416后桥-客车
维修手册

SM-2400005-FQ0PQ

东风德纳车桥有限公司
DONGFENG DANA AXLE CO., LTD.

目录

第一章 概述信息（Chapter1 Overview Information）

1 前言（Foreword）

感谢您选用我公司生产的车桥产品！

Thank you for choosing the axle products produced by our company!

本手册介绍了东风德纳车桥的主要技术参数、使用保养规范、维修拆装方法等。为了使您能正确使用和保养车桥，降低车辆故障，提高车桥使用寿命，保证您的行车安全，我们希望您认真阅读此手册，遵守保养规程，做好日常及定期维护保养工作。

This manual introduces the main technical parameters, operation and maintenance specifications, repair and disassembly methods of Dongfeng Dana axle. In order to enable you to correctly use and maintain the axle, reduce vehicle failure, improve the service life of the axle, and ensure your driving safety, we hope you read this manual carefully, abide by the maintenance procedures, do a good job of daily and regular maintenance work.

为适应用户需要，东风德纳车桥有限公司（简称 DDAC）将不断地对生产的产品进行改进和完善，我公司保留在任何时候进行产品设计和技术特征更改的权利。因此，本手册中的图形及说明在出版时是正确的，其后的设计和技术特征的更改，恕不另行通知，敬请谅解。“以客户为中心”是我公司一贯遵循的原则，您在使用中有任何问题或建议请及时反馈到我公司，以便我们不断提高产品质量，更好的为您服务。

In order to meet the needs of users, DDAC will continue to improve and perfect the products. Ddac reserves the right to change the design and technical features of the products at any time. Therefore, the graphics and instructions in this manual are correct at the time of publication, and subsequent design and technical features are subject to change without notice. "Customer-centric" is the original principle that our company has always followed. If you have any questions or suggestions in use, please feedback to our company in time, so that we can continuously improve product quality and serve you better.

有关我公司产品的质量保修、备件购置等问题，请与本公司联系：

Please contact us for the quality warranty and spare parts purchase of our products.

售后服务：0710-3720000-8820、0710-3720000-8798，

After-sales service: 0710-3720000-8820 / 0710-3720000-8798.

三包结算：0710-3720000-8700，

Three guarantees settlement：0710-3720000-8700

配件及三包：0719-8236704。

Accessories and its three guarantees service：0719-8236704.

2 性能特点（Performance Characteristics）

本驱动桥是东风德纳车桥有限公司为用户倾情打造的一款高端车桥，产品平台基于模块化配置开发，可根据用户需求选用不同配置。该桥汲取了 DANA 全球最新技术精华，采用了新型的减磨结构设计，全新的润滑油净化系统等专利技术，具有高可靠性、高经济性、高间隔维护里程及安全性。

This drive axle is a high-end axle created by Dongfeng Dena Axle Co., Ltd. for users. The product platform is developed based on modular configuration, and different configurations can be selected according to user needs. The axle draws on DANA's latest technology and features a new wear reduction design, a new lubricating oil purification system and other patented technologies, providing high reliability, high economy, high interval maintenance range and safety.

1）高可靠性。高动力密度主减速器一体化设计，齿轮设计强度高，寿命长，严格按照车桥总成及整车实验规范的验证。

1) High reliability. High power density main reducer integrated design, gear design high strength, long life, in strict accordance with the axle assembly and vehicle test specifications verification.

2）高经济性。采用轻量化设计较市场同类产品自重更轻，速比更小，提高燃油经济性的同时，大大提高传动效率。

2) High economy. The lightweight design is lighter than similar products in the market, and the speed ratio is smaller. It improves fuel economy and greatly improves transmission efficiency.

3）高维护间隔里程。采用新型的减磨结构设计，更高的零件清洁度标准，更好的润滑效果，更专业的油品保证，使其间隔维护里程可显著提升。

3) High maintenance interval mileage. The new wear reduction structure design, higher parts cleanliness standard, better lubrication effect, more professional oil guarantee, so that its interval maintenance mileage can be significantly improved.

4）安全性。采用新的轴管结构设计，新型的材料和锻造工艺，专用机器人焊接技术，确保了产品质量。

4) Safety. The new shaft tube structure design, new materials and forging technology, special robot welding technologyensure the quality of products.

3 安全注意事项（Safety Precautions）

⚠ 警告:

如果不遵守警告标志所规定的事项，则将会造成严重的人身伤害或重大财产损失。

If you do not comply with the requirements of the warning signs, which will cause serious personal injury or major property damage.

1. 车桥发生故障时禁止继续使用，不得自行拆卸处理。

1. When the axle breaks down, it is prohibited to continue to use it, and it is not allowed to disassemble and handle it by itself.

2. 禁止对车桥结构进行私自改变。

2. It is forbidden to change the structure of the axle without permission.

3. 摩擦块和制动盘应采用原厂配件，否则会带来严重后果。注意观察磨擦片磨损情况，以防由于磨擦片过度磨损造成制动失效。

3. The friction block and brake disc should use the original accessories, otherwise it will bring serious consequences. Pay attention to the wear of the friction sheet to prevent the brake failure caused by excessive wear of the friction sheet.

4. 对于自动调整臂，除特殊情况外，禁止手动调节制动间隙；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；对后制动器进行手工调整时，一定要将车停在平坦的地方，并保证贮气筒气压在 700kPa 以上。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。制动出现异常情况时，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。

4. For the automatic adjustment arm, manual adjustment of brake clearance is prohibited except in special circumstances; When manually adjusting the brake gap, it is strictly prohibited to change the push rod stroke by twisting the brake gas chamber push rod connecting fork; When adjusting the rear brake manually, be sure to park the car in a flat place and ensure that the air cylinder pressure is above 700kPa. Use triangle pad wood to stop the wheel before and after removing the parking brake, to adjust the rear brake clearance. When the brake is abnormal, it is necessary to stop immediately to check the working condition of the automatic adjusting arm and other parts of the brake system, and take appropriate measures to eliminate the fault in time.

5. 除特殊情况外，禁止手动调节盘式制动器制动间隙。如果发现制动间隙不正常，则需检查间隙调整机构功能。

5. Manual adjustment of disc brake clearance is prohibited except in special circumstances. If the brake clearance is found to be abnormal, the function of the clearance adjustment mechanism should be checked.

6. 严禁擅自调节制动气路气压，以免造成零件损坏。

6. It is strictly prohibited to adjust the brake air pressure without authorization to avoid parts damage.

7. 用户在按照所规定的保养项目进行车辆保养时，应根据所在地区的使用条件，适当地缩短保养间隔里程，以保证您的车辆得到更加合理的维护和更好的可靠性，不可延长保养间隔里程。

7. When the user maintains the vehicle according to the specified maintenance items, the user should shorten the maintenance interval mileage appropriately according to the service conditions of the region, so as to ensure that your vehicle can get more reasonable maintenance and better reliability. The maintenance interval mileage cannot be extended.

4 维修建议及注意事项（Maintenance Suggestions and Precautions）

维修建议

Maintenance advice

1）拆卸之前，仔细检查故障部位，判断可能的原因。

1) Before disassembly, carefully check the fault site and determine the possible causes.

2）准备好相应的维修作业工具及设备，以便提高工作效率和保证维修质量。

2) Prepare relevant maintenance tools and equipment to improve work efficiency and ensure maintenance quality.

3）清洁主要的部件和其周围环境。拆解下的总成及零部件，集中存放，存放地点保持清洁，干燥。

3) Clean the main components and their surrounding environment. Assembly and parts under disassembly, centralized storage, storage place to keep clean and dry.

4）在进行维修或保养时，更换易损零件，如油封、密封垫片等，不允许重复使用。

4) In the repair or maintenance, replace vulnerable parts, such as oil seal, sealing gasket, etc., do not allow repeated use.

5）所有涂胶螺栓再重复使用时，必须重新涂胶，换新螺栓时需换同型产品。拧紧力矩及调整数据需要参照拧紧力矩表执行。

5) When all gluing bolts are reused, they must be re-glued, and the same type of products should be replaced when replacing new bolts. For the tightening torque and adjustment data, see the tightening torque table.

6）使用纯正的备件产品。

6) Use pure spare parts.

7）针对纯电车当内外摩擦块磨损量差值超过5mm时，建议将内外片换装位置使用。

7) For pure electric cars, when the wear difference between internal and external friction blocks exceeds 5mm, it is recommended to replace the internal and external pieces.

维修过程中的注意事项

Matters needing attention during maintenance

8）仔细清洗和检查所有的零件。

8) Carefully clean and check all parts.

9）进行零件更换时，需要成对更换的零件应严格按照要求成对更换。

9) When replacing parts, parts that need to be replaced in pairs should be replaced in strict accordance with the requirements.

10）轴承等是不可修复的，一旦出现故障应该报废并成套更换。

10) Bearings are irreparable and should be scrapped and replaced in sets once faults occur.

11）啮合件更换需更换同一供应商产品。

11) The meshing parts shall be replaced by the products of the same supplier.

12）更换轴承时，直到准备安装时才能拆开轴承包装。

12) When replacing the bearing, the bearing package can not be disassembled until it is ready for installation.

13) 为了保持车桥良好的性能，请使用本公司推荐的润滑油品。

13) In order to maintain the good performance of the axle, please use the lubricating oil recommended by our company.

14) 您有义务将本产品中的可回收零件交由授权的废旧物质回收公司进行处理。

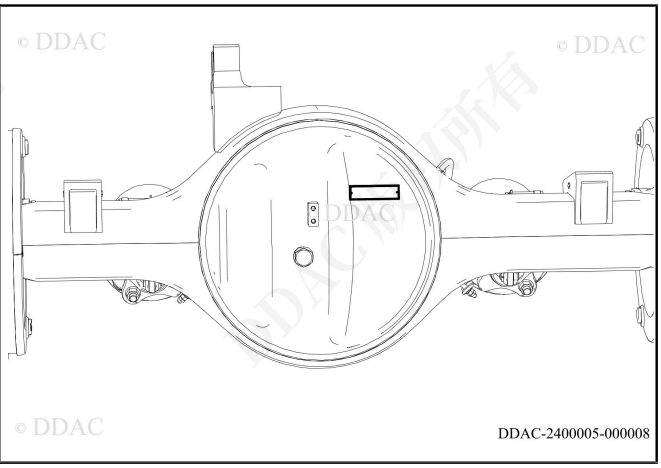
14) You are obligated to submit the recyclable parts of the product to an authorized waste material recycling company for disposal.

15) 您有义务将本产品及维修过程中废弃的润滑油、润滑脂等废旧物按当地环保法规要求进行集中回收处理，不可随意倾倒，抛弃。

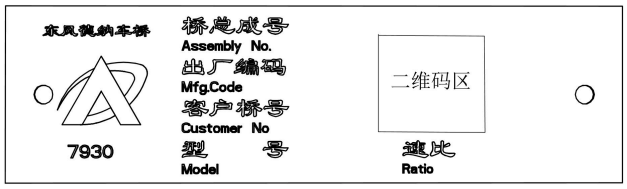
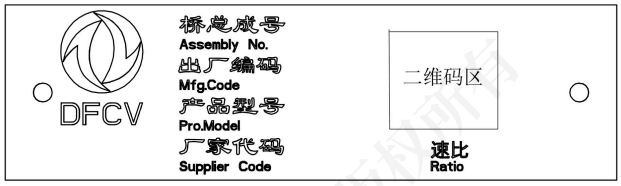
15) You have the obligation to recycle the product and the waste lubricating oil, grease and other waste materials used in the maintenance process according to the requirements of local environmental protection laws and regulations, and do not dump or discard them at will.

5 车桥标识 (Axle Identification)

车桥上的标牌
Signs on the axle

后桥： Rear Axle Assembly：	 DDAC-2400005-000008

车桥铭牌示例
Content of axle nameplate

车桥铭牌示例1：针对东风商用车之外用户。 Example of axle nameplate1： for users except Dongfeng commercial vehicles.	
车桥铭牌示例2：针对东风商用车用户。 Example of axle nameplate2: For Dongfeng commercial vehicle users.	

铭牌内容定义
Definition of nameplate content

1）桥总成号：东风德纳车桥有限公司定义的车桥总成编号。

1) Axle assembly number: the axle assembly number defined by the OEM. If there is no definition, it shall be defined by DDAC.

2）速比：车桥总减速比。

2) Speed ratio: Total reduction ratio of vehicle and axle.

3）产品型号：东风德纳车桥有限公司定义的车桥总成公告平台号。

3) Product model: Axle assembly announcement platform number defined by Dongfeng

例如：DF0901D-416

For example:DF0901D-416

4）出厂编码：代表桥生产信息。

4) Factory code: represents the axle production information.

示例：

For example:

旧出厂编码：QB12141111200代表襄阳工厂12装配线2014年11月11号装配的第200根桥总成。

The old factory code: QB12141111200 represents the 200th axle assembly assembled by Assembly Line 12 of Xiangyang Factory on November 11, 2014.

新出厂编码：15172108代表2021年5月17日2装配线的第108根桥总成。

The new factory code: 15172108 represents the 108th axle assembly assembled by Assembly Line 2 on May 17, 2021.

5）厂家代码：7930 东风德纳车桥有限公司，不同客户的代码不相同。

5) Manufacturer code: 7930 Dongfeng Dena Axle Co., LTD. The code is different for different customers.

6）客户桥号：主机厂协议桥号。

6) Customer number: OEM agreement number.

7）二维码：可通过扫描二维码了解桥的详细信息。

7) Two-dimensional code: you can scan the two-dimensional code to understand the detailed information of the axle.

6 车桥参数与配置（Axle Parameters and Configuration）

技术参数及配置

传动 Transmission	结构特点 Structural features		低自重、高可靠性、高效率 Low weight, high reliability, high efficiency
	最大输出扭矩（N.m） Maximum output torque (N.m)		24000
	速比 Speed ratio		5.57
	主减齿轮油注油量（L） Filling capacity of reducer (L)		8.5
承载 Load-bearing	桥壳 Axle housing	结构特点 Structural features	高强度冲焊桥壳 High strength punch welded axle housing
		轴荷（t） Axle weight (t)	9.5
	轮端 The wheel end	润滑形式 Lubrication form	普通脂润滑 Ordinary grease lubrication
制动 Brake	磨损报警线 Wear alarm line		有 Yes
	ABS		有 Yes
	制动器规格 Brake specification		19.5"
车型类别 Vehicle type	本桥用于城市公交，换油/脂周期参见换油/脂周期表 This axle is used for city bus, and the oil/grease change period is referred to the oil/grease change prriod		

7 如何使用本手册 (How to use this manual)

服务手册的结构

Structure of the service manual

本手册的结构顺序与拆卸步骤顺序相对应，分别汇总了桥总成和主要组件的拆卸、组装过程。

The structure sequence of this manual corresponds to the sequence of disassembly steps, and summarizes the disassembly and assembly process of axle assembly and main components respectively.

“专用工具”中列出了进行相应维修工作时所需的专用工具。

The "Special Tools" section lists the special tools required to perform the corresponding maintenance work.

“通用工具”中列出了进行相应维修工作时所需的通用工具。

The "General Tools" section lists the common tools required to perform the appropriate repair work.

关于工作安全的重要信息

Important information about safety at work

遵守所有适用的安全法规和法律要求，是避免在作业期间对人员和产品造成损害的先决条件，维修人员需在确保安全前提下实施维修、保养作业。

Compliance with all applicable safety regulations and legal requirements is a prerequisite for avoiding damage to personnel and products during operations. Maintenance personnel are required to perform repair and maintenance operations in a safe manner.

正确维修 DDAC 产品的先决条件是：必须由经过培训合格的专业人员进行维修、保养作业。

The prerequisite for proper maintenance of DDAC products is that the repair and maintenance operations must be performed by trained and qualified professionals.

