

# What are the advantages and disadvantages of available water management systems?

**Volume Stealers: Some systems make your gutters less effective by lowering the volume of water that gutters can handle. In addition, these systems get clogged as well.**

There are some systems that are placed into the gutter. They can be made of sponge-like material, bristle brush (similar to bottle cleaners), or a thick mesh. They are designed to take up space to keep debris out of the gutters but let the water in.

In essence, these systems pre-clog your gutters. A one foot section of 5" gutter handles 1.75 gallons of water. If you take up 50% to 80% of the volume of the gutter, then you are limiting the volume of water that your gutters can handle. What happens in a down pour? Your 5" gutter is now a 2.5" or with some systems, 1". Would you install a 1" gutter on your home? Of course not, a 1" gutter would only be practical if you lived in the desert.

The other problem is that debris will sit on top of these systems and mesh together. When that happens, water isn't going to go into your gutter anyway. Some of these systems advertise that they come out for easy cleaning. This requires the use of a ladder and defeats the purpose for those homeowners who purchased it to stay off the ladder.

Your ultimate goal is to get more water into your gutters. It isn't going to happen with these products.

**Vertical Hole Products: Vertical-Hole Systems collect debris on top and then water flows over your gutters. Many of these systems add more maintenance than what you would have had with just clogged gutters. Some of these systems are so flimsy that they blow off or worse cause damage to your roof.**

Vertical-Hole Systems are any type of gutter protection that has vertical holes for the water to drain through on the cover. These products are made of vinyl, wire, and aluminum.

In essence, they are all mesh systems. When you think mesh, think of debris meshing together. That is exactly what is going to happen. Debris will sit on top of these systems, get wet, and then stick to the holes in the mesh. And it doesn't matter how fine the mesh is. Look at the thin mesh on the lint trap of your dryer. Does the debris collect there?

Anyone who has put down mulch in the garden will know that the organic material eventually knits together. That is the same process that will happen on the mesh systems. When the debris meshes together, then it will be worse than having no gutter protection. The water will overflow at these points.

These systems are high maintenance. Cleaning these systems involves getting up on a ladder, removing the mesh, cleaning out the small debris in the gutter, hosing off the mesh panels, and then reinstalling them.

Some of the flimsier systems cause additional problems. Heat and cold will cause the panels to contract and expand. Some panels bow up while others will bow down. Debris can easily get into the gutters at this point. Commonly, the panels will blow off. Much worse, sometimes, debris will form a dam behind a bowed up panel, trapping water which causes damage to the roof.

Many consumers that have purchased mesh systems have given up on them. On a bright point, they didn't have to spend much to find out they didn't work.

**Dome Systems: Dome Systems are the most widely accepted product, but many of them don't work well due to design flaws. There are subtle differences that make a big difference in efficiency. Very few systems have all of the proper components.**

Lets' define the dome system.

Dome systems have been around since the turn of the 20<sup>th</sup> century and have been extensively promoted since 1970. There is considerable consumer awareness that they are the most effective systems available.

These systems use water surface tension to rinse off the debris and allows the water to continue on through the gutter system. Water molecules stick together. An easy experiment illustrating this is to take a water glass, turn it on its side, and turn on the faucet. The water will navigate the rounded contour of the glass and fall off on the bottom. Now let's examine the components of a dome system and we can put this process all together.

The components of a dome system include:

- Cover: Strip of metal or plastic going from the gutter to the roof creating a dome, hence the name dome system.
- Nose: This is the rounded projection hanging over the lip of the gutter.
- Trough: Water goes into the gutter after debris falls off the cover.

- Lip: System attaches at this point.
- End Cap: Strip of metal attached to the end of the gutter that closes off the system to birds and squirrels.

Dome systems work in the following manner:

- The majority of the debris is blown off the cover.
- The remainder is rinsed off the cover.
- The debris falls off and the water follows the rounded nose into the gutter and away from the home.

At first glance, many of these systems look similar. But not all dome systems are equal. There are only a few that contain the proper design components to not clog and maximize the amount of water getting into the gutter. There are subtle differences that make a big difference in effectiveness. If you know the efficiencies of each component then you will be able to determine what makes a good system versus researching every product on the market.

