Regulus

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LYRA 1000 VVS

Installation and Operation Manual
LYRA 1000 VVS THERMAL STORE

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LYRA 1000 VVS

CONTENTS

1 - Description

Regulus LYRA Thermal Stores are intended for accumulation and subsequent distribution of thermal energy from solid-fuel fired boilers, heat pumps, solar collectors, electric boilers etc. The Thermal Store shall be always connected to a sealed heating circuit. The tank comes with complete accessories for connection to heating circuits, solar system and hot water.
The accessories supplied represent a complete solution for connecting a heating system, connecting cold water inlet for DHW heating and subsequent DHW output. In the recirculation variant this also enables connection of a circulation pipe. The hot water circulation pump is already integrated in a fresh water station. Heat sources shall be connected to the free inlets at the tank rear, following the diagrams included in this Manual (Chapter 5.5). When more heat sources are combined, some intelligent controller should be used to control the heat sources and sinks, incl. the Thermal Store charging and discharging, for example Regulus IR12 Intelligent Controller.

1.1 - Models

There are 4 models of Regulus LYRA:
- for one heating circuit, no hot water recirculation (code 12231),
- for one heating circuit, with hot water recirculation (code 12229),
- for two heating circuits, no hot water recirculation (code 12230),
- for two heating circuits, with hot water recirculation (code 12228).

1.2 - Tank protection

The inner surface has no finish, no anticorrosion protection, the outer surface is lacquered in gray.

1.3 - Thermal insulation

Thermal insulation is included in the scope of delivery. The insulation consists of 3 layers; the first layer is made of soft insulation tightly fitting to the tank. The second, main insulation layer, features a coefficient of thermal conductivity l=0,032 W/m.K. The third layer is represented by a tough, glossy, washable surface. The total insulation thickness is 100 mm.

1.4 - Packaging

Tanks are delivered standing, each screwed to its pallet, packed in bubble wrap. Included in the package are all components to be fitted on the tank. Insulation is in a separate package.

2 - General Information

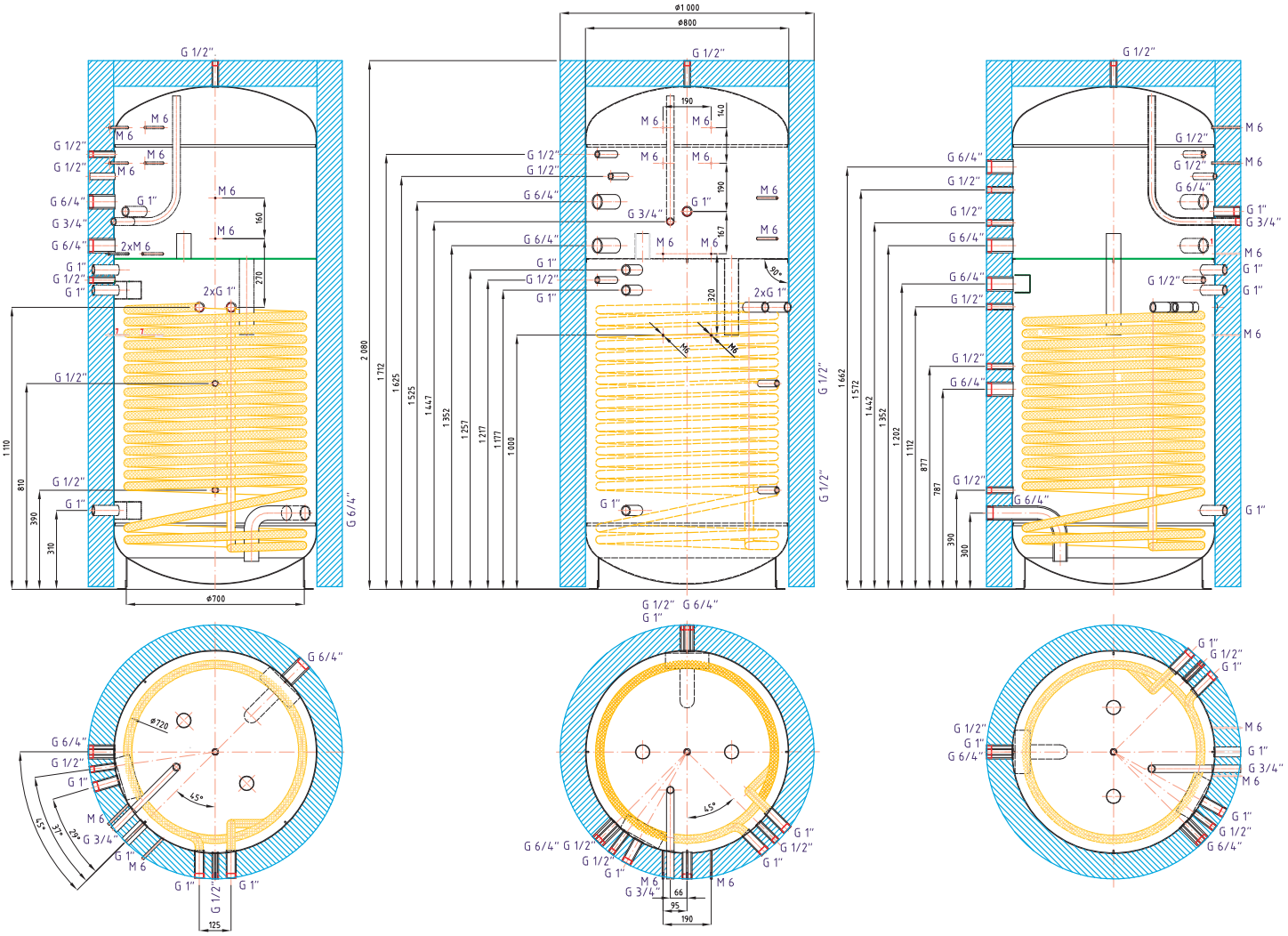
This Owners Manual is an integral and important part of the product and must be handed over to the User. Read carefully the instructions in this Manual as they contain important information concerning safety, installation, operation and maintenance. Keep this Manual for later reference. The appliance shall be installed by a qualified person according to valid rules and Manufacturer‘s Instructions.
This appliance is designed to accumulate heating water and distribute it subsequently. It shall be connected to a heating system and heat sources. It is intended also for DHW heating, but exclusively through the enclosed fresh water station with a plate heat exchanger.

