triumph
WATER HEATING



Mains Pressure Duplex Stainless Steel Multi-purpose Water Heaters V3.1

Installation
Commissioning
Technical Data

PROUDLY 100%
NZ OWNED & OPERATED

SIGMA
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1 General Information

To ensure the correct installation, operation and maximised service life of the water heater, please read and follow these instructions carefully. Damage resulting from failure to comply with these instructions will void all liability and warranty claims. Improper installation can cause injury and/or damage to property. Water heaters must be installed and commissioned by suitably qualified personnel who therefore assume responsibility for the correct and compliant fitting of components, installation and commissioning of the water heater.

Triumph water heaters are designed and manufactured to meet all relevant NZ Standards and Minimum Energy Performance Standards (MEPS) as specified by AS/NZS 4692.2. See section 7 for list of standards.

Manufacturers contact details:

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2 Product Description

Triumph Mains Pressure Duplex Stainless Steel Water Heaters are floor standing water heaters available in standard sizes ranging from 140l to 500l. The water heaters are available as standard electric water heaters or water heaters with optional solar HX (heat exchange) coil, wetback HX coil, radiator or underfloor HX coil or a combination of the above. Custom sized and configured water heaters can be specified and built to order. Water heaters come complete with sensor pockets to accommodate temperature sensors required for solar or heating circuit control.

Triumph water heaters have a maximum permitted operating temperature and pressure of 95°C and 850 kPa respectively. The water heaters feature excellent thermal insulation properties by way of high density polyurethane encased in a protective Zincalume shell.

Each water heater is supplied complete with:

- 1 x 850 kPa TPR valve
- 1 x 3 kW High Grade Incoloy Electric Element and Thermostat

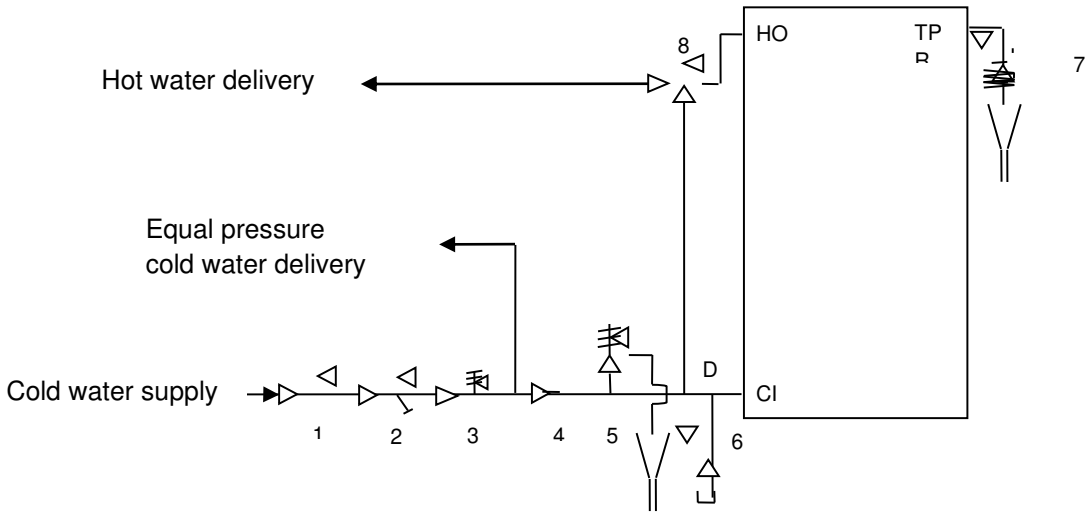
Additional extras include:

- Extra Electric element and thermostat
- Solar HX coil
- Wetback HX coil
- Radiator or underfloor (heating circuit) HX coil
- Additional Fittings
- Sensor pockets

3 Installation Instructions

Water heaters shall be installed according to the hydraulic connection diagrams below, or alternatively, in accordance with NZS 4607. See section 4.3 for detail on valves and components.

