

Understanding GM

Electric-Shift Transfer Cases



By Mike Weinberg
Contributing Editor

By now, any transmission shop that has not become familiar with computer controls and vehicle electronics has gone out of business. There are, however, a lot of shops that don't realize electronics have reached the transfer cases on late-model sport-utility vehicles. Of the dozens of tech calls that I handle every week, at least 10% concern problems with electrically shifted transfer cases. Several issues back we discussed Ford applications, and here we will deal with GM vehicles.

Four-wheel-drive vehicles have become as sophisticated and complex as anything else we work on. As in all late-model vehicles with electronic controls for engine management, we find that all the powertrain systems are interconnected. The average transfer case today is electrically connected to the transmission manual-lever position sensor, vehicle-speed sensor, powertrain control module, transfer-case relay, front-axle relay and electronic actuator, and the ABS brake system. It would take all the pages in this issue to go through all the schematics,

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diagnostic trees and theory of operations of one of these systems, so this will be a fairly broad overview of a typical electrically shifted transfer case found in late-model GM trucks.

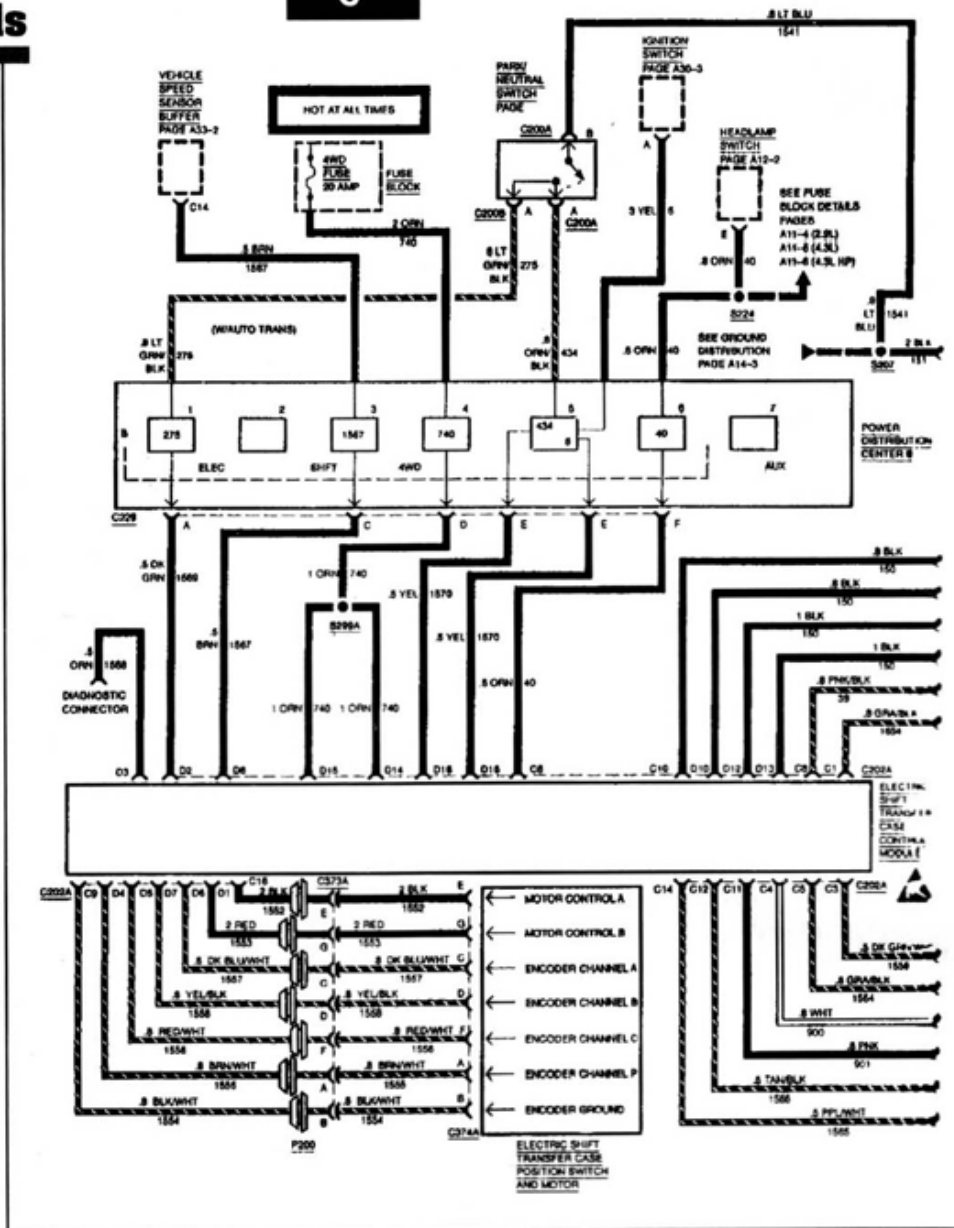
Electronic Shift Control

This dashboard-mounted control typically has two position switches, four-wheel-drive and low range. Pressing the 4WD switch will engage the transfer case and lock the front axle. Low-range shifts cannot be made unless certain parameters are met. The vehicle must be in 4WD, the vehicle speed must be under 3 mph, or in certain systems the trans must be in park or neutral.

