Brassware

The Bathroom Academy
in partnership with
Strategic Professionals

Brassware
Generic Industry Guide

Welcome to the Brassware Generic Industry Guide one in a series of Industry Guides which are available free of charge from the Bathroom Academy Web Site.

We have aimed to make the contents of the Guides both informative and relevant and hope you will consider them a valuable aid to your continuing professional development and that of your colleagues, within the Bathroom Industry.

Each Guide has been written by experts and contains the same five elements:

- Right choice of product for end user needs
- Generic industry design
- Generic industry installation
- Frequently asked questions
- Generic industry terminology

The Brassware Generic Industry Guide looks at the vast range of brassware available and offers essential information which will allow the Retailer, Merchant and Installer to provide items best suited to the end user needs, whilst the customer's major considerations will be cost, functionality, durability and aesthetics. It is also essential to consider a number of important additional factors; available space, storage requirements and the materials used to manufacture the furniture and its' suitability and compatibility with the bathing and/or showering suite within the bathroom.

Other guides in the series are:

- Baths
- Bathroom Furniture
- Domestic Water Systems
- Sanitaryware and Fittings
- Shower Controls
- Shower Enclosures
- Shower Trays
- Thermostatic Mixing Valves
- Wetrooms

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Industry Guide to Brassware Issue 4/11

Introduction

What is Brassware?

Brassware is the generic term which refers to all types of taps and associated fittings used on washbasins, baths and bidets etc. to provide a controlled supply of hot and cold water from a household water system.

The range of taps and mixers available to any potential user is vast and as styles, designs, finishes and fashions continually change, so do the types of products available. They can range from traditional style pillar taps to more sophisticated monoblocs. Whatever your preference there will be a style, design, finish and type to suit every bathroom application.

Purchasing needs will primarily be based upon cost, style and performance, although the latter can and is often overlooked. A UK hot and cold water system can be more complicated than it looks. The same Brassware in neighbouring homes can have dramatically different performance depending on the water supply system installed within the building.

This guide has been produced by the tap manufacturing members of the BMA to help identify water systems and assist in the selection of the correct types of taps. It also references key requirements of water regulations and good plumbing practice, highlighting the areas to look out for and to consider.

This guide is not a replacement for Water Regulations/ Bye-laws (in Scotland) or any other relevant regulations. The BMA cannot be responsible for any installation which does not comply with regulatory requirements.

In the case of any doubt concerning the installation of taps, mixers or associated products the full text of the current Water Regulations should be consulted, advice is available from your local Water Company.

The following guide provides information on the types of taps available, tap installation and finally tap performance.

Section 1

Types of Taps and Mixers

Types

There are many types of taps and mixers available to cover all installations from the outside garden tap to the inside cloakroom, utility room and kitchen through to the bathroom and en- suite. Based around similar principals of controlling the flow of water, taps are chosen for design, cost, performance and installation requirements.

Pillar Taps

Pillar taps are used on sinks, washbasins, bidets or baths with two tap hole installation. Available as a pair, these are designed to control hot and cold flow through separate units. Pillar taps are, in the main, constructed with either size 1/2 threaded inlet tails for sinks and basins and bidets or size 3/4 threaded inlet tails for Baths.

This type of fitting can also be supplied as high neck types for sinks; they are designed to accommodate buckets or large containers beneath for filling. Ideal taps for kitchens and/or utility rooms.

Monobloc Taps

Designed for installation in a single hole in basins or in baths, monobloc taps are available with two handle operation to separately control hot and cold water, or with single lever operation which controls both the mix of hot and cold water and the flow.

Single flow types allow the hot and cold to be mixed in the body of the tap. To comply with Water Regulations such fittings require either balanced supply pressures or check valves fitted immediately upstream of the tap.

Dual flow keeps the hot and cold water separate until the point of discharge and therefore do not require either balanced supply or check valves.

Monobloc fittings are usually supplied with copper inlet tails or flexible connections. They are designed in styles to compliment other bathroom brassware or as stand-alone products in the kitchen or utility room.

Floor Standing Bath Mixers and Fillers

Designed for use with undrilled baths and available with various handle or level operations to control both the mix of hot and cold water and the flow.

Bath Mixers and Fillers (Two Hole)

Usually deck mounted, these taps can be supplied as single or dual flow fittings. Constructed, in the main, with two size 3/4 inlet tails, they suit baths supplied with two tap holes. Many baths are now supplied undrilled, offering flexibility on where the taps/mixer can be positioned.

Bath mixers can incorporate a hand held shower head and flexible hose.

Three Hole Mixers

These can be either basin types with size ½ connections or bath taps with size ¾ connections. Two individual side valves complete with handles control the flow to a central spout.

Four and Five Hole Mixers

This configuration is usually found only on baths where the hot supply, cold supply, filler nozzle spout and a shower head attachment are all mounted in individual holes in the bath's rim. Five hole mixers will have a separate diverter control.

