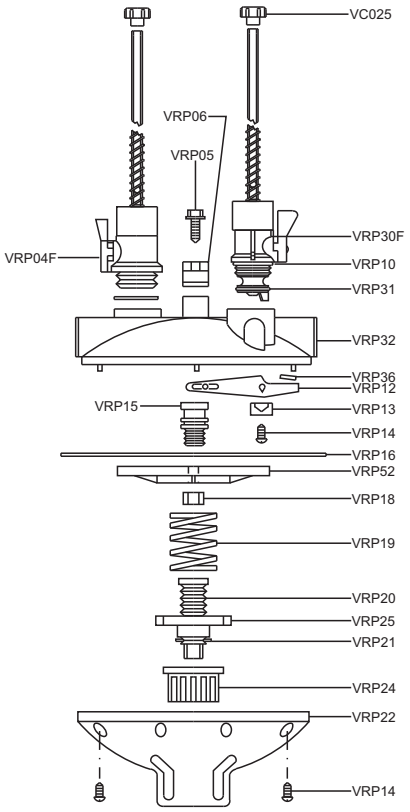
Slope regulators should be used when the column height at the end assembly is 6” (15 CM) or higher than the column height at the supply regulator (VR202).

Water must run downhill. The column height at the end assembly should be level or higher than the column height at the supply regulator (VR202).

No more than three VR204’s should be installed in one line.

VR204



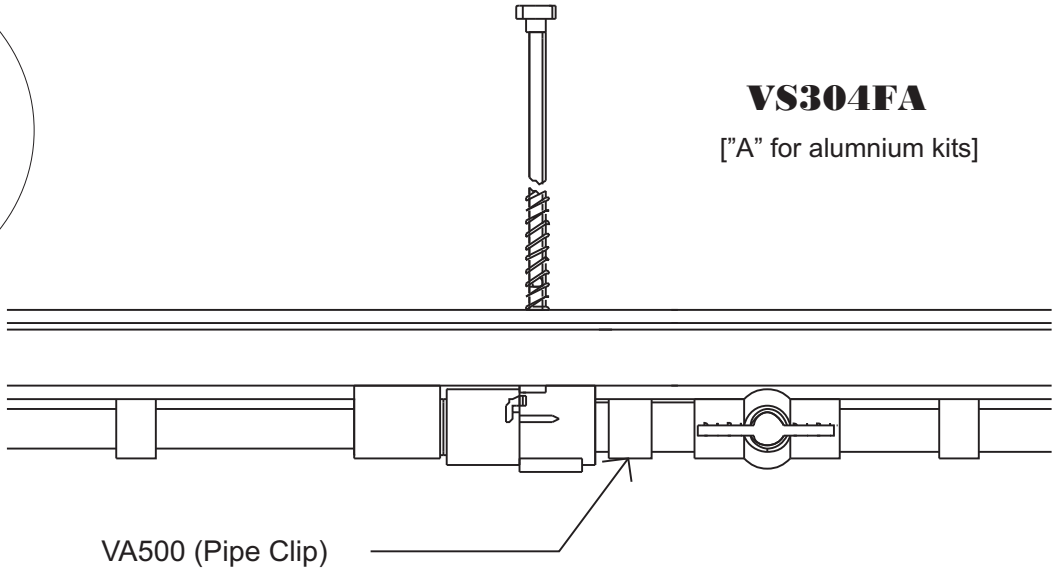


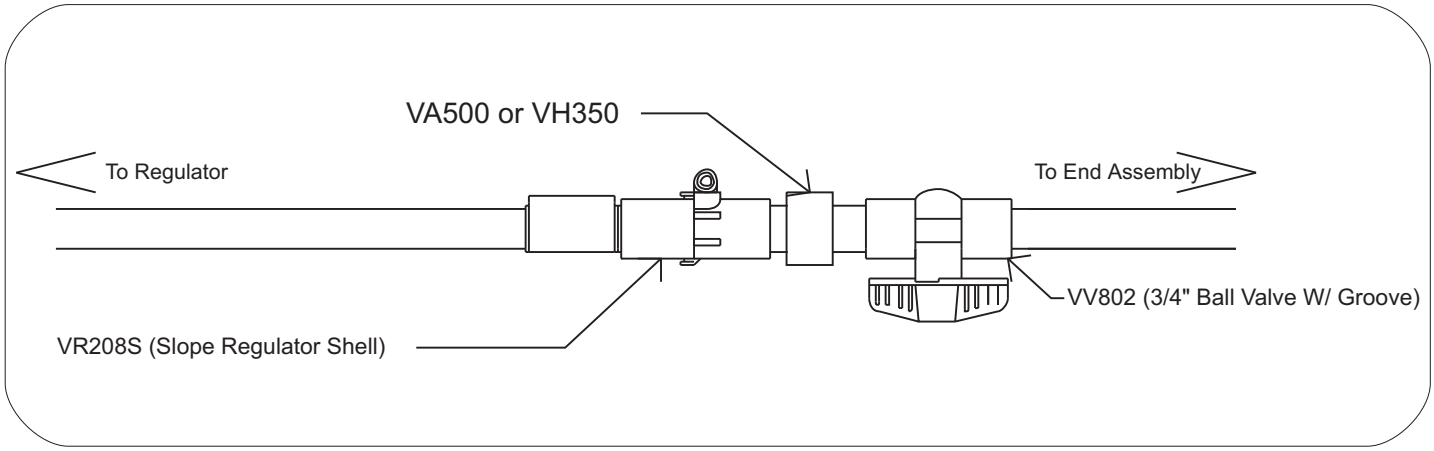
Inline Shutoff

The mid-line shutoff allows you to create a brood area smaller than the total length of the house.

VS304FA

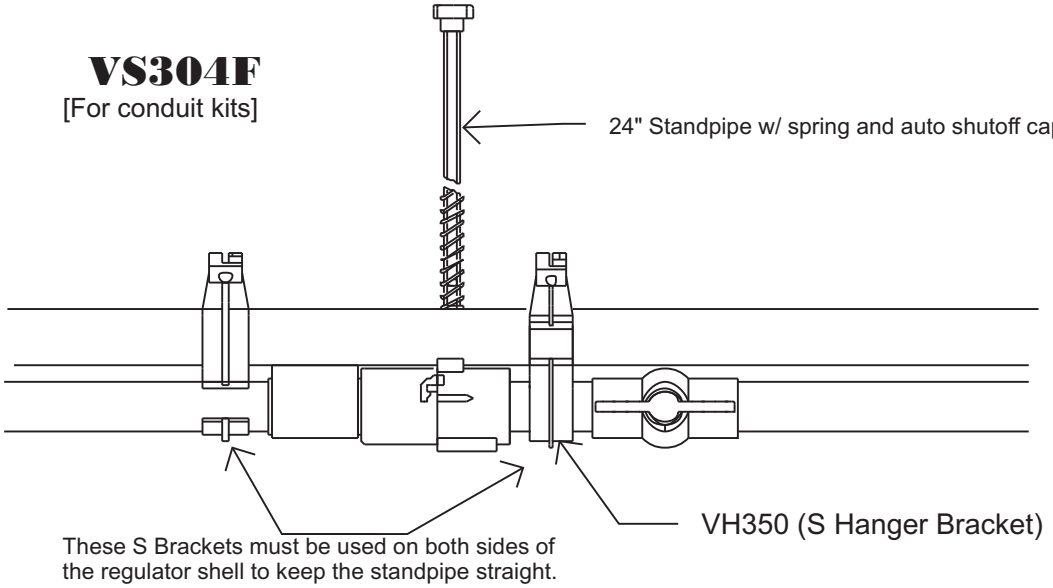
["A" for alumnium kits]



