521E
TIER III

Service Manual

Print No. 87728450 A - EU

CASE
CONSTRUCTION

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Repair Manual
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CNH Italia S.p.A.
Viale delle Nazioni, 55
41100 Modena
Italia

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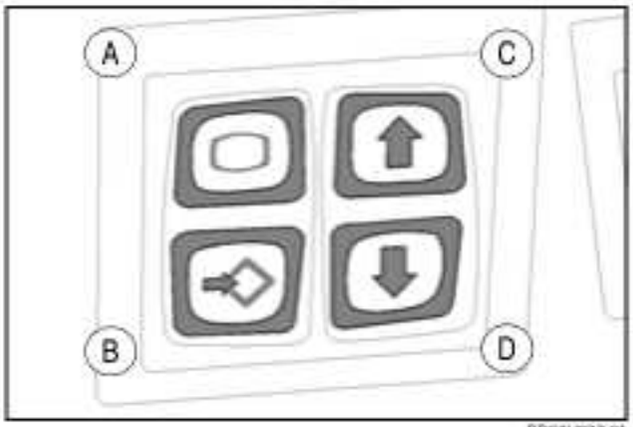
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RETRIEVING FAULT CODES

General Fault Code Identification

1. Press and hold the escape key and up arrow key for more than 2 seconds to access the fault codes.



BD06H037-01

A. Escape key

B. enter key

C. up key

D. down key

2. Yellow Faults, buzzer will beep once every 2 seconds:

   A. Operator can acknowledge it by pressing the enter key.

   B. The message will disappear.

   C. Buzzer will not beep anymore.

   D. Yellow lamp will stay ON.

   E. Fault will remain in Yellow list until it is closed.

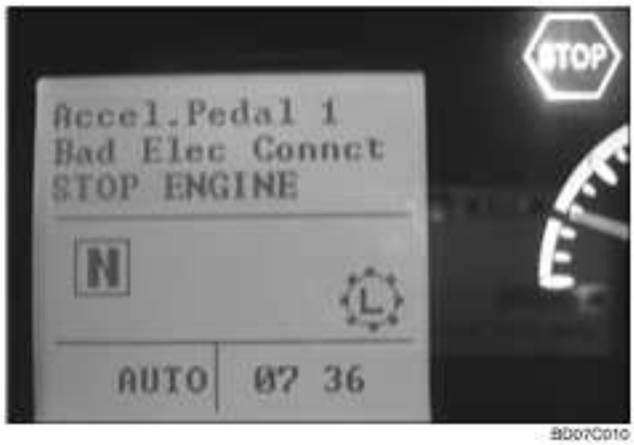
3. Red Faults, buzzer will be continuous, alternating sounds:

   A. Operator can acknowledge it by pressing the enter key.

   B. Buzzer will change to a less stressing sound, but will remain.

   C. Message will remain on display with indication of URGENT STOP.

Fault Code Display



BD07C010

1. If a fault code occurs, it will be displayed in the upper zone of the LCD. Depending on how critical the code is, the RED master STOP or the YELLOW caution indicator will also come on.



BD07C011

2. To retrieve the code/s, press the two upper buttons of the keypad for 2 seconds. When the screen comes up press ENTER on the category with codes present.



