

OPERATION AND MAINTENANCE MANUAL

HDK VEHICLES USA LLC.



WWW.HDKEV.COM

CONTENTS

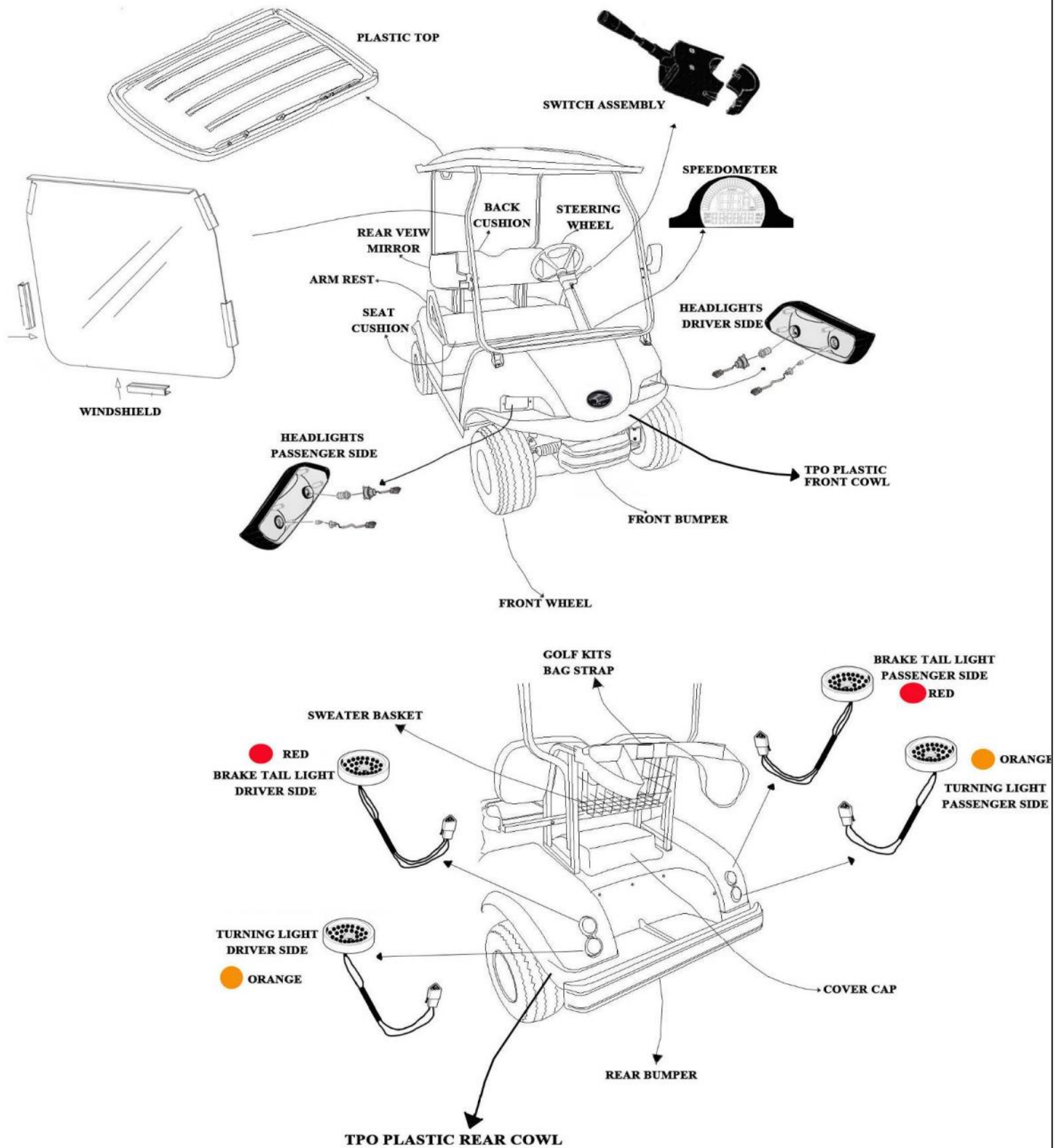
Decals.....	1
Front Wheel Alignment.....	3
Brake and Accelerator	7
Rear Axle and motor.....	11
Controller.....	14
Charger.....	20
DC-DC converter.....	23
Speedometer.....	24
Switches..	26
Headlights.....	28
Taillights.....	28
Contactora.....	29
Horn.....	29
Relay.....	30
Fuses.....	30
Batteries.....	31
Electrical System Trouble Shooting and Solutions.....	33
Tire tread.....	34
Warranty Appendix	

GENERAL INFORMATION

HDK Corporation mainly deals in five types of the Electric Vehicles, Electric golf car, Shuttle bus people movers, Utility carts, Engineer and transportation cart, Off Road electric cars, among which DEL3022G series are electric golf cars. Our golf car is environment-friendly and suitable for use in golf course, Hotels and many other businesses. All the key components are imported from major brand name companies. The whole car is new fashion design. Offering stable performance, Flexible controls, and driving comfort. Our golf car can be used as people movers or utility cars in vacation villages, Villa areas, Resort hotels and private residential areas, Tourist scenic spots, Commercial and Industrial Facilities.

Parameter Type	DEL 3022G Series Electric Golf Cart					
	DEL 3022G	DEL 3022G2Z	DEL 3042G	DEL 3042G2Z	DEL 3062G	DEL3062G2Z
Passenger capacities	2	4	4	6	6	8
Dimension (mm) (L×W×H) Approximate	2350×1180× 1780	2610×1180× 1780	3100×1180× 1780	3360×1180× 1780	4900×1180× 1780	5160×1180× 1780
Range (based on flat road at a speed of 20 km/h) (km/h) Approximate	80	75	70	65	60	60
Maximum speed (gear ratio of 12.49:1/gear ratio of 10.25;1) (km/h) Approximate	20/29	20/29	20/28	20/28	20/28	20/28
Maximum grade ability Approximate	30%	28%	25%	22%	20%	20%
Minimum turning diameter (m) Approximate	3.1	3.1	4.3	4.3	5.5	6.8
Brake distance (V=20km/h) Approximate	≤3.5m	≤3.8m	≤4.0m	≤4.0	≤4.5m	≤4.5m
Minimum distance from floor(mm) Approximate	110	110	110	110	110	110
Noise (DB) Approximate	63	63	63	63	63	63

VEHICLE FEATURES

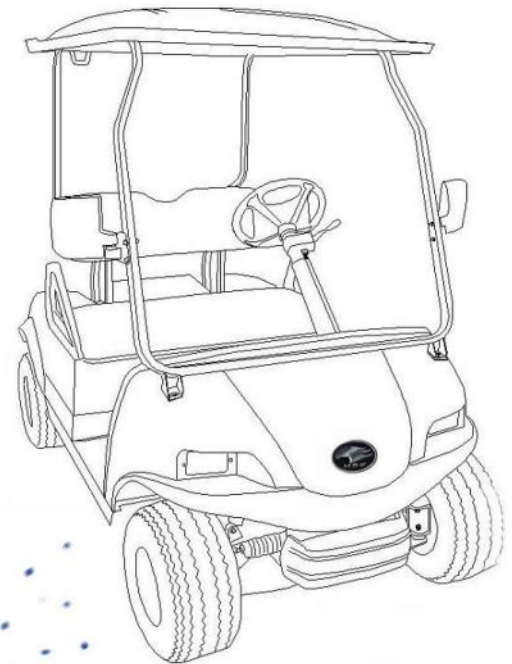


VEHICLES FEATURES



**CHASSISES OF GOLF CARTS ALL USE
HOT-GALVANIZED-DIP CHASSIS , HDK
ASSURE YOU “NO RUST IN 15 YEARS”.**

VEHICLE COLOR OPTIONS



HDK VEHICLE HAS DOZENS OF COLORS TO CHOOSE FROM

**SPECIAL COLOR REQUEST WILL ALL BE DONE BY HDK
AND MAY COST EXTRA**

DECALS

* Vehicle's serial number



201189678

Manufacturing year

201189678

Vehicle's serial
number

Vehicles manufactured by HDK Corporation, all have vehicle serial numbers on the left side of the chassis frame behind wheel. The front four numbers are the manufacturing year of the vehicle. The other five numbers are the vehicle's serial number given by HDK Corporation. All the vehicles are documented. After the vehicles are sold out of the factory, HDK Corporation will track the vehicles by using the vehicle's serial number as identity. Serial numbers are insurance warranty of HDK Corporation. Customers should be aware of the importance of the vehicle's

Serial Numbers  **DON'T TEAR IT DOWN** while using the vehicles or in routine maintenance.

* Steering Wheel decals



①

②



③



OPERATING INSTRUCTIONS

- Read owner's manual and dash-mounted safety warnings prior to driving.
- Study and understand controls.

TO OPERATE

- Turn wheels to desired direction and ensure path is clear.
- Turn key to ON position.
- While stopped, place Forward/Reverse switch in desired position:
F-Forward N-Neutral R-Reverse(Buzzer will sound)
- Park brake will release and vehicle will start moving when accelerator pedal is pressed.
- Slowly press accelerator pedal to increase speed.
- To stop, release accelerator pedal and press brake pedal.

BEFORE LEAVING

- Press park brake pedal until it locks and holds vehicle.
- Place Forward/Reverse switch in NEUTRAL position.
- Turn key OFF and remove key when not in use.

MOTOR BRAKING

- Electric motor braking provides speed regulation functions.
- For parked vehicle, beeping alarm indicates vehicle roll away.
- In operation, beeping alarm indicates reduction in motor braking.
- Apply brakes to further reduce vehicle speed as required.
- System is activated only when tow switch is in the RUN position.
- When towing this vehicle, tow switch must be in the TOW position.

CCI 102518001

- ①. Steering wheel
- ②. HDK decal
- ③. Vehicle operating instructions decal

DECALS

* Charger's decals



.Charger

.Charger's indicating decal

.Charger's stage display decal

.HDK charger's information decal

.Caution and warning decal

DANGER: RISK OF ELECTRIC SHOCK. CONNECT ONLY TO PROPERLY GROUNDED AC OUTLET. DO NOT TOUCH UNINSULATED PORTION OF OUTPUT CONNECTOR OR UNINSULATED BATTERY TERMINAL. DO NOT REMOVE COVER. NO OPERATOR SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

CAUTION: READ MANUAL BEFORE CHARGING. USE ONLY ON BATTERY SYSTEMS WITH AN ALGORITHM SELECTED THAT IS APPROPRIATE TO THE SPECIFIED BATTERY TYPE AND CAPACITY. SEE MANUAL. CHARGING OTHER BATTERY TYPES OR VOLTAGES MAY CAUSE PERSONAL INJURY AND DAMAGE. SURFACES MAY BE HOT - TO AVOID RISK OF BURNS, DO NOT TOUCH.

WARNING: RISK OF EXPLOSIVE BATTERY GASES. ADEQUATE VENTILATION DURING CHARGING IS REQUIRED - PREVENT FLAMES OR SPARKS. CONSULT MANUAL. DISCONNECT AC SUPPLY BEFORE MAKING OR BREAKING CONNECTIONS TO THE BATTERY. OR ARCING AND BURNING MAY RESULT. TO AVOID DAMAGE, DO NOT PULL ON CHARGE CORD. HAVE DEFECTIVE CORDS OR PLUGS REPLACED IMMEDIATELY BY QUALIFIED PERSONNEL.

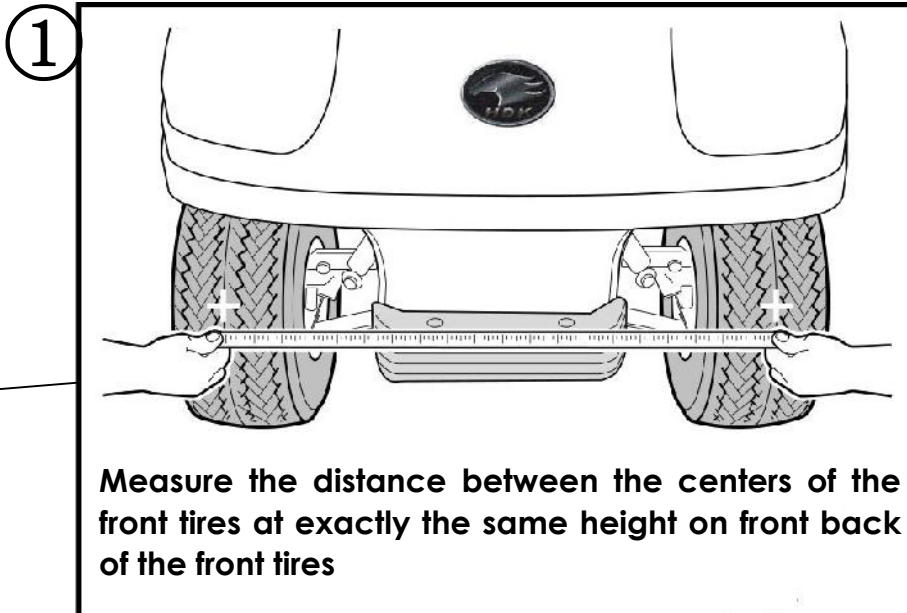


BATTERY TYPE: Selectable - see manual.
Made in China
HDK ELECTRIC VEHICLES
www.hdkev.com

WHEEL ALIGNMENT

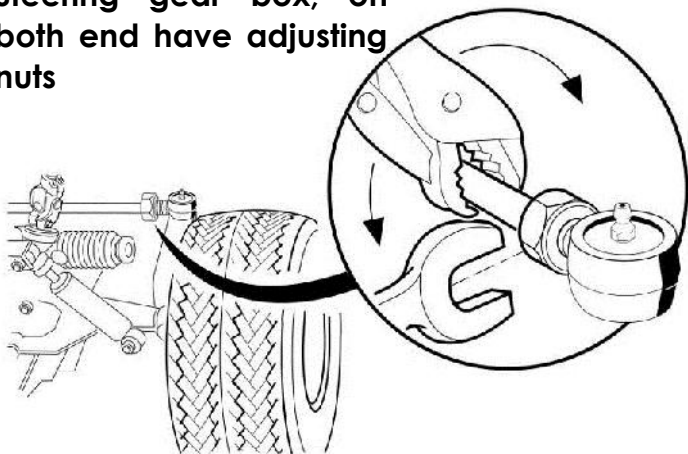
* Front wheels camber adjustment

The camber angle and toe-in of both Front Wheels, are done by wheel alignment. Intended to equalize each of the front wheels. For all HDK carts they have bolts on both side of the front wheels, used to equalize the turning radius in both directions



②

Steering gear box, on both end have adjusting nuts



Loose the locking nut on the steering gear box with wrench, rotate tie rod with locking pliers to increase or decrease the Toe-in scale.

