# WSM

## WORKSHOP MANUAL
## TRACTOR

# M100GX,M110GX,M126GX,
# M128GX,M128GX-FS,
# M135GX,M135GX-FS

Kubota

KiSC issued 01, 2022 A

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# INFORMATION

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# 1. SAFETY FIRST

## ⚠ SAFETY FIRST

- **This symbol, the industry's "Safety Alert Symbol", is used throughout this manual and on labels on the machine itself to warn of the possibility of personal injury. Read these instructions carefully.**
- **It is essential that you read the instructions and safety regulations before you try to repair or use this unit.**

**⚠ DANGER**
- **Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.**

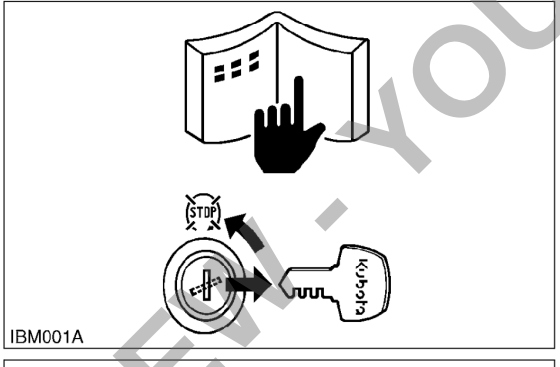
**⚠ WARNING**
- **Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.**

**⚠ CAUTION**
- **Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.**

**■ IMPORTANT**
- **Indicates that equipment or property damage could result if instructions are not followed.**

**■ NOTE**
- **Gives helpful information.**

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### BEFORE YOU START SERVICE

- Read all instructions and safety instructions in this manual and on your machine safety decals.
- Clean the work area and machine.
- Park the machine on a stable and level ground, and set the parking brake.
- Lower the implement to the ground.
- Stop the engine, then remove the key.
- Disconnect the battery negative cable.
- Hang a **"DO NOT OPERATE"** tag in the operator station.

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### START SAFELY

- Do not do the procedures below when you start the engine.
  - short across starter terminals
  - bypass the safety start switch
- Do not alter or remove any part of machine safety system.
- Before you start the engine, make sure that all shift levers are in neutral positions or in disengaged positions.
- Do not start the engine when you stay on the ground. Start the engine only from operator's seat.

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# 3. SPECIFICATIONS

## [1] FOR NORTH AMERICA MODEL

| Model | | | M100GX | M110GX | M126GX | M135GX |
|---|---|---|---|---|---|---|
| Engine | Model | | V3800-TIE4 | | V6108-TIE4 | |
| | Type | | Direct injection, with turbocharger, water-cooled, 4-cycle diesel | | | |
| | Number of cylinder | | 4 | | | |
| | Total displacement | | 3769 $cm^3$ (230 cu.in.) | | 6124 $cm^3$ (374 cu.in.) | |
| | Bore and stroke | | 100 × 120 mm (3.94 × 4.72 in.) | | 118 × 140 mm (4.65 × 5.51 in.) | |
| | Net power*1 | | 74.6 kW (100 HP) | 81.7 kW (109.5 HP) | 93.2 kW (125 HP) | 100.7 kW (135 HP) |
| | PTO power*1 (factory observed) | | 64.1 kW (86 HP) / 2600 $min^{-1}$ (rpm) | 71.6 kW (97.3 HP) / 2600 $min^{-1}$ (rpm) | 80.5 kW (108 HP) / 2200 $min^{-1}$ (rpm) | 88.0 kW (120 HP) / 2200 $min^{-1}$ (rpm) |
| | Maximum torque | | 346 N·m (35.3 kgf·m, 255 lbf·ft) / 1500 $min^{-1}$ (rpm) | 370 N·m (37.7 kgf·m, 273 lbf·ft) / 1500 $min^{-1}$ (rpm) | 532 N·m (54.2 kgf·m, 392 lbf·ft) / 1200 $min^{-1}$ (rpm) | 567 N·m (57.8 kgf·m, 418 lbf·ft) / 1200 $min^{-1}$ (rpm) |
| | Low idling revolution | | 800 to 850 $min^{-1}$ (rpm) | | | |
| | Battery capacity | | 12 V, 100 Ah at 20 hours, 900CCA | | 12 V, 160 Ah at 20 hours, 1090CCA | |
| | Fuel | | Diesel fuel No. 1-D S15 [below −10 °C (14 °F)]<br>Diesel fuel No. 2-D S15 [above −10 °C (14 °F)] | | | |
| | Fuel tank capacity | | 190 L (50.2 U.S.gals, 41.8 Imp.gals) | | | |
| | Engine oil capacity | | 10.5 L (11.1 U.S.qts, 9.2 Imp.qts) | | 14.6 L (15.4 U.S.qts, 12.8 Imp.qts) | |
| | Coolant capacity | | 9.6 L (10.1 U.S.qts, 8.5 Imp.qts) | | 14.6 L (15.4 U.S.qts, 12.8 Imp.qts) | |
| Dimensions | Overall length | | 4230 mm (166.5 in.) | | 4360 mm (171.7 in.)<br><4350 mm (171.3 in.)> | |
| | Overall width (min. tread) | | 2100 mm (82.7 in.) | | 2180 mm (85.8 in.) | |
| | Overall height | | 2790 mm (109.8 in.) | 2840 mm (111.8 in.) | 2875 mm (113.2 in.) | |
| | Wheel base | | 2435 mm (95.9 in.) | | 2690 mm (105.9 in.)<br><2680 mm (105.5 in.)> | |
| | Tread | Front | 1580, 1610 mm (62.2, 63.39 in.) | | 1775, 1875 mm (69.9, 73.8 in.) | |
| | | Rear | 1500 to 2060 mm (59.1 to 81.1 in.) | 1530 to 2035 mm (60.2 to 80.1 in.) | 1590 to 2090 mm (62.6 to 82.3 in.) | |
| | Crop clearance | | 450 mm (17.7 in.) | 495 mm (19.5 in.) | 565 mm (22.2 in.) | |
| Weight | | | 4095 kg (9028 lbs) | 4180 kg (9216 lbs) | 4705 kg (10373 lbs)<br><4905 kg (10814 lbs)> | |
| Traveling system | Standard tire size | Front | 12.4R24 | 13.6R24 | 14.9R24 | |
| | | Rear | 18.4R34 | | 18.4R38 | |
| | Clutch | | Multiple wet disk, Electronic Hydraulically operated | | | |
| | Steering | | Hydrostatic power steering | | | |
| | Braking system | | Hydraulically operated wet disk | | | |
| | Differential | | Bevel gears with differential lock (Front, Rear) | | | |
| Hydraulic system | Hydraulic control system | | Electronic draft control | | | |
| | Pump capacity | | 70.9 L (18.7 U.S.gals, 15.6 Imp.gals) / min. | | 77.2 L (20.4 U.S.gals, 17.0 Imp.gals) / min. | |
| | Three point hitch | | Category 2 | | | |
| | Max. lifting force | At lift points | 3900 kg (8598 lbs) | | | |
| | | 24 in. behind lift points*2 | 3100 kg (6834 lbs) | | | |
| | Remote hydraulic control | | 2 standard (3rd and 4th valve optional) | | | |
| | System pressure | | 19.7 MPa (201 $kgf/cm^2$, 2857 psi) | | | |
| | Traction system | | Swinging drawbar, adjustable in direction | | | |
| PTO system | Live PTO (Independent) | Direction of turning | Clockwise, viewed from tractor rear | | | |
| | | PTO / engine speed | 6 splines: 540 $min^{-1}$ (rpm) / 2205 $min^{-1}$ (rpm)<br>21 splines: 1000 $min^{-1}$ (rpm) / 2389 $min^{-1}$ (rpm) | | 6 splines: 540 $min^{-1}$ (rpm) / 1994 $min^{-1}$ (rpm)<br>21 splines: 1000 $min^{-1}$ (rpm) / 2050 $min^{-1}$ (rpm) | |

The company reserves the right to change the specifications without notice.

