



Installation and technical manual

Dynamic Storage Heater



AU



DERBY

TTS 20
TTS 24
TTS 30
TTS 36
TTS 40
TTS 51
TTS 61

TTN 40

THESE INSTRUCTIONS SHOULD BE READ CAREFULLY AND RETAINED FOR FUTURE REFERENCE.

BE SURE TO OBSERVE ALL LABELS AND WARNINGS ON THE APPLIANCE.

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Attention : The storage heater must only be installed by a competent electrician.

SPECIAL NOTES – Safety

 Keep children under 3 years of age away from the appliance unless constant supervision is provided. - The appliance can be switched on and off by 3- to 7-year-old children if they are supervised or have been instructed in the safe use of the appliance and understand the resulting dangers. The prerequisite for this is that the appliance has been installed as described. Children aged 3 to 7 must not insert the plug into the socket or regulate the appliance. - The appliance can be used by children aged 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. - Children must not play with the appliance. Cleaning and user maintenance must not be carried out by children without supervision. - Parts of the appliance can become very hot and cause burns. Special care must be taken when children and vulnerable persons are present. - Do not cover the appliance. - Do not place the appliance directly under a wall socket

Manual Storage Heater

Before setting up, have the load-bearing capacity and tread resistance of the floor checked by a specialist. When setting up on deep-pile carpets or similar soft floor coverings, it must be placed on a base plate (accessory) so that the floor clearance is maintained.

Safety

Due to the surface temperature of the electric heat storage unit, the following safety distances must be observed:

To walls	min. 2 cm
To walls made of combustible material (e.g. wood)	min. 2 cm
To a covering above (e.g. stone window sill)	min. 3 cm
To a ledge made of combustible material (e.g. wood)	min. 10 cm
To objects in front of the air outlet grille on all sides	min. 50 cm
Between two or more electric heat devices	min. 3 cm



Caution:

Do not cover the appliance!

Do not place objects so that they touch the heater!

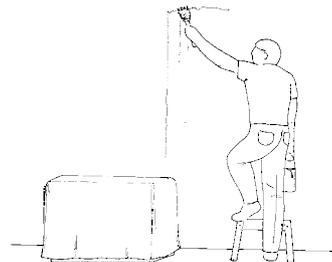
In the case of curtains and textiles, make sure that they are not blown on by the hot air stream. Also, do not place flammable or highly heat-insulating materials such as newspapers, blankets, laundry, spray cans, etc. on or directly next to the unit. Please make absolutely sure that the unit is securely attached to the wall.

Electric storage heaters must not be operated in rooms that are at risk of fire or explosion due to dust, gases or vapours. Such rooms include, for example, the short-term operation of the storage heater when laying, sanding or sealing floors of any kind. In this case, the unit must not be charged and must also be covered - especially in the area of the ventilation grille. When setting up heat storage units in commercial premises, please contact your responsible employers' liability insurance association.



Caution:

Observe national/ regional installation regulations

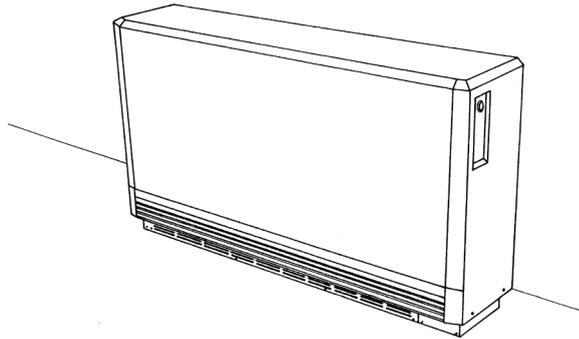


Manual Storage Heater

Introduction

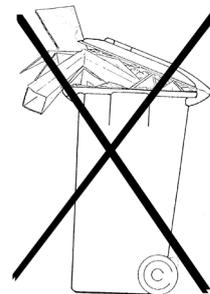
We congratulate you on your purchase of your Technotherm storage heater.

Although the Installation and Operation of the heater is very simple, we advise that you read this booklet carefully as it gives you important information on safety, the installation and operation, as well as the care of the appliance. Please retain the instructions and pass them on to future occupants of the heated dwelling.



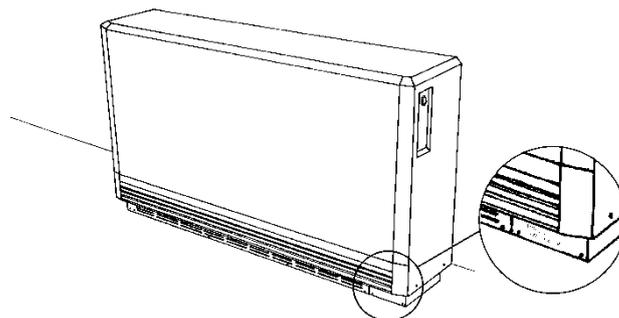
Please note the following: -

- dispose of all packing materials in the proper way.



- if the heater shows any sign of damage, report it straight away, before installation!
- chipped or slightly damaged bricks can be used without problem.
- this heater must only be installed and serviced by a qualified electrician.

