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1.1 How to use this manual

This service manual is mainly developed for VOYAH FREE series vehicles, which incorporates the main technical information on the range extender assembly, drive motor assembly, generator, high voltage battery pack, chassis, suspension, body and electrical parts, including removal and refitting, disassembly and assembly, adjustment, maintenance and fault diagnosis, etc. Please read this manual carefully and strictly implement the provisions herein to get familiar with the fault diagnosis, troubleshooting, maintenance and repair methods of the vehicle and ensure that the repaired vehicle is in the best working condition, thus achieving the ideal power, economy and comfort.

For the safety of your life and property, please strictly follow the precautions in this manual. Failure to observe the precautions in the relevant chapter may result in personal injury or vehicle accident.

All information in this manual is up to date until June 2022. However, due to the continuous improvement of the product, our company reserves the right to update the relevant content at any time without prior notice. It is inevitable that there might be some mistakes and omissions in this manual on account of its wide coverage and the continuous improvement of the product, and any suggestions from readers are appreciated.

1.2 Danger, warning, and notice

1.2.1 Danger and warning

- The electrical equipment on VOYAH FREE is divided into low voltage electrical components and high voltage electrical components. The former includes: triple screen, audio, lighting, horn and blower, etc.; the latter includes: drive motor assembly, MCU, onboard charger, power distribution unit (PDU), high voltage harness, high voltage battery pack, A/C compressor, A/C heater (PTC), etc.
- The high voltage components are pasted with an orange high voltage warning label, on which the contents should be noticed. To avoid electric shock, do not touch high voltage components, high voltage cables (orange) and their connectors.
- If the cable is exposed or broken, do not touch it to avoid electric shock.
- It is forbidden for non-professional maintenance personnel to contact, disassemble or modify electrical equipment at will. Otherwise, touching high voltage will cause serious consequences such as burns or even death by electric shock.

Warning for maintenance of parts with high voltage

Maintenance site requirement:

- Safety isolation measures should be adopted before maintenance operations: use warning fences for isolation and place high voltage warning signs to warn unrelated personnel to stay away from the area to avoid safety accidents.
- Water-based fire extinguishers must be provided at the designated location of the maintenance site. When the high voltage battery is on fire, a large amount of water must be used to extinguish the fire.
- Before maintaining the high voltage equipment, connect the body ground wire to the ground wire of special maintenance station for the electric vehicle.
- Install dedicated AC circuits and power sockets. If no special circuit is used to charge the electric vehicle, the normal operation of other equipment on the circuit may be affected.
- Keep the working environment clean and well ventilated, away from liquids and flammable materials.

Maintenance personnel must wear the insulation and protective equipment before operation:

- Protective insulation clothing.
- Insulating rubber shoes.
- Protective glasses.
- Insulating gloves (high voltage electrician gloves or battery electrolyte acid and alkaline resistance gloves).

Insulation tools:

- Pad the maintenance area with insulating rubber.

- Maintenance personnel must use insulation tools when working with live parts.
- After the battery high voltage connector is disconnected, wrap the high voltage output part with special protective cover or insulation tape immediately.
- Special workbench with insulation pad must be used when repairing high voltage battery and electric control components.

Warning!

- Before use, check the insulation and protective equipment to ensure that there is no damage, holes or cracks, the internal and external surfaces are clean and dry, because that they can not be operated with water to ensure safety.

Warning for driving in a road test

Warning!

- When a road test is needed for the vehicle reporting a fault for repair to judge the fault location or the scan tool is needed to read the information parameters of the vehicle in operation, an assistant should drive the vehicle while the maintenance technician determines the fault or reads the parameters. It is forbidden to control the vehicle and do other things at the same time for one person. Otherwise, there are traffic hazards, which may cause traffic accidents, resulting in personal injury.

Warning for disconnection of battery

Warning!

- Before maintaining electrical components, all electronics and start switches must be turned off, unless otherwise stated in operating procedures.
- Disconnect the negative terminal of the battery if the tool or device easily touches the exposed live terminal. Failure to follow these safety instructions may result in personal injury and damage to the vehicle.

Warning!

- To repair the SRS, disconnect the negative terminal of the battery for at least 10 minutes before performing other maintenance operations.

Warning for brake dust

Warning!

- When repairing wheel brake parts, avoid the following operations:
 - Do not grind the friction plate.
 - Do not use sandpaper to polish the brake friction plate.
 - Do not use dry brush or compressed air to clean wheel brake parts.

Warning for brake fluid

Warning!

- Do not use brake fluid stored in an unsealed container owing that brake fluid absorbs moisture easily. Improper or contaminated brake fluid may cause system failure, vehicle loss of control, or personal injury.

Warning for irritation of brake fluid

Warning!

- Brake fluid irritates skin and eyes. In case of contact, the following measures should be taken:
 - In case of eye contact, rinse with water immediately and thoroughly.
 - In case of skin contact, wash with soap and water immediately.

Warning for replacement of brake pipe

Warning!

- Install and secure the brake pipe carefully with correct fasteners for replacement; otherwise, the brake pipe and brake system may be damaged, resulting in personal injury.

Warning for supplement restraint system (SRS) clock spring

Warning!

- Improper installation of the clock spring assembly will damage the internal spiral coil of the clock spring, which may cause the malfunction of the coil and the SRS module, resulting in personal injury.

Warning for disposal of SRS module

Warning!

- In order to prevent accidental deployment of the SRS and personal injury, the undeployed SRS module should not be disposed as regular workshop waste. Some of the materials contained in the undeployed modules may cause serious illness or personal injury if the sealed container is damaged during the disposal process. The undeployed airbag module should be safely disposed following the deployable procedure.

Warning for pickup and storage of SRS module

Warning!

- When transporting the undeployed airbag module:

- Do not carry the wire or connector on the airbag module.
- Make sure the airbag opening is not facing you or anyone else.

Warning!

- When storing an undeployed airbag module, ensure that the airbag opening is not facing the surface where the airbag module is placed. The airbag opening should not face down, and it is forbidden to place any objects on the airbag module. There should be enough space around the airbag for accidental employment, otherwise it will cause personal injury.

- Do not immerse the undeployed airbag module in water or contact with other liquids.

- Do not place the undeployed SRS module near the fire source or in a high temperature area to prevent accidental deployment of the SRS and personal injury.

Warning!

- Do not hit or shake the SRS impact sensor. Before powering on the impact sensor, ensure that the impact sensor is firmly fixed. Failure to follow the correct installation procedures may cause the SRS mistakenly deployed or worked abnormally, resulting in personal injury.

Warning for SRS

Warning!

- This vehicle is equipped with SRS. Failure to observe correct operating procedures may result in the following situations:

- Pretensioner burst.
- Personal injury.
- Unnecessary SRS repair.

Warning!

- Observe the following guidelines to avoid the above situations:

- Refer to SRS parts view to determine whether you are performing maintenance operations on, around, or on the wiring of SRS parts.
- If you are performing maintenance operations on, around, or on the wiring of the SRS component, disconnect the SRS.

Warning for high temperature of deployed SRS module

Warning!

- After deployment, the metal surface of the SRS parts may be very hot. To avoid fire and ensure personal safety:

- Allow sufficient cooling time before touching any metal surface of a SRS part.
- Do not place inflated SRS part next to anything flammable.

Warning for inhalation of R134a

Warning!

- Avoid inhalation of A/C refrigerant R134a and lubricating oil vapor or mist. In case of contact, eyes, nose and throat irritation may occur. Work in a well-ventilated area. When discharging R134a from the A/C system, the R134a should be recovered using maintenance equipment. In the event of an accidental system leak, the work area must be ventilated before continuing with repairs.

Warning for maintenance of exhaust system

Warning!

- To avoid burns, do not repair the exhaust system while engine is warming up.

Warning for window raising/lowering

Warning!

- When operating the power window switch, ensure that the head, hands and other body parts of driver and all passengers are far away from the window to avoid accidental injury.

Warning for eye protection

Warning!

- Maintenance personnel should wear approved welding masks and gloves when performing certain procedures (e.g. welding or cutting, etc.) to reduce the risk of personal injury.

Warning for acoustic insulating materials

Warning!

- When the open flame is used in the maintenance process, the acoustic insulating material must be removed and keep a certain range away from the open flame. When installing the acoustic insulating material, the maintenance personnel should avoid inhaling smoke, otherwise it will be harmful to health.

Warning for fuel and fuel pipeline

Warning!

- To reduce the risk of fire and personal injury, please observe the following points:

- Replace all fuel pipelines that are bumped, scratched or damaged during installation and do not attempt to repair fuel pipelines.
- When installing a new fuel pipe, do not directly hit the clip of the fuel pipe with a hammer.
- Before connecting the fuel line joint, always apply a few drops of clean engine oil on the fuel line joint to ensure proper reconnection and prevent possible fuel leakage. (During normal operation, the O-ring of the joint will expand, and if it is not lubricated, the O-ring may be deformed).

Warning for fuel pipe joint

Warning!

- Fuel is flammable and explosive, which may cause a fire if there is a fire source. To prevent fire or explosion hazards, do not use open containers to discharge or store fuel.

- Please prepare a water-based fire extinguisher nearby.

Warning for handling of glass and metal plate

Warning!

- When handling the glass or metal plate with sharp edges or rags, wear goggles and gloves to reduce the risk of personal injury.

Warning for removal of injector O-ring

Warning!

- If the O-ring is not removed with the injector, a repaired injector with the new O-ring can not be properly placed in the injector seat, resulting in oil leakage.

Warning for moving parts and hot surfaces

Warning!

- When working around a running engine, avoid touching moving parts and hot surfaces to prevent personal injury.

Warning for goggles and gloves

Warning!

- Wear goggles and gloves when removing exhaust system parts. Otherwise, rust and sharp edges of worn parts may cause serious personal injury.

Warning for removal of expansion tank cover

Warning!

- To avoid scalding, do not remove the expansion tank cover until the engine is cooled. If the expansion tank cover is removed while the engine and radiator are not cooled, the cooling system will release hot, high-pressure fluid and steam.

Warning for maintenance of cooling system

Warning!

- As long as there is pressure in the cooling system, the solution temperature will be higher than the boiling temperature even if the solution is not boiling in the radiator. If the expansion tank cover is opened while the engine is not cooled and the pressure is still high, the engine coolant immediately boils and can be sprayed onto the operator, causing severe burns.

Warning for road test

Warning!