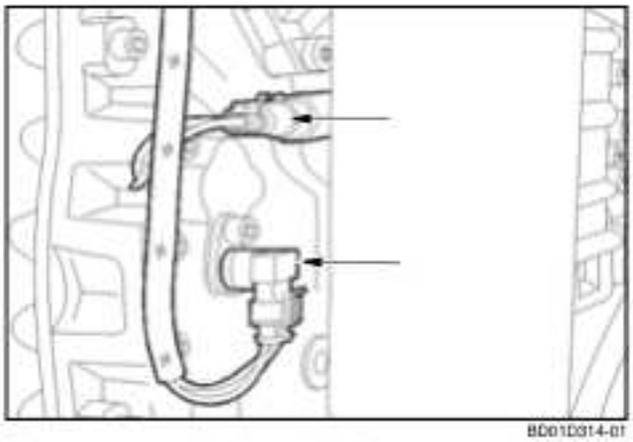
BD07C012

3. If more than one code is present in the category, scroll through to each by pressing the DOWN button on the keypad.

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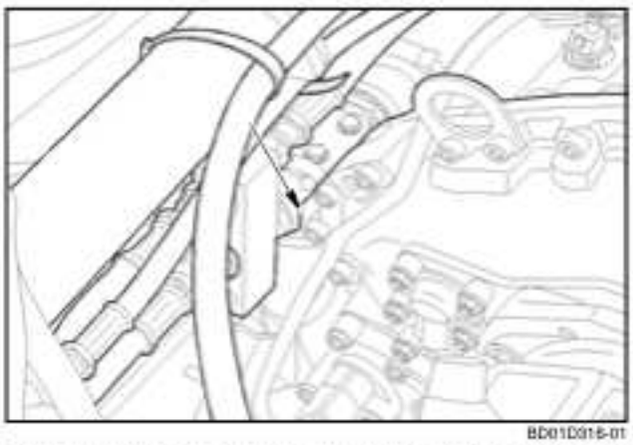
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STEP 38



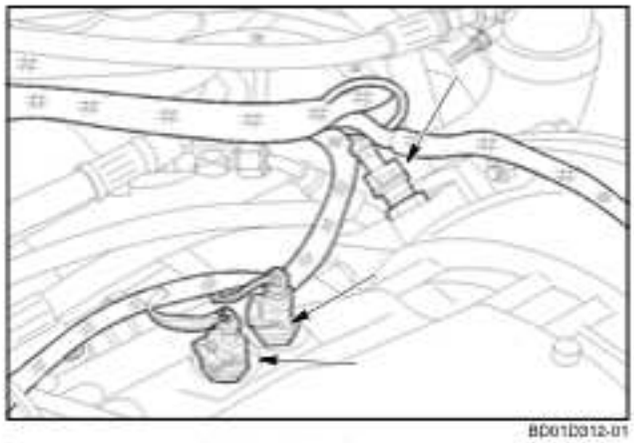
Connect transmission wiring harness connectors to output speed sensor and filter maintenance switch following tags installed during removal. Remove and discard tags.

STEP 39



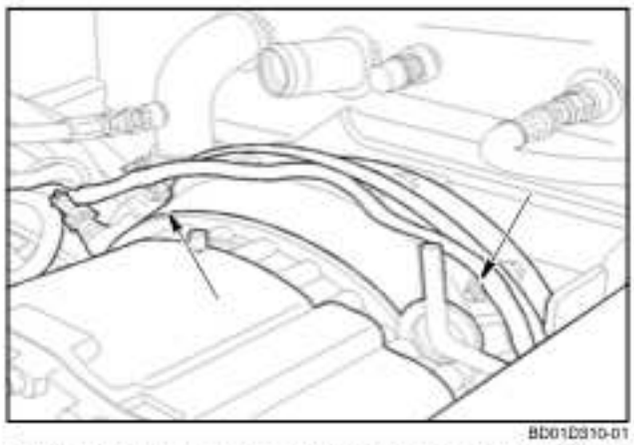
Install socket head bolt to secure wiring harness clamp.

STEP 40



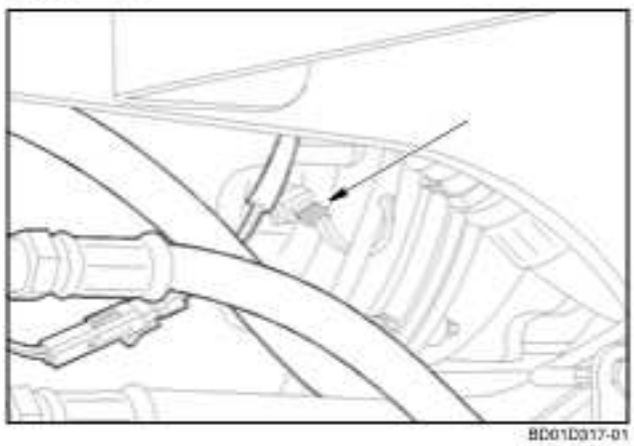
Connect transmission wiring harness connectors to turbine speed sensor, intermediate speed sensor, and engine speed sensor following tags installed during removal. Remove and discard tags.

STEP 41



Install two socket head bolts to secure transmission wiring harness clamps.

