



DIY plumbing



what is it?

Plumbing is about installing & maintaining the infrastructure required for obtaining water, getting rid of sewage and waste water, heating water and central heating. It's one of the 'dark arts' of the building industry, but unlike electricians, there are a lot of plumbing jobs that you can do yourself, safely and legally. The word itself comes from the Latin for lead (plumbum), as water pipes were made of lead from Roman times to relatively recently - a bad idea, as lead is poisonous. The Roman plumbing system was more or less the same as the Victorian system, lead poisoning and all. The oldest plumbing systems were probably in the Indus Valley around 2700BC (using clay pipes), but there were sophisticated systems in ancient Greece, China and Persia too.

Nowadays pipes are either plastic or copper, and fittings (elbows, tees, connectors and reducers) tend to be made of plastic, brass or copper. In the UK, copper pipes found in the home tend to be either 15mm (equivalent to the old 1/2") or 22mm (roughly equivalent to the old 3/4"). Plastic is good for long runs, especially in inaccessible places, as it's flexible, and doesn't have to have joints (you wouldn't want a leak in a joint under a concrete slab for example). Copper can be more aesthetically pleasing in visible places - and plastic can sag, especially with hot water. Plastic is typically used for waste pipes, and can have compression, solvent-weld or push-fit joints.

Water companies generally supply mains water to



installing a twin-coil cylinder with pump & control set (for solar hot water) in a loft, with copper pipework and 45° elbows

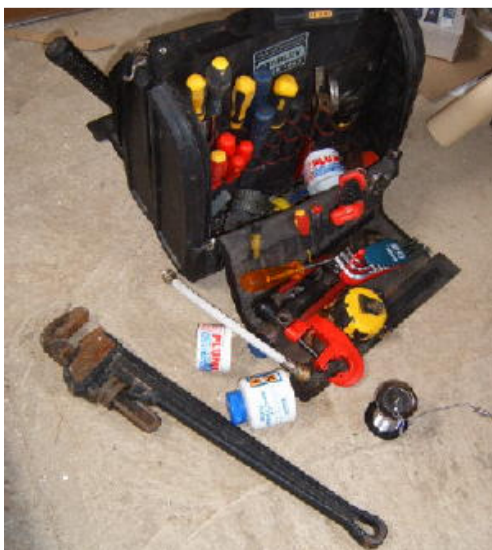
just outside the boundary of a property, and there will often be a water meter. From here a supply pipe (the responsibility of the householder) is run to the building, and usually just inside is the main stop cock to turn off the water. Inside the house, there are two types of cold water supply. Direct supply is straight from the mains, indirect is fed by gravity from a cistern in the loft (itself fed by the mains). The supply of potable water in the UK is incredible value for money at c. £1 per 1000 litres.

Hot water can be provided in various ways - gas boiler heating a cylinder via a copper coil; electric immersion heater; 'combi' boiler giving instant hot water without a cylinder; solar hot water (with an extra coil in your cylinder - a 'twin-coil' cylinder); or a back-boiler on a wood stove (you can even have a 'triple-coil' cylinder connected to solar, a wood stove and a gas boiler for backup).

what are the benefits?

If you want to install eco-friendly kit like solar hot water, a back-boiler on a wood stove, rainwater harvesting, greywater recycling, wind pump or ram pump, you'll need basic plumbing skills, which will also be handy in maintaining your hot and cold water systems and central heating. You can become more self-sufficient, and your knowledge will be useful in understanding your systems, and whether they're working properly or efficiently. You may even think about plumbing as a career (people will always need plumbers).

DIY plumbing skills will help you save water. Leaks are a waste of water, as are dripping taps



a plumbing toolkit, including stillsons wrench, pipe cutter, solder & flux (used to help the solder spread into the joint)



getting to grips with a pipe bender; books are sometimes not enough - you have to have a go

(and if it's a hot tap, it's a waste of energy). You can install water-saving devices yourself too.

The water supply in the UK is perfectly good for drinking at very low cost. Once the infrastructure is in place, it has a relatively low environmental impact, so it's much better to use it instead of bottled water, which involves millions of tonnes of plastic, and fuel to truck it around the country. Let's not even think about bottled water that's transported in from other countries.

Plus, DIY plumbing skills will save you money.

what can I do?

First learn how the plumbing in your house works. There's lots of basic information in books and online these days, and it's good to read up before diving in. Get a good reference book. Treloar's *Plumbing* covers everything you need to know. Get yourself a toolkit (see photo), and find out where your stop cocks are in case of emergency. For practical experience, hang out with someone who knows what they're doing, or attend a course.

what you can't do: sometimes you have to call a professional - e.g. only approved installers are allowed to work on pressurised (unvented) hot water systems and cylinders and only installers registered with the Gas Safe Register can work on gas installations.

for beginners: you can quickly learn to bleed a radiator, change a U-bend or waste pipes, change tap washers or ball cocks, and fix hammering in your pipes. Plus you can install water-saving

devices like tap and shower head aerators that feel the same as full flow, but use far less water.

It's important that all metal pipes (and in fact all exposed metalwork in your building) are connected together with earth wires that lead to the earthing block at the main electrical consumer unit in your house. Otherwise, if there is an electrical fault, stray current may make your pipework live. If you then touch it, and it's not earthed, it will try to get to earth through you, and its attempt to do so may kill you. This wiring is called earth bonding, and this factsheet isn't big enough to cover it properly - but you must read up on it before doing any work.

for the more adventurous: go on a course, or find someone to teach you, and you'll soon be able to install and maintain plumbing fixtures like washbasins, toilets, showers and baths, plus the pipework to and the waste from them. Soldering, pipe bending and tightening compression joints isn't rocket science, but can't really be learnt from books - you have to do it. Extra equipment such as expansion vessels, pumps and filters are not beyond the grasp of the relatively handy.

You could then install rainwater harvesting / greywater recycling kit, which involves pipework and pumps to move water around, using the same basic skills. You could even install your own solar hot water system, or a back-boiler on a wood stove, plumbed in to a twin- or triple-coil cylinder. Gas boilers are not for the amateur plumber, but you can certainly install and maintain the radiators and pipework, as well as energy saving controls, and of course, lagging for pipework in lofts, and plenty of insulation for the loft itself.

resources

- LILI run an 'introduction to plumbing' course
- Roy Treloar, *Plumbing* - excellent, comprehensive book
- Mike Lawrence, *Plumbing & Central Heating*, (these books & more available from LILI)
- gassaferegister.co.uk - find installers legally registered to carry out gas work
- plumbingpages.com - huge plumbing information resource
- plumbworld.co.uk - supplies & tools
- ciphe.org.uk - Institute of Plumbing & Heating Engineering - careers advice & other information

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