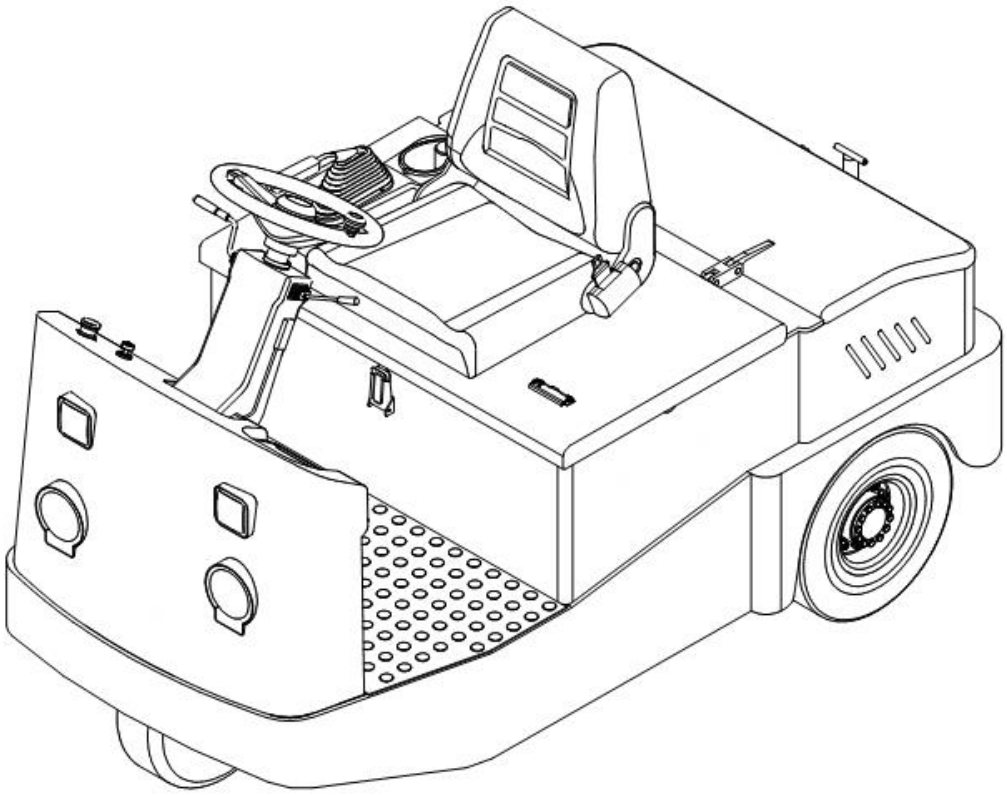
MT60UX (A7S7)
Sit-drive electric tow tractor
Service and maintenance manual



PART NO. 550234251

REVISION 00 (03/2020)