A comparison of individual components can be done very easily.

## **Nose Design affects how much water gets into the gutter.**

The most common design is the squared off nose. It is a very easy and inexpensive feature to manufacture, which is why it is so popular. But it has some issues. In the water surface tension experiment, it was noted that water follows a rounded contour. What happens when you put a squared off bend in the contour. It's almost like a little ski jump. Here is a picture of Niagara Falls. There is an arrow pointing to the spray that is coming off of the squared off nose of the falls. You can see with a squared off nose, that not all of the water is going to go in the gutter. The excess is going to spill over the ground next to the foundation.

Here is an example of the rounded nose. There is a picture of a dam that has a round nose. Notice how the water adheres tightly to the falls before dropping into the lower section of the river. Can you see how a rounded nose would get more rainwater into the gutters?

## **Nose Positioning will determine how much debris or rain water will get in the gutter.**

The positioning of the nose in relation to the lip of the gutters is critical as well. The lip is located on the top outer section of the gutter. The majority of the dome systems position the nose of the cover equal to the inside lip of the gutter. This is done to minimize rainwater flying over the nose of the gutter. This is called a nose back design. This design does minimize fly off, but it presents some issues. Sometimes, debris will

bounce on the lip of the gutter. When that happens, there is a 50% chance of the debris going into the gutter. Those are not very good odds. Most systems can handle some incidental debris, but only a small percentage of debris before it becomes a problem. These systems commonly fill up with debris in the trough portion of the gutter cover and then clog. When they clog, then they fail, and no water gets into the gutters.

There are systems in which overcompensate by positioning the nose past the outside lip of the gutter. Now debris will not bounce on the lip of the gutter into the trough. This feature does have its disadvantages. There is a greater chance of rainwater flyover, especially if the system is a square nose design. Then there is the issue of drips after the rain stops. With a small volume of water flowing on the cover, it breaks into little rivulets and numerous drips descend from the nose of the cover which falls to the ground. Have you ever unloaded groceries in the pouring rain? You open up the garage door and open the trunk of your car. What do you feel on the back of your neck? It's kind of irritating isn't it?

A few systems have improved on their systems and incorporate the best of both worlds by positioning the nose flush with the outside lip of the gutter. Debris doesn't bounce on the nose, and drips don't fall from the nose (especially if it is rounded). It's amazing that a very simple adjustment makes a big difference in not clogging and getting more water into the gutter.

**Low profile mounts need to have enough room in the trough to channel out incidental debris. High profile mounts don't have slots so they are not affected by debris hanging up in the slots.**

**On the flipside, it's easier for birds to get in and build nests in high profile mounts which then lead to clogs. Low profile mounts don't have this issue due to slots in their trough that prevent birds from getting in.**

There is a good reason why it's important to minimize incidental debris from getting into the trough of the cover. This is more of an issue with the low profile mounted systems which attach to the lip of the gutter versus high profile mounted systems which attach to a bracket instead. There is always going to be some incidental debris that gets into the trough of the gutter protection carried by the flow of water or by debris that get blown in by strong winds and vertical rain. It is important to be able to channel the incidental debris through the trough and into the gutters where it can be flushed out. Low profile mount systems have slots in the trough to keep out birds and other pests, but allow the water to get through. Systems that have 2 inches or less size slots in their trough commonly fail. Debris gets hung up in the slots and the system fails. Incredibly, almost all of the low profile mount systems have small slots and therefore don't work well. There are a few low profile systems that have very large slots that are big enough to handle the debris. These slots are big enough to allow incidental debris to get through

while keeping out birds and squirrels. When a large slot system is paired with a nose flush design, then it works very well.

**A high profile mount uses clumsy brackets that make it difficult to mount properly. High profile mounts are more visible than low profile mounts.**

Mounting systems for gutter protection can have an impact on efficiency and esthetics. There are two mounting systems, low profile mount and high profile mount. High profile mount systems were designed to get around the issue of debris hanging up in slots in the trough of the cover. They don't have slots. There are gaps in the panels from two to five feet depending on the placement of brackets. They are a mixed blessing. The issue with the slot size is reconciled, but other issues arise because of the use of clumsy brackets. Many of these bracket systems incorporate plastic into the design with metal. Plastic and metal expand and contract at different temperatures. Consequently, the bracket becomes contorted and warps the panel cover. The hot sun may warp the panel in the middle of the bracket placement due to expansion. Sometimes a heavy load of snow and ice will collapse the panels. The absence of slots in these systems sometimes allows for birds to get in and build nests if the panels become distorted. Birds don't need a big opening. If you look at most bird houses, the openings are very small.

