Pre-commissioning & site details checklist

UltraGas® Hot Water Boilers

(Valid for all sizes)

This sheet must be completed and returned before any visits can be booked into Hoval diary. The accompanying checklist MUST be completed and returned at least 3 working days prior to site visit.		
Name (person who filled in this form).		
Site Name		
Site Address		
Post Code.		
Details of primary site contact	Name	
	Email	
	Phone	
Details of secondary site contact	Name	
	Email	
	Phone	
Boiler model(s)		
No of appliances		
Boiler ID No. **(1200+ 6 digits):** **If Known** (on delivery note).		
Proposed date of required site visit		
Installer company name		
Gas Safe Installer number (if applicable). *This will be checked so please provide the Gas Safe number.*		
Site Information required		
Is a site induction required?		
What are the site induction requirements e.g. time place duration etc.		
Location of boiler plant room e.g. basement, top floor etc.		
Is there parking on site, if not where?		
Required documentation		
Nearest A&E to site		

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System

All electrical work must be completed up to Hoval control panel including any associated external sensors. *All boilers **are** to be fitted with a separate safety interlock. A combined enable and safety interlock may not be acceptable.*	☐ Yes ☐ No			
Is the heating system filled and vented?	☐ Yes ☐ No			
Is the heating water quality checked and in line with Hoval's recommendations? (see appendix 2).	☐ Yes ☐ No			
Are the boilers installed on an unvented system, or a system on an open vent with a minimum of 15 meters (1.5 Bar), head above the boilers?	☐ Yes ☐ No			
What is the cold fill pressure?				Bar
Suitable safety valve(s) fitted at correct point, together with associated discharge pipe work piped to a safe location.	Size	mm…	Pressure	Bar
Are the boilers connected to a BMS system?	☐ Yes ☐ No			
How are the boilers being controlled (please state) *See note above on safety interlocks.*	**0-10v Firing rate** ☐	**BMS enabled** ☐	**Modbus** ☐	**Others please state**
	0-10v Set point ☐	**Hoval Gateway** ☐		
Other manufacturers equipment has been installed and commissioned as necessary i.e. Pressure units, pumps and B.M.S	☐ Yes ☐ No			

Flue System/Ventilation

Is the flue system installed correctly?	☐ Yes ☐ No
Type of flue system? *If the boilers are in a D formation, please refer to appendix 1*	
Is the flue system gas/water tight?	☐ Yes ☐ No
Has the flue system been commissioned? *Certificates available for inspection.*	☐ Yes ☐ No
Flue commissioning certificate number	
Is the Safety interlock fitted in line with current regulations?	☐ Yes ☐ No
Is each boiler fitted with the required flue sample test point which can be sealed? *The Commissioning engineer will not drill a sample point in the flue.*	☐ Yes ☐ No
NOTE -: If the boilers are installed on a shared flue, and this has a positive pressure reading, then the notice in Appendix 3 MUST BE Followed.	

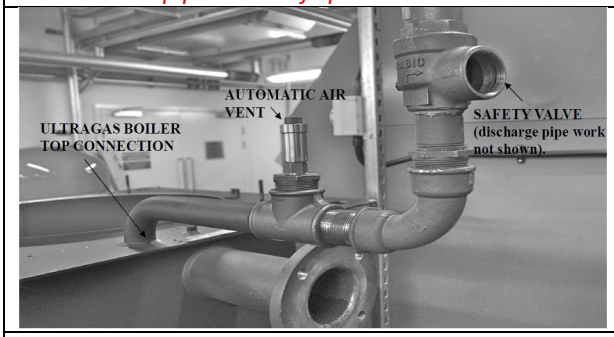
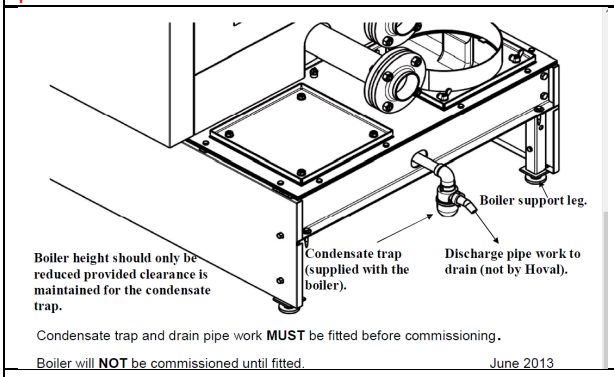
Ventilation installed in accordance with current regulations (type of ventilation). *If the correct ventilation is not installed the boilers will not be commissioned.*	☐ Yes ☐ No	Type of ventilation installed.
Air supply free area mm^2	High level	mm^2
	Low level	mm^2
Mechanical air supply Volume M/sec	Supply air	M/sec
	Extract air	M/sec