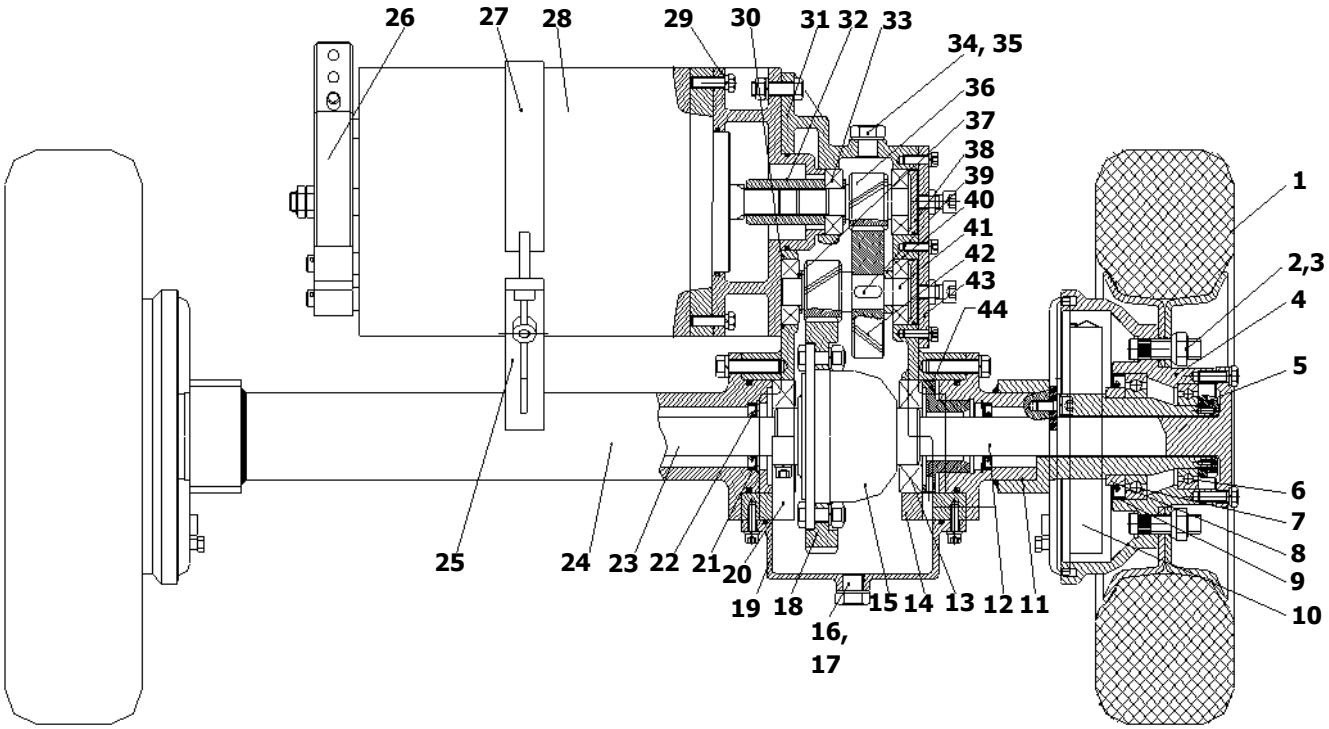
Repair

Driving system

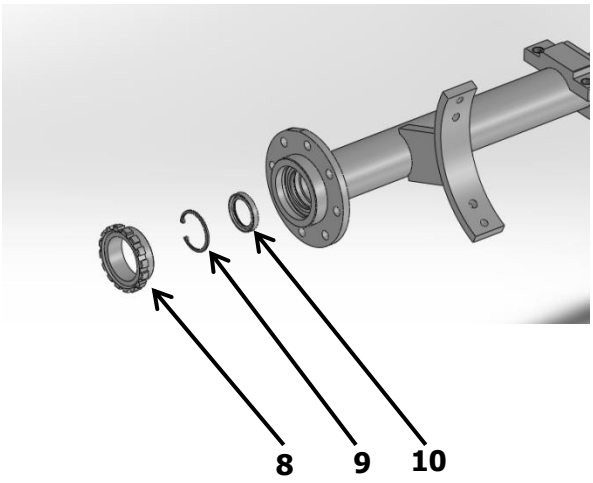
Principles of operation

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.