Brackets are difficult to install due to the settling of a home. Houses move up and down and from side to side over time. If you were to align yourself parallel to your gutters you can see that it's not a perfectly straight run, (unless it's new construction). It's hard to get proper nose positioning when you are making adjustments every few feet. If the installer is working in inhospitable climate conditions, proper placement may be non-existent. The resultant effect may be a nose back placement and you know what's going to happen then.

Then there are the issues with esthetics. The low profile mount systems are popular because they are easy to mount going from the lip of the gutter and following naturally up the contour of the roof. Low profile mounting systems can be installed on almost any roof, inclusive of re-roofs. For curb appeal they tend to be less visible. If they are paired with large slots, then they rarely clog.

High profile mounting systems are raised up and it's difficult to follow the contour of the roof. They cannot be easily installed in many situations. Because the system is raised up, they are more visible from the street.

There is definitely a trade-off with bracket systems. If they are installed properly, (training and certification is critical with these systems), then they will work well. However, they make be a less attractive option for some homeowners.

## **Vinyl Dome Systems are not durable, take away from the curb appeal of the home, and generally clog in a short time.**

Dome covers can be made from various materials including vinyl, aluminum, and aluminum alloys. Ever wonder what happens with your recycled plastic? Some systems use regrind-plastic in their construction. On the “green end” of things, it’s wonderful. On the practical end it’s disastrous. Have you ever seen plastic toys in the sandbox, or discarded milk jugs along the road? The plastic gets bleached out and it is cracked. What is going to happen with a low grade plastic that is exposed to the harsh elements on your roof? It’s going to degrade isn’t it?

Another issue is that installing end caps on these systems is optional. Hence birds and squirrels make nests in the gutter protection. But even if end caps are used, there is still a problem. Squirrels chew through plastic. Then they build homes in the gutter protection. Much worse, birds get in to the openings and the problem is magnified. To summarize it, vinyl is not an acceptable material for gutter protection.

## **Metal Dome Systems are very durable if made from an aluminum alloy.**

Aluminum is an excellent product, lightweight and very strong. Where it runs into a problem with gutter protection is when the manufacturer uses “Oh Too Thin” gauge (.019 gauge or less) aluminum to cut corners. Remember, gutter protection is exposed to the harsh conditions on the roof. A thin panel will warp in the hot sun, and collapse with heavy snow loads. This situation is magnified with bracket systems with brackets every few feet. If the panel is distorted it may leave an opening big enough for birds to get in and build nests. A nest will then cause a clog.

On the flipside, if you use too thick of a gauge of aluminum, the panels won’t lay flat. There will be raised edges at the overlaps where debris could potentially get in the gutters. Upper end systems use an aluminum alloy. Although a little more expensive, aluminum alloy panels are very durable. These systems allow for strength, yet you can use a thinner gauge to allow the panels to lay flat. In this case, the benefit far outweighs the expense.

## **All in One Dome Systems require replacing the gutters and down spouts, are very expensive, and have numerous issues.**

There are systems that are sold only as complete water management systems (gutters, downspouts, and gutter protection). They are extruded on site either as one extrusion, or two, comprising gutters and gutter protection. In either case, it is necessary to replace the gutters and downspouts. If your gutters and downspouts are in good condition, this adds excess expense and is frivolous. After all, would you replace your floor every time you replaced your carpeting? If you do need new gutters and down spouts then it might make sense.

Due to excellent marketing, these products are very popular. But they have several drawbacks.

When you pitch a conventional gutter to drain properly to the down spout, the metal is flexible enough to bend. When you have a gutter protection built into the system, then it loses flexibility and becomes rigid. Instead, you have to tilt it to achieve proper pitch. Unfortunately, you cause a wide gap from the roof to the gutter at the down spout end. This gap is very visible and unsightly. Water falls off the roof on this end and cascades on to the flat gutter protection. The water overshoots at this end and doesn't end up in the gutter. This is counter productive to having gutter protection in the first place. You wanted to get more water into the gutters and away from the home. It's not going to happen with this system.

