# RAINWATER HARVESTING COMMERCIAL & RESIDENTIAL FILTERS, PUMPS & SYSTEM COMPONENTS CATALOG





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6/20/2016 RainStore-USA Catalog Version 3.2 CKK

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### **RAINSTORE-USA RAINWATER HARVESTING SYSTEMS**

### **1.0 ROOFTOP, GUTTERS & DOWNPIPE FILTRATION**

The first line of defense against leaves and debris is at the rooftop and associated water conveyance structures (gutter downpipes). A good gutter guard or screen is highly recommended for any Rainwater Harvesting System. Many of these gutter guard devices are commonly available at local building supply houses. The gutter downpipe conveyance system can also be used to minimize or prevent mosquitos, vermin and roof debris from entering the system.

**1.1** <u>**RainStore - DownPipe Filters**</u> - can be used in combination with or in place of first flush diverters and typically require less maintenance. The connection capacity for most 3 or 4-inch downspout filters is less than 1000 square feet. These filters are typically aesthetically pleasing and can be installed as a precursor to pre-tank or in-tank filters. Filters carried by RainStore are detailed below:

Item Number

RainStore - Leaf Eater Advanced - Rain Head (Sizes: 3-inch & 4-inch)

1-001





**RainStore** - Leaf Eater Ultra - Rain Head (Sizes: 3-inch & 4-inch)





Item Number 1-003

RainStore - Leaf Separator







Item Number 1-005

Available in Brown or Grey (specify when ordering) Connection Capacity: For up to 500 sq. feet of rooftop area

Leaf Separators sort out leaves, larger debris and dirt particles ejecting them from the side. Each unit can be retrofitted into existing 2x3-inch or 3x4-inch downspouts or built into new rectangular or round gutter downspouts with no adaptors necessary.

#### RainStore - Collection Filter

(Optional hose attachments to tank - available upon request)

Item Number

1-006



Connection Capacity up to 500 sq. feet of rooftop area. Collection Filters remove leaves, debris and dirt particles for rain barrels & smaller storage tanks. Unit installs within the downpipe - adaptors & reduction sets also available. Highly efficient filtration. Each unit can be retrofitted into existing 2x3-inch or 3x4-inch downspouts or built into rectangular or round gutter downspouts. Available in grey, white or brown (specify when ordering)

#### RainStore – Rainus Downspout Filter



Connection Capacity: For up to 750 sq. feet of rooftop area

Item Number

1-007

#### Available in brown or grey (specify when ordering)

These Downspout Filters provide a primary cascade filter and finer secondary filter to remove leaves, debris and finer dirt particles. Installs in the lower portion of the downpipe with adaptors and/or reducing fittings are available. Each unit can be retrofitted into existing 2x3-inch or 3x4-inch downspouts or built into rectangular or round gutter downspouts. Highly efficient two-step filtration with all debris and particles ejected from the front of the filter.

#### 1.1.2 RainStore - Ground Surface Filter Pits

Filter Pit 22-inch Optional 22-inch Riser Optional 22-inch Junk Basket

Filter Pit 27.6-inch Optional 27.6-inch Riser Optional 27.6-inch Basket





Item Number

1-008-A 1-008-B 1-008-C

1-008-D 1-008-E 1-008-F





High Density Polyethylene Base with Galvanized Steel Heavy Duty Lid



Optional Junk Basket Insert for Easy Removal and Periodic Cleaning

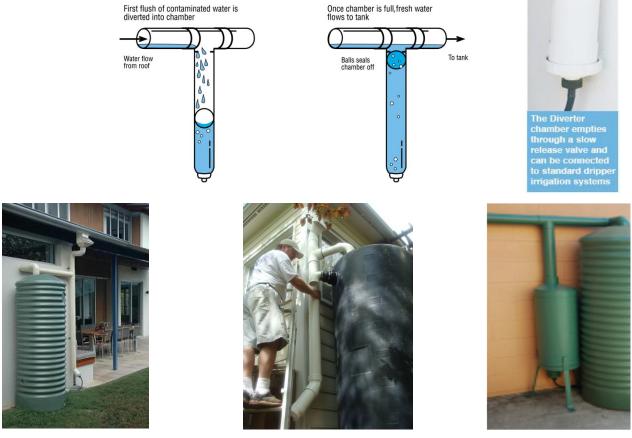
Filter Pits handle large volumes of rainwater and enable screening to be done at a central point in the system. In some cases they can be safer and easier to clean than rain heads fitted at roof gutters. Filter Pits are extremely beneficial when used in conjunction with underground tanks/cisterns or where tanks/cisterns are placed downhill from the building. A fall of at least 30" is required between the building and the top or the tank. They are usually placed at a convenient spot in the garden, between the tank and the building. Filter Pits are a 'junction' where the various pipes from around the house meet from which the main pipe or pipes then connect to the rainwater tank/cisterns.

#### **Features and Benefits**

- Convenient location for cleaning, compact & easy to maintain
- Beneficial when used in conjunction with underground tanks/cisterns or where tanks/cisterns are placed downhill from the building
- Suits a variety of inlets/outlet sizes pipes can be, 2", 3" up to 4" dia., and can be in multiples to take the filtered rainwater to storage
- Available in two sizes 22" and 27.6". The size will depend on the amount of pipes entering the pit
- Includes a stainless steel mosquito proof screen (1/32" aperture) and lid
- Optional junk basket for larger debris removal incorporates a 1/4" aperture stainless steel screen
- Optional riser extensions are available to increase the height of the top of the filter pit to ground level

### 1.2 RainStore - First Flush Diverters

First flush or water diverters isolate the first water and contaminants that have fallen on the roof after a rain event has just begun and then directs the rest of the water to additional filter(s) or directly to the cistern. Ten gallons of rainfall per one thousand square feet of roof area is considered an acceptable volume for the water diverter. First flush or water diverters are a low cost option available through **RainStore-USA** and afford reliability, durability and functionality with some routine maintenance required. Some examples are shown below:



#### 1st Flush Diverter Kits Available in 3-inch, 4-inch or 12-inch Wall Posts are listed below:

RainStore - 1st Flush Diverter Kits	<u>Item Number</u>
3-inch Wall Kit (Center Pipe not included)	1-009
4-inch Wall Kit (Center Pipe not included)	1-010
12-inch round Wall Kit (Center Pipe not included)	1-011

Design Question: Typically, how much water volume should be diverted to the downspout diverter?

**Answer**: Most literature cites a volume of 5 - 10 gallons for every 1,000 sq. feet of rooftop area.

### 1.3 <u>RainStore - Commercial/Industrial Downspout Adaptors &</u> <u>Adaptors with built-in Debris Trap</u>



Heavy Duty - Ideal for schools, government and/or military buildings with underground storage where lawn and/or snow removal equipment is commonly used near the building.

