CEBM014402

# Shop Manual

# HD1500-5

## DUMP TRUCK

SERIAL NUMBERS **A30079 & UP**

KOMATSU®

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| TRANSMISSION CONTROLLER FAULT CODE LIST | | | |
|---|---|---|---|
| No. | SYSTEM FAULT CODE | DESCRIPTION | ACTION CODE |
| 42 | b049 | M CLUTCH ECMV FAILURE 2 | 02 |
| 43 | b051 | L/U CLUTCH ECMV FAILURE 3 | 02 |
| 44 | b052 | H CLUTCH ECMV FAILURE 3 | 02 |
| 45 | b053 | L CLUTCH ECMV FAILURE 3 | 02 |
| 46 | b054 | 1st CLUTCH ECMV FAILURE 3 | 02 |
| 47 | b055 | 2nd CLUTCH ECMV FAILURE 3 | 02 |
| 48 | b056 | 3rd CLUTCH ECMV FAILURE 3 | 02 |
| 49 | b058 | R CLUTCH ECMV FAILURE 3 | 02 |
| 50 | b059 | M CLUTCH ECMV FAILURE 3 | 02 |
| 51 | b060 | ENG.SPEED SENSOR FAILURE | 02 |
| 52 | b061 | T/M IN SPEED SENSOR FAILURE | 02 |
| 53 | b062 | T/M MID. SPEED SENSOR FAILURE | 02 |
| 54 | b063 | T/M OUT SPEED SENSOR FAILURE | 02 |
| 55 | b071 | L/U CLUTCH SLNOID FAILED HIGH | 02 |
| 56 | b072 | H CLUTCH SLNOID FAILED HIGH | 02 |
| 57 | b073 | L CLUTCH SLNOID FAILED HIGH | 02 |
| 58 | b074 | 1st CLUTCH SLNOID FAILED HIGH | 02 |
| 59 | b075 | 2nd CLUTCH SLNOID FAILED HIGH | 02 |
| 60 | b076 | 3rd CLUTCH SLNOID FAILED HIGH | 02 |
| 61 | b078 | R CLUTCH SLNOID FAILED HIGH | 02 |
| 62 | b079 | M CLUTCH SLNOID FAILED HIGH | 02 |
| 63 | b081 | T/C IN PRESS. SIGNAL FAILURE | 02 |
| 64 | b082 | T/C OUT PRESS. SIGNAL FAILURE | 02 |
| 65 | b083 | T/C IN PRESS.SENSOR FAILURE | 02 |
| 66 | b084 | T/C OUT PRESS.SENSOR FAILURE | 02 |
| 67 | b091 | L/U CLUTCH SLNOID FAILED LOW | 02 |
| 68 | b092 | H CLUTCH SLNOID FAILED LOW | 02 |
| 69 | b093 | L CLUTCH SLNOID FAILED LOW | 02 |
| 70 | b094 | 1st CLUTCH SLNOID FAILED LOW | 02 |
| 71 | b095 | 2nd CLUTCH SLNOID FAILED LOW | 02 |
| 72 | b096 | 3rd CLUTCH SLNOID FAILED LOW | 02 |
| 73 | b098 | R CLUTCH SLNOID FAILED LOW | 02 |
| 74 | b099 | M CLUTCH SLNOID FAILED LOW | 02 |
| 75 | b0A1 | MACHINE SELECT FAILURE | 04 |
| 76 | b0A2 | T/C OIL TEMP.SENSOR FAILURE | 02 |
| 77 | b0A3 | FUEL LEVEL SENSOR FAILURE | 01 |
| 78 | b0A4 | R.BR.OIL TEMP.SNSR L FAILURE | 02 |
| 79 | b0b1 | T/M OIL TEMP.SENSOR FAILURE | 02 |
| 80 | b0b2 | COOLANT TEMP.SENSOR FAILURE | 01 |
| 81 | b0b4 | R.BR.OIL TEMP.SNSR R FAILURE | 02 |



