CAT® Lift Trucks

Service Manual

Chassis & Mast

MC

GP15N	CT25C-55001-up
GP15ZN	CT34-52001-up
GP18N	CT25C-75001-up
GP18ZN	CT34-72001-up
GP20CN	CT34-22001-up
GP20N	CT17D-10001-up
GP20ZN	CT35-10001-up
GP25N	CT17D-60001-up
GP25ZN	CT35-60001-up
GP30N	CT13F-40001-up
GP35N	CT13F-60001-up
GPE15N	CT34-00001-up
GPE18N	CT34-40001-up
GPE20CN	CT34-30001-up
GPE20N	CT17D-20001-up
GPE20ZN	CT35-20001-up
GPE25N	CT17D-70001-up
GPE25ZN	CT35-70001-up
GPE30N	CT13F-10001-up
GPE35N	CT13F-80001-up
DP15N	CT16D-54001-up
DP18N	CT16D-74001-up
DP20CN	CT16D-24001-up
DP20N	CT18C-20001-up
DP25N	CT18C-70001-up
DP30N	CT14E-10001-up
DP35N	CT14E-80001-up

For use with K15, K21, K25, S4Q2 and S4S Engine Service Manuals.

99719-38210

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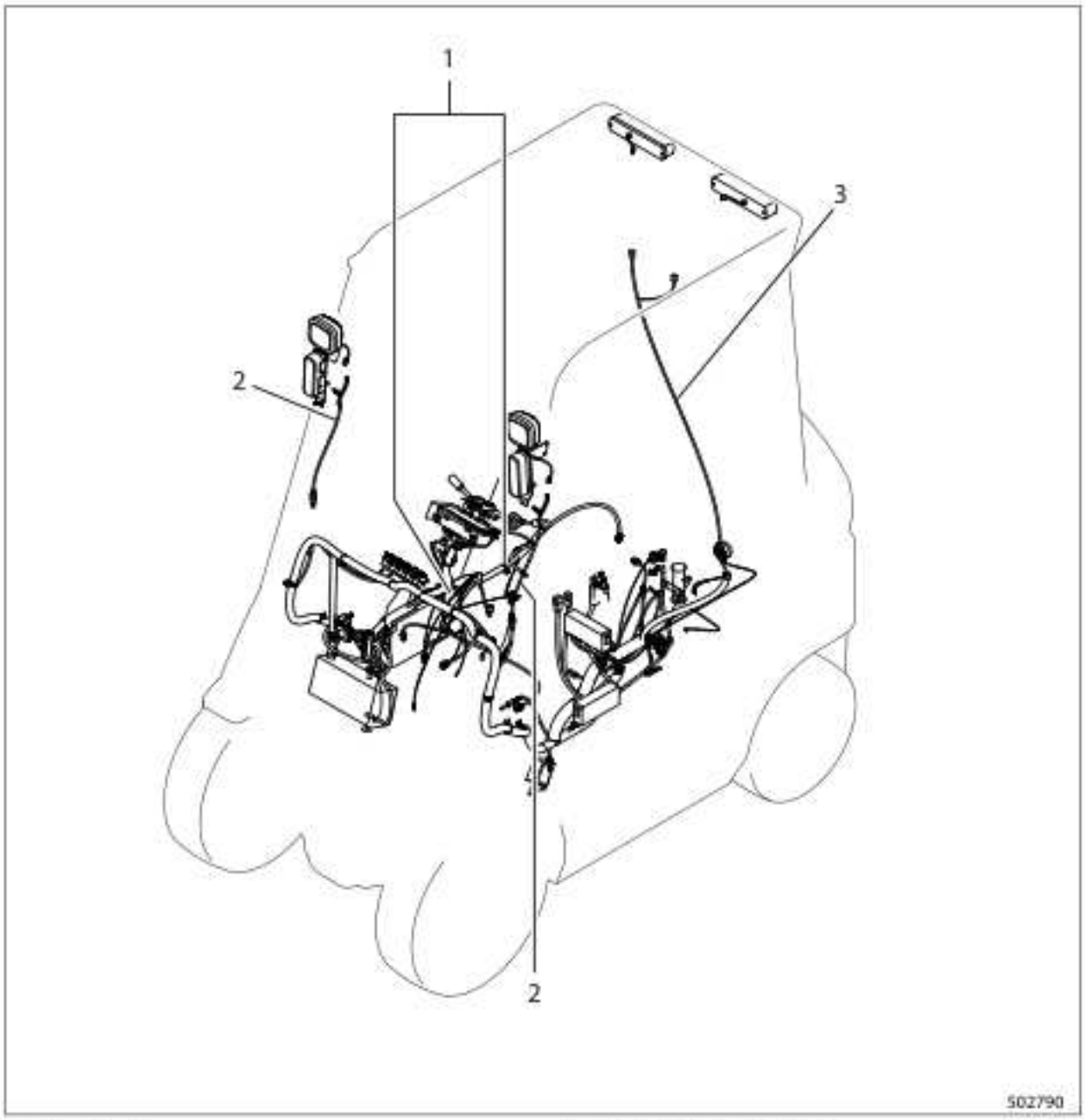
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Chapter 3 ELECTRICAL SYSTEM

