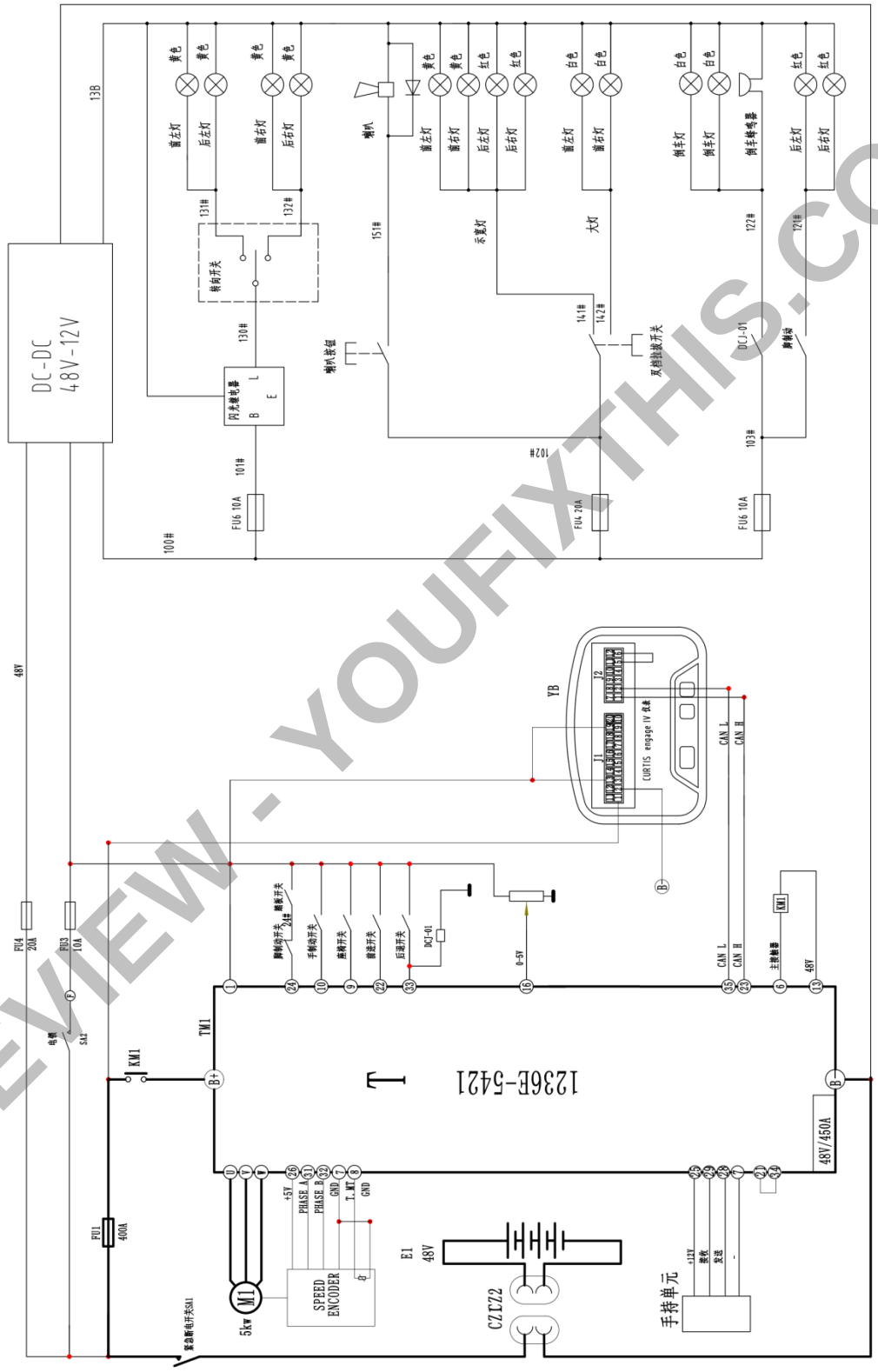
Electrical schematic – manual steering trucks