Using the accumulation tank for other purposes than above described (e.g. as a domestic hot water tank) is forbidden and the manufacturer accepts no responsibility for damage caused by improper or wrong use.

The output of heat sources not equipped with their own safety valve and connected to the tank fitted with the enclosed safety valve shall never exceed 110 kW.

3 - Technical Data and Dimensions

code: 12228, 12229, 12230, 12231



Total fluid volume:	923 l
Fluid volume in tank:	900 l
Fluid volume in heat exchanger:	23 l
Heat exchanger surface area:	4,2 m²
Max. working temp. in tank:	95 °C
Max. working temp. in heat exchanger:	160 °C
Max. working pressure in tank:	4 bar
Max. working pressure in heat exchanger:	10 bar
Hot water recovery rate from 10°C to 50°C with heating water temperature 63°C:	1800 l/h (84 kW)
Empty weight:	213 kg
Tipping height without insulation:	2120 mm

4 - Operation

This Thermal Store is designed to heat water and accumulate heat for space heating in domestic or industrial applications, however always in sealed pressure circuits with forced circulation. In the heat store, heating water is heated up from several heat sources like various types of hot-water boilers, renewable energy sources (heat pumps, solar collectors), or electric heating elements.

5.1 Mounting pump stations and accessories onto LYRA

SCOPE OF DELIVERY

LYRA Thermal Store, code **12228** (others under codes 12229, 12230, 12231 differ just in number of heating circuits or the possibility to connect the fresh water station to a recirculation pipe):

12228: LYRA 1000 VVS Thermal Store with 2 heating circuits and DHW recirc.

Code	Name	Qty
11999	PSW 1000 FWS Thermal Store for LYRA	1 pcs
11998	Insulation for PSW 1000 FWS Thermal Store, NEODUL - code 11999	1 pcs
12224	Pump station for Thermal Store, 2 circuits	1 pcs
14866	S2 Solar 3 pump station, ST25/6, 2-12 l/min, 3/4"	1 pcs
9717	Fresh water station with FWC3 controller, with recirculation	1 pcs
12226	Kit to connect assemblies onto LYRA	1 pcs
12227	Kit to connect solar pump station onto LYRA	1 pcs
12687	TSC3 Assy for LYRA	1 pcs
13983	T-Piece Assy for LYRA	1 pcs
12689	Pressure gauge assy for LYRA	1 pcs
12690	Angled Ball Valve Assy for LYRA	1 pcs
13236	Ball valve and elbow assy for LYRA and VEGA tanks	1 pcs
13234	Kit for connecting TSV assy to LYRA tank	1 pcs
13237	Accessory kit for LYRA and VEGA tanks	1 pcs
12222	Cover for pump station with 2 circuits	1 pcs
12223	Front insulation for cover for pump station with 2 circuits	1 pcs
12720	Top insulation for cover for pump station with 2 circuits	1 pcs
12713	Black knurled screw, M6x1-10 PA 6.6	4 pcs
13437	Kit for connecting expansion vessel to LYRA	1 pcs