1. Chassis Electrical Components and Wiring Outline

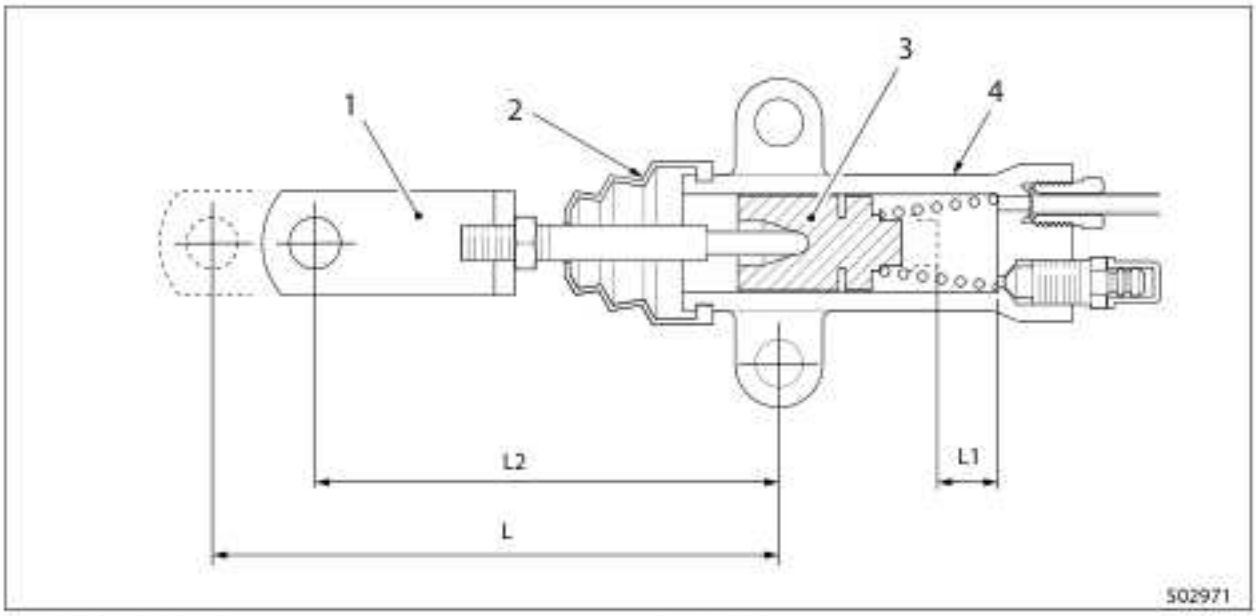


1. Main harness
2. Harness front combination
3. Harness rear combination

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15. Checking Clutch Disc for Wear

The clutch release cylinder automatically compensates for changes in the position of the release levers of the pressure plate assembly due to clutch disc wear. There is no need for pedal adjustment once the pedal is adjusted at the time of assembly. However, measure the wear of clutch disc as instructed below so that you will know when it is the right time to replace clutch disc.