- Test the vehicle on the road and comply with all traffic laws and regulations provided that safety can be ensured. Do not attempt any operation that may compromise the control of the vehicle. Failure to follow the above safety instructions may result in the serious personal injury and the vehicle damage.

1.2.2 Precautions for maintenance operation safety

Precautions for maintenance operation safety:

- When repairing high voltage parts of vehicle, a full-time supervisor must be allocated. And the supervisor and maintenance personnel must have the national accredited *Special Operation Certificate (Electrician)* and *Primary electrician certificate (including)* or above (professional qualification certificate).
- The supervisor will supervise the whole process of maintenance.
- Supervise whether the composition of maintenance personnel, use of tools, wear of protective equipment, safety protection of spare parts, and maintenance safety warning sign meet the requirements.
- Check whether the high voltage load equipment (such as the IPU) has high voltage.
- Responsible for the inspection of the safety maintenance operation procedures in the maintenance process. The supervisor should direct the operation according to the safety maintenance operation procedures, be informed after the maintenance personnel finishes an operation, and mark on the job instruction sheet (JIS).
- Untrained personnel are prohibited to carry out high voltage parts maintenance, and all personnel are prohibited to carry out dangerous operations with fluke mentality to avoid safety accidents.
- Do not reuse the dropped high voltage battery. Excessive collision may lead to damage and breakage of parts inside the high voltage battery, or even short circuit of the high voltage battery and other extreme situations.
- Prevent the high voltage battery from being soaked, which may lead to internal short circuit, loss of circuit protection function and abnormal chemical reaction of the high voltage battery.
- Do not bump or hit the high voltage battery during assembly to avoid deformation of the housing and its internal structure, which may lead to loss of protection function of the internal circuit of the high voltage battery.
- Welding on the housing is prohibited. The applied voltage to the high voltage battery may cause the loss of protection function of its internal circuit.
- This manual does not necessarily include all items required for vehicle repair and maintenance. It is intended for use by personnel with professional skills and qualifications. Repair or maintenance performed by technicians who have no professional skills or qualifications and rely only on this manual or fail to use appropriate equipment or tools, will cause injury to themselves or the surrounding personnel and damage to customer's vehicle. To avoid damage to vehicle as a result of dangerous operations, please observe the following rules:
 - The contents of this manual must be read thoroughly.
 - The methods provided in this manual are quite effective for vehicle maintenance and repair. When performing repairs following the procedures prescribed in this manual, always use the SST. In the event of using non-designated special tools and repair methods, you must ensure the safety of the technician before start and make sure no personal injuries or damages to customer's vehicle will be caused.
 - If parts need to be replaced, replace parts with the same part number and do not use inferior parts.
 - In order to effectively avoid possible personal injury during repair or maintenance, as well as vehicle damage caused by improper operation or potential hazards that may make the vehicle unsafe, you must earnestly observe the "Warning" and "Notice" in this manual. In addition, the contents of "Warning" and "Notice" in this manual are not exaggerated. Violation of these instructions may lead to dangerous consequences.
 - The vehicle is equipped with a power system that operates at high voltage. All related operations of the high voltage system (e.g. maintenance, repair of the electrical system) can only be performed by professionals trained in high voltage electrical knowledge.
 - For vehicles with air suspension, any vehicle lifting operation (for inspection, repair, maintenance, etc.) needs to switch the vehicle active suspension mode to maintenance mode, otherwise it may damage the air suspension.

Important precautions for filling brake fluid in brake system

CAUTION:

- When filling brake fluid in the brake master cylinder reservoir, only brake fluid in clean and sealed containers should be used. The fluid meets the DOT4 requirements. Failure to use the recommended brake fluid will result in system contamination that can damage rubber seals or rubber gaskets inside hydraulic brake system components.

Important precautions for brake caliper

CAUTION:

- When removing the brake caliper, use a steel wire to secure the brake caliper to prevent damage to the brake pipe.

Special precautions for effect of brake fluid on paint and electrical components

CAUTION:

- Avoid contact of brake fluid with paint, electrical connectors, wires or cables. Brake fluid will damage the paint and cause corrosion of electrical components. If brake fluid contacts with the paint, flush the contact area with water immediately. If brake fluid contacts with electrical connectors, wires or cables, wipe the brake fluid with a clean cloth.

Important precautions for damage of fuel tank strap

CAUTION:

- Do not bend the fuel tank strap. Otherwise, it will damage the fuel tank.

Important precautions for engine emissions

CAUTION

- Modifications to the following systems will affect the vehicle's emission control system and may cause the engine emission MIL to illuminate:

- Engine
- Exhaust system
- Fuel system

CAUTION:

- If the replaced tire does not meet the performance standards of the original tire, it can also affect the vehicle's emissions control, which can also cause the engine emissions MIL to illuminate.

- Modifications to these systems or the installed tire with incorrect performance standards may result in repairs beyond the manufacturer's warranty, which may cause the vehicle unable to pass required emissions tests.

Important precautions for engine lifting

CAUTION:

- When lifting or jacking the engine for any reason, do not support the jack under the oil pan or crankshaft pulley. Lifting in any incorrect way can cause damage to engine parts.

Important precautions for engine mount

CAUTION:

- If one of engine mounts breaks, the force applied to the other engine mounts will increase, which may cause the remaining engine mounts to break.

Important precautions for excessive sealant on flywheel bolt

CAUTION:

- When assembling the component, apply appropriate sealant on the fastener. Excessive sealant may lead to improper assembly of the component or loose fastener, resulting in serious damage to the engine.

Important precautions for exhaust manifold and oxygen sensor

CAUTION:

- When the engine temperature is higher than 48 °C, the oxygen sensor will be difficult to remove, while excessive force will damage the exhaust manifold or exhaust pipe thread.

Important precautions for exhaust system inspection

CAUTION:

- When inspecting or replacing the exhaust system components, ensure that there is sufficient clearance from all points under the body to avoid overheating of the floor and possible damage to passenger compartment mats and trim materials.

Important precautions for torque reaction against timing drive chain

CAUTION:

- To avoid component damage, use a wrench to pull the hexagon part of the camshaft during removal or installation. If the torque reaction against timing chain cannot be avoided, the timing chain will fail.

Important precautions for removal of exterior markings

CAUTION:

- When removing signs/nameplates, use a plastic flat-edged tool to avoid damaging the paint.

Important precautions for fasteners

CAUTION:

- Please use the correct fasteners in the right place, replace the fasteners with correct part number, specify the fasteners needed to be replaced or use thread locking adhesive or sealant in maintenance procedures, and do not use the paint, lubricants or resistance corrosion inhibitors on the fastener or its connection part, unless otherwise specified. These coatings affect the torque and clamping force of fasteners and will damage them. When installing fasteners, use the correct tightening sequence and torque to avoid damaging the parts and system.

Important precautions for fuel pressure

CAUTION:

- The fuel pressure must not exceed the specified value, otherwise the fuel pressure regulator may be damaged.

Precautions for handling electrostatic discharge sensitive components

CAUTION:

- Handle all electrical components with care because that electrostatic discharge (ESD) will damage many solid electrical components. Observe the following safety precautions to avoid ESD damage:

- Before maintaining any electrical component, touch the metal ground point to release static electricity from the body.
 - Do not touch bare terminals. The terminals may be connected to circuits easily damaged by electrostatic discharge.
 - When maintaining the connector, do not touch the bare terminal with the tool.
 - Do not remove parts from protective housing unless otherwise specified.
- Avoid the following operations unless it specifically stated in diagnostic procedures:
- Make the part or connector bonded or grounded.
 - Connect the probe of the test equipment to the component or connector. When using the probe, connect the ground lead first.
 - Ground the protective housing of the component before opening it. Do not place the solid component on top of a metal workbench or other electrical equipment.

Special precautions for heated oxygen sensor and oxygen sensor

CAUTION:

- Do not remove the lead of the heated oxygen sensor. Removing the lead or harness connector will affect the operation of the sensor.
- Please take the oxygen sensor carefully, do not drop it, and place it in a clean and tidy environment.
- Do not use any kind of cleaning agent.
- Do not repair oxygen sensor wires, harness connectors or terminals. If the lead, harness connector or terminal is damaged, the oxygen sensor must be replaced.
- External clean air reference is obtained through signal and heater leads. Repairing the leads, harness connectors or terminals will block the air reference channel and degrade the oxygen sensor performance.
- When repairing a heated oxygen sensor, the following principles must be followed:
 - Do not apply contact cleaner or other materials on the sensor or vehicle harness connector. These materials will enter the sensor and cause poor performance.
 - Do not damage the sensor's leads and harnesses, resulting in exposure of its internal wires, which provides access for foreign matter to enter the sensor and cause performance failure.
 - Do not bend or kink the leads of the sensor and vehicle, otherwise it will block the air reference channel.
 - Ensure that the surrounding seal of the harness connector is intact to avoid damage caused by water ingress.

Important precautions for setting the start switch to "OFF" position when disconnecting the battery

CAUTION:

- When connecting or disconnecting the battery cable, battery charger, or jumper cable, set the start switch to OFF. Otherwise, the control module or other electrical components may be damaged.

Do not twist or bend the hose during installation

CAUTION:

- The inlet and outlet hoses shall not be twisted in the process of installation, and the hoses shall not be bent or deformed to facilitate installation, otherwise components may be damaged.

Important precautions for machining surface damage

CAUTION:

- Do not cut, scratch or damage the sealing surface. If the sealing surface is a machined surface, it may be damaged, resulting in leakage.

Special precautions for power system control module and ESD

CAUTION:

- Do not touch the connector pins or welded parts on the circuit board to prevent electrostatic discharge from damaging the electronic control module on the vehicle.

Important precautions for sealant

CAUTION:

- Do not let the room temperature curing sealant into the blind threaded hole. Otherwise, the fastener will produce hydraulic locking effect during the fastening, which may cause damage to the fastener or other parts, and also make the fastener unable to get the correct clamping force, resulting in improper seal and leakage. The fasteners that are not properly tightened can loosen or separate parts and cause serious engine damage.

Important precautions for use of scan tool

CAUTION:

- Before diagnosing the vehicle, you must pay attention to the following conditions, otherwise the control module may be damaged.
- The software version of scan tool and data link connector (DLC) must be up to date.
- The vehicle battery must be fully charged and the battery voltage should be between 12 and 13V.
- The connection between the scan tool and the DLC cable must be firm.
- When programming the control module, the battery charger should not be connected to the battery.

