RECORD OF REVISIONS

For pdf, use search function {search word} to find all the revised locations.

Last digit of the code No.	Month of Revision	Main revised point and corrective measures {search word}	Reference page
1	2020.08	Additional information Tightening torques for the rocker arm bracket mounting screw and nut were changed.	4-57 4-93
		Adding information how to handling DEF/AdBlue®	3-3
		Adding information about outline of the SCR system	4-41
		Change the information about the DEF/AdBlue® fluid level warning indicator criteria. • Before: 15% • Now: 40%	4-39 11-88 4-44
		Adding information about DEF header unit replacing tool	2-41
		Adding information about how to replace engine parts.	4-130
		Change and adding some maintenance items about DEF/AdBlue®	3-9 3-13 3-59 3-60
2	2020.09	Changing oil specification	3-1

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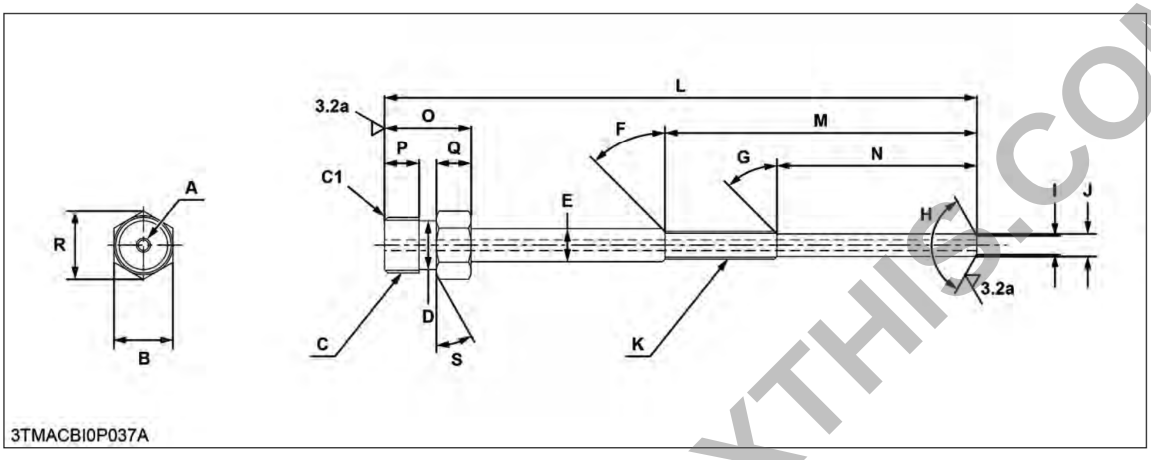
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2.8 Compression tester adapter (Glow plug adapter)

Use to check compression pressure through glow plug hole.

■ **NOTE**

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



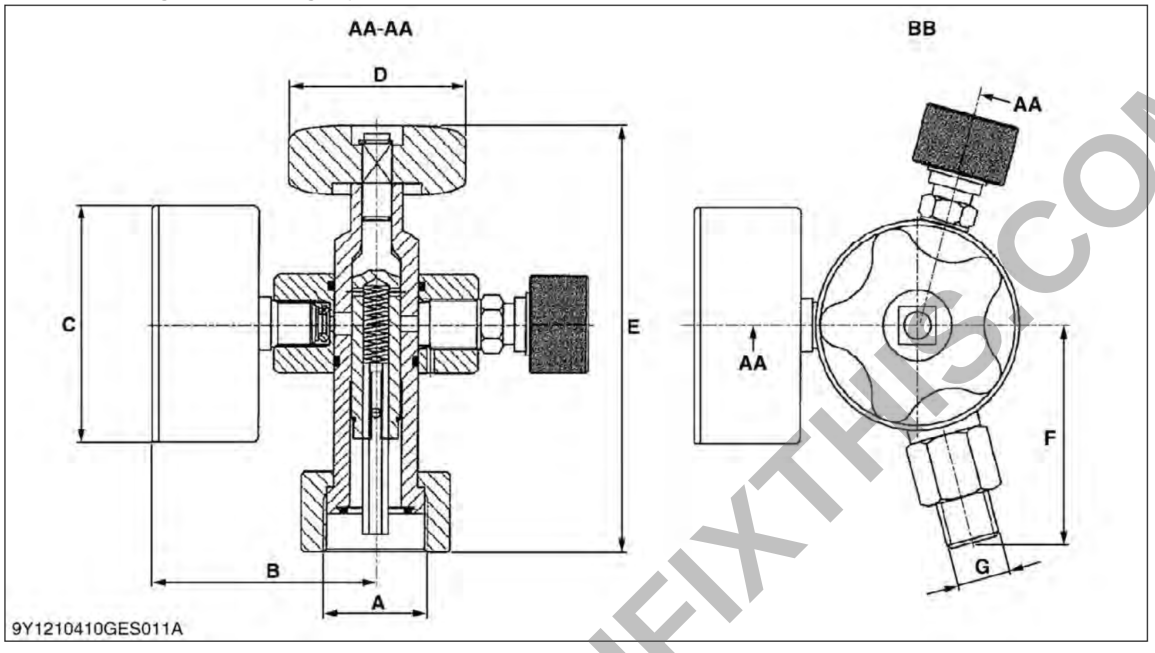
A	3.00 mm dia. (0.118 in. dia.) through hole
B	17.0 mm (0.669 in.)
C	M16 × 1.5
D	14.0 mm dia. (0.551 in. dia.)
E	9.50 mm dia. (0.374 in. dia.)
F	0.785 rad (45.0°)
G	0.785 rad (45.0°)
H	2.12 to 2.18 rad (121 to 125°)
I	4.90 to 5.50 mm dia. (0.193 to 0.216 in. dia.)
J	6.30 to 6.50 mm dia. (0.248 to 0.255 in. dia.)
K	M8 × 1.0
L	171 mm (6.73 in.)
M	90.0 mm (3.54 in.)
N	57.60 to 58.00 mm (2.268 to 2.283 in.)
O	25.0 mm (0.984 in.)
P	10.0 mm (0.394 in.)
Q	10.0 mm (0.394 in.)
R	19.63 mm (0.7728 in.)
S	0.52 rad (30°)
C1	Chamfer 1.00 mm (0.0394 in.)

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8.1.1 Pressure reducer

Use for checking accumulator gas pressure.



A	M28 × P1.5
B	60 mm (2.4 in.)
C	63 mm dia. (2.5 in. dia.)
D	47 mm dia. (1.8 in. dia.)
E	110 mm (4.33 in.)
F	56 mm (2.2 in.)
G	M14 × P1.5

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Tightening torque	Front suspension hose mounting nut 1	45.0 to 65.0 N·m 4.59 to 6.62 kgf·m 33.2 to 47.9 lbf·ft
	Front suspension hose mounting nut 2	70.0 to 77.0 N·m 7.14 to 7.85 kgf·m 51.7 to 56.7 lbf·ft
	Front suspension hose mounting nut 3	49.0 to 68.6 N·m 5.00 to 6.99 kgf·m 36.2 to 50.5 lbf·ft

20.10 Replacing brake hose

See the related pages.

— RELATED PAGE —

4.2.1.3.2 Removing brake pipe on page 4-72

20.11 Replacing air conditioner hose

- See the related tasks.

— RELATED PAGE —

7.4.3 Removing air conditioner pipes on page 12-77

21. Service as required

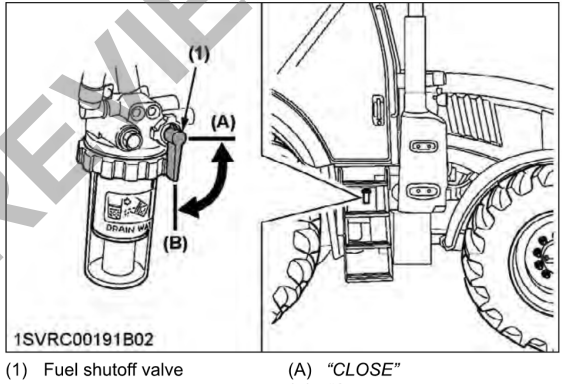
21.1 Bleeding fuel system

Air must be removed:

- When the fuel filter or lines are removed.
- When water is drained from water separator.
- When tank is completely empty.
- After the tractor has not been used for a long period of time.

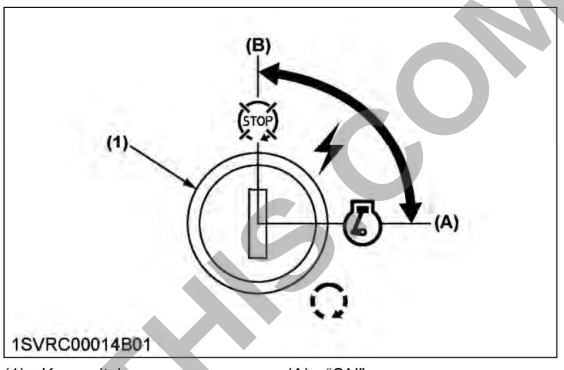
Bleeding procedure is as follows:

1. Fill the fuel tank with fuel, and open the fuel shutoff valve.



(1) Fuel shutoff valve
(A) *"CLOSE"*
(B) *"OPEN"*

2. Turn *"ON"* and *"OFF"* the key switch repeatedly 10 times or so at the following intervals. This lets the air out of the fuel line.
   a. Key switch *"ON"* time: 30 seconds
   b. Key switch *"OFF"* time: 15 seconds



(1) Key switch
(A) *"ON"*
(B) *"OFF"*

3. Set both the hand and the foot throttles to the minimum speed position, turn the key switch to start the engine and then reset the throttle at the mid speed (around 1500 rpm) position.
   If engine doesn't start, try it several times at 30 second intervals.

