# 821F
# 921F
# Tier 4
# Wheel Loader

# SERVICE MANUAL

**Part number 84487565**

1st edition English

April 2011

CASE CONSTRUCTION

MidWestTech | Case 821F, 921F, Tier 4 Wheel Loader Service Manual | Publication 84487565

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# MAINTENANCE SCHEDULE

| SERVICE INTERVAL | ITEM NUMBER | SERVICE POINTS | Initial Service | FREQUENCY IN HOURS | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CHECK | CLEAN | CHANGE | DRAIN | LUBRICATE | REPLACE | ADJUST |
| Variable Periodic (•) | 2 | Radiator Coolant Level | | • | | | | | | |
| | 13 | Tires | | • | | | | | | |
| | 16 | Hydraulic Filter | | • | | | | | | |
| | 12 | Alternator, AC, Drive Belt | | • | | | | | | |
| | 31 | Air cleaner | | • | • | | | | | |
| | 19 | Bleed Fuel Filter of Condensation | | | | | • | | | |
| | 28 | Clean SCR system DEF tank filter | | | • | | | | | |
| | XX | Fire extinguisher | | • | | | | | | |
| Every 10 Hours | 1 | Check Engine Oil Level | | 10 | | | | | | |
| Every 50 Hours | 13 | Check Engine Coolant Level | | 50 | | | | | | |
| | 3 | Check Transmission Oil Level | | 50 | | | | | | |
| | 4 | Check Hydraulic Oil Level | | 50 | | | | | | |
| | 5 & 6 | Grease Bucket Mounting Fittings | | | | | | 50 | | |
| | 7 | Grease machine and attachments | | | | | | 50 | | |
| First 100 Hours | 16 | Change Engine Oil and Filters | 100 | | | | | | | |
| | 18 | Replace Fuel Filters | 100 | | | | | | | |
| | 20 | Change Hydraulic Filter | 100 | | | | | | | |
| | 25 | Change Oil in Axles | 100 | | | | | | | |
| | 13 | Check wheel torque | | 100 | | | | | | |
| | 28 | Clean in-line DEF supply filter | | | 100 | | | | | |
| Every 100 Hours | 8 | Lubricate The Steering Cylinder Pivots - Rod And Closed End (4 Fittings) | | | | | | 100 | | |
| | 9 | Grease Front Drive Shaft Support Bearing | | | | | | 100 | | |
| | 10 | Lubricate Loader Lift & Cylinder Pivots (10) Z-bar | | | | | | 100 | | |
| | 10 | Lubricate Loader Lift & Cylinder Pivots (18) XT | | | | | | 100 | | |
| Every 250 Hours | 11 | Check Cab Air Filter | | 250 | | | | | | |
| | 14 | Check Tire Pressure & Wheel Torque | 4 | 250 | | | | | | |
| | 12 | Check Drive Belt | | 250 | | | | | | |
| | XX | Trans Clutch Calibration (See Section 6002) | 250 | 1000 | | | | | | |
| Every 500 Hours | 14 | Check Axle Oil Level | | 500 | | | | | | |
| | 15 | Check Battery Electrolyte Level | | 500 | | | | | | |
| | 16 | Change Engine Oil and Filter | | | | 500 | | | | |
| | XX | Check ROPS | | 500 | | | | | | |
| | 18 | Drain Fuel Tank Condensation & Water Separator | | | | | 500 | | | |
| | 19 | Replace Fuel Filter | | | | | | | 500 | |

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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Every 1000 Hours | 20 | Replace Hydraulic Oil filter | | | | | | | 1000 | |
| | 21 | Grease Articulation Fittings | | | | | | 1000 | | |
| | 24 | Change crankcase filter | | | | 1000 | | | 1000 | |
| | 23 | Replace Drive Belt | | | | | | | | |
| | 11 | Replace Cab Air Filter | | | | | | | 1000 | |
| | 26 | Change Transmission Oil and Filter | | | | 1000 | | | | |
| | XX | Check Injector Calibration | | 1000 | | | | | | |
| | XX | Check Valve Adjustment (Engine Manual) | | 1000 | | | | | | |
| | XX | Trans Clutch Calibration (See Section 6002) | | 1000 | | | | | | |
| Every 1500 Hours | 21 | Change Front & Rear Axle Oil | | | | 1500 | | | | |
| | 26 | Change Transmission Oil and Filter | | | | 1500 | | | | |
| | 28 | Clean in-line DEF filter | | | | | | | | |
| Every 2000 Hours | 29 | Change Hydraulic Oil | | | | 2000 | | | | |
| | 30 | Change Coolant | | | | 2000 | | | | |
| | 31 | Replace Engine Air Cleaner | | | | | | | 2000 | |
| | 32 | Lubricate cab and door | | | | | | 2000 | | |
| | XX | Valve Clearance (Engine Manual) | | | | | | | | 2000 |
| Every 3000 Hours | XX | Replace DEF supply module filter | | | | | | | 3000 | |
| Every 6000 Hours | XX | Engine Injectors (Engine Manual) | | | 6000 | | | | | |
| | XX | Fuel Pump (Engine Manual) | | | 6000 | | | | | 6000 |

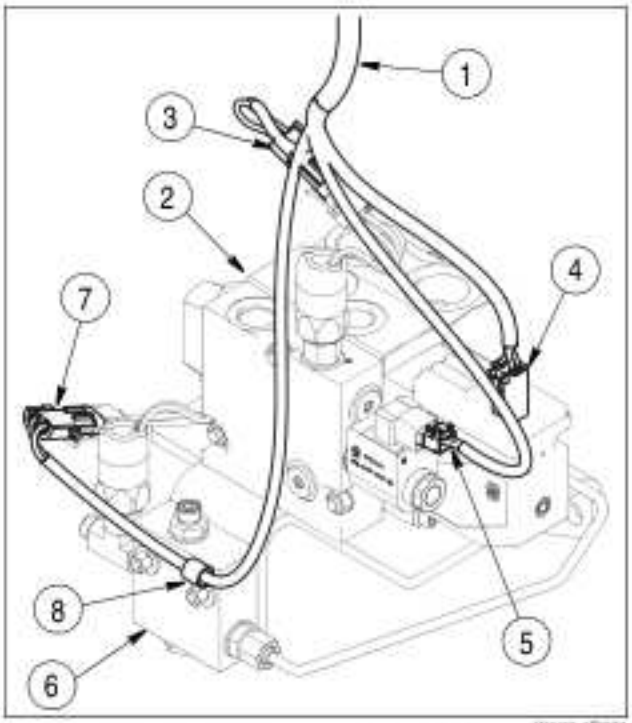
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| 108 – Front Wiper and Washer Switch | | |
|---|---|---|
| Located on right side console. | | |
| **Check Points** | **Correct Reading** | **Possible Cause of Bad Reading** |
| Terminal for wire 0-DT to ground | Continuity | Bad ground circuit. |
| **NOTE:** *Put the master disconnect switch and the ignition switch in the ON position. Make sure the front wiper and washer switch is in the OFF position.* | | |
| Terminal for wire 19J-B to ground | 24 volts | Check fuse ECA-F12, check circuit 19J, also check power relay module B (14). |
| **NOTE:** *Put the front wiper and washer switch in the LOW position.* | | |
| Terminal for wire 63LC to ground | Continuity | Bad front wiper and washer switch also check grounding circuit. |
| **NOTE:** *Put the front wiper and washer switch in the HIGH position.* | | |
| Terminal for wire 63HC to ground | Continuity | Bad front wiper and washer switch also check grounding circuit. |
| **NOTE:** *Put the front wiper and washer switch in the wash position.* | | |
| Terminal for wire 63W to ground | 24 volts | Bad front wiper and washer switch. |

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# Installation

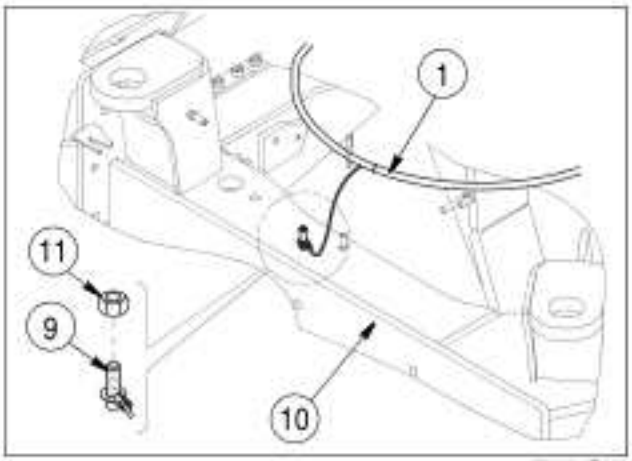
## STEP 12




W190-4R071

Connect the chassis harness (1) to PVG32 valve (2), connect connector (3) to the pilot pressure switch connector (4). Connect connector (5) to the solenoid valve. Connect connector (7) to the pressure switch on valve PVFC (6) and secure the harness with strap (8) on the valve.

