Recreational Pond Instructions
CUSTOM SIZES

Components of a Rec Pond

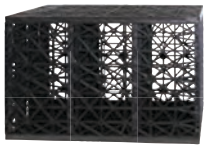
PV-CUBE
Pit Viper™ Module

PV-COUP
Pit Viper™ Diffuser Connector

PV-CO410
4" to 10" Single Wall Pit Viper™ Connector

PV-CAP10
Pit Viper™ End Cap

EBC44
EasyBog™ Cube



HSC44
High Strength Res-Cube

JAFIB3
Intake Bay Vault

JAFIB4
Intake Bay Vault

CVA30IB
Intake Bay Check Valve

CVA40IB
Intake Bay Check Valve

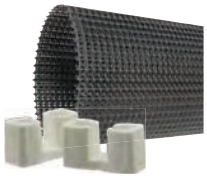
SPVS165
Swim Rated Pump

SPVS270
Swim Rated Pump
Larger Pumps available

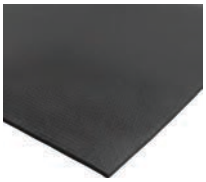
JAFM
Clean Out Vault

JAFME x2
Clean Out Vault Extension

FMV 20, FMV30 or FMV40
2", 3" or 4" Flow Meter



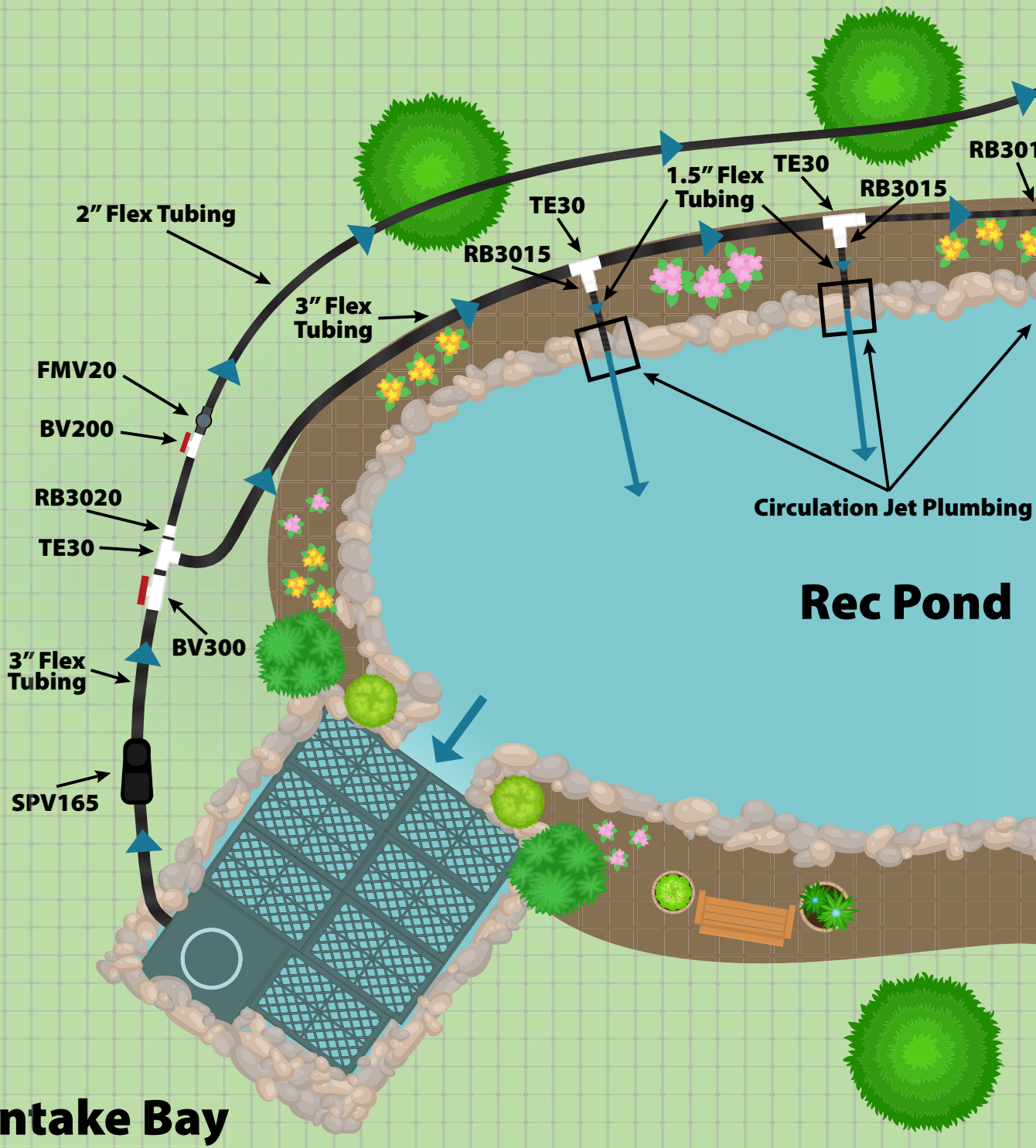
PN125 & HSCCLIP
Res-Cube Mesh & Clips



DuraLiner™

Underlayment

Example Layout



Learn how the Wetland System works here!

Planning, Excavation, & Liner

****Read and follow all equipment instructions. Always follow local and national codes**

1 Determine the Pond Size

Calculate the surface area and total gallons the pond will hold.

Example: a 15' x 25' x 5' deep Pond is 375 sq ft ~ 7,500 gallons based on a 3' average depth

2 Sizing the Wetland Filter

A. Recommendations are, 30% of the surface of the pond for less than 50,000 gallons, 25% of the surface for ponds over 50,000 gallons

Example: For a 15' x 25' pond, 375 sq ft, you will want a 10' x 11.5' wetland, which equals 115 sq ft

