

# TROUBLESHOOTING Mitsubishi KM 160-180 Series Transaxles

By Mike Weinberg  
Contributing Editor

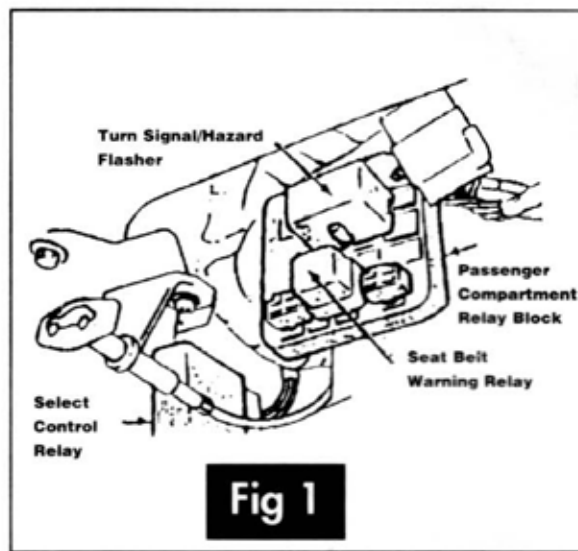
The Mitsubishi designed KM160 and 180 series transaxles are found in Mitsubishi, Hyundai and Chrysler vehicles. This unit is a four-speed transaxle with a vacuum operated two-speed input gear. There is NO 5th-speed gear in this unit. When the driver selects 5th gear, the geartrain remains in 4th gear, and through a combination of electronics and vacuum, the input-shaft synchronizer is shifted to the high side providing an overdrive ratio in the transaxle. The 180 series units are four-wheel drive but function in the same manner. The early 180 units are true four-wheel-drive models with separate control systems to engage overdrive and four-wheel drive. The later units are all-wheel-drive

units with full-time four-wheel drive.

These are basically simple transaxles that generate an amazing number of tech calls because very few technicians understand how they operate and the manufacturer has been slow on releasing information to the field. Save the schematics and diagrams in this article as they are difficult to find.

The first rule in repairing one of these units is careful diagnosis and troubleshooting BEFORE you remove the unit from the car. The most-common

complaints are no 5th gear, no movement in any gear (often confused with clutch failure), grinding going into 5th gear, grinding coming out of 5th gear, and losing



