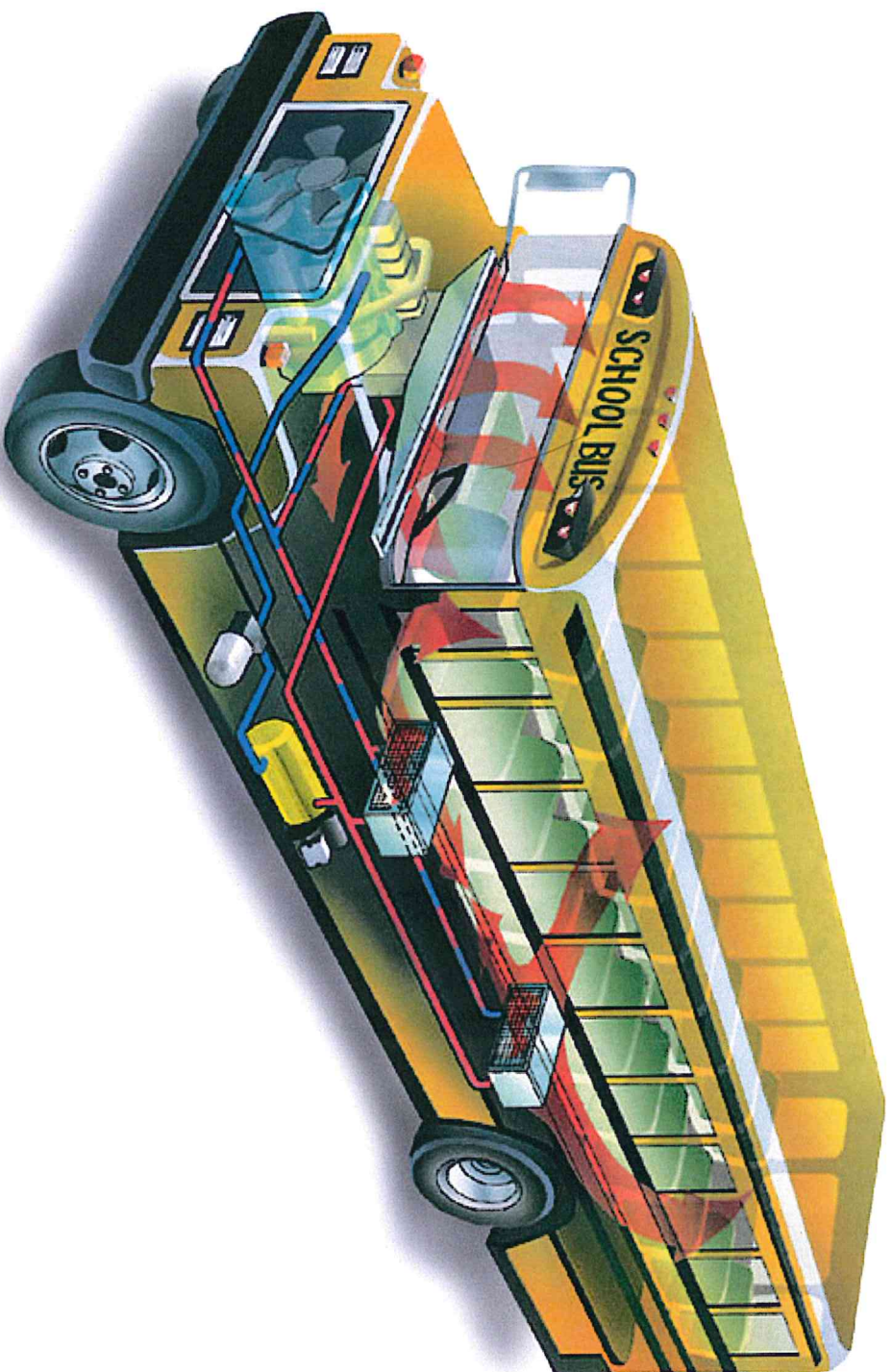
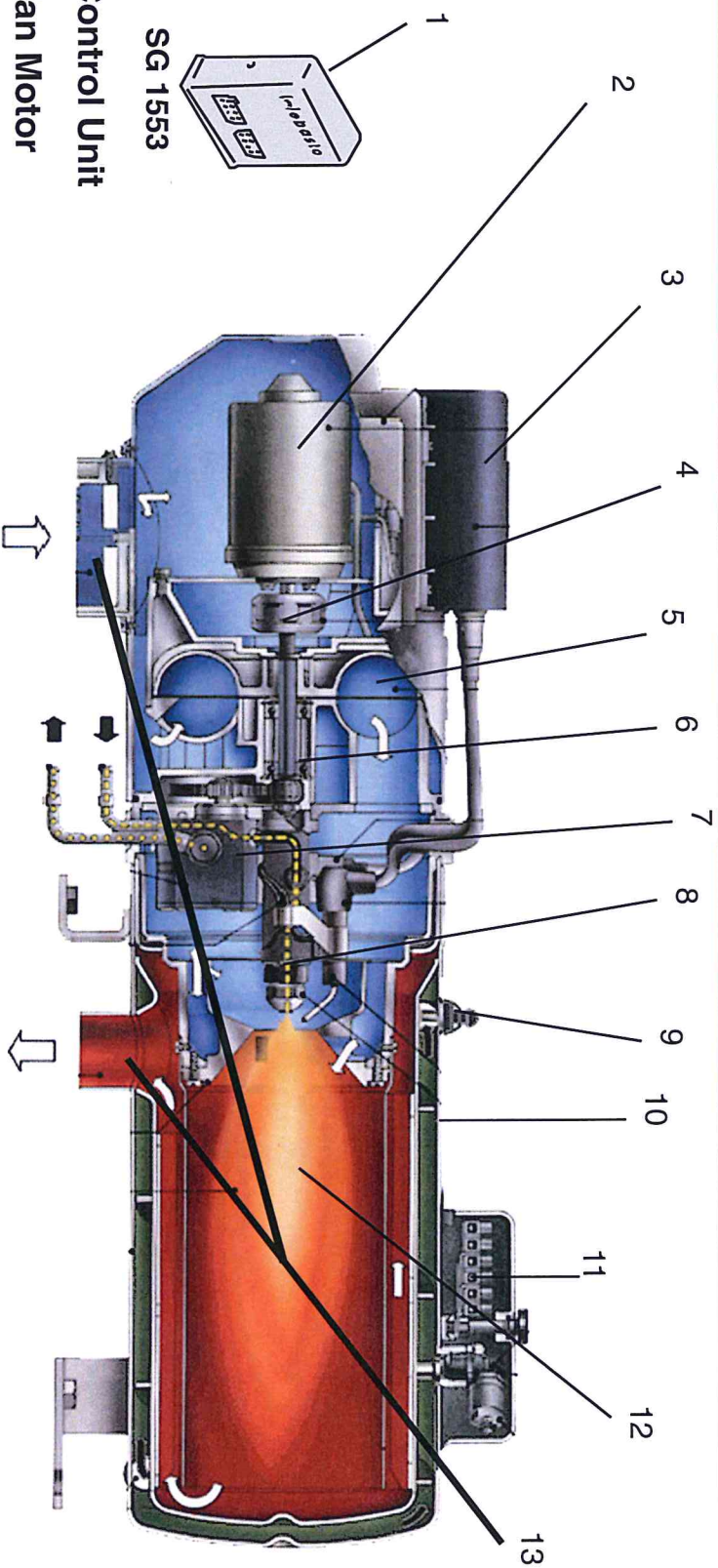


