Stratton mk2

Water Manifold Kit

INSTALLATION INSTRUCTIONS

IMPORTANT NOTE

THESE INSTRUCTIONS MUST BE READ AND UNDERSTOOD BEFORE INSTALLING, COMMISSIONING, OPERATING OR SERVICING EQUIPMENT

Hamworthy

Customer After Sales Services

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Technical Enquiries

To supplement the detailed technical brochures, technical advice on the application and use of products in the Hamworthy Heating range is available from our technical team in Poole and our accredited agents.

Site Assembly

Hamworthy offer a service of site assembly for many of our products where plant room access is restricted. Using our trained staff we offer a higher quality of build and assurance of a boiler built and tested by the manufacturer.

Commissioning

Commissioning of equipment by our own engineers, accredited agents or specialist sub-contractors will ensure the equipment is operating safely and efficiently.

Service Contracts

Regular routine servicing of equipment by Hamworthy service engineers inspects the safety and integrity of the plant, reducing the risk of failure and improving performance and efficiency. Service contracts enable you to plan and budget more efficiently.

Breakdown service, repair, replacement

Hamworthy provide a rapid response breakdown, repair or replacement service through head office at Poole and accredited agents throughout the UK.

Spare Parts

We offer a comprehensive range of spare parts, providing replacement parts for both current and discontinued products. Delivery options are available to suit you. Please refer to our website for more details.

This kit is designed specifically for use with Stratton mk2 wall hung boilers from Hamworthy Heating Ltd.

Approved boiler models: Stratton mk2 S2-40, S2-60, S2-70, S2-80, S2-100, S2-120

Contents:

IMPORTANT

THESE PIPE KITS MUST ONLY BE USED IN CONJUNCTION WITH LOW LOSS HEADERS

HAMWORTHY HEATING LTD PROVIDE
2 OPTIONAL LOW LOSS HEADER KITS:

DN50 – Part number 562702306
DN80 – Part number 562702309

1.00 INTRODUCTION

These pipe kits have been designed to fit in a standard height room leaving ample space for flue installations above the boilers.

Gas, water and condensate header assemblies are provided to suit the matched boilers and a low loss header must be used for completing final system connections.

Based around a single frame structure with provision to bolt multiple frames side by side up to 4 wide, all necessary mounting holes are provided to enable the fitting of the pipe header assemblies along with frame securing bolts.

All necessary boiler isolating valves for flow, return and gas supply are provided along with individual boiler pumps and non-return valves to ensure back flow through non-firing boilers is prevented. All pumps provided are ErP compliant energy efficient models.

This manual contains all the technical and dimensional data required to install these kits.

Pipe kit selection guide

Boiler models	Quantity of boilers	Flow/Return Header specification	Gas header specification	Hamworthy part number
S2-40, S2-60, S2-70, S2-80	1	DN50 – PN06	R2”	562702304
S2-40, S2-60, S2-70, S2-80	2	DN50 – PN06	R2”	562702305
S2-40, S2-60, S2-70, S2-80	3	DN50 – PN06	R2”	582702001
S2-40, S2-60, S2-70, S2-80	4	DN50 – PN06	R2”	582702002
S2-100, S2-120	1	DN80 – PN06	R2”	562702307
S2-100, S2-120	2	DN80 – PN06	R2”	562702308
S2-100, S2-120	3	DN80 – PN06	R2”	582702003
S2-100, S2-120	4	DN80 – PN06	R2”	582702004

Pipe kit contents

Pipe kits are design as assemblies for a single boiler or for twin boilers. For a three boiler installation a single and twin pipe kit are assembled end to end, and for a four boiler installation two twin pipe kits are assembled end to end.

Single boiler kit

Boiler support frames	Flow/Return and gas header assembly	Boiler connection kit	Blind flanges kit	Condensate header kit	Pump
1 off	1 off	1 off	1 off	1 off	1 off

Twin boiler kit

Boiler support frames	Flow/Return and gas header assembly	Boiler connection kit	Blind flanges kit	Condensate header kit	Pump
2 off	1 off	2 off	1 off	2 off	2 off

2.00 GENERAL DESCRIPTION OF SYSTEMS

A single boiler system is defined as fitting one appliance on a single frame with either a DN50 or DN80 pipe assembly to suit the installed boiler.

A two, three or four boiler system (cascade) is defined as fitting two to four appliances on single frames that are bolted together and share a common water and gas header assembly (DN50 or DN80 to suit installed boilers).

2.10 FRAME AND PIPE KIT CHOICES

- These water headers and pumps are designed for use with a low loss header system only.
- Boilers are not provided with these kits and will be required to be purchased separately.

Boiler models	Quantity of boilers	Flow/Return Header specification	Gas header specification	Hamworthy part number
S2-40, S2-60, S2-70, S2-80	1	DN50 – PN06	R2”	562702304
S2-40, S2-60, S2-70, S2-80	2	DN50 – PN06	R2”	562702305
S2-40, S2-60, S2-70, S2-80	3	DN50 – PN06	R2”	582702001
S2-40, S2-60, S2-70, S2-80	4	DN50 – PN06	R2”	582702002
S2-100, S2-120	1	DN80 – PN06	R2”	562702307
S2-100, S2-120	2	DN80 – PN06	R2”	562702308
S2-100, S2-120	3	DN80 – PN06	R2”	582702003
S2-100, S2-120	4	DN80 – PN06	R2”	582702004

2.11 LOW LOSS HEADER OPTIONS

Boiler models	Primary/Secondary connection specification	Hamworthy part number
S2-40, S2-60, S2-70, S2-80	DN50 – PN06	562702306
S2-100, S2-120	DN80 – PN06	562702309

2.12 6 PORT MANIFOLD KIT OPTIONS

Boiler models	Primary/Secondary connection specification	Hamworthy part number
S2-40, S2-60, S2-70, S2-80	DN50 – PN06	562702310
S2-100, S2-120	DN80 – PN06	562702311

2.13 MATCHED BOILER CHOICES

Boiler model	Output at 80/60°C	Output at 50/30°C	Hamworthy part number
S2-40	40.0kW	43.0kW	082450
S2-60	56.4kW	61.0kW	082451
S2-70	69.9kW	76.8kW	082452
S2-80	79.8kW	87.5kW	082453
S2-100	95.7kW	104.5kW	082454
S2-120	119.5kW	129.5kW	082455

2.20 MULTIPLE BOILER INSTALLATIONS

When sizing multiple boiler installations, the minimum and maximum system heat load requirements need to be matched to the minimum and maximum appliance load capabilities.

These water header & pump kits are designed to supply the optimum water flow around the boiler primary water circuit only and must be used in conjunction with a suitably sized low loss header.

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

2.40 PUMP CONTROL

All pumps provided are designed to be wired to the boiler allowing a controlled pump over run.

If using an external pump control system the capability of a timed pump over run signal provided by the boiler must be maintained at all times.

2.50 GAS SUPPLY

All boilers are suitable for use with Natural Gas (G20) and LPG (G31). Boilers are configured for Natural Gas when delivered. Conversion to LPG involves control parameter changes and the fitting of an LPG gas orifice and must be completed by a Gas Safe qualified engineer before the boiler is first fired using LPG.

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

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.

2.60 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 boiler and all of the associated connections and equipment. (See boiler manuals)

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

2.70 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. Maneuvering 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.
- Use appropriate lifting equipment where necessary

During all maneuvers 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. GENERAL

3.00 SYSTEM COMPONENTS

3.10 BOILER SUPPORT FRAMES

Configured as single frames that can be bolted together where more than one boiler is to be installed, boiler support frames are provided with all necessary fixings to secure on frame to the next.