12226: Assy Connection Kit for LYRA

Code	Name	Qty
11271	DN25 water pipe, 1"MF,250-500	1 pcs
13984	DN25 pipe (5/4” nut) l=580 mm	1 pcs
3016	DN25 water pipe, 1"MF,200-400	1 pcs
3041	DN20 water pipe,3/4"MF,250-500	2 pcs
7691	Brass hex plug, 1” M	1 pcs
8306	3/4” elbow, M/F, brass	1 pcs
6447	Pipe insulation, diam. 28, 13 mm thick (2 m)	1.2 m
7187	Pipe insulation, diam. 35, 13 mm thick (2 m)	1.5 m
12996	M6x16 stainless steel bolt (hex socket) DIN 912/A2	8 pcs
7853	6.5 washer (large diameter 3d)	8 pcs
9980	1” nut gasket - 18,5x30x2 PTFE	3 pcs
9978	3/4" nut gasket - 15x24x2 PTFE	3 pcs

13237 : Accessory Kit for LYRA and VEGA

Code	Name	Qty
10474	Thermometer d=63 with sheath l=150, 1/2“, rear conn., 0-120°C	2 pcs
605	Safety valve 3 bar,1/2" F/F	1 pcs
6971	1/2" hex nipple (M/M), thick wall	2 pcs
11965	1/2" ball valve, F/F	1 pcs
11708	Automatic ½“ air release valve, with check valve	1 pcs

13437 : Expansion Vessel Connection Kit for Lyra/Vega

Code	Name	Qty
11969	6/4" FF ball valve	1 pcs
7627	Hex nipple, 6/4“ x 6/4“, M/M, thick wall	2 pcs
8757	T-piece in brass 6/4" FFF	1 pcs
8766	Reducing hex nipple 1"x6/4" M/M	1 pcs
7049	T-piece in brass 1" FFF	1 pcs
6969	Hex nipple, 1“x1“, M/M, thick wall	1 pcs
7701	Reducing hex nipple, 1“x1/2“, M/M, brass	1 pcs
11713	1/2“ drain valve, no handle, with cap	1 pcs

12227 : Solar Pump Station Connection Kit for LYRA/VEGA390

Code	Name	Qty	
3012	DN20 hose for water, 100-200 mm long, 3/4“ FM	2	pcs
154	Sensor Sheath, 7x8x100 mm, 1/2“, for 1 sensor	1	pcs
7223	Reducing Hex Nipple, 1“x3/4“, M/F, brass	2	pcs
6447	Insulation DNa 28,13 mm thick, 2 m	0,5	m
10845	Capillary spring, small, 1/2“, stainless steel	1	m
9980	1“ PTFE Nut Gasket - 18.5x30x2 mm	2	pcs
12996	M 6x16 Stainless Steel Bolt (Allen head), DIN 912/A2	2	pcs
7853	Washer 6.5 (large diam. 3d)	2	pcs

13234 : Kit for TSV Assy Connection to LYRA

Code	Name	Qty	
11946	DN20 hose for water, 65-125 mm long, 3/4“ FM	1	pcs
998	Ball Valve 3/4“ M/F, red butterfly handle	1	pcs
6970	3/4“ M/M brass hex nipple, thick wall	1	pcs

MOUNTING INSTRUCTIONS

WARNING! At least 20 °C and 4 persons are necessary to mount the insulation. All threaded connections shall be sealed either with a thread sealant or with the gaskets included in separate kits.

1. Remove the tank from its pallet and place it to its approximate position, shift the bottom insulation under the tank.

2. Slide the insulation inserts into the openings for connections.

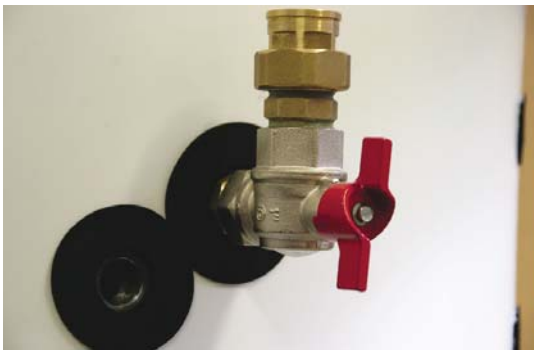





3. Fit on the front insulation part, then the rear insulation part. Check the proper position of the insulation towards the sockets prior to final fixing. Use the jig to close the locks.

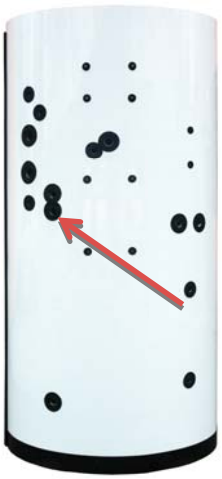
4. Peel off the protective foil from the insulation, apply the self-adhesive annuluses around the openings for connections. Some annuluses are cut out, these shall be used in places where openings are close to each other (the annuluses overlap).

5. Fit the assembly with elbow ball valve (code 12690). From this point on, it is important to stick to the sequence of installation steps described below!