# Scholastic Series DBW 2010 Coolant Heater

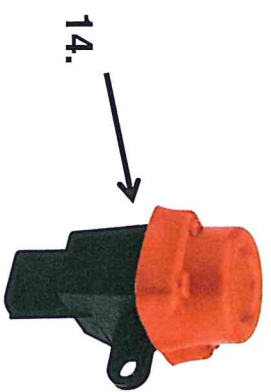
**ebasto**  
Feel the Drive



# Scholastic Series DBW 2010



- 1. Control Unit
- 2. Fan Motor
- 3. Ignition Coil, Wires and Electrodes
- 4. Coupler / Clutch
- 5. Fan Assembly
- 6. Bearings, Shaft and Drive Gear
- 7. Fuel Pump, Driven Gear and Fuel Lines
- 8. Fuel Nozzle and Holder
- 9. Coolant Bleeder Valve
- 10. Heat Exchanger / Water Jacket / Coolant Inlet-Outlet
- 11. Thermal Controls and Cover
- 12. Combustion Chamber
- 13. Intake and Exhaust
- 14. Inertia Switch





# Heater Specifications



## Heater

## Scholastic Series DBW 2010

*Heat Output*

13 Kw / 45000 Btu/h

*Fuel*

Diesel #1, Diesel #2, and Artic Blends

*Fuel Consumption*

1.5 l/h, .40 g/h,  
.33 lmp g/h

*Rated Voltage*

12 or 24

*Operating Range*

10-14 or 20-28 volts

*Power Consumption  
without Coolant  
Circulating Pump*

60 Watts  
(5 amp @ 12v)  
(2.5 amp @ 24 v)

*Permissible Ambient  
Temperature During  
Operation: Heater,  
Control Unit and  
Circulation Pump*

-40 to +60 C  
-40 to +140 F

# Scholastic Series DBW 2010



<b>Heater</b>		<b>Scholastic Series DBW 2010</b>
<i>Minimum Cooling System Capacity</i>		10 l / 2.2 gal
<i>Permissible Coolant Operating Pressure</i>		0.4 – 2.0 bar 6 – 29 psi
<i>Exhaust CO2</i>		10.5 – 11.0 % by volume
<i>Heater Dimensions:</i>		
Length		584 mm / 23 in
Width		205 mm / 8.1 in
Height		228 mm / 9 in
Weight		15 kg / 33 lbs
<i>Fuel Line:</i>		
Internal Diameter		6 mm / 0.25 in
Length		10 m / 33 ft
Suction Height		2 m / 6.6 ft
<i>Combustion Air Intake Pipe:</i>		
Internal Diameter		80 mm / 3.2 in
Length		5 m / 16.5 ft
Bends		270 degrees

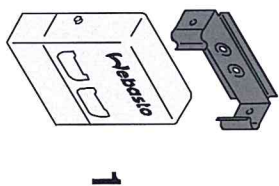
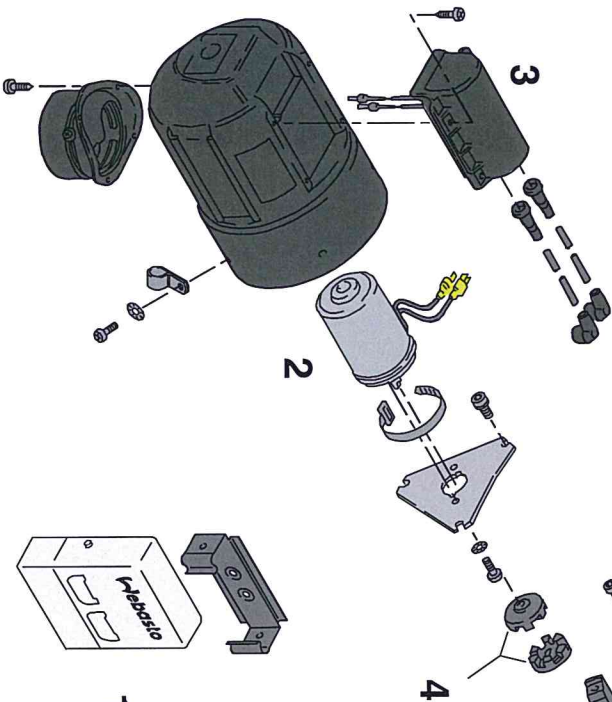
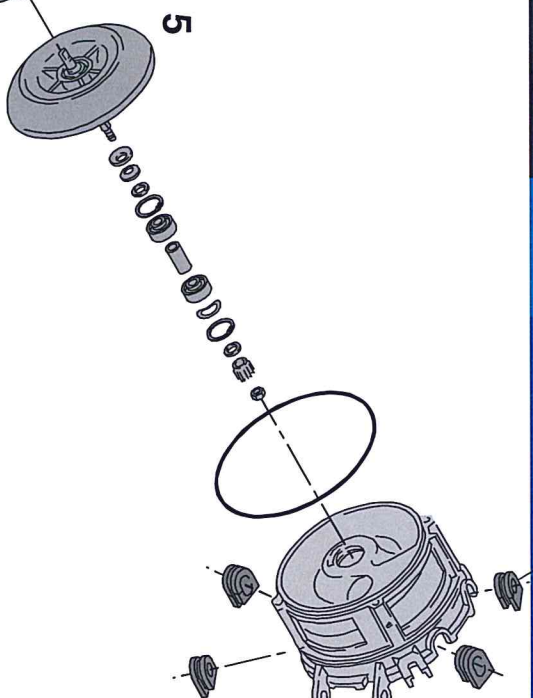
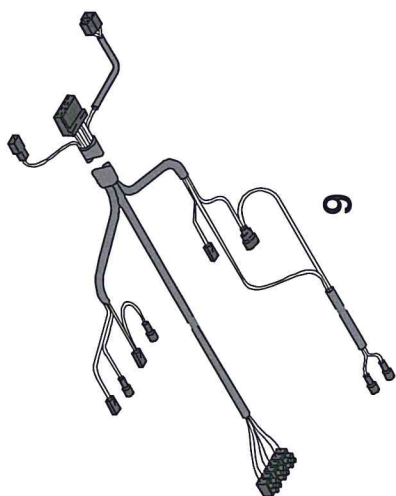
# Scholastic Series DBW 2010