Boiler support frames provide a compact floor mounted structure capable of having any Stratton mk2 boiler model mounted to them. Mounting the boiler uses a simple hook and eye arrangement, where the frame is provided with two mounting hooks that correspond with matching slots in the top bracket of the boiler.

The feet of the boiler support frames are provided with holes allowing floor fixings to be used to provide added security of the installation, especially for free standing installations.

Additionally the feet of the support frames also have lateral holes to provide a set fixing position for the pipe kit header assemblies ensuring correct positioning in relation to the boiler pipe connections.

3.11 FLOW AND RETURN WATER HEADERS

Flow and return headers are provided in either DN50 or DN80 sizes to suit the installed boilers with flanges rated to PN06.

Blank flanges are provided for fitting to the opposite ends of the headers to the low loss header. Blank flanges are provided with a drain valve for the return header and a plugged connection for the flow header for connection of ancillary equipment where required.

Isolating valves and flexible connecting pipes are pre-fitted to the headers for making the connection from the headers to the boiler connection assemblies.

The feet of the flow and return header assembly are designed to locate within the feet of the boiler support frames and are provided with corresponding location holes to those in the support frame feet for a secure fixing correctly positioned in relation to the boiler pie connections.

Fixings are provided to secure the header assembly to the boiler support frame.

3.12 GAS HEADER

The gas header is 2” diameter for all variants of the pipe kit. A cap is provided for the opposite end of the gas header to the incoming gas supply pipe, with a removable plug to assist purging and soundness testing on site.

A gas isolating valve is pre-fitted to the header. Pressure test points are provided at each end of the gas header.

The gas header is designed for location in set cradles provided as part of the flow and return header assembly.

3.13 BOILER SHUNT PUMP

The pumps provided with these kits are low energy pumps fully compliant with ErP regulations.

Adequate flow around the primary circuit is assured with design 20°C differential temperature.

The boiler shunt pumps should be set to constant pressure setting.

The boiler shunt pumps should be connect directly to the boiler control to ensure operation prior to boiler ignition as well as benefitting from the 5 minute shunt pump over-run period provided by the boiler control.

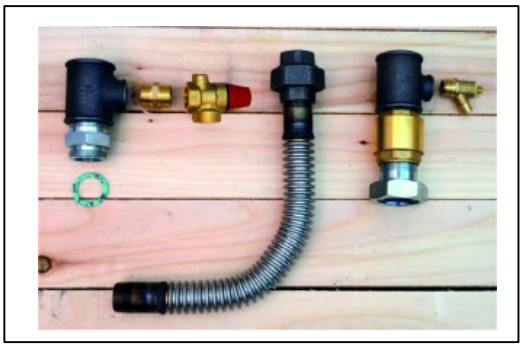
The supplied pumps do not require an electrical contactor and can be wired directly to the boiler control.

3.14 BOILER CONNECTION KITS

A full set of components is provided to make the connections from the flow, return and gas headers to their corresponding connections on the underside of each boilers.

Flow connection components:

1. Tee – 1 ¼" x 1 ¼" x ¾" with flexible pipe adaptor
2. Brass union
3. Safety relief valve – 4 bar

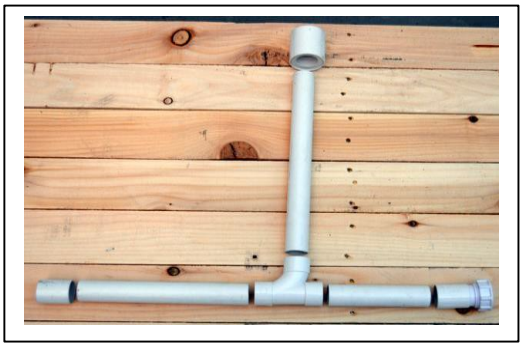


Return connection components:

1. Tee – 1 ¼" x 1 ¼" x ½" with non-return valve and pump adaptor
2. ½" Drain valve

Gas connection components:

1. Flexible pipe to connect header to boiler
2. 1" Black iron union for final boiler connection



Condensate components:

1. Full set of polypropylene fittings including tundish

3.20 OPTIONAL LOW LOSS HEADERS

All variants of the frame and pipe kit must be fitted to a suitably sized low loss header. Hamworthy Heating Ltd recommend using the optional low loss headers available for these kit providing a fast fit solution designed to fit directly to the flow and return headers of the boiler pipe kit.

Optional low loss headers are provided with pre-fitted automatic air vents and drain valve, along with required fixings for connecting the low loss header to the boiler pipe kit.

3.30 OPTIONAL 6 PORT MANIFOLD KITS

Where more than one secondary circuit is to be connected to the boiler installation, optional manifold extension kits provide for up to three secondary circuits.

Optional manifold extension kits are designed to fit directly to the secondary circuit connections of the optional low loss headers and are provided with required fixings.

IMPORTANT POINTS

Before commencing installation:

MOUNTING FRAME(S) MUST STAND ON A FLAT AND LEVEL FLOOR.

WHEN ASSEMBLING THE HEADER KIT THE HEADER MUST BE BOLTED TO THE FRAME BEFORE THE FLEXIBLE HOSE CONNECTIONS ARE MADE.

4.00 INSTALLATION AREA AND DIMENSIONS

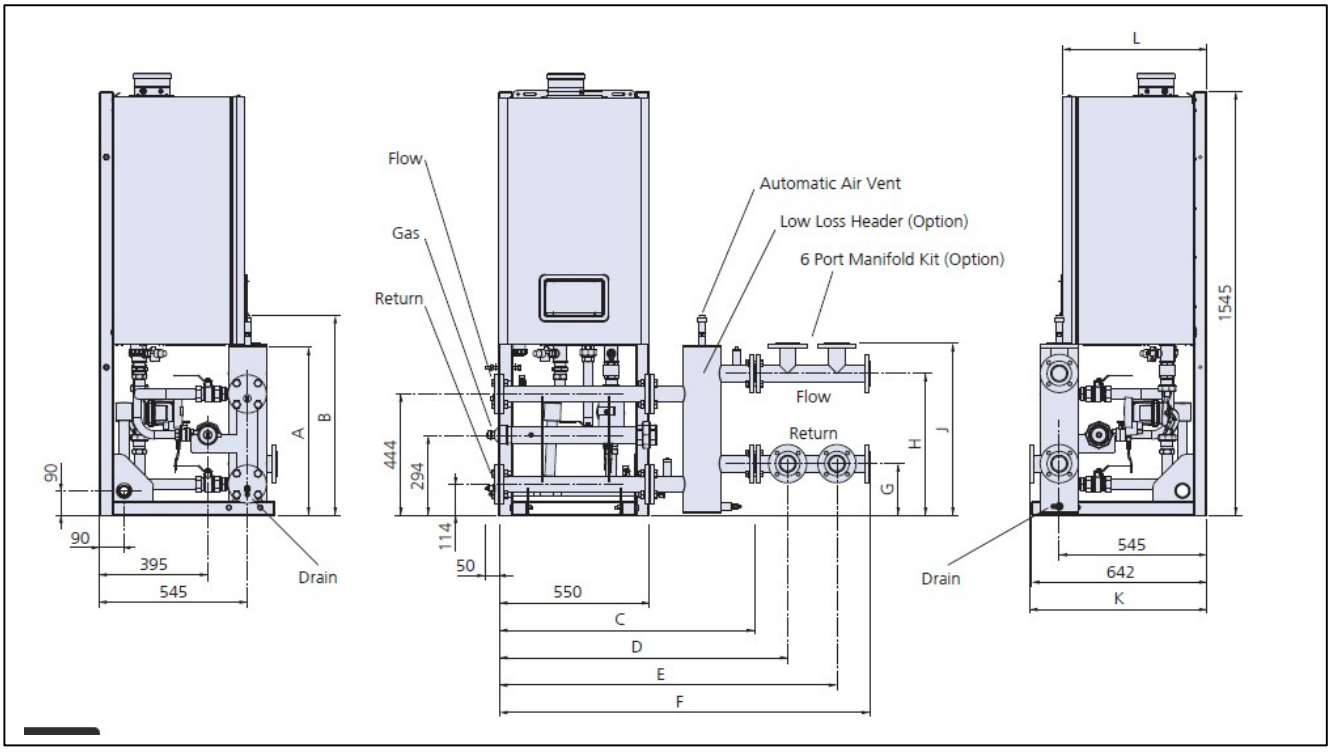
Care must be taken to ensure adequate space is provided around the boiler and pipe kit for installation and maintenance.