8 重要紧固件力矩 (Critical Fastener Torque)

紧固件 Fasteners	拧紧力矩 (N.m) Tightening torque (N.m)
主锥锁紧螺母 Main cone lock nut	1000~1500
轴承座连接螺栓 Bearing seat connection bolts	240~280
差壳连接螺栓 Differential shell connection bolts	140~180
被动锥齿轮连接螺栓 Passive bevel gear connection bolts	615~685
差速器轴承盖螺柱 Differential bearing cover Stud	220~280
差速器轴承盖螺母 Differential bearing cover nuts	500~550
调整螺母止动片螺栓 Adjust the nut stop bolt	15±3
减速器与桥壳连接螺栓 Connecting bolt of reducer and axle housing	220~250
半轴安装螺栓 Axle shaft fastening bolt	140~180
注油塞 Oil injection plug	130~150
放油塞 Oil drain plug	60~80
制动器安装螺栓 Brake fastening bolt	540~600
轮毂轴承调整螺母拧紧力矩（免维护脂润滑） Tightening torque of hub bearing adjusting nut (maintenance-free grease lubrication)	1000~1100（不回退） 1000~1100 (Don't back)
轮毂轴承调整螺母拧紧力矩（免维护油润滑） Tightening torque of hub bearing adjusting nut (maintenance-free oil lubrication)	400~450（不回退） 400~450 (Don't back)
轮毂轴承调整螺母拧紧力矩（普通脂润滑） Tightening torque of hub bearing adjusting nut (ordinary grease lubrication)	500~550（打紧回退） 500~550 (Tighten and roll back)
车轮螺母 Wheel nut	580~650

9 符号 (Symbol)

⚠ 警告:

违章操作可能会导致人身伤害或死亡。

Illegal operations may result in personal injury or death.

⚠ 注意:

所显示的图片、图纸和零件并不总是代表原件，工作过程如图所示。

The pictures, drawings and parts shown do not always represent the originals and the working process is shown.

图片、图纸和零件不是按比例绘制的，不得计算尺寸和重量 (包括阐述) 。

Pictures, drawings and parts not drawn to scale shall not be calculated for size and weight (including exposition).

必须根据所述文本展开和进行工作。

The text must be developed and worked on.

10 略缩语 (Abbreviations)

序号 Serial number	略缩语 Abbreviations	释义 Paraphrase
1	ABS	制动防抱死系统 Antilock bralke system
2	主锥 Main bevel	主动锥齿轮 Active bevel gear
3	磨报线 Wear alarm wire	磨损报警线 Wear alarm wire
4	主减/减总 Main subtraction/total subtraction	主减速器总成 Main reducer assembly
5	行星轮 Pinion Mate Gear	行星齿轮 Pinion Mate Gear
6	减壳 Reducer housing	减速器壳 Reducer housing

11 主要单位 (Major Units)

概念 Concept	符号 Symbol	单位 Unit	換算 Conversion	备注 Note
质量 Quality	m	kg (千克)	1 kg = 1000 g	
力 Force	F	N (牛顿)	1 kpf = 9.81 N	
功率 Power	P	KW (千瓦)	1 PS = 0.7355 KW 1 KW = 1.36 PS	
尺寸 Size	L或Φ L or Φ	m	1m=1000mm	
扭矩 Torque	T	Nm (牛米)	1 kpm = 9.81 Nm	T (Nm) =F(N) r (m)
力矩 Torque	M	Nm (牛米)	1 kpm = 9.81 Nm	M (Nm) =F (N) r (m)
压力 Pressure	Pa	bar	1.02 at ü = 1.02 kp/cm^2 = 1 bar = 750 torr	
转速 Rotate speed	n	r/min		
容积 Volume	L	L(升)	1L=1000ml	
温度 Temperature	T	℃		
载荷 Load	G	t（吨）	1t=1000kg	
电阻 Resistance	R	Ω		
电压 Voltage	U	v		
电流 Current	I	A		

第二章 车桥的保养（Chapter2 Maintenance of Axle）

1 保养定义（Definition of Maintenance）

车桥在使用过程中，各部位会产生磨损、松动、自然劣化等，在这种情况下继续使用会导致车辆性能下降、发生故障乃至危及行驶安全。根据GB/T 18344与GB/T 35260要求，对车桥按照日常维护、一级维护、二级维护项目与周期进行维护保养 。

In the process of using the axle, the parts will produce wear, loosening, natural deterioration, etc., in this case, the continued use will lead to the performance of the vehicle Drop, malfunction and even endanger the safety of driving. According to the requirements of GB/T 18344 and GB/T 35260, the axle shall be in accordance with daily maintenance, first-level maintenance,Secondary maintenance items and periods Perform maintenance.

日常维护：以清洁、补给和安全性能检视为主，过程中发现问题应及时进行保修。

Daily maintenance: mainly cleaning, supply and safety performance inspection. Any problem found in the process should be guaranteed in time.

一级维护：以润滑、紧固为主，并检查有关制动等系统中的安全部件的维护作业。

Level 1 maintenance: In addition to routine maintenance, mainly lubrication and fastening, and check the maintenance of safety components in the system such as braking.

二级维护：除一级维护作业外，以检查、调整制动系统等安全部件的维护作业。

Level 2 maintenance: In addition to level 1 maintenance operations, to check and adjust the braking system and other safety components maintenance operations.

注：恶劣工况下，一级、二级维护保养周期减半。

Note : In bad working conditions, the level 1 and 2 maintenance cycle is halved.

2 日常维护（Daily Maintenance）

由车辆使用人负责执行维护作业内容：

The user of the vehicle shall be responsible for the maintenance of the following contents:

序号 serial number	维护项目 Maintenance project	技术要求 technical requirement	维护周期 Maintenance Period	备注 note
1	制动系统自检 Self-check of braking system	车辆仪表无ABS与磨报线故障提示 There is no ABS or mill line fault dislayed on vehicle instrumentThere is no ABS or mill line fault dislayed on vehicle instrum	出车前、行车中 Before and during driving	
2	检查测试行车制动 Check and test the service brake	行车制动功能正常 The service brake function is normal	出车前、行车中 Before and during driving	
3	检查车轮螺栓、螺母 Check wheel bolts and nuts	无缺失或松动 There was no missing or loosening	出车前、收车后 Before and after driving	

序号 serial number	维护项目 Maintenance project	技术要求 technical requirement	维护周期 Maintenance Period	备注 note
4	检查车桥有无漏油点 Check the axle to make sure it is no oil leaks	半轴与轮端接合面、轮端内侧、桥壳本体、减速器与桥壳接合面、注/放油塞、主锥、轴承座无漏油 In place of Half shaft with Wheel end joint surface.wheel end Inside, axle housing body,reducer with Joint surface of axle housing,Note/drain Plug,Main cone,Bearing seat.It is no oil spill	出车前、收车后 Before and after driving	

3 一级维护（Level 1 maintenance）

由专业人员负责执行维护作业内容，除日常维护项目外，还包括以下维护作业内容：

In addition to routine maintenance items, professional personnel are responsible for the following maintenance activities:

序号 Serial number	维护项目 Maintenance project	技术要求 Technical requirement	推荐周期 Maintenance Period	备注 Note
1	检查制动气室、制动管路 Check brake air chamber and brake line	无泄漏，固定牢靠 No leakage, fixed firmly	1万KM/1月 10000 KM / 1 month	
2	检查通气塞 Check air breather plug	无堵塞、无缺失 No blockage, no missing	1万KM/1月 10000 KM / 1 month	
3	检查ABS、磨报线束线、波纹套管、导线 Check ABS, wire harness, corrugated bushing and conductor	线束整齐、固定牢靠，波纹套管无老化、破损，导线无外露 The wiring harness is neat and firmly fixed. The corrugated sleeve is not aging or damaged, and the wire is not exposed	1万KM/1月 10000 KM / 1 month	
4	检查制动间隙 Cleck the brake clearance	制动间隙符合要求 The brake clearance Conforms to regulations	1万KM/1月 10000 KM / 1 month	
5	检查半轴螺栓螺母紧固情况 Check half shaft bolts and nuts for tightening	扭矩合格 Torque value is qualified	1万KM/1月 10000 KM / 1 month	
6	检查确认车轮螺母 Check and confirm the wheel nuts	扭矩合格 The torque is qualified	1万KM/1月 10000 KM / 1 month	
7	检查制动气室、气室支架、调整臂连接、制动器安装螺栓、螺母 Check brake air chamber, air chamber bracket, adjustment arm connection, brake installation bolts and nuts	连接螺栓、螺母齐全、无松动 The connection bolts and nuts are complete and secure	1万KM/1月 10000 KM / 1 month	仅用于鼓式制动车桥 For drum brake axle only
8	对气室支架黄油嘴注脂 Grease the butter nozzle of the air chamber bracket	参见润滑脂加注部位及要求 See grease filling parts and requirements	参见润滑脂加注周期 See grease filling period	仅用于鼓式制动车桥 For drum brake axle only
9	对制动底板油脂嘴注脂 Grease the grease nozzle of brake plate	参见润滑脂加注部位及要求 See grease filling parts and requirements	参见润滑脂加注周期 See grease filling period	仅用于鼓式制动车桥 For drum brake axle only
10	对调整臂油脂嘴注脂 Grease the grease nozzle of the adjusting arm	参见润滑脂加注部位及要求 See grease filling parts and requirements	参见润滑脂加注周期 See grease filling period	仅用于鼓式制动车桥 For drum brake axle only

4 二级维护（Level 2 maintenance）

由专业人员负责执行维护作业，除一级维护项目外，还包括以下维护作业内容：

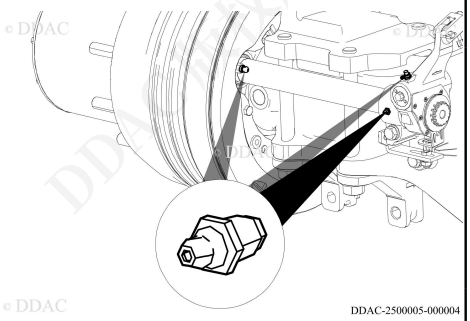
Professional personnel are responsible for performing maintenance operations. In addition to primary maintenance items, maintenance operations include the following:

序号 serial number	维护项目 Maintenance project	技术要求 Technical requirement	推荐周期 Maintenance Period	备注 Note
1	检查桥总成油量 Check the total amount of oil on the axle assembly	桥总成油量达到要求 the total amount of oil on the axle assembly is qualified	60000KM或6月 60000KM or 6 months	
2	检查轮毂轴承松紧度 Check hub bearing tightness	转动灵活，无松旷 Flexible rotation, no loose	60000KM或6月 60000KM or 6 months	
3	检查轮毂轴承轴向间隙 Check that the axial clearance of hub bearings	轴向间隙符合规定 The axial clearance conforms to the regulations	60000KM或6月 60000KM or 6 months	
4	检查轮毂本体 Check the hub body	无裂损 No crack damage	60000KM或6月 60000KM or 6 months	
5	检查制动鼓 Check the brake drum	无裂痕、沟槽、油污及明显变形 No cracks, grooves, oil stains and obvious deformation	60000KM或6月 60000KM or 6 months	仅用于鼓式制动车桥 For drum brake axle only
6	检查制动摩擦片和制动盘厚度 Detect the thickness of brake friction plate and brake disc	厚度未达到磨损极限、内外片无偏磨现象 The thickness does not reach the wear limit, and the inner and outer pieces have unbiased wear phenomenon	60000KM或6月 60000KM or 6 months	仅用于盘式制动车桥 For disc brake axle only
7	检查制动钳紧固情况 Check the brake pliers for fastening	安装牢固 Installation is firm	60000KM或6月 60000KM or 6 months	仅用于盘式制动车桥 For disc brake axle only
8	检查制动钳滑阻力 Check brake caliper slip resistance	满足要求 Resistance values are up to standard	60000KM或6月 60000KM or 6 months	仅用于盘式制动车桥 For disc brake axle only
9	检查制动盘和摩擦片外观 Check the appearance of brake disc and friction plate	制动盘和摩擦片摩擦工作面不得有油污、裂纹、失圆和沟槽等损伤 There are not damages such as oil, crack, loss of circle and groove etc On the friction working surface of brake disc and friction plate	60000KM或6月 60000KM or 6 months	仅用于盘式制动车桥 For disc brake axle only
10	检查制动器密封件 Check brake seals	无裂纹或损坏 No cracks or damage	60000KM或6月 60000KM or 6 months	

序号 serial number	维护项目 Maintenance project	技术要求 Technical requirement	推荐周期 Maintenance Period	备注 Note
11	检查制动器制动间隙调整机构 Check the brake gap adjustment mechanism	工作正常 Working properly	60000KM或6月 60000KM or 6 months	
12	检查齿圈及传感器，并对齿圈及传感器进行清洁 Check the gear ring and sensor, and clean the ring and sensor	无破损及异物 No damage or foreign matter	60000KM或6月 60000KM or 6 months	
13	更换桥总成润滑油 Replace axle assembly lubricating oil	参见加注方法 See Recharge method	参见润滑油加注周期 See lubricating oil filling period	
14	更换普通轮端润滑脂 Replace the common wheel end grease	参见轮毂系统章节 See the section on Hub Systems	参见车桥保养润滑脂加注周期章节 See the section on Filling period of axle maintenance Grease	同时更换轮毂油封，半轴油封 Replace the hub oil seal and half shaft oil seal at the same time

5 润滑脂更换周期及要求（Grease replacement period and requirements）

5.1 润滑脂加注部位及要求（Grease filling position and requirements）

加注部位 Position of filling	注脂要求 Grease filling requirements	图示 Illustration
1、气室支架油脂嘴 1.Air chamber bracket grease nozzle	衬套端面处有油脂溢出为止 There is grease overflow at the end face of the bushing	
2、底板凸轮轴油脂嘴 2.Bottom camshaft grease nozzle	衬套端面处有油脂溢出为止 There is grease overflow at the end face of the bushing	
3、调整臂油脂嘴 3. Grease nozzle of adjusting arm	加注到油脂嘴少量油脂溢出为止 Fill until a small amount of grease spills out of the grease nozzle	
4、凸轮轴支架凸轮轴油脂嘴 4.Camshaft bracket camshaft grease nozzle	加注到衬套有少量油脂溢出为止 Fill until a small amount of oil spills out of the bushing	
5、轮毂换脂 5.The hub changes grease	参见轮毂系统章节（仅对脂润滑轮端） See Wheel Hub Systems Section (Grease lubricated wheel ends only)	参见轮毂系统章节（仅对脂润滑轮端） See Wheel Hub Systems Section (Grease lubricated wheel ends only)

注：

Note:

1、其中1、2、3、4只针对鼓式S凸轮制动器。

1. 1, 2, 3 and 5 of them are only for drum S CAM brakes.

5.2 润滑脂加注周期（Grease filling Period）

对应车辆用途 Purpose of vehicle	普通脂润滑轮端更换周期 Change cycle of wheel end for ordinary grease lubrication		底板或凸轮轴支架(气室支架）、调整臂注脂周期 Ottom or camshaft bracket (air chamber bracket), adjusting arm grease period	
	润滑脂 Grease	更换周期 Replacement period	润滑脂 Grease	更换周期 Replacement period
公路客运、旅游 Highway passenger transport and tourism	DDAC-B	6万公里/6个月 60000km/6months	DDAC-A	2万公里/2个月 20000km/2months
城市公交 City bus	DDAC-B	6万公里/6个月 60000km/6months	DDAC-A	2万公里/2个月 20000km/2months
校车、通勤车、摆渡车 School bus, commuter bus, ferry bus	DDAC-B	6万公里/6个月 60000km/6months	DDAC-A	2万公里/2个月 20000km/2months

注：

Note:

1、免维护脂润滑轮端不做主动定期更换润滑脂要求。

1. Maintenance-free grease lubrication wheel ends do not make active regular grease replacement requirements.

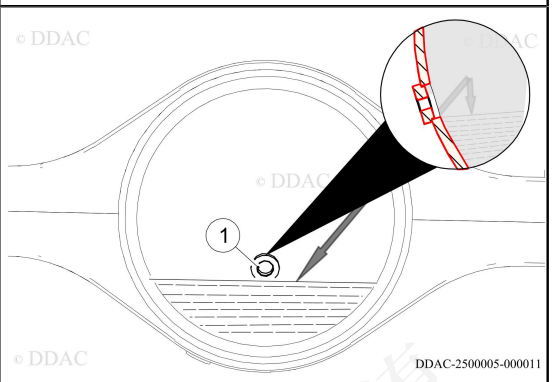
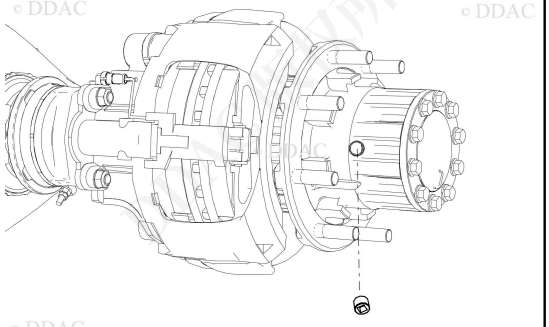
5.3 润滑脂品推荐（Grease products are recommended）