3.1 Standard electric water heater

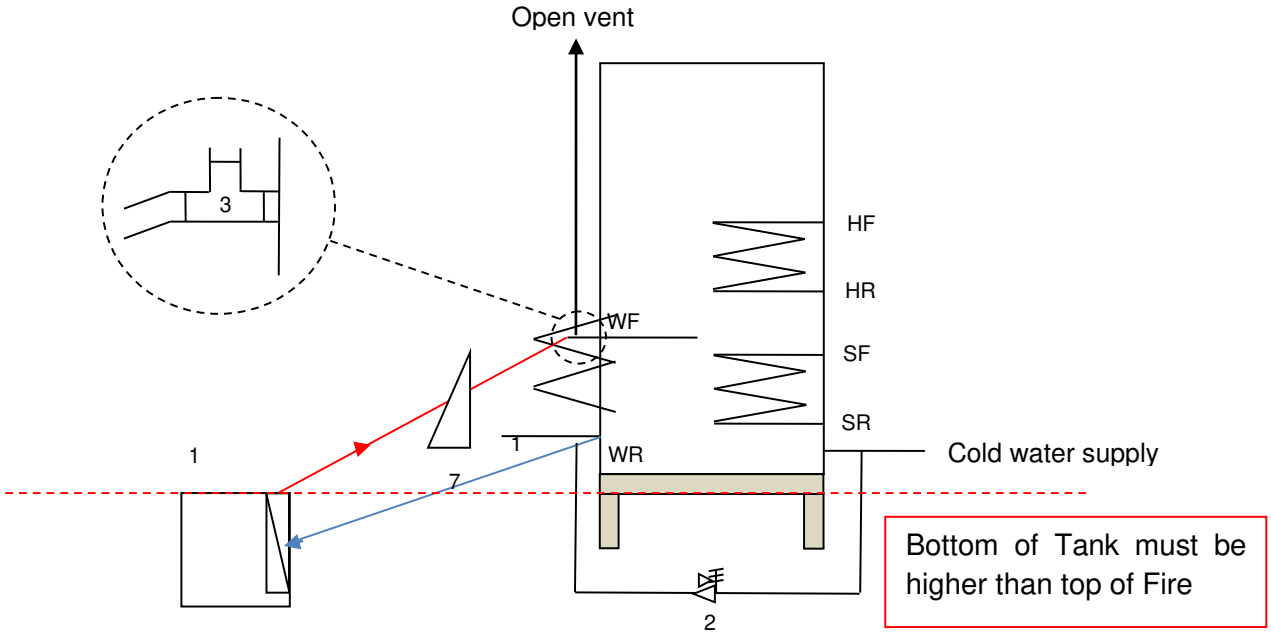


1. Isolation valve
2. Strainer
3. Pressure reducing/limiting Valve (optional depending on mains pressure)
4. Non-return valve
5. Expansion control valve and relief drain
6. Drain valve (inside installation only) with cap/plug
7. Temperature and pressure relief valve and drain
8. Tempering valve (suggested but not compulsory temperature limiting device)

CI: Cold water inlet connection
HO: Hot water outlet connection
D: Drain connection
TPR: Temperature Pressure Relief connection

3.2 Multi-purpose water heater

Same installation as described in section 4.1 but with the additional heat source/heat load connections as described below.