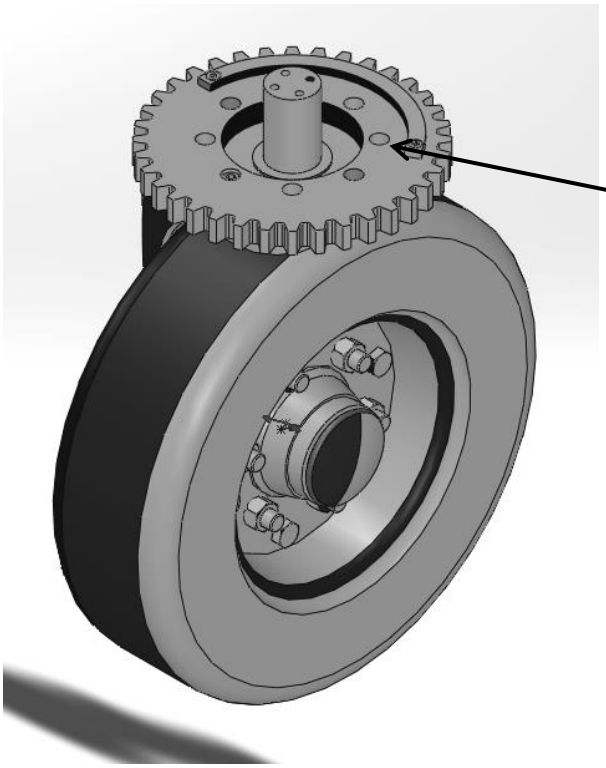
Driving axle structure



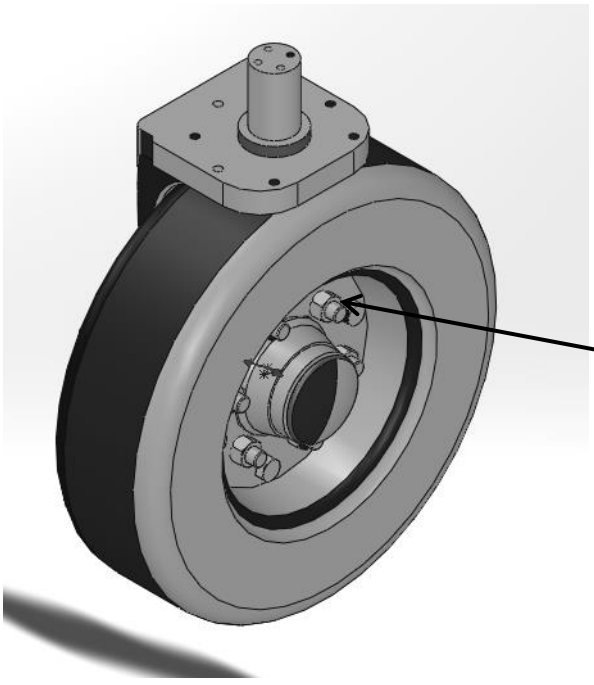
1	Wheel	23	Major semi-axis
2	Wheel bolt	24	Shaft bush
3	Wheel nut	25	Motor bracket
4	Brake drum	26	Mechanical brake
5	Nut	27	Motor hoop
6	Rolling bearing	28	Motor 3KW
7	Bearing 6011	29	Motor flange
8	Shaft sleeve	30	O-type ring 47x2.65
9	Framework oil seal FB70x90x10	31	Gear box housing
10	Brake	32	Coupling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



10. Remove the nuts (item 8), circlip for hole 20 (item 9) and seal ring (item 10) from the long shaft assembly.
11. Remove the circlip for hole 20 and seal ring in the short shaft assembly in same way.