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| PMC HARNESS CONNECTOR CIRCUITS<br>CONNECTOR - PMC5 | | | |
|---|---|---|---|
| **Pin No.** | **Function** | **Circuit No.** | **Type** |
| 1 | SNET +A | SNET +A | Serial in/output |
| 2 | SNET +B | SNET +B | Serial in/output |
| 3 | Ground | SNET0 | Ground |
| 4 | Reserved (S-NET) | | Serial in/output |
| 5 | Reserved (S-NET) | | Serial in/output |
| 6 | Reserved | | Ground |
| 7 | Reserved (RS485) | | Serial in/output |
| 8 | Reserved (RS485) | | Serial in/output |
| 9 | Ground | | Ground |
| 10 | RCM (RS422) TXD (+) | 990 | Serial output |
| 11 | RCM (RS422) RXD (-) | 991 | Serial output |
| 12 | Reserved (RS422) | | Serial output |
| 13 | Reserved (RS422) | | Serial output |
| 14 | RCM (RS422) RXD (+) | 992 | Serial input |
| 15 | RCM (RS422) RXD (-) | 993 | Serial input |
| 16 | Reserved (RS422) | | Serial input |
| 17 | Reserved (RS422) | | Serial input |
| 18 | Ground | 996 | Ground |
| 19 | Reserved (ISO) | | Serial in/output |
| 20 | Reserved (ISO) | | Serial output |
| 21 | Reserved | | Ground |



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7. Clean the glass and prepare the black primer coat according to adhesive instructions.
8. Apply a continuous even bead of the adhesive (approximately 10 mm (0.38 in.) diameter) to the cab skin at a distance of 20 mm (0.79 in.) inboard from the previously marked final location of the glass edges from Step 1. For the front windshield, only apply adhesive across the top and lower edges, not along the sides.

*NOTE: DO NOT apply the bead too far inboard, as it will make any future replacement more difficult.*

9. If installing the windshield or either side windshield, make a spacer (1, Figure 2-25) out of wood to assist in proper glass alignment. The dimensions of the spacer are 9.5 mm (0.38 in.) by 9.5 mm (0.38 in.).
10. For side windows, carefully position the glass in place with the black masking side towards the adhesive. For the side windshields, verify that the forward edge (Dimension B, Figure 2-25) is properly located. The top edge must be even with the top edge of the windshield. Press slowly and firmly into place ensuring that the glass is properly seated.

    The windshield must be centered so there is approximately 9.5 mm (0.38 in.) distance from the outside edge of the windshield to the outer flat edge of each side glass. Refer to Dimension A, Figure 2-25. The top edge of the windshield must be even with the top edges of both side windshields.
11. Using a wooden prop and duct tape, hold the glass in place for at least one full hour before moving the vehicle.

*NOTE: Do not allow the joint to move until the entire cure time for the adhesive has elapsed. Vibration or movement will weaken the bond. Cure time for SikaTack®-Plus Booster adhesive is one hour.*

*If SikaTack®-Plus Booster adhesive is not used, adhere to all adhesive instructions for use, including full allowances for proper curing time. The curing time may be as long as 24 hours.*

12. Remove the tape or prop from the glass after the cure time has expired.
13. If the windshield or either side windshield was replaced, the corner seal must be installed. Allow some overhang on each end as this seal will shrink when it cools and stiffens.
    a. Place the corner seal in a bucket of hot tap water. This will allow the seal to become more flexible.
    b. Carefully install the corner seal, starting at the bottom corner of the windshield and the side windshield. Slide the seal all the way up.
    c. After the seal has cooled, trim the top and bottom ends as required. Seal the top and bottom joints.
14. The top edge of the windshield must have a fillet of adhesive (4, Figure 2-24) placed all along the top edge of the glass to help seal out moisture and protect the top edge of the glass from damage. This should have the appearance of a clean, smooth equal legged fillet weld made from the adhesive running from the steel surface of the cab to the most forward edge of the glass when viewed from the side of the cab.