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\*Includes New Morse Chain

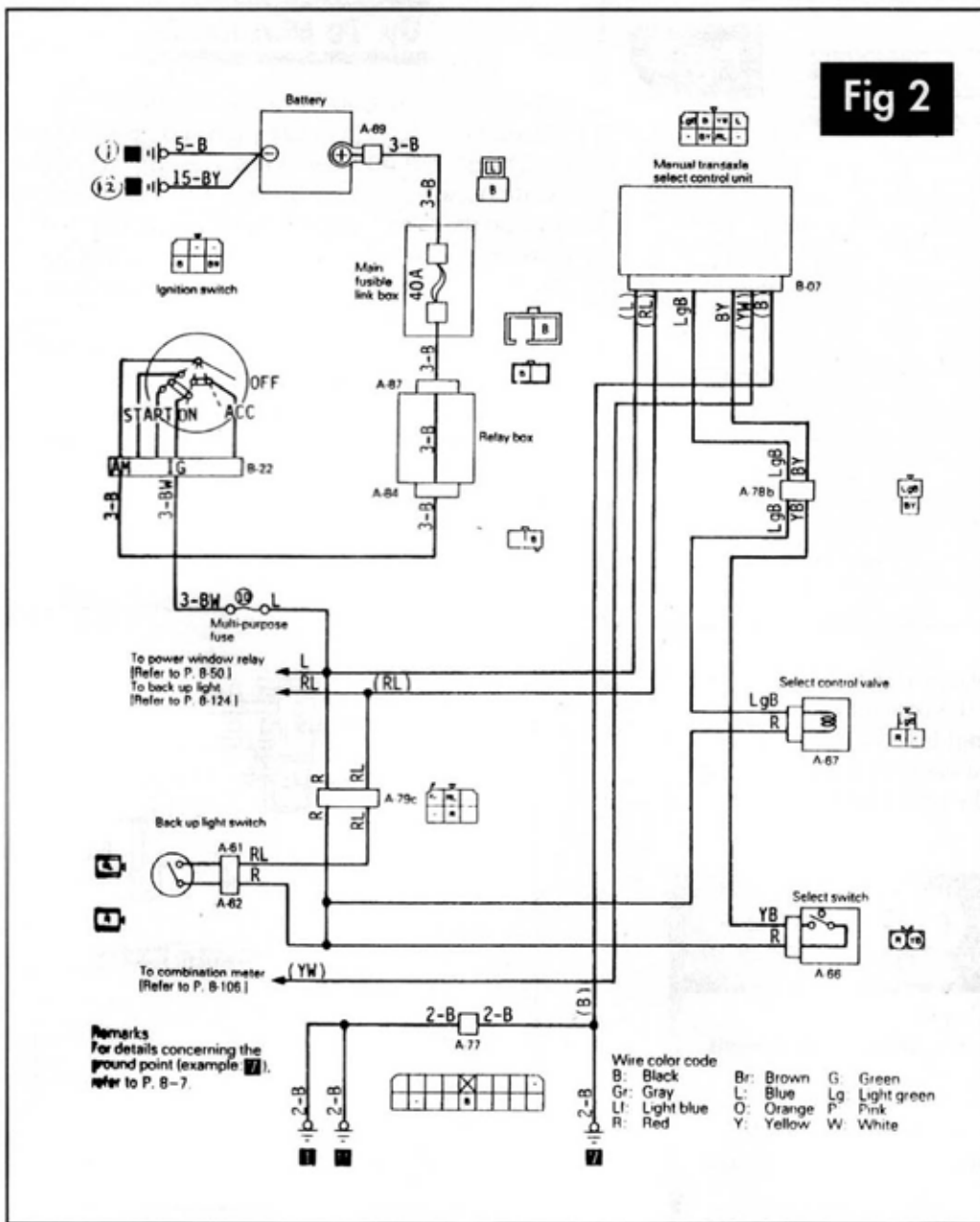
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all movement or 5th gear intermittently, particularly when hot. None of these complaints requires internal unit repair or clutch work in most cases. More of these units are removed needlessly from the vehicles than all other manual transmissions combined. If you have a no-5th-gear problem or any combination of 5th-gear problems, a quick way to verify integrity of the unit internally is to swap the hoses on the vacuum diaphragm on the transmission. If the car drives OK 1-4 (it will be sluggish because you are in the high side of the input), the unit is OK inside and your problems are in the control system.

### Principles Of Operation

Ignition On puts battery voltage to the select control relay through fuse #10. When the shift lever is moved to 5th gear, halfway across the neutral bar between 4th

*continues next page*

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## Up To Standards

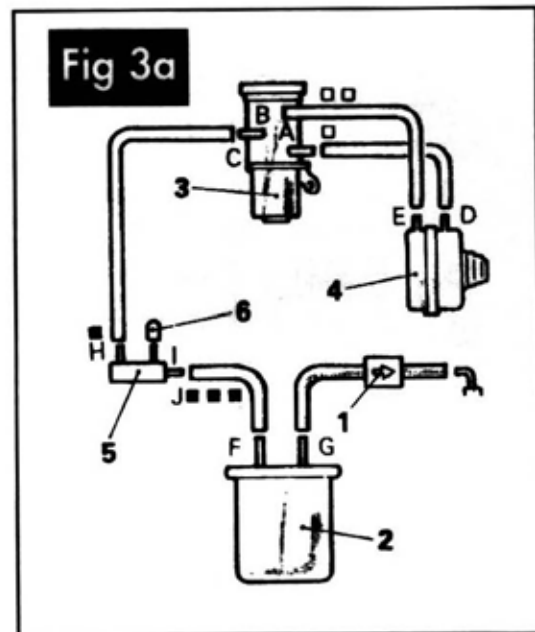
**Fig 3**

Nipple mark	Nipple		Vakuum	
	Identification (q'ty)	Identification color	Identification (q'ty)	Identification color
A	○ (1)	White	□ (1)	White
B	○○ (2)	White	□□ (2)	White
C	None	—	None	—
D	○ (1)	White	None	—
E	○○ (2)	White	None	—
F	None	—	None	—
G	None	—	None	—
H	● (1)	Blue	■ (1)	Blue
I	●● (2)	Blue	None	—
J	None	—	■■■ (3)	Yellow

and 5th the select switch closes and 12 volts flow to fuse #10, the select switch, the control relay and ground. Vehicle-speed signal is fed to the control relay, and when road speed exceeds 6 mph the control relay sends power to the select control valve,

which ports vacuum from the low side of the vacuum diaphragm to the high side, pulling the input shift rail into the overdrive ratio. The opposite occurs in downshifting. When you shift to reverse the select switch is energized, but because road speed is under 6 mph the control relay will not complete the circuit, and the input remains on the low side.