■ **NOTE**

- ***1: Manufacture's estimate**
  ***2: Top link mounting: upper hole**
  **<>: Front suspension type**

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# 4. LUBRICANTS, FUEL AND COOLANT

| No. | Place | Capacity | | | | Lubricants, fuel and coolant |
|---|---|---|---|---|---|---|
| | | M100GX | M110GX | M126GX, M128GX | M135GX | |
| 1 | Fuel | 190 L<br>50.2 U.S.gals<br>41.8 Imp.gals | | | | • No. 2-D S15 diesel fuel<br>• No. 1-D S15 diesel fuel if temperature is below –10 °C (14 °F) |
| 2 | Cooling system | 9.6 L<br>10.1 U.S.qts<br>8.5 Imp.qts | | 14.6 L<br>15.4 U.S.qts<br>12.8 Imp.qts | | Fresh clean soft water with anti-freeze |
| | Recovery tank | 1.1 L<br>1.2 U.S.qts<br>1.0 Imp.qts | | 1.5 L<br>1.6 U.S.qts<br>1.4 Imp.qts | | |
| 3 | Washer liquid | 2.0 L<br>2.1 U.S.qts<br>1.8 Imp.qts | | | | Automobile washer liquid |
| 4 | Engine crankcase (with filter) | 10.5 L<br>11.1 U.S.qts<br>9.2 Imp.qts | | 14.6 L<br>15.4 U.S.qts<br>12.8 Imp.qts | | **Engine oil**<br>API Service Classification CJ-4 (DPF type engine)<br>• Above 25 °C (77 °F) SAE30, SAE10W-30 or 15W-40<br>• 0 to 25 °C (32 to 77 °F) SAE20, SAE10W-30 or 15W-40<br>• Below 0 °C (32 °F) SAE10W, SAE10W-30 or 15W-40 |
| 5 | Transmission case | 65.0 L<br>68.7 U.S.qts<br>57.2 Imp.qts | | | | KUBOTA SUPER UDT2 fluid* |
| 6 | Front differential case oil | 7.0 L<br>7.4 U.S.qts<br>6.2 Imp.qts | | 13.0 L<br>13.7 U.S.qts<br>11.4 Imp.qts | | KUBOTA UDT or SUPER UDT2 fluid* or SAE80, SAE90 gear oil |
| | Front axle gear case oil | 3.5 L<br>3.7 U.S.qts<br>3.1 Imp.qts | | 4.5 L<br>4.8 U.S.qts<br>4.0 Imp.qts | | |

■ **NOTE**
- ***KUBOTA original transmission hydraulic fluid.**

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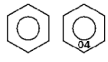
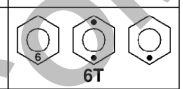


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# 5. TIGHTENING TORQUES

## [1] GENERAL USE SCREWS, BOLTS AND NUTS

**Tighten screws, bolts and nuts whose tightening torques are not specified in this Workshop Manual according to the table below.**

| Indication on top of bolt |  No-grade or 4T | | | | | |  7T | | | | | |  9T | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Indication on top of nut |  No-grade or 4T | | | | | | | | | | | |  6T | | |
| Material of opponent part | Ordinariness | | | Aluminum | | | Ordinariness | | | Aluminum | | | Ordinariness | | |
| Unit | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft |
| M6 | 7.9 to 9.3 | 0.80 to 0.95 | 5.8 to 6.8 | 7.9 to 8.8 | 0.80 to 0.90 | 5.8 to 6.5 | 9.81 to 11.2 | 1.00 to 1.15 | 7.24 to 8.31 | 7.9 to 8.8 | 0.80 to 0.90 | 5.8 to 6.5 | 12.3 to 14.2 | 1.25 to 1.45 | 9.05 to 10.4 |
| M8 | 18 to 20 | 1.8 to 2.1 | 13 to 15 | 17 to 19 | 1.7 to 2.0 | 13 to 14 | 24 to 27 | 2.4 to 2.8 | 18 to 20 | 18 to 20 | 1.8 to 2.1 | 13 to 15 | 30 to 34 | 3.0 to 3.5 | 22 to 25 |
| M10 | 40 to 45 | 4.0 to 4.6 | 29 to 33 | 32 to 34 | 3.2 to 3.5 | 24 to 25 | 48 to 55 | 4.9 to 5.7 | 36 to 41 | 40 to 44 | 4.0 to 4.5 | 29 to 32 | 61 to 70 | 6.2 to 7.2 | 45 to 52 |
| M12 | 63 to 72 | 6.4 to 7.4 | 47 to 53 | – | – | – | 78 to 90 | 7.9 to 9.2 | 58 to 66 | 63 to 72 | 6.4 to 7.4 | 47 to 53 | 103 to 117 | 10.5 to 12.0 | 76.0 to 86.7 |
| M14 | 108 to 125 | 11.0 to 12.8 | 79.6 to 92.5 | – | – | – | 124 to 147 | 12.6 to 15.0 | 91.2 to 108 | – | – | – | 167 to 196 | 17.0 to 20.0 | 123 to 144 |
| M16 | 167 to 191 | 17.0 to 19.5 | 123 to 141 | – | – | – | 197 to 225 | 20.0 to 23.0 | 145 to 166 | – | – | – | 260 to 304 | 26.5 to 31.0 | 192 to 224 |
| M18 | 246 to 284 | 25.0 to 29.0 | 181 to 209 | – | – | – | 275 to 318 | 28.0 to 32.5 | 203 to 235 | – | – | – | 344 to 402 | 35.0 to 41.0 | 254 to 296 |
| M20 | 334 to 392 | 34.0 to 40.0 | 246 to 289 | – | – | – | 368 to 431 | 37.5 to 44.0 | 272 to 318 | – | – | – | 491 to 568 | 50.0 to 58.0 | 362 to 419 |

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## [2] STUD BOLTS

| Material of opponent part | Ordinariness | | | Aluminum | | |
|---|---|---|---|---|---|---|
| Unit | N·m | kgf·m | lbf·ft | N·m | kgf·m | lbf·ft |
| M8 | 12 to 15 | 1.2 to 1.6 | 8.7 to 11 | 8.9 to 11 | 0.90 to 1.2 | 6.5 to 8.6 |
| M10 | 25 to 31 | 2.5 to 3.2 | 18 to 23 | 20 to 25 | 2.0 to 2.6 | 15 to 18 |
| M12 | 30 to 49 | 3.0 to 5.0 | 22 to 36 | 31 | 3.2 | 23 |
| M14 | 62 to 73 | 6.3 to 7.5 | 46 to 54 | – | – | – |
| M16 | 98.1 to 112 | 10.0 to 11.5 | 72.4 to 83.1 | – | – | – |
| M18 | 172 to 201 | 17.5 to 20.5 | 127 to 148 | – | – | – |

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# 6. MAINTENANCE FOR NORTH AMERICA, OCEANIA

| No. | Item | | | Indication on hour meter | | | | | | | | | | | | | Interval | Reference page | Important | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | | | | |
| 1 | Engine start system | | Check | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | every 50 Hr | G-20 | | |
| 2 | Wheel bolt torque | | Check | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | every 50 Hr | G-21 | | |
| 3 | Tie-rod dust cover | | Check | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | every 50 Hr | G-22 | | |
| 4 | Battery condition | | Check | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | G-29 | *4 | |
| 5 | Greasing | | | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | G-23 | | |
| 6 | Fan belt [M100GX, M110GX] | | Adjust | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | G-26 | | |
| 7 | Brake pedal | | Adjust | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | G-28 | | |
| 8 | Parking brake lever | | Adjust | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | G-29 | | |
| 9 | Air cleaner element | Primary element | Clean | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | G-25 | *1 | |
| | | | Replace | | | | | | | | | | | | | | | every 1 year | G-47 | *2 | |
| | | Secondary element | Replace | | | | | | | | | | | | | | | every 1 year | G-47 | | |
| 10 | Fuel line | | Check | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | | ☆ | every 100 Hr | G-27 | | |
| | | | Replace | | | | | | | | | | | | | | | every 2 years | G-51 | | |
| 11 | Toe-in | | Adjust | | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | G-34 | | |
| 12 | Fuel tank water | | Drain | | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | G-35 | | |
| 13 | Oil cooler line | | Check | | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | G-33 | | |
| | | | Replace | | | | | | | | | | | | | | | every 2 years | G-51 | | |
| 14 | Power steering oil line | | Check | | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | G-34 | | |
| | | | Replace | | | | | | | | | | | | | | | every 2 years | G-51 | | |
| 15 | Radiator hose and clamp | | Check | | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | G-32 | | |
| | | | Replace | | | | | | | | | | | | | | | every 2 years | G-51 | | |
| 16 | Intake air line | | Check | | | | ☆ | | | | ☆ | | | | ☆ | | | every 200 Hr | G-33 | *3 | |
| | | | Replace | | | | | | | | | | | | | | | every 2 years | G-51 | | |
| 17 | Hydraulic oil filter | | Replace | ★ | | | | | ☆ | | | | | | ☆ | | | every 300 Hr | G-17 | | |
| 18 | Engine oil | | Change | ★ | | | | | | | ☆ | | | | | | | every 400 Hr | G-18 | | |
| 19 | Engine oil filter | | Replace | ★ | | | | | | | ☆ | | | | | | | every 400 Hr | G-18 | | |
| 20 | Water separator | | Clean | | | | | | | | ☆ | | | | | | | every 400 Hr | G-40 | | |
| 21 | Pre-filter [M126GX, M135GX] | | Clean | | | | | | | | ☆ | | | | | | | every 400 Hr | G-39 | | |
| 22 | Fuel filter [M100GX, M110GX] | | Replace | | | | | | | | ☆ | | | | | | | every 400 Hr | G-40 | | |
| 23 | Fan / Air-conditioner belt [M126GX, M135GX] | | Adjust | ★ | | | | | | | ☆ | | | | | | | every 400 Hr | G-37 | | |



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# 7. CHECK AND MAINTENANCE FOR NORTH AMERICA, OCEANIA

**CAUTION**

**Take the following precautions when checking the tractor.**

- **Park the machine on firm and level ground.**
- **Set the parking brake.**
- **Lower the implement to the ground.**
- **All residual pressure of the hydraulic system released.**
- **Stop the engine and remove the key.**
- **Lower the front suspension to the lowest position. [Front suspension type]**

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## [1] DAILY CHECK

To prevent trouble from occurring, it is important to know the condition of the tractor. Check the following items before starting.