B. **4' Minimum Depth.** 3' required for the **PV-CUBE** Pit Viper™ & **EBC44** EasyBog™ Cubes (Step 10) and 6" minimum covering of stone and gravel to hide the cubes. *Clean out vault is recommended to be at a slightly lower elevation than the rest of the wetland*

C. **Over dig the length and width by 1'.** This gives room for folds in the liner and plumbing connections to the Pit Viper™ (Step 20).

3 Determine the Flow Rate to the Wetland

A. Each Pit Viper™ Module requires 600 gph. *Ex. a lateral of (10) Pit Vipers will require 6,000 gph*

B. Layout the Pit Viper™ lateral, centered in the longest length of the wetland. (See step 7, part D on next page for info on laterals over 22.5' long.)

4 Sizing the Intake Bay

A. One gallon of water in reserve in the intake bay is required per gallon per minute (GPM) of flow

Example: if your total flow rate for the pond is 150 gpm, your intake bay is required to hold at least 150 gallons of water

B. Calculate the flow rate required for your pond.

1. Your total target flow rate between the wetland and circulation jets should be at least equal to the gallons of water in the pond.

   Example: A 7,500 gallon pond should have a total flow rate of at least 7,500 gallons per hour

2. Subtract the total gallons of the pond from the flow going to the wetland.

   Example: A 7,500 pond – 3,000 gph flowing to the wetland = 4,500 gph remaining for the circulation jets

3. Calculate how many circulation jets are required to make up the remaining flow requirements. Each jet requires 3,000 gph.