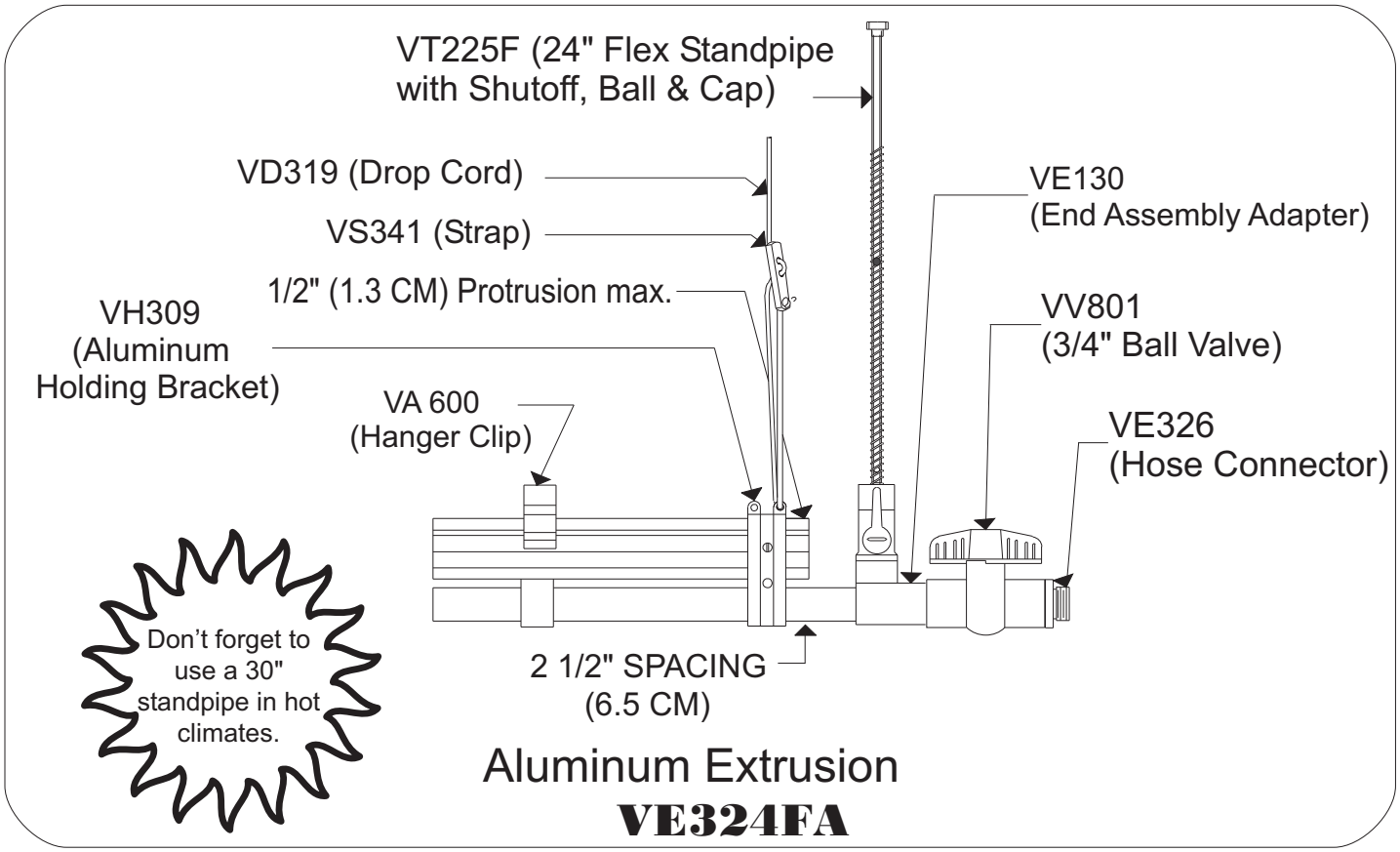


VS304F

[For conduit kits]