Wall Mounted Taps

Taps do not have to be mounted directly onto the bath or basin. Wall mounted taps can be used where there are no tapholes available in the sanitaryware (e.g. 'Belfast' sink or a 'Vessel' style washbasin). They are available in single or multi tap hole configurations, with and without back plates.

Bib Taps

Bib taps are similar to pillar taps but they are designed for wall fixing. They are available as pairs for hot and cold supplies but are often installed as individual units. The bib style tap can also be supplied in an unplated state for robust outdoor installation. Such taps are supplied with a hose union connector. Taps used with hoses in gardens need to be protected against backflow by a double check valve.

Auto-Shut Off

Also known as non-concussive taps, they are usually found in pairs with pillar style bodies. They are predominately found in public places, such as service stations, camp sites and other places where unthinking users can leave taps running. The main reason for using auto –shut off taps is to save water. They usually include an adjustment feature so that the period of flow can be set to suit the supply pressure.

Section 2

Mechanisms and Tap Operation

Regardless of their exterior shape or form, the principles of tap operation are the same. They incorporate “headwork” which controls on/off and flow rate. They take the form of either separate hot and cold controls or of single lever operation, where on/off mix and flow rate is achieved with one control. Taps with individual handles have “headwork” valves that are available in two types:

Elastomeric Seal

This traditional type of headwork uses a replaceable elastomeric washer, and works simply by squeezing the washer over a machined hole to control the flow of water. Available with rising or non-rising spindle.

Ceramic Disc Valve

Ceramic disc headworks utilise hard wearing ceramic discs that rotate against each other in order to open and close a waterway. Popular due to their low maintenance and ease of control, these headworks are available with 1/4 or 1/2 turn operation, from fully on to fully closed.

The alternative to individual handles is single lever operation often used with mixing valves. These also use moveable hard wearing ceramic discs, but the mechanics of the cartridge enable control of on/off, flow and temperature with the single lever.

Pop-up Wastes

Pop-up wastes are often supplied with monobloc and three hole mixers, negating the need for plug and chain type wastes. An operating rod is usually situated at the rear of the body. Raising or lowering the rod operates the plug holding or releasing the water. Most standard pop-up wastes supplied with taps are slotted to suit most UK basin designs.

Clicker Wastes

Clicker wastes can be used on basins and baths where mixers provided do not have the facility to use pop-up wastes. Pressing and depressing the centre plug allows the water to be released or retained.

An unslotted type is used when the basin has no overflow or the basin has an overflow through the entire wall thickness, with an external pipe connecting the overflow to the pipework. Unslotted cannot be used on a basin with internal overflow. A slotted type is used when the basin has an overflow cavity internal to the basin wall.

Check Valves

Check valves (or non-return valves) are required to comply with Water Regulations with certain types of fittings. They allow water flow in the intended direction only. They prevent “used “or dirty water flowing back into the supply system.

Pressure Reducing Valves

Pressure reducing valves are sometimes required in supplies where the system pressure is excessive.

Flow Restrictors

Components that can be fitted into nozzle/spout or inlet tails to reduce water flow to various flow rates.

Flow Regulator

A device which when installed limits the maximum water usage when the tap is fully operating and normally has a built in non-return valve feature.

Operating Pressures

Operating pressure is the term used to define the pressure of water in a supply system (BSEN 200 defines performance requirements for taps of the low resistance type). The primary concern in the UK used to be ensuring adequate flow with low supply pressures BSEN 200 requires size 1/2 basin pillar tap to deliver at least 7.5 litres of water per minute at a working pressure of 0.1 bar. Such taps can be used with higher pressures but they will not need to be opened so far.

0.1 bar pressure is quantified as 1 metre head of water above the outlet of the tap.

The water pressure in each home can vary and depends totally on the type of plumbing system installed. As a general guide, low pressure systems are gravity fed and less than 1.0 bar (10 meter head) and high pressure systems are mains fed or pumped gravity fed.

Safety considerations for hot water supplies

Preventing very hot water from contacting the skin prevents those bathing or washing from the dangers of scalding. Both the young and old are most at risk because their skin is thinner and less tolerant to high water temperatures.

To combat this there are devices available that control the outgoing water temperature into basins, bidets and baths. Fitted under the appliance and connected to the hot and cold water supplies these units are known as Thermostatic Mixing Valves or TMVs. Sometimes TMV technology is built into the design of the basin, bidet or bath tap.

This is of obvious benefit to those showering or hand washing. It is also particularly useful for those preparing to take a bath. Despite recommendations to the contrary, most bathers fill baths by turning on the hot tap first. They then regulate the bathing temperature by running in some cold water. This results in a period during which the bath contains dangerously hot water.

How do Thermostatic Mixing Valves (TMVs) work?

The hot and cold water enters the valve and mixes to create the outgoing temperature. The outgoing temperature is usually set by the manufacturer although it should be adjusted on site after installation. The regulation of the outgoing temperature is achieved by a thermostat in the unit which keeps temperature variations to an absolute minimum, even when the incoming water temperatures or water pressures change.

A risk assessment should be undertaken to determine which of the two approved products types should be selected TMV2 or TMV3 in domestic wash rooms.