■ IMPORTANT

- **Do not hold key switch at engine start position for more than 10 seconds continuously. If more engine cranking is needed, try again after 30 seconds.**

4. Accelerate the engine to remove the small portion of air left in the fuel system.
5. If air still remains and the engine stops, repeat the previous steps.

21.2 Bleeding brake system

- See the related page.

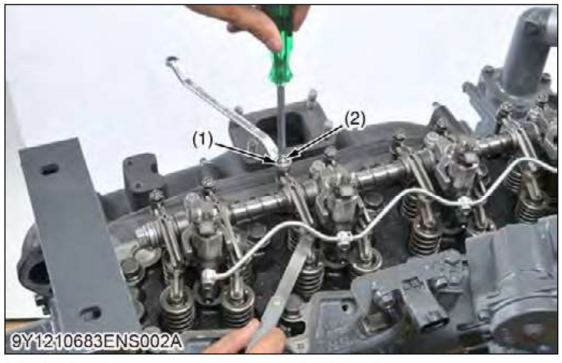
— RELATED PAGE —

4.1.9 Bleeding brake system on page 7-21

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3. Loosen the lock nut of adjusting screw (push rod side) and insert the thickness gauge between the rocker arm and the bridge head.



(1) Lock nut (2) Adjusting screw

4. Set the adjusting screw to the specified value, then tighten the lock nut.

Valve clearance	Service specification	0.15 to 0.19 mm 0.0059 to 0.0074 in.

Adjustable cylinder location of piston		Valve arrangement	
		Intake	Exhaust
When No.1 piston is at compression top dead center.	1st	☆	☆
	2nd	☆	
	3rd		☆
	4th		
When No.1 piston is at overlap position.	1st		
	2nd		☆
	3rd	☆	
	4th	☆	☆

■ NOTE

- **After adjusting, tighten the lock nut (2) securely.**

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

4.1.2 Lubricating system

4.1.2.1 Checking engine oil pressure

1. Remove the oil switch and set a pressure tester (Code No. 07916-32032).



2. Start the engine. After warming up, measure the oil pressure of both idling and rated speeds.
3. If the oil pressure is less than the service limit, check the following.
   - Engine oil level insufficient
   - Oil pump damaged
   - Oil strainer clogged
   - Oil filter cartridge clogged
   - Oil gallery clogged
   - Excessive oil clearance
   - Foreign matter in the relief valve

Engine oil pressure	At idle speed	Service limit	50 kPa 0.5 kgf/cm^2 7 psi
	At rated speed	Service specification	200 to 390 kPa 2.0 to 4.0 kgf/cm^2 29 to 56 psi
		Service limit	150 kPa 1.5 kgf/cm^2 21 psi

(When reassembling)

- After checking the engine oil pressure, tighten the oil switch tapper screw to the specified torque.

Tightening torque	Oil switch taper screw	15 to 19 N·m 1.5 to 2.0 kgf·m 11 to 14 lbf·ft

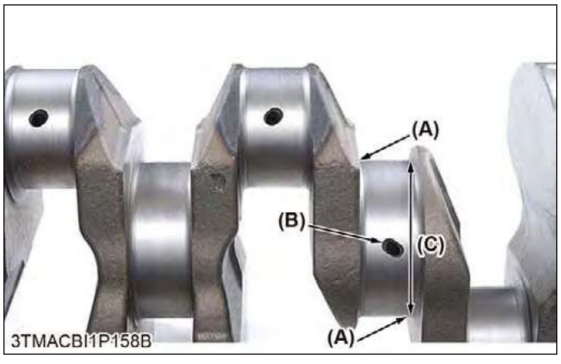
4.1.3 Cooling system

⚠ WARNING

- **Stop the engine when replacing belts. If instructions are not followed, clothes or a part of your body can get caught in the belt or pulley and could cause serious injury.**

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(A) Dimension
(B) Dimension
(C) Dimension

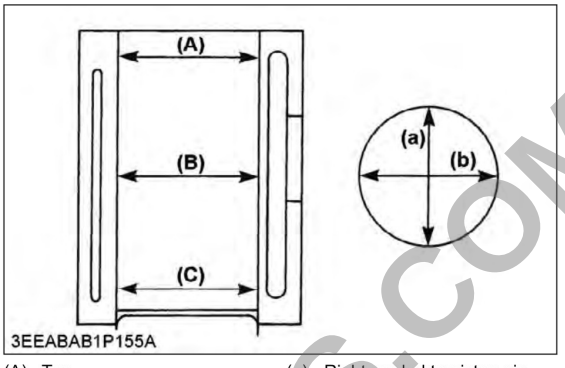
Undersize	0.2 mm 0.008 in.	0.4 mm 0.02 in.
Dimension (A)	3.2 to 3.6 mm radius 0.13 to 0.14 in. radius	3.2 to 3.6 mm radius 0.13 to 0.14 in. radius
*Dimension (B)	1.0 to 1.5 mm relief 0.040 to 0.059 in. relief	1.0 to 1.5 mm relief 0.040 to 0.059 in. relief
Dimension (C)	94.773 to 94.788 mm dia. 3.7313 to 3.7318 in. dia.	94.573 to 94.588 mm dia. 3.7234 to 3.7239 in. dia.
The crankshaft journal must be fine-finished to higher than Rmax = 0.8S. *Holes to be de-burred and edges rounded with 1.0 to 1.5 mm (0.040 to 0.059 in.) relief.		

4.4.5 Cylinder

4.4.5.1 Checking cylinder wear

1. Measure the I.D. of the cylinder at the six positions (see figure) with a cylinder gauge to find the maximum and minimum I.D.'s.





(A) Top
(B) Middle
(C) Bottom (skirt)
(a) Right-angled to piston pin
(b) Piston pin direction

2. Get the difference (maximum wear) between the maximum and the minimum I.D.'s.
3. If the wear exceeds the service limit, bore and hone to the oversize dimension.

Cylinder bore I.D.	Service specification	118.000 to 118.035 mm 4.64567 to 4.64704 in.
	Service limit	118.15 mm 4.6516 in.

4. Visually check the cylinder wall for scratches. If deep scratches are found, the cylinder should be bored.

4.4.5.2 Correcting cylinder (Oversize)

■ NOTE

- **When the oversize cylinder is worn beyond the service limit, replace the cylinder block with a new one.**

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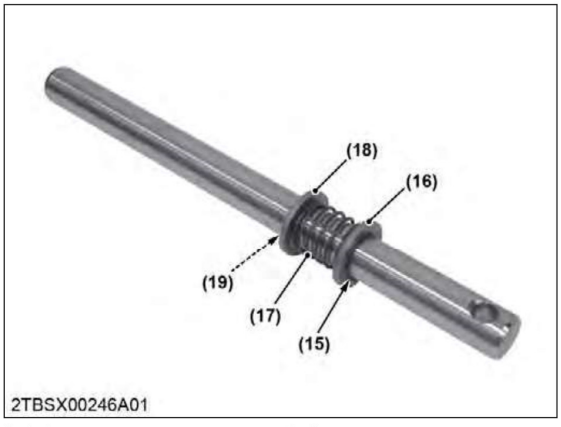
Transmission and differential gear

Symptom	Probable cause and checking procedure	Solution	Reference page
Excessive transmission noise	1. Transmission oil insufficient	Fill	3-1 3-17
	2. Gear worn or damaged	Replace	—
	3. Bearings worn or damaged	Replace	—
	4. Shifter or shift fork worn or damaged	Replace	5-151
	5. Improper backlash between pinion shaft gear and ring gear	Adjust	5-144
Gears slip out	1. Shift linkage improperly adjusted	Adjust	5-151
	2. Shifter or shift fork worn or damaged	Replace	5-151
	3. Shift fork or shift rod bent	Replace	5-151
	4. Synchronizer unit damaged	Replace	5-139
Rear wheels cannot be driven	1. Rear differential gear broken	Replace	—
	2. Planetary gears broken	Replace	6-7
Rear differential lock cannot be set	1. Differential lock clutch broken or worn	Replace	—
	2. Differential lock solenoid valve malfunction	Replace	11-368
	3. Differential lock piston malfunction	Replace	—
	4. Differential lock switch damaged	Replace	—
	5. Electric circuit for differential lock failure	Repair or replace	Attached circuit
Rear differential lock cannot be disengaged	1. Differential lock solenoid valve malfunction	Replace	11-368
	2. Differential lock return spring weaken or damaged	Replace	—
	3. Differential lock switch damaged	Replace	—
	4. Electric circuit for differential lock failure	Repair or replace	Attached circuit

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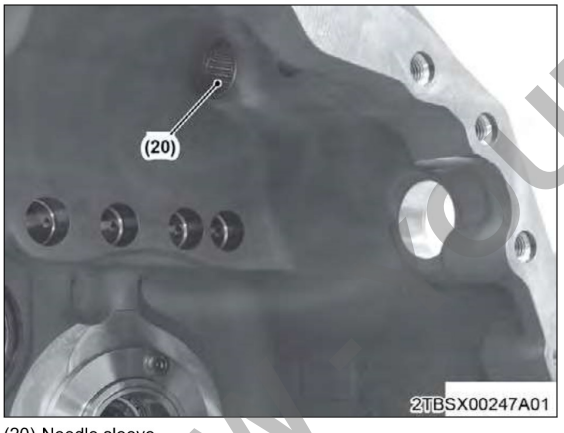
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42. Remove snap ring (19).