GAS SUPPLY

Type of Gas the boilers will be firing on.	Natural ☐ Liquid ☐ (LPG).
Is the gas/installation installed to the current regulations	☐ Yes ☐ No
Has the gas pipe work been tested and purged in accordance with IGEM UP/1?	☐ Yes ☐ No
Is there a current test and purge certificate present on site for the Hoval engineer to inspect? Example of certificate. Please note-: no certificate may mean the commissioning will not take place. GAS TESTING AND PURGING (NON-DOMESTIC)	☐ Yes ☐ No
Is the supplied Gas filter for the boilers UG **400-2000D** fitted? (Please note this is supplied loose for the installer to fit). Please note-: No filter fitted, the commissioning will not take place. **Gas filter** with measurement nozzle before and behind the filter inset (diameter: 9 mm) Pore width of the filter inset < 50 µm Max. pressure difference 10 mbar Max. inlet pressure 100 mbar Type Connection 70612/6B Rp ¾" 2007 995 70602/6B Rp 1" 2007 996 70604/6B Rp 1¼" 2054 495 70603/6B Rp 1½" 2007 997 70631/6B Rp 2" 2007 998	☐ Yes ☐ No

Please Note-: Only qualified persons with suitable training on the product should commission the appliance.

Boilers

Automatic Air Vents are fitted in the appropriate position and system filled and fully vented. *The Hoval engineer will not commission the boiler if the automatic air vent and safety valves are not fitted and installed correctly, Safety valve discharge pipe must be installed and piped to a safe place.*	☐ Yes ☐ No
	
Manufactures supplied condensate trap fitted. If the manufactures supplied syphon traps are not fitted, commissioning cannot take place	☐ Yes ☐ No
	Should the boiler support legs NOT be used, the manufactures supplied **condensate trap must still** be used, if required the boiler may be installed on a plinth or the floor cut out to accommodate the supplied trap.
Suitable access around the boilers for commissioning/servicing	☐ Yes ☐ No
Clearance around the boiler as per manufactures instructions	☐ Yes ☐ No
Sufficient lighting in plant room installed and working?	☐ Yes ☐ No
Sufficient heat load is available to fire the boiler for commissioning. This should be sufficient to allow all boilers to run on high fire for 30 minutes uninterrupted.	☐ Yes ☐ No

Signed on behalf of the installer:	Date:

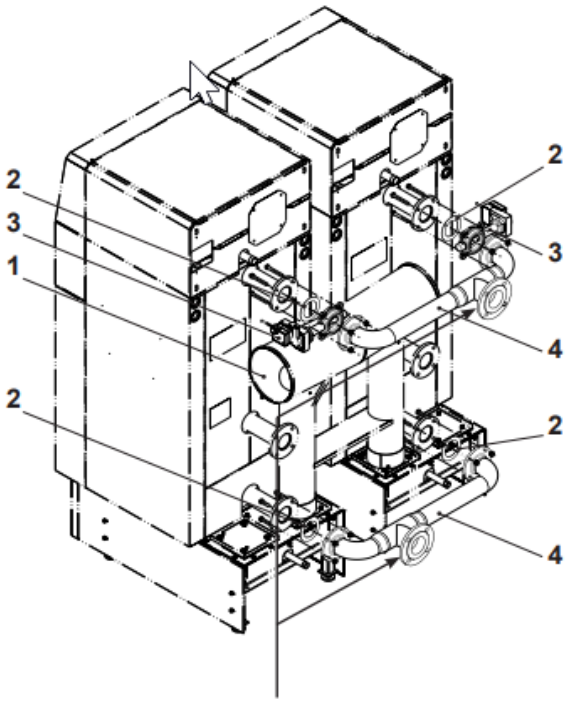
NOTE: IF THIS CHECKLIST IS NOT FULLY COMPLETED AND RETURNED TO HOVAL THIS WILL DELAY COMMISSIONING TAKING PLACE.

Appendix 1

These instructions are intended exclusively for the specialist.

Function of the hydraulic connection set
The hydraulic connection set is used to connect double boilers. The associated hydraulic butterfly valves fulfil two important functions:
- In the case of heat generator cascades, the hydraulic butterfly valves prevent heating water from flowing through heat generators that are switched off and thus cooling down. Heat losses of the heating water through heat generators that are out of operation are thus reduced to a minimum.
- With the hydraulic butterfly valves, the control behaviour of the heat generator cascade is optimised with regard to the flow temperature, thus increasing the system efficiency.