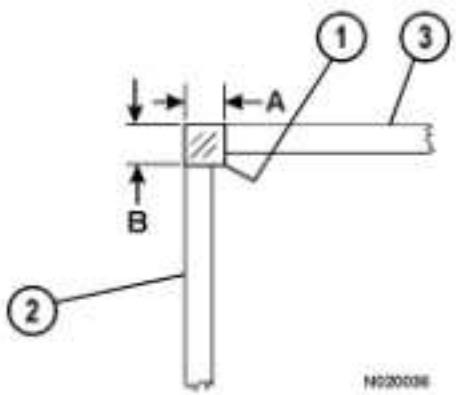



FIGURE 2-25. GLASS ALIGNMENT

1. Spacer — A - 9.5 mm (0.38 in.)
2. Side Windshield Glass — B - 9.5 mm (0.38 in.)
3. Windshield Glass



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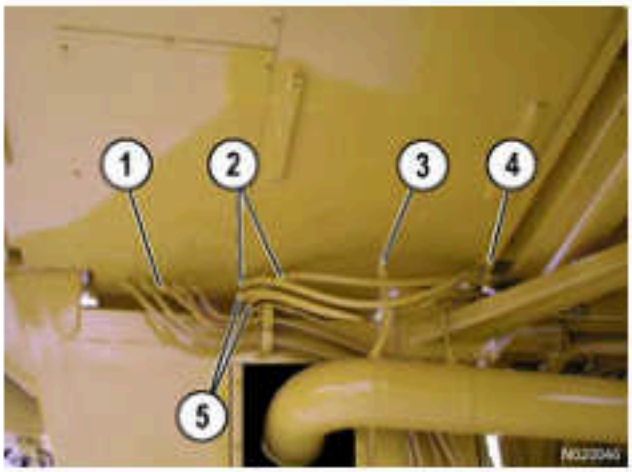



FIGURE 2-4. CAB HYDRAULIC AND HVAC

1. Hydraulic Hoses
2. Heater Hoses
3. HVAC Drain
4. Clamp
5. A/C Hoses

9. Disconnect two heater hoses (2, Figure 2-4) from the fittings underneath the cab. Remove clamp (4) securing the hoses to the bottom of the cab.
10. Disconnect five hydraulic hoses (1).
11. Disconnect two air conditioner hoses (5).
12. Cap all hoses and fittings to prevent contamination.

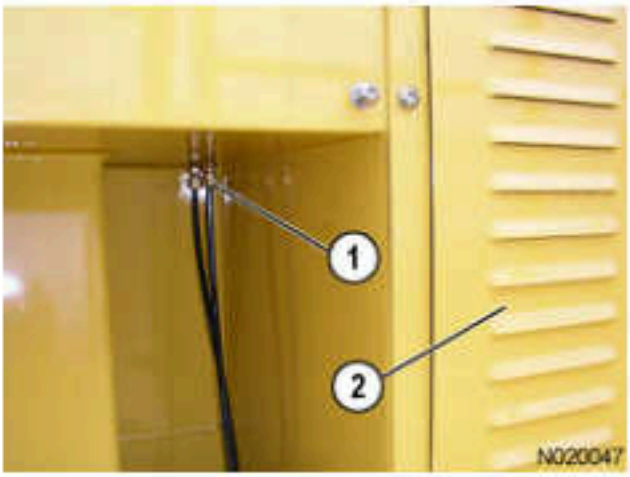



FIGURE 2-5. VACUUM HOSES

1. Vacuum Hoses
2. Filter Cover

13. Remove the access cover from the exterior of the RH side of the cab. Disconnect two vacuum hoses (1, Figure 2-5) from the front of the cab.