(15) Snap ring
(16) Washer
(17) Compression spring
(18) Washer
(19) Snap ring

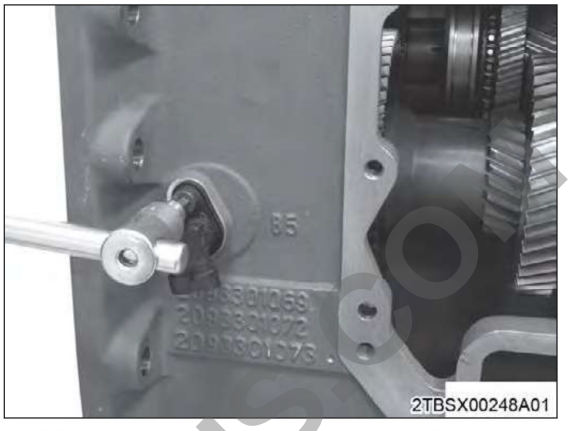
43. Drive cover plate out of transmission housing.
44. Remove needle sleeve (20).



(20) Needle sleeve

1.6.7.9 Removing and disassembling main shaft

1. Loosen cylindrical screw.
2. Pull speed transmitter out of transmission housing.
3. Remove shims.



4. Attach centering device to transmission housing.
   (S) Centering device W71TL0003
5. Loosen slotted nut with slotted nut wrench.
   (S) Slotted nut wrench W710000241



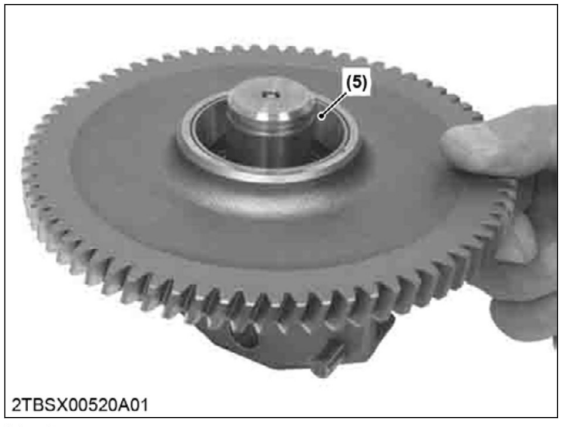
6. Remove washer and gear.



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9. Insert bearing outer rings (5) into spur gear.



(5) Outer rings

10. Put assembled spur gear onto bearing bracket.
11. Press bearing inner ring onto bearing bracket until contact is obtained.



12. Put shim (6), e. g.: 2.20 mm (0.0866 in.), onto bearing inner ring.



(6) Shim

13. Insert retaining ring.

Checking axial clearance of bearing

14. Check axial clearance 0.025 to 0.075 mm (0.00099 to 0.0029 in.) of bearing.

■ NOTE

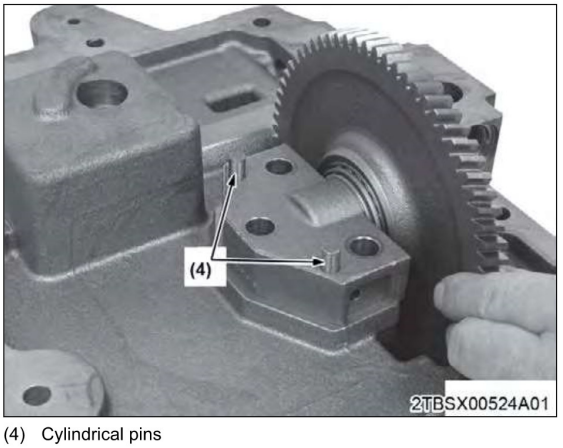
- **Correct deviations with a corresponding shim.**



15. Insert assembled bearing bracket into housing.
16. Insert cylindrical pins (4).

⚠ CAUTION

- **Risk of injury due to parts flying away.**
- **Slight or moderate injury possible. Wear protective goggles.**

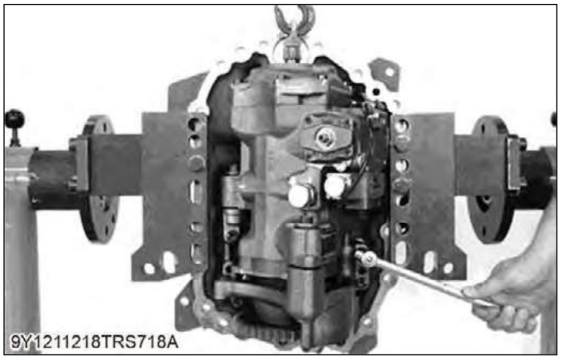


(4) Cylindrical pins

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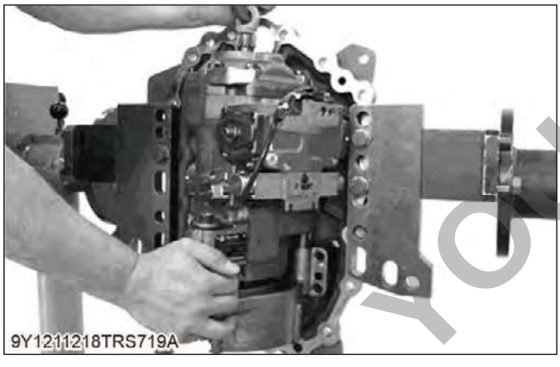
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12. Secure the hydrostatic unit by means of the lifting device (S). Loosen the bolted connection.



13. Lift the hydrostatic unit out of the housing cover.

NOTE
- **Do not place/support the hydrostatic unit on the shaft input/output.**



14. Loosen the cylindrical pins (3×).

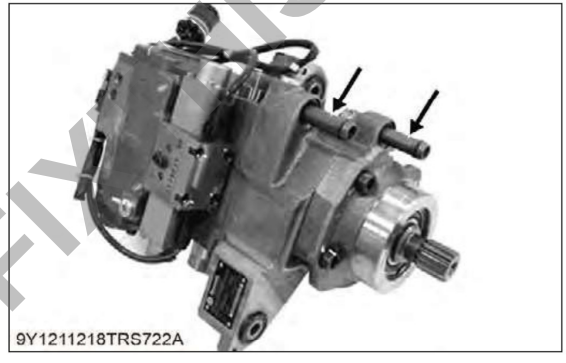


15. Lift the hydrostatic unit out of the bearing bracket.

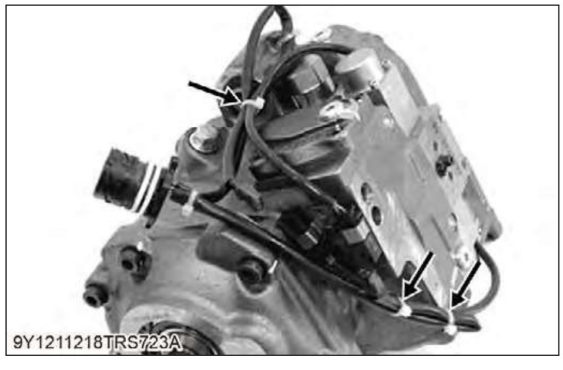
NOTE
- **Do not place/support the hydrostatic unit on the shaft input/output.**



16. Pull the tubes (2×, see arrows) out of the hydrostatic unit. If necessary, remove the O-rings.



17. Separate both plug connections (wiring harness/ hydrostatic unit). Remove the cable clips (see arrows).



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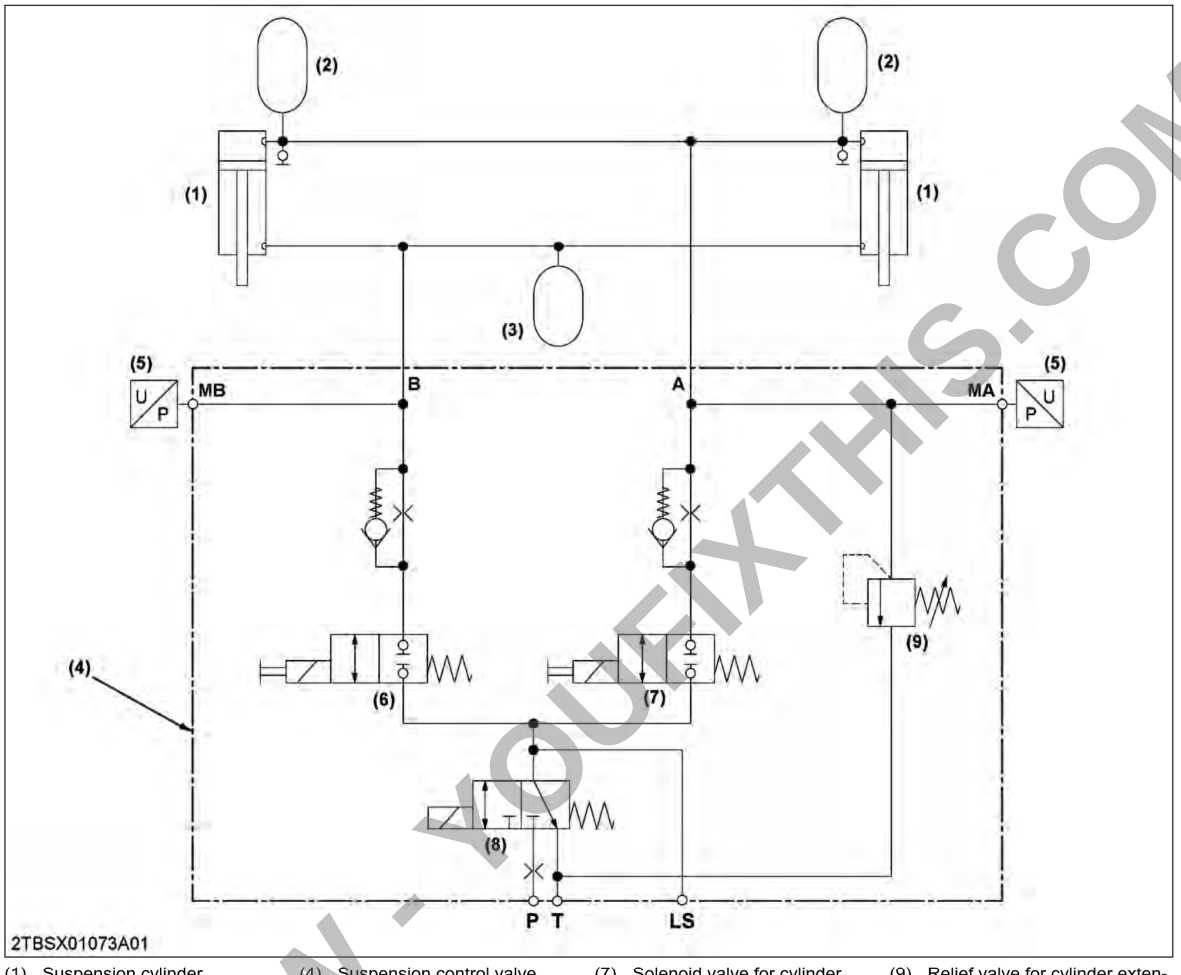
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6. REAR AXLE