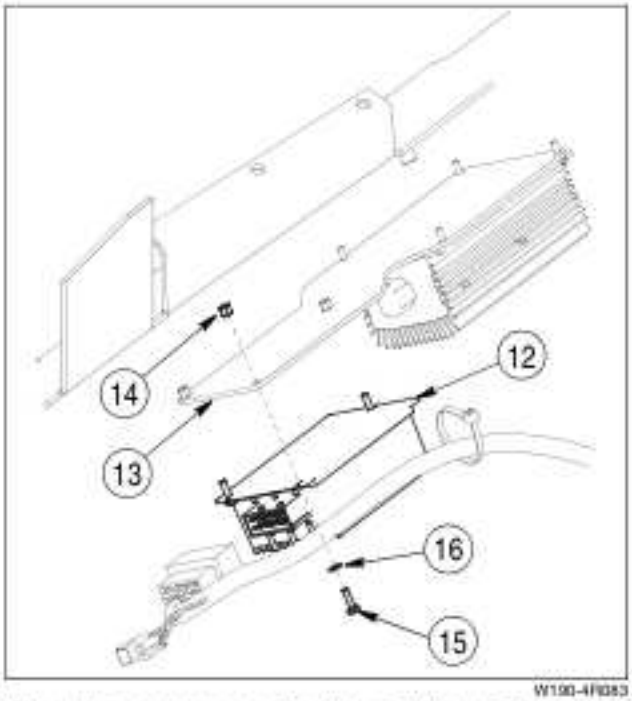
## STEP 13




W190-4R088

Connect the chassis harness (1) to the grounding stud (9), install and tighten the nut (11).

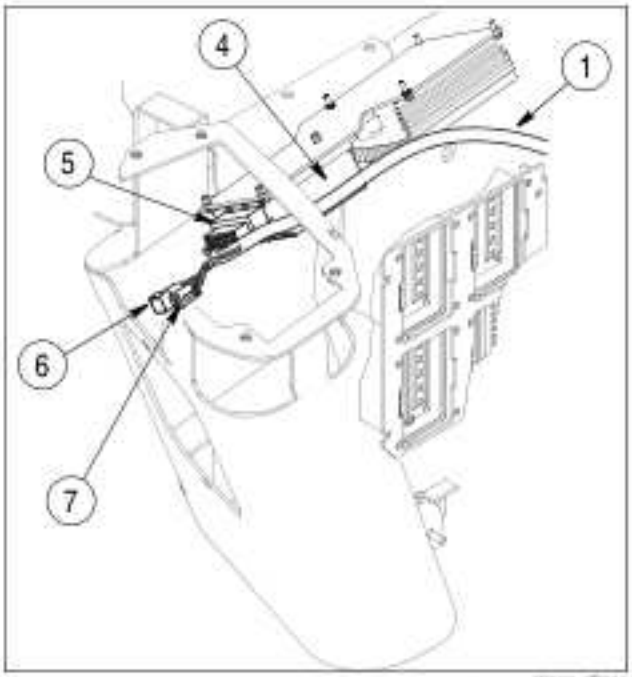
## STEP 14




W190-4R083

Open the access panel on the right-hand side of the cab to access the fuse and relay compartment. Install the steering control module (12) on the supporting plate (13) by installing the three nuts (14), capscrews (15) and washers (16). Tighten the capscrews.

## STEP 15




W190-4R084

Connect the joystick harness (1) to the steering control module (4) with connector (5). Connect connector (6) to the cab harness connector (7).

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# TESTING AND ADJUSTING THE STEERING LIMIT PRESSURE

## Pressure Check

### STEP 1




BD03M041

1. ARTICULATION LOCK

Install articulation lock (1).

### STEP 2




BD06F148

1. TEST PORT (LOAD LIMIT)

Connect a 345 bar (5000 psi) test gauge to the test port (1), located on the priority valve.

### STEP 3

Make sure that the temperature of the hydraulic oil is at least 54°C to 57°C (129°F to 135°F). The following is the procedure for heating the hydraulic oil.

- To measure the oil temperature with the instrument cluster:
  - A. Press the up or down arrow key.
  - B. Stop at the info screen with the temperatures that need to be monitored are on.
- To heat the hydraulic oil do the following:
  - A. Start the engine and run at full throttle.
  - B. Hold the bucket control lever in the ROLLBACK position while raising and lowering the lift arms from ground level to full height.
  - C. Continue this procedure until the temperature of the hydraulic oil is 54° to 57°C (129° to 135°F).

After heating oil to operating temperature, lower bucket to the ground, turn off the engine, and relieve all pressure in the hydraulic system.

### STEP 4

Start the engine and run at full throttle.

### STEP 5

Steer hard in either direction over relief pressure.

### STEP 6

Record the reading on the test gauge.

### STEP 7

Reading should be 239 to 243 bar (3465 to 3525 psi).

### STEP 8

If this reading is more or less than specified, it will be necessary to adjust the steering limit pressure.

