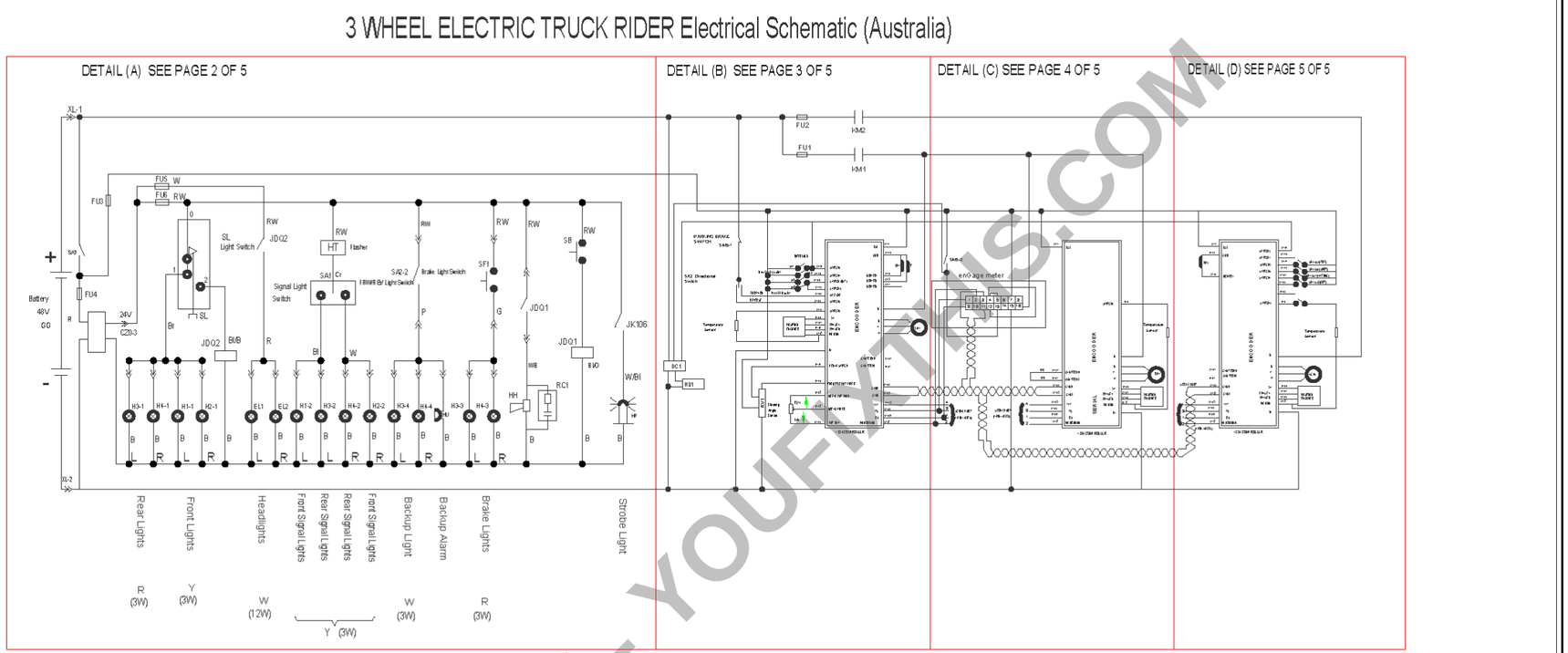
Schematic Diagram (Australian Standard)



Wire Color	Blk	White	Red	Green	Yellow	Brown	Blue	Gray	Violet	Orange	Pink
Part No.	B	W	R	G	Y	Br	Bl	Gr	V	O	P

Description: The remaining unmarked wire diameter is 1.0mm, the current value is 0.3A