Read all the information on the rating label and make sure that this corresponds to the required values.



Manual Storage Heater

Caution

Storage Heaters may become very hot!

Electric storage heaters are space heating appliances and will attain surface temperatures in excess of 90°C (195°F) and greater directly in front of or above the discharge grille.

Do not create fire hazards by placing flammable objects, materials or substances on, against or near the heater.

Keep the air discharge grille clear at all times and allow a 50 cm (19") clearance in front of the heater, 3cm (1¼") to the sides and top.

This manual must be read by the installing electrician prior to installation of the heater and by the owner or occupant prior to operation of the heating system. Save this manual and pass it on to any new owner or occupant. Should the heater(s) require service, provide this manual to the service personnel.

This equipment is only for installation in accordance with current Electrical Codes. It should only be installed by a competent, licensed electrician. Any deviation from these instructions will result in voiding the warranty and may create a dangerous condition.

Description

How it works...

The concept is simple:

- Use electricity when there is little demand for it (usually at night) so that the Electricity Board can sell it at lower rates.
- Turn this cheap electricity into heat which can be easily stored.
- Store just enough heat to comfortably meet your daily needs.
- Use the stored heat (but not electricity) during the rest of the day when electricity costs much more because everybody else needs it (industries, businesses, schools and homes).

Here is how your TTS Heating System does it:

The Electricity Board puts in a different type of electric meter which measures the electricity you use during the "Off-Peak" hours on one set of dials and the "On-Peak" hours on another set. Some utilities may, instead, provide a separate meter which measures only the electricity used by the storage heaters. This will depend on the type of rate your Power Company offers.

TTS heaters work the same way with any of these rates. When the meter switches at the pre-set time or by command, from the high rate "On-Peak" to the low rate "Off-Peak", it signals a control panel in the heating system to turn on the individual TTS heaters and begin charging them up.

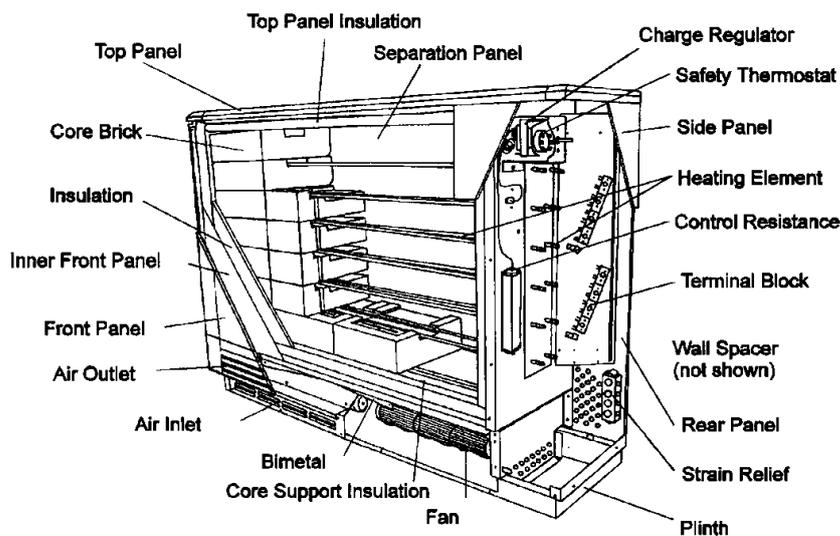
The temperature in each room is controlled independently by a thermostat (integral or wall mounted) used to operate a small fan within the heater to discharge stored heat as needed. No other heating system offers the precise combination of thermostat controlled convection heat supported by a constant background of radiant heat emitted by the warm surfaces of the heater case. No ups and downs in room temperature, just comfort at its best.

Manual Storage Heater

Design and Construction

TTS heaters are an assembly of 6 primary elements:

1. **Case** - The attractively designed steel case is finished with a high degree of craftsmanship. All surfaces painted with a neutral off-white baked enamel. This case is very strong and provides the base upon which all other components are supported.
2. **Thermal Insulation** - The thermal insulation within the heater provides a key function in the heaters' design and is a combination of Vermiculite panels and a micro porous type ceramic material. The result is the ability to store heat within the brick core at temperatures reaching 675°C (1250°F) and yet provide surface temperatures on the case which are typically below 75°C (165°F).
3. **Storage Core** - The actual heat storage device is an assembled core made up of refractory bricks of feolite material, approx. 6 kg (13 lbs) each. The bricks are identical and are delivered in packs of 2's and 3's (see Technical Data, page 14). The bricks are moulded, high temperature fired and specifically formulated to provide the highest specific heat and thermal conductivity for the maximum efficiency as a storage core.
4. **Heating Elements** - The electric heating elements are a metal sheath, rod type made of the finest materials proven in millions of installations over the past 20 years. This element placed within the special shaped storage bricks, provides for rapid heat recovery and an even application of heat to the storage core.
5. **Charge Controls** - TTS heaters are equipped with two separate thermostat controls, the first is the "Manual" charge thermostat which can be fitted with a control knob at the front of the heater. This control is used to manually set the temperature level that the heater storage core will be charged to during each charge period and thus the amount of heat stored. The second charge control is a fixed setting "Safety" or high temperature limit thermostat, which will shut the heater off if the other controls fail to limit the maximum temperatures.
6. **Fan Assembly** - The TTS heater utilizes a low-volume, slow speed fan to push heat from the storage core when the wall thermostat signals the need for heat in the room. The fan assembly also includes the discharge air-mixing valve used to keep the output air temperature at a safe and comfortable level. TTS heater fans are nearly silent in normal operation and should not cause concern even in bedroom applications.