Important precautions for test probe

CAUTION:

- Do not insert the probe (digital multimeter, etc.) of a common test equipment into the harness connector or fuse box terminal. A majority of the terminals will be deformed as a result of the diameter of the test probes, leading to poor contact and system failure. Thus, special tools must be used to detect the terminals from the front. Never use a paper clip or other substitutes to detect the terminals.
- When using a SST to test a component, ensure that the selected terminal test adapter matches the size of the connector terminal. Do not select the terminal test adapter visually, as some connector terminal holes may be larger than the actual terminals in the hole. Using a large terminal test adapter may damage the terminal.

Important precautions for parking

CAUTION:

- Park carefully where there are bumps or fixed stoppers, otherwise the bumper and other parts of the vehicle may be damaged. Please stop before the wheels contacts with these bumps.
- Please carry your keys when leaving the vehicle.

Important precautions for vehicle collision

CAUTION:

- When the impact sensors detect a certain level of impact, the emergency shutdown system cuts off the high voltage current and stops the fuel supply of fuel pump to minimize the risk of electrical and fuel leakage. If this system is activated, the vehicle will not be able to restart. To restart your vehicle, please contact the authorized service center of VOYAH.

1.2.3 Supplementary description of Facelift

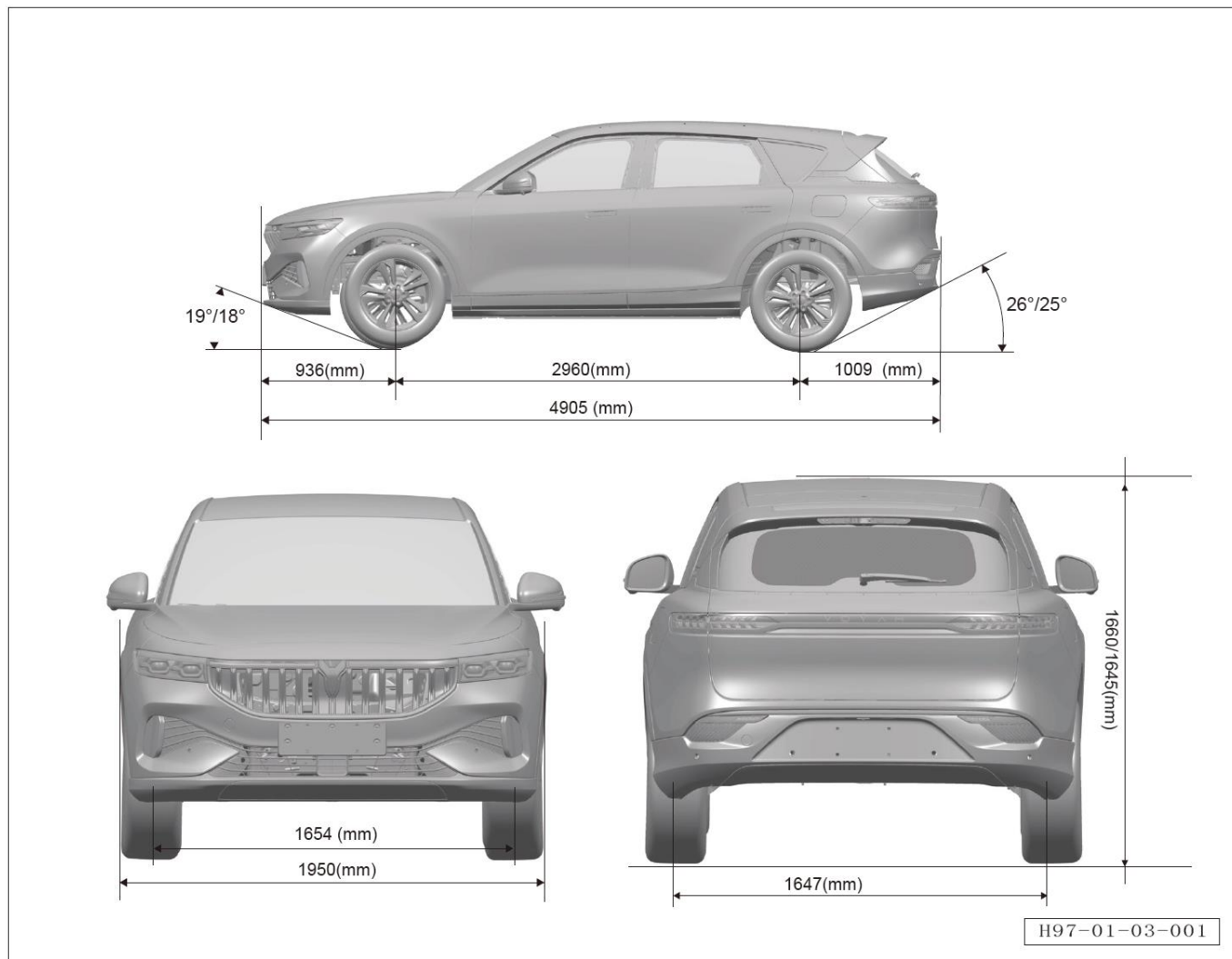
Category		Launched model	Facelift	Remarks
Drive motor		JinKang electric drive system assembly	IPS electric drive system assembly	/
high-voltage battery		BYD lithium ion battery	CATL lithium ion battery	/
Chassis	Front subframe	"X-shaped" structure	"Trapezoidal" structure	/
	Rear subframe	Different fixing positions of suspension rubber sleeve for two models		/
	Fixed mode of drive motor	3-point fixed for front motor	4-point fixed for front motor	Different motor mountings for two models
		3-point fixed for rear motor	3-point fixed for rear motor	
Drive shaft assembly	Approximately equal in length of left and right axle	Long axle on the left (with support)	/	
Cooling system pipeline		The driving motors of the two models are different, and the cooling system pipelines are partially different, including the change of the position of motor water inlet and outlet pipes, battery water inlet and outlet pipes, three-way valve, four-way valve and water pump, which affects the layout of water pipes.		The specific arrangement is subject to the real vehicle with different configurations

Note:

- The part marked with "Facelift" in this manual indicates that this function, configuration or maintenance/disassembly method are only applicable to Facelift models.

1.3 Vehicle parameters

1.3.1 Basic parameters of vehicle



1.3.1.1 Overall dimensions

Item name		Parameter (mm)	
		Value	
Outline dimension	L	4905	
	W	1950	
	H	1660 (spiral spring)	1645 (air spring)
Wheelbase		2960	
Wheel tread	Front wheel	1654	
	Rear wheel	1647	
Front overhang		936	
Rear overhang		1009	
Minimum ground clearance (full load)		180 (spiral spring)	163 (air spring)
Approach angle (full load)		19° (coil spring)	18° (air spring)
Departure angle (full load)		26° (coil spring)	25° (air spring)

Note: The exterior rearview mirror located near the junction of A pillar lower end and the front door (each on the left and right) and the antenna located above the rear roof are not included in the external width.

1.3.1.2 Mass

Product model	Vehicle curb weight (kg)			Maximum total mass (kg)		
	Curb mass	Front axle load	Rear axle load	Maximum total mass	Front axle load	Rear axle load
EQ6490AL5F1SHEV	2150	1099	1051	2525	1227	1298
EQ6490AL5F2SHEV	2290	1227	1063	2665	1354	1311
EQ6490AL5F1BEV	2190	1001	1189	2565	1129	1436
EQ6490AL5F1BEV	2330	1125	1205	2705	1252	1453

1.3.1.3 Comprehensive parameters

Item	Performance Parameters			Units
Seating number	5			Person
Minimum turning diameter	11.5			m
Maximum gradient	≥ 40%			/
0 km/h to 100 km/h acceleration	EV	RWD	7.3	S
		4WD	4.7	S
	REV	RWD	7.1	S
		4WD	4.5	S
Maximum speed	EV	RWD	180	km/h
		4WD	200	km/h
	REV	RWD	180	km/h
		4WD	200	km/h

1.3.1.4 Mass (Facelift)

Product model	Vehicle curb weight (kg)			Maximum total mass (kg)		
	Curb mass	Front axle load	Rear axle load	Maximum total mass	Front axle load	Rear axle load
EQ6491AL5F2SHEV	2280	1227	1053	2655	1351	1304
EQ6491AL5F2BEV	2310	1137	1173	2685	1267	1418

1.3.2 Performance parameters

Item	Performance Parameters			Units
Fuel consumption per 100 km in NEDC condition	REV	RWD	7.6	L/100km
		4WD	8.3	L/100km
Fuel consumption per 100 km in NEDC condition	EV	RWD	18.3	KWh/100km
		4WD	19.3	KWh/100km
	REV	RWD	17.3	KWh/100km
		4WD	17.6	KWh/100km
NEDC range	EV	RWD	505	km
		4WD	475	km
	REV	RWD	150	km
		4WD	140	km
Charging time	EV	AC slow charge	10	h
		DC fast charge	45	min
	REV	AC slow charge	3.75	h
		DC fast charge	45	min

Note: The time required for the high voltage battery to be charged from 0% to 100% SOC with AC during slow charging; or the time required for the high voltage battery to be charged from 20% to 80% SOC with DC during fast charging. The charging data are measured at room temperature (25°C).