NO.	LABEL	DESCRIPTION	Model	SPEC	Qty	Manufactor
1	GG	LEAD-ACID BATTERY	6PZS600-G00	2V	24	
			5PZS500-G00		24	
			4PZS400-G00		24	
2	EL1-EL2	HEADLIGHTS	WD100x90	24V/12W	2	
3	H1-H2	TURN SIGNAL LIGHTS		24V	2	
4	H3-H4	TAIL LIGHTS		24V	2	
5	RC1	HORN FILTER			1	CURTIS
6	KM1	MAIN CONTACTOR	SW180	48V	1	Albright
7	KM2	PUMP CONTACTOR	SW180	48V	1	Albright
8	SL	LIGHT SWITCH			(1)	
9	SA1	TURN SIGNAL SWITCH			(1)	
10	SA2	DIRECTIONAL SWITCH	SS-5GL		1	OMROM
11	SA3	KEY SWITCH	47.00.13.		1	KEYA
12	SA4	SEAT SWITCH			(1)	seat accessory
13	SA5	SEAT BELT SWITCH			(1)	seat accessory
14	SA6	DROP SWITCH	Z-15GQ2255-B		1	OMRON
15	SA7	MAST LIMIT SWITCH	TZ-3104		1	OMRON
16	ZF	SOLENOID VALVE	HCZS-F16D-000	24V	1	
17	SF1	BRAKE LIGHT SWITCH	UK231	24V/3A	1	
18	HH	HORN	R450-700200-000	24V	1	
19	HT	FLASHER	SG224C	24V	1	

NO.	LABEL	DESCRIPTION	Model	SPEC	Qty	Manufactor
20	DC1	DELAYED CONTROL	YDS-03-48	48V	1	
21	HU	BACKUP ALARM	DJB-24B	24V	1	
22	HU1	ALARM	YDS-03-05	5V	1	
23	HF	STROBE LIGHT	LTD152A	24V	(1)	
24	SB	HORN BUTTON			1	OMRON
25	SM1	LIFT CONTROL	Z-15GQ2255-B		1	OMRON
26	SM2	TILT CONTROL	Z-15GQ2255-B		1	OMRON
27	SM3	SIDE SHIFT CONTROL	Z-15GQ2255-B		1	OMRON
28	SM4	FOURTH CONTROL	Z-15GQ2255-B		1	OMRON
29	SM5	PARKING BRAKE SWITCH	Z-15GQ2255-B		1	OMRON
30	FU1	FUSE	FU-350A-G00	350A	1	SIBA(CPDS13-20A)
31	FU2	FUSE	FU-350A-G00	350A	1	SIBA(CPDS13-20A)
32	FU3-6	FUSE	0257010	10A	4	Littelfuse
33	XL	Battery Connector	ESBC160AR/EKPM160AR	160A/150V	1	RAVIOLI(CPDS13-20A)