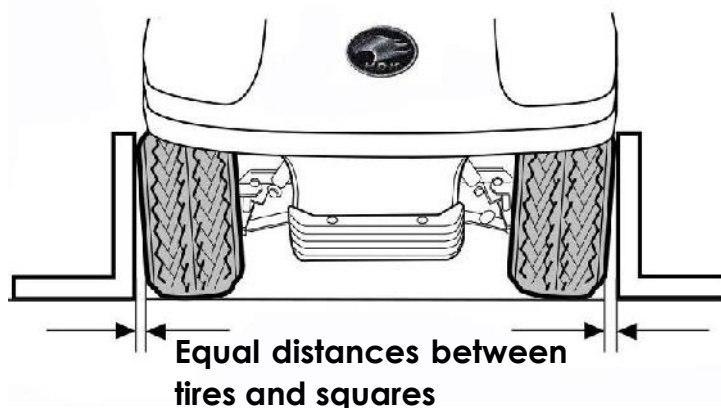
Adjust the front tires front distance and back distance, make the Toe-in scale as follow:

⚠ THE BACK DISTANCE SHOULD BE 3-8mm BIGGER THAN FRONT DISTANCE



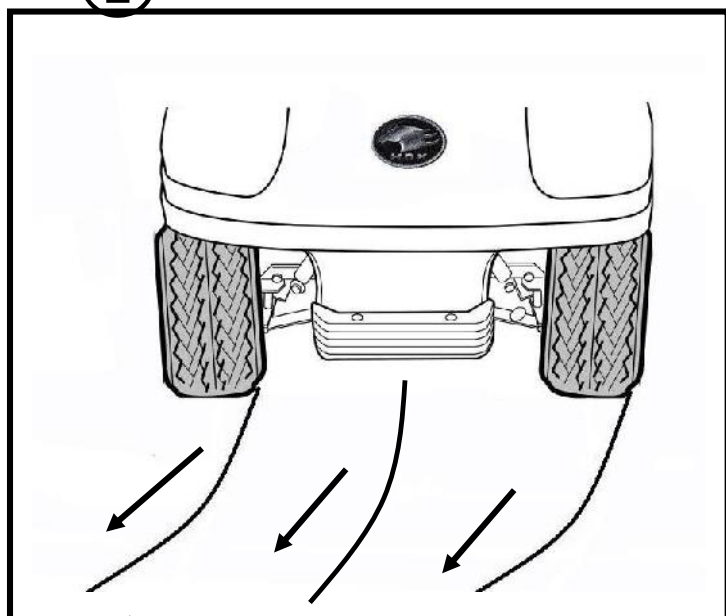
③

While adjust the front wheels Toe-in, one can use measurer and framing squares to measure the physical scales of the front wheels Toe-in



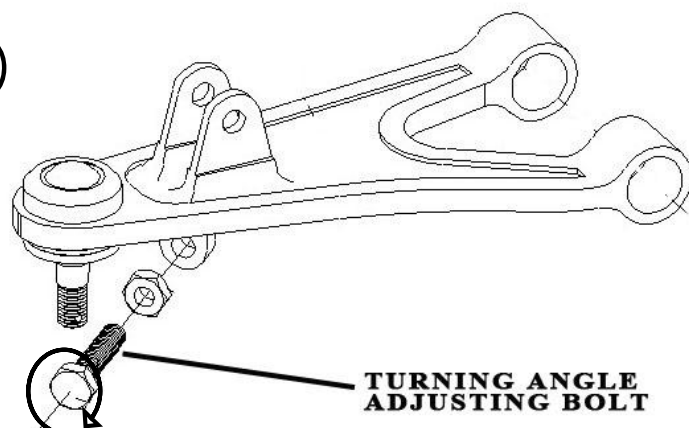
WHEEL ALIGNMENT

① * Front Wheels Turning Angle Adjustment



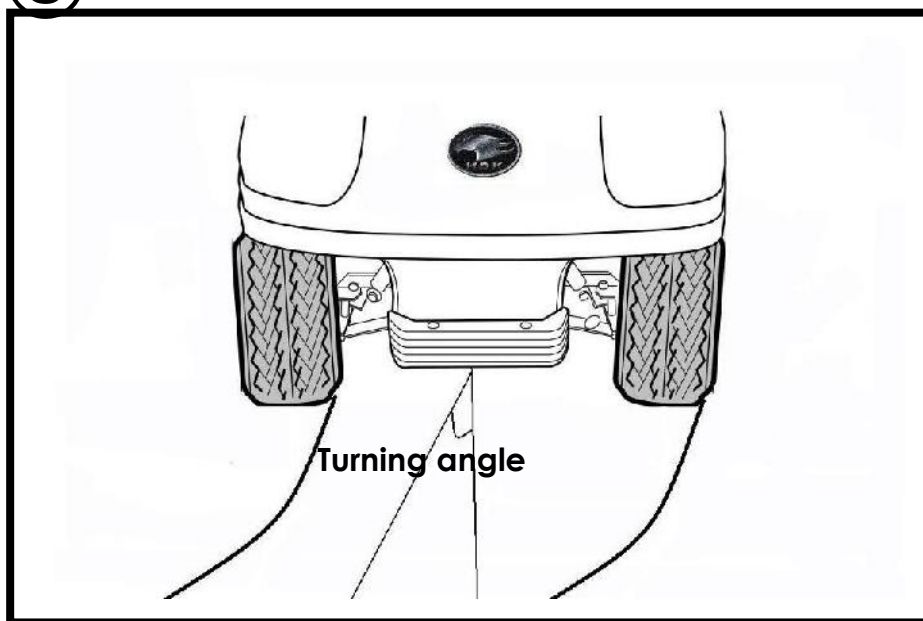
All HDK carts have bolts on both side of the front wheels, used to equalize the turning radius in both directions

②



Loose the adjust bolts on the steering gear box with wrench, rotate the bolts to equalize the turning radius in both directions

③



All HDK carts turning angles have been calibrated by HDK technicians. New carts sent out of HDK factory, the turning angles have been set at maximum scale. For customers who want to change the turning angles. Follow the instructions (Figure).

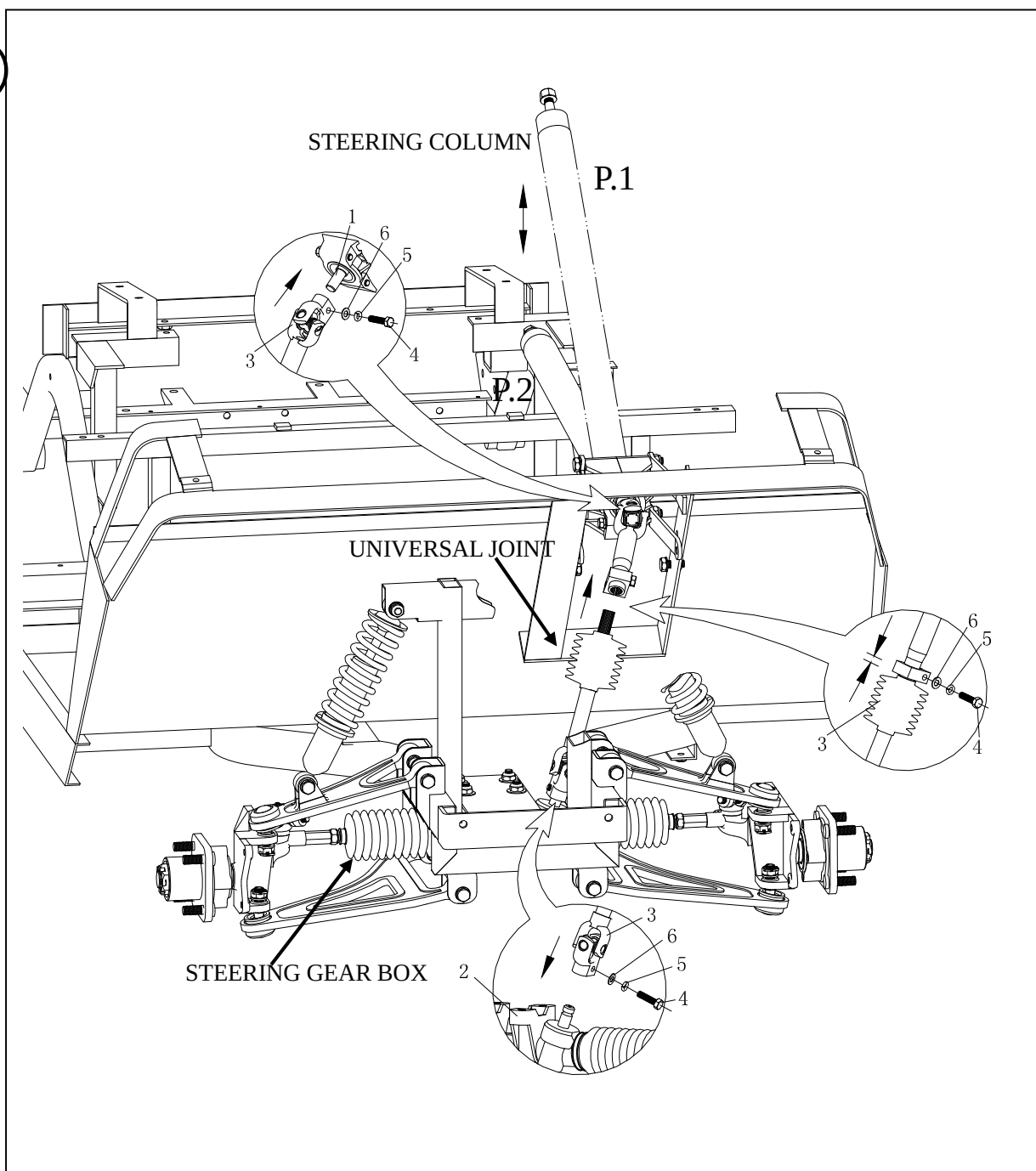
⚠ CAUTIONS

The front wheels have to stay parallel symmetrical, to keep the vehicle in the most precise operating function. One can use measuring tools to measure the turning angles of the cart.

WHEEL ALIGNMENT

* Vehicle steering system

①

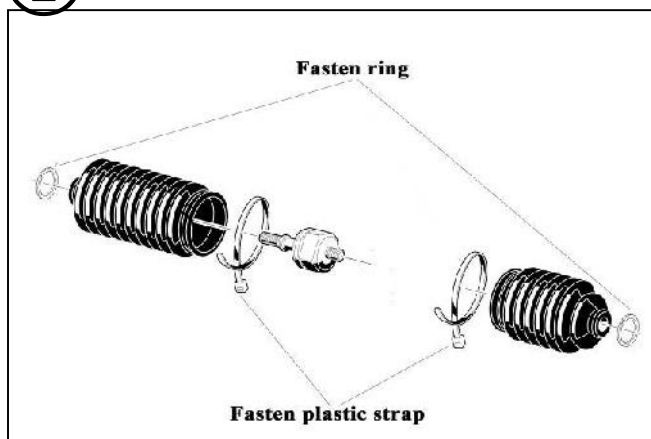


For HDK vehicles, Steering is controlled through a rack and pinion steering assembly which is connected by a steering column to a steering wheel. For different steering requires the steering column of all HDK vehicles have two mounting positions as different angles and height options (FIGURE ①, P.1 /P.2). The mechanical operations are passed by universal joint that connects the steering column and steering box. Vehicle direction control is executed by steering gear box. All the steering operations are mechanical.

 No manual adjustment to the rack and pinion gear assembly is required. A spring loaded self-adjusting mechanism is incorporated into the assembly.

WHEEL ALIGNMENT

① * Steering system maintenance



⚠ .To assure the steering system in proper function all the mounting nuts and fasten rings should be solid tight.

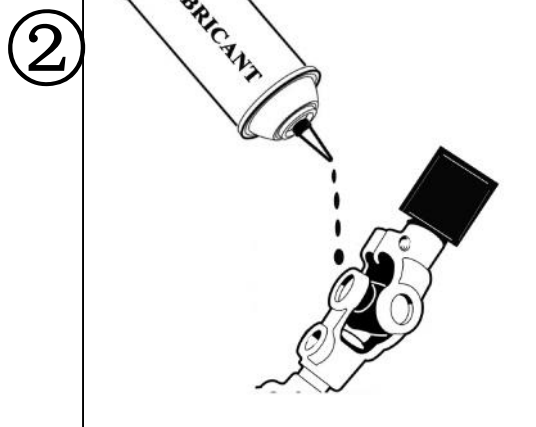
⚠ . The steering wheel should be installed on the splines of the steering shaft, making sure to align the match marks placed on the wheel and steering column.

While operate the steering wheel one should stop turning when it comes to the dead end of the turning angle, otherwise may damage the steering wheel cause the nut to strip .

⚠ □ The dust cover on the universal joint or and the steering box should be kept in perfectly tight to keep dust or other foreign objects and water to enter inside of the mechanical parts (FIGURE①).

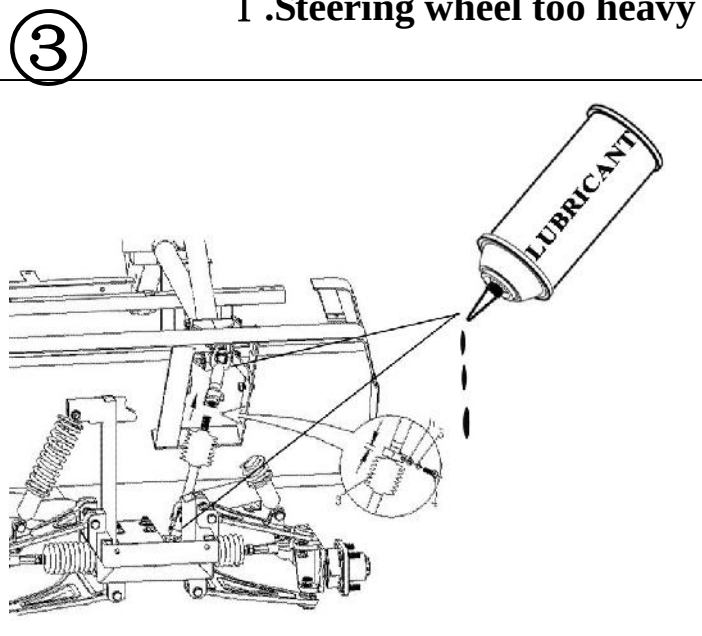
⚠ The joint parts of the steering system or the connection spot should add lubricant per month to keep the joint part, shaft perfectly smooth (FIGURE②).

⚠ ⑤ The front tire pressure should be the same, tires should be at the same worn out situation and the wheel nuts should be retighten periodically, to reduce the shake of all the steering system components.



⚠ Steering system malfunctions

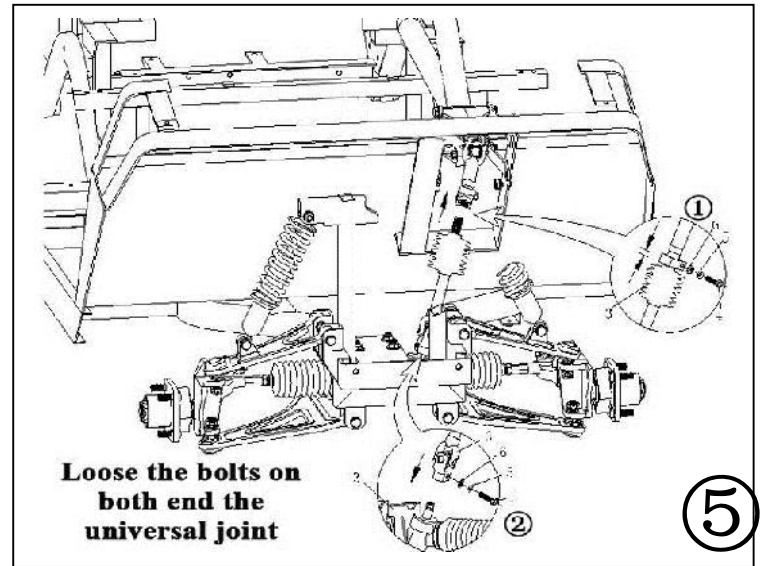
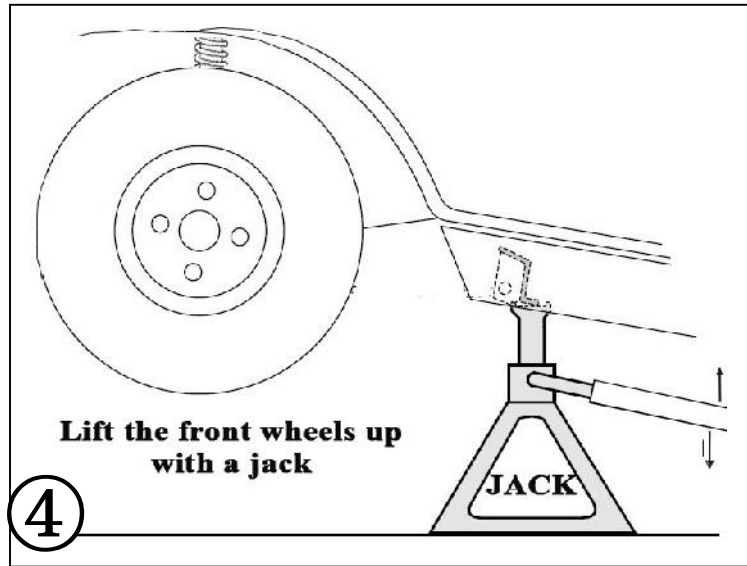
I .Steering wheel too heavy to operate



