

Keston

EVERYTHING IS POSSIBLE



STANDARD HEIGHT FRAME & HEADER KITS

Heat 45 - 55, 45P - 55P

Heat 2 45 - 55, 45P - 55P

When replacing any part on this appliance, use only spare parts that you can be assured conform to the safety and performance specification that we require. Do not use reconditioned or copy parts that have not been clearly authorised by Keston. For the very latest copy of literature for specification and maintenance practices visit our website www.keston.co.uk where you can download the relevant information in PDF format.

This kit is suitable for the following boilers:

Keston Heat 45, 55, 45P, 55P

Keston Heat 2 45, 55, 45P, 55P

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IMPORTANT

**THESE KITS CAN BE USED IN CONJUNCTION WITH
LOW LOSS HEADERS
SUPPLIED AS PART OF THE KESTON HEAT OPTIONS RANGE**

1 INTRODUCTION

This technical data contains information for dimensioning & assembly of a cascade system kit for the Keston Heat & Keston Heat 2 range of products.

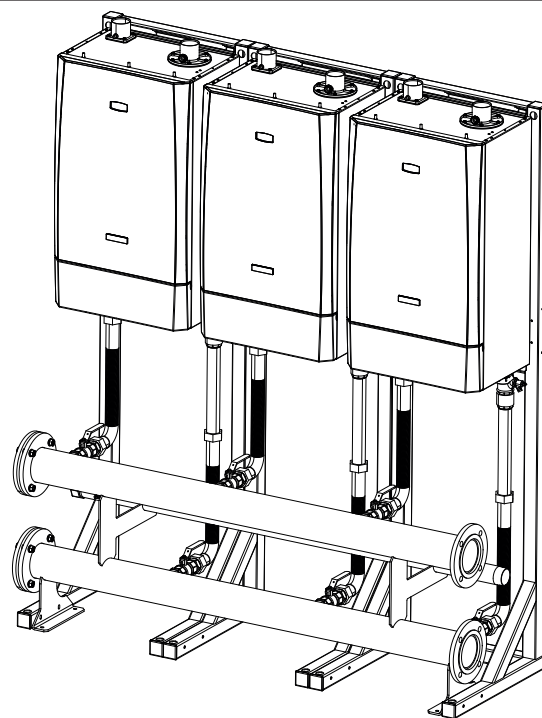
Header and Frame kits are available in both 'in line' (6 boilers long) and back to back options (3 boilers long).

GENERAL DESCRIPTION OF FRAME & HEADER KITS

A requirement to spread the total required heat output over several boilers can be accommodated by the use of the multiple boiler frame & header kit options.

The Varican optional accessory can be installed (1 per boiler) for cascade control.

All headers and pipe work should be insulated in accordance with the Non Domestic Building Services Compliance Guide. To ensure compliance with the maximum heat loss criteria, insulation thickness should be calculated according to BS EN ISO 12241 using standardised assumptions.



2 GENERAL DESCRIPTION OF CASCADE SYSTEMS

2.1 FRAME AND HEADER KIT DESIGN OPTIONS

The boilers are suitable for use in a multiple boiler configuration. Frame 7 states options available and gives the minimum number of appliances required, the appropriate floor space & the kit product number (N.B. The kits do not include the boilers).

Kits do not include the support frame as the boilers can be wall mounted but a frame kit is available if wall space etc. does not facilitate boiler/header wall mounting.

Available Keston Heat 2 Appliances	
kW (NG)	Product No.
Keston Heat 2 45	355123
Keston Heat 2 55	355124
kW (Propane)	Product No.
Keston Heat 2 45	355125
Keston Heat 2 55	355126

Note.

All boilers need to be sized in accordance to the total required heat load and the modulation capabilities of the appliances.

	Kit Contents			
	Frame	Water Header	Hardware Pack Connection	Hardware Pack Misc
DN50	1 off	1 off	1 off	n/a
DN65	2 off	1 off	1 off	1 off
DN80	3 off	1 off	1 off	1 off
DN100	4 off	1 off	1 off	1 off

continued

2.2 MULTIPLE BOILER INSTALLATIONS

For installing 2 to 6 boilers, the product range includes water and gas headers capable of assembly using threaded socket, compression and flange connections.

2.3 HYDRONIC ISOLATION: LOW LOSS HEADER

A low loss header allows flow separation within a hydronic system.

This allows two flow circuits to operate with their own flow and pressure drop environments whilst effectively transferring heat to its adjoined water circuit.

This enables the modern high resistant, high efficiency boilers to operate under their optimum conditions, while the main heating circuit operates to its own controlled optimum requirements.

2.4 OUTPUT CONTROL

The optional Varican accessory control can be installed (1 per boiler) to enable cascade control.

2.5 GAS SUPPLY

For Keston Heat the 45 & 55 boilers are configured for use with natural gas. The 45P & 55P boilers are configured for use with LPG / Propane.

For Keston Heat 2 the 45 & 55 boilers are configured for use with natural gas. The 45P & 55P boilers are configured for use with LPG / Propane.

Connection to the gas supply must be in accordance to with all the applicable regulations.

A single frame and DN50 water header kit will require the gas inlet to be made up to the gas tap provided, connecting it to the inlet of the appliance.

2, 3 and 4 boiler units will be supplied with a 2" gas header and all the necessary components and pipe work to connect it to the appliances.

Note: Test points are provided at each end of the 2" gas header. The test point nearest to the gas inlet is intended to be used as the appliance inlet pressure point.

2.6 ASSEMBLY

The frames must be located in a suitable place that affords a flat and level floor area of suitable load bearing capacity. Care must be taken when locating the frames that space is available for the servicing, installation and maintenance of the appliance and all of the associated connections and equipment. (See Appliance manuals)

When using multiple frames they must be bolted together and where necessary secured to the floor.

2.7 SAFE HANDLING

Installation may require 2 or more operatives to move it to its installation site, remove it from its packaging base and during movement into its installation location. Manoeuvring may include the use of a sack truck and involve lifting, pushing and pulling.

Caution should be exercised during these operations.

Operatives should be knowledgeable in handling techniques when performing these tasks and the following precautions should be considered:

- Grip the boiler at the base.
- Be physically capable.
- Use personal protective equipment as appropriate, e.g. gloves, safety footwear.

During all manoeuvres and handling actions, every attempt should be made to ensure the following unless unavoidable and/or the weight is light.

- Keep back straight.
- Avoid twisting at the waist.
- Avoid upper body/top heavy bending.
- Always grip with the palm of the hand.
- Use designated hand holds.
- Keep load as close to the body as possible.
- Always use assistance if required.

3 MULTIPLE BOILER SYSTEM COMPONENTS

3.1 GENERAL

The multiple boiler systems consist of the following components:

- Frame kit (optional 1 per boiler)
- Boiler gas header.
- Boiler flow and return headers supported on mounting skid
- Low loss mixing header (optional)
- Hardware pack (includes essential connection and valve components)

3.2 MAIN WATER HEADER

The main water headers consist of: water flow, water return headers custom sized for all boilers. It is possible to extend the system to a maximum of 6 boilers in a linear configuration.

Each header kit provides water flow and return headers sized either DN80, DN100 dependent on total maximum combined heating output required.

3.3 GAS HEADER

The Gas header consists of a custom manufactured 2" manifold. This is located in a cradle incorporated within the header mounting skid.

3.4 LOW LOSS HEADERS (MIXING HEADERS) OPTION

The mixing headers are supplied with an auto air vent and drain point as standard.

