TOYOTA

REPAIR MANUAL

OPS SUPPLEMENT

7FGU15-32 / 7FDU15-32
7FGCU20-32

Pub. No. CU040

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OPS

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Note:
See Section 5 (SAS) for the connector layout, controller sequence and connector diagram.

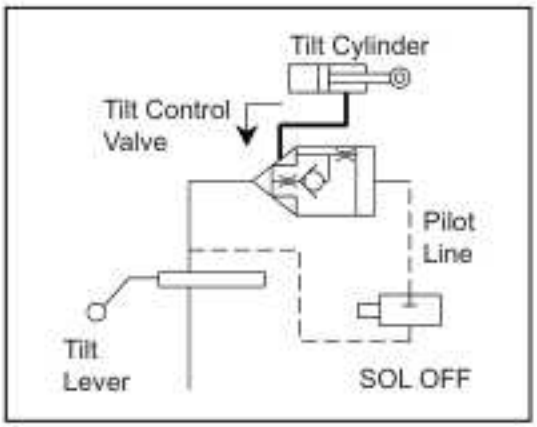
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Hydraulic circuit control

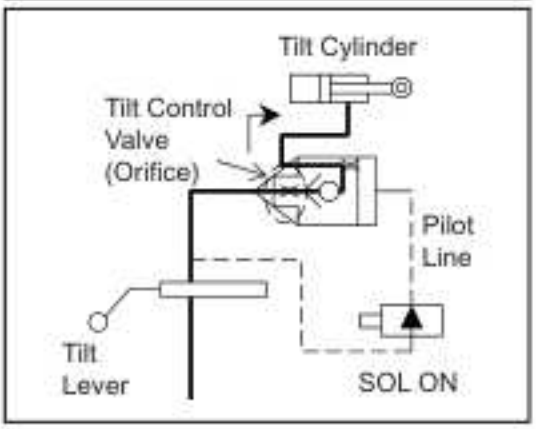
Tilt control is achieved by ON/OFF of the tilt control solenoid (SOL) valve installed on the integral control valve. The relationships between the tilt hydraulic circuit and tilt control SOL valve is as shown in the table below. When the SOL is OFF upon backward tilting operation, the circuit is fully open. When the SOL is OFF upon neutral or tilt forward operation, tilting is stopped.

Tilt control SOL			
ON		OFF	
Semi-open circuit	Forward tilt circuit	Full open circuit for backward tilting	Tilt stop circuit
• High lifting height, backward tilting speed restriction • Low lifting-height, backward tilting speed restriction*	• Forward tilting	• Low lifting height, backward tilting	• Tilt lever at neutral • Stop with forward tilting angle restriction • Automatic leveling stop with forward tilting

*Backward tilting operation with the tilt lever knob switch depressed.



1. Tilt stop circuit
The tilt stop circuit refers to the state where the tilting operation is disabled as upon tilt lever setting at the neutral position or upon stopping with forward tilting angle restriction or fork automatic leveling. The tilt cylinder operation is stopped because the tilt control valve in the control valve is closed.



2. Tilt semi-open circuit
The tilt semi-open circuit refers to the state where the tilting operation speed is restricted (slowed down).
The tilting speed is slowed down because the orifice in the tilt control valve is connected to reduce the oil flow to the tilt cylinder.