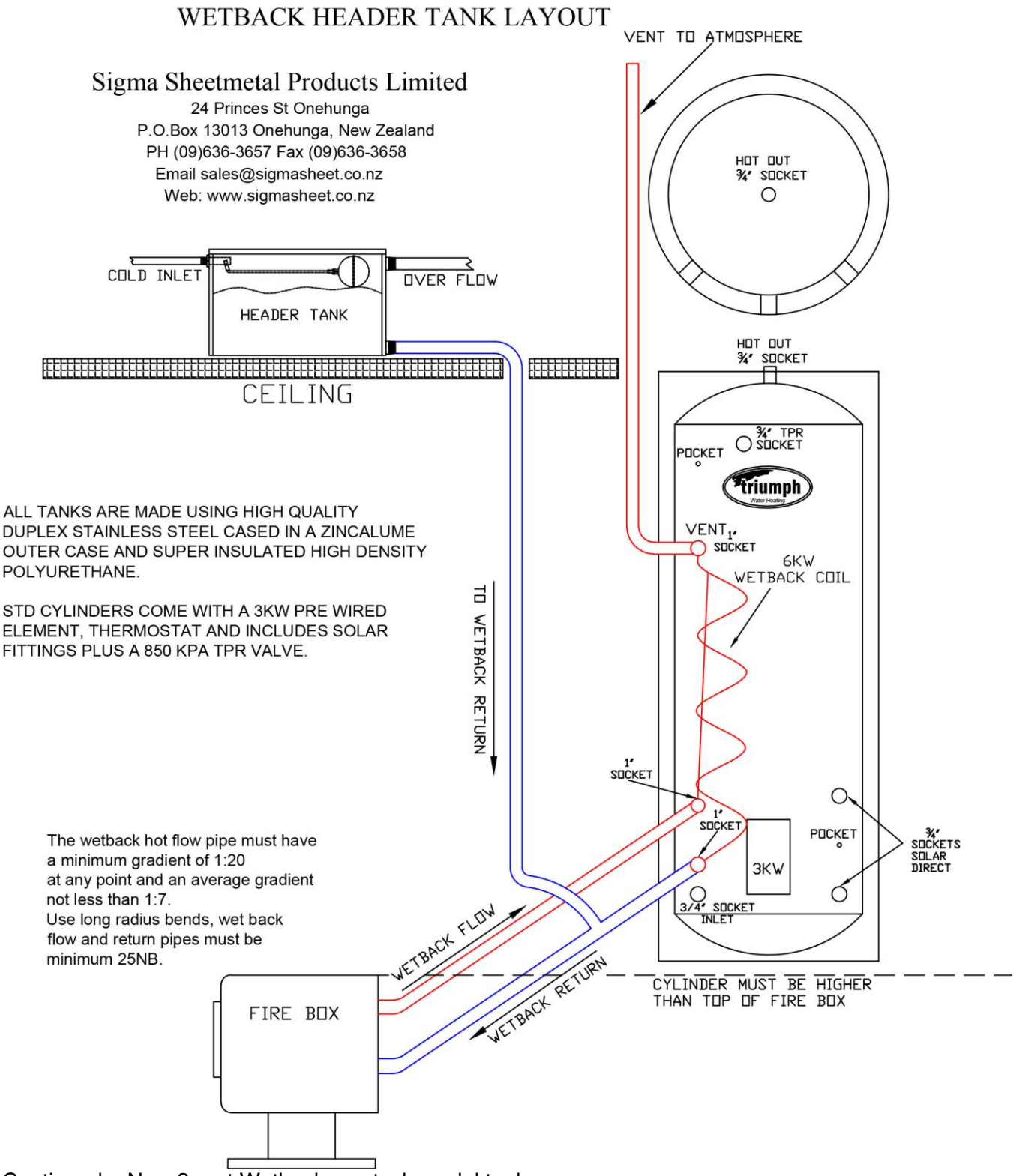


1. Wetback
2. Pressure reducing valve
3. 25NB Tee fitting

WF:	Wetback Flow connection
WR:	Wetback Return connection
SF:	Solar Flow connection
SR:	Solar Return connection
HF:	Heating circuit Flow connection
HR:	Heating circuit Return connection

Notes: The wetback hot flow pipe must have a minimum gradient of 1:20 at any point and an average gradient not less than 1:7 : Use long radius bends
Wet back flow and return pipes must be minimum 25NB
Tee connection must be installed as per exploded view to ensure natural convection induced flow

