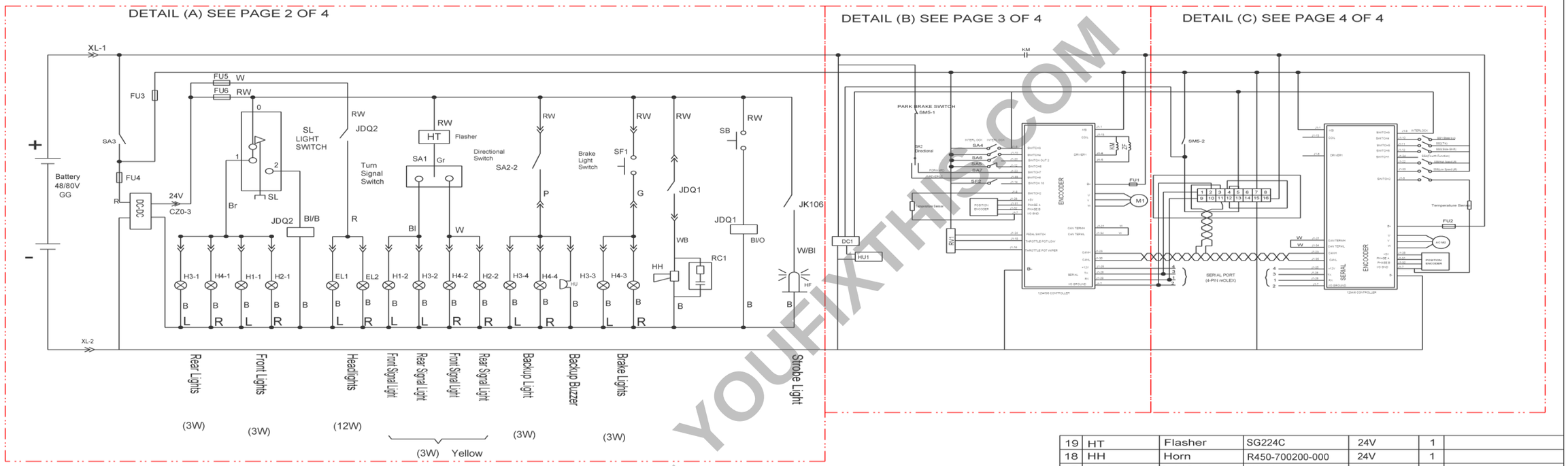
Electrical Principle Diagram

4 WHEEL ELECTRIC RIDER Electrical Schematic (Australia)



Wire Color	Blk	White	Red	Green	Yellow	Brown	Blue	Gray	Violet	Orange	Pink
Code	B	W	R	G	Y	Br	Bl	Gr	V	O	P

Description: The remaining unmarked wire diameter is 0.85mm and the current is 0 ~ 8A

PAGE 1 OF 4

No	LABEL	Description	Model	Spec	Qty	Truck Model
1	GG	LEAD ACID BATTERY	D-500	2V	40	3-3.5t
			D-630B	2V	24	2-2.5t
			D-420	2V	24	1-1.8t
2	EL1-EL2	HEADLIGHT	WD100x90	24V/70W	2	
3	H1-H2	SIGNAL LIGHT		24V	2	
4	H3-H4	TAIL LIGHTS		24V	2	
5	RC1	HORN FILTER			1	
6	KM	MAIN CONTACTOR	SW200	48V	2	
7	SL	Light Switch			(1)	
8	SA1	Turn Signal Switch			(1)	
9	SA2	Directional Switch	SS-5GL		1	
10	SA3	Key Switch	47.00.13.0		1	
11	SA4	Seat Switch			(1)	
12	SA5	Seat Belt Switch			(1)	
13	SA6	Drop Switch	Z-15GQ2255-B		1	
14	SA7	Mast Limit Switch	TZ-3104		1	
15	ZF	Solenoid Valve	HCZS-F16D-000	24V	1	
16	SF1	Brake Light Switch	JK231	24V/3A	1	
17	SF2	Brake Switch	JK231	24V/3A	1	
18	HH	Horn	R450-700200-000	24V	1	
19	HT	Flasher	SG224C	24V	1	