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2.4.2 Hydraulic circuit of front suspension



(1) Suspension cylinder
(2) Accumulator for cylinder retraction
(3) Accumulator for cylinder extension
(4) Suspension control valve
(5) Pressure sensor
(6) Solenoid valve for cylinder rod side
(7) Solenoid valve for cylinder head side
(8) Solenoid valve for hydraulic pump
(9) Relief valve for cylinder extension

The figure shows the hydraulic circuit for the front suspension system.
The oil is delivered from the hydraulic pump to the front suspension control valve (4), and then oil flow controlled by the front suspension control valve is distributed to the suspension cylinders. There are 3 accumulators in the front suspension oil circuit line. 2 accumulators are in the oil circuit line at cylinder head side and 1 accumulator is at cylinder rod side.

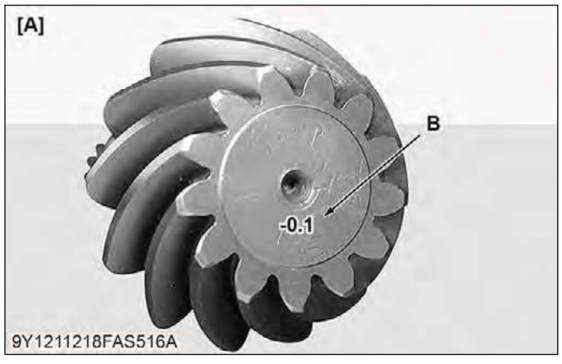
(When lifting the tractor)
The tractor can be lifted up by pushing the button **UP**. The solenoid valve for hydraulic pump (8) and the solenoid valve for cylinder head side (7) are activated, and then oil is delivered to the cylinder head side.

(When lowering the tractor)
The tractor can be lowered by pushing the button **DOWN**. The solenoid valve for cylinder head side (7) is activated, and then the oil inside the cylinder head side returns to the tank via the solenoid valve for hydraulic pump.

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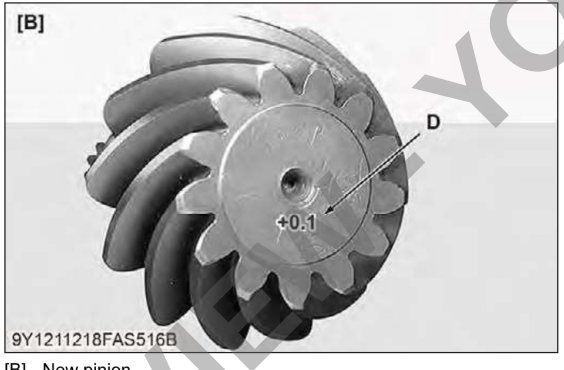
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2. Check nominal dimension "B" as marked on the old pinion. Do the calculation following the indicated formula to obtain the necessary value to the successive calculation.
   - C = A ± B
   - Example: C = 1.1 - 0.1 = 1 mm
   - C = 1 mm.



[A] Old pinion

3. Check nominal dimension "D" as marked on the new pinion. Do the calculation following the indicated formula to obtain the value of necessary shims.
   - S = C - (D)
   - Example: S = 1 - (+0.1) = 0.9 mm
   - S = 0.9 mm



[B] New pinion

4. Partially insert the thrust block of the bearings (2) with the shims (3).

■ NOTE
- **The thinner shims (3) must be set in between the thicker ones.**



(2) Thrust block of bearing (3) Shim

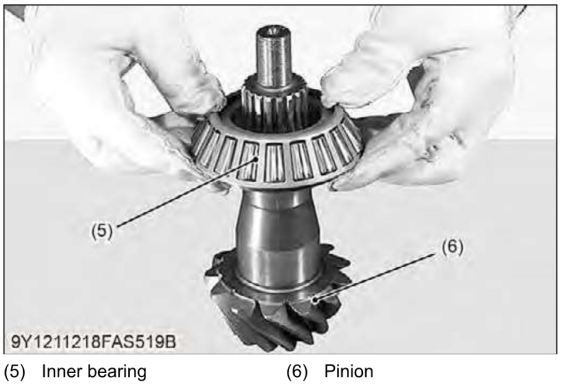
5. Install tension rod and guide tool T11 on the thrust block of the external and inner bearing (4). Connect the tension rod to the press and move the thrust block of the bearing (4) into its seat. Disconnect the press and remove the tension rod.

■ NOTE
- **Before starting the next stage, ensure that the thrust blocks have been completely inserted into the seat.**



(4) Thrust block of bearing

6. Heat the inner bearing (5) to about 100 ℃ (212 ℉) and fit it to the pinion (6).

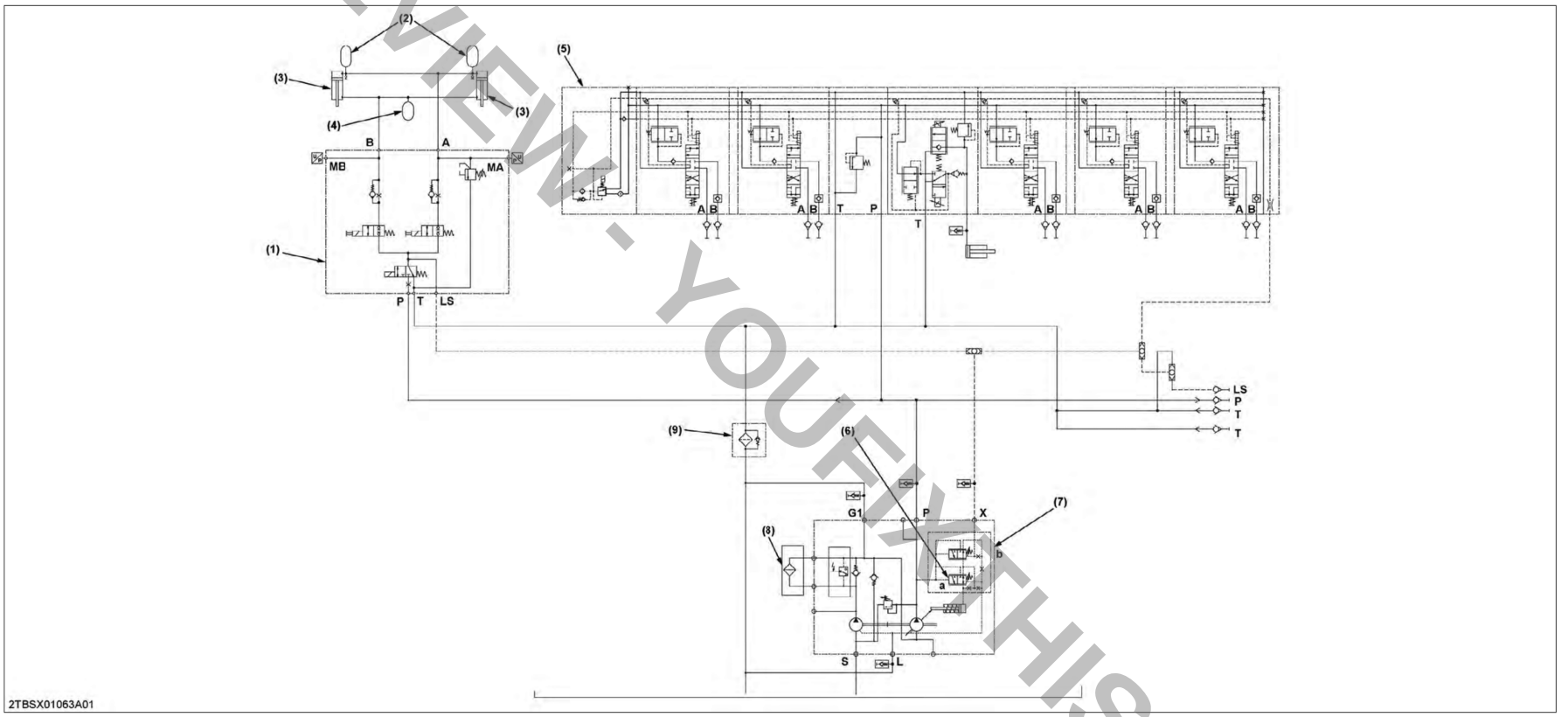


(5) Inner bearing (6) Pinion

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3. Hydraulic circuit

3.1 Hydraulic circuit for auxiliary control valves and front suspension (Premium and Premium KVT model)



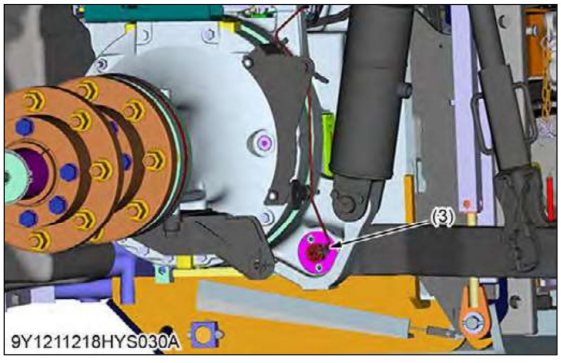
(1) Front suspension valve assembly
(2) Accumulator
(3) Hydraulic cylinder (Front suspension)
(4) Accumulator
(5) Auxiliary control valve
(6) Relief valve
(7) Axial piston variable pump (3-point hitch, front suspension)
(8) Filter (Pressure)
(9) Filter (Return flow)

a: 19.6 to 20.09 MPa (199.9 to 204.8 kgf/cm^2, 2843 to 2913 psi) at 2100 rpm

b: Above 110 L/min. (29.1 U.S.gals/min., 24.2 Imp.gals/min.)