1. Push rod complete
2. Boot
3. Piston
4. Body

L : Dimension when release cylinder is assembled (mm)
L1: Dimension when release cylinder is installed to clutch shifter shaft (when clutch disc is new)
L2: Dimension between centers of cylinder body mounting bolt hole and mounting pin hole

(1) After the clutch release cylinder is installed in accordance with the clutch pedal adjustment procedure described above, measure L2 and record the measurement.

Note: L2 may deviate from the specified standard value due to error in the installed dimensions of parts, their free play, etc.

(2) As the clutch disc wears, the piston is pushed further little by little, which results in a decrease in L2 dimension. During monthly inspection, measure L2 and if the measurement exceeds the limit, replace the clutch disc.

Item		Specified value	
L1 (reference value)	Dry type clutch	Standard	22 mm (0.87 in.)
	Wet type clutch	Standard	17 mm (0.67 in.)

Item		Specified value	
L2 dimension	Dry type clutch	Standard	105.9 ± 0.5 mm (4.169 ± 0.019 in.)
	Wet type clutch	Standard	100.9 ± 0.5 mm (3.972 ± 0.019 in.)

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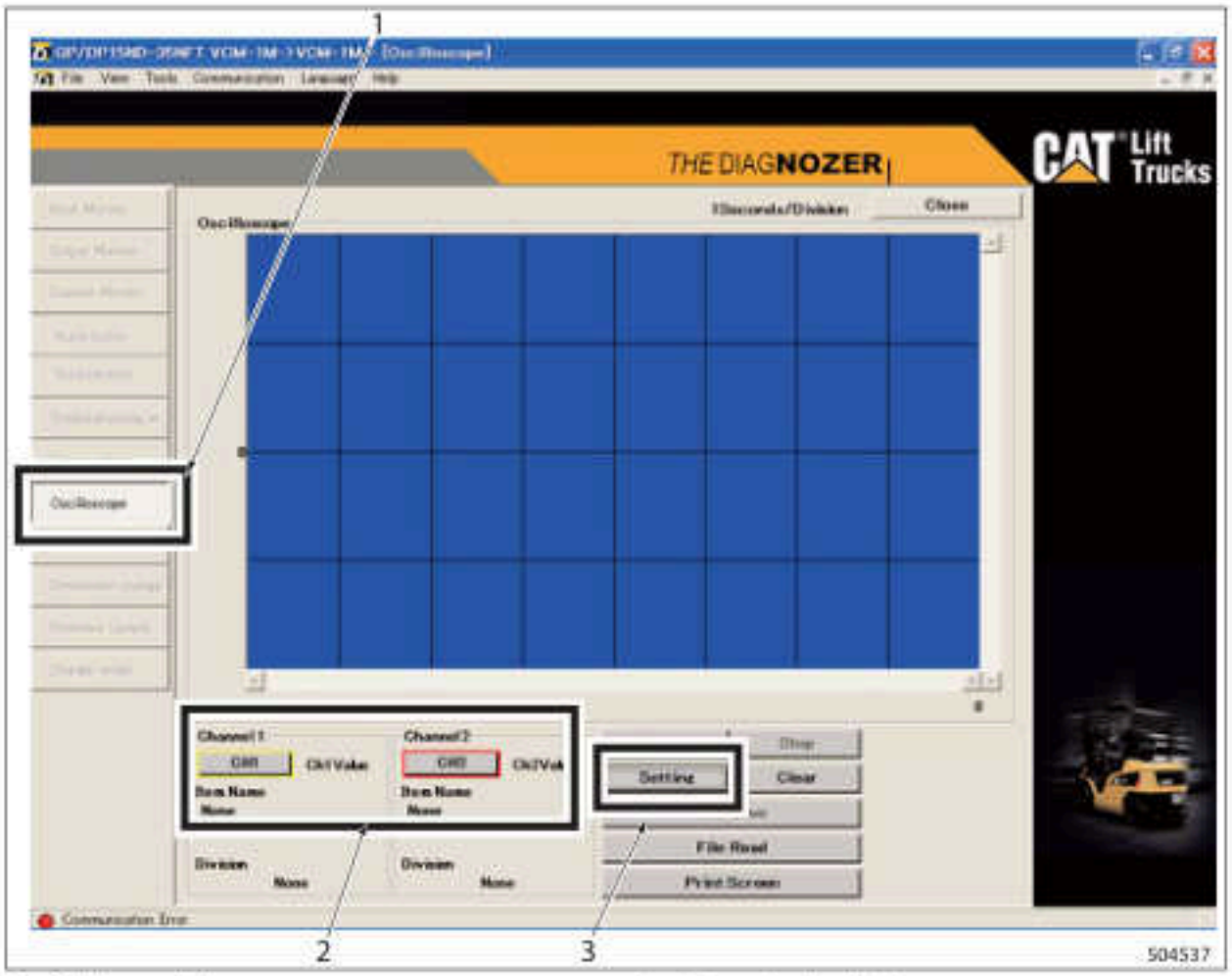
13. Troubleshooting