3.2.1 Multi-purpose water heater



Continued – New 3 port Wetback on stock model tanks

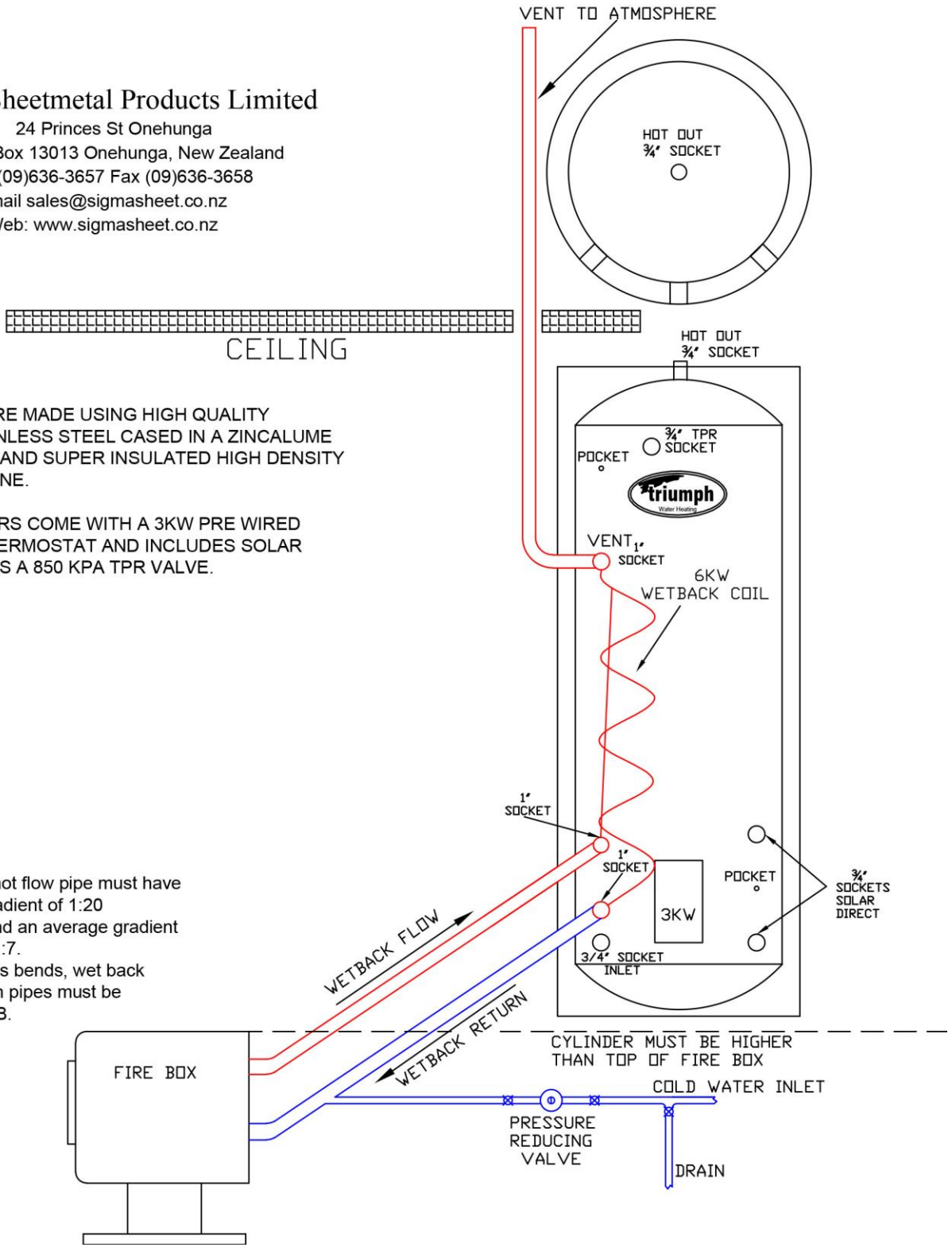
WETBACK PRESSURE REDUCING VALVE LAYOUT

Sigma Sheetmetal Products Limited
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ALL TANKS ARE MADE USING HIGH QUALITY DUPLEX STAINLESS STEEL CASED IN A ZINCALUME OUTER CASE AND SUPER INSULATED HIGH DENSITY POLYURETHANE.

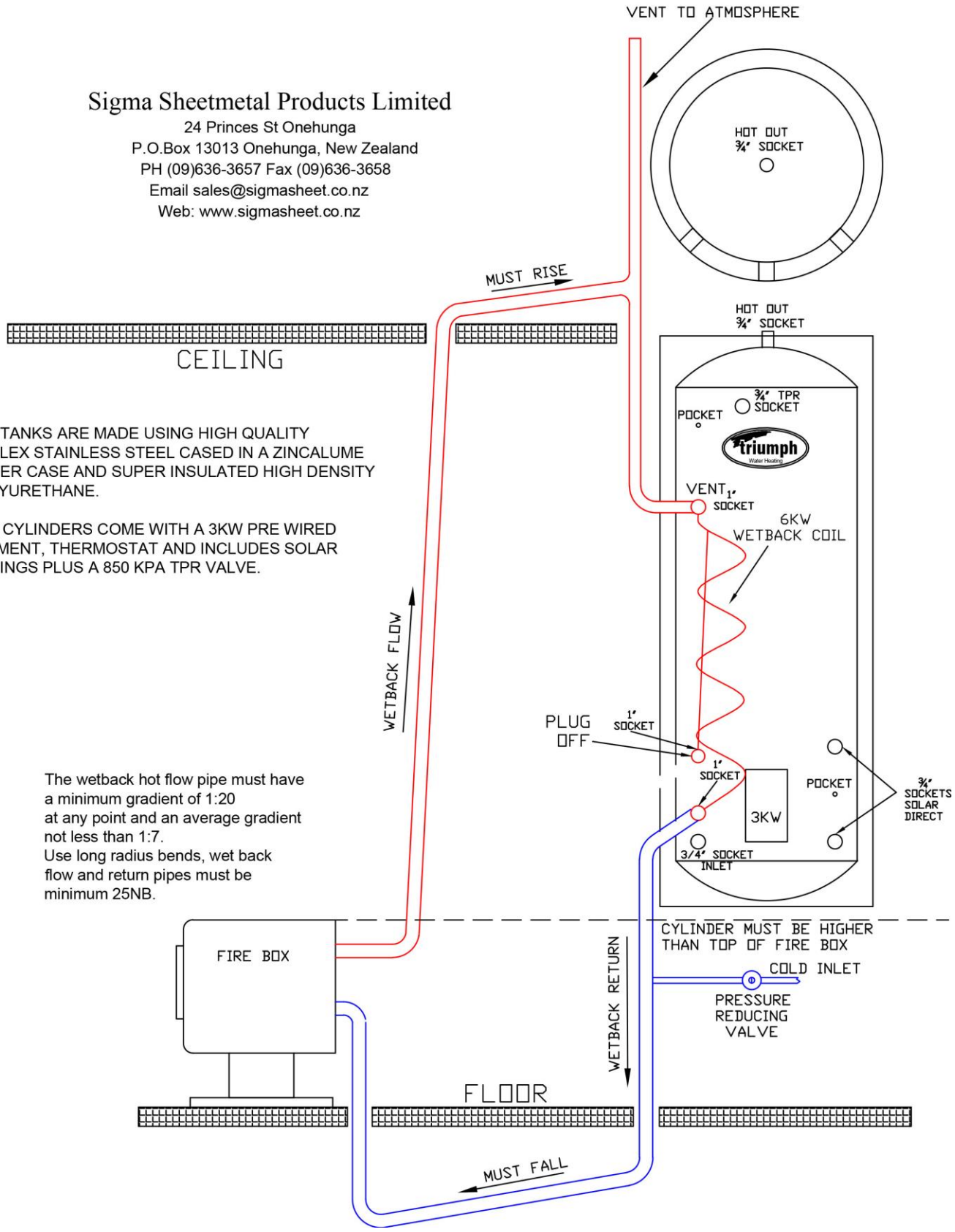
STD CYLINDERS COME WITH A 3KW PRE WIRED ELEMENT, THERMOSTAT AND INCLUDES SOLAR FITTINGS PLUS A 850 KPA TPR VALVE.