DDAC编号 DDAC number	名称 Name	推荐脂品厂家 Recommended grease manufacturer
DDAC-A	汽车通用锂基酯 General automotive lithium ester	东风商用车：DFCV-C10-DG-3润滑脂 Dongfeng commercial vehicle: DFCV-C10-DG-3 grease 中石化天津分公司：2#锂基酯、DDAC-A润滑脂 Sinopec Tianjin Branch: 2# lithium ester, DDAC-A grease 壳牌：GadusS3 V160C3润滑脂 Shell: GadusS3 V160C3 grease
DDAC-B	极压复合锂基润滑脂 The extreme pressure lithium complex grease	东风商用车：DFCV-C20-DZ-3润滑脂、DFCV-C20-DZ-2润滑脂 Dongfeng commercial vehicle: DFCV-C20-DZ-3 grease, DFCV-C20-DZ-2 grease 中石化天津分公司：HP-R 润滑脂、DDAC-B润滑脂 Sinopec Tianjin Branch: HP-R grease, DDAC - B grease 壳牌：GadusS3 V220C2 润滑脂 Shell: GadusS3 V220C2 grease 福斯：RENOLIT LX-EP 2润滑脂 Foss: RENOLIT LX-EP 2 grease

DDAC编号 DDAC number	名称 Name	推荐脂品厂家 Recommended grease manufacturer
DDAC-C	高温长寿命润滑脂 High temperature long life grease	中石化天津分公司：THT-A 润滑脂、DDAC-C润滑脂 Sinopec Tianjin Branch: THT-A grease, DDAC-C grease 壳牌：Gadus S5 V220 2 润滑脂 Shell: Gadus S5 V220 2 grease 福斯：RENOLIT LX-NHU 2润滑脂 Foss: RENOLIT LX-NHU 2 grease 美孚：Mobilgrease XHP 222润滑脂 Mobil: Mobilgrease XHP 222 grease

6 润滑油更换周期及要求 (Oil replacement period and requirements)

6.1 润滑油加注部位及要求 (Filling sites and requirements with Lubricating grease Oil)

加注部位 Position of filling	加注要求 Oil filling requirements	图示 Illustration
桥总成注油孔（1） Axle assembly oil hole (1)	参阅加注润滑油 Refer to refilling lubricating oil	
轮毂端盖加油孔 Wheel end cap oil fill hole	参阅加注润滑油章节（仅针对油润滑轮端） Refer to the section on filling with lubricant (for oil-lubricated wheel ends only)	

6.2 润滑油加注周期（Grease Oil filling Period）

加油部位 Oil filling position	适用车型 Applicable models	名称 Name	油品等级 Oil level	首保换油周期（先到为准） First warranty oil change cycle (whichever comes first)	定期保养换油周期（先到为准） Regular maintenance and oil change cycle (whichever comes first)	备注 Note
主减速器 The main reducer	城市公交车（备注：①） City bus (Note: ①)	重负荷齿轮油 Heavy load gear oil	API GL-5 (按季节、地区、环境温度等要素选用不同粘度、耐不同温度的润滑油（备注②）） API GL-5 (lubricating oil with different viscosity and temperature resistance according to season, region, ambient temperature and other factors (Note ②))	5000公里/3个月 5000 km /3 months	6万公里/6个月 60,000 km /6 months	
	旅游车，城际巴士 Tour bus, intercity bus			5000公里/3个月 5000 km /3 months	6万公里/6个月 60,000 km /6 months	
	校车、通勤车，摆渡车 School bus, commuter bus, ferry bus			5000公里/6个月 5000 km /6 months	6万公里/12个月 60,000 km /12 months	
	城市公交车（备注：①） City bus (Note: ①)	高性能齿轮油 High performance gear oil	GL-5+ （按季节、地区、环境温度等要素选用不同粘度、耐不同温度的润滑油（备注②）） Gl-5 + (lubricating oil with different viscosity and temperature resistance according to season, region, environmental temperature and other factors (Note ②))	5000公里/3个月或免首保换油（备注④） 5000 km /3 months or free of first insurance for oil change (Note ④)	10万公里/12个月 100,000 km /12 months	
	旅游车，城际巴士等 Tour bus, intercity bus, etc			5000公里/3个月或免首保换油（备注④） 5000 km /3 months or free of first insurance for oil change (Note ④)	10万公里/12个月 100,000 km /12 months	

加油部位 Oil filling position	适用车型 Applicable models	名称 Name	油品等级 Oil level	首保换油周期（先到为准） First warranty oil change cycle (whichever comes first)	定期保养换油周期（先到为准） Regular maintenance and oil change cycle (whichever comes first)	备注 Note
	所有客运车辆 All passenger vehicles	长效里程齿轮油 Long-term mileage Gear oil	SAE J2360 (按季节、地区、环境温度等要素选用不同粘度、 耐不同温度的润滑油(备注③)) SAE J2360 (lubricants with different viscosity and temperature resistance are selected according to season, region, ambient temperature and other factors (Note ③))	5000公里/3个月或免首保换油（备注④） 5000 km /3 months or free of first insurance for oil change (Note ④)	10万公里以上/12个月 100,000 km /12 months	
		超长寿命齿轮油 Ultra-long life gear oil	SAE J2360 (按季节、地区、环境温度等要素选用不同粘度、 耐不同温度的润滑油(备注③)) SAE J2360 (lubricants with different viscosity and temperature resistance are selected according to season, region, ambient temperature and other factors (Note ③))	免首保换油（备注④） free of first insurance for oil change (Note ④)	30万公里/36个月 300,000 km /36 months	
轮毂 Wheel hub		重负荷齿轮油 Heavy load gear oil	API GL-5或更换后桥桥总成同型油品 API GL-5 or replace the same type of oil in the rear axle assembly.	-	10万公里/12个月或随后桥换油，同时对轮端进行检查 100,000km /12 months or the rear axle oil change with inspection of wheel ends.	仅用于免维护油润滑 For maintenance-free oil lubrication only.

加油部位 Oil filling position	适用车型 Applicable models	名称 Name	油品等级 Oil level	首保换油周期（先到为准） First warranty oil change cycle (whichever comes first)	定期保养换油周期（先到为准） Regular maintenance and oil change cycle (whichever comes first)	备注 Note
			API GL-5或更换后桥桥总成同型油品 API GL-5 or replace the same type of oil in the rear axle assembly.	-	5万公里/6月或随后桥换油，同时对轮端进行检查 50,000km /6 months or the rear axle oil change with inspection of wheel ends.	仅用于普通油润滑 For ordinary oil lubrication only

备注①:

Note①

其它未注明车型参阅城市公交车

Other models not indicated refer to city buses

备注②:

Note ②:

热带地区（≥40℃）：85W/140）

Tropical area (≥40℃) : 85W/140

常温地区（-15℃~40℃）：85W/90）

Normal temperature area (-15℃~40℃) : 85W/90

（-30℃~40℃）：80W/90）

(-30℃~40℃) : 80W/90)

极寒冷地区（< -30℃）: 75W/90）

Extremely cold area (< -30℃) : 75W/90)

备注③：指符合SAE J2360等级标准，优先按推荐的油品。如车辆销售地区在海外，不能选购推荐油品，请根据车辆所在地区选用推荐油品，或者选择经DANA全球认证过油品公司的润滑油，所有油品必须满足长效里程齿轮油的各项技术指标。

Note ③ : It means the oil that meets the SAE J2360 grade standard , and the recommended oil is preferred preferentially. If the vehicle sales area is overseas, you cannot choose recommend oil products, please choose the recommended oil according to the region where the vehicle is located, or choose the lubricating oil certified by DANA global oil company, all oil products must meet the technical indicators of long-acting mileage gear oil.

备注④: 免首保换油车桥指客户通过技术协议与DDAC确认的部分桥型。

Note ④: Oil change axle without first warranty refers to part of the axle type confirmed by the customer with DDAC through technical agreement.

6.3 润滑油品推荐 (Grease oil products are recommended)

名称 Name	质量等级 Quality grade	推荐厂家牌号 Recommend the manufacturer's brand
重负荷齿轮油 Heavy load gear oil	GL-5	东风商用车齿轮油 DFCV-G90 Dongfeng commercial vehicle gear oil DFCV-G90 东风嘉实多GL-5： 85W/90、85W/140 Dongfeng Castrol GL-5:85W/90, 85W/140 中石化长城GL-5：85W/90、85W/140 Sinopec Great Wall GL-5:85 W/90, 85W/140 中石油昆仑GL-5： 85W/90、85W/140 Petrochina Kunlun GL-5:85W/90, 85W/140 壳牌施倍力Spirax S2 A： 80W-90 80W-140 Shell Spirax S2 A: 80 w - 90-80 w - 140 福建莱克 GL-5： 85W/90、 85W/140 Fujian Lake GL-5:85W/90, 85W/140
高性能齿轮油 High performance gear oil	GL-5+	东风商用车齿轮油 DFCV-G100 Dongfeng commercial vehicle gear oil DFCV-G100 东风嘉实多GL-5+： 85W/90 Dongfeng Castrol GL-5+ : 85W/90 昆仑天威GL-5+： 85W-140 Kunlun Tianwei GL-5+ : 85W-140 壳牌施倍力Spirax S3 GX： 80W-90 Shell Spirax S3 GX: 80W-90
长效里程齿轮油 Long-term mileage Gear oil	SAE J2360	中石化长城超长寿命齿轮油SAE 80W-90、85W-140 Sinopec Great Wall long life gear oil SAE 80W-90, 85W-140 壳牌长效齿轮油LGO 80W-90 Shell long-acting gear oil LGO 80W-90

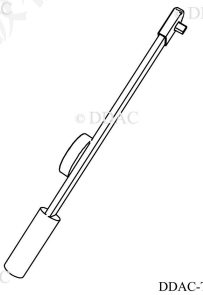
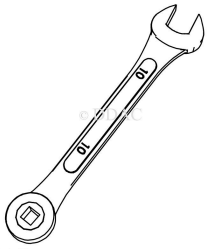
说明：润滑油品首选DDAC推荐厂家牌号使用，若使用推荐品牌之外的其他品牌油品时，油品性能指标必须满足车桥使用润滑油品技术要求。

Note: The lubricating oil of the manufacturer’s brand which is recommended by DDAC is used preferentially. If the lubricating oil of other brands except for the recommended brand is used, the performance indicators of the oil must be fit for the technical requirements of the lubricating oil used by the axle.

6.4 加注方法 (Filling method)

6.4.1 排放润滑油 (Discharge lubricating oil)

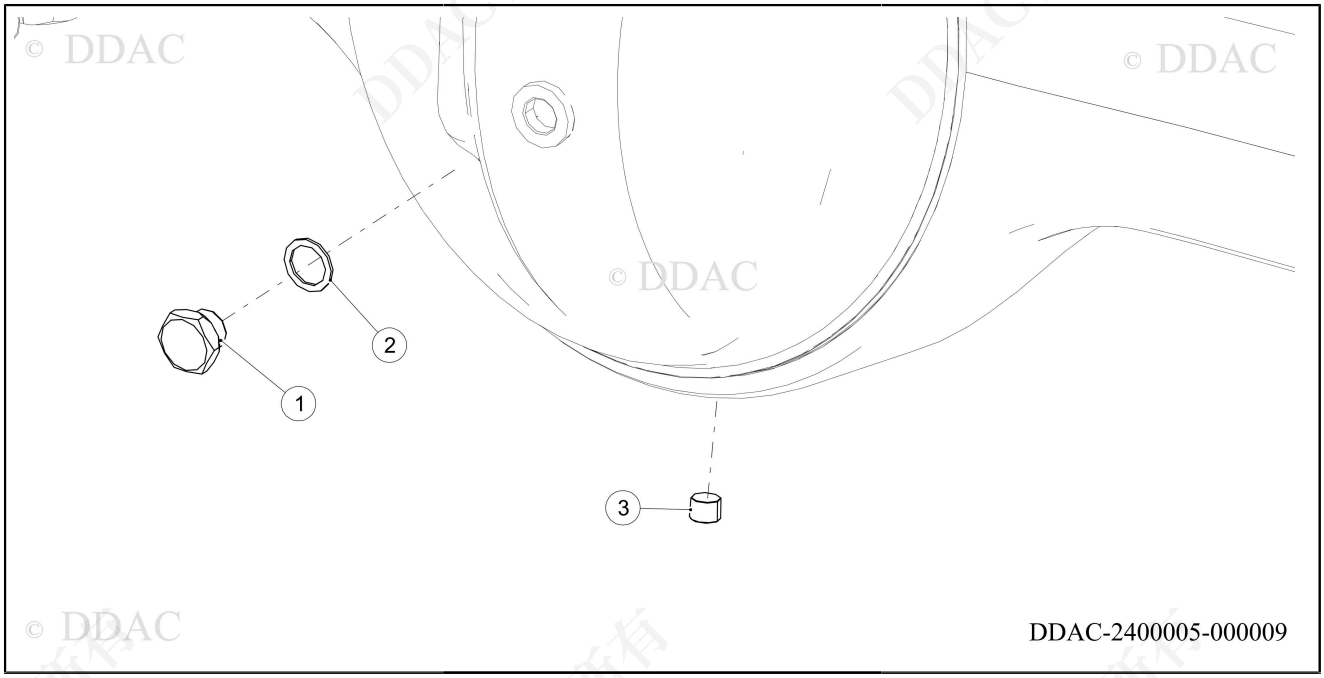
工具
Tool

序号 NO.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool Model Specifications	图示 Illustration
1	力矩扳手 Torque wrench	用于检查注油螺塞力矩 Used to check the torque value of oil filling screw	0~150 N.m / 5 N.m	 DDAC-T000003
2	外四方扳手 Outer square wrench	用于拆装放油螺塞 Used to disassemble and assemble the oil discharge screw plug	B=10	 DDAC-T000006

分解图
Breakdown drawing

1. 桥壳本体注放油塞位置图

1. Location diagram of oil injection and drain plug in axle housing body



DDAC-2400005-000009

1. 螺塞-油面孔 1. Screw plug assembly - Refueling hole	2. 密封垫圈-螺塞 2. Seal gasket - screw plug	3. 方槽锥形螺塞-放油孔 3. Square groove conical plug - oil drain hole

放油前准备
Prepare before draining oil

1. 准备容积大于 20 L 的敞口容器。

1. Prepare open containers with a volume greater than 20 L.

放油步骤
Oil drain steps

⚠ 警告:

放油前需注意桥总成高温，注意烫伤。

Pay attention to high temperature of Axle assembly and scald before oil discharge. Watch for burns.

防止油飞溅至容器外，造成环境污染。

Prevent oil from splashing outside the container and causing environmental pollution.

排放后的润滑油不得重新使用。

The discharged lubricating oil shall not be reused.

1. 桥总成的放油

1. Oil discharge of axle assembly

1) 在桥总成放油口正下方，放一个容积大于 20 L 的敞口容器，用 B=10 的外四方扳手取下放油塞，排净润滑油。

1) Place an open container with a volume of more than 20 L directly below the oil outlet of the axle assembly, remove the oil plug with an external square wrench of B=10, and drain the lubricating oil.

2) 清洁清理螺塞残胶，检查螺塞螺纹是否有损伤。

2) Clean up the residual glue of the screw plug and check whether there is damage to the screw thread.

3) 清理螺塞上杂质。

3) Clean the impurities on the screw plug.

4) 确认残油排尽。

4) Confirm that the residual oil is exhausted.

5) 将螺塞螺纹圆周上涂螺纹密封胶，等待五分钟。

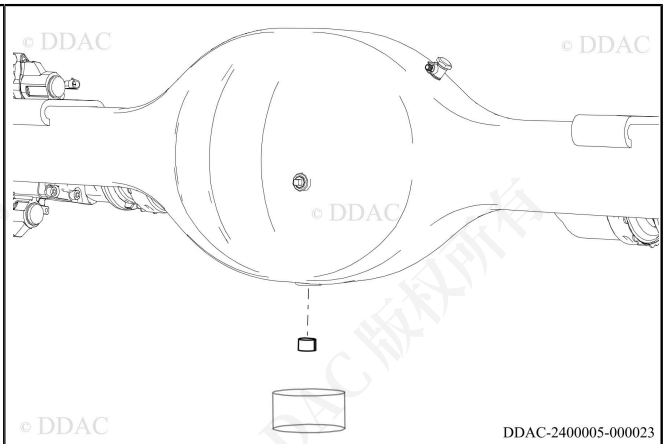
5) Apply thread sealant to the circumference of the plug thread and wait for five minutes.

