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Allison 3000 service manual

Pressure Switch Logic State Chart Range Park Rev Neut OD 4 3 2 1 "C" On On On Off On On Off Off "D" On On On Off Off Off On "E" On On On On On Off Off Off Reverse Off On Off Off Off Off Off Off Figure 25 AUTOMATIC TRANSMISSION SERVICE GROUP 21 Technical Service Information RETRIEVING DIAGNOSTIC CODES A or H Pause Break Scroll Lock Print Home Scrn Backspace F12 F11 _ - F10 F9 0 F8 9 F7 F6 7 F5 6 F4 5 F3 F2 3 F1 2 ESC 1 W ~ ` Q b Ta A ps Lock Ca Shift rl Ct Fn Y 4 T R G E F D V S C X Z Alt n Wi P 8 O I L U K < J , H M N B PgUp + | = \ } PgDn] r { Ente [: ; > . Two different bottom pan configurations are also provided to make these units even more versitile. All transmission XX fluid level and pressure checks must be made at normal operating temperatures (160-200°F). Attempting repairs or service without the proper training, tools and equipment could cause injury to you or others and damage to the vehicle that may cause it not to operate properly. Ignores the signal poloskovogo switch Low oil level sensor signal High level oil level sensor signal Adjunct oil temperature sensor signal Uses the value of the the default temperature Low oil temperature sensor signal Uses standard the temperature value The high level of oil temperature sensor signal Uses standard the temperature value Adjunct of the turbine wheel speed sensor signal DNS, the AUTOMATIC TRANSMISSION is blocked on the current transfer There is no signal to the turbine wheel speed sensor DNS, the AUTOMATIC TRANSMISSION is blocked on the current transfer Low level signal sensor ABS braking Considered ABS deactivated Incompatible input signal RELS Function disables the RELS Wrong input signal a special function (wire 101 and 142) Adjunct sensor signal output revolutions DNS, the AUTOMATIC TRANSMISSION remains on the current transfer Allison HUB™ houses a library of Operator's Manuals which covers all current products and is available in a variety of languages. Paypal, Visa, Russia Bank, Turkey Bank, Bitcoin, Webmoney, Skrill, Perfect Money PM, Neteller, WechatPay, AliPay are the payment methods we accept when purchasing products on the website - How to Pay with Visa Credit Card - Guide to Home Pages on Mobile Phone - [HOT] Engineering Computer - Guide to search and buy documents on the Mobile Phone - [HOT] Discount Coupon - Cummins Insite 8.9.1.74 Active for PC - BACK GO TO PAGE BACK BACK ALLISON 1000/2000 SERIES INDEX CLUTCH AND SOLENOID APPLICATION CHART ..... The 1000 and 2000 Series transmissions both have helical cut planetary gear systems to minimize noise concerns and come in two different gear ratio configurations. 26 MAIN CASE "REAR" OIL PASSAGE IDENTIFICATION ..... Special Note: Allison Series 1000/2000/2400 transmissions are designed and manufactured to metric standards, and metric tools are required for service. 68 C1/C2 CLUTCH HOUSING SNAP RING IDENTIFICATION ..... Range PARK/NEUTRAL REVERSE FORWARD (TCC Off) FORWARD (TCC On) MAIN PRESSURE TEST SPECIFICATIONS Pressure @ 600 RPM 900-1655 kpa (130-240 psi) 800-1380 kpa (115-200 psi) 800-1380 kpa (115-200 psi) Main Pressure Tap TO COOLERTO COOLER FROM COOLERFROM COOLER Pressure @ 1200 RPM 1515-1795 kpa (220-260 psi) 1515-1795 kpa (220-260 psi) 1515-1795 kpa (220-260 psi) 1000-1170 kpa (145-170 psi) Figure 28 AUTOMATIC TRANSMISSION SERVICE GROUP 23 Technical Service Information BELL HOUSING OIL PASSAGE IDENTIFICATION 16 16 9 15 16 16 29536810 3 2 1 13 2 9 14 2 10 3 3 16 3 1 8 1 16 7 1 6 11 1. All switches and their locations are identified in Figure 22. A normally closed solenoid remains closed until a signal from the TCM energizes the solenoid. X 1 X X O X N X L 1 A 2 I F X R 9 X E 9 S X X N X X X FC X E X X X X X X X X 9 . CONVERTER IN 5. Term.Color ColorCircuit Ends Circuit Ends Blue Trans-D Vehicle System 1 1 2 2 Pink 3 3 White 4 4 Green Blue 5 5 Yellow 6 6 Gray 7 7 White 8 8 Blue 9 9 10 10 Orange 11 11 12 12 13 13 14 14 15 15 16 16 17 17 18 18 19 19 20 20 21 22 23 24 25 26 27 28 29 30 31 32 Blue Orange Blue Yellow Green Orange Pink Green Yellow Yellow White Pink Orange Green Blue Gray White Orange Green Circuit Function