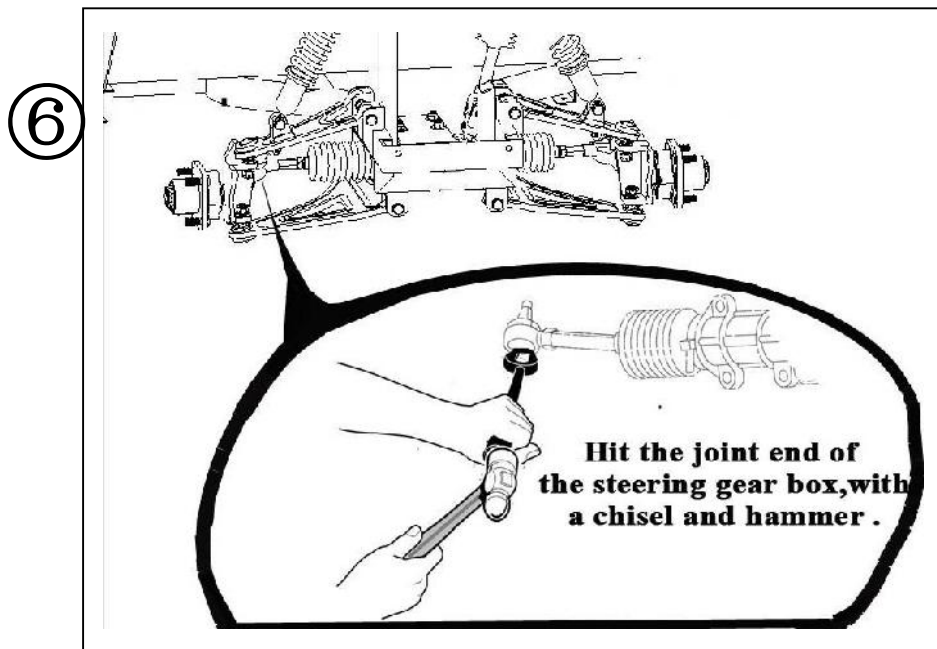
To eliminate the heavy steering wheel malfunction, one can do as followed:

- Check the connection of the steering system and be sure all the bolts and nuts are tight. Add lubricant to the joints.(FIGURE③)
- Lift up the front wheels with a jack.(FIGURE④)
- Loose the bolts that connect the universal joint to steering column and steering box (FIGURE⑤)
- Loose the jack put down back the vehicle, shake the vehicle for multiple times, to make the connection of the universal joints and steering column, steering gear box perfect. Fasten back the bolts make it solid tight.

Follow the steps above will make the steering wheel getting light



! If still can not perfectly make the steering wheel light, one can operate by following (FIGURE ⑥): Use a chisel and a hammer to hit the connection spot of the joint ball of the steering box and turning knuckle, multiple times until the steering wheel is easy to rotate in little strength.



II . Direction control not precise

Check the system components see whether all the components are in functioning properly, adjust the front wheel camber to equalize the front wheels, make left and right wheels symmetrical (check camber adjustment chapter), equalize the turning angles of both side of the wheels make it parallel. Check the tire pressure of both side of the front wheels make sure it is the same, and the tire wear is even out of the front tires.

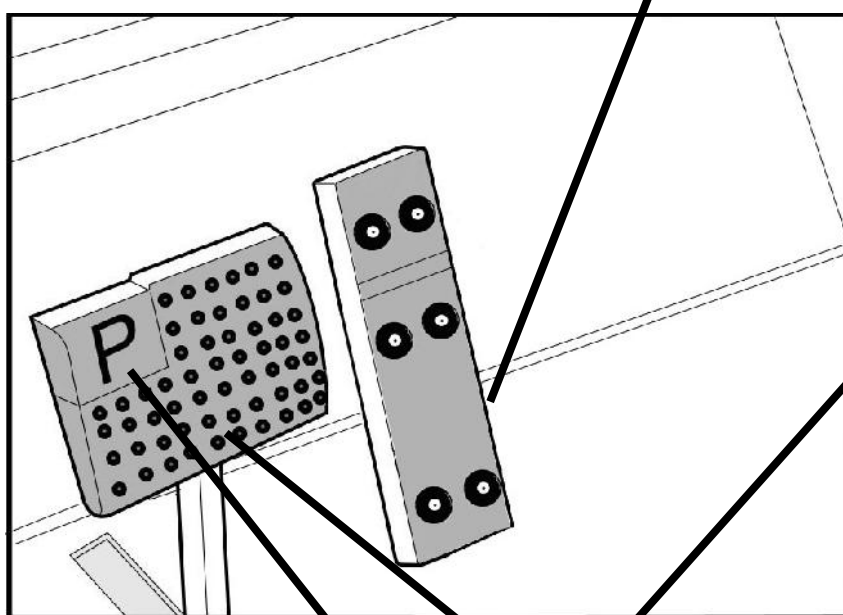
! CAUTIONS

PERIODIC MAINTENANCE OF THE STEERING SYSTEM IS REQUIRED, TO INSURE THE VEHICLE IN GOOD CONDITION OF DIRECTION MANIPULATION. THE DIRECTION CONTROL FAIL MAY CAUSE INJURIES TO THE PASSENGERS.

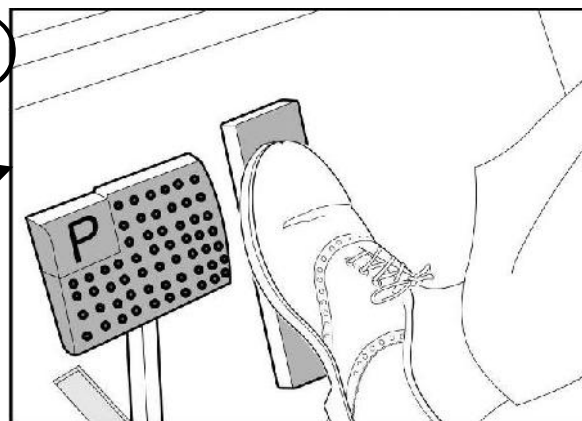
BRAKE AND ACCELERATOR

* Brake and accelerator assembly

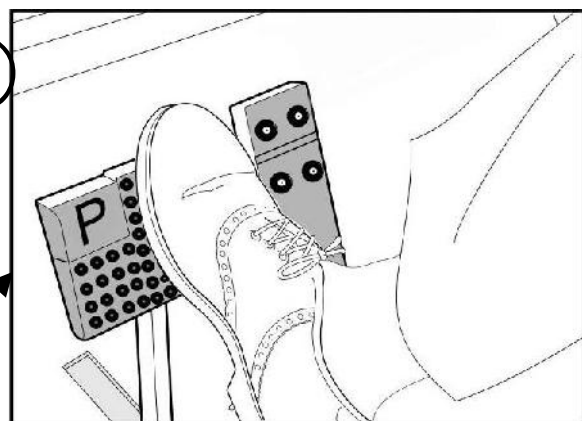
Operating method figures



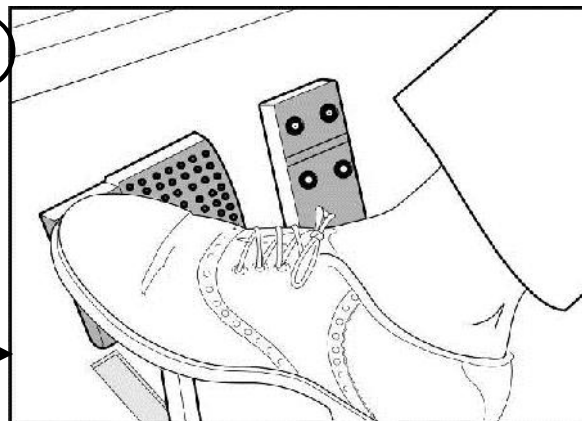
①



②



③



Accelerator pedal operation

The vehicle speed is controlled by the operation of accelerator pedal.

Brake pedal operation

The vehicle uses the brake pedal operation to decrease the vehicle speed.

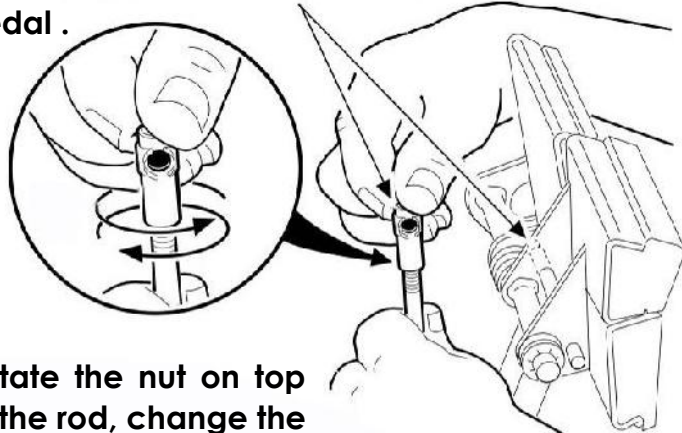
parking pedal operation

when stopping the vehicle, the parking pedal operation will keep the vehicle locked in place, no matter if it is on the ramp or on flat ground.

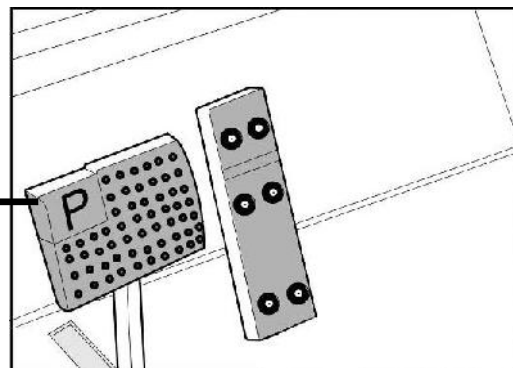
BRAKE AND ACCELERATOR

*** Brake and accelerator adjustment and maintenance** **.Too hard to unlock the parking pedal**

- ① Disassemble the height adjusting rod in the back of the parking pedal .

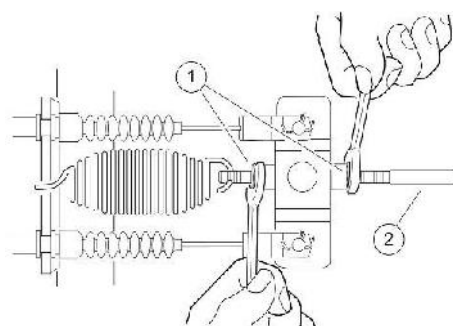


Rotate the nut on top of the rod, change the rod's height



If it is too hard to lock/unlock the parking pedal, one should adjust the brake pedal as the FIGURE shows. Change the height of the sustain rod of the parking pedal will make the parking pedal easy to lock/unlock.

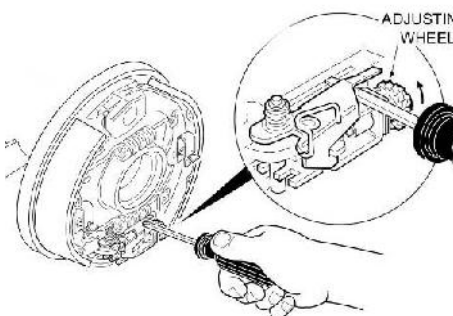
II . Brake pedal, too heavy or brake not in proper function



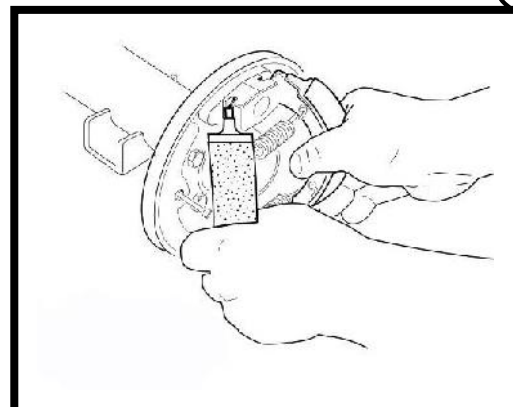
If the brake of the vehicle not in proper function, either too tight or too loose. One can make certain things go as followed to adjust the brake into proper functional state.

. Use wrenches to adjust the tightness of the brake cables (FIGURE).

- ② Adjust the tightness of the brake shoes. Remove the brake drum, use a screwdriver to adjust the tightness of the brake shoes. Rotate the adjusting wheel in proper scale to make the space between the brake shoes and brake drum minimum (brake shoes are perfect tight but don't rub the brake drum while vehicle loose the brake in running operation) (FIGURE).



Take out the brake shoes and clean the interior space. Clean the brake shoes shreds and mental dust that rubbed off from brake drum (the contact of brake shoes and brake drum) (FIGURE).



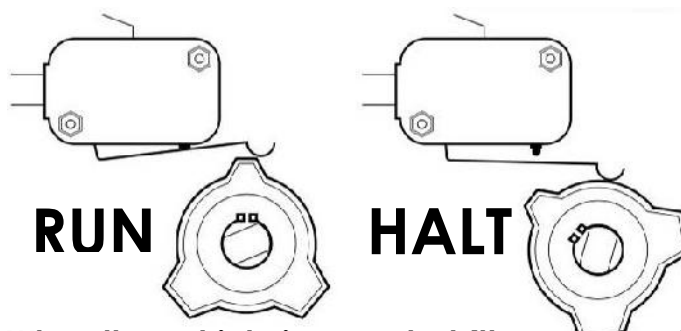
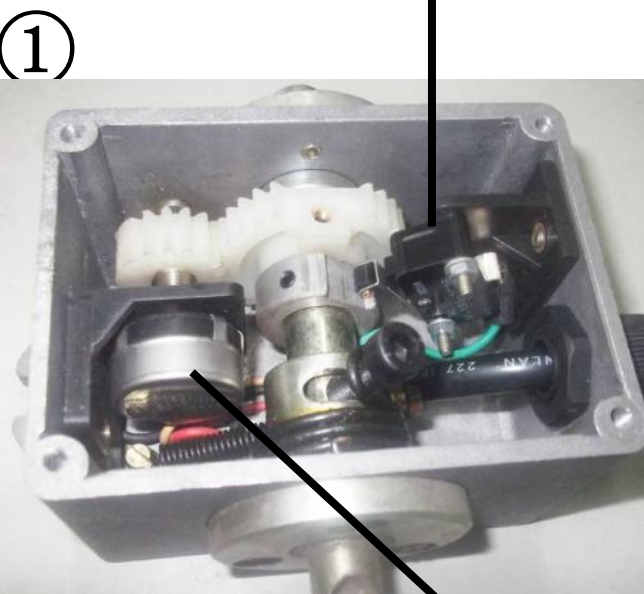
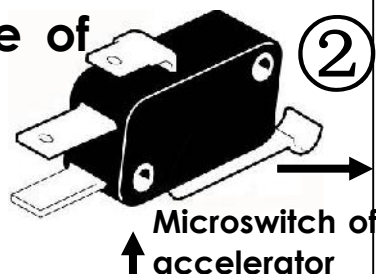
④

BRAKE AND ACCELERATOR

* Brake and accelerator adjustment and maintenance

III. Accelerator adjustment

The structure of
accelerator



When the vehicle is operated (the accelerate pedal be depressed), the micro switch will be in **RUN** position the micro switch will give out a signal, To activate the vehicle's electrical circuit system into work and move car. When the vehicle is stopped the micro switch will in **HALT** position the vehicle's

POT



The POT the accelerator use is 0-5K Ω changeable resistor. The throttle capacity is associated to the POT, when the vehicle is operation (the accelerate pedal is depressed), the POT's resistance value ranges from 0-5K Ω . The accelerator as you can see from figure① the POT and micro switch are fixed in specific position connected with mechanical gears, when the pedal is stepped the gears will rotate with the shaft, the micro switch will be triggered and POT resistance will change according to the step angle .