### -Rust Free Solid Heavy Duty 304 Stainless Steel or Carbon Steel Construction

#### -Outlet Hub is Schedule 40 PVC

#### -Available in virtually any size, color and length (typical sizes below)

	<u>Item Number</u>
3 x 4-inch 304 stainless steel, coated w/4-inch outlet, 26-inches tall	1-012
3 x 4-inch carbon steel, coated w/4-inch outlet , 26-inches tall	1-013
3 x 4-inch 304 stainless steel, coated w/6-inch outlet, 26-inches tall	1-014
3 x 4-inch carbon steel, coated w/6-inch outlet , 26-inches tall	1-015
4 x 4-inch 304 stainless steel, coated w/4-inch outlet, 26-inches tall	1-016
4 x 4-inch carbon steel, coated w/4-inch outlet , 26-inches tall	1-017
4 x 4-inch 304 stainless steel, coated w/6-inch outlet, 26-inches tall	1-018
4 x 4-inch carbon steel, coated w/6-inch outlet , 26-inches tall	1-019
4 x 5-inch 304 stainless steel, coated w/4-inch outlet, 26-inches tall	1-020
4 x 5-inch carbon steel, coated w/4-inch outlet , 26-inches tall	1-021

### RainStore - Commercial/Industrial Downspout Adaptors &

### **Adaptors with Debris Trap - Continued**

4 x 5-inch 304 stainless steel, coated w/6-inch outlet, 26-inches tall	1-022
4 x 5-inch carbon steel, coated w/6-inch outlet , 26-inches tall	1-023
4 x 6-inch 304 stainless steel, coated w/4-inch outlet, 26-inches tall	1-024
4 x 6-inch carbon steel, coated w/4-inch outlet , 26-inches tall	1-025
4 x 6-inch stainless steel, coated w/6-inch outlet, 26-inches tall	1-026

#### Notes:

-larger or custom sizes available on request

- -45 degree outlets also available
- -offset boots available if necessary for fitting

#### 1.4 RainStore Leaf Separator Commercial - Rain Heads

Item Number



### Fits Larger Downpipe Sizes

6-inch Diameter (150mm) (Fits snug inside 6-inch schedule 40 or 80 PVC)	1-027
8.8-inch Diameter (225mm) (Adaptor necessary for 8-inch or 10-inch Pipe)	1-028

- Single screen technology for optimum debris shedding
- High flow rate performance to match commercial requirements
- Minimal maintenance
- Superior catchment efficiency
- A single mosquito proof stainless steel mesh screen







### 2.0 PRE-STORAGE FILTERS

Pre-Storage Filters are highly effective filtering systems for installation prior to the storage tank. These filters can be used for both residential and commercial systems. Pre-tank filters carried by **RainStore-USA** are presented below:

### 2.1 RainStore - VF-1 Cascade Filter

Rainwater may enter the filter from one or both of the 4-inch (100 mm) inlets. Filtered water and unwanted debris exit out the bottom through 4-inch (100 mm) outlets as shown in these illustrations.



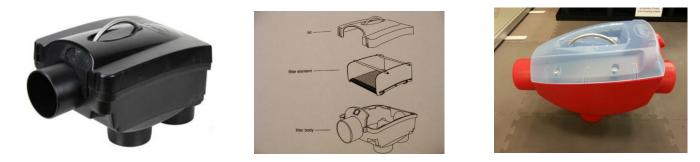
-Cascade filter cartridge with steep degree of inclination

- -Two-step self-cleaning filtering system
- -High quality durable plastic w/stainless steel fine filtration
- -Flexible couplings recommended
- -Connection Capacity: Up to 3500 sq. feet of area

<u>Item Number</u>
2-001
2-001-R
2-001-SS



### 2.1.1 <u>RainStore – Mini Cascade Filter</u>



Item Number

2.1.1-001

RainStore – Mini-Cascade Filter w/Lid 4-inch (100 mm) Inlet 4-inch (100 mm) outlet to storage 4-inch (100 mm) waste outlet Connection Capacity: For up to 2,500 sq. feet of rooftop area

### 2.1.2 RainStore – Medium and Large Cascade Filters



Flexible couplings recommended

Connection Capacity: For up to 14,000 sq. feet of area

RainStore - Medium Cascade Filter w/Riser & LidItem Number4-inch (100 mm) or 6-inch (150 mm) Inlet2.1.2-0014-inch (100 mm) outlet to storage4-inch (100 mm) or 6-inch (150 mm) waste outletFlexible Couplings recommendedConnection Capacity: For up to 6,000 sq. feet of areaRainStore - Large Cascade Filter w/Riser & Lid2.1.2-0026-inch (150 mm) or 8-inch (200 mm) Inlet2.1.2-0026-inch (150 mm) outlet to storage6-inch (150 mm) outlet to storage6-inch (150 mm) or 8-inch (200 mm) waste outlet1

### 2.2 RainStore - Twin Filter

Double Sided Cascade Filtration; Rainwater may enter the filter from one or both of the 4-inch (100 mm) or 6-inch (150 mm) inlets. Filtered water and unwanted debris exit out the bottom through 4-inch (100 mm) or 6-inch (150 mm) outlets as shown. Flexible couplings recommended for American (Imperial) pipe.



Designed for up to 8,000 square feet of area using both 4-inch inlet/outlets and 12,500 sq. feet of area using both 6-inch inlet/outlets; Optimizes gravity flow & filtration from gutters to above or below ground storage

#### RainStore - Twin Filter with steel mounting brackets

Item Number 2-002

#### -High Quality Durable Plastic w/Stainless Steel Fine Filtration

-Built-in 4-inch or 6-inch Inlet and Outlet Connections to be cut on the project site

-Two-Step Self Cleaning Filtering System

-Comes with wall mounting brackets for easy attachment to a wall or the side of a building

-Well suited for above or below ground rainwater storage tanks

-Connection Capacity: For up to 8,000 square feet of area using both 4-inch inlet/outlets and 12,500 sq. feet of area using both 6-inch inlet/outlets



Shown with wall mounting brackets included with the unit



Top view without lid



Cross-Section illustrating filtration process

### 2.3 RainStore - Small Retention (Basket) Filter

Rainwater may enter the filter from one or both of the 4-inch (100 mm) inlets or one inlet may be used as an emergency overflow. Filtered water exits out the bottom via 4-inch (100 mm) outlet. Flexible couplings recommended.



Shown with optional riser for buried units.

-Filter Basket must be inspected and will likely require emptying periodically. -Size: 15-inch Diameter x 20-inch Depth

	<u>Item Number</u>
Garden Basket Filter w/no lid (Up to 2,400 sq. ft. of rooftop area)	2-003
Garden Filter with Lid	2-003-L
Garden Filter with Lid & Riser	2-003-L-R

Note: Garden Filter can be used in various configurations including a debris trap for the waste pipe following the Volume Filter VF-1. Please call our specialists to assist you with these and various other innovative configurations.