**Checking**

- Check areas where previous trouble was experienced.
- Walk around the tractor.

1. Check the tire pressure, and check for wear and damage.
2. Check for oil and water leak.
3. Check the engine oil level.
4. Check the transmission fluid level.
5. Check the coolant level.
6. Check the washer liquid level.
7. Check the water separator.
8. Check air cleaner evacuator valve (when used in a dusty place).
9. Check the condition of seat belt.
10. Check and clean the radiator screen, grill intercooler and oil cooler.
11. Check and clean the air conditioner condenser screen.
12. Check the nuts of the tires are tight.
13. Check the number plate or SMV emblem for damage and replace as necessary if equipped.
14. Care of danger, warning and caution labels.
15. Clean around the exhaust manifold and the muffler of the engine.
16. Checking and refueling.
17. Checking DPF muffler.

- While sitting in the operator's seat.

1. Check the throttle pedal, brake pedals and clutch pedal.
2. Check the throttle lever and shuttle lever.
3. Check the parking brake.
4. Check the steering wheel.
5. Check the seat belt.

- Turning the key switch.

1. Check the performance of the Easy Checker™ lights.
2. Check head lights, turn signal lights, hazard lights and other light equipment. Clean if necessary.
3. Check the performance of the meters and gauges.

- Starting the engine.

1. Check to see that the lights on the Easy Checker™ go off.
2. Check the color of the exhaust.
3. Check the brakes for proper operation.

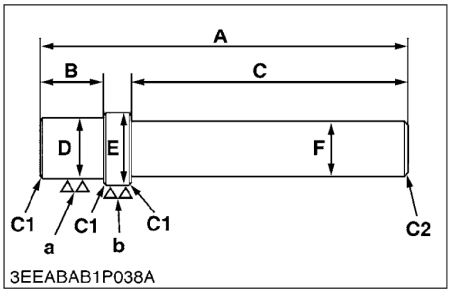
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## (2) For V3800(-CR)-TI



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**Small End Bushing Replacing Tool**

**Application**

- To press out and press fit the bushing.

■ **NOTE**

- **These special tools are not provided, so make it referring to the figure.**

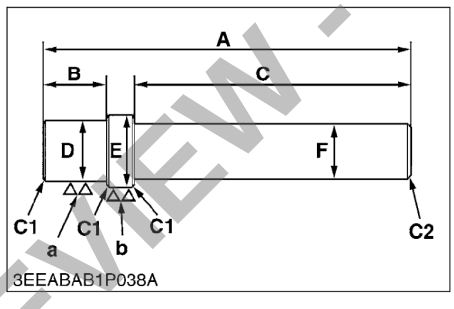
**[Press out]**

| | |
|---|---|
| **A** | 157 mm (6.18 in.) |
| **B** | 14.5 mm (0.571 in.) |
| **C** | 120 mm (4.72 in.) |
| **D** | 30.0 mm dia. (1.18 in. dia.) |
| **E** | 32.95 mm dia. (1.297 in. dia.) |
| **F** | 20 mm dia. (0.79 in. dia.) |
| **a** | 6.3 µm (250 µin.) |
| **b** | 6.3 µm (250 µin.) |
| **C1** | Chamfer 1.0 mm (0.039 in.) |
| **C2** | Chamfer 2.0 mm (0.079 in.) |

**[Press fit]**

| | |
|---|---|
| **A** | 157 mm (6.18 in.) |
| **B** | 14.5 mm (0.571 in.) |
| **C** | 120 mm (4.72 in.) |
| **D** | 30.0 mm dia. (1.18 in. dia.) |
| **E** | 42.000 mm dia. (1.6535 in. dia.) |
| **F** | 20 mm dia. (0.79 in. dia.) |
| **a** | 6.3 µm (250 µin.) |
| **b** | 6.3 µm (250 µin.) |
| **C1** | Chamfer 1.0 mm (0.039 in.) |
| **C2** | Chamfer 2.0 mm (0.079 in.) |

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3EEABAB1P038A

**Idle Gear Bushing Replacing Tool**

**Application**

- To press out and press fit the bushing.

■ **NOTE**

- **This special tool is not provided, so make it referring to the figure.**

| | |
|---|---|
| **A** | 196 mm (7.72 in.) |
| **B** | 37.5 mm (1.48 in.) |
| **C** | 150 mm (5.91 in.) |
| **D** | 44.95 mm dia. (1.770 in. dia.) |
| **E** | 48.075 to 48.100 mm dia. (1.8928 to 1.8937 in. dia.) |
| **F** | 20 mm dia. (0.79 in. dia.) |
| **a** | 6.3 µm (250 µin.) |
| **b** | 6.3 µm (250 µin.) |
| **C1** | Chamfer 1.0 mm (0.039 in.) |
| **C2** | Chamfer 2.0 mm (0.079 in.) |

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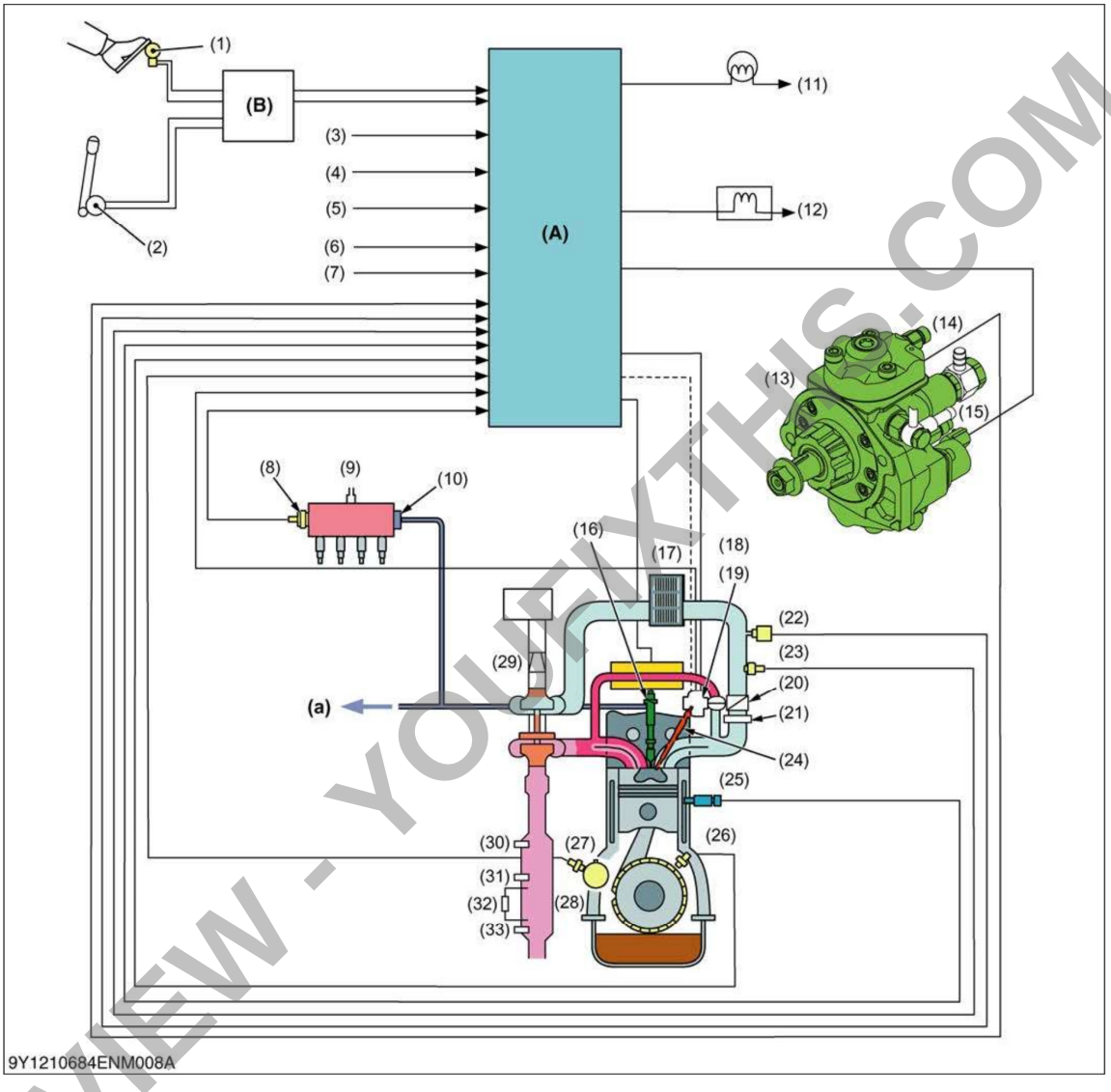
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# [5] ENGINE CONTROL SYSTEM

