



Xuzhou XCMG Auto Manufacturing Co., Ltd.

Vehicle Type

XGA3310BEVWEDX

Maintenance Manual

维修保养手册



Xuzhou XCMG Auto Manufacturing Co., Ltd.



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保养与调整 Maintenance and Adjustment

- ◆ 认真做好汽车的保养是延长汽车使用寿命与正常运行极为重要的环节。

Maintaining the vehicle carefully is an extremely important link to prolong its service life and normal operation.

1.电机系统的保养 Maintenance of Electrical Drive System

- ◆ 每天行车上高压前，车辆处于停车状态，开机上弱电控制电源，通过仪表监测电机系统返回数据是否正常，电机及控制器温度是否在正常范围内，电机反馈转速应该为零，电压、电流为零。若以上数据有异常，严禁上高压运行。同时记录故障状态及数据，便于后续维修。

Every day before running on the high voltage, the vehicle is in the stopped state. After starting the vehicle,



turn on the weak current control power supply, and observe whether the returned data from instrument monitoring motor system is normal, whether motor and controller temperature is in the normal range. Motor feedback speed, voltage and current should be zero. If one of the above data is abnormal, do not power on the high-voltage. At the same time, record the fault state and data for subsequent maintenance.

- ◆ 每天行车前上高压后，对比电机系统返回电压与电池电压是否相等，若差异大于 $\pm 20V$ ，属异常状态，严禁行车。

After the high voltage is applied before running every day, compare whether the returned voltage of the motor system is the same as the battery voltage. If the difference is greater than $\pm 20V$, it is an abnormal state and driving is prohibited.

- ◆ 记录行车过程中出现的电机系统故障类型及相关数据。

Record the motor system fault and related data in the process of running.

- ◆ 每天行车前检查水冷系统是否工作正常，水箱是否充满，管路有无弯曲折叠，有无漏水现象，如发



现应及时更换维修，严禁系统无冷却或冷却不良运行。

Prior to every drive, verify that the water cooling system is functioning correctly, ensure the radiator is full, check for any bending or folding in the pipes, and inspect for leaks. If any issues are found, they should be repaired or replaced immediately. It is strictly prohibited to operate the system without adequate cooling or with poor cooling.

- ◆ 每两周检查一次控制器及电机固定安装点是否牢靠，螺丝有无明显松动。

Check every two weeks whether the controller and the motor are firmly fixed and whether the screws are obviously loose.

- ◆ 每天行车前怠速状态，检查电机运行时是否有机械异响。

Drive in idling state before running every day, and check whether there is mechanical abnormal sound when the motor is running.

- ◆ 每 2 周检查一次电机及控制器动力引线塞是否松动，整车信号插件及电机信号插件有无松动。



Check whether the motor and controller power lead plug is loose every two weeks, and whether the vehicle signal plug-in and motor signal plug-in are loose.

- ◆ 电机系统需要每一年检修一次，利用检修的时间重点检查日常维护巡视不到的部位。检修时应选择晴朗干燥的天气进行，避免阴雨天气拆机维护。

The motor system must undergo an annual inspection, focusing on areas not covered by routine maintenance checks. The maintenance should be carried out in sunny and dry weather, and be avoided in rainy weather.



2.变速器系统的保养 Transmission System Maintenance

(1) 绿控变速器保养与维护 LVKON transmission maintenance (AMT)

- ◆ 正确合理地使用变速器，定期进行维护保养，对于保证车辆安全可靠行驶和延长变速器寿命十分重要，请遵循以下使用要求：

Proper and prudent use of the transmission, along with regular maintenance, is crucial for ensuring safe and dependable vehicle operation and extending the transmission's lifespan. Please adhere to the following usage requirements:

1) 润滑油牌号 Lubricating oil grade

- ◆ 变速器内须加注优质重载齿轮润滑油，要求使用不低于 75W/90 车辆齿轮油。

The transmission requires filling with high-quality heavy-duty gear lubricant, with specifications not less than 75W/90 gear oil.

2) 补充润滑油 Replenish lubricating oil



- ◆ 为防止不同型号的润滑油发生化学反应，在补充润滑油时应保证与原来的润滑油型号相同。
To prevent chemical reactions between different types of lubricating oils, ensure that the replacement oil matches the original type when refilling.
- 3) 换油周期 **Lubricant replacement interval**
- ◆ 变速器在更换润滑油时，要首先将变速器内原有的润滑油排放干净；
Before changing the transmission lubricant, completely drain the existing oil from the transmission.
- ◆ 新变速器在行驶 2000~5000km 时，无需更换润滑油；
There is no need to replace the lubricating oil when a new transmission has been driven for 2,000 to 5,000 kilometers.
- ◆ 每行驶 10000km 应检查润滑油的油面高度和泄漏情况，随时进行补充；
Inspect the oil level and check for leaks every 10,000 kilometers, and replenish the oil as necessary.
- ◆ 每行驶 50000km/2 年应更换润滑油



Replace the lubricating oil every 50,000 kilometers or every 2 years.

4) 油面位置 Oil level position

- ◆ 油面高度通过变速器壳体侧面的锥形油面观察孔进行检查，油面高度应与观察孔下沿平齐，最低不得低于油面观察孔下沿 5mm。过多的加油量将会导致变速器温度升高和漏油；过少的加油量将会导致零件润滑不良，严重者将会发生烧箱事故。

The oil level is evaluated through the conical observation port on the side of the transmission housing. It should align with the lower edge of the port, and must not fall more than 5mm below this edge. Too much oil will lead to temperature rise and oil leakage of the transmission while too little oil will lead to poor lubrication of parts, or even burning of the transmission.

5) 油面位置的检查 Check the oil level

- ◆ 油面高度应定期进行检查，检查油面高度时汽车应停在水平的路面上。由于热油的体积膨胀，为了防止测量不准，停驶后的车辆不能立刻检查，只有在油面稳定和稍微冷一些时才可进行。



The oil level should be inspected regularly, and the vehicle should be parked on a level surface during the inspection. Because hot oil expands, avoid immediate checks post-driving to prevent inaccurate measurements. Only conduct oil level checks when the fluid is stable and slightly cooler.

6) AMT 变速器工作温度要求 AMT transmission operating temperature requirements

- ◆ 变速器在连续工作期间的最高温度不得超过 110℃，最低温度不得低于-30℃，工作温度超过 110℃ 时，会使润滑油分解并缩短变速器的寿命，下列任何一种情况都可能引起变速器的工作温度超过 110℃：

The transmission's maximum allowable temperature during sustained operation must not exceed 110℃, and its minimum allowable temperature must not fall below -30℃. Operating temperatures exceeding 110℃ will cause lubrication oil degradation and reduce transmission lifespan. The following scenarios can lead to operating temperatures above 110℃:

- 变速箱安装位置过于密闭或变速箱周围空气流动较差；



The transmission is installed in too confined a space, or there is inadequate air circulation around it.

- 在非常高或者非常低的车速下行驶;

Run at extremely high or low speed;

- 变速箱内加入了过多的润滑油;

Excessive amounts of lubricating oil have been added to the gearbox.

- 车辆长时间在环境温度高于 40℃ 的环境中工作。

The vehicle works in an environment with ambient temperature above 40℃ for a long time.



注意:

Note:

- ❖ 在按规定的时间换油时，加入清洁的润滑油之前，用过的润滑油必须放完。放油前，可将车辆适当



运行，使润滑油加热，有利于加快放油速度，同时也可排放出混在润滑油中的冷凝水。放油时，旋下变速器底部的放油塞。在装回放油塞之前，保证油塞磁头清洁，并涂抹密封胶或缠绕密封胶带。

When changing oil at the designated intervals, all used oil must be completely drained before adding new, clean oil. Before draining the oil, the vehicle can be appropriately run to warm the lubricating oil, which helps expedite the drainage process and also removes any condensation mixed within the oil. Unscrew the drain plug on the bottom of the transmission to drain the oil. Ensure the magnetic head of the drain plug is clean before reinstallation and apply sealant or wrap it with sealing tape.

- ❖ 动力总成在使用过程中，需要定时检查总成是否漏油；具体检查方法如下：行驶停车后不应立即检查油平面，应等润滑油稍微冷却后再行检查，如果油面偏低，应加油至注油口溢出为止，同时应检查变速器是否漏油。

During the operation of the powertrain, it's important to routinely inspect for potential oil leaks. The procedure is as follows: Do not immediately check the oil level after stopping the vehicle; instead, wait for



the lubricant to cool slightly. If the oil level is found to be low, add oil until it overflows from the filler opening. Additionally, inspect the transmission for any signs of oil leakage.