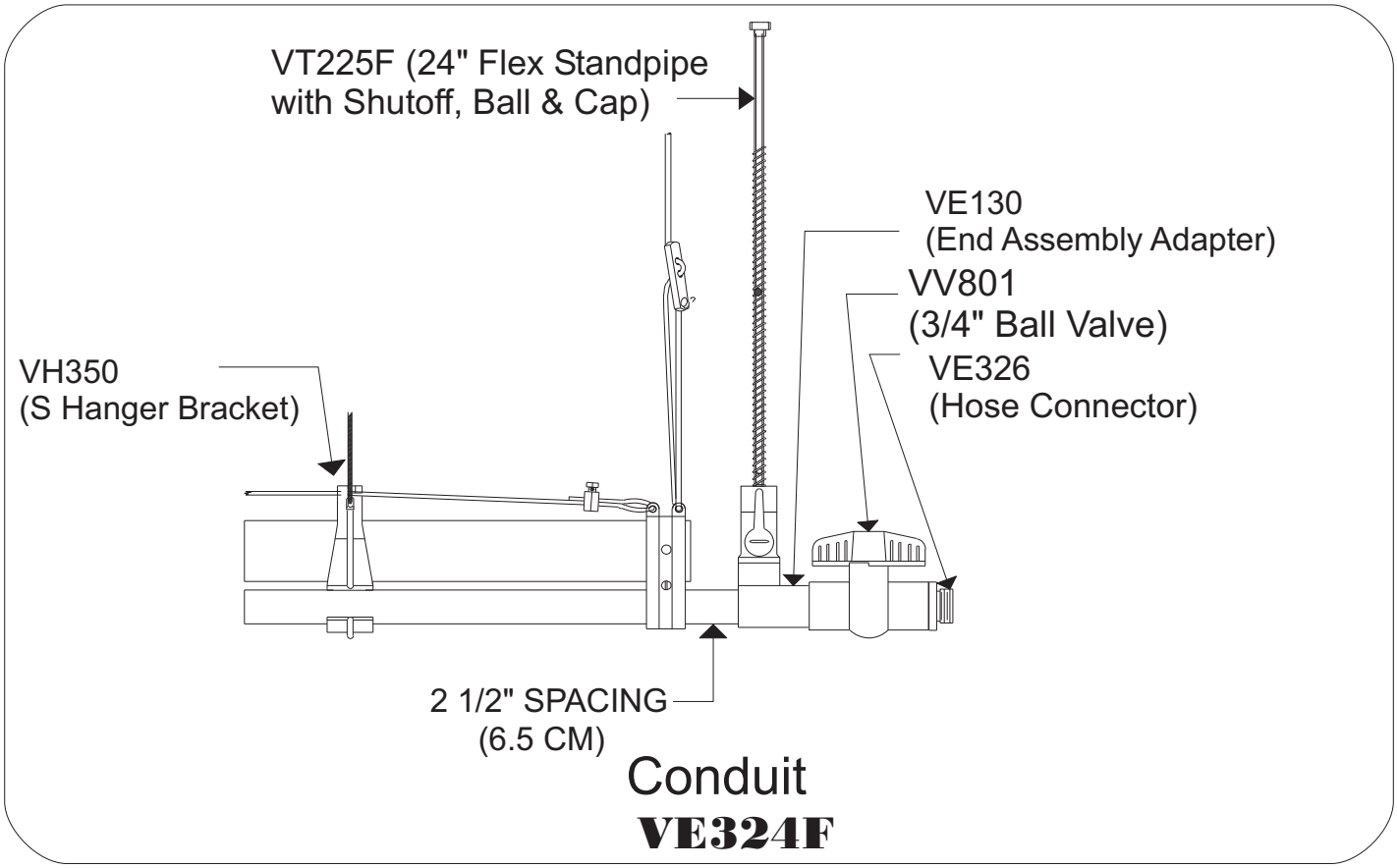


End Assembly



Aluminum Extrusion

VE324FA

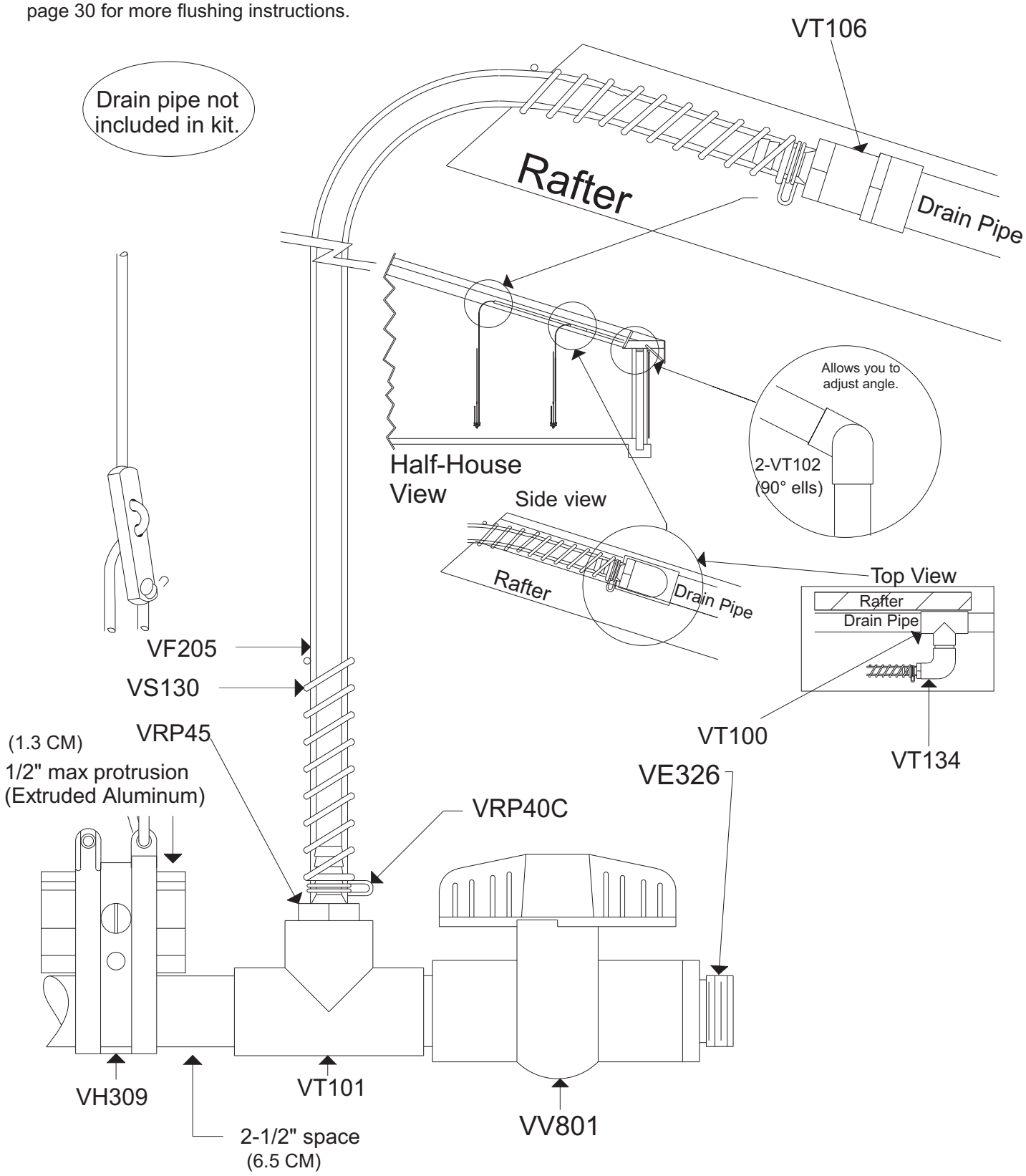


Conduit

VE324F

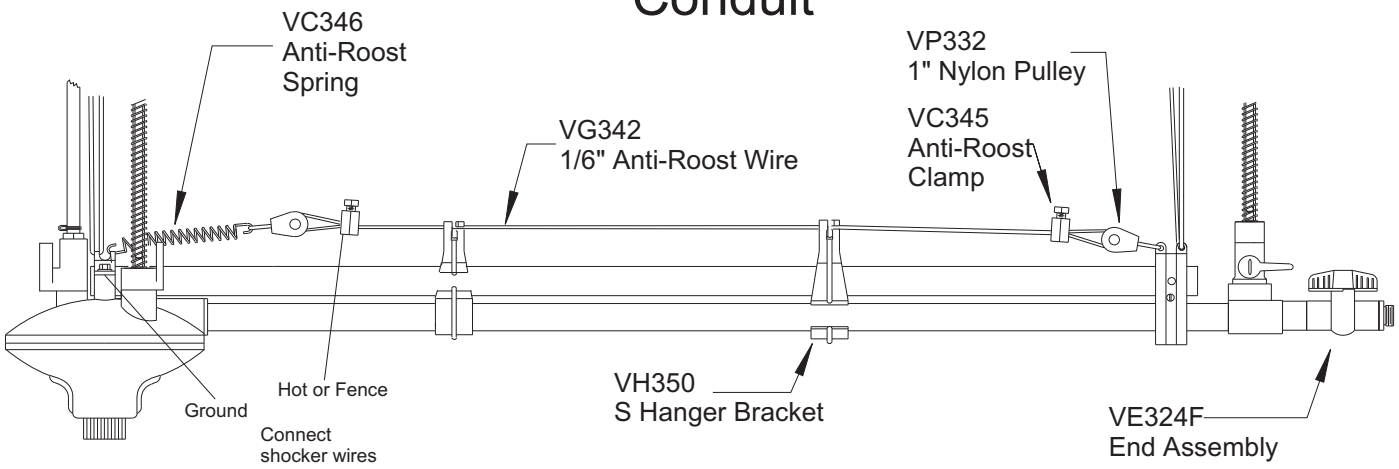
Floor Flush Kit
VF200

This kit allows you to flush the lines from the regulator. Just twist and flush. See page 30 for more flushing instructions.