Manual Storage Heater

Operating Instructions

The operation of TTS heaters is convenient and economical. The heaters charge overnight. Radiation from the casing provides a low level of background heat. The fan can be switched on as desired increasing heat output.

Heater Charging Adjustments

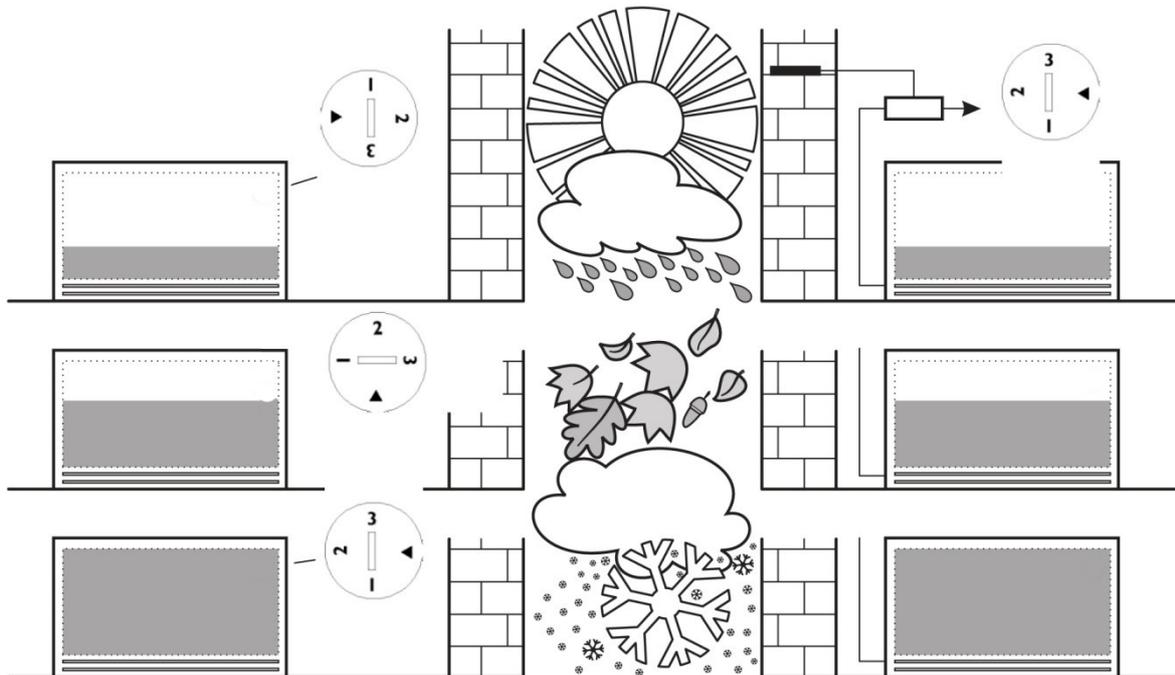
TTS heater charging can be controlled manually.

Manual Control

When only "Manual" adjustment of the TTS heater is needed, the exterior mounted control knob must be installed. This is the knob that was found in the cardboard shipping support used between the heater elements. The heater's thermal charge level can now be adjusted by a simple turn of the knob.

Suggested knob settings for maximum heating comfort and efficiency are:

Summer weather	No charge
Cool weather	1/3 charge
Cold weather	2/3 charge
Very cold weather	Full charge



Manual Storage Heater

Output Control

A proportion of the stored heat will be radiated from the casing providing a low level of background heat. Output can be increased by switching on the fan(s) whereby heat is discharged from the low-level outlet grille.

This is done at the room thermostat located on the control panel. If the thermostat is provided with an "ON-OFF" switch for the fan(s) set this switch to "ON". Then turn the thermostat knob to the desired room temperature indicated on the dial. Once set, the thermostat will then keep the room temperature automatically at this level by switching the fan(s) on and off accordingly.

Care of the Storage Heater

TTS storage heaters are designed to require minimum maintenance. The surface (when cool) can be cleaned with any "liquid" household cleaner.

Note - Do not use abrasive cleaners as these may damage the finish.

In those areas where considerable amounts of dust, dirt and/or fur are encountered, it is recommended that the area behind and in front of the heater be vacuumed quite frequently. The fan assembly and base compartment should be completely cleaned at least every three years just before a heating season.

Electrical Shock Hazard

Technotherm storage heaters are supplied by more than one electrical circuit.

Be sure that all circuits are turned off before opening the heater case.

Service should only be made by competent, qualified personnel.

