

Thermo Top Z

Supplementary Heater

Thermo Top E ***Thermo Top C***

Auxiliary Heater

Type Thermo Top E - B

Type Thermo Top Z/C - B
Fuel

Type Thermo Top E - D

Type Thermo Top Z/C - D
Diesel

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**3.2 Functional Description
Thermo Top E and C (Auxiliary Heater)****3.2.1 Switch On***Fuel*

When operating the "instant heat" switch button the timer display shows  or when operating the switch on the Telestart transmitter the operating indicator light on the transmitter flashes. This puts the heater in standby.

The glow plug, the combustion air fan and the circulation pump are activated. After 30 seconds the fuel dosing pump starts operation and combustion air fan operation is suspended for 3 seconds.

Subsequently the combustion air fan speed is increased in a ramp within 57 seconds to nearly full load operation. After reaching full load fuel delivery within this period the glow plug is deactivated and the combustion air fan operation increased to full load.

During the subsequent 45 seconds as well as in normal operation the glow plug functions as flame sensor to monitor the flame condition.

After all these events the automatically controlled heating operation starts. In case of a no flame condition or a flameout, a restart is automatically initiated. If the no flame condition persists, fuel delivery is stopped and the heater enters an error lockout with a run-down of the combustion air fan.

Diesel

When operating the "instant heat" switch button the timer display shows  or when operating the switch on the Telestart transmitter the operating indicator light on the transmitter flashes. This puts the heater in standby.

The glow plug, the combustion air fan and the circulation pump are activated. After 30 seconds the fuel dosing pump starts operation and combustion air fan operation is suspended for 3 seconds.

Subsequently the combustion air fan speed is increased in two ramps within 56 seconds to nearly full load operation. After a stabilisation phase (constant speed) of 15 seconds the combustion air fan speed is again increased in a ramp within 50 seconds to nearly full load. After reaching full load fuel delivery the glow plug is deactivated and the combustion air fan operation increased to full load.

During the subsequent 45 seconds as well as in normal operation the glow plug functions as flame sensor to monitor the flame condition.

After all these events the automatically controlled heating operation starts. In case of a no flame condition or a flameout, a restart is automatically initiated. If the no flame condition persists, fuel delivery is stopped and the heater enters an error lockout with a run-down of the combustion air fan.

A flameout during normal combustion operation causes an automatic restart.

3.2.2 Heating Operation*Fuel*

When the temperature rises to reach 72° C the heater switches to the energy saving part load operation. A rise in temperature up to 76.5° C causes the heater to enter a control idle period. This also happens when exceeding a total heating operating time of 76 minutes.

The circulation pump, the vehicle's own heating air fan, and the operation indicator light remain on during control idle.

After cool-down of the coolant to 71° C the heater resumes part load operation. Another rise in temperature to 76.5° C causes the heater to enter again the control idle period. A drop in the coolant temperature during part load operation due to an increased demand in heat will cause the heater to switch to full load operation at 56° C.

Diesel

Heating operation for the Diesel type heater is identical in the sequence of events. Should the coolant temperature however not drop within 900 seconds during the control idle period to below 71° C, a subsequent drop in the coolant temperature below 71° C causes the heater to perform a regular starting sequence into full load operation.

3.2.3 Switch Off

When turning the heater off by pushing the "instant heat" switch button  ( in indicator panel extinguishes) or when operating the switch on the Telestart (flashing indicator on hand-held transmitter extinguishes) the vehicle heating air fan stops.

Combustion terminates and run-down commences. The circulation pump and the combustion air fan first continue operation to cool the heater down (run-down) to be automatically switched off afterwards.

NOTE

The run-down time and the combustion air fan speed depend on the heater operating condition at the time of deactivation.