For domestic properties Thermostatic Mixing Valves conforming to BS EN 1111 and BS EN 1287, with BuildCert TMV2 scheme approval should normally be selected.

Where there is a higher level of risk of scalding to less able occupants, then a Thermostatic Mixing Valve conforming to BS 7942, with BuildCert TMV3 scheme approval should be selected. One key safety feature on TMV2 and TMV3 Thermostatic Mixing Valves is that the valves will shut off the flow of hot water in the event of interruption of the cold water supply.

The independent testing and approval of Thermostatic Mixing Valves under the TMV2 and TMV3 BuildCert scheme, ensures product performance is maintained.

Developments of the scheme involved the BEAMA Association in conjunction with other parties including the NHS Estates, capt (Child Accident Prevention Trust) and BRE (Building Research Establishment). The aim of BEAMA is focused on the safe provision of hot water at the point of use.

Section 3
Domestic Water Systems

Operating Principles

Before specifying a particular tap, it is necessary to establish the type of hot water system in the property. Specifically, is the water pressure high or low?

Low Pressure

Hot and Cold Gravity Fed Water System

A cold water cistern is normally located in the loft feeding both the domestic cold water supply and also the cold water supply to the hot water cylinder. This tank, normally situated in an airing cupboard (better known as simply the hot water tank) stores hot water and feeds the domestic hot water supply system. A common installation arrangement in older properties.

Hot and Cold Pumped Gravity System

As with H&C Gravity Fed Water System – this system has a cold water tank, normally located in the loft, feeding both the domestic cold water supply and also the cold water supply to the hot water storage tank. This hot water storage tank is normally situated in an airing cupboard (simply known as the hot water tank) stores hot water for the domestic hot water supply system. A pump is then fitted to provide a higher volume of water.

Gravity Hot and Cold Mains Fed Water System

As with other Low Pressure Systems this system also operates from a cold water tank and is normally located in the loft feeding both the domestic cold water supply and also the cold water required for the hot water tank. The hot water tank normally situated in an airing cupboard (simply known as the hot water tank) stores hot water for the domestic hot water supply system. However, this system differs from the hot and cold gravity system as the cold comes directly from the mains, creating an imbalance in pressures. Pressure imbalance normally greater than 5:1 will require a pressure reducing valve, this should be fitted on the dominant supply, specifically if using a mixer tap with single flow.

High Pressure

Mains Fed Hot Water System

These hot water appliances provide hot water on demand as and when required.

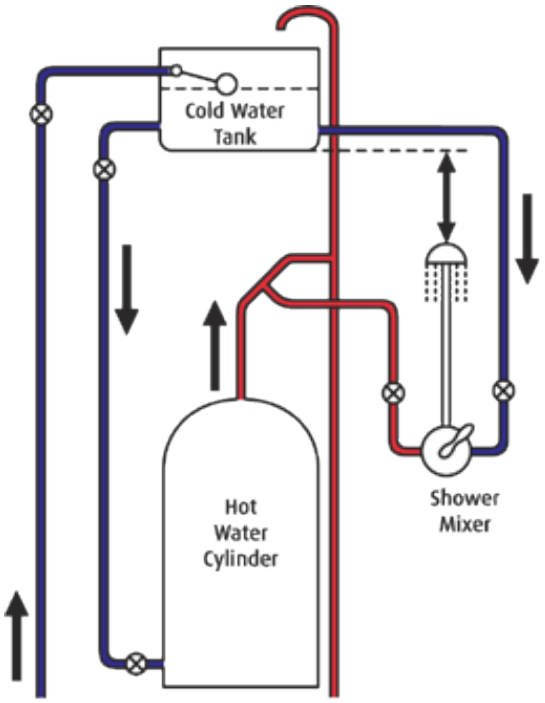
Combi Boilers and multipoint boilers heat mains cold water instantaneously as it flows through a heat exchange unit within the boiler.

Operating pressure for these units is usually between 0.5 to 10 bar. Within this pressure range, sufficient water must flow through the boiler when a tap or shower is turned on in order to activate a flow sensor in the boiler. When activated, the flow sensor initiates heat transfer to the domestic hot water circuit. The minimum flow to activate the water heating process is normally around 2 to 3 litres per minute.