<b>Heater</b>		<b>Scholastic Series DBW 2010</b>	
<b>Exhaust Pipe: Internal Diameter Length Bends</b>			38 mm, 1.5 in 5 m, 16.5 ft 270 degrees
<b>Coolant Hose Connections:</b>			25.4 mm / 1" (OD)
<b>Acceptable Coolant Temperature Difference Inlet to Outlet</b>			10 C / 50 F
<b>Circulating Pump</b>			<b>MP Pump</b>
<b>Flow Rate</b>			4543 l/h 20 g/min against .2 bar (2.9 PSI)
<b>Power Consumption<sup>5</sup></b>			72 Watts (6 amp @ 12 V)



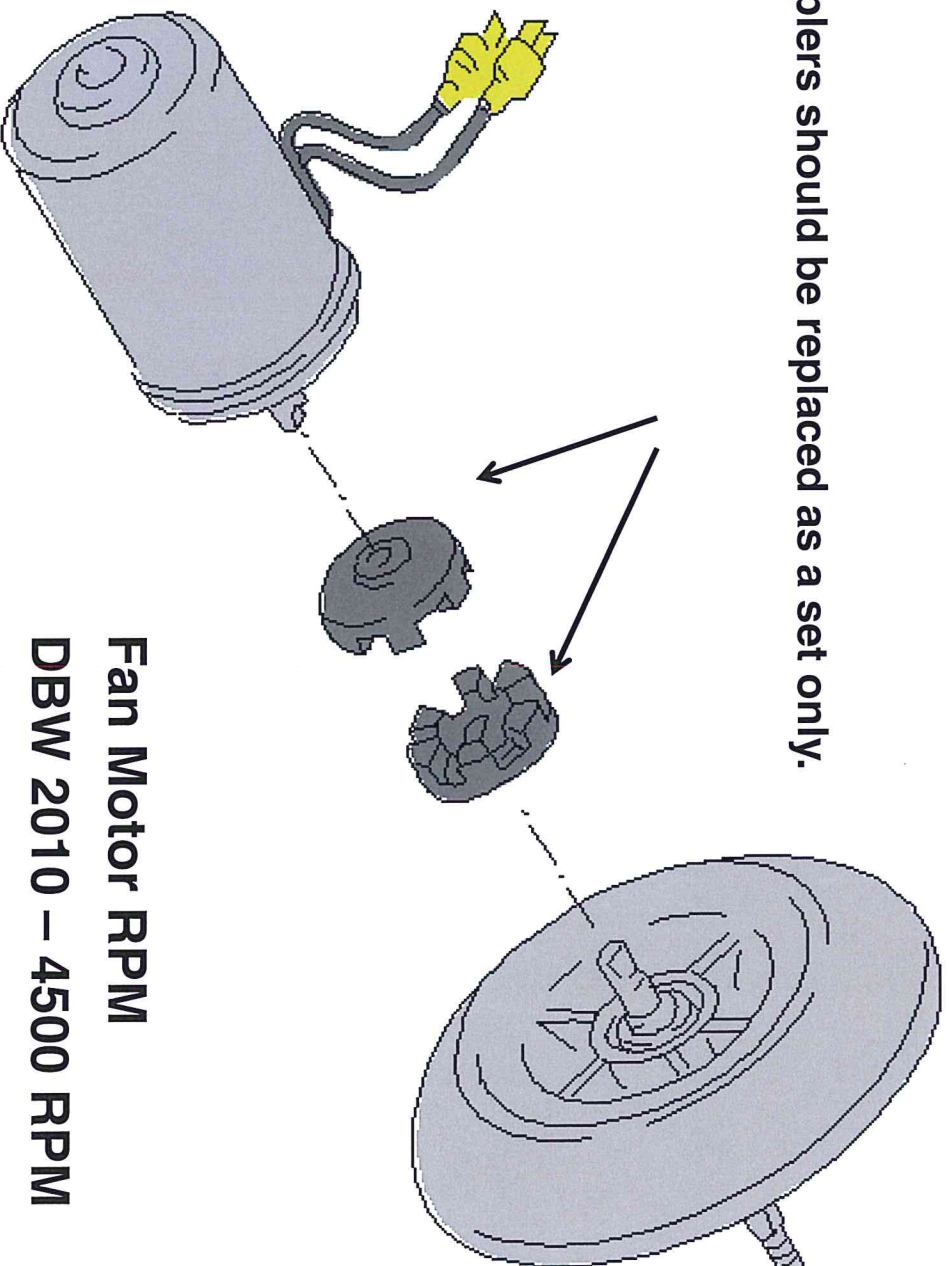
# Scholastic Series DBW 2010



- 1 Control unit SG 1553 (12 or 24 V)
- 2 Motor
- 3 Ignition spark transmitter
- 4 Coupling
- 5 Combustion air fan
- 6 Wiring harness
- 7 Bearings