The accelerators HDK vehicles use for golf series cars are #3 accelerators, accelerators are specially designed by HDK to match the vehicles' speed control demands.



ACCELERATOR IS EXTREMELY IMPORTANT FOR VEHICLE'S SAFETY, ONLY TRAINED TECHNICIAN'S SHOULD BE ALLOWED TO REPAIR OR SERVICE THE ACCELERATOR. TECHNICIAN'S SHOULD HAVE KNOWLEDGE OR EXPERIENCES OF ELECTRICAL VEHICLE REPAIRS.



ANY MODIFICATION OR CHANGES TO THE ACCELERATOR MAY AFFECT THE STABILITY OR HANDLING OF THE VEHICLES MAY CAUSE SEVERE PERSONAL INJURY AND OR CAUSE DEATH.

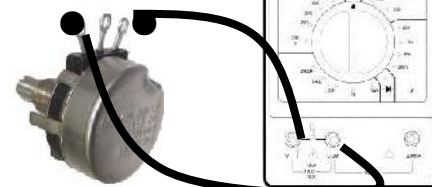
BRAKE AND ACCELERATOR

Eliminate accelerator malfunctions and accelerator maintenance

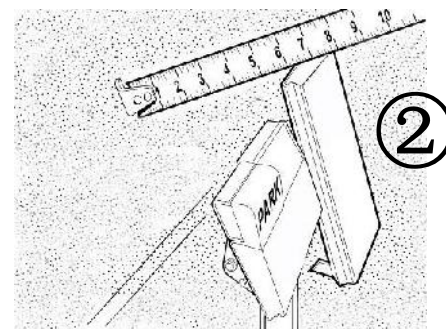
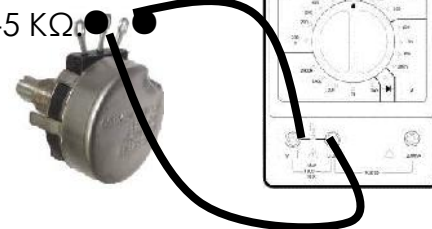
. Accelerator no respond

1. Be sure power key is on "ON" position, F/R switch in F or R position.
2. Remove the accelerator assembly part's plastic lid.
3. Check the micro switch's position. When the pedal is loosed the micro switch should stay at **HALT** position, and when the accelerator pedal is depressed the micro switch should stay at **RUN** position.
4. depress the accelerator pedal see if the cams rotate as the shaft rotates if not, see which cam can not rotate.
5. If all the accelerator's mechanical functions in good condition check the POT's resistance value with a multimeter (see figure), If the POT values are not right replace it with a new POT Switch.
6. If all the accelerator's mechanical functions in good condition, check the micro switch see if it is connected while it is on **RUN** position if not change it with a new one.

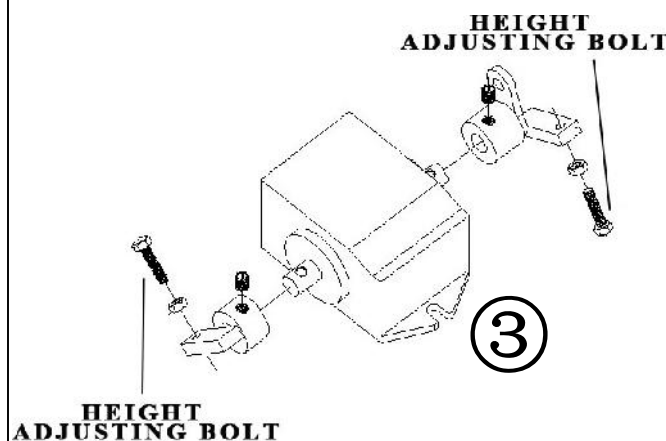
Use the multimeter to measure the resistance value of the left and right pins see the if the value is 5 K Ω .



Use the multimeter to measure the resistance value of the left (right) and middle pins step the pedal as well see if the value is range from 0-5 K Ω .



Use a measurer to measure the height of the accelerator pedal



Adjust the height of the accelerator pedal by rotate the height adjusting bolt.

ii .vehicle still running when loose the accelerator pedal

1. Turn off the vehicle's power.
2. Remove the accelerator assembly's cover lid.
3. Keep the accelerator pedal in loose position state, and check the micro switch position, see if while it is in the HALT position (PAGE 9). If the accelerator micro switch still in the RUN position, if so Then adjust the accelerator height restraint bolt (FIGURE) to adjust the height. Make the accelerator's micro switch stay at HALT position while loose the accelerator pedal.
4. If the micro switch is in good working condition, then one should check the solenoid contactor.

BRAKE AND ACCELERATOR

IV. Brake and accelerator maintenance

1. The strength to press down the brake pedal is about 30kgf. Pay attention to the distance between the brake pedal and the front of the cart.
2. The brakes on golf carts are self-adjusting. The strength for parking brake is about 30kgf. Of parking limits should be accurate reliable, and fully brake. Otherwise please readjust it.



3. The accelerator assembly box should be kept water-proof, water will cause short circuit of the electronic components inside of the accelerator assembly box. When one removes the cover lid and assembles it back, one should put silicone gel on the fringe of the assembly box then put back the lid, fasten the screws tight to keep water from leaking into the assembly box .(FIGURE ①)

4. The springs that attached to the brake or the accelerator, should always have good and flexible, to pull back the brake or accelerator. One should check the springs one time flexibility per month to prevent cart operating hazards. Low flexibility of the accelerator spring may cause the car still running when the accelerator pedal is in the HALT position. It may cause severe injuries or death to persons.

①

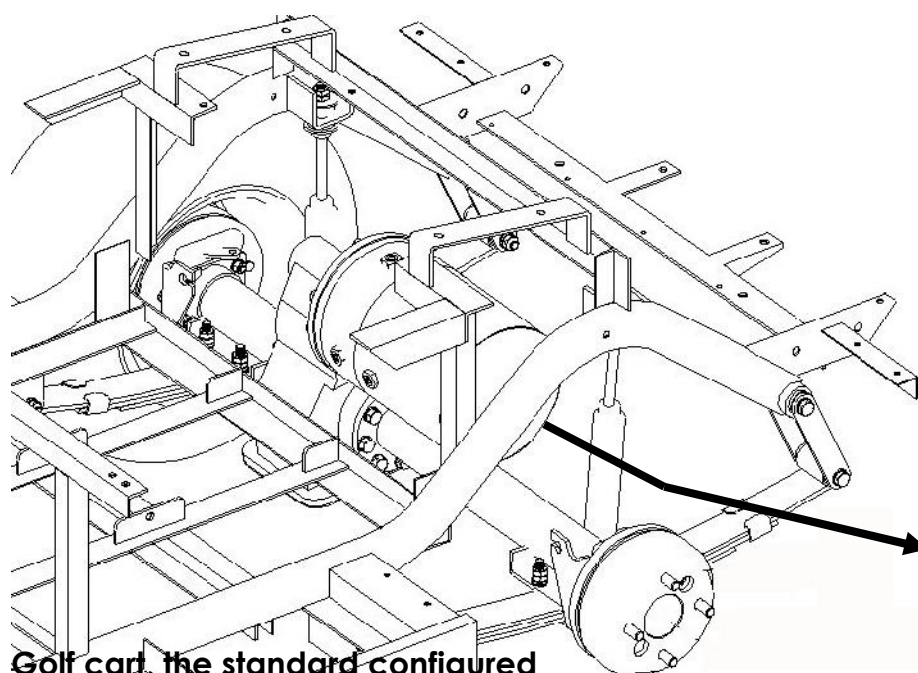


BE SURE TO TURN OFF THE VEHICLE POWER WHILE CONDUCTING ANY OPERATIONS TO THE ACCELERATOR, BE SURE TO KEEP ON FLAT GROUND WHILE CONDUCTING THE BRAKE ASSEMBLY MAINTENANCE, ANY OF THESE MISOPERATIONS MAY CAUSE THE CAR TO RUN UNINTENTIONALLY AND MAY CAUSE INJURIES TO PERSONS AND PEOPERTY.



DO NOT TRY TO DRIVE THE VEHICLE TO MAINTENANCE SPOT WHEN THE CAR HAS A BRAKE OR ACCELERATOR MALFUNCTION. ANY INTENTIONS TO TRY TO DRIVE THE VEHICLE MAY CAUSE CAR LOSE CONTROL AND MAY CAUSE INJURIES OR DEATH TO PERSONS OR PROPERTY.

REAR AXLE AND MOTOR

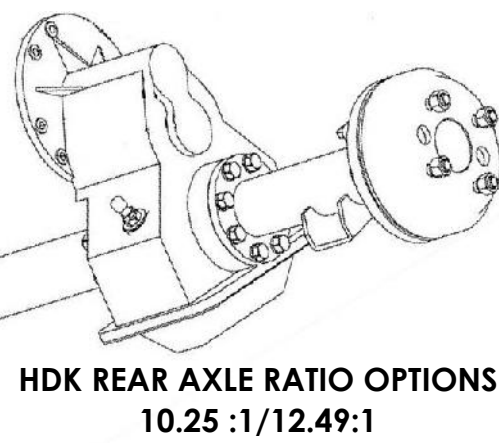


MOTOR OPTIONS 3KW /4KW /5KW

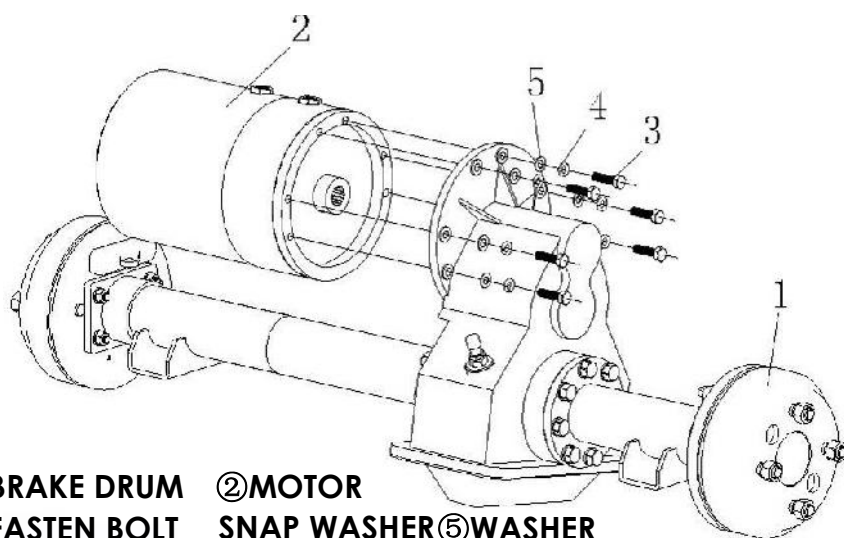
HDK vehicles use ADC motors as a standard configuration. ADC motors are a first class motor on the market *today*. Excellent performance, highly dependable, low energy consumption. Customers can choose different rated voltage DC motors. We have 3KW /4KW/5KW motors available as customer options

Golf cart, the standard configured rear axle ratio is 10.25:1 high speed. Also can be 12.49:1 as another option for power. In case customer want to increase the vehicle's torque or the vehicle's maximum speed customer can choose different rear axles as options .

Due to different brakes required by customer's, Rear axle have mechanical and hydraulic brake systems, the standard configuration is mechanical brake axles. But also customer can option to upgrade to hydraulic brake axle, as long as it is requested by customer in writing.



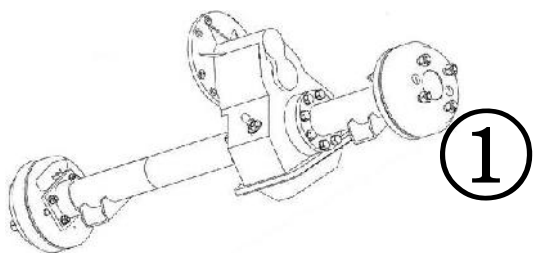
HDK REAR AXLE RATIO OPTIONS 10.25 :1/12.49:1



- ①BRAKE DRUM ②MOTOR
③FASTEN BOLT ④SNAP WASHER ⑤WASHER

REAR AXLE AND MOTOR

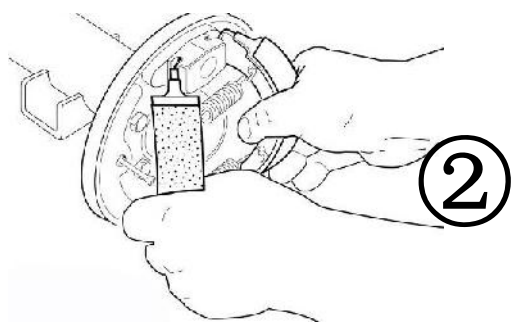
I . Rear axle maintenance



Make sure all the nuts on rear axle gear box all fastened up (in case oil leaking). Make sure the gear box have enough capacity of lubricate oil before use (90%of the whole capacity)

⚠ CAUTIONS

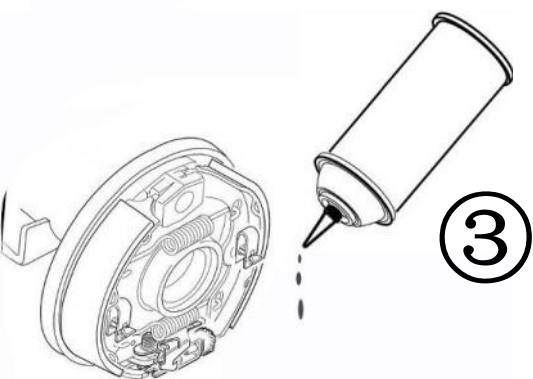
THE REAR AXLE GEAR BOX SHOULD BE INJECTED WITH HEAVY DUTY AUTOMOTIVE GEAR OIL 90W AND CHANGE OIL PER 12 MONTHS .



Monthly customer should take off the brake drum, and clean the brake shoes and backing plates. One can use high velocity air to blow off the interior contamination. Check the brake shoes, whether the brake shoes come loose or not .

⚠ CAUTIONS

MONTHLY CLEARANCE ADJUSTMENTS ARE EXTREMELY NECESSARY, IF NOT THE BRAKE SHOES SHED DUST MAY CAUSE DAMAGE TO THE BRAKE MECHANICAL PARTS, AND WILL INCREASE THE NOISE LEVEL OF THE REAR AXLE

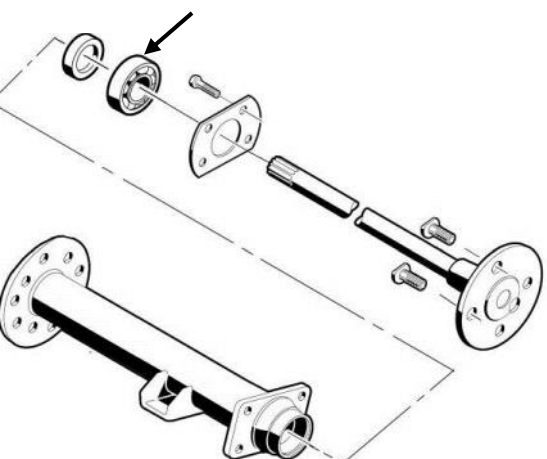


Every three months customer should take off the brake drum and add lubricate oil to the mechanical parts in the brake drum. to the cams and shafts. For the shed dust of the brake shoes may cause the mechanical parts malfunctions.

⚠ CAUTIONS

CUSTOMERS SHOULD BE CAREFUL ABOUT THE OIL SPRAY WHILE ADD OIL TO MECHANICAL PARTS. DO NOT GET THE BRAKE SHOES' SURFACE CONTAMINATED WITH OIL. IF SO PLEASE CLEAN THE BRAKE SHOES SURFACE WITH RAG AND BRAKE CLEANER THEN RUB THE SURFACE WITH ROUGH SAND PAPER MULTIPLE TIMES .