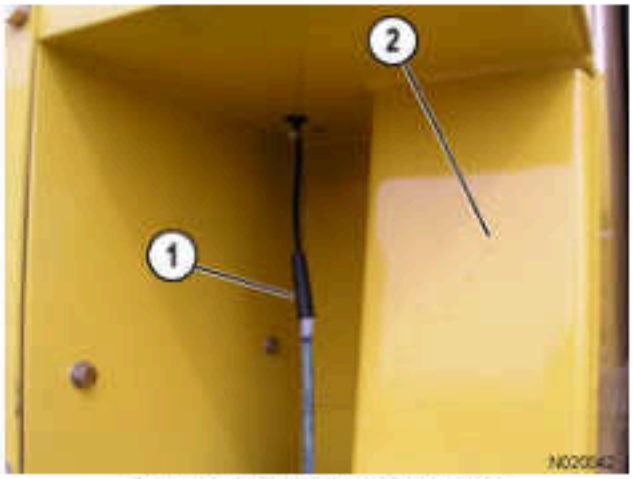



FIGURE 2-6. RADIO ANTENNA

1. Radio Antenna
2. LH Front ROPS Beam

14. Remove the access cover from the exterior of the LH side of the cab. Disconnect radio antenna (1, Figure 2-6).




FIGURE 2-7. CAB MOUNT

1. Cap Screw
2. Harness



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**Formulas -**

Top View: (A + B) / 2 = 3 mm max.

Side View: (C - D) / 2 = 3 mm max.

**Example -**

Measurements: A = 3 mm B = 7 mm

C = 20 mm D = 6 mm

Top view formula: (3 + 7) / 2 = 5 mm

The quotient of 5 mm in this example is 2 mm over the allowable maximum of 3 mm. Loosen the cap screws at the front transmission mounts and remove the locking plates. Use a hoist to move the transmission 2 to 5 mm towards the center of the truck. Moving the transmission 2 to 5 mm would result in a quotient of 3 mm or less, meeting the specification.

*NOTE: Keep the shafts parallel when adjusting the position of the transmission.*

Side view formula: (20 - 6) / 2 = 7 mm

The quotient of 7 mm in this example is 4 mm over the allowable maximum of 3 mm. Use a hoist to lift the transmission enough to install shims (2, Figure 5-8) below mounting pins (1). A general guideline to follow is to divide the difference by two. This is the number of shims to install. Since the difference in this example is 4 mm, install two shims at each front mount.

*NOTE: DO NOT install additional shims at the rear mounts. Adjust the transmission height by shimming the front mounts, only.*