These systems are typically baked enamel paint finish and the color bleaches out making them unsightly.

In northern climates, icing is a big issue. Icicles form sooner on all gutter protection than without gutter protection. Icing is worse on fascia mount systems. The All in One Systems give the ice a boost up to get under the first row of shingles which is your first line of defense on your roof. If this section of your roof is compromised then water can get into your attic, ceiling, and other areas of your home.

These systems tend to be very expensive. However, they are sold ethically, and the manufacturer does an honest job of laying out the drawbacks of their system in their warranty.

## **Some finishes on metal dome systems look better than others.**

The purpose of gutter protection is to protect the investment of your home. You want to take great care to not put something on your home that will spoil the curb appeal, and ultimately lower your home value. Gutter protection should be matched to the color of your roof to blend in with the roof line. The appearance of your home is better if the gutter protection is invisible.

Vinyl covers come in four colors, white, beige, blue, and grey, shades of which are unlikely to match your roof. Color or shade wouldn't matter anyhow. The color is going to bleach out and the product is going to crack.

The majority of the metal dome systems have a baked enamel finish guaranteed not to blister, crack, or peel. This is a characteristic of all baked enamels, such as the finish on your car. If you were to park your car in the sun for a couple of years, would it be the same color it was when it was purchased? Of course not, typically, baked enamel gutter protections sitting up on a hot roof, will look two-tone after a couple of years.

Do you remember the old fashion aluminum siding. It faded or chalked. The fading and chalking is caused by the baked enamel finish separating and the effervescence coming through. The same thing happens with the baked enamel finish on gutter covers. This is not a good pairing. When dirt and tree resin accumulate on top of the gutter protection, a crust forms. The crusty and clogged gutter diminishes the appearance of your home.

Upper end systems incorporate a no fade-no chalk finish into the paint. A key ingredient is Kynar. Kynar paint is used on metal roofs and road signs, or other applications to where routine painting would not be desired or practical. Systems using Kynar in their finish hold the curb appeal much longer than the baked enamel ones.

The latest innovation in gutter protection is the incorporation of roofing granules into the finish. For homes with asphalt shingled roofs this is the ultimate ability to blend in with the roof line. In essence, these systems become the first line of shingles on your roof. They don't take away from the curb appeal from your home and are literally invisible.

There is another benefit to roof granule finished products. Granules are added to shingles to slow down the flow of water on your roof. These systems achieve the same purpose and they can hold water much better than any system to date.

## **You don't want installers learning on your home. Insist on true factory trained installers.**

Despite gutter protection being a mature industry, very few manufacturers offer true factory certification. **The majority of installers are learning on your home!**

Have you ever purchased a grill or bike? You take the box home and you open it up to find directions and several thousand pieces. It's kind of intimidating isn't it? Well imagine someone arriving at your door step. The installer unloads the product glances at the directions, and says, "Well here goes nothing." It's not a good scenario. Later, you inspect the job. He wasn't very good at the end of the house where he started, but he was okay by the time he got to the end of the job. Who wants an installer learning on their home?

The most thorough training is done in a factory setting. The better manufacturers will have class room training with practical application for every type of roof scenario. Installers have the opportunity to practice on roof mockups and keep practicing until they get it perfect. You can't do this on someone's home, because you would add excess holes to home's structures. The other issue is that there are numerous types of roofs, and each one requires different mounting procedures. Therefore, a seasoned installer that has learned on the job may still be going through the learning curve on new roof applications.

## **Most warranties don't guarantee anything!**

**The biggest myth is that warranties are for the consumer.** In actuality, warranties are meant to protect the manufacturer or dealer. On the surface in the regular print, it appears that the document is laying out what is covered in case something fails. In the fine print, it usually states that the manufacturer is not guaranteeing anything.

What is the purpose of fine print? It is meant to convey the bad news without being readily apparent. The irony is, the better the product, the less the need for a strong warranty. However, since the manufacturer is so confident of the material and performance, the best products carry the better warranties and are commonly devoid of fine print.