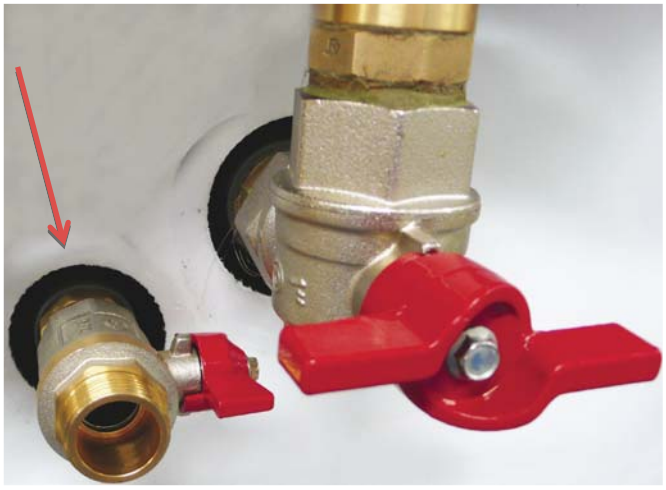


6. Fit the assembly with ball valve and pressure gauge (code 12689).

7. Do hrdla 1“ pod skupinu s manometrem namontovat zátku (kód 7691).



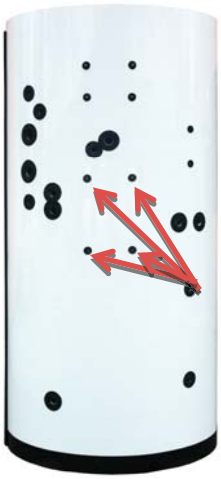
8. Fit the 3/4” ball valve (code 998) to the tank and the 3/4” FF hex nipple (code 6970) into the valve, both these components are included in the Kit code 13234. Turn the ball valve into the position shown in the fig.



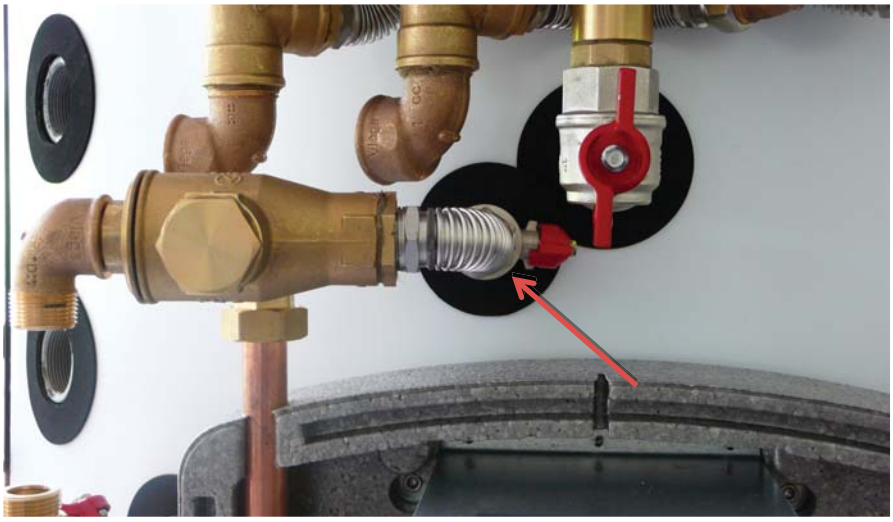
9. Fit the ball valve and elbow assembly (code 13236) into the lower 1“ opening.

10. Align the metal sheet against the four pins and fix it using 4 screws M6x16 with washers (codes 12996 and 7853) - both these components are included in the Kit code 12226. Do not forget to place insulation washers under the metal sheet and loosen the clamps. Fit the pump station with 4-way mixing valves (code 12224 or 12225). Using a 5/4” union nut, connect it with the angled valve assembly mounted earlier (see point 5). Tighten the clamps.

11. Fit the fresh water station (code either 9717 or 9913) using 4 screws M6x16 with washers (codes 12996 and 7853) - all these components are included in the Kit code 12226.

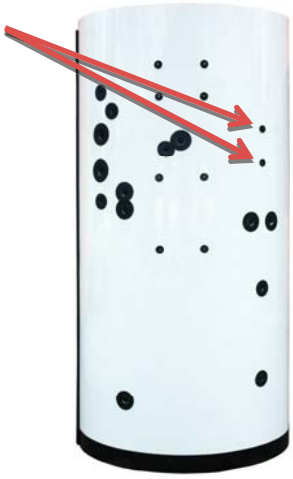


12. Connect the TSV3B assembly (code 12687) using a 3/4“ pipe, 100 mm long (code 11946) - included in Kit 13234 with 3/4“ ball valve - see point 8.

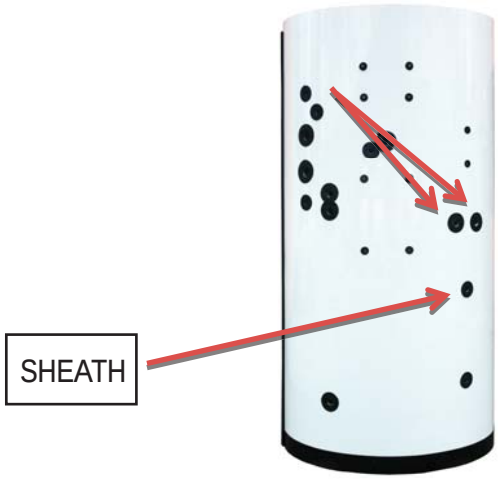


13. Connect the TSV3B assembly with the DHW assembly..

14. Fit the solar pump station (code 14866) using 2 screws M6x16 and washers (codes 12996 and 7853) - all these components are included in the Kit code 12227.