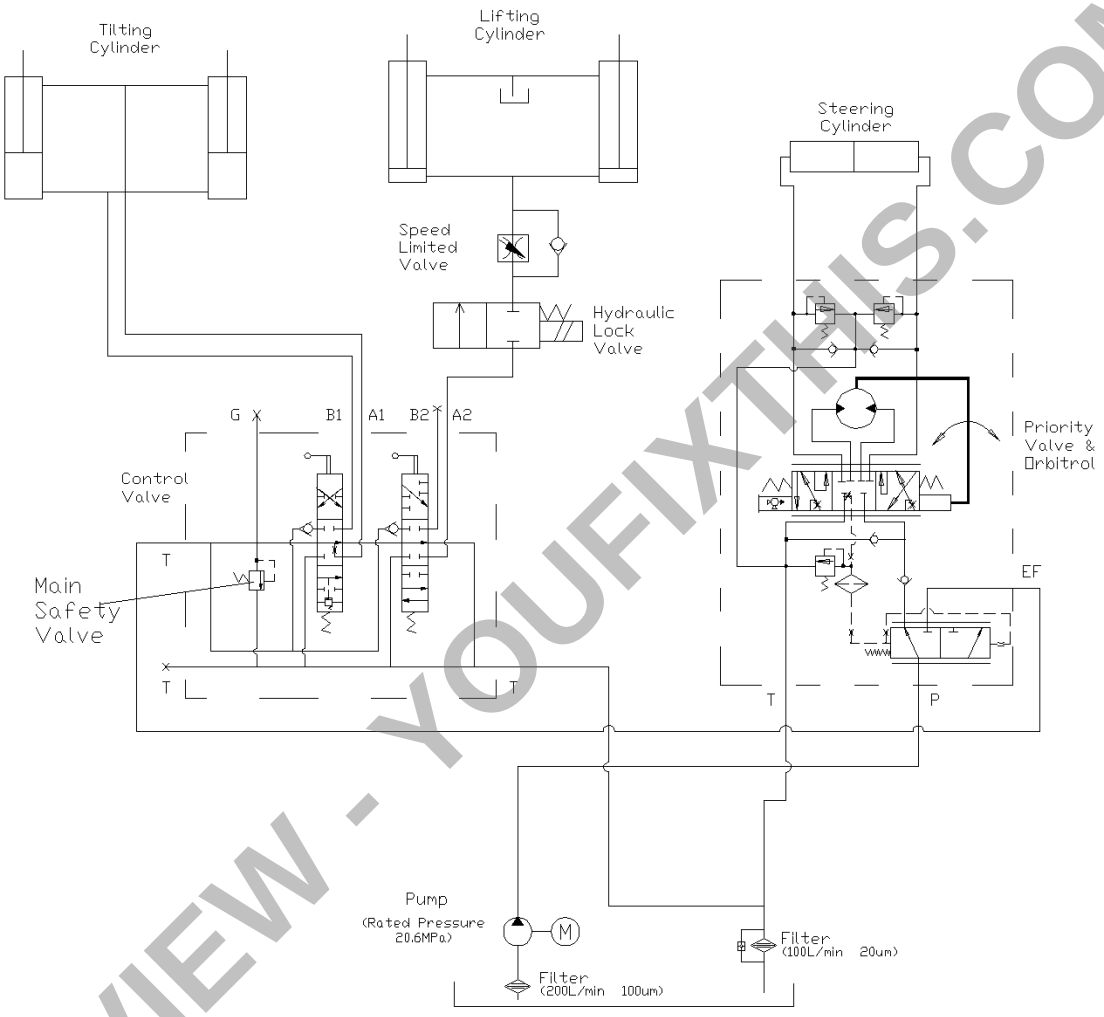
34	TRACT MOTOR	DRIVE MOTOR	HPQ4.75-4HC	4.75kW	2	HEPU(CPDS13-20A)
35	PUMP MOTOR	HYD PUMP MOTOR	HPB9.5-4HC-C	9.5kW	1	HEPU(CPDS13-20AC4)
36	JDQ1-2	RELAY	T9AP5D52-24	24V	2	TYCO

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Hydraulic Schematic Diagram



Main saftey valve pressrue:

1.3t	14MPa
1.5t	15.5MPa
1.6/1.8/2.0t	18MPa

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Structure

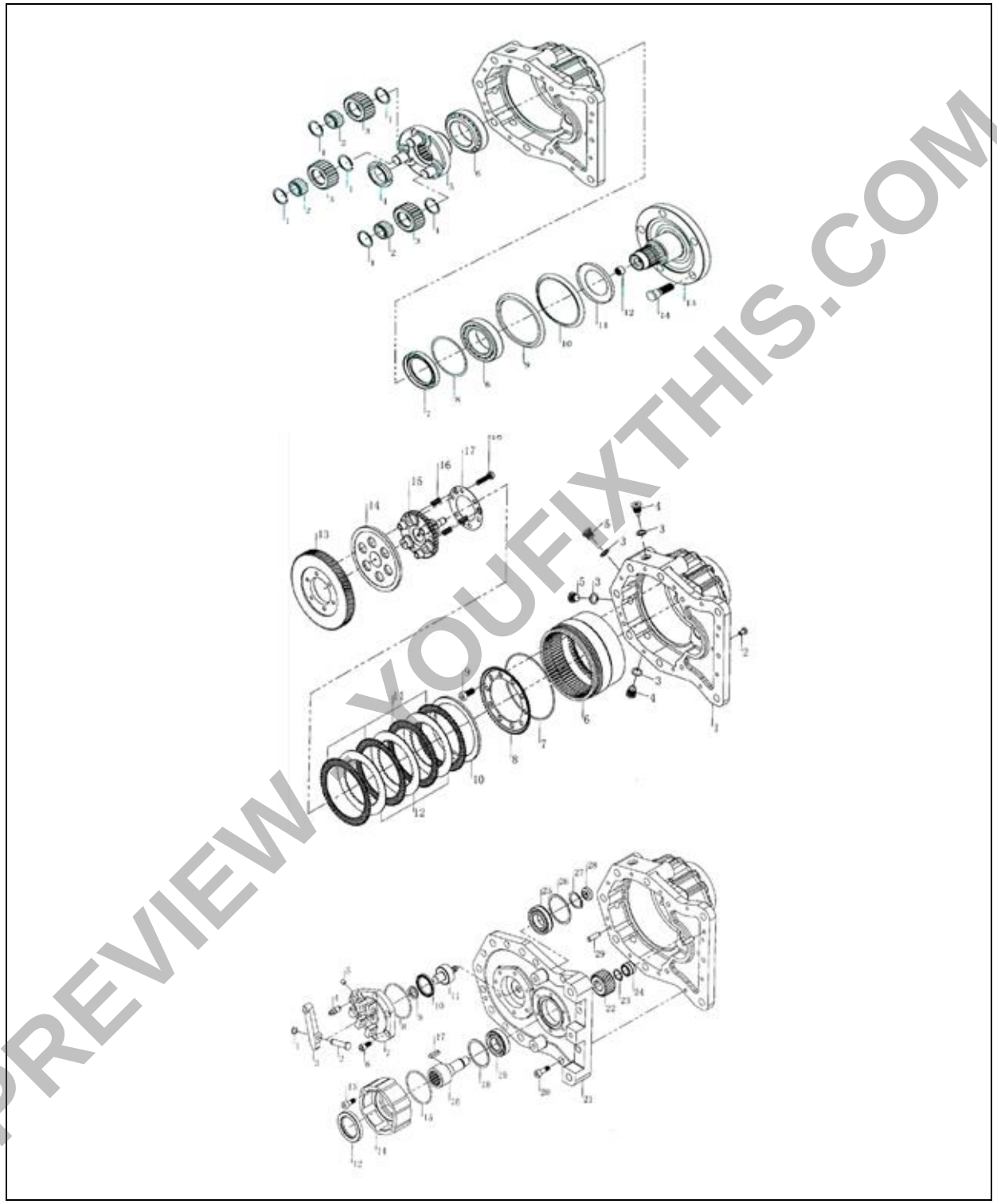


Figure 1-1

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Left/Right Traction Controller Fault Code Table		
Instrument Display-Display Codes	**Handheld Display Fault Codes**	**Possible Cause**
1.8	Severe Overvoltage	1. Battery Menu parameters are misadjusted. 2. Battery resistance too high for given regen current. 3. Battery disconnected while regen braking. 4. See 1313-4401 menu Monitor » Battery: Capacitor Voltage.
2.1	Controller Under Temperature Cutback	1. Controller is performance-limited at this temperature (below -25°C). 2. Controller is operating in an extreme environment. 3. See 1313-4401 menu Monitor » Controller: Temperature.
2.2	Controller Over Temperature Cutback	1. Controller is performance-limited at this temperature (above 85°C). 2. Controller is operating in an extreme environment. 3. Excessive load on vehicle. 4. Improper mounting of controller. 5. See 1313-4401 menu Monitor » Controller: Temperature.
2.3	Under Voltage Cutback	1. Normal operation. Fault shows that the batteries need recharging. Controller is performance-limited at this voltage. 2. Controller battery parameters are misadjusted. 3. Check for non-controller system drain on battery. 4. Battery resistance too high. 5. Battery disconnected while driving. 6. See 1313-4401 menu Monitor » Battery: Capacitor Voltage. 7. Blown B+ fuse or main contactor did not close
2.4	Overvoltage Cutback	1. Normal operation. Fault shows that regen braking currents elevated the battery voltage during regen braking. Controller is performance-limited at this voltage. 2. Battery parameters are misadjusted. 3. Battery resistance too high for given regen current. 4. Battery disconnected while regen braking. 5. See 1313-4401 menu Monitor » Battery: Capacitor Voltage.
2.5	+5V Supply Failure	1. External load impedance on the +5 V supply (pin 26) is too low. 2. See 1313-4401 menu Monitor » Outputs: 5 Volts and Ext Supply Current.
2.6	Digital Out 6 Overcurrent	1. External load impedance on Digital Output 6 driver (Pin 19) is too low.
2.7	Digital Out 7 Overcurrent	1. External load impedance on Digital Output 7 driver (Pin 20) is too low.