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# INDEX OF FUNCTIONS

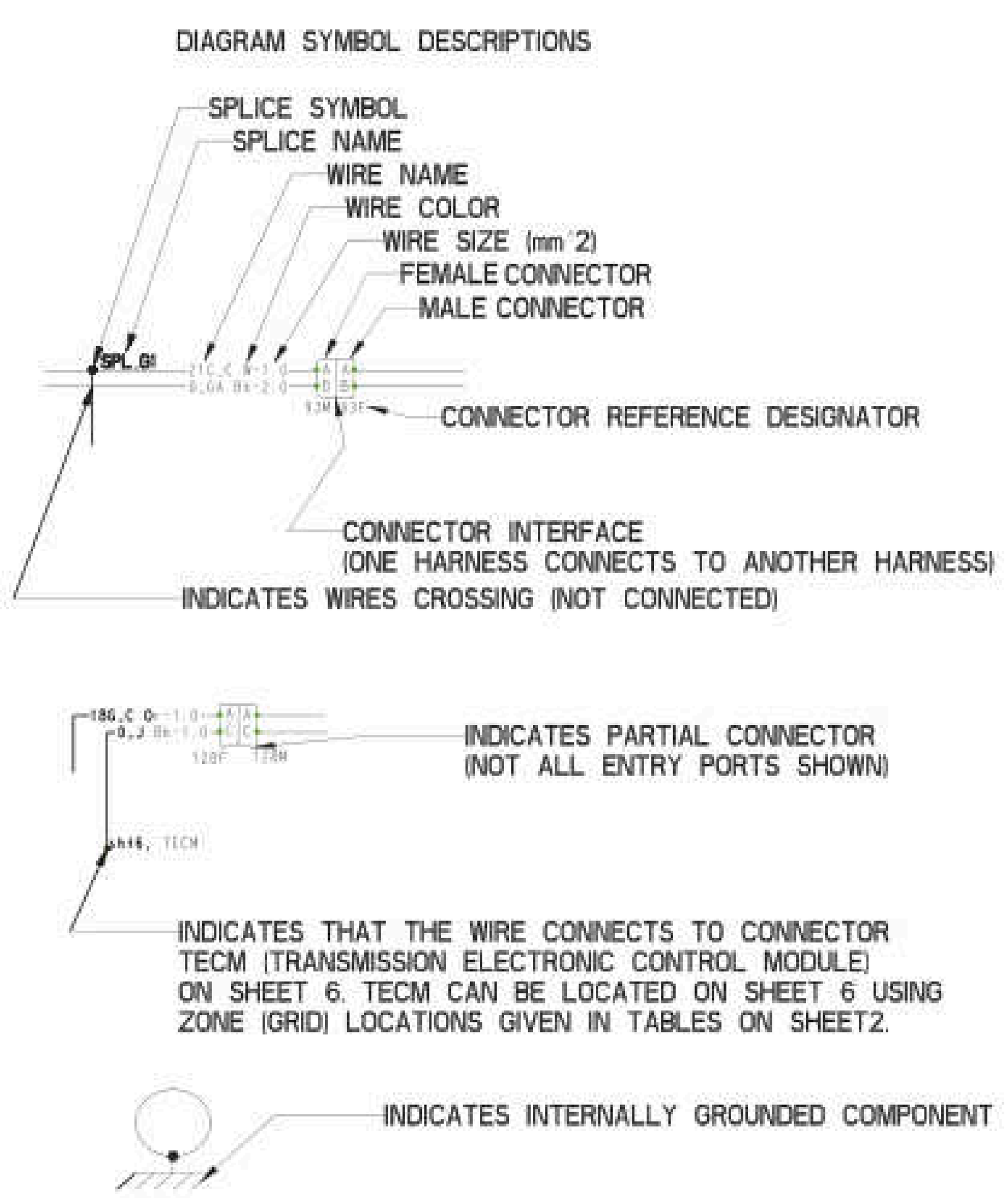
| FUNCTION | SHT |
|---|---|
| AIR SEAT | 12 |
| BACKUP ALARM | 6 |
| CAN COMMUNICATION | 12 |
| COLD START | 4 |
| ENGINE CONTROL | 5 |
| HOOD LIFT | 11 |
| HVAC | 12,14 |
| IGNITION SWITCH | 4 |
| INSTRUMENT CLUSTER | 9 |
| LIGHTING 1 (combos...) | 6 |
| LIGHTING 2 (work lights) | 7 |
| MACHINE CONTROLS | 10 |
| RADIO/POWER CONVERTER | 12 |
| POWER DISTRIBUTION | 4 |
| TRANSMISSION CONTROL | 8 |
| SCR EXHAUST TREATMENT | 5 |
| SECONDARY STEERING | 11 |
| WIPER/WASHER SYSTEM | 11 |
| JOYSTICK STEERING | 13 |

## COLOR ABBREVIATIONS

| ABBREVIATION | COLOR |
|---|---|
| Bk | BLACK |
| DU | DARK BLUE |
| G | GREEN |
| K | PINK |
| LG | LIGHT GREEN |
| LU | LIGHT BLUE |
| N | BROWN |
| Or | ORANGE |
| P | PURPLE OR VIOLET |
| R | RED |
| S | GREY |
| T | TAN |
| U | BLUE |
| W | WHITE |
| Y | YELLOW |

## LARGE CONNECTOR LIST

| NAME | DESCRIPTION | SHEET |
|---|---|---|
| AIC_1 | ADV INSTR CLUSTER 1 | 4, 7, 9, 10 |
| AIC_2 | ADV INSTR CLUSTER 2 | 4, 6, 7, 9, 10 |
| CAB_E | CAB-ENGINE | 4, 5, 9, 10, 11, 12 |
| CAB_F | CAB-FRNT_CHAS | 6, 10 |
| CAN_MOD_2 | JSS CAN MOD | 13 |
| ECA | ELECT CNTR A | 4, 5, 6, 7, 8, 9, 10, 11 |
| ECB | ELECT CNTR B | 4, 6, 9, 10, 12 |
| ECC | ELECT CNTR C | 4, 6, 7, 8, 9, 10, 11 |
| ECD | ELEC CNTR D | 4, 5, 6, 10, 11, 12 |
| ENG | ENGINE-CAB1 | 4, 5, 9, 10, 11, 12 |
| FRONT | FRNT_CHAS-CAB | 6, 10 |
| SW_PD | SWITCH PAD | 6, 9, 10, 12 |




REF DES NAMING CONVENTION
S... ROCKER SWITCHES
L... LIGHTS
P... PRESSURE SENSORS/SWITCHES
Y... SOLENOIDS
R... RESISTANCE MEASURE
ABOVE LETTER FOLLOWED BY THE FIRST LETTER
OF THE FIRST TWO WORDS OF THE SYMBOL LABEL
SPL ... SPLICE

### ECA

| PIN | NAME | SHT |
|---|---|---|
| A1 | A1 | 8 |
| A2 | A2 | 13 |
| A3 | A3 | 9 |
| A4 | A4 | 11 |
| A5 | A5 | 10 |
| A6 | A6 | 9 |
| A7 | A7 | 10 |
| A8 | A8 | 6 |
| A9 | A9 | 4 |
| A10 | A10 | 5 |
| C1 | C1 | 12 |
| C2 | C2 | 11 |
| C3 | C3 | 11 |
| C4 | C4 | 6 |
| C6 | C6 | 12 |
| C7 | C7 | 11 |
| C8 | C8 | 12 |
| C9 | C9 | 7 |
| L1 | L1_1 | 8 |
| L1 | L1_2 | 13 |
| L1 | L1_3 | 9 |
| L1 | L1_4 | 11 |
| L1 | L1_5 | 10 |
| L1 | L1_6 | 9 |
| L1 | L1_7 | 10 |
| L1 | L1_8 | 6 |
| L1 | L1_9 | 4 |
| L1 | L1_10 | 5 |
| L2 | L2_1 | 12 |
| L2 | L2_2 | 11 |
| L2 | L2_3 | 11 |
| L2 | L2_4 | 6 |
| L2 | L2_6 | 12 |
| L2 | L2_7 | 11 |
| L2 | L2_8 | 12 |
| L2 | L2_9 | 7 |

### ECB

| PIN | NAME | SHT |
|---|---|---|
| B1 | 30_K1 | 4 |
| B3 | 30_K2 | 4 |
| B5 | 30_K3 | 4 |
| B7 | 30_K4 | 10 |
| B9 | 30_K5 | 9 |
| B2 | 85_K1 | 4 |
| B4 | 85_K2 | 4 |
| B6 | 85_K3 | 4 |
| B8 | 85_K4 | 10 |
| B10 | 85_K5 | 9 |
| D1 | 86_K1 | 4 |
| D3 | 86_K2 | 4 |
| D5 | 86_K3 | 4 |
| D7 | 86_K4 | 10 |
| D9 | 86_K5 | 9 |
| C2 | 87A_K1 | 4 |
| C4 | 87A_K2 | 4 |
| C6 | 87A_K3 | 4 |
| C8 | 87A_K4 | 10 |
| C10 | 87A_K5 | 9 |
| D2 | 87_K1 | 4 |
| D4 | 87_K2 | 4 |
| D6 | 87_K3 | 4 |
| D8 | 87_K4 | 10 |
| D10 | 87_K5 | 9 |
| A1 | A1 | 12 |
| A2 | A2 | 12 |
| A3 | A3 | 6 |
| A4 | A4 | 6 |
| A5 | A5 | 6 |
| A6 | A6 | 6 |
| A7 | A7 | 6 |
| A8 | A8 | 6 |
| A9 | A9 | 12 |
| A10 | A10 | 12 |
| AA1 | B1 | 12 |
| AA2 | B2 | 12 |
| AA3 | B3 | 6 |
| AA4 | B4 | 6 |
| AA5 | B5 | 6 |
| AA6 | B6 | 6 |
| AA7 | B7 | 6 |
| AA8 | B8 | 6 |
| AA9 | B9 | 12 |
| AA10 | B10 | 12 |