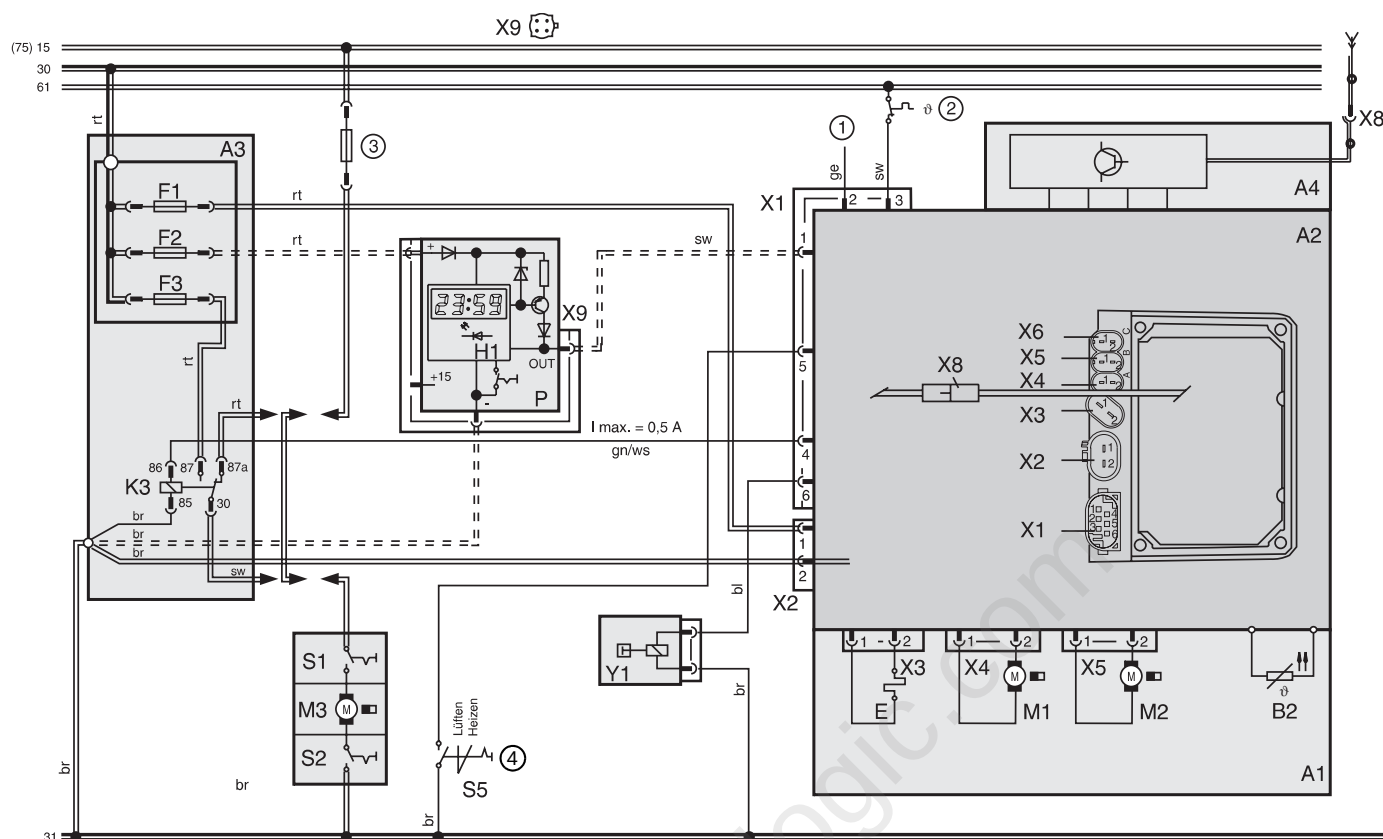
Run-down time is for:

Fuel

168 seconds when deactivated in full load operation and 157 seconds when deactivated in part load operation.

Diesel

175 seconds when deactivated in full load operation and 100 seconds when deactivated in part load operation. Dependent on the software variant implemented in the control unit there might be deviations from those run-down periods.