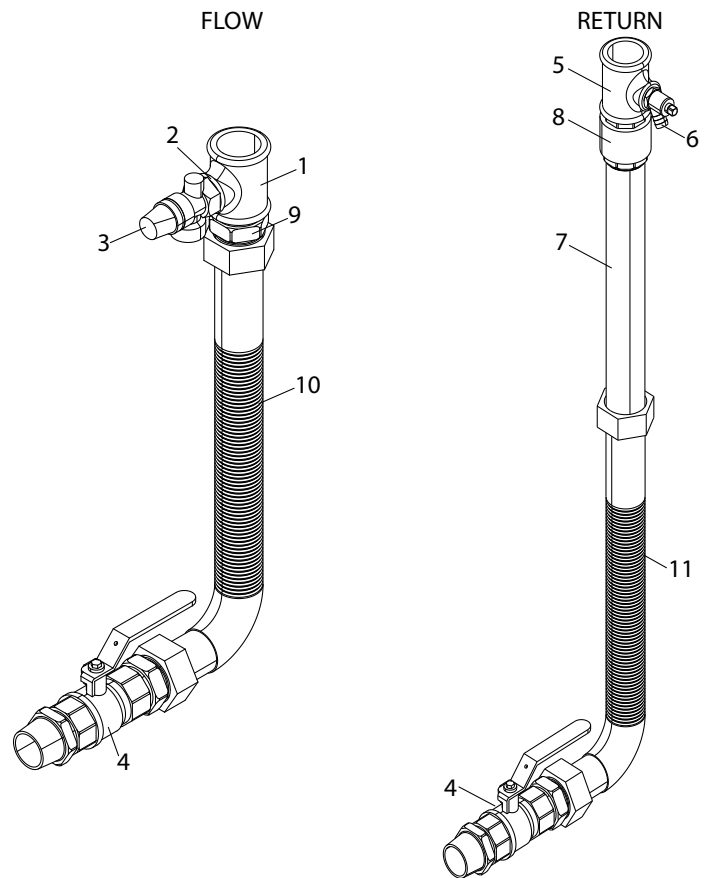
3.5 BOILER CONNECTION KITS

The connection kit contains the following components:

1. Boiler return leg complete with isolating valve, pump, non return valve, drain cock and fibre seals.
2. Boiler flow leg complete with isolating valve, pressure relief valve and fibre seals.
3. Header blanking flanges, fasteners and gaskets.
4. Mixing header fasteners and gasket.

LEGEND

1. 1 1/4" X 3/4" X 1 1/4" Tee
2. Close Taper nipple
3. Safety Relief Valve 6 bar
4. Isolation Valve
5. 1 1/4" X 1/2" X 1 1/4" Tee
6. Drain Off Cock
7. Connection Pipe Assembly
8. Non Return Valve
9. 1 1/4" taper male to 1 1/4" Parallel Hex Adapter
10. Boiler Flow Flexible Connection from Header
11. Boiler Return Flexible Connection from Header



***Gas Connection Sequence:** Conical adapter, flexi hose

3.6 FREE-STANDING FRAMES

If boilers in cascade are positioned in-line the installer has the option to either wall mount the boilers or mount boilers on optional frame kits available. If mounting in-line product on frames, optional frame kit UIN 355013 must be specified in the correct quantity, one frame kit for each boiler installed in cascade for in-line and back to back.

3.7 INSTALLATION AREA AND DIMENSIONS

Care must be taken to ensure adequate access for boiler / cascade system installation and servicing.

Additional clearance must also be considered in the event of boiler replacement.

A minimum of 450mm clearance must be provided from the front of the installed boilers in cascade to facilitate boiler servicing.

Consideration to connecting heating flow and return pipework, gas supply and condensate drainage must be given. Routing of the condensate drain must be made to allow a minimum fall of 1 in 20 away from the installed boilers in cascade, throughout its length. Adequate room above the boilers must be provided to install and service the boiler flue system. Further information with respect to flue and condensate drain connection is provided in the installation and servicing instructions provided within the boilers packaging carton.

IMPORTANT POINTS

Before commencing installation:

If Wall mounting;

- Ensure wall is capable of supporting the weight of boilers to be mounted
- Mark drill points of header using floor mounting template
- Mark height on to the wall from the floor to the top of the boiler
- Ensure floor is flat and level and is of suitable load bearing capacity

If Frame mounting;

- The frames must stand on a flat and level floor of suitable load bearing capacity.
- If using a frame kit (UIN 355013) the header must be bolted to the frame before the hoses are connected to the boiler.

MOUNTING FRAME MUST BE SECURED TO THE FLOOR WITH BOLTS

These Installations refer to perpendicular wall and floor. If walls are not perpendicular, it is recommended that a frame kit be used. The correct number of frames should be ordered (1 per boiler).

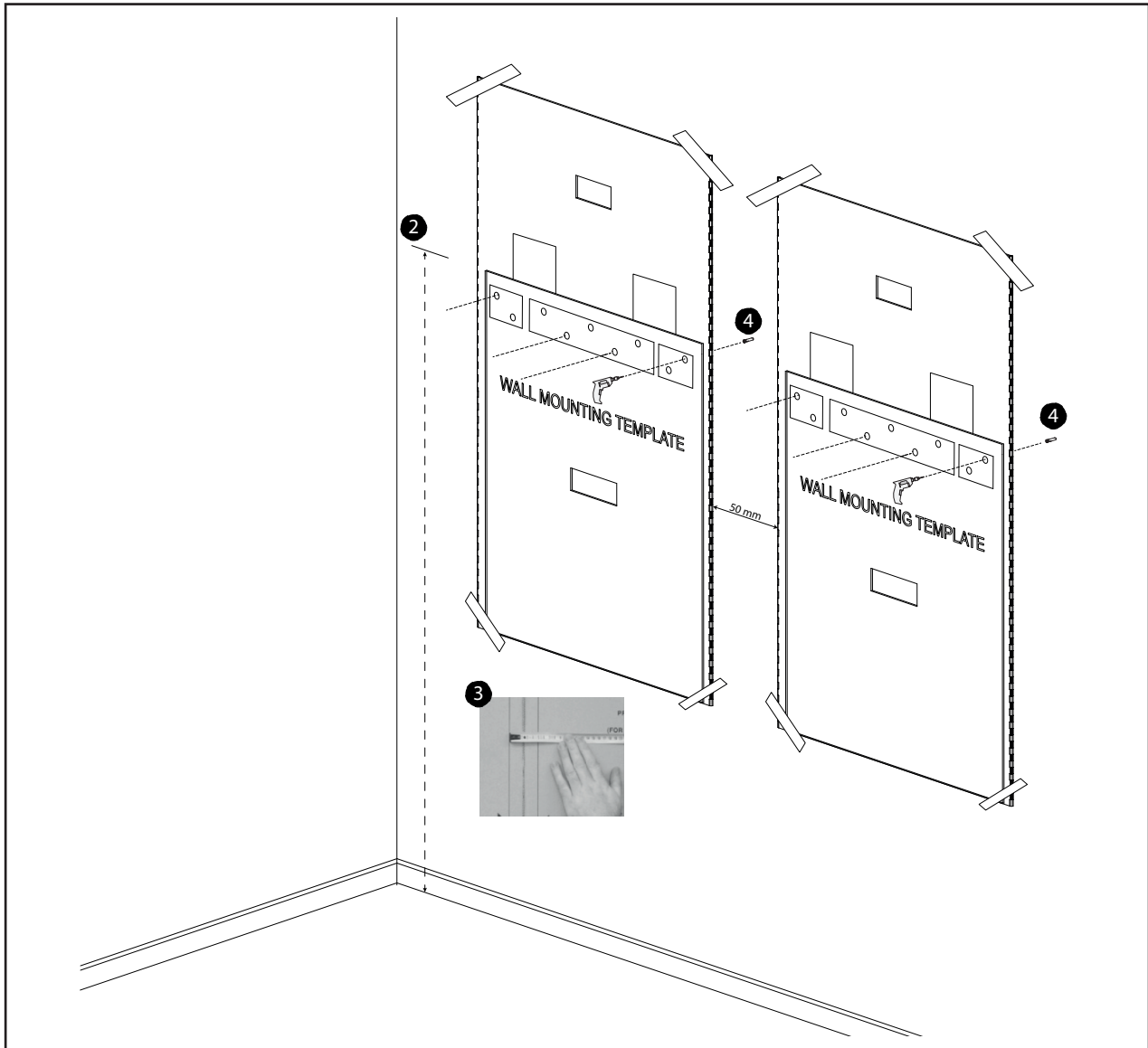
Allowances must be made for installation where skirting boards or other features are in place that may affect the nominal installation conditions.