No	LABEL	Description	Model	Spec	Qty	Truck Model
20	HU1	Backup Alarm	YDS-03-05	5V	1	
21	DC1	Delay Controller	YDS-03-80	80V	1	
	DC1		YDS-03-48	48V	1	
22	JDQ1-2	Relay	T9AP5D52-24	24V	2	
23	HU	Alarm	DJB-24B	24V	2	
24	HF	Lights	LTD152A	24V	1	
25	SB	Horn Button			(1)	
26	SM1	Lift Control	Z-15GQ2255-B		1	
27	SM2	Tilt Control	Z-15GQ2255-B		1	
28	SM3	Side Shift Control	Z-15GQ2255-B		1	
29	SM5	Handbrake Switch	Z-15GQ2255-B		1	
30	FU1	Fuse	FU-425A-G00	425A	1	(2 / 2.5 / 3.5t)
			FU-350A-G00	350A	1	(1/ 1.5 /1.8 /3t)
31	FU2	Fuse	FU-250A-G00	250A	1	(2/ 2.5 /3 /3.5t)
			FU-225A-G00	225A	1	(1 / 1.5 / 1.8t)
32	FU3-6	Fuse	179020	10A	4	
33	XL	Battery Connector	ESBC160AR/EKPM160AR	160A/150V	1	

No	LABEL	Description	Model	Spec	Qty	Truck Model
34	TRACT MOTOR	HPQ15-4HC-A	15kW	1	3-3.5t	
		HPQ11-4HC-A	11kW	1	2-2.5t	
		HPQ8-4HC-A	8kW	1	1-1.8t	
35	PUMP MOTOR	HPB10-4HC	8.6kW	1	3-3.5t	
		HPQ8.6-4HC	8.6kW	1	1-2.5t	

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Electrical Principle Diagram Overview

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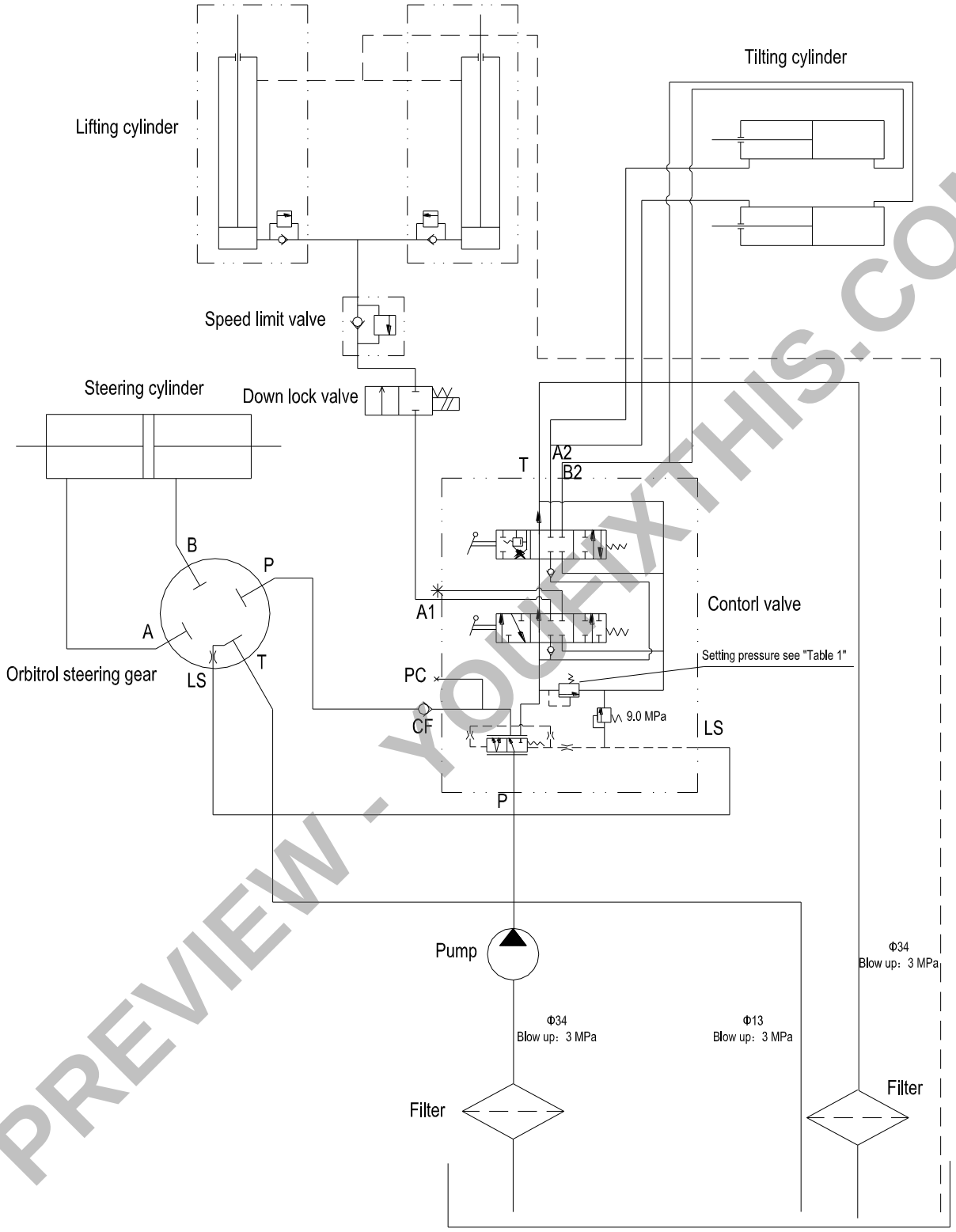