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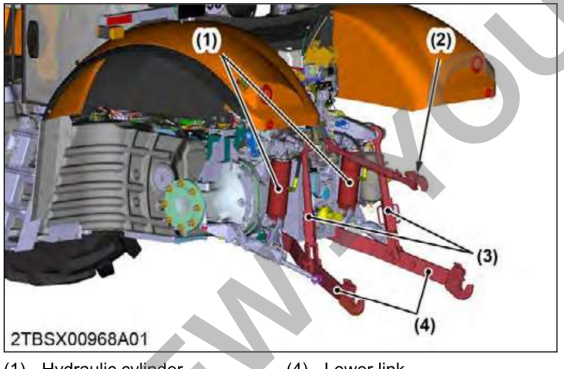
3. Disconnect the sensor connector and remove the draft pin (3).



(3) Draft pin

2.5.4.3 Removing top link, lift rods and hydraulic cylinders

1. Remove the top link (2).
2. Remove the lift rods (3).
3. Remove the lower links (4).
4. Remove the hydraulic cylinders (1).



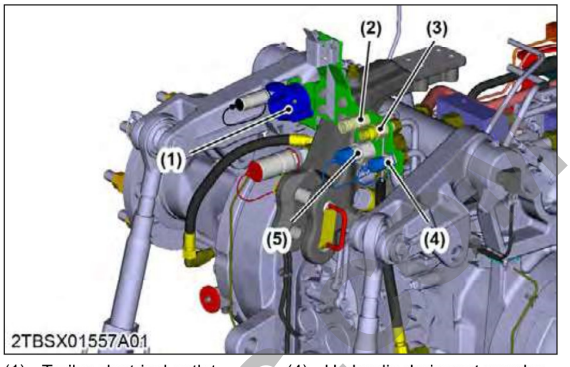
(1) Hydraulic cylinder
(2) Top link
(3) Lift rod
(4) Lower link

(When reassembling)

- Apply molybdenum grease to the hydraulic cylinder pins when replacing them with new ones.

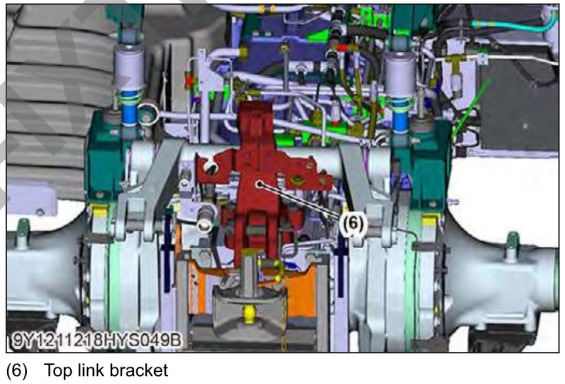
2.5.4.4 Removing top link bracket

1. Remove the auxiliary control valves.
2. Remove the trailer electrical outlet (1).
3. Remove the hydraulic trailer brake green coupler (2) and orange coupler (3).
4. Remove the power beyond return coupler (5) and the hydraulic drain port coupler (4).



(1) Trailer electrical outlet
(2) Hydraulic trailer brake green coupler
(3) Hydraulic trailer brake orange coupler
(4) Hydraulic drain port coupler
(5) Power beyond return coupler

5. Remove the top link bracket (6).



(6) Top link bracket

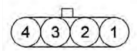
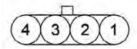
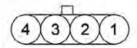
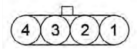
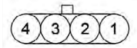
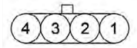
(When reassembling)

Tightening torque	Mounting bolt of top link bracket	343.2 to 402.1 N·m 35.00 to 41.00 kgf·m 253.2 to 296.5 lbf·ft
	Hydraulic trailer brake green coupler lock nut	45.0 to 49.5 N·m 4.59 to 5.04 kgf·m 33.2 to 36.5 lbf·ft
	Hydraulic trailer brake orange coupler lock nut	60.0 to 66.0 N·m 6.12 to 6.73 kgf·m 44.3 to 48.6 lbf·ft

RELATED PAGE
1.4.3 Auxiliary control valves on page 10-60

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Category	Unit	Connector	Harness	Harness side	Pin info	Supply voltage	Reference value 1	K-OBD item	K-OBD reference value
Rear hitch	Draft ratio adjustment dial	R21	W/H27	 2TBSX01184A02	1: Clockwise end 2: Supply 3: Counterclockwise end	5 V	3-1: 4.7 kΩ 2-3: 0 to 4.7 kΩ (Clockwise) 2-1: 4.7 to 0 kΩ (Clockwise)		
Rear hitch	Ride control switch	S43	W/H27	 2TBSX01184A02	1: Supply 2: Signal 3: LED night mode 4: LED function	1: 5 V	1-2: 18 kΩ (Released) 3 kΩ (Pressed)		
Remote valve	Auxiliary control valve 1	Y31	W/H25	 2TBSX01164A01	1: GND 2: CANH 3: CANL 4: Supply	12 V		**VCU2 IO testing** • Auxiliary valve online • Auxiliary valve 1 position and mode • Auxiliary valve 1 set point and mode	
Remote valve	Auxiliary control valve 2	Y32	W/H25	 2TBSX01164A01	1: GND 2: CANH 3: CANL 4: Supply	12 V		**VCU2 IO testing** • Auxiliary valve online • Auxiliary valve 2 position and mode • Auxiliary valve 2 set point and mode	**Auxiliary valve online** • ONLINE: Valve normal condition • OFFLINE: No communication with valve **Auxiliary valve position and mode** • Float: 11.8 mm (0.465 in.) • Retract/Lower: 5 mm (0.2 in.) • Stop: 0 mm (0 in.) • Extend/Raise: -5 mm (-0.2 in.) **Auxiliary valve 3 set point and mode** • Float: 0% • Retract/Lower: 100% • Stop: 0% • Extend/Raise: 100%
Remote valve	Auxiliary control valve 3	Y33	W/H25	 2TBSX01164A01	1: GND 2: CANH 3: CANL 4: Supply	12 V		**VCU2 IO testing** • Auxiliary valve online • Auxiliary valve 3 position and mode • Auxiliary valve 3 set point and mode	
Remote valve	Auxiliary control valve 4	Y34	W/H25	 2TBSX01164A01	1: GND 2: CANH 3: CANL 4: Supply	12 V		**VCU2 IO testing** • Auxiliary valve online • Auxiliary valve 4 position and mode • Auxiliary valve 4 set point and mode	
Remote valve	Auxiliary control valve 5	Y35	W/H25	 2TBSX01164A01	1: GND 2: CANH 3: CANL 4: Supply	12 V		**VCU2 IO testing** • Auxiliary valve online • Auxiliary valve 5 position and mode • Auxiliary valve 5 set point and mode	
Remote valve	Auxiliary control valve 6	Y36	W/H25	 2TBSX01164A01	1: GND 2: CANH 3: CANL 4: Supply	12 V		**VCU2 IO testing** • Auxiliary valve online • Auxiliary valve 6 position and mode • Auxiliary valve 6 set point and mode	
Remote valve	Pilot pressure solenoid	Y39	W/H25	 2TBSX01162A02	1: GND 2: Supply	7.2 V	4.7 Ω	**VCU2 IO testing** • Pilot pressure solenoid valve	Auxiliary valve lock OFF: 2200 to 2500 mA

(Continued)