4 WALL MOUNTED INSTALLATION PROCEDURE

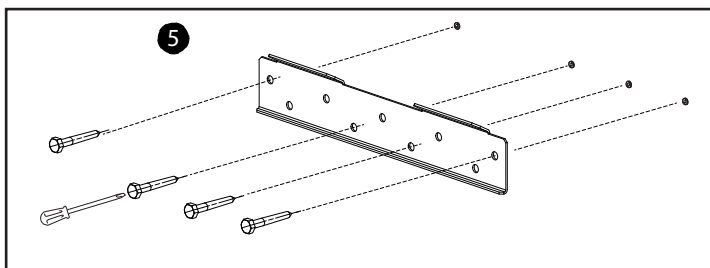
4.1 WALL MOUNTED SIDE BY SIDE OPTION

Ensure wall is capable of supporting the weight of boilers to be mounted. Note. boiler weights can found in the boiler Installation Instructions.

1. Cut the sides off the cardboard wall mounting template/s (found in the boiler packaging) to create the 50mm side clearance required.
2. Mark the height on to the wall from the floor to the top of the boiler 1919mm.
3. Tape the template/s to the wall ensuring the 50mm side clearance per boiler requirement is adhered to.

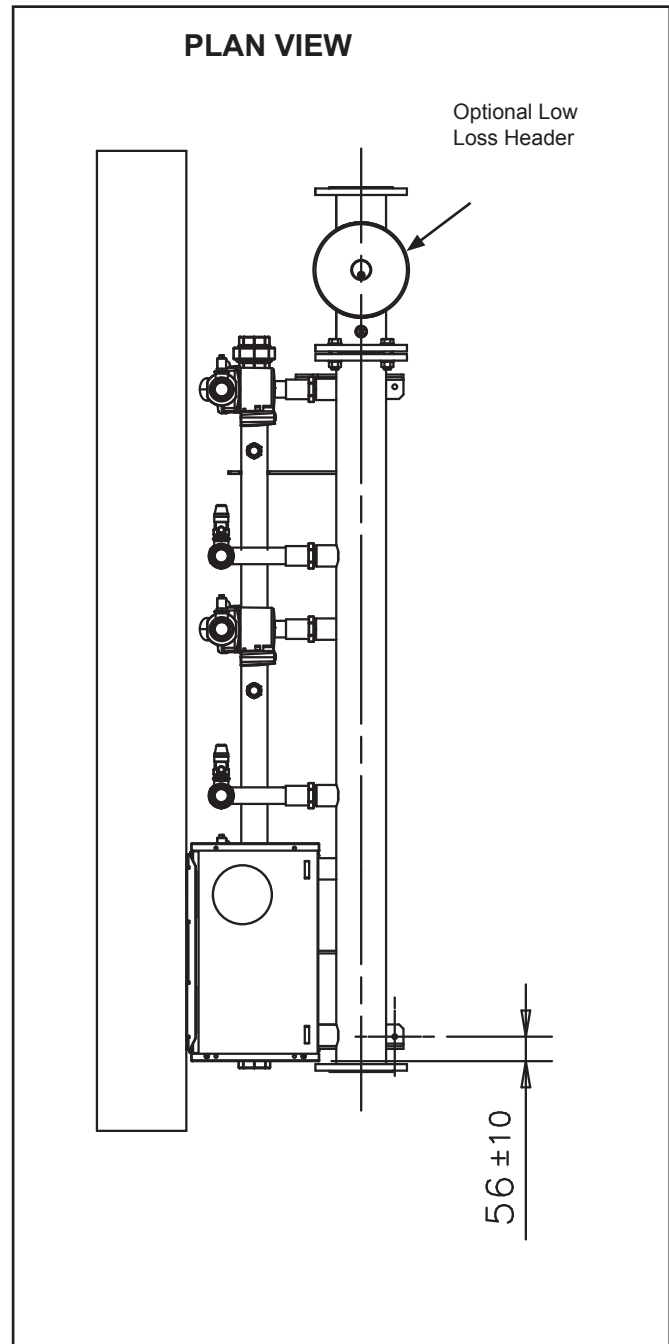
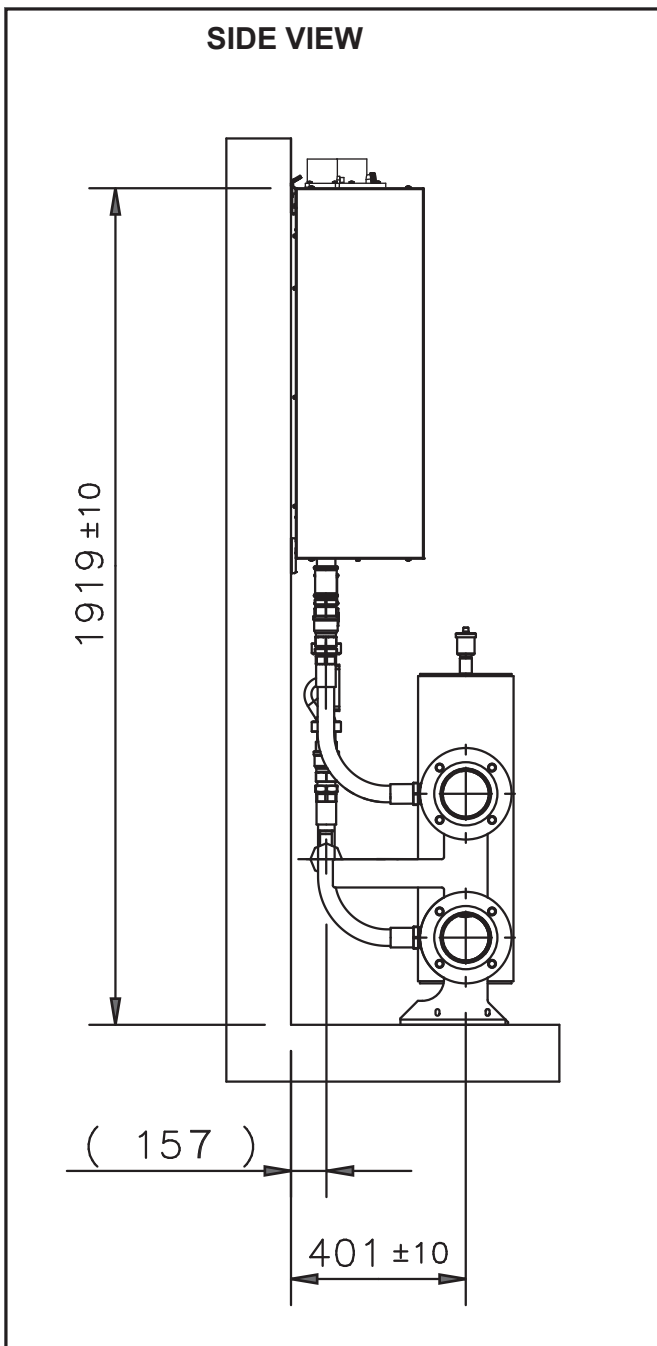