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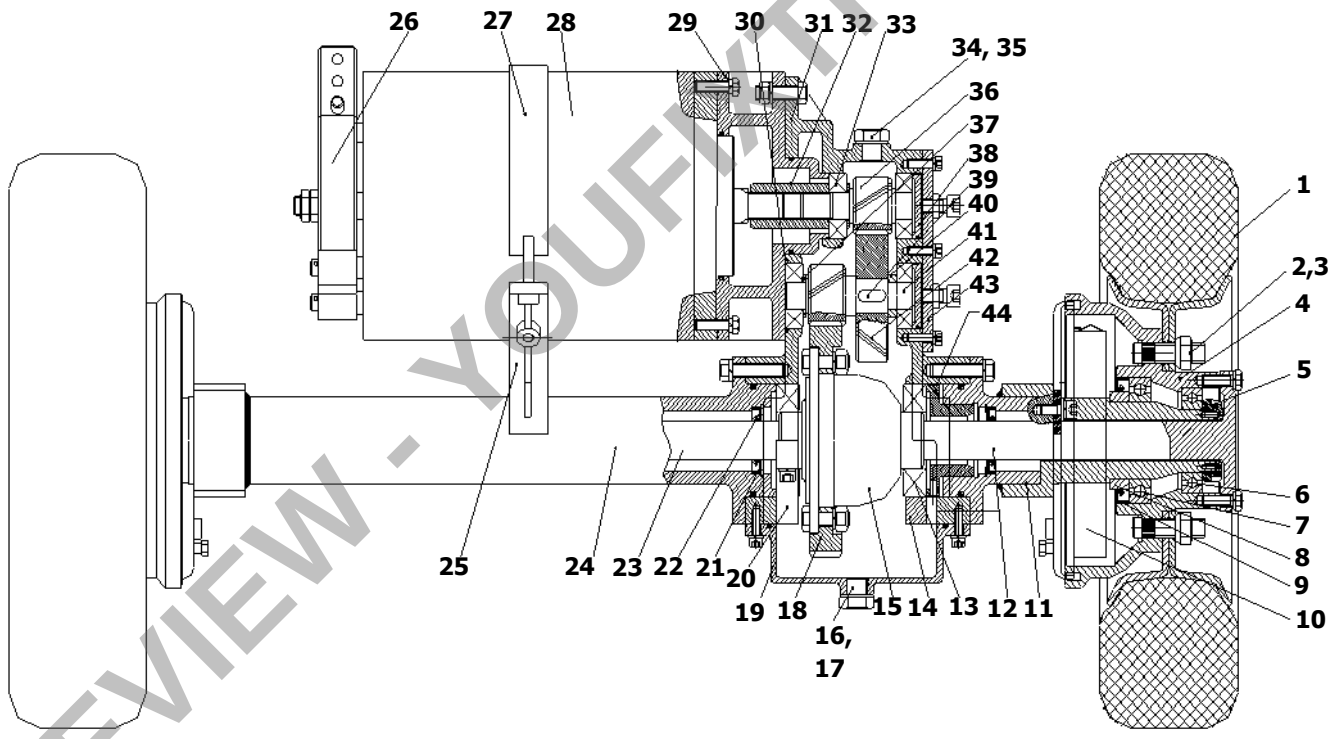
Repair

Driving system

Principles of operation

The running of the tractor relies on the storage battery as its power source and the DC motor as its driving force to drive the truck through the two-speed transmission. The travel direction (forward or backward) is achieved through changing the rotation direction of the driving motor. When the truck turns , this driving axle controls the rotating speed of the right and left drive wheels by symmetrical taper planetary gear differential to achieve the coordinated turning of the two wheels so as to meet the requirements of driving kinematics.