### ECC

| PIN | NAME | SHT |
|---|---|---|
| B1 | 30_K1 | 11 |
| B3 | 30_K2 | 11 |
| B7 | 30_K4 | 10 |
| B9 | 30_K5 | 4 |
| B2 | 85_K1 | 11 |
| B4 | 85_K2 | 11 |
| B8 | 85_K4 | 10 |
| B10 | 85_K5 | 4 |
| D1 | 86_K1 | 11 |
| D3 | 86_K2 | 11 |
| D7 | 86_K4 | 10 |
| D9 | 86_K5 | 4 |
| C2 | 87A_K1 | 11 |
| C4 | 87A_K2 | 11 |
| C8 | 87A_K4 | 10 |
| C10 | 87A_K5 | 4 |
| D2 | 87_K1 | 11 |
| D4 | 87_K2 | 11 |
| D8 | 87_K4 | 10 |
| D10 | 87_K5 | 4 |
| A1 | A1 | 7 |
| A2 | A2 | 7 |
| A3 | A3 | 6 |
| A4 | A4 | 6 |
| A5 | A5 | 4 |
| A6 | A6 | 10 |
| A7 | A7 | 11 |
| A8 | A8 | 9 |
| A9 | A9 | 12 |
| A10 | A10 | 8 |
| L1 1 | L1_1 | 7 |
| L1 2 | L1_2 | 7 |
| L1 3 | L1_3 | 6 |
| L1 4 | L1_4 | 6 |
| L1 5 | L1_5 | 4 |
| L1 6 | L1_6 | 10 |
| L1 7 | L1_7 | 11 |
| L1 8 | L1_8 | 9 |
| L1 9 | L1_9 | 12 |
| L1 10 | L1_10 | 8 |

### ECD

| PIN | NAME | SHT |
|---|---|---|
| B1 | 30_K1 | 11 |
| B3 | 30_K2 | 11 |
| B5 | 30_K3 | 10 |
| B7 | 30_K4 | 10 |
| B9 | 30_K5 | 12 |
| B2 | 85_K1 | 11 |
| B4 | 85_K2 | 11 |
| B6 | 85_K3 | 10 |
| B8 | 85_K4 | 10 |
| B10 | 85_K5 | 12 |
| D1 | 86_K1 | 11 |
| D3 | 86_K2 | 11 |
| D5 | 86_K3 | 10 |
| D7 | 86_K4 | 10 |
| D9 | 86_K5 | 12 |
| C2 | 87A_K1 | 11 |
| C4 | 87A_K2 | 11 |
| C6 | 87A_K3 | 10 |
| C8 | 87A_K4 | 10 |
| C10 | 87A_K5 | 12 |
| D2 | 87_K1 | 11 |
| D4 | 87_K2 | 11 |
| D6 | 87_K3 | 10 |
| D8 | 87_K4 | 10 |
| D10 | 87_K5 | 12 |
| AA2 | A1 | 6 |
| AA1 | A2 | 6 |
| AA4 | A3 | 4 |
| AA3 | A4 | 4 |
| AA6 | A5 | 4 |
| AA5 | A6 | 4 |
| AA8 | A7 | 5 |
| AA7 | A8 | 5 |
| AA10 | A9 | 6 |
| AA9 | A10 | 6 |
| A2 | AA1 | 6 |
| A1 | AA2 | 6 |
| A4 | AA3 | 4 |
| A3 | AA4 | 4 |
| A6 | AA5 | 4 |
| A5 | AA6 | 4 |
| A8 | AA7 | 5 |
| A7 | AA8 | 5 |
| A10 | AA9 | 6 |
| A9 | AA10 | 6 |

(62) AIC 1

| PIN | SHT |
|---|---|
| 1 | 9 |
| 2 | 9 |
| 3 | 12 |
| 4 | 12 |
| 6 | 9 |
| 7 | 7 |
| 9 | 9 |
| 11 | 9 |
| 12 | 9 |
| 13 | 9 |
| 14 | 9 |
| 20 | 10 |
| 21 | 13 |
| 22 | 4 |
| 23 | 10 |
| 25 | 9 |
| 26 | 10 |

(71) AIC 2

| PIN | SHT |
|---|---|
| 2 | 7 |
| 4 | 9 |
| 5 | 9 |
| 6 | 9 |
| 7 | 10 |
| 8 | 10 |
| 9 | 6 |
| 10 | 6 |
| 11 | 11 |
| 12 | 12 |
| 14 | 9 |
| 15 | 9 |
| 16 | 10 |
| 17 | 4 |
| 18 | 10 |
| 20 | 9 |
| 21 | 9 |
| 22 | 9 |

ENG ENGINE-CAB1

| PIN | SHT |
|---|---|
| 1 | 9 |
| 2 | 1 |
| 3 | 4 |
| 4 | 4 |
| 5 | 9 |
| 6 | 4 |
| 7 | 4 |
| 8 | 4 |
| 9 | 4 |
| 10 | 5 |
| 11 | 4 |
| 12 | 5 |
| 13 | 5 |
| 14 | 5 |
| 15 | 4 |
| 16 | 9 |
| 17 | 9 |
| 18 | 5 |
| 19 | 9 |
| 20 | 9 |
| 21 | 4 |
| 22 | 10 |
| 23 | 10 |
| 24 | 11 |
| 25 | 11 |
| 26 | 4 |
| 27 | 4 |
| 28 | 9 |
| 29 | 12 |
| 30 | 12 |
| 31 | 4 |

ENG2 ENG BULKHD2

| PIN | SHT |
|---|---|
| A | 5 |
| B | 5 |
| C | 5 |
| D | 5 |
| E | 5 |
| F | 5 |
| G | 5 |
| H | 5 |
| J | 6 |
| K | 6 |
| L | 6 |
| M | 6 |
| N | 6 |
| P | 6 |
| R | 6 |
| S | 6 |
| T | 11 |
| U | 11 |
| V | 11 |
| W | 11 |
| X | 11 |

FRONT

| PIN | SHT |
|---|---|
| 1 | 6 |
| 2 | 6 |
| 3 | 6 |
| 4 | 10 |
| 5 | 6 |
| 6 | 6 |
| 7 | 6 |
| 8 | 10 |
| 9 | 10 |
| 10 | 6 |
| 11 | 10 |
| 12 | 10 |
| 13 | 10 |
| 14 | 6 |
| 15 | 6 |
| 16 | 6 |
| 17 | 10 |
| 18 | 10 |

(70) SW PD SWITCH PAD

| PIN | SHT |
|---|---|
| 1 | 6 |
| 3 | 10 |
| 4 | 9 |
| 5 | 9 |
| 7 | 12 |
| 8 | 12 |
| 9 | 9 |
| 10 | 9 |

TRANS TRANSMISSION-CAB

| PIN | SHT |
|---|---|
| 1 | 9 |
| 2 | 8 |
| 3 | 11 |
| 4 | 11 |
| 5 | 8 |
| 6 | 11 |
| 7 | 8 |
| 8 | 8 |
| 9 | 8 |
| 10 | 8 |
| 11 | 8 |
| 12 | 8 |
| 13 | 8 |
| 14 | 8 |
| 15 | 8 |
| 16 | 8 |
| 17 | 8 |
| 18 | 8 |
| 19 | 8 |
| 20 | 8 |
| 21 | 8 |
| 22 | 8 |
| 23 | 9 |
| 24 | 8 |
| 25 | 8 |
| 26 | 11 |
| 27 | 8 |
| 28 | 8 |
| 29 | 8 |
| 30 | 9 |
| 31 | 8 |