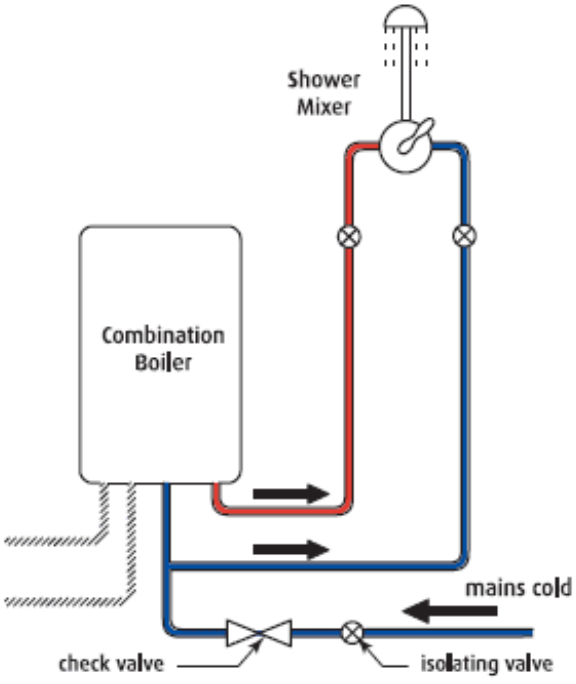
Important Note

Any system providing a mains pressure supply is only as good as the supply entering the property. A product may boast for example 35 litres per minute flow rate at 3 bar pressure, but if the supply to the property is inadequate and can only muster say, 15 litres at 1 bar, this is all that will be achieved. Figures quoted against products are indicative of their potential based on an adequate supply.

Hot and cold gravity fed water system



Hot and cold pumped gravity fed water system



Section 4
Commissioning Requirements

Before Starting
Before starting to fit any type of brassware, always read the instructions supplied by the manufacturer very carefully.

- Always make yourself aware of which side is hot and which is cold, usually hot is on the left and cold is on the right when viewing from the front.
- Always make yourself aware of where the nearest water shut off point is, which can be a stop cock or isolating valve. Its location is very important as the fitting of any brassware cannot begin until the water has been turned off and the system drained.
- If you have no localised isolating valves it is always recommended to fit one near the tap, knowing its position afterward will help if there are any unforeseen leaks, or maintenance requirements.

Taps today are manufactured to exacting standards so installation onto sinks, basins, baths and bidets is made as simple as possible. However, fitting new taps onto old baths can commonly throw up some installation problems. Tap holes usually measure 180mm from centre to centre, subsequently bath mixer taps are designed to fit those centres. When fitting a new mixer tap to an old bath ensure that the taphole centres are compatible. You may need to buy a tap with adjustable swivel unions.

Always know what your water system configuration is (see Domestic Water Systems – Operating Principles).

Historically in the UK taps were required to work at pressures as low as 0.1 bar. However, as new methods of heating water have been introduced, water pressures have increased, giving the consumer a much wider offering in terms of design and performance.

Thoroughly flush all pipework after installing any new pipes or altering an existing system.

Removing Old Taps
- Once the water has been turned off, the tap(s) can then be turned on and any drain cocks opened to drain away the remaining water in the pipework.
- When the water has drained away, remove the old tap(s) by disconnecting them from the water pipes. This can be done by using a claw spanner to undo the tap connectors.
- When replacing monobloc style taps disconnect the copper tails or flexible connections from the water supply pipes. Usually you will find that these are bent or offset during installation.
- If a pop-up-waste is to be removed identify the connecting clip that holds the vertical and horizontal rods together. Loosen the screws on the connecting clip and disassemble the rods (some rods, usually the longer vertical rod, may be made up of two or more parts, these can simply be unscrewed).

Once the pop-up-waste mechanism has been separated from the tap, disconnect the waste pipe and loosen all nuts and seals.

- Use a claw spanner to undo the nut(s), situated under the tap(s). These may be individual nuts located on the threaded tails or in the case of monobloc style taps it may be on a threaded stud, screwed into the base of the tap body.
- Once unscrewed remove the tap(s) from their holes and clean the surface around the holes ready for the new fittings. Cleaning the surface of dirt or old sealant, will ensure good grip for any new seals.

Fitting New Taps
- Locate the new tap in the tapholes ensuring that some kind of anti-rotational washer or seal is fitted between the flange and the top of the ware. This may be in the form of a rubber/foam washer or 'O' ring. Alternatively, bedding the tap on a bead of silicone sealant is acceptable. If sealant is used this will take 24 hours to cure. Usually, hot is on the left and cold is on the right when viewing from the front.
- Once the tap is in place, locate and tighten the securing nut pulling the tap down tight and compressing the sealing washer if one is supplied. In some cases a supporting washer or "top - hat" may be required especially where the thickness of a sink or basin is particularly thin. The supporting washer compensates for the thin mounting surfaces
- In the case of a single-hole monobloc style fitting with detachable connections, ensure that copper pipes/tails or flexible connecting hoses are securely screwed into the tap body before offering the product to the ware. Make sure the copper pipes/tails or flexible connecting hoses are inserted through the hole carefully.

  Note: Ensure all relevant washers and clamping plates are fitted correctly and in place.
- When the tap is properly fitted reconnect the water supply, using new connectors or using the connectors from the previous tap but replacing any fibre/rubber sealing washers. An isolating valve should be installed to help with future maintenance if one is not already installed. Standard connections for basins are usually 15mm x 1/2 (22mm x 3/4 for baths).

Various means of connection including compression and push- fit are available.

- If installing a pop-up-waste, assemble the flange portion into the ware, ensuring any seals provided are in place or a bead of silicone sealant is used under the flange. Screw on the lower section of the waste, below the ware, ensuring that any seals are in place. Make sure the horizontal rod is pointing to the back. Position the vertical rod down through the tap connecting any second lower part of the vertical rod to the upper part. Position the connection clip on the vertical and horizontal rods. Tighten the screws on the clip and check operation.