1.3.3 Main structure and technical parameters

Item		Type and parameter	
Complete vehicle	Vehicle class	M1	
	Drive type	Rear wheel drive/4WD	
	Engine layout	Transverse front engine	
Range extender assembly	Type	In-line four-cylinder four-stroke range extender assembly	
	Rated generator power/rpm	KW/r/min	50±2.5/3000~4000
	Max. generator power/rpm	KW/r/min	72±3.6/4000
	Rated generator voltage	V	350
	Maximum generating current	A	220
	Minimum power consumption	L/KW · h	0.38
	Maximum generation efficiency	%	92
	Total displacement	L	1.498
	Outline dimension	mm	790x610x630 (excluding the accessories)
	Net mass	kg	172 (excluding the accessories)
	Generator control mode		Constant power/power following
	Fuel type		Grade 92 and above gasoline in accordance with GB17930
	Emission standard		China 6b
	Communication		CAN communication
	Insulation class		H
	Fault Diagnosis		OBD
Operating conditions		Highest temperature ≤ 45℃; minimum temperature ≥ -30 ℃; altitude ≤ 4,800 m	

Type	In-line four-cylinder four-stroke, water-cooled, double overhead camshaft, 16-valve, digital multi-point sequential EFI, silent chain drive, DVVT, turbocharged, range extender generator
Number of cylinder	4
Compression ratio	9.2: 1
Maximum net torque/speed	191±9.55/1800~4000
Minimum fuel consumption rate	25N m: ≤ 430 at 2,000r/min; 120N m: ≤ 280 at 4,000r/min
Air inlet	Exhaust turbocharger
Ignition method	Multi-point electronic ignition
Firing order	1 -3 -4 -2
Rotation direction	Clockwise
Starting mode	Range extender motor starting
Cooling method	Compulsory cooling
Coolant	Ethylene glycol coolant in accordance with GB 29743, freezing point ≤ -40 °C
Lubricating mode	Combination of splash and force feed system
Oil pressure	At 750 r/min: ≥ 90; at 4000 r/min: ≥ 300
Oil filling amount	4L
Oil grade	SAE 5W-30 API quality grade: SN and above

Drive motor	Peak power/kW		255	
	Peak torque/Nm		520	
	Rated power/kW		85	
	Rated torque/Nm		125	
	Peak speed/RPM		16000	
	Working voltage range (V)		270 ~ 400	
Alternator	Item	Units	Type and parameter	
	Rated power/rpm	KW/r/min	54/2500	
	Peak power/rpm	KW/r/min	90/6000	
	Peak power duration	s	60	
	Working voltage range	V	270 ~ 400	
	Rated torque	Nm	206	
	Permanent magnet flux linkage	Wb	0.0758	
	Working temperature	°C	-40 ~ 85	
	Cooling oil	/	ATF Dexron VI	
	Lubricating oil capacity	L	0.6	
	Insulation class	/	H	
	IP grade (high voltage line part)	/	IP67	
	Coolant	Category	/	Ethylene glycol coolant in accordance with GB 29743, freezing point ≤ -40 °C
		Flow	L/min	10 ~ 12
Maximum temperature		°C	60	
Working pressure		MPa	0.2	

Rim specifications	J8x19 8.5Jx20
Tire specification	255/50 R19 255/45 R20

Tire specification	Tire pressure (Bar)			
	No load		Full load	
	Front wheel	Rear wheels	Front wheel	Rear wheels
255/50 R19	2.4	2.4	2.6	2.7
255/45 R20	2.5	2.5	2.8	2.9

Name		Residual dynamic unbalance
Front wheel	Inside	8g
	Outside	8g
Rear wheel	Inside	8g
	Outside	8g

Drivetrain	Type	Single-stage gear reducer
	Deceleration ratio	8.28:1

Steering System	Steering gear type		Rack and pinion
	Steering power type		Electronic power steering (DP-EPS)
	Steering column		Collapse energy absorption type
Brake System	Service brake system	Product name	ibooster
		Boost type	Vacuum booster
		Brake type	Front/rear vented disc brake
		ABS	ABS+EBD, ESP
	Parking brake		Rear wheel EPB
	Emergency brake type		Combined with service brake
Suspension System	Front suspension type		Double wishbone independent suspension
	Rear suspension type		Multi-link independent suspension

Name	Parameters
Stroke	117mm
Free travel	9.75mm

Name	Parameters
Wear limit of front wheel brake friction plate (excluding friction plate back plate)	2mm
Wear limit of rear wheel brake friction plate (excluding friction plate back plate)	2mm

1.3.4 Lighting signal lamp parameters

Lamps		Qty.	Specification	Power/W	
Front combination lamp	Headlamp	Low beam	2	LED	24
		High beam	2	LED	21
	Matrix headlights	Low beam	2	LED	24
		High beam	2	LED	72
	Daytime Running Lamp		2	LED	21
Rear combination lamp		2	LED	1.7	
Reversing lamp		2	LED	4.8	
High mounted brake lamp		1	LED	11	
Rear fog lamp		2	LED	3	
Side turn signal lamp		2	LED	4	
Front door courtesy lamp (footboard)		2	LED	1.6	
Left/right front door lamp		2	LED	1.7	
License plate lamp		1	LED	0.5	
Front ceiling lamp		1	LED	8.5	
Rear reading lamp		2	LED	2	
Multi-color ambient lamp		1	LED	0.4	
Rear trunk light		1	LED	0.5	
Front trunk light		1	LED	0.5	

Note: If you need to replace with the LED lamp, please go to the authorized service center of VOYAH.

1.3.5 Battery parameters

Manufacturer	Leoch
Battery type	AGM
Battery model	A6-QF-40
Rated capacity (Ah)	40
Maximum outline dimensions (mm)	200.5x134.5x203x224
Fixation	Upper fixed
CCA	330
Weight (kg)	12.5

1.3.6 Oil specifications and capacity parameters

Item	Type		Specification	Capacity
Fuel	/		92# and above	56L
Coolant	REV	Range extender	VOYAH original coolant (-35℃)	6.5L
		Battery system		12.5L
	EV battery system			21L
Range extender oil	Range extender lubrication system		SN Grade 5W-30 Fully Synthetic Lubricant	4L
Gear lubricant	Drive motor gear lubricant (including reducer)		ETF-EMC Electromechanical Coupling Lubricant	3L for single motor 6L for double motors Filling respectively
	Generator lubricating oil		ATF T6	1.1L
Windshield washer fluid	Windscreen cleaning system		Ethylene glycol type -35 ℃	3.7L
A/C Refrigerant	A/C cooling system		R134a	0.67 Kg for EV 0.62 Kg for REEV
Brake Fluid	Brake System		Motor vehicle brake fluid HZY4	0.75L

Note: Long-term filling of fuel with sulfur content higher than standard may result in excessive emissions. Please use fuels that meet local standards for vehicles.

1.3.7 Parameters of front and rear suspension

Wheel Alignment Parameters			Curb+0 (Half load) Coil spring		Curb+3 (Half load) Comfort air spring		
Front overhang	Toe-in (deg)	Nominal value	0.17	0° 10'	0.10	0° 6'	
		Tolerance ±	0.05	0° 3'	0.05	0° 3'	
		max	0.22	0° 13'	0.15	0° 9'	
		min	0.12	0° 7'	0.05	0° 3'	
	Camber angle (deg)	Nominal value		-0.50	-0° 30'	-0.71	-0° 43'
		Tolerance ±		0.50	0° 30'	0.50	0° 30'
		max		0.00	-0° 0'	-0.21	-0° 13'
		min		-1.00	-1° 0'	-1.21	-1° 13'
		△	Nominal value	0.50	0° 30'	0.50	0° 30'
			max	0.50	0° 30'	0.50	0° 30'
			min	-0.50	-0° 30'	-0.50	-0° 30'
	Kingpin caster angle (deg)	Nominal value		3.48	3° 29'	3.98	3° 59'
		Tolerance ±		0.50	0° 30'	0.50	0° 30'
		max		3.98	3° 59'	4.48	4° 29'
		min		2.98	2° 59'	3.48	3° 29'
		△	Nominal value	0.50	0° 30'	0.50	0° 30'
			max	0.50	0° 30'	0.50	0° 30'
			min	-0.50	-0° 30'	-0.50	-0° 30'

Wheel Alignment Parameters			Curb+0 (Half load) Coil spring		Curb+3 (Half load) Comfort air spring	
Front overhang	Kingpin caster angle (deg)	Nominal value	4.03	4° 2'	4.21	4° 13'
		Tolerance ±	0.50	0° 30'	0.50	0° 30'
		max	4.53	4° 32'	4.71	4° 43'
		min	3.53	3° 32'	3.71	3° 43'
	△	Nominal value	0.50	0° 30'	0.50	0° 30'
		max	0.50	0° 30'	0.50	0° 30'
		min	-0.50	-0° 30'	-0.50	-0° 30'

Rear overhang	Toe-in (deg)	Nominal value	0.17	0° 10'	0.18	0° 11'	
		Tolerance ±	0.05	0° 3'	0.05	0° 3'	
		max	0.22	0° 13'	0.23	0° 14'	
		min	0.12	0° 7'	0.13	0° 8'	
	Camber angle (deg)	Nominal value	-1.37	-1° 22'	-1.53	-1° 32'	
		Tolerance ±	0.50	0° 30'	0.50	0° 30'	
		max	-0.87	-0° 52'	-1.03	-1° 2'	
		min	-1.87	-1° 52'	-2.03	-2° 2'	
		△	Nominal value	0.50	0° 30'	0.50	0° 30'
			max	0.50	0° 30'	0.50	0° 30'
			min	-0.50	-0° 30'	-0.50	-0° 30'
	Thrust angle (deg)	Nominal value	0.00	-0° 0'	0.00	-0° 0'	
		Tolerance ±	0.15	0° 9'	0.15	0° 9'	
max		0.15	0° 9'	0.15	0° 9'		
min		-0.15	-0° 9'	-0.15	-0° 9'		

1.3.8 Battery pack parameters

		Battery type		Lithium ion high voltage battery
		high-voltage battery	REV	System rated voltage
Working voltage range	V			268.8 ~ 403.2
System rated energy	KW · h			34.56
Continuous discharge power	KW			72
Peak discharge power (5s)	KW			310
EV	System rated voltage		V	348.4
	Working voltage range		V	273.6 ~ 398.4
	System rated energy		KW · h	92.5
	Continuous discharge power		KW	90
	Peak discharge power (5s)		KW	561.5

1.3.9 Main structure and technical parameters (Facelift)

Item		Type and parameter	
Complete vehicle	Vehicle class	M1	
	Drive type	Rear wheel drive/4WD	
	Engine layout	Transverse front engine	
Range extender assembly	Type	In-line four-cylinder four-stroke range extender assembly	
	Rated generator power/rpm	KW/r/min	50±2.5/3000~4000
	Max. generator power/rpm	KW/r/min	72±3.6/4000
	Rated generator voltage	V	350
	Maximum generating current	A	220
	Minimum power consumption	L/KW · h	0.38
	Maximum generation efficiency	%	92
	Total displacement	L	1.498
	Outline dimension	mm	790x610x630 (excluding the accessories)
	Net mass	kg	172 (excluding the accessories)
	Generator control mode		Constant power/power following
	Fuel type		Grade 92 and above gasoline in accordance with GB17930
	Emission standard		China 6b
	Communication		CAN communication
	Insulation class		H
	Fault Diagnosis		OBD
Operating conditions		Highest temperature ≤ 45℃; minimum temperature ≥ -30 ℃; altitude ≤ 4,800 m	