Condition	Problem		Possible cause	Action
Excessive steering effort	Flow priority valve malfunction	No steering flow	Foreign objects clogged in orifices of spool	Disassemble and clean
			Spring in spool fatigued	Replace spring
		Relief valve malfunction	Low relief pressure	Adjust relief pressure
			Damaged valve seating surface	Replace valve assembly
			Spring settling.	Replace spring, then adjust relief pressure
		Oil leak from relief valve	Damaged O-ring on the valve body	Replace O-ring
	Steering valve malfunction	Clogging in gerotor		Disassemble and clean
		Sleeve and spool seizure due to entry of foreign objects		Replace
		Damaged bearing		Replace
		Overtightening of end cap mounting bolts		Retighten
	Steering cylinder malfunction	Piston rod deflection		Replace
		Damaged piston seal		Replace
	Misalignment	Steering valve and tilt column assembly fault		Adjustment
	Other malfunctions	Flattened hose or pipe		Replace
Unstable steering wheel movement	Steering valve malfunction	Spool or sleeve seizure		Replace
		Damaged center spring		Replace
	Other malfunctions	Air trap		Bleed air
		Flattened hose or pipe		Replace
		Damaged piston seal of steering cylinder		Replace

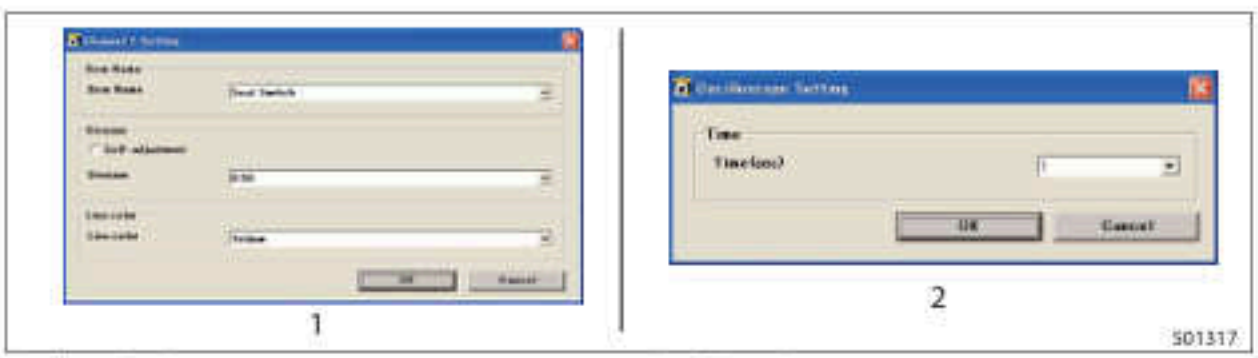
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Oscilloscope

Click the oscilloscope button from the menu or toolbox to display the oscilloscope screen in the main window. The oscilloscope screen shows a graph of the specified input/output values. The user can set up two items (CH1 and CH2) as input/output values to be expressed in the graph. The time axis of the graph is expressed in seconds. The data of the graph being displayed on the screen can be stored in the memory, and redisplayed later. The graph screen can be printed out on a printer by clicking the Print Screen button. Note that graphs will have some amount of lag in the wave pattern and a margin of error due to the simple function of an oscilloscope. To obtain an accurate wave pattern, use a dedicated measuring instrument.