3.冷却系统 Cooling System

(1) 检查与添加冷却液 Check and add coolant

- ◆ 添加冷却液前请区分膨胀水箱所属冷却系统，纯电车型有电机冷却、电池冷却两套冷却系统；电机冷却系统的膨胀水箱布置在驾驶室后左侧、电池冷却系统的膨胀水箱布置在（驾驶室前盖板后、电池包框架顶部、电池包框架上）、燃料电池冷却系统的膨胀水箱布置在驾驶室后右侧。

Before adding coolant, identify the cooling system associated with the expansion tank. Pure electric vehicles feature two cooling systems: one for the motor and another for the battery. The expansion tank of the motor cooling system is arranged behind the rear left side behind the cab, and the expansion tank of the battery cooling system is arranged behind the rear right side behind the cab.

- ◆ 当冷却液液面低于最低液位线“MIN”时，请及时补充冷却液，加注冷却液时应以缓慢均匀的速率进行加注，直至冷却液液面至最高液位线“MAX”。



When the coolant level is lower than the minimum level line "MIN", please replenish the coolant in time, and fill the coolant at a slow and even rate until the coolant level reaches the maximum level line "MAX".

(2) 散热器排液 Radiator draining

- ◆ 放水阀位于散热器下方，打开放水阀，可以将电机冷却系统中的冷却液全部放掉。

The drain valve is located beneath the radiator. Opening the drain valve allows all coolant in the Motor cooling system to be drained.



注意：

Note:

- ❖ 必须在冷却液温度降到 50°C 以下后才能进行冷却液排液操作。

Do not drain the coolant until the coolant temperature drops below 50°C.



(3) 使用防冻液注意事项: Precautions for antifreeze use:

- ◆ 冷却液的冰点有-25℃、-35℃、-40℃等规格，F35 防锈防冻液冰点为-35℃；请根据当地环境温度选择不同冰点的冷却液，选择原则是冰点比当地气温低 10℃左右。

Coolants are available with freezing points of -25°C, -35°C, and -40°C. The F35 anti-rust antifreeze has a freezing point of -35°C. Select the coolant with a freezing point suitable for the local ambient temperature. Ideally, choose a coolant whose freezing point is approximately 10°C lower than the expected ambient temperature.

- ◆ 在补充防锈防冻液时，应注意添加同种型号，以免发生沉淀现象。

When replenishing anti-corrosive antifreeze, ensure to add the same type to avoid precipitation issues.

- ◆ 当发现冷却液中有氢氧化铝白色悬浮物时或嗅到防冻液变臭时，说明防冻液变质，此时应全部更换。If aluminum hydroxide white suspensions are present in the coolant, or if the antifreeze smells foul, it indicates the decomposition of the antifreeze, necessitating a complete replacement.



- ◆ 冷却液可以用乙二醇型，不能用丙二醇型(冰点高 5.4℃，沸点低 4℃)；

The coolant should be of the ethylene glycol type and not the propylene glycol type, due to its higher freezing point (5.4°C) and lower boiling point (4°C).

4.制动系统 Brake System

(1) 电动空气压缩机的检查与维护 Inspection and maintenance of electric air compressor

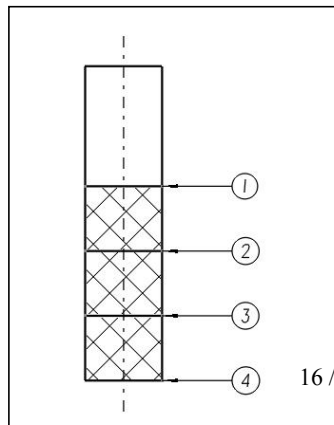
1) 检查油位 Check the oil level

- ◆ 检查油镜：电动空气压缩机运行时从油镜处观察油位，机油在油镜口的 $1/3 \sim 2/3$ 处即可（电动空气压缩机油底盒上有油镜和放油口）。

Inspect the oil sight glass: While the electric air compressor is operating, check the oil level via the oil sight glass. The oil should be positioned between $1/3$ and $2/3$ of the oil sight glass opening. (The oil bottom box of the electric air compressor contains both an oil sight glass and an oil drain.)

- ◆ 通过油尺查看油位（油尺上滚花区域为油位区域）。

Monitor the oil level using the dipstick (the knurled section on the dipstick represents the oil level).





- 当油面位于油尺滚花区域 1/3 到 2/3 处，为合理位置；
It is reasonable when the oil level lies between 1/3 and 2/3 of the oil dipstick knurled range;
- 当油面位于滚花区域上限到 1/3 处，则说明机油过多，但不影响电动空气压缩机的正常运行；
If the oil level reaches 1/3 of the upper limit of the knurled area, it indicates excess oil, although it does not impact the standard operation of the electric air compressor.
- 当油面位于滚花区 2/3 处到滚花区域下限，则说明机油过少，但不影响电动空气压缩机的正常运行，此时应该加油；
When the oil level is between two-thirds of the knurled area and the lower limit of this area, it indicates that the engine oil level is low. However, this does not impact the normal operation of the electric air compressor. At this point, it is advisable to add more oil.
- 当油面低于滚花区域下限时，则必须要加油。
If the oil level falls below the lower limit of the knurled area, oil must be added immediately.



- “①”滚花区域上限，“②” 1/3 处，“③” 2/3 处，“④” 滚花区域下限。
"①" represents the upper limit of the knurled area, "②" represents the one-third mark, "③" represents the two-thirds mark, and "④" represents the lower limit of the knurled area.

2) 更换机油 Replace the engine oil

- ◆ 通过观察油镜/油尺检查油位高低，若机油不够，应及时加油。
Check the oil level by observing the oil sight glass or dipstick. If the oil level is low, it should be topped up promptly.
- ◆ 换油前，请务必确保所换的油品是要求型号的机油（例如车辆采用的配置为瑞立品牌（SORL）电动空气压缩机，则建议采用瑞立（SORL）提供的专用润滑油，机油型号标准：CH-4，15W-40，壳牌 R3 机油）。
Before changing the oil, ensure that the oil being replaced is of the required specification. For instance, if the vehicle uses a Ruili electric air compressor, it is recommended to use the special lubricating oil



provided by Ruili. Oil specifications: CH-4, 15W-40, Shell R3 oil.

- ◆ 先准备好盛油的容器及拆卸工具，拧开放油螺塞，将油箱中的机油放掉并妥善处理。

First, prepare an oil container and the necessary tools for disassembly. Unscrew the drain plug, drain the oil from the tank, and dispose of it properly.

- ◆ 拧下原有的机油滤清器，清理干净后，换上新的机油滤清器。

Remove the old oil filter, clean the area, and install a new oil filter.

- ◆ 拧紧各个螺塞，将机器上的油污和灰尘清理干净，然后拧出油尺往油尺孔处开始加油，加油时应缓慢倒入，小心溢漏。

Secure each screw plug, thoroughly remove oil stains and dust from the machine, then remove the dipstick to begin adding oil to its port. Pour the oil slowly to prevent spills and leaks.

- ◆ 当机油加到规定位置时，拧紧油尺；若有油溅在机器上，应清理干净。

When the engine oil reaches the specified level, tighten the dipstick; if there is any oil splashed on the



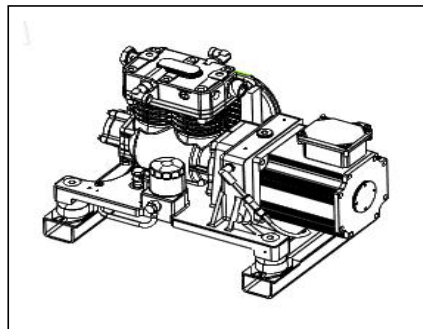
machine, clean it up.

- ◆ 加好油后开启电源，检查机器运转是否正常。

Once the oil has been added, turn on the power and verify that the machine is operating properly.

- ◆ 4000km(例保)或间隔每 1 个月时检查机油；走合期(首保: 12000km)或间隔每 3 个月时更换机油；之后间隔每 25000km 或每 6 个月时更换机油。(以先到者为准)

Inspect the engine oil every 4000km (routine maintenance) or monthly; during the running-in period (first maintenance: 12,000km) or every 3 months, replace the engine oil; thereafter, replace it every 25000km or every 6 months. (whichever comes first)





注意:

Note:

- ❖ 变质的机油会损坏电动空气压缩机，并且换油时必须确保已经切断电动空气压缩机的电源，处于停机状态，同时电动空气压缩机内部压力应当为 0。

Deteriorated engine oil can damage the electric air compressor, so you must ensure that the compressor's power is disconnected and it is completely shutdown before changing the oil. The internal pressure of the compressor should also be zero.