   Divide the remaining gallons in the pond by 3,000

   Example: 4,500 remaining gallons ÷ 3,000 gph per jet = 1.5 jets, round up to (2) jets = 6,000 gph

4. In this example, your total flow rate is 9,000 gph

   Example: 3,000 gph for the wetland + 6,000 gph for the circulations jets

5. Convert the 9,000 gph to gpm

   Example: 9,000 gph divided by 60 gpm = 150 gpm

C. Calculate how many Res-Cubes are needed in the intake bay. Each **HSC44** Res-Cube, holds 31.5 gallons of water

Example: 150 gallon divided by 31.5 = (5) Res-Cubes needed

D. Layout the Res-Cubes, 16" x 27", and the **JAFIB3** or **JAFIB4** intake bay vault, 24" x 24" to determine the needed footprint of the intake bay.

E. **2.5' minimum depth.** 17.5" for the cubes and vaults, 4" of gravel covering the intake bay and 6" minimum of water over the gravel

F. Over dig by 6" to account for folds in the liner

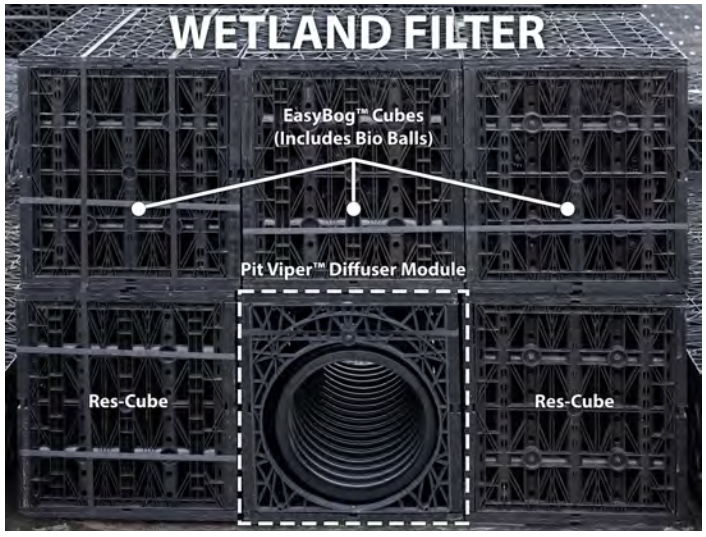
5 Sizing the Intake Channel to the Intake Bay

6,000 gph is required per foot of width of the intake channel. **Recommended 6"-1' depth in the intake channel**

Example: For a 150 gpm flow rate (9,000 gph) a 1.5' width is needed

6 Using DuraLiner™ EPDM Liner, Underlayment & Rock Pads

Seam the wetland, pond, and intake bay liners together if separate liner panels are being used.



7 Create the Pit Viper™ Diffuser Lateral

A. Layout the Pit Viper™ Lateral, centered in the longest length of the wetland.

B. Each Pit Viper™ Module connects with a 10" coupling **PV-COUP.**

C. Water Enters the first Pit Viper™ Module through the 10" x 4" Cap **PV-CO410.** This is a friction fit where 4" PVC slides into the yellow sleeve on the **PV-CO410.** This connection is made within the liner/wetland.

To make this connection, bring your plumbing up over the liner into the wetland, OR through the liner with a bulkhead fitting or pipe boot

D. Notes:

1. The recommended length for each Pit Viper™ Lateral is up to 22.5' long, or (10) Pit Viper™ Modules. *If a longer length is needed, cap the Pit Viper™ Lateral at 22.5' and create an additional lateral. Multiple shorter laterals are also an option.*
2. Use 600 gph per Pit Viper™

   Example: A lateral of (10) Pit Viper™ Modules will require 6,000 gph
3. Use **HSCCLIPS** Res-Cube Clips to Secure all Pit Viper™ Modules, Res Cubes™ and EasyBog™ Cubes.

E. Cap the end of the Pit Viper™ Lateral

1. **Using a Clean Out Vault** install the 10" cap, **PV-CAP10**, on the far side of the last Pit Viper™
2. **Using a gravity drain** install a second 10" x 4" cap on the far side of the last Pit Viper™. Use 4" PVC to connect to the Pit Viper™/end of the lateral. Use a bulkhead fitting or pipe boot to make a penetration through the liner. Install a valve in the discharge line to allow the wetland to be backflushed/emptied as needed.