INDEX / WIRE INFORMATION 1

## CONNECTOR LIST

| NAME | DESCRIPTION | SHEET |
|---|---|---|
| 115 | GRID_HTR_PWR | 4 |
| 193 | STARTER_RELAY | 4 |
| 194 | STARTER_SIGNAL | 4 |
| 195 | STR_REL_PWR | 4 |
| 108F | DIAGNOSTIC_CONNECTOR | 8 |
| 140M | DIODE_MODULE | 11 |
| 197F | MAIN_CAB_FNR | 8 |
| 197M | FNR-MAIN_CAB | 8 |
| 202M | ROLLBACK_JUMPER | 10 |
| 209F | BACK-UP_ALRM_DISA_JMP | 6 |
| 209M | BACK-UP_ALRM_DISA_JMP | 6 |
| 20M | TRANS_KICK-DOWN | 8 |
| 215F | ALTERNATOR_RESISTOR | 4 |
| 216F | ALTERNATOR_RESISTOR | 4 |
| 21M | TRANS_KICK-DOWN | 13 |
| 242F | CHAS_GRD-SEC_STRG_MTR | 11 |
| 244F | STARTER-SEC_STRG_MTR | 11 |
| 245F | SEC_STR_FLYBACK | 11 |
| 64F | FLASHER_CONNECTOR | 6 |
| 64M | FLASHER_CONNECTOR | 6 |
| AB+ | ALTERNATOR_B+ | 4 |
| AB_5 | ALTERNATOR B+ | 4 |
| ACT | AC_COMP_CLUTCH | 12 |
| AD | ALTERNATOR D+ | 4 |
| ALT_5 | ALTERNATOR D+ | 4 |
| ARM_FNR | FNR-MAIN_CAB | 13 |
| ARM_POS | ARM POSITION | 13 |
| B1 | STARTER PWR STUD | 4 |
| B2 | STARTER_POWER | 4 |
| B3 | STARTER-BATTERY | 4 |
| B4 | STARTER_POWER | 4 |
| B5 | STARTER PWR STUD | 4 |
| B6 | STARTER POWER | 4 |
| B7 | STARTER-BATTERY | 4 |
| B8 | STARTER_POWER | 4 |
| BPP | PEDAL POSITION | 8 |
| BT1 | BATTERY_STARTER | 4 |
| BT2 | DISCONECT-BATTERY | 4 |
| BT3 | STARTER-BATTERY | 4 |
| BT4 | DISCON-BLCK_GRND | 4 |
| BTM_C | CAB BOTTOM BULKHD | 6 |
| BTM_E | CAB BTTOM | 5 |
| BU1 | BACKUP_ALARM_GRND | 6 |
| BU2 | BACKUP_ALARM | 6 |
| BUZ | AIC_BUZZER | 9 |
| CABE2 | CAB TO ENG2 BULKHD | 5 |
| CAB_ARM | CAB TO ARMREST | 13 |
| CAB_ARM_FRM | CAB TO ARM TO FRM | 13 |
| CAB_B | CAB BTM BULKHEAD | 6 |
| CAB_FNR | MAIN_CAB_FNR | 13 |
| CAB_FRM | CAB TO JSS FRAME | 13 |
| CAB_PW | CAB POWER | 4 |
| CAB_RF | CAB TO ROOF CONNECTION | 7 |
| CAB_T | CAB-TRANSMISSION | 8 |
| CBPW | CAB POWER | 4 |
| CL | CIGAR_LIGHTER | 12 |
| CNV | 24V TO 12V PWR CONVERTER | 12 |
| DC1 | DISCONECT-BATTERY | 4 |
| DC2 | DISCON-BLCK_GRND | 4 |
| DC3 | FUEL_SOL_DISCONNECT | 4 |
| DC4 | FUEL_SOL_DISCONNECT | 4 |
| DC2_A | DISCONECT-BATTERY | 4 |
| DEFDM | DOSER METERING VLV | 5 |
| DIA | DIAGNOSTIC | 12 |
| DIA_2 | DIAGNOSTIC | 5 |

## CONNECTOR LIST

| NAME | DESCRIPTION | SHEET |
|---|---|---|
| DISC | DISCONNECT-ENGINE | 4 |
| DM | DIODE OR | 11 |
| DNOX2 | NOX CONTROLLER | 5 |
| DS | DOOR SWITCH | 7 |
| DTLTS | DEF_TANK_LEVEL_TEMP_SENSOR | 5 |
| DTS | DOWNSTREAM TEMP SENS | 5 |
| D_OR | DIODE OR | 7 |
| ECA_L1 | B+ POWER | 4 |
| EDC7 | ENGINE CONTROLLER | 5 |
| EM | RTD_HEIGHT_CONT_RTT | 10 |
| ENG2 | ENG BULKHD 2 | 5, 6, 11 |
| ENG_B | CAB BTTOM | 5, 9, 12 |
| ENG_D | DISC_HARNESS | 4 |
| ENG_H | ENGINE TO HOOD | 6 |
| ENG_H_T_1 | ENGINE TO HOOD | 6 |
| ENG_H_T_2 | ENGINE TO HOOD | 6 |
| ESS | ENG_SPEED_SENS | 8 |
| EVGT_3 | EVGT_FUSE | 5 |
| EVGT_4 | EVGT | 5 |
| E_HD | TRANS-HOOD | 6 |
| FFH | FUEL_FLTR_HTR | 4 |
| FLSHR | FLASHER_MODULE | 6 |
| FM | FILT_MAINT_SW | 8 |
| FNR_RLY | RELAY K2 | 13 |
| FSS | FAN_SPEED_SENS | 9 |
| FWD_DIODE | DIODE ASSY | 13 |
| FWM | FRONT-WIPER_MOTOR | 11 |
| FWMG | WIPER GROUND | 11 |
| FWW | FRONT_WASHER | 11 |
| GH | GRID_HEATER | 4 |
| GHC | GRID_HEATER_REL | 4 |
| GHF1 | GRID HTR FUSE | 4 |
| GHF3 | GRID_HTR_FUSE | 4 |
| GHF4 | GRID_HTR | 4 |
| GH_1 | GRID_HTR | 4 |
| GND_CAB1 | GROUND_A | 7 |
| GND_CAB2 | GROUND_A | 11 |
| GND_CAB3 | GROUND_C | 12 |
| GND_CAB4 | GROUND_C | 12 |
| GND_CAB5 | GROUND_C | 12 |
| GND_CAB6 | STRT, FFH, WAT_SEP_HTR | 4 |
| GND_CAB3D | GROUND_A | 8 |
| GND_CAB_SPL | CAB GRND SPLICE | 12 |
| GND_CAB_SPL2 | SPL BACK LGHT GD | 4, 6 |
| GND_ENG1 | STRT, FFH, WAT_SEP_HTR | 4 |
| GND_ENG2 | WIF, EDC | 5 |
| GND_ENG3 | SPLC_PK, WSHR MTR | 11 |
| GND_ENG4 | REAR LIGHTING | 6 |
| GND_ENG6 | DEDICATED | 9 |
| GND_ENG7 | TRANNY, COOL TEMP | 9 |
| GND_FC | GROUND_A | 10 |
| GND_GH1 | STRT, FFH, WAT_SEP_HTR | 4 |
| GND_JSS | GROUND_A | 13 |
| GND_PDST | GROUND_A | 9 |
| GND_PDST1 | GROUND_A | 9 |