Table 1

Tonnage:t	1.5	1.8	2.0	2.5	3.0	3.5
Setting pressure:MPa±0.5MPa	15.0	17.4	17.5	17.6	17.7	17.8

Fig.4-1Hydraulic System Diagram

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1.2 Reduction gearbox

The reduction gearbox is a double reduction gearbox, namely a cylindrical helical gear and a planetary hub reduction, with a compact structure.

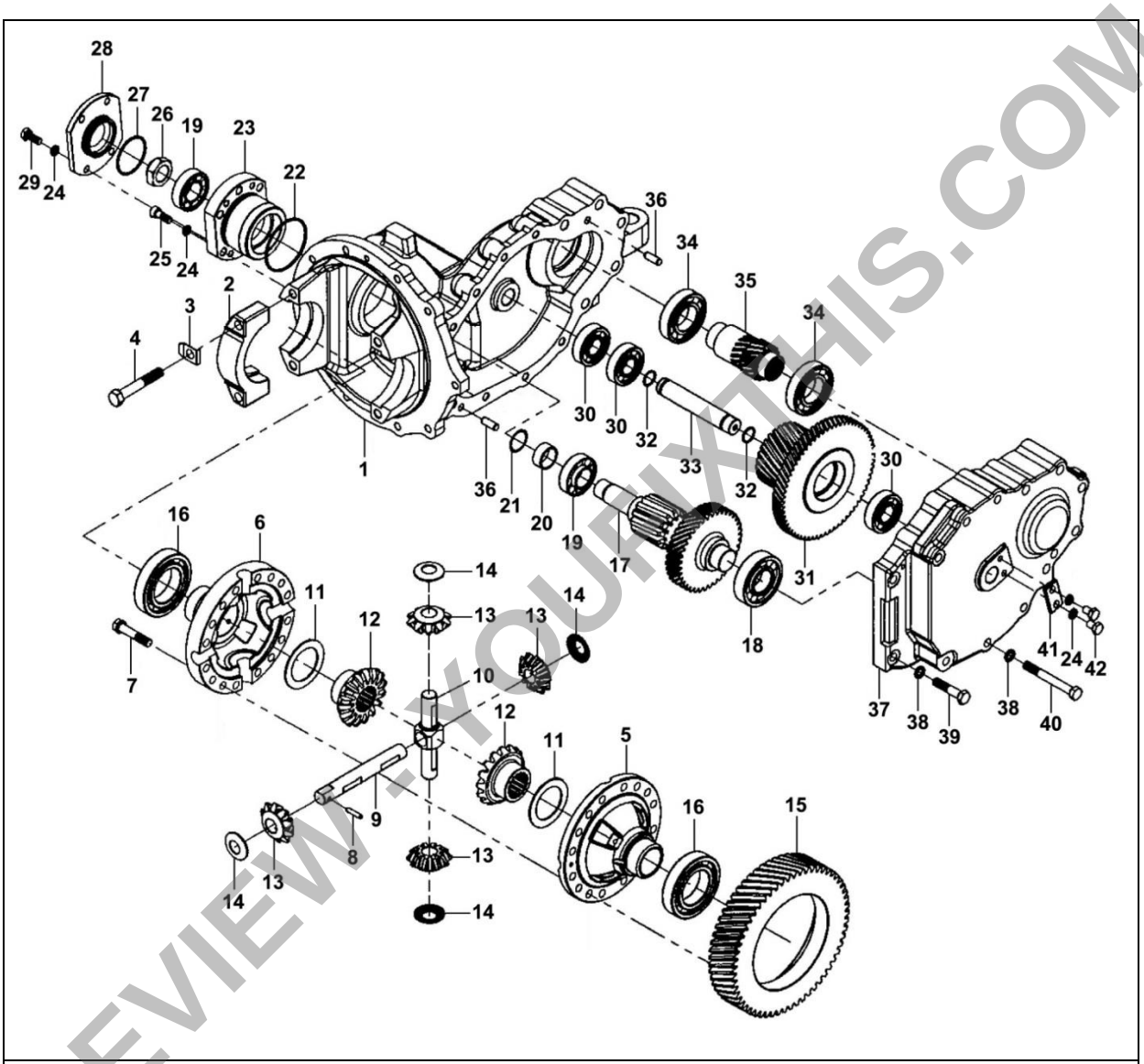


Fig. 1-1 Gear Box

1. Transmission Housing	2. Bearing Seat	3. Locking Plate	4.Bolt
5. Differential housing,R.H.	6. Differential Housing,L.H.	7. Bolt	8. Pin
9.Pinion Gear Shaft	10.Pinion Gear Shaft	11.Washer	12.Half shaft gear
13.Planetary Gear	14.Thrust Washer	15.Big Ring Gear	16.Bearing
17.Double Gear Shaft	18.Bearing	19.Bearing	20.Bushing
21.Shim	22.O-Ring	23.Bearing Seat	24.Washer
25.Bolt	26.Locknut	27.O-Ring	28.Bearing cap
29.Bolt	30.Bearing	31.Double gear	32.O-Ring
33.Shaft	34.Bearing	35.Pinion	36.Pin
37.Transmission Housing	38.Washer	39.Bolt	40.Bolt
41.Locating Plate	42.Bolt		

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5. Lifting System

5.1 Assembly Data

Inspection and Adjustment

Place	Assy clearance (mm)	Repair clearance (mm)
Between Mast and Rollers	0.1-0.8	0.2-1.0
Between Spacers - Shims	0.5-2.0	
Between Mast and Support Guide Plate	0.1-0.8	0.2-1.0
Between Spacers-Shims	0.5-1.0	
Inner Mast and Fork Carriage Side Rollers	0.1-0.6	0.2-1.0
Lift Chain Slack	25-30 mm	

Tightening Torque of Main Parts

Place	N·m
Lift Chain Lock Nuts	127-157 (M16), 176-216(M18) ; 245-314(M20)
The Bearing Cover Between the Mast and the Drive Axle	89-118 (M14), 176-216 (M18)
Tilt Cylinder Lock Nuts	89-118 (M12)
Lift Cylinder Bolts (Top)	76-107 (M12)
Lift Cylinder Bolts(Bottom)	22-29 (M8), 44-58 (M10)
Lift Cylinder Mounting Bolts (U-Shaped Bolts)	14-18 (M8), 29-39 (M10)