### 2.3.1 RainStore - Retention (Basket) Filter XL

Extra Large Basket Filter





Standard with Polyethylene Basket Insert

Heavy Duty with Stainless Steel Basket Insert

-Two 4-inch (100 mm), 6-inch (150 mm) or 8-inch (200 mm) Inlets

-Two 4-inch (100 mm), 6-inch (150 mm) or 8-inch outlets to storage

-Side or bottom outlet can be used for outlet to storage

-Flexible Couplings recommended

-Filter Basket must be inspected and will likely require emptying periodically. -Size: 31-inch Wide x 32-inch Depth, Lid Diameter: 18-inches

Connection Capacity: For areas up to 8,500 sq. ft. using the 6-inch inlet/outlets for areas up to 12,000 sq. ft. using 8-inch inlet/outlets

	<u>Item Number</u>
Retention Basket Filter XL with standard Polyethylene Basket Insert	2.3.1-001
Retention Basket Filter XL with Stainless Steel Basket Insert	2.3.1-001SS

Note: Retention Filter XL can be used in various configurations including a debris trap for surface storm water applications. Please call our specialists to assist you with these and various other innovative configurations.

**2.4** <u>**RainStore In-Tank Filters**</u> - offer two-step cleaning for installation into small or medium tanks. These filters are often used if the filter is desired to be inside the cistern, typically when there little clearance between the plumbing inside and the ceiling of the tank, or when there is very little height difference in the inlet and outlet of the tank. An example of In-tank filters is presented below:

#### 2.4.1 RainStore - Cistern Filter

Rainwater enters the filter through a 4-inch inlet. Filtered water exits out the bottom through a 4-inch outlet and unwanted material slopes through to a 4-inch outlet. When used in combination with the Overflow Siphon Duo, the waste material outlet and the overflow outlet act as the same outflow as shown in the illustrations below.



RainStore - Cistern Filter

Item Number

2.4.1-001

-Connection Capacity: For up to 2000 sq. feet of rooftop area -Two-step self-cleaning

-High quality durable plastic w/stainless steel fine filtration

-Flexible couplings recommended

Optional Backwashing Device, Fittings & Hose

2.4.1-001BW





Example: RainStore Cistern Filter with Overflow Siphon Duo in series

### 2.4.2 RainStore - Patronen Filter

Rainwater enters the filter through a 4-inch inlet. Filtered water exits out the bottom through a 4-inch outlet and unwanted material slopes through to a 4-inch outlet. When used in combination with the Overflow Siphon Duo, the waste material outlet and the overflow outlet act as the same outflow as shown in the illustration below.





<u>Item Number</u> 2.4.2-001

RainStore – Patronen Filter

-Connection Capacity: For up to 2000 sq. feet of rooftop area

-Tubular filter cartridge mesh in stainless steel with plastic housing

-Flexible couplings recommended

#### 2.4.3 RainStore - Compact Filter

Rainwater enters the filter through a 4-inch inlet. Filtered water exits out the bottom through a 4-inch outlet and unwanted material is washed through to a 4-inch outlet. Used when there is little room and no height difference between the inlet and outlet. When used in combination with the Overflow Siphon Duo, the waste material outlet and the overflow outlet act as the same outflow.





Item Number

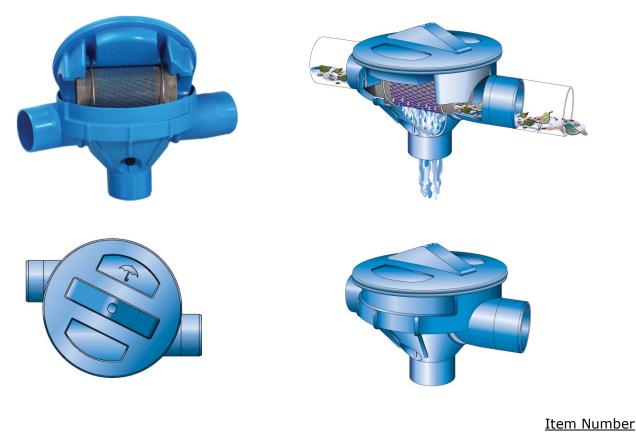
2.4.3-001

### RainStore – Compact Filter

-Connection Capacity: For up to 2000 sq. feet of rooftop area -Tubular filter cartridge mesh in stainless steel with plastic housing -Flexible couplings recommended

#### 2.4.4 RainStore - Sinus Filter

Rainwater enters the filter through a 4-inch inlet. Filtered water exits out the bottom through a 4-inch outlet and unwanted material is washed through to a 4-inch outlet. Used when there is little room and no height difference between the inlet and outlet. When used in combination with the Overflow Siphon Duo, the waste material outlet and the overflow outlet act as the same outflow.



RainStore - Sinus Filter

-Connection Capacity: For up to 2200 sq. feet of rooftop area

-Tubular filter cartridge mesh in stainless steel with plastic housing -Flexible couplings recommended

Optional Backwashing Device, Fittings & Hose

2.4.4-001BW

2.4.4-001

### 2.5 RainStore Commercial/Industrial Pre-Tank Filters





**2.5.1** <u>**RainStore** – Industrial Cascade Filter VF-2</u> - Rainwater enters the filter through an 8-inch inlet. Filtered water exits the filter through a 6-inch outlet and unwanted material is washed out the bottom of the basin through 8-inch outlet as shown in these illustrations. Flexible couplings and/or adaptors are necessary.



**RainStore** – Industrial Cascade Filter VF-2 Connection Capacity: For up to 14,500 square feet of area Item Number

2-005





Above: Example Illustrations with fiberglass basins used to house these commercial filters.

These industrial filters are available with the pre-fabricated basins shipped to your project location. Contact us for available options and pricing for stand-alone industrial filters or filters pre-fabricated built into the containment basins. Pre-fabricated units arrive at the project site "ready to install" with no assembly necessary.

### 2.5 RainStore - Commercial/Industrial Pre-Tank Filters (continued)



Rainwater enters the filter through one or both of either 8 or 10-inch inlets. Filtered water exits the filter through a 6 or 8-inch outlet to storage and unwanted material is washed out the bottom of the basin through a 4, 6 or 8-inch outlet as shown in these illustrations. Flexible couplings and/or adaptors are necessary.