15. Connect the solar pump station to the tank using the respective Kit (code 12227). Prior to fitting, cut the insulation to length and slide it onto the pipe. Fit the solar sheath.



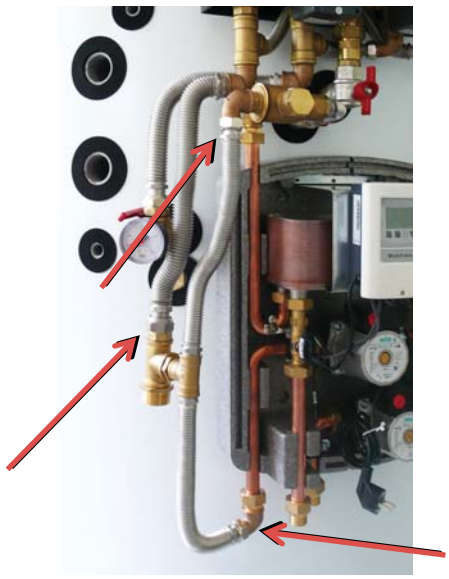
16. Stretch the pipes to the below listed preliminary lengths, cut the insulation and slide it onto the pipes (included in the Kit code 12226):
    - one 1” pipe (code 11271) to 410 mm, insulation to some 500 mm
    - one 1” pipe (code 3016) to 250 mm, insulation to some 300 mm
    - one 3/4” pipe (code 3041) to 450 mm, insulation to some 550mm
    - one 3/4” pipe (code 3041) to 320 mm, insulation to some 400 mm
    - one 5/4” DN25 pipe (code 13484) to 580 mm, insulation to some 700 mm

17. Using the 1” pipe 250 mm long (code 3016), connect the pressure gauge assy with the inner 1” elbow of the pump station with 4-way valves.

18. Fit the 1” pipe 410 mm long (code 11271), connect the zone valve assy with onto the pump station.

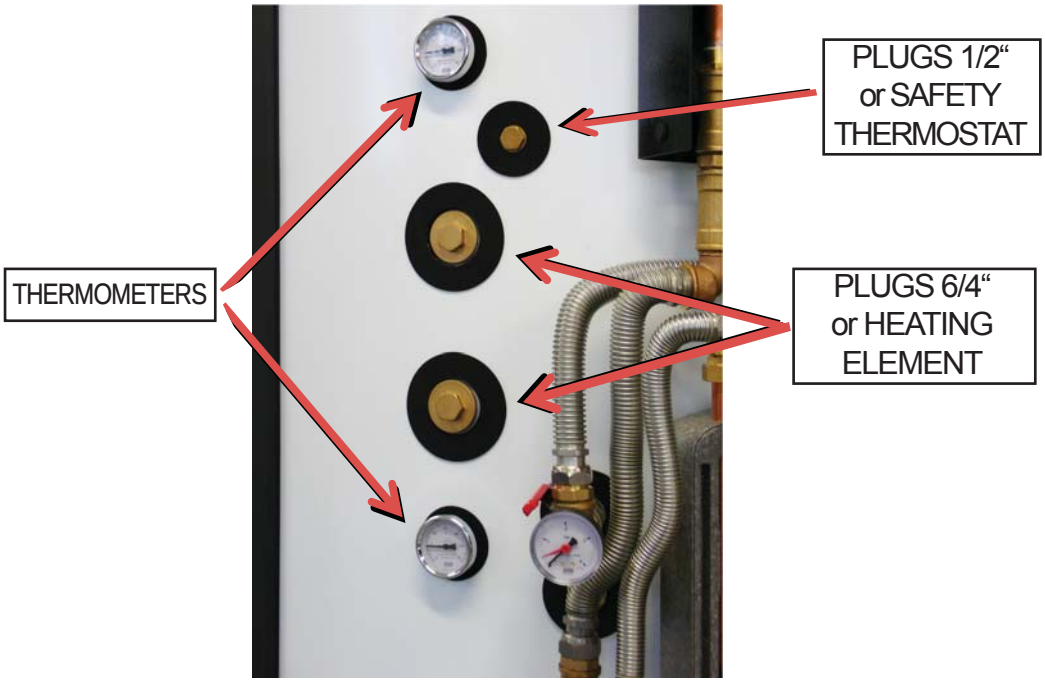
19. Fit the 3/4“ pipes 320 and 450 mm long (code 3041) to the T-piece assy (code 13983). The 450 mm long pipe shall be fitted at the right-hand side, see fig.

