

ATC

Automatic Temperature Control
for Trucks, Buses and Coaches



WABCO

ATC offers clear benefits



WABCO Automatic Temperature Control system offers customers a broad range of clear benefits

- Simple adjustment to the required setting on the dashboard
- Frees the driver from the need to do repeated re-adjustments
- Temperature control accuracy of $\leq 1^{\circ}\text{C}$
- Regulation of compartment temperature provides driver and passenger comfort at various outdoor temperatures, traveling and engine speeds
- Integrated control of the auxiliary heating and air conditioning systems
- Continuous regulation of the heater fan speed
- Automatic regulation of heating and ventilation
- Driver option to modify the comfort level via the flaps and fan controls
- A comprehensive on-board diagnostic system
- Individual electronics system for buses and motor coaches which communicates with the operating console via a CAN interface
- Operating console with integrated display for vehicles without central display

ATC components for trucks



ATC components for trucks

- Control electronics
- Fan module
- Valve unit including water valve, pulse or DC motor and limit switch
- Temperature sensors to register the external, internal and outlet temperature at the heat exchanger (heater)

ATC in trucks

When traveling long distances, it has been traditionally necessary to continuously re-adjust the manual heater in order to achieve an agreeable temperature in the driver's cabin.

The ATC electronic system regulates the temperature in line with a characteristic curve designed to reflect the human sense of comfort. When the outside temperature is low, a slightly higher temperature is generated on the inside without the driver's intervention, e.g. by re-adjusting the set value or other manual alterations. In addition, ATC provides for an increased

throughput of air on warm days and, when low temperatures prevail, it ensures that the driver's cabin heats up quickly and the windscreen is de-iced rapidly.

In the first case, the volume of air is regulated continuously, while in the second case the water flow is controlled. This regulation also takes place if the vehicle is fitted with an additional air conditioning unit.

Furthermore, ATC allows the driver to switch off the automatic mode and regulate the speed of the fan manually.

More comfort on city buses and motor coaches



ATC components for buses

- Operating console for controlling the temperature in the driver's cab and passenger areas
- Substations
- Fan module
- Temperature sensors to register external, internal and outlet temperature at the heat exchangers
- Water temperature sensor

ATC in city buses

VDV Publication 236 has established a new basis for air conditioning in city buses. In a further development we have provided for the use of WABCO components to fully meet these requirements. The WABCO air conditioning components benefit from the experience and the volume effects of our various systems for commercial vehicles. The components have CAN interfaces to allow them to communicate with each other and with other systems.

WABCO's operating console is based on four basic modules, to be used in different configurations together with substations.

Operation

The water and/or air quantity for the passenger and driver sections are controlled separately. The system for the passenger section can be switched off by a pushbutton.

To control the temperature of the driver section, the city bus driver has all the usual compact controls within easy reach. The control facility also ensures a pleasant environment for this area.



