General Description

A cruise control system is standard equipment on model 107. Its design and operation is identical on all models of this series. A push-pull switch is used for operation of the system.

Description of System

The Cruise Control System consists of the ON - SET/ACCEL switch, a SERVO (throttle actuator), a SPEED SENSOR, an AMPLIFIER ASSEMBLY, and the necessary wiring, linkage such as the teleflex cable, check valve and the vacuum hoses to connect the Actuator to the vacuum line between vacuum pump and brake booster.

The ON-SET/ACCEL switch is located on the center console (Fig. 1).

The AMPLIFIER ASSEMBLY and the SPEED SENSOR are located under the instrument panel, close to the steering column at the fire wall (Fig. 2).

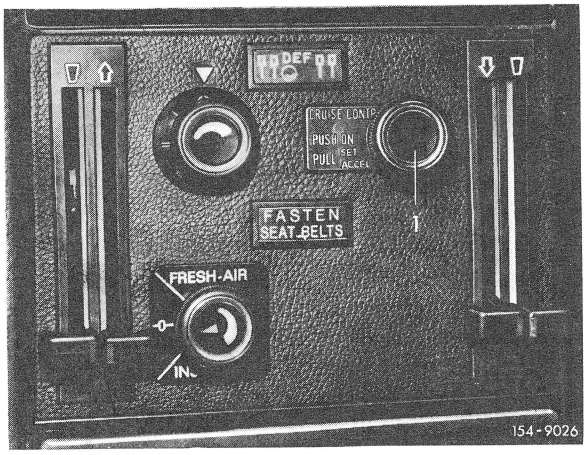


Fig. 1
1 Push-puli switch, model 107

The push-pull switch will return to neutral position upon releasing. Any desired speed above 30 mph may be set and maintained with the cruise control system without operating the accelerator.

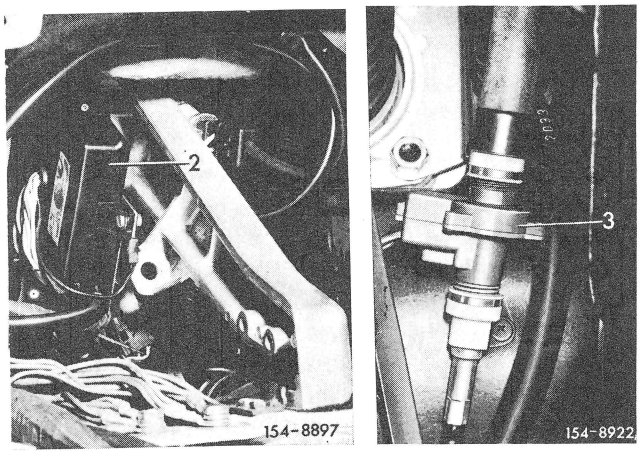


Fig. 2

2 Amplifier
3 Speed sensor

The SERVO is mounted in the engine compartment on the right side near the fire wall (Fig. 3).

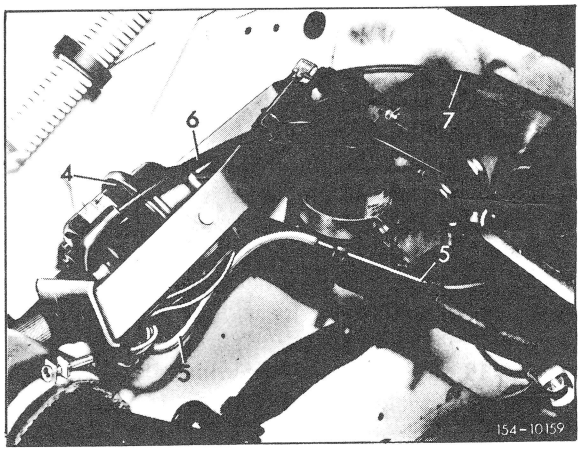


Fig. 3

4 Actuator
5 Vent line on actuator
6 Vacuum line
7 Bowden cable

Operation

To use the cruise control system, the vehicle's speed must exceed 30 mph. To activate the system, the control switch has to be turned ON. Upon reaching the desired speed, the speed can be SET by again operating the control switch. This speed will be maintained until either reset by the driver or upon depressing the brake pedal. In case it is desired to increase the speed, this can be achieved by operating the ACCEL function of the switch until the new speed has been reached or by accelerating with the accelerator and then operating the SET function of the switch.