Sufficient access around the installation must be provided to allow the routing and connection of the gas supply, fitting of the low loss header and connections to secondary circuits.

The condensate pipe must be extended to a suitable drain and consideration must be given to allow a continuous fall of no less than 3° from the boilers to the final drain discharge. Where an adequate fall cannot be provided it may be necessary to install a bespoke condensate pumping unit.

Above the boilers sufficient space must be present to allow the connection of a flue header or individual boiler flue pipes.

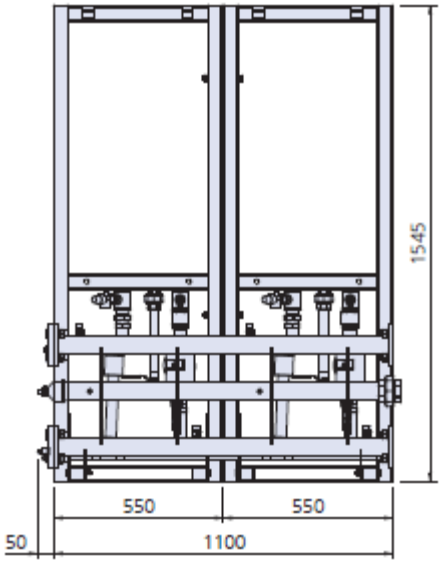
4.10 SINGLE BOILER FRAME AND PIPE KIT WITH OPTIONAL LOW LOSS HEADER AND OPTIONAL MANIFOLD EXTENSION KIT



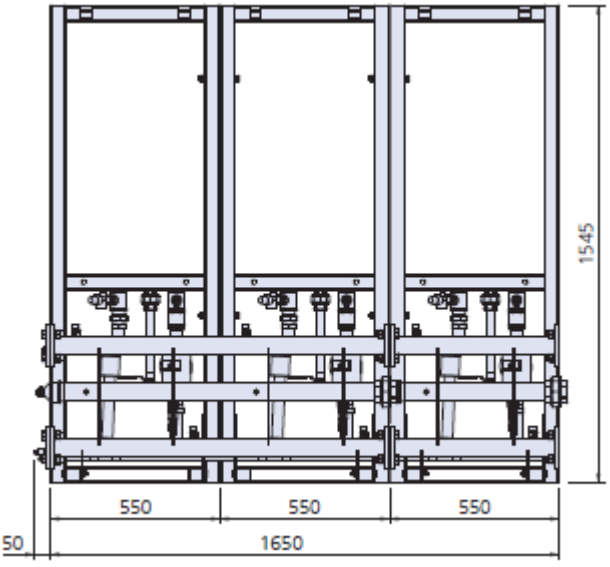
Boiler models	Flow Header	Return Header	Gas Header	Condensate Header
S2-40, S2-60, S2-70, S2-80	DN50 PN06	DN50 PN06	R2”	32mm Poly
S2-100, S2-120	DN80 PN06	DN80 PN06	R2”	32mm Poly

Boiler models	A	B	C	D	E	F	G	H	J	K	L
S2-40, S2-60, S2-70, S2-80	620	735	933	1056	1236	1356	189	519	629	651	527
S2-100, S2-120	720	832	1010	1155	1385	1530	214	565	684	694	624

