Hot Water Cylinder Selection Guide

Performance

The performance of any hot water (DHW) cylinder is dependant on a number of factors which all combine to provide the final temperature produced at the cylinder. It is very important to get these factors correct or the performance of the cylinder may be compromised and end-user expectations not reached.

Two main factors which can affect the final temperature of the hot water cylinder are coil size and flowrate.

Coil Size

Due to the lower flow temperature (than a fossil boiler) available at the cylinder coil, in order to transfer the heat into the water within the cylinder a larger coil surface area is required. This has to be the true surface area of the coil and not 'fins' attached to the coil. As a rough guide 0.2m^2 of coil surface area is required per kW thermal output of the heat pump.

Flowrate

Again due to the lower flow temperature as opposed to a fossil boiler, hot water cylinders generally require a higher flowrate of water into the coil. If the coil in the tank is of too small diameter, this high flowrate can increase the pressure drop across the coil. If care isn't taken this pressure drop can exceed the amount of pressure available from the water pump within the heat pump and result in lower stored temperatures within the tank.

Other factors which can also affect the final stored temperature within the tank include: distance of the hot water cylinders from the heat pump; distance from the point of usage; and the plumbing configuration of any secondary returns or towel rails.

The following pages show different types of hot water cylinder configurations. Figure 1 shows a single coil tank and Figure 2 a twin coil tank for use with solar. Figures 3 and 4 deal with installations where there is more than one tank installed. Figure 3 shows where both tanks are bought up to temperature together. Figure 4 shows hot water cylinders that are brought up to temperature individually of each another, i.e. a constant and occasional configuration.

It is important in both twin tank configurations that a reverse return piping arrangement is used for the piping to and from the coils and the domestic hot water tank outlets and inlets, otherwise the tanks will not reach the correct temperatures together.

Selection charts of Kensa heat pumps with Advance Appliance hot water cylinders are contained within this document taking into account flowrate and coil size. (However this is a guide only as the installation can also affect performance.)

Hot Water Cylinder Selection Guide

Compact Range

Single Tank and non-constant twin tank operation

	Single Coil									Twin Coil					
	150	215	250		305		400	500		215	255	305		400	500
Heat Pump Size	25	25	25	32	25	32	32	32	Coil size (mm)	25	25	25	32	32	32
	2	3	3	3	3	3	3	3	Meter Coil size (m2)	2	2	3	3	3	3
3.5	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
6	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
8	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
10	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
12	×	✓	✓	✓	✓	✓	✓	✓		×	×	✓	✓	✓	✓
12 Twin	×	✓	✓	✓	✓	✓	✓	✓		×	×	✓	✓	✓	✓
16	×	×	×	✓	×	✓	✓	✓		×	×	×	✓	✓	✓
20	×	×	×	✓	×	✓	✓	✓		×	×	×	✓	✓	✓
24	×	×	×	✓	×	✓	✓	✓		×	×	×	✓	✓	✓
30	×	×	×	✓	×	✓	✓	✓		×	×	×	✓	✓	✓

Twin Tank constant parallel operation

	Single Coil									Twin Coil					
	150	215	250		305		400	500		215	255	305		400	500
Heat Pump Size	25	25	25	32	25	32	32	32	Coil size (mm)	25	25	25	32	32	32
	2	3	3	3	3	3	3	3	Meter Coil size (m2)	2	2	3	3	3	3
3.5	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
4	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
6	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
8	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
10	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
12	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
12 Twin	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
16	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
20	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
24	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
30	×	✓	✓	✓	✓	✓	✓	✓		×	×	✓	✓	✓	✓

Hot Water Cylinder Selection Guide

High Temperature Range

Single Tank and non-constant twin tank operation

		Single Coil									Twin Coil					
		150	215	250		305		400	500		215	255	305		400	500
HT Heat Pump Size		25	25	25	32	25	32	32	32	Coil size (mm)	25	25	25	32	32	32
		2	3	3	3	3	3	3	3	Meter Coil size (m2)	2	2	3	3	3	3
3.5		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
4.3		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
6		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
7		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
8.5		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
10		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
12		×	✓	✓	✓	✓	✓	✓	✓		×	×	✓	✓	✓	✓
17		×	×	×	✓	×	✓	✓	✓		×	×	×	✓	✓	✓
20.5		×	×	×	✓	×	✓	✓	✓		×	×	×	✓	✓	✓