Circuit Function PSA Input Battery Ground PSA Input PSA Input PSA Input NSBU Input NSBU Input NSBU Input NSBU Input Throttle Position Sensor Tan Tan Tan Trans Sump Temp Input Retarder Temp Input (Opt) Engine Coolant Temp Turbine Speed Sensor (High) Turbine Speed Sensor (Low) Output Speed Sensor (High) Output Speed Sensor (Low) Engine Speed Sensor (High) Engine Speed Sensor (Low) TPS Voltage Supply Analog Ground TRANS ID Trim Solenoid A (High) Trim Solenoid A (Low) Trim Solenoid B (High) Trim Solenoid B (Low) C Solenoid Ground (On/Off) D Solenoid Ground (On/Off) E Solenoid Ground (On/Off) F Solenoid Low (PWM) G Solenoid Low (PWM)(Opt) C, D, E Solenoid V Supply F Solenoid High (PWM) 1322313304295286278 Trans-F Trans-E Trans-K NSBU-4A NSBU-4D NSBU-4B NSBU-4C TPS-B Trans-G R Temp-A ECTS-A TSS-A TSS-B OSS-A OSS-B ESS-A ESS-B TPS-C Trans-H, ECTS-A, Temp-B, NSBU-7D R-Temp-B, TPS-A Trans-T Trans-L Trans-M Trans-N Trans-P Trans-A Trans-B Trans-W Trans-J Trans-J Trans-C Trans-S 21 22 23 24 25 26 27 28 29 30 31 32 Gray Yellow Pink Yellow Gray Blue Orange Green White Yellow Green Blue Pink Orange Yellow White Pink Green Tan Orange White Blue Pink White Green Tan Pink Yellow Red Blue Green Black 14 11 13 151816 21 19 22 20 17 7269 25 23 24 10 12 TCM "J1" (Gray) Harness Connector (Face View) Ignition Power Battery Power Ignition Power Battery Ground GPI 1 GPI 2 GPI 3 GPI 4 GPI 5 GPI 6 GPI 7 GPI 8 GPI 9 Retarder Mod. Internally these units contain 2 rotating clutches (C1 and C2), and 3 brake clutches (C3, C4 and C5), to direct the flow of torque through the unit. The TCM, using pulse width modulation programming, varies the percentage of voltage ON time during a cycle. LOCK-UP SIGNAL 13. Ban torque converter lock, barring the master modulation. It is basically the same as most current GM models with 0.5 volts at idle, to 5.0 volts at wide open throttle. 80 SOLENOID AIR CHECKS ..... B Pink, 5V Supply C TCM "J2" (RED) Connector Transmission Control Module (TCM) 20 9 19 (TPS) Distance of Travel Versus Volts mm/inch 0/0 1/.039" 2/.079" 3/.118" 4/.157" 5/.197" 6/.236" 7/.275" 8/.314" 9/.354" 10/.394" 11/.433" 12/.472" 13/.511" 14/.551" 15/.590" 16/.629" 17/.669" 18/.708" 19/.748" 20/.787" 21/.826" 22/.866" 23/.905" 24/.945" 25/.984" 26/1.023" 27/1.063" 28/1.102" 29/1.142" 30/1.181" 31/1.220" 32/1.260" 33/1.299" 34/1.339" 35/1.378" 36/1.417" 37/1.457" 38/1.496" 39/1.535" 40/1.575" 41/1.614" 42/1.654" 43/1.693" 44/1.732" 45/1.772" 46/1.811" Volts 0 0.11 0.22 0.33 0.44 0.55 0.66 0.77 0.88 0.99 1.10 1.20 1.30 1.43 1.54 1.65 1.76 1.87 1.98 2.08 2.19 2.30 2.41 2.52 2.63 2.74 2.85 2.96 3.07 3.18 3.29 3.40 3.51 3.62 3.73 3.84 3.95 4.06 4.17 4.28 4.39 4.50 4.61 4.72 4.83 4.94 5.05 10 Figure 10Figure 9 AUTOMATIC TRANSMISSION SERVICE GROUP Technical Service Information NEUTRAL START BACK-UP SWITCH The installation of a transmission mounted Neutral Start/ Reverse Signal switch is required. The percentage of time the voltage is ON during each 100th of a second is called the solenoid duty cycle. Serviced as an assembly under Allison Part Number 15321154. The torque converter is a single stage, three element unit, consisting of a pump, stator, and turbine, with the addition of a converter clutch to provide direct drive from the engine to the transmission. 119 TORQUE SPECIFICATION CHART ..... Prohibition on blocking the torque converter. High level signal from the current transfer. Maximum GVW = 30000 lb. The operator may turn off and restart the engine, and the manual selector lever will provide reverse when in R, Neutral when in P/N, and 3rd Gear when in any forward range, regardless of the range where the failure occured. 24 MAIN CASE "FRONT" OIL PASSAGE IDENTIFICATION ..... LINE PRESSURE 3. This information is included on the transmission identification tag located on the right rear side of the transmission case, as shown in Figure 3. 