	<u>Item Number</u>
2.5.2 RainStore – Industrial Cascade Filter VF-3	2-006
Connection Capacity: For up to 16,500 sq. feet of rooftop area	
2.5.3 RainStore – Industrial Cascade Filter VF-4	2-007
Connection Capacity: For up to 25,000 sq. feet of rooftop area	
2.5.4 RainStore – Industrial Cascade Filter VF-6	2-008
Connection Capacity: For up to 32,000 sq. feet of rooftop area	









Above: Example Illustrations of VF-3, VF-4 and VF-6 Filters with pre-cast vault or manhole used to house these commercial filters. Most of these pre-cast basins are standard and available at pre-cast suppliers nationwide. Technical drawings for these are available upon request.

### 2.5 RainStore - Commercial/Industrial Pre-Tank Filters (continued)

**2.5.5** <u>**RainStore** – Industrial Cascade Filter VF-12</u> - Rainwater enters the filter through a 12-inch inlet. Filtered water exits the filter through a 10-inch outlet and unwanted material is washed out the bottom of the basin through 12-inch outlet as shown in the illustrations below.



Item Number

**RainStore** – Industrial Cascade Filter VF-12 Connection Capacity: For up to 60,000 sq. feet of area

2-009



Height difference between inlet and outlet: 12.6" measured from center

Filter body material: stainless steel Filter mesh material: Stainless steel 1.4301 Mesh size: 0.390 X 0.980 mm

Dimensions: 47.2" X 51.1" X 31.5" (Dimension C = 30.7" + foot adjustment 7.9")

Weight: 360 pounds

Filter element should be cleaned 1 - 2 times annually depending on leaf & debris load

### 2.6 <u>RainStore – Heavy Duty Filters</u> PURAIN 150-S and PURAIN 150-200-S

Item Number



#### Highly Durable Self Cleaning Cascade Filter Can be Used Above Ground, Below Ground or In-Tank RainStore/PuRain – 150-S (6-inch) Max. Roof Area 10,760 Sq. Ft. RainStore/PuRain – 200-S (8-inch) Max. Roof Area 21,250 Sq. Ft.

#### PURAIN PR-150, PR-200, PR-300 & PR-400

Item Number

2-013-A

2-013-B



### Highly Durable Above Ground Self Cleaning Cascade Filters

RainStore/PuRain – PR-150 (6-inch) Max. Roof Area 10,760 Sq. Ft.	2-013-C
RainStore/PuRain – PR-200 (8-inch) Max. Roof Area 21,250 Sq. Ft.	2-013-D
RainStore/PuRain – PR-300 (12-inch) Max. Roof Area 47,600 Sq. Ft.	2-013-E
RainStore/PuRain – PR-400 (16-inch) Max. Roof Area 102,000 Sq. Ft.	2-013-F

### PURAIN PR-HD-150, PR-HD-200, PR-HD-300 & PR-HD-400

Item Number



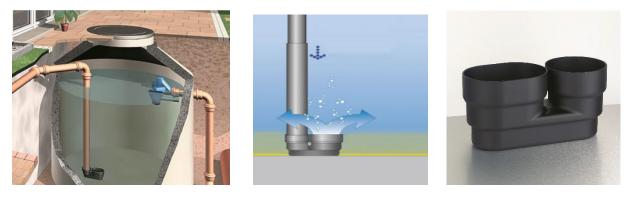
### Highly Durable Below Ground Self Cleaning Cascade Filters

RainStore/PuRain – PR-HD-150 (6-inch) Max. Roof Area 10,760 Sq. Ft.	2-013-G
RainStore/PuRain – PR-HD-200 (8-inch) Max. Roof Area 21,250 Sq. Ft.	2-013-H
RainStore/PuRain – PR-HD-300 (12-inch) Max. Roof Area 47,600 Sq. Ft.	2-013-I
RainStore/PuRain – PR-HD-400 (16-inch) Max. Roof Area 102,000 Sq. Ft.	2-013-J

Note: Roof Area Connection Capacities Vary with Geographic Regions & Rainfall Intensities

### 3.0 TANK COMPONENTS – Ensuring higher end-use water quality

**3.1** <u>**RainStore - Calming Inlets**</u> - are an important part of the cleaning process because they allow rainwater to enter the tank slowing it down to minimize disturbance of bottom sediment. Calming inlets also ensure that oxygenated water is introduced to the lower layer of the stored water. Oxygen rich water prevents anaerobic reducing conditions from forming in the lower levels of the storage tank keeping the water quality at optimum. Calming inlets offered are presented below:



<u>Item Number</u> 3-001-4

RainStore - Standard Calming Inlet

Inlet Size: 4-inch diameter

### 3.2 <u>RainStore – Large Commercial/Industrial Calming Inlets</u>





<u>Item Number</u>

Inlet Sizes:	
6-inch diameter (150 mm) for 6-inch inlet pipe	3-001-6
8-inch diameter (200 mm) for 8-inch inlet pipe	3-001-8
10-inch diameter (250 mm) for 10-inch inlet pipe	3-001-10
12-inch diameter for 12-inch (300 mm) inlet pipe	3-001-12

\*pipe adaptor may be necessary for imperial pipe sizes

**3.3** <u>Overflow Conveyance Siphons</u> -are essential in that the tank must overflow periodically, at least twice per year in order that floating debris can be removed by the skimming effect of the overflow device. With a built in water seal, the overflow siphon also acts as a barrier to insects and rodents. Some examples of overflow siphons are presented below:



Schematic Illustration of Calming Inlet & Overflow

### 3.3.1 Residential/Small Commercial 4-Inch Overflow Conveyance Siphons





Basic Overflow Siphon - Inlet/Outlet Size: 4-inch

#### RainStore – Basic Overflow Siphon with Rodent Barrier

Inlet/Outlet Size: 4-inch -4-inch flexible coupling recommended for pipe connection going outside of the tank



#### RainStore - Overflow Siphon Uno - Threaded

#### Outlet Size: 4-inch

-4-inch threaded male stem w/mounting nut for easy mounting through wall of tank -4-inch flexible coupling recommended for pipe connection outside the tank

Item Number 3-002-U

Item Number

3-002

### 4-Inch Overflow Conveyance Siphons (continued)





Item Number 3-002-UC

RainStore - Overflow Siphon Uno - Concrete

Outlet Size: 4-inch -4-inch pipe with expanded width in the mid-section -tapered for easy mounting through different size holes in the wall of concrete tanks -4-inch flexible coupling recommended for pipe connection going outside of the tank



RainStore - Overflow Siphon MonoInlet/Outlet Size: 4-inch

Item Number

3-002-M

Outlet Size: 4-inch -4-inch flexible coupling recommended for pipe connection to the outside of the tank