1. Oscilloscope button
2. Input/output read set-up button
3. Time axis set-up button



1. Channel setting screen
2. Time axis set-up screen

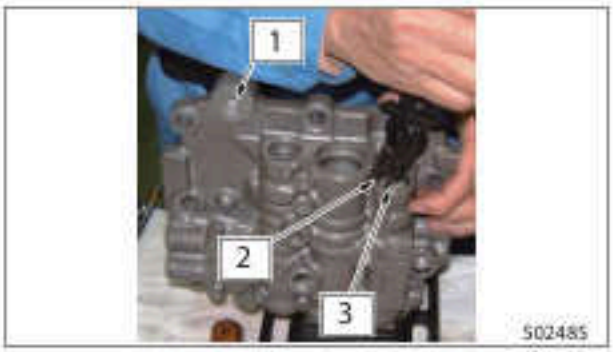
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6.8 Oil Seal and Plug, Removing

Regulator valve section

(1) Secure the control valve body in a vise so that inching lever mounting side faces up.

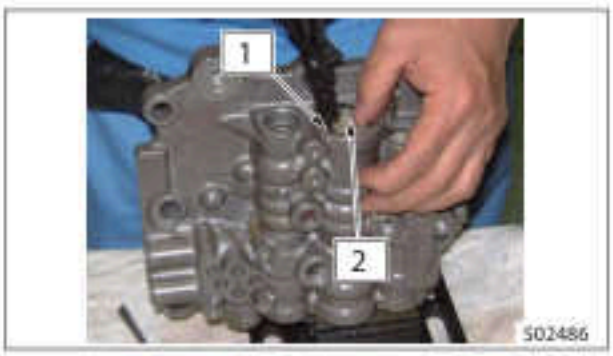
(2) Remove snapring from regulator valve section and remove main relief plug together with O-ring.



1. Inching lever mounting portion 3. Main relief plug
2. Snapring

Accumulator valve section

Remove snapring from accumulator valve section and remove accumulator plug together with O-ring.



1. Snapring 2. Accumulator plug

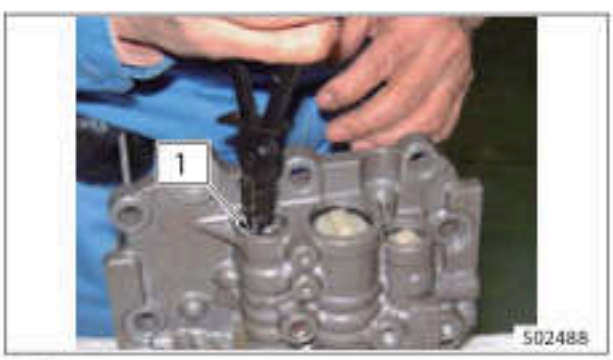
Regulator valve section

(1) Remove oil seal from inching rod.