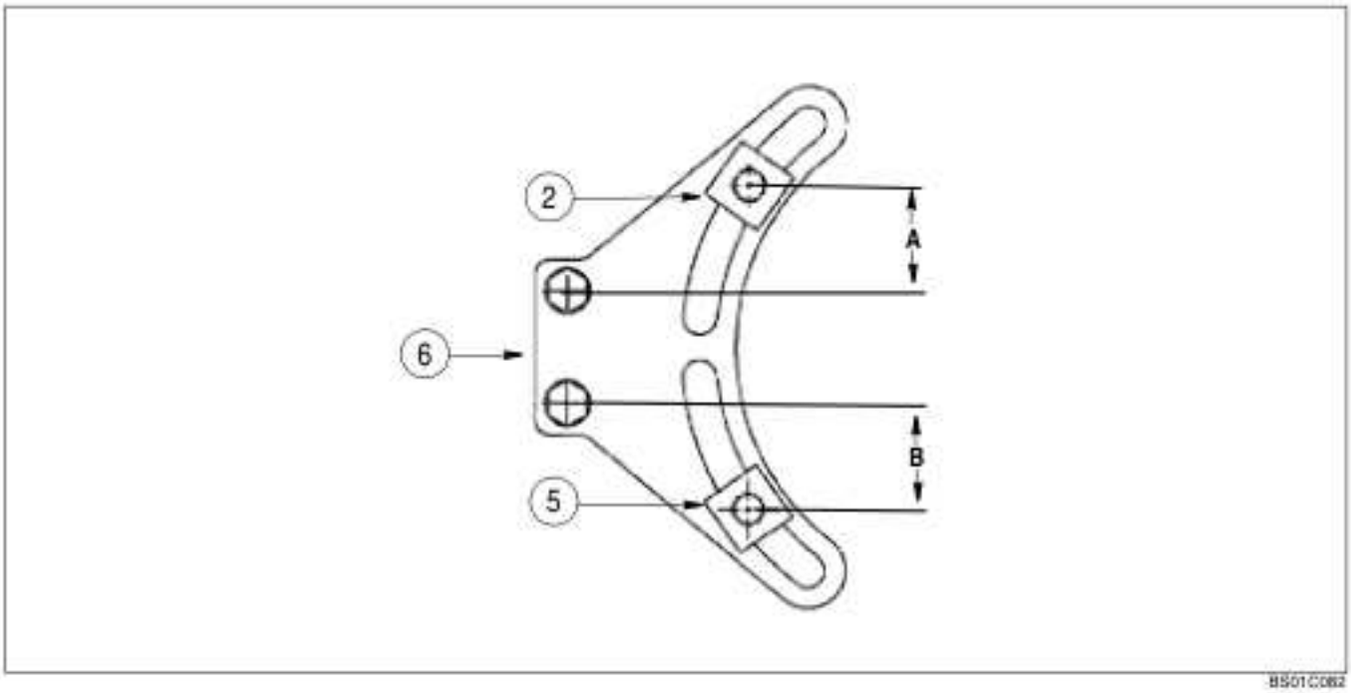
STEP 42



Connect transmission wiring harness connector to temperature sensor following tag installed during removal. Remove and discard tag.

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BS01C082

2. RETURN TO TRAVEL TARGET 5. HEIGHT CONTROL TARGET 6. TARGET MOUNTING PLATE

MACHINE	A	APPROXIMATE RESULTING RETURN TO TRAVEL HINGE PIN HEIGHT	B	APPROXIMATE RESULTING HEIGHT CONTROL HINGE PIN HEIGHT
521E Z-BAR	57 mm (2.24 inches)	358 mm (14.10 inches)	54 mm (2.13 inches)	3302 mm (130.0 inches)
521E XT	47 mm (1.85 inches)	438 mm (17.24 inches)	48 mm (1.89 inches)	3302 mm (130.0 inches)
521E XR	59 mm (2.32 inches)	458 mm (18.03 inches)	52 mm (2.05 inches)	3500mm (137.8 inches)

TARGET ADJUSTMENT ILLUSTRATION Z-BAR, XT AND XR MODELS

8. Refer to the table and the illustration on this page. Position the height control target (5) on the target mounting plate (6) using the table above.

NOTE: *The higher the height control target (5) is positioned in its slot in the target mounting plate (6), the lower the lift arms will stop as they are raised.*

9. Tighten the height control target (5).
10. Position the return to travel target (2) using the table above.
11. Tighten the return to travel target (2).