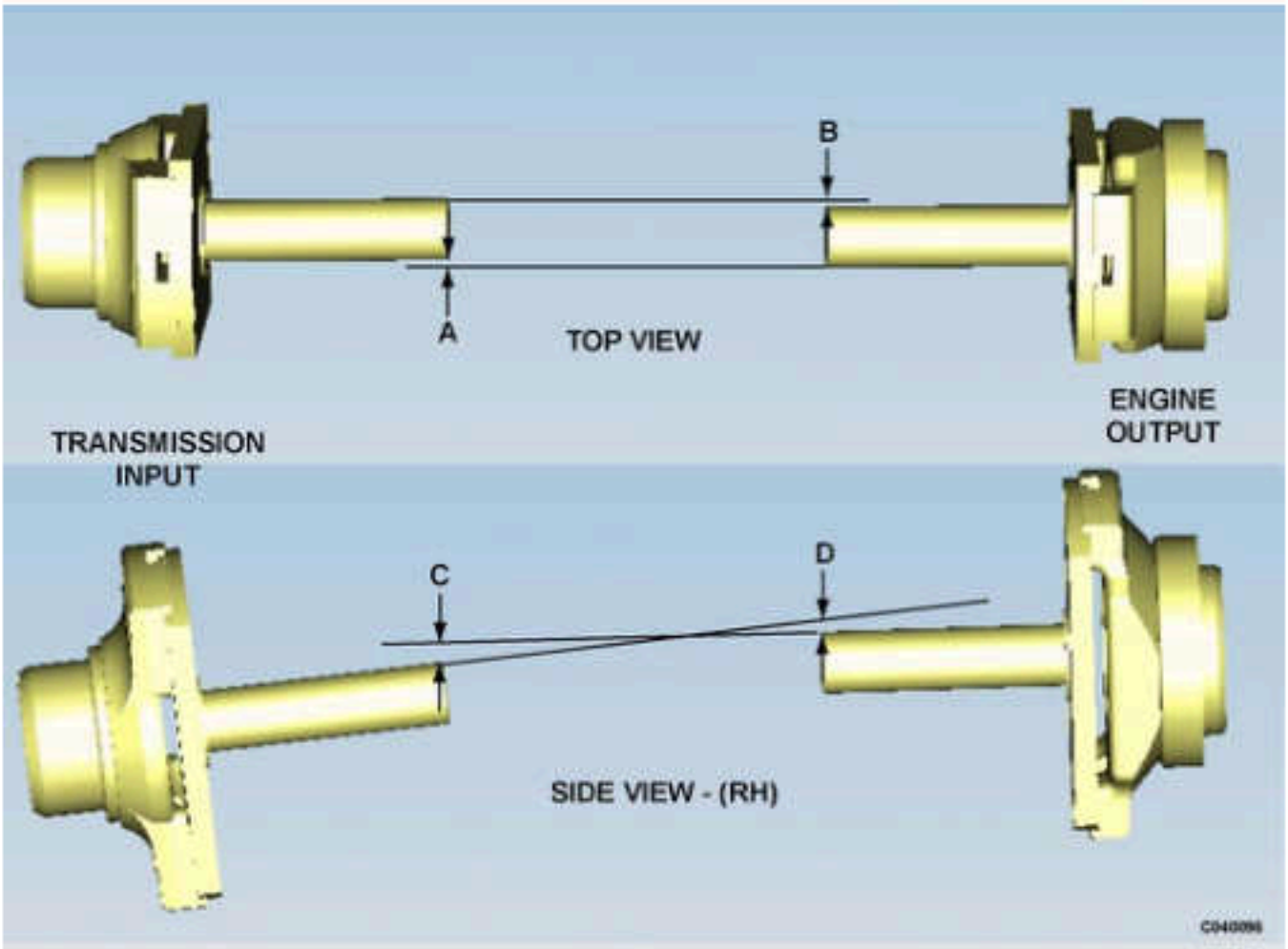



FIGURE 5-7. MEASURING DRIVE LINE ANGLES



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| CKT# | DESCRIPTION | SHT/ZONE |
|---|---|---|
| 0 | CHASSIS GROUND | 2-A4, 2-B7, 2-C6 3-A6, 4-A6, 6-A7, 7-A4, 8-A4 9-A4, 10-A4, 12-A4 13-A4, 14-A4, 15-A7 16-A6, 17-A5, 18-A5 18-D2, 19-A2, 20-B7, 21-A3, 22-A2 |
| 1 | BATTERY DIRECT POWER (+24V) | 1-A1, 5-A5, 9-A5 10-A1, 12-A5, 16-A1 20-B6, 21-A1 |
| 2 | BATTERY DIRECT POWER (+12V) | 1-A2, 20-B6, 21-A2 |
| 3 | CONTROL POWER (+24V) | 2-B3 |
| 4 | CONTROL POWER (+12V) | 2-B3 |
| 11 | BATT. DISCONNECT POWER (+24V) | 2-A5, 13-A2, 15-A1 16-A1, 17-A1 |
| 11CL | RELAY BOARD 1 | 16-B5 |
| 11D | LIGHT CONTROL POWER | 15-B2 |
| 11DL | RELAY BOARD 5 | 15-A5 |
| 11DR | RELAY BOARD 5 | 15-B5 |
| 11F | RELAY BOARD 1 | 16-B5 |
| 11H | HORN SIGNAL | 17-B2 |
| 11HL | RELAY BOARD 5 | 15-B5 |
| 11HR | RELAY BOARD 5 | 15-C5 |
| 11PF | PRE-LUBE PUMP PWR SUPPLY | 2-B5 |
| 11PS | PRE-LUBE | 2-B5 |
| 11S | SAFETY SWITCH "ON" | 2-B2 |
| 11T | RELAY BOARD 1 | 16-A4 |
| 11Z | RELAY BOARD 1 | 16-C4 |
| 12 | CONTROL POWER (+24V) | 2-D5, 6-A4, 9-A5, 10-A1, 11-A6, 13-A2, 14-A1, 17-A1, 18-A1, 19-A4 |
| 12H | HYD TK LVL & HST LIM PROX. SW | 10-D1 |
| 12PC | SERVICE TOOL COM PORT 12VDC | 11-D7 |
| 12V | CONTROL POWER (+12V) | 2-C4, 19-A1 |
| 13 | KEYSWITCH "ON" (ACC) | 2-C1 , 3-D4, 4-C4 |
| 13A | SWITCHED BATT POWER (+24V) | 14-A1 |
| 14R | ALTERNATOR "R" SIGNAL | 2-C6, 4-A7, 14-C3 |
| 14R1 | ALTERNATOR "R" OUTPUT | 2-C6 |
| 15 | KEYSWITCH "ON" (BR) | 2-B3 |
| 201 | VB | 4-A3 |
| 202 | TX OUT | 4-A3 |
| 203 | TX IN | 4-A3 |
| 204 | SCK | 4-A3 |
| 205 | LOAD | 4-A3 |
| 206 | COMMON | 4-A3 |
| 207 | RESET | 4-A3 |
| 21 | KEYSWITCH "START" (C) | 2-C2 |
| 21PS | START SIGNAL (AFTER PRE-LUBE) | 2-B6 |
| 21PSW | ENGINE OIL PRESS SW. | 2-A5 |