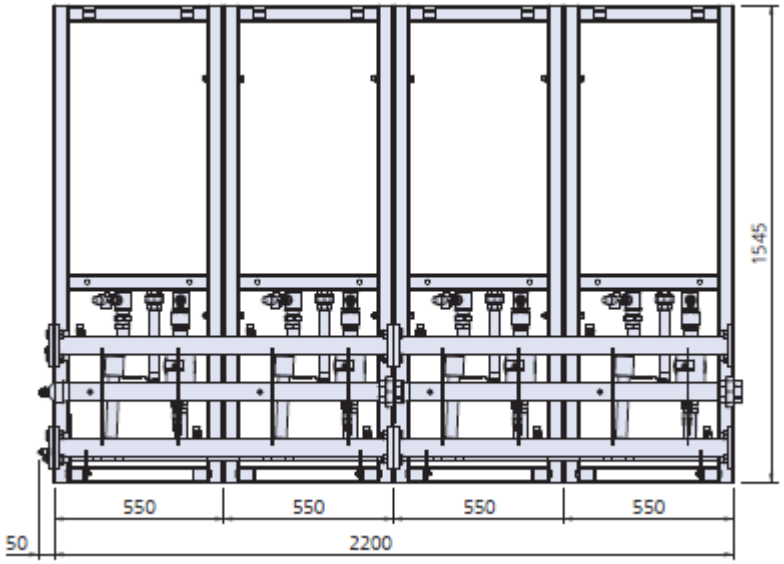
4.11 DOUBLE BOILER FRAME AND PIPE KIT



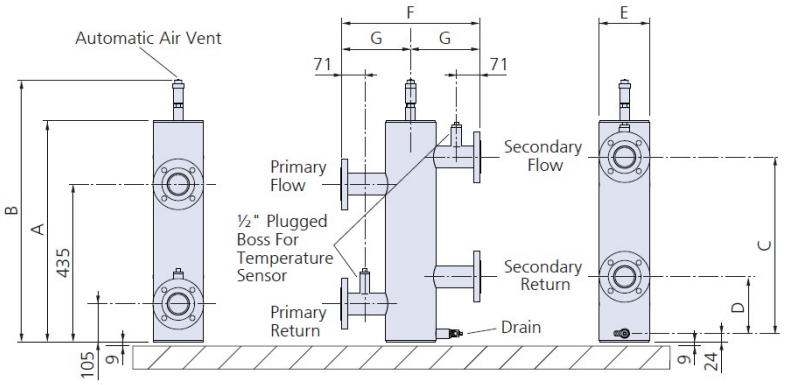
4.12 TRIPLE BOILER FRAME AND PIPE KIT



4.13 FOUR BOILER FRAME AND PIPE KIT



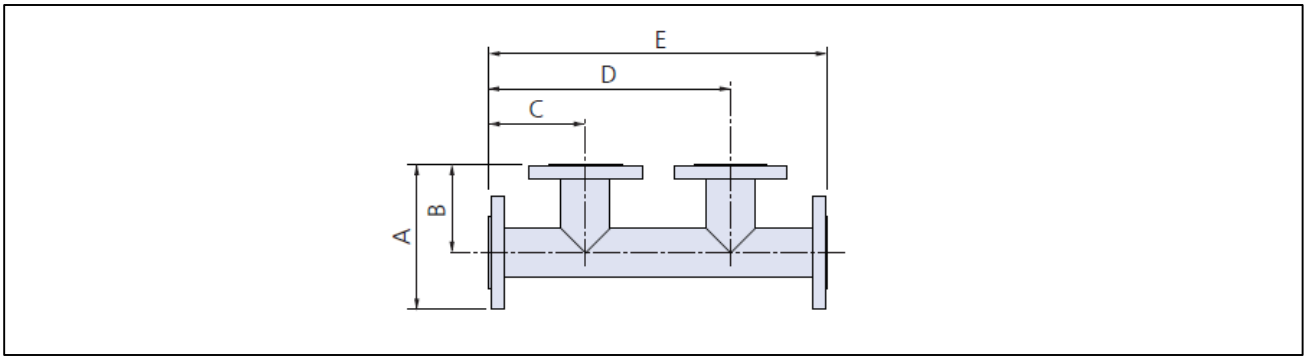
4.14 OPTIONAL LOW LOSS HEADERS



Boiler models	Primary Flow Connection	Primary Return Connection	Secondary Flow Connection	Secondary Return Connection
S2-40, S2-60, S2-70, S2-80	DN50 PN06	DN50 PN06	DN50 PN06	DN50 PN06
S2-100, S2-120	DN80 PN06	DN80 PN06	DN80 PN06	DN80 PN06

Boiler models	A	B	C	D	E	F	G
S2-40, S2-60, S2-70, S2-80	663	785	510	180	152	420	210
S2-100, S2-120	710	824	535	205	220	460	230

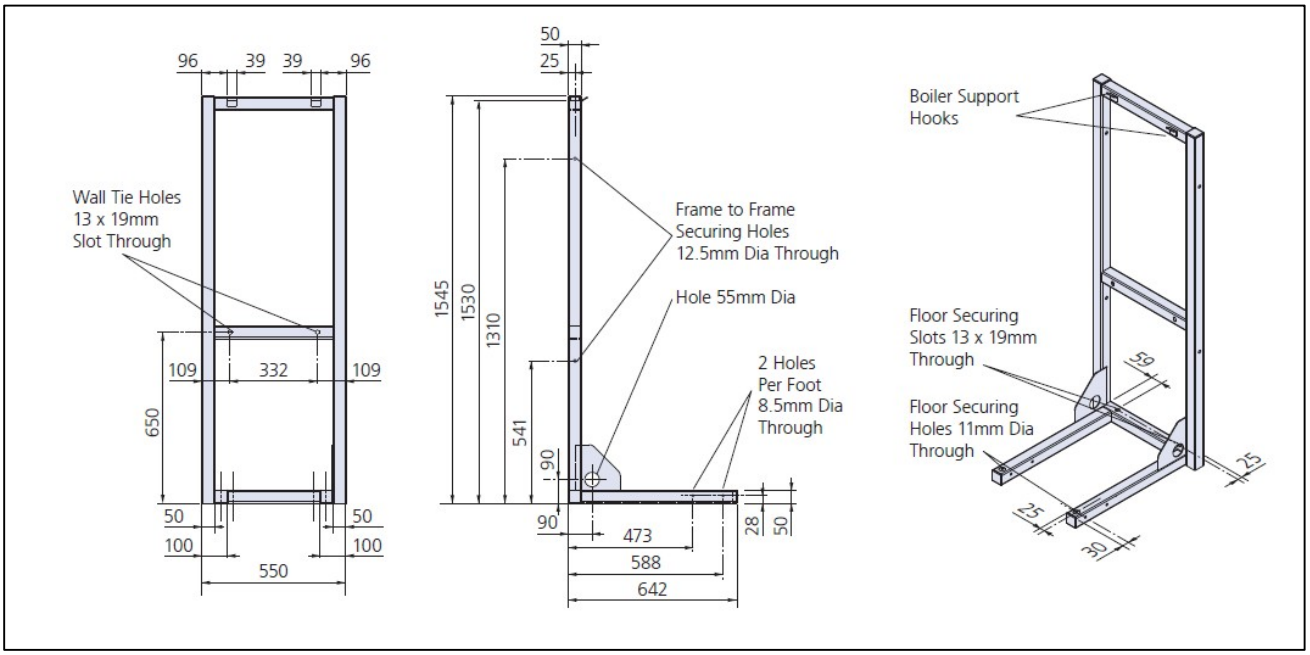
4.15 OPTIONAL MANIFOLD EXTENSION KITS



Boiler models	Primary Flow Connection	Primary Return Connection	Secondary Flow Connection	Secondary Return Connection
S2-40, S2-60, S2-70, S2-80	DN50 PN06	DN50 PN06	DN50 PN06	DN50 PN06
S2-100, S2-120	DN80 PN06	DN80 PN06	DN80 PN06	DN80 PN06

Boiler models	A	B	C	D	E
S2-40, S2-60, S2-70, S2-80	180	110	120	300	420
S2-100, S2-120	235	140	145	375	520

4.16 OPTIONAL BOILER SUPPORT FRAME



Note: Multiple boiler support frames can be located next to each other and bolted together to produce a rigid support structure for multiple boilers. When purchased separately to frame and pipe kits there are no pipes supplied.