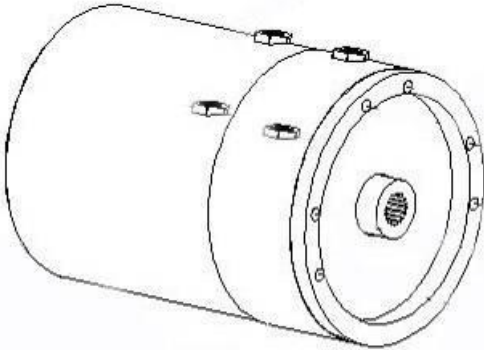
Lubricating grease



4

REAR AXLE AND MOTOR

II. Motor maintenance



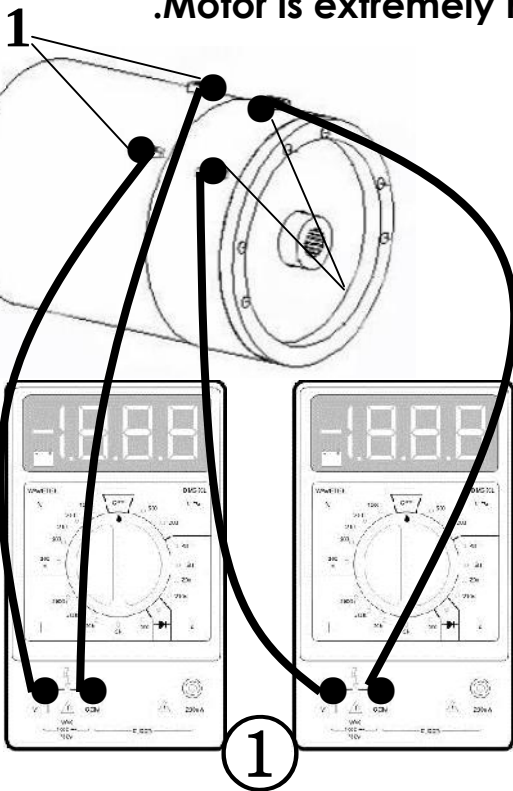
The electric cables connected to the motors should be big enough. Standard cables should be 40mm² or more. Because the cables have tremendous current burden, if the cables not big enough it will generate lots of heat, and the big current will brake the cables cause brake circuit .

The nuts fastened to the motors should be solid tight, loose nuts will cause big electric sparks, and may cause severe motor damage or explosion.



Motor's malfunctions

.Motor is extremely hot and cannot operate

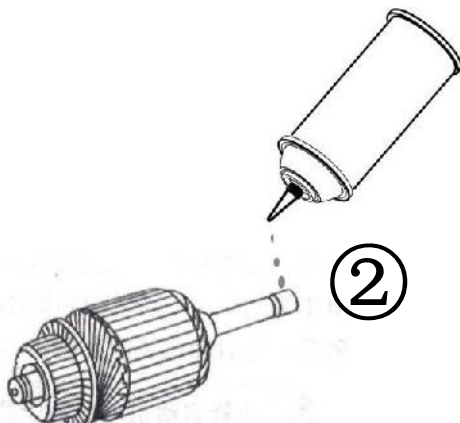


(1)Check the fasten nuts on the top of the DC motor be sure they are tight. The DC motor may have internal coils break up. Turn off the vehicle power disconnect the cables attached to the motor. Use a multimeter and set it to resistance function. Measure the four brass post on the motor as the figure shows. the motor has two coils and if either one has a break in the circuit the motor won't operate, and the motor will generate more heat than normal.

Measure the resistance of the NO .1 post, and NO. 2 post as the figure shows if either of the two have no respond value, then we can be sure the motor has a internal coil break. Disassemble the motor and find out the break spot and repair broken or break in the coil.

Disassemble the outside cover of the motor and check the carbon brushes, whether it is in proper condition. If it is extremely worn out then the motor may not have good contact conditions. Change the brushes with new pair .

ii .Motor creates too much noises



Check the bolts that fasten the motor to the rear axle, the bolts should be solid tight and if they come loose may create much more noise and will cause the shaft of the motor to get damaged.

The mechanical parts of the motor may become lack of lubricate grease after certain time's usage. Add grease to the rotor of the motor bearings .

Be sure all the bolts and nuts are fasten up inside of the motor.

CONTROLLER

.1243 controller



i .FEATURES

(1)Unparalleled Driving and Braking Feel

- Regenerative braking allows shorter stopping distances, increases usable battery energy, and reduces motor heating. The half bridge armature drive topology allows regenerative braking down to zero vehicle speed.
- "Ramp Restraint" feature provides automatic electronic braking that restricts vehicle movement while in neutral.
- Vehicle speed is controlled by the throttle, at all times including down hills.
- "Load Compensation" provides improved loaded versus unloaded speed regulation by compensating for losses in the armature.

(2)Fully Programmable

- Fully compatible with the Curtis Models 1311 and 1314 programmers for programming, test, and diagnostic information.
- MultiMode™ feature allows four user selectable vehicle operating profiles. Each profile has separate drive current limits, brake current limits, acceleration rates, brake rates and maximum speeds.

.Specifications

A 16-pin Molex low current connector in the controller provides the low current logic control connections

16	15	14	13	12	11	10	9
8	7	6	5	4	3	2	1

- Pin 1 load sensor input [optional]
- Pin 2 Fault 1 output / pump input Fault 2 output
- Pin 3 Fault 2 output
- Pin 4 main contactor driver output
- Pin 5 throttle: 3-wire pot high
- Pin 6 throttle: 0-5V; pot wiper
- Pin 7 throttle: pot low
- Pin 8 auxiliary driver output (typically
- Pin 9 Mode Select 2 input
- Pin 10 emerg. reverse check output [optional]
- Pin 11 reverse input
- Pin 12 forward input
- Pin 13 emergency reverse input
- Pin 14 Mode Select 1 input
- Pin 15 interlock input
- Pin 16 keyswitch input (KSI)

A 4-pin low power connector is provided for the handheld programmer. A complete 1311 programmer kit, including the appropriate connecting cable, can be ordered from HDK company

- Pin 1 receive data (+5V)
- Pin 2 ground (B-)
- Pin 3 transmit data (+5V)
- Pin 4 +15V supply (100mA)

4	3
2	1

Handheld Programmer



CONTROLLER

II.1243 controller maintenance and configurations



CONTROLLER MAINTENANCE

There are no user serviceable parts in the Curtis 1243^{GEN2} controller. No attempt should be made to open, repair, or otherwise modify the controller. Doing so may damage the controller and will void the warranty.

It is recommended that the controller be kept clean and dry and that its fault history file be checked and cleared periodically.

CLEANING

Periodically cleaning the controller exterior will help protect it against corrosion and possible electrical control problems created by dirt, grime, and chemicals that are part of the operating environment and that normally exist in battery powered systems.

When working around any battery powered vehicle, proper safety precautions should be taken. These include, but are not limited to: proper training, wearing eye protection, and avoiding loose clothing and jewelry.

Use the following cleaning procedure for routine maintenance.

1. Remove power by disconnecting the battery.
2. Discharge the capacitors in the controller by connecting a load(such as a contactor coil or a horn) across the controller's **B+** and **B-** terminals.
3. Remove any dirt or corrosion from the connector areas. The controller should be wiped clean with a moist rag. Dry it before reconnecting the battery. The controller should not be subjected to pressured water flow from either a standard hose or a power washer.
4. Make sure the connections are tight, but do not over tighten them. maximum tightening torque specifications for the battery and motor connections are limited .

FAULT HISTORY

A programming device can be used to access the controller's fault history file. The programmer will read out all the faults the controller has experienced since the last time the history file was cleared. Faults such as contactor faults may be the result of loose wires; contactor wiring should be carefully checked. Faults such as over temperature may be caused by operator habits or by over loading. After a problem has been diagnosed and corrected, it is a good idea to clear the history file. This allows the controller to accumulate a new file of faults. By checking the new history file at a later date, you can readily determine whether the problem was indeed fixed.



Controller configurations

See 1243 controller parameter data sheets



CAUTIONS

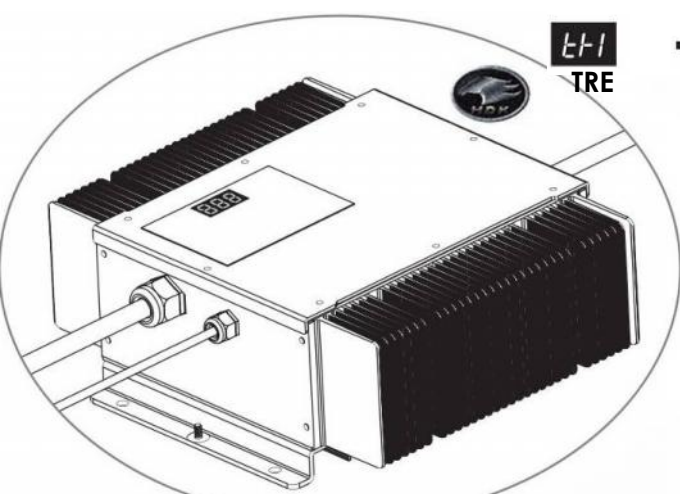
CUSTOMER SHOULD NOT TRY TO OPEN THE CONTROLLER BOX IN ANY CIRCUMSTANCES.

CONTROLLER

.1266 controller

CHARGER

I .Charger's specifications



i . Charging display process



ii .LED display



1	Red LED steady on: error occurred
2	Orange LED flashing: Low AC voltage
3	Red LED & green LED flashing alternately(slow):<80% Charger
4	Red LED & green LED flashing alternately(frequent):<80% Charger
5	Green LED steady on : battery fully Charged

HDK Charger is highly intellective, charger can be calibrated to be 36V or 48V. the charger has:
electronic protection-auto-reset ,
electronic current limit.



Charger's calibrations and malfunction sloutions

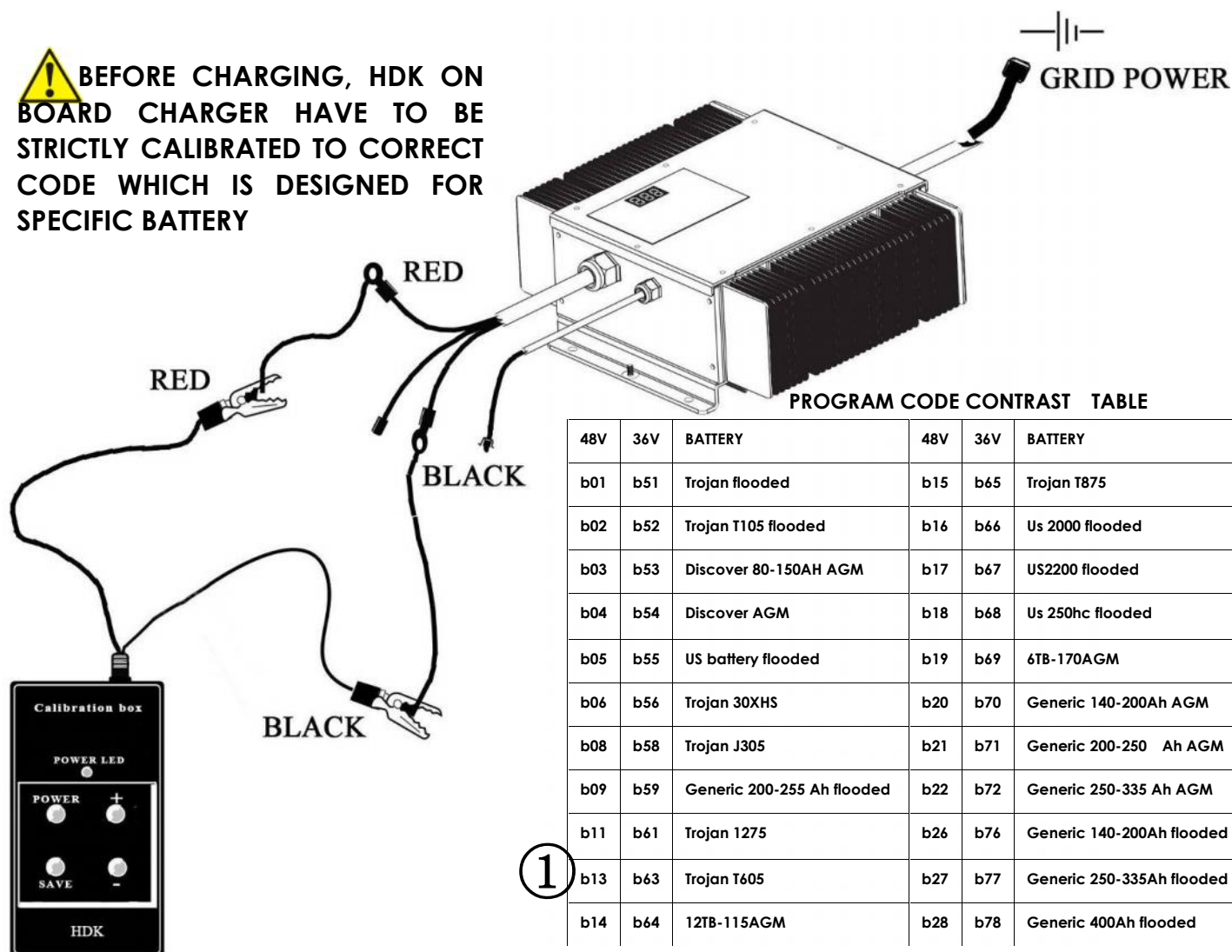
i .Alert and error display

Code	Reason	Solving method
E01	No charging function .	Inspect if the connecting terminals are in proper connection
	Battery temperature is too high or too low.	Check if the battery temperature is in the range of -10℃-50℃
E02	No battery connection; battery voltage too high or too low.	Inspect if the battery voltage is in the range (48:12V to 55.2V/36V:9V to 41.4V).In-charging display E02,48Vbattery mode, battery voltage is above 67.2;In 36V battery mode, battery voltage is above 50.4V.
E03	Battery is not fully charged for long time(overtime charging)	Inspect if the battery connecting terminals are loose or rusted
E04	Battery cannot have TRE charging, charging to the least normal voltage .that means voltage unable to be charged in.	Inspect if the battery is shorted or individual battery cell damaged
E05	Charger internal temperature high	Ensure that surrounding temperature is not too high,and ventilation is good ,and the charger should be turned off .
E06	Charger internal damage	Turn off the charger and send it to service dept for repairing
E07	Grid power low	Inspect the grid power
RL1	Grid power alert	Inspect the grid power

CHARGER

ii .Charger's calibration

! BEFORE CHARGING, HDK ON BOARD CHARGER HAVE TO BE STRICTLY CALIBRATED TO CORRECT CODE WHICH IS DESIGNED FOR SPECIFIC BATTERY



! Operation illustration

. Inspection of the charger acquiescent charging category

Entering display charge category mode:

! .Disconnect AC input wires.

! .Disconnect between the charger output and battery.

.A. when AC input is connected the display will show the program revision. After around 5 seconds later, it will show the charger output voltage and complete the self-inspection process.

B. Display continues to show **b01** 10 seconds, exit the acquiescent charging mode, display shows **E02**.

.Disconnect AC in put wires. If there is need to change the charging category setting, the positive (Red)/ negative (Black) terminals of the output wires should be connected to the battery positive (Red)/ negative (Black) terminals. After connecting the grid power, the charger can start charging the battery code.

.Turn on the power of the calibration box, press button “+” to increase code number, press “-” to decrease the code number; until to the right code of the battery . Press “**SAVE**” button to save the setting, the code display will flash after save the setting.