6) 用手将螺塞装上，再用扳手旋进，用力矩扳手拧紧螺塞，检测力矩要求至 60~80 N.m。

6) Install the screw plug by hand, screw in with a wrench, and tighten with a torque wrench.Screw plug, measuring torque required to 60~80 N.m.

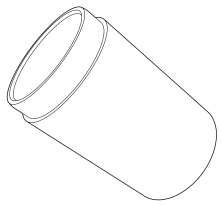
7) 用擦布擦净放油口周边。

7) Clean the area around the oil drain with a wiping cloth.



6.4.2 加注润滑油 (Filling lubricating oil)

工具
Tool

序号 NO.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool Model Specifications	图示 Illustration
1	力矩扳手 Torque wrench	用于检查注油螺塞力矩 Used to check the torque value of oil filling screw	0~150 N.m / 5 N.m	
2	套筒 The sleeve	用于拆装放油螺塞 Used to disassemble and assemble the oil discharge screw plug	S=34	

拆卸注油螺塞
Remove oil filling screw plug

⚠ 警告:

不得添加再生润滑油油或回用润滑油。

Do not to add recycled lubricating oil or recycled lubricating oil.

按规定的油量加油，油量过多会造成减速器总成或轮边减速器总成发热，过少会造成零件早期失效。

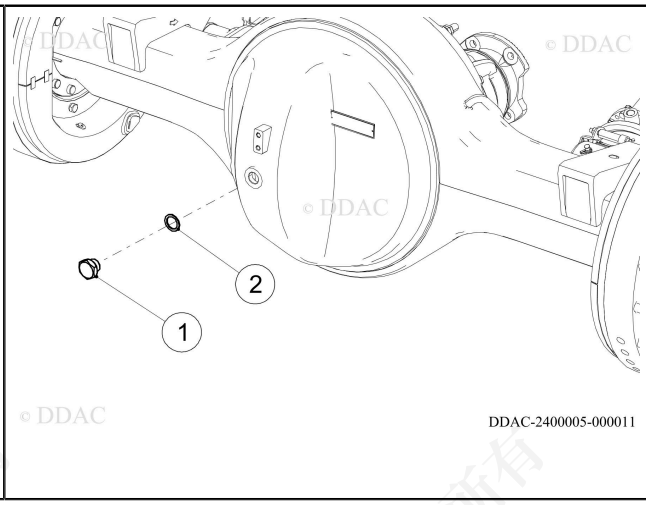
Add oil according to the specified amount of oil, too much oil will cause the reducer assembly or wheel reducer assembly heat, too little oil will cause early failure of parts.

⚠ 注意:

螺塞中间有磁铁，将磁铁上吸附的杂质清理干净，再装回螺塞上。

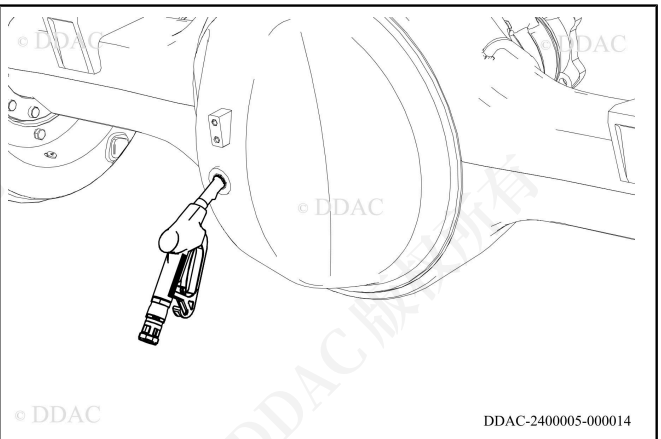
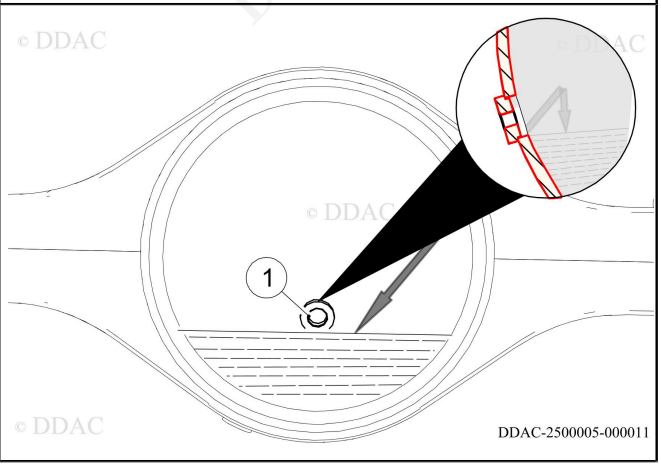
There is a magnet in the middle of the screw plug. Clean up the impurities adsorbed on the magnet and then put them back on the screw plug.

1. 用 S=34 扳手松开注油塞。
1. Loosen the oil filling plug using the S=34 wrench.
2. 拧下注油塞（1）与密封垫片（2）。
2. Screw the oil plug and sealing gasket.
3. 清洁清理油面塞，检查螺纹是否有损伤。
3. Clean the oil plug and check whether the thread is damaged.
4. 清理螺塞上杂质。
4. Clean the impurities on the screw plug.
5. 检查密封垫片是否变形，开裂。
5. Check whether the sealing gasket is deformed or cracked.
6. 确认润滑油牌号是否正确。
6. Confirm whether the lubricating oil brand is correct.



桥总成加油

Fuel the Axle assembly

1. 加油壶嘴对准油口，按量加注润滑油。 1. Align the spout of the oil spout with the oil spout and add lubricating oil according to the amount.	
2. 无法定量加注量，将油面加至与螺孔下沿平齐。 2. When quantitative filling is not possible, fill the oil level to the lower edge of the screw hole. 3. 将密封垫片套在螺塞上。 3. Cover the sealing gasket on the screw plug. 4. 将螺塞拧进桥壳上的油面孔。 4. Screw the screw plug into the oil face on the axle housing.	

第三章 车桥的维修（Chapter3 Repairs of Axle）

1 常见故障与排除（Common faults and troubleshooting）

故障表现 The fault performance	原因分析 Analysis of causes	排除方法 Method of exclusion
传动声音异常 Transmission sound abnormal	主被动齿轮打齿 Active and passive gear tooth beating	更换主被动齿轮或减速器总成 Replace the main and passive gear or reducer assembly
	主被动齿轮齿面磨损、擦伤 Active and passive gear tooth surface wear and abrasion	更换主被动齿轮或减速器总成 Replace the main and passive gear or reducer assembly
	齿轮油不合格 Gear oil is not qualified	更换合格油品 Replace qualified oil
	差速器齿轮间隙过大 Differential gear clearance is too large	更换调整垫片，调整间隙至合格范围 Replace the adjusting gasket and adjust the clearance to the acceptable range
	主被动齿轮齿侧齿隙过大 The clearence between active and passive bevel gears is too large	调整齿侧间隙至合格范围 Adjust the backlash in circular tooth to the acceptable range
	主动齿轮轴承预紧力过小 The preload force of drive gear bearing is too small	调整预紧力至合格范围 Adjust the preload to the acceptable range
	半轴齿轮、行星齿轮、止推垫片、销轴等有磨损或损伤。 Wear or damage of axle shaft gear, planetary gear, cross shaft, thrust gasket, etc	更换故障零件 Correct or replace faulty parts
	齿轮油加注量不足 Gear oil filling amount is insufficient	加足量齿轮油 Add plenty of gear oil
	主减内轴承损坏或磨损 The bearing in the main reducer is damaged or worn	更换损坏的轴承 Replace the damaged bearings
	传动轴夹角影响 The influence of the Angle between the transmission shaft	调整传动轴夹角至合理范围 Adjust the Angle of the drive shaft to a reasonable range
润滑油泄漏 Lubricating oil leakage	主锥油封磨损或损伤 Oil seal for driving bevel gear worn or damaged	更换主锥油封 Replace the oil seal for driving bevel gear
	减速器与桥壳结合面紧固螺栓松（扭矩衰减）或密封胶损坏 Loose fastening bolts (torque attenuation) or damaged sealant on joint surface of reducer and axle housing	按规定力矩拧紧螺栓，重涂密封胶 Tighten the bolts according to the specified torque and reapply the sealant
	放油塞松动或衬垫有损伤 Drain plug is loose or gasket has damage	按规定力矩拧紧螺塞，或更换衬垫 Tighten the plug according to the specified torque, or replace the gasket

故障表现 The fault performance	原因分析 Analysis of causes	排除方法 Method of exclusion
	由于超载使桥壳变形 The axle housing is deformed due to overload	校正或更换桥壳 Correct or replace the axle housing
	通气塞被堵或损伤 Blocked or damaged the air vent plug	清洁或更换通气塞 Clean or replace the air vent plug
轮端漏油 There is oil leakage at the wheel end	半轴紧固螺栓松动 The side shaft fastening bolts are made loose	按规定力矩拧紧螺栓 Tighten the bolts with the specified torque
	密封胶损坏失效,油封失效 Sealant damage and failure, oil seal is failure	重涂密封胶，更换轮毂内油封 Reapply the sealant and replace the oil seal in the hub
制动噪音或震动 Brake noise or vibration	制动块弧形弹簧是否产生永久变形 Whether the arc springs of the brake slipper component produce permanent deformation	如产生永久变形，更换制动块弧形弹簧 For permanent deformation, replace the brake slipper arc spring
	制动块能否在托架上自由滑动 Can the brake slipper slide freely on the bracket	拆下制动块压板、制动块总成，清洁制动块压板、制动块总成和托架 Remove brake block plate, brake slipper assembly and clean brake block plate, brake slipper assembly and bracket
	制动盘的最大跳动是否符合要求 Is the maximum beating of the brake disc satisfactory	如不符合要求，更换制动盘或修正 If not compliant, replace the brake disc or correct it
	制动盘上是否存在裂纹或沟槽 Any cracks or grooves on the brake disc	如不符合要求更换制动盘 Replace the brake disc if not compliant
	盘式制动器及其零件是否按规定要求固定在车桥上 Whether the disc brake and its parts are fixed on the axle as specified	检查所有紧固件，确保紧固牢靠 Check all fasteners to ensure they are secured
无制动或制动力矩不足 No braking or insufficient braking moment	制动块总成的摩擦材料是否磨光 Whether the friction material of the slipper block assembly is polished	如总厚度≤12mm，必须更换制动块 If the total thickness is ≤12mm, the brake slipper must be replaced
	制动块和制动盘的间隙是否正常 Is the gap between the brake slipper and the brake disc is normal	正常间隙0.7~1.2mm，如不符合，检查自调机构工作情况 Normal clearance 0.7~1.2mm, if not consistent, check the work of the self-adjustment mechanism
	制动盘是否良好 Whether the brake disc work well	检查，如不符合更换制动盘 Check that if the brake disc is not replaced
	制动气室的气压是否≥0.6MPa（用气压表测量气室的气压) Whether the air pressure of the brake air chamber is 0.6MPa(Measure the air pressure in the air chamber with a barometer)	根据车辆制造商的要求实施补救 Remremedy as required by the vehicle manufacturer
	制动气室的放水塞是否去掉 Whether the water discharge plug of the brake air chamber is removed	去掉制动气室的放水塞 Remove the water release plug from the brake air chamber

2 桥总成系统 (Axle Assembly System)

安全注意事项

Safety Precautions

1. 操作人员应提前熟悉此维修内容，严禁不熟悉此维修内容的人员操作。

1. Operators should be familiar with the maintenance content in advance, and personnel unfamiliar with the maintenance content are forbidden to operate.

2. 维修作业应遵守本内容提及的警告与注意事项，避免造成零部件损坏或人身伤害。

2. Maintenance operations shall comply with the warnings and precautions mentioned herein to avoid damage to parts or personal injury.

3. 进行车桥拆卸时，请始终佩戴护目镜，防止对眼睛造成伤害。

3. When removing the axle, always wear goggles to prevent eye damage.

4. 车辆应停放在水平地面上，在轮胎下放置三角木防止车辆移动，用安全架支撑车辆，勿在仅有千斤顶支撑的车辆下作业，千斤顶可能打滑、翻倒并造成人身伤害和组件损坏。

4. The vehicle should be parked on the horizontal ground, placed triangle wood under the tire to prevent the vehicle from moving, with a safety frame to support the vehicle, do not operate under the vehicle supported only by the jack, the jack may slip, overturn and cause serious personal injury and component damage.

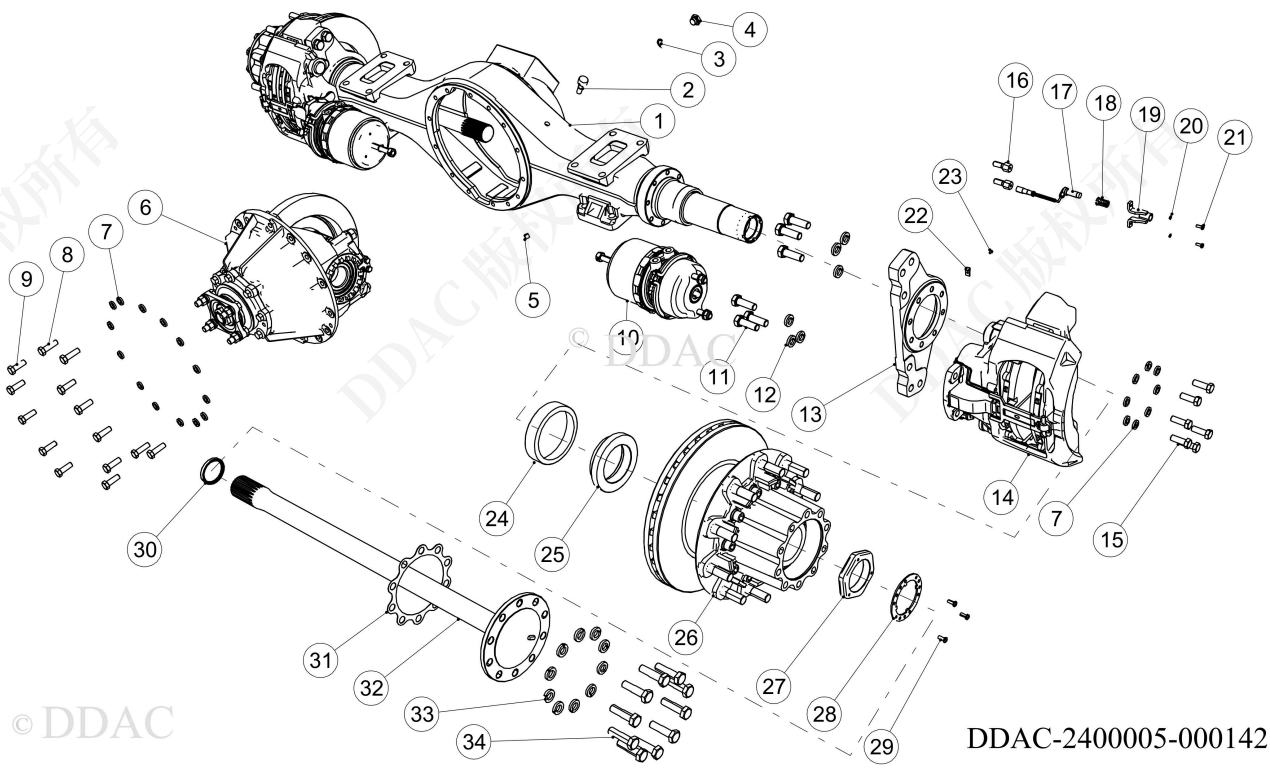
通用工具

Universal tool

序号 NO.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool model specifications	图示 Illustration
1	力矩扳手 Torque wrench	用于检查安装力矩 Used to check the mounting torque of the adjust screw	0~500N.m	

分解图

Breakdown drawing



1. 桥壳总成 1. Axle Housing Assembly	2. 通气塞总成 2. Air Breather Plug Assembly	3. 垫圈 3. Washer
4. 螺塞-油面孔 4. Screw Plug	5. 方槽锥形螺塞 5. Screw Plug	6. 后桥主减速器总成 6. Final Drive Assembly
7. 重型弹簧垫圈 7. Spring Washer	8. 六角头螺栓 8. Bolt	9. 六角头螺栓 9. Bolt
10. 弹簧制动气室总成 10. Chamber Assembly	11. 六角头螺栓 11. Bolt	12. 重型弹簧垫圈 12. Spring Washer
13. 制动底板 13. Brake Plate	14. 盘式制动器总成 14. Disc Brake Assy	15. 六角头螺栓 15. Bolt
16. ABS传感器总成 16. Sensor Assembly	17. 衬套-ABS孔 17. Bushing	18. ABS传感器支架 18. ABS Sensor Bracket
19. 六角头螺栓 19. Bolt	20. 标准型弹簧垫圈 20. Spring Washer	21. 夹片-固定传感器导线 21. Clip
22. 六角头螺栓 22. Bolt	23. 内圈 23. Inner Ring	24. 轮毂油封总成 24. Oil Seal
25. 后轮毂及制动盘总成 25. Hub & Brake Disc Assembly	26. 调整螺母-轮毂轴承 26. Adjusting Nut	27. 锁紧垫圈-轮毂轴承螺母 27. Locking Washer
28. 六角法兰面螺栓 28. Bolt	29. 半轴油封 29. Oil Seal	30. 衬垫-半轴 30. Gasket
31. 半轴 31. Axle Shaft	32. 重型弹簧垫圈 32. Spring Washer	33. 后桥半轴螺栓 33. Bolt