8 Install Empty HSC44 Res-Cubes, on each side of the Pit Viper™ Lateral

A. Three Res-Cubes™ on each side of the lateral, for an overall width of 9.33', including the lateral

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B. If multiple Pit Viper™ laterals are being installed, each lateral will be 8', or 6 cubes apart. *Use clips to secure the Pit Viper™ Modules and Res-Cubes together.*

10 Install JAFM (Clean Out Vault)

Install two JAFME (Clean Out Vault Extensions) on JAFM.

Install the EasyBog™ Cubes

Install a layer of EBC44 EasyBog™ Cubes over the lower

11

layer of empty cubes and the Pit Viper™ Modules. *Use clips to secure the Pit Viper™ Modules and Res-Cubes together.*

12 Install ¼" Plastic Mesh

13 Cover the Wetland with Stones & Gravel

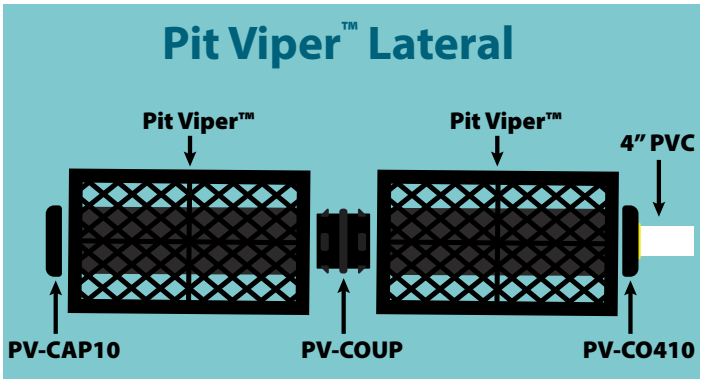
Install a 6" layer of stones and gravel over the wetland

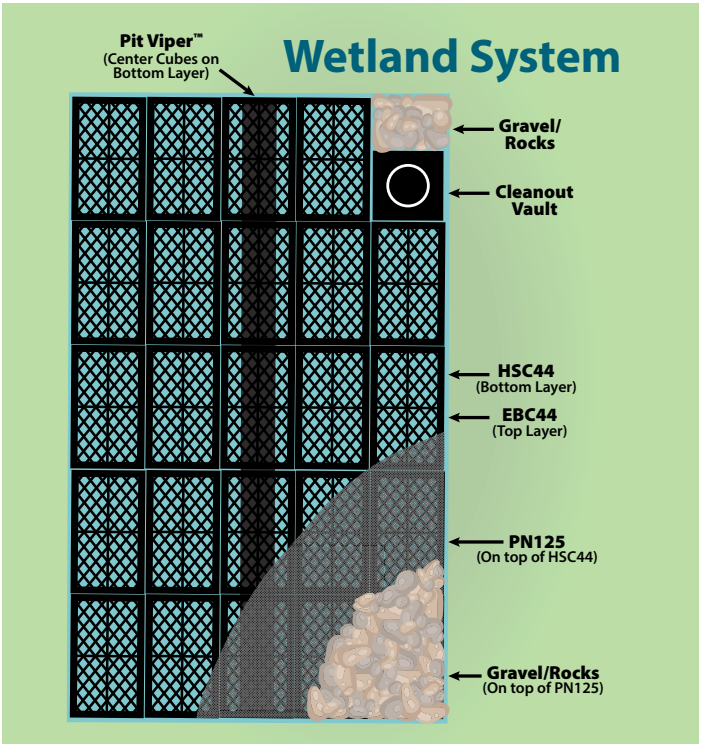
Return Water Back to the Pond

A. Seam the pond liner and wetland liner together

B. Using liner, stone and waterfall foam, create a waterfall, or stream, to return filtered water to the pond

C. If a waterfall or stream is not desired, you can install the wetland just above water level and return the filtered water to the pond over a wider distance creating a calmer more serene setting.