Manual Storage Heater

Installation

Positioning

Please read the instructions in the introductory section concerning position, safety and load-bearing capacity.

If in doubt, consult a building engineer.

Transport

To facilitate transport, the heater and the bricks are packaged separately. The 7 bricks per core column are packed in two's and three's.

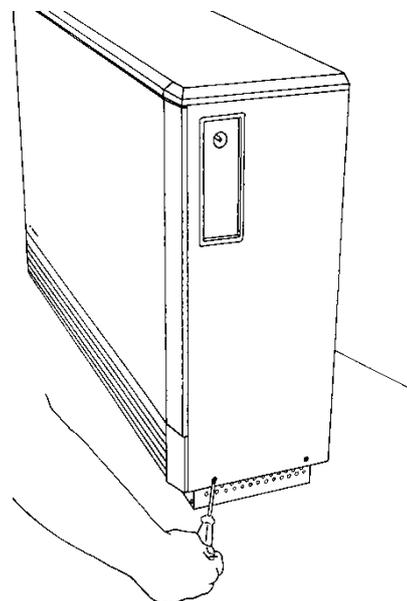
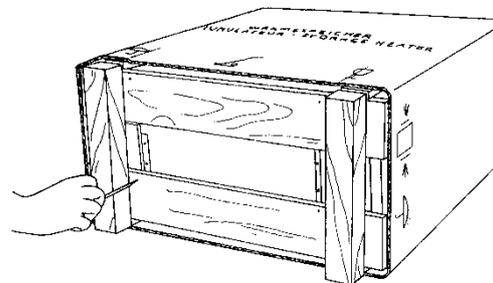
The heating elements are factory fitted and pre-wired.

Preparation

In order to avoid unnecessary scratching or other damage to the heater it is advised to unpack it close to its proposed place of installation.

Tip the carton on its back and remove the screws from the wooden palette to which the base of the heater is attached.

Bring the carton back upright, cut the bands and pull the carton from the heater. Remove the wooden battens and the plastic covering and then take the heater from its palette.



The **installation** can now begin:

Unscrew the two screws holding the right-hand side panel and, after pulling off the regulator knob, pull the panel outwards and downwards to remove.

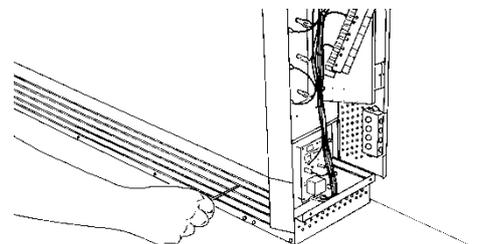
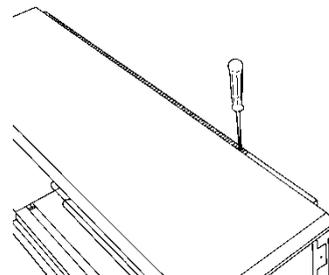
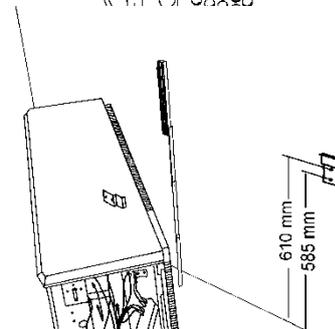
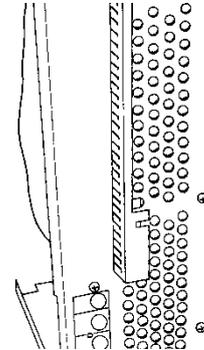
Manual Storage Heater

The heater must be prevented from tipping over by fixing the two brackets to the wall using the screws and plugs, all of which are contained in the plastic bag in the right-hand side of the heater cabinet. If these screws and plugs are unfit for the wall fabric in question, other suitable materials must be used.

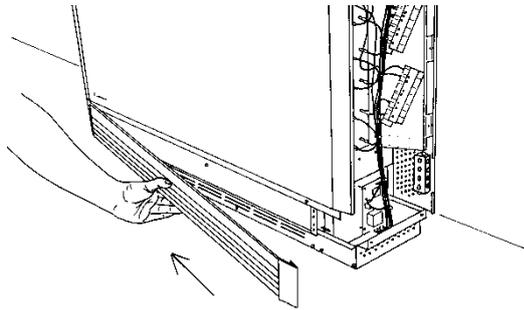
The connecting cables can now be drawn through the strain relief at the back of the heater and cut to length. Fix the safety brackets to the wall at the height shown in the diagram. Remember, when placing the heater on thick-pile carpeting that the heater will sink somewhat into the pile. This must be allowed for as well as if the heater is placed on a board or feet to raise it from the carpet. The distance between the brackets should be about one-half of the heater length, although the exact spacing is not important.

For more stability the brackets can be screwed to the heater through the spacer bracket at the rear of the heater.

Remove the metric screw at the right-hand end of the air-outlet grille....