Type	In-line four-cylinder four-stroke, water-cooled, double overhead camshaft, 16-valve, digital multi-point sequential EFI, silent chain drive, DVVT, turbocharged, range extender generator
Number of cylinder	4
Compression ratio	9.2: 1
Maximum net torque/speed	191±9.55/1800~4000
Minimum fuel consumption rate	25N m: ≤ 430 at 2,000r/min; 120N m: ≤ 280 at 4,000r/min
Air inlet	Exhaust turbocharger
Ignition method	Multi-point electronic ignition
Firing order	1-3-4-2
Rotation direction	Clockwise
Starting mode	Range extender motor starting
Cooling method	Compulsory cooling
Coolant	Ethylene glycol coolant in accordance with GB 29743, freezing point ≤ -40 °C
Lubricating mode	Combination of splash and force feed system
Oil pressure	At 750 r/min: ≥ 90;at 4000 r/min: ≥ 300
Oil filling amount	4L
Oil grade	SAE 5W-30 API quality grade: SN and above

Drive motor	Peak power/kW		255	
	Peak torque/Nm		520	
	Rated power/kW		85	
	Rated torque/Nm		125	
	Peak speed/RPM		16000	
	Working voltage range (V)		270 ~ 400	
Alternator	Item	Units	Type and parameter	
	Rated power/rpm	KW/r/min	54/2500	
	Peak power/rpm	KW/r/min	90/6000	
	Peak power duration	s	60	
	Working voltage range	V	270 ~ 400	
	Rated torque	Nm	206	
	Permanent magnet flux linkage	Wb	0.0758	
	Working temperature	°C	-40 ~ 85	
	Cooling oil	/	ATF Dexron VI	
	Lubricating oil capacity	L	0.6	
	Insulation class	/	H	
	IP grade (high voltage line part)	/	IP67	
	Coolant	Category	/	Ethylene glycol coolant in accordance with GB 29743, freezing point ≤ -40 °C
		Flow	L/min	10 ~ 12
Maximum temperature		°C	60	
Working pressure		MPa	0.2	

Drive motor	Parameters	Front motor	Rear motor
	Peak power (kW)	160	200
	Peak torque (N·m)	310	410
	Maximum operating speed (r/min)	16000	16000

Rim specifications	J8x19 8.5Jx20
Tire specification	255/50 R19 255/45 R20

Tire specification	Tire pressure (Bar)			
	No load		Full load	
	Front wheel	Rear wheels	Front wheel	Rear wheels
255/50 R19	2.4	2.4	2.6	2.7
255/45 R20	2.5	2.5	2.8	2.9

Name		Residual dynamic unbalance
Front wheel	Inside	8g
	Outside	8g
Rear wheel	Inside	8g
	Outside	8g

Drivetrain	Type	Single-stage gear reducer
	Deceleration ratio	8.28:1

Steering System	Steering gear type		Rack and pinion
	Steering power type		Electronic power steering (DP-EPS)
	Steering column		Collapse energy absorption type
Brake System	Service brake system	Product name	ibooster
		Boost type	Vacuum booster
		Brake type	Front/rear vented disc brake
		ABS	ABS+EBD, ESP
	Parking brake		Rear wheel EPB
	Emergency brake type		Combined with service brake
Suspension System	Front suspension type		Double wishbone independent suspension
	Rear suspension type		Multi-link independent suspension

Name	Parameters
Stroke	117mm
Free travel	9.75mm

Name	Parameters
Wear limit of front wheel brake friction plate (excluding friction plate back plate)	2mm
Wear limit of rear wheel brake friction plate (excluding friction plate back plate)	2mm

1.3.10 Battery pack parameters (Facelift)

high-voltage battery	Battery type		Lithium ion high voltage battery	
	REV	System rated voltage	V	345.6
		Working voltage range	V	268.8 ~ 403.2
		System rated energy	KW · h	34.56
		Continuous discharge power	KW	72
		Peak discharge power (5s)	KW	310
	EV	System rated voltage	V	348.4
		Working voltage range	V	273.6 ~ 398.4
		System rated energy	KW · h	92.5
		Continuous discharge power	KW	90
Peak discharge power (5s)		KW	561.5	

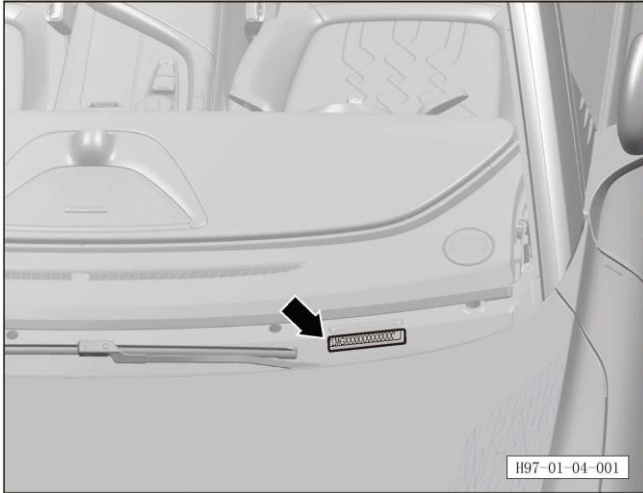
high-voltage battery	Parameters	EV	REV
	Battery type	Ternary lithium ion battery	Ternary lithium ion battery
	Nominal voltage (V)	350.4	350.4
	Rated energy (kW·h)	103.01	37.55
	Nominal capacity (Ah)	294	114

1.3.11 Oil specifications and capacity parameters (modified models)

Item	Type		Specification	Capacity
Fuel	/		92# and above	56L
Coolant	REV	Range extender	VOYAH original coolant (-35℃)	6.5L
		Battery system		12.5L
	EV battery system			21L
Range extender oil	Range extender lubrication system		SN Grade 5W-30 Fully Synthetic Lubricant	4L
Gear lubricant	Drive motor gear lubricant (including reducer)		ETF-EMC Electromechanical Coupling Lubricant	3L for single motor 6L for double motors Filling respectively
	Generator lubricating oil		ATF T6	1.1L
Windshield washer fluid	Windscreen cleaning system		Ethylene glycol type -35 ℃	3.7L
A/C Refrigerant	A/C cooling system		R134a	0.67 Kg for EV 0.62 Kg for REEV
Brake Fluid	Brake System		Motor vehicle brake fluid HZY4	0.75L

Note: Long-term filling of fuel with sulfur content higher than standard may result in excessive emissions. Please use fuels that meet local standards for vehicles.

Item	Type	Specification	Standard capacity	Actual consumption
Coolant	EV	VOYAH original coolant (-35℃)	19 L	19±1L
	REV		21 L	21±1L
Drive motor gear lubricant	Front motor (EV)	CASTROL 805C EV	0.85 L	/
	Rear motor (EV/PHEV)			/

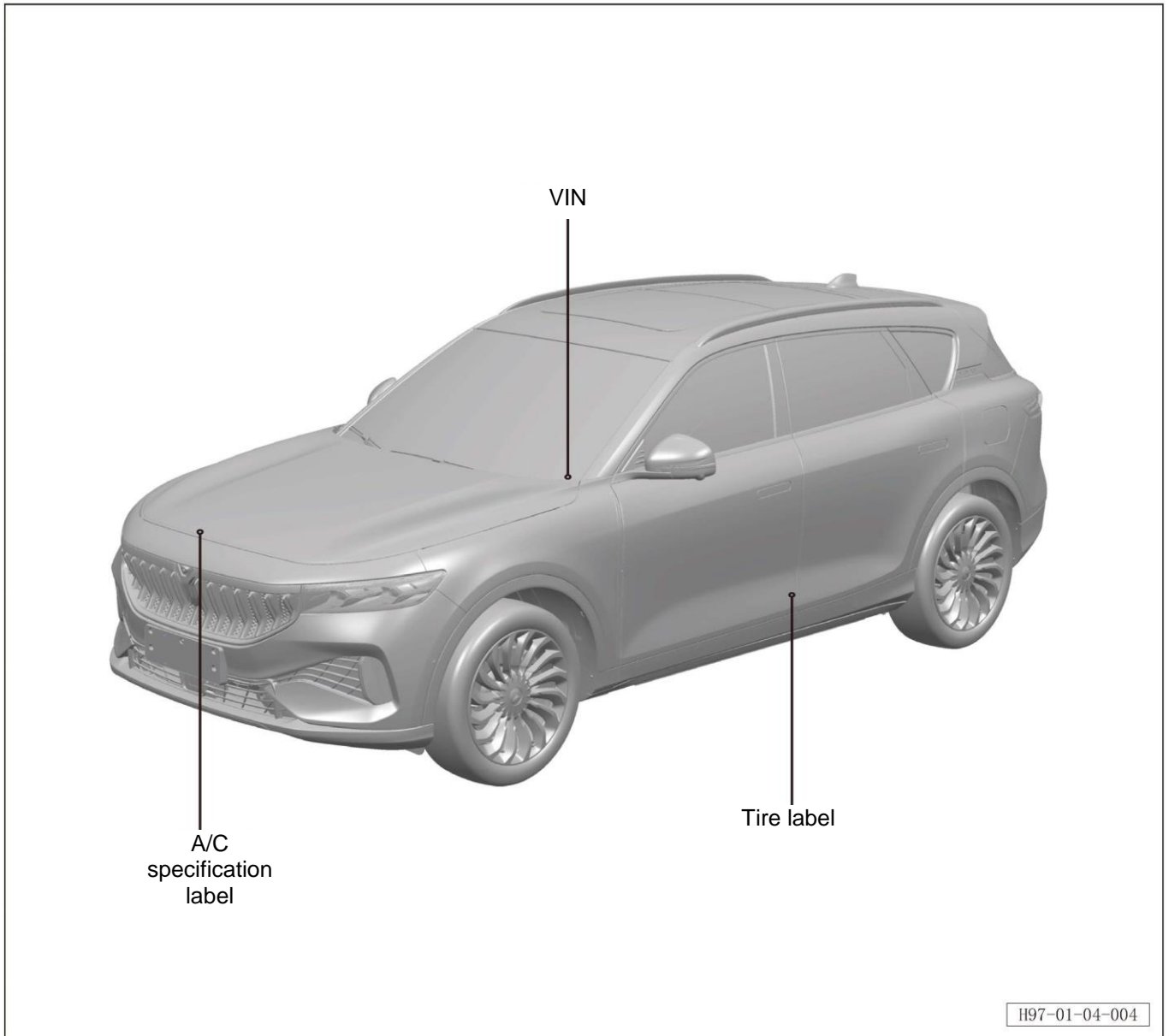


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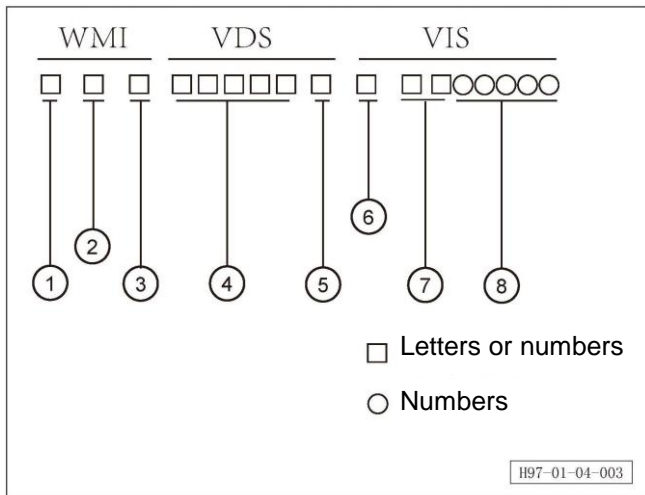
1.4 Identification

1.4.1 Vehicle identification number (VIN)

VIN (lower left edge of front windshield).