Driving axle structure



1	Wheel	23	Major semi-axis
2	Wheel bolt	24	Shaft bush
3	Wheel nut	25	Motor bracket
4	Brake drum	26	Mechanical brake
5	Nut	27	Motor hoop
6	Rolling bearing	28	Motor 3KW
7	Bearing 6011	29	Motor flange
8	Shaft sleeve	30	O-type ring 47x2.65
9	Framework oil seal FB70x90x10	31	Gear box housing
10	Brake	32	Coupling band
11	Shaft tube	33	Bearing 6204
12	Minor semi-axis	34	Seal screw M10

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Troubleshooting chart – traction controller 1236E

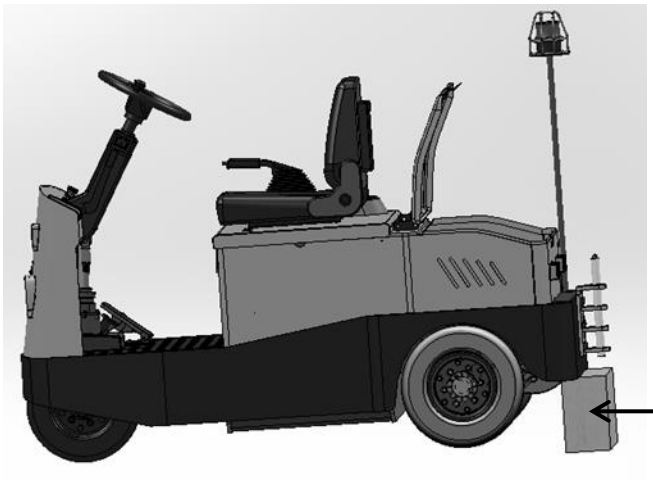
Use this chart to identify fault names, potential causes, and conditions to set and clear the fault. Before troubleshooting, cycle the keyswitch to see if the fault clears. If the fault does not clear, turn off the keyswitch and disconnect the 35 pin connector from the controller, inspect the connector for damage or corrosion, clean and replace if necessary, and reconnect. If the fault persists, use the troubleshooting chart.

Code	Name	Possible cause	Set/clear conditions
12	Controller Overcurrent	1. External short of U, V, or W motor connections. 2. Motor parameters are mistuned 3. Controller defective. 4. Speed encoder noise problems.	*Set:* Phase current exceeded the current measurement limit. *Clear:* Cycle keyswitch.
13	Current Sensor Fault	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 keyswitch.
14	Precharge Failed	1. See Monitor menu>>Battery: Capacitor Voltage. 2. External load on capacitor bank (B+ connection terminal) that prevents capacitor bank from charging.	*Set:* Precharge failed to charge the capacitor bank to the keyswitch voltage. *Clear:* Cycle Interlock input or use VCL function *Enable_Precharge().*
15	Controller Severe Undertemp	1. See Monitor menu>>Controller: Temperature. 2. Controller is operating in an extreme environment.	*Set:* Heatsink temperature below -40°C (-40°F). *Clear:* Bring heatsink temperature above -40°C (-40°F) and cycle interlock or keyswitch.
16	Controller Severe Overtemp	1. See Monitor menu>>Controller: Temperature. 2. Controller is operating in an extreme environment. 3. Excessive load on vehicle.	*Set:* Heatsink temperature above 95°C (203°F). *Clear:* Bring heatsink temperature below 95°C (203°F) and cycle interlock or keyswitch.
17	Severe B+ Undervoltage	1. Battery Menu parameters misadjusted. 2. Non-controller system drain on battery. 3. Battery resistance too high. 4. Battery disconnected while driving. 5. See Monitor menu>>Battery: Capacitor Voltage. 6. Blown B+ fuse or main contactor did not close.	*Set:* Capacitor band dropped below the Severe Undervoltage limit with FET bridge enabled. *Clear:* Bring capacitor voltage above Severe Undervoltage limit.
17	Severe KSI Undervoltage	1. See Monitor menu>>Battery: Keyswitch Voltage. 2. Non-controller system drain on battery. 3. Resistance in low power circuit too high. 4. Low power circuit power source disconnected while driving. 5. Blown fuse.	*Set:* Keyswitch voltage dropped below 8.4V (Brownout voltage is 8.0V). *Clear:* Bring keyswitch voltage above 8.4V.