Item	Nomenclature	Remark
A1	Heater	Thermo Top E or Z/C
A2	Control unit	
A3	Connector box	
A4	Telestart receiver	T60
B2	Temperature sensor	
E	Glow plug / flame sensor	
F1	Fuse 15 A	Flat fuse SAE J 1284
F2	Fuse 1 A	Flat fuse SAE J 1284
F3	Fuse 25 A	Flat fuse SAE J 1284
H1	LED (in item P)	operating indicator light
K3	Relay (in item A3)	vehicle air fan
M1	Motor	combustion air fan
M2	Motor	circulation pump
M3	Motor	vehicle air fan
P	Timer, digital	for timer operation
S1	Switch for vehicle air fan	depending on vehicle S1 or S2
S2	Switch for vehicle air fan	depending on vehicle S1 or S2
S5	Switch	summer/winter switch
X1	Connection, 6-pole	
X2	Connection, 2-pole	water repellant
X3	Connection, 2-pole	water repellant
X4	Connection, 2-pole	water repellant
X5	Connection, 2-pole	water repellant
X6	Connection, 2-pole	water repellant
X8	Connection, 2-pole	HF, coaxial
X9	Connection, 4-pole	
Y1	Dosing pump	

Wire Gauges		
	< 7.5 m	7.5 - 15 m
-----	0,5 mm ²	0,75 mm ²
=====	0,75 mm ²	1,5 mm ²
=====	1,5 mm ²	2,5 mm ²
=====	2,5 mm ²	4,0 mm ²
=====	4,0 mm ²	6,0 mm ²

Wire Colours	
bl	blue
br	brown
ge	yellow
gn	green
gr	grey
or	orange
rt	red
sw	black
vi	violet
ws	white

Legend for circuit diagrams

- ① Diagnosis
- ② Outside air temperature
- ③ Vehicle heating air fan fuse provided in vehicle
- ④ Option

Fig. 702 Automatic Switching Circuit for Thermo Top E and Z/C, 12 V Timer and Telestart T60

9.2.3 Burner Insert with Glow Plug / Flame Sensor, Replacement**CAUTION**

In case of Thermo Top E and C the circulation pump must be removed first (see 9.2.1.1).

9.2.3.1 Removal

1. Remove combustion air fan (see 9.2.2.1).
2. Push grommet of cable of glow plug / flame sensor (8, Fig. 902) out of burner housing (5).
3. Remove screws (10).
4. Withdraw burner insert (3) with glow plug / flame sensor (8) from burner housing (5).
5. Remove gasket (4) and discard.
6. Perform procedures on components after disassembly (refer to 9.1.1).

9.2.3.2 Installation

1. Position new gasket (4) on burner housing (5).
2. Position burner insert (3) for assembly and secure with screws (10). Torque tighten screws to 4 ± 0.4 Nm.
3. Press grommet of glow plug / flame sensor cable into burner housing (5).
4. Install combustion air fan (see 9.2.2.2).
5. Install circulation pump as required (see 9.2.1.2).

9.2.4 Control Unit / Heat Exchanger with Burner Housing, Replacement**CAUTION**

In case of Thermo Top E and C the circulation pump must be removed first (see 9.2.1.1).

9.2.4.1 Removal

1. Remove combustion air fan (see 9.2.2.1).
2. Push grommet of cable of glow plug / flame sensor (8, Fig. 902) out of burner housing (5).
3. Remove screws (10).
4. Withdraw burner insert (3) with glow plug / flame sensor (8) from burner housing (5) and remove.
5. Remove gasket (4) and discard.
6. Perform procedures on components after disassembly (refer to 9.1.1).

9.2.4.2 Installation

1. Position new gasket (4, Fig. 902) on burner housing (5).
2. Position burner insert (3) for assembly and secure with screws (10). Torque tighten screws to 4 ± 0.4 Nm.
3. Press grommet of glow plug / flame sensor cable into burner housing (5).
4. Install combustion air fan (see 9.2.2.2).
5. Install circulation pump as required (see 9.2.1.2).

Full Version Available

Webasto Thermo Top C and Thermo Top E Heater Service Manual

Webasto Thermo Top C, Thermo Top E heater service manual with repair, troubleshooting and disassembly procedures. Instant PDF download.

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