Most companies have their warranties on hand when presenting their products. Most of them would prefer the consumer doesn't see the warranty until after the final payment. Hence, you should scrutinize the warranty to ensure that the product is going to do what you want it to do. Amazingly many companies are honest when it comes to the warranty and inform the homeowner of the weaknesses and drawbacks of their products. Consequently, in order to see the true picture, read the warranty first before purchasing the product. Get your concerns reconciled in writing. Don't take verbal promises. Otherwise you won't have any recourse if you have issues down the road.

You need to check out the stability of the company warranting the work and the product. 96% of all home improvement companies go out of business within the first five years. If the company is not well established, then there is a high probability of the warranty meaning nothing. Some companies will close shop every couple of years and set up under another name to avoid the commitments and promises that they made to their former customers.

**Don't install gutter protection if you will be replacing your roof soon. Removal and reinstallation of gutter protection must be done by the installing company to avoid voiding the warranty and is expensive.**

If your roof is in need of repair, you should always get the roof done first. Otherwise, you may pay a hefty fee to have your gutter protection taken off and reinstalled. This situation is very expensive because the installer has to take the product off. The installer has to wait for the roof to be installed, and then come back and reinstall the product. There are set-up costs and guess who's paying for them? On top of it, material doesn't always come off and go back on without having to replace some panels. If you change the color of your roof, then you may have to change the color of the panel and end up repurchasing the whole system.

**Unless the roofer was the original installing company, don't allow them to touch the gutter protection. You will void your warranty!** The dismantling of the system may ruin the panels to the extent that they can't be reinstalled properly. Unless the reinstallation is done by true factory certified installers, very rarely, if ever, is the product

reinstalled properly. Many an unwary homeowner has had to pay for new gutter protection because the product was ruined or reinstalled incorrectly.

## **Icicles are an issue with all gutter protection.**

Unless the gutter cover is heated as well, you will have issues with icicles depending on the orientation of your home and your roof configuration.

Icicles form two ways in your gutters. The ice builds up in your down spouts and works its way up and overflows the gutter. Snow builds up in the gutters. Ice-melt from the roof accumulates on top of the snow until it overflows the gutter.

Most gutter protection is designed to keep out leaf debris. Some claim that they minimize icing. This is not true unless there is an electrical heating system incorporated into the gutter cover.

**You will see icicles sooner with all gutter protection.** Instead of the ice building up in the gutter and eventually overflowing, it will be sitting on the gutter cover where it will almost immediately form icicles.

With systems that cover the first row of shingles, this is good news as it will minimize damage done under your first row of shingles. With fascia mounted products it will be disastrous.

The bad news is that you will either need to knock off the icicles or invest in a heated gutter cover. Heated gutter covers can be added to the existing gutter protection. Or if there isn't a tree issue, they can be installed in the gutters to protect against ice issues. In a heated system, you want to look for the following components:

- Self regulating, heavily insulated, heat cables that don't get above 90 degrees Fahrenheit
- A heat dispersing panel to go over the cable to spread the heat out to melt large amounts of snow or ice.
- The system should be always hardwired into its own separate circuit in the breaker box with a 20 or 30 amp GFI breakers with EP (equipment protection) components. Plug-in systems are dangerous and you may not be able to use that outlet for other things such as Christmas lights.
- The system doesn't need to be on when it is bitterly cold or if moisture isn't present. These systems pull the same amount of electricity equivalent to a hair dryer operating all day and all night. Install a temperature / moisture sensor. It will save you a great deal of energy costs and give a better performance.

**Do your research carefully. There are many sites that can give you good information about products and installing companies.**

This is the age of information. The internet is excellent for checking out products and companies. You should at the very least check out all contractors on The Better Business Bureau site. This is accessible at [www.bbb.org](http://www.bbb.org). Access the advanced business reliability search by phone number. It is the easiest way. A reliable company will have a website with the BBB logo on it for instant reliability report. You will have the best luck with companies like this.

You can also Google search a company. But you have to sift through a lot of fluff and advertisements to find the reliability information.

There are also consumer sites such as [www.pissedconsumer.com](http://www.pissedconsumer.com) where you can search by the product. This will give you a great deal of feed back from experienced consumers.