| 21PT | PRE-LUBE TIMER START | 2-C3 |
| 21S | KEYSWITCH "START" | 2-C2 |
| 22C | FAN CLUTCH CNTRL INPUT 1 7 2 | 18-C6 |
| 22D1 | FAN CLUTCH END FULL ON | 18-C7 |
| 24D1 | ALTERNATE DROOP | 8-A6 |
| 24E1 | ALTERNATE TORQUE | 8-A6 |
| 24F1 | 1ST GEAR RANGE FILL SIGNAL | 6-D2 |
| 24F2 | 2ND GEAR RANGE FILL SIGNAL | 6-D2 |
| 24F3 | 3RD GEAR RANGE FILL SIGNAL | 6-D2 |
| 24FH | HIGH GEAR RANGE FILL SIGNAL | 6-C2 |
| 24FL | LOW GEAR RANGE FILL SIGNAL | 6-D2 |
| 24FLU | L/C FILL SIGNAL | 6-C2 |
| 24FM | MEDIUM GEAR RANGE FILL SIG. | 6-C2 |
| 24FR | REVERSE GEAR RANGE FILL SIG. | 6-D2 |
| 24G1 | +5VDC SUPPLY | 8-D2 |
| 25 | BATTERY DIRECT POWER SUPPLY | 5-A7 |
| 25A | PRE-LUBE STARTER START SIG. | 2-B6 |
| 25B | STARTER START SIGNAL | 2-B6 |
| 25C1 | CONTROL POWER SUPPLY (+24V) | 5-A7 |
| 25C2 | CONTROL POWER SUPPLY (+24V) | 5-A7 |
| 25D | DRIVE SIGNAL (-) | 6-C5 |
| 25F1 | F1 START SELECT SW. TOP LT. | 7-C2 |
| 25F2 | F1 START SELECT SW BOTTOM LT. | 7-D2 |
| 25H1 | HIGHEST GEAR SELECT SIG. #1 | 7-A3 |
| 25H2 | HIGHEST GEAR SELECT SIG. #2 | 7-A3 |
| 25L | LOW GEAR RANGE (-) | 6-C5 |
| 25L2 | SHIFT LIMIT SW. BOTTOM LT. | 7-D3 |
| 25L3 | SHIFT LIMIT SW. TOP LT. | 7-D3 |
| 25LH | LIMP HOME JUMPER | 7-B2 |
| 25LMT | SHIFT LIMIT SIGNAL | 7-D2 |
| 25N | NEUTRAL SIGNAL (-) | 2-C3, 6-B7, 14-A3 |
| 25N1 | NEUTRAL SIGNAL (-) | 14-B2 |
| 25P | SOLENOID POWER SUPPLY (+24V) | 5-B7 |
| 25R | REVERSE SIGNAL (-) | 6-A5 |
| 25SP | SHIFTER SENSOR POWER (+12V) | 6-B5 |
| 25T | T/M CUT SOLENOID RELAY SIG. | 3-A4, 5-B5, 7-A3, 14-B1 |
| 25TC | T/M SOLENOID CUT SIGNAL | 5-B7 |
| 25T2 | MODE CHANGE #1 SW. TOP LT. | 3-B6 |
| 25T3 | MODE CHANGE #1 SW. BOTTOM LT. | 3-C6 |
| 25T4 | MODE CHANGE #2 SW. TOP LT. | 3-C7 |
| 25T5 | MODE CHANGE #2 SW. BOTTOM LT. | 3-C7 |
| 25W | SHIFT WAIT SIGNAL | 6-D7 |
| 253 | 3RD GEAR RANGE SIGNAL (-) | 6-C5 |