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DIAGNOSIS ERROR CODE LIST

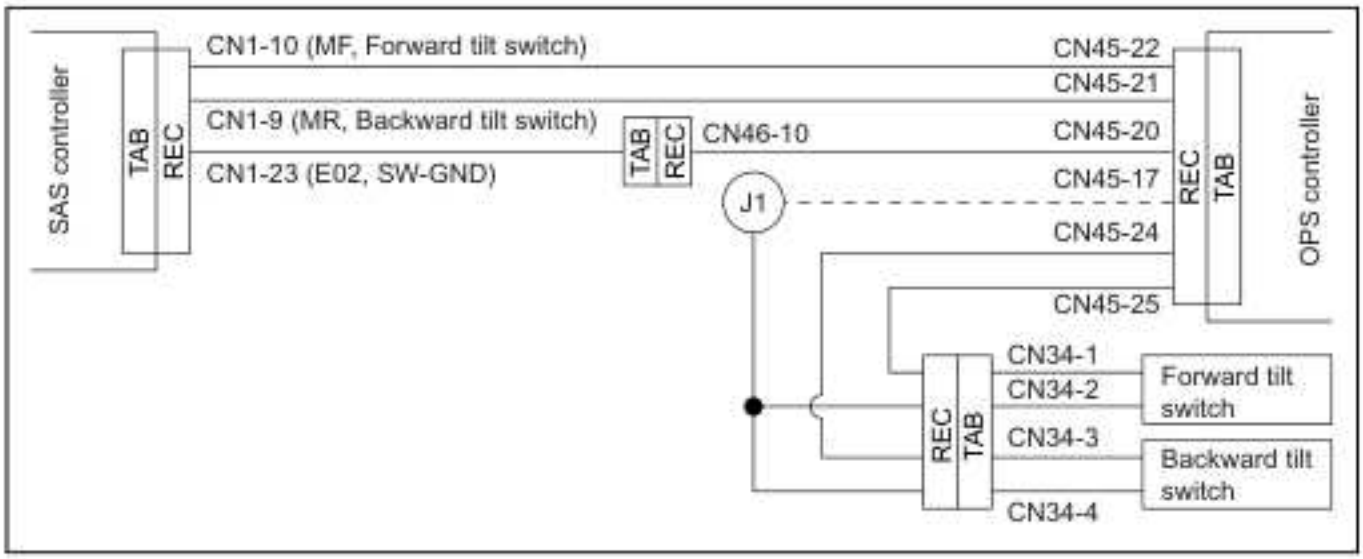
Lamp	Error code	Vehicle spec.	Error description	Major cause	Phenomenon on vehicle	
					SAS spec. model	SAS-less spec. model
ON	—	—	Dead lamp check	—	—	—
Blinking (one short ON pulse)	1-1	All specifications	Seat switch abnormality	Sticking GND fault	No OPS functioning	No OPS functioning
Blinking (two short ON cycles)	2-1	Other than mini lever model	Lift lowering switch abnormality	Sticking GND fault	No special change from normal state (Excessive leak during lowering)	No special change from normal state (Excessive leak during lowering)
	2-2	SAS-less*	Tilting switch abnormality	Sticking GND fault	—	No special change from normal state (Excessive leak during lowering)
	2-3					
	2-4					
Blinking (three short ON cycles)	3-1	All specifications	Forward interrupt relay (RYF) abnormality	Discontinuity	Forward traveling is possible while OPS is operating.	Forward traveling is possible while OPS is operating.
				GND fault	↑	↑
				+B shorting	Forward traveling is always disabled.	Forward traveling is always disabled.
	3-2		Reverse interrupt relay (RYR) abnormality	Discontinuity	Reverse traveling is possible while OPS is operating.	Reverse traveling is possible while OPS is operating.
				GND fault	↑	↑
				+B shorting	Reverse traveling is always disabled.	Reverse traveling is always disabled.
Blinking (four short ON cycles)	4-1	All specifications	Unload solenoid (SOL1) abnormality	Discontinuity	Lift lowering and backward tilting are disabled but other material handling operations are possible while OPS is operating	Lift lowering and backward tilting are disabled but other material handling operations are possible while OPS is operating
				GND fault	↑	↑
				+B shorting	All material handling operations are disabled while OPS is operating. While OPS is not operating, only lift lowering is possible but other material handling operations are disabled.	All material handling operations are disabled while OPS is operating. While OPS is not operating, only lift lowering is possible but other material handling operations are disabled.

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TROUBLESHOOTING BY ERROR CODE

- **Error code 63 (Tilt lever switch abnormality)**
- **Error code 63-1 (Both tilt lever switches ON at the same time)**
- **Error code 63-2 (Forward tilt switch 2-minute short circuit)**
- **Error code 63-3 (Backward tilt switch 2-minute short circuit)**

Related Portion



Estimated Causes:

① Connector contact defect
② Harness defect
③ Forward tilt switch defect
④ Backward tilt switch defect
⑤ Tilt switch installation defect
⑥ Controller defect

Error code 63

Check CN1, CN45 and CN46 for any disconnection or internal wetting.
NG → After correction, check the indication by the SAS lamp. *
OK ↓

Inspection 1:
Check the wiring between the tilt lever switch and the OPS controller for continuity.
OK → SAS controller defect
NG ↓