Intake Bay Installation

14 Select the Pump and intake Bay Vault

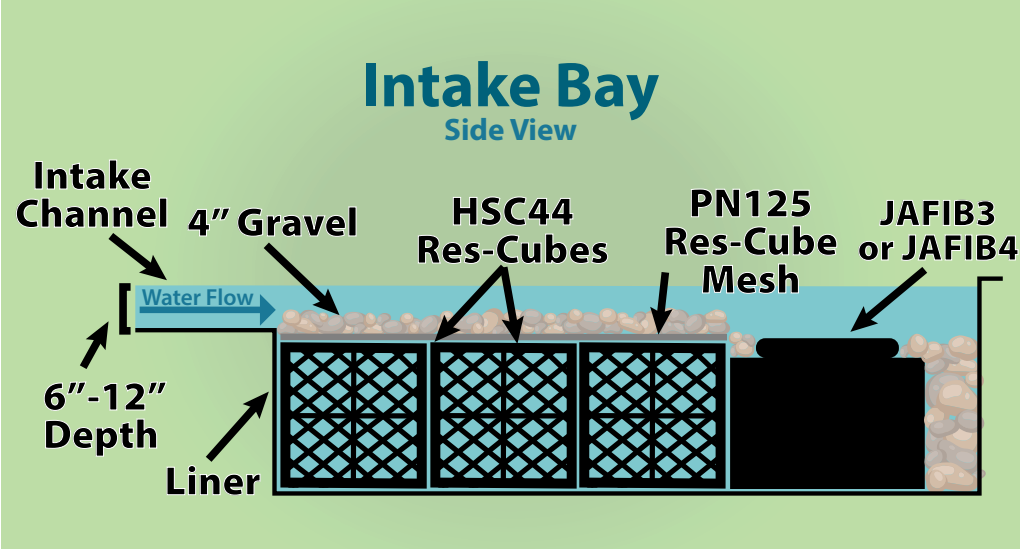
A. If using 3" plumbing, select the JAFIB3 vault and CVA30IB check valve. The 3" plumbing allows flow rates up to 13,500 gph.

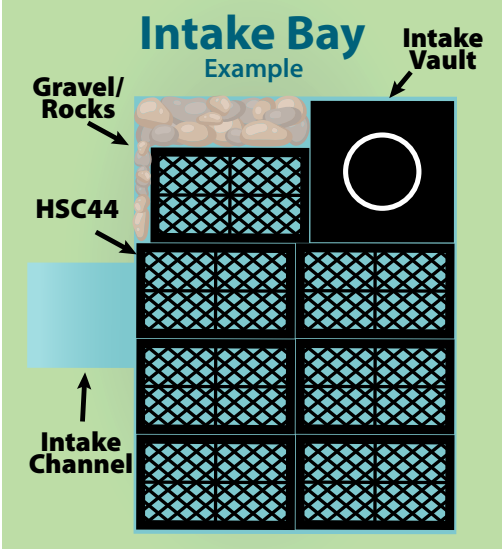
B. If using 4" plumbing, select the JAF40IB and CVA40IB. The 4" plumbing allows flow rates up to 21,000 gph.