## CONNECTOR LIST

| NAME | DESCRIPTION | SHEET |
|---|---|---|
| GND_PDST2 | GROUND_A | 9 |
| GND_S1 | GROUND_A | 10 |
| GND_S2 | GROUND_A | 10 |
| GND_SSCHAS | SSM_GROUND_CABLE | 11 |
| GND_SSMOD | SEC STR CHASIS GND | 11 |
| GND_TRANS | GROUND_TRANS | 9 |
| GND_WIF | GRND WIF RING TERM | 4 |
| HD | HOOD_SWITCH | 11 |
| HDM | HOOD_LIFT_MOTOR | 11 |
| HD_E | HOOD-TRANS | 6 |
| HD_N | HOOD TO ENG | 6 |
| HD_N_T_1 | HOOD TO ENGINE | 6 |
| HD_N_T_2 | HOOD TO ENGINE | 6 |
| HN1 | HORN_PWR | 10 |
| HN2 | HORN_GRND | 10 |
| HOT | HYD_OIL_TEMP_SEND | 9 |
| HTS | HMDTY AND AMB TEMP | 5 |
| HVAC1 | HVAC1 | 12 |
| HVAC2 | HVAC2 | 12 |
| ISS | INT_SPEED_SENS | 8 |
| JSS_19TF | MAIN_CAB_FNR | 13 |
| JSS_19TM | FNR-MAIN_CAB | 13 |
| JSS_ARM | JSS ARMREST TO CAB | 13 |
| JSS_CAB | JSS CAB | 12, 13 |
| JSS_CNT | JSS CONTROLLER | 13 |
| JSS_FRM | JSS FRAME TO CAB | 13 |
| JSS_LS | JSS LOAD SENSE | 13 |
| JSS_PIL_DUMP | JSS PILOT DUMP | 13 |
| JSS_PIL_PR | JSS PILOT PRESSURE | 13 |
| JSS_RLY | RELAY K2 | 13 |
| JSS_VALVE | JSS HYD VALVE | 13 |
| K5 | | |
| KD_DIODE | DIODE ASSY | 13 |
| KWCO | WIPER CUTOUT | 11 |
| L1_ECC | ECC BATT PWR | 7 |
| LBEGRD | LIGHT BEACON GRND | 7 |
| LBEPWR | LIGHT BEACON PWR | 7 |
| LDM1 | DOME_LIGHT_B+ | 7 |
| LDM2 | DOME_LIGHT_AUTO | 7 |
| LDM3 | DOME_LIGHT_GND | 7 |
| LLF | LIGHTS_LH | 6 |
| LLFW | LH_FRONT_WK_LT | 7 |
| LLR | LH_REAR_COMB_LT | 6 |
| LLRW | LH_REAR_WK_LT | 7 |
| LLR_E | LH_REAR_COMB_LT | 6 |
| LPL | LIC_PLATE_LIGHT | 6 |
| LRF | LIGHTS_RH | 6 |
| LRFO | FRONT_WK_LT_OPT | 7 |
| LRFR | FRONT_WK_LT_OPT | 7 |
| LRFS | FRONT_WK_LT_OPT | 7 |
| LRFW | RH_FRONT_WK_LT | 7 |
| LRR | RH_REAR_COMB_LT | 6 |
| LRRW | RH_REAR_WK_LT | 7 |
| LRR_E | RH_REAR_COMB_LT | 6 |
| LSPK | LEFT_SPEAKER | 12 |
| MON | CAMERA/MONITOR | 7 |
| NOXS | NOX SENSOR | 5 |
| NTRL_DIODE | DIODE ASSY | 13 |
| OSS | OUT_SPEED_SENS | 8 |
| PAF | AIR_FILT_RES_SW | 9 |
| PBD | DEC_PRESS_SW | 8 |
| PBL | BRAKE_LT_PRES_SW | 6 |
| PBW | BRK_WARN_PR_SW | 9 |
| PHF | HYD_OIL_FILT_RES_SW | 9 |
| PHF9 | HYD_FLTR_RES_SW | 9 |
| PO1 | POWER_OUTLET | 12 |
| PO2 | POWER_OUTLET | 12 |
| PRB1 | RED_BRAKE_SW | 9 |
| PRB2 | RED_BRAKE_SW | 9 |
| PRBF | ROLLBACK_PRES_SW | 10 |
| PRH | AC HIGH PRESS SW | 12 |

## CONNECTOR LIST

| NAME | DESCRIPTION | SHEET |
|---|---|---|
| PRL | AC LOW PRESS SW | 12 |
| PRMB_L1 | B+ POWER | 4 |
| PRMB_L2 | B+ POWER | 4 |
| PRM_A | PWR RLY MOD A | |
| PRM_A1 | PRM OUTPUT | 4 |
| PRM_A2 | PRM SIGNAL | 4 |
| PRM_B1 | PRM SIGNAL | 4 |
| PRM_C1 | PRM SIGNAL | 4 |
| PRM_D | PWR RLY MOD D | |
| PRM_D1 | PRM OUTPUT | 4 |
| PRM_D2 | PRM SIGNAL | 4 |
| PSS | SEC STR PRES SWITCH | 11 |
| PVRES | JSS JOYSTICK | 13 |
| PXF | RTD | 10 |
| PXH | HGT_CNTRL-RTT | 10 |
| PXM | RTD | 10 |
| PXT | RTD | 10 |
| P_A1 | B+ POWER | 4 |
| P_A3 | B+ POWER | 4 |
| P_C1 | B+ PWR FRM PRMD | 4 |
| P_C2 | B+ PWR FRM PRMD | 4 |
| P_C3 | B+ PWR FRM PRMD | 4 |
| P_C4 | B+ PWR FRM PRMD | 4 |
| P_C6 | B+ PWR FRM PRMD | 4 |
| R1 | RESISTOR | 13 |
| RAD | RADIO_POWER | 12 |
| RAD_J1 | RADIO_POWER | 12 |
| RAD_J2 | SPEAKER | 12 |
| RAD_J3 | RADIO_JUMPER | 12 |
| RECT | ENG_COOL_TEMP | 9 |
| RFL | FUEL_SENDER | 9 |
| RFLG | FUEL_SEND_GRND | 9 |
| RFL_23 | FUEL_LEVEL_SEND | 9 |
| ROOF | ROOF TO CAB CONNECTION | 7, 11, 12 |
| RSPK | RIGHT_SPEAKER | 12 |
| RTHP | THROTTLE_PEDAL | 5 |
| RVS_DIODE | DIODE ASSY | 13 |
| RWM | REAR_WIPER_MTR | 11 |
| RWMG | REAR_WIPER_MTR_GD | 11 |
| RWW | REAR_WASHER | 11 |
| SAJ | FNR_SWITCH | 13 |
| SBE | BEACON_SW | 7 |
| SBU | BACK-UP_ALRM_DIS_SW | 6 |
| SC | SEAT_COMP_MOTOR | 12 |
| SDA | DIFF LOCK SWITCH | 8 |
| SDC | DECLUTCH_SWITCH | 8 |
| SDM | DIFF LOCK SWITCH | 8 |
| SDR | DRIVING LIGHTS SW | 6 |
| SFC | FAN_CONTROL_SW | 10 |
| SFL | RETURN_TO_TRAVEL_SW | 10 |
| SFNR | FNR_SWITCH | 8 |
| SFWW | FRONT WIPER/WASHER | 11 |
| SHC | HEIGHT CONTROL SW | 10 |
| SHZ | HAZARD_SWITCH | 6 |
| SJS | JOYSTICK_CONTROL_SW | 13 |
| SPB | PARKING_BRAKE_SWITCH | 9 |
| SPC | PILOT_CONTROL_SWITCH | 10 |
| SPE | PIN_ENGAGE_SW | 10 |
| SPK | SPEAKER | 12 |
| SPL_2 | ULTRASONIC | 11 |
| SPL_3 | ULTRASONIC | 11 |
| SPL_12V | ULTRASONIC | 12 |
| SPL_19S | ULTRASONIC | 11 |
| SPL_35A | ULTRASONIC | 6 |
| SPL_42C | ULTRASONIC | 7 |
| SPL_A1 | ULTRASONIC | 10 |
| SPL_A2 | ULTRASONIC | 10 |
| SPL_A3 | ULTRASONIC | 10 |
| SPL_A4 | ULTRASONIC | 9 |
| SPL_A1A | ULTRASONIC | 6 |
| SPL_AC | ULTRASONIC | 12 |