| 254 | 4th GEAR RANGE SIGNAL (-) | 6-C5 |
| 255 | 5th GEAR RANGE SIGNAL (-) | 6-C5 |
| 27B | BATT DIRECT PWR SUPPLY (+24V) | 9-C6 |
| 28A1 | ETHER START CONTROL | 2-A5 |
| 30 | T/M CONTROLLER GROUND - ATC | 2-D5, 5-A7 14-B3, 9-A6 4-C7, 11-B-2 |
| 31 | WARNING LT & BUZZ PWR (+24V) | 3-A1, 4-D4 |
| 31B | DIMMER POWER CIRCUIT | 5-D5 |
| 31C | COOLANT TEMPERATURE | 5-B4 |
| 31F | FUEL LEVEL SIGNAL | 7-B2 |
| 31M | THROTTLE MODIFICATION SIG. | 8-B2 |
| 31S1 | ENGINE SPEED SIGNAL | 7-B5 |
| 31S2 | ENGINE SPEED SIGNAL | 7-B5 |
| 31SA | AUTOMATIC IDLE SELECT SIGNAL | 3-A7 |
| 31SB | AUTO. IDLE SEL. SW. BOTTOM LT. | 3-A6 |
| 31SC | AUTO. IDLE SEL. SW. TOP LT. | 3-A6 |
| 31TRQ | TORQUE OUTPUT | 8-C6 |
| 32L | T/M OIL LEVEL SIGNAL | 7-A2 |
| 32P1 | TORQUE CONVER INLET PRESS (+) | 5-A4 |
| 32P2 | TORQUE CONVER OUTLET PRESS (+) | 5-A4 |
| 32S1 | T/M INPUT SHAFT SPEED SIG (+) | 7-A5 |
| 32S2 | T/M OUTPUT SHAFT SPEED SIG (+) | 7-B5 |
| 32S3 | T/M MID-SHAFT SPEED SIG (+) | 7-A5, 14-B3 |
| 32SP | SENSOR POWER (+24V) | 5-A1 |
| 32T1 | T/M LUBE INLET TEMP | 5-C4 |
| 32T2 | VALVE INLET OIL TEMP | 5-C4 |
| 33AP1 | BRAKE ACCUMULATOR PRESSURE | 9-B2 |
| 33AP2 | BRAKE ACCUMULATOR PRESSURE | 9-B2 |
| 33AP3 | BRAKE ACCUMULATOR PRESSURE | 9-B3 |
| 33AP4 | BRAKE ACCUMULATOR PRESSUR | 9-B3 |
| 33B1 | SENSOR POWER (+18V) | 12-D2 |
| 33B2 | LEFT REAR BRAKE PRESSURE | 12-C2 |
| 33B3 | SENSOR POWER (+18V) | 12-C2 |
| 33B4 | RIGHT REAR BRAKE PRESSURE | 12-C2 |
| 33F | STEERING SYSTEM PRESSURE | 9-B2 |
| 33G1 | STEERING SYSTEM PRESSURE | 9-C3 |
| 33LF | LEFT FRT BRAKE DISK WEAR SIG | 10-A6 |
| 33LR | LEFT REAR BRAKE DISK WEAR SIG | 10-A6 |
| 33RF | RT FRT BRAKE DISK WEAR SIG | 10-A6 |
| 33RR | RT REAR BRAKE DISK WEAR SIG | 10-A6 |
| 33T1 | RETARDER COOL OIL TEMP-RIGHT | 5-C4 |
| 33T2 | RETARDER COOL OIL TEMP-LEFT | 5-C4 |