20.Connect the T-piece assy at 3 points, see fig.



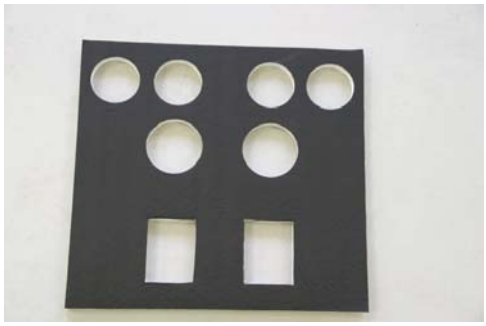
21. Using the 5/4” pipe 580 mm long, connect the T-piece assy with the ball valve assy.

22. Fit two thermometers (code 10474), included in Kit 13237, and 6/4” and 1/2” plugs or electric heating elements and a safety thermostat.



23. Fit the hex nipple 6971 into the sleeve and then the safety valve (code 605) – included in Kit 13237.

24. Push the front insulation onto the pump station with 4-way valves.



25. Connect the terminals of the pumps with cables, push the cables behind the insulation.

26. Fit the plastic cover onto the pump station with 4-way valves and fix it with 4 plastic screws M6x10 (code 12713).

27. Fit the top insulation and the top plastic cover onto the tank.

28. Fit the automatic air release valve (code 11708) with ball valve (code 11965) and hex nipple (code 6971), all included in Kit 13237.

Completely fitted tank:

5.2 Connecting heating circuits

1. Return line from Heating Circuit 1 – G1”F
2. Flow to Heating Circuit 1 – G1”F
3. Flow to Heating Circuit 2 – G1”F
4. Return line from Heating Circuit 2 – G1”F

As a variant, LYRA can be supplied with a pump station for one heating circuit only.

5.3 Connecting DHW circuit

1. Hot water outlet – G3/4” M
2. Hot water recirculation – G3/4” M
3. Cold water inlet – G3/4” M

As a variant, LYRA can be supplied with a fresh water station without recirculation pump and recirculation line connection.

As a variant, a kit with a zone valve can be supplied to ensure controlled thermal layering.