## (1) Engine Control System Diagram




(1) Foot Throttle Sensor
(2) Hand Throttle Sensor
(3) Key Switch On Signal
(4) Starter Switch Signal
(5) Vehicle Speed Signal
(6) Auto Regeneration Switch Signal
(7) Parked Regeneration Switch Signal
(8) Rail Pressure Sensor
(9) Rail
(10) Pressure Limiter
(11) Indicators
(12) Glow Relay (Heater Relay)
(13) Supply Pump
(14) Fuel Temperature Sensor
(15) Suction Control Valve
(16) Injector
(17) Inter Cooler
(18) EGR DC Motor
(19) EGR Lift Sensor
(20) Intake Throttle Valve
(21) Intake Air Heater (V3800-TIE4)
(22) Boost Sensor
(23) Intake Air Temperature Sensor
(24) Glow Plug (V6108-TIE4)
(25) Coolant Temperature Sensor
(26) Crankshaft Position Sensor
(27) Camshaft Position Sensor
(28) Diesel Particulate Filter
(29) Air Flow Sensor
(30) Temperature Sensor (DOC Inlet Exhaust Temperature) (T0)
(31) Temperature Sensor (DPF Inlet Exhaust Temperature) (T1)
(32) Differential Pressure Sensor (DPF Differential Pressure) (△P)
(22) Temperature Sensor (DPF Outlet Exhaust Temperature) (T2)

**(A) ENGINE ECU**
**(B) MAIN ECU**
**(a) To Fuel Tank**

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# 1. V3800 ENGINE (FOR M100GX, M110GX)

## [1] TROUBLESHOOTING

This troubleshooting shows only mechanical failures. The failures related to the common rail system (CRS), refer to the diagnosis manual (DM) for common rail system engine (9Y120-01920).

| Symptom | Probable Cause | Solution | Reference Page |
|---|---|---|---|
| **The engine does not start** | No fuel | Fill up the fuel | G-9 |
| | Air in the fuel system | Bleed the air (for North America and Oceania) | G-54 |
| | | Bleed the air (for Europe) | G-102 |
| | Water in the fuel system | Drain the water in the fuel system (for North America and Oceania) | G-35 |
| | | Drain the water in the fuel system (for Europe) | G-83 |
| | The fuel pump is damaged | Replace | – |
| | The fuel hose is clogged | Clean or replace (for North America and Oceania) | G-27 |
| | | Clean or replace (for Europe) | G-75 |
| | The fuel filter is clogged | Replace (for North America and Oceania) | G-40 |
| | | Replace (for Europe) | G-89 |
| | The viscosity of fuel at low temperature is too high | Replace the specified fuel | G-9 |
| | The cetane number of fuel is low | Replace the specified fuel | G-9 |
| | Fuel leakage because of loose injection pipe retaining nut | Tighten the retaining nut | 1-S32 |
| | The injector is clogged | Replace | 1-S37 |
| | The supply pump is damaged | Replace | 1-S43 |
| | Seizure of the crankshaft, camshaft, piston or bearing | Repair or replace | – |
| | Compression leakage from the cylinder | Replace the head gasket<br>Tighten the cylinder head screw | 1-S40,<br>1-S41 |
| | Incorrect valve timing | Check the timing gear | 1-S47 |
| | Piston ring and cylinder are worn out | Replace | 1-S53 |
| | Incorrect valve clearance | Adjust valve clearance | 1-S13 |
| **The starter does not operate** | Refer to "8. Electrical System" | – | 8-S1 |



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# [2] SERVICING SPECIFICATIONS

**ENGINE BODY**

| Item | | Factory Specification | Allowable Limit |
|---|---|---|---|
| Cylinder Head Surface | Flatness | – | 0.05 mm<br>0.002 in. |
| Top Clearance | | 0.70 to 0.90 mm<br>0.028 to 0.035 in. | – |
| Compression Pressure | | 3.09 to 3.28 MPa /<br>200 $min^{-1}$ (rpm)<br>31.5 to 33.5 $kgf/cm^2$ /<br>200 $min^{-1}$ (rpm)<br>448 to 476 psi /<br>200 $min^{-1}$ (rpm) | 2.41 MPa /<br>200 $min^{-1}$ (rpm)<br>24.6 $kgf/cm^2$ /<br>200 $min^{-1}$ (rpm)<br>350 psi /<br>200 $min^{-1}$ (rpm) |
| Variance Among Cylinders | | – | 10 % or less |
| Valve Seat | Angle (Intake) | 1.0 rad<br>60° | – |
| | Angle (Exhaust) | 0.79 rad<br>45° | – |
| | Width (Intake) | 1.5 to 1.9 mm<br>0.059 to 0.074 in. | – |
| | Width (Exhaust) | 2.0 to 2.3 mm<br>0.079 to 0.091 in. | – |
| Valve Face | Angle (Intake) | 1.0 rad<br>60° | – |
| | Angle (Exhaust) | 0.79 rad<br>45° | – |
| Valve Recessing | Intake | 0.60 to 0.80 mm<br>0.024 to 0.031 in. | 1.2 mm<br>0.047 in. |
| | Exhaust | 0.850 to 1.05 mm<br>0.0335 to 0.0413 in. | 1.2 mm<br>0.047 in. |
| Valve Stem to Valve Guide | Clearance (Intake) | 0.035 to 0.065 mm<br>0.0014 to 0.0025 in. | 0.1 mm<br>0.004 in. |
| • Valve Stem | O.D. (Intake) | 6.960 to 6.975 mm<br>0.2741 to 0.2746 in. | – |
| • Valve Guide | I.D. (Intake) | 7.010 to 7.025 mm<br>0.2760 to 0.2765 in. | – |
| Valve Stem to Valve Guide | Clearance (Exhaust) | 0.035 to 0.065 mm<br>0.0014 to 0.0025 in. | 0.1 mm<br>0.004 in. |
| • Valve Stem | O.D. (Exhaust) | 6.960 to 6.975 mm<br>0.2741 to 0.2746 in. | – |
| • Valve Guide | I.D. (Exhaust) | 7.010 to 7.025 mm<br>0.2760 to 0.2765 in. | – |
| Valve Clearance (Cold) | | 0.23 to 0.27 mm<br>0.0091 to 0.010 in. | – |

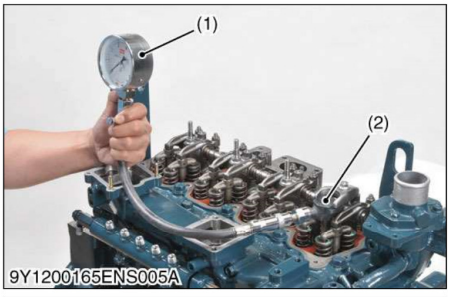


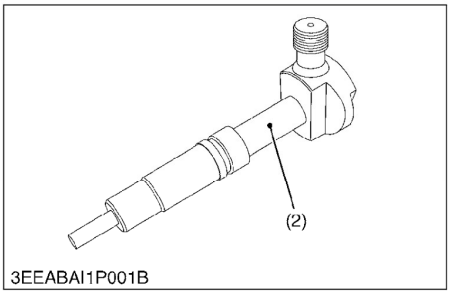
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# [4] CHECKING AND ADJUSTING

## (1) Engine Body




**Compression Pressure**

1. After warming-up the engine, stop the engine.
2. Remove the air cleaner, muffler, throttle valve, intake air heater, EGR valve and EGR cooler pipe.
3. Remove the injection pipe, cylinder head cover, overflow pipe, injectors and gaskets of injector.
4. Remove the common rail and inlet manifold.
5. Set a compression tester (1) (Code No.: 07909-30208) with the adaptor (2) to the injector hole. (See page G-109.)
6. Crank the engine with the starter to operate the engine approx. 200 $min^{-1}$ (rpm).
7. Measure a maximum value of the compression pressure. Do the same steps twice for each cylinder.