Item Number

3-002-D

**RainStore -** Overflow Siphon Duo Inlet/Outlet Size: 4-inch

Inlet/Outlet Size: 4-inch -4-inch flexible couplings recommended for connections

### 3.3.2 Large Commercial Overflow Conveyance Siphons



Shown with steel screen rodent barrier

Outlet Sizes: fits 6, 8, or 10-inch diameter pipe sizes

RainStore - Giant Overflow Siphon w/steel screen barrier

6-inch (150 mm) Size Outlet 8-inch (200 mm) Size Outlet 10-inch (250 mm) Size Outlet <u>Item Number</u> 3-003-6 3-003-8 3-003-10

\*Flexible coupling or other adaptors may be necessary to ensure tight seal during installation

**3.4** <u>**RainStore - Floating Intake Filters**</u> - consist of a floating ball which suspends the pump filter intake just below the water surface of the tank extracting water from the cleanest zone of the storage tank. These are available in 1-inch, 1-1/4-inch, 1-1/2-inch and 2-inch sizes. Some examples of floating intake filters are presented below:



#### Sizes Range from 1 to 2-inch connections:

**RainStore -** Floating Intake Filter (1-inch) **RainStore -**1-inch dense anti-fouling flex hose

**RainStore -** Floating Intake Filter (1 1/4-inch) **RainStore** -1 1/4-inch ribbed flex hose

**RainStore -** Floating Intake Filter (1 1/2-inch) **RainStore -**1 1/2-inch ribbed flex hose

**RainStore -** Floating Intake Filter (2-inch) **RainStore -** 2-inch ribbed flex hose Item Number

3-004 3-004-H (per ft.)

3-005 3-005-H (per ft.)

3-006 3-006-H (per ft.)

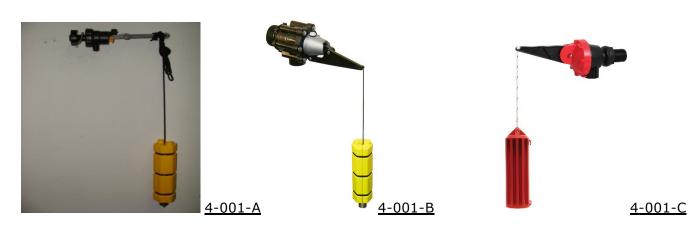
3-007 3-007-H (per ft.)

\*Appropriate size hose clamps are recommended with the hose & intake filter

### **4.0 BACK-UP INTEGRATION & VALVES**

If rainwater is to be used as the principal water supply for a building or if it is the primary exterior water supply, then provision must be made to automatically switch to a backup water supply when there is insufficient rainwater to meet demand. There are several solutions that effectively isolate the two water supplies and prevent cross-contamination. When the water level in the tank reaches a pre-set low level, a valve in the backup line opens and water is added directly to the rainwater tank. To prevent cross contamination, the outlet of the backup water in the tank must be several inches above the highest possible water level of the rainwater tank or it can dump into a small tank or funnel device that provides a similar air gap.

4.1 <u>Mechanical Backup Valves (Pressure)</u>	<u>Item Number</u>
Low Flow ½-inch delivers 2gpm@20psi; 4gpm@50psi	4-001-A
High Flow 1-inch delivers 50gpm@20psi; 70gpm@40psi	4-001-B
Medium Flow ¾-inch delivers 7gpm@20psi; 12gpm@50psi	4-001-C



-Maintains minimum amount of water in tanks -adjustable cord length to determine water level -mount through wall of tank or access riser -includes male stem w/mounting nut

### 4.1.1 <u>Hydraulic Back-Up Valve (Pressure)</u>

Item Number

4-001-C



When Rainwater is not available the hydraulic backup valve automatically switches from a rainwater pump to a backup water source. It does not require electricity and can be mounted in any position. The valve must be used with a rainwater pumping system that delivers continuous pressure such as a pump controlled by a controller or by

a pressure tank with a pressure switch. If there is no rainwater or during a power outage the piston automatically slides back, allowing the backup water to flow to the outlet port while a check valve in the rainwater inlet prevents reverse flow back to the rainwater pump. An integral double-check valve prevents cross contamination of the backup water source during switchover operation.

-max flow 50 gpm, max pressure 150 psi
 -heavy duty chrome-plated brass body
 -inlet/outlet ports are one-inch female threaded NPT

#### 4.1.2 Mechanical Fill Valves (Pressure)

High Flow 1-inch delivers up to 60gpm

Item Number

4-002



-Maintains water level in backup, treatment or secondary storage tanks

-operates by water line pressure

-mount through wall or in bulkhead

1 inch male stem w/mounting put

-1-inch male stem w/mounting nut

#### 4.1.3 <u>Reduced Pressure Zone (RPZ)Backflow Preventer</u>



RPZ Preventer w/pre-filter, 1-inch RPZ Preventer w/pre-filter, 1-1/4-inch RPZ Preventer w/pre-filter, 1-1/2-inch RPZ Preventer w/pre-filter, 2-inch

4-003-A 4-003-B 4-003-C 4-003-D

Item Number

-offers highest level of protection against contamination

-includes brass shut-off valves

-includes pre-filter assembly

-cartridge with all functional components is easily removed for repair or winterization -simple super compact design for inexpensive maintenance

### 4.2 RainStore - Electronic Valves

### Heavy Duty Electric Solenoid Valve

Solenoid Valve, 24vac, 1-inch Solenoid Valve, 24vac, 1.5-inch



-heavy duty piloted valve
-high efficiency solenoid
-stainless steel actuator
-brass shock cones
-1-inch or 1.5-inch female threads
-automatically closes in case of power failure

### 4.2.1 Electric Motorized Ball Valves

#### Features of all RainStore electric motorized ball valves:

- -24v actuator
- -manual override
- -internal limit switches
- -internal heater to prevent condensation
- -LED status indicator
- -electronic torque limiter
- -sealed for outdoor use
- -optional power failure return insert

#### **Electric Motorized Ball Valves**

2-Port Ball Valve, 24v, PVC, 1-inch 2 Port Ball Valve, 24v, PVC, 1-1/4-inch 2-Port Ball Valve, 24v, PVC, 1-1/2-inch 2-Port Ball Valve, 24v, PVC, 2-inch 2-Port Ball Valve, 24v, PVC, 3-inch Power Failure Return - Insert



2-Port Ball Valve, 24v, Brass, 1-inch	4-005-G
2 Port Ball Valve, 24v, Brass, 1-1/4-inch	4-005-H
2-Port Ball Valve, 24v, Brass, 1-1/2-inch	4-005-I
2-Port Ball Valve, 24v, Brass, 2-inch	4-005-J
Power Failure Return - Insert	4-005-K



Item Number

Item Number

4-005-A

4-005-B

4-005-C 4-005-D

4-005-E

4-005-F

4-004-A 4-004-B

### **Electric Motorized Valves (continued)**

3-Port Ball Valve, 24v, PVC, 1-inch	4-0
3 Port Ball Valve, 24v, PVC, 1-1/4-inch	4-0
3-Port Ball Valve, 24v, PVC, 1-1/2-inch	4-0
3-Port Ball Valve, 24v, PVC, 2-inch	4-0
Power Failure Return - Insert	4-0