83 EXTENSION HOUSING ASSEMBLY ..... RETRIEVING DIAGNOSTIC CODES Currently you must use PC Tool Software called TransPro® which is available through Kent-Moore Heavy-Duty Division, and must be loaded onto a Windows 95/98 Lap-T op PC as shown in Figure 26. By the engagement of the 5 clutch packs in various combinations, the planetary gear sets react singly or together to provide 5 forward speeds, neutral, and reverse. "Portions of materials contained herein have been reprinted under license from General Motors Corp, Service & Parts Operations." The information and part numbers contained in this booklet have been carefully compiled from industry sources known for their reliability, but ATSG does not guarantee its accuracy. Holds 4 transfer.Torque converter lock ban. Changes in fluid temperature are indicated by changes in sensor resistance. 100 FINAL TRANSMISSION ASSEMBLY PROCESS ..... The TCM uses this information to control solenoids and valves, supply system status, and provide diagnostic information for service technicians. LINE PRESSURE 14. We have also provided a pressure switch logic state chart in Figure 25. There are also 2 additional switches in the PSA that are not used. Refer to Figures 11 and 12. Hopefully aftermarket scanner manufacturers will be able to provide us with a cartridge for the more popular scanners in the future. This includes all text illustrations, tables and charts. These elements are contained in a housing which is mounted adjacent to a rotating ferrous member, such as a gear tooth. Technical Service Bulletins (Tech Tips, Service Tips, Warranty Publications, etc.) can be found here. The NSBU Switch has redundant circuitry to alert the TCM in the event of a single wire or switch failure. 29 SHIFT VALVE BODY OIL PASSAGE IDENTIFICATION ..... Each time the engine is started, the Check Trans light will illuminate momentarily and then go off after a few seconds. Refer to the chart provided in Figure 10 for approximate voltages at various throttle openings. The trim solenoids operate using battery voltage. 120 CAUTION: ATSG service manuals are intended for use by professional, qualified technicians. The use of TransPro® is describeded in detail in the instruction manual that is furnished with each set of software. When pressure is routed to the switch from the shift valves, the switch closes and allows current to flow from the positive contact and through the switch. Shift Solenoids C, D, and E may operate in the open or closed state with no modulation capability at all. The cooler ports and the main line pressure tap are the only non-metric fittings on the transmission case. INTERNAL WIRING HARNESS ASSEMBLY A 100 percent duty cycle indicates a maximum signal to the solenoid. Disables adaptation gear. ..... Each sensor consists of a wire coil wrapped around a pole piece that is adjacent to a permanent magnet. This switch commonly refered to as an "NSBU Switch", mounts directly onto the transmission case from the outside and detects the angular position of the manual shift selector shaft. Transmissin Control Modules are available in both 12V and 24V configurations, to match the configuration of the vehicle electrical system. The output flange/yoke retaining bolt is also non-metric. FROM COOLER 8. Two signal wires extend from one end of the housing and an exposed end of the pole piece is at the opposite end of the housing. 19 PRESSURE SWITCH ASSEMBLY IDENTIFICATION AND OPERATION ..... A suction filter, located in the bottom pan provides general protection to the entire hydraulic system, and a spin-on filter provides full time protection for the control solenoids and multipass protection for the entire system. OVERAGE (CONV RELEASE) 4. 9 THROTTLE POSITION SENSOR ..... C1 CLUTCH 11. The spin-on filter is located externally on the converter housing at the lower left front of the transmission. The gear ratios for both of the new units are shown in this Manual. The TCM, shown in Figure 6, recieves and processes signals from various switches and sensors. Clut ON ON ON ON ON 4 C2 ClutC3ClutC4ClutC5Clut ONON ON ONON ON ON ON AUTOMATIC TRANSMISSION SERVICE GROUP Sol "A" ** ** ** ** ** ** ** Figure 2 Sol "B" ** ** ** ** ** ** ** Sol "C" X X X Sol "D" XXON X X Sol "E" X X X Sol "F" * * X X * *** Copyright © 2000 ATSG Ratios 1000 2000 4.49 3.10 1.81 1.41 1.00 0.71 5.09 3.51 1.90 1.44 1.00 0.74 Technical Service Information ALLISON IDENTIFICATION TAG LOCATION 9 .8 9 .8 9 .8 9 .8 9 .8 9 .8 9 .8 9 .8 9 .8 9 .8 9 W A U 