Final Checks
- Once you are happy with the installation, it is now time to check for leaks.
- Be aware that air will be in the system, so when first turning the water on you may hear "spluttering and gurgling" or "spitting" sounds. This will be short term and should disappear after a few seconds. With the tap controls in the off position, turn on the supplies and check for leaks around the pop-up waste.

Section 5
Common Fault Diagnostics

Most common problems that occur can be resolved after conducting a few simple checks.

1. No Water Flowing
   - Is the water still turned off at the stop cock or isolating valve?
   - Have in-line filters been checked for blockage?
   - Is there an air-lock in the water supply?
   - Have any non-return or check valves been fitted? If so they may be fitted the wrong way around for water flow direction.

2. Very poor flow
   - Does the tap meet the requirements of the water supply, with regards to water pressure and the minimum required by tap?
   - Some taps are fitted with what is known as an aerator . This mixes air and water together to give a “bubbly” flow. Aerators restrict the flow. Sometimes, these can be converted to become flow straighteners which provide less restriction (therefore better) flow, but the “bubbly” stream will be lost.
   - Check to make sure that all stop cocks or isolating valves have been fully opened.

3. Loss of Water
   - If the waste has been in place for a long time and the seal has deteriorated, or sealing washers from a new fitting were omitted, it may need to be resealed with silicone, or the missing washers fitted.

Section 6
Frequesntly Asked Questions

What do you do if a tap/mixer leaks?
Isolate the water supplies. Remove the tap headwork, (usually by removing the "indice cap" and removing the screw underneath, or loosening a grub screw, which will allow the handle to be pulled off). Clean the seating if the tap has rubber washers and check the sealing washer and any "o" rings are in good condition, replacing as necessary. Replace the cartridge if there is any doubt about the condition of any ceramic discs.

Why does my basin waste leak?
First check the silicone seal between the waste flange and the basin (it may appear as if it is the plug cannot hold water, but the water may be actually seeping under the waste flange into the slots on the waste underneath). If this appears to be in good working order check that the plug and waste are not damaged.

Has my tap/mixer got ceramic discs or standard elastomeric (rubber) washers?
If the operation of the tap is based on small amounts of rotation (1/4 or 1/2 turn) from fully off to fully on then the tap is likely to be ceramic disc operation. However the only true way to identify this is by removing it and checking visually. The presence of two ceramic discs in a cartridge rather than a rubber sealing washer provides confirmation.

What are the benefits of Ceramic Discs over conventional sealing washers?
Ceramic Discs have higher resistance to corrosion and wear, and thus require less maintenance. They are also much easier to operate so are of benefit to the elderly and the less able.

How do you maintain Ceramic Disc valves?
To maintain CD valves, isolate the water supply and remove the handles/heads to enable the removal of the valve. The valve can then be taken apart and the ceramic discs cleaned as well as the valve seals. The valves and the handles/heads can then be replaced. This is only required if the tap begins to drip.

Is it possible to change the handle and headwork? How do you remove them?
Yes providing they are compatible. This is possible usually by removing the "indice cap" and removing the screw underneath, or loosening a grub screw, which will allow the handle to be pulled off. The headwork or ceramic disc cartridge can then be removed.

Is it dual flow or single flow?
The terms dual or single flow apply to mixer tap spouts: A "Dual flow" spout is split internally by a 'wall' into two separate 'channels' or tubes to keep the flow of the hot and cold water separate, to the point of discharge. A "Single flow" spout requires the hot and cold water to mix within the body of the tap.

What is the advantage of dual flow?
Dual flow products do not mix water, as hot and cold supplies have different channels to outlets. When the supply pressures are unbalanced, and there is a risk of the higher pressure flowing into the lower pressure supply pipe – there is no need to fit check valves in order to comply with the requirements of the Water Regulations.

When is single flow satisfactory?
With single flow products the mixing of hot and cold water occurs within the body of the tap. This ensures that the water delivered is mixed to the desired set temperature.

"Single flow" is satisfactory when the supply pressures are the same i.e. balanced.

There are several reasons why this could be, examples are:

- The type of manufacturing process used to make the tap/mixer.
- The level of technology used.
- A difference in the size of the valve (i.e. how much water does it let through).
- The size of a tap to how much brass is used etc.
- Surface finish - is it chrome, gold or an alternative special finish?

Why is it important to ensure that high pressure taps are not used on a low pressure system?
If a tap requires high pressure it won't perform adequately on a low pressure system. Therefore the flow from the tap will be less than satisfactory. Usually the waterways in the fitting are much smaller in a high pressure tap, so when installing it on a low pressure system, you will frequently see a much reduced flow of water out of the tap, invariably one that is not fit for the purpose you require.

What is the recommended way to clean taps?
All surface finishes will wear if not cleaned correctly. The only safe way to clean your tap/mixer is to wipe with a soft damp cloth. Stains can be removed using washing up liquid. All bath cleaning powders and liquids even the non scratch cleaners are likely to damage the surface of the fitting. DO NOT use bleach.