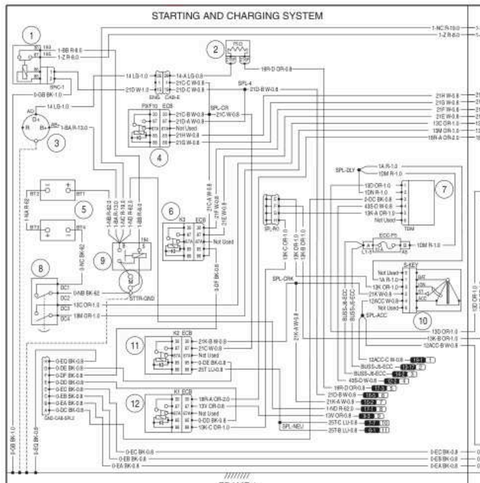
NOTE: *The higher the return to travel target (2) is positioned in its slot in the target mounting plate (6), the lower the lift arms will stop as they are lowered.*

12. Check to make sure the proximity switch (4) and all of the mounting bolts are tight. Refer to the illustration on page 8.
13. Start the engine.
14. Place the detent switch in the ON position, and set the return to travel/float detent switch to the return to travel position.
15. Raise the lift arms to approximately the horizontal position. Place the loader control lever in the raise position and verify that the electromagnet holds it in that position until the height control target (5) passes in front of the proximity switch (4). Refer to the illustration on page 8.
16. With the lift arms still raised, place the loader control lever in the lower position and verify that the electromagnet holds it in that position until the return to travel target (2) passes in front of the proximity switch (4). Refer to the illustration on page 8.
17. Repeat steps 8 through 16 until the desired heights are reached.
18. Lower the bucket to the ground and stop the engine.

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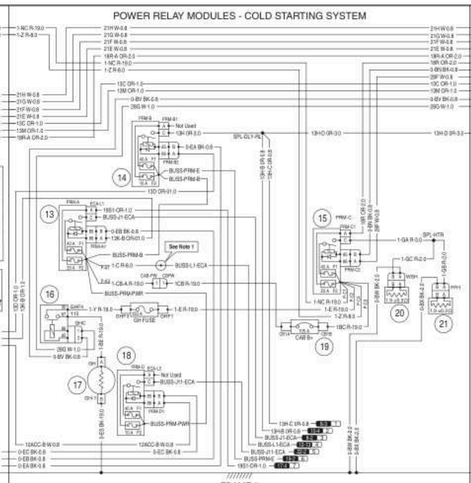
STARTING AND CHARGING SYSTEM



FRAME 1

BC088245-01A

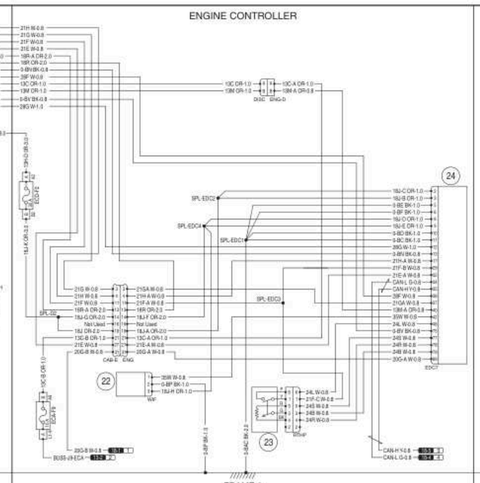
POWER RELAY MODULES - COLD STARTING SYSTEM