3) 清理呼吸管 **Clean the breather tube**

- ◆ 呼吸管处在长期使用过程中，由于排出的废气中会含有微量油气，这部分油气长期堆积后，会让人产生电动空气压缩机喷油问题的错觉，实际是正常使用的表现；但同时，若呼吸管因表面污渍过多，



将会影响电动空气压缩机内部废气的排出，导致电动空气压缩机内部负压过高。因此需定期清洁检查呼吸管管口部位，将污渍清理干净，防止呼吸管口堵塞，保证通气通畅。

During extended use of the breathing tube, exhaust gases may contain trace amounts of oil mist. Over time, the accumulation of this oil mist might lead to a mistaken belief that the electric air compressor is experiencing oil injection issues; however, this is actually a sign of normal operation. Nevertheless, if the breathing tube becomes excessively stained, it can impede the exhaust gas discharge from the electric air compressor, causing undue negative pressure within the unit. It is essential to regularly clean and inspect the mouth of the breathing tube to remove any stains, preventing blockages and ensuring unobstructed ventilation.

- ◆ 4000km（例保）或间隔每 1 个月时检查并清理；走合期（首保：12000km）或间隔每 3 个月时检查并清理；之后间隔每 25000km 或每 6 个月时检查并清理。（以先到者为准）

Inspect and clean every 4000km (routine maintenance) or at 1-month intervals; during the running-in



period (first maintenance at 12000km) conduct inspections and cleaning every 3 months; thereafter, carry out these checks every 25000km or 6 months. (whichever comes first)

4) 检查/更换风扇 **Inspect/replace the fan**

- ◆ 检查风扇运行状态，若已损坏需立即进行更换，保证风扇正常运转。

Examine the fan's operating condition. If it is found to be damaged, replace it immediately to ensure proper operation.

- ◆ 4000km（例保）或间隔每 1 个月时检查；走合期（首保：12000km）或间隔每 3 个月时检查；之后间隔每 25000km 或每 6 个月时检查。（以先到者为准）

Inspect every 4000km (routine maintenance) or at intervals of 1 month; during the running-in period (first maintenance: 12000km), check every 3 months; thereafter, inspect every 25000km or every 6 months. (whichever comes first)



5) 检查安全阀 **Inspect the safety valve**

- ◆ 检查安全阀是否开启、安全阀口是否有明显的气流，若有需立即进行更换，保证安全阀没有开启。
Verify if the safety valve is open and if there is noticeable air flow at the safety valve port. If yes, replace it immediately to ensure the safety valve remains closed.
- ◆ 4000km（例保）或间隔每 1 个月时检查；走合期（首保：12000km）或间隔每 3 个月时检查；之后间隔每 25000km 或每 6 个月时检查或更换。（以先到者为准）
Inspect every 4000km (routine maintenance) or at intervals of 1 month; during the running-in period (first maintenance: 12000km), check every 3 months; subsequently, inspect or replace every 25000km or every 6 months. (whichever comes first)

6) 检查减震垫 **Check the shock pad**

- ◆ 目测减震垫损坏情况，若有开裂需立即更换，保证减震垫表面无裂痕现象
Perform a visual inspection of the damping pad for any damage. If cracking is observed, replace it



immediately to ensure the damping pad surface remains free from cracks.

- ◆ 4000km（例保）或间隔每 1 个月时检查；走合期（首保：12000km）或间隔每 3 个月时检查；之后间隔每 25000km 或每 6 个月时检查。（以先到者为准）

Inspect every 4000km (routine maintenance) or at intervals of 1 month; during the running-in period (first maintenance: 12000km), check every 3 months; thereafter, inspect every 25000km or every 6 months. (whichever comes first)

7) 检查进、排气管 **Inspect the intake and exhaust pipes**

- ◆ 目测进气管损坏情况，若有损坏需立即更换，连接卡扣和连接处接头需复紧，保证无破损、开裂等不良现象，且与电动空气压缩机和空滤器的连接牢固。

Visually inspect the intake pipe for any damage. Replace immediately if damage is found. Ensure that the fastening clips and joints are re-tightened to prevent any damage, cracking, or other issues, maintaining a



secure connection with the electric air compressor and air filter.

- ◆ 4000km（例保）或间隔每 1 个月时检查并复紧；走合期（首保：12000km）或间隔每 3 个月时检查并复紧；之后间隔每 25000km 或每 6 个月时检查并复紧。（以先到者为准）

Inspect and retighten at 4000km (routine maintenance) or every 1 month; during the running-in period (initial maintenance: 12000km) or every 3 months. Thereafter, inspect and retighten at intervals of 25000km or every 6 months. (whichever comes first)

8) 检查低压线束和接插件 **Inspect the low voltage wiring harness and connectors**

- ◆ 目测电动空气压缩机低压线束状态，若有破损现象需及时更换，并且各线束接插件应无松动现象。
Visually inspect the low-voltage wiring harness of the electric air compressor. If any damage is observed, replace it promptly and ensure that all wiring harness connectors are secure and not loose.
- ◆ 4000km（例保）或间隔每 1 个月时检查；走合期（首保：12000km）或间隔每 3 个月时检查；之后间隔每 25000km 或每 6 个月时检查。（以先到者为准）



Inspect every 4000km (routine maintenance) or at intervals of 1 month; during the running-in period (first maintenance: 12000km), check every 3 months; thereafter, inspect every 25000km or every 6 months. (whichever comes first)

9) 检查搭铁线 Inspect the bonding jumper

- ◆ 目测编织管、端子，若有破损、开裂需立即更换，固定螺栓需复紧，保证螺栓无松动现象。

Visually inspect the braided tube and terminals. If any damage or cracking is found, replace immediately. Re-tighten the fixing bolts to ensure they are secure and not loose.

- ◆ 4000km（例保）或间隔每 1 个月时检查并复紧；走合期（首保：12000km）或间隔每 3 个月时检查并复紧；之后间隔每 25000km 或每 6 个月时检查并复紧。（以先到者为准）

Inspect and retighten at 4000km (routine maintenance) or every 1 month; during the running-in period (initial maintenance: 12000km) or every 3 months. Thereafter, inspect and retighten at intervals of 25000km or every 6 months. (whichever comes first)



10) 检查电动空气压缩机与安装支架的固定螺栓 Inspect the fixing bolts between the electric air compressor and its mounting bracket

- ◆ 固定螺栓需复紧，保证螺栓无松动现象。

Re-tighten the fixing bolts to ensure they are secure and free from looseness.

- ◆ 4000km（例保）或间隔每 1 个月时检查；走合期（首保：12000km）或间隔每 3 个月时检查；之后间隔每 25000km 或每 6 个月时检查。（以先到者为准）

Inspect every 4000km (routine maintenance) or at intervals of 1 month; during the running-in period (first maintenance: 12000km), check every 3 months; thereafter, inspect every 25000km or every 6 months. (whichever comes first)

11) 清理整机表面 Clean the surface of the complete unit

- ◆ 采用风枪清理电动空气压缩机表面的灰尘、泥泞，整机表面无灰尘、泥泞堆积，表面清洁。

Use an air gun to remove dust and mud from the surface of the electric air compressor. Ensure the entire



unit is free of dust and mud accumulation, leaving the surface clean.

- ◆ 4000km（例保）或间隔每 1 个月时检查并清理；走合期（首保：12000km）或间隔每 3 个月时检查并清理；之后间隔每 25000km 或每 6 个月时检查并清理。（以先到者为准）

Inspect and clean every 4000km (routine maintenance) or at 1-month intervals; during the running-in period (first maintenance at 12000km) conduct inspections and cleaning every 3 months; thereafter, carry out these checks every 25000km or 6 months. (whichever comes first)

(2) 制动空滤器滤芯的清洁与更换 **Clean and replace the brake air filter element**

- ◆ 松开空滤器端盖上的全部紧固卡扣，打开端盖壳体，一只手扶住产品，另一只手缓慢取出滤芯，用湿布去除空滤器壳体内部的灰尘，使用气枪（气枪气压不大于 400kPa）清理灰尘，吹净滤芯。

Release all the fasteners on the air filter end cover, then open the cover housing. Support the product with one hand while gently removing the filter element with the other. Use a damp cloth to wipe away dust inside the air filter housing and utilize an air gun (air pressure not exceeding 400 kPa) to thoroughly clean



the filter element.

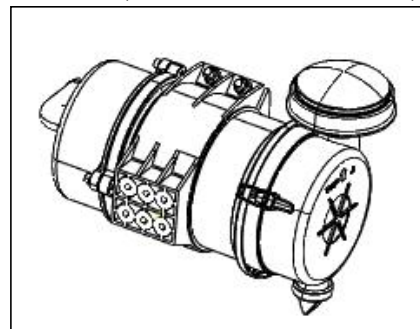
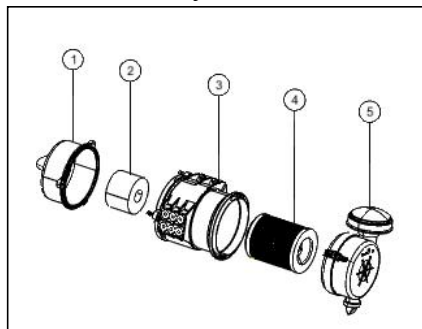
- ◆ 如果滤芯没有损坏且不是很脏，等滤芯清理干净后，再将滤芯按开口端向内方向插入主壳体底部，确保密封，盖上端盖，排尘口竖直向下，锁紧卡扣；如果滤芯太脏无法清理干净，或者滤芯损坏则需要更换新滤芯，再按上述同样的方法重新安装好。

If the filter element is not damaged and only slightly dirty, once cleaned, reinsert it into the main housing at the bottom, ensuring the opening end faces inward for a proper seal. Close the end cap, ensure the dust outlet is vertically downward, and secure all fasteners. Should the filter element be excessively dirty or damaged, it must be replaced with a new one, following the same installation method described.