4. Drill the required holes in the wall to fit the wall mounting plate plugs. (See boiler Installation Instructions for details)
5. Screw the wall mounting plate(s) to the wall.



continued

4.1 WALL MOUNTED SIDE BY SIDE OPTION CONT'D.....



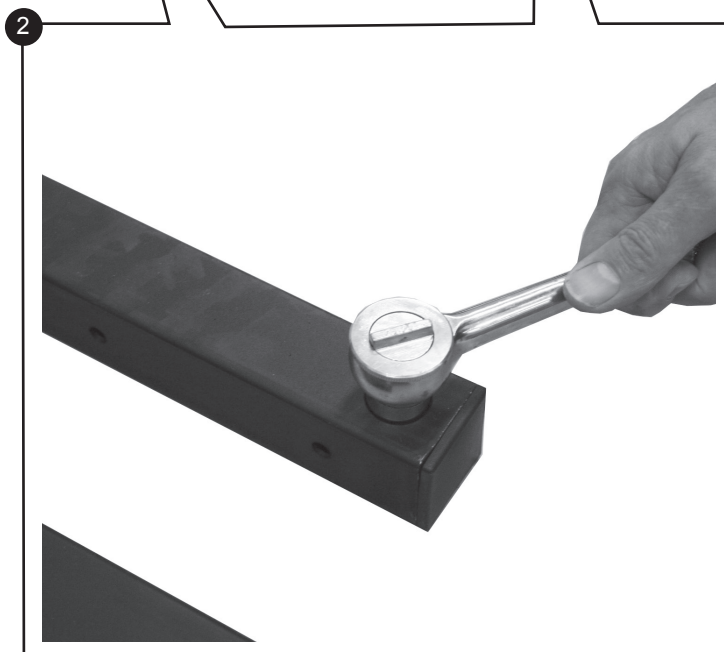
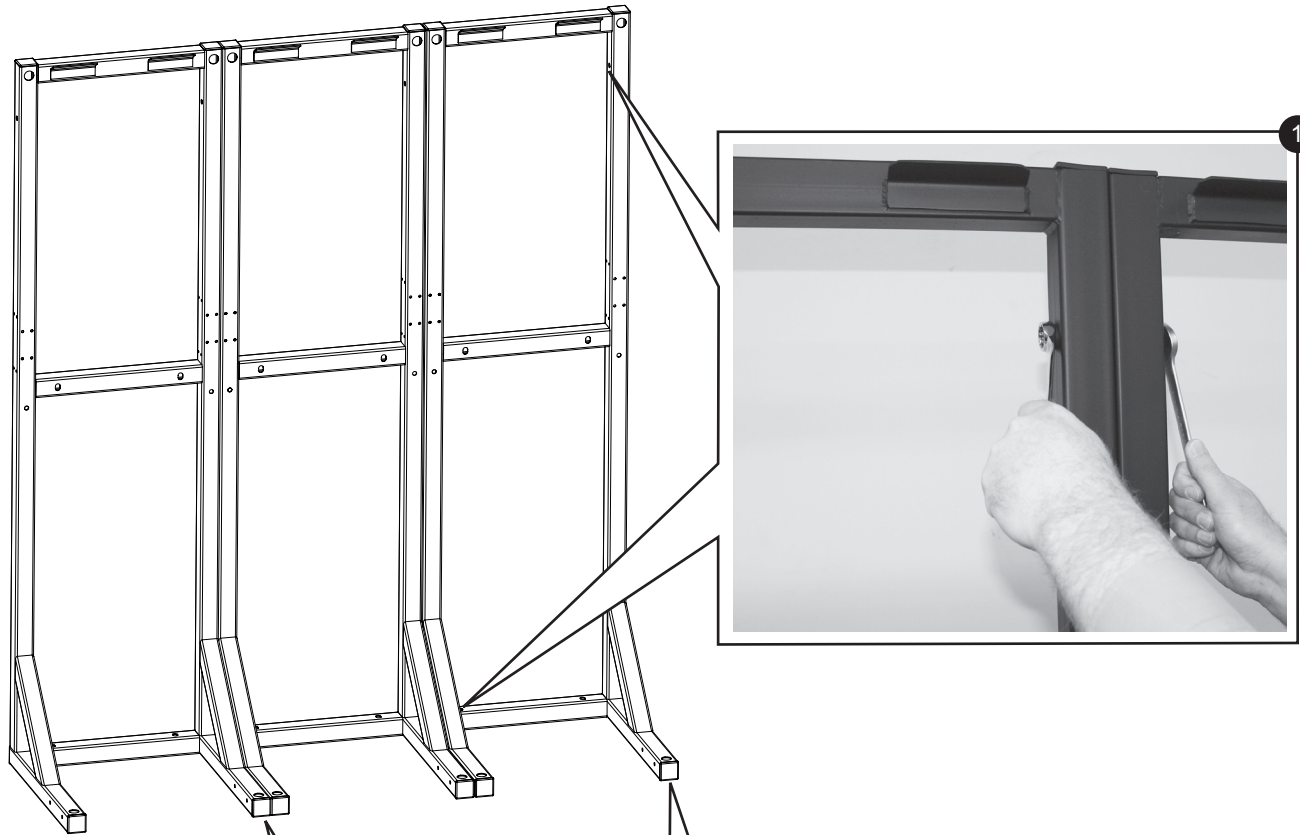
Careful consideration MUST be given to the installation tolerances. If these are not adhered to, hoses may become kinked or connections may not fit.

5 FRAME KIT INSTALLATION PROCEDURE

5.1 SIDE BY SIDE FRAME KIT MOUNTING PROCEDURE

1. Place the frame kit sections in the required position and bolt them together at the top and bottom with the bolts, nuts and washers provided.