15 Install the HSC44 Res-Cubes, intake Bay Vault, and Check Valve Assembly

16 Install the PN125 Plastic Mesh Over the Cubes

17 Install Gravel and Stone Over the intake Bay





Plumbing, Pump, & Jets Installation

18 Install the suction plumbing from the intake bay, to the pump

A. Select the appropriate plumbing size

- **2" for up to 5,400 gph**
- **3" for up to 13,500 gph**
- **4" for up to 21,000 gpm**

B. Using the rubber coupling on the intake bay check valve assembly, connect the suction line to the intake bay.

C. Using the union supplied with your pump, connect the suction line to the pump.

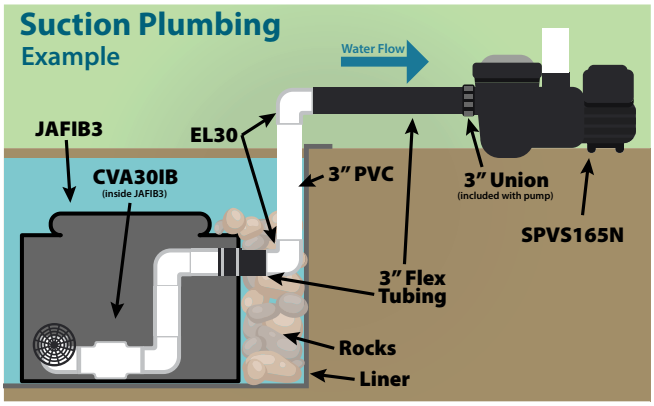
D. Always make sure all suction plumbing is airtight and full of water before starting the pump.

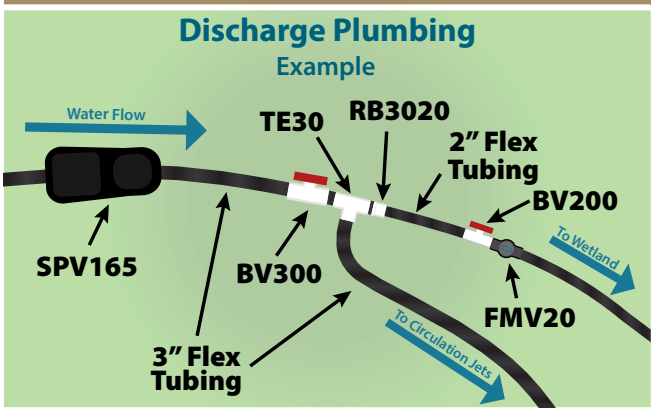
E. Read and follow all pump instructions.

19 Install the discharge plumbing

A. Select the appropriate plumbing size from the suction plumbing guidelines.

B. Use a tee or wye to split the discharge plumbing to two lines. One line will feed the circulation jets, the other will feed the wetland filter (see illustration to the right). Size both lines according to the suction plumbing guidelines above.