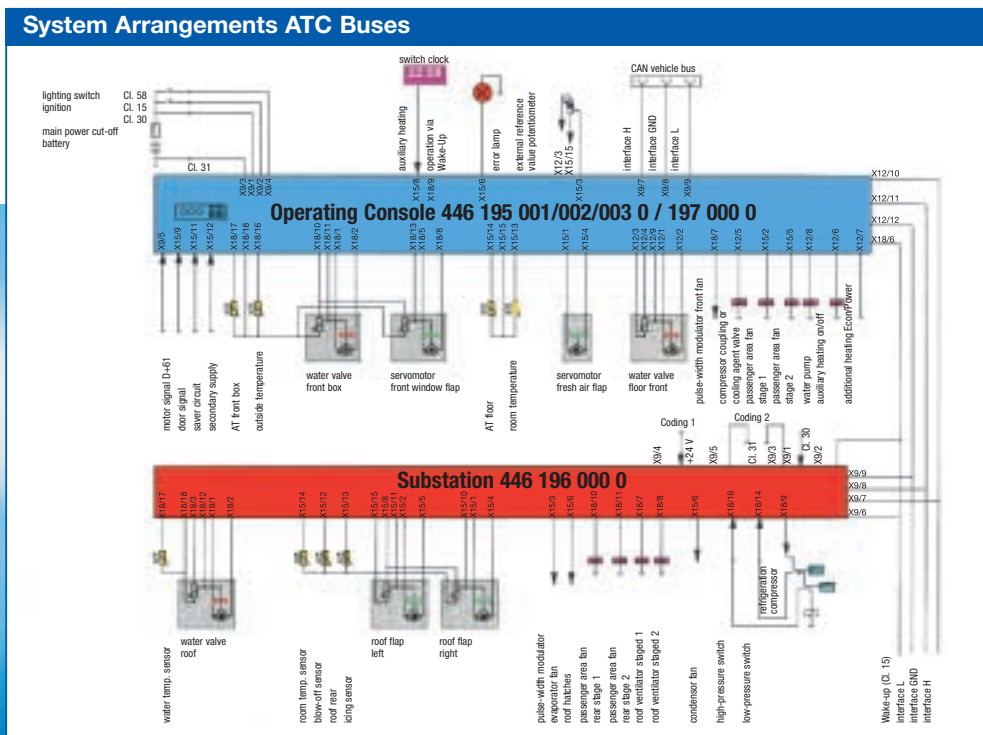
ATC in motor coaches

Based on the ATC city bus system, a more complex variant has been developed for motor coaches. This also consists of an operating console and up to eight substations (identical to the city bus substations). Unlike in buses, however, ATC in motor coaches provides for a larger scope of intervention by the driver. Temperatures, index values and fan speeds are shown on the dashboard display. A timer for the pre-selection of the auxiliary heating system has also been integrated in the control system.

WABCO's diagnostic controller and other custom-made diagnostic equipment can be used on all ATC CAN systems.

For vehicles without a central display, WABCO offers an operating console with an integrated display. It indicates the basic settings or the current adjustment according to the driver's demand without time delay. Moreover, the display directly delivers error messages when the system fails. The operating console with display fits perfectly into the family of ATC CAN systems, featuring high operating comfort and excellent control.

ATC components at a glance

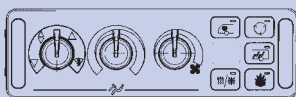


ATC components



ATC Truck ECU
446 090 024 0

Using six characteristics for which the parameters can be set, this ECU controls a water valve, the fan and the flaps, together with a potentiometer.



ATC CAN City Bus
446 195 001 0 446 195 004 0
446 195 002 0
446 195 003 0

The modular concept permits comfortable control of driver's and passenger's areas. Heating/ventilation/air conditioning components are actuated automatically.



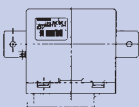
ATC CAN Motor Coach
446 197 001 0 446 197 004 0
446 197 002 0 446 197 005 0
446 197 003 0

Unlike the city bus variant, this operating console permits a wide range of settings for the passenger area.



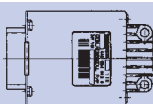
Display/Operating Console
446 197 040 0

The operating console with display expands the application of the ATC CAN systems to vehicles without central indicating device.



