Hargreaves Foundry Drainage

GUIDE TO BUYING CAST IRON RAINWATER PRODUCTS

Hargreaves Foundry have been manufacturing cast iron products for over 130 years, we are experts and one of the country's leading suppliers of cast iron rainwater products. We are iron founders, this is our business and we know what we are talking about.

The purpose of this guide is to help customers understand the benefits of buying quality cast iron rainwater products and provide an overview of what to look for when buying them. This guide will also provide information about best practise for installation and how to properly maintain your cast iron system.

WHY CAST IRON?

Cast iron is widely recognised as a premier, high quality, market leading product, a fact proven by centuries of continuous use for rainwater systems. There are many benefits to cast iron including;

- Reliable
- Strong & Durable
- Long Lasting
- Value For Money
- Sustainable

In operation over the life of a building it will out perform and outlast other materials. Also cast iron is 100% recyclable, losing none of its original properties in the process. This makes cast iron a more sustainable material than others used for rainwater drainage. Cast iron products will last the life of your building. There is no need for iron to go to landfill and it will not degrade into micro particles like plastics and enter our waterways and oceans.

WHAT CAST IRON PRODUCTS ARE AVAILABLE FOR MY PROPERTY?

Cast iron rainwater products offer a wide choice of designs. Pipes can be round, square or rectangular, there are eight standard gutter profiles and five standard hopper heads in different sizes. We also have patterns for a further 48 different styles of ornamental hopper head and 28 special gutter profiles.

Hargreaves is a working foundry so in addition to these “off the shelf” choices we can also manufacture bespoke gutters and hopper heads to a customer’s specification. As a working foundry we have our own pattern shop. A pattern is a tool used by a foundry to replicate exactly an existing casting or create a brand new design. Our skilled and experienced pattern makers have worked on many projects including ‘Big Ben’ and the Palace of Westminster, Buckingham Palace, St James Palace, Holyrood Palace, RMA Sandhurst and many others. It is often said a casting is only as good as the pattern it was made from.

All these products will deal with rainwater effectively, the choice for customers should be their preference based on appearance and budget. The only other consideration is what dimension of pipes and gutters will be needed. This is
determined by the worst-case rainfall levels, the area and the pitch of your roof, and is something for which you will need the advice of your installer or merchant.

WHAT TO LOOK FOR WHEN BUYING CAST IRON RAINWATER PRODUCTS

Round Rainwater Pipes

A rainwater pipe consists of a tube of cast iron with a socket at the top. Some sockets are plain, others have ears that allow for fixing the pipe to a surface.

Pipes should be straight with a consistent metal thickness. The external finish won't necessarily be smooth like plastic due to the manufacturing process but should be even and without any obvious defects like cracking or uneven wall thickness. The inside of the pipe shouldn't have any obstructions that could restrict the flow of water.

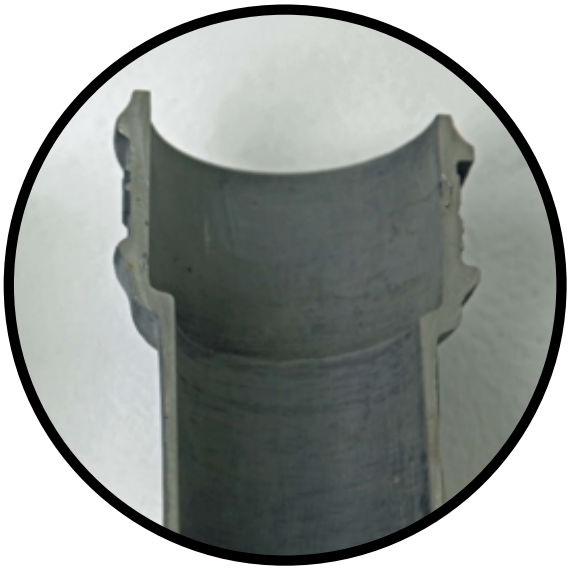
Hargreaves round rainwater pipes are cast centrifugally with the socket cast on as an integral part of the pipe. It is a single piece of cast iron, and in our opinion is the best way to make round pipes. There are several advantages to this method of manufacture;

Centrifugal casting is the only method of producing straight pipes with a consistent metal thickness and an even surface finish over the length of the pipe.