Wiping after use will avoid the formation of scale caused by hard water drying on the surface. The build up of soap deposits and lime scale can prove difficult to remove and must be avoided.

What is the recommended way to clean gold plated taps?
Harsh abrasives and general bathroom cleaners must NOT be used. Gold finishes are softer than chrome plate and special care must be taken when cleaning. Use only diluted liquid soap. Clean regularly, rinse and wipe dry.

How do you remove limescale build up on taps?
Rather than using an aggressive cleanser the safest way to remove lime-scale is with a natural citric acid e.g. lemon juice, or vinegar. Rinse afterwards and wipe dry.

What guarantee will I get?
Most taps come with a minimum guarantee; which can vary from different manufacturers from 1 year to 10 years. However, in most cases this only covers manufacturing or material defects, and will not cover your need to replace seals or washers as this is dependent on usage and water supply conditions e.g. debris in water, or excessive lime-scaling.

Section 7
Industry Terminology

Adjustable Swivel Unions
Offset connection pieces that can be swivelled to suit differing centres of the supply pipes before tightening.

Angled Flow
Water discharges from the tap at an angle, rather than vertically downwards. Useful to ensure water discharges well into a bowl when hand-washing is intended.

Back Nuts
Nuts used under an appliance to tighten and hold a tap in place.

Bar
A unit of measurement of water supply pressure approximately equivalent to a column of water 10m high.

Basin Mixer
Water fitting on a wash basin that usually mixes hot and cold water within the body of the fitting. Requires hot and cold water pressures to be equal – ideally from the same source. If pressures are unequal, divided flow types should be used.

Basin Taps
Taps of pillar type construction. Available in hot or cold types.

Bath Filler
Similar to basin mixers, but for filling baths.

Bath & Shower Mixer
A single body fitting, requiring two tap holes for hot and cold water supplies, which mixes within the body of the fitting. A diverter can channel water to either a spout to fill the bath or via an attached flexible hose to a shower outlet.

Bath Taps
Taps of pillar type construction. Available in hot or cold types.

Bib Tap
A single control for a single supply of water, either hot or cold, fixed onto a wall.

Body
A cast housing which accommodates the headwork and hand-wheel or lever. Key attributes are the ability to deliver acceptable volumes of water and aesthetic appearance.

Box Spanner
A simple socket spanner with a hollow centre that fits over a threaded inlet tail to tighten/un-tighten a nut.

Ceramic Discs
Hard wearing ceramic discs create a positive on/off control unless ports are aligned. Popular due to low maintenance and easy quarter or half turn operation.

Check Valves
Allow water to flow in only one direction. Sometimes required by Water Regulations to prevent backflow.

Chrome Plating
Coating on tap bodies to enhance aesthetics.

Clamping Plate
An alternative to backnuts. Mainly used on monoblocs to hold the tap in place.

Claw Spanner
Tool for unscrewing or tightening nuts which secure water fittings. Clamping jaws usually serrated for extra grip (protect any decorative finishes before use) which tighten to prevent slip – depending on the directions of use.

Combination Boiler
Boiler which heats water as used. Fed by the mains, hot and cold water are balanced when supplying fittings. Does not require a hot water cylinder or cold water tank. Also heats water for central heating system.

Compression Fitting
A nut and “olive” which compresses around copper tubes when tightened to create a water tight seal.

Deck Mounted
Fitting required to be installed onto a horizontal surface.

Dimensional Standard
British or European Standard which defines dimensions- usually limited in the case of European Standards to “connecting” dimensions.

Draw Off Fittings
Water fitting that controls on/off and flow rate as water is used.

Dual Flow Fillers
Hot and cold water enters a single fitting and travels through the body in separate channels. The waters are not mixed until the point of discharge.

Elastomeric Anti- Rotation Washer
Washer fitted between a tap and an appliance, to prevent the tap from turning during use.

Electroplated
Common method of applying a tough metal coating e.g. nickel/chrome to a brass product.

Enamelled
A method of applying a glass finish to a metal product e.g. bath.

Equal / Balanced
Hot and cold pressures are the same – usually from the same source e.g. cold water storage tank.

Fibre Washer
A washer made from a tough fibrous material used as an alternative to rubber.

Flange
The “collar” usually found around the base of a tap.

Flexible Hose
Pipe made from elastomeric material, sometimes protected by a metal outer cover – used commonly to transfer water to an alternative “shower” outlet.

Flow Rate
Speed at which water flows e.g. through a fitting. Usually measured in litres per second or minute.

Four Hole
Number of holes in appliance – a 3 hole bath filler with a diverter mechanism on the spout which diverts the flow from the bath filler to a hand held shower.

Globe Tap
Old fashioned tap of bulbous appearance, traditionally mounted to the inside surface of a bath. Requires backflow protection e.g. check valves if used today.

Grub Screw
Small headless screw used for locating or locking parts together.