Twin Tank constant parallel operation

		Single Coil									Twin Coil					
		150	215	250		305		400	500		215	255	305		400	500
HT Heat Pump Size		25	25	25	32	25	32	32	32	Coil size (mm)	25	25	25	32	32	32
		2	3	3	3	3	3	3	3	Meter Coil size (m2)	2	2	3	3	3	3
3.5		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
4.3		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
6		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
7		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
8.5		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
10		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
12		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
17		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
20.5		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓

Hot Water Cylinder Selection Guide

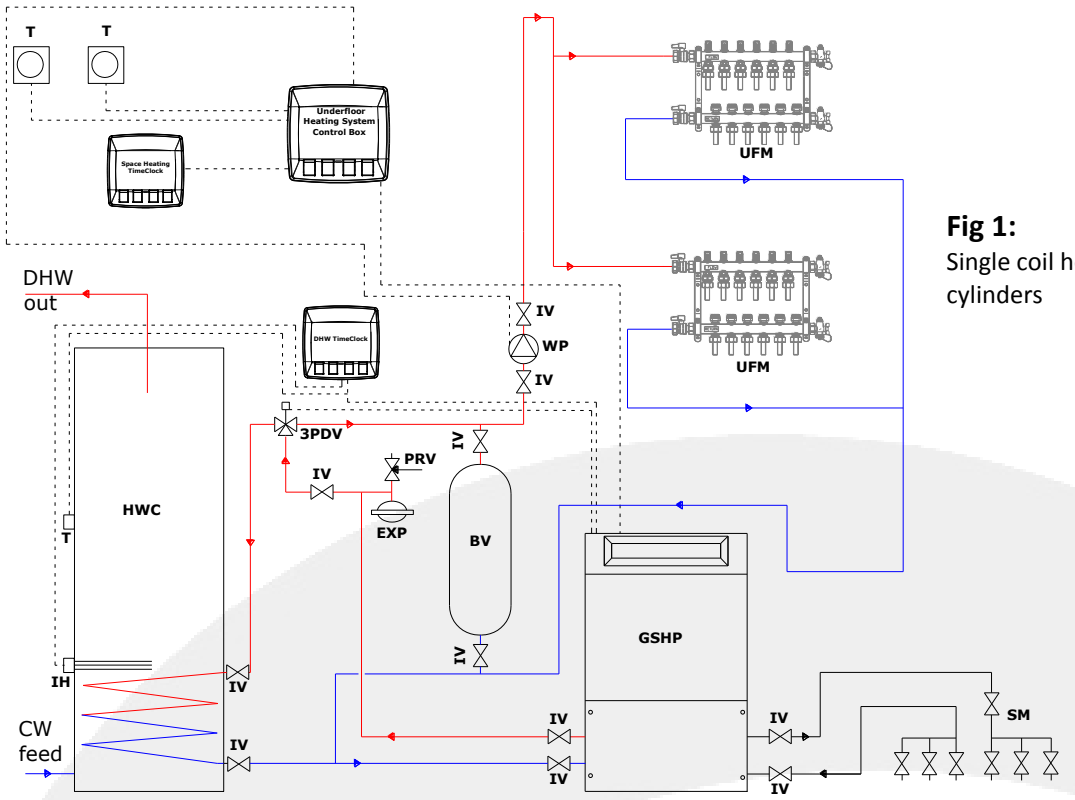

Fig 1:
Single coil hot water cylinders