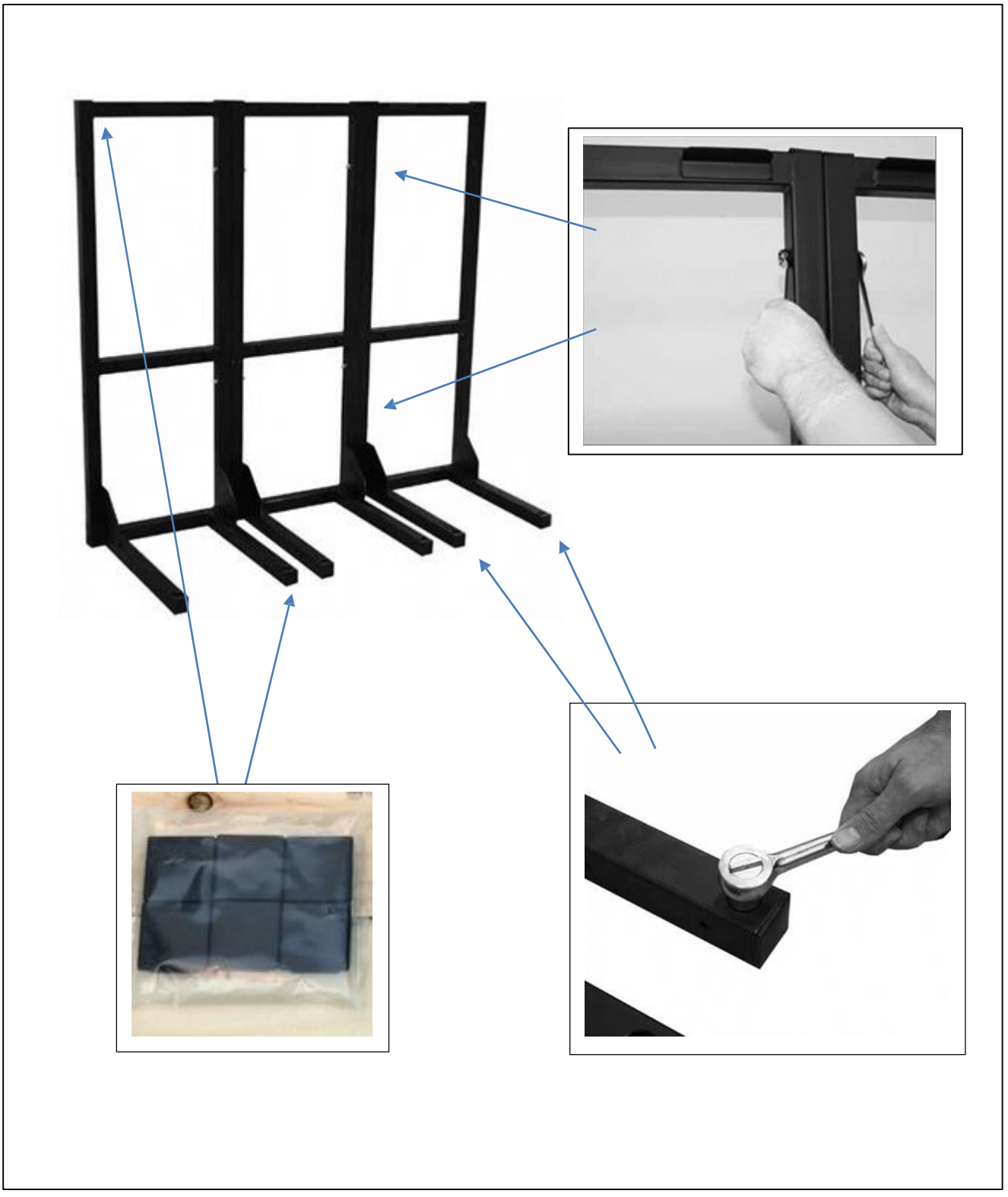
5.00 INSTALLATION PROCEDURE

5.10 BOILER SUPPORT FRAME INSTALLATION

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

2. Drill and fit the required floor bolt's (not provided) through the hole provided in the front of the frame feet. (Note, this must be done before fitting water headers)

3. Fit the square black plastic plugs into the open ends of the frame at the top of each upright and in the end of each foot.

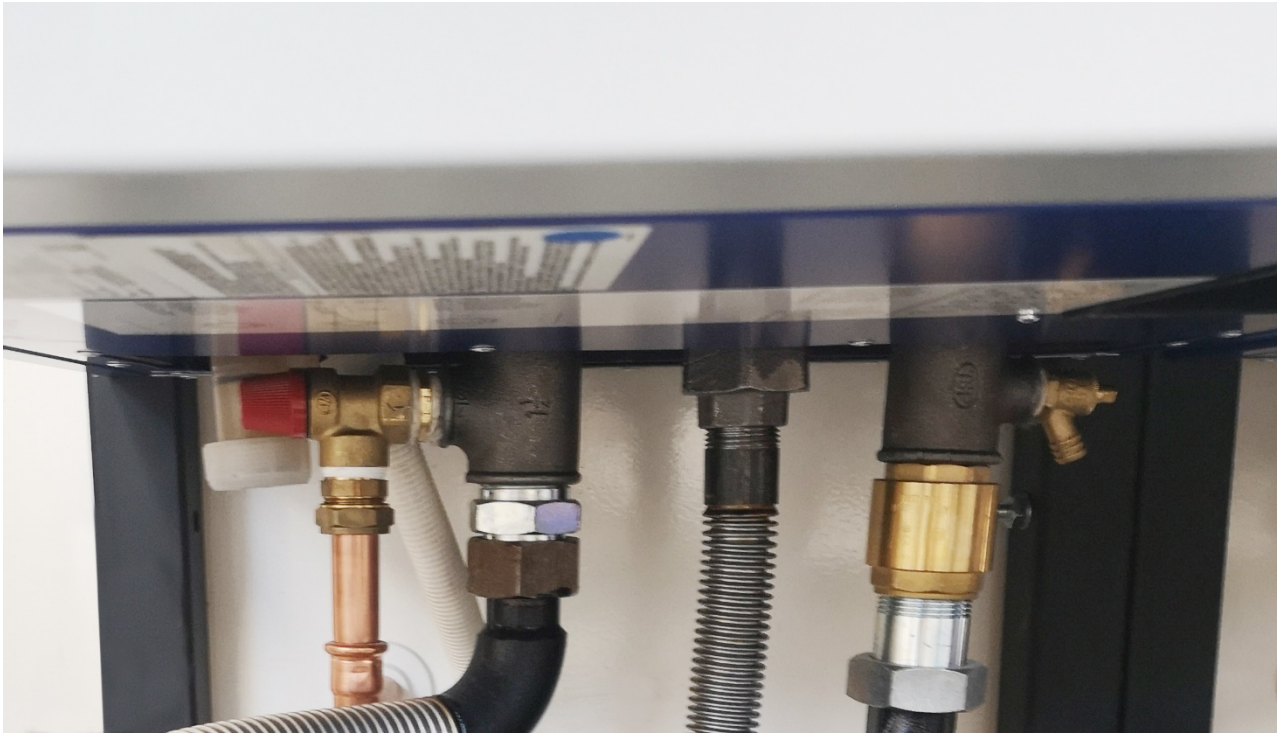


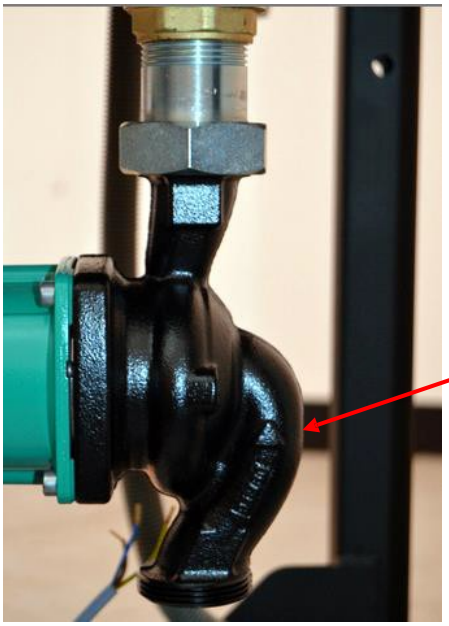
5.11 BOILER MOUNTING

1. Using suitable lifting apparatus where required mount the boiler to its respective support frame. The boiler is provided with two slots in the upper bracket which simply locate over the two hooks provided on the support frame.

5.12 Boiler Assembly

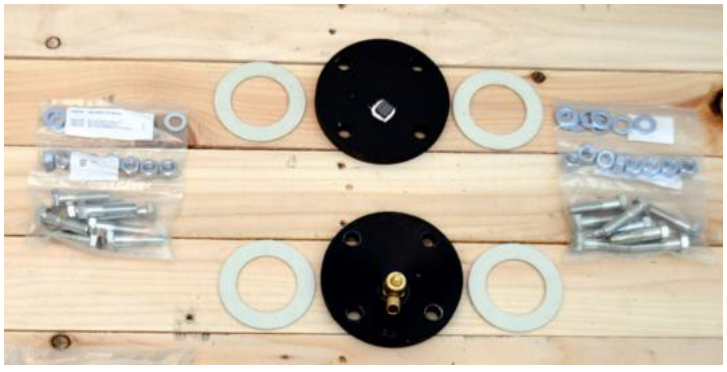
1. Fit 1 ¼” tee with the ¾” side outlet and flexible pipe adaptor to the boiler flow connection.
2. Fit the pressure relief valve into the ¾” outlet of the tee on the boiler flow connection. Note this must be fitted after the tee is fitted to the boiler
3. Fit the condensate trap to the outlet on the underside of the boiler and ensure the retention nut is tightened
4. Fit one half of the 1” iron union to the gas connection on the underside of the boiler using Gas Safe approved jointing compound
5. Fit 1 ¼” tee with ½” side outlet and non-return valve and pump adaptor to the boiler return connection.
6. Attach 1 ¼” tee to the boiler return connection
7. Fit drain valve into the ½” outlet of the tee on the boiler return connection. Note this must be fitted after the tee is fitted to the boiler
8. Fit the pump to the pump adaptor using one of the gaskets provided with the pump. Note, take care to ensure the arrow on the side of the pump is pointing upwards towards the bottom of the boiler ensuring correct flow direction