FRAME 2

BC088245-02A

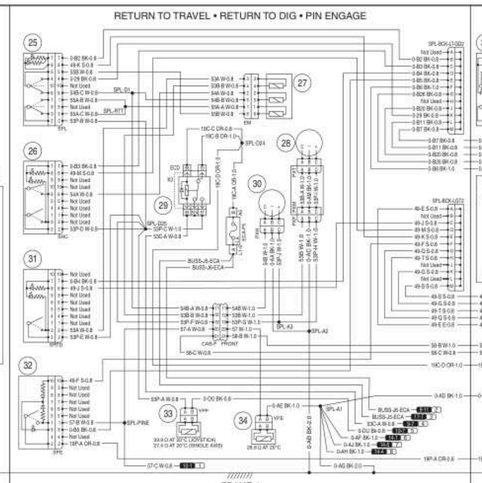
ENGINE CONTROLLER



FRAME 3

BC088245-03A

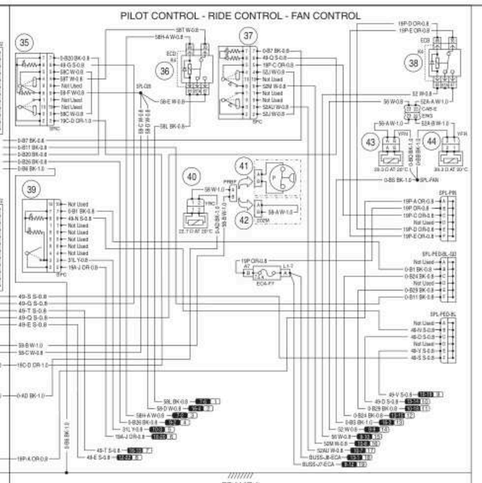
RETURN TO TRAVEL • RETURN TO DIG • PIN ENGAGE



FRAME 4

BC088245-04A

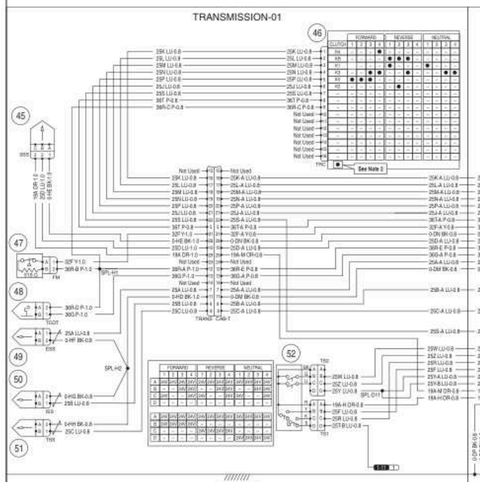
PILOT CONTROL - RIDE CONTROL - FAN CONTROL