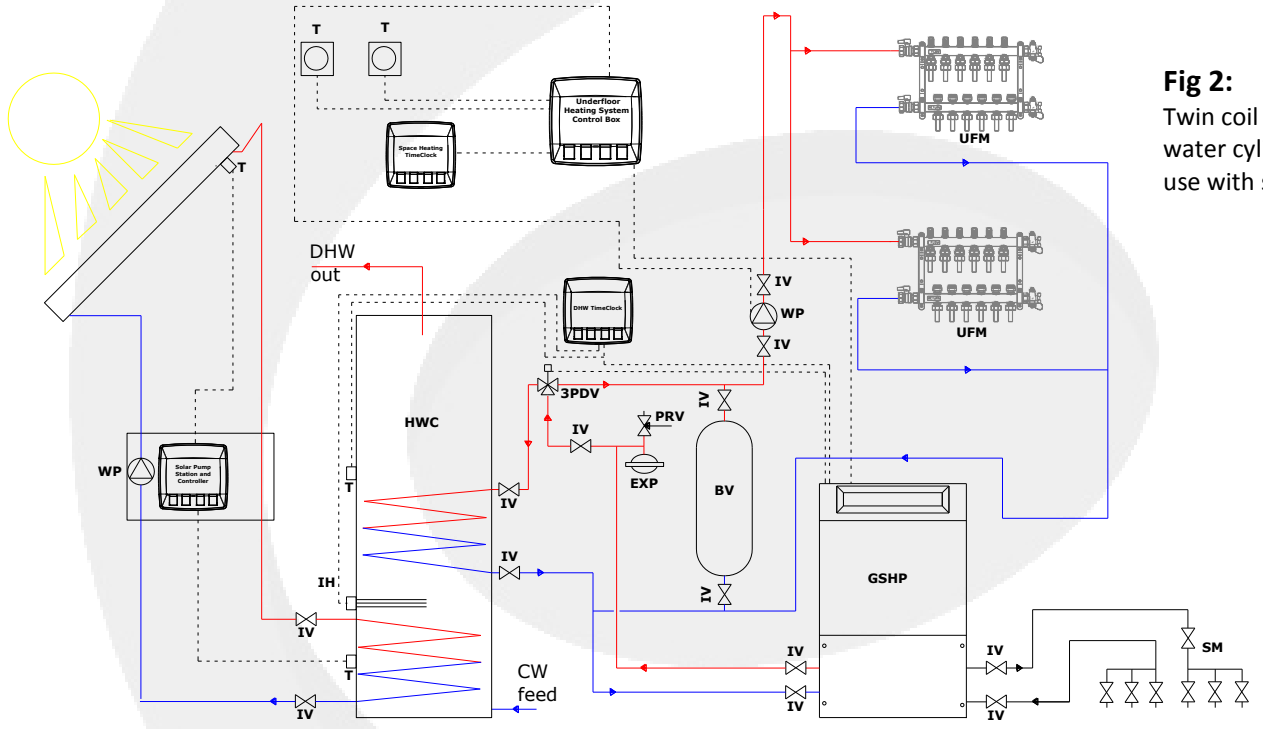

Fig 2:
Twin coil hot water cylinders for use with solar

Hot Water Cylinder Selection Guide

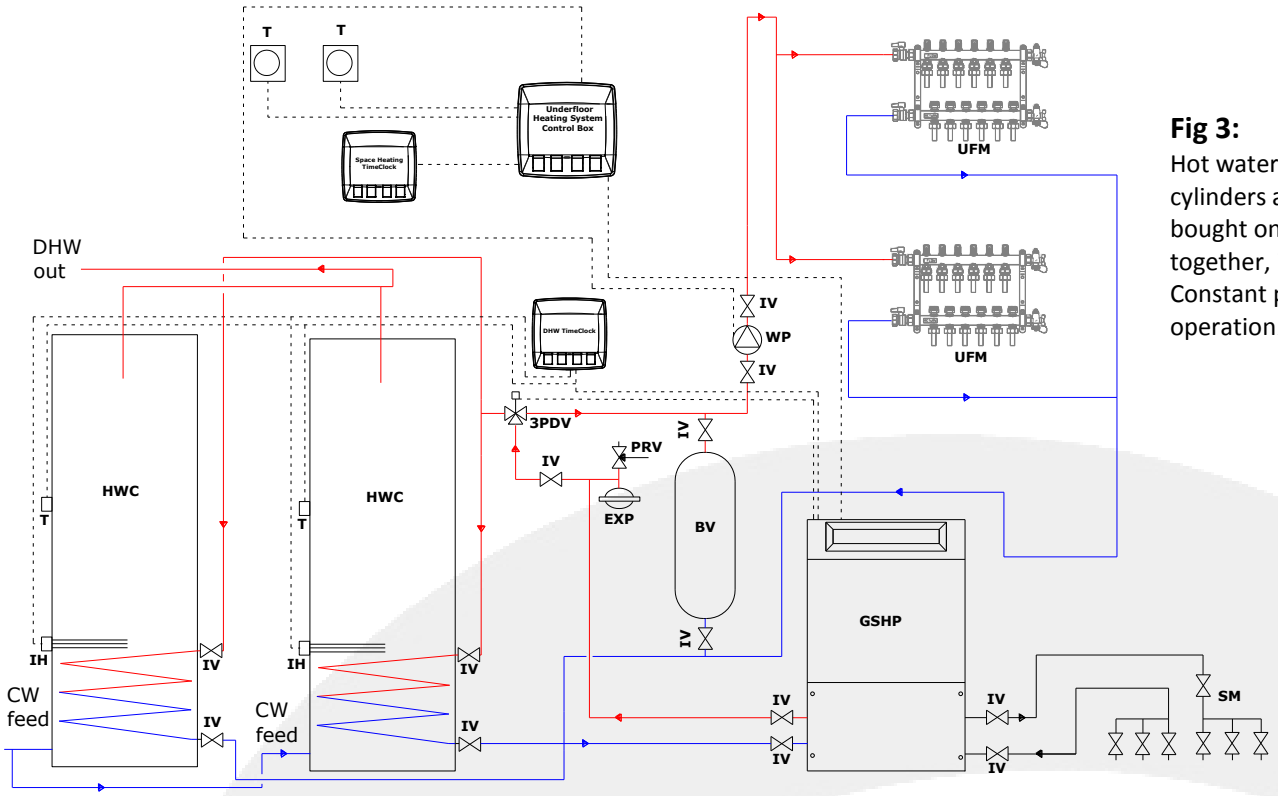

Fig 3: Hot water cylinders are bought on line together, i.e. Constant parallel operation.

ALL PLUMBING NEEDS TO BE REVERSE RETURN (not shown for clarity)

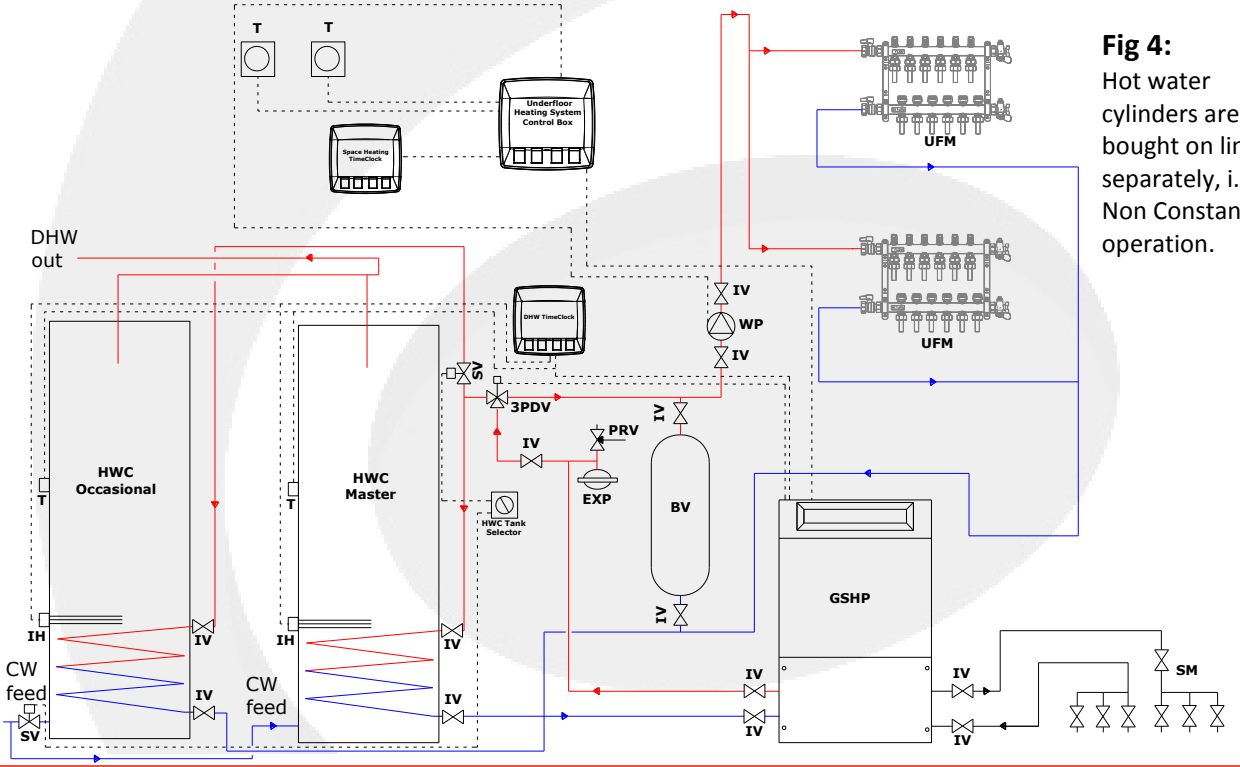

Fig 4: Hot water cylinders are bought on line separately, i.e. Non Constant operation.