CONNECTOR LIST 2

## CONNECTOR LIST

| NAME | DESCRIPTION | SHEET |
|---|---|---|
| SPL_ACC | ULTRASONIC | 4 |
| SPL_ACP | ULTRASONIC | 12 |
| SPL_ACS | ULTRASONIC | 12 |
| SPL_AJ | ULTRASONIC | 13 |
| SPL_ALT | ULTRASONIC | 4 |
| SPL_AP | ULTRASONIC | 9 |
| SPL_B8 | ULTRASONIC | 6 |
| SPL_BCK_LGT | SPLICE BACK LGHT PWR | 7 |
| SPL_BCK_LGT2 | SPL_BACK LGT PWR | 10 |
| SPL_BCK_LT_GD | SPL BACK LGHT GD | 7 |
| SPL_BCK_LT_GD2 | SPL_BACK LGT GRND | 10 |
| SPL_BLWR | ULTRASONIC | 12 |
| SPL_BUZ | ULTRASONIC | 9 |
| SPL_C3 | ULTRASONIC | 11 |
| SPL_CAN | ULTRASONIC | 12 |
| SPL_CAN_DH | ULTRASONIC | 5 |
| SPL_CAN_DIAG | ULTRASONIC | 12 |
| SPL_CAN_DIAG_L | ULTRASONIC | 12 |
| SPL_CAN_DL | ULTRASONIC | 5 |
| SPL_CAN_GH | ULTRASONIC | 5 |
| SPL_CAN_GL | ULTRASONIC | 5 |
| SPL_CAN_HT | ULTRASONIC | 5 |
| SPL_CAN_HV | ULTRASONIC | 5 |
| SPL_CAN_JS_H1 | ULTRASONIC | 12 |
| SPL_CAN_JS_H2 | ULTRASONIC | 12 |
| SPL_CAN_JS_L1 | ULTRASONIC | 12 |
| SPL_CAN_JS_L2 | ULTRASONIC | 12 |
| SPL_CAN_L | ULTRASONIC | 12 |
| SPL_CAN_LT | ULTRASONIC | 5 |
| SPL_CAN_LV | ULTRASONIC | 5 |
| SPL_CAN_TEL | ULTRASONIC | 12 |
| SPL_CAN_TEL2 | ULTRASONIC | 12 |
| SPL_CAN_TRANS | ULTRASONIC | 12 |
| SPL_CAN_TRANS_L | ULTRASONIC | 12 |
| SPL_CNV | ULTRASONIC | 12 |
| SPL_CR | ULTRASONIC | 4 |
| SPL_CRK | ULTRASONIC | 4 |
| SPL_D1 | ULTRASONIC | 10 |
| SPL_D11 | ULTRASONIC | 8 |
| SPL_D12 | ULTRASONIC | 8 |
| SPL_D15 | ULTRASONIC | 8 |
| SPL_D16 | ULTRASONIC | 8 |
| SPL_D17 | ULTRASONIC | 8 |
| SPL_D19 | ULTRASONIC | 8 |
| SPL_D24 | ULTRASONIC | 10 |
| SPL_D25 | ULTRASONIC | 10 |
| SPL_D26 | ULTRASONIC | 10 |
| SPL_D8_C1 | ULTRASONIC | 6 |
| SPL_DC | ULTRASONIC | 8 |
| SPL_DCUG | ULTRASONIC | 5 |
| SPL_DLY3 | ULTRASONIC | 9 |
| SPL_DR | ULTRASOIC | 6 |
| SPL_EDC1 | ULTRASONIC | 5 |
| SPL_EDC2 | ULTRASONIC | 5 |
| SPL_EDC3 | ULTRASONIC | 5 |
| SPL_EDC4 | ULTRASONIC | 5 |
| SPL_ENG | ULTRASONIC | 11 |
| SPL_FAN | ULTRASONIC | 10 |
| SPL_FLSHR_PWR | ULTRASONIC | 6 |
| SPL_FNR | ULTRASONIC | 8 |
| SPL_FW | ULTRASONIC | 11 |
| SPL_H1 | ULTRASONIC | 8 |
| SPL_H2 | ULTRASONIC | 8 |
| SPL_HB | ULTRASONIC | 6 |
| SPL_HC | ULTRASONIC | 11 |
| SPL_HOOD | ULTRASONIC | 11 |
| SPL_HOOD_GRND | HOOD GRND 6PCK | 11 |
| SPL_HRN | ULTRASONIC | 10 |
| SPL_HTR | ULTRASONIC | 4 |
| SPL_J1 | ULTRASONIC | 6 |
| SPL_J2_N | ULTRASONIC | 6 |
| SPL_JSS_1 | ULTRASONIC | 13 |