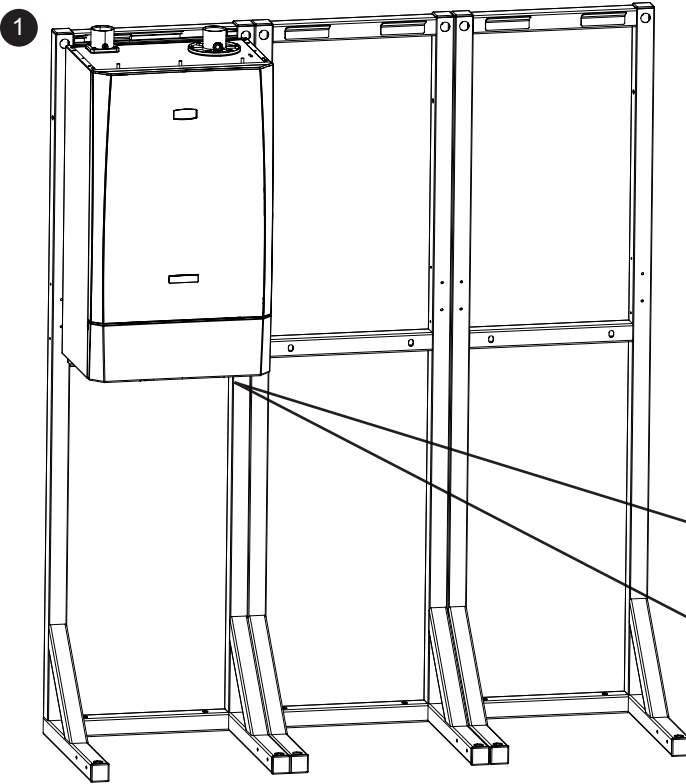
IMPORTANT: MOUNTING FRAME MUST BE SECURED TO THE FLOOR WITH BOLTS



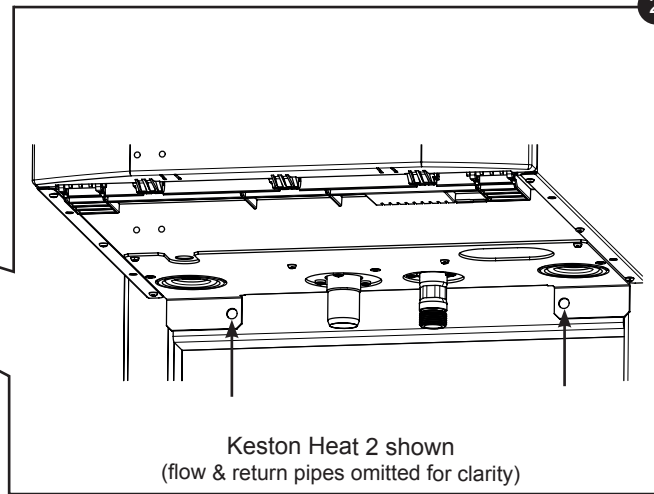
2. If additional stability is required remove the plastic foot covers and drill the floor in order to floor bolt the frame assembly to its required location. (Bolts not supplied in kit)

5.2 BOILER MOUNTING

1. As appropriate mount the boilers onto either the wall plates or the side by side frame kit.



2. Ensure the boiler bottom fixing bracket is screwed to the frame or wall.



6 HEADER KIT ASSEMBLY (OPTIONAL ACCESSORY)

6.1 FITTING MIXING HEADER AND BLANKING FLANGES

1. Fit the mixing header and blanking flanges in the chosen positions.

Note. Mixing header can be located either LHS or RHS of the headers.



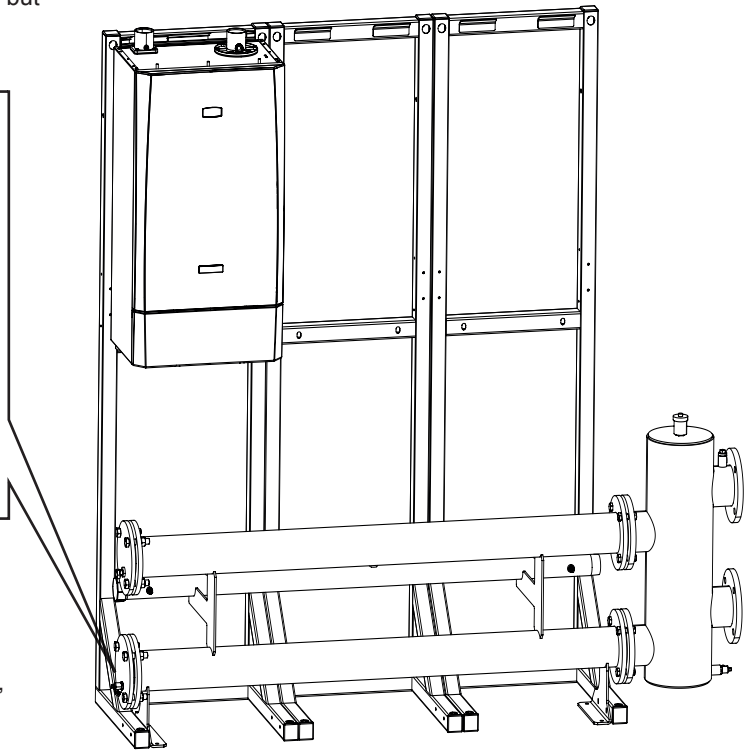
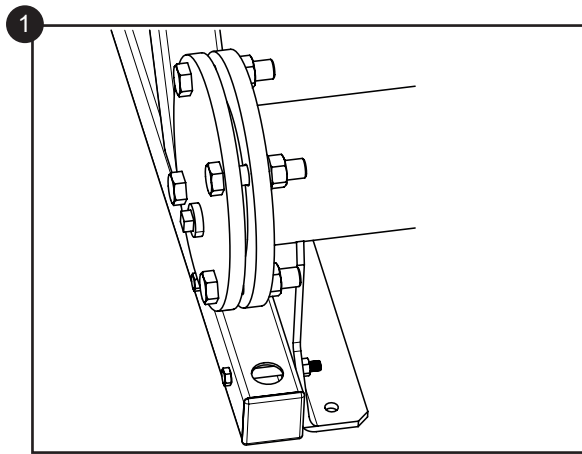
Mixing Header



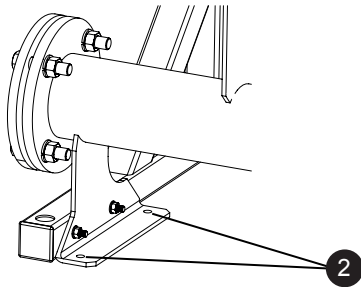
Blanking Flange

6.2 FITTING HEADER KIT ASSEMBLY

1. Slide the header kit assembly between the frame legs but do not screw the header kit to the frame at this stage.



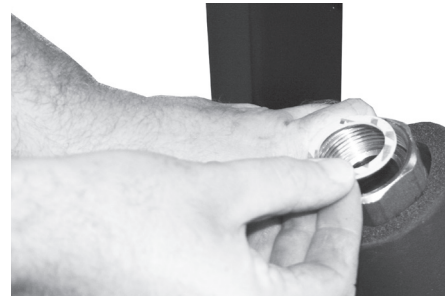
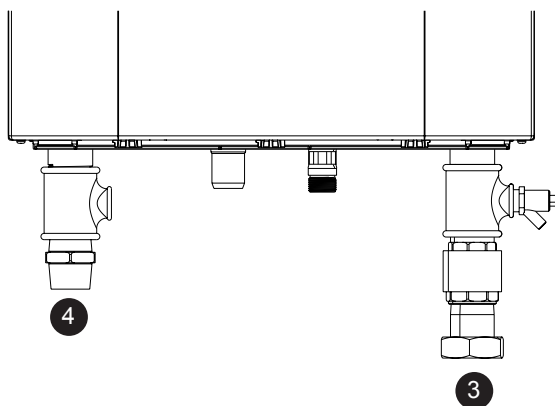
2. Screw the header legs to the frame feet with the bolts, nuts & washers provided.



3. Connect the return assembly to the boiler RH boiler return connection (see below).

4. Connect the isolating valve/pressure relief valve assembly to the boiler LH flow connection (see below).

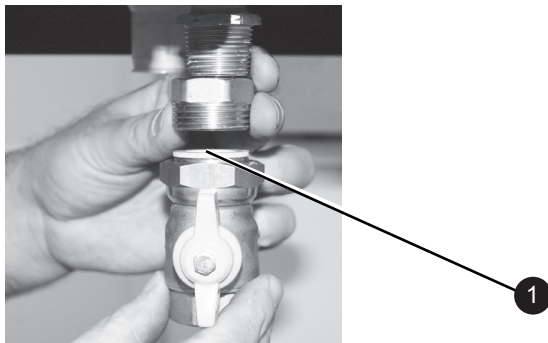
5. Fit the two flexible header connections to the boiler return connection and the isolating valve connection ensuring the sealing washers are fitted.