Transfer Case

When 4WD is activated the electric shift motor rotates the internal linkage to engage

Fig 1



GM Transfer Cases

All GM Transfer Cases are Remanufactured with the Latest O.E. Components with Updated Clutch Packs to Eliminate Chatter Problems

- AVALANCHE - NV246C, NV261C/ NV263C TAHOE/YUKON-NV149C, NV241C, NV243C, NV246C, BW4481C, BW4482C, BW4484C
- SUBURBAN / XL - NP208C, NV241C, NV243C, NV246C, NV261C, NV263C
- ALL PICKUPS - NP208C, NV241C, NV243C, NV261C, NV263C, BW4401C, BW4470C, S10, S15-NP207C, NP231C, NV233C, NV136C, NV236C, BW4472C
- BLAZER, JIMMY - NP208C, NV241C, NV243C
- TRAILBLAZER, ENVOY - NV126C, NV226C
- COLORADO - BW4484C
- HUMMER - NV281GM, NV242GM
- ASTRO, SAFARI - BW4472C, NV136C
- EXPRESS, SAVANNAH - BW4473C

*Includes New Morse Chain

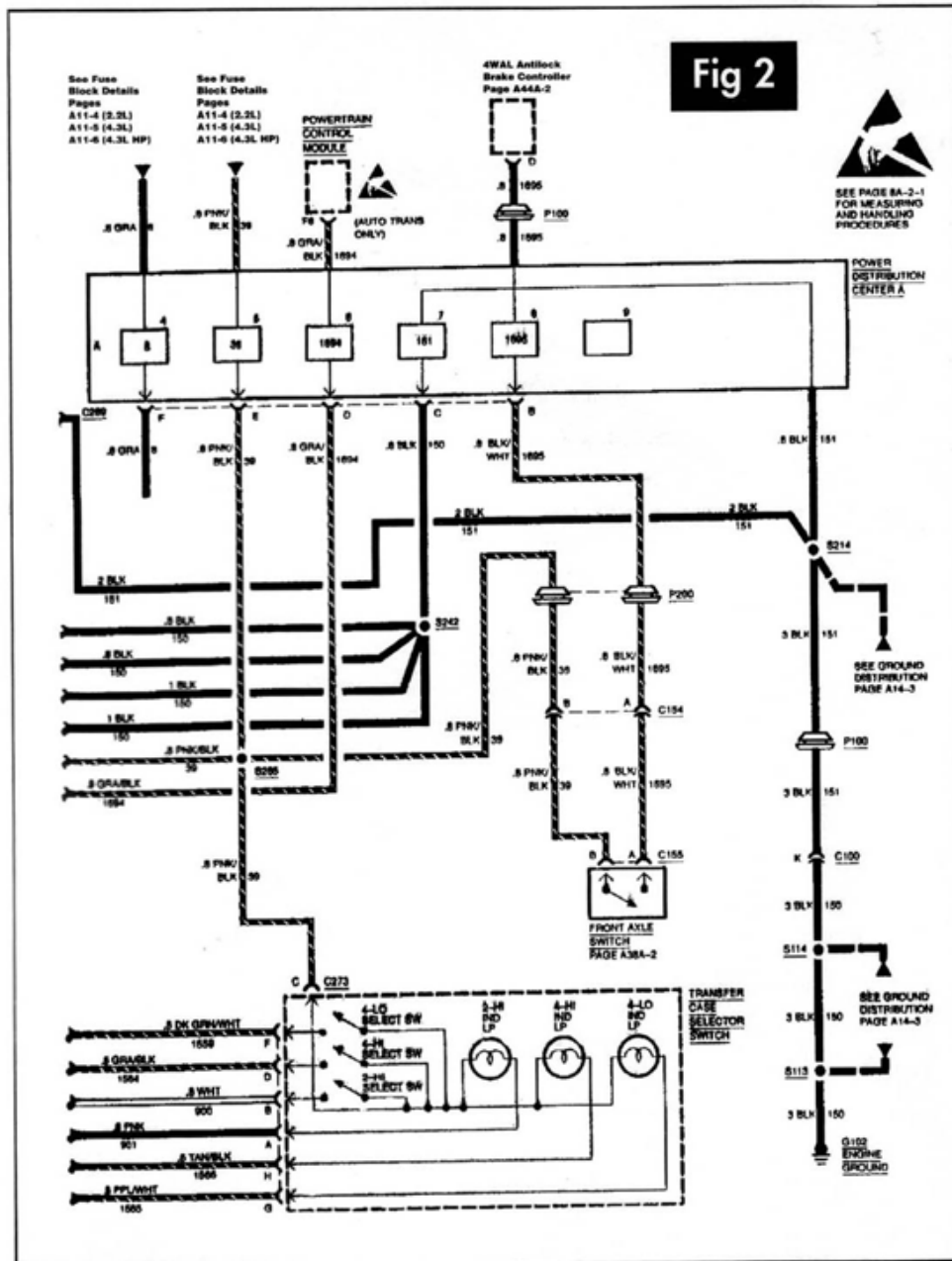
Chatter-Free Transfer Case Lubricant

Prevent Costly T-Case Repairs

- Eliminates driveline chatter and shudder in clutch-type transfer cases*
- Prevents clutch failure from lubricant breakdown
- This is a lubricant not an additive

* Chatter-Free will not repair transfer cases that are already damaged!





the drive sprocket to the mainshaft and transfer power through the chain to the front driveshaft. On some units an electromagnetic clutch is used to synchronize the shift to 4WD, with power coming through the transfer-case relay.

Front Axle

When the 4WD button is pushed and the transfer case begins to engage, the transfer-case switch closes and battery voltage is supplied to the front-axle actuator. The front axle now is locked and the front-axle switch closes, illuminating the 4WD indicator lamp. Battery voltage also is supplied from the front-axle switch to the rear-wheel or 4-wheel anti-lock-brake module. Anti-lock braking then will be modified while the vehicle is in 4WD mode.

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Put an End to Transfer Case Failures For Good!

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Slip-Yoke Eliminator Kits • AWD Low-Range Lockups
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