Subassemblies - drive unit, combustion air fan

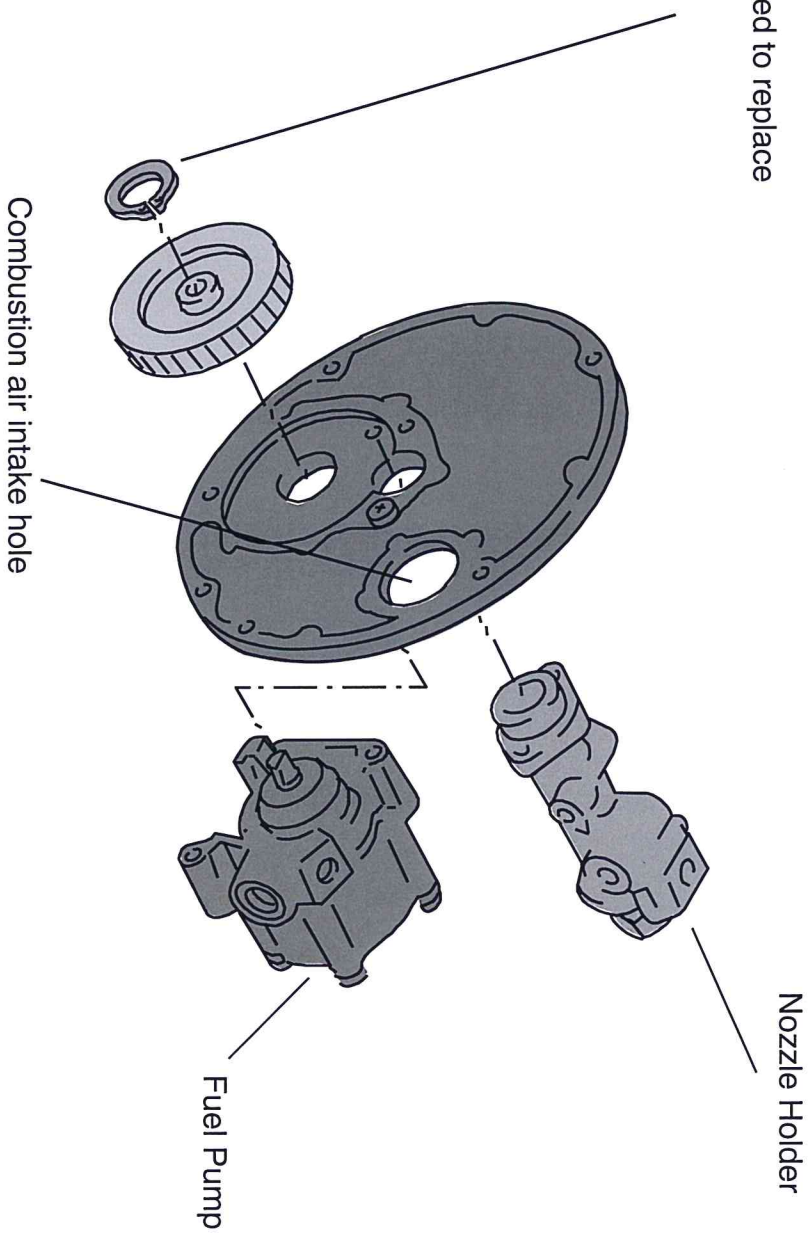
**Couplers should be replaced as a set only.**