6.3 FITTING GAS CONNECTION

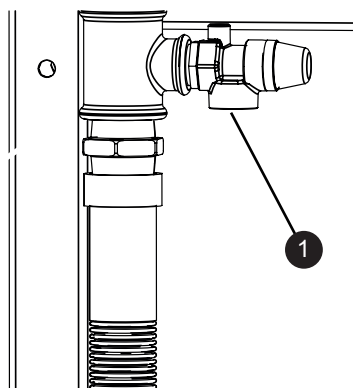
1. Fit conical male adapter to the gas isolation valve.
2. Fit the gas isolation valve assembly to the boiler gas connection ensuring the sealing washer is fitted.
3. Fit the flexi gas pipe to the header then connect to the isolation valve and the header gas connection.

Note: Gas isolation valve is supplied with boiler.



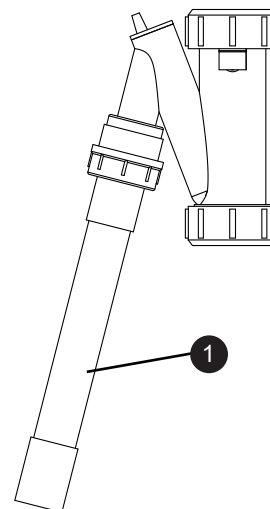
6.4 PRESSURE RELIEF VALVE CONNECTION

1. Ensure each boiler pressure relief connection is piped to safety.



6.5 CONDENSATE SIPHON FITTING

1. Fit the condensate siphon to the boiler and pipe to drain following the recommendations contained in the boiler Installation instructions.



7 INSTALLATION DRAWINGS FOR MULTIPLE BOILER SYSTEMS

7.1 GENERAL

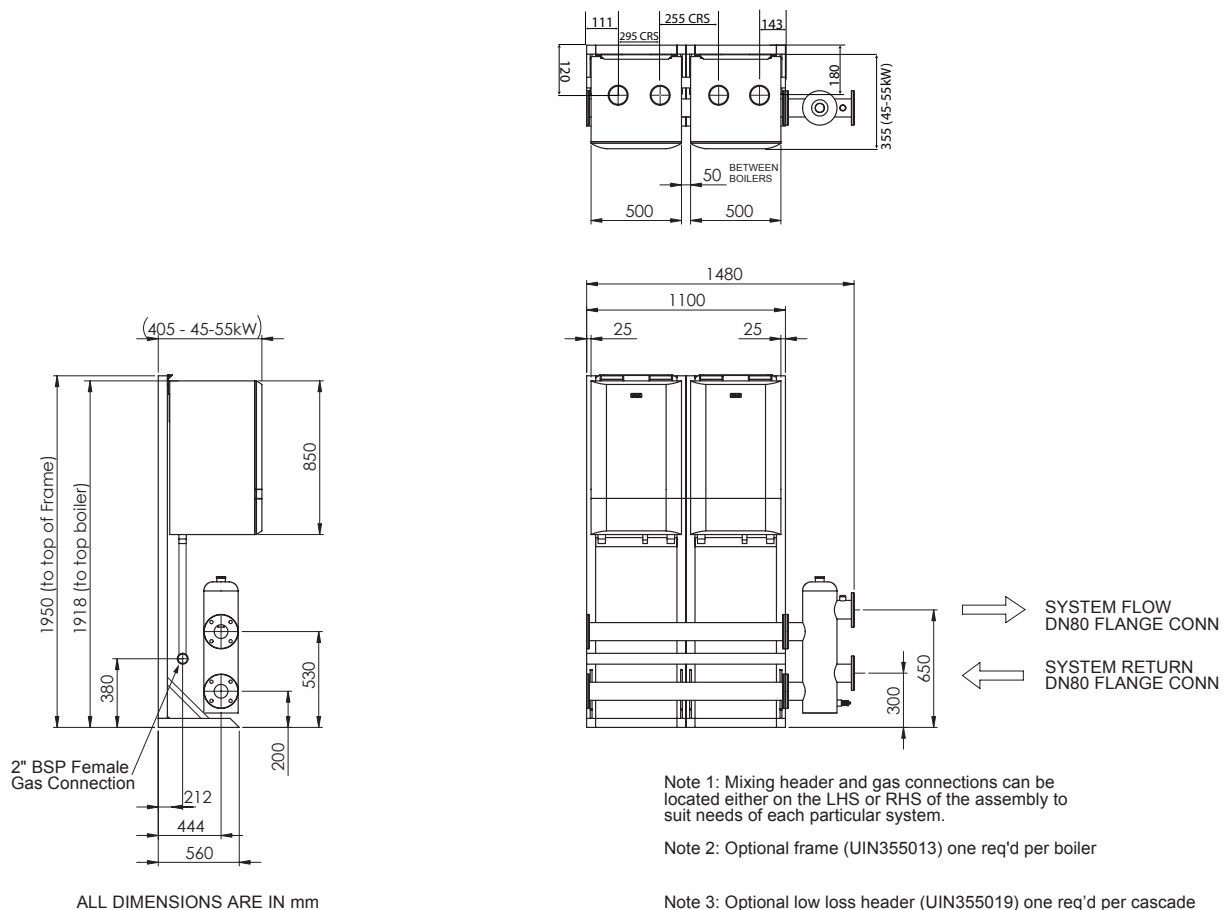
The multiple boiler systems are available in two formats:

- 2 to 6 boilers in a linear configuration, mounted on a wall.
- 2 to 6 boilers in a linear configuration, mounted on a free-standing frame.