整车状态下，桥总成的拆卸前准备

Preparation before disassembly

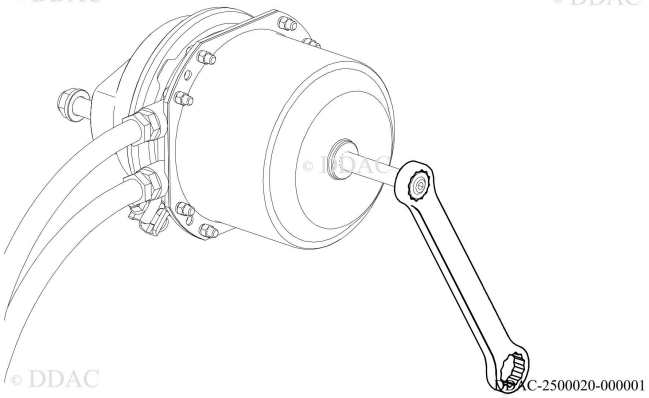
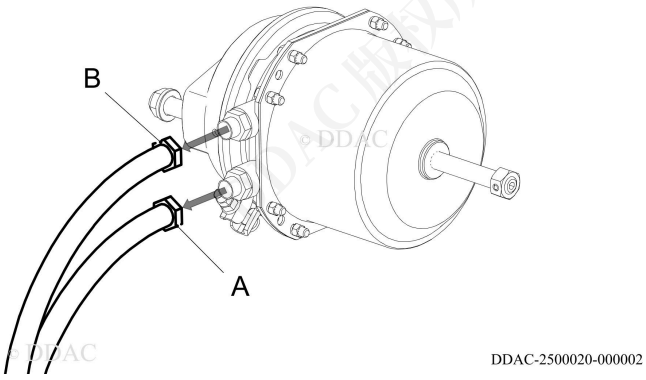
⚠ **注意:**

在拆解气管之前应将气管中残余的空气排尽。

Exhaust the remaining air in the trachea before disassembling it.

拆下气管时做好标识，与气室接口位置对应。

When the trachea is removed, make a mark corresponding to the interface position of the air chamber.

1. 放出桥总成润滑油参阅：排放齿轮油。 1. Discharge lubricating oil from axle assembly. 2. 用扁嘴钳剪断捆扎在桥上的有 ABS 传感器连接线扎带，磨损报警线连接线扎带，差速锁传感器连接线束线扎带，脱开与整车连接的线束拔插头处的连接。 2. Use flat nose pliers to cut the ABS sensor cable ties, wear alarm cable ties, differential lock sensor cable harness cable ties tied on the axle, and unplug the cable harness plugs connected to the vehicle.	
3. 在未驻车制动情况下，完全旋出弹簧制动气室上的螺栓（1）。 3. Disconnect the connection between the gas pipe and the air chamber from the gas pipe joint.	 DDAC-2500020-000001
4. 拉手刹，从制动气室气管接头（A、B）处脱开气管与气室连接，并做好气管标识。 4. Disconnect the connection between the gas pipe and the differential lock from the gas pipe joint of the wheel differential lock. 5. 从轮差锁气管接头处脱开气管与差速锁的连接。 5. In the case of no parking brake, completely unscrew the bolt on the spring brake air chamber.	 DDAC-2500020-000002

整车状态下，桥总成的拆卸步骤

⚠ **警告:**

一般维修作业中如果不涉及桥总成或桥壳更换，无需执行桥与车辆的分离。

General maintenance operations that do not involve replacement of the axle assembly or axle housing do not require separation of the axle from the vehicle.

需确认千斤顶状态完好，支撑位置可靠。

Ensure that the jack is in good condition and the support position is reliable.

车轮很重，拆卸时小心伤人。

The wheels are heavy, so be careful of injuries when removing them.

桥总成拆卸需采用专用工具，拆卸时小心伤人。

Special tools should be used to disassemble the axle assembly. Be careful to hurt people when disassembling.

1. 拆卸车轮

1. Remove the wheel

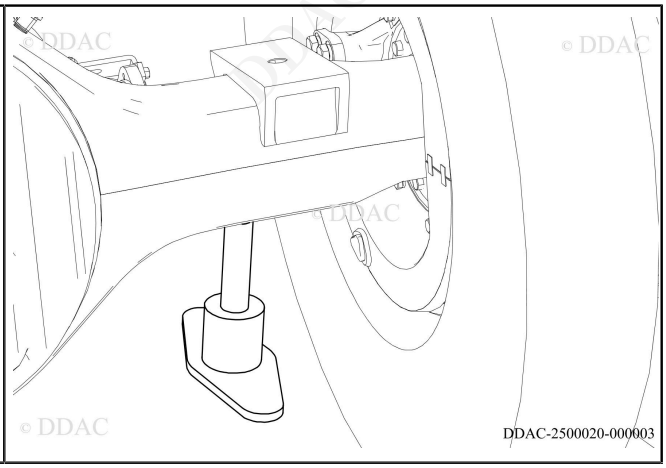
⚠ 注意:

拆车轮总成时不要损伤车轮螺栓。

Do not damage the wheel bolts when removing the wheel assembly.

车轮和轮毂通过匹配止口而对中，在拆卸和安装时不要用力移动和扭转它们。

The wheel and hub are aligned by matching stops and do not move or twist them forcefully during removal and installation.

1）松开车轮螺母。 1) Loosen the wheel nut. 2）在后桥下推力杆座下方顶起车辆，使后桥车轮刚好离地，装上合适高度的安全支架。 2) Lift the vehicle under the rear axle stinger seat, so that the rear axle wheel is just off the ground, and install the safety bracket with appropriate height. 3）取下车轮螺母，拉出左右车轮总成。 3) Remove the wheel nut and pull out the left and right wheel assemblies.	

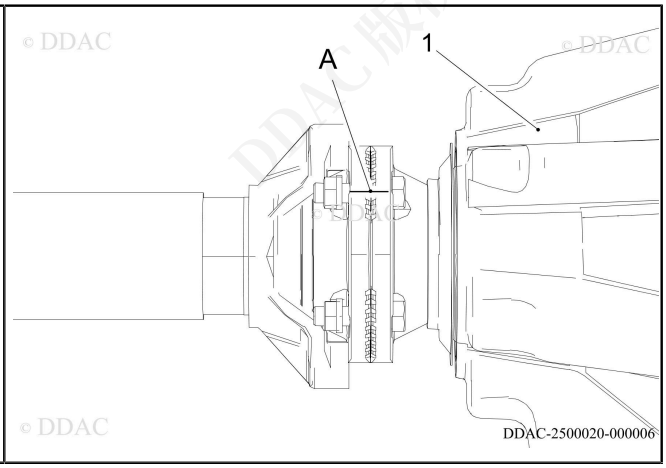
2. 拆传动轴

2. Remove transmission shaft

⚠ 警告:

传动轴很重，脱开连接时防止砸伤。

The drive shaft is very heavy to prevent injury when disconnecting.

1）脱开主减速器突缘与传动轴的连接，在传动轴的空花键位用油漆笔等工具刻下匹配标记，在配对法兰上刻下匹配标记，然后从减速器上分离传动轴。 1) Disconnect the connection between the spur edge of the main reducer and the drive shaft, use the paint pen and other tools to mark the matching mark on the empty spline position of the drive shaft, and mark the matching mark on the matching flange, and then separate the drive shaft from the reducer.	

3. 拆卸钢板弹簧 U 型螺栓。

3. Remove the leaf spring U-bolt.

4. 在桥总成正下方，放置平移小车。

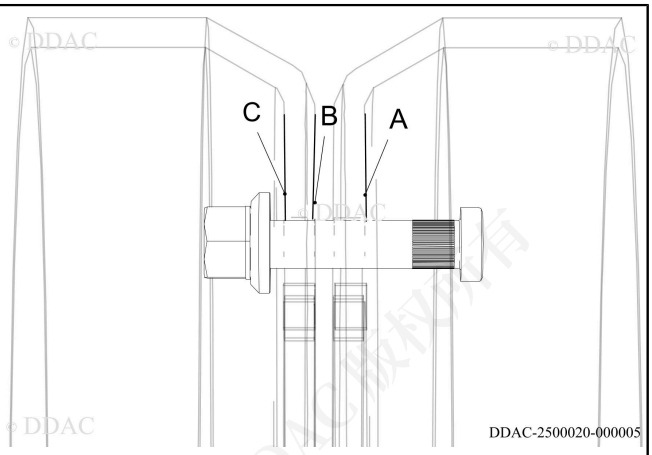
4. Place the trolley below the axle assembly directly.

5. 松开千斤顶，将车桥平稳的放到平移小车上，拉出车桥总成 。

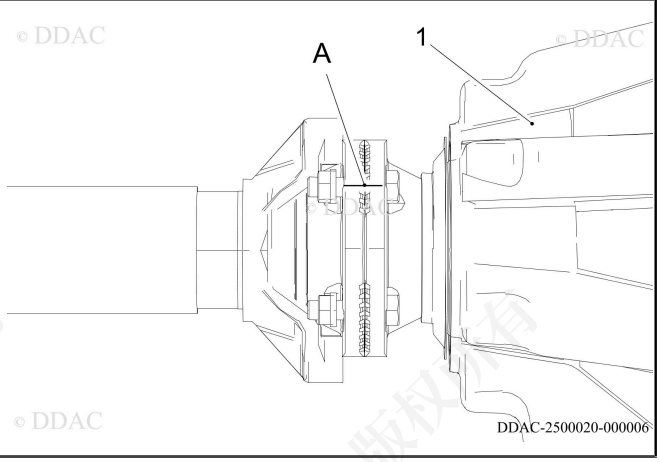
5. Release the jack, put the axle on the trolley smoothly, and pull out the axle assembly.

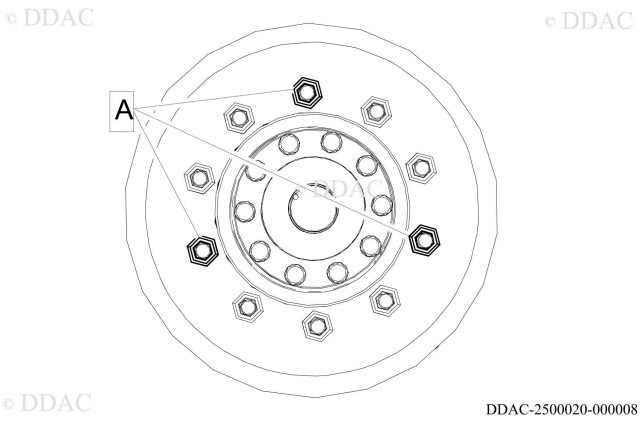
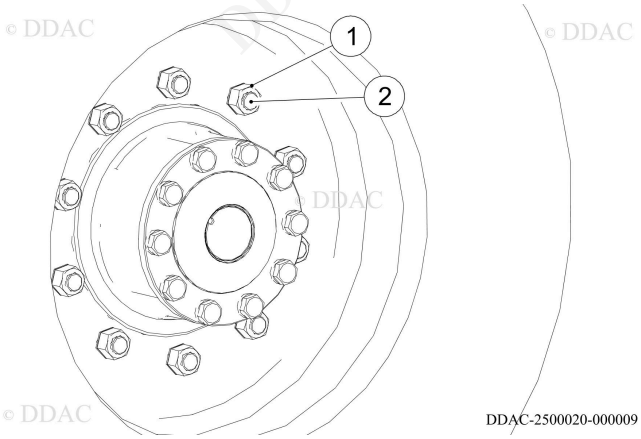
桥总成安装到整车前准备

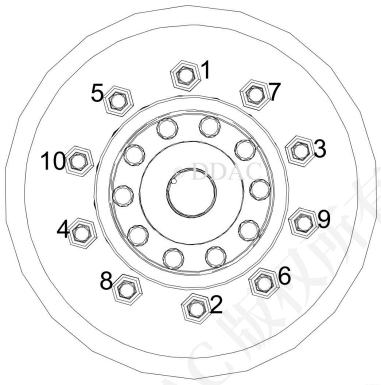
Preparations for Installation

1. 在安装轮胎之前，仔细清洁轮毂螺栓、车轮螺母螺纹、轮毂与轮辐、内外车轮、车轮与车轮螺母接触区域（A、B、C）。 1. Before installing the tire, carefully clean the hub bolts, wheel nut threads, hub and spoke, inner and outer wheels, wheel and wheel nut contact areas (A, B, C). **注：** **Note:** **如果用户在安装区域（A、B）上涂抹了油漆，彻底清除油漆和铁锈。** **If the user has applied paint to the installation areas (A and B), thoroughly remove paint and rust.** **安装备胎时，如果安装区域（A、B）已经喷涂防锈漆，彻底清除安装区域的油漆。** **When installing the spare tire, if the installation area (A and B) has been sprayed with anti-rust paint, thoroughly remove the paint from the installation area.**	

桥总成安装到整车安装步骤
Installation steps

1. 将后桥总成拉到位，将钢板弹簧装到后桥总成钢板弹簧导向座中。 1. Pull the rear axle assembly into position and install the leaf spring into the rear axle assembly leaf spring guide seat. 2. 装钢板弹簧U型连接螺栓。 2. Install U-shaped connecting bolts of leaf spring. 3. 安装左右 ABS 传感器连接线。 3. Install ABS sensor cables on the left and right sides. 4. 装后桥弹簧制动气室连接管路。 4. Install pipes to be connection with the rear axle spring brake air chamber. ⚠ **注意:** **在拆解气管之前应将气管中残余的空气排尽。** **Exhaust the remaining air in the trachea before disassembling it.** **拆下气管时做好标识，与气室接口位置对应。** **When the trachea is removed, make a mark corresponding to the interface position of the air chamber.**	
5. 按标记连接传动轴与减总突缘。 5. Connect the drive shaft and the total reduction edge according to the mark. 图注： Figure note: 1 -主减速器 1 - Main reducer A -匹配标记 A -matched marker	

6. 装中后桥挡泥板总成及车架各连接附件。 6. Install fender assembly and frame connection accessories.	
7. 安装内车轮 7. Install the inner wheel **⚠ 注意:** **安装轮胎总成时，注意不要损坏轮毂螺栓螺纹。** **When installing the tire assembly, be careful not to damage the hub bolt threads.** 1）固定轮胎总成，使轮毂螺栓处于车轮螺栓孔的中心，并确保内车轮处于螺栓孔的中心。 1) Secure the tire assembly so that the hub bolt is in the center of the wheel bolt hole and ensure that the inner wheel is in the center of the bolt hole.	
8. 安装外车轮 8. Install the outer wheel **⚠ 注意:** **重新安装车轮后行驶 50~100 公里左右重新对车轮螺母检查复拧。** **After reinstalling the wheel, drive about 50~100 kilometers, check the wheel nut again and re-twist it.** **注：** **Note:** **在车轮螺母的螺纹部分涂抹两滴齿轮油，用干净的抹布擦除多余的油。** **Apply two drops of gear oil to the threaded part of the wheel nut and wipe off excess oil with a clean rag.** 1）放置车轮总成，使轮毂螺栓与车轮孔的中心接触在3处（A）稍微拧紧螺母，并确保车轮在螺栓孔中心。 1) Place the wheel assembly so that the hub bolt contacts the center of the wheel hole at 3 (A) and tighten the nut slightly, making sure that the wheel is centered in the bolt hole.	 DDAC-2500020-000008
2）稍微拧紧车轮螺母（1）直到它接触车轮后（力矩：大约 100 N.m），按图中所示顺序用规定的力矩拧紧螺母（1）。 2) Tighten the wheel nuts slightly (1) Until it touches the wheel (torque value: about 100N.m), tighten the nut (1) with the specified torque in the order shown in the figure. 图注： Figure note: 1 -螺母 1 - nut 2 -螺栓 2 - bolt	 DDAC-2500020-000009

3）用规定的力矩拧紧车轮螺母，按图中所示顺序分几次拧紧车轮螺母，并最后用规定的力矩拧紧。 3) Tighten the wheel nut with the specified torque, tighten the wheel nut several times according to the order shown in the figure, and finally tighten the wheel nut with the specified torque.	 DDAC-2500020-000010
4）将弹簧制动气室螺栓回位，拿走前轮前后三角木。 4) Return the spring brake air chamber bolt to its position and remove the front and rear triangular wood of the front wheel.	
9. 移走安全支架，慢慢降下千斤顶。 9. Remove the safety bracket and slowly lower the jack.	