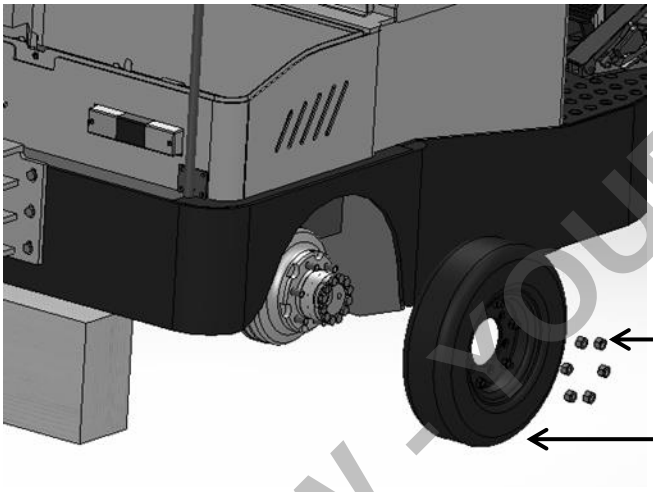
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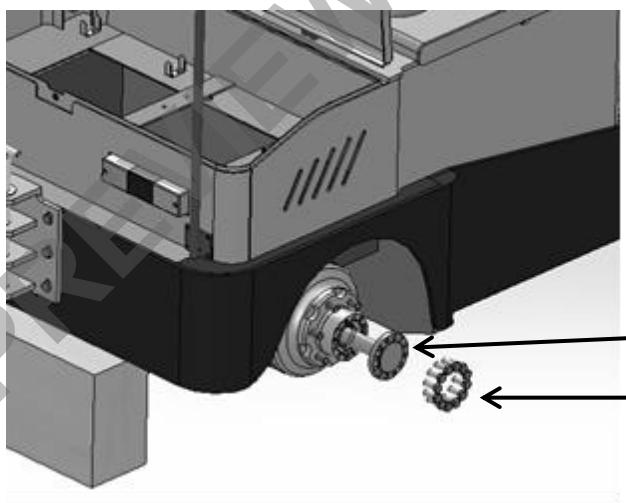
Drive axle – remove



1. Support the rear part of the chassis with a block or stand (item1) rated to hold the weight of the truck.



2. Remove 6 M14x1.5 hub nuts (item 2) from each wheel and remove the drive wheels (item 3).



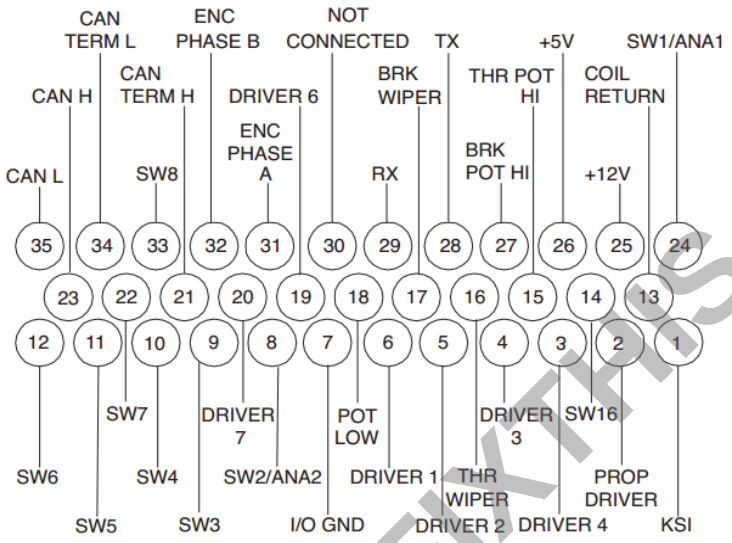
3. Remove 24 M8x30 hex screws (item 4) that fasten the semi-shaft and remove the semi shaft (item 5).