FRAME 5

BC088245-05A

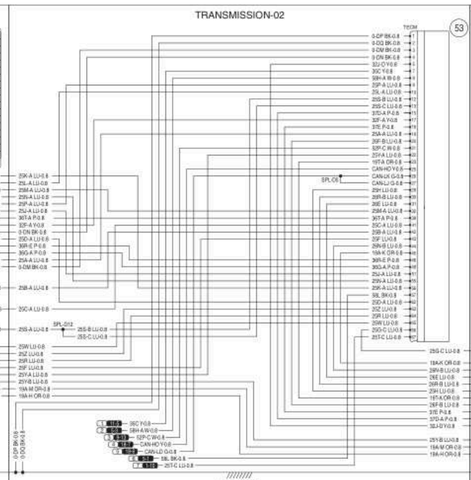
TRANSMISSION-01



FRAME 6

BC088245-09A

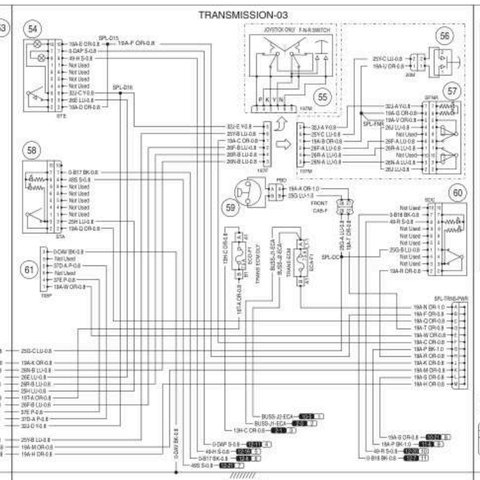
TRANSMISSION-02



FRAME 7

BC088245-06A

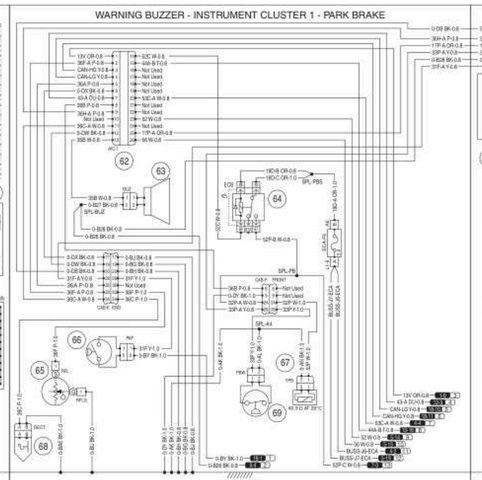
TRANSMISSION-03



FRAME 8

BC088245-08A

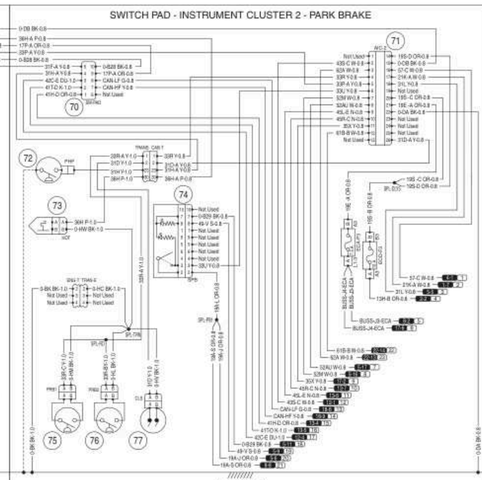
WARNING BUZZER - INSTRUMENT CLUSTER 1 - PARK BRAKE



FRAME 9

BC088245-09A

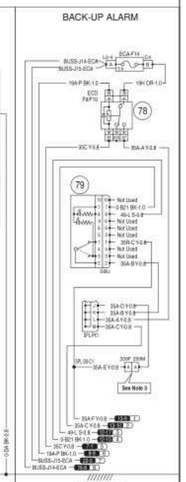
SWITCH PAD - INSTRUMENT CLUSTER 2 - PARK BRAKE