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1.4.2 Rules for VIN composition

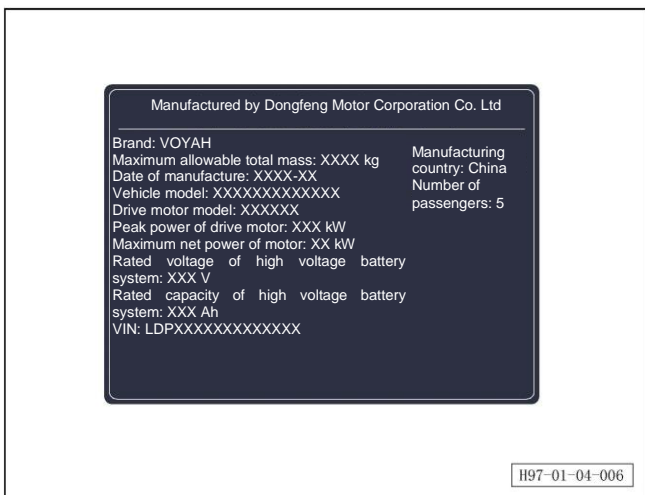
VIN (composition)

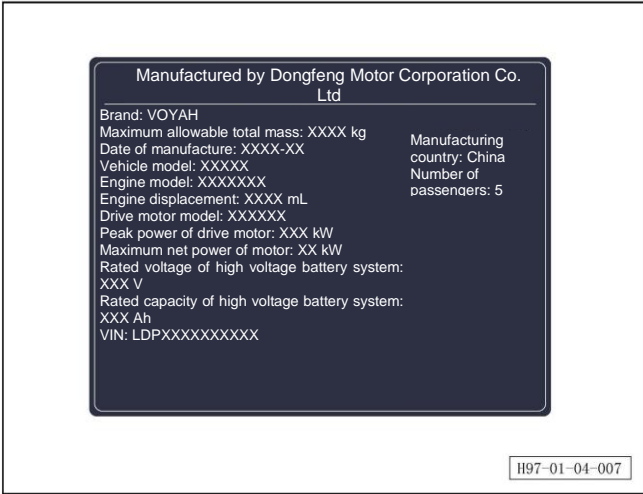
- The VIN contains the following information:

- ① Geographical region
- ② Country
- ③ Manufacturing factory
- ④ Vehicle type code
- ⑤ Check digit
- ⑥ Year
- ⑦ Assembly plant
- ⑧ Production S/N

1.4.3 Vehicle nameplate

The vehicle nameplate (EV) is pasted on the right front door frame.

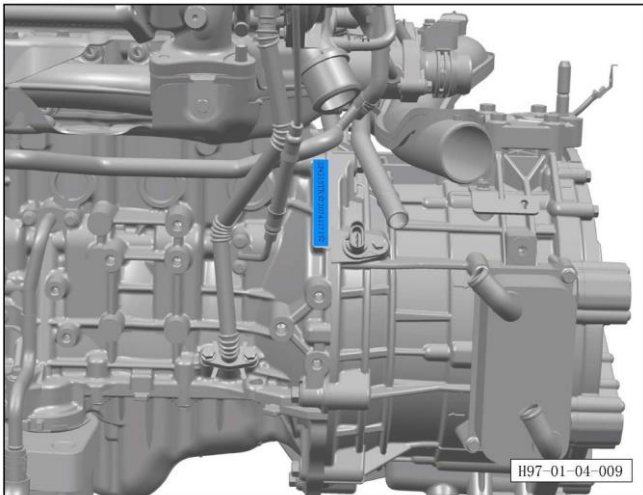




The vehicle nameplate (REEV) is pasted on the right front door frame.

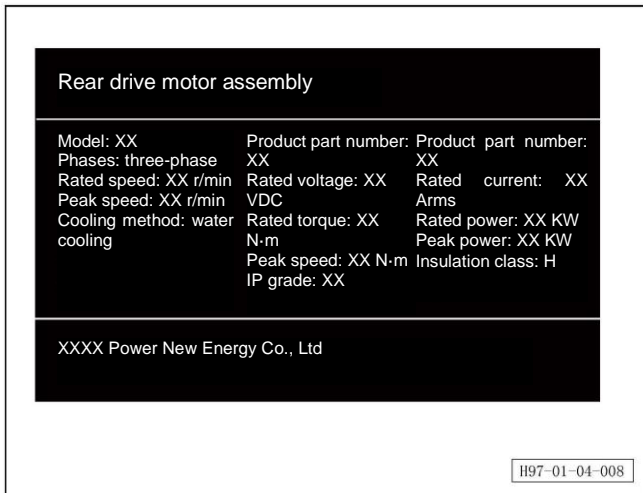
1.4.4 Engine series number

The engine series number is located in the upper middle front of the engine.



1.4.5 Drive motor nameplate

The drive motor nameplate is located on the left side of the drive motor.

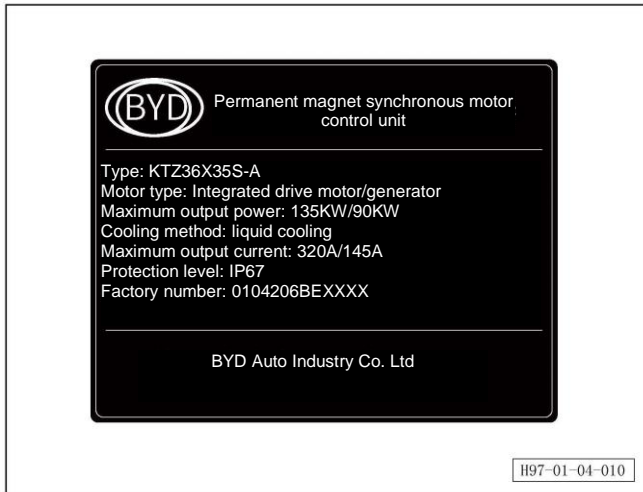


The drive motor nameplate is located at the lower rear of the drive motor.



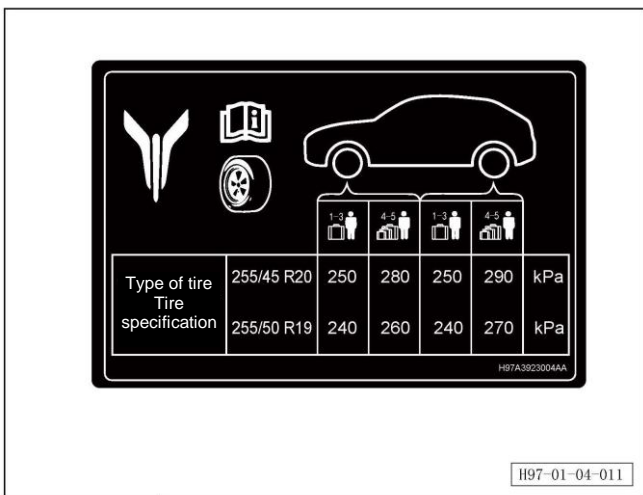
1.4.6 Generator controller nameplate

The generator controller nameplate is located above the generator controller.



1.4.7 Tire inflation label

The vehicle tire inflation label is located under the B-pillar on the driver side. Under left B-pillar: arrow of tire inflation information label.



1.5 Vehicle lifting and jacking

1.5.1 Vehicle lifting

Warning!

- It is important for the lifting safety to use the lift position as shown below. Otherwise, it may cause the vehicle damage or personal injury.
- The horizontal pad must be used in the lifting position when lifting vehicles with 2-post lift.