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SPN	FMI	Suspicious part	Problem description	DTC set parameter	System reaction	Diagnostic procedure	WSM link page
5527	13	Calibrated powershift clutch F filling time invalid, out of tolerance range.	The value for the filling time of the power shift clutch, which is defined during calibration, is out of the permitted range. A default value is used instead. 1. Calibration not performed yet or faulty.	Power shift clutch F • Calibration value filling time invalid, out of tolerance	No change	1. Calibrate Powershift clutch 2. Check Powershift clutch F pressure (Clutch disengaged: 1.5 to 3.5 bar, engaged: 20 bar) 3. Check Powershift clutch F solenoid valve (Y16) and Powershift output speed sensor (B13), and their installation conditions	Y16: 11-383 B13: 11-371
5528	13	Calibrated powershift clutch G filling time invalid, out of tolerance range.	The value for the filling time of the power shift clutch, which is defined during calibration, is out of the permitted range. A default value is used instead. 1. Calibration not performed yet or faulty.	Power shift clutch G • Calibration value filling time invalid, out of tolerance	No change	1. Calibrate Powershift clutch 2. Check Powershift clutch G pressure (Clutch disengaged: 1.5 to 3.5 bar, engaged: 20 bar) 3. Check Powershift clutch G solenoid valve (Y17) and Powershift output speed sensor (B13), and their installation conditions	Y17: 11-384 B13: 11-371
5530	2	Application error. Error can occur only at improperly programmed EST57A application controls (not at serial controls)	This error can only occur in the event of incorrect programming of an EST57A, not with serial control units. The control unit switches itself off.	Application fault	TCU shutdown: • No driving • Supply for all valves is immediately off	1. Check the application data and if required, reprogram the control unit. 2. Replace the control unit if the error continues to occur.	–
5531	2	Configuration error (end of line/Customer- programming)	The End of Line or customer programming is faulty and does not work with the basic program. The control unit switches itself off.	Configuration fault	TCU shutdown: • No driving • Supply for all valves is immediately off	1. Check parameters of TCU 2. If this DTC reoccurs after ignition off/on, update TCU software or replace TCU.	Parameter: 13-38
5551	0	Temperature exceeding limit	The measured temperature in the transmission is too high. 1. Cooling system damaged. 2. Load permanently too high.	Over temperature • Maximum permitted temperature exceeded (Over 107 °C (225 °F) for longer than 60 s)	No change	Cause for increased heat input into transmission must be localized. 1. Reduce engine speed. 2. Check transmission oil cooler for pollution and damage. 3. Check connecting tubes from transmission to oil cooler for damages. 4. Check cooler pressure limiting valve. 5. Monitor transmission oil temperature with K-OBD. If the measured oil temperature does not decrease within some minutes though vehicle is in standstill and engine is running, then change the temperature sensor (B19).	B19: 11-374
5560	13	Calibrated main clutch contact pressure invalid, out of tolerance	The value for the contact pressure of the main clutch, which is defined during calibration, is out of the permitted range. A default value is used instead. 1. Calibration not performed yet or faulty.	Main clutch • Calibration value contact pressure invalid, out of tolerance (Pressure < 3.5 bar or > 6.5 bar)	No change	1. Calibrate Main clutch 2. Check Main clutch pressure (Reference. Clutch pedal released: 0.5 to 1.8 bar, depressed: 20 bar) 3. Check Main clutch solenoid valve (Y11) and main clutch speed sensor (B12), and their installation conditions	Y11: 11-378 B12: 11-370
5570	2	System pressure plausibility	The system pressure is measured above a defined engine speed. In case of exceeding the limiting value and too low pressure the failure is set. 1. System pressure too low. 2. Cable or connector damaged. 3. System pressure switch has internal problem.	System pressure • Plausibility (Despite measured engine speed no pressure for longer than 1 s)	No change	1. Check speeds of engine, power shift input speed sensor (B14) and engine speed from CAN BUS. 2. Check transmission oil level as well as suction and pressure filter. 3. Check system pressure valve (function and contamination) 4. Adapt a manometer to the provided measurement connection "system pressure" and check the value during running engine. Compare the measured pressure value from the manometer with the one that is shown by the diagnostic tool. In case of deviation above 1 bar, change the system pressure sensor (S2). 5. Change the system pressure pump. 6. In case of further active failure check transmission for leakages.	B14: 11-372 S2: 11-376
5711	2	PTCTL2 Req_dir_travel, Req_dir_travel_status, from VCU2	The CAN signal is faulty. 1. Malfunction on the CAN BUS. 2. Sender control unit has an internal problem.	CAN BUS • Signal PTCTL1_TRAVDIR (travel direction) faulty (VCU2)	No change or TCU shutdown: • No driving • Supply for all valves is immediately off	1. Check CAN connection between VCU2 and TCU. (CAN terminating resistors: 120 Ω) 2. Check VCU2 supply line and GND line. 3. Check VCU2 (A83) (Reprogram VCU2 to compatible version)	A83: 11-253
5712	2	EEC1_TORQUE from ECU	The CAN signal is faulty. 1. Malfunction on the CAN BUS. 2. Sender control unit has an internal problem.	CAN BUS • Signal EEC1_TORQUE faulty (ECU)	NORMAL	1. Check CAN connection between ECU and TCU. (CAN terminating resistors: 120 Ω) 2. Check ECU supply line and GND line. 3. Check ECU (CN33) (Reprogram ECU to compatible version)	CN33: 11-260
5713	2	EEC1_ENGSPEED, from ECU	The CAN signal is faulty. 1. Malfunction on the CAN BUS. 2. Sender control unit has an internal problem.	CAN BUS • Signal EEC1_ENGSPEED (engine speed) faulty (ECU)	No change	1. Check CAN connection between ECU and TCU. (CAN terminating resistors: 120 Ω) 2. Check ECU supply line and GND line. 3. Check ECU (CN33) (Reprogram ECU to compatible version)	CN33: 11-260

(Continued)

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SPN	FMI	Suspicious part	Problem description	DTC set parameter	System reaction	Diagnostic procedure	WSM link page
522068	3	Solenoid Valve Frontloader Proportional-3rd-retract	Shortcut to power	Pin2-41 detected current below normal. (current < Ubat/250 Ohm, for 150msec) Short to power line.	3rd function shall go to fault state 3rd function is switched OFF 3rd function icons on Terminal are in ERROR state	1. Check the related harness of Front loader solenoid valve (3rd function retract) (Y55) 2. Check Front loader solenoid valve (3rd function retract) (Y55) (shall be around 8 Ω) 3. If there is DTC [SPN:522067], check Front loader solenoid valve (3rd function extend) (Y54) and the related harness of it.	–
522068	5	Solenoid Valve Frontloader Proportional-3rd-retract	Open circuit (+short to Ubatt)	Pin2-41detected current below normal. (load > 250 Ohm, current < 15 mA, for 150msec) Open circuit.	3rd function shall go to fault state 3rd function is switched OFF 3rd function icons on Terminal are in ERROR state	1. Check the related harness of Front loader solenoid valve (3rd function retract) (Y55) 2. Check Front loader solenoid valve (3rd function retract) (Y55) (shall be around 8 Ω) 3. If there is DTC [SPN:522067], check Front loader solenoid valve (3rd function extend) (Y54) and the related harness of it.	–
522068	6	Solenoid Valve Frontloader Proportional-3rd-retract	Shortcut to ground	Pin2-41 detected current above normal. (current > Ubat/2.5 Ohm, for 150msec) Short to ground or shortcut.	3rd function shall go to fault state 3rd function is switched OFF 3rd function icons on Terminal are in ERROR state	1. Check the related harness of Front loader solenoid valve (3rd function retract) (Y55) 2. Check Front loader solenoid valve (3rd function retract) (Y55) (shall be around 8 Ω) 3. If there is DTC [SPN:522067], check Front loader solenoid valve (3rd function extend) (Y54) and the related harness of it.	–
522068	12	Solenoid Valve Frontloader Proportional-3rd-retract	Not plausible	If the feedback of 3rd function retract does not reflect the commanded state or both the 3rd function extend and 3rd function retract switches read back as ON.	3rd function shall go to fault state 3rd function is switched OFF 3rd function icons on Terminal are in ERROR state	1. Key switch OFF/ON	–
522069	3	Solenoid Valve Frontloader 4th	Shortcut to power	Pin1-51 detected current below normal. (current < Ubat/20 Ohm, for 100msec) Short to power line.	4th function shall go to fault state, when it is selected 4th function is switched OFF Bucket shall go to fault state Bucket icon on Terminal shall show ERROR state	1. Check the related harness of Front loader solenoid valve (4th valve) (Y56) 2. Check Front loader solenoid valve (4th valve) (Y56) (shall be around 8 Ω) 3. If front loader is not equipped with 4th function, it shall be around 120 Ω	–
522069	5	Solenoid Valve Frontloader 4th	Open circuit (+short to Ubatt)	Pin1-51 detected current below normal. (load > 20 Ohm, current < 15 mA, for 100msecc) Open circuit.	4th function shall go to fault state, when it is selected 4th function is switched OFF Bucket shall go to fault state Bucket icon on Terminal shall show ERROR state	1. Check the related harness of Front loader solenoid valve (4th valve) (Y56) 2. Check Front loader solenoid valve (4th valve) (Y56) (shall be around 8 Ω) 3. If front loader is not equipped with 4th function, it shall be around 120 Ω	–
522069	6	Solenoid Valve Frontloader 4th	Shortcut to ground	Pin1-51 detected current above normal. (current > Ubat/2 Ohm, for 100msec) Short to ground or shortcut.	4th function shall go to fault state, when it is selected 4th function is switched OFF Bucket shall go to fault state Bucket icon on Terminal shall show ERROR state	1. Check the related harness of Front loader solenoid valve (4th valve) (Y56) 2. Check Front loader solenoid valve (4th valve) (Y56) (shall be around 8 Ω) 3. If front loader is not equipped with 4th function, it shall be around 120 Ω	–
522071	3	Solenoid Valve Front PTO Return	Shortcut to power	Pin1-80 detected current below normal. (current > Ubat/1,5 Ohm, for 100msec) Short to power line.	Front PTO shall go to error state Front PTO is switched OFF Dashboard icon blinks Front PTO Icon on Terminal shall show ERROR state (if applicable)	1. Check the related harness of Front PTO solenoid valve (X24-1) 2. Check Front PTO solenoid valve (X24-1) (shall be about 5.3 Ω)	X24-1: 11-455
522071	5	Solenoid Valve Front PTO Return	Open circuit (+short to Ubatt)	Pin1-80 detected current below normal. (load > 20 Ohm, current < 15 mA, for 100msecc) Open circuit.	Front PTO shall go to error state Front PTO is switched OFF Dashboard icon blinks Front PTO Icon on Terminal shall show ERROR state (if applicable)	1. Check the related harness of Front PTO solenoid valve (X24-1) 2. Check Front PTO solenoid valve (X24-1) (shall be about 5.3 Ω)	X24-1: 11-455
522071	6	Solenoid Valve Front PTO Return	Shortcut to ground	Pin1-80 detected current below normal. (current <Ubat/15 Ohm, for 100msec) Short to ground or shortcut.	Front PTO shall go to error state Front PTO is switched OFF Dashboard icon blinks Front PTO Icon on Terminal shall show ERROR state (if applicable)	1. Check the related harness of Front PTO solenoid valve (X24-1) 2. Check Front PTO solenoid valve (X24-1) (shall be about 5.3 Ω)	X24-1: 11-455