**Fan Motor RPM  
DBW 2010 – 4500 RPM**

# Scholastic Series DBW 2010

Retaining clip must be removed to replace the fuel pump



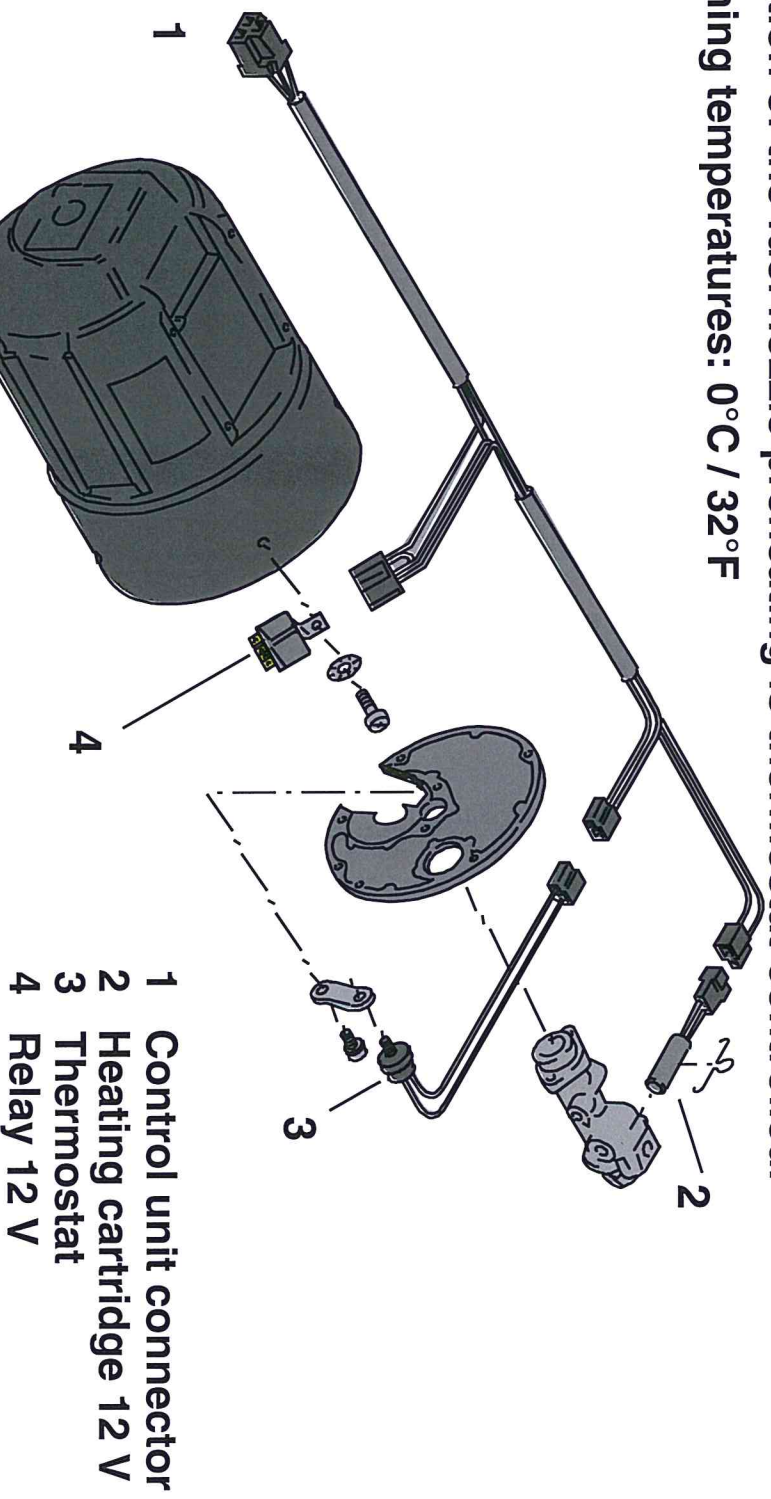


## Scholastic Series DBW 2010

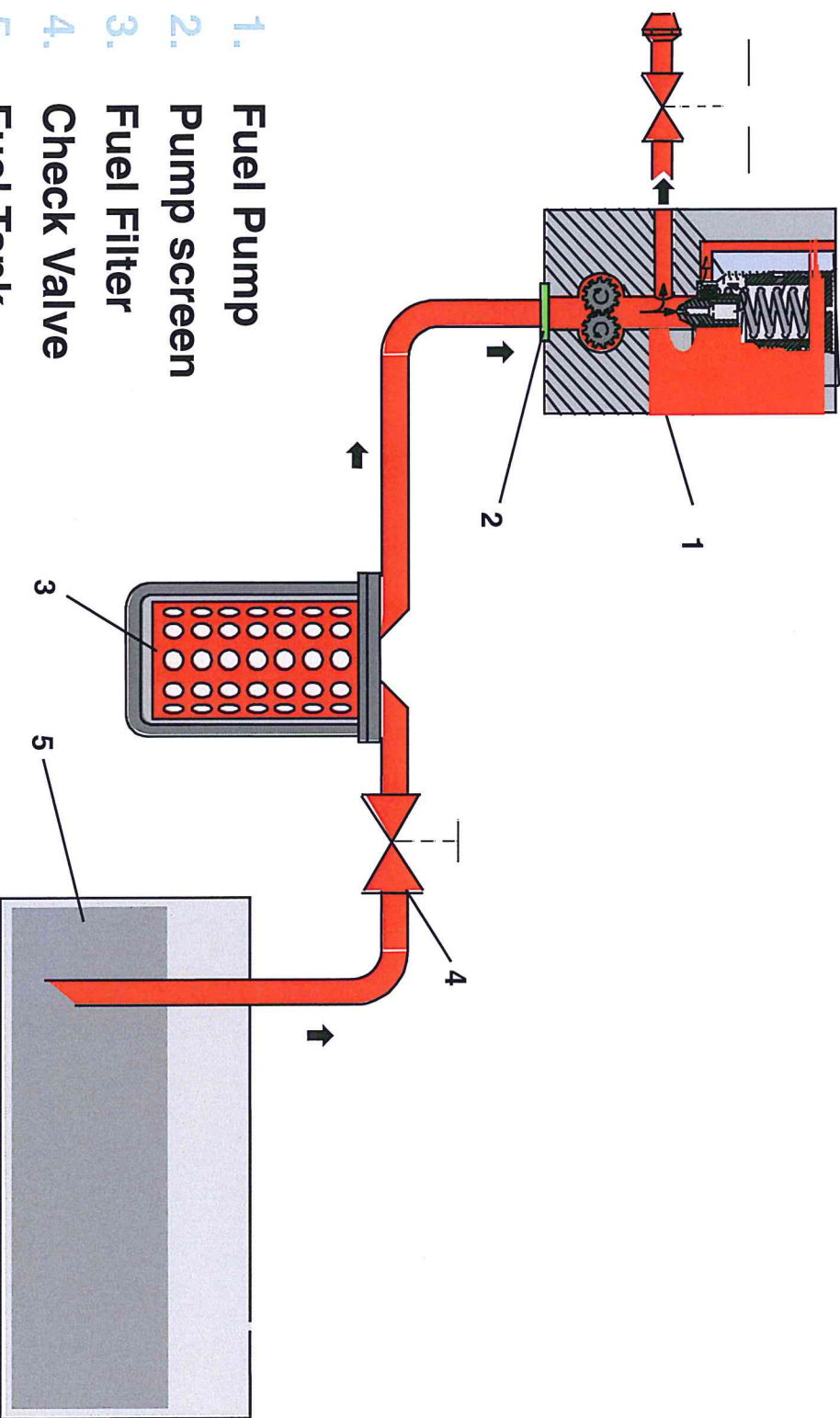
The fuel nozzle holder preheating feature assures uniform atomization of the fuel and a stable combustion process in the heater also in the case of low intake temperatures.

Activation of the fuel nozzle preheating is thermostat-controlled.