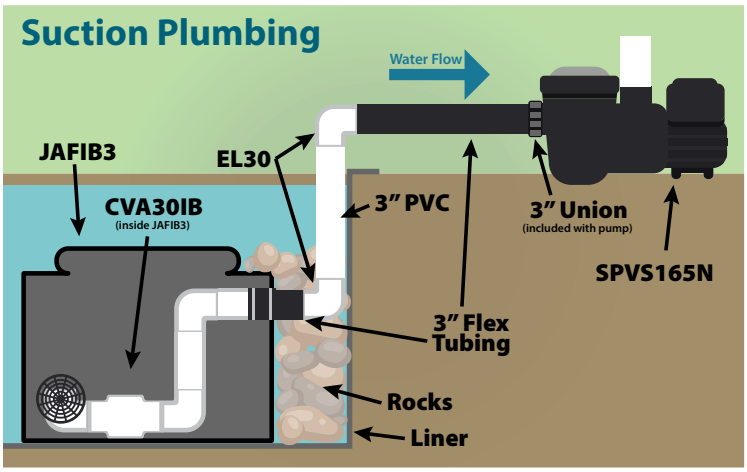


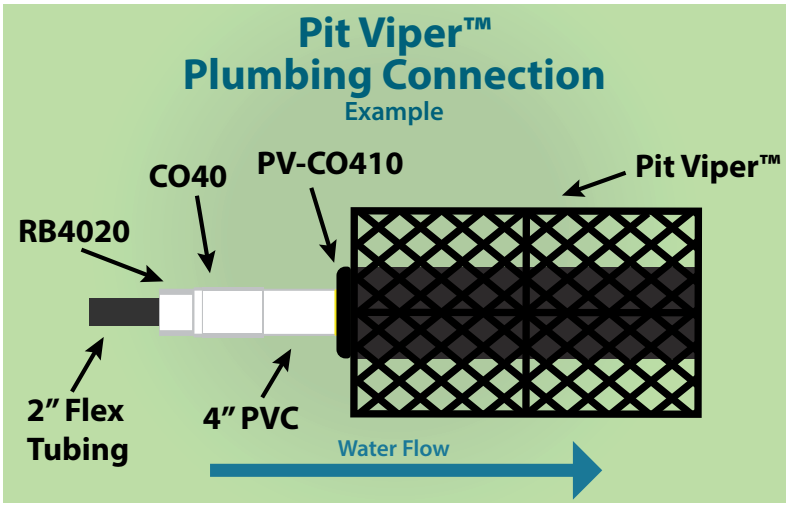
20 Plumbing the wetland filter

A. Select your line size running to the wetland based on the flow rates in Step 17. *Don't forget to calculate friction loss.*

B. Install the flow meter(s) on the line, or lines, feeding the wetland. It can be located anywhere between the pump and wetland on the supply line running to the wetland. One meter per Pit Viper™ lateral is required.