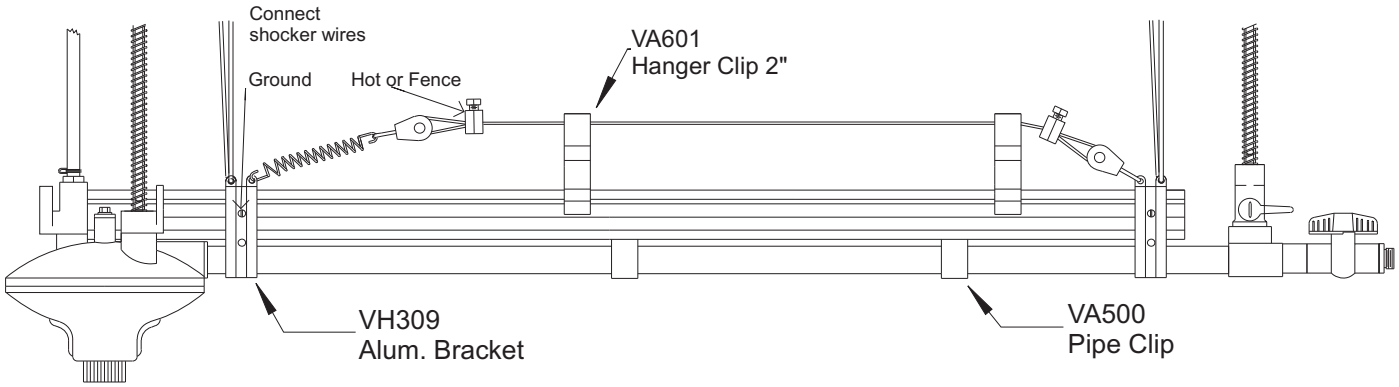


Shocking Unit Hookup

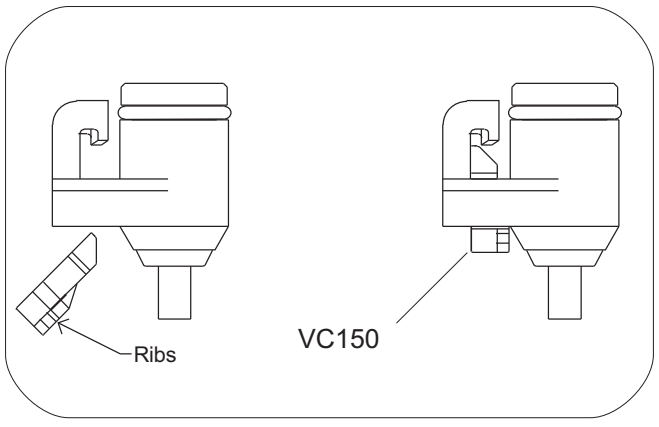
Conduit



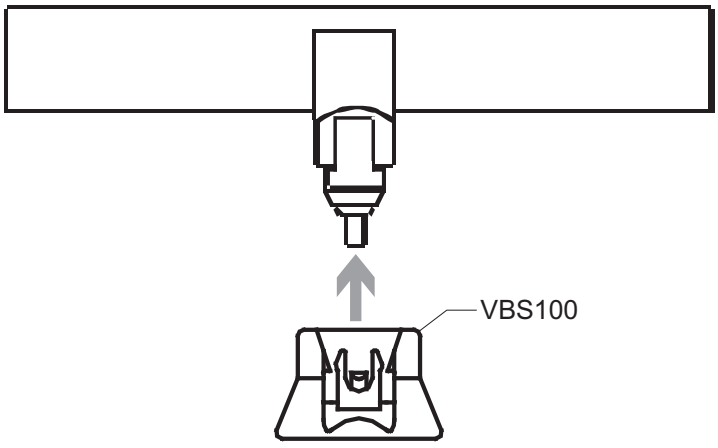
Aluminum Extrusion



Nipple Locking Clip & Breeder Locking Shield

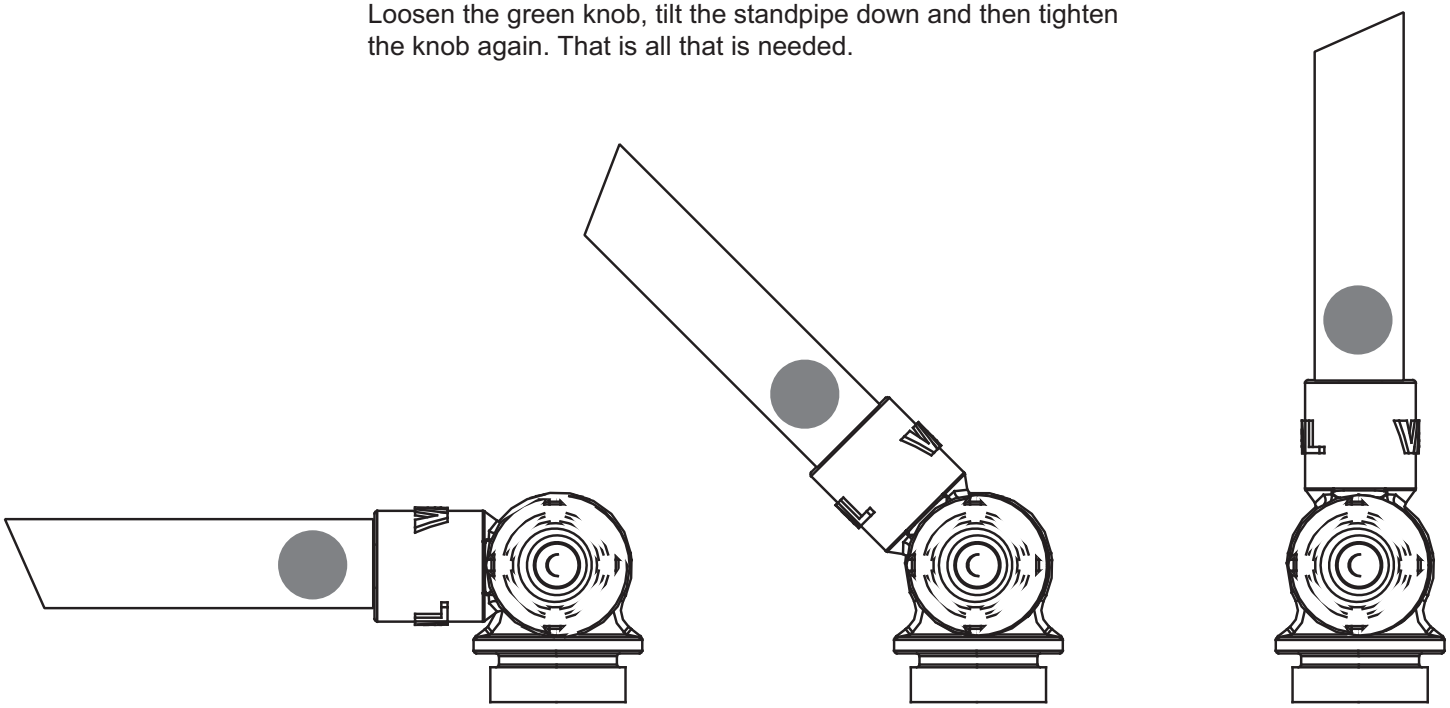


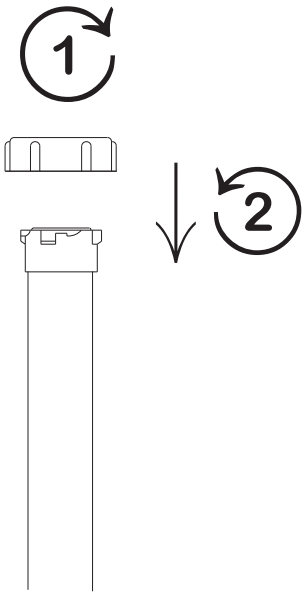
The ribs on the clip should face the nipple body.



Folding Standpipe Assembly

Loosen the green knob, tilt the standpipe down and then tighten the knob again. That is all that is needed.

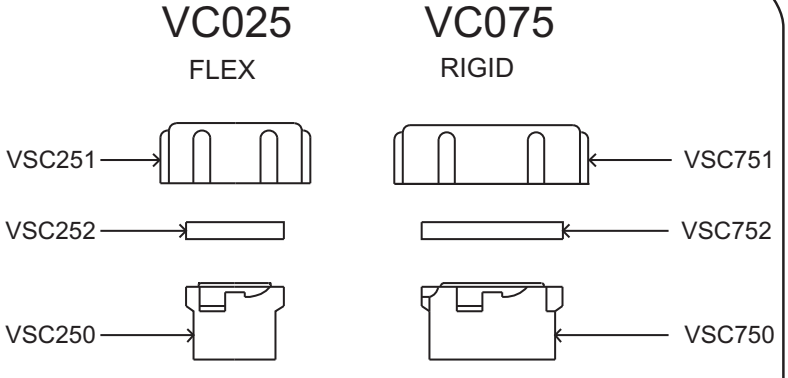




1. Turn the cap clockwise to lock.

2. Turn counterclockwise, while pushing down, to unlock for cleaning.

Standpipe Caps

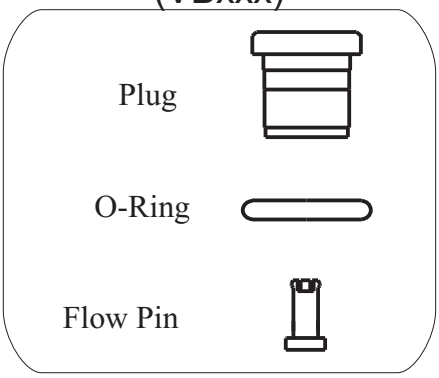


New standpipe caps that won't leak while flushing and are easily removable for cleaning. Just twist and flush to clean the nipple lines and twist and swish with standpipe brush to clean standpipe.