(Continued)

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Inhibit mode

Warning level	Buzzer	Engine output limitation			n/min		P		Remark
0	No	No limitation	●	○	○	○	○	○	Normal operation, regeneration is not required.
1	No	No limitation	●	★	○	○	○	○	Regeneration is required, but auto regeneration is not permitted. Parking regeneration is not possible.
Level 2-1: Every 5 second **Level 2-2:** Every 3 second		No limitation	●	★	○	○	★	○	Auto regeneration is prohibited. Condition for parked regeneration is not satisfied. This indication switch to the following if cancel the DPF inhibit switch in the state of condition for parked regeneration is satisfied. Shift to the Auto Regeneration if cancel the DPF inhibit switch in the state of condition for parked regeneration is not satisfied.
			○	★	★	★	★	○	Condition for parked regeneration is satisfied. When pressing the parked regeneration switch, parked regeneration will start.
			○	★	★	●	★	○	Under the preparation for parked regeneration.
			○	●	○	●	○	○	Under the parked regeneration.
3	Every seconds	50%	●	○	○	○	★	★	This indication switch to the following if cancel the DPF inhibit switch in the state of condition for parked regeneration is satisfied.
			○	○	○	★	★	★	Condition for parked regeneration is satisfied. When pressing the parked regeneration switch, parked regeneration will start.
			○	○	○	●	★	★	Under the preparation for parked regeneration.
			○	●	○	●	○	★	Under the parked regeneration.
4	Every seconds	50%	●	○	○	○	○	●	Without K-OBD.
			●	○	○	○	★	★	When using K-OBD and condition for parked regeneration is not satisfied. This indication switch to the following if cancel the DPF inhibit switch in the state of condition for parked regeneration is satisfied.
			○	○	○	★	★	★	When using K-OBD and condition for parked regeneration is satisfied. When pressing the parked regeneration switch, parked regeneration will start.
			○	○	○	●	★	★	Under the preparation for parked regeneration when using K-OBD.
			○	●	○	●	○	★	Under the parked regeneration when using K-OBD.
5	Every seconds	50%	●	○	○	○	○	●	Even when using K-OBD, it is not possible to do parked regeneration.

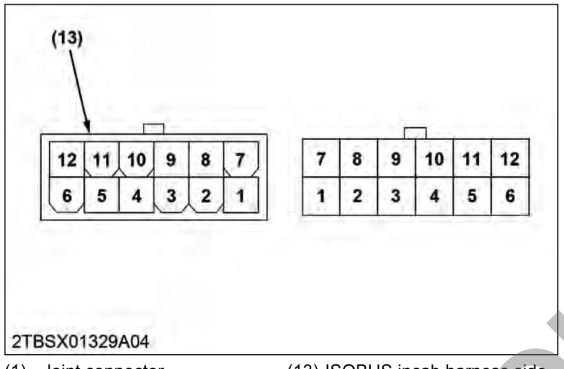
○: OFF
★: Blink
●: ON

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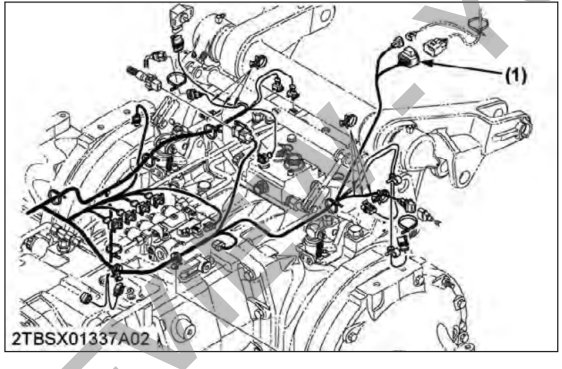
X104 connector (ISOBUS incab - CEU relay harness)

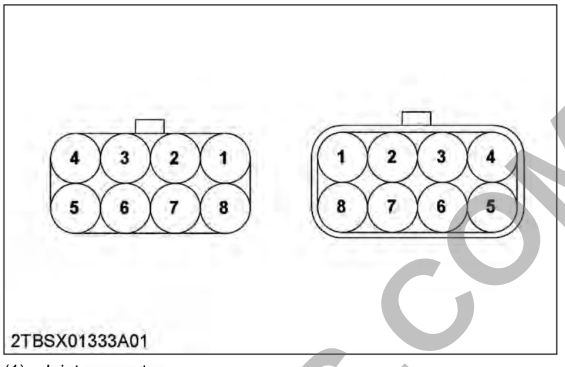




(1) Joint connector (13) ISOBUS incab harness side

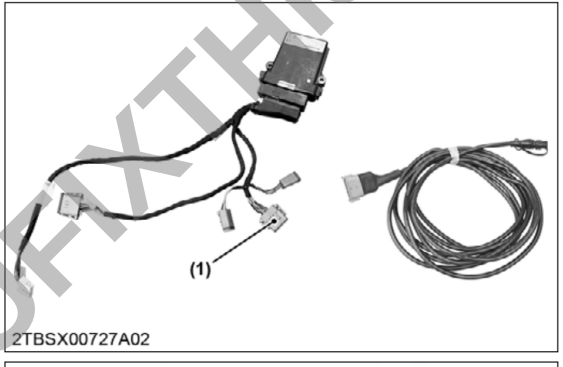
CN14 connector (Transmission - Trailer connector)

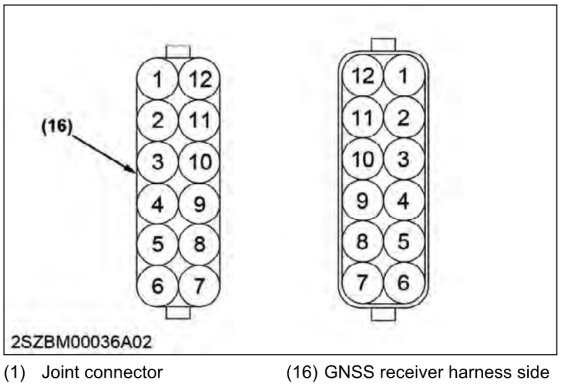




(1) Joint connector

B62 connector (GNSS receiver - NAC)





(1) Joint connector (16) GNSS receiver harness side

5.7 CAN termination

■ NOTE

- **Firstly check the CAN resistance, then check the wires continuity.**

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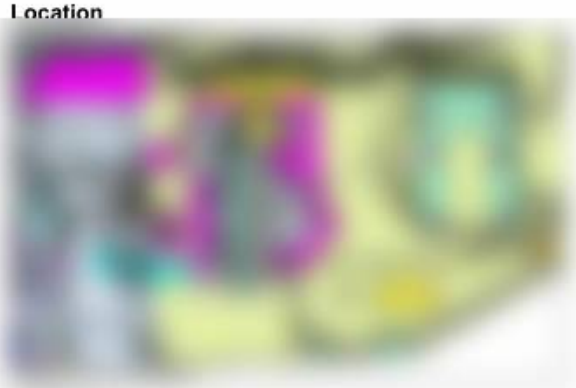
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5.13.26 Checking solenoid valve (Powershift clutch G) (Y17)

1. Disconnect the connector.

Pin	Color of wiring	Info
1	P	Supply
2	V	GND

Location



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5. If the reference value is not as indicated, the sensor is damaged.

Voltage	Terminal 2 - 3	Block mode (0%)	1.3 V
		Auto mode (50%)	1.9 V
		100%	2.7 V

6. (Reference) Check the signal status by K-OBD.

K-OBD item

xCU	Item
VCU2 IO testing	FAS pressure 2

Reference value

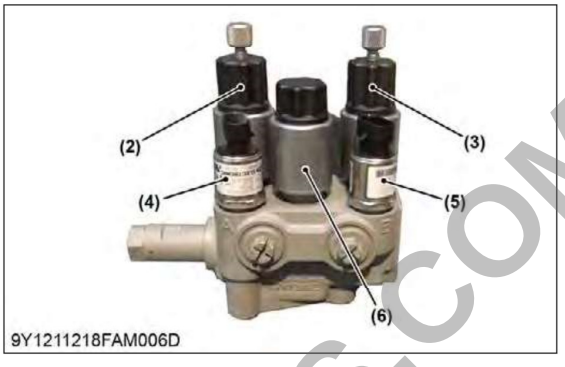
FAS pressure 2	Manual mode	0%	1639 mV (6.6 MPa, 67 kgf/cm^2, 960 psi)
		50%	2060 mV (9.6 MPa, 98 kgf/cm^2, 1400 psi)
		100%	2879 mV (14.5 MPa, 148 kgf/cm^2, 2100 psi)
	Block mode	0%	1646 mV (8.6 MPa, 88 kgf/cm^2, 1200 psi)

5.17.6 Checking front suspension solenoid valve (head side) (Y41)

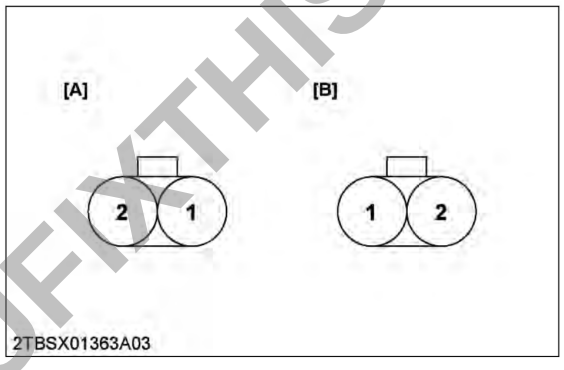
1. Disconnect the connector.