1. Fitting the hydraulic connection set



Install hydraulic connection lines according to the Tichelmann principle (flow and return connections offset).

Fig. 01

1. Make sure that the flue gas collector (1) of the flue gas overpressure set is mounted.
2. Remove flanges and seals (2) from the flows and returns of the heat generators.
3. If safety fitting pipes (option) are required, ensure that a safety fitting pipe and seal (2) are fitted to both heat generators at the following connections:
   - Heating flow:
     for mounting an additional safety temperature limiter and a maximum pressure limiter
   - Low-temperature or high-temperature return:
     for connecting a diaphragm pressure expansion tank
4. Fit the hydraulic connection set:

Install hydraulic connection lines according to the Tichelmann principle (flow and return connections offset) (see Fig. 01).

- Install the following on the heating flow connections of the two heat generators:
  - One hydraulic butterfly valve (3) each
  - One hydraulic connection (4)
- Mount the following on the low-temperature return connections of the two heat generators:
  - optionally one hydraulic butterfly valve each (not included in the hydraulic connection set)
  - One hydraulic connection (4)

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Appendix 2

Hoval UK Fill and Replacement Water Quality

IMPORTANT. Reference should be made to the following.

BSRIA BG29/2020 Pre-Commission Cleaning of Pipework Systems 6th Edition.

BSRIA BG50/2021 Water Treatment for Closed Heating and Cooling Systems. 2nd Edition.

VDI 2035 part 1, Scale formation in drinking water and water heating systems.

VDI 2035 part 2, Prevention of damage in water heating installations water-side corrosion.

BS EN 14868 2005, Protection of metallic materials against corrosion – Guidance on the assessment of corrosion likelihood in closed water circulation systems.

CIBSE Heat Networks Code of Practise for the UK **CP1 2020 Annex E**

CIBSE Design Guide Heat Networks 2021

From the Introduction of BG50 edition2.
"In closed heating and cooling systems, problems with corrosion, scale, sedimentation and biofouling can result in energy wastage, poor system performance, and the need for early replacement of plant and components. It is therefore essential to prevent such problems by eliminating the root causes of such phenomena through proper design, construction, maintenance and monitoring. In particular, minimising oxygen ingress is essential"

The above emphasises the absolute necessity for the correct management of all fill and replacement water used in closed heating systems. The documents referenced set out the methods that can be adopted to avoid damaging the heating equipment along with all the other system components.

In the instance of a heating boiler, usually the boiler surfaces are the hottest part of the closed system and so a prime location for damage when necessary precautions are not undertaken.

It is therefore vital that the design, installation and on-going maintenance of closed heating systems account for the quality of the initial fill water, and any make up that, from time to time, may be necessary.

Installers and operators must ensure appropriate measures are taken to limit any scaling, corrosion, or biofouling that may occur within the system. Additionally, it is important that Oxygen ingress is, wherever possible, prevented. Dissolved Oxygen must be closely monitored so that the correct water chemistry can be managed on an ongoing basis.

Raw water is unlikely to be suitable for use in a commercial heating system in the UK, it will need to be treated either physically or chemically to eliminate the potential for corrosion and scaling on boiler and system surfaces and to prevent any biological fouling caused by bacteria.

We suggest that installers refer to the advice set out in the Reference documents indicated and follow the procedures outlined in these documents in relation to the water quality used for both initial fill and any subsequent make up that might be introduced into the system and Hoval boilers.

A Water Treatment specialist should be consulted to advise on the most appropriate methods to be undertaken prior to filling the system.

Where the local water hardness dictates, a level of pre-treatment may be necessary to either partially soften or demineralise (or deionise) the water. This to limit the mineral content that might then go on to form scale on the boiler surfaces. The Water Treatment specialist should review the quality of the proposed fill water at an early stage and advise.

In the UK chemical inhibitors are commonly used to restrict dissolved Oxygen in the water – to limit its impact and reduce potential corrosion - and may also prevent any mineral hardness precipitating and forming a scale on hotter surfaces. Scaling can lead to localised overheating and potential subsequent damage.

An alternate approach is to continually remove dissolved oxygen from the circulating water. This does not address possible mineral content and some pre-treatment or inhibiting chemicals of the fill water may still be necessary. Fully demineralising may be necessary depending on the method adapted.

In both cases it is important to limit the introduction of fresh make up water as this can impact on the concentration of any inhibitors and will re-introduce mineral hardness along with dissolved Oxygen and/or Carbon Dioxide into the circulating water. If left unchecked this can lead to damage.

It is normal to ensure careful control of the pH of the system water, **for steel and stainless- steel** boilers this would be a **pH of 8.2 to 10** (after 10-12 weeks of operation) but a **lower pH of 8.0 to 8.5** is necessary if there are **Aluminium alloys** in contact with the water.