CHARGER

iii Charger's default setting

.Enter the battery selection mode;

.when the display shows the default charging category, charger output wire negative terminal (black/white wire) connects to battery negative terminal. Use the charger output wire positive ring terminal to touch the battery positive terminal for 3 seconds (+/-0.5 second). Remove the ring terminal. The display shows addition of the battery category (eg. **b01** adding to **b02**. Remark: If the charger output wire positive ring terminal is removed, the display shows the battery charging category without addition. this illustrate that the touching time is not sufficient for 3 seconds. Please repeat the operation).

.If this continues to increase, steps 2 should be repeated (remark: if the operation stop time exceeds 30 seconds during the operation process, the display will show E02. Please disconnect the grid power until nothing shown on display then connect to grid power again and repeat the setting).

.If the current setting needs to be stored the charger output wire positive ring terminal should be used to touch the battery positive terminal for more than 10 seconds. When the replay activation sound is heard and the display flashes then the new setting is successfully stored;

.disconnect the grid power until nothing shown on the display. Then re-connect the grid power, and inspect if the charger charging category is correct.

. After inspection confirm correct the grid power should be disconnected until nothing shown on display the charger output wire positive terminal (red)should be properly connected to the battery positive terminal. Then connect to the grid power and start charging.



CAUTIONS



USE THE CHARGER ONLY WITH AN ALGORITHM SELECTED THAT IS APPROPRIATE TO THE SPECIFIC BATTERY TYPE. OTHER USEAGE MAY CAUSE PERSONAL INJURY AND DAMAGE. LEAD ACID BATTERIES MAY GENERATE EXPLOSIVE HYDROGEN GAS DURING NORMAL OPERATION.KEEP SPARKS FLAMES, AND SMOKING MATERIALS AWAY BATTERIES.



PROVIDE ADEQUATE VENTLIATION DURING CHARGING. NEVER CHARGE A FROZEN BATTERY. BATTERY CAPS SHOULD BE REMOVED WHILE CHARGING.



RISK OF THE ELECTRIC SHOCK CONNECT CHARGER POWER CORD TO AN OUTLET THAT HAS BEEN PROPERLY INSTALLED AND GROUNDED IN ACCORDANCE WITH ALL LOCAL CODES AND ORDINANCES. A GROUND OUTLET IS REQUIRED TO REDUCE RISKOF THE ELECTRIC SHOCK. DO NOT USE GROUND ADAPTERS OR MODIFY PLUG DO NOT TOUCH UNINSULATED PORTION OF THE OUTPUT CONNECTOR OR UNINSULATED BATTERY TERIMALS. ALLWAY USE A SURGE PROTECTOR ON AC CORD TO PREVENT DAMAGE TO CHARGERS.



CHILDREN SHOULD BE SUPERVISED TO ENSURE THAT THEY DO NOT PLAY WITH THE APPLIANCE

DC-DC CONVERTER

Specifications

Out cover Material: Aluminum
 Input voltage: 30-70V
 Input current : <5A
 Working frequency: 100KHZ
 Output voltage: 12±0.1V
 Max output current: 18A(12V)(continuing work for 12 hours).
 Water-proof level: ≥IP54
 Working temperature: -40℃-85℃
 Lifetime: > 10000 hours
 Insulating strength: 1000VDC

* DC-DC converter maintenance

HDK vehicles use DC-DC converters special designed for vehicle's control circuit diagram .HDK DC-DC converter have automatic over current, over heated. short circuit, over current protection and recover functions.



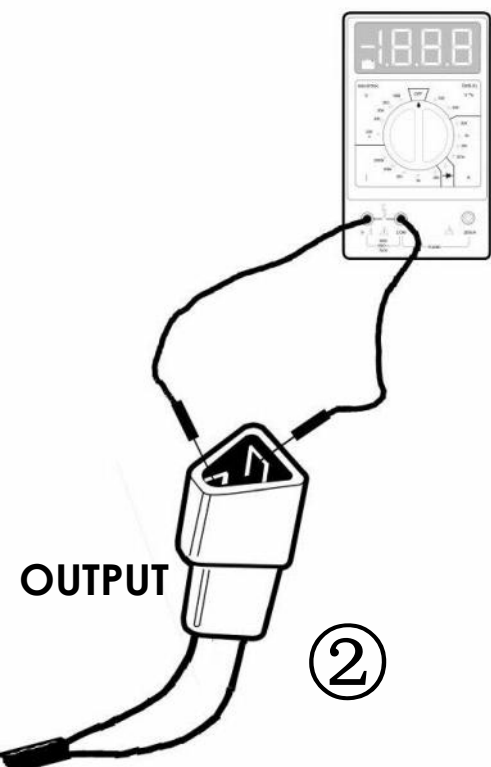
The burden of the vehicle system should not be over 150W (total power of all the lights),If so the DC converter will shut



DC-DC converter malfunctions

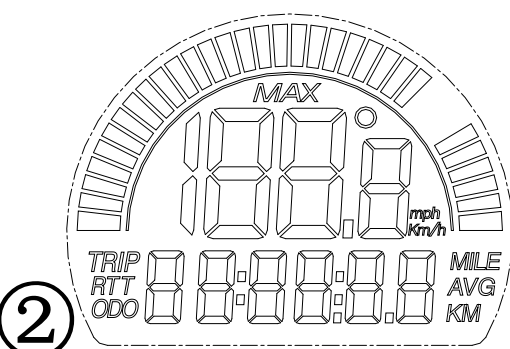
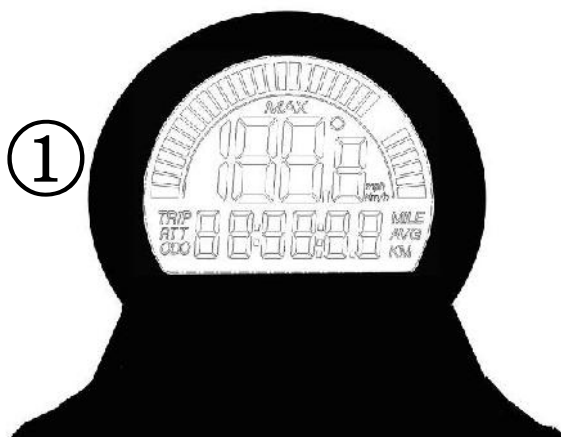


- I . All the lights and horn can not switched on
Check the Input
- II .Light get dark when turn all the lights and horn be used
- III. DC converter extremely hot while working
- IV.All the lights shut off automatically after short time turn on the lights.



SPEEDOMETER

Specifications



Working voltage: 6~15V DC "It does not allow to higher than 15V "

The reverse geostatic: >200V

Working temperature: -30 °C ~ +80 °C <suitable for the cold area >

Store temperature: -35°C ~ +85 °C

The speed shows the maximum: 199.9 Km/H

The speed show value: measured values

RPM shows the maximum: Self-defining (Acquiescence 6000RPM)

The electric consumption restored way: OCR / HVR

Single course distance maximum: 999.9 Km

Total mileage maximum: 300,000 kilometers

Single-run time maximum: 999 hours

Total running time maximum: 9999 hours (Zero clearing after exceeding)

The precision of mileage value: 0.1 Km Single-run; 1 Km/H Total running;

Display mode of running time: Hour: Minute / # Hour

Mileage value inaccuracy: -1%

The voltage of signal of the indicator lamp: +10 ~ +15V

All functions show at switch on show time: 3 seconds

The signal of the switch input voltage: 10V min; /15V max; DC

LCD type: TN (concrete parameter is omitted)

Functions

1. Speed display by digital (are precise as to 0.1 Km/H, anti-shake)
2. The bar code shows the RPM / Speed
3. Electric consumption display (6 shelves, have two kinds of alarm)
4. Single course distance (TRIP)
5. Total mileage (ODO)
6. The electric car operates once riding time (RT)
7. The electric car operates total time (RTT)
8. Kilometer / Mileage switching
9. The inside parameter adjusting
10. Turn left, turn right, high light, parks, trouble, low light LED indicator lamp
11. Light green back light / always lighting

* Speedometer maintenance

The speedometer is highly integrated instrument, to keep it in good working conditions one should keep in usage under the specifications limits of the speedometer. eg. the working environment should be between -30 °C ~ +80 °C, the working voltage should be between 6~15 V .

The speedometer should be installed properly on the front of the vehicle and it should be kept firmly to prevent it from loose or falling from vehicle. The wire harness that connects the speedometer to the circuitry should be fixed on the chassis with plastic fastening straps to prevent the wiring connection from breaking.

Speedometer should stay away from water flooding, water may cause the speedometer internal short circuit, stay away from fire or chemical objects. High temperature or acid may cause permanent damages to the LCD screen display.



Speedometer malfunctions

I . Speedometer has no showing

Check the working power supply wire connection.

II . Speedometer stays static have no current vehicle speed numbers show on the speedometer

Check the signal wiring of the speedometer, the “RMP” terminal should have in coming signals, if it doesn’t have signal coming in, one should check the connection wires conditions from the speed sensor on the DC motor to the speedometer, check whether there is any torn up on wires or loose connection of plugs. If the connections are all ok then one should check the speed sensor condition. If it is broken a new speed sensor is required.

III. The speedometer LED indicating lights do not work as responds to the related operations, such as when turn the turning lights but the indicating LED does not light up and flash .

Check the speedometer plug connection with wire harness.

Speedometer Setting

See speedometer operation data sheets



CAUTIONS



WHEN THE CAPACITY OF THE BATTERY REDUCES, THE ELECTRIC CONSUMPTION INDICATE SHOWS IS REDUCED, THIS VALUE SHOWING IS NOT RISEN BY VOLTAGE OF THE BATTERY, ONLY WHEN THE VOLTAGE OF THE BATTERY ACCORDS WITH “RCV” CONDITION, ELECTRIC CONSUMPTION IS RESTORED TO THE FULL LEVEL INDICATE.



AFTER INSERTING THE ELECTRIC INSTRUMENT, PLEASE CHARGE TO BATTERY IMMEDIATELY, UNTIL TO FULL LEVEL IT COULD MAKE THE ELECTRIC INSTRUMENT POINT OUT ACCURATELY VALUE .

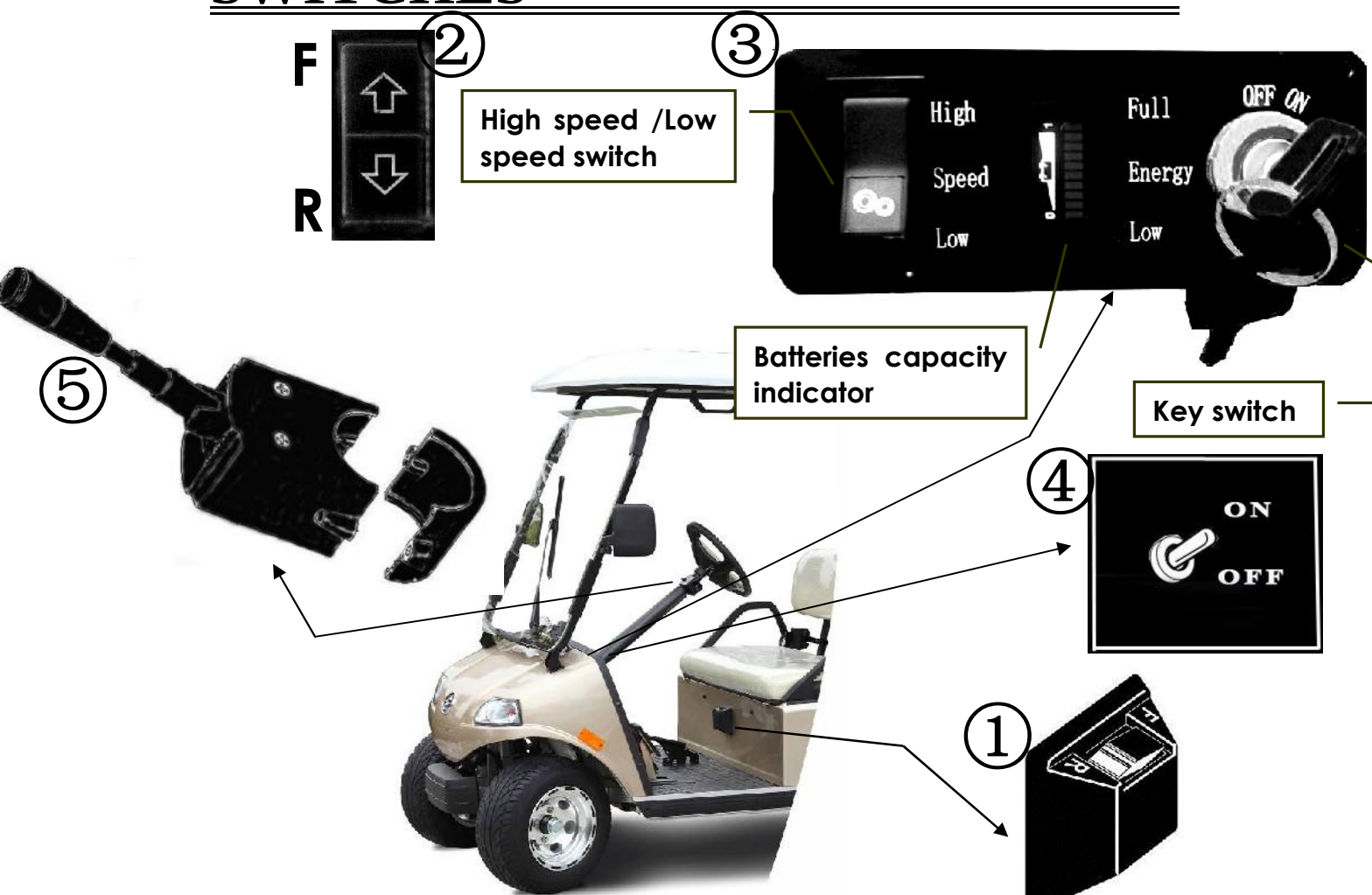


WHEN THE SPEEDOMETER PARAMETER IS SET UP, DATA ARE KEPT IMMEDIATELY. IF PRESENT THE FAULT OF OPERATING PROGRESS, THEN PLEASE CUT OFF THE SWITCH OR CUT OFF THE INSTRUMENT POWER DIRECTLY BEFORE PARAMETER IS SET UP AND FINISHED .



CARRY OUT THE PARAMETER AND SET UP PROBABLY WILL DESTROY INSTRUMENT /THE NORMAL RUNNING OF THE SAME FUNCTIONS, PLEASE MAKE SURE THE PARAMETER DATA IS CORRECTLY, IF HAVE ANY FURTHER PROBLEMS, PLEASE CONTACT TECHNICIAN ATTENDANT.

SWITCHES



.Forward/Reverse switch on the body Forward/Reverse switch on the dash board (, locations of the Forward/Reverse are optional) High speed/Low speed switch, Batteries capacity indicator, Key switch Power switch ⑤Switch assembly



Switches maintenance and malfunctions' solutions

.Mechanical switches

For mechanical switches, one should always keep it proper positions while operate the vehicle. Such as when one choose to drive in high speed state one should press the High speed/Low speed switch make it stay at High speed. Choose to operate the vehicle forward one should make the F/R switch stay at F position.

When mechanical switches are not easy to press and switch modes, please check the whether there are objects caught in the switches, if so clear the switches take out the objects.

When switches are in proper mechanical functions, but cannot control the vehicle, please check the wire harness, check whether the wires come loose or not, if so reconnect the wires and make it tight. If after check the wire harness and is in perfect connection, but the switches still cannot operate, please check the switch with multimeter, check whether it is connected between pins whether switch the states. If the switch does not respond, the switch needs to be changed.

Batteries indicator maintenance and malfunctions

(1) Connecting :

Pin1=Battery+

Connects to the vehicle's main positive (+) terminal Use as short a wire as needed.

Pin2=Battery-

Connects to the vehicle's main negative (-) terminal use as short a wire as needed.

Note: pins 1&2 are connected across the total battery pack.

Pin3= No option

Pin 3 is left open.