In case the speed is raised by accelerating, for instance for passing, the vehicle will return to the set speed after releasing the accelerator. Any speed setting will be cancelled by operating the brake pedal. The system, however, will remain activated until turning off the ignition.

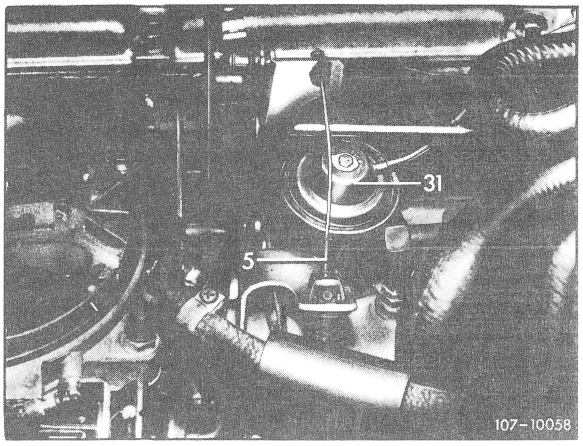


Fig. 4
5 Bowden cable connection to accelerator linkage

Description of Operation

The SPEED SENSOR is installed into the speedometer drive cable and produces an electrical signal which varies with the speed of the vehicle. If the cruise control system is activated by the push-pull switch, the electrical signal corresponding to the speed the vehicle is travelling will be entered and retained in the memory of the amplifier. Any variations in the vehicle speed will change the electrical signal from the sensor which is fed into the comparator of the amplifier and also through a feedback potentiometer in the actuator to a second input of the comparator. The difference of these electrical signals is amplified and the output is used to control the solenoid valves in the vacuum operated actuator. (Depending on the electrical signal valves in the vacuum operated actuator.) Depending on the electrical signal, either the valve opens which allows vacuum to be drawn in the actuator chamber, or the other valve opens which allows atmospheric pressure to enter the actuator chamber.