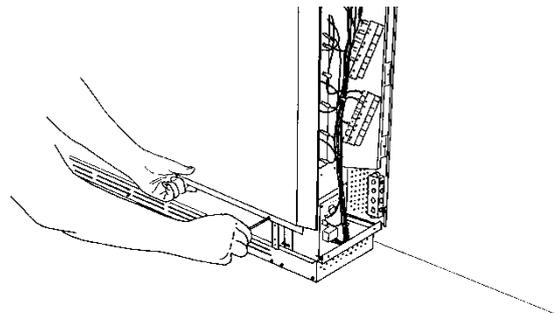


Manual Storage Heater

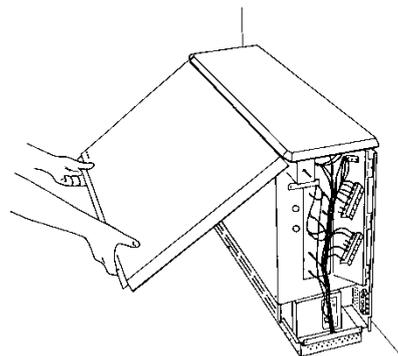


.... pull the grille slightly outwards and push it to the left to remove it.

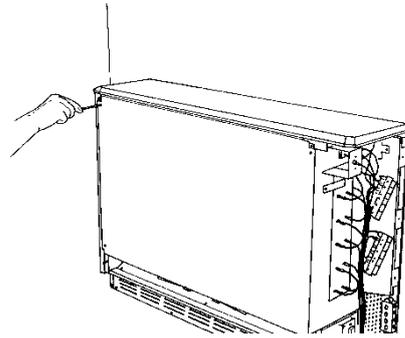
Remove the front panel screws.



Pull the bottom of the front panel out to about 45° and then pull it downwards to remove it from the top panel.



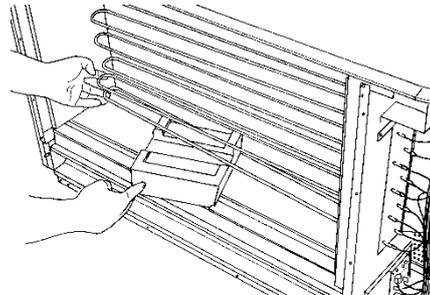
Manual Storage Heater



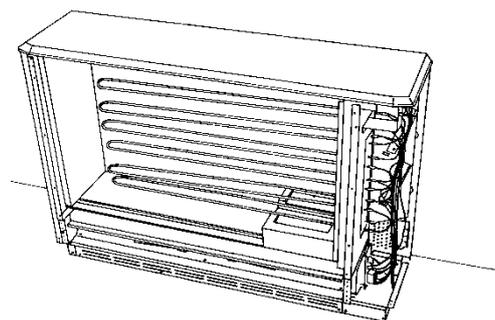
Remove the four screws from the inner front panel and **carefully** remove the panel itself. Be very careful not to damage the fragile insulation attached to the rear of the panel.

Having removed the card holding the heating elements in position, the core bricks are then put into the heater, starting with the bottom row. To facilitate this, lift the heating element up slightly.

The first brick is put into the core on the left-hand side ...

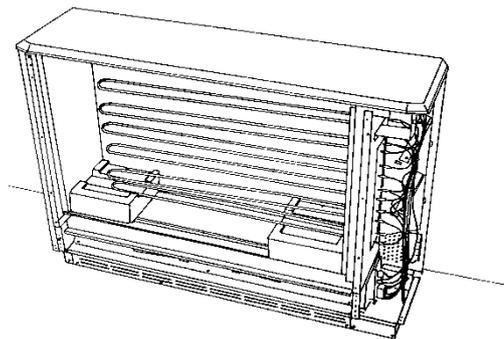


... then slid across to the right.

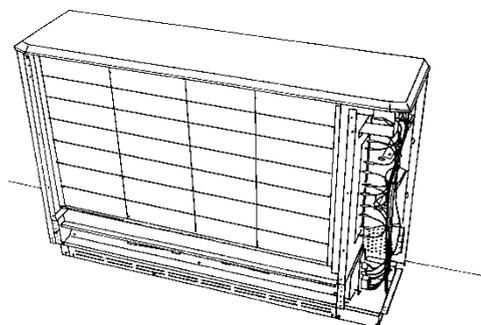


Manual Storage Heater

The second brick is then set on the far left of the core and the remaining bricks in the middle.



This is repeated until all the bricks have been installed.



After removing any waste, dust or other particles from the interior of the heater, the panels can be refitted in the reverse order, i.e.

1. inside front panel
2. outside front panel
3. air-outlet grille.

Manual Storage Heater

Connection of Supply Cables

Warning! THIS APPLIANCE MUST BE EARTHED!

Only heat resisting cable shall be used. The wire in the mains cable will be coloured according to the following code:



Colours may vary nationally

Green and Yellow:	Earth
Brown:	Live
Blue:	Neutral

The electrical wiring requires two supply cables. Ensure the cable is appropriate for the heater rating.