Pin4=key switch

Connects to the Battery + through the switched terminal of the key switch.

(2)Display :

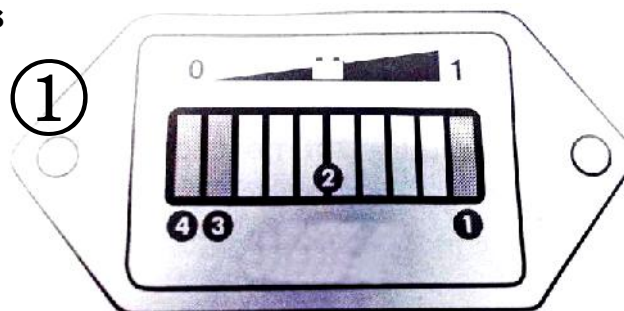
only when the battery is properly charged is the right-most LED lit.

As the battery's state-of-charge decreases successive LEDs light up. only one on at a time.

The 2nd-from-left LED flashes, indicating "energy reserve" (70% depth of the discharge).

④The 2 left-most LEDs

depth of discharge).



Batteries' indicator malfunction



Keyswitch on and no display

Terminals not connected or improper voltage; key switch not high.



Stays at full

Indicator voltage does not match battery voltage.



Will not reset

Indicator does not match battery voltage or battery not fully charged



Reset without terminals charging battery

Not connected directly to battery



Empty too soon

Indicator voltage does not match battery voltage or terminals not connected directly to battery

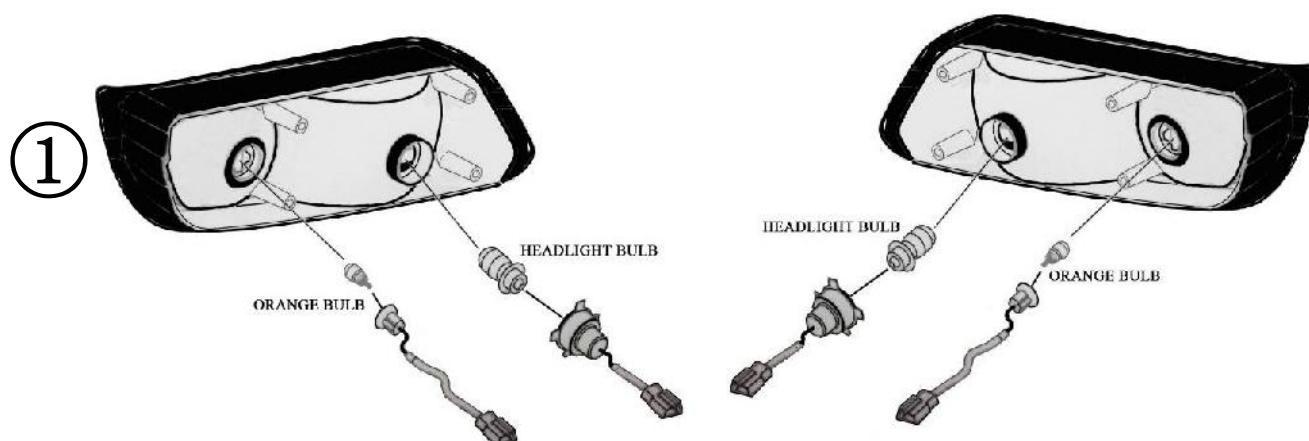


Using environmental temperature

Operating:-40~85 ; Storage:-50~+90

Humidity "95%RH non-condensing" at 38 ; Shock and Vibration : Meets SAE J 1378

HEAD LIGHTS



Headlight bulbs are halogen bulbs, the main light bulbs rated power can range from 30-60W, turning bulbs are orange color bulbs, the DC-DC converter provide 12V working voltage, and the switch assembly control the headlights to turn on and turn off. When headlights are turned on the indicator LED on the speedometer will flash as the lights are turned on, Eg. when turn on the main light the indicator will be flashing as well .



Headlights maintenance and bulb changing



HEADLIGHTS RATED POWER SHOULD ALWAYS BE KEPT WITHIN 50W, OTHERWISE THE HIGHER POWER BULBS WILL CREATE MASS HEAT OVER AND DAMAGE TO THE LIGHT ASSEMBLY.

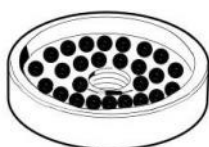


THE CAP ON THE ON THE BACK OF THE HEADLIGHTS SHOULD ALWAYS STAY TIGHT TO KEEP OTHER OBEJCT ENTER INTO THE HEADLIGHTS, THE HEAT EXHAUST TUBE ON THE BACK OF THE MAIN LIGHT SHOULD ALWAYS KEPT VENTILATED.



WHEN CHANGING A BURNT OUT BULB ONE SHOULD WAIT UNTIL THE LIGHT BULBS ARE IN NORMAL TEMPERATURE
IN CASE MAY CAUSE BURN INJURY, AFTER ONE CHANGED THE BAD BULBS ONE SHOULD BE SURE TO PUT BACK

LED TAIL LIGHTS



2



LED tail lights maintenance and malfunctions



THE LED LIGHTS SHOULD ALWAYS STAY AWAY FROM WATER, THE WATER MAY CAUSE SHORT CIRCUIT.

The tail lights are LED lights, the brake lights are red LEDs, the turning lights are orange LEDs, LED light assembly have highly efficient, low energy consumption and high luminance properties. The LED light assembly has a diode to prevent the power polarity reverse, and resister to limit the LEDs working current. When turn on the front headlights the brake LED lights will be on in dim light, when step the brake the brake LEDs will be on in strong light. The back turning lights are connected to the front turning lights in parallel circuit.

Malfunctions



Switch on but cannot light up

Check the plug see whether it is tight, check the input voltage with a multimeter. If all check ok then the LED light assembly has a circuit break please check the diode.



(2)Taillight flashing too fast

Change the flasher



The light too dark

The resistor is defective, or the voltage supply from the DC-DC converter too low

CONTACTOR - SOLENOID



Contactor - solenoid is to protect the circuitry safety, and control the power on and off. The current come out of the battery is extremely high, for safe operation the circuit put contactor on. The interior structure is basically a electronic magnet. When someone steps on the accelerator the circuit will provide enough current to make the contactor to click on .Then the current is allowed to enter into the controller. When someone releases the accelerator the power will be cut the contactor-solenoid off and will break the circuit disallowing current to controller.



Contactor-Solenoid maintenance and malfunctions



THE FASTENING NUTS ON THE CONTACTOR-SOLENOID SHOULD BE SOLID TIGHT LOOSE CONNECTION MAY CAUSE ELECTRIC SPARKS AND CAUSE SEVERE DAMAGE.

Malfunctions



Contactor-Solenoid will not respond when stepping on the accelerator

Bad connection or wrong connection or the contactor is broken



Contactor-Solenoid keeps repeating on and off

Contactor-Solenoid is bad or poor good from controller to Contactor-solenoid.



Contactor-Solenoid keeps staying on when releasing the accelerator

Check the micro-switch in the accelerator box, see if it is in right position (check the accelerator chapter), if so then the contactor-Solenoid is bad internally.

HORN



Horn is powered by 12V voltage come out of DC-DC converter, controlled by switch assembly .



Horn maintenance and malfunctions



THE HORN SHOULD BE KEPT SURFACE CLEAN, DIRT OR OTHER OBJECT MAY AFFECT THE VIBRATION OF THE HORN CAUSE THE SOUND TO CHANGE AND LOW SOUND. THE HORN SHOULDN'T BE LOADED WITH HIGH VOLTAGE BECAUSE HIGH VOLTAGE WILL EASY BREAK THE COIL IN THE HORN SAUSING DAMAGE.

Malfunctions



Push the horn switch and will not respond

Wrong or bad connection of horn, check the horn plugs, use a multimeter to check whether where is voltage loaded on horn when push the switch. If all is right. Then the horn is bad



Strange horn voice

Push the horn, change the contact position of the horn and frame. Clean the surface of the horn especially dirt on it .



Horn have sound on when push the switch but go off after

Crank the tightness of the horn, use a screwdriver to rotate the middle screw to change the tightness of the horn .

RELAY



Relay is as a electric switch in the circuit system, the relay is be placed in input side of the DC-DC convertor as electric switch to control the converter power supply, when vehicle power is turned on the relay will click on, when the power is turned off the relay will brake attach.



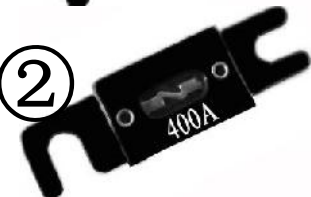
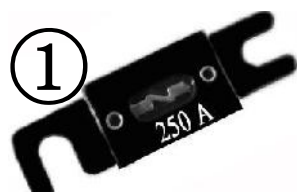
Relay malfunctions



Power switch is on, relay no respond .

Check the connection see whether it is good connection condition, if it is then the Relay is bad.

FUSES



For protect the electronic circuit, fuses are required. The vehicle circuitry's property is low voltage and high current. In case of short circuit, over current working, fuses are placed in the circuit for secure the electronic components, in case default operation may cause unrepairable damages.

Main fuse for 1243/1246 system.

Main fuse for 1268 system.

DC converter Input protective fuse for 1243/1246 system.

DC converter Input protective fuse for 1268 system.



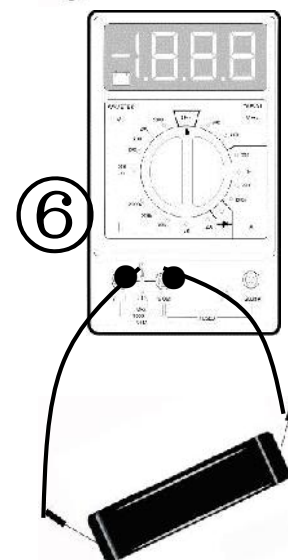
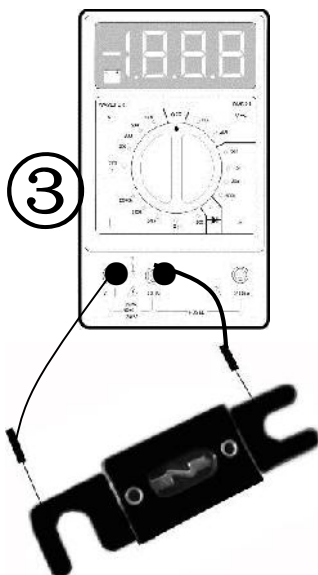
Relay malfunctions

When the vehicle have a break down, turn on the power and whole circuitry system has no respond, then the main fuse should be checked, when the power is on and vehicle can be operated, but all lights and horn cannot be switched on. Then the DC converter Input protective fuse should be checked.

 To judge a broken main fuse one can judge by physical eye observation, one can tell from the revealed fuse in the middle of the fuse, if it is broken then the fuse will be broken in the middle physically. For other fuses one can use a multimeter to judge, the resistance of the fuses are zero, if it is broken means the inner connection be disconnected.

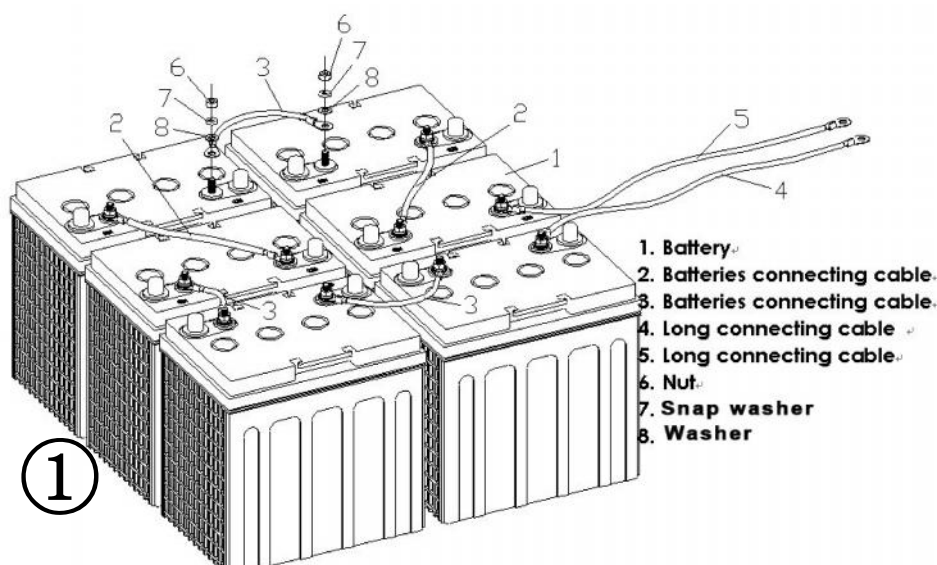


WHEN COMMIT THE FUSE CHANGING, THE POWER SHOULD BE TURNED OFF.



BATTERIES

.HDK vehicle batteries connection



①

Batteries loaded on HDK vehicles, according to different configurations, customers who purchase HDK vehicles can choose different batteries (figure are the batteries available). The batteries are connected in series circuit pattern :

System	Battery QTY(PCS)	Single battery voltage(V)
36V	6	6
48V	6	8
48V	8	6

②

Batteries HDK vehicles can apply

Trojan flooded	Trojan T875
Trojan T105 flooded	Us 2000 flooded
Discover 80-150AH AGM	US2200 flooded
Discover AGM	Us 250hc flooded
US battery flooded	6TB-170AGM
Trojan 30XHS	Generic 140-200Ah AGM
Trojan J305	Generic 200-250 Ah AGM
Generic 200-255 Ah flooded	Generic 250-335 Ah AGM
Trojan 1275	Generic 140-200Ah flooded
Trojan T605	Generic 250-335Ah flooded
12TB-115AGM	Generic 400Ah flooded



Battery malfunction and maintenance

II .Maintenance

- i .the exterior of the battery, the connection wires and bolts should be kept clean and dry. If there is electrolyte outside the battery, please clean with dry cotton cloth first then wash with water and finally wipe dry. (while cleaning, do not allow any cleaning solution, or water to get inside the battery, to avoid leakage and increasing self-discharge)
- ii . The connection of the battery should always be kept in good condition. please check if any battery cable terminal or nut has become loose periodically in order to prevent any sparkle or damage to terminals .
- iii.Do not place any object on the battery and do not connect the positive pole to the negative pole. This may cause a short circuit, damage to the battery or injury to your body.
- iv.The battery should be recharged fully when not in use. Any delay on the re-charging will cause negative effect on the battery.
- v The evaporation and electrolyzing of the water will cause the density of electrolyte of the battery increased and the liquid surface decrease, especially in hot water. Therefore check the distilled water or the attenuated sulfuric acid for lead-acid battery with density of 1.40 to adjust the electrolyte to meet the density of the 1.28 the surface should be flat with highest level then continue to charge 0.5-1 hour in order to make the internal uniform.
- vi.Any impurities are not allowed to enter the battery. Keep the apparatus clean for adding water to avoid the impurities to be fallen into the battery.
- vii.When driving, the driver shall be always be aware of the drop level the battery power from the batteries capacity indicator. The driver shall estimate the distance needed to be taken and recharge the battery at a proper time in case that the car can not get back to the recharging station in time for recharging.