Switching temperatures: 0°C / 32°F







- 1. Fuel Pump
- 2. Pump screen
- 3. Fuel Filter
- 4. Check Valve
- 5. Fuel Tank

Single Line Fuel System

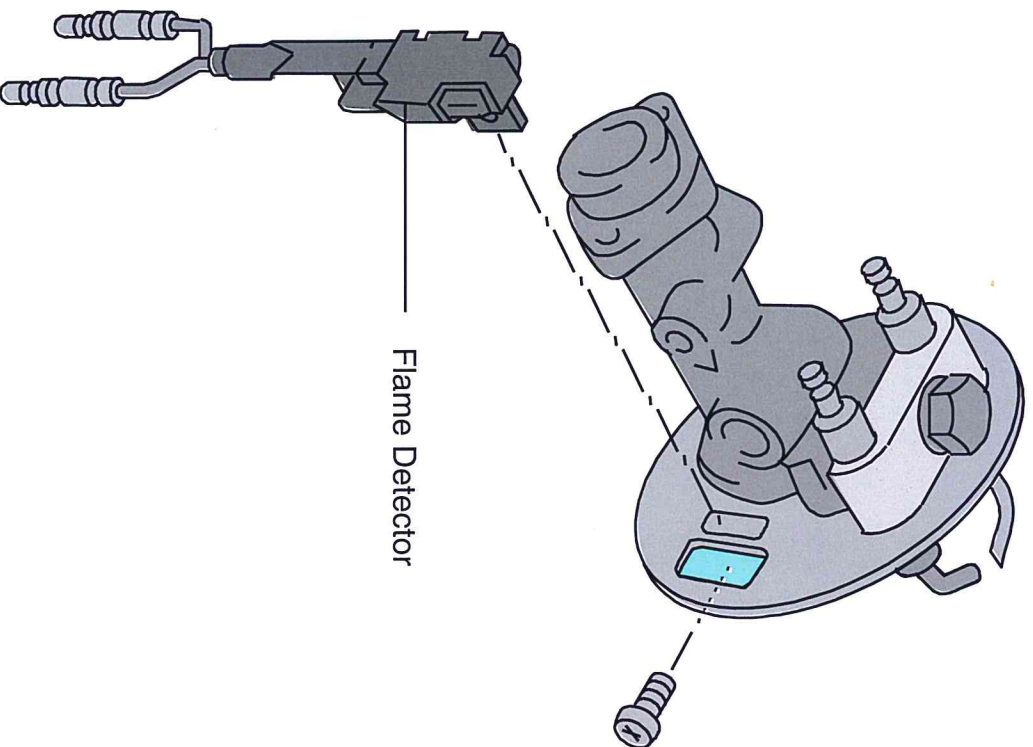


**Scholastic Series DBW 2010**



**New Style (-3.5 PSI +- .5 PSI) PN 50000594A**

**One Way Check Valve**



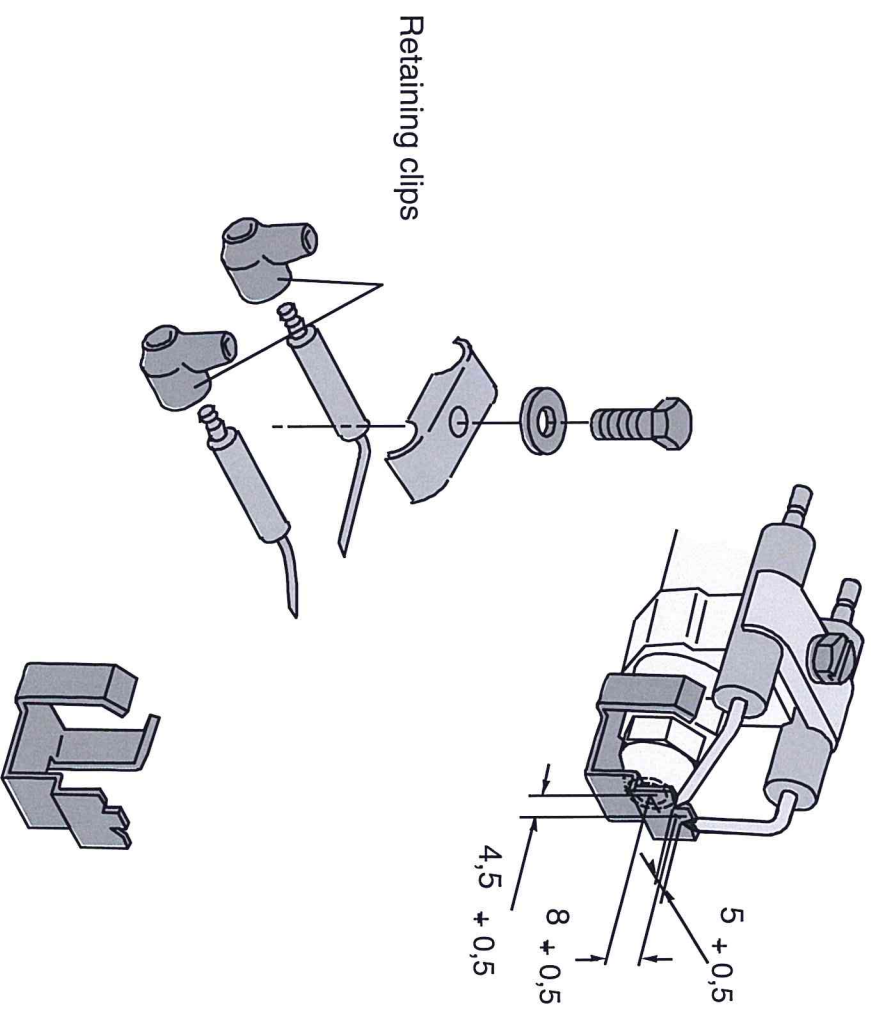
## Function

The flame detector is a light-sensitive resistor that Supplies a **"Flame Present"** signal to the control unit.

## Testing

Using an Ohm Meter test for a change in resistance of more than 200 ohms from light to dark.

Photo Eye / Flame Detector



Electrode Adjustment Gage  
Part Number 310646



Overheat Fuse

Temperature fuse

138° C (280° F) (white) 406 287

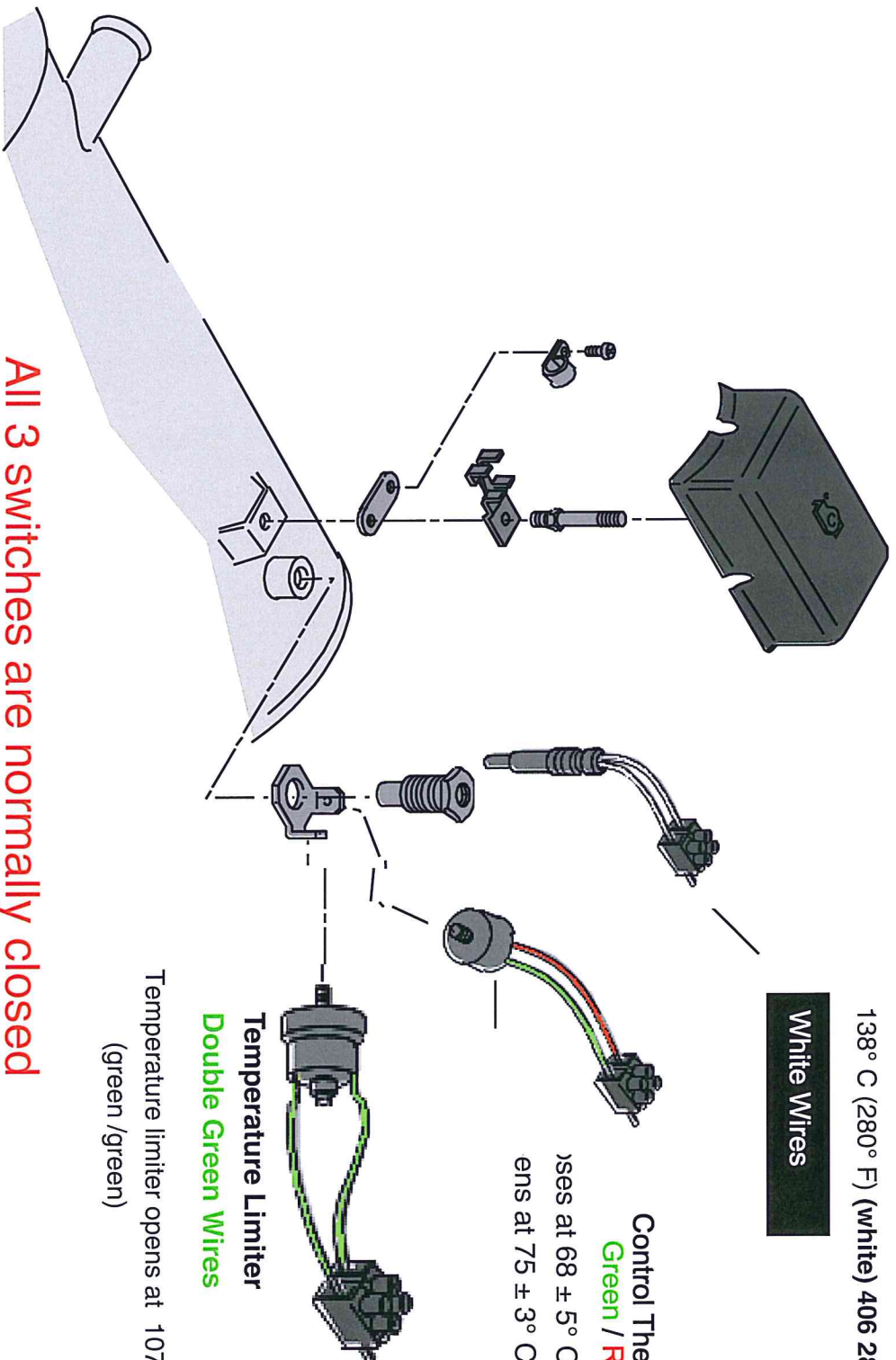
White Wires

Control Thermostat  
Green / Red

Opens at  $68 \pm 5^{\circ}\text{C}$  ( $154 \pm 9^{\circ}\text{F}$ )  
Closes at  $75 \pm 3^{\circ}\text{C}$  ( $167 \pm 6^{\circ}\text{F}$ )

