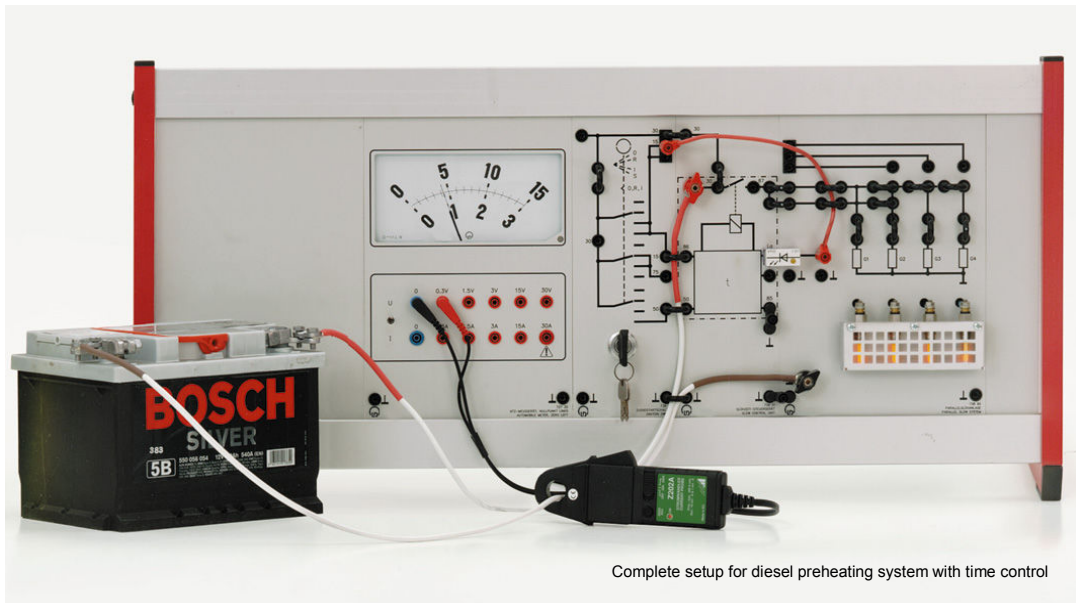


T 3.2.9 Starting Aids for Diesel Engines
T 3.2.9.1 Parallel Pre-Glow System



Training Objectives

- ➔ glow plug function
- ➔ investigation of the heating process
- ➔ operational data acquisition and evaluation
- ➔ operating principle of temperature dependent control
- ➔ operating principle of current dependent control
- ➔ pre and post glow function

T 3.2.9 Starting Aids for Diesel Engines
T 3.2.9.1 Parallel Pre-Glow System

Diesel motors are self-igniting – at least most of the time. But in the winter and on other cold days the diesel just doesn't want to spring into life. It does not have sufficient heat in the combustion chambers to produce the self-ignition. This necessary heat is provided by the glow plug – particularly the rod glow plug. It extends its heating rod into the pre-chamber or the whirl chamber so that the injected fuel vaporizes on the glow plug's hot surface and self-ignites. The released heat initiates combustion.

The heating rod of a modern rod glow plug reaches a temperature of over 850 °C within a few seconds. A lot of energy is needed to ignite diesel fuel at low temperatures – particularly if the motor is to start quickly. This requires a great deal more than just a glowing point at the tip of the glow plug – especially since a plug can be blow-cooled by the intake of cold air during the starting process. In such surroundings, the plug will only function properly if it has enough reserves, i.e. when enough glowing volume is present so that heat can immediately be re-supplied to the cold-blown zone.

This training system "Parallel preheating system" investigates the glow process whereby the glow plugs can be selectively regulated by either a temperature controlled or a current controlled glow-time relay. Investigations will be made of the: ■ duration of the preheating period ■ control of the indicator lamp ■ duration of post-heating ■ the current during the preheating phase ■ the current during the post-heating phase as well as ■ the glow plug's PTC effect.

Respective measurements can be recorded with Sensor-CASSY (➔ 524 010) or volt/ohm meters.



Heated to 1,100 °C in only 2 seconds – for a diesel motor start as quick as a gas motor

EQUIPMENT LIST, T 3.2.9.1

Parallel Pre-Glow System

QTY.	CATALOG NO.	DESIGNATION
1	738 90	Parallel Glow System
1	738 91	Glow Time Control Unit Temperature
1	566 112	Book: Starting Aids for Diesel Engines T 3.2.9