| 33T3 | TORQUE CONVERTER OIL TEMP | 5-B4 |
| 33T4 | FRT BRAKE COOL OIL TEMP | 5-D4 |
| 34L | BATTERY LEVEL SIGNAL | 10-B6 |
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| 35C1 | AUTO CRUISE CANCEL | 10-C2 |
| 35C2 | AUTO CRUISE SET/DOWN | 10-C2 |
| 35C3 | AUTO CRUISE RESUME/UP | 10-C2 |
| 35C4 | AUTO CRUISE ON/OFF | 10-D2 |
| 35E1 | MAXIMUM SPEED SET UP SIGNAL | 10-B2 |
| 35E2 | MAXIMUM SPEED SET DOWN SIG | 10-B2 |
| 35E3 | MAXIMUM SPEED SET LOADED SIG | 10-B2 |
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| 35L2 | PC INTERFACE | 11-D2 |
| 35L3 | PC INTERFACE | 11-D2 |
| 35L4 | PC INTERFACE | 11-D2 |
| 35L5 | USER SUPPLIED PC | 11-A5 |
| 35S1 | RGT FRT WHL SPEED +18V SUPPLY | 12-C7 |
| 35S2 | RGT FRT WHEEL SPEED SIG | 12-C7 |
| 35S3 | RGT FRT WHEEL SPEED GROUND | 12-C7 |
| 35S4 | LFT FRT WHL SPEED +18V SUPPLY | 12-C7 |
| 35S5 | LFT FRT WHEEL SPEED SIG | 12-C7 |
| 35S6 | LFT FRT WHEEL SPEED GROUND | 12-C7 |
| 35S7 | RGT REAR WHL SPEED +18V SUPPLY | 12-C7 |
| 35S8 | RGT REAR WHEEL SPEED SIG | 12-C7 |
| 35S9 | RGT REAR WHEEL SPEED GROUND | 12-C7 |
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| 35S12 | LFT REAR WHEEL SPEED GROUND | 12-D7 |
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| 38L2 | LATERAL INCLINATION SIGNAL | 7-C-2 |
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| 39AA | GREEN PLM LT POWER SUPPLY | 14-D3 |
| 39B | AMBER PLM LIGHT CONTROL | 14-C3 |
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| 39CA | RED PLM LT POWER SUPPLY | 14-C3 |
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| 39FA | RIGHT REAR SUSPENSION PRESS | 14-B6 |
| 39FB | LEFT REAR SUSPENSION PRESS | 14-B6 |
| 39FC | RIGHT FRONT SUSPENSION PRESS | 14-B6 |
| 39FD | LEFT FRONT SUSPENSION PRESS | 14-A6 |
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