Only the Hoval TopGas boiler models have an Aluminium Heat Exchanger.

Hoval UltraGas, UltraOil, Max3plus, Max3, SRplus, STplus, THW, STU and BioLyt boilers are all fabricated from either steel or stainless steel.

The electrical conductivity is also commonly used as an indicator of water quality. The measure and any limits that should be observed will depend on the quality of the fill water, and the level of minerals it contains, along with the methods adopted to control the water chemistry. Sudden changes in conductivity can indicate changes in system water quality, so continuous monitoring is advised.

Monitoring for changes will of course flag potential issues. Investigation and remedial action to correct any imbalance should then be made in this event.

The quality of the heating water must be checked and documented periodically.

Our trade association ICOM (Industrial and Commercial Energy Association) produced a water treatment guide for systems like your own and they recommended monitoring frequencies as follows.

- Within 14 days of first fill and pressure test.
- Within 14 days of pre commissioning cleaning.
- Whenever the make- up supply water quality is changed – good practise to include a water meter on the supply to detect any unexpected additions.
- In line with the recommendation of the water treatment expert.
- The water quality should be checked **at least** quarterly - records of results, tests and procedures should be properly logged to monitor any changes or trends.

Example frameworks for water sampling record keeping are detailed in the BG29/2020 document.

The water treatment provider should be able to confirm that either the inhibitor(s) and biocide(s) products are correctly applied to be able to maintain the water quality on an ongoing basis, or that the system water is being correctly managed to ensure compliance with the installation design.

A site's water treatment regime must be in place prior to the first equipment commissioning visit.

In systems with ongoing oxygen ingress or where regular make up water is anticipated then isolating the boilers from the rest of the system, by utilising a plate heat exchanger, will offer the greatest protection to the boilers.

Appendix 3

Assembly instructions
Flue gas overpressure set
UltraGas® (250D-3100D), UltraGas® 2 D (250-3100)

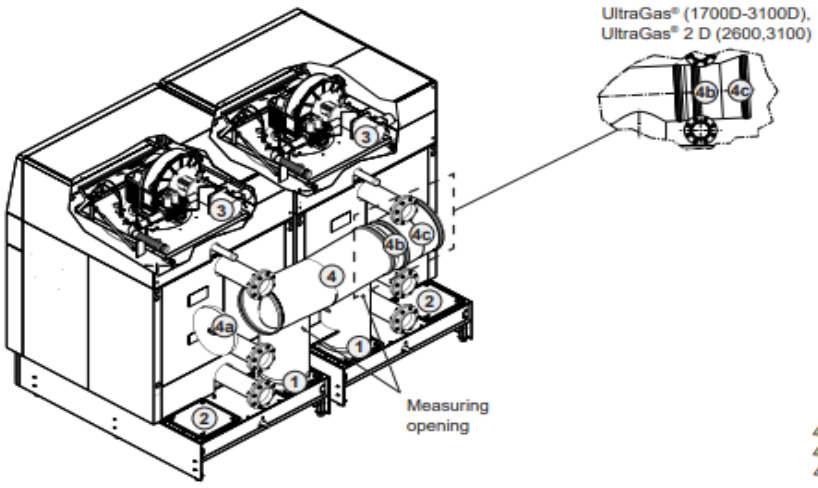
Hoval

These instructions are intended exclusively for the specialist.

Function of the flue gas overpressure set
The flue gas overpressure set for double boilers consists of two motorised combustion air dampers and a flue gas collector.
- The flue gas collector connects the flue gas connections of the individual boilers so that they can be routed together in one flue gas duct.
- The motorised combustion air damper prevents flue gas from escaping into the installation room. As soon as the fan does not receive a request via the PWM signal, the damper is closed by the mechanical spring return. In this way, the dampers are always closed without current.

1. Mounting the flue gas overpressure set

WARNING
Flue gas outlet via open combustion air intake line
In heat generator cascades with a common flue gas line with overpressure (i.e. also in double boilers), flue gas can escape via the burner through the open combustion air intake line of a switched-off heat generator. There is a risk of poisoning.
- Ensure that a motorised combustion air damper is installed and electrically connected in all heat generators in the cascade.
- Service motorised combustion air dampers once a year.
- In the event of a malfunction, if the error codes "E:18 Fan speed lower limit" or "E:21 No flame after ignition" occur, also check the function of the motorised combustion air damper.



1 Flue gas outlet
2 Cleaning opening
3 Motorised combustion air damper
4 Flue gas collector
4a Cover of the access panel
4b Transition piece
4c Connection tube

Fig. 01

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