3 3 9 X X n X n . The AC voltage generated varies from 150mV at low speed to 15V at high speed. Trim Solenoid A is a Normally Closed solenoid, providing 86 psi (590 kpa) at zero current, and no trim pressure at full current. EXHAUST AUTOMATIC TRANSMISSION SERVICE GROUP 6 1 10 16 Copyright © 2000 ATSG Figure 34 Technical Service Information OIL PUMP PASSAGE I.D. 2 2 14 1. A normally open solenoid remains open until the TCM energizes the solenoid. ENGINE SPEED SENSOR The Engine Speed Sensor is externally mounted in the torque converter housing, and directed at the ribs protruding from the torque converter as shown in Figure 1. X P o R X - i O X C X s S X R iso X s O l A i X T l O X AN - M X L X m X A NDI X I A R s X X , X S NE I X E n L X X G - O X P a X A OF X X N N r X X X A O I I X X X S T I ND X V X I - I X D X X X X X X X X X - X X L X X E X X X D I X OD T X S M - IE X X X R X X E X E S T X 0 - DA 0 0 . DALE ENGLAND FIELD SERVICE CONSULTANT WAYNE COLONNA TECHNICAL SUPERVISOR PETER LUBAN TECHNICAL CONSULTANT JON GLATSTEIN TECHNICAL CONSULTANT JERRY GOTT TECHNICAL CONSULTANT GERALD CAMPBELL TECHNICAL CONSULTANT Copyright © ATSG 2000 JIM DIAL TECHNICAL CONSULTANT ED KRUSE TECHNICAL CONSULTANT GREGORY LIPNICK TECHNICAL CONSULTANT DAVID CHALKER TECHNICAL CONSULTANT MIKE SOUZA TECHNICAL CONSULTANT ROLAND ALVAREZ TECHNICAL CONSULTANT AUTOMATIC TRANSMISSION SERVICE GROUP 18639 S.W. 107TH AVENUE MIAMI, FLORIDA 33157 (305) 670-4161 1 Technical Service Information ALLISON 1000/2000 SERIES Engine Speed Sensor Turbine Speed Sensor AllisonAllison Output Speed Sensor Neutral Start Switch Engine Speed Sensor TWO WHEEL DRIVE Turbine Speed Sensor AllisonAllison Neutral Start Switch FOUR WHEEL DRIVE Figure 1 AUTOMATIC TRANSMISSION SERVICE GROUP Copyright © 2000 ATSG 3 Technical Service Information ALLISON 1000/2000 SERIES TRANSMISSION "C4" CLUTCH "C3" CLUTCH "C2" CLUTCH "C1" CLUTCH "C5" CLUTCH C1 Range Park Reverse X Neutral OD-1st OD-2nd OD-3rd OD-4th OD-5th X = Electrical Power Applied To Solenoid = Apply Solenoid "F" To Apply Converter Clutch * = Solenoids "A" and "B" are "Trim" solenoids used to control oncoming, off-going, and ** holding pressure to the five clutch packs. Output voltage from the TPS is directed to the Transmission Control Module (TCM) through the external harness. Trim Solenoid A allows for limp-home capability in the event of a power or TCM failure. CUT-BACK (5TH GEAR) 16. 16 INTERNAL WIRING HARNESS SCHEMATIC AND RESISTANCE CHART ..... The switch is interfaced to the starter circuit, and the reverse signal provision may be used to activate vehicle back-up lights and/or reverse warning devices. 12 DIAGNOSTIC TROUBLE CODE IDENTIFICATION ..... EXTERNAL COMPONENTS SPEED SENSORS The speed sensors are variable reluctance devices which convert mechanical motion to an AC voltage. The three pressure switches corresponding to the shift valves are normally open (N/O) when there is no pressure to the switch, so that electrical current is stopped at the switch. Anytime the Check Trans light is on, upshifts and downshifts will be restricted and direction changes may not occur. The Special Service Tools Web Store allows all users the ability to find and purchase service tools which are unique to perform repair and ... The Allison 3000 Series Service Manual TS3989RU GEN4 is a comprehensive guide specifically designed to provide detailed information and instructions for technicians and maintenance personnel working with Allison transmissions, ... The service procedures recommended by Allison Transmission (or the vehicle manufacturer) and described in this manual are effective methods for ... This manual contains detailed maintenance, service, repair and overhaul procedures for Allison 3000 series transmissions. Reg. MAIN PRESSURE TAP LOCATION AND SPECIFICATIONS ActiveDescriptionCode Y Y Y Y Y Y MIL 10:45 AM LINE PRESSURE TEST Check transmission fluid level. 11 TRANSMISSION CONTROL MODULE CONNECTOR IDENTIFICATION ..... These solenoids are reffered to as Pressure Proportional to Current (PPC) solenoids, since the output hydraulic pressure supplied by these solenoids is proportional to the current commanded. The Transmission Control Module (TCM) signals six different solenoids, located on the valve body, to apply and release clutches based on vehicle speed and power combinations, and the range selected by the operator. 