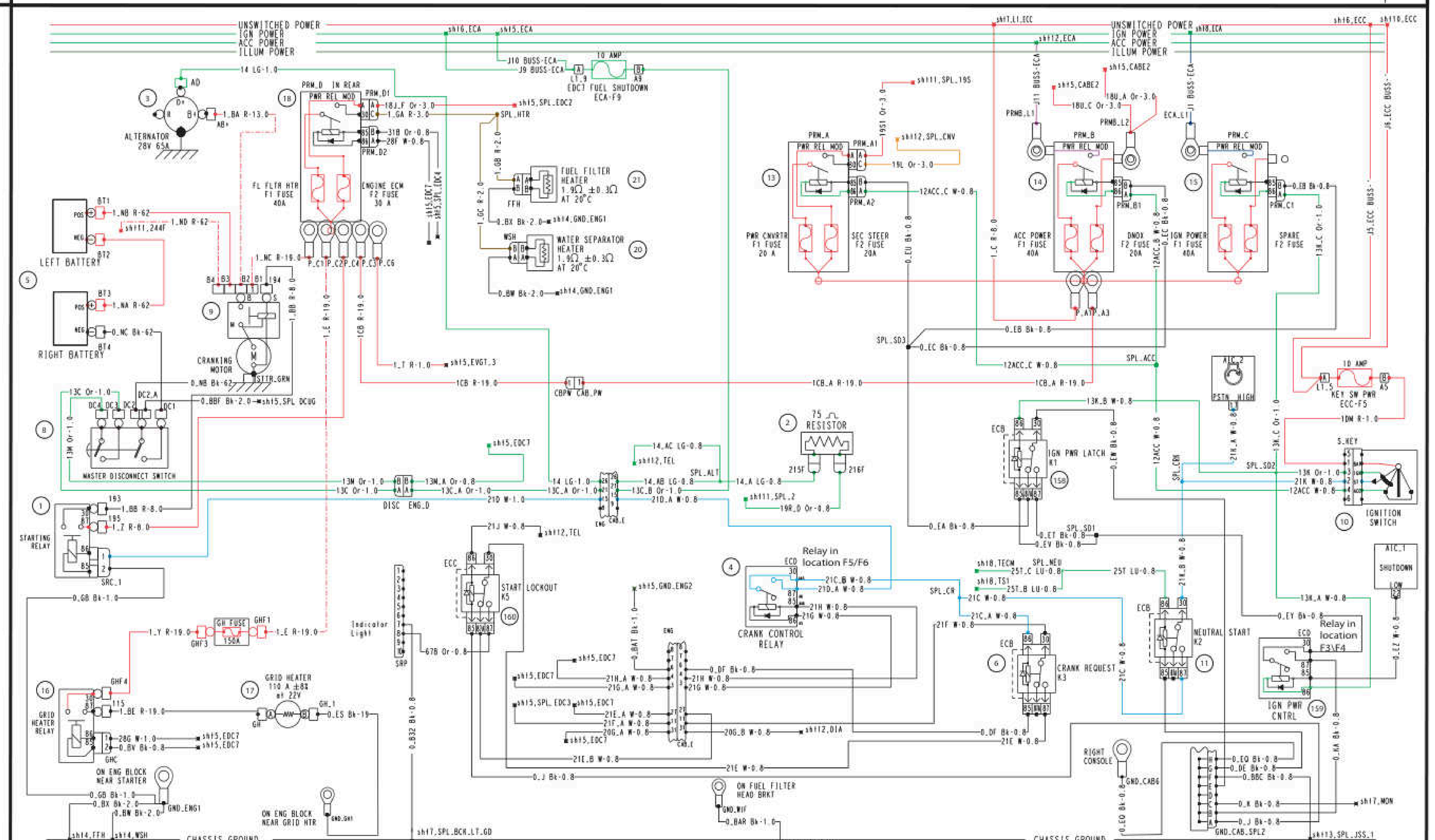
## CONNECTOR LIST

| NAME | DESCRIPTION | SHEET |
|---|---|---|
| SPL_JSS_2 | ULTRASONIC | 13 |
| SPL_JSS_3 | ULTRASONIC | 13 |
| SPL_JSS_4 | ULTRASONIC | 13 |
| SPL_JSS_5 | ULTRASONIC | 13 |
| SPL_JSS_6 | ULTRASONIC | 13 |
| SPL_JSS_7 | ULTRASONIC | 13 |
| SPL_JSS_9 | ULTRASONIC | 13 |
| SPL_JSS_10 | ULTRASONIC | 13 |
| SPL_JSS_11 | ULTRASONIC | 13 |
| SPL_JSS_13 | ULTRASONIC | 13 |
| SPL_JSS_14 | ULTRASONIC | 13 |
| SPL_JSS_15 | ULTRASONIC | 13 |
| SPL_JSS_16 | ULTRASONIC | 13 |
| SPL_JSS_17 | ULTRASONIC | 13 |
| SPL_JSS_18 | ULTRASONIC | 13 |
| SPL_JSS_20 | ULTRASONIC | 13 |
| SPL_JSS_21 | ULTRASONIC | 13 |
| SPL_LB | ULTRASONIC | 6 |
| SPL_LT | ULTRASONIC | 7 |
| SPL_NEU | ULTRASONIC | 4 |
| SPL_PBS | ULTRASONIC | 9 |
| SPL_PED_BL | SPL BACK LGT PWR 6 PCK | 10 |
| SPL_PED_BL_GD | SPL BACK LGT GD 6PCK | 10 |
| SPL_PIN | SPL_BACK LGT PWR | 10 |
| SPL_PINE | ULTRASONIC | 10 |
| SPL_PK1 | SPLICE 3-4WAY | 7 |
| SPL_PK3 | SPLICE 3-4WAY | 6 |
| SPL_POS | ULTRASONIC | 6 |
| SPL_POS_L | ULTRASONIC | 6 |
| SPL_POS_NA | ULTRASONIC | 6 |
| SPL_POS_R | ULTRASONIC | 6 |
| SPL_PR | ULTRASONIC | 6 |
| SPL_PTM | ULTRASONIC | 9 |
| SPL_RAD | ULTRASONIC | 12 |
| SPL_RD | ULTRASONIC | 9 |
| SPL_ROOF | SPLICE ROOF GROUND | 7 |
| SPL_RTT | ULTRASONIC | 10 |
| SPL_RWW | ULTRASONIC | 11 |
| SPL_SD1 | ULTRASONIC | 4 |
| SPL_SD2 | ULTRASONIC | 4 |
| SPL_SD3 | ULTRASONIC | 4 |
| SPL_SEC | ULTRASONIC | 11 |
| SPL_SS | ULTRASONIC | 11 |
| SPL_SW_PD | ULTRASONIC | 9 |
| SPL_TRNS_PWR | TRANS_PWR | 8 |
| SPL_WHS | ULTRASONIC | 11 |
| SPL_WK | ULTRASONIC | 7 |
| SPL_WL | ULTRASONIC | 7 |
| SPL_WL1 | ULTRASONIC | 7 |
| SPL_WLS | ULTRASONIC | 11 |
| SPL_WR | ULTRASONIC | 7 |
| SPL_WRK1 | ULTRASONIC | 7 |
| SPL_WRK2 | ULTRASONIC | 7 |
| SPL_WRKF | ULTRASONIC | 7 |
| SPL_WRKR | ULTRASONIC | 7 |
| SRC | RIDE_CONTROL_SW | 10 |
| SRC_1 | RELAY | 4 |
| SRHSTLK | RH STALK SWITCH | 6 |
| SRP | WORK LIGHTS SW | 4 |
| SRTD | DETENT_SWITCH | 10 |
| SRWP | REAR_WIPER_SW | 11 |
| SSD | SEC_STR_DIODE | 11 |
| SSM | SEC STR MOD | 11 |
| SSS | SS MAG SWITCH | 11 |
| SS_TR | SS_MOD-TRANS | 11 |
| STA | TRANS_AUTO_SW | 8 |
| STE | TRANS_ENABLE_SW | 8 |
| STTR_GRN | GRID_HTR_FUSE | 4 |
| SWL | WORK LIGHTS SW | 7 |
| S_KEY | IGNITION_SWITCH | 4 |
| TCOT | TCO_SENDER | 8 |
| TECM | TRANS | 8 |

## CONNECTOR LIST

| NAME | DESCRIPTION | SHEET |
|---|---|---|
| TEL | TELEMATICS | 12 |
| TERM_CAN_2 | CAN BULK HEAD | 5 |
| THV | TANK HEATER CONTROL VALVE | 5 |
| TRANS | TRANSMISSION-CAB | 8,9,11 |
| TRC | TRANS_CONTROL | 8 |
| TR_SS | SEC_STR_MOD_OPT | 11 |
| TS1 | TRANSMISSION_SHIFTER | 8 |
| TS2 | TRANSMISSION_SHIFTER | 8 |
| TSS | TURB_SPEED_SENS | 8 |
| TURBO | ENG DASH_TURBO | 5 |
| UBJ | DEF LEVEL TEMP | 5 |
| UBJM | DEF LEVEL TEMP | 5 |
| UTS | UPSTREAM TEMP SENSE | 5 |
| WIF | WATER_IN_FUEL_SNSR | 5 |
| WSH | WATER_SEP_HTR | 4 |
| YDL | DIFF LOCK SOLENOID | 8 |
| YDL_1 | DIFF LOCK SOLENOID | 8 |
| YDL_2 | DIFF LOCK SOLENOID | 8 |
| YFN | FAN_PWM_SOL | 10 |
| YFR | FAN_REV_SOL_OPT | 10 |
| YLS | TC_LOCKUP_VALVE | 8 |
| YPB | PARK_BRK_SOL | 9 |
| YPE | PIN ENGAGE JUMPER | 10 |
| YPE1 | PIN ENGAGE JUMPER | 10 |
| YPE2 | PIN_ENGAGE_OPT | 10 |
| YPP | PILOT_PRES_SOL | 10 |
| YRC | RIDE_CONTROL_OPT | 10 |
| YRC_J | RIDE CNTRL_JUMPER | 10 |
| YRC_J2 | RIDE_CONTROL_OPT | 10 |
| YSS | SEC_STRG_SOL | 11 |
| S4_S | | 14 |

CONNECTOR LIST 3




COLD START | POWER DISTRIBUTION | IGNITION SWITCH 4

# ELECTRICAL SCHEMATIC SIDE 1

721F, 821F, 921F TIER 4 WHEEL LOADER

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