C. Install a ball valve before each flow meter. This will allow you to control the wetland's required flow rate.



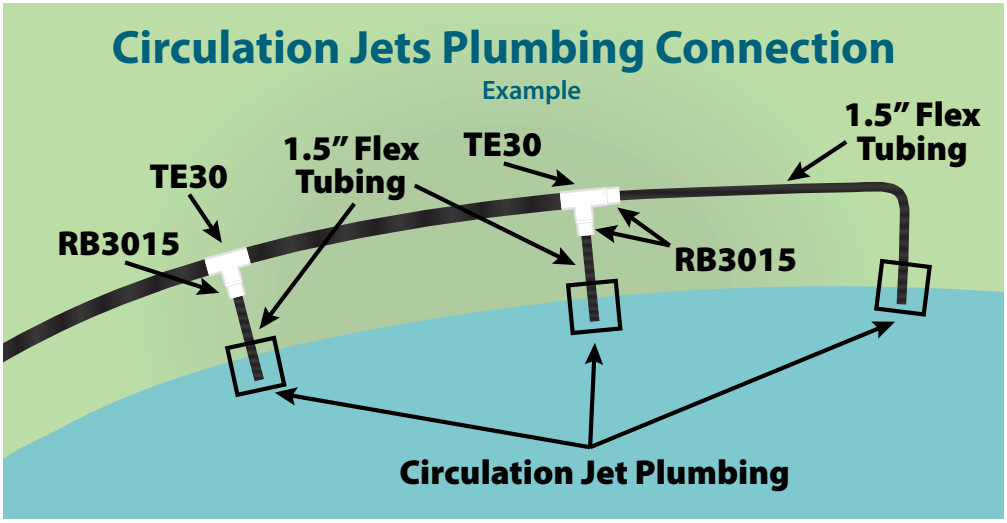


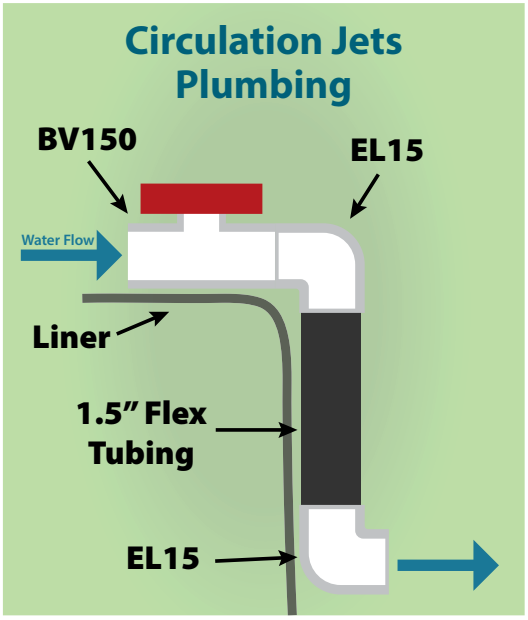
21 Plumbing the Circulation Jets

A. The jets are comprised of open 1.5" PVC

B. Each jet requires 3,000 gph

C. Use tees, reducer bushings, and ball valves, plumb each jet from the main line supplying water to the jets. The ball valves are used to adjust flow to each jet. (see illustration below)





Supply Checklist

Wetland Filter

- ❍ Liner
- ❍ UnderLayment

Pit Viper™ System

- ❍ Diffuser Module – PV-CUBE
- ❍ Diffuser Connectors – PV-COUP
- ❍ 4" to 10" PitViper Connector – PV-CO410
- ❍ End Cap – PV-CAP10

Clean Out Vault

- ❍ Vault - JAFM
- ❍ Vault Extension - JAFME x 2

- ❍ Empty Res-Cubes – HSC44
- ❍ EasyBog Cubes – EBC44
- ❍ Re-Cube Mesh – PN125
- ❍ Res-Cube Clips - HSCCLIP
- ❍ Flow Meter – FMV20 or FMV30

Intake Bay

- ❍ Liner
- ❍ UnderLayment
- ❍ Intake Bay Vault – JAFIB3 or JAFIB4
- ❍ Intake Bay Check Valve Assembly – CVA30IB or CVA40IB
- ❍ Res-Cubes – HSC44
- ❍ Res-Cube Mesh – PN125
- ❍ Res-Cube Clips - HSCCLIP

Pond

- ❍ Liner
- ❍ UnderLayment
- ❍ Rock Pads

• Pump & Plumbing

- ❍ Swim Rated External Pump – Pump selection is based on flow rate
- ❍ Plumbing for pump - Selected based on flow rate
- ❍ Plumbing for circulation jets – Selected based on the number of jets

Optional Accessories

Sludge Remover Beneficial Bacteria - SRB

Contains a proven blend of enzyme producing pond bacteria which naturally reduces odor causing, decomposing organic debris and muck. This product also contains barley straw powder which helps keep pond water clean. Packaged in water soluble packets that simply dissolve in the water for easy applications.

- Reduces toxic ammonia and nitrite
- Reduces problem causing nitrate and phosphate
- Reduces murky water caused by organic wastes
- Reduces organic bottom sludge (muck)
- Reduces odors
- Works in water temperatures down to 45° F

Liner Seam Kit - LSK

- Essential for connecting multiple liner pieces
- Contains three 2 oz. bottles of EPDM primer, one 25' roll of 3" double sided seam tape, one seam roller, one pair of latex gloves and scrubber pads

Water Fill Valve - WFS50

- Brass fill valves replace water lost from evaporation or splash.
- Ideal for skimmers, vaults, and water fill boxes (WFB) to maintain water levels.
- Heavy-duty brass body and rods offer superior durability compared to plastic fill valves.
- Adjustable valve rod (arm) for precise fit.

Folding, Telescoping Pond Net - EPFN

- Great all-around pond net for skimming leaves, catching fish, etc.
- Aluminum frame and handle are light weight and very strong
- Net measures 13" x 18" x 16" deep mesh and is flat along the front making it easier to catch fish
- 27" - 47" telescoping handle is super strong and folds for storage.

4" Bottom Drain Kit - BDK3N

- Heavy duty, roto-molded design offers superior strength
- Designed to connect bottom drain into skimmer box
- Kit includes bottom drain, 3" bulk head fitting, 3" valve and fittings (flex pipe sold separately)