- ◆ 4000km（例保）或间隔每 1 个月时检查滤芯；走合期（首保：12000km）或间隔每 3 个月时清理或更换；之后间隔每 25000km 或每 6 个月时更换滤芯。（以先到者为准）

Inspect the filter element every 4000 km (routine maintenance) or once a month. During the running-in period (first maintenance at 12,000 km) or every three months, clean or replace it as needed. Thereafter,

replace the filter element every 25000 km or every six months. (whichever comes first)



“①” 空滤器底座 “②” 安全滤芯 “③” 空滤器壳体 “④” 主滤芯 “⑤” 空滤器端盖
 "①" Air filter base "②" Safety filter element "③" Air filter housing "④" Main filter element "⑤" Air filter end cap



注意：

Note:

- ❖ 务必使用原厂配套滤芯，对灰尘较大或污染气体浓度较高地区，应缩短保养和更换周期。
Always use the factory-supplied filter element. In conditions with excessive dust or high levels of pollutants, consider shortening the maintenance and replacement intervals.
- ❖ 安全滤芯不得作为主滤芯使用。安全滤芯仅为主滤芯的后备滤芯充当保护屏障，作用是当主滤芯出现损坏、未安装正确的特殊情况下以及滤芯更换维护时，避免杂质进入进气系统的清洁空气侧。
The safety filter element must not be used as the main filter element. The safety filter element acts solely as a protective barrier for the backup of the main filter element. It serves to prevent impurities from entering the clean air side of the intake system when the main filter element is damaged, incorrectly installed in



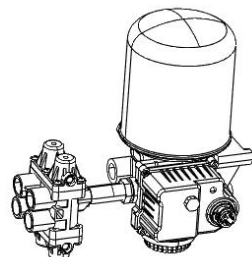
special circumstances, or during filter element replacement and maintenance.

(3) 空气干燥器的检查与维护 Inspection and maintenance of the air dryer

- ◆ 空气干燥器又名空气处理单元，每行驶 60,000km 需对空气干燥器进行保养，环境恶劣工况用车保养里程为 30,000km。当出现储气筒数次放出大量水时或空气处理单元排气口处形成油滴时，需更换干燥罐。

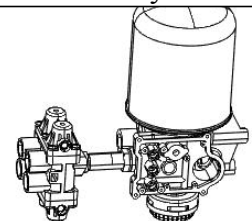
The air dryer, also referred to as the air treatment unit, requires servicing every 60,000 km. For vehicles operating in harsh conditions, the maintenance interval is 30,000 km. The dryer should be replaced if the air reservoir releases a significant amount of water multiple times or if oil droplets form at the exhaust port of the air handling unit.

- ◆ 建议每半年至少更换 1 次干燥罐，可拉动管路最远端储气筒下方的放水阀拉环，根据积水量来判断是否需要干燥罐进行更换。



空气干燥器

Air dryer





It is advisable to replace the drying tank at least once every six months. Utilize the pull ring of the drain valve situated under the air reservoir at the farthest end of the pipeline to determine whether the dried tank needs replacement based on the amount of accumulated water.

- ◆ 更换方法：逆时针旋转拧下干燥罐，更换新的干燥罐并旋紧，旋紧力矩 $70\text{N} \cdot \text{m}$ ，注意需同时更换矩形密封圈。

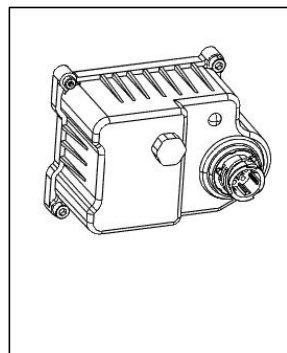
Replacement Procedure: Rotate the drying tank counterclockwise to unscrew it, replace it with a new drying tank, and tighten with a torque of $70\text{ N}\cdot\text{m}$. Ensure the rectangular sealing ring is also replaced.

- ◆ 为保证产品可靠性，建议每 3 年更换阀体部件。

To maintain product reliability, it is advised to replace the valve body components every three years.

更换方法：拔出干燥罐控制盒线束插件，卸下 3 只安装螺栓，使用 4mm 内六角

阀体部件



控制盒 34 / 89

Control box



扳手卸下 4 只安装螺栓，拔出内部接插件。更换新总成，装上控制盒，装上车后，上电亮绿灯正常。

Replacement Procedure: Detach the harness plug from the dry tank control box, remove three mounting bolts, and use a 4mm Allen wrench to remove four mounting bolts. Then, disconnect the internal connector. Replace with a new assembly and install the control box. After installation on the vehicle, it is normal that the green light turns on after power-on.

- ◆ 干燥器控制盒建议更换周期为 8 年。

The suggested replacement interval for the dryer control box is every eight years.



注意：

Note:

- ❖ 空气干燥器排气口出现少量油污属于正常现象，可以很容易擦拭干净，不必更换。若产生油滴的情



况下，请先检查空气压缩机是否失效。

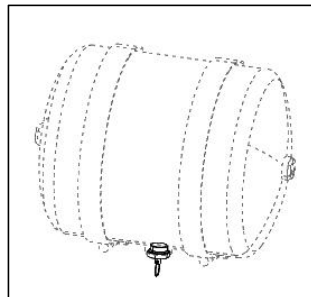
A small amount of oil residue at the air dryer's exhaust port is normal and can be easily cleaned off without needing replacement. If oil droplets are present, first inspect the air compressor for any failures.

(4) 储气筒的检查与维护 **Inspection and maintenance of the air reservoir**

- ◆ 检查储气筒有无损坏、开裂、漏气等现象，若有需立即更换。

Inspect the air reservoir for any damage, cracks, or leaks, and replace it immediately if any are found.

- ◆ 4000km（例保）或间隔每 1 个月时检查；走合期（首保：12000km）或间隔每 3 个月时检查；之后间隔每 25000km 或每 6 个月时检查。（以先到者为准）
Inspect every 4000km (routine maintenance) or at intervals of 1 month; during the running-in period (first maintenance: 12000km), check every 3 months; thereafter, inspect every 25000km or every 6 months. (whichever comes first)





- ◆ 每个储气筒的正下方都装有放水阀，每周必须进行储气筒的放水操作。储气筒积水过多会造成制动管路积水，甚至制动失效。放水时，斜向拉动储气筒正下方的放水阀拉环即可。

Every air reservoir is equipped with a drain valve directly beneath it, and the draining of the air reservoir must be performed weekly. Excessive water accumulation in the air reservoir can lead to water build-up in the brake supply line, potentially causing brake failure. To drain water, pull the release ring of the drain valve at an angle directly below the air reservoir.

(5) 消声器滤芯的检查与维护 **Inspection and maintenance of muffler filter element**

- ◆ 车辆制动阀体的底部一般配有消声器装置，如继动阀、差动式继动阀、空气干燥器、ABS 阀、脚阀等。消声器滤芯需保持清洁、无堵塞，若发现滤芯过脏，无法清洁，应立即更换。

The bottom of the vehicle brake valve body is typically equipped with muffler devices, such as the relay valve, differential relay valve, air dryer, ABS valve, and foot valve. The muffler filter element must remain clean and unobstructed. If it is found to be excessively dirty and cannot be cleaned, it should be replaced



immediately.

- ◆ 清洁方法：拧开端盖螺栓，将消声器端盖随同滤芯取出，使用气枪（气枪气压不大于 400kPa）清理灰尘，清洁后按原样重新安装好。

Cleaning method: Loosen the end cover bolts, remove the muffler end cover along with the filter element, clean the dust using an air gun (with a pressure not exceeding 400kpa), and reinstall it as it was.

- ◆ 4000km（例保）或间隔每 1 个月时检查；走合期（首保：12000km）或间隔每 3 个月时检查或更换；之后间隔每 25000km 或每 6 个月时更换。（以先到者为准）

Inspect every 4,000 km (routine maintenance) or every month; during the running-in period (first maintenance at 12,000 km) or every 3 months, inspect or replace; thereafter, replace every 25,000 km or every 6 months. (whichever comes first)

(6) 制动系统其它零部件的检查与维护 **Inspection and maintenance of other brake system components**

- ◆ 轻踩制动踏板，检查其自由行程，正常值为 15mm~25mm。制动踏板踩到底，应无发涩现象，踏板松



开时应有排气声音。

Gently press the brake pedal to check its free travel, which should be between 15 mm and 25 mm. When the brake pedal is pressed firmly to the floor, it should operate smoothly without any sticking. There should be a release of air when the pedal is released.

