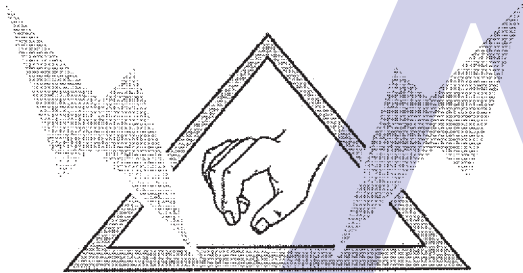


Warning

Precautions to be taken when working on late ZF transmissions fitted with Mechatronic control units (6 Speed Units with combined Valve Body & ECU)

Transmission Control Module (TCM) and
Main Control Valve Body
Electrostatic Discharge (ESD)



CAUTION: When working with the transmission control module (TCM) and main control valve body, all suitable safety precautions must be taken to protect the component against electrostatic discharge (ESD). Failure to follow these instructions may result in component damage.

Make sure **all** possible **safety** precautions are taken to **protect** the **TCM** and **main control valve body** unit against **ESD**.

Personal Wrist-Band Earthing

Earthing (grounding) by means of a wrist band or strap is the most reliable method of diverting electrostatic charges away from working personnel, and should therefore be used wherever possible, particularly if the person concerned is working while seated. The wrist band earthing (grounding) device consists of a bracelet closely attached to the wrist and a spiral earthing (grounding) cable connecting it to the earthing (grounding) contact point. This system must include a quick-release device so that the wrist can be released in the event of danger.

Shoes and Foot Earthing Straps

Electrically conductive shoes should be worn by persons who mainly work standing up or either standing or sitting in ESD protection zones, particularly if wrist band earthing (grounding) is impracticable. The standard calls for ESD shoes to record values between 0 and 35 Mega-ohms (MOhm) resistance. However, for antistatic working shoes resistance values between 0.1 and 1000 MOhm are called for, and a through-conducting resistance for protective shoes of 0.1 to 100 MOhm. A lower limit value of not less than 0.1 MOhm must be maintained on account of the contact voltage risk. For this reason the minimum value has been set contrary to the standard at the higher figure of 0.75 MOhm.

Transmission Control Module (TCM) and Main Control Valve Body

The transmission control module (TCM) and main control valve body is a combination of hydraulic and electronic control units. Both these modules are installed in the transmission, in the fluid pan.

This technical principle has the following advantages: Minimum tolerances (TCM is mated to solenoids)

- Better coordination of gear shifts
- Increased refinement
- Optimized shift quality
- Good reliability, since the number of plug connections and interfaces is reduced.