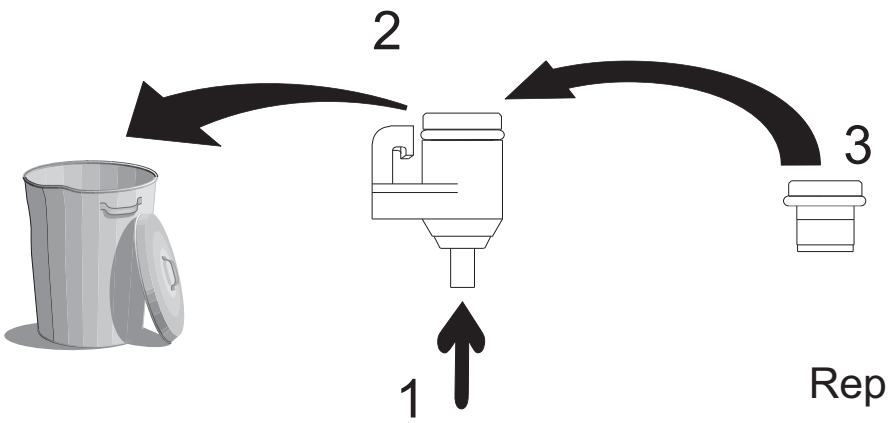
Replacement Caps Kits

When you're getting too much water out of the nipples with the standpipes at their lowest setting, it is probably time to replace the caps. Send a sample (3-5 nipples) to your distributor with your name, address, date of installation and any other helpful information.

New Replacement Kit (VBxxx)



The Cap Replacement Kit part numbers will be based on your particular drinker.



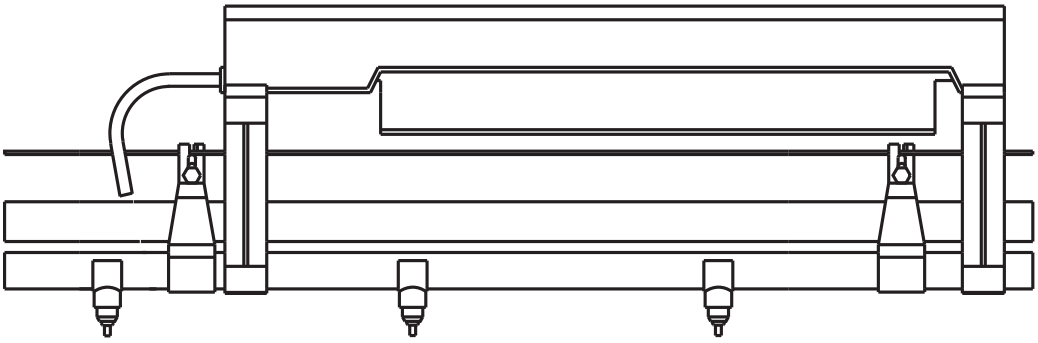
Replacing Caps

1. Push up on the stainless steel pin to loosen the old plug.
2. Pull out old plug and throw away. If the inside is dirty, clean.
3. Push in replacement plug. If necessary, tap on plug lightly.

CAUTION! Do not mix the SS balls and SS pins from all the nipples together.This may cause nipples to leak.

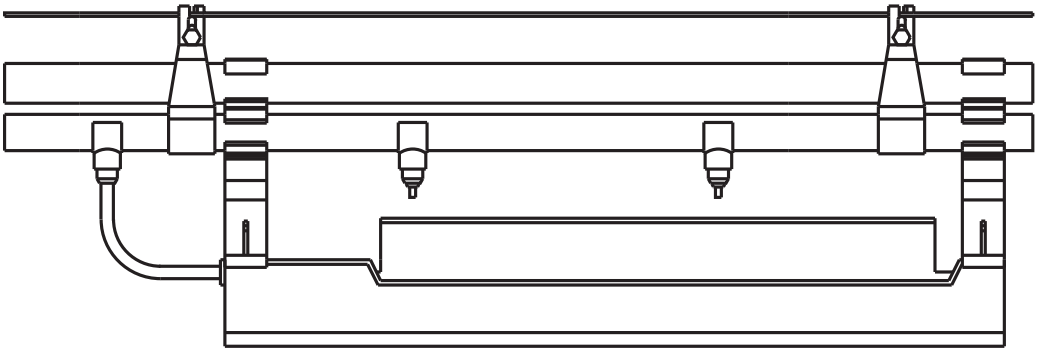
After replacing the caps, remember that the new cap returns the nipple to nearly the same flow that it had when it was new. That means that you need to raise standpipe pressures back to what they were when they were new.

Mini Drinker



Mini Drinker in storage position.

Mini Drinker in use.



VM100

VM111-Single hanger bracket for aluminum extrusion.

VM104-Bracket

VC340-Clip

Cover

VM101-Connector

VM107-Bumper

VM103-Float

VM102-Valve

BG222-Hose

VM106-Trough

Big Tom Turkey Kit

1. Snap the Hanger Bracket [VH340] on the conduit and pipe next to the saddle.

2. Insert the Long Pin Turkey Nipple [VT150LP] into the saddle.

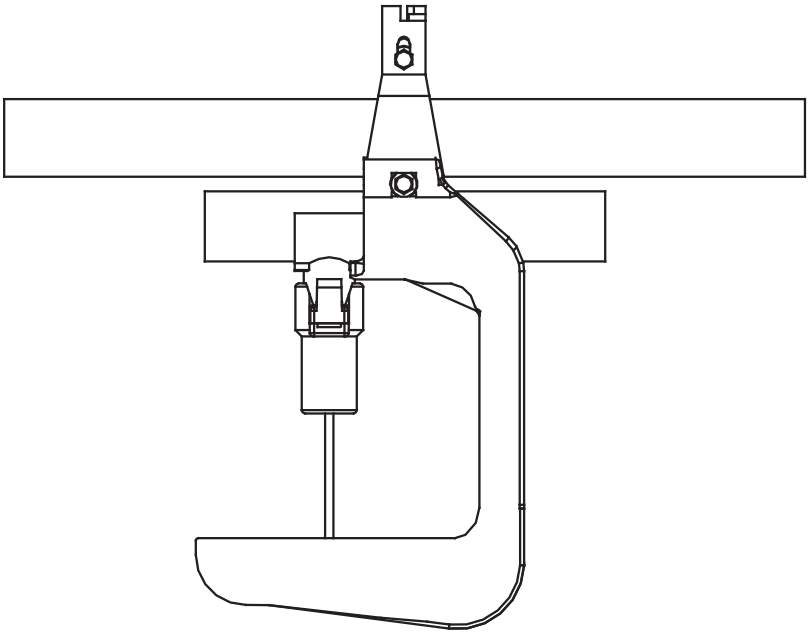
3. Snap the Pin Stop [VT186] into the nipple.