- ◆ 空气压缩机不打气时，检查空气干燥器节能管内的气压是否排掉，管路是否打折憋气，或管路内窜入水被冻住导致空气不流通。

If the air compressor fails to discharge air, inspect whether the air pressure in the energy-saving tube of the air dryer is released, check if the pipeline is bent or obstructed, or if water has infiltrated the pipeline and frozen, hindering air circulation.

- ◆ 保养前、后轮制动器，需从滑脂嘴注入润滑油，直至凸轮轴根部溢出润滑脂为止。

During maintenance of the front and rear wheel brakes, lubricating oil must be injected through the grease nozzle until grease overflows at the base of the camshaft.



- ◆ 通常在使用中不需要调整制动间隙，但需定期检查。可通过挡尘盘的观察孔检查制动间隙。
Typically, brake clearance requires no adjustment during use, but regular inspections are necessary. Brake clearance can be inspected through the observation hole of the dust guard disc.



注意：

Note:

- ❖ 若使用环境比较恶劣，为了您的驾乘安全，对于本章节制动系统保养与维护的全部内容，均应根据实际情况缩短保养周期，提高保养频次。

If operating in harsh conditions, for your safety, it is advisable to shorten the maintenance intervals and increase the maintenance frequency of the brake system as outlined in this chapter, based on actual conditions.



5.驱动桥及悬架系统 Drive Axle and Suspension System

(1) 制动器的检查与维护 Inspection and maintenance of brake

1) 鼓式制动器的检查与维护 Inspection and maintenance of drum brake

◆ 调整臂为自动手调臂。

The adjusting arm is automatic manual adjusting arm.

◆ 正常检查：每行驶 5000km。

Normal inspection: every driving of 5000km.

◆ 制动鼓与制动蹄间隙摩擦片间隙：制动蹄中部：0.7-1.0mm。

Clearance between brake drum and brake shoe: clearance of friction plate in the middle part of brake shoe:
0.7-1.0 mm.

① 自动调整臂调整方法： Adjustment method of automatic adjusting arm:



- ◆ 请对照所购产品的具体配置。如果制动器装备有自动调整臂，当摩擦片磨损、间隙超过设定值时，能自动调小制动蹄片和鼓之间的间隙，以减少保养时间，保证行车安全。

Please refer to the specific configuration of the purchased product. If the brake is equipped with an automatic adjusting arm, when the friction plate wears and the clearance exceeds the set value, it can automatically reduce the clearance between the brake shoe and the drum to shorten the maintenance time and ensure driving safety.

- ◆ 更换新的制动摩擦片时，需要对制动间隙进行重新调整，调整步骤如下：用扳手顺时针转动调整臂蜗杆六方头直至转不动（摩擦片与制动鼓接触）为止，再逆时针方向转动蜗杆六方头 3/4 圈（反方向转动时会听到咔咔声）。

When replacing the brake friction plate with a new one, it is necessary to readjust the brake clearance. The adjustment steps are as follows: use a wrench to rotate the worm hexagon head of the adjusting arm clockwise until it cannot be rotated anymore (the friction plate contacts the brake drum), and then rotate the



worm hexagon head for 3/4 turn counterclockwise (click sound will be heard when rotating in the opposite direction).



注意：

Note:

- ❖ 经常注意检查制动间隙，感觉制动疲软时及时调整。在调整制动器时应注意以下几点：
Frequently check the brake clearance, and adjust it in time when you feel that the braking is weak. Pay attention to the following points when adjusting the brake:
- 在正常使用过程中，禁止手动调节制动间隙。
During normal use, it is forbidden to manually adjust the brake clearance.
- 定期检查磨擦片磨损情况，以防由于磨擦片过度磨损造成制动失效。



Regularly check the wear of friction plate to prevent brake failure caused by excessive wear of friction plate.

- 手动调节制动间隙时，严禁用拧动制动气室推杆连接叉的方法来改变推杆行程。

When manually adjusting the brake clearance, it is strictly prohibited to change the push rod stroke by turning the push rod yoke of the brake chamber.

- 对后制动器进行手工调整时，一定要将车停在平坦的地方，并保证储气筒气压在 700kPa 以上。

When manually adjusting the rear brake, be sure to park the vehicle on a flat place and ensure that the air pressure of the air reservoir is above 700kPa.

- 用三角垫木将车轮前后塞住，解除驻车制动后，才能调整后制动器间隙。

Support the front and back of wheels with tilting fillets. The clearance of rear brake can be adjusted only after the parking brake is released.

- 制动调整臂出现异常情况时，必须立即停车检查自动调整臂以及制动系统其它部位的工作情况，并



及时采用恰当的措施排除故障。

Anytime the brake adjusting arm is abnormal, the vehicle must be stopped immediately to check the working conditions of the automatic adjusting arm and other parts of the braking system, and appropriate measures shall be taken to eliminate the fault in time.

- 制动器间隙调整完毕后，一定要将连接叉备紧螺母拧紧。

After the brake clearance is adjusted, be sure to tighten the clevis yoke lock nut.

(2) 悬架系统的维护 Maintenance of suspension system

1) 橡胶悬架弹簧的定期检查 Regular inspection of rubber suspension spring

- ◆ 每三个月对橡胶悬架变刚度弹簧及剪切弹簧进行检查。一旦橡胶悬架均衡梁一侧有一个剪切弹簧出现损坏或严重磨损的迹象，建议更换安装在该均衡梁装置上的两个剪切弹簧，如果只更换一侧的剪切弹簧，车辆可能会稍微向一侧倾斜，新的剪切弹簧往往会固定在某个角度，然后使车辆恢复原始状态。



Check the variable stiffness spring and shear spring of rubber suspension every three months. Once a shear spring on one side of the rubber suspension equalizer shows signs of damage or serious wear, it is recommended to replace the two shear springs installed on the equalizer device. If only the shear spring on one side is replaced, the vehicle may be slightly tilted to one side, and the new shear spring will often be fixed at a certain angle, then restore the original state of the vehicle.

- ◆ 建议按照下面操作，进行正确的检查：

It is recommended to carry out correct inspection according to the following operations:

- ◆ 用楔子挡住前轮，防止在检查悬架时车辆移动；

Block the front wheels with wedges to prevent vehicle movement during suspension inspection;

- ◆ 将车辆尾部抬高至刚好使后轮离地状态，然后使用支架支撑；

Lift the rear end of the vehicle to a state where the rear wheels are just off the ground, and then support it with a bracket;



- ◆ 使用以下标准检查所有剪切弹簧。如果发现橡胶有划口、裂痕或接合间隙，请使用机械标尺等工具测量损坏区域的厚度，确定是否需要做出更换。

Use the following standards to check all shear springs. If scratches, cracks or joint gaps are found in the rubber, measure the thickness of the damaged area using a mechanical ruler, etc. to determine if replacement is necessary.

- 使用不当可能造成剪切弹簧金属板边缘弯曲、有毛刺或突出。如果橡胶没有被卡住，且没有锋利的金属边缘与橡胶的自由表面接触，这种情况是可以接受的。

Improper use may cause bent, burred or protruding edges of the shear spring metal plate. This condition is acceptable if the rubber is not seized and no sharp metal edges are in contact with the free surface of the rubber.

- 橡胶表面在受压时产生折痕是可以接受的。这些表面上的折痕看似条纹，磨损会将其磨光或被发粘的橡胶所覆盖。



It is acceptable that the rubber surface creases under pressure. The creases on these surfaces look like streaks, and wear will burnish them or cover them with tacky rubber.

- 因为车辆运行使橡胶中出现少量的油和润滑脂污染物是可以接受的。因为永久变形造成橡胶形状发生轻微的变化，不能错误的认为是由于油和润滑脂污染引起。橡胶表面一定程度的软化是可以接受的。不过，因污染造成的不可接受的膨胀情况将需要更换剪切弹簧。在无载情况时，如果剪切弹簧橡胶膨胀出金属板边缘之外，则剪切弹簧必须更换。

A small amount of oil and grease contaminants in the rubber due to vehicle operation is acceptable. The slight change in rubber shape caused by permanent deformation should not be mistakenly attributed to oil and grease contamination. Some softening of the rubber surface is acceptable. However, unacceptable expansion due to contamination will necessitate replacement of the shear springs. Under no-load conditions, if the shear spring rubber expands beyond the edge of the metal plate, the shear spring must be replaced.

- 橡胶中的划口或裂痕长度超过 25 毫米，平均深度超过 10 毫米是不可以接受的，必须更换剪切弹簧。



Nicks or cracks in the rubber with a length of more than 25 mm and an average depth of more than 10 mm are unacceptable, and the shear spring must be replaced.