■ **NOTE**

- **Check the compression pressure with the specified valve clearance.**
- **Always use a fully charged battery for you do this test.**
- **Variances in cylinder compression values must be less than 10 %.**
- **Replace the injector gaskets to new ones.**

| | | |
|---|---|---|
| Compression pressure | Factory specification | 3.09 to 3.28 MPa / 200 $min^{-1}$ (rpm)<br>31.5 to 33.5 $kgf/cm^2$ / 200 $min^{-1}$ (rpm)<br>448 to 476 psi / 200 $min^{-1}$ (rpm) |
| | Allowable limit | 2.41 MPa / 200 $min^{-1}$ (rpm)<br>24.6 $kgf/cm^2$ / 200 $min^{-1}$ (rpm)<br>350 psi / 200 $min^{-1}$ (rpm) |

| | | |
|---|---|---|
| Tightening torque | Injector clamp nut | 24 to 27 N·m<br>2.4 to 2.8 kgf·m<br>18 to 20 lbf·ft |
| | Overflow pipe joint screw (M6 × 1.0) | 9.81 to 11.2 N·m<br>1.00 to 1.15 kgf·m<br>7.24 to 8.31 lbf·ft |
| | Cylinder head cover 1 screw | 6.87 to 11.2 N·m<br>0.700 to 1.15 kgf·m<br>5.07 to 8.31 lbf·ft |
| | Cylinder head cover 2 screw | 9.81 to 11.2 N·m<br>1.00 to 1.15 kgf·m<br>7.24 to 8.31 lbf·ft |
| | Injection pipe retaining nut | 23 to 36 N·m<br>2.3 to 3.7 kgf·m<br>17 to 26 lbf·ft |

(1) Compression Tester (2) Injector Adaptor

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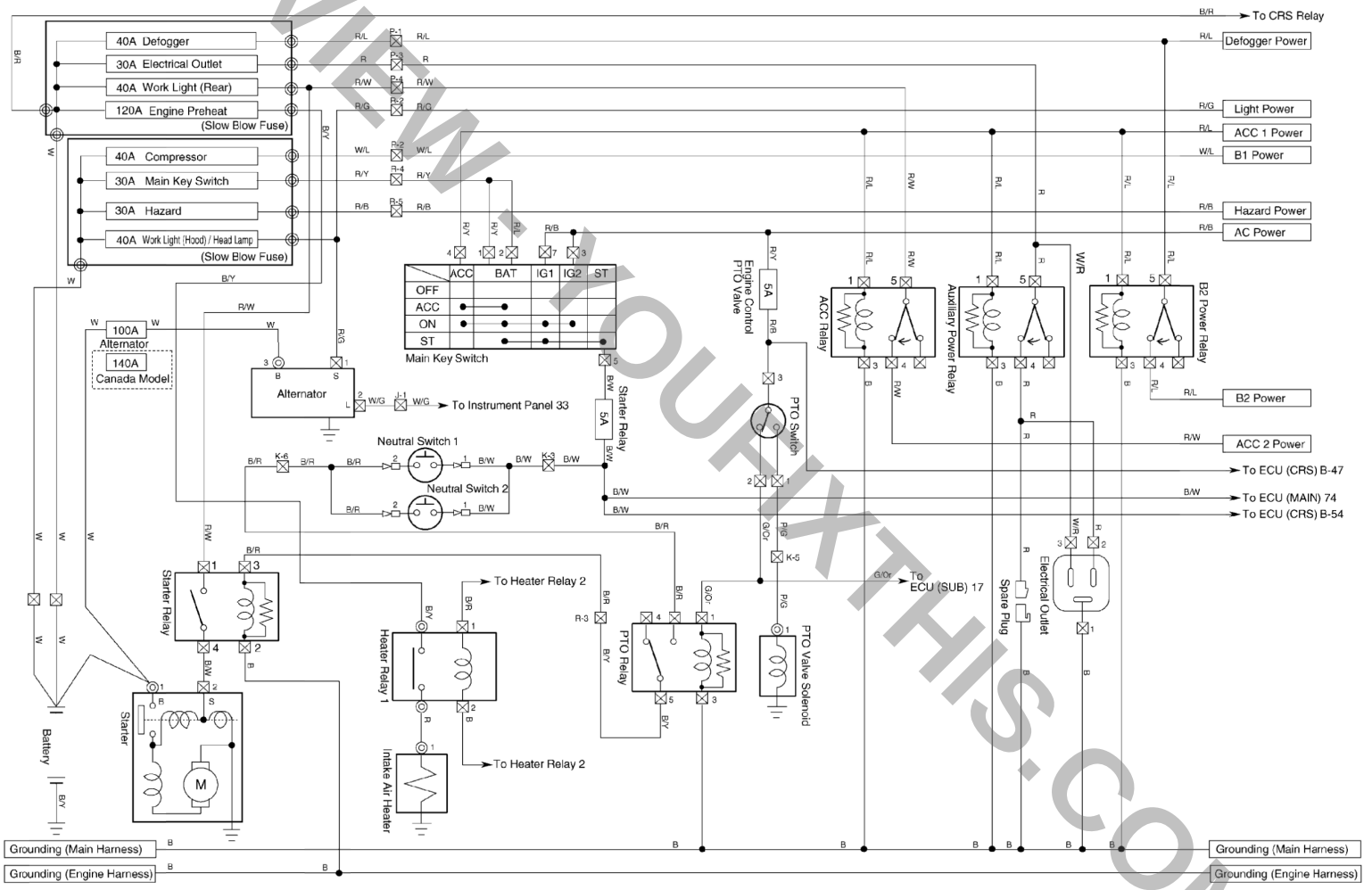
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# 1. ELECTRICAL CIRCUIT

## [1] ENGINE START, CHARGING, ENGINE STOP AND POWER (NORTH AMERICA MODEL M100GX, M110GX)



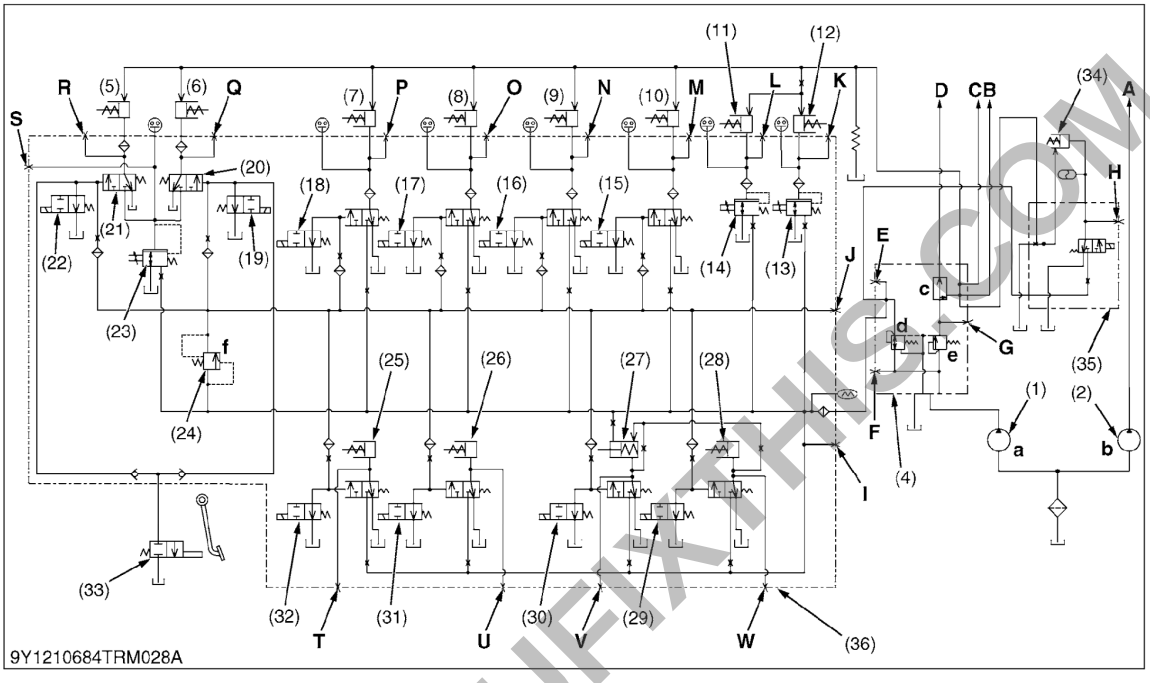





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# [5] HYDRAULIC CONTROL

## (1) Hydraulic Circuit




(1) Hydraulic Pump (for Power Steering / PTO / Power Shift / 4WD / Bi-speed)
(2) Hydraulic Pump (for 3-Point Hitch)
(3) PTO Valve
(4) Regulator Valve
(5) Master Clutch (Forward)
(6) Master Clutch (Reverse)
(7) Main Shift Clutch **1**
(8) Main Shift Clutch **2**
(9) Main Shift Clutch **3**
(10) Main Shift Clutch **4**
(11) Main Shift Clutch **L**
(12) Main Shift Clutch **H**
(13) Solenoid Proportional Pressure Reducing Valve (Main Shift **H**)
(14) Solenoid Proportional Pressure Reducing Valve (Main Shift **L**)
(15) Solenoid Valve
(16) Solenoid Valve
(17) Solenoid Valve
(18) Solenoid Valve
(19) Solenoid Valve
(20) Main Spool
(21) Main Spool
(22) Solenoid Valve
(23) Solenoid Proportional Pressure Reducing Valve (Master)
(24) Pressure Reducing Valve
(25) Hydraulic Clutch (Front Differential Lock)
(26) Hydraulic Clutch (Rear Differential Lock)
(27) Hydraulic Clutch (4WD)
(28) Hydraulic Clutch (Bi-speed)
(29) Solenoid Valve
(30) Solenoid Valve
(31) Solenoid Valve
(32) Solenoid Valve
(33) Clutch Safety Valve
(34) PTO Clutch
(35) PTO Valve
(36) Power Shift Valve Assembly