最后步骤

The final step

1. 检查添加润滑油，参阅加注润滑油。

1. Check to add lubricating oil, refer to filling lubricating oil.

2. 清理现场。

2. Clean up.

3 半轴 (Axle Shaft)

安全注意事项

Safety Precautions

1. 操作人员应提前熟悉此维修内容，严禁不熟悉此维修内容的人员操作。

1. The operator should be familiar with the maintenance content in advance, and it is strictly forbidden to operate the personnel who are not familiar with the maintenance content.

2. 维修作业前中应遵守本内容提及的警告与注意事项，避免造成零部件损坏或人身伤害。

2. Before maintenance, the warnings and precautions mentioned in this content shall be observed to avoid parts damage or personal injury.

3. 进行车辆维护或保养时，请始终佩戴护目镜，防止对眼睛造成伤害。

3. When performing vehicle maintenance or maintenance, please always wear safety goggles to prevent damage to eyes.

4. 车辆应停放在水平地面上，在轮胎下放置三角木防止车辆移动，用安全架支撑车辆，勿在仅有千斤顶支撑的车辆下作业，千斤顶可能打滑、翻倒并造成严重的人身伤害和组件损坏。

4. The vehicle should be parked on the horizontal ground, placed triangle wood under the tire to prevent the vehicle from moving, with a safety frame to support the vehicle, do not operate under the vehicle supported only by the jack, the jack may slip, overturn and cause serious personal injury and component damage.

5. 在装配与拆除过程中应使用铜锤或合成材料制成的短锤，勿用钢锤直接敲打钢制部件，脱落的零件碎片可能造成人身伤害与部件损坏。所使用的其他工具需保证完好，损坏的工具可能导致作业质量不良或引起人员、零件损伤。

5.In the process of assembly and disassembly, Should be use a copper hammer or a short hammer made of synthetic materials. Do not hit steel parts directly with a steel hammer, as the broken parts may cause personal injury and component damage. Ensure that other tools are in good condition. Damaged tools may cause poor operation quality or damage to personnel and parts.

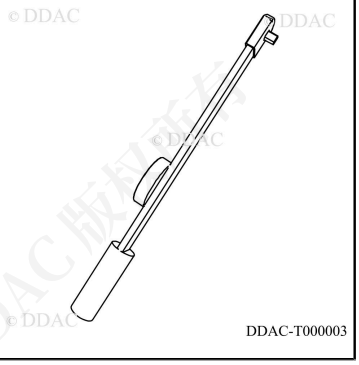
6. 溶剂清洗剂易燃、有毒，并可引起火灾，典型的溶剂清洗剂有四氯化碳、乳液型以及石油基型，使用溶剂清洗剂之前，仔细阅读制造商说明并严格遵守，同时也应遵循如下步骤：

6. Solvent cleaning agents are flammable, toxic, and can cause fires. Typical solvent cleaning agents include carbon tetrachloride, emulsion type, and petroleum based type. Before using solvent cleaning agents, carefully read the manufacturer's instructions and strictly follow them, and also follow the following steps:

- 着防护服，保护皮肤。
- Wear protective clothing to protect your skin.
- 在通风良好的环境下作业。
- Operate in a well-ventilated environment.
- 不能使用汽油或含有汽油的溶剂。汽油会发生爆炸。
- Do not use gasoline or solvents containing gasoline. The gas oil will explode.
- 务必正确使用热溶液槽和各种碱性溶液。使用前应仔细阅读制造商说明并严格遵守。
- Be sure to use hot solution tanks and alkaline solutions correctly. Read the manufacturer's instructions carefully and strictly follow them before use.
- 清洗磨削或抛光的零件不得使用热溶液槽、水及各种碱性溶液，否则会损坏零件。
- Do not use hot solution tanks, water and various alkaline solutions when cleaning grinding or polishing parts, otherwise the parts will be damaged.

通用工具

Special tool

序号 NO.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool model specifications	图示 Illustration
1	扭矩扳手 Axle shaft oil seal indenter	用于检测安装螺栓扭矩 Used to install axle shaft oil seal	0~300 N.m	 DDAC-T000003

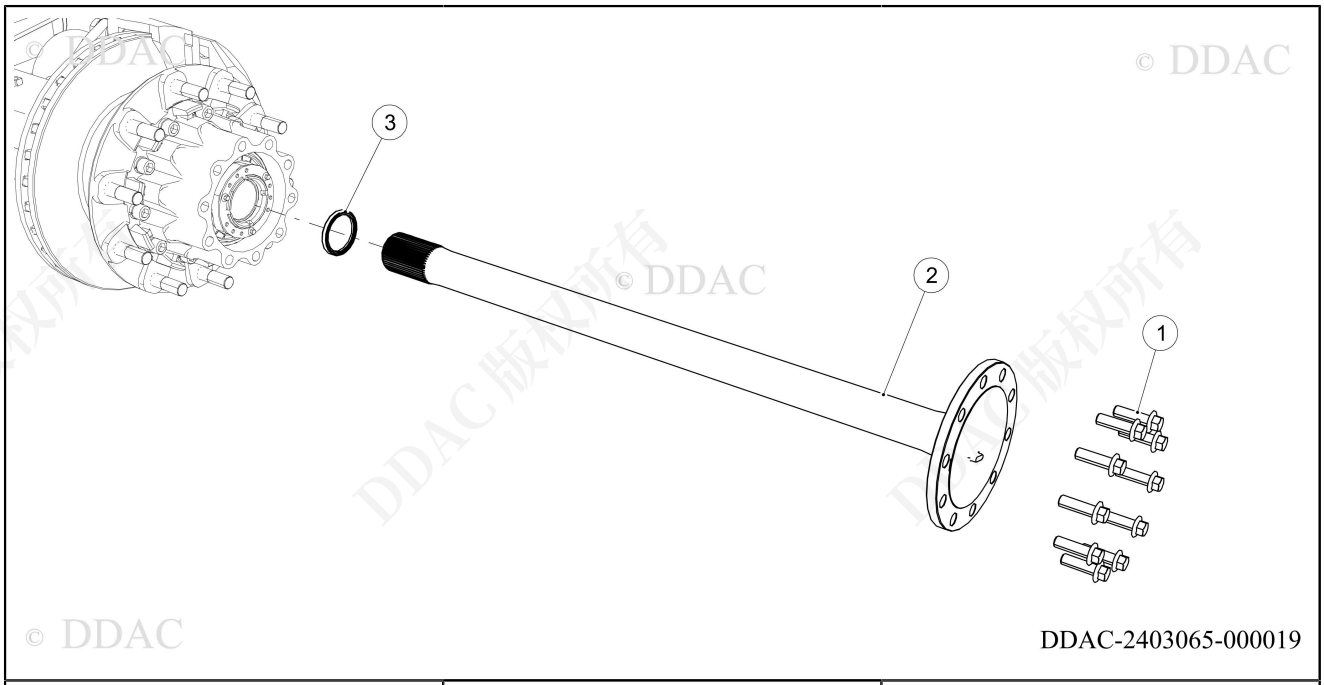
化学品
Chemical product

序号 NO.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	润滑油 Lubricating oil	安装齿轮润滑 Used to install the end cover	适量 Right amount	与减总用油一致 In accordance with oil for gear reducer assembly
2	硅硐密封胶 Silicone sealant	用于端盖安装 Used to install the end cover	适量 Right amount	HZ-01

易耗品
Consumable goods

序号 NO.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	清洗剂 Cleaning agent	装配前对零件清洗 Clean the parts before assembly	适量 Right amount	硼酸或煤油或柴油 Boric acid or kerosene or diesel oil

分解图
Breakdown drawing



1. 后桥半轴螺栓 1. Axle shaft bolt	2. 半轴 2. Axle shaft	3. 半轴油封 3. Oil seal

拆卸步骤
Disassembly steps

1. 拆卸半轴

1. Remove axle shaft

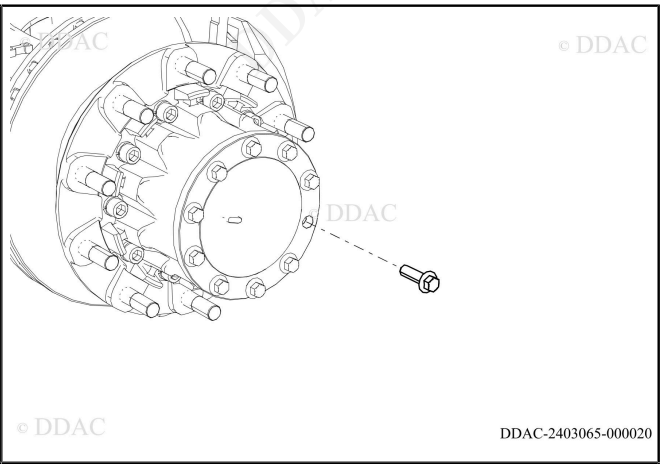
⚠ 注意:

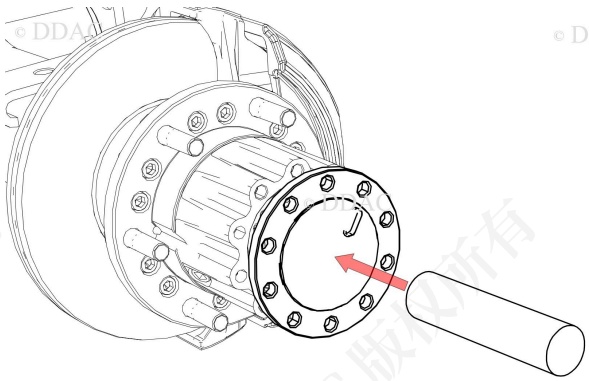
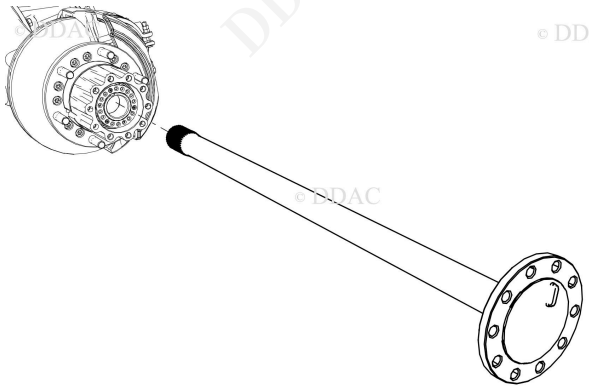
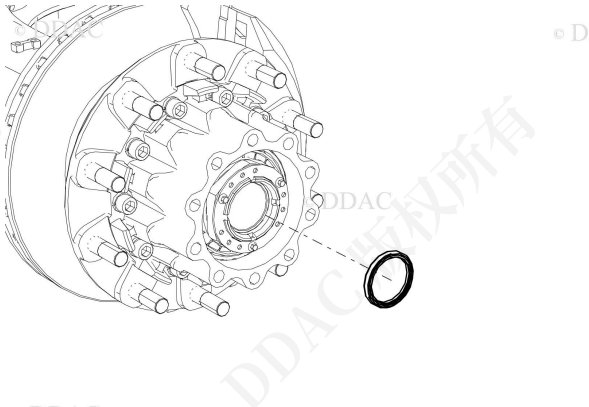
拆卸半轴时，注意不要损坏半轴螺栓的螺纹。

When removing the axle shaft, be careful not to damage the thread of the half-shaft bolt.

半轴拆卸后需妥善保存，避免损伤、磕碰半轴花键。

The axle haft should be properly stored after disassembly to avoid damage and knock against the axle shaft spline.

1）拆卸半轴螺栓。 1）Remove the axle shaft bolt.	

2）轻轻敲击半轴法兰外圆端面，使半轴与轮毂脱开。 2) Gently knock the outer circular end surface of the axle shaft flange to detach the axle shaft from the hub.	 DDAC-2403065-000039
3）抽出半轴。 3) Pull out the axle shaft.	 DDAC-2403065-000040
⚠ **注意:** **取出的油封集中交由有资质的机构处置，不可随意抛弃。** **The removed oil seal shall be centrally handed over to a qualified institution for disposal and shall not be discarded at will.** 4）撬出半轴密封。 4) Pry out the semi-shaft seal.	 DDAC-2403065-000023

安装前准备
Preparations for Installation

⚠ **注意:**

清理残胶时不要刮伤安装面。

Do not scratch the mounting surface when cleaning the residual glue.

残胶不要随意丢弃，可能造成环境污染。

Do not discard the residual glue at will, which may cause environmental pollution.

1. 彻底清理半轴与轮毂贴合面的密封胶，除去二者贴合表面上的油脂并清洁，然后彻底除去机油、水和其它污垢。

1. Thoroughly clean the sealant on the fitting surface of the axle shaft and the hub, remove the grease on the surface and clean the two surface , and then thoroughly remove the oil, water and other oil dirt.

2. 清理半轴螺栓孔及螺栓上的残胶。

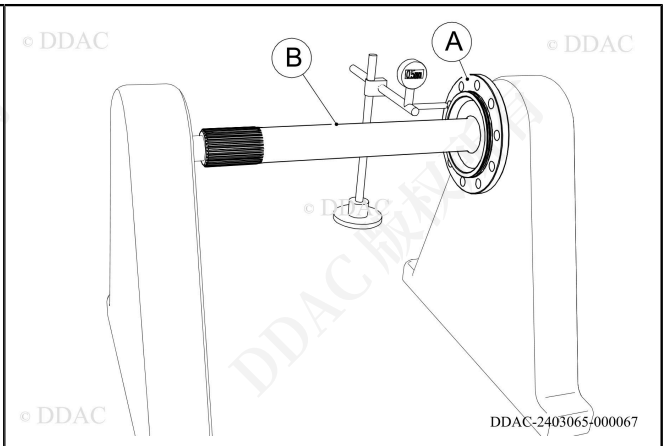
2. Clean the axle shaft bolt hole and the residual glue on the bolt.

3. 检查半轴螺栓，螺纹是否有剥落、螺栓是否有弯曲变形。

3. Check the axle shaft bolts, whether the threads are peeled, and whether the bolts have bending deformation.

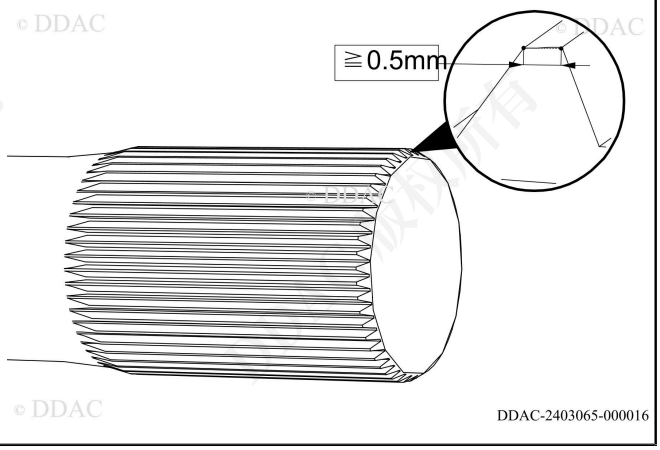
4. 检查半轴是跳动量是否合格。

4. Check whether the jerk value of axle shaft is qualified.

1）半轴杆部变形量的检查 1) Check the deformation of the axle shaft rod 要点：测量半轴杆部中间点圆周跳动量（图示 A 点处） Key points: Measure the circumference jerk value of the middle point of the axle shaft rod (shown at point A) 维修标准：小于 2.5 mm，修理极限：3.5 mm Maintenance standard: less than 2.5mm, repair limit: 3.5mm 2）半轴法兰端面变形量的检查 2) Check the deformation of the axle shaft flange end surface 要点：测量半轴法兰端面直径靠外边缘处跳动量（图示 B 点处） Key points: Measure the jerk value at the outer edge of the axle shaft flange end diameter (FIG Show point B) 维修标准：小于 0.5 mm，修理极限：0.8 mm Maintenance standard: less than 0.5mm, repair limit: 0.8mm	

5. 检查半轴花键

5.Check the axle shaft spline

1）检查花键部位是否有扭曲变形。 1)Check whether there is distortion in the spline part.	
2）检查花键部位是否有压溃变形。 2)Check whether there is crushing deformation at the spline part. **注：** **Note:** **测量花键齿顶宽A，不小于0.5mm，小于0.5mm更换处理。** **Measure the top width of spline teeth, not less than 0.5 mm. If it is less than 0.5mm, replace it.**	

安装步骤

Installation steps

1. 安装半轴

1. Install the axle shaft

⚠ 注意:

半轴装配时，不可使劲猛推，勿大力敲击，防止破坏半轴齿轮花键。

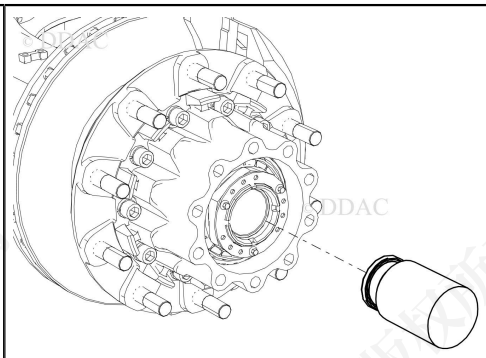
When assembling the axle shaft, do not push hard or knock vigorously to prevent damage to the gear spline of the axlt shaft.