Location

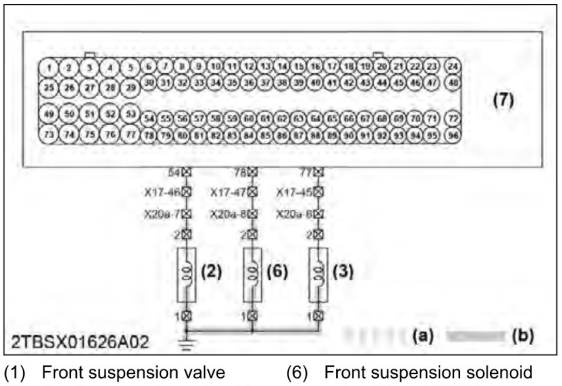




Connector



Related circuit



(1) Front suspension valve
(2) Front suspension solenoid valve (Head) (Y41)
(3) Front axle suspension solenoid valve (Rod) (Y43)
(4) Front suspension pressure sensor (Rod) (B35)
(5) Front suspension pressure sensor (Head) (B36)
(6) Front suspension solenoid valve (Pump) (Y42)
(7) VCU2 (A83-1)
[A] Connector (Harness side)
[B] Connector (Valve side)
(a) Supply from control unit
(b) GND line

Pin	Color of wiring	Info
1	B	GND
2	W	Supply

2. Turn the main key switch to ON position.

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MECHANISM

1. Air conditioning system

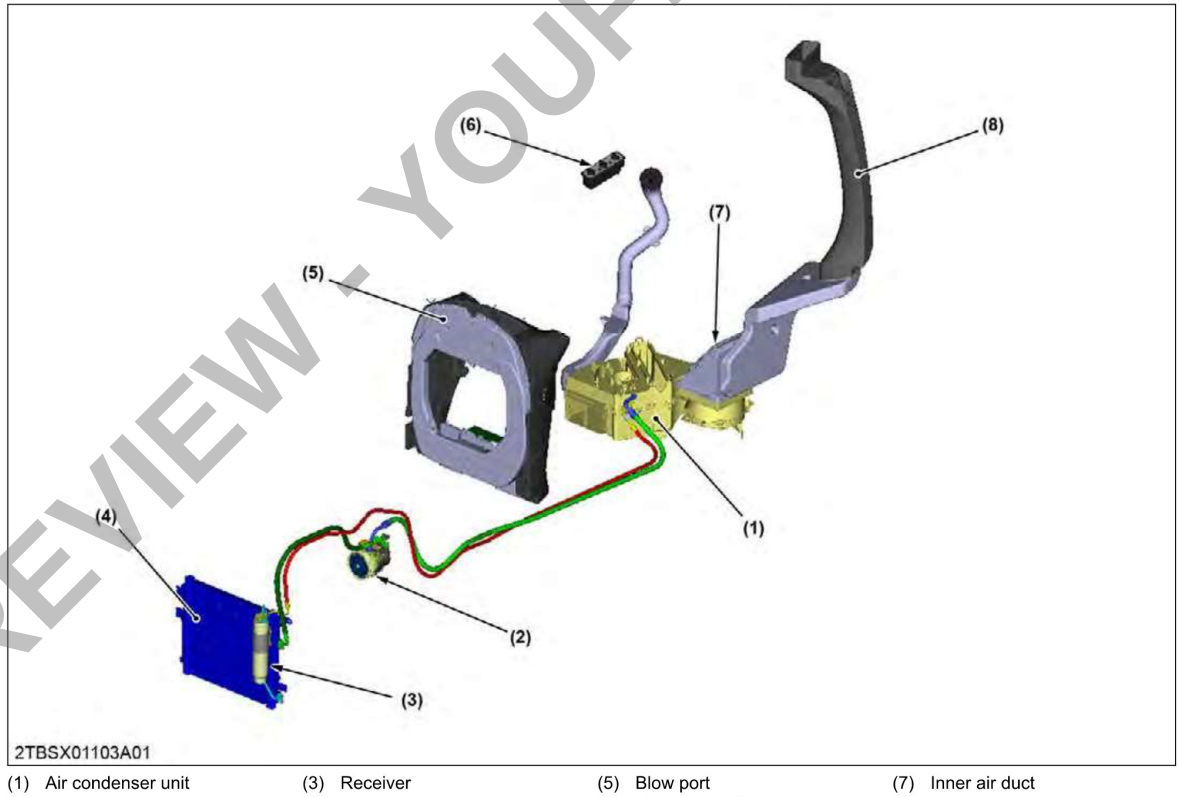
1.1 Structure of air conditioning system

■ NOTE

- **As for the mechanism and function of each component part, refer to Workshop Manual of "MECHANISM".**

This cabin is equipped with the inner air circulation/outside air inhalation type large capacity thin air conditioner.
The inner air inhaled from the inner air filter provided behind the seats goes through the inner air duct (7) and goes into the air conditioner unit (1). The fresh air inhaled from the fresh air filter goes through the rear pillar on the left and goes into the air conditioner (1) unit via the fresh air duct (8).
The inner air and fresh air inhaled into the air conditioner unit is cooled and dehumidified in the cooling section of the air conditioner unit. The comfortable air, warmed moderately with the heater, comes from the air duct with low humidity.
The six dashboard air outlets allow opening and closing, and adjusting direction of winds. The defroster blow port is opened and closed by moving the mode dial on the control panel.

Capacity (Cooling)	Service specification	Approx. 4.4 kW
Capacity (Warming)		Approx. 6.1 kW

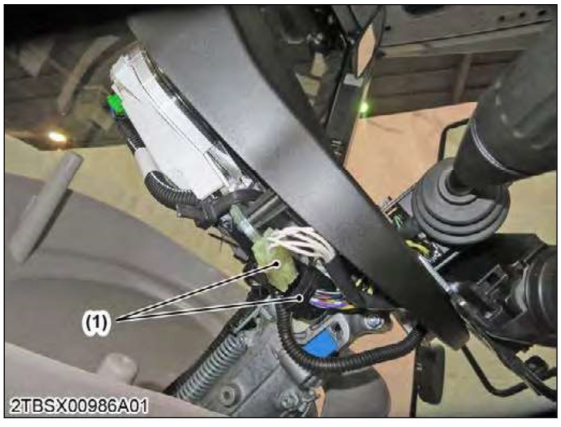


(1) Air condenser unit
(2) Compressor
(3) Receiver
(4) Condenser
(5) Blow port
(6) Control panel
(7) Inner air duct
(8) Fresh air duct

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7.3.2 Removing shuttle lever and front wiper switch

1. Remove the harness (1).



(1) Harness

2. Remove the front wiper switch (2).
3. Remove the shuttle lever (3).



(2) Front wiper switch (3) Shuttle lever

7.3.3 Removing switch panel

1. Remove the switch panel cover (1).



(1) Switch panel cover

2. Remove the switch panel (2).



(2) Switch panel

7.3.4 Removing meter panel

1. Remove the meter panel (1).



(1) Meter panel

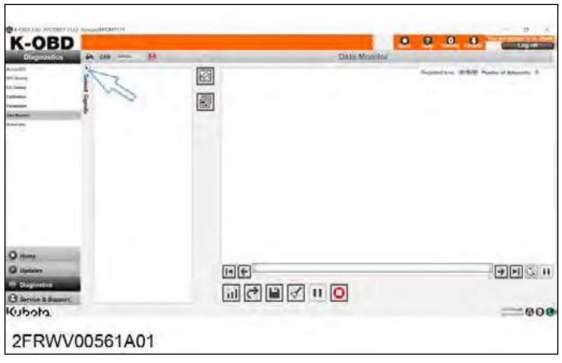
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7. Function of Data Monitor

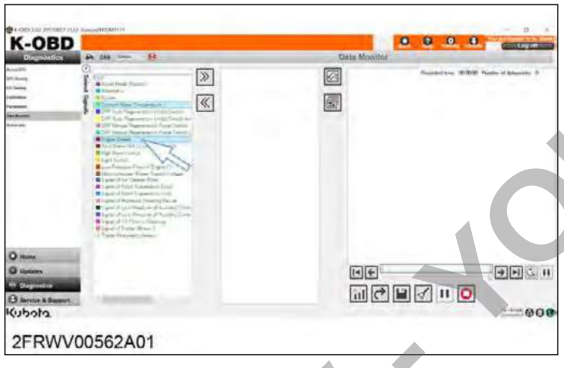
7.1 Selecting Data Monitor items

1. Click **[Select Signals]**.



2. Select data monitor items from the list or type an item name in the window below and select.

From the list



Search window

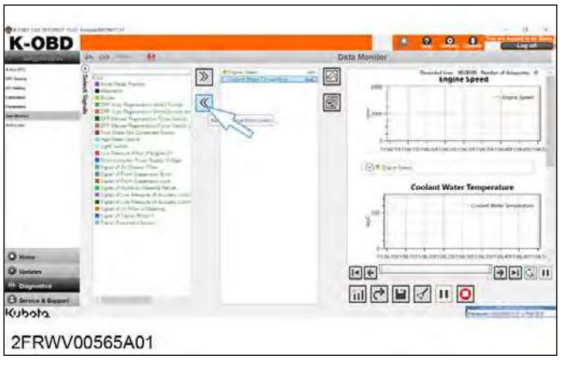


3. Click the icon below to start monitoring selected items.



4. If you want to stop monitoring some of the items, select them and click the icon below.





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