**a: (M100GX, M110GX 23.4 cc/rev.) (M126GX, M128GX, M135GX: 27.5 cc/rev.)**
**b: (M100GX, M110GX: 27.5 cc/rev.) (M126GX, M128GX, M135GX: 32.8 cc/rev.)**
**c: (20 L/min, 5.3 u.s. gal/min, 4.4 imp. gal/min)**
**d: (2.16 MPa, 22.0 kgf/cm$^2$, 313 psi)**
**e: (2.79 MPa, 28.4 kgf/cm$^2$, 405 psi)**
**f: (0.78 MPa, 8 kgf/cm$^2$, 113.8 psi)**
**A: To 3-Point Hitch**
**B: To Brake Master Cylinder**
**C: To Power Steering Controller**
**D: To Power Steering Controller**
**E to W: Check Port (Front Suspension Type: E Port is used for Front Suspension Hose)**

**(To be continued)**

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## Diagnostic Trouble Code

| Display | Item | Detection timing | Condition | Probable cause | Fail safe control or symptom caused by error |
|---|---|---|---|---|---|
| E-H02 | Lift Arm Sensor | At any time | Sensor Output Voltage: below 0.2 V or more than 4.9 V | Wiring for sensor is disconnected or short-circuited | It is not possible to control the 3P. (3P remote switch is active.) |
| E-H04 | Hydraulic Control Lever Sensor | At any time | Sensor Output Voltage: below 0.2 V or more than 4.9 V | Wiring for sensor is disconnected or short-circuited | It is not possible to control the 3P. (3P remote switch is active.) |
| E-H07 | Lift Arm Top Limit Adjustment Dial | At any time | Sensor Output Voltage: below 0.2 V or more than 4.9 V | Wiring for dial is disconnected or short-circuited | It is not possible to control the 3P. (3P remote switch is active.) |
| E-H08 | Draft Sensor | When using draft mode | Sensor Output Voltage: below 0.2 V or more than 4.9 V | Wiring for sensor is disconnected or short-circuited | It is not possible to control the 3P in draft mode. (3P remote switch is active.) |
| E-R11 | Foot Throttle Sensor | At any time | Sensor Output Voltage: below 0.2 V or more than 4.9 V | Wiring for sensor is disconnected or short-circuited | Foot throttle is not active. |
| E-R13 | Hand Throttle Lever Sensor | At any time | Sensor Output Voltage: below 0.2 V or more than 4.9 V | Wiring for sensor is disconnected or short-circuited | Hand throttle lever is not active. |
| E-H14 | Draft Ratio Adjustment Dial | When using draft mode | Sensor Output Voltage: below 0.2 V or more than 4.9 V | Wiring for dial is disconnected or short-circuited | It is not possible to control the 3P in draft mode. (3P remote switch is active.) |
| E-H15 | 3-point Hitch Lowering Speed Adjustment Dial | At any time | Sensor Output Voltage: below 0.2 V or more than 4.9 V | Wiring for dial is disconnected or short-circuited | It is not possible to control the 3P. (3P remote switch is active.) |
| E-R16 | Rev-limiter Control Dial | At any time | Sensor Output Voltage: below 0.2 V or more than 4.9 V | Wiring for dial is disconnected or short-circuited | engine speed is at idling. |
| E-R20 | Clutch Pedal Sensor | At any time | Sensor Output Voltage: below 0.2 V or more than 4.9 V | Wiring for sensor is disconnected or short-circuited | It is not possible to travel (after the range shift lever is at "N" for a 1.5 seconds, it is possible to travel at L1 to L8 speed.) |
| E-R23 | T/M Oil Temperature Sensor | At any time | Sensor Output Voltage: below 0.2 V or more than 4.9 V | Wiring for sensor is disconnected or short-circuited | – |
| E-H24 | 3-point Hitch Solenoid | When lifting or lowering 3P | Output voltage to solenoid or Current to ECU (MAIN) is abnormal. | Wiring for solenoid is disconnected or short-circuited | It is not possible to lift or lower the 3P. (3P remote switch is also not active.) |
| E-R28 | Bi-speed Solenoid | At any time | Output Voltage to Solenoid is abnormal. | Wiring for solenoid is disconnected or short-circuited | Disconnection: Bi-speed is not active.<br>Short-circuited: Always bi-speed turn "ON". |
| E-R29 | 4WD Solenoid | At any time | Output Voltage to Solenoid is abnormal. | Wiring for solenoid is disconnected or short-circuited | Disconnection: 4WD is not active.<br>Short-circuited: Always 4WD turn "ON". |
| E-H30 | Unload Solenoid | At any time | Output Voltage to Solenoid is abnormal. | Wiring for solenoid is disconnected or short-circuited | Disconnection: Unload is not active.<br>Short-circuited: 3P lifting is not active or |
| E-R31 | Solenoid (Main Shift 1) | When traveling at 1st or 5th speed | Output Voltage to Solenoid is abnormal. | Wiring for solenoid is disconnected or short-circuited | It is not possible to travel at 1st or 5th speed. |
| E-R32 | Solenoid (Main Shift 2) | When traveling at 2nd or 6th speed | Output Voltage to Solenoid is abnormal. | Wiring for solenoid is disconnected or short-circuited | It is not possible to travel at 2nd or 6th speed. |
| E-R33 | Solenoid (Main Shift 3) | When traveling at 3rd or 7th speed | Output Voltage to Solenoid is abnormal. | Wiring for solenoid is disconnected or short-circuited | It is not possible to travel at 3rd or 7th speed. |
| E-R34 | Solenoid (Main Shift 4) | When traveling at 4th or 8th speed | Output Voltage to Solenoid is abnormal. | Wiring for solenoid is disconnected or short-circuited | It is not possible to travel at 4th or 8th speed. |

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# [4] ECU, INSTRUMENT PANEL AND SIDE DIGITAL DISPLAY

## (1) Main ECU

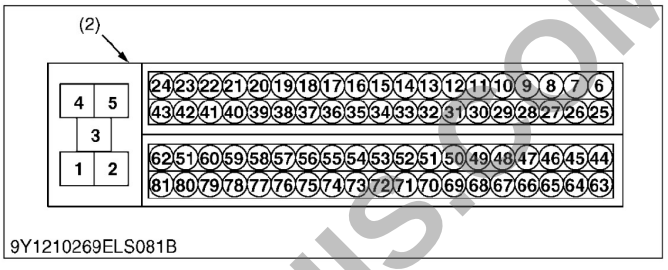
■ **IMPORTANT**

- **When replacing the main ECU, be sure to do the calibration and setting. (See page 8-S34 and 8-S59.)**

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**Arrangement of Main ECU Connector Pin**




(1) Main ECU (2) Connector (ECU Side)

**(To be continued)**

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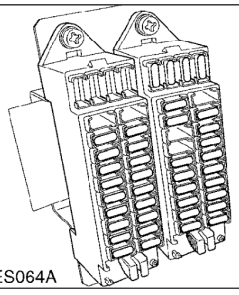
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**(Continued)**



9Y1210684GES064A

| (1) | (2) | (3) | (4) | (25) | (26) | (27) | (28) |
|---|---|---|---|---|---|---|---|
| (5) | | (15) | | (29) | | (39) | |
| (6) | | (16) | | (30) | | (40) | |
| (7) | | (17) | | (31) | | (41) | |
| (8) | | (18) | | (32) | | (42) | |
| (9) | | (19) | | (33) | | (43) | |
| (10) | | (20) | | (34) | | (44) | |
| (11) | | (21) | | (35) | | (45) | |
| (12) | | (22) | | (36) | | (46) | |
| (13) | | (23) | | (37) | | (47) | |
| (14) | | (24) | | (38) | | (48) | |

9Y1210684GES065A

| Fuse No. | Capacity (A) | Protected Circuit |
|---|---|---|
| (1) | – | – |
| (2) | – | – |
| (3) | – | – |
| (4) | – | – |
| (5) | – | – |
| (6) | 10 | ECU (Suspension, if equipped) |
| (7) | 5 | ECU (SW) |
| (8) | 20 | Defogger (Side) |
| (9) | 20 | Defogger (Rear) |
| (10) | 10 | Brake Lamp |
| (11) | 5 | Radio |
| (12) | 5 | Air Conditioner (Fan Control) |
| (13) | 15 | Wiper |
| (14) | 5 | Starter Relay |
| (15) | – | – |
| (16) | 5 | Switch (Transmission Control) |
| (17) | 5 | Switch (Hitch Control) |
| (18) | 10 | ECU (Main) |
| (19) | 5 | Main Meter |
| (20) | 5 | 4WD, Bi-speed. Differential Lock |
| (21) | 5 | Engine Control, PTO Valve |
| (22) | 10 | Turn Signal |
| (23) | 15 | Loader Power Auxiliary Socket |
| (24) | 5 | LCD Monitor |
| (25) | 5 | Spare |
| (26) | 10 | Spare |
| (27) | 15 | Spare |
| (28) | 20 | Spare |
| (29) | 15 | Work Light (Cabin Side) |
| (30) | 15 | Work Light (Front Upper) |
| (31) | – | – |
| (32) | – | – |
| (33) | 10 | Option Lamp |
| (34) | 15 | Work Light (Rear) |