半轴装配时，半轴花键不要接触油封唇口，防止半轴油封唇口损伤。

When assembling the axle shaft, the axle shaft spline should not touch the lip of the oil seal to prevent damage to the lip of the axle shaft oil seal.

1）用工具压装半轴油封。

1) Press the axle shaft oil seal with tools.



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2）在半轴法兰与轮毂贴合表面涂密封胶，涂胶宽度不得低于 3 mm，且不得间断。

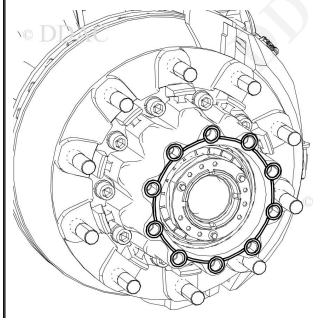
2) Apply sealant to the fitting surface of the axle shaft flange and the hub, and the width of the sealant shall not be less than 3 mm, and shall not be interrupted.

注：

Note:

密封胶涂好，应在 2-20 分钟完成装配。

After the sealant is coated, the assembly should be completed in 2-20 minutes.



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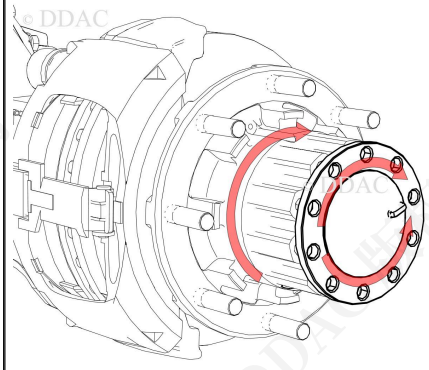
3）将半轴小心的插入桥壳轴管的孔内，晃动半轴，使其头部装入半轴齿轮的花键中，在半轴与轮毂贴合前转动轮毂，使半轴孔与轮毂螺纹孔对齐。

3) Insert the half shaft carefully into the hole of the axle housing shaft tube, shake the half shaft, make its head into the spline of the half shaft gear, rotate the hub before the half shaft and hub fit, so that the half shaft hole and the hub threaded hole are aligned.



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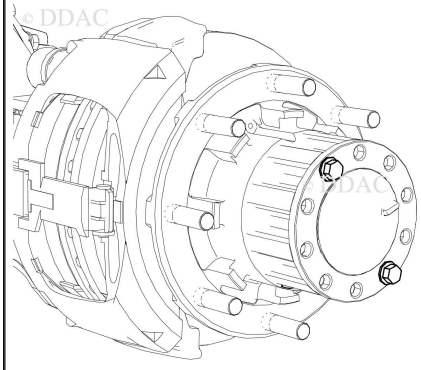
4）将半轴推到位，将螺栓拧入螺纹孔内，对称预拧紧，再按 140~180 N.m 力矩对称拧紧所有螺栓。

4) Push the axle shaft into place, screw the bolt into the threaded hole, pre-tighten symmetrically, and then tighten symmetrically according to the torque of 140~180 N.m.



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4 轮毂系统 (Hub System)

安全注意事项

Safety Precautions

1. 操作人员应提前熟悉此维修内容，严禁不熟悉此维修内容的人员操作。

1. The operator should be familiar with the maintenance content in advance, and it is strictly forbidden to operate the personnel who are not familiar with the maintenance content.

2. 维修作业应遵守本内容提及的警告与注意事项，避免造成零部件损坏或人身伤害。

2. Before maintenance, the warnings and precautions mentioned in this content shall be observed to avoid parts damage or personal injury.

3. 进行车辆维护或保养时，请始终佩戴护目镜，防止对眼睛造成伤害。

3. When performing vehicle maintenance or maintenance, please always wear safety goggles to prevent damage to eyes.

4. 车辆应停放在水平地面上，在轮胎下放置三角木防止车辆移动，用安全架支撑车辆，勿在仅有千斤顶支撑的车辆下作业，千斤顶可能打滑、翻倒并造成人身伤害和组件损坏。

4. The vehicle should be parked on the horizontal ground, placed triangle wood under the tire to prevent the vehicle from moving, with a safety frame to support the vehicle, do not operate under the vehicle supported only by the jack, the jack may slip, overturn and cause serious personal injury and component damage.

5. 在装配与拆除过程中应使用铜锤或合成材料制成的短锤，勿用钢锤直接敲打钢制部件，脱落的零件碎片可能造成人身伤害与部件损坏。所使用的其他工具需保证完好，损坏的工具可能导致作业质量不良或引起人员、零件损伤。

5.In the process of assembly and disassembly, Should be use a copper hammer or a short hammer made of synthetic materials. Do not hit steel parts directly with a steel hammer, as the broken parts may cause personal injury and component damage. Ensure that other tools are in good condition. Damaged tools may cause poor operation quality or damage to personnel and parts.

6. 更换受损或不符合规范或通过焊接、热处理等方式修理或修复车桥零件，可能会造成零部件损坏或人身伤害。

6.Replace damaged or do not conform to the specifications.Repair or renovate axle parts by welding or heat treatment, which may cause damage to parts or personal injury.

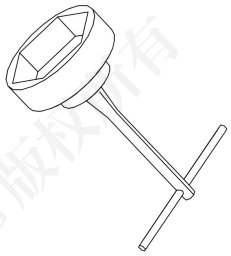
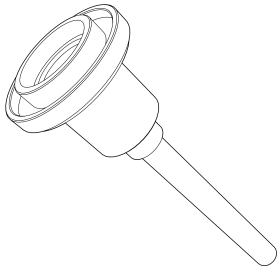
7. 溶剂清洗剂易燃、有毒，并可引起火灾，典型的溶剂清洗剂有四氯化碳、乳液型以及石油基型，使用溶剂清洗剂之前，仔细阅读制造商说明并严格遵守，同时也应遵循如下步骤：

7. Solvent cleaning agents are flammable, toxic, and can cause fires. Typical solvent cleaning agents include carbon tetrachloride, emulsion type, and petroleum based type. Before using solvent cleaning agents, carefully read the manufacturer's instructions and strictly follow them, and also follow the following steps:

- 着防护服，保护皮肤。
- Wear protective clothing to protect your skin.
- 在通风良好的环境下作业。
- Operate in a well-ventilated environment.
- 不能使用汽油或含有汽油的溶剂。汽油会发生爆炸。
- Do not use gasoline or solvents containing gasoline. The gas oil will explode.
- 务必正确使用热溶液槽和各种碱性溶液。使用前应仔细阅读制造商说明并严格遵守。
- Be sure to use hot solution tanks and alkaline solutions correctly. Read the manufacturer's instructions carefully and strictly follow them before use.
- 清洗磨削或抛光的零件不得使用热溶液槽、水及各种碱性溶液，否则会损坏零件。
- Do not use hot solution tanks, water and various alkaline solutions when cleaning grinding or polishing parts, otherwise the parts will be damaged.

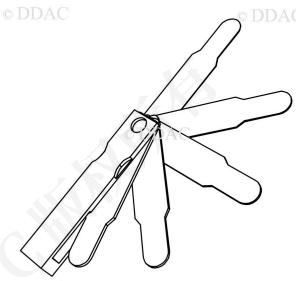
专用工具

Special Tool

序号 NO.	工具名称 Tool name	工具用途 Tool use	工具图号 Tool model specifications	图示 Illustration
1	调整螺母套筒 Adjusting nut sleeve	拆装调整螺母 Remove and assemble the adjusting nut	590V3-531	
2	油封压装压头 Oil seal pressing head	装轮毂油封 Install the hub oil seal	51V3-4416	

通用工具
Universal tool

序号 NO.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool model specifications	图示 Illustration
1	力矩扳手 Torque wrench	用于检查调整螺杆安装力矩 Used to check and adjust the nut mounting torque	200~1000 N.m	
2	弹簧秤 Spring balance	用于检测轮毂启动力 Used to test hub starting power	0~200 N	

序号 NO.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool model specifications	图示 Illustration
3	塞尺 Feeler	检查轴承外环是否压装到位 Check whether the bearing outer ring is pressed in place	0.02~0.5 mm	

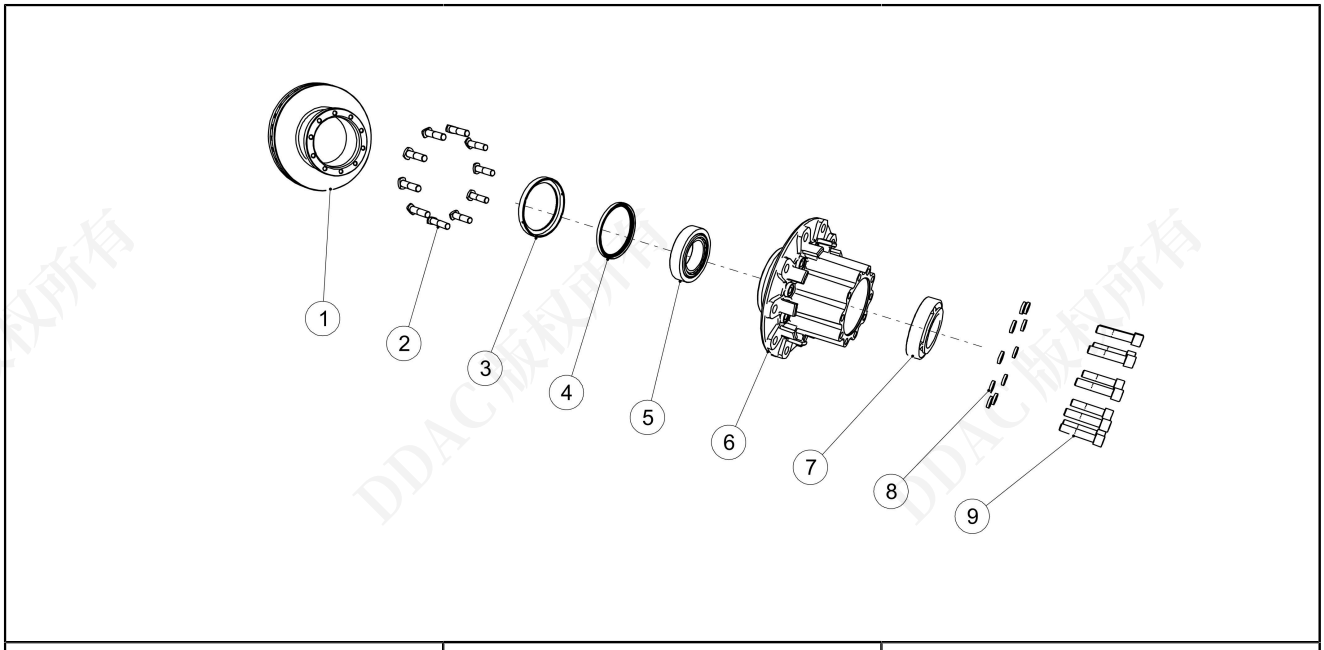
化学品
Chemical product

序号 NO.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	润滑油 Lubricating oil	用于安装油封时涂抹外圆 Used to apply the outer circle when installing the oil seal	适量 Bight amount	与减总用油一致 In accordance with oil for gear reducer assembly
2	硅硐密封胶 Silicone sealant	用于油封座圈 Used for oil seal washer	适量 Bight amount	HZ-01
3	清洗剂 Cleaning agent	装配前对零件清洗 clean the parts before assembly	适量 Bight amount	硼酸或煤油、柴油 Boric acid or kerosene or diesel oil

易耗品
Consumable goods

序号 NO.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	清洗剂 Cleaning agent	装配前对零件清洗 clean the parts before assembly	适量 Bight amount	硼酸或煤油、柴油 Boric acid or kerosene or diesel oil

分解图
Breakdown drawing



1. 后制动盘 1. Brake Disc	2. 车轮螺栓 2. Wheel Bolt	3. ABS齿圈 3. Sensor Ring
4. 后桥轮毂油封总成 4. Oil Seal	5. 轴承总成 5. Bearing Assembly	6. 后轮毂 6. Hub
7. 轴承总成 7. Bearing Assembly	8. 弹簧垫圈 8. Spring Washer	9. 螺栓 9. Bolt

拆卸前准备

Prepare before disassembly

1. 车轮拆卸参阅：桥总成系统。

1. Wheel removal refer to Step: Axle assembly system.

2. 拆半轴参阅：半轴系统。

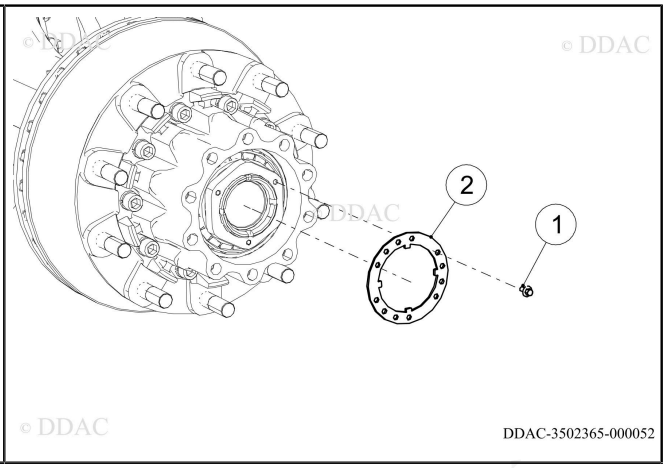
2. Remove half shaft refer to Step: Axle shaft system.

拆卸步骤

Disassembly steps

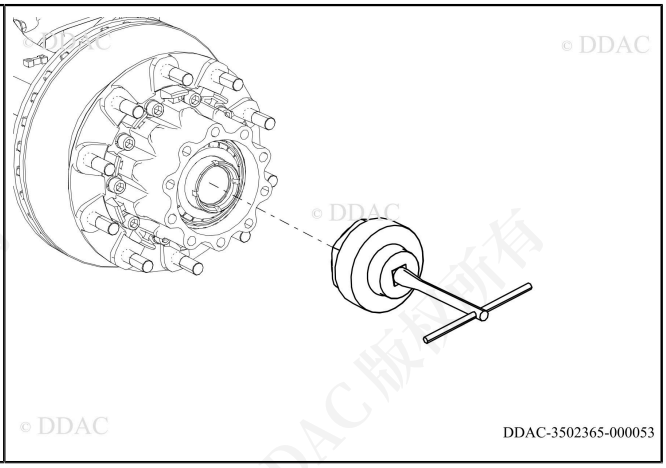
1. 拆调整螺母

1. Remove adjustment nut

1）拆下 3 个锁紧螺栓（1）、锁紧垫圈（2）。 1) Remove the 3 locking bolts (1) of the locking gasket and remove the locking gasket (2).	

2）用专用工具（3924-Z-KD01-01）拆下调整螺母。

2) Remove the adjusting nut with the sleeve tool（3924-Z-KD01-01）.



2. 拆轮毂制动盘总成

2. Remove hub & brake disc assembly

⚠ 警告:

轮毂总成很重，需要 2 个人或者起吊机进行拆除。

The hub assembly is heavy and requires 2 people or a crane to remove.

⚠ 注意:

拆轮毂总成时不要损伤转向节螺纹。

Do not damage the knuckle thread when removing the hub assembly.