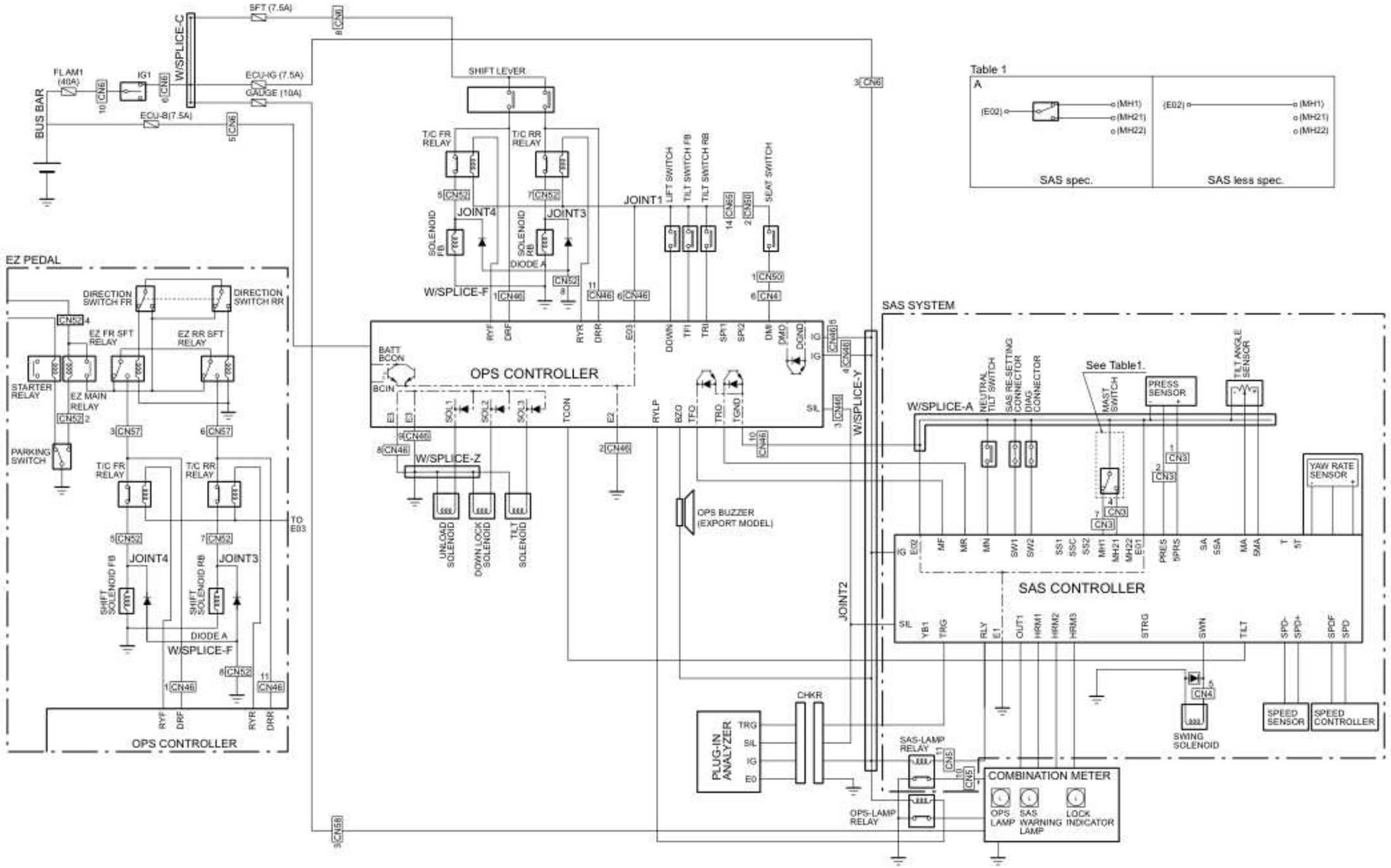
Inspection 2:
Check continuity between CN1 and CN45.
NG → Harness defect
OK ↓

Perform troubleshooting for error code 2 for the OPS controller. For this defect, the SAS lamp blinks instead of the OPS lamp.

* After the ignition switch is turned ON, make sure that the SAS lamp is lit upon tilting forward and backward. Make sure that the 2-minute waiting OPS lamp blinks when the tilt lever is on the neutral position.

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CONTROLLER SEQUENCE (SAS, OPS)



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