Hand-Wheel and Lever
Means of providing connection to the headwork to facilitate easy manual control of on/off and flow through taps.

High Pressure
Water pressure usually higher than 1 or 2 Bar.

Horizontal Rod
Component of a pop-up waste connecting to the vertical controlling rod.

Hot & Cold Gravity, Pump Assisted
Cold water tank is normally located in the loft feeding a hot water cylinder usually in an airing cupboard. Both supplies are then pumped after mixing, to provide a higher volume of water.

Hot Gravity, Cold Mains
Cold water tank is normally located in the loft feeding a hot water cylinder usually in an airing cupboard. However it differs from the hot and cold gravity system as cold water comes direct from the mains causing an imbalance in pressures. Pressure imbalances of greater that a ratio of 5.1 will require a pressure reducing valve to be installed on the dominant supply when using a mixer.

Inlet Tails
Means for providing connection to the hot and cold water supplies. Either rigid - plain or threaded, or flexible.

Kitemark
Logo owned by the British Standard Institution which indicates conformity to British Standards.

Limescale
A build up of alkali based deposits formed from water flow, usually found in older pipework or tap bodies/shower outlets.

Low Pressure
Tank fed water supply which is generally below 1 or 2 Bar.

Maximum Pressure
Maximum safe working pressure.

Mechanical Mixing Valve
Water fitting which requires manual operation to effect on/off flow control and mixed water temperature.

Minimum Performance
Performance under least favourable supply conditions.

Minimum Pressure
The least pressure required so that a fitting performs adequately. Water pressure depends on the type of fitting and plumbing system installed. As a general guide, low pressure systems are gravity fed and less than 1.0 bar, high pressure systems are mains fed, pumped or combination boilers and are usually 1.0 bar or over.

Monobloc Mixer
A single body fitting, requiring only one tap hole. Mixes water from two supplies normally hot and cold, available in a basin or bidet fitting. Water can either be mixed in an internal chamber or at the point of discharge.

Non Rising Spindle
Non rising headwork, handle does not rise, it is opened to control flow.

Optimum Height
The distance between the bottom of the cold water storage tank and the top of the shower head for adequate shower performance.

Overflow Pipe
Pipe used to discharge excessive flow to a sanitary appliance.

Performance Standard
Specification agreed between interested parties concerning the performance of a product under specified conditions e.g. flow rate at a given supply pressure.

Pillar Taps
Taps fixed to a horizontal surface e.g. sanitary appliance, and used to control on/off flow.

Pop-up Connecting Clip
A double entry clip to hold vertical and horizontal pop-up rods together.

Pop-Up Waste
Often supplied with monobloc mixers, negating the need for an untidy plug and chain. An operating rod is usually concealed behind the mixer to raise and lower the plug.

Potable Water
Drinkable water usually direct from a mains supply.

Pressure Reducing Valves
Means for reducing water pressure. Sometimes required on systems using mixers and with a high pressure imbalance (greater than a ratio of 5:1 generally).

Pressure Test
A test, usually associated with water supply pressures, to ensure no leakage at a specified pressure.

Push Fit Connector
Method of joining pipework components together with a push in type connector. Does not require brazing, sealant or adhesive.

PVD
A process performed in a vacuum chamber which bonds the finish to the substrate of the tap.

Quarter Turn
Flow control from fully closed to fully open by turning a lever, or hand-wheel, through 90°.

Rising Spindle
Multi turn operation, handle rises as used.

Rubber Base Seal
Elastomeric gasket fitted between a tap and appliance to create a seal.

Sealing Gasket
See Rubber Base Seal.

Servicing
Periodic replacement of worn and aged components in a tap (e.g. sealing washers).

Servicing Valve
Control used to isolate flow to a water fitting to aid maintenance and servicing.

Shutting Off
The act of turning off the water supplies, prior to installation, replacement or servicing of taps.

Silicone Sealant
A commercial sealing compound used to create a water tight but flexible seal.

Single check Valve
Also known as a non-return valve.

Single Flow
Hot and cold water mixes within the body of a fitting. To comply with Water Regulations, such fittings require single check valves to be fitted to each inlet if the supply pressure is unbalanced.

Single Lever
Mixer using only one handle (lever) to control flow and temperature. Typically applied to monobloc or some 2 tap-hole mixer designs.

Standard Dimension
Dimension agreed as a convention e.g. Mixer tap holes for baths should be approximately 180mm (7in) apart.

Stopcock
Valve used to switch waterflow on or off on the mains supply, commonly found beneath a sink unit.

Supply Pressure
Pressure measured at the inlet of a water fitting.

Tap Connector
Device used to facilitate connection of a tap's inlet tails to the hot and cold water supplies.

Tap Headwork
Mechanism, connected within the head of a tap/water fitting, that controls on/off, flow rate and sometimes temperature.

Temperature Test
Usually associated with thermostatic mixing valves. A test to establish that a safe mixed water temperature is not exceeded.

Thermostatic Mixing Valve
Also known as TMV. A device to compensate for variations in the temperature and/or pressure of incoming water supplies, to maintain a selected mixed water temperature.