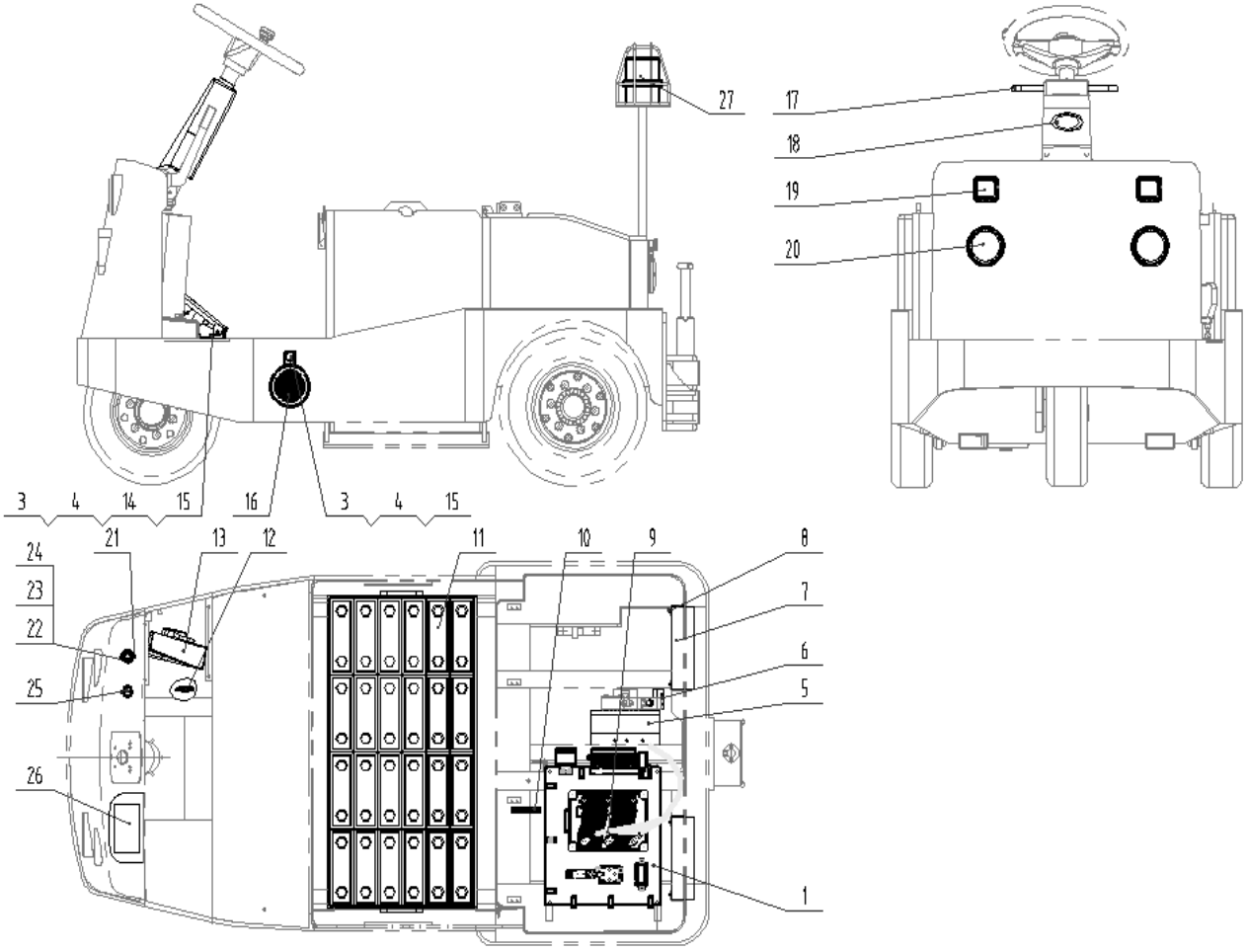


5. Remove 8 M8×30 screws (10) that fix the steer wheel fluted gear, and remove the steer wheel gear.



6. Remove 6 M14×1.5 hub nuts (11) that fix the steer tire.

Electrical component identification



1	Controller panel	15	Nut M8
3	Washer 8	16	Horn
4	Washer 8	17	Combined switch JK804
5	AC motor	18	Blue light
6	Micro switch TM-1308 (solenoid brake)	19	Turn signal
7	Rear light	20	Headlight
8	Nut M5	21	Screw M5 x 12
9	Main circuit chart	22	DC power switch ZDK31/250A
10	Control circuit chart	23	Warning ring yellow
11	Lead-acid battery	24	Mushroom head JD12-01C
12	Brake light switch JK231	26	Instrument panel
13	Accelerator	27	Strobe light LTD152/12V-24V
14	Screw M8 x 30		

Code	Name	Possible cause	Set/clear conditions
28	Motor Temp Hot Cutback	1. Motor temperature is at or above the programmed temperature hot setting and current is being cut back. 2. Motor temperature control menu parameters are mistuned. 3. See Monitor menu>> Motor: Temperature and Inputs: Analog 2. 4. If the application does not use a motor thermistor, Temp Compensation and Temp Cutback should be programmed to Off.	*Set:* Motor temperature is at or above the Temperature Hot parameter setting. *Clear:* Bering the motor temperature within range.
29	Motor Temp Sensor Fault	1. Motor thermistor is not connected properly. 2. If the application does not use a motor thermistor, Motor Temp sensor Enable should be programmed Off. 3. See Monitor menu>> Motor: Temperature and Inputs: Analog 2.	*Set:* Motor thermistor input (pin 8) is at the voltage rail (0 or 10V). *Clear:* Bring the motor thermistor input within range.
31	Coil1 Driver Open/Short	1. Open or short on driver load. 2. Dirty connector pins. 3. Bad crimps or faulty wiring.	*Set:* Driver 1 (pin 6) is either open or shorted. This fault can be set only when Main Enable = Off. *Clear:* Correct open or short, and cycle driver.
31	Main Open/Short	1. Open or short on driver load. 2. Dirty connector pins. 3. Bad crimps or faulty wiring.	*Set:* Main contactor driver (pin 6) is either open or shorted. This fault can be set only when Main Enable = On. *Clear:* Correct open or short, and cycle driver.
32	Coil2 Driver Open/Short	1. Open or short on driver load. 2. Dirty connector pins. 3. Bad crimps or faulty wiring.	*Set:* Driver 2 (pin 5) is either open or shorted. This fault can be set only when EM Brake Type = 0. *Clear:* Correct open or short, and cycle driver.
32	EMBrake Open/Short	1. Open or short on driver load. 2. Dirty connector pins. 3. Bad crimps or faulty wiring.	*Set:* Electromagnetic brake driver (pin 5) is either open or shorted. This fault can be set only when EM Brake Type > 0. *Clear:* Correct open or short, and cycle driver.
33	Coil3 Driver Open/Short	1. Open or short on driver load. 2. Dirty connector pins. 3. Bad crimps or faulty wiring.	*Set:* Driver 3 (pin 4) is either open or shorted. *Clear:* Correct open or short, and cycle driver.
34	Coil4 Driver Open/Short	1. Open or short on driver load. 2. Dirty connector pins. 3. Bad crimps or faulty wiring.	*Set:* Driver 4 (pin 3) is either open or shorted. *Clear:* Correct open or short, and cycle driver.
35	PD Open/Short	1. Open or short on driver load. 2. Dirty connector pins. 3. Bad crimps or faulty wiring.	*Set:* Proportional driver (pin 2) is either open or shorted. *Clear:* Correct open or short, and cycle driver.
36	Encoder Fault	1. Motor encoder failure. 2. Bad crimps or faulty wiring. 3. See Monitor menu>>Motor: Motor RPM.	*Set:* Motor encoder phase failure detected. *Clear:* Cycle keyswitch.