1）转动轮毂，同时在轮毂上轻轻敲击，沿轮毂轴管总成拆下轮毂制动盘总成（2）。

1) Turn the hub, while gently tapping on the hub, along the hub shaft tube remove hub & brake disc assembly(2).

2）拆卸轮毂外轴承内圈（1）脱开轴管时需要立即接住，避免砸落地上引起损伤，并妥善保存。

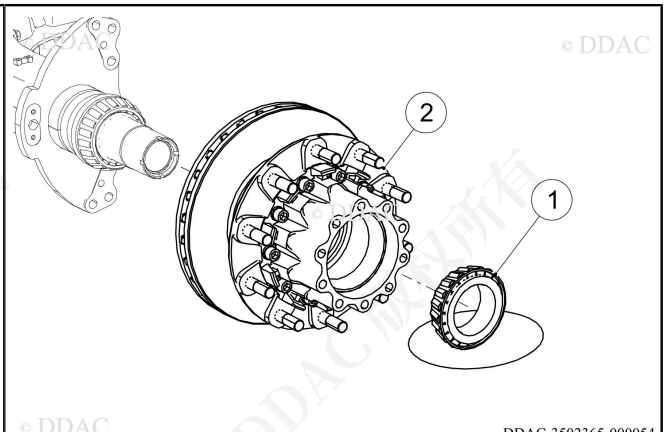
2) Remove the inner ring of the outer bearing of the hub(1), and immediately catch it when the shaft tube is removed to avoid damage caused by falling on the ground and keep it properly.

注：

Note:

如果有部分油封残留在轴头上请小心地将其移除。

If the oil seal remains on the shaft head, remove it creafully.

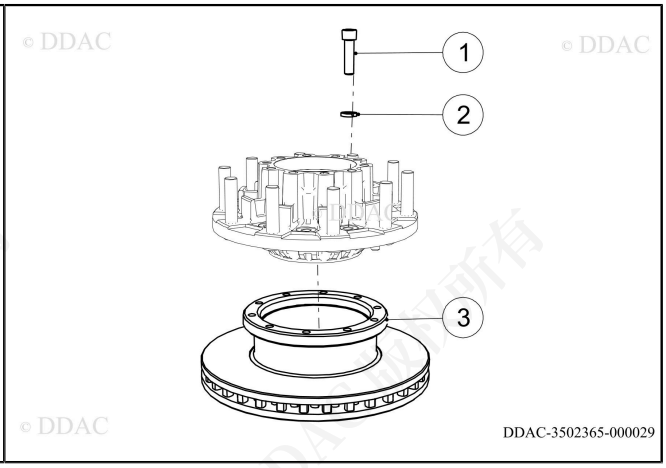


3. 分解轮毂制动盘总成

3. Disassemble the hub brake disc assembly

3.1 分离轮毂制动盘总成

3.1 Separate hub brake disc assembly

1）取下轮毂制动盘紧固螺栓（1）、垫圈（2），取下制动盘（3）。 1) Remove the fastening bolts (1) and gaskets (2) of the wheel hub brake disc, and remove the brake disc (3).	

3.2 拆轮毂油封

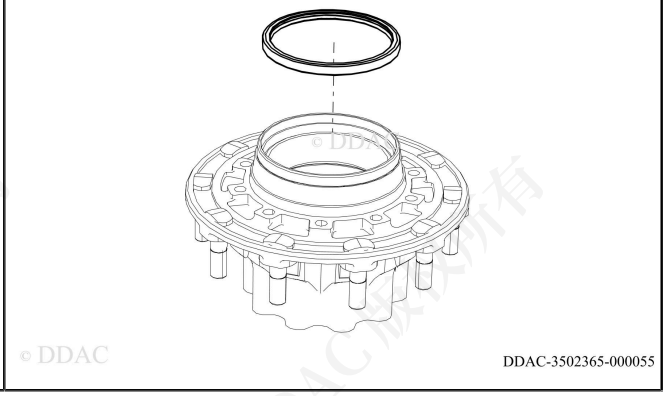
⚠ **注意:**

拆卸油封时不要碰伤安装面。

Do not injure the mounting surface when removing the oil seal.

拆解下来的油封妥善处置，无论外观是否损坏，不允许再次使用。

The dismantled oil seal is properly disposed, no matter whether the appearance is damaged or not, it is not allowed to be used again.

1）将轮毂外端向下放置，将内外油封拆下。 1) Place the outer end of the wheel hub downward, and remove the inner and outer oil seals.	

3.3 拆ABS齿圈

3.3 Remove the ABS ring gear

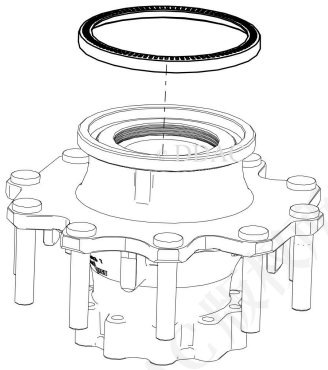
⚠ **注意:**

执行此步骤需要确认轮毂或 ABS 齿圈需更换。

Performing this step requires confirming that the hub or ABS ring gear needs to be replaced.

取ABS齿圈时不要损伤轮毂，轮毂 ABS 齿圈安装部位损坏需更换轮毂。

Do not damage the hub when taking out the ABS ring gear. If the mounting part of the ABS ring gear of the hub is damaged, the hub needs to be replaced.

• 如果更换轮毂，直接敲下ABS齿圈。 • If replacing the hub, knock the ABS ring directly.	 DDAC-3104010-000053

3.4 拆轴承外圈

3.4 Remove the bearing outer ring

⚠ 警告:

如果使用压床拆卸，遵守冲压机制造商所要求的所有警告和注意，避免造成零部件损坏和人身伤害。

If a press is used for disassembly, Comply with all warnings and precautions required by the press manufacturer to avoid damage to parts and personal injury.

采用人工敲击拆卸外圈时，注意反弹伤人。

When the outer ring is removed by manual tapping, pay attention to rebound injury.

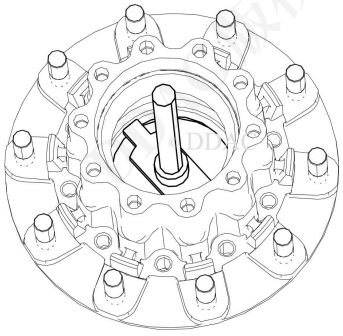
⚠ 注意:

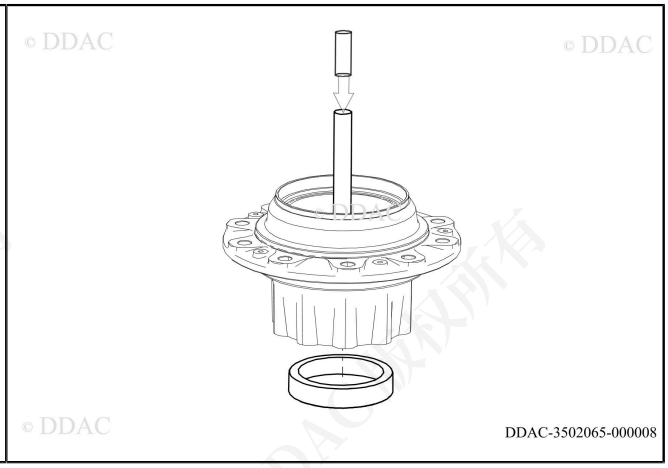
执行此步骤需要确认轮毂轴承需要更换新轴承。

Perform this step before confirming that the hub bearing needs to be replaced with a new bearing.

避免损坏轮毂轴承外圈孔与轴承安装台阶。

Avoid damaging the hub bearing outer ring hole and bearing mounting step.

1）将工具放置到轮毂轴承外圈的小径面轮毂拆卸凹槽中。 1)Place the tool in a small diameter hub dismounting groove in the outer ring of the hub bearing.	 DDAC-3502365-000056

2）用铜棒敲击工具端部，退出轴承外圈。 2)Tap the end of the tool with a copper rod to exit the bearing outer ring.	 DDAC-3502065-000008

4. 拆内轴承内圈总成

4. Remove inner bearing inner ring assembly.

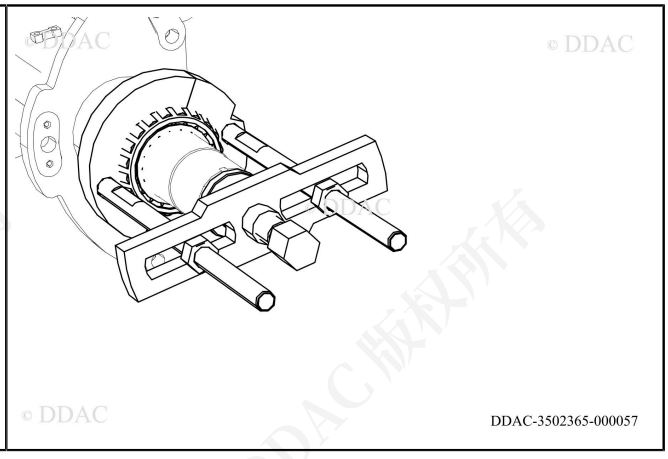
⚠ 注意:

执行此步骤需要确认轮毂轴承需要更换新轴承。

Perform this step before confirming that the hub bearing needs to be replaced with a new bearing.

避免损坏轮毂轴承外圈孔与轴承安装台阶。

Avoid damaging the hub bearing outer ring hole and bearing mounting step.

1）用专用拉马拉下内轴承内圈。 1) Use special lamala to pull down the inner ring of the inner bearing.	 DDAC-3502365-000057

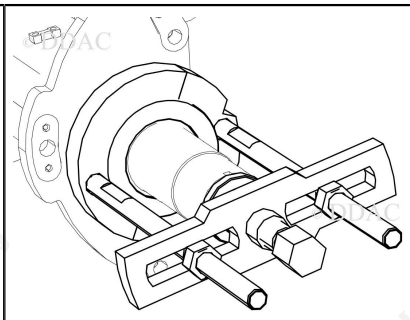
5. 拆油封座圈

5. Remove the oil seal seat ring

⚠ 注意:

执行此步骤需要确认油封座圈有无变形、损伤，如有必须更换。

Before performing this step, check whether the oil seal seat ring is deformed or damaged. If so, replace it.

1）用工具拉下油封座圈。 1) Pull down the oil seal seat ring with the tool.	 DDAC-3502365-000058

6. 拆车轮螺栓

6. Remove wheel bolts

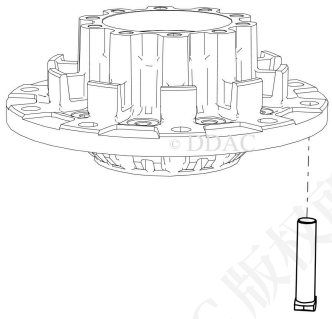
⚠ 警告:

遵守冲压机制造商所要求的所有警告和注意，避免造成零部件损坏和人身伤害。

Comply with all warnings and care required by the press manufacturer to avoid damage to parts and personal injury.

敲击装入螺栓时不要敲击轮毂，避免轮毂损伤。

Do not knock the hub when tapping the mounting bolt to avoid damage to the hub.

1）将轮毂平放在地面或压力机支架上，螺栓法兰面朝下，使支撑点靠近要拆卸的螺栓。 1) Place the hub flat on the ground or press bracket with the bolt flange facing down so that the support point is close to the bolt to be removed. 2）用铜棒敲击需更换螺栓螺纹头部，或将螺栓压出，取下需更换的螺栓。 2) Knock the screw head of the bolt to be replaced with a copper rod, or press the bolt out to remove the bolts that need to be replaced.	 DDAC-3502365-000035

安装前准备

Preparations for Installation

⚠ 警告:

严禁使用汽油清洗零件。

Do not use gasoline to clean parts.

如果你选择继续使用现有的轴承，这些轴承必须按照生产商建议的原则进行检查。

If you choose to continue using existing bearings, these bearings must be inspected in accordance with the principles recommended by the manufacturer.

当确定轴承内圈或外圈有损坏时，必须对内外轴承同时成套进行更换，同时必须更换轴承隔套。

When it is determined that the inner or outer ring of the bearing is damaged, the inner and outer bearings must be replaced in a complete set at the same time, and the bearing sleeve must be replaced at the same time.

1. 清洁轮毂内腔，如果轴承外圈已拆下，检查轮毂轴承座孔，确认轴承外圈是否有转动，如果有转动需更换轮毂。

1. Clean the inner cavity of the hub. If the bearing outer ring has been removed, check the hole of the hub bearing seat to confirm whether the bearing outer ring is rotating. If there is rotation, replace the hub.

2. 清洁与半轴结合面残胶。

2. Clean the residual glue of the joint surface with the half shaft.

3. 清洁轴承内圈总成。

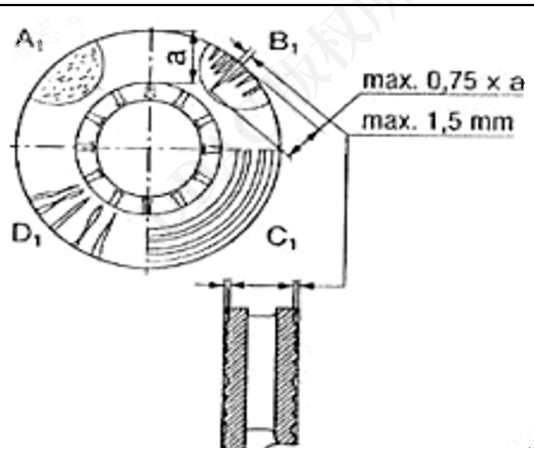
3. Clean bearing inner ring assembly.

4. 清洁 ABS 齿圈上的油污与杂物。

5. Clean oil and sundries on ABS gear ring.

5. 检查制动盘

5. Check the brake disc

A_1 =小裂纹在表面上延伸，此情况允许。 A1= Small cracks extend on the surface, which is allowed. B_1 =小于 1.5 mm 长、宽的裂纹径向延伸，此情况允许。 B1= radial extension of crack with length and width less than 1.5 mm, which is allowed. C_1 =小于 1.5 mm 深的环形槽，此情况允许。 C1= annular groove less than 1.5 mm deep, this case is allowed. D_1 =片状裂纹是不允许的，制动盘必须更换。 D1= Sheet crack is not allowed, brake disc must be replaced. 制动盘总厚度 19.5 / 22.5 不小于 37 mm，16 / 17.5 不小于 28 mm。 Total thickness of brake disc: 19.5/22.5, not less than 37 mm; 16/17.5, not less than 28 mm.	

6. 让零件充分干燥，残留的溶液必须擦拭干净。

6. Let parts fully dry, residual solution must be wiped clean.

7. 零件清洗完成后检查轴承内外圈有无损伤及缺陷。

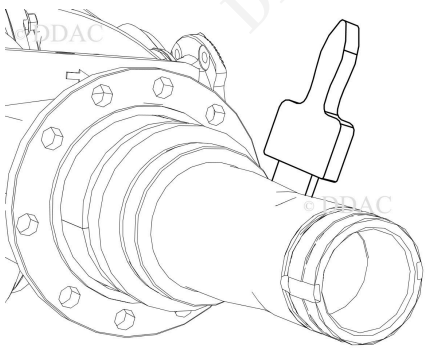
7. After the parts are cleaned, check whether the inner and outer ring of the bearing and the sleeve are damaged or defective.

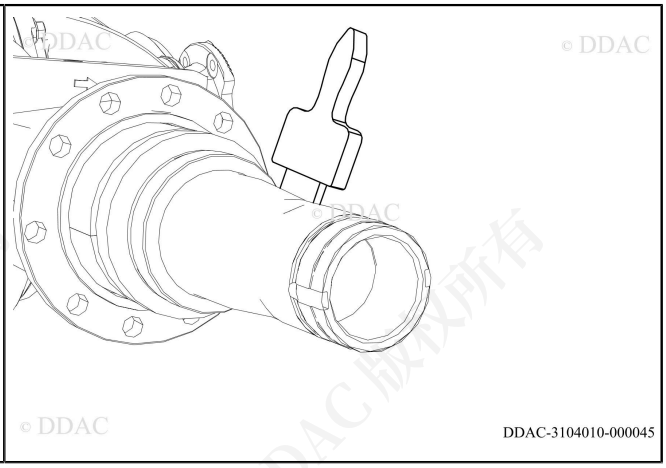
8. 将内、外轴承内圈总成涂抹润滑脂（DDAC-B），使润滑脂填满滚子与保持架间。

8. Apply