Three Hole Tap/Mixer
Typically a central spout and two separate handwheel controlled assemblies. The "body" of the mixer is normally concealed beneath the exposed surface of the basin.

Tolerances
Limits of variation – usually on specified units of pressure, temperature, flow or dimension.

Two Hole
Number of holes in a sanitaryware appliance. Can be for two separate taps or for two hole mixer tap, depending upon the centres/position.

Unbalanced Pressure
Water arrives at the tap from separate sources at different pressures eg from the mains (cold) and water tank (hot).

Unvented Domestic Hot Water Cylinder
A plumbing system where the cold feed is taken directly from the mains to provide a high pressure hot water supply. There is no open vent to atmosphere.

Wall-Mounted
Fitting installed onto vertical wall.

Washered Valve
Valve with an elastomeric (rubber) washer fitted.

Water System
The complete water supply system within a building incorporating all the pipework, hot water system and all draw off devices.

Section 8
References

BSI British Standards
BSI British Standards' publications give recommendations on a wide range of building and construction matters including materials, testing, health and safety, access and regulations. They are essential reference for architects, developers, building owners, site managers, building contractors, structural engineers, materials specifiers and other interested parties.

www.bsigroup.com

BS 5412:1996
Specification for low-resistance single taps and combination tap assemblies (nominal size 1/2 and 3/4) suitable for operation at PN 10 max, and a minimum flow pressure of 0.01 MPa (0.1bar).

The standard specifies the dimensional, watertightness, pressure resistance, hydraulic, mechanical strength and endurance characteristics with which size 1/2 and 3/4 single taps and combination taps shall comply. Replaces Parts 1 to 5 of the dual-numbered BS 5412 and BS 5413.

BS EN1111: 1999
Sanitary tapware. Thermostatic mixing valves (PN 10) General technical specification for use in bathrooms and kitchens.

BS EN 1287: 1999
Sanitary tapware. Low pressure mechanical mixing valves. General technical specification. Replaces BS 1415-1: 1976.

BS 7942:2011
Performance and material requirements, including test methods, three distinct types of thermostatic mixing valves for use in care establishments.

BS 6700:2006 + A1:2009
Specification for design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages. Combines requirements and recommendations for systems for pipes, fittings and connected appliances installed to supply buildings with water for drinking and other purposes. To be read in conjunction with CP 342-2: 1974.

BS 1010-2:1973
Specification for draw-off taps and stop – valves for water services (screw-down pattern).

BS EN 200:2008
Sanitary tap. General technical specifications for single taps and mixer taps (nominal size 1/2) PN 10. Minimum flow pressure of (0.05) MPa (0.5bar).

Dimensional, water- tightness, pressure resistance, hydraulic, mechanical strength, mechanical endurance and acoustic characteristics with which the single taps and mixer taps shall comply.

BS ISO 80000-1:2009
Quantities and units. General.

BS EN ISO 1456:2009
Metallic and other inorganic coatings. Electrodeposited coatings of nickel, nickel plus chromium, copper plus nickel and of copper plus nickel plus chromium.

BS EN 1112:2008
Sanitary tapware. Shower outlets for sanitary tapware for water supply systems of type 1 and type 2. General technical specification.

BS EN 1113:2008
Sanitary tapware. Shower hoses for sanitary tapware for water supply systems of type 1 and type 2. General technical specification.

BS EN 816:1997
Sanitary tapware. Automatic shut-off valves PN10.

BS EN 817:2008
Sanitary tapware. Mechanical mixing valves PN10. General technical specifications.

BS 5388:1976
Specification for spray taps.

BS EN 248:2002
Sanitary tapware. General specification for electrodeposited coatings of Ni-Cr.

BS EN 246:2003
Sanitary tapware. General specifications for flow rate regulators.

Water Supply (Water Fittings) Regulations 1999
The Water Fittings Regulations (or Byelaws 2000 in Scotland) are national requirements for the design, installation and maintenance of plumbing systems, water fittings and water-using appliances. Their purpose is to prevent misuse, waste, undue consumption or erroneous measurement of water and to prevent contamination of drinking water.

www.legislation.gov.uk/uksi/1999/1148/contents/made

Water Byelaw
The Water Fittings Regulations, replace water byelaws (in governing the prevention of waste, misuse, undue consumption, contamination and erroneous measurement of public water supplies in domestic and commercial plumbing installations) and represent important protection for public health and the environment
.
The Regulations are based on performance standards, e.g. British Standards or those European Standards being mandated under the Construction Products Directive.

www.opsi.gov.uk

CIPHE
The Chartered Institute of Plumbing and Heating Engineering is the UK's professional and technical body for all plumbing and heating professionals. All members listed have had to prove their competence through recognised qualifications or extensive experience, the prime objective of improving the science, practice and principles of plumbing and heating engineering in the public interest.

www.ciphe.org.uk

BEMA
BEMA is concerned with TMVs and aims concerned with the safe provision of hot water at point-of use.

www.beama/org.uk