1. Inching rod oil seal

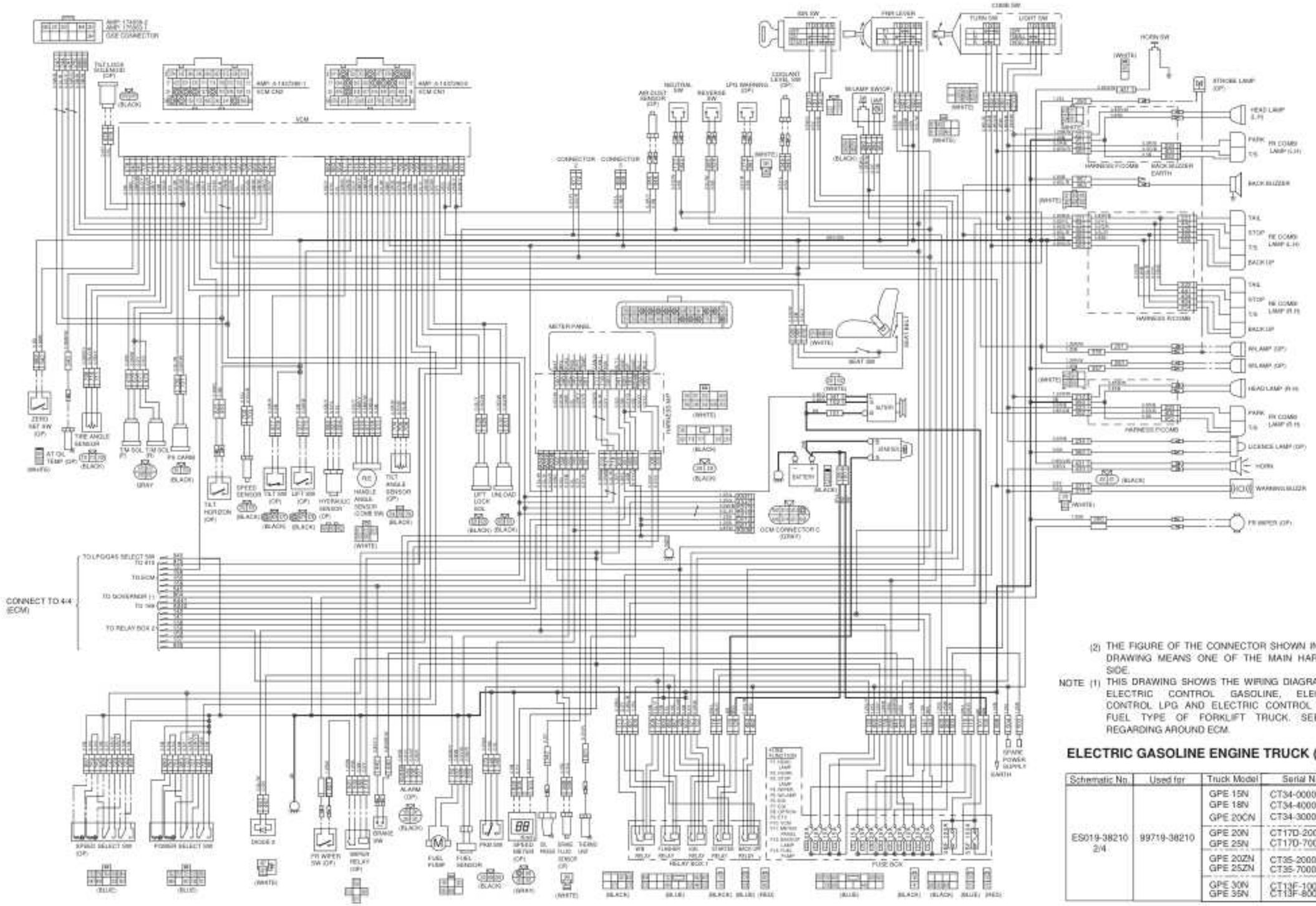
(2) Remove snapring from inching valve section.



1. Snapring

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Electrical Schematic (4/7)



(2) THE FIGURE OF THE CONNECTOR SHOWN IN THIS DRAWING MEANS ONE OF THE MAIN HARNESS SIDE.

NOTE (1) THIS DRAWING SHOWS THE WIRING DIAGRAM OF ELECTRIC CONTROL GASOLINE, ELECTRIC CONTROL LPG AND ELECTRIC CONTROL DUAL FUEL TYPE OF FORKLIFT TRUCK. SEE 4/4 REGARDING AROUND ECM.

ELECTRIC GASOLINE ENGINE TRUCK (MC)

Schematic No.	Used for	Truck Model	Serial No.
ES019-38210 2/4	99719-38210	GPE 15N	CT34-00001 up
		GPE 18N	CT34-40001 up
		GPE 20CN	CT34-30001 up
		GPE 20N	CT17D-20001 up
		GPE 25N	CT17D-70001 up
		GPE 20ZN	CT35-20001 up
		GPE 25ZN	CT35-70001 up
		GPE 30N	CT13F-10001 up
		GPE 35N	CT13F-80001 up

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