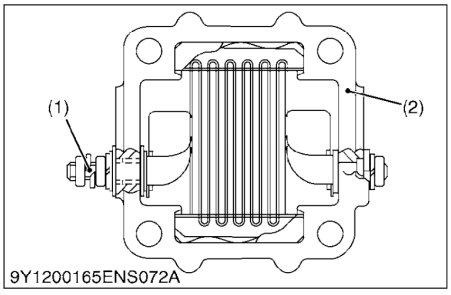
**(To be continued)**

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## (4) Electrical System




**Intake Air Heater**

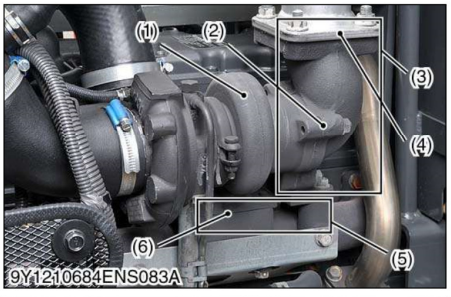
1. Disconnect the leads from the intake air heater.
2. Measure the resistance between the positive terminal (1) and the air heater body (2).
3. If the resistance value is at 0 Ω (ground short), replace the intake air heater. If the resistance value is infinity, the heat coil is disconnected. Replace the intake air heater.

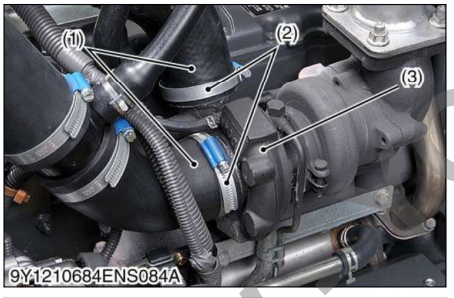
| | | |
|---|---|---|
| Resistance of the heater coil | 12 V Specification | Approx. 0.3 Ω (Approx. 42 A: at 25 °C) |

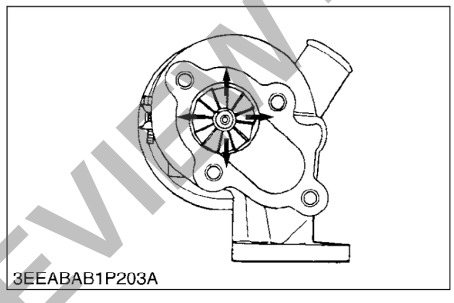
(1) Positive Terminal (2) Intake Air Heater Body

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## (5) Turbocharger




**Exhaust Gas Leakage of Turbine Side**

1. Check the exhaust port (3) and the inlet port (5) side of the turbine housing (1) for exhaust gas leakage.
2. If you find a gas leakage, tighten the screws and nuts again or replace the gasket (2) / (4) / (6) with a new one.

(1) Turbine Housing (4) Gasket
(2) Gasket (5) Inlet Port
(3) Exhaust Port (6) Gasket

9Y1210684ENS0044US0

**Air Leakage of Compressor Side**

1. Check the inlet hose (1) of the compressor cover (3) for air leakage.
2. Check the suction side of the inlet hose for loose connections or cracks.
3. If you find an air leakage, change the clamps (2) and / or the inlet hose.

(1) Inlet Hose (3) Compressor Cover
(2) Clamp

9Y1210684ENS0045US0

**Radial Clearance**

1. If the wheel touches the housing, replace the turbocharger assembly with a new one.

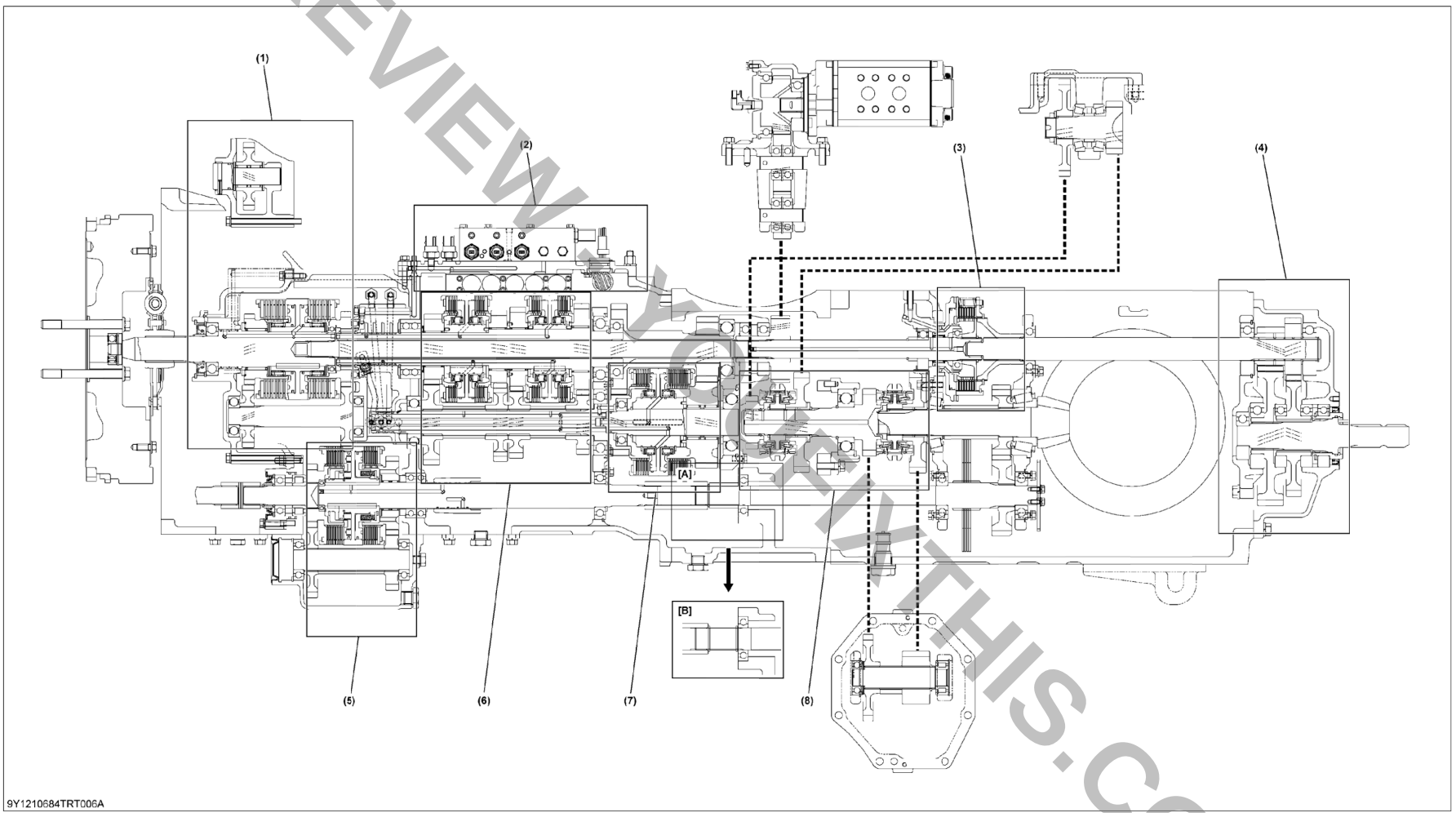
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## [2] M126GX, M135GX (NORTH AMERICA MODEL)

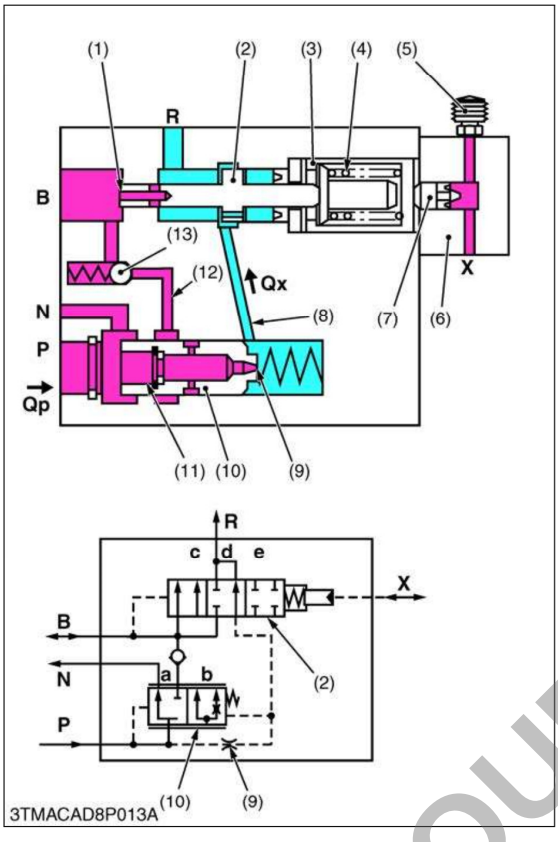



(1) Master Clutch Section
(2) Power Shift Valve Section
(3) PTO Clutch Section
(4) PTO Speed Change Section
(5) 4WD / Bi-Speed Section
(6) Main Shift (1-4) Section
(7) Main Shift (L-H) Section
(8) Range Shift (L-M-H) Section

**[A] Old Type**
**[B] New Type**



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## Partial Braking of Trailer Brake

The trailer braking pressure **Pb** (acting on surface (1) of control spool (2)) is in equilibrium with the tractor braking pressure **Px** (acting on piston (7)).