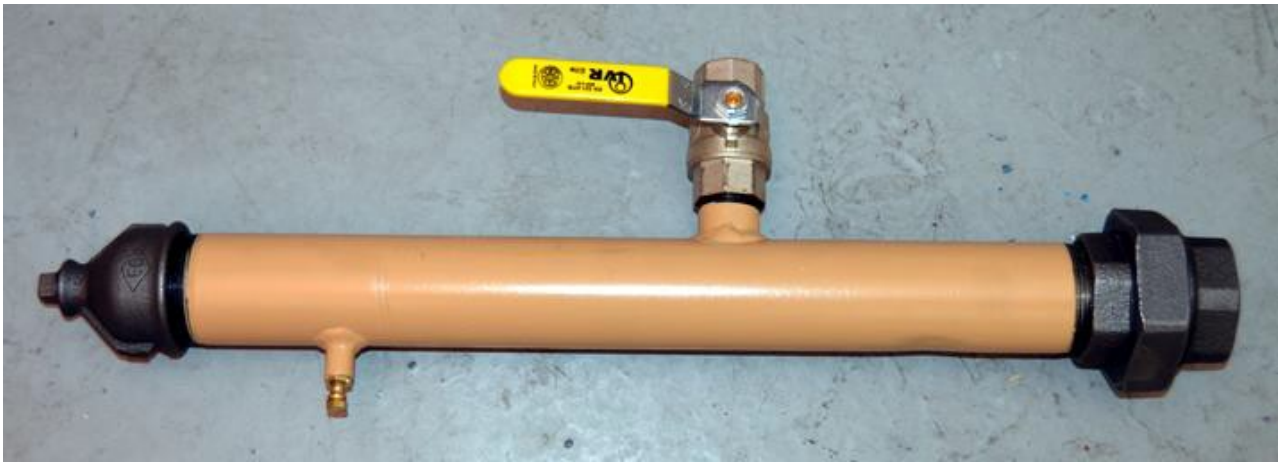
5.13 Header Assembly

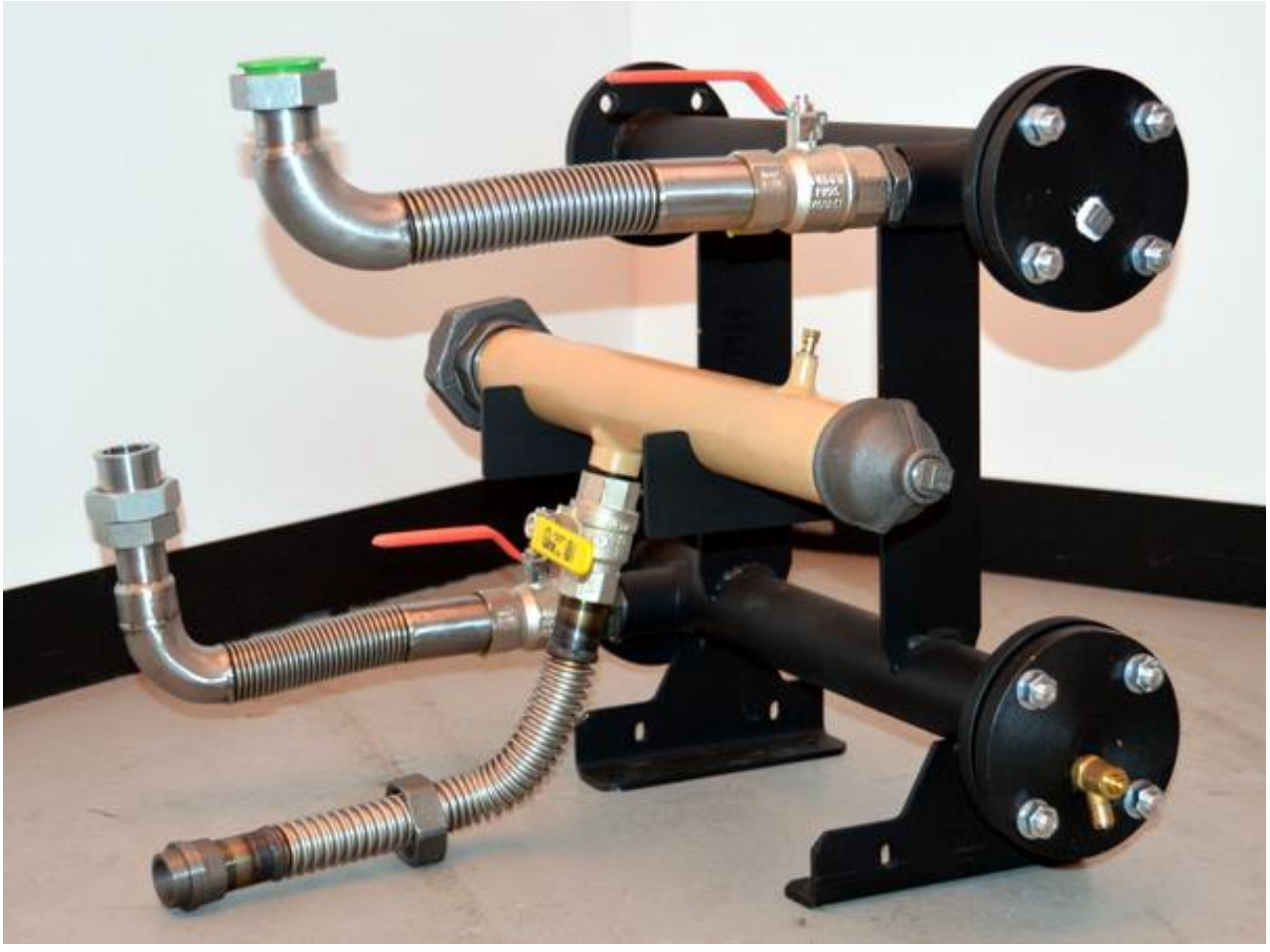
1. Check the isolation valves are fully operational by turning from fully open to full closed and back
2. Fit the water header blank flanges to the opposite ends of the assembly to where the low loss header will be installed.