18 EXTERNAL WIRING HARNESS SCHEMATIC AND TERMINAL IDENTIFICATION ..... The service manual covers Gen 1-3 is essential for professional mechanics working on the automatic ... View and Download Allison Transmission 3000 instruction manual online. Maximum GVW = 26000 lb. The pressure switch corresponding to reverse is a normally closed (N/C) switch, and pressure is fed to the switch when the transmission is placed into the reverse position. Ban converter clutch switch adaption is off Temperature control unit exceeded DNS, SOL OFF, actively hydraulic control. 6 ELECTRICAL OPERATION ..... TPS CONNECTOR TURBINE SPEED SENSOR CONNECTOR 7 PIN 4 PIN NSBU SWITCH CONNECTORS OUTPUT SPEED SENSOR CONNECTOR ENGINE SPEED SENSOR CONNECTOR Copyright © 2000 ATSG Figure 6 8 AUTOMATIC TRANSMISSION SERVICE GROUP Technical Service Information ELECTRICAL OPERATION The electronic control of the transmission is performed by the Transmission Control Module (TCM). 14 SOLENOID IDENTIFICATION AND OPERATION ..... The torque converter housings of these units mate directly to SAE No. 2, SAE No. 3, or direct to the engine block in some cases. NSBU SWITCH WIRE SCHEMATIC NSBU SWITCH RANGE CHART ON SCAN TOOL Range A B C P P R N D 3 2 1 OFF OFF ON ON OFF OFF ON ON ON OFF OFF OFF OFF ON ON ON ON OFF OFF OFF OFF ON OFF ON OFF ON OFF NEUTRAL START BACK-UP SWITCH Copyright © 2000 ATSG Figure 11 Rev/Park Accessory Battery Feed PK/NEUT Start Battery Feed 7-Way NSBU Switch Receptacle (Face View) 4-Way NSBU Switch Receptacle (Face View) Park Accessory Back-up Lamps Not Used A G B F C E D C A D B Harness Connectors A G B F C E D C A D B NSBU Switch (Face View) A B C E F G D A B C D Tan Blue Yellow Pink Orange Green Blue Gray White Yellow TCM "J2" (RED) Connector 20 5 7 8 6 Copyright © 2000 ATSG Starter Relay Transmission Control Module (TCM) Figure 12 AUTOMATIC TRANSMISSION SERVICE GROUP 11 TCM "J2" (Red) Receptacle Technical Service Information RED RED R R ED ED G G GR GR R R A A A A Y Y Y Y TCM "J1" (Gray) Receptacle TRANSMISSION CONTROL MODULE (TCM) S S IS IS TO TO SSI SSI D TO D TO N N ND ND U U CHASS CHASS U U CHA CHA E E O O E E N N N N L L R R RO RO C C ICL ICL I I IO IO H H T G T G T T TIO TIO EH EH O O U U OT G OT G VE VE V V N N A A AU AU N N O O O O C C C C D D D D 1322313304295286278251023122114 TCM "J2" (Red) Receptacle 14 13 151816 19 20 17 9 11 25 23 21 24 22 10 12 TCM "J2" (Red) Harness Connector (Face View) 7269241122132015181 6 7 26 1322313304295286278 1322313304295286278251023122114 19 17 7269241122132015181 6 19 17 TCM "J1" (Gray) Receptacle 14 11 13 151816 21 19 22 20 17 7269 25 23 24 10 12 1322313304295286278 TCM "J1" (Gray) Harness Connector (Face View) 12 Copyright © 2000 ATSG Figure 13 AUTOMATIC TRANSMISSION SERVICE GROUP Technical Service Information TCM CONNECTOR PIN IDENTIFICATION CHART 14 11 13 151816 21 19 22 20 17 7269 25 23 24 10 12 TCM "J2" (Red) Harness Connector (Face View) Term. Some 1000/2000/2400 Series transmissions are available with an optional extension housing that accommodates an OEM installed two shoe, expanding type, drum parking brake. Find the Service Manual and explore its importance. Heavy-duty automatic transmission with parking pawl. 22 AUTOMATIC TRANSMISSION SERVICE GROUP Technical Service Information Allison TransPro 3 4 6 9 1 2 6 0 5 8 1 3 6 5 2 2 6 4 5 4 8 9 1 0 4 3 3 6 7 3 3 8 TYPICAL TransPro® DISPLAY Transmission Demo Mode ON P0713 Trans Fluid Temp Sensor Circuit High Input Y Y P0722 Output Speed Sensor Circuit No Signal P0748 Pressure Control Trim Solenoid A Electrical P0763 Shift Solenoid C Electrical DTCs RetrievedDTCs Retrieved Allison TransProStartStart Copyright © 2000 ATSG Figure 27 ? Trim Solenoids A and B operate using a frequency of 1000 Hz. The current causes a force on the armature and shaft assembly, which is balanced by fluid pressure acting on the end of the shaft. 35 TRANSMISSION DISASSEMBLY PROCESS ..... 