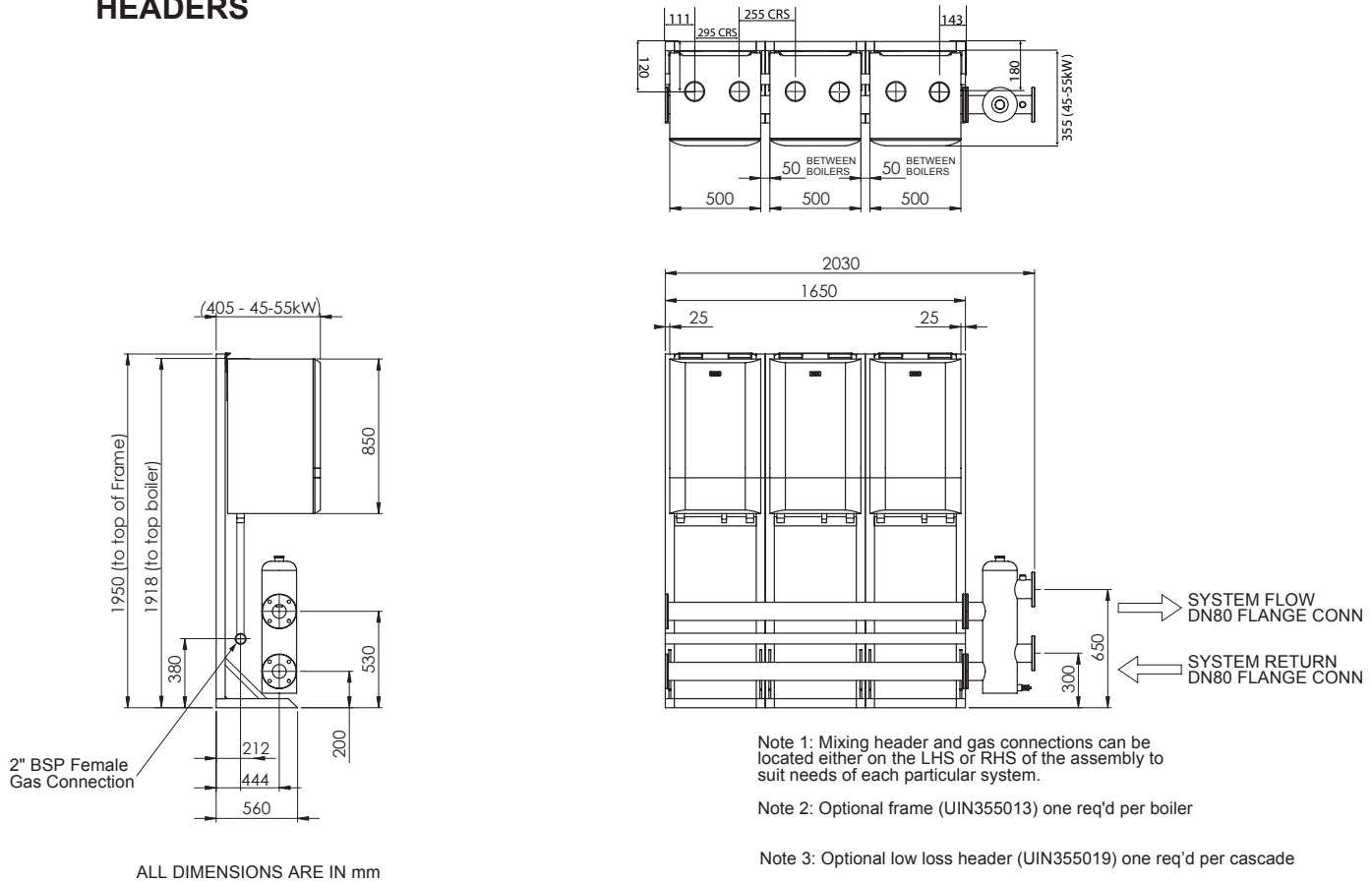
The boiler side of the cascade systems is sized to water flow and return differential $20\Delta T$.

7.2 SIDE BY SIDE FRAME KIT CONFIGURATION

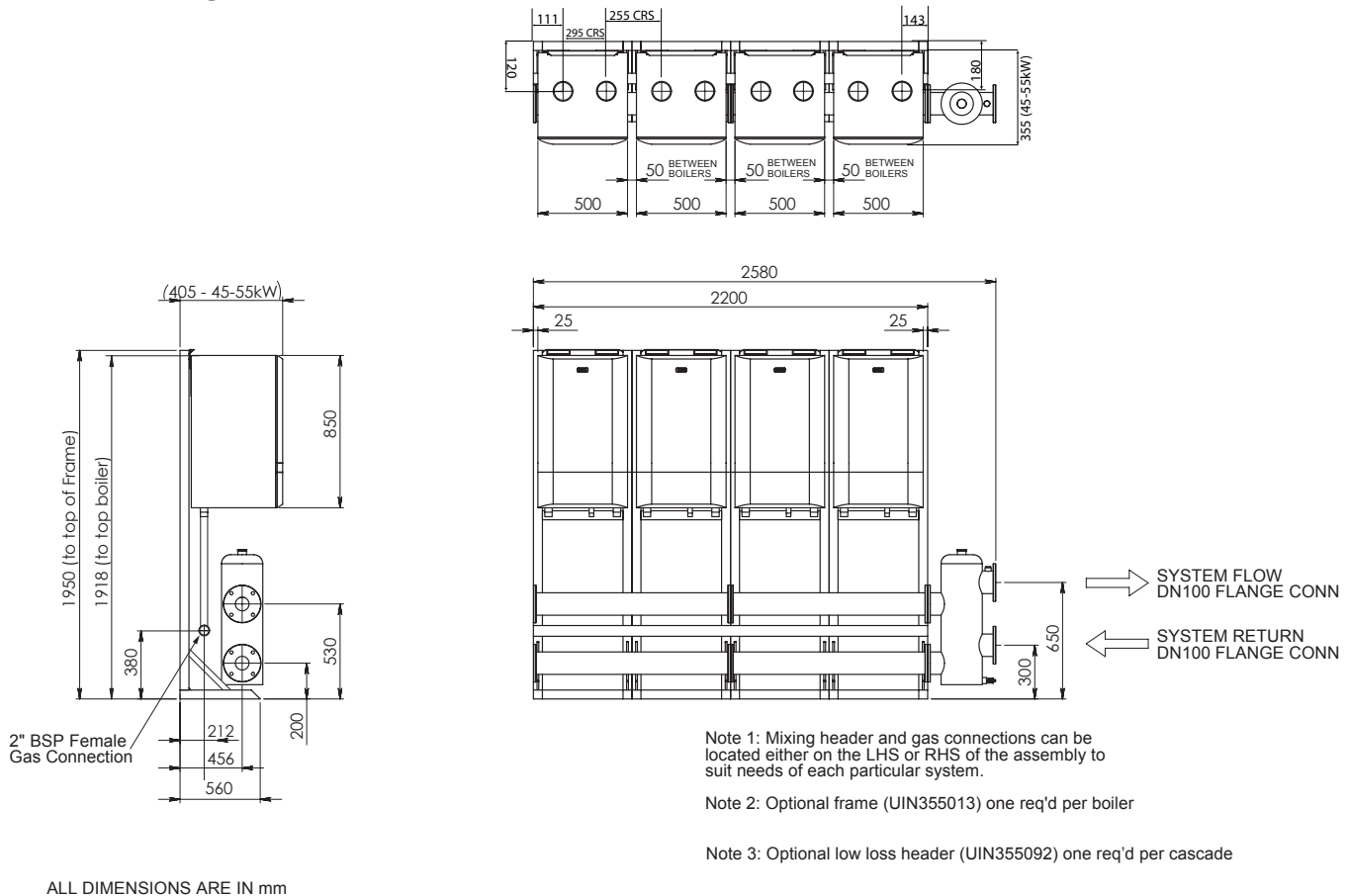
7.2.1 INSTALLATION DRAWING WITH 2 – 45/55 BOILERS (SIDE BY SIDE) LOW LOSS HEADERS