1. Feed the two supply cables (three if automatic charge control is used) in from the rear of the heater through the cable clamp and to the terminal block.
2. Storage Element Supply - Connect the live phase cables to the terminals marked L1, L2 and L3 and connect the neutral to one of the terminals marked N. See instructions on Page 19 for 240V Connection.
3. Fan Supply - This supply is connected into the terminal strip located below the element terminal block. Connect the live supply to the terminal marked LE and the neutral supply to the terminal marked N.
4. Earth Connection - Ensure the earth cables are securely fixed to the earthen screws located at the bottom of both terminal blocks.
5. Ensure all cables are firmly connected to the terminal blocks.

Manual Storage Heater

System Start-up

Note: All breakers must be off for the heater to be safely de-energized to permit safe servicing.

Steps to activate the system

1. **Control Panel** - Energize control panel at the circuit breaker.
2. **Fans and Thermostats** - Check proper operation of fans and thermostats. Check to see that the fans go ON and OFF with operation of the thermostat.
3. **Circuit Breakers** - Switch "ON" all element feed circuit breakers.
4. **First Charge** - The heater insulation is free from organic binding material. It can thus be operated immediately without having to go on full charge in order to purge any odours. It is, however, advisable, to ventilate the room well during the initial charging phase.
5. **Current Draw** - It is wise to check the current draw of each heater. See the Technical Data Sheet for the proper amperage. This can be done at the breaker panel or at the individual heaters.

Manual Storage Heater

Explanation:

Model TTS 20 – TTS 61 – Device with manual control

Technical Data: model standard

Model	TTS 20	TTS 24	TTS 30	TTS 36	TTS 40	TTS 51	TTS 61
Nominal rating *	2000 W	2400 W	2700 W	3600 W	4000 W	5000 W	6000 W
Nominal voltage	240 V~ 415V 2N~ 415V 3N~ 50 Hz	240 V~ 415V 2N~ 415V 3N~ 50 Hz	240 V~ 415 V 3N~ 50 Hz				
Nominal charge period*	8 h						
Nominal charge	16 kW	19,2 kW	24,0 kW	32 kWh		40 kWh	48 kWh
Maximum charge	22 kWh	22 kWh	32 kWh	32 kWh	35 kWh	44 kWh	53 kWh
Dimensions (mm)							
width							
height	580	580	760	760	940	940	1120
deep	660 245	660 245	660 245	660 245	660 245	660 245	660 245
Weight total	128 kg 32 kg	128 kg 32 kg	183 kg 39kg	183 kg 39 kg	238 kg	238 kg	292 kg
Weight cabinet	32 kg	32 kg	39 kg	39 kg	46 kg	46 kg	53 kg
No. Brick packs	4 x 42 2 x 43	4 x 42 2 x 43	6 x 42 3 x 43	6 x 42 3 x 43	8 x 42 4 x 43	8 x 42 4 x 43	10 x 42 5 x 43
Fan	240 V~ / 50 Hz / 1 x 9 W	240 V~ / 50 Hz / 1 x 9 W	240 V~ / 50 Hz / 2 x 9 W	240 V~ / 50 Hz / 2 x 9 W	240 V~ / 50 Hz / 2 x 9 W		
Power ZH**	750 W	750 W	1000 W	1000 W	1000 W	1000 W	1500 W

Technical data:model low

Model	TTN 40
Nominal rating *	4000 W
Nominal voltage	240 V~ 415 V 3N~ 50 Hz
Nominal charge period*	8 h
Nominal charge	32 kWh
Maximum charge	35 kWh
Dimensions (mm)	
width	1120 / 1300
height	536 / 536
deep	245 / 185
Weight total	215 kg
Weight cabinet	43,5 kg
No. Brick packs	5 x 42 / 6 x 44 5 x 43 / 6 x 45
Fan	240 V~ / 50 Hz / 2 x 9 W
Power ZH**	1500 W

These heaters are drip-water proof if mounted to a wall as described in the installation instructions