The brake line **B** remains separated from the reservoir and the oil in the trailer brake is thus enclosed.

Control spool (2) is shifted to the right after the pressures have equalized and opens bore (8) to the reservoir through port **R**. Control spool (2) is in position **d**. Flow control valve (10) is thus switched into position **a** and has no regulating function.

As in the case of the released trailer brake, the delivery flow **Qp** from the pump passes through port **N** and flows as **Qp** - **Qx** to the tractor hydraulic system. A control flow **Qx** passes to the reservoir through control spool (2).

(1) Piston Surface
(2) Control Spool
(3) Pressure Relief Element
(4) Spring
(5) Bleed Valve
(6) Control Head
(7) Piston
(8) Bore
(9) Throttle
(10) Flow Control Valve
(11) Restrictor
(12) Bore
(13) Check Valve

**P: Port for 3P Hydraulic Pump**
**N: Port for 3P Control Valve**
**B: Port for Trailer Brake**
**R: Port for Reservoir (Transmission Case)**
**X: Port for Tractor Service Brake**
**Qp: Delivery Flow**
**Qx: Control Flow**

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# MECHANISM

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| Display | Item | Detection timing | Condition | Probable cause | Fail safe control or symptom caused by error |
|---|---|---|---|---|---|
| E-R35 | Solenoid Proportional Pressure Reducing Valve (Main Shift L) | When traveling at 1st to 4th speed | Output voltage to solenoid or Current to ECU (MAIN) is abnormal. | Wiring for solenoid is disconnected or short-circuited | It is not possible to travel at 1st to 4th speed. |
| E-R36 | Solenoid Proportional Pressure Reducing Valve (Main Shift H) | When traveling at 5st to 8th speed | Output voltage to solenoid or Current to ECU (MAIN) is abnormal. | Wiring for solenoid is disconnected or short-circuited | It is not possible to travel at 5th to 8th speed. |
| E-R37 | Solenoid Proportional Pressure Reducing Valve (Master Clutch) | Travel at any speed | Output voltage to solenoid or Current to ECU (MAIN) is abnormal. | Wiring for solenoid is disconnected or short-circuited | It is not possible to travel at any speed. |
| E-R38 | Pressure Switch OFF (Main Shift 1) | When traveling at 1st or 5th speed | Pressure Switch can not be turned on when needed. | Switch Failure or the problem occurs in hydraulic circuit. Wiring for solenoid is disconnected or short-circuited. | It is not possible to travel at 1st or 5th speed. |
| E-R39 | Pressure Switch OFF (Main Shift 2) | When traveling at 2nd or 6th speed | Pressure Switch can not be turned on when needed. | Switch Failure or the problem occurs in hydraulic circuit. Wiring for solenoid is disconnected or short-circuited. | It is not possible to travel at 2nd or 6th speed. |
| E-R40 | Pressure Switch OFF (Main Shift 3) | When traveling at 3rd or 7th speed | Pressure Switch can not be turned on when needed. | Switch Failure or the problem occurs in hydraulic circuit. Wiring for solenoid is disconnected or short-circuited. | It is not possible to travel at 3rd or 7th speed. |
| E-R41 | Pressure Switch OFF (Main Shift 4) | When traveling at 4th or 8th speed | Pressure Switch can not be turned on when needed. | Switch Failure or the problem occurs in hydraulic circuit. Wiring for solenoid is disconnected or short-circuited. | It is not possible to travel at 4th or 8th speed. |
| E-R42 | Pressure Switch OFF (Main Shift L) | When traveling at 1st to 4th speed | Pressure Switch can not be turned on when needed. | Switch Failure or the problem occurs in hydraulic circuit. Wiring for solenoid is disconnected or short-circuited. | It is not possible to travel at 1st to 4th speed. |
| E-R43 | Pressure Switch OFF (Main Shift H) | When traveling at 5st to 8th speed | Pressure Switch can not be turned on when needed. | Switch Failure or the problem occurs in hydraulic circuit. Wiring for solenoid is disconnected or short-circuited. | It is not possible to travel at 5th to 8th speed. |
| E-R44 | Pressure Switch OFF (Master Clutch) | When traveling at any speed | Pressure Switch can not be turned on when needed. | Switch Failure or the problem occurs in hydraulic circuit. Wiring for solenoid is disconnected or short-circuited. | It is not possible to travel at any speed. |
| E-R45 | Pressure Switch ON (Main Shift 1) | When shifting to L, M, or H range from Neutral. | Pressure Switch is always turned on. | Switch Failure or the problem occurs in hydraulic circuit. Wiring for solenoid is disconnected or short-circuited. | Travel speed is fixed to 1st. |
| E-R46 | Pressure Switch ON (Main Shift 2) | When shifting to L, M, or H range from Neutral. | Pressure Switch is always turned on. | Switch Failure or the problem occurs in hydraulic circuit. Wiring for solenoid is disconnected or short-circuited. | Travel speed is fixed to 2nd. |
| E-R47 | Pressure Switch ON (Main Shift 3) | When shifting to L, M, or H range from Neutral. | Pressure Switch is always turned on. | Switch Failure or the problem occurs in hydraulic circuit. Wiring for solenoid is disconnected or short-circuited. | Travel speed is fixed to 3rd. |
| E-R48 | Pressure Switch ON (Main Shift 4) | When shifting to L, M, or H range from Neutral. | Pressure Switch is always turned on. | Switch Failure or the problem occurs in hydraulic circuit. Wiring for solenoid is disconnected or short-circuited. | Travel speed is fixed to 4th. |

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# [10] 3 POINT HITCH SYSTEM

## (1) Hydraulic Control Lever Sensor

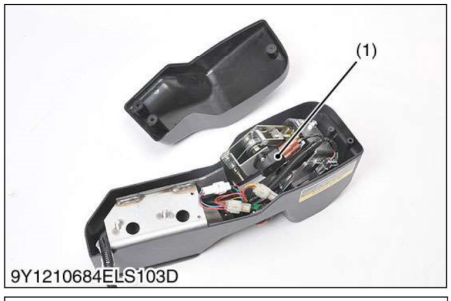
■ **IMPORTANT**

- **When replacing or removing the sensor, be sure to do the calibration. (See page 8-S59.)**

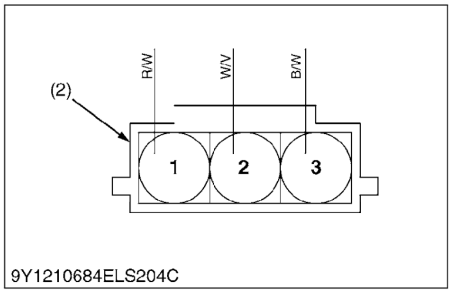
■ **NOTE**

- **Firstly check the connector voltage, secondly check the other wires continuity, then finally check the sensor resistance.**

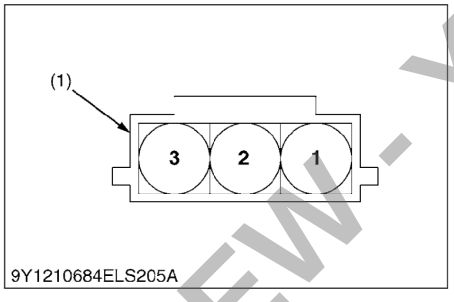
9Y1210684ELS0332US0



9Y1210684ELS103D



9Y1210684ELS204C



9Y1210684ELS205A

### Connector Voltage

1. Disconnect the connector, and turn the main key switch **"ON"** position.
2. Measure the voltage with a voltmeter across the terminals shown in the table below.
3. If the reference value is not indicated as shown in the table below, check the relating electric circuit.

| | | | |
|---|---|---|---|
| Voltage | Main switch at **"ON"** | Terminal **1** – chassis | Approx. 5 V |

(1) Hydraulic Control Lever Sensor (2) Connector (Harness Side)

9Y1210684ELS0243US0

### Sensor Resistance

1. Measure the resistance with an ohmmeter across the terminals shown in the table below.
2. If the reference value is not indicated, the hydraulic control lever sensor is damaged.

**(Reference)**

- The change of resistance can be checked easily when an analog tester is employed.

| | | |
|---|---|---|
| Resistance | Terminal **1** – **3** | Approx. 2 kΩ |

| | | | |
|---|---|---|---|
| Resistance | Slowly turning the sensor shaft | Terminal **1** – **2** | 0 to 2 kΩ |

(1) Connector (Sensor Side)

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