

## Diagnosis - Complaint Related Diagnostic Chart - Overall Function

### Prior to Test

1. Review □ 11 entirely.
2. Check transmission ATF oil level. See document AR27.00-P-0101A
3. Review this section completely, prior to making any repairs.



The following Diagnosis - Complaint Related Diagnostic Charts in this section contain complaints regarding:

- Noise Complaints
- Power Transfer Complaints
- Individual Complaints
- ATF Leak Complaints
- DTC Related Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	<b>Engine quits after selecting a drive gear and noise from transmission in position "N" or "P" (no DTC's are stored in DTC memory)</b>	<ol style="list-style-type: none"> <li>1. PWM solenoid valve (Y3/6y6) (torque converter lock-up) locked-up, (due to foreign matter).</li> <li>2. Torque converter lock-up clutch control valve (22) locked up, (due to foreign matter). (applies up to transmission number 22890 only, thereafter screen installed in oil passage).</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace PWM solenoid valve (Y3/6y6).</li> <li>2. Clean out torque converter lock-up clutch control valve.</li> </ol>

<sup>1)</sup> Observe Preparation for Test, see □ 22.

## Diagnosis - Complaint Related Diagnostic Chart - Noise Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	Rumbling, droning or possible shuttering with torque converter lock-up.	Insufficient torque converter slippage rpm	Using the HHT, turn off the torque converter lock-up. If the complaint can not be duplicated thereafter replace the PWM solenoid valve (Y3/6y6) and reset the adaption values, using the HHT.
--	Howling, whistle noises at (> 4000rpm) in all gears.	Transmission ATF filter clogged. Transmission AFT oil pump	Replace ATF oil filter. Replace ATF oil pump.
--	Howling, singing noises	Gear set noises: 1st, 2nd, 5th gears  Sealing ring at propeller shaft intermediate bearing is touching bearing inner race.	Currently no solution, please contact regional office and advise of VIN and mileage.  Replace propeller shaft intermediate bearing with bearing that uses a black colored seal.
--	Load reversal noise (cracking noise)	Shear noise between output flange and collar nut.   Up to transmission number 30332, there after collared nut and tightening torque value changed, see Remedy.	Use collar nut with Dacromet coating (silver color). (Tightening torque: 200Nm)
--	Ticking noises from center console shift gate while driving at slow speeds.	Loose connection at R/P lock valve (Y66/1) connector.	Check and or replace R/P lock valve (Y66/1) connector.

<sup>1)</sup> Observe Preparation for Test, see □ 22.

## Diagnosis - Complaint Related Diagnostic Chart - Power Transfer Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	Harsh 2 → 1 deceleration downshift	Transmission adaption (adaption of ETC). ETC software date Free-wheeling unit (F1)	See □ 11/34, See □ 13/7
--	Harsh 3 → 2 deceleration downshift (reappears also after performing transmission adaption.	Clutch K3   Applies to al models with engine 119, 120 up to transmission number 27083	See □ 13/7
--	No or late upshift of transmission	Different size tires mounted on the front axle. Wrong factor attained shortly after starting to drive.	Mount proper size tires on front axle.
--	No upshift from 3 → 4 and 4 → 5 when releasing accelerator pedal quickly, only works if transmission is in "S" program.	Upshift prevention due to dynamic-sporty driving style of client.	Educate/advise client.
--	No upshift into 5th gear with WOT or kick-down.	The upshift 4 → 5 occurs with WOT or kick-down if the rev-limiter rpm is reached. High power vehicles will shift into 5th gear only when attaining the rev-limiter rpm (250 km).	Educate/advise client.

<sup>1)</sup> Observe Preparation for Test, see □ 22.

## Diagnosis - Complaint Related Diagnostic Chart - Power Transfer Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	No upshift out of 1st gear (program "S" selected) and out of 2nd gear (program "W" selected) at 1,500 rpm with engine "cold". Fault can not be duplicated every time.	Transmission range recognition switch (S16/10) and/or Electronic Transmission Control (ETC).	Remove parts and contact regional office.
--	Engine revs up during 2 → 3 shift and /or has harsh downshift during 3 → 2 shift.	ATF level in transmission AFT oil filter  Free-wheeling unit (F2)   Check ATF level in transmission or fill to correct level.	See □ 13/8 See document AR27.00-P-0101A
--	No downshift via kick-down function	Required pedal value < 95% (Test using HHT)   All models with engine 111	Check engine management, if necessary readjust, see DM Engines.
--	Shudder in 2 → 3 power upshift or 3 → 2 downshift (engine braking)	ATF level in transmission AFT oil filter   Command or Regulating, Shift control valves, Clutch (K3)	See □ 13/8 See document AR27.00-P-0101A