The wetback hot flow pipe must have a minimum gradient of 1:20 at any point and an average gradient not less than 1:7.
Use long radius bends, wet back flow and return pipes must be minimum 25NB.



WETBACK PRESSURE REDUCING VALVE UNDER /OVER LAYOUT

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3.3 Valves and components

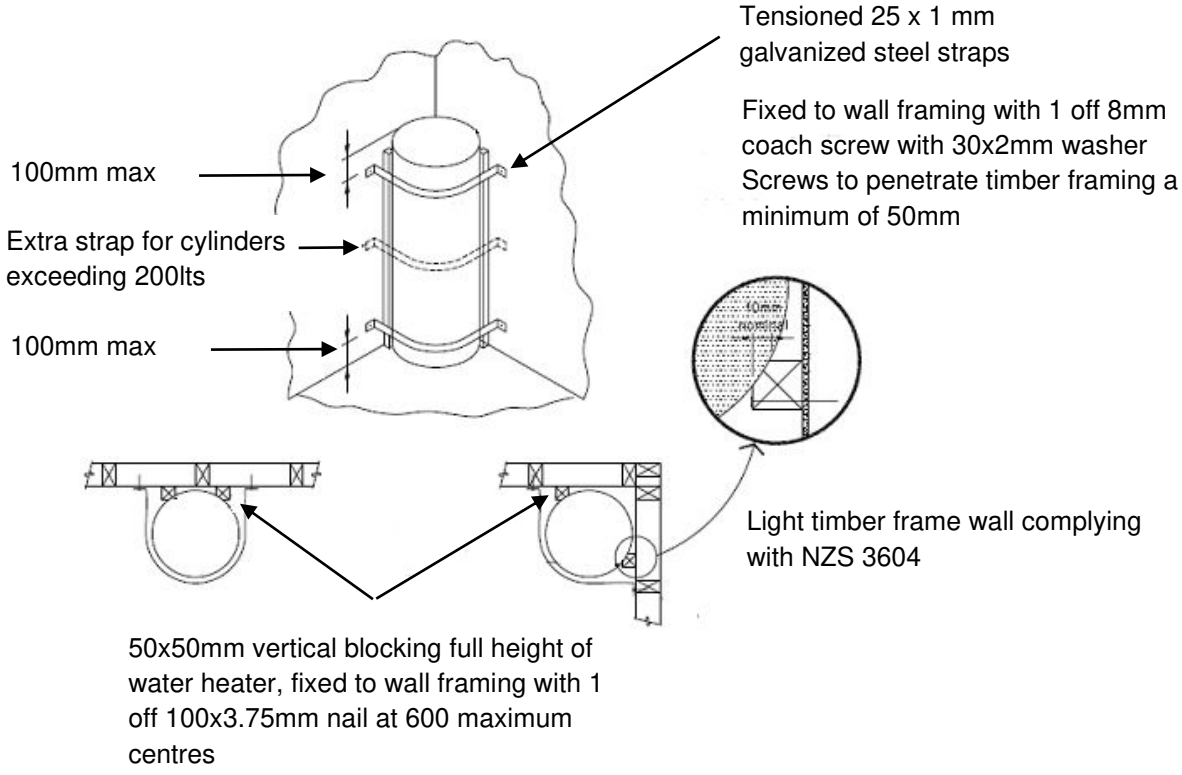
Valves and safety devices must be in accordance with clause G12 of the New Zealand Building Code. Tempering valves must comply with NZS 4617 or AS 1357.2. All components, once installed, must be accessible for inspection, maintenance and removal. Safe trays must be installed under the water heater where water could penetrate another household unit within the same building. Drain pipes must have a conveniently located isolation valve and terminate with a cap or plug, or, if terminating outside the building, with a cap only.