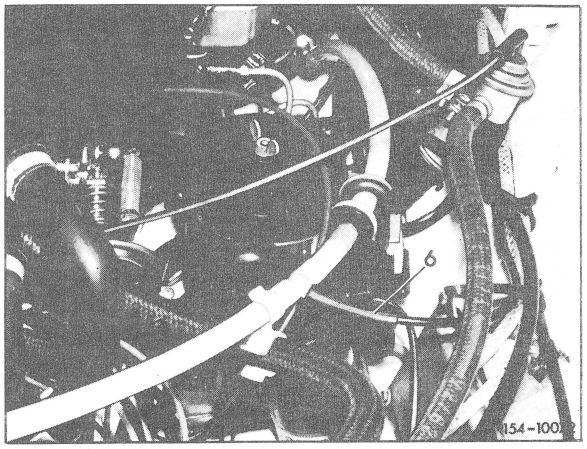


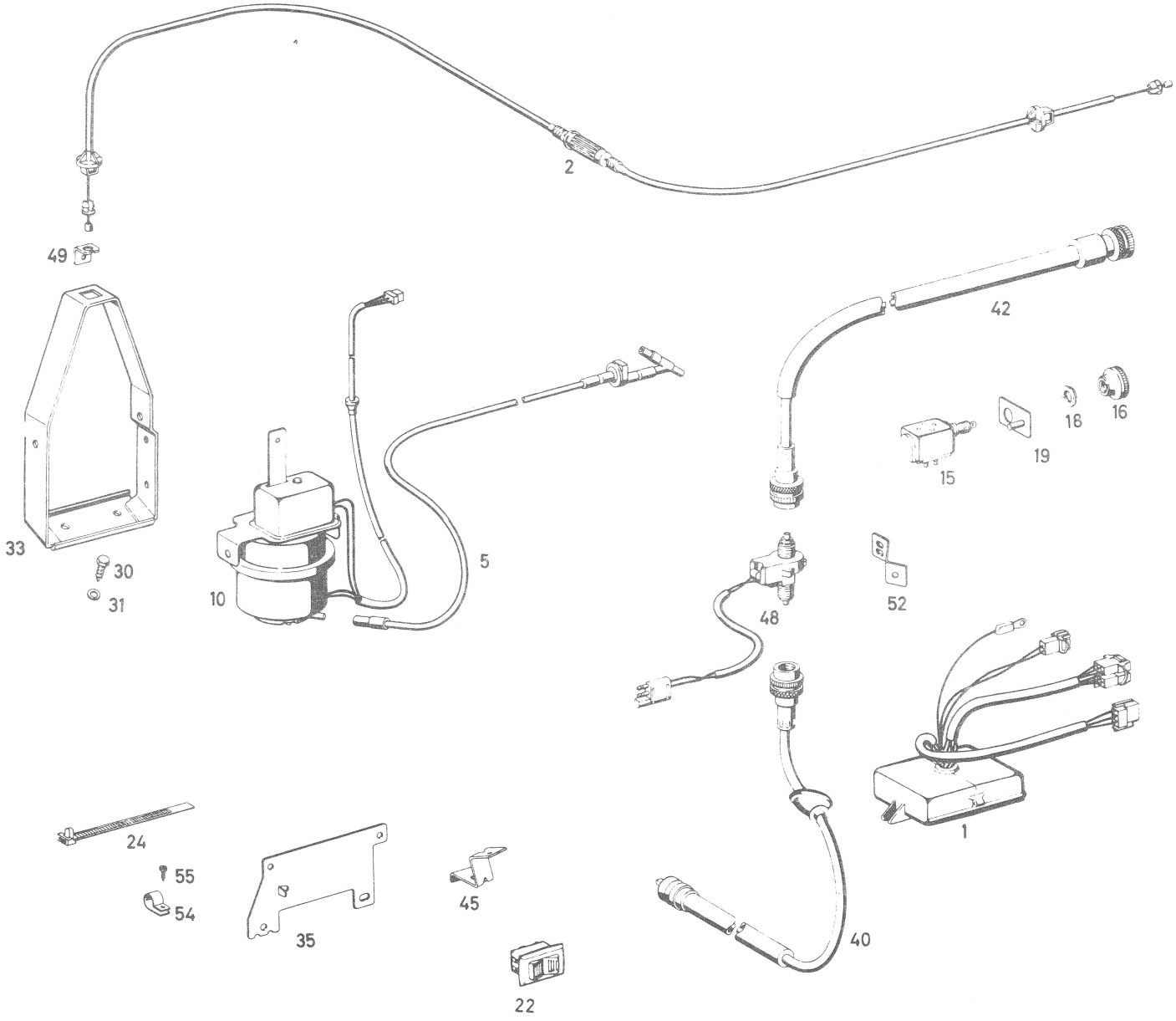
Fig. 5
6 Vacuum line connection

The diaphragm is spring loaded causing the actuator rod to be fully extended if there is no vacuum in the actuator chamber. Thus, by controlling the vacuum in the chamber, the diaphragm and thereby the actuator rod can be positioned at any point between the limits of its stroke. The diaphragm controls the movement of the Teleflex cable which is connected to the accelerator linkage.