FRAME 10

BC088245-10A

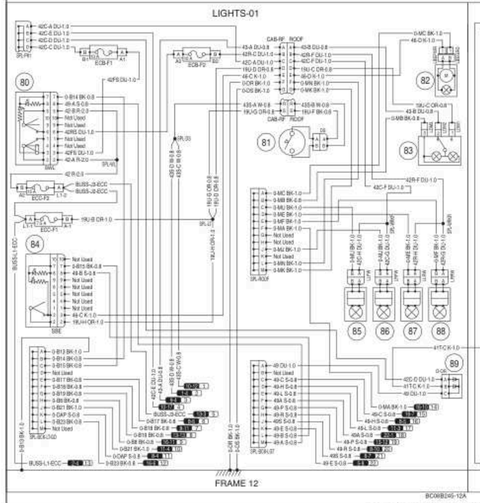
BACK-UP ALARM



FRAME 11

BC088245-11A

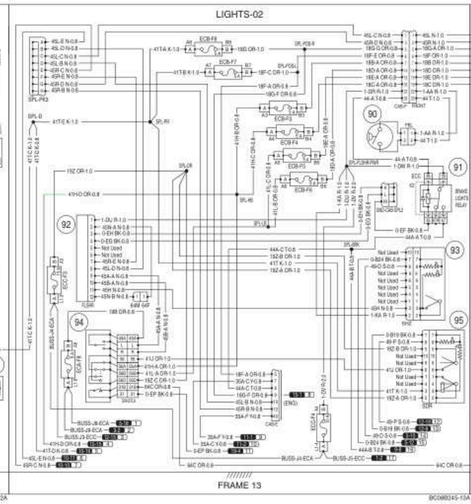
LIGHTS-01



FRAME 12

BC088245-12A

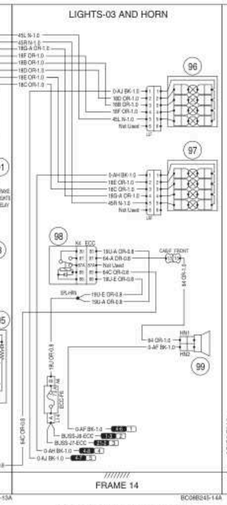
LIGHTS-02



FRAME 13

BC088245-13A

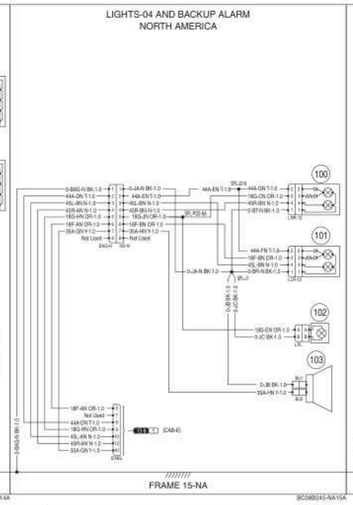
LIGHTS-03 AND HORN



FRAME 14

BC088245-14A

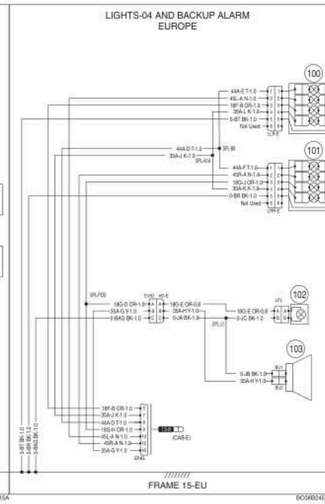
LIGHTS-04 AND BACKUP ALARM NORTH AMERICA



FRAME 15-NA

BC088245-NA15A

LIGHTS-04 AND BACKUP ALARM EUROPE



FRAME 15-EU

BC088245-EU15A

COMPONENT

FRAME - COMPONENT NUMBERS	FRAME - COMPONENT NUMBERS	FRAME - COMPONENT NUMBERS	FRAME - COMPONENT NUMBERS
1 - 1. Starting Relay	5 - 37. Fan Control Switch (Option)	10 - 73. Hydraulic Oil Temperature Sender	NORTH AMERICA
1 - 2. Resistor - 75 Ohm	5 - 38. Fan Reverse Relay (Option)	10 - 74. Park Brake Switch	15 - 100. Right-Hand Rear Combination Lamps
1 - 3. Alternator	5 - 39. Pilot Control Switch	10 - 75. Redundant Brake Pressure Switch 1	Pin 1 - Ground
1 - 4. Crank Control Relay	5 - 40. Ride Control Solenoid (Option)	10 - 76. Redundant Brake Pressure Switch 2	Pin 2 - Brake Lamp
1 - 5. Batteries	5 - 41. Rollback Pressure Switch (XT with Ride Control Only)	10 - 77. Coolant Level Sender	Pin 3 - Tail Lamp
1 - 6. Crank Request Relay	5 - 42. Rollback Jumper	11 - 78. Backup Alarm Relay	Pin 4 - Turn Lamp
1 - 7. Time Delay Module	5 - 43. Fan PWM Solenoid	11 - 79. Backup Alarm Disable Switch	15 - 101. Left-Hand Rear Combination Lamps
1 - 8. Master Disconnect Switch	5 - 44. Fan Reverse Solenoid (Option)	12 - 80. Work Lamps Switch	Pin 1 - Ground
1 - 9. Starter	6 - 45. Output Speed Sensor	12 - 81. Door Switch	Pin 2 - Brake Lamp
1 - 10. Ignition Switch	6 - 46. Transmission Solenoid Valve and Temperature Sender	12 - 82. Rotating Beacon (Optional)	Pin 3 - Tail Lamp
1 - 11. Neutral Start Relay	6 - 47. Filter Maintenance Switch	12 - 83. Dome Lamp	Pin 4 - Turn Lamp
1 - 12. Voltmeter Relay	6 - 48. Torque Convertor Output Temperature Sender	12 - 84. Rotating Beacon Switch (Optional)	15 - 102. Licence Plate Lamp
2 - 13. Power Relay Module A	6 - 49. Engine Speed Sensor	12 - 85. Left-Hand Front work Lamp	15 - 103. Backup Alarm
2 - 14. Power Relay Module B	6 - 50. Intermediate Speed Sensor	12 - 86. Right-Hand Front work Lamp	
2 - 15. Power Relay Module C	6 - 51. Turbine Speed Sensor	12 - 87. Left-Hand Rear work Lamp	EUROPE
2 - 16. Grid heater Relay	6 - 52. Transmission Shifter	12 - 88. Right-Hand Rear work Lamp	100. Right-Hand Rear Combination Lamps
2 - 17. Grid Heater	7 - 53. Transmission Electronic Control Module	12 - 89. Diodes	Pin 1 - Brake Lamp
2 - 18. Power Relay Module D	8 - 54. Transmission Enable Switch	13 - 90. Brake Lamp Switch	Pin 2 - Turn Lamp
2 - 19. Circuit Breaker Cab +	8 - 55. FNR Switch for Joystick Controls	13 - 91. Brake Lamp Relay	Pin 3 - Tail Lamp
2 - 20. Water Separator Heater	8 - 56. Transmission Kick-Down Switch	13 - 92. Flasher Module	Pin 4 - Backup Lamp
2 - 21. Fuel Filter Heater	8 - 57. FNR Switch for Single Axis Controls	13 - 93. Hazard Switch	Pin 5 - Ground
3 - 22. Water In Fuel Sensor	8 - 58. Transmission Auto Switch	13 - 94. Turn Signal, High-Low Beam, and Horn Switch	Pin 6 - Not Used
3 - 23. Throttle Potentiometer	8 - 59. Brake Declutch Pressure Switch	13 - 95. Driving Lamps Switch	102. Licence Plate Lamp
3 - 24. Engine Controller	8 - 60. Declutch Switch	14 - 96. Left-Hand Front Combination Lamps	103. Backup Alarm
4 - 25. Return-to-Travel Float Switch	8 - 61. Diagnostic Connector	Pin 1 - Ground	
4 - 26. Height Control Switch	9 - 62. Instrument Cluster Connector 1	Pin 2 - Low Beam	
4 - 27. Electromagnetic Detents Pins 3 and 4 - Return-to-Dig Pins 2 and 5 - Height Control Pins 1 and 6 - Return-to-Travel	9 - 63. Warning Buzzer	Pin 3 - High Beam	
4 - 28. Return-to-Dig Proximity Switch	9 - 64. Parking Brake Relay	Pin 4 - Position	
4 - 29. Pilot Control Relay ECD-H3	9 - 65. Fuel Level Sender	Pin 5 - Turn Signal	
4 - 30. Height Control and Return-to-Travel Proximity Switch	9 - 66. Air Filter Restriction Switch	14 - 97. Right-Hand Front Combination Lamps	
4 - 31. Return-to-Dig Switch	9 - 67. Parking Brake Solenoid	Pin 1 - Ground	
4 - 32. Pin Engage Switch (Option)	9 - 68. Radiator Coolant Temperature Sender	Pin 2 - Low Beam	
4 - 33. Pilot Pressure Solenoid	9 - 69. Brake Pressure Warning Switch	Pin 3 - High Beam	
4 - 34. Pin Engage Solenoid (Option)	10 - 70. Switch Pad	Pin 4 - Position	
5 - 35. Ride Control Switch (Option)	10 - 71. Instrument Cluster Connector 2	Pin 5 - Turn Signal	
5 - 36. Ride Control Relay (Option)	10 - 72. Hydraulic Filter Restriction Switch	14 - 98. Horn Relay	
		14 - 99. Horn	