Important note:

Temperature and Pressure Relief (TPR) valves are designed to relieve excess pressure to ensure non-vented water heaters do not explode. TPR valves are designed to keep the maximum water temperature below 99°C. Drain lines from the TPR valve must be copper and discharge to an appropriate place that does not cause damage to the building. If draining into a tundish, the tundish must be constructed of a material capable of withstanding 99°C water.

3.4 Anchorage and seismic restraint

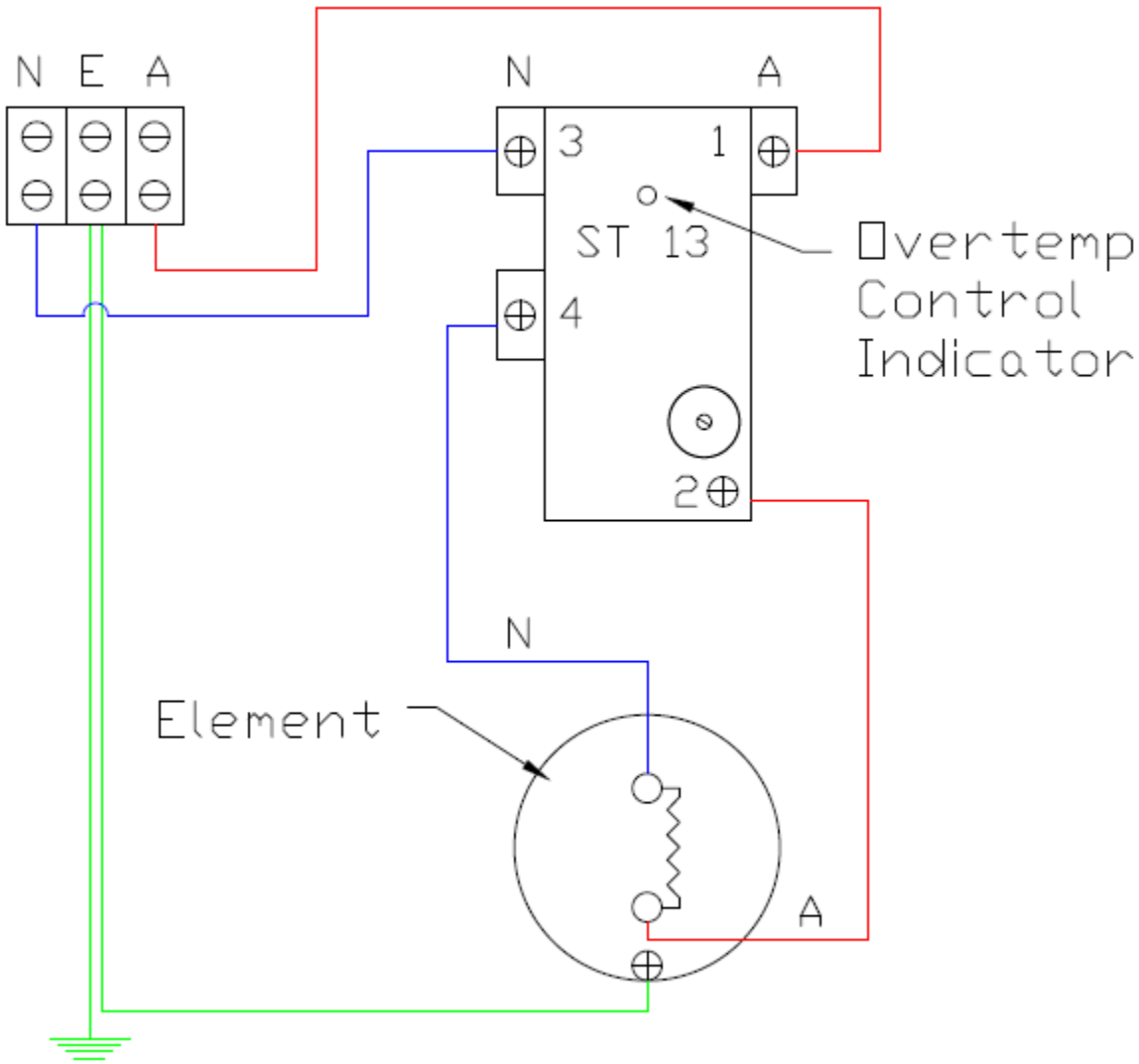
Water heaters must be adequately supported and restrained to resist earthquake forces. Water heaters up to 360l capacity may be restrained according to Acceptable Solution G12/AS1 below, or alternatively, in accordance with Section 203 of NZS 4603.