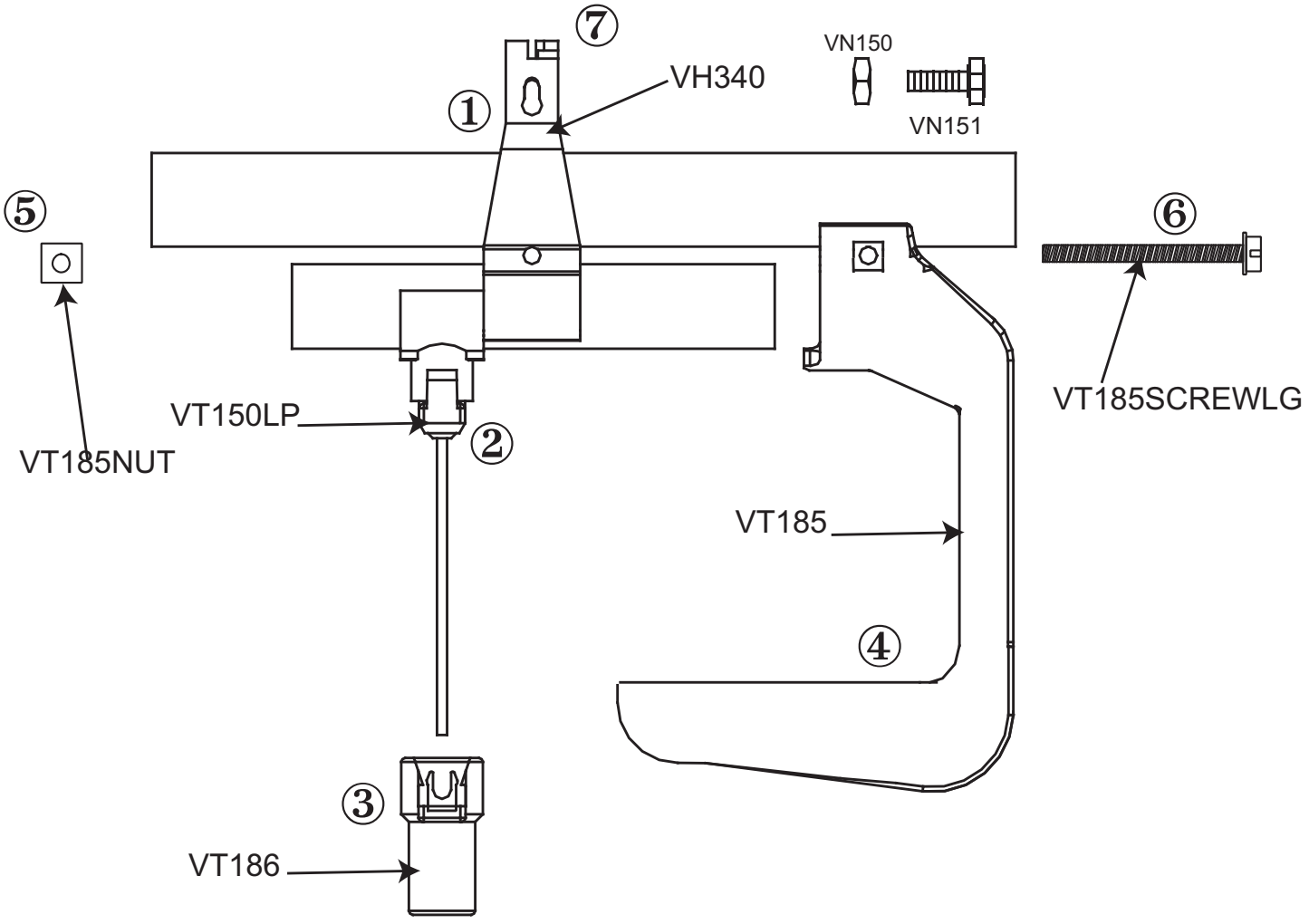
4. Snap the Big Tom Turkey Cup [VT185] onto the water pipe and then slide the Cup onto the Hanger Bracket. NOTE: Make sure the hook is fully locked onto the saddle.

5. Place the Nut [VT185NUT] into the square on the other side of the Bracket.

6. Push the Bolt [VT185SCREWLG] into the lined up holes of the Cup and the Hanger Bracket and screw it into the Nut.

7. Install the Hanger Bracket Bolt [VN150] and Nut [VN151] also.





Operation and Management

Broiler Management Procedures

GENERAL GUIDELINES

- The management stick is only a general guideline. Bird size, temperature and many other things can affect how you should manage line height and water pressure. Keep a record of what works best for you from year to year.

- Wet litter can be caused by either one or both of the following; nipples are hanging too low or too high (winch them up or down) or water pressure is too high (lower ball in standpipe). Use lower water pressure in winter.

PRE-CHICK SETUP

- ➤ Be sure water lines have been placed properly (2-3 FT [61-91 CM] from feed lines).
- ➤ Be sure nipple density is correct (see chart, brood area 30 maximum, grow-out area 15 maximum birds).
- ➤ Check filter cartridge and replace or backflush if needed.
- ➤ Provide at least 25 PSI (lbs / square inch) of pressure to a VAL-CO Watering System.
- ➤ If using low pressure regulator (VR202L) provide at least 3 PSI.
- ➤ Level water lines with house floor (to within 1/2" [1.3 CM]).
- ➤ Level shavings under water lines.
- ➤ Adjust regulator (ball height 2-4" [5-10CM]) (using management stick, 1" [2.5 CM] shown in clear sight tube).
- ➤ Adjust water line height to day one, from center of 1.05" diameter PVC pipe (using management stick).
- ➤ If you have a non-uniform flock, you must satisfy smaller birds.
- ➤ Trigger all nipples to make sure they are getting water.

CHICK PLACEMENT

- ★ Place chicks under water lines, not under brooders.
- ★ Make sure that the trigger pins are at eye level for your birds.
- ★ Double check to make sure that water is present throughout system.
- ★ After 48 hours, raise water lines so birds are drinking from the bottom of nipple pin.

Important! After second week, water pressure (ball height in standpipe) should be as high as possible without wetting litter to obtain maximum weights.

HOT CLIMATE MANAGEMENT

- ❂ Be sure to use 30" standpipes
- ❂ Start water pressure at 6-8" (15-20.3 CM).
- ❂ Water standpipe pressure should be raised by 6-8" (15-20.3 CM) every week until 28" (71 CM) is reached.
- ❂ If necessary, flush water lines periodically to keep water cooler (**if not using insulated pipe**).
- ❂ Insulate header kit (see page) [**use chiller**].

GROW OUT

- ✍ Adjust water line pressure and height according to management stick.
- ✍ Water pressure in standpipe should be kept as high as possible without wetting litter.
- ✍ Raise drinker height at least twice a week so birds drink from bottom of trigger pin.
- ✍ Always medicate or chlorinate during broiler house peak water demand.
- ✍ If chlorine, iodine or some other cleaning agent is not being used on a daily basis, the VAL-CO Watering System should be cleaned by running vinegar, chlorine or some other cleaning agent through a medicator during peak water demand every two weeks.

EMPTY HOUSE

- □ Drain water lines and regulators if there is any possibility of freezing.
- □ Clean standpipes with pipe brush, VB151 or VB151F.
- □ Flush the lines according to flushing instructions (on page 30) after every growout.
- □ **Remember to readjust your regulator to 2" (5 CM) of column to extend the life of the regulator diaphragm.**

Breeder Management Procedures

GENERAL GUIDELINES

- The water line should be low enough to satisfy the smallest hens. See page 28 for a drawing of optimum nipple height.
- Wet litter or slats can be caused by either on or both of the following: nipples are hanging too low or too high (winch them up or down) or water pressure is too high (lower ball in standpipe). Use lower water pressure in winter.