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Troubleshooting Tables

TROUBLESHOOTING CHART (Table 5)			
CODE	PROGRAMMER LCD DISPLAY *EFFECT OF FAULT*	POSSIBLE CAUSE	SET/CLEAR CONDITIONS
12	Controller Overcurrent *Shutdown Main Contactor* *Shutdown Motor* *Shutdown EM Brake*	1. External short of phase U, V, or W motor connections. 2. Motor parameters are mistuned. 3. Controller defective.	***Set:*** Phase current exceeded the current measurement limit. ***Clear:*** Cycle KSI.
13	Current Sensor Fault *Shutdown Main Contactor* *Shutdown Motor* *Shutdown EM Brake*	1. Leakage to vehicle frame from phase U, V, or W (short in motor stator). 2. Controller defective.	***Set:*** Controller current sensors have invalid offset reading. ***Clear:*** Cycle KSI.
14	Pre-charge Failed *Shutdown Main Contactor* *Shutdown Motor* *Shutdown EM Brake*	1. External load on capacitor bank (B+ connection stud) that prevents the capacitor bank from charging. 2. See 1313-4401 menu Monitor » Battery: Capacitor Voltage.	***Set:*** Pre-charge failed to charge the capacitor bank to the KSI voltage. ***Clear:*** Cycle Interlock input or use VCL function *Pre-charge()*.
15	Controller Severe Under Temperature *Shutdown Main Contactor* *Shutdown Motor* *Shutdown EM Brake* *Shutdown Throttle, Full Brake*	1. Controller is operating in an extreme environment. 2. See 1313-4401 menu Monitor » Controller: Temperature.	***Set:*** Heat sink temperature below -40°C. ***Clear:*** Bring heat sink temperature above -40°C, and cycle interlock or KSI.
16	Controller Severe Over Temp *Shutdown Main Contactor* *Shutdown Motor* *Shutdown EM Brake* *Shutdown Throttle, Full Brake*	1. Controller is operating in an extreme environment. 2. Excessive load on vehicle. 3. Improper mounting of controller. 4. See 1313-4401 menu Monitor » Controller: Temperature.	***Set:*** Heat sink temperature above +95°C. ***Clear:*** Bring heat sink temperature below +95°C, and cycle interlock or KSI.
17	Severe Under Voltage *Reduced Drive Torque*	1. Battery Menu parameters are misadjusted. 2. Non-controller system drain on battery. 3. Battery resistance too high. 4. Battery disconnected while driving. 5. See 1313-4401 menu Monitor » Battery: Capacitor Voltage. 6. Blown B+ fuse or main contactor did not close.	***Set:*** Capacitor bank voltage dropped below the Severe Battery Under voltage limit (see page 49) with FET bridge enabled. ***Clear:*** Bring capacitor voltage above Severe Battery Under voltage limit.
18	Severe Overvoltage *Shutdown Main Contactor* *Shutdown Motor* *Shutdown EM Brake* *Shutdown Throttle, Full Brake*	1. Battery Menu parameters are misadjusted. 2. Battery resistance too high for given regen current. 3. Battery disconnected while regen braking. 4. See 1313-4401 menu Monitor » Battery: Capacitor Voltage.	***Set:*** Capacitor bank voltage exceeded the Severe Battery Overvoltage limit (see page 49) with FET bridge enabled. ***Clear:*** Bring capacitor voltage below Severe Battery Overvoltage limit and then cycle KSI.