3.5 Electrical installation

Electrical installation must comply with AS/NZS 3000 and be performed by a suitably qualified technician. Water heaters are provided with standard 240V, 50Hz, 3kW Incoloy electric elements unless otherwise stated. Connect the power supply directly to the terminal block and earth the tab connector. For details refer to the wiring diagram below.

NZBC G9 requires any electrical installation within a building be constructed to provide protection to users against electrocution should parts of the building become live due to electrical faults. Equipotential bonding is required in situations where this may occur.



Please note that the thermostat has an overtempt control mechanism that is a one-shot fuse. If it is tripped due to a fault condition the thermostat will need to be replaced.

3.6 Tips on reducing heat loss

Significant heat loss and therefore energy consumption will occur as a result of insufficient insulation of pipe work and cylinder connections, incorrect pipe routing and also as a result of gravity circulation and micro circulation in pipe work and connections. To reduce heat loss, the following best practice installation recommendations are given:

Insulation:

Ensure all hot water pipe work and exposed connections are insulated with good quality insulation material.

Pipe routing;

Route hot pipes so they fall on exit of the water heater. Keep pipes low where possible.

Gravity circulation:

With gravity circulation, hot water flows out of a water heater connection and cold water flows back in via another connection. A classic example of this occurrence is with solar loops that do not have a non-return valve fitted. The most effective counter measure for gravity circulation is to install appropriately specified spring check valves. Care must be taken in specifying the correct spring force.

Micro circulation:

With micro circulation, hot water flows out of a water heater connection and cold water flows back in the same connection due to natural convection. Micro circulation is strongest in large diameter pipes. The most cost effective counter-measure to combat micro circulation is to fit anti-thermosiphon downward U loops at all hot water connection points.

4 Commissioning Instructions

4.1 Flushing, filling, bleeding

Following installation of the water heater it is recommended that both the water heater and any HX coils be flushed out to remove any debris that may have entered the system prior to or during installation.

To fill the water heater, open a hot water tap until water flows out. Fill any auxiliary circuits (wetback, heating, solar) according to the manufacturer's instructions. If the HX supply pipes are routed downwards, the water heater HX coils must be bled.

4.2 Pressure/leak test

After successful filling and bleeding of the water heater, perform a pressure/leak test. An acceptable method is to pressurise the cylinder to mains pressure, wait 15 minutes and then inspect the connections to ensure there are no leaks. Leak test any auxiliary circuits (wetback, heating, solar) according to the manufacturer's instructions.

5 Technical Data

Technical data for standard water heaters									
Volume (l)	150	180	200	225	250	280	315	405	500
Height (mm)	1720	1160 1460	1640	1410	1550	150 1720	1725	2160	2625 1835
Diameter (mm)	460	575 510	510	575	575	610 580	610	630	630 720
Weight (kg)									
Maximum Working Pressure (kPa)	850	850	850	850	850	850	850	850	850
Maximum Working Temperature (°C)	95	95	95	95	95	95	95	95	95
Insulation thickness (mm)									
Volume above electric element (l)									

Technical data for standard HX coils	
Maximum Working Pressure	850 kPa
Maximum Working Temperature	95 °C
Diameter	20NB

Standard connections		
Description	Abbrev.	Socket
Cold water inlet	CI	20mm / 3/4" BSP
Hot water outlet	HO	20mm / 3/4" BSP
TPR valve connection	TPR	20mm / 3/4" BSP
Drain	D	20mm / 3/4" BSP
Wetback flow	WF	25mm / 1" BSP
Wetback return	WR	25mm / 1" BSP
Solar flow	SF	20mm / 3/4" BSP
Solar return	SR	20mm / 3/4" BSP
Heating circuit flow	HF	20mm / 3/4" BSP
Heating circuit return	HR	20mm / 3/4" BSP
Electric element	E	1¼" BSP
Sensor pocket	SP	7x250mm