- 橡胶与相连的金属表面结合间隙深度达到 13 毫米是可以接受的，如果任何接合间隙深度超过 13 毫米，应更换车辆受影响一侧的两个剪切弹簧。因生产成型操作造成金属板上面出现薄膜或其他残余橡胶材料，在检查时可以忽略。

The depth of bonding clearance between rubber and connected metal surface is acceptable up to 13mm. If the depth of any bonding clearance exceeds 13mm, the two shear springs on the affected side of the vehicle shall be replaced. Films or other remnants of rubber material on the sheet metal resulting from production forming operations may be ignored during inspection.



6.前轴、转向及轮胎系统 Front Axle, Steering, and Tire Systems

(1) 前桥制动器的保养与调整 Maintenance and adjustment of front axle brakes

1) 盘式制动器的检查与维护 Inspection and maintenance of disc brake

- ◆ 如该车装配的是盘式制动器，制动器内部运动件为永久润滑，除非损坏，所有密封件无须保养。

If the vehicle is equipped with disc brakes, the internal moving components are permanently lubricated and all seals require no maintenance unless they are damaged.

① 间隙检查: Clearance inspection:

- ◆ 向车轮方向推制动钳并用塞规检测间隙。

Push the brake caliper towards the wheel and check the clearance with a feeler gauge.

- ◆ 正常间隙: $0.7\text{mm} \leq \text{间隙} \leq 1.2\text{mm}$

Normal clearance: $0.7\text{ mm} \leq \text{clearance} \leq 1.2\text{ mm}$

- ◆ 自动间隙调节器的检查:



Automatic slack adjuster inspection:

- ◆ 如果间隙超出规定的要求或更换新的摩擦衬片后，应检查自动间隙调节器。过程如下：

If the clearance exceeds the specified requirements or after replacing with a new friction lining, check the automatic slack adjuster. The process is as follows:

- 从制动钳上移开橡胶堵塞。

Remove the rubber plug from the brake caliper.

- 用对边距为 8mm 的外六角双头扳手(10mm 内六角梅花扳手)扭动调节器的六角头，缓慢的沿顺时针方向拧紧 1/2 圈（逆时针方向回退 3~4 下），使间隙达到 2 到 3mm（注：不要使用电动扳手、风动钻及开口扳手）。

Using a 8mm diagonal double-ended hex wrench(10 mm hex box wrench), gently tighten the adjuster's hex head by 1/2 turn clockwise(roll back 3~4 times counterclockwise) to set the clearance to 2~3 mm (Note: Do not use electric wrenches, air drills, or open-end wrenches).



- 轻踩动踏板 5 次，若调节器完好，每执行制动一次，扳手沿逆时针方向转动一下（自动调整至稳定制动间隙值 0.7~1.2mm 之间，并保持稳定）。

Lightly press the pedal five times. If the regulator is functioning properly, turn the wrench counterclockwise once with each brake application(the brake clearance will be automatically adjusted to the stable value between 0.7~1.2mm and maintain stability).

- 按照上述顺序检查完调节器后，重新安装橡胶堵塞。

After completing the check of the regulator in the specified sequence, proceed to reinstall the rubber plug.

- 进行若干次制动后，制动间隙会自动调整至正常范围。

After several times of braking, the brake clearance will be automatically adjusted to the normal range.



(2) 转向系统检查、保养与调整 **Steering system inspection, maintenance, and adjustment**

1) 检查与更换动力转向液压油 **Check and replace the power steering hydraulic oil**

◆ 检查周期 **Inspection interval**

- 每行驶 5000km。 Every 5000 km.

◆ 首次更换 **First replacement**

- 首次行驶 3000km。 Initial driving distance of 3000 km.

◆ 更换周期 **Replacement cycle**

- 每行驶 20000km 或油变质及杂质过多时。

Every 20000 km or when the oil deteriorates and there are too many impurities.

- 车辆使用过程中，要经常检查油罐中的油量及油液有无变质，如发现不良状况，应及时添加或更换。检查油平面时，将贮油罐擦干净。再拧下油标尺总成，将标尺擦干净，重新装入游标尺，再将游标尺取下，观察油平面高度。如果油平面高度不在油标尺上下刻线之间，则需添加同型号的液压油。



When the vehicle is running, check the oil level of oil tank frequently and check the oil for deterioration. If the oil is in poor condition, timely replenish or replace it. Clean the oil tank when checking the oil level. Then remove the dipstick assembly, wipe and reinstall the dipstick, and then take it out to observe the oil level. Replenish the hydraulic oil of the same model if the oil level is not between the upper and lower scale marks of the dipstick.

◆ 更换方法 **Replacement method**

- 将汽车的后轮前后用三角垫木塞住，变速器置空档，用千斤顶将前轴顶起，使两边轮胎离地，或将直拉杆与垂臂脱开。

Plug the front and back of rear wheels of the vehicle with chocks, turn the transmission to neutral position, and jack up the front axle so that the tires on both sides are off the ground, or disengage the drag link from the drop arm.

- 先将油罐擦干净，再拧下油罐盖拧紧螺母，打开油罐盖，并将转向器的放油螺栓拧开，反复转动方



向盘至两极限位置，放出油泵和油罐中的残油。必要时可以通高压电运转电机，并左右打方向盘至极限位置几次，直至油口中不再有油液流出。

Firstly clean the oil tank, then unscrew the locking nuts of fuel cap to open the cap, and screw off the oil drain bolt of the steering gear, and then repeatedly turn the steering wheel to the limit positions on both sides to drain out the residual oil in the oil pump and oil tank. If required, run the motor using high voltage and turn the steering wheel fully to the left and right several times until no fluid flows out from the oil port.

- 确认系统油液排放干净后，拧紧放油螺栓，更换或清洗油罐滤芯。

Once the system oil is confirmed to be fully drained, tighten the oil drain bolt and either replace or clean the oil tank's filter element.

- 向油罐中注满洁净的油液，在整个加油过程中，不允许油面下降过快或油罐无油，以免系统吸入空气。

Fill the oil tank with clean oil. In the whole process of oil filling, fast drop of oil level or lacking of oil in



the oil tank shall be avoided to prevent the air from getting into the system.

- 通高压电，让电机工作，转向泵运转 2 分钟，然后关机，检查油罐油面是否符合要求。

Apply high voltage to the motor, operate the steering pump for 2 minutes, and then shut down the system to check if the oil level in the oil tank meets the specified requirements.

- 通高压电，使电机运转，将方向盘从左极限位置转至右极限位置，并重复多次，直至油面不再下降和无气泡逸出，最后加注油液至规定油面（即油面在油标尺上下刻度之间）。

Supply high voltage to activate the motor, move the steering wheel from the far left to the far right several times until the oil level stabilizes and no bubbles emerge. Finally, top off the oil to the specified level (ensure the oil level falls between the upper and lower marks on the dipstick).



注意：



Note:

- ❖ 禁止在电机运转时加注液压油。

Do not fill hydraulic oil when the motor is running.

- ❖ 补充油量时，必须添加同型号液压油。

Use the hydraulic oil of the same model only when replenishing the oil.

- ❖ 电机运转同时，来回转动方向盘，有利于系统内空气的排出。

While the motor is operating, move the steering wheel back and forth to aid in the release of air from the system.

- ❖ 检查油平面时，电机必须关机。

The motor must be turned off when inspecting the oil level.

- ❖ 勿将方向盘在极限位置上停留 15 秒以上，此时应稍回转方向盘，以防止转向助力泵损坏。

Do not keep the steering wheel at limit positions for over 15 seconds. The steering wheel should be swung



back slightly, to avoid damage of the power steering pump.

- ❖ 维护保养过程需要更换转向泵泵头时：切记不要漏装连接块绝缘套。每年对连接块槽内重新补加美孚 102WT 或 GLK8501 润滑脂，以确保润滑连接，相关图片展示如下。

During maintenance, when replacing the steering pump head, ensure the connecting block insulation sleeve is installed. Reapply Mobil 102WT or GLK8501 grease to the connecting block groove annually to maintain lubrication. See relevant images below.



传动连接块与连接块绝缘套总成
Transmission connecting block and
connecting block insulating sleeve
assembly



连接块绝缘套和传动连接块
Connecting block insulation
sleeve and transmission
connecting block



一字键槽内填充油脂
Fill the slotted keyway
with grease

2) 方向盘自由转动量的检查 **Inspection of free rotation volume of steering wheel**

- ◆ 5000km 保养时，应检查方向盘的自由转动量，在中间位置向左或向右自由转动量不能超过 15° 。

Check the free rotation volume of steering wheel during the maintenance every 5000 km. The volume of leftward or rightward free rotation shall not exceed 15° .