Temperature Limiter  
Double Green Wires

Temperature limiter opens at  $107^{\circ}\text{C}$  ( $225^{\circ}\text{F}$ )  
(green /green)

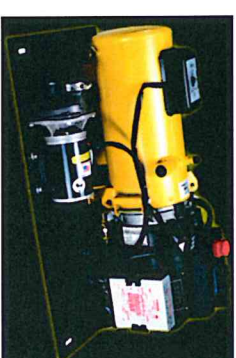


All 3 switches are normally closed

Check for continuity with an Ohm meter

## Scholastic Series DBW 2010

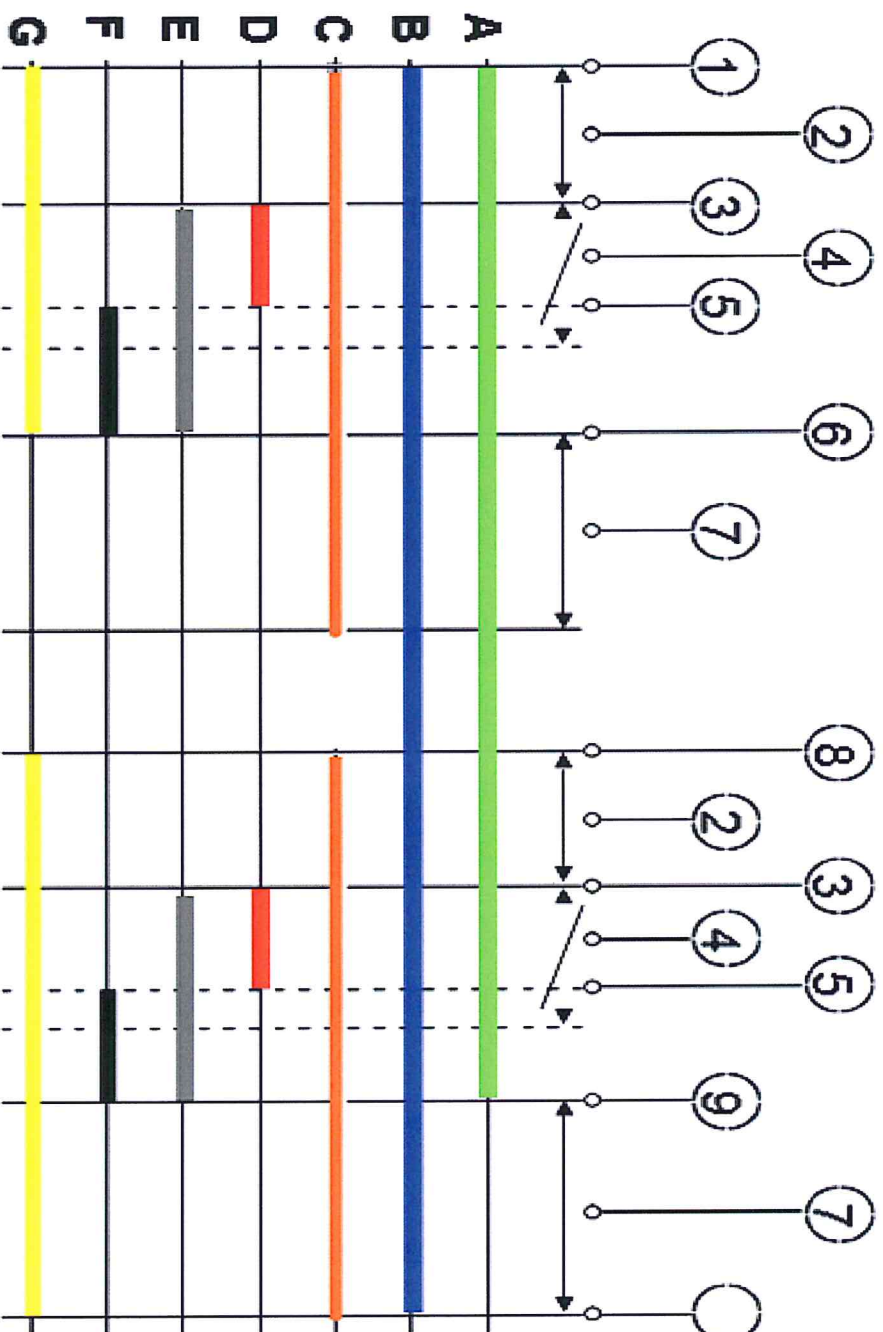
1. Run the heater a minimum of 15 minutes every month
2. Annually check and replace fuel nozzles
3. Annually replace fuel filters
4. Every 4 years replace the bearings



DBW 2010 – 88641A  
0.35 nozzle



DBW 2010 – 378313  
Bearing Kit



**Flow diagram  
for control unit 1553  
(normal sequence of functions)**

- ① Switching on
- ② Pre-start time 10 ... 25 s
- ③ Start
- ④ Safety time 5 ... 25 s
- ⑤ Operation (safety time is stopped)
- ⑥ Control idle period, start
- ⑦ After-run ~ 150 s
- ⑧ Control idle period, end
- ⑨ Switching off
- ⑩ Off

- A** Lamp, green: operation indicator of regul.thermostat
- B** Circulating pump, negative polarity current for heater
- C** Heater motor
- D** Ignition spark transmitter
- E** Solenoid valve
- F** Flame detector
- G** Regulating thermostat



# Scholastic Series DBW 2010



Problem Description	Voltage Supply	Electrical Fuse	Wiring Harness / Connection	Switch	Overheat Fuse / Temperature Limiter	Control Thermostat	Flame detector	Control Unit	Ignition electrodes	Coil / Coil Wires	Electric Motor	Fuel Supply	Fuel Pump	Fuel Solenoid Valve	Fuel Nozzle	Coolant Circulation Pump	Combustion Air Intake	Exhaust System	Coolant System	Inertia Switch	
Switch On - No Operation	Yellow																				
Control Lamp - Off after 30 Sec onds																					
Blower Motor - Inoperative	Yellow	Yellow																			
Blower Motor - No Prestart cycle	Blue																				
Blower Motor - No Shut Down Cycle																					
Blower Motor - Inoperative	Blue																				
No Spark (Ignition)		Yellow																			
No Combustion (Flame)																					
Combustion stops after 30 sec onds	Yellow		Yellow																		
Combustion cycle does not stop				Blue																	
Lite color smoke during combustion				Blue																	
Dark color smoke during combustion	Blue																				
Overheat condition			Yellow																		