5.14 Gas Header Assembly

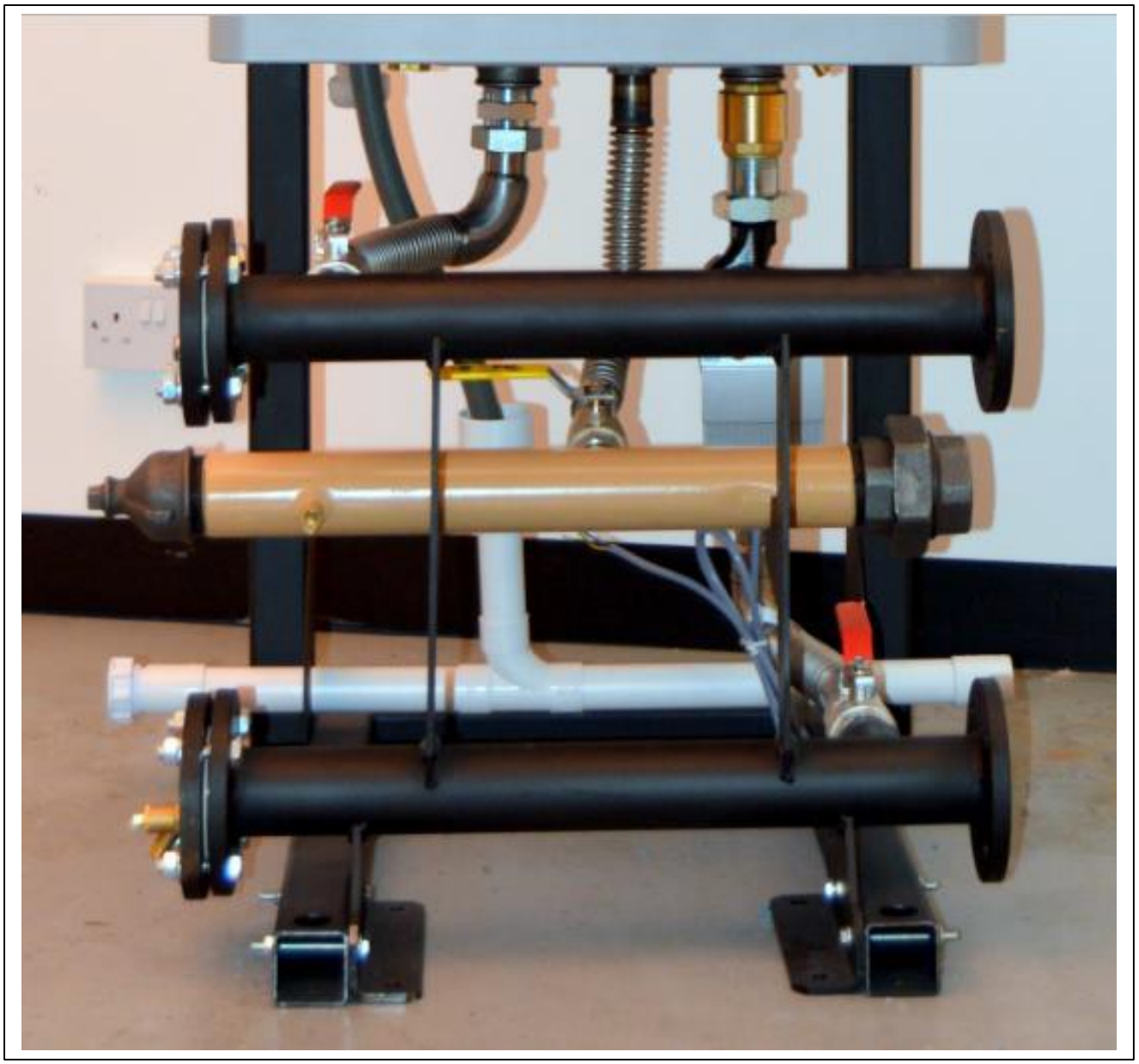
1. Fit the blanking cap to the opposite end of the head to the incoming gas supply using Gas Safe approve jointing compound
2. Fit the plug into the blanking cap using Gas Safe approved jointing compound
3. Fit the second half of the 1” iron unions to one end of the flexible pipes using Gas Safe approved jointing compound
4. Fit the flexible gas pipe to the gas header using Gas Safe approved jointing compound
5. Position the gas header in the support cradle to the rear of the water header assembly





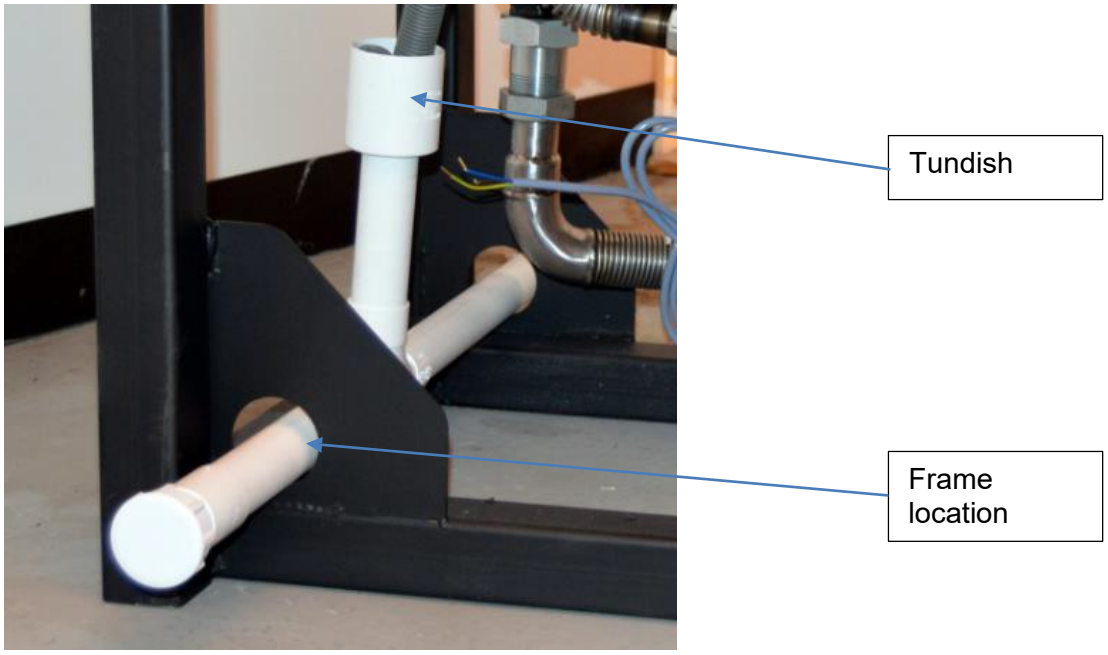
5.15 Fitting header assembly to boiler support frames

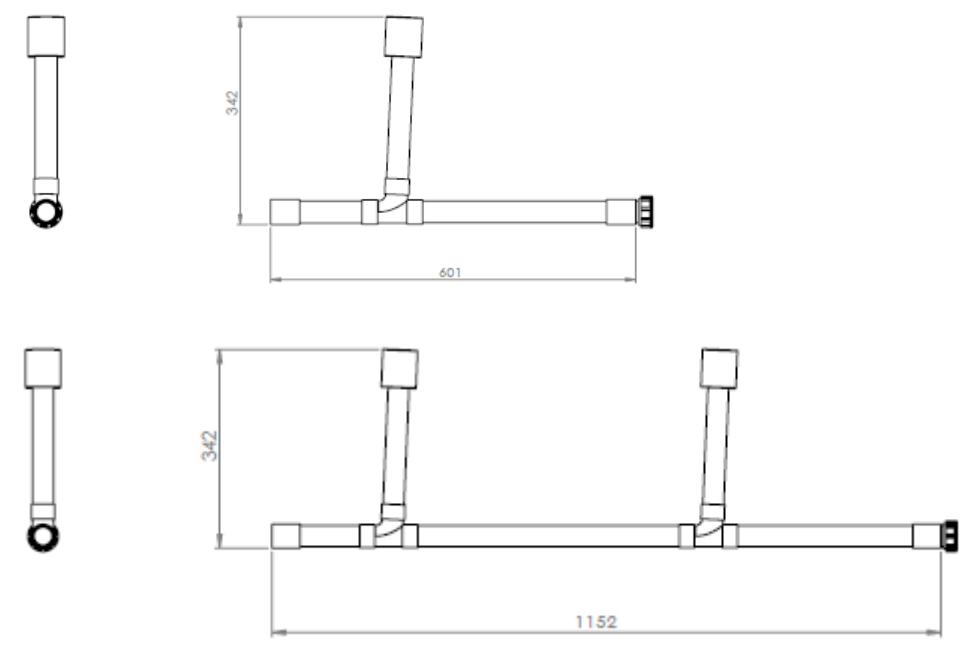
1. Locate header assembly into the required position between the support frame legs
2. Align the bolt holes of the header assembly and support frame feet and loosely fit the provided fixings to secure the header assembly to the support frames
3. Connect the flexible return pipes to the pump using the gasket provided and tighten
4. Connect the flexible flow pipes to the boiler flow adaptors using the gaskets provided and tighten
5. Connect the flexible gas pipe to the boiler gas connection tightening the two union halves together
6. Tighten the bolts securing the header assembly to the support frame legs
7. Ensure the gas header test points and plugged cap are accessible



5.16 Fitting condensate header

1. The condensate header uses fittings designed for glued assembly. It is advisable to assemble the condensate header in position on the frame to ensure it sits inside the holes of the frame at low level
2. Assemble the sections of pipe as shown in the drawing below.
3. The flexible discharge pipe from the condensate trap on the underside of the boiler must be located inside the tundish. It will be necessary to cut the flexible pipe to a suitable length to allow the flexible pipe to locate a minimum of 100mm inside the vertical section of condensate header.
4. Once assembled the condensate header must be extended to a suitable drain using polypropylene pipe having a continuous fall from the pipe kit to the drain of at least 3°.





