



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35

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DEPARTMENT OF MECHATRONICS ENGINEERING

19MCE402 – AUTOTRONICS

Topic: Electronic control of automatic Transmission



ELETRONIC CONTROL OF AUTOMATIC TRANSMISSION



Electronic control of automatic transmissions (ECT) is a technology that enhances the performance, efficiency, and convenience of automatic transmission systems in vehicles. Here's an overview of ECT in points:

- 1. Purpose:** ECT is designed to improve the operation of automatic transmissions by using electronic sensors and control modules to manage gear shifting, optimize performance, and enhance fuel efficiency.
- 2. Sensors:** Electronic sensors monitor various factors such as vehicle speed, engine load, throttle position, and engine temperature to provide real-time data to the transmission control module (TCM).
- 3. Transmission Control Module (TCM):** The TCM is a dedicated electronic control unit responsible for managing the automatic transmission. It processes sensor data and makes decisions about gear selection and shifting.
- 4. Shift Points:** ECT allows for precise control of gear shifting points. It can adjust shift points based on driving conditions, such as acceleration, deceleration, and load.
- 5. Adaptive Shifting:** ECT systems can "learn" the driver's behavior and adapt the transmission's shifting patterns to suit the driver's preferences and driving style.



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6.Manual Mode: Many ECT-equipped vehicles offer a manual mode that allows the driver to manually select and control specific gears, giving the driver more control, particularly in situations like towing or sporty driving.

7.Performance Optimization: ECT systems optimize performance by ensuring the transmission shifts gears at the ideal points for maximizing power or fuel efficiency, depending on the driving scenario.

8.Fuel Efficiency: ECT contributes to better fuel efficiency by managing gear shifts to keep the engine operating within its most efficient RPM range.

9.Safety Features: Some ECT systems integrate with safety features like hill-start assist and traction control to enhance vehicle stability and control in various driving conditions.

10.Maintenance Benefits: ECT systems often include diagnostic capabilities, identifying transmission issues and generating fault codes to simplify troubleshooting and maintenance.



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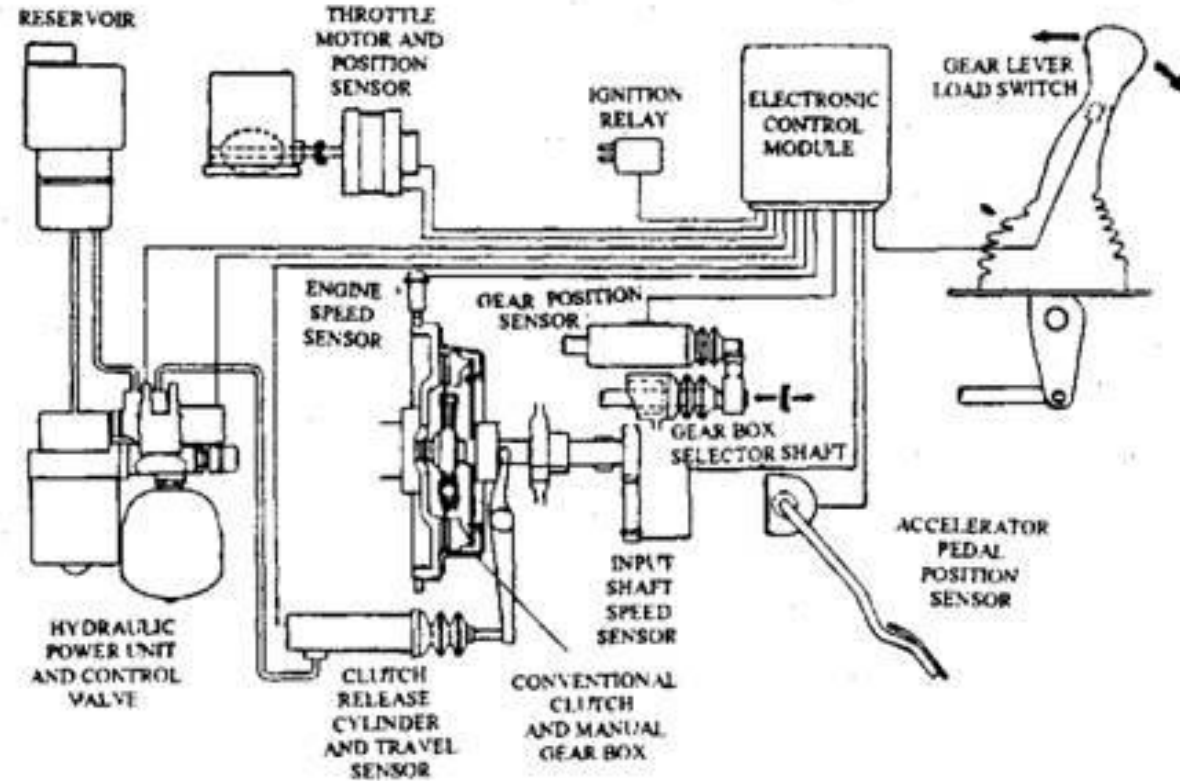
11.Advanced Features: In modern vehicles, ECT can come with advanced features such as paddle shifters for manual control, adaptive shift algorithms that adapt to driving style, and integrated torque converter lockup for additional performance and efficiency gains.

12.User Interface: Some vehicles feature a user interface, often integrated into the dashboard or infotainment system, allowing drivers to monitor transmission-related information and make adjustments, when available.

Electronic control of automatic transmissions has become a standard in modern vehicles, offering benefits in terms of performance, fuel efficiency, and driving comfort. It enables precise control over gear shifts and adapts to different driving conditions, enhancing the overall driving experience.



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Thank You