55 FOUR DIFFERENT BELL HOUSINGS IDENTIFICATION ..... The shift solenoids provide either full control line pressure, or exhaust, to the lands of each of the corresponding Shift V alves C, D, and E. 8 9 . Passage No. 1 2 9 10 11 12 13 14 16 15 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 Reverse Park/Neut 1st 2nd Pump Suction Main Line Pressure TCC Apply Exhaust Backfill/ C-1 Clutch C-2 Clutch/Exhaust Backfill C-2 Clutch Lock-Up Signal Cut-Back (5th Gear) Control Main Line Pressure To Filter Exhaust To Sump Control Main Line Pressure From Filter Reverse Pressure Switch "D" Shift Valve Pressure Switch "E" Shift Valve Pressure Switch "C" Shift Valve Pressure Switch C-3 Clutch C-3 Clutch C-3 Clutch Exhaust Backfill Main Line Pressure Exhaust Backfill C-3/B Trim Exhaust Backfill C-3/B Trim OD/B TrimC-4/B Trim C-1/B Trim "D" Signal TCC Interlock Exhaust Backfill/ C-3 Clutch EBF/C-3 Clutch C-4 Clutch C-5 Clutch Exhaust Backfill "A" Trim Solenoid Signal "B" Trim Solenoid Signal "A" Clutch Trim "B" Clutch Trim "A" Clutch Trim Feedback "B" Clutch Trim Feedback "D" Solenoid Signal "E" Solenoid Signal "C" Solenoid Signal C-1/Main Control Main After "B" Solenoid Screen B Trim "E" Shift Valve Interlock C-2/EBF Exhaust Backfill/C-5 Clutch (Power Off State) C-3/EBF C-2/EBF Thermister Exhaust Backfill C-1/Main 3rd 4th 5th EBF/ C-1 ClutchC-1 Clutch C-1/B Trim C-2/B Trim C-1/B TrimC-1/B Trim C-2/B Trim C-4/EBF OD/EBF C-2/Main Exhaust C-2/Main C-1/EBF Cut-BackC-3/EBF C-1/EBFC-1/EBF 30 Copyright © 2000 ATSG Figure 37 AUTOMATIC TRANSMISSION SERVICE GROUP Allison Transmission 3000/4000 series fault code list – download PDF manual See also: • Allison Transmission PDF Service Manuals • Allison Transmission 1000 and 2000 Series Fault Codes List • Allison Transmission 3000/4000 series fault Code List Allison Transmission 3000 Series Automatic transmissions Allison 3000 and 4000 Series with electronic control Gen4 Low voltage signal to the inclusion of retarder High voltage signal at the inclusion of retarder Intermittent or low level signal accelerator pedal position The default value for default The high level of gas pedal position sensor signal The default value for default Sample control at excess temperature. CUT-BACK (5TH GEAR) 14. 5 GENERAL DESCRIPTION AND OPERATION ..... Notice that the standard General Motors case connector has been utilized, and the Park/Neutral switch is exactly the same switch used currently on the THM 4L60-E transmission. 66 C1/C2 CLUTCH HOUSING ASSEMBLY ..... TYPICAL MANUAL SHIFT TOWER DO NOT SHIFT P R N D 4 2 1 DO NOT SHIFT Copyright © 2000 ATSG Figure 4 6 AUTOMATIC TRANSMISSION SERVICE GROUP Technical Service Information ALL 1000 AND 2400 SERIES Shift Selector Position P (Park) R (Reverse) N (Neutral) D (Drive) 4 (Fourth) 3 (Third) 1 (First) * With Park Pawl Engaged ** 4 Speed Calibration or Trailering Mode Gears Available Neutral* Reverse Neutral 1-5 1-4 1-3 1st Selector Position P (Park) R (Reverse) N (Neutral) D (Drive) 4 (Fourth) 2 (Second) 1 (First) ALL 2000 SERIES "WITH" AUTO-APPLY PARKING BRAKE Shift Selector Position PB = (Park) R (Reverse) Gears Available Neutral* Reverse Selector Position PB = (Park) R (Reverse) Shift Shift Gears Available Neutral* Reverse Neutral 1-5 1-4 1-2 1st Gears Available Neutral* Reverse Shift Selector Position P (Park) R (Reverse) N (Neutral) D (Drive) 3 (Third) 2 (Second) 1 (First) Shift Selector Position PB = (Park) R (Reverse) Gears Available Neutral* Reverse Neutral 1-5 (1-4)** 1-3 1-2 1st Gears Available Neutral* Reverse N (Neutral) D (Drive) 4 (Fourth) 3 (Third) 1 (First) * With Auto-Apply Parking Brake Engaged ** 4 Speed Calibration or Trailering Mode PB = Auto-Apply Parking Brake Neutral 1-5 1-4 1-3 1st N (Neutral) D (Drive) 4 (Fourth) 2 (Second) 1 (First) ALL 2000 SERIES "WITHOUT" AUTO-APPLY PARKING BRAKE Shift Selector Position R (Reverse) N (Neutral) D (Drive) 4 (Fourth) 3 (Third) Gears Available Reverse Neutral 1-5 1-4 1-3 Selector Position R (Reverse) N (Neutral) D (Drive) 4 (Fourth) 2 (Second) Shift Neutral 1-5 1-4 1-2 1st Gears Available Reverse Neutral 1-5 1-4 1-2 N (Neutral) D (Drive) 3 (Third) 2 (Second) 1 (First) Shift Selector Position R (Reverse) N (Neutral) D (Drive) 3 (Third) 2 (Second) Neutral 1-5 (1-4)** 1-3 1-2 1st Gears Available