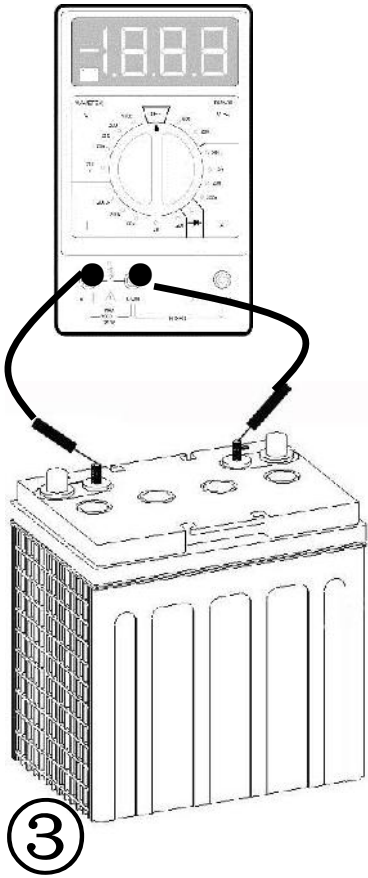
viii. If the golf car is going to be kept unused for a period of time, the battery shall be fully charged before put away. After that the battery fully recharged every month, until the charger turn off automatically.

ix. During charging the car shall be parked in a well-ventilated area with the fill caps open. Keep car far away from any flame and sparks and avoid any explosion or fire that could cause physical injury or damage to the property.

x. Once charged the cap should be kept tightly covered.



II .malfunctions and solutions

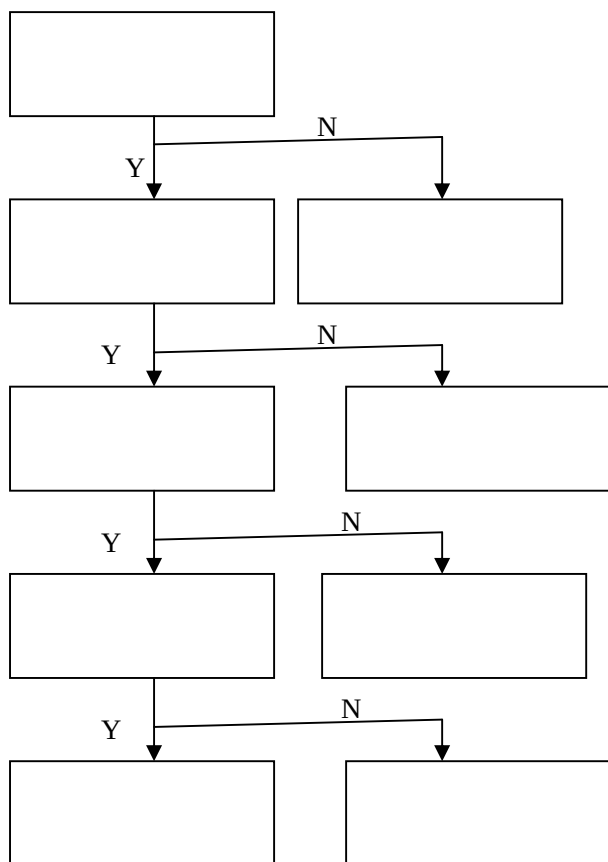




ELECTRICAL CIRCUITRY

MALFUNCTIONS AND SOLUTIONS

34



VEHICLES' TIRE TREAD

①

For different circumstances the vehicle being used, different tire treads are optional ,the standard tires HDK vehicles have are turf tires.

FIGURE ① STANDARD TREAD

②

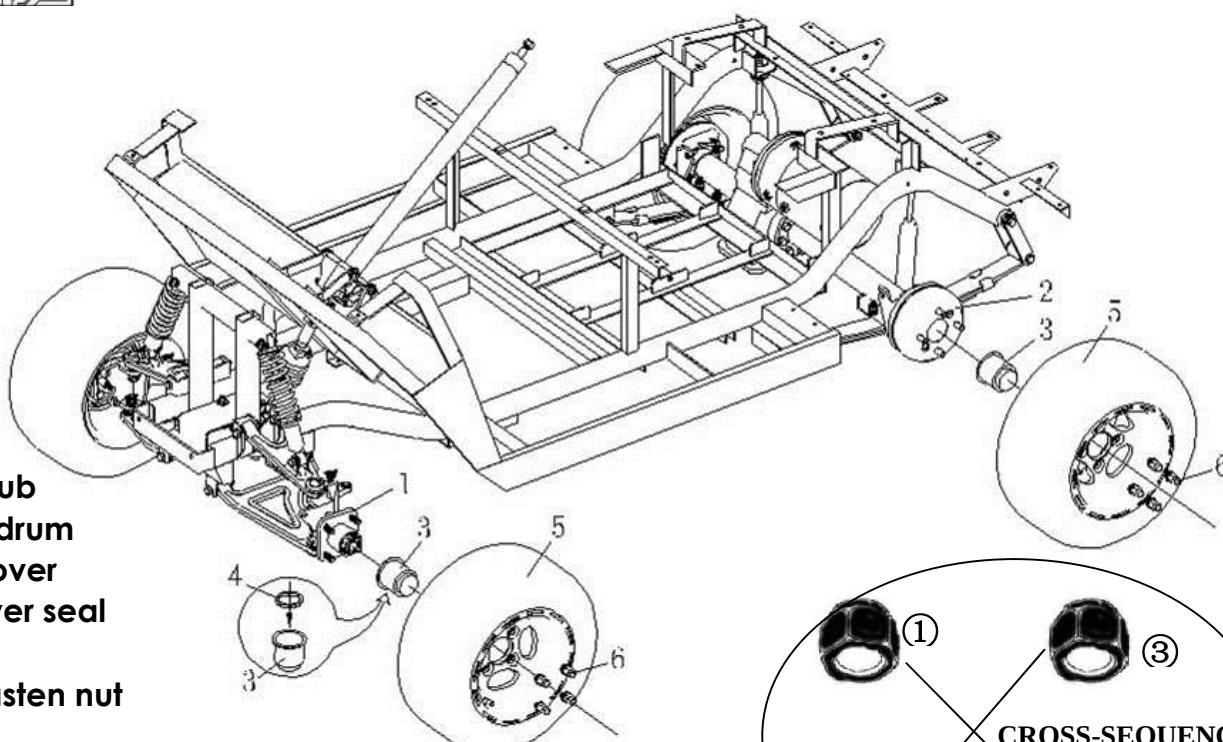
FIGURE ② PREMIUM TREAD

③

FIGURE ③ EXTRA TRACTION



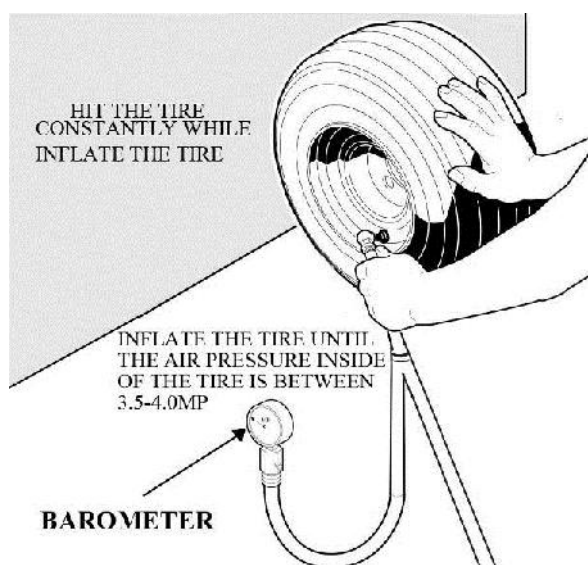
FOR ATTACHING THE MAXIMUM PERFORMANCE THE TIRES SHOULD ALWAYS BE CHOSEN ACCORDING TO THE CIRCUMSTANCES THE VEHICLE MOSTLY BEEN USED.



! While fasten the wheel nuts, one should always keep fasten it on in cross-sequence. To attach the perfect tight situation.



Tubeless tire cautions



1. Clean both tire beads to remove dirt or other object.
2. Where the tire beads seat, clean the wheel rim with a wire brush
3. Apply plenty of tire mounting lubricant(soap and solution)to both beads and rim flanges
4. Install the tire on the rim from the valve stem side .if there is no tire machine available ,use a rubber mallet and tire iron
5. Remove the valve core and position tire so that both beads are on the rim flange narrow bead seats
6. Quickly remove the air nozzle and install the valve core
7. Adjust the tire ,keep the air pressure between 3.5-4.0MP,immerse the tire into water to make sure there are no leaks

WARRANTY



The warranty is to standardize the after-sale service for export vehicles, Settle the claims efficiently and improve our after-sale service Experience.

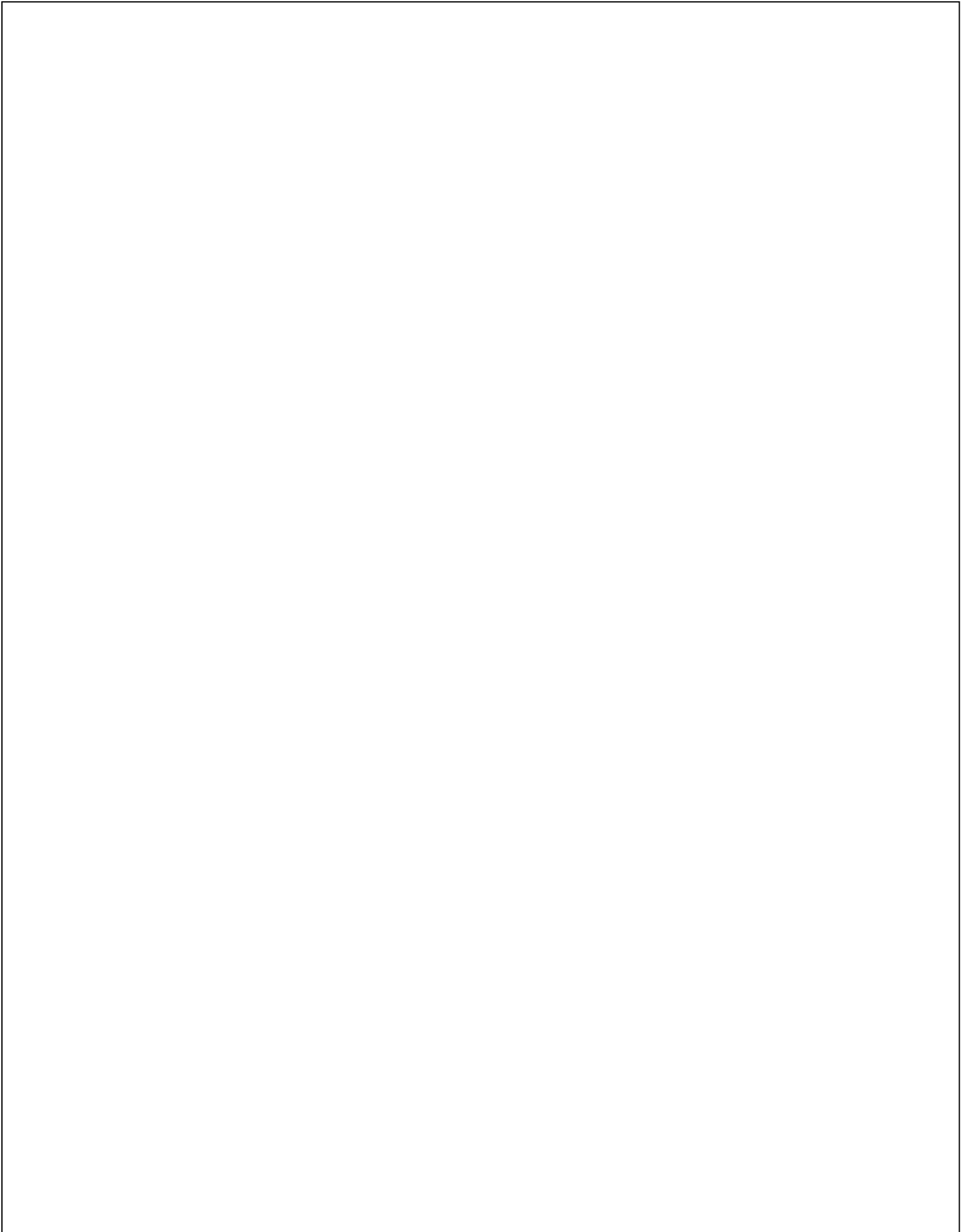
HDK Electric Vehicle Corporation is dedicate in the electric vehicle manufacturing since 2006, HDK customers are all over the world, HDK Electric Vehicle Corporation promises any client who buys HDK vehicles, HDK technician's will be always be ready to help fix the problems with you. We provide superior quality for after sales service.

For more warranty information please see limited warranty form that customers receive when purchasing HDK vehicles.

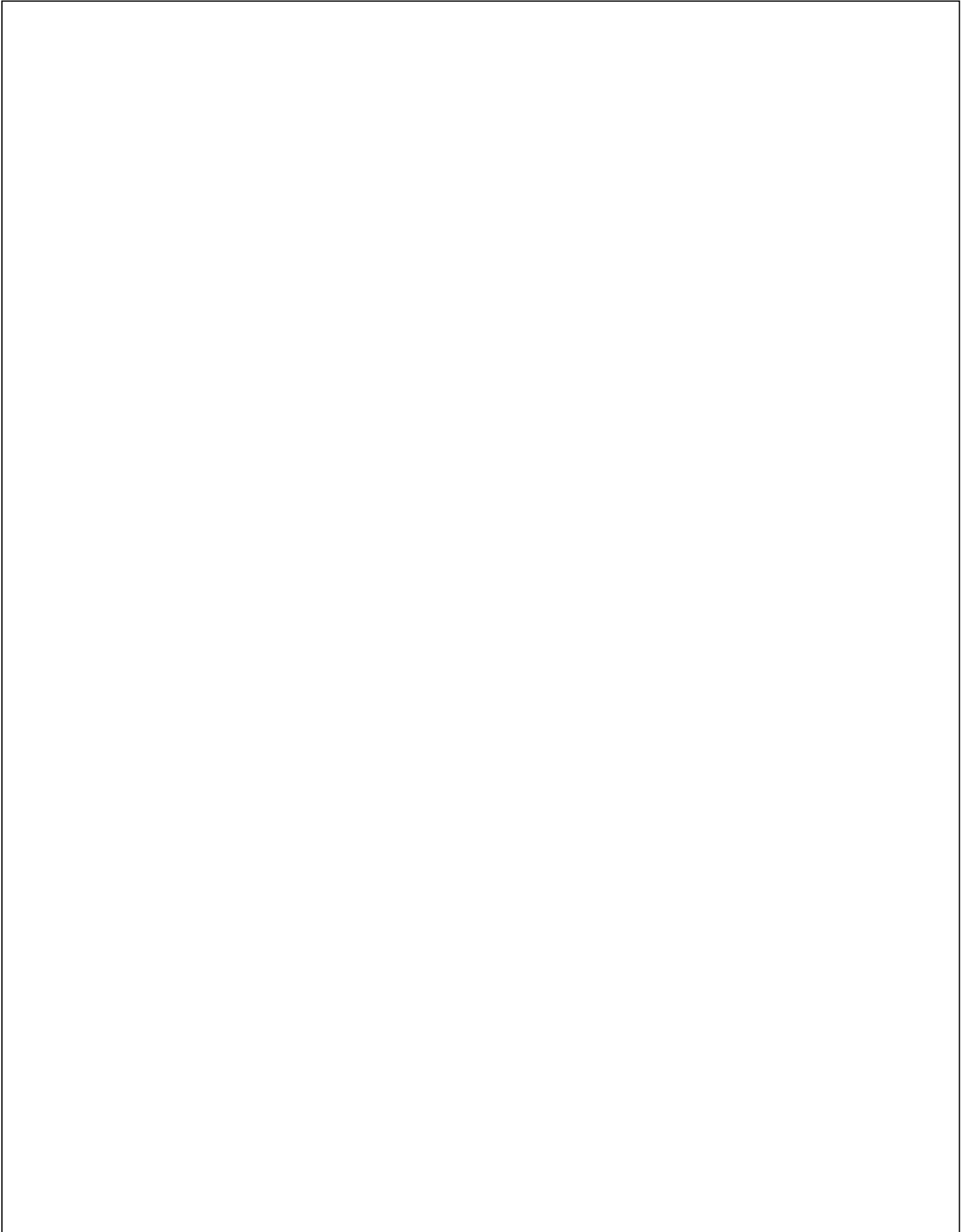
Appendix

I

II



III





www.hdkusa.com