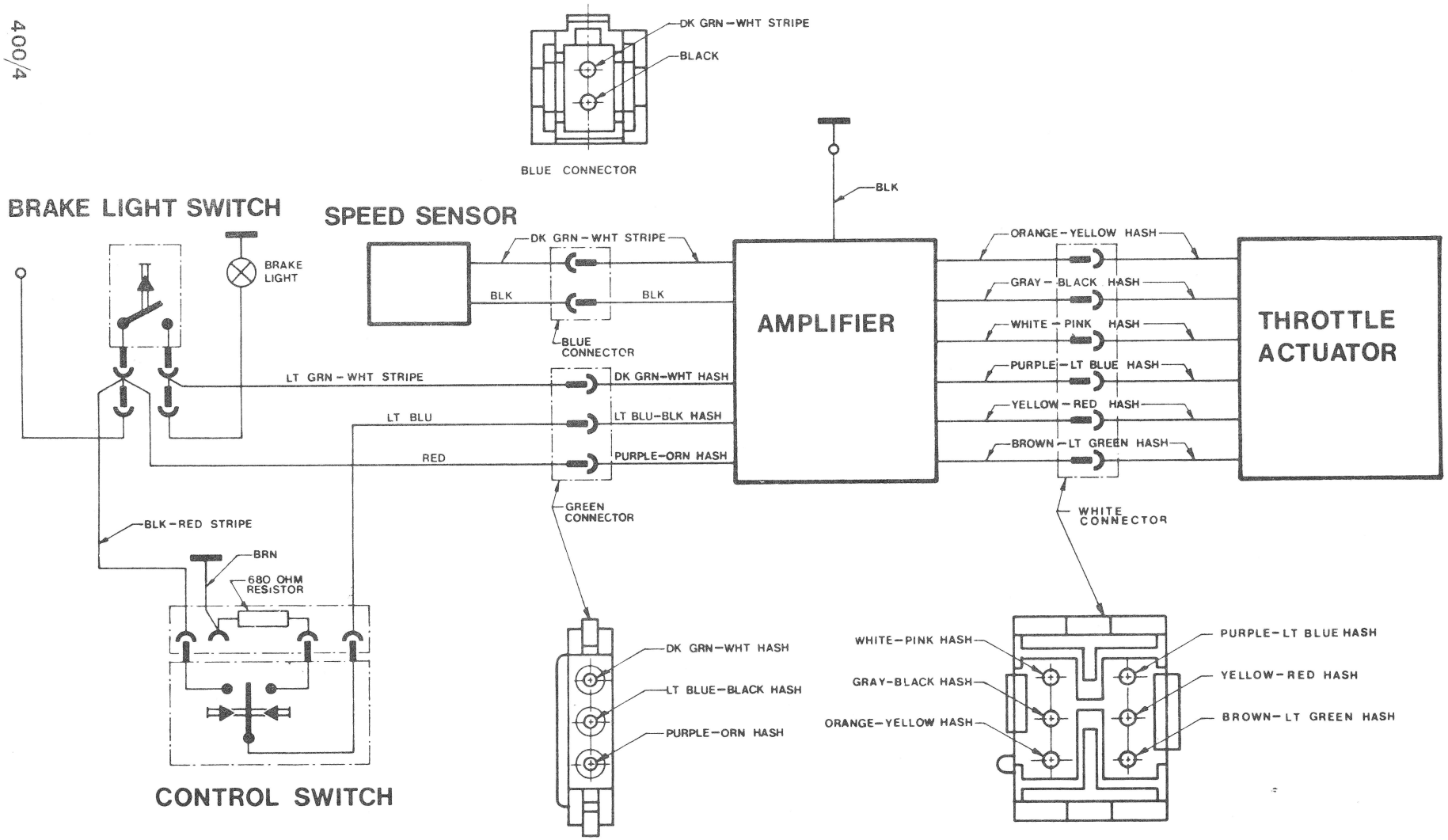
The electric power for the Cruise Control System is supplied through the brake switch connector. Positive power is supplied through the fail-safe circuit to the logic circuit of the amplifier. Whenever the brakes are applied, the brake switch is closed and a change in the power line voltage is sensed by certain control transistors in the amplifier which are back-based and turned off. This will immediately deactivate the Cruise Control System.

In a similar way, the amplifier senses other voltage changes in the electrical part of the brake system and reacts by shutting off the Cruise Control (for instance if a brake light burns out).

In the event a failure should occur in the brake switch or the brake line while the switch is in the open mode, a circuit in the amplifier is provided which will shut down the Cruise Control if the vehicle's speed is reduced by a predetermined amount below the speed (Redundant Brake).



1 Amplifier
2 Teleflex cable
5 Vacuum hose
10 Servo-assembly (Throttle actuator)
15, 16, 18, 19 Control switch assembly (Model 107)
22 Control switch (Model 116)
40 Speedometer cable, lower
42 Speedometer cable, upper
48 Speed sensor



CRUISE CONTROL WIRING DIAGRAM