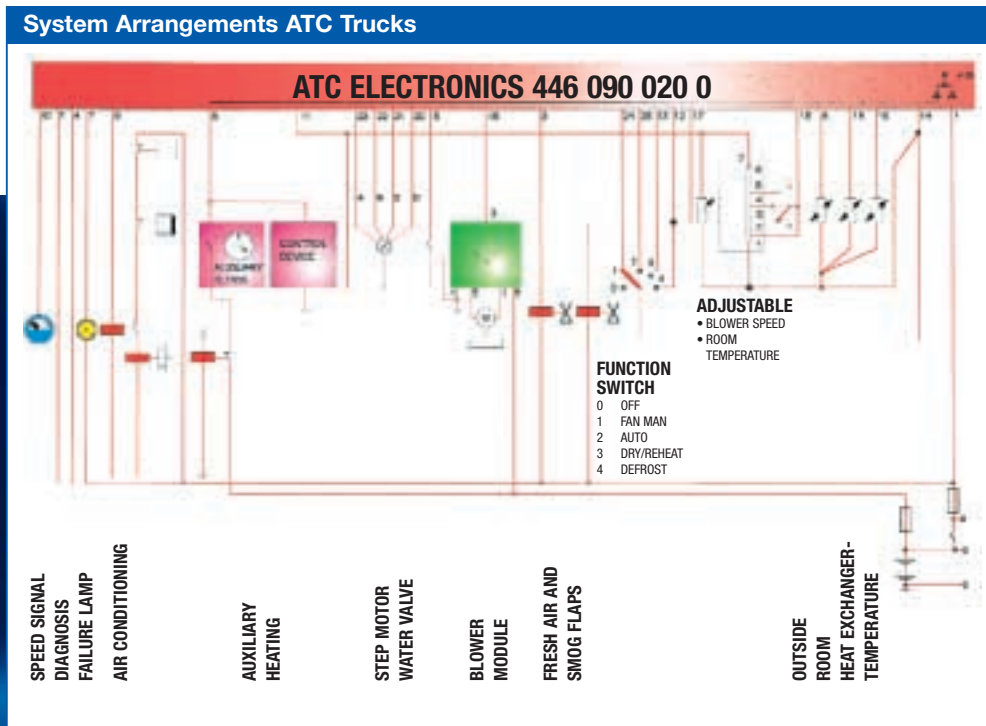
ATC CAN Substation
446 196 000 0

The modular design is achieved by this substation. These universal substations are used depending on the type of equipment fitted.

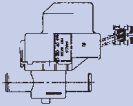
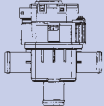


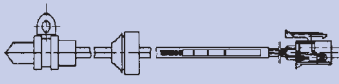
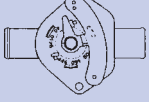


Fan Module
446 024 012 0

This fan module is used for the continuous actuation of the pulse-width modulation for fans (max. 14 amps).



ATC components

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|---|---|--|
|  | <p>Water Valve DC - 446 091 002 0 STEP.- 446 091 001 0</p> | <p>DC and step motor variants are available for the electrical water valve, with a maximum of 1,400 l/h.</p> |
|  | <p>Large Water Valve DC (2/2-Way) 446 091 004 0 DC (3/2-Way) 446 091 200 0</p> | <p>Both water valves have a flow rate of 1,800 l/h and are actuated by a DC motor with potentiometer return.</p> |
|  | <p>Air Outlet Temperature Sensor 446 092 003 0</p> | <p>At the outlet of the heat exchanger, this sensor picks up the air outlet temperature and transmits it to the ECU as an electrical value.</p> |
|  | <p>Water Temperature Sensor 446 097 001 0</p> | <p>The vehicle's initial behavior (including auxiliary heating) is picked up by this temperature sensor via the water of the heating system.</p> |
|  | <p>Outside Temperature Sensor 446 097 000 0</p> | <p>To maintain the comfort characteristic, the disturbance variable of the outside temperature is monitored by our electronic control units.</p> |
|  | <p>Water Valve - manual 446 091 500 2</p> | <p>In vehicles without ATC ECU, the driver can control the water quantity for the water valve via a bowden cable.</p> |



WABCO, the vehicle control systems business of American Standard Companies, is the world's leading producer of electronic braking, stability, suspension and transmission control systems for heavy duty commercial vehicles. WABCO products are also increasingly used in luxury cars and sport utility vehicles (SUVs). Customers include the world's leading commercial truck, trailer, bus and passenger car manufacturers. Founded in the US 135 years

ago as Westinghouse Air Brake Company, WABCO was acquired by American Standard in 1968. Headquartered in Brussels, Belgium, the business today employs nearly 6500 people in 29 office and production facilities worldwide. In 2003, WABCO contributed US\$ 1.358 billion to American Standard's total sales of US\$ 8.568 billion.

Website: www.wabco-auto.com