Reverse Neutral 1-5 (1-4)** 1-3 1-2 1 (First) ** 4 Speed Calibration or Trailering Mode 1st 1 (First) AUTOMATIC TRANSMISSION SERVICE GROUP Figure 5 1st 1 (First) 1st Copyright © 2000 ATSG 7 Technical Service Information TYPICAL TRANSMISSION CONTROL MODULE AND VEHICLE HARNESS TRANSMISSION CONTROL MODULE (TCM) TRANSMISSION (J2) HARNESS "J2" CONNECTOR (RED) "J1" CONNECTOR (GRAY) VEHICLE (J1) HARNESS J 1939 CONNECTOR (OPTIONAL) VIW "X" CONNECTOR VIW "Y" CONNECTOR GP 19 CONNECTOR THROTTLE POSITION SENSOR (TPS) Actual harness configuration may differ from this illustration. If power is interrupted while the transmission is operating in R(Reverse) or N(Neutral), the transmission defaults to or continues Neutral operation untill a key cycle. EXHAUST 11 10 1 2 13 Figure 30 AUTOMATIC TRANSMISSION SERVICE GROUP 15 14 Copyright © 2000 ATSG 25 Technical Service Information MAIN CASE "FRONT" PASSAGE I.D. 16 16 16 1. The 1000/2000/2400 Series transmissions use lever type shift selectors, as shown in Figure 4. The transmission identification tag also includes the date of manufacture, and also the transmission identification number used with the diagnostic systems. Illumination of the Check Trans light at any time after start-up, indicates that the TCM has stored a DTC, or the TCM is not working properly. As the pulse width, or duty cycle is increased, the solenoid is ON longer. All models have neutral, reverse, and up to 5 forward speeds, with 5th gear being overdrive. Several different torque converters are available to match the transmissions to a wide variety of diesel and gasoline engines. Shift Solenoids C, D, E - Shift Solenoids C, D, & E are normally closed solenoids that provide the necessary logic to distribute fluid to the correct clutch packs in the transmission. The 1000 and 2000 Series transmissions utilize five clutch packs (No Bands-No Freewheels) to obtain the five forward gears and reverse. EXHAUST 16 16 11 16 N/A 9 13 2 1 10 14 15 Copyright © 2000 ATSG 26 Figure 31 AUTOMATIC TRANSMISSION SERVICE GROUP Technical Service Information MAIN CASE "REAR" PASSAGE I.D. 15 14 C5 CLUTCH Figure 32 COOLER MANIFOLD PASSAGE I.D. MAIN LINE PRESSURE TAP TO TO CLR CLR Copyright © 2000 ATSG FROM 76 FROM CLR CLR 6. 22 LINE PRESSURE TESTS ..... TO COOLER 7. The 1000 Series uses closer steps to improve the shift quality that we now expect from an automatic transmission. The converter clutch is also shut off when transmission shifting is restricted. Topics include Power Take-Off (PTO) operation, shift ... Allison Transmission 3000 Service Manual Size : 173 MB Format : PDF Language : English Brand: Allison Transmission Type of machine: Transmission Type of Allison Transmission Service Repair Manuals PDF, Electrical Wiring Diagrams Free Download Learn how to properly maintain, remove, and install the Allison 3000 and 4000 on-highway transmission with the WTEC III control system. NOTE: Refer to Figure 5 for the various Shift Selector positions, and corresponding ranges that can be attained for all 1000/2000/2400 Series models. The 2000 Series uses wider steps to accommodate the greater vehicle weights associated with the 2000 Series. A zero percent duty signal indicates a minimum or no signal to the solenoid. 27 OIL PUMP COVER OIL PASSAGE IDENTIFICATION ..... 96 CASE CLUTCH PARTS ..... 20 RETRIEVING DIAGNOSTIC TROUBLE CODES ..... The front oil pump, driven by the converter, provides the pressure needed for the hydraulic system, and comes from the common sump in the bottom pan. 23 BELL HOUSING OIL PASSAGE IDENTIFICATION ..... As a ferrous object, such as a gear tooth approaches and passes through the gap at the end of the pole piece, an AC voltage pulse is induced in the wire coil. TPS Throttle Position Sensor (TPS) Connector Green, Ground A Blue, Signal Ret. Figure 20 on Page 18 gives you an internal wire schematic for all of the internal components, and pin identification for the external transmission case connector Continued on Page 18. One end of the cable is attached to the throttle lever and the other end, inside a protective housing, to the potentiometer. SOLENOIDS The 1000/2000/2400 Series solenoid locations are shown in Figure 17. The different models are identified as follows: 1000 Series 2000 Series 2400 Series Each transmission is identified by a model designation, group numbers, and serial number. 