6 Producer Statement

Sigma Sheetmetal Products Limited
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Date:
Product Description:
Type of System:
Capacity:
Size:
Construction Material:

These products have been manufactured in compliance with the following standards:

Energy Efficiency Standard:	AS/NZS 4692.2 NZ MEPS
Manufacturing Standard:	AS/NZS 4692.1
Specific Requirements:	AS/NZS 2712
	Cause 2.7
	Cause 2.8
	Cause 3.3
	Cause 5.4.4
Temperature and Overtemp Control Device:	AS/NZS 60335.2.21

All tanks are hydrostatically pressure tested
Maximum Working Pressure: 850kPa
Production Date:
Job No.:
Product Warranty: 5 years on cylinder, 1 year on all other components

Signature:

Name:

Suppliers of:
SIGMA Building Products, TRIUMPH Hot Water Cylinders, EDEN Tool Chests, SIGMA Flue Systems, SIGMA & RUBBEDIN Stove Accessories, SIGMA Tool Storage Systems

Sigma Sheetmetal Products Limited

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WARRANTY CLAIM FORM

Date :

NAME/OWNER:	**PHONE:**
ADDRESS:	
PRODUCT DESCRIPTION:	
DATE PURCHASED:	**SERIAL NO:**
FROM:	**BRANCH:**
PLUMBER/INSTALLER:	**PHONE:**
FAULT:	**RELIEF OR OPEN VENT**
POSITION OF RELIEF:	
WATER SUPPLY (PLEASE CIRCLE)	**TOWN RAINWATER BORE PUMP FITTED**
AVAILABLE FOR PICK UP YES/NO	**FROM:**
REPLACEMENT SENT YES/NO	**INVOICE NO:**
INVOICE NO:	
INSTALLER:	**FACTORY INSPECTION JOB NO:**
ACTUAL FAULT FOUND:	

Conditional Replacement of Product

Customer to accept any replacement product is Subject to Inspection at our Factory

The cost of the replacement product will be payable by the Customer if the Warranty Claim is denied through damage caused by - Faulty of Incorrect Installation, Excessive Pressure, Negative Pressure (collapsed tank) or Aggressive Water.

Accepted by Customer: Name

Signed: Date:

7 Warranty Form

WARRANTY PERIODS

PRODUCT	WARRANTY PERIOD FROM DATE OF PURCHASE
Low Pressure Cylinder Medium Pressure Cylinders (Heavy Head) Standard Mains Pressure (Glass Lined) Duplex Stainless Steel Mains Pressure Hunson Type Mains Pressure Coil Cylinders Marine & Motorhome Cylinders Dairy Cylinders Automatic Oversink Boilers	5 YEARS
Hot Rod Heat Exchangers Undersink Boilers & Chillers Elements, Valves & Thermostats	1 YEAR
Solar Panels	5 YEARS

* Warranty Periods are applicable from the Date of Purchase.

Products are covered for the stated period against failure due to defective material or manufacture.

This guarantee does not cover removal or re-installation of the Hot Water Cylinder, or any consequential losses incurred including any freight costs. Should a defect occur within the guaranteed period, the specific item is to be returned with proof of purchase to the supplier.

In some circumstances we may cover the labour cost of a product that has failed under warranty within the first 12 months from the date of purchase. Where a cylinder is installed outside of the metropolitan area or further than 25km from a authorised agent, travel costs shall be the owners responsibility.

This guarantee applies only to the defects occurring under conditions of normal use for which this specific water heater was designed and damage to the water heater caused by negative or excessive pressures above the maximum working pressure, incorrect installation, failure due to corrosion caused by chemical action/ aggressive water or other substances introduced into the water supply are not covered by the Guarantee.

Cylinders are covered under warranty for the stated period. Where a failed component or Cylinder is repaired or replaced under warranty, the balance of the original period will remain effective - The replaced part or cylinder does not carry a new warranty.

Repair or replacement of any defective cylinder or boiler is at our discretion.

Sigma Sheetmetal Products Ltd will not cover extra costs such as use of cranes or roof removal where the cylinder has been installed in a non-accessible area.

Continuous Water Quality and Impurity Limits

TDS (Total Dissolved Solids)	Total Hardness $CaCO_3$	Dissolved (free) CO_3	Ph	Langelier Index
Up to 600 mg/L or ppm	Up to 200 mg/L or ppm	Up to 25 mg/L or ppm	6.5 - 8.5	Between - 1.0 - 0.8

Manufacturer:
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Technical data subject to change!
Due to constant further development, illustrations and technical data can differ.

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