<sup>1)</sup> Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - Power Transfer Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	Delayed engagement/no transmission of power in "R" and/or "D", at times intermittent.	<b>Possible causes regarding intermittent complaints:</b> ATF oil level in transmission.   Check ATF level in transmission or fill to correct level.  Transmission range recognition switch (S16/10) ATF oil filter   Disassemble/check center console shift gate  Delayed pressure build-up at piston B2/B3   Remove and replace: Brake B2, Brake B3, and parking lock wheel  Allocation of ETC/Electro-hydraulic control unit (EHS)   Remove and replace: Brake B2	See □ 13/9  See document AR27.00-P-0101A  See document AR27.60-P-0920B  See document AR27.50-P-0781A  See document AR27.50-P-0880A

<sup>1)</sup> Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - Power Transfer Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	Delayed engagement/no transmission of power with gear selector lever in "R" and/or "D", at times intermittent.	<b>Possible causes regarding duplicatable complaints:</b>   Collared nut loose. Brake B2/B3. Shift pressure regulating solenoid valve (Y3/6y2). Modulating pressure regulating solenoid valve (Y3/6y1). Command or Regulating, Shift control valves. Transmission circlips	

--	Harsh coasting downshift 4 → 3, just before vehicle comes to a stop.	Separator plate in the Electro-hydraulic control unit  Occurs only with gear selector lever in "D" or 4th gear, not if gear selector lever is in: 3rd or 2nd gear. Applies up to transmission number 0527574, thereafter the separator plate was introduced into production.	Replace separator plate, P/N 140 277 39 14
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1) Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - Individual Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	Harsh 2 → 1 coasting downshift	ETC software version  Software versions optimised as of April 15, 1998 Free-wheeling unit (F1) faulty  Since it is possible that the free-wheeling unit F2 will be damaged as well, replace F2 (P/N 140 270 05 31) the hollow shaft, rear sun gear/clutch K3 as well.	Replace ETC software version  Replace Free-wheeling unit (F1)
--	Harsh 3 → 2 coasting downshift (occurs after transmission adaption process as well)	Clutch K3 runs empty  Applies to all models using engine 119, 120 up to transmission number 27083, thereafter electro-hydraulic control unit optimised.  Disc spring for piston in Clutch K3 is missing.	Install ETC repair set, P/N 140 540 08 45  Install missing disc spring for piston in Clutch K3

1) Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - Individual Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	Engine revs up during 2 → 3 shift and /or has harsh downshift during 3 → 2 shift.	ATF oil filter not installed.  Free-wheeling unit F2 faulty	Install missing ATF oil filter.  Replace F2 (P/N 140 270 05 31) the hollow shaft, rear sun gear/clutch K3.   Applies up to transmission number 981435 only. P/N 140 270 05 31 applies to W5A330 and W5A580 only.
--	Shudder in 2 → 3 power upshift or 3 → 2 downshift (engine braking)	ATF oil filter not installed.  Command or Regulating, Shift Control Valves stuck due to foreign matter  Clutch plates of clutch K3 are either burnt, have hot-spots or are worn down.	Install missing ATF oil filter.  Check valves for full travel and ease of movement, if necessary free up valves as needed.  Replace inner and outer clutch plates of clutch K3.   Applies up to transmission number 331159 only, thereafter the thickness of the clutch plates changed. Additionally replace torque converter lock-up clutch control valve (22).   Applies up to transmission number 221668 only.

1) Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - Individual Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
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--	<p>Delayed engagement/no transmission of power with gear selector lever in "R" and/or "D"</p> <p><b>Note:</b> <b>Possible causes where fault CAN NOT be reproduced each time.</b></p>	<p>Transmission range recognition switch (S16/10)</p> <p>ATF oil filter not installed.</p> <p>Older engagement process, therefore delayed pressure build up at piston B2 and B3</p> <p>False allocation ETC/Electro-hydraulic control unit.</p>	<p>Replace the Transmission range recognition switch (S16/10), only if upon testing with the HHT, the HHT display shows "Between Selections" or "Fault".</p> <p><b>i</b></p> <p>A fault code for the above is no longer set in memory as of software version e03/f08</p> <p>Install ATF oil filter.</p> <p>New engagement process (replace ETC, electro-hydraulic control unit, use repair set)</p> <p><b>i</b></p> <p>Applies only up to transmission number 23104 with software: e00, e01, f04, f06, r00, thereafter the piston B2 was optimized.</p> <p>Determine proper allocation (swap ETC or Electro-hydraulic control unit)</p>
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1) Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - Individual Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	<p>Delayed engagement/no transmission of power with gear selector lever in "R" and/or "D"</p> <p><b>Note:</b> <b>Possible causes where fault CAN BE reproduced each time.</b></p>	<p>Torx screws (M8X60) loose or missing for piston guide on piston B2/B3</p> <p>Shift pressure regulating solenoid valve (Y3/6y2), stuck due to foreign matter.</p> <p>Modulating pressure regulating solenoid valve (Y3/6y1), stuck due to foreign matter.</p> <p>Command or Regulating, Shift Control Valves stuck due to foreign matter.</p> <p>Seal rings for piston B2 or B3 damaged.</p> <p>Circlip for disc spring for piston B2/B3 is not installed in groove.</p>	<p>Tighten loose torx screws or replace missing torx screws.</p> <p>Replace (Y3/6y2)</p> <p>Replace (Y3/6y1)</p> <p><b>i</b></p> <p>Applies up to transmission number 538312 only, thereafter screen installed in oil passage.</p> <p>Check valves for full travel and ease of movement, if necessary free up valves as needed.</p> <p>Replace seal rings.</p> <p>Replace transmission, flush transmission oil cooler and all lines. Replace torque converter only if upon flushing there are metal shavings present.</p>

1) Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - Individual Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	Continued from □ 13/10	<p>Circlip for output shaft ball bearing is missing or not in the groove.</p> <p>Circlip for outer disc spring for Brake B3 is not in the groove.</p> <p>Circlip for rear planetary sun gear shaft is missing or not in the groove.</p>	<p>Replace transmission, flush transmission oil cooler and all lines. Replace torque converter only if upon flushing there are metal shavings present.</p> <p>Replace transmission, flush transmission oil cooler and all lines. Replace torque converter only if upon flushing there are metal shavings present.</p> <p>Replace transmission, flush transmission oil cooler and all lines. Replace torque converter only if upon flushing there are metal shavings present.</p>

1) Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - ATF Leak Complaints (Overall)

#### Prior to Test

- Review □ 11 entirely.

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	ATF oil leak near electro-hydraulic control unit connector	<p>Electro-hydraulic control unit connector</p> <p>Electrical conductor plate of electro-hydraulic control unit</p> <p>Electro-hydraulic control unit O-rings</p>	See □ 13/13
--	ATF oil leaks near torque converter housing	<p>Transmission over filled with ATF (ATF is escaping via transmission breather hole)</p> <p>Outer brake carrier B1</p> <p>Torque converter</p> <p>ATF oil pump</p>	<p>See □ 13/15</p> <p>Check ATF fluid level, fill up as necessary, see document AF27.00-P-0101A</p>

1) Observe Preparation for Test, see □ 22. This WIS printout will not be recorded by the update service.

**Diagnosis - Complaint Related Diagnostic Chart - ATF Leak Complaints (Individual)**

V	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	ATF oil leak near electro-hydraulic control unit connector  <b>i</b> <b>Prior to starting any repairs, check the ATF fluid level.</b>	Distorted O-rings  Distorted connector  The electrical conductor plate is not resting properly on the valve body housing. Therefore, the connector is not properly centered in the bore of the support plate and does not seal completely around its circumference.  Electrical connections at the electrical conductor plate are leaking ATF. Therefore, ATF leaks into in harness, at times to ETC control module (N15/3).	Replace O-rings  <b>i</b> Applies up to transmission number 1211278 only, thereafter modified material used (color: red/brown).  Replace connector.  <b>i</b> Applies up to transmission number 1309692 only, thereafter modified material used.  Carefully remove boss on the electrical conductor plate (Figure 1, next page, <b>arrow</b> ), to allow proper seating.  <b>i</b> Applies only between 09/97 and 02/98, up to transmission number 77692 only.  Replace the following components: electrical conductor plate, connector and O-rings.