PRE-BIRD SETUP

- ★ Be sure water lines have been placed properly (2-3 FT [61-91 CM] from feed lines).
- ★ Make sure the bird density is 10-12 birds (male and female) per drinker.
- ★ Check filter cartridge and replace or backflush if needed.
- ★ Provide at least 25 PSI (lbs / square inch) of pressure to a VAL-CO Watering System (If using low pressure regulator (VR202L) provide at least 3 PSI).
- ★ Level water lines with house floor (to within 1/2" [1.3 CM]).
- ★ Adjust regulator to about 12” from the middle of the nipple line (see page 28 for drawing).
- ★ Trigger all nipples to make sure they are getting water.

HOT WEATHER MANAGEMENT

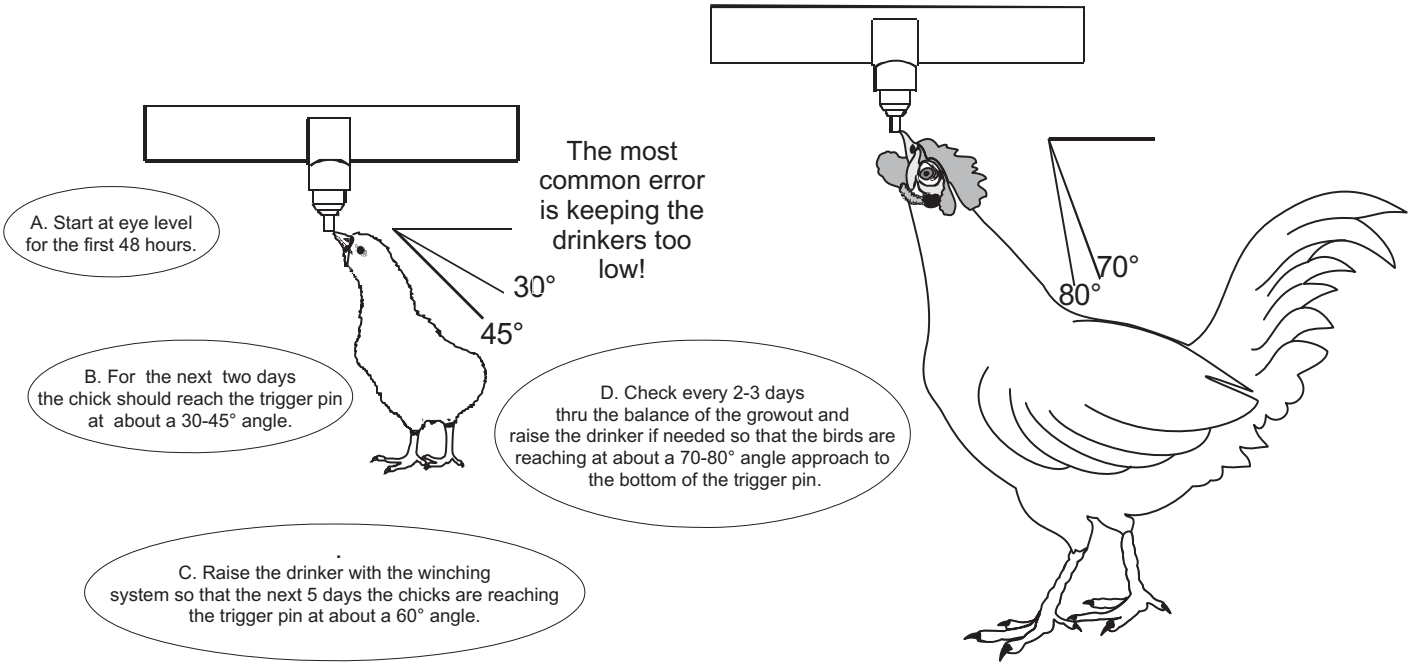
- ♦ Start water pressure at 14”.
- ♦ If necessary, flush water lines periodically to keep water cooler (**if not using insulated pipe**).
- ♦ Insulate header kit (see page) [**use chiller**].

EMPTY HOUSE

- o Drain water lines and regulators if there is any possibility of freezing.
- o Clean standpipes with pipe brush, VB151 or VB151F.
- o Flush the lines according to flushing instructions (on page 30) after every growout.
- o Remember to readjust your regulator back to 2" (5 CM) of column to extend the life of the regulator diaphragm.

Roaster Nipple and **V-Max Regulator Management**

The two most important procedures for the Roaster Nipple are ① height of drinker from the floor in relation to the bird and ② amount of pressure in the system (water height in the standpipe). Both of these procedures must change during the growout cycle. The following instructions detail the various changes of the cycle.

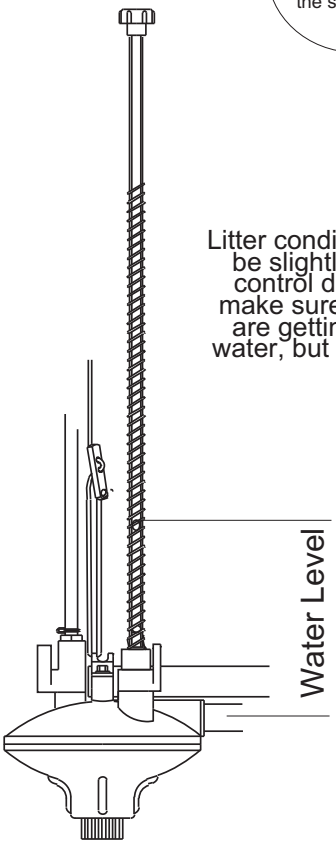


A. Start day-old chicks with 1-2 inches of water in the standpipe.

B. On the third day raise the water in the standpipe up to 3-4 inches.

C. On the fifth day raise the water in the standpipe to 5-6 inches. Continue to raise the water in the standpipe 1-2 inches every other day until you notice litter condition getting wet. Stop increasing pressure for 3-4 days until litter conditions are good; continue procedures raising water in the standpipe 1-2 inches every other day.

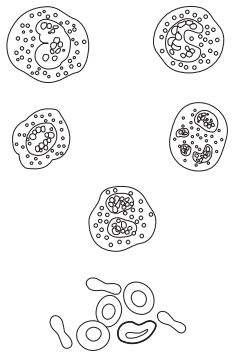
Litter conditions should be slightly damp to control dust and to make sure your birds are getting enough water, but not too wet.



The above procedures will give you excellent weight gain, great feed conversion, low mortality and little to no condemnation. These procedures take into consideration the various seasonal changes and extreme temperature changes throughout the various parts of the world.

Triple the life of your V-Max Regulator diaphragm by adjusting your regulator back to about a 2-4 inches of water level immediately after birds are taken out of the house. This is very practical, because the regulator must be readjusted to the 1-2 inch water level anyway when chicks are brought into the house for start-up.

Cleaning Water Lines



A regular cleaning program should be used to eliminate water line contaminants; including bacteria, sludge, drug residues and hard water deposits.

GENERAL CLEANING PROCEDURE:

1. Mix cleaning solution as indicated below.
2. Fill watering system with solution.
3. Allow solution to sit 1 to 3 hours.
4. Flush system with plain water using high pressure.
5. Check filters, valves and nipples for clogging from debris.
6. Adjust regulator pressure to normal operating pressure.