When you are diagnosing a problem with this unit the place to start is vacuum. Begin at the intake manifold, where you will find the main vacuum hose running down to a one-way check valve. For complaints of no 5th or loss of 5th when hot, remove the main vacuum hose and slice it down the middle, like a worm in biology



class. These are double laminated hoses, and in many cases you will find the inner hose melted or gummy, blocking vacuum flow. Use a piece of Hayden cooler-line hose and a couple of #6 clamps as a replacement. Verify that the one-way check-valve arrow is facing in the manifold direction and mouth blow through it. You should be able to blow with the arrow but not against it. Verify with a vacuum gauge that there is vacuum to the select control valve. Pull the hoses off the vacuum diaphragm on the transmission and verify vacuum to the low side with the engine at idle. Disconnect the select control valve wire and jump directly with 12 volts. Vacuum should port to the high side of the diaphragm. Using a vacuum pump, put 15-20 pounds of vacuum to each side of the vacuum

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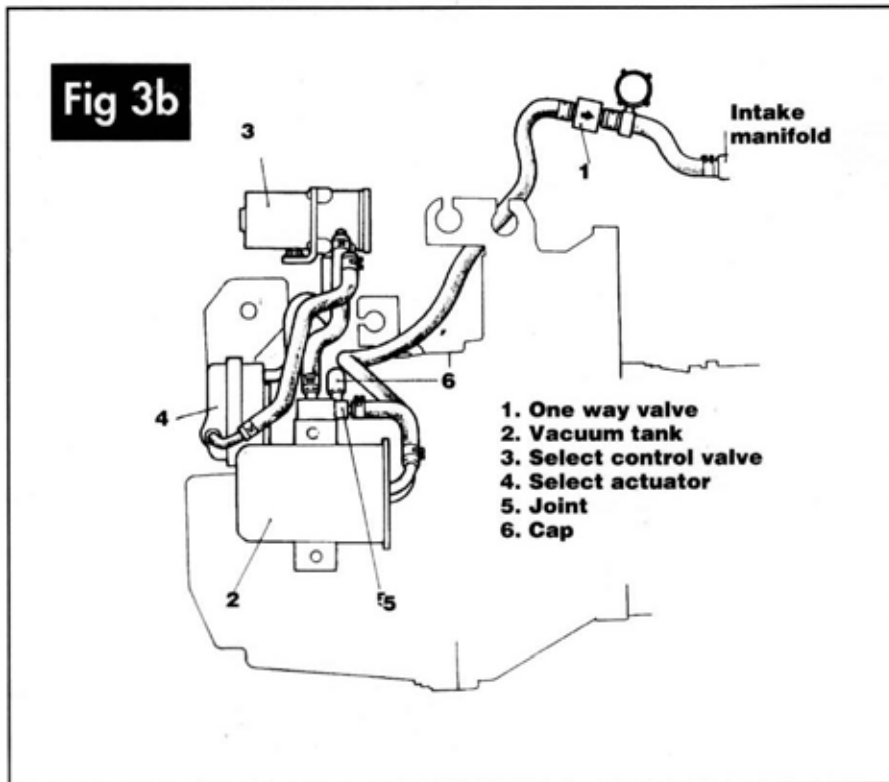
diaphragm and make sure it holds vacuum for 60 seconds, just as you would check a modulator. The next step is to check the adjust-

ment of the select switch. The select switch is mounted on the side of the case at the end of the main shift rod on the 160 models and on

## Up To Standards

the shift linkage on the 180 series. Disconnect the two-wire plug on the select switch and, using a self-powered continuity light or ohmmeter, have someone sit in the car and hold the shifter halfway between 4th and 5th on the neutral bar. The select switch should close. If it does not, loosen the two 10mm retaining bolts and rock the switch until continuity is achieved. If you cannot get the switch to close, it is defective. If all these systems are operating correctly the problem will be found in a defective control relay, bad grounds, a defective speed sensor (in the speedo head), a blown #10 fuse, or a shorted or defective backup light switch.

This unit looks complicated, but looking over the diagrams and wiring schematics will make troubleshooting easy. Solving problems on these units will make you a local hero, and don't be surprised if dealers start sending you their "problem children." **TD**



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