## Testing devices for heaters with control unit 1553

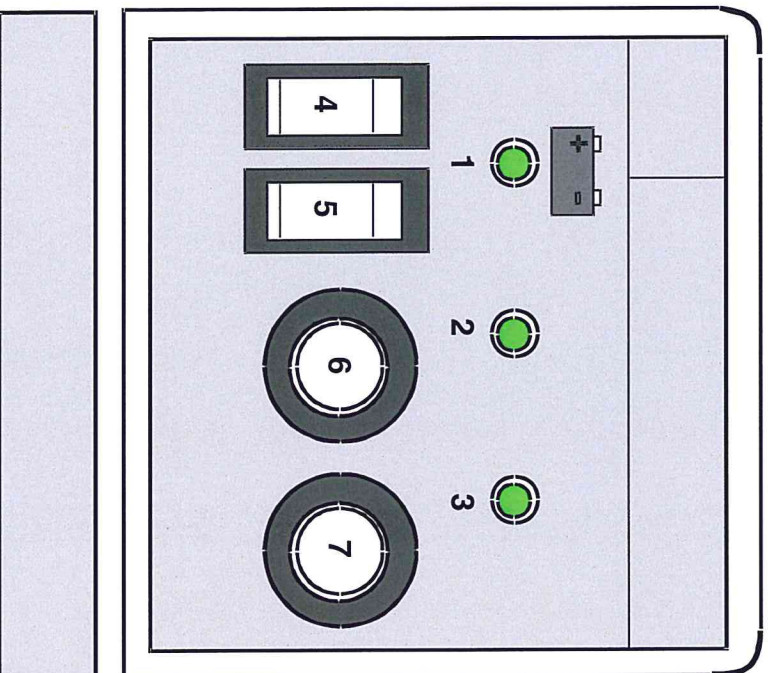
Part number 50440280A

The testing device is to be connected in place of the control unit. Combustion operation is thus possible.

1. Led – Input Power to heater
2. Led – Control thermostat
3. Led – Flame detector
4. On/Off switch – water pump
5. On/Off switch – motor
6. Push Button – ignition spark coil
7. Push Button – fuel solenoid valve

### **Caution:**

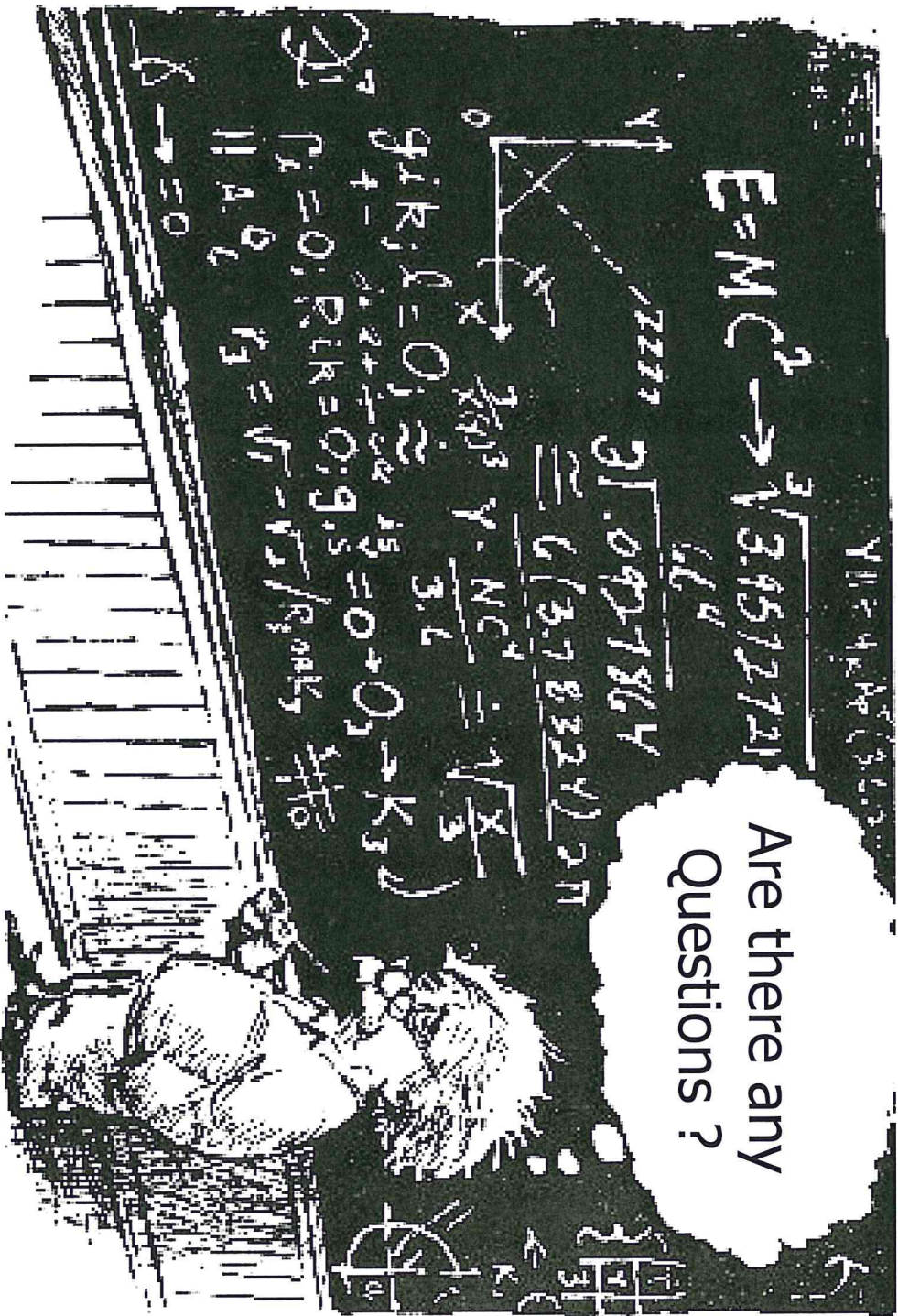
**Do Not Operate Any Heater With The Burner Head In The Open Position. Injury May Occur.**



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for technical documentation and  
information or contact our technical  
team at 800-860-7866 if you have  
any questions or concerns.



# Questions?



Thanks for your attention and time.