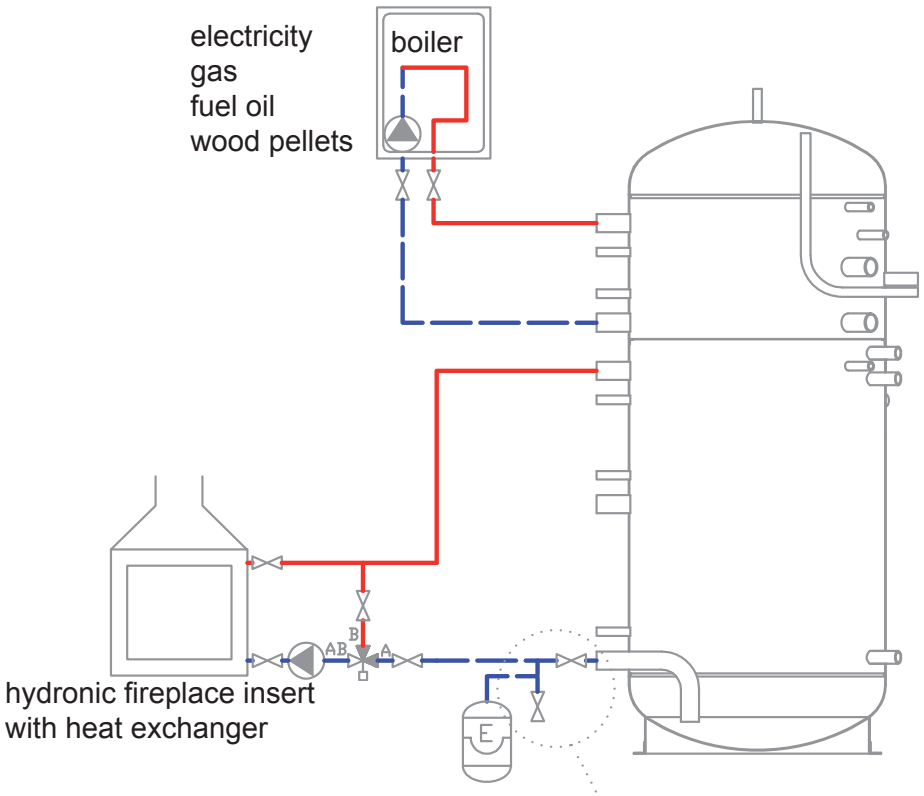
5.4 Connecting solar circuit

1. Inlet from solar collectors – G3/4” M
2. Return line to solar collectors – G3/4” M

5.5 Examples of heat sources connection

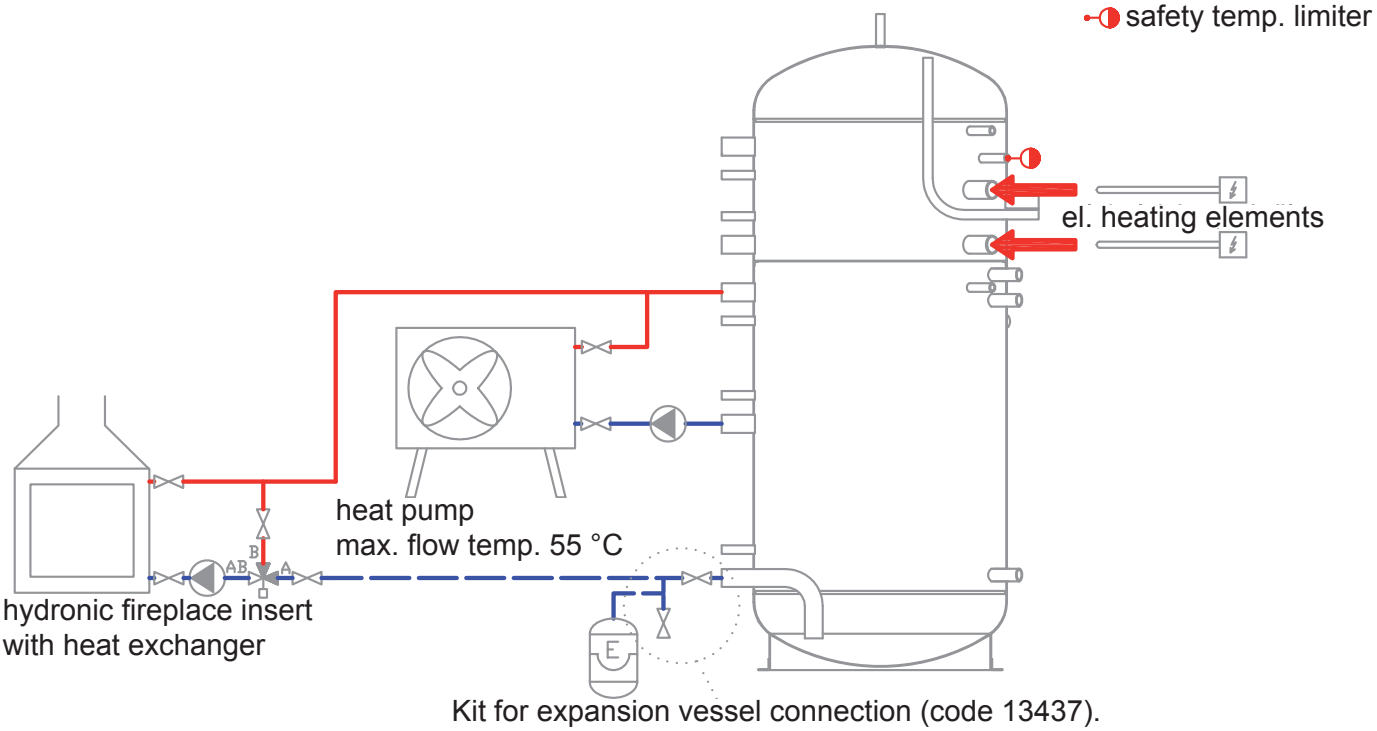
Inlets and outlets for connecting various heat sources are located across from pump stations for heating and DHW. Openings for electric heating elements are situated left from the pump station for heating.

EXAMPLE I:
Hydronic fireplace insert with heat exchanger and hydronic boiler (electric, gas, oil or wood pellet fired)