- ◆ 自由转动量过大应作如下调整：

In case of excessive free rotation volume, conduct following adjustment:

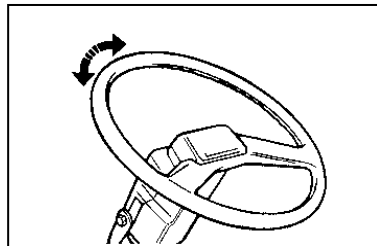
- 检查调整前轮毂轴承间隙。

The clearance of front hub bearing should be checked.

- 检查转向传动副的磨损是否过大。

Check whether the steering drive pair is excessively worn.

- 检查横直拉杆的球销锥体与上、下节臂锥孔的配合状况，拧紧球销螺母，然后配合锤击接头处，再





将螺母旋入 $1/3 \sim 1/2$ 圈到刚能插入开口销为止，不允许为了插入开口销而松退螺母。

Inspect the fit between the ball stud's taper and the taper holes in the upper and lower knuckle arms. Secure the ball stud nut, strike the joint with a hammer, then tighten the nut $1/3$ to $1/2$ turn until a cotter pin can be inserted without loosening the nut to fit the pin.

- 检查转向垂臂与转向器摇臂轴花键连接处及其紧固螺栓有无松动。

Check whether the connection between the steering drop arm and steering gear rocker arm shaft spline and its fastening bolts are loose.

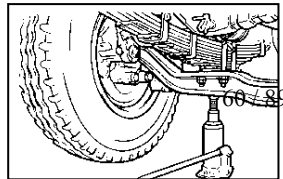
- 检查调整转向器摇臂轴与螺母座的啮合情况。

Check and adjust engaged condition between rocker arm shaft of steering gear and nut seat.

(3) 轮胎的使用、保养与更换 Use, maintenance and replacement of tires

1) 拆卸轮胎 Removal of the tire

- ◆ 拆卸前轮（后轮）时先用三角垫木塞住后轮（前轮）的前后。





Plug a chock between the rear wheel (front wheel) and the ground before removing the front wheel (rear wheel).

- ◆ 用随车工具中的车轮螺母套筒扳手拧松车轮螺母。

Loosen the wheel nut with the wheel nut box spanner among driver's tools.

- ◆ 用千斤顶顶起车轴一端，使车轮略微离地。

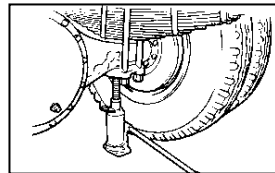
Lift an end of the car axle with jacking to leave small space between the wheel and the ground.

- ◆ 将轮胎螺栓螺母用清水清洗干净，用机油浸泡或涂润滑脂。

Clean the wheel nuts and bolts with clear water, and then soak them in oil or apply grease.

- ◆ 拆卸车轮螺母。

Remove the wheel nuts.



2) 安装轮胎 Installation of the tire

- ◆ 用撬杆使轮胎的轮辋螺栓孔套进轮毂螺栓。

Match the tire rim bolt holes with hub bolts with crowbar.

- ◆ 将轮毂螺栓调整到位于螺栓孔中心位置时，拧紧轮胎螺母。

Adjust hub bolts to make them at the center of the bolt hole and then tighten the tire's nuts.

- ◆ 慢慢地将千斤顶下降到轮胎接触地面。

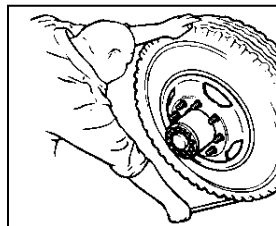
Slowly lower the jack until the tire contacts the ground.

- ◆ 按对角线顺序分三次将轮胎螺母拧紧到规定力矩 $550 \sim 650 \text{ N} \cdot \text{m}$ 。

Tighten the tire nuts to a torque of 550 to 650 $\text{N} \cdot \text{m}$, following a diagonal sequence over three passes.

- ◆ 每次重新安装轮胎螺母后，在开始使用的 200~500km 或 1~2 天内，对螺母以规定力矩进行复紧。

After reinstalling the tire nuts, retighten them to the specified torque within 200 to 500 km of driving or





within 1 to 2 days of use.

3) 轮胎换位 Tyre rotation

- ◆ 每行驶 10000km 保养时，须根据驱动形式（8×4）按图示规定进行轮胎换位。

During maintenance every 10,000 km, rotate the tires according to the diagram based on the drive configuration (8×4).

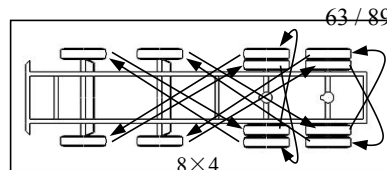
◆ 轮胎换位的原则：Principles of tire rotation:

- 后桥双胎其两胎的外径差不得大于 12mm，外径较小的轮胎装在内。

The outer diameter difference of the twin tires of the rear axle shall not be more than 12mm and the tire with a smaller outer diameter shall be installed inside.

- 前轮应安装相同型号、均衡、磨损少的轮胎，并确保轮胎满足动平衡要求。有条件应对新换位或新装配的前轮胎作动平衡试验。

The front wheels shall be mounted with balanced and least worn tires of the same model. Ensure that the tires shall meet the requirement of dynamic balance. Dynamic balance test shall be conducted on the front





tire newly changed or assembled, if practicable.

- 换位后，轮胎的转动方向应与换位前相反。新轮胎必须成对使用。

After tire rotation, the rotating direction of tires shall be opposite to that before tire rotation. New tires must be used in pairs.

- 同一车轴上必须安装同一种尺寸级别的轮胎，否则会引起制动跑偏、车身摆动、爆胎和转向失去控制。

The same axle must be mounted with tires of the same dimension and grade, or else, braking deviation, vehicle body swinging and steering out of control will be caused.

- 检查轮毂螺栓和车轮螺母的螺纹是否有划痕，为安全起见当任何一方的螺纹损坏，需成对更换，因为另一方可能损伤。当发生轮胎螺栓断裂时，必须更换全部轮胎螺栓螺母。

Inspect the threads of hub bolts and wheel nuts for any scratches. For safety, if the thread on either component is damaged, replace both parts in pairs as the other side could be compromised. In case of tire



bolt fracture, all tire bolts and nuts must be replaced.

- 检查车轮轮辐的接触面（球面）以及安装孔，如果有变形或损伤，则应更换。如果轮胎螺母的法兰与螺母没有相对转动或抱死，也须更换螺母。

Check the wheel rim contact surface (sphere) and the mounting holes and in case of any deformation or damage, they shall be changed. If relative rotation or locking between the nut flanges and the nuts of the tire do not occur, the nuts also must be replaced.

- 检查车轮的轮辋，如果有裂纹则应更换。安装双胎时，内侧轮胎和外侧轮胎的气门芯隔开，以便充气。

Check the wheel rim and replace it if there is any crack. When the twin wheels are mounted, the valve cores of the internal and external tires shall be separated for the purpose of air charging.

4) 检查轮胎气压及胎面 **Check the tire pressure and tread**

- ◆ 用气压表检查各轮胎气压是否满足规定要求，不足时需充气。



Inspect whether the pressure of each tire meets the specified requirements with an air pressure gauge, and if it is insufficient, inflate the tire.

- ◆ 检查轮胎是否有异物挂在胎面上,将附在其上的异物去掉。检查胎面花纹的深度。如果深度小于 1.6mm (在高速公路上小于 2.4mm) 时,轮胎就必须更换。测量时,沿轮胎圆周至少测量六个点。

Check whether there are foreign matters suspending on the tread or not, and remove them (if any). Check the tread depth. If the depth is less than 1.6mm (less than 2.4mm on expressway), the tire must be replaced. Measure six or more points along the tire circle.



注意:

Note:

- ❖ 装配车轮总成时将轮胎轻点与轮辋重点对应装配,挡圈缺口对应气门嘴装配。



When assembling the wheel assembly, align the tire's lightweight point with the rim's heavy point, and match the retainer ring notch with the valve stem.

- ❖ 用加平衡块的方法进行平衡，单侧平衡块不超过 2 块，平衡块技术要求符合 QC/T 199 《汽车车轮平衡块》

Balance the wheel by adding balance weights, ensuring no more than two weights on one side. The balance weights must meet the technical standards outlined in QC/T 199 *Automobile Wheel Balance Weights*.

5) 轮胎充气装置 Tire inflator

◆ 轮胎充气装置的使用 Application of tire inflation device

- 轮胎充气装置从储气筒取气对轮胎进行充气。

The tire inflation device takes air from the air reservoir to inflate the tire.

◆ 使用方法 Operation method

- 将轮胎打气软管接头与储气筒上的测试接头对接，并将接头拧紧。



Connect the tire inflation hose fitting to the test fitting on the air reservoir, and secure the connection.

- 启动车辆，使空压机工作。

Start the vehicle to activate the air compressor.

- 将软管另一端对准轮胎气门嘴充气，并用压力表进行检测，使轮胎气压达到规定值。

Aim the other end of the hose at the tire valve to inflate, and use a pressure gauge to ensure the tire pressure reaches the specified level.