* Power ratings with full rated power

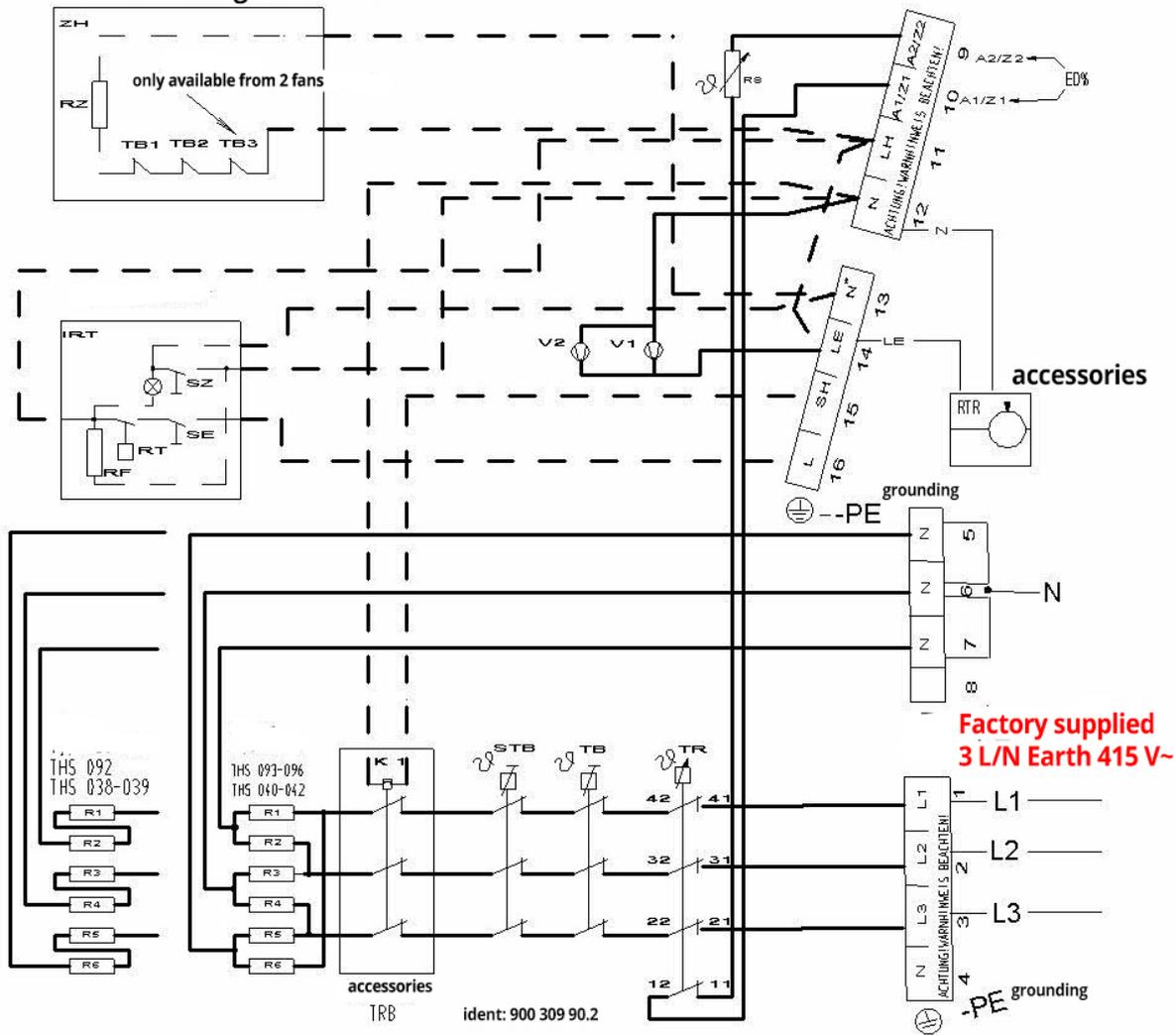
** ZH not for Australia

Caution:

An all-pole disconnecting device must be provided in the dispatcher system

Manual Storage Heater

Additional heating accessories



Factory-fitted components

TR	Charge control
TB	Safety thermostat
RS	Control resistor
R1..6	Heating elements
IRT 24 Z	Integral Room Thermostat
V1.V2	Fans (TT20&30 only one)
PE	grounding

A2/Z2	charge control
LH	DAE
LE	discharge fan(s)
SH	Thermal Relay
L	line voltage for IRT

Accessories

K1	Thermal Relay
TBZ	Safety thermostat for DAE
RZ	Day Acting Element (DAE)
SE	Fan switch
SZ	DAE switcz