Weight of Basic 3M Mast

Tonnage	1.5t	2.0t	2.5t	3.0t	3.5t
Mast Weight (kg)	531	930	1000	1100	1200

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CODE	PROGRAMMER LCD DISPLAY	POSSIBLE CAUSE
1 , 2	Controller Overcurrent	1. External short of phase U, V, or W motor connections. 2. Motor parameters are miss-tuned. 3. Controller defective.
1 , 3	Current Sensor Fault	1. Leakage to vehicle frame from phase U, V, or W (short in motor stator). 2. Controller defective.
1 , 4	Recharged Failed	1. External load on capacitor bank (B+ connection stud) that prevents the capacitor bank from charging. 2. See 1311 menu Monitor » Battery: Capacitor Voltage.
1 , 5	Controller Severe Under temperature	1. Controller is operating in an extreme environment. 2. See 1311 menu Monitor » Controller: Temperature.
1 , 6	Controller Severe Over temperature	1. Controller is operating in an extreme environment. 2. Excessive load on vehicle. 3. Improper mounting of controller. 4. See 1311 menu Monitor » Controller: Temperature.
1 , 7	Severe Under voltage	1. Battery Menu parameters are misadjusted. 2. Non-controller system drains on battery. 3. Battery resistance too high. 4. Battery disconnected while driving. 5. See 1311 menu Monitor » Battery: Capacitor Voltage. 6. Blown B+ fuse or main contactor did not close.
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 1311 menu Monitor » Battery: Capacitor Voltage.
2 , 1	Controller Under temperature Cutback	1. Controller is performance-limited at this temperature. 2. Controller is operating in an extreme environment. 3. See 1311 menu Monitor » Controller: Temperature.
2 , 2	Controller Over temperature Cutback	1. Controller is performance-limited at this temperature. 2. Controller is operating in an extreme environment. 3. Excessive load on vehicle. 4. Improper mounting of controller. 5. See 1311 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. Battery parameters are misadjusted. 3. Non-controller system drain on battery 4. Battery resistance too high. 5. Battery disconnected while driving. 6. See 1311 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 1311 menu Monitor » Battery: Capacitor Voltage.
2 , 5	+5V Supply Failure	1. External load impedance on the +5V supply (pin 26) is too low. 2. See 1311 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.
2 , 8	Motor Temp Hot Cutback	1. Motor temperature is at or above the programmed Temperature Hot setting, and the requested current is being cut back. 2. Motor Temperature Control Menu parameters are mistuned. 3. See 1311 menus Monitor » Motor: Temperature and Monitor » Inputs: Analog2. 4. If the application doesn't use a motor thermistor, Temp Compensation and Temp Cutback should be programmed Off.
2 , 9	Motor Temp Sensor Fault	1. Motor thermistor is not connected properly. 2. If the application doesn't use a motor thermistor, Temp Compensation and Temp Cutback should be programmed Off. 3. See 1311 menus Monitor » Motor: Temperature and Monitor » Inputs: Analog2.

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1.3.3 Removal and installation of drive axle assembly

WARNING

- **Be careful during removal and installation of drive axle. The Axle is heavy and can cause serious injury. Use appropriate capacity lifting equipment to avoid injury.**

（1）Raise front end of forklift truck and support frame with wooden blocks.
（2）Remove mast assembles.
（3）Slightly raise axle with a hoist and place wooden blacks under differential gear carrier and transmission case.
（4）After placing a pan under axle case, loosen oil plug, drain oil from axle case.
（5）Disconnect brake nuts from left and right cylinders. (see Figure 1-3).

CAUTION

- **Plug brake tube openings to prevent oil from flowing out**.

（6）Disconnect brake cable at hand brake lever.
（7）Remove front wheels.
（8）Remove axle shaft.
（9）Support driving axle with wire ropes and lifting device.
（10）Remove bolts securing axle mounting bracket to frame. (see Figure 1-4).
（11）Remove nuts securing axle case to differential gear carrier. (see Figure1-5).
（12）Remove driving axle assembly.