### Item Number

4-005-L
4-005-M
4-005-N
4-005-0
4-005-P

#### 3-Port Ball Valve, 24v, Brass, 1-inch 3-Port Ball Valve, 24v, Brass, 1-1/4-inch 3-Port Ball Valve, 24v, Brass, 1-1/2-inch 3-Port Ball Valve, 24v, Brass, 2-inch Power Failure Return - Insert



Motorized Butterfly Valve, 24v, PP, 4-inch Motorized Butterfly Valve, 24v, PP,, 6- inch Power Failure Return - Insert



### 4.3 RainStore – Float Switches

When it's not necessary to know how much water is in a rainwater tank, float switches can be used to operate a pump, valve, or other electrical device at a pre-set level. We can supply mercury-free low-voltage (SPDT) and line-voltage float switches, as well as cable weights and transformers. Line-voltage float switches are provided with piggyback plugs for simple connection to 120v pumps.

Low Voltage Float Switch	4-006
Line Voltage Float Switch	4-007

### Item Number 4-005-Q

4-005-R 4-005-S 4-005-T 4-005-U

#### Item Number

4-005-V 4-005-W 4-005-X

### **5.0 RAINSTORE-USA PUMPS**

### Choosing a Pump for Rainwater Harvesting

While gravity flow from a cistern is generally enough to fill a bucket or to water a few nearby plants, most water-harvesting systems require a pump to convey the water from the holding tank to the spot where it will be used. Typical uses include watering plants, washing vehicles, flushing toilets, and washing clothes. A pump can increase the uses of the water-harvesting system and is required when consistent pressure is needed. Knowledge of how pumps operate and how they are selected will ensure that an efficient and appropriate pump is included in the water-harvesting system design.

Because pumps and plumbing systems are diverse, people installing water-harvesting systems should consult an experienced professional to make sure all applicable codes are met and that there will be no damage to the pump or plumbing. Pump selection should be based on the flow and total head the pump is required to supply. Flow is the rate at which water travels through a pipe and often is measured in gallons per minute (gpm). Total head is a description of the energy required to move the water and is typically expressed in feet of water or pounds per square inch (psi).

**RainStore-USA** has established discount pricing relationships with a nationwide network of companies that manufacture, stock and deliver various types rainwater pumps for specific project situations. Since the pump is typically one of the most important components of a Rainwater Harvesting System, it only makes sense to work with professionals for various projects nationwide. Based on project specifics, **Smart Water Solutions** staff can research our database to find the most suitable type of pump for the subject project. Below are the various types of pumps available through the **RainStore-USA** network. Please contact us for guidance and consultation for proper pump selection.

### 5.1 RainStore Surface Pressure Pumps

### 5.1.1 RainStore – Pressure without controller

Self-Priming Surface Pressure Pump (controller required) 34-HP, 120V, 8a, 21 gpm, 58 psi (max) 1.5-HP, 120V, 6a, 32 gpm, 82 psi (max) 1.5-HP, 240V, 4a, 3ø, 32 gpm, 82 psi (max)

<u>Item Number</u> 5-001-A 5-001-B 5-001-C



Pump shown is illustration only – actual pump may vary slightly from this illustration

-for use with pump controller

- -totally enclosed fan cooled motor
- -1-inch female inlet/outlet
- -inlet filter highly recommended
- -1-year warranty

\*rainproof protective is covering necessary for outdoor storage

### **RainStore Surface Pressure Pumps (continued)**

### 5.1.2 RainStore – Pressure Pump with built-in controller

Self-Priming Surface Pressure Pump w/internal controller 1/4 HP, 120V, 4a, 17 gpm, 31 psi (max) 1/2 HP, 120V, 6a, 19 gpm, 40 psi (max) 1 HP, 120V, 11a, 24 gpm, 67 psi (max)





-internal electronic pump controller

- -stainless steel hydraulic end
- -1-inch female inlet/outlet
- -totally enclosed fan cooled motor
- -internal mini pressure tank
- -inlet filter recommended
- -1year warranty

\*rain proof protective cover is necessary for outdoor storage

#### 5.1.3 RainStore - MQ

Electronic Self-Priming Surface Pressure Pump 1-HP, 120V, 9a, 22 gpm, 60 psi (max)



-internal electronic pump controller
-internal mini pressure tank
-1-inch male inlet/outlet
-water cooled motor does not require venting
-inlet filter recommended
-1-year warranty

\* Rain-proof protective cover is necessary for outdoor storage

Item Number 5-003

Item Number

5-002-A

5-002-В 5-002-С

### 5.1.4 <u>RainStore – Surface Pump Pre-Filter</u>

Surface Pressure Pump Pre-Filter highly recommended for surface pumps used with RWH Tanks (screened cleanout strainer) 1-inch threaded female inlet/outlet

<u>Unit</u>	
Solid	
Clear	

<u>Item Number</u> 5-004-A 5-004-B



### 5.2 RainStore Submersible Pumps

### 5.2.1 <u>RainStore Basic Submersible Transfer Pump</u> RainStore 1/3 HP, 120v, 3a, 37gpm, 9psi RainStore ½ HP, 120v, 5a, 57gpm, 13psi





-automatic transfer pump
-internal low water shutoff float switch
-1-1/4-inch male discharge
-Oil free motor
-16 ft. cord
-1 year warranty

Item Number

5-005-А 5-005-В

5.2.2 RainStore Automatic Electronic Submersible Rainwater Pump	<u>Item Number</u>
1-HP, 120V, 10a, 25gpm, 62 psi (max) 1-inch Female - Threaded Intake	5-007-A
¾ HP, 120V, 7.5a, 20gpm, 52 psi (max) – Screened Intake	5-007-B
1-HP, 140V, 10a, 25gpm, x 62 psi (max) – Screened Intake	5-007-C



-electronic submersible pressure pump
-internal electronic pump controller
-1-inch female discharge
-oil free motor
-48-foot cord
-1year warranty

#### 5.2.3 RainStore Heavy Duty Submersible Rainwater Pump

Stainless-steel housing and shaft Sealed base w/1-1/4 female threaded intake for floating intake filters Or screened base for direct intake Item Number 1-1/4-inch Female Threaded Intake Models 0.5-HP, 120V, 10a, 21gpm, 58psi (max) 5-008-A 1.0-HP, 120V, 12a, 32gpm, 69psi (max) 5-008-B 1.5-HP, 240V, 8a, 32gpm, 104psi (max) 5-008-C Screened Intake Models 0.5-HP, 120V, 10a, 21gpm, 58psi (max) 5-008-D 1.0-HP, 120V, 12a, 32gpm, 69psi (max) 5-008-E 1.5-HP, 240V, 8a, 32gpm, 104psi (max) 5-008-F -Threaded -Shown with -Screened Intake Intake Floating inlet Filter