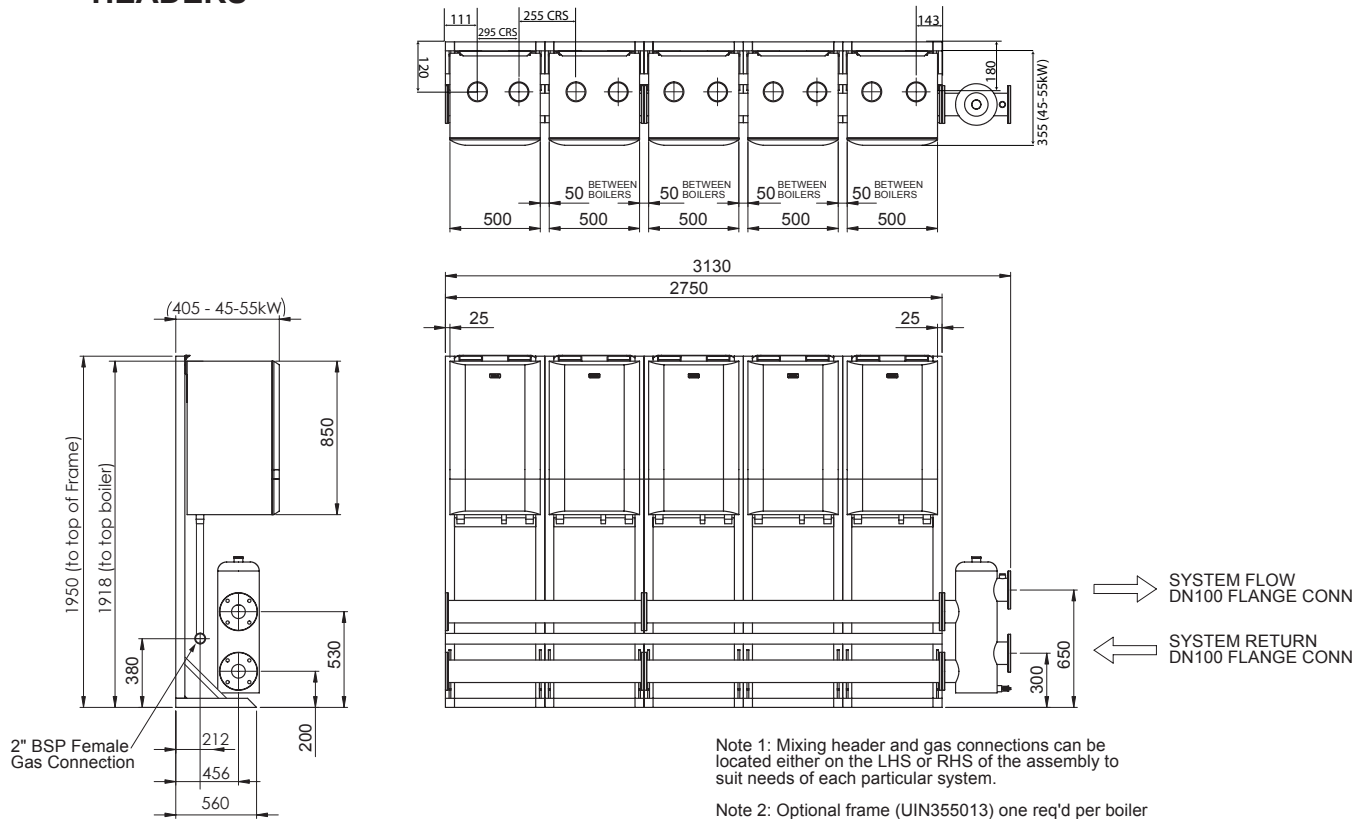
7.2.2 INSTALLATION DRAWING WITH 3 – 45/55 BOILERS (SIDE BY SIDE) LOW LOSS HEADERS



7.2.3 INSTALLATION DRAWING WITH 4 – 45/55 BOILERS (SIDE BY SIDE) LOW LOSS HEADERS

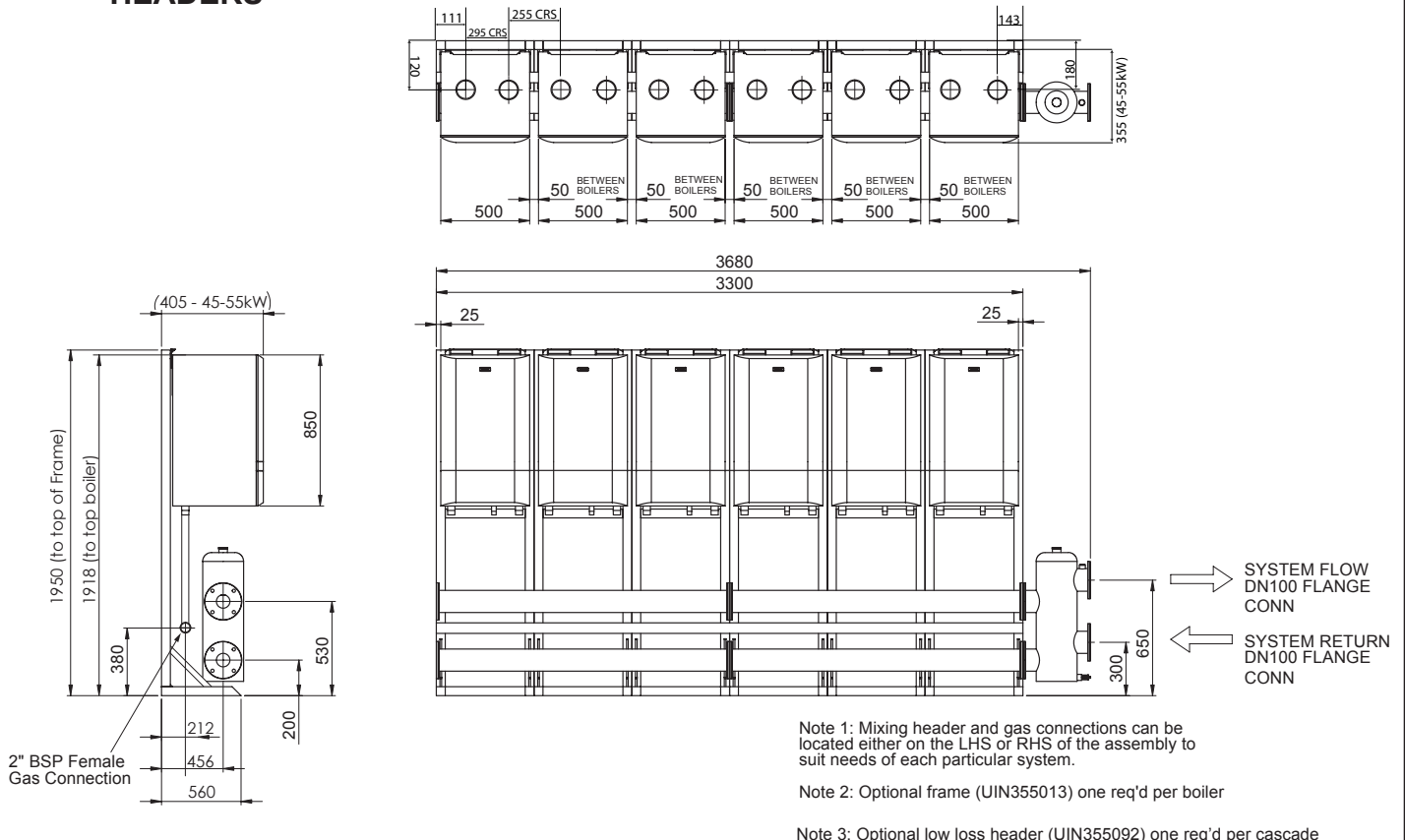


7.2.4 INSTALLATION DRAWING WITH 5 – 45/55 BOILERS (SIDE BY SIDE) LOW LOSS HEADERS



ALL DIMENSIONS ARE IN mm

7.2.5 INSTALLATION DRAWING WITH 6 – 45/55 BOILERS (SIDE BY SIDE) LOW LOSS HEADERS



ALL DIMENSIONS ARE IN mm

8 COMMISSIONING AND TESTING

1. Electrical and gas safety checks must be carried out on completion of installation as with individual boiler commissioning.

NOTES

NOTES



Keston Heating pursues a policy of continuing improvement in the design and performance of its products.
The right is therefore reserved to vary specification without notice.

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