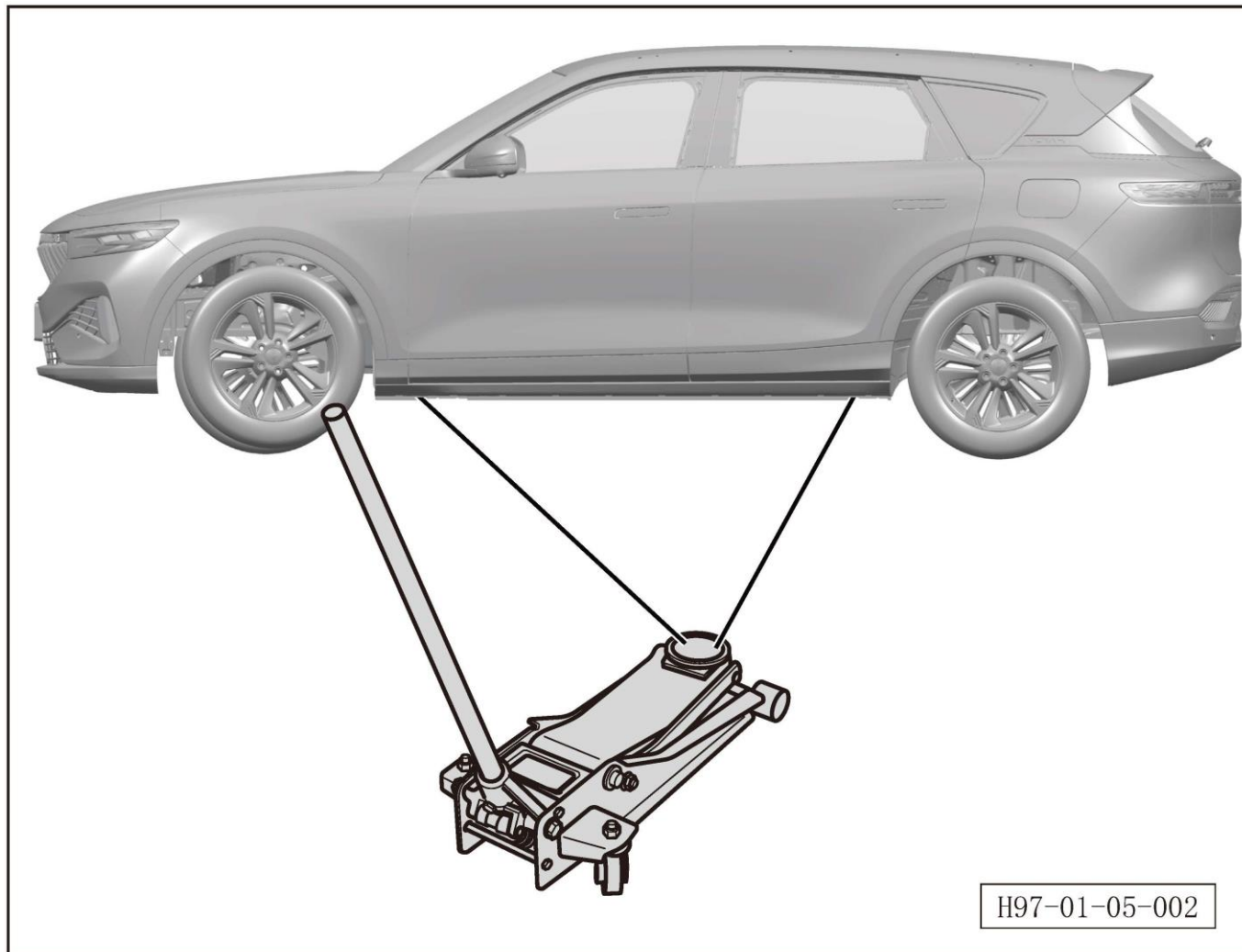


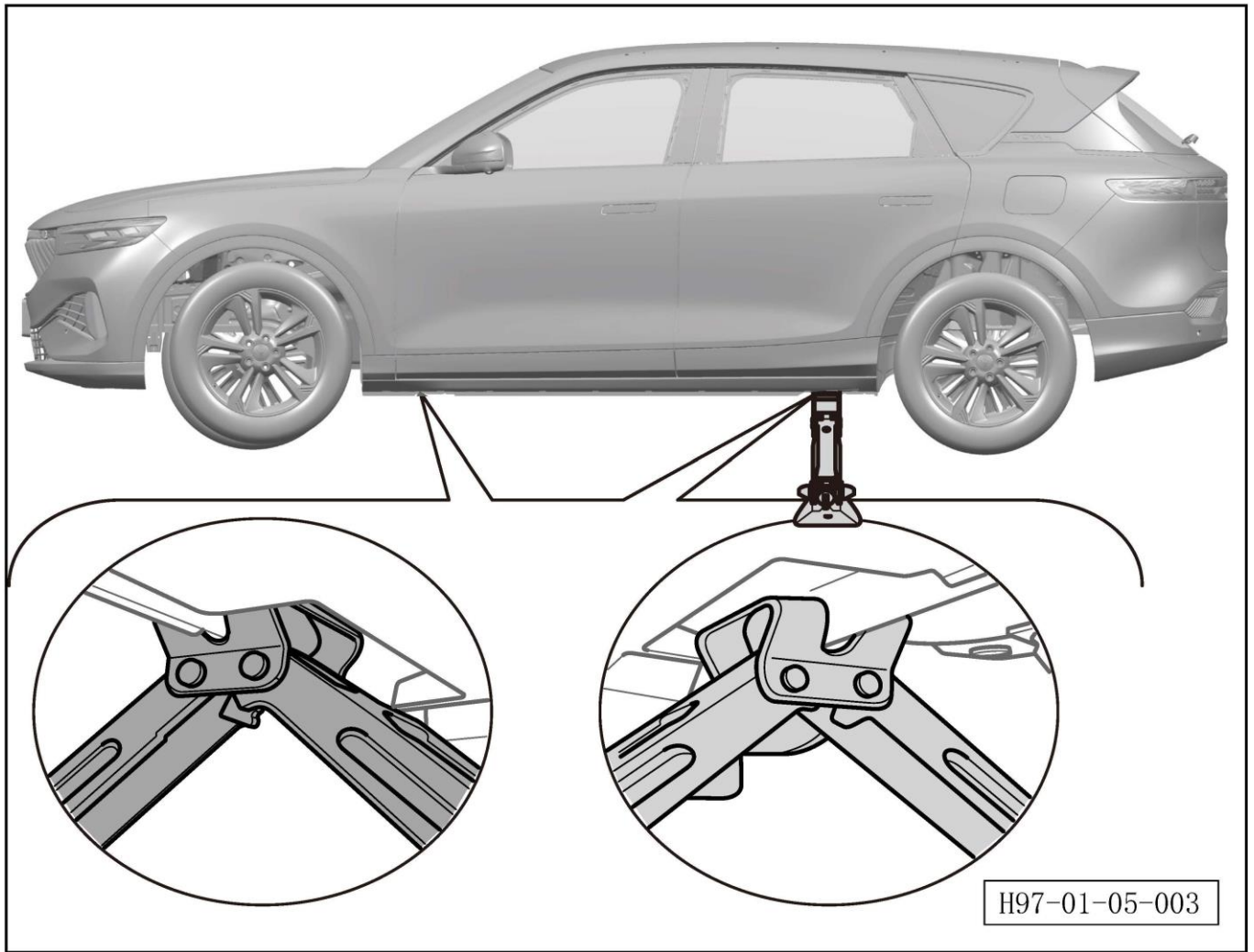
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1.5.2 Vehicle jacking

Warning!

- Please park your vehicle on hard flat ground. If the vehicle needs to be jacked up on soft ground, the load distribution block must be placed under the jack and the stopper must be placed in the opposite direction of the diagonal wheel from the jacking point. Failure to comply with these requirements may result in personal injury. It is essential to fully understand the following instructions when maintaining a vehicle with a jack. Correct jacking points must be identified, usually in the wide area between the front and rear wheels. A liner should be used to protect the paint from damage when using the jack.

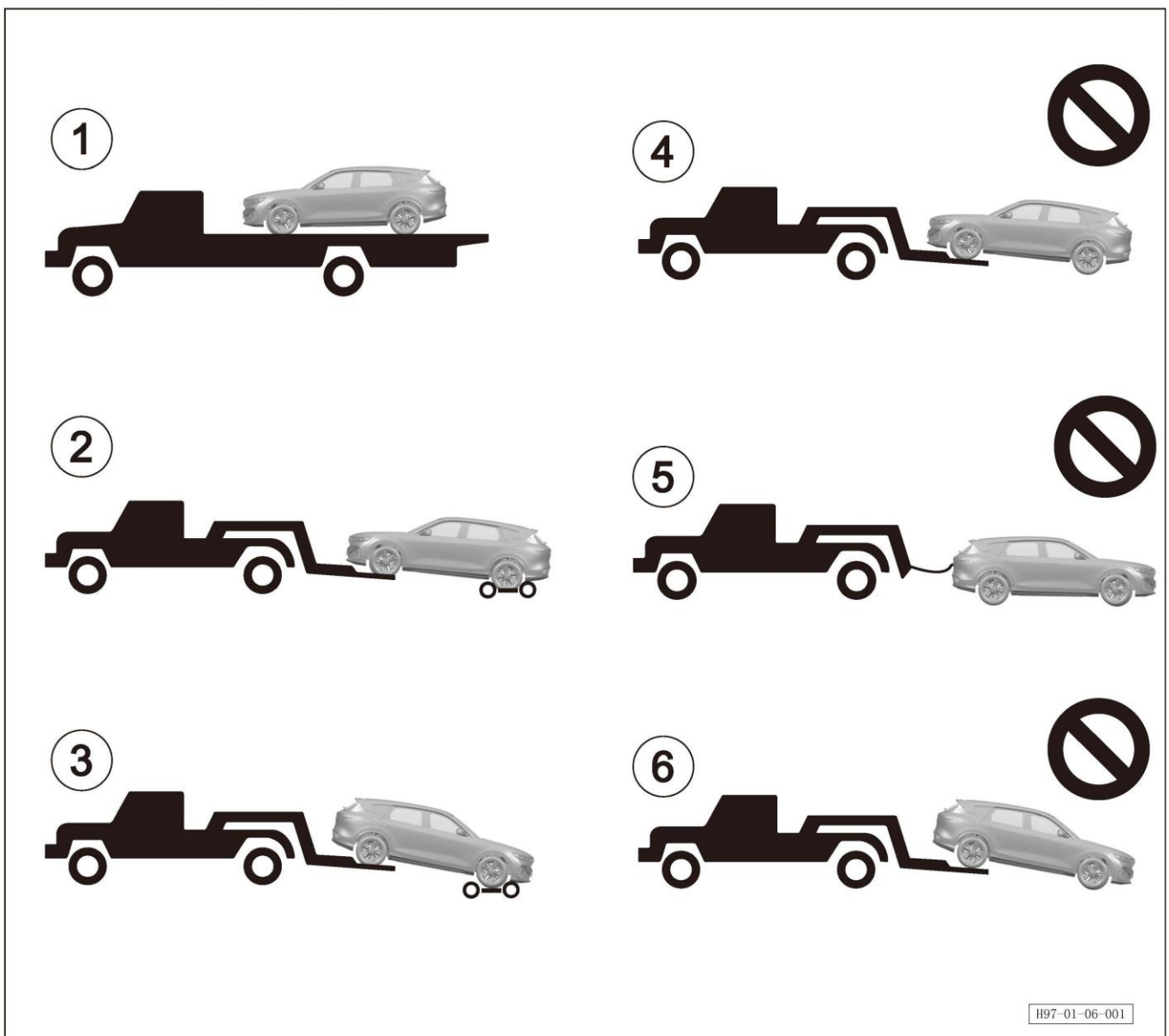




1.6 Vehicle towing

1.6.1 Trailer towing

1. The vehicle should be towed by the authorized service center of VOYAH or a professional trailer company.
2. It is recommended to tow the vehicle by flatbed truck. If not, the vehicle can also be towed by a wheel lift tow truck according to conditions.
2. The towing methods ①②③ with all four wheels off the ground should be used instead of ④⑤⑥ as shown in figure.
3. Before the traction, the vehicle should be in OFF gear, with emergency flasher on, all door closed and the mechanical lock locked.
4. During the traction, no person is allowed to stay in the vehicle.