-1-1/4-inch female discharge, double ceramic seals, oversize bearings

- -single phase for use with HD pump controller
- -three phase for use with VFD pump controller
- -water cooled
- -48 foot cord
- -1 year warranty

### 5.2.4 RainStore - Amphibian Pump

Versatile Rainwater Pump which can be Submersible, Surface or Buried Underground Electronic Pressure Pump with internal electronic pump controller

#### <u>J Models</u> 1-1/4-HP, 120V, 14a, 15gpm, 75psi (max) Pump w/Submersible Kit Pump w/Surface Kit Pump w/Underground Kit

Item Number

5-009-A 5-009-B 5-009-C



Pump shown is illustration only - actual pump may vary from this illustration

#### <u>M Models</u> 1-1/4-HP, 240V, 7a, 27gpm, 64psi (max) Pump w/Submersible Kit Pump w/Surface Kit Pump w/Underground Kit







5-009-E

5-009-F



Pump(s) shown are illustrations – actual pump may vary slightly from these illustrations

-internal electronic pump controller

- -stainless steel motor, heavy duty bearings
- -1-inch female intake, 1-1/4-inch female discharge
- -automatic start/stop, dry run protection
- -48 foot cord
- -1 year warranty
- -All kits include suction & discharge parts
- -Underground kits include 17x30x24-inch enclosure

### 6.0 RainStore - Rainwater Tank Level Indicators & Controllers

To effectively manage rainwater utilization, it is important to know how much water remains in storage. **RainStore** offers various devices that accurately measure and display the water level in a rainwater tank, remotely, for distances up 1000 feet.

### 6.1 RainStore - Mechanical Tank Level Indicator

Item Number



6-001

The Mechanical Level Indicator mounts into a 1-1/2" threaded bulkhead fitting or a ring gasket installed in the top of surface storage tanks. The indicator housing sits on the surface of the tank a neutrally buoyant float hung from a nylon cord rises and falls with the water level, causing a pointer to spin and accurately display the water level from 0 to 100 inches. Its low cost makes it economical for the smallest tanks and even rain barrels. However, since the indicator must be visible, it is not suitable for very tall surface tanks or for underground tanks. Calibration is quick and simple: the water level in the tank is measured with a stick and tape measure, the cover is pried open, the indicator ring is rotated so that the pointer indicates the measured water level, and the cover is snapped back in place.

### 6.2 RainStore - At-Tank Water Level Indicator with Remote Wireless Receiver



The Wireless Tank Gauge is a rainwater tank/cistern level indicator that ensures you are able to tell how much water is in your tank/cistern at a glance from within your home or office.

- Transmits signals wirelessly to the receiver up to 328ft/100 metres away
- Simple Set-up
- Tank level working range of +/-5%, due to the use of a solid float system
   Utilizes a reliable solid float system that does not rely on ultrasonic beams
   Will not interfere or snag on any internal components
- Easy to read dial face with 'Empty' and 'Full' indicators
- Suitable for all vented tanks up to 9.8ft/3 metres tall
- Requires a standard 35mm hole saw
- 4 x AAA batteries required

<u>Item Number</u> 6-001-A

### 6.3 <u>RainStore – Pneumatic Tank Level Indicator</u>

Item Number

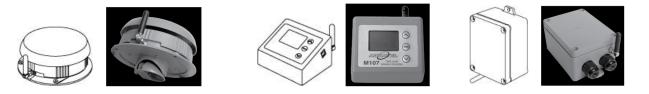


6-002

Pneumatic Tank Level Indicator

The Pneumatic Level Indicator can be mounted up to 150 ft. from the tank and will accurately display the water level from 0 to 100% by measuring water pressure. The dial gauge must be mounted in a dry location, calibrated to the tank depth (up to 8 feet of water), and zeroed. Pulling a knob at the bottom of the gauge operates an internal air pump that clears any water in the hose and the tank probe. The water in the tank then exerts pressure on the air within the hose and probe in proportion to the water depth, which is displayed on the gauge. This device is inexpensive enough to be affordable for any rainwater system and can measure in spaces with internal obstructions, including modular underground tanks where electronic devices require expensive pressure sensors to give accurate measurements. The kit consists of a dial gauge, a tank probe, a condensate trap, 100 feet of small-diameter hose, plus all of the fittings to connect everything together.

#### 6.4 RainStore - Wireless Ultrasonic Control System



<u>Wireless ultrasonic control system</u> System-24v System-120v System-240v Item Number

6-004-24 6-004-120 6-004-240

The Wireless Ultrasonic Control System uses a directed ultrasonic beam to determine the water level in a rainwater tank and then transmits the data without wires to a display unit located in a building up to 1000 feet away. Both the tank-mounted transmitter and the interior display unit communicate wirelessly with a weatherproof control unit that can directly operate pumps or electric valves to provide backup, remote refill, or remote drain capability.

Water level is displayed digitally in percent, along with the tank temperature and the signal strength. Control unit functions can be easily programmed and monitored with the display unit. Manual override capability permits direct valve or pump operation when desired.

Unlike more primitive ultrasonic devices, this unit features a high-power transmitter design that is unaffected by condensation, plus sophisticated electronic circuitry to eliminate stray signals, preserve battery life, and warn of problems such as rapid water loss possibly caused by a leaking tank. The direction of the ultrasonic signal can also be adjusted to provide accurate results with domed tanks. The kit consists of a tank unit, a display unit, a control unit, two antennas and batteries. Two versions are available based on the desired control unit: 24vac or 115vac. Note that power must be present at the site of the control unit to operate a valve or pump.

### 6.5 <u>RainStore – Digital Tank Level Indicator</u>



de	<u>Item Number</u>
Digital level indicator, RF 36" – 106"	6-005-A
Digital level indicator, RF 107" – 224"	6-005-B
Shielded Control Cable, 50-ft.	6-005-С
Shielded Control Cable, 100-ft.	6-005-D
Shielded Control Cable, 150-ft.	6-005-Е

The Digital Level Indicator is an electronic device that accurately displays the water level in a rainwater tank from 0 to 100% using a radio frequency cable sensor that hangs in any open plastic or concrete tank. The kit consists of a digital display, a tank sensor, a sensor control box, and a power transformer. The display must be mounted in a dry location within 150 feet of the tank and wired to the control box mounted in the tank access way. The standard sensor measures tanks with up to 9 feet of water; an optional longer sensor measures tanks with up to 19 feet of water. Since the system is powered by a plug-in 24 volt transformer, an electrician is not necessary for safe installation. Due to the possibility of radio-frequency interference, this device is not recommended for use in steel tanks or modular underground tanks.