CIRCUIT DIAGRAM LEGEND

SHOWS CIRCUIT CROSSING NOT CONNECTED

SPL-00 SHOWS CIRCUIT SPLICE CONNECTION

Frame and Wire Tag Number where circuit continues. WIRE TAGS: 000 / 000. FRAME - WIRE. WIRE. Wire Tag assigned to wire in Frame. CIRCUIT CONTINUATION

54 COMPONENT NUMBER

MALE TERMINAL. FEMALE TERMINAL.

INDICATES EXTERNAL GROUND. GROUND.

INDICATES INTERNALLY GROUNDED COMPONENT

FEMALE CONNECTOR. MALE CONNECTOR. CONNECTOR NUMBER. CONNECTOR IDENTIFICATION. INDICATES PARTIAL CONNECTOR. NOT ALL CONNECTIONS ARE SHOWN

WIRE IDENTIFICATION

BK . BLACK		OR . ORANGE	T . . TAN
DU . DARK BLUE		P . . PURPLE (Violet)	U . . BLUE
G . . . GREEN		R . . . RED	W . . WHITE
K . . . PINK		S . . . GREY	Y . . . YELLOW
LG . . LIGHT GREEN			
LU . . LIGHT BLUE			
N . . . BROWN			

702A G-1.0 — WIRE NUMBER / WIRE COLOR — WIRE SIZE

NOTES

NOTE 1: Electrical Center C - Power Stud

NOTE 2: Indicates Modulated and Current Controller.

NOTE 3: Disconnect when Backup Alarm Disable Switch is installed. Applicable only on TUV Road Approved Machines.

ELECTRICAL SCHEMATIC
521E WHEEL LOADER

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