CAUTION

- If the flatbed truck cannot be used to tow the vehicle normally, the vehicle can be towed to the safety area by using the tow ring, waiting for rescue.
- The vehicle can be towed away from the site only if there is no safety risk. If the deformation, leakage, smoke and other defects occur in the vehicle battery pack, the safety risk should be mitigated first.

1.6.2 Emergency towing

If a truck trailer is not available in an emergency, the tow cable or chain can be fastened in the tow ring and used to tow the vehicle temporarily, but this method is only suitable for low speed and short distance towing on solid, flat road.

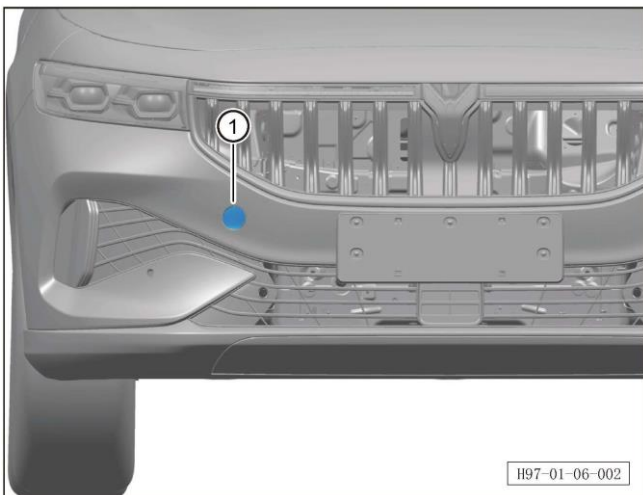
Installation position and method of front and rear tow rings:

Note:

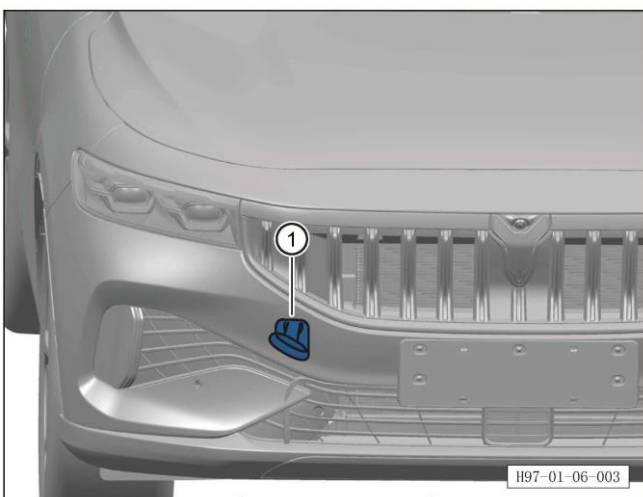
- When towing is required, the tow ring must be installed first.
- Tow ring is stored in the driver's tool.

Front towing

- a. Remove the front tow ring trim cover①.

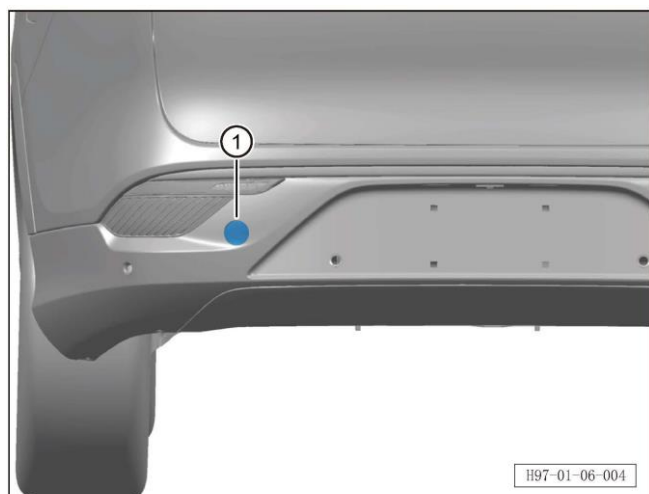


- b. Install the tow ring ① and fasten the towing rope.

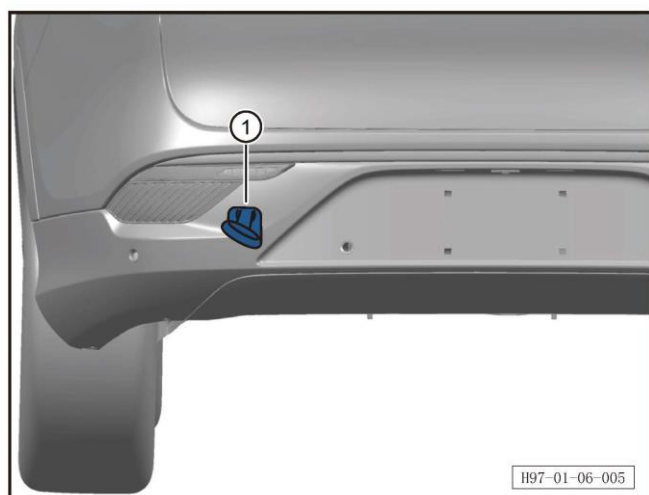


Rear towing

a. Remove the rear tow ring trim cover①



b. Install the tow ring ① and fasten the towing rope.



1.6.3 Emergency towing requirements

- Avoid sudden start or unstable driving operations when towing.
- Drive slowly and avoid violent operation when towing, because that excessive towing force will damage the vehicle.
- Avoid too close spacing between vehicles when towing.
- Shift the gear to N position when towing.
- Towing hook must be firmly screwed into the threaded hole. Otherwise, the hook may slip from the threaded hole during towing.
- The start switch of the towed vehicle shall be switched to "ON" and the steering wheel shall be turned left and right to confirm that the steering wheel can work.
- Do not tow a vehicle at a speed higher than 30km/h.
- The maximum towing distance allowed is 50km.
- When towing, make sure to turn on the hazard warning lamps of the towing and towed vehicles and comply with local traffic laws and regulations.
- The driver must sit inside the vehicle to control the steering wheel and brake pedal to avoid personal injury and vehicle damage during towing.
- High speed driving is prohibited during towing.
- Inexperienced drivers should not attempt to tow other vehicles to avoid accidents.
- During towing, the brake booster and steering booster of the towed vehicle do not work. Braking should be done earlier than normal.
- Drive slowly. Do not drive too fast, accelerate, decelerate, turn sharply, because that excessive towing will damage the vehicle.
- The towing rope must be kept tight at all times during towing.
- The vehicle should be towed in a straight line as far as possible.

1.7 Abbreviations

Abbreviations	Description
EV	Pure electric power
REV	REV
ABS/EBD	Anti-lock brake system (ABS)/Electronic brake force distribution system
A/C	A/C system
TPMS	TPMS
AFS	Automatic headlamp control system
OBD	On-board diagnostic system
CAN-L	Controller Area Network (CAN) signal line - CAN-L
CAN-H	Controller Area Network (CAN) signal line - CAN-H
LIN	Local Intranet
B+	Battery power supply
B-	Battery negative terminal
G	GND
PEPS	Passive Entry & Passive Start (PEPS)
KL30	Battery power supply
KL15	Ignition switch power supply
VCU	Vehicle controller
ESP/ESC	ESP
RPA	Reversing/parking aid
EPS	Electric Power Steering (EPS)
SIG	Signal
DEF	Defogger
LDWS	Lane departure warning system
FCW	Pre-crash safety system (PCS)
ECO	Economic mode
CCD	Backup camera
OBC	OBC intercharging system
HMA	High beam assist (intelligent high/low beam control)
HWA	Single-lane highway assist

Abbreviations	Description
GPS	Vehicle-mounted satellite positioning and navigation system
BMS	Battery management system
PCU	Power control unit
EPB	Electronic hand brake
EBA/BAS/BA/EVA	Brake assist
ASR/TCS/TRC/ATC	Traction control system
ETC	Electronic Toll Collection (ETC)
BSD	Blind spot detection
ACC	Adaptive cruise control
LKA	LKA
LCA	Lane Centering Control (LCC)
AEB	Autonomous Emergency Braking (AEB)
DOW	DOW
TSR	Traffic sign recognition
ISA	ISA
RCTA	RCTA
TJA	Traffic jam assist
Autohold	Automatic parking system
ADAS	Advanced driving assist system
ICA (TJA+HWA)	Integrated cruise assist
PFB	Battery positive fuse box
ZJB	Main fuse box
OPC	Oil pump controller
GPF	DPF
IPU	MCU
BVP	Battery vacuum pump
HVH	High voltage heater
PDU	Power distribution unit

Abbreviations	Description
DWG	Drawing
COMPT	Assembly/component
ASSY	Assembly
SUB-ASSY	Sub-assembly
UPR	Upper part
LWR	Lower part
FR	Front
R	Rear
LH	Left side
RH	Right side
INR	Internal
EXT	External
OTR	External
CTR	Middle
LF	Left front
LR	Left rear
RF	Right front
RR	Right rear
BRKT	Bracket
VIN	Vehicle identification number
4WD	Four-wheel drive
AWD	AWD
PT	Powertrain
ENG	Engine
SRS	Airbag
BSD	BSD

Abbreviations	Description
BCM	Body Control Module
IC	Instruments Cluster
ECU	Electronic Control Unit
OTA	Over-The-Air
HSD	High Speed Data connector
CAN	Controller Area Network
IGN	Ignition
ESC	Electronic Stability Controller
BSD	Blind Spot Detection
EPS	Electronic Power Steering
ACC	Adaptive Cruise Control
FCW	Forward Collision Warning
AEB	Automatic Emergency Breaking
RSR	Road Sign Recognition
LDW/LKA	Lane Departure Warning
LKS	Lane Keeping Support
IVI	in vehicle infotainment
HMI	Human Machine Interface
UI	User Interface
TBD	To Be Defined