Casting the socket on as part of the process, as opposed to attaching a separate socket to a pipe, ensures the integrity of the pipe and also ensures the internal flow is efficient and unobstructed. A separate socket fitted to the inside of the pipe significantly reduces the internal diameter. Taking the 70mm diameter pipes shown as an example, with a socket fitted internally the pipe diameter is reduced to 58mm. The calculation, in accordance with EN 1206-3:2000, shows a 65% increase in capacity on the Hargreaves pipe with the integral socket

Other

HF Pipe



Example left of a separate socket attached and right
Hargreaves centrifugal cast on socket, showing clearly the reduction in pipe diameter.

Plain Half Round & Beaded Half Round Gutters

A gutter is a cast iron trough with a socket at one end and a spigot at the other for making internal and external connections to other gutter lengths and fittings, for example outlets, that connect to a rainwater pipe. Gutters collect rainfall as it runs off the roof and allows the water to drain away from the fabric of the building into the drain pipes and then the drains.

Example of socket end

Example of spigot end

Gutters should be straight, if badly warped this makes installation problematic. As with pipes they should have an even, consistent finish that will allow for the unobstructed flow of rainwater.

Examples of poor quality, warped gutters

Both Hargreaves plain half round and beaded half round gutters are cast centrifugally. When a pipe is cast centrifugally it is cut length ways to form two half round gutters. The advantages of this method are;

- A gutter that is straight, with an even metal thickness
- A gutter with an even and consistent surface.

All Other Rainwater Products

Centrifugal casting is only possible for round and half round products, all other products such as fittings, square and rectangular pipes and other gutter profiles that aren't half round are cast using traditional methods.

Products using traditional methods are cast in sand moulds. This production method has been used for centuries. You should still expect to get straight pipes and gutters, although the metal thickness may not be quite as consistent as those products cast centrifugally. The surfaces may not be quite as smooth as centrifugal cast, the surface of a sand cast product should, however, be of a consistent texture and should not show any joint lines from the casting process.

Right - Examples showing joint lines and a generally rough finish on the top two castings and an HF Hargreaves Foundry casting properly finished.

Installation

Correct installation is vital to ensure the effectiveness and longevity of your system. Poor installation can give rise to avoidable problems and poor performance. You can find out more about correct installation on our website, but our main advice would be to seek the help of an experienced installer.

Having said that there are areas a customer can look out for;

Preparation

As with any drainage system cast iron gutters and pipes must be fixed to sound material. Bear in mind the system may also have to support additional weight that can result from a build-up of ice and snow during the winter months. Do not attach any part of a rainwater system to loose masonry, old or loose fascias etc.

Cast iron products should be handled with care after primer and finishing coats of paint have been applied. Things to look out for are chips or scratches on the surface and it is always worth checking the edges of gutters as these can be particularly susceptible to scuffing. If cast iron is exposed to water and oxygen it will rust. This visual inspection is easy to do and any problem areas easy to remedy. Simply apply touch up paint to the exposed area as soon as possible and proceed with installation.

Examples
of chips and scuffs after installation painting that have not been re-touched, resulting in rusting of damaged area

Reworking

When installing a system it is more than likely that pipes and gutters may need cutting. Guidance for installers is available on our website but there are a few points worth noting;

- Cutting the pipe or gutter will expose bare iron, this needs to be retouched with paint as soon as possible.
- The process of cutting will produce cutting dust (iron filings) and if not removed promptly and the surface dried, these will then rust on the surface of the paint.
- If rust has formed on exposed, uncoated areas of the casting the area affected will need to be sanded down, cleaned and dried before the surface is retouched with paint. It is important to ensure the area is completely recoated to prevent re-ocurrence of the issue in the same location.