Terminals

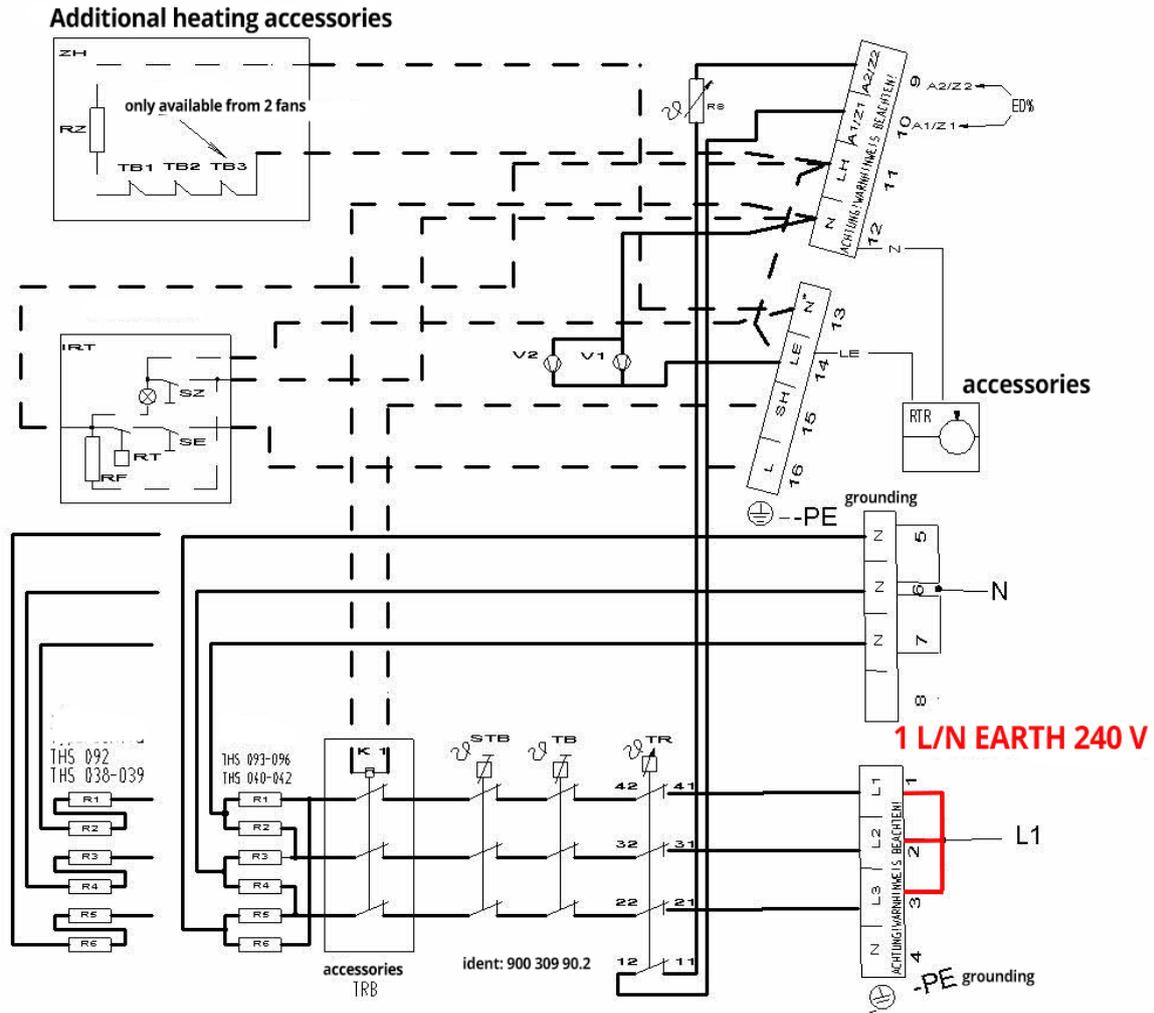
L1,L2,L3	Charge Voltage
A1/Z1	from central

Our equipment is supplied with power stickers. Depending on the connected power, the corresponding sticker has to be glued into the surrounding area of the rating plate.

MODELL TTS 36	IP 20
Typ THS 093	
Nennleistung	3600 W
Aufladezeit	8 h
Nennspannung	415 V~
Nennaufladung	28,8 kWh
Gebälse	240 V~ 50Hz 1x9W
Leistung ZH 1000 W	Gewicht 183 kg
Artikelnr. 850 036 005	Fabr.Nr.
Lucht LHZ Elektroheizung GmbH&Co.KG Reinhard-Schmitt-Str.1 09217 Burgstädt	

900 318 741

Manual Storage Heater Technotherm



Factory-fitted components

TR	Charge control
TB	Safety thermostat
RS	Control resistor
R1..6	Heating elements
V1.V2	Fans (TT20&30 only one)
IRT 24 Z	Integral Room Thermostat
PE	grounding

Accessories

K1	Thermal Relay
TBZ	Safety thermostat for DAE
RZ	Day Acting Element (DAE)
SE	Fan switch
SZ	DAE switch

Terminals

L1,L2,L3	Charge Voltage
A1/Z1	from central
A2/Z2	charge control
LH	DAE
LE	discharge fan(s)
SH	Thermal Relay
L	line voltage for IR

Important! Do NOT connect Terminal 13, 14 and 15 to power supply. Terminal 14 only when an external Thermostat (accessory) is being use.

All power cables must be disconnected before accessing the connection terminals.

Manual Storage Heater Technotherm

Additional Information

Operation without auxiliary heating

Switch on the switch.

Turn the integrated room temperature control knob to the maximum position (clockwise stop) until the room temperature has reached a comfortable level. Then turn the controller knob slowly to the left until the controller switches off (audible "click"). The room temperature is now automatically kept constant at this level and needs no further adjustment.

Operation with auxiliary heating (**not for Australia**)

If the unit is to be operated with auxiliary heating, the switch for the auxiliary heating must be set to position "I" and the switch for the fan must be set to position.

If heat is still required after the unit has been unloaded, the auxiliary heating switches on automatically and continues to heat the room. The operation of the auxiliary heating is indicated by the control lamp. If the room is not to be heated, the room thermostat is switched off via the fan switch. The setting on the room temperature controller is left as it is.

Energy-saving tip

A higher electricity price usually has to be paid for operation with supplementary heating. The auxiliary heating should therefore only be switched on when needed. Pay attention to the position of the switch "I - 0", as the control lamp only lights up during heating operation. At night, during prolonged ventilation and when the rooms are not in use, we recommend switching off the discharge fans. This can be done advantageously by installing a central switch or via a time switch. The setting on the units can then be left as it is. We reserve the right to make technical changes.



Always interrupt all electrical circuits before undertaking any work in the electrical compartment.

HEAD OFFICE

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