33 MAIN CASE "BOTTOM VIEW" OIL PASSAGE IDENTIFICATION ..... EXHAUST 24 15 14 16 2 16 6 BOTTOM BELL HOUSING COOLER MANIFOLD SURFACE Figure 29 AUTOMATIC TRANSMISSION SERVICE GROUP 7 16 Copyright © 2000 ATSG Technical Service Information PUMP COVER SPACER PLATE OIL PASSAGE I.D. 16 16 16 16 16 3 3 2 8 1 2 7 6 1 16 16 2 16 3 2 16 9 16 9 1. Low voltage in the circuit of Patients DNS, SOL OFF hydraulic control active High voltage in the circuit of Patients DNS, SOL OFF hydraulic control active The control unit does not recognize AUTOMATIC configuration Uses standard configuration There is a problem with the brake sensor On musorovozah it is impossible to Enable N-D. This manual will cover the dis-assembly, rebuild of all components and re-assembly of both the 1000 and 2000 Series units. (Opt) PWM Throttle Sensor Power Analog Ground GPO 1 GPO 2 GPO 3 GPO 4 Range Inhibit Indicator GPO 6 CHECK TRANS Vehicle Speed Vehicle Speed Digital Ground CAN High ISO 9141 CAN Shield CAN Low 1322313304295286278 Vehicle System RMR-B Vehicle System RMR-C RMR-A Vehicle System Vehicle System Vehicle System Vehicle System Vehicle System Vehicle System Vehicle System Vehicle System Vehicle System Vehicle System Vehicle System Vehicle System Vehicle System Vehicle System J 1939 A or H Vehicle System J 1939 C or S J 1939 B or L Figure 14 AUTOMATIC TRANSMISSION SERVICE GROUP Copyright © 2000 ATSG 13 DTC Description Technical Service Information DIAGNOSTIC TROUBLE CODE (DTC) CHART "Check Trans" Light P0117 P0118 P0121 P0122 P0123 P0218 P0561 P0562 P0563 P0602 P0606 P0700 P0703 P0705 P0706 P0708 P0711 P0712 P0713 P0716 P0717 P0721 P0722 P0726 P0727 P0731 P0732 P0733 P0734 P0735 P0736 P0741 P0742 P0746 P0747 YES P0763 P0768 P0776 YES P0777 YES Engine Coolant Temperature Circuit Low Voltage (High Temperature) Engine Coolant Temperature Circuit High Voltage (Low Temperature) Throttle Position Sensor Performance Problem Throttle Position Sensor Circuit Low Voltage Throttle Position Sensor Circuit High Voltage Transmission Fluid Over Temperature Urealistic variations in vehicle system voltage System Voltage Low System Voltage High TCM Not Programmed Transmission Control Module Internal Performance MIL Illumination requested Brake Switch Circuit Transmission Range Sensor Circuit (PRNDL Input) Transmission Range Sensor Circuit Performance Transmission Range Sensor Circuit High Input Transmission Fluid Temperature Circuit Performance Transmission Fluid Temperature Circuit Low Voltage (High Temperature) Transmission Fluid Temperature Circuit High Voltage (Low Temperature) Turbine Speed Sensor Circuit Performance Turbine Speed Sensor Circuit No Signal Output Speed Sensor Circuit Performance Output Speed Sensor Circuit No Signal Engine Speed Sensor Circuit Performance Engine Speed Sensor Circuit No Signal Incorrect 1st Gear Ratio Incorrect 2nd Gear Ratio Incorrect 3rd Gear Ratio Incorrect 4th Gear Ratio Incorrect 5th Gear Ratio Incorrect Reverse Gear Ratio Torque Converter Clutch System Stuck Off Torque Converter Clutch System Stuck On Torque Converter Clutch Solenoid ElectricalP0742 YES Solenoid A controlled Clutch Stuck Off Solenoid A controlled Clutch Stuck On Pressure Control Trim Solenoid "A" ElectricalP0748 YES Shift Solenoid "C" Electrical Shift Solenoid "D" Electrical Shift Solenoid "E" ElectricalP0773 YES Solenoid B controlled Clutch Stuck Off Solenoid B controlled Clutch Stuck On NO NO NO NO NO NO NO YES YES YES YES NO YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES YES 14 Figure 15 AUTOMATIC TRANSMISSION SERVICE GROUP Copyright © 2000 ATSG DTC Description Technical Service Information DIAGNOSTIC TROUBLE CODE (DTC) CHART "Check Trans" Light P0778 P0836 P0840 P0841 P0842 P0843 P0845 P0846 P0847 P0848 P1688 P1709 P1710 P1711 P1712 P1713 P1714 P1715 P1716 P1720 P1721 P1723 P1724 P1726 P1727 P1760 P1835 P1860 P1891 Pressure Control Trim Solenoid "B" Electrical 4 Wheel Drive Low Switch Circuit Malfunction (may also be listed as P1875) Transmission Pressure Switch, Solenoid C