- 拆卸充气软管，然后停止空压机工作。

Detach the inflation hose, and then stop the air compressor.



7.定期保养计划表 Regular Maintenance Schedule

- ◆ 本保养计划表所示的是第一个周期的检查保养项目和期限；以后，第二个周期，除不做走合保养外，均按第一个周期项目循环进行。检查保养期间以行驶里程及月数表示，以先到为准。

This maintenance plan shows the inspection and maintenance items and the term of the first cycle; all items in the second cycle are the same as those in the first cycle, except for the running-in service. Inspection and maintenance intervals are based on mileage or months, whichever occurs first.



注意：

Note:

- ❖ 用户在按照所规定的保养项目进行保养时，应根据所在地区苛刻的使用条件，适当的缩短保养间隔



里程，以保证车辆得到更加合理的维护，决不可延长保养间隔里程。

When maintaining the vehicle according to the specified maintenance items, the user shall shorten the maintenance interval mileage as appropriate in case of harsh service conditions in the region to ensure proper maintenance of the vehicle, but the maintenance interval mileage shall never be extended.

◆ 保养计划表中的符号含义如下：

The symbols in the maintenance schedule have the following meanings:

“A” 表示总行驶里程（×1000km） indicates the total mileage (×1000 km).

“B” 表示月份数字 represents the number of months.

“★” 正常行驶保养项目 denotes normal driving maintenance items.

“☆” 走合保养项目 signifies break-in maintenance items.

“△” 走合保养里程（1500km～2500km） indicates the mileage for break-in service. (1500 km to 2500 km)



“◎” 首次保养项目 refers to the initial maintenance items.

(1) 电机 Motor

◆ 参照各电机使用说明书。

Refer to the user manual of each motor.

(2) 变速器 Transmission

检查与保养项目	A	△	5	10	15	20	25	30	35	40	45	50	55	60
Inspection and maintenance items	B		1	2	3	4	5	6	7	8	9	10	11	12
清洁变速器及通气塞 Clean the transmission and ventilation plug	☆	★	★	★	★	★	★	★	★	★	★	★	★	★
检查变速器是否漏油 Check the transmission for oil leakage	☆	★	★	★	★	★	★	★	★	★	★	★	★	★



检查变速器油面高度，不足添加 Check the oil level in the transmission; add oil if the level is low.	☆		★		★		★		★		★		★
检查操纵机构是否失灵或损坏 Check whether the control mechanism is malfunctioning or damaged	☆				★				★				★
更换变速器润滑油 Replace the transmission lubricating oil		◎									★		
检查变速器各轴承工作情况 Check the working condition of											★		



transmission bearings.



注意：

Note:

- ❖ 若车辆长期在大负荷工况下或者污染严重的环境中，应适当缩短更换变速器润滑油的间隔里程。
If the vehicle always works with heavy load or in severely polluted environment, shorten the mileage between replacements of transmission lubricating oil.



(3) 电器系统 Electrical system

序号 No.	检查与保养项目 Inspection and maintenance items	A	△	5	10	15	20	25	30	35	40	45	50	55	60
		B		1	2	3	4	5	6	7	8	9	10	11	12
1	检查蓄电池电解液液面指示标识 Check the battery electrolyte level indicator		☆	★	★	★	★	★	★	★	★	★	★	★	★
2	检查电气线路连接和固定状况 Check the connection and fixation of electric circuit		☆	★	★	★	★	★	★	★	★	★	★	★	★



3	检查电器部件功能(包括灯光、开关、仪表、雨刮、暖风、空调、启动等) Check electric component functions (including light, switches, instruments, wiper, HVAC, startup, etc.)	☆	★	★	★	★	★	★	★	★	★	★	★	★
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(4) 制动系统 Brake system

序号 No.	检查与保养项目 Inspection and maintenance items	A	△	5	10	15	20	25	30	35	40	45	50	55	60
		B		1	2	3	4	5	6	7	8	9	10	11	12
1	检查制动踏板自由行程 Check the free stroke of the brake pedal.		☆	★	★	★	★	★	★	★	★	★	★	★	★
2	检查行车及驻车制动效能，按需检查、调整制动间隙 Check the braking effectiveness in case of driving and parking; check and adjust the brake clearance as needed		☆	★	★	★	★	★	★	★	★	★	★	★	★
3	检查制动空气管路及各元件气密性（含老化、磨损、故障等）		☆	★	★	★	★	★	★	★	★	★	★	★	★



	Inspect the air tightness of the brake air pipeline and all components for signs of aging, wear, faults, etc.													
4	检查储气筒内积水及空气干燥器 Check the accumulated water and air drier in the air reservoir	☆	★	★	★	★	★	★	★	★	★	★	★	★
5	检查、紧定制动底板并检查制动鼓、摩擦片的磨损情况 Check and tighten the braking base plate; check the wearing of brake drum and friction lining	☆						★						★
6	更换空气干燥器滤芯 Replace the filter element of air drier							★						★



7	更换电动空气压缩机空滤滤芯 Replace the air filter element of the electric air compressor.					★				★				
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(5) 悬架系统 Suspension system

序号 No.	检查与保养项目 Inspection and maintenance items	A	△	5	10	15	20	25	30	35	40	45	50	55	60
		B		1	2	3	4	5	6	7	8	9	10	11	12
1	清洁、检查钢板弹簧，紧定 U 型螺栓 Clean and check the leaf springs and tighten the U-bolts	☆		★	★	★	★	★	★	★	★	★	★	★	★
2	满载时紧定钢板弹簧 U 型螺栓 Tighten the U-shape bolts of the steel plate spring with full load	☆			★		★		★		★		★		★
3	清洁检查减振器（包括检查减振器的损坏及松旷，检查减振器泄露等） Clean and check the shock absorber, checking for	☆		★	★	★	★	★	★	★	★	★	★	★	★



	damage, looseness, and leakage													
4	检查弹簧卡箍有无松动和变形 Check the spring clamp for looseness and deformation				★			★			★			★
5	检查橡胶悬架 Inspect the rubber suspension.		★	★	★	★	★	★	★	★	★	★	★	★



(6) 传动轴 Drive shaft

检查与保养项目 Inspection and maintenance items	A	△	5	10	15	20	25	30	35	40	45	50	55	60
	B		1	2	3	4	5	6	7	8	9	10	11	12
检查传动轴（包括各连接部位及十字轴 轴承是否松旷、有无偏移、以及传动轴 中间支承是否松旷） Check the drive shaft (including checking whether or not the connection parts and cross bearing are loose and free from deviation and whether or not the intermediate support of the drive shaft is loose)		☆	★	★	★	★	★	★	★	★	★	★	★	★



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Vehicle Type

XGA3310BEVWEDX

检查传动轴花键磨损情况 Check the drive shaft spline for wear											★		
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(7) 其他 Others

序号 No.	检查与保养项目 Inspection and maintenance items	A	△	5	10	15	20	25	30	35	40	45	50	55	60
		B		1	2	3	4	5	6	7	8	9	10	11	12
1	检查、紧定车轮总成（包括检查半轴螺栓和车轮螺母的紧定、轮胎气压、异常磨损等） Check and fasten wheel assembly (including checking the fastening of axle shaft and wheel nut, the tire pressure and abnormal friction, etc.)	☆		★	★	★	★	★	★	★	★	★	★	★	★
2	检查轮辋总成是否损伤和变形				★		★		★		★		★		★



	Check the rim assembly for damage and deformation												
3	检查、调整轮毂轴承间隙和润滑 Check and adjust clearance and lubrication between hub bearings			★		★		★		★		★	★
4	轮胎换位 Tyre rotation			★		★		★		★		★	★
5	ABS 传感器间隙调整及清洁 Clean ABS sensor and adjust the clearance			★		★		★		★		★	★
6	检查液压系统的泄露及密封情况 Check the hydraulic system for	☆	★	★	★	★	★	★	★	★	★	★	★



	leakage and sealing													
7	检查驾驶室各连接处及车架各铆钉是否松动 Check whether the connections in the cab and rivets on the car frame are loose		★	★	★	★	★	★	★	★	★	★	★	★
8	检查液压系统的泄露及密封情况 Check the hydraulic system for leakage and sealing	☆	★	★	★	★	★	★	★	★	★	★	★	★



9	检查驾驶室（前）后悬减振器的泄露、损坏及松动状况，必要时更换 Check the leakage, damage and looseness of (front) rear suspension shock absorbers of the cab and replace them when necessary				★				★				★
10	检查驾驶室前悬橡胶套总成的状况，必要时更换 Check the rubber sleeve assembly of the front suspension of the cab, and replace it if necessary						★						★



11	检查驾驶室（前）后悬置弹簧总成的状况，必要时更换 Check the condition of (front) rear suspension spring assembly of the cab and replace them if necessary						★						★
12	更换驾驶室举升装置液压油 Replace the hydraulic oil for lifting device in the cab												★