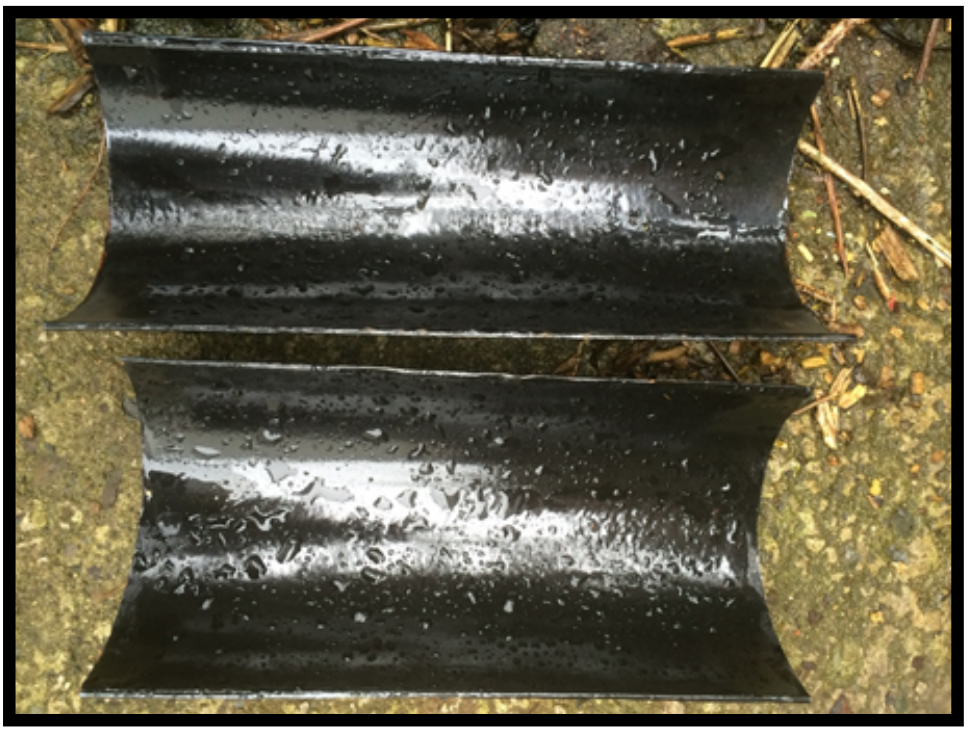
Fitting

Cast iron rainwater systems are designed to be used with a range of different brackets and fixings. These designs have been tried and tested for more than a century. It is important that the correct bracket and fixings are used in relation to the installation needs of your property. Always seek advice form an experienced installer if you are unsure which to choose.

Example
showing rusted screw and bolt in the socket resulting from failure to use touch up paint on the nut and bolt

Effects Of Not Removing "Cutting" Dust From Painted Surfaces

DAY 1 -



PX painted Gutter

– Top section, “cutting” dust not wiped from surface

– Bottom section, surface has been wiped of any contaminants before storing outside; this will be the control sample for comparison purposes.

DAY 7 -

PX painted Gutter -

– Top section, showing rusting of “cutting” dust

– Bottom Section, no rust showing on control sample.

AFTER 1 MONTH -

PX Painted Gutter

– Both samples wiped clean of any contaminants;

– The only rust which is evident, is where the gutter was originally cut.

AFTER 6 MONTHS -

Paint

As mentioned above a good paint finish is vital to get the best out of your cast iron drainage system.

Cast iron rainwater products should be delivered with at least a transit primer coat ready for further coating. Hargreaves Foundry use an anti-corrosive, high build primer on their products applied in factory conditions, and ready for painting on receipt.

A popular choice now is to have the products pre-painted. Hargreaves Foundry offer black as standard in a 2-pack polyurethane high solids finish. (Other colours in the RAL range are available.) The 2-pack polyurethane finish has a life expectancy of 10 years subject to annual maintenance and correct installation procedures being followed, especially in relation to cutting and retouching.

It is important to note that variations in local environments can also affect the duration of the paintwork. In particular we also offer a Premier Coastal paint finish for locations within 5Km of the sea. This has been developed in response to the rigours of a marine environment, which has a detrimental effect on paint work on all material surfaces, not just cast iron. Our standard 10-year life expectancy does not apply to coastal and marine environments.

Maintenance

Cast iron drainage systems, like any other quality products, require ongoing maintenance. This maintenance is straight forward, uncomplicated and only required once a year. We recommend this is carried out in late autumn after leaf fall and before winter sets in. There are four simple checks;

Check gutters are not blocked with leaves, moss debris etc. If they are a brush should be enough to remove them.

Check fittings and brackets are still secure.

Check the paint finish is showing no signs of rust. If there is, sand down the affected area to bare metal, clean, dry and apply touch up paint to the area.

Check there are no leaks, where the gutters are jointed to other gutters or fittings, with a simple visual inspection.

Summary

- Cast iron is a premium product that will enhance the appearance of your building
- It is reliable, durable and long lasting
- It is good value for money
- A good paint finish will enhance appearance and longevity
- It is sustainable
- It is important that cast iron is installed properly, especially in relation to retouching paintwork
- It is easy to maintain