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Traction controller connector pinout

All low power connections are made through a single 35-pin AMPSEAL connector. The mated plug housing is AMP part number 776164-1, and the contact pins are AMP part number 770520-3. The connector will accept 20 to 16 AWG wire with 1.7-2.7mm (.067-106 in) thin wall insulation.



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Troubleshooting

Mechanical breakdowns

Fault	Possible cause	Possible repair
Improper braking	1. Leaking in brake system 2. Clearance between brake shoe is not well adjusted 3. Brake is overheated 4. Improper contact between brake drum and friction pad 5. Impurity on friction plate 6. Impurity in brake liquid 7. Micro adjust valve on brake pedal is not well adjusted	1. Repair 2. Adjust the adjuster 3. Check the return spring 4. Readjust 5. Repair or change 6. Check the brake liquid 7. Adjust
Noise in brake	1. Friction plate surface is hardened or has impurity 2. Base plate is deformed or screws are loosened 3. Brake shoe is deformed or is not mounted correctly 4. Friction plate is worn out 5. Wheel bearing is loosened	1. Repair or change 2. Repair or change 3. Repair or change 4. Change 5. Repair
Uneven brake	1. Oil stain on the friction plate surface 2. Clearance between brake shoe is not well adjusted 3. Branch pump doesn't work 4. Return spring on the brake shoe is damaged 5. Brake drum is slanting	1. Repair or change 2. Adjust the adjuster 3. Repair or change 4. Change 5. Repair or change
Improper brake	1. Oil leaking in brake system 2. Clearance between brake shoe is not well adjusted 3. Air in brake system 4. Brake pedal is not well adjusted	1. Repair or change 2. Adjust the adjuster 3. Release the air 4. Readjust

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Inspection and maintenance every 1000 hours

Every three months, in addition to the 350-hour maintenance, the following maintenance should be carried out. When the parts must be adjusted and replaced, please contact with maintenance personnel.

Drive motor	Clean and inspect internal components of the motor.
Electrical system	Check the main electrical contactor for damage and tighten the fastening hardware.
Drive axle	Check the gearing inside the drive axle and adjust gear clearance if necessary.
Brake system	Check all internal components of the brake for wear and damage.
	Replace the brake seals.
	Drain and release the brake fluid.
Steering system	Clean and inspect internal components of the steering system.
	Adjust the clearance between the steering gear and the steer column.
Whole truck	Grease the chassis.

Recommended fluids

Name	Specification		Quantity
	China	Rest of world	
Gear oil	GL-5 85W/90 gear oil		2L
Lubricant grease	2# lithium lubricating	JISK2220/2#	
Brake fluid	DOT3 synthetic brake fluid		1L

Notice

Always recycle or dispose of all fluids according to local regulations.

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Periodic inspection and maintenance

Inspection and maintenance every day (8 hours)

Whole truck	Clean dust and grease from exterior of the truck.
	Ensure all hardware is tight and undamaged.
	Make sure the tow pin is undamaged.
Braking system	Check brake fluid level and fill if required.
Electrical system	Make sure all lights are working properly.
	Make sure the horn works properly.
	Make sure all operation switches work properly.

Inspection and maintenance every 350 hours

Every 350 hours, in addition to the daily inspections, the following maintenance should be carried out. When the parts must be adjusted and replaced, please contact with maintenance personnel. Keep a monthly maintenance record.

Whole truck	Thoroughly clean the truck, including inside the battery compartment and the undercarriage.
Electrical system	Check all switches for wear.
	Make sure the battery box has no excessive corrosion, and that the battery posts are properly connected and undamaged.
	Check all wiring to make sure the wires, connectors, and insulations are all in good condition.
	Tighten the hardware fastening the electrical components.
Brake system	Check the clearance between the brake drum and brake shoe and adjust if necessary.
	Check the brake pedal movement and adjust if necessary.
	Check the brake shoes for wear and replace if necessary.

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