Item Number

#### 6.6 RainStore - Basic Pump Controller





Basic Pump Controller, 1-HP, 120v	6-006-A
Basic Pump Controller, 2-HP, 240v	6-006-B
-1-inch male inlet/outlet -Pressure gauge -Adjustable cut-in pressure	

-Electrical cords from source/to pump included

### 6.7 <u>RainStore – Pump Controller-PT</u> Pump Controller with built-in Pressure Tank



Item Number

Pump Controller-PT, 1.5-HP, 120v	6-007-А
Pump Controller-PT, 3-HP, 240v	6-007-В
Union Port Adaptor 1-inch	6-007-C
Union Port Adaptor 1-1/4-inch	6-007-D

-digital pump controller -displays pressure, current, power factor -adjustable cut-in pressure -overcurrent and low power factor protection -dry-run and frequent start protection

*Note:* This controller sold only with pre-attached port adaptors – please specify either 1-inch or 1-1/4-inch size (6-008-C or D, respectively)

#### 6.8 RainStore – Heavy Duty Pump Controller



Simplex Pump Controller, 1.5-HP, 2a, 120v Simplex Pump Controller, 3-HP, 2a, 240v

-1-inch male inlet -1-1/4-inch female outlet -adjustable cut-in pressure

-1 year warranty

Item Number

6-008-A 6-008-B

### 6.9 RainStore – Pump Controller - Variable Frequency Drive

Pump Controller VFD	(Illustration not available)	Item Number
Pump Controller VFD, 3-HP,	. 3ø, 240v	6-009-A
-maintains set pressure on -optimal motor efficiency a -1-1/4-inch male inlet -1-1/4-inch female outlet -240vac power in, 240vac -controls up to 3hp three-p	t any pressure 3ø power out	

#### 6.9.1 RainStore – Rainwater System Controller



Item Number

Rainwater System Controller, RF, 36" – 106"	6-010-A
Rainwater System Controller, RF, 107" – 224"	6-010-B
Rainwater System Controller w/pressure sensor, 12 - 39-inches	6-010-C
Rainwater System Controller w/pressure sensor, 40 - 63-inches	6-010-D
Rainwater System Controller w/pressure sensor, 64 - 98-inches	6-010-E
Rainwater System Controller w/pressure sensor, 99 - 196-inches	6-010-F
Rainwater System Controller w/pressure sensor, 197 - 393-inches	6-010-G
Shielded Control Cable, 50-ft.	6-010-H
Shielded Control Cable, 100-ft.	6-010-I
Shielded Control Cable, 150-ft.	6-010-J

The Rainwater System Controller is a state-of-the-art digital electronic device with a sophisticated microprocessor that accurately displays the water level in a rainwater tank from 0 to 100% and manages rainwater system functions based on water level or elapsed time. All system functions are accessible through an intuitive programming interface that can display in English, Spanish, or French. Output relays provide 24 volt power to operate a low-water backup system, a high-water transfer pump, a first-flush device, a filter rinsing valve, a service reminder system, or a variety of other rainwater system functions. The kit consists of a digital control panel, the appropriate tank sensor and sensor-control box, and a power transformer. The control panel must be mounted in a dry location within 150 feet of the tank and wired to the control box mounted in the tank access way. Since the system is powered by a plug-in 24 volt transformer, an electrician is not necessary for safe installation.

### 7.0 Rainwater Tank Bulkhead Fittings, Gaskets, Screens & Adaptors

### 7.1 Superior Quality Bulkhead Fittings







Sizes Available	Item Numbe
Bulkhead Fitting ½-inch	BH-001
Bulkhead Fitting ¾-inch	BH-002
Bulkhead Fitting 1-inch	BH-003
Bulkhead Fitting 1¼-inch	BH-004
Bulkhead Fitting 1 1/2-inch	BH-005
Bulkhead Fitting 2-inch	BH-006
Bulkhead Fitting 3-inch	BH-007
Bulkhead Fitting 4-inch	BH-008

### <u>er</u>

### 7.2 Ring Gaskets





Ring Gasket Shown with PVC inlet pipe installed at top of tank

Sizes Available	Recommended Drill Hole Size	Item N
Ring Gasket ½-inch	1 ¼-inch	RG-001
Ring Gasket ¾-inch	1 ¼-inch	RG-002
Ring Gasket 1-inch	1 ¾-inch	RG-003
Ring Gasket 1¼-inch	2-inch	RG-004
Ring Gasket 1 ½-inch	2 ½-inch	RG-005
Ring Gasket 2-inch	3-inch	RG-006
Ring Gasket 3-inch	4-inch	RG-007
Ring Gasket 4-inch	5-inch	RG-008
Ring Gasket 6-inch	7-inch	RG-009

-gaskets made of high strength rubber -drill hole, insert gasket, use lubricated pipe -tank wall thickness up to ½-inch -fits schedule 40 pipe only <u>Item Number</u> RG-001 RG-002 RG-003 RG-004 RG-005 RG-006 RG-007 RG-008

### 7.3 Insect Barrier Screens with High Flow Flap Valves

### Item Number



Fits 4-inch PVC pipe

SC-001





Fits 3-inch PVC Pipe

SC-002

### 7.4 <u>PIPE COUPLINGS & ADAPTORS</u> <u>Metric > Imperial (American) Pipe Size Adaptors</u>



**Example:** 4x3 High Quality Rubber Flexible Couplings with Hose Clamps

Sizes Flexible Coupling 2" x 2" Flexible Coupling 3" x 3" Flexible Coupling 4" x 2" Flexible Coupling 4" x 2" Flexible Coupling 4" x 3" Flexible Coupling 4" x 4" Flexible Coupling 6" x 4" Flexible Coupling 6" x 6" Flexible Coupling 8" x 6" Flexible Coupling 8" x 8" Flexible Coupling 8" x 8" Flexible Coupling 8" x 8" Flexible OD Elbow 2" x 2" Flexible 90 Elbow 3" x 3" Flexible 90 Elbow 4" x 4" Flexible Tee 2" x 2" Flexible Tee 3" x 3" Flexible Tee 4" x 4" Flexible End Cap 3" Flexible End Cap 4" Flexible End Cap 6" Flexible End Cap 8"	Item Number           FC-022           FC-032           FC-033           FC-042           FC-043           FC-044           FC-064           FC-086           FC-088           FCE-022           FCE-033           FCE-022           FCE-033           FCE-044           FT-022           FT-033           FT-044           FEC-002           FEC-003           FEC-004           FEC-004           FEC-004           FEC-004           FEC-006           FEC-008
	128 000

### 7.5 Hose Meter



### Item Number

HM-001





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