5.20 Fitting optional low loss header

5. Align the primary connection flanges of the low loss header with the outlet flanges for flow and return header pipes within the pipe kit assembly
6. Using the gaskets and fixings provided with the low loss header secure the low loss header to the pipe kit assembly and tighten the fixings evenly
7. Where required remove one or both of the plugged connections in the low loss header and fit pockets for temperature sensors as provided by the controls company

5.30 Fitting optional manifold extension kits

1. Align the extension manifold flanges with the secondary outlet connections of the low loss header. Take care to ensure the rotation of the extension manifolds suits the direction for connecting to secondary circuits.
2. Using the gaskets and fixings provided with the manifold extension kits secure the manifold extensions to the low loss header and tighten the fixings evenly
3. Fit blank flanges (not supplied) to any unused connections on the manifold extensions

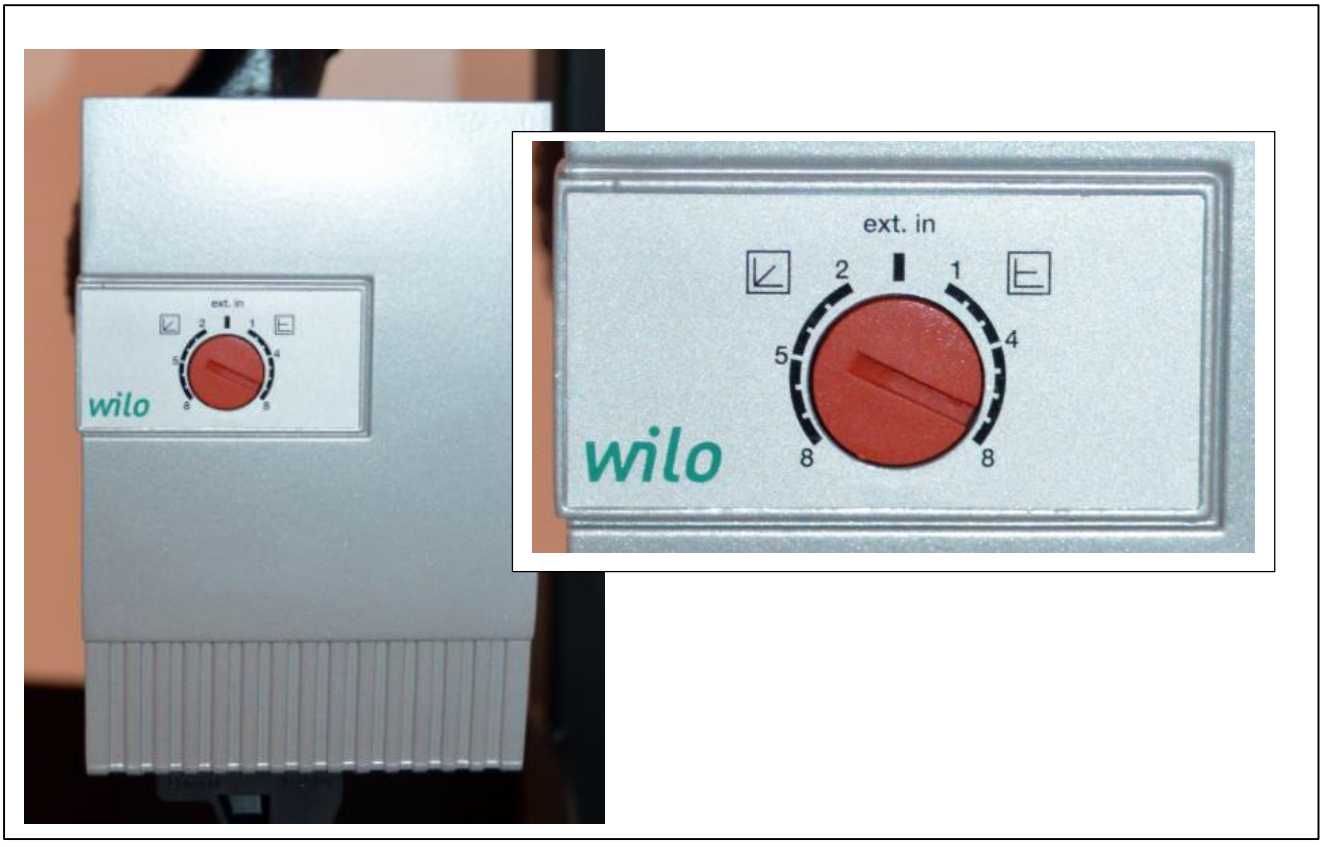
5.40 Pump electrical connection

1. The individual boiler shunt pumps should be wired directly to the boiler control panel via one of the electrical cable glands provided on the underside of the boiler.
2. Each pump is provided with a 3 core power supply cable 1500mm long
3. The electrical load of the supplied pumps is less than 1 Amp when used with a Hamworthy frame and pipe kit with a Hamworthy low loss header connected directly to the end of the assembly and suitable for direct connection without the use of a contactor
4. Wiring of supplied pumps should be made to terminal block QX3 within the boiler control. This is located immediately beneath the main boiler controller. Care should be taken to ensure the Live, Neutral and Earth connections are correctly connected.

5.50 Pump setting and testing

1. Supplied pumps should be set for constant pressure
2. Set the red rotary dial on the face of the pump in the clockwise direction to the setting shown in the table. This setting should provide a 20°C differential temperature across each boiler.

	Boiler Model					
	S2-40	S2-60	S2-70	S2-80	S2-100	S2-120
Pump setting (dial position)	4.1	4.8	4.4	5.3	5.8	7.6
Pump power (Watts)	50	75	85	100	125	205
Pump current (Amps)	0.35	0.55	0.65	0.75	0.60	0.85



6.00 Recommended spares

Spare item	Applicable boiler	Part number
Auto Air Vent	All	531905026
Drain valve	All	531905028
Isolating valve for flow and return	All	531911069
Isolating valve for gas	All	531911070
Flexible pipe for flow	All	532403459
Flexible pipe for return	All	532403460
Flexible pipe for gas	All	532403126
Non return valve	All	531911071
Safety Relief Valve	All	531905029
Pump Wilo Stratos Para 25/1-8	S2-40, S2-60, S2-70, S2-80	530905070
Pump Wilo Stratos Para 25/1-12	S2-100, S2-120	530905071
Bolt set Frame	All	533706092
Bolt and gasket Set DN50 two flanges	S2-40, S2-60, S2-70, S2-80	531201201
Bolt and gasket Set DN80 two flanges	S2-100, S2-120	531201202

Notes

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