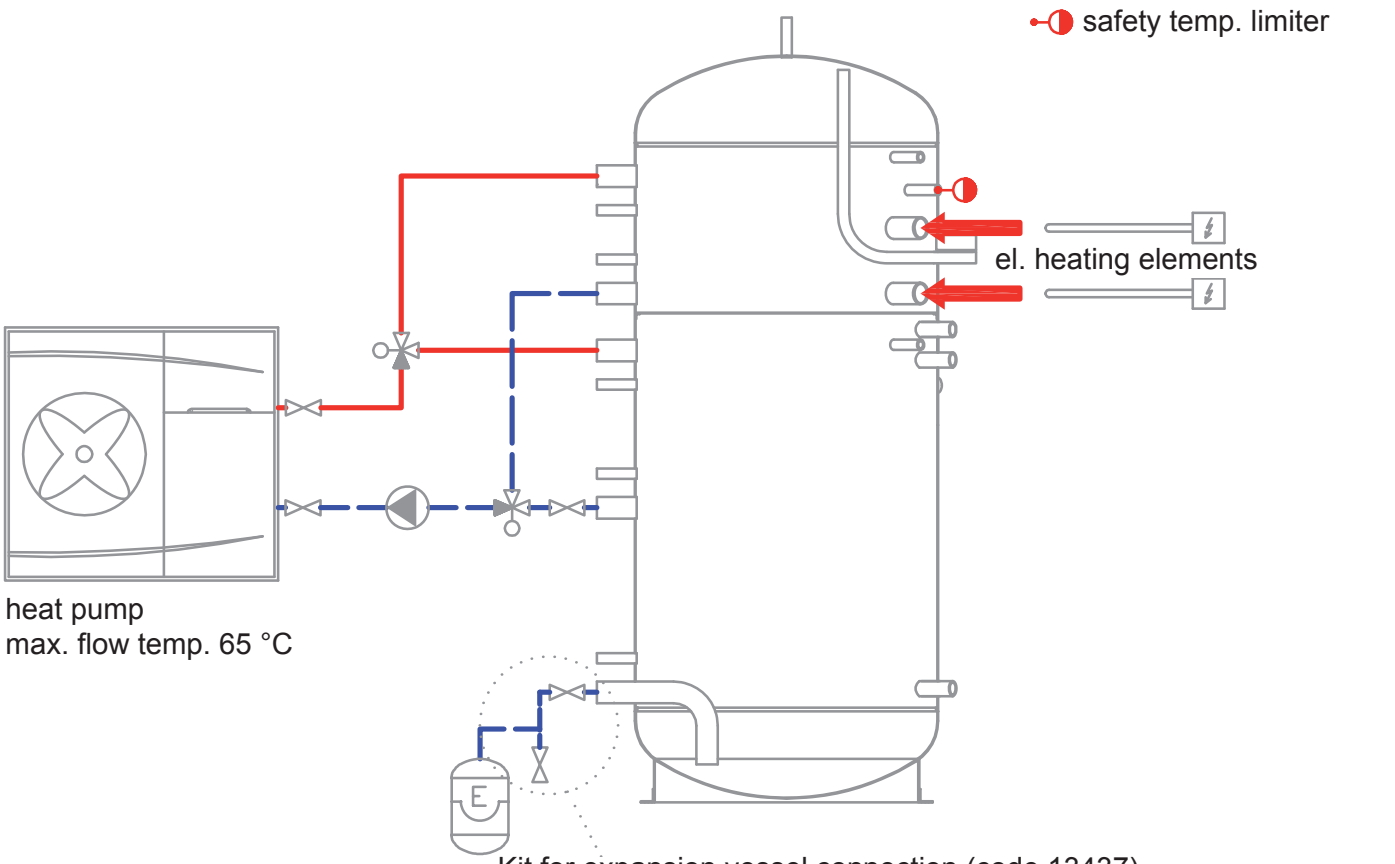
Kit for expansion vessel connection (code 13437).
During operation, the 6/4” valve shall be secured in an open position.

EXAMPLE II.
Hydronic fireplace insert with heat exchanger, heat pump with flow temperature up to 55 °C, electric heating elements.



Kit for expansion vessel connection (code 13437).
During operation, the 6/4” valve shall be secured in an open position.

EXAMPLE III.
Heat pump with flow temperature over 60 °C, electric heating elements



5.6. Installation of electric heating elements

The Thermal Store can be fitted with up to 2 electric heating elements of max. 12 kW total power output. These elements shall be installed into the G6/4” sleeves in the upper tank section, left from the pump station for heating circuits. The G1/2” port above the el. heating element ports is intended for a safety temperature limiter.

All el. heating elements shall be installed together with a safety temperature limiter.

Electric heating elements shall be wired by authorized staff only.

6 - Installation and Commissioning

Installation shall meet valid rules and may be done by qualified staff only. Defects caused by improper installation, use or handling are not covered by warranty.
After the tank is installed and connected to an existing heating system, it is recommended to clean the entire heating system using a suitable cleaning agent, e.g. MR-501/R.
Anti-corrosion protective liquid should be also used, e.g. MR-501/F.

6.1 - Commissioning

The tank shall be filled up together with the heating system, respecting valid standards and rules. In order to minimize corrosion, special additives for heating systems should be used. The quality of heating water depends on the quality of filling water at commissioning, on the top-up water and on the frequency of topping up. This has a strong influence on the lifetime of heating systems. Poor quality of heating water may cause problems like corrosion or incrustation, esp. on heat transfer surfaces.

Fill the heating circuits with the appropriate fluids and air-bleed the entire system. Check all connections for leaks and verify the system pressure. Set the heating controller in compliance with the documentation and manufacturer's recommendations. Check regularly proper function of all control and adjustment elements.

7 - Maintenance

If the tank is fitted with a heating element, disconnect it from the mains first. Clean the exterior of the tank with a soft cloth and a mild detergent. Never use abrasive cleaners or solvents

Check all connections for leaks.

8 - Disposal

Packaging shall be disposed of in compliance with the valid rules. When the product reaches the end of its life, it shall not be disposed of as household waste. It shall be dropped off at a Local Waste Recycling Center. Insulation shall be recycled as plastic and the steel vessel as scrap iron.

9 - Warranty

This product is covered by warranty under the conditions listed in this Manual and in compliance with the Warranty Certificate. A Warranty Certificate is an integral part of this accumulation tank scope of supply.

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