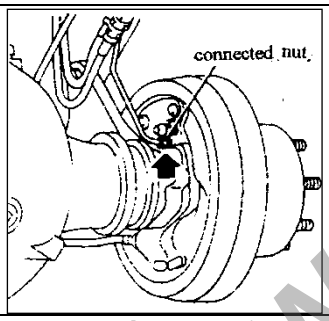


Fig. 1-3

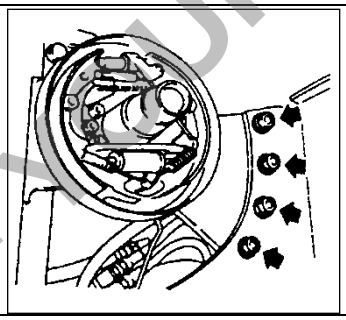


Fig. 1-4

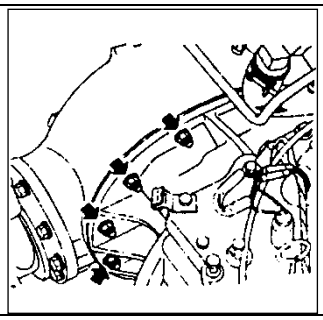


Fig. 1-5

（13）Remove brake drum then remove wheel hub.
（14）Remove axle mounting bracket and brake component from axle tube.
（15）Remove oil seal from axle tube.
（16）To install driving axle assembly in the reverse order of removal. Observe the following:
① When installing axle mounting bracket and brake component, apply a coat of calcium grease to axle tube.
② Apply 1/3-2/3 of volume of calcium grease to wheel hub then install them on axle tube.
③ Install oil seal with its part number facing to the inside of forklift truck.
④ Install drain plug after cleaning it and covering it with seal tape (PVC, white).
⑤ Replenish axle case with gear oil. Tighten vent plug after clearing.**

Gear oil GL-5 85W/90	1.5t - 1.8t	4.5 L
	2.0t - 3.5t	6.0 L

**** Vent plug must be cleaned frequently to prevent the pressure in the axle housing from increasing.**

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Condition	Possible Cause	Corrective action
Loud impact noise when travelling and changing direction	• Excessive gear clearance	Adjust
	• High gear wear	Replace
Gear Noise when Travelling	• Low oil level in the gearbox	Add gear oil
	• Excessive gear clearance	Adjust
	• High gear wear	Replace

1.3 Drive axle

1.3.1 Data

Forklift Model		1.5t-1.8t	2.0t - 2.5t	3.0t - 3.5t
Drive axle type		Full-floating, drive axle is directly mounted to the frame, front-wheel drive		
Tire inflation pressure	MPa	0.79	0.90	
Rotation starting tension of hub at the hub bolt	N	10-29		
Axial clearance of wheel bearing	mm	Less than 0.08		
Weight	kg	125 - 130	195 - 198	202 - 208

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Foreword

This manual covers the components, operation, and servicing of the 1.5T-3.5T 4 Wheel Electric forklift truck. To ensure safe operation of this truck, it is important to read and understand the contents of this manual.

Only qualified service personnel should perform maintenance on this truck.

Product specifications in this manual may vary from your actual truck due to periodic improvements in design. Please contact your Utilev dealer if you have any questions or comments regarding this manual.

This electric four-wheel forklift truck has passed the requirements for, and is approved for operation in countries adhering to CE regulations.

MODELS

Model	Drive Controller	Pump Controller	Rated Capacity(t)/ Load Center(mm)
UT15PFE-UT18PFE	Curtis 1234	Curtis 1234	1.5 / 500，1.8 / 500
UT20PFE-UT25PFE	Curtis 1236	Curtis 1234	2.0 / 500，2.5 / 500
UT30PFE	Curtis 1236	Curtis 1236	3.0 / 500
UT35PFE	Curtis 1238	Curtis 1236	3.5 / 500

WARNING

Indicates a condition that can cause immediate death or injury!

CAUTION

Indicates a condition that can cause property damage!

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