REGULAR MAINTENANCE

Watering system should be cleaned every four months (or every month in hot weather) during production with one of the following at a ratio of 1:128:

Administration	Vinegar for alkaline water	Citric Acid for alkaline water	Ammonia for acid base water
Proportioner	64 fl oz. white household vinegar + 64 fl oz. water = 1 gal. of stock	1 pack 205 gm citric acid + 128 fl oz. water = 1 gal. of stock	4 fl oz. clear household ammonia + 124 fl oz. water = 1 gal. of stock

BETWEEN FLOCKS

Watering system should be cleaned between flocks. A stronger cleaning solution can used, since no birds will be drinking the water. It is important to thoroughly flush the system with plain water to prevent storing high concentrations of cleaning solution in the watering system until the next flock is placed in the house.

Administration	ProClean	Vinegar for alkaline water	Citric Acid for alkaline water	Ammonia for acid base water
Proportioner	128 fl oz. ProClean = 1 gal. of stock	128 fl oz. white household vinegar = 1 gal. of stock	4 packs 205 gm citric acid + 128 fl oz. water = 1 gal. of stock	16 fl oz. clear household ammonia + 112 fl oz. water = 1 gal. of stock

CHLORINE

Chlorine is now considered to be the key salmonella fighter.

When using chlorine, the following dosages and application methods should be followed:

Administration	Chlorine
Proportioner	5 fl oz. bleach + 123 fl oz. water = 1 gallon of stock solution

This solution should run out in the poultry house through the medicator at 128 parts of water to 1 part of stock solution. The solution should be run during one of the last three days of the growout. This cleans the whole system including VAL-CO nipples drinkers and sterilizes the entire system for the new growout cycle.

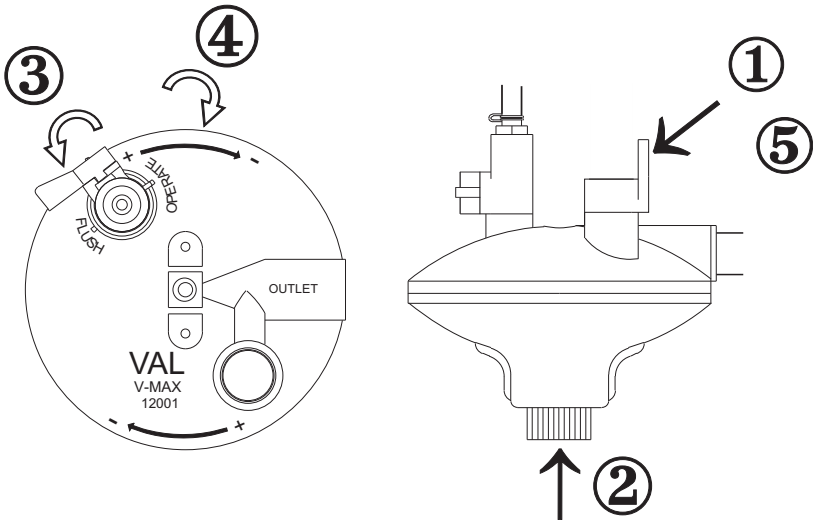
Do not place chlorine agents in the system when the house is vacant. This places heavy residue in the pipes and nipple drinkers which can clog up various parts of the system.

Vaccination Procedure

Medicate during peak water demand.

1. Withdraw chlorine 12 hours prior to vaccination or medication.
2. Neutralize with milk replacer for 3 hours prior to start of vaccination.
3. Raise water lines out of birds' reach for up to 3 hours in cool weather and as short as a half hour in hot weather.
4. At the end of the withdrawal time, mix the vaccination in the proportion indicated on the packaging (if it is powder, make sure it is completely dissolved). **NOTE:** Add food color dye to mixture if there is no color to the vaccine or see #6 for quantity of water in pipe to drain.
5. Put the medicator tube into the bucket and lower the water lines to the proper height.
6. Flush the lines until you see the color at the end of the line or flush 1/3 gallon (1.2 L) per 10 FT piece of pipe if there is no color. This will give the birds cooler water and ensure the maximum effectiveness of the medication.
7. When the vaccination bucket is empty, fill it with clean water to flush the medicator.
8. After the medicator is flushed, don't forget to bypass the medicator with the ballvalves.

Flushing Procedure



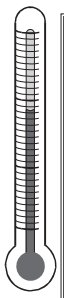
If you have the Floor Flushing Kit (VF200) all you have to do is Twist-n-Flush at the regulator (follow #2 - 5).

1. If you are not using the VF200, hook hose to end assembly and open ballvalve and close standpipe shutoff valve.
2. Close shutoff valve on regulator standpipe and push up on adjustment knob while...
3. Simply twisting the intake from operate 180° to the flush position. **NOTE:** Make sure end assembly ballvalve is open before starting the flushing operations. Failing to open the ballvalve may cause damage to the regulator diaphragm.
4. To start the flushing, open the shutoff valve on the intake (VRP09).
5. When completed, close valve on intake (VRP09) and reverse procedure. Regulator is now ready for normal operations again. **NOTE:** When using the new Twist-N-Flush intake (VRP09) with the old existing regulators, simply twist the intake 90° to begin flushing.

Important Water Facts

Contaminant	Recommendation
TDS- Total Disolved Solids	< 3000 mg/liter
∗ Hardness (calcium and magnesium salts)	< 20 mg/liter
Salinity	< 1000 ppm
Nitrates (NO_3)	< 5 ppm
Nitrites (NO_2)	< 5 ppm
Total bacterial count	< 3000/ml
Total coliform count	< 300/ml
Total E. coli	0
pH	6-9
Iron	< .5 mg/liter

∗ Hard water produces deposits on nipples and water faucets and decreases their life and usefulness.



Water Temperature	Bird Reaction
50-60°F (10-15°C)	Comfortable drinking
> 86°F (30°C)	Reduction in drinking
> 111°F (44°C)	Refusal to drink

Water temperature is also an important factor in weight maintenance. Water lines outside the poultry house should be buried at least 2 FT (61 CM) underground. Water lines inside the house (especially when the lines run against an uninsulated roof) should be insulated R4 or better (VT400). Tanks should be painted white or silver and shaded from the sun when possible. If water is still not cool enough, the VAL-CO Chiller unit (VC990) is recommended. See page .

Chemical Resistance

Do not use these chemicals on or in the VAL-CO Watering System.

Acetaldehyde	Dishwashing Detergents	Nye Rheolube 745R-2®
Acetone	Dow Corning® Molykote 111	Octyl Alcohol
Acetophenone	Dow Corning® Silicone Fluid DC 230	Ortho® Isotex Insect Spray
alpha-Chloronapthalene	Dowgard® Permanent Anti-Freeze	Ortho® Home Orchard Spray
Amchem Ridoline 322®	Ethyl Alcohol	Petroleum Jelly
Amchem Ridoline 421®	Ethyl Acetate	Phenol
Amchem Ridoline 804®	Ethylene Dichloride	Pine Oil
Amchem Ridoline 53®	Ethylene Chloride	Porion Ink
Andis® Hair Clipper Lube	Formaldehyde >5%	Propylene Glycol
Balkamp® Sil Glyde	Gasoline	PVC Upholstery Materials
Benzene	Isopropyl Alcohol	Shell Diala AX®
Brake Fluid	Johnson's® No Roach	Shell Tellus 33®
Bromine	Kerosene	Stoddard® Solvent
Butyl Ether	Kiwi® Shoe Polish (Solid)	Sulfur Dioxide
Carbon Tetrachloride	meta-Cresol	Sunoco Sunvis 931®
Chlordane	Methanol	Tenneco® L465 Synthetic
Chlorobenzene	Methyl Isobutyl Ketone	Toluene
Chloroform	Methyl Ethyl Ketone	Toothpaste
Cyelohexanone	Molykote 557®	Turpentine
Diethyl Ketone	Naptha (VM & P)	Xylene
Dioctyl Phthalate	Novus® Plastic Polish #1/#2	

This is only a partial list. Remember not to use any oil-based products.