<sup>1)</sup> Observe Preparation for Test, see □ 22.

**Diagnosis - Complaint Related Diagnostic Chart - ATF Leak Complaints (Individual)**

**Valve unit (Y3/6)**

(sectional, as seen from below)

(**arrow**, remove boss in electrical conductor plate)

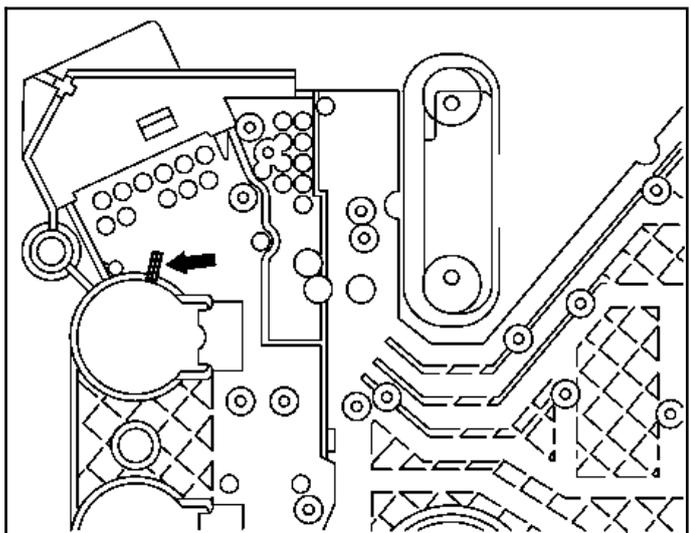


Figure 1

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**Diagnosis - Complaint Related Diagnostic Chart - ATF Leak Complaints (Individual)**

V	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
--	ATF oil leaks near torque converter  <b>i</b> <b>Prior to starting any repairs, check the ATF fluid level.</b>	Outer brake carrier B1 mounting screws (Torx M6)  Lower 6 mounting screws on torque converter housing.  Torque converter leaks at its welding seam.  Radial sealing ring of ATF oil pump damaged.  O-ring for ATF oil pump damaged/missing.	Clean out mount screw (Torx) threads and reinstall mount screws with Locktite 574 (P/N 001 989 89 20).  <b>i</b> Applies up to transmission number 981619, thereafter coated mount screws used in production.  Clean out mount screw threads and reinstall mount screws with Locktite 574 (P/N 001 989 89 20).  Replace torque converter.  Replace radial seal ring.  Replace O-ring.

<sup>1)</sup> Observe Preparation for Test, see □ 22.

**Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints**

**Prior to Test**

- Review □ 11 entirely, especially page □ 11/4 (Limp-home modes).  
 Follow all "Test step/Remedy" remarks in following chart, for additional information

(noted in charts in specific pages of this section) regarding specific DTCs.

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>	
002 003 004 005 006 007	098 PO 153 099 PO 158 100 PO 163 101 PO 143 102 PO 148 103 PO 148	Transmission is in electrical limp-home-mode	Solenoid valves Harness is damaged from ETC control module to each individual solenoid valve. End stage fault in ETC control module	See □ 13/20 as well.
012	108 PO 115	Transmission is in electrical limp-home-mode	Harness is damaged from ETC control module to each RPM sensor. RPM sensors are faulty	See □ 13/21 as well.
013	109 PO 115	Transmission is in electrical limp-home-mode	Harness is damaged from ETC control module to each RPM sensor. RPM sensors are faulty. Vehicles with less than 600 miles: Impulse wheel window misaligned, due to manufacture, loose or axially misaligned.	See □ 13/21 as well.  Replace clutch K1
015	111 PO 100	Transmission does not transmit engine power.	Harness is damaged from ETC control module to each RPM sensor. RPM sensors are faulty.	See □ 13/21 as well.

<sup>1)</sup> Observe Preparation for Test, see □ 22.

**Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints**

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>	
018	114 --	Transmission gear selector lever in "Between Selections", transmission is in electrical limp-home-mode	 Applies to all models without "Touch Shift" feature. Shift linkage, Transmission range recognition switch (S16/10)	See □ 13/22 as well,
020	116 --	Engine starts with a delay	Shift linkage adjusted incorrectly. Plunger of starter lock-out is stuck.	Adjust shift linkage. Replace electrical conductor plate
026 028 029	122 -- 124 -- 125 --	Background fault noted	 Non-USA vehicles only, continue to next test step.	--
037	133 --	Transmission is in electrical limp-home-mode	Fault in software: 21/96 status	Replace ETC
038	134 PO 120	Transmission is in electrical limp-home-mode	Possible communication to ETS/ESP faulty.	Advise regional office
050	146 PO 100	Transmission is in mechanical-hydraulic limp-home-mode	ATF oil level Piston B2/B3: piston guide Harness If the fault reappears after the test drive, after all causes have been eliminated, then contact the regional office for help.	See □ 13/23 as well, Check ATF fluid level, fill up as necessary, see document AF27.00-P-0101A, Remove, install brake B2, brake B3 and parking lock wheel, see document AR27.50-P-0781A

<sup>1)</sup> Observe Preparation for Test, see □ 22.

**Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints**

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>	
051	147 PO 100	Gear implausible, transmission slips, transmission is in mechanical-hydraulic limp-home-mode	ATF oil level ATF oil filter Version coding Rear axle ratio Modulating pressure regulating solenoid valve (Y3/6y1) Command or Regulating, Shift Control Valves Clutch K3 Free-wheeling units F1/F2 Circlips Plain bushing at input/outputshaft worn out Actuator motor at transfer case (Model 163)	See □ 13/24 as well, Check ATF fluid level, fill up as necessary, see document AF27.00-P-0101A
052	148 --	Unwanted actuation of torque converter lock-up function		Advise regional office
052	149 PO 140	Torque converter lock-up does not function or requires too much power		Advise regional office

<sup>1)</sup> Observe Preparation for Test, see □ 22.

**Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints**

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
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055	151	PO 130	Selected gear not attained, transmission is in electrical limp-home-mode	ATF oil level Harness ATF oil filter not installed Shift pressure regulating solenoid valve (Y3/6y2) Command or Regulating, Shift Control Valves	See □ 13/26 as well, Check ATF fluid level, fill up as necessary, see document AF27.00-P-0101A
055	151	--	Fault in ETC control module (N15/3), however not critical for function of transmission.	ETC control module (N15/3)  With DTC 151, erase DTC and replace ETC control module only if the fault can be reproduced during a test drive.	Replace ETC

1) Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints



The following charts contain specific DTCs with additional information.

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
002 098 PO 153 003 099 PO 158 004 100 PO 163 005 101 PO 143 006 102 PO 148 007 103 PO 148	Transmission is in electrical limp-home-mode	Connector connection between ETC control module and transmission is loose or has no electrical contact.  Harness is damaged, has abrasion damage, or is short circuited.  Solenoid valve(s) has bent contact finger.  Solenoid valve faulty.  Short circuit on the electrical conductor plate of the electro-hydraulic control unit due to deposited metal shavings   Applies up to transmission number 393328, thereafter the electrical conductor plate has been modified.  Endstage fault in ETC control module.	Check and verify proper electrical connection.  Test harness for short circuits to ground (-).  Re-bend contact finger for proper contact.  Replace solenoid valve.  Remove metal shavings.  Replace ETC control module.

1) Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
012 108 PO 115 013 109 PO 115 015 111 PO 100	Transmission is in electrical limp-home-mode, or does not transmit engine power.	Connector connection between ETC control module and transmission is loose or has no electrical contact.  Harness is damaged, has abrasion damage, or is short circuited.  Short circuit on the electrical conductor plate of the electro-hydraulic control unit due to deposited metal shavings   Applies up to transmission number 393328, thereafter the electrical conductor plate has been modified.  RPM sensors are faulty.  Pressure plate below RPM sensors not installed.	Check and verify proper electrical connection.  Test harness for short circuits to ground (-).  Remove metal shavings.  Replace conductor plate.  Replace conductor plate.

1) Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
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018	114	--	Transmission gear selector lever in "Between Selections", transmission is in electrical limp-home-mode.	<p><b>i</b> Applies to all models without "Touch Shift" feature.</p> <p>Shift linkage improperly adjusted.</p> <p>Transmission range recognition switch (S16/10).</p> <p><b>i</b> A fault code for the above is no longer set in memory as of software version e03/f08</p>	<p>Re-adjust shift linkage properly.</p> <p>Replace the Transmission range recognition switch (S16/10), only if upon testing with the HHT, the HHT display shows "Between Selections" or "Fault".</p>
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1) Observe Preparation for Test, see □ 22.

**Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints**

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>			
050	146	PO	700	Transmission is in mechanical-hydraulic limp-home-mode	<p>Torx screws (M8X60) loose or missing for piston guide on piston B2/B3</p> <p>Harness is damaged, has abrasion damage, or is short circuited.</p>	<p>Tighten loose torx screws or replace missing torx screws.</p> <p>Test harness for short circuits to ground (-).</p>

1) Observe Preparation for Test, see □ 22.

**Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints**

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>			
051	147	PO	700	Transmission is in mechanical-hydraulic limp-home-mode	<p>Wrong version code in ETC control module.</p> <p>Wrong rear axle ratio.</p> <p>ATF oil filter not installed.</p> <p>Torx screws (M8X60) loose or missing for piston guide on piston B2/B3</p> <p>Modulating pressure regulating solenoid valve (Y3/6y1)</p> <p><b>i</b> Applies up to transmission number 538312 only, thereafter screen installed in oil passage.</p> <p>Command or Regulating, Shift Control Valves stuck due to foreign matter.</p>	<p>Check/Re-program ETC control module using HHT.</p> <p>Check rear axle ratio, replace rear drive with proper rear axle for model</p> <p>Install ATF oil filter.</p> <p>Tighten loose torx screws or replace missing torx screws.</p> <p>Replace Y3/6y1</p> <p>Check valves for full travel and ease of movement, if necessary free up valves as needed.</p>

1) Observe Preparation for Test, see □ 22.

**Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints**

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>			
051	147	PO	700	Continued from □ 13/24	<p>Clutch plates of clutch K3 are either burnt, have hot-spots or are worn down.</p> <p>Free-wheeling unit (F1) faulty</p> <p><b>i</b> Since it is possible that the free-wheeling unit F2 will be damaged as well, replace F2 (P/N 140 270 05 31) the hollow shaft, rear sun gear/clutch K3 as well.</p> <p>Free-wheeling unit (F2) faulty</p>	<p>Replace inner and outer clutch plates of clutch K3.</p> <p><b>i</b> Applies up to transmission number 331159 only, thereafter the thickness of the clutch plates changed.</p> <p>Additionally replace torque converter lock-up clutch control valve (22).</p> <p><b>i</b> Applies up to transmission number 221668 only.</p> <p>Replace Free-wheeling unit (F1)</p> <p>Replace F2 (P/N 140 270 05 31) the hollow shaft, rear sun gear/clutch K3.</p>

1) Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
 051 141 PU 100	Continued from □ 13/25	Circlip for outputshaft ball bearing is missing  Circlip for outer disc spring for Brake B3 is missing.  Circlip for disc spring for piston B2/B3 is not installed in groove.  Plain bushing at input/outputshaft worn out   Applies up to transmission number 1324240, exchange transmissions up to 346607. Thereafter plain bearing replaced with needle bearing  Actuator motor at transfer case (Model 163)	Replace transmission, flush transmission oil cooler and all lines. Replace torque converter only if upon flushing there are metal shavings present.  Replace transmission, flush transmission oil cooler and all lines. Replace torque converter only if upon flushing there are metal shavings present.  Replace transmission, flush transmission oil cooler and all lines. Replace torque converter only if upon flushing there are metal shavings present.  Swap inputshaft/outputshaft    Replace actuator motor.

1) Observe Preparation for Test, see □ 22.

### Diagnosis - Complaint Related Diagnostic Chart - DTC Related Complaints

	Complaint/Problem	Possible cause	Test step/Remedy <sup>1)</sup>
 055 151 PU 130	Selected gear not attained, transmission is in electrical limp-home-mode.	ATF oil filter not installed.  Harness is damaged, has abrasion damage, or is short circuited.  Shift pressure regulating solenoid valve (Y3/6y2) stuck due to foreign matter.  Command or Regulating, Shift Control Valves stuck due to foreign matter.  Spring for regulating valve pressure control valve	Install ATF oil filter  Test harness for short circuits to ground (-).  Replace (Y3/6y2).  Check valves for full travel and ease of movement, if necessary free up valves as needed.  Swap electro-hydraulic control unit

1) Observe Preparation for Test, see □ 22.