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1. Drive System

The drive system adopts a dual-motor front wheel drive, wherein the left and right drive wheels are driven independently by different motors, the rotation speed of the left and right motors is controlled by the rear wheel steering angle, and each motor is connected to the gearbox, brakes, solid tires, rims and other components.

The reduction gearbox is a double reduction system with a compact structure, comprising a first-stage cylindrical helical gear set and a second-stage planetary final drive.

The brakes are maintenance-free, wet disc brakes.

Failure	Possible Cause	Remedy
Loud impact sound when travelling and changing direction	Excessive Gear Backlash	Adjust
	Excessive Gear Wear	Replace
Gear Noise when Travelling	Gearbox Oil Level Too Low	Top Up Gear Oil
	Excessive Gear Backlash	Adjust
	Excessive Gear Wear	Replace

Gearbox

Technical Parameters

Item		Parameter
Weight (Without Oil)		31 kg
Oil Capacity		0.35 L
Oil Type		ATF DEXRON II
Foot Brake	Brake Fluid	DOT3
	Operating Pressure	60-80 bar
	Normal Pressure (Maximum Continuous)	80 bar
	Maximum Pressure	100 bar
	Hydraulic Cylinder Brake Fluid Volume (Under Normal Conditions)	1.71 cm^3
	Hydraulic Cylinder Brake Fluid Volume (Under Maximum Wear Conditions)	3.71 cm^3
Hand Brake	Hand Brake Lever Pulling Force	100 N
	Stroke	6 mm
	Wear Limit Stroke	13 mm

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Precautions for Use:

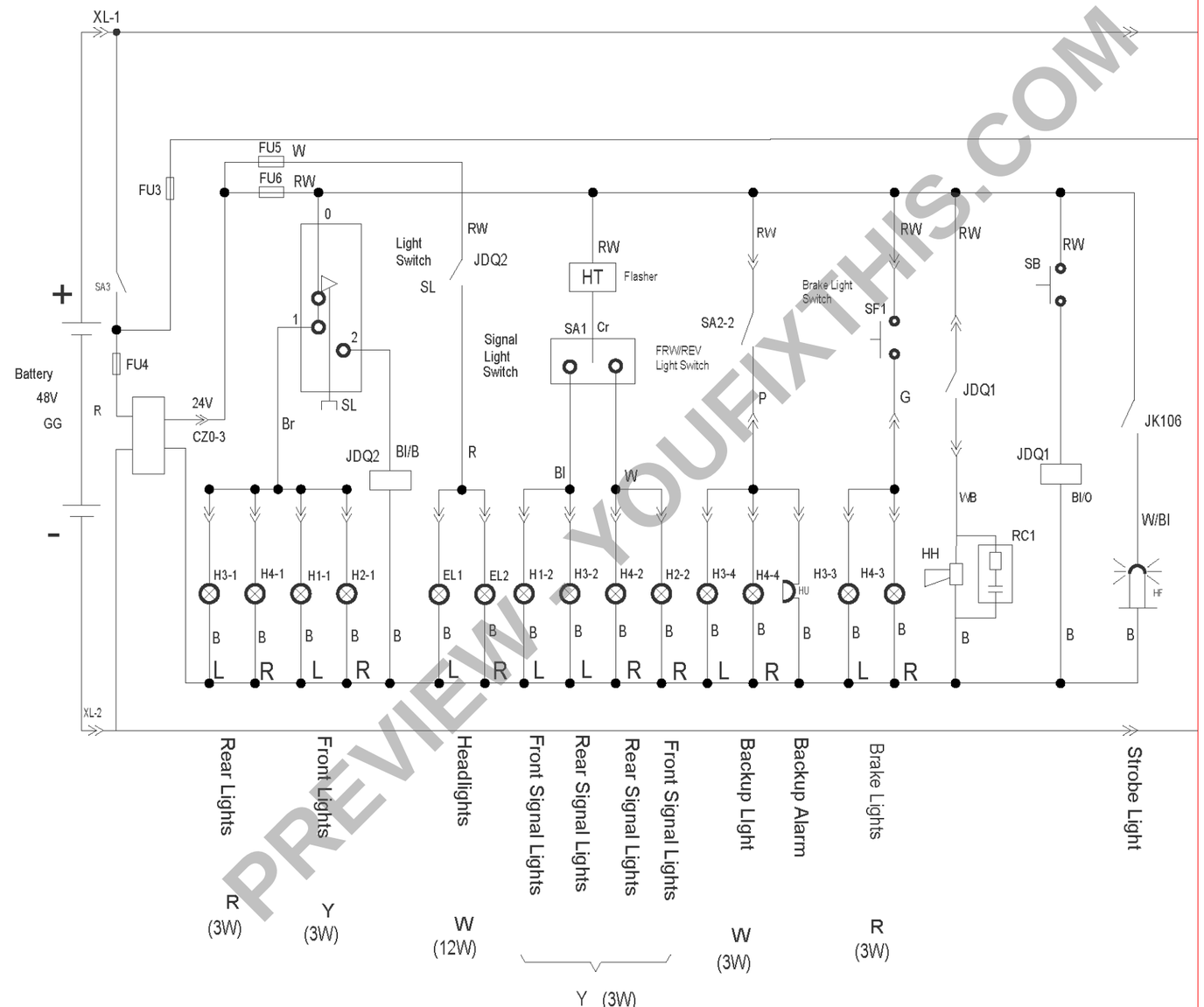
- In the event of oil leakage from the cylinder body, check and replace the seal rings (12, 14, and 16). Also check the guide sleeve and cylinder body for damage.
- Periodically check the bearings (10, 19) and their seal rings (9, 20), and replace promptly if damaged. Also change grease on a regular basis.
- Periodically check the bearings (26, 28), and their seal ring (25), and replace promptly if damaged. Also change grease on a regular basis;
- Adjusting the preload of the steer wheels hub bearings: remove the counterweight and its cover panel, and then jack up the rear of the frame with an automotive jack so that the wheels are off the ground. Tighten nut (3) until the steer wheels hubs cannot be moved by hand, then rotate it 1/6 to 1/4 turn in the opposite direction.
- Adjusting the preload of the support bearings (10, 19): Remove counterweight and its cover panel, and then jack up the rear of the frame. Tighten nut (8) until the steering spindle cannot be moved by hand, then rotate nut (8) 1/6 to 1/4 turn in the opposite direction.

Problem	**Cause Analysis**	**Remedy**
Steer wheels will not turn	Pump damaged or faulty	Replace
	Clogged or damaged priority valve	Flush or replace
	Hose or connector damaged or pipe blocked	Replace or flush
Steering is hard	Diverter valve pressure too low	Adjust pressure
	Air in the oil line	Bleed off air
	Steering gear fails to centre, positioning spring broken or weak	Replace spring
	Excessive leakage inside steering cylinder	Check piston seal
Abnormal noise	Low oil tank level	Add oil
	Damaged steering gear shaft rack	Replace
	Damaged wheel bearing or support bearing	Replace
	Inadequate lubrication	Add grease
	Clogged suction pipe or oil filter	Flush or replace
Oil leak	Defective steering cylinder seal ring or damaged pipe or connector	Replace
	Damaged wheel hub bearing or support bearing or seal ring	Replace seal ring
Steering angles of left and right drive wheels (front wheels) do not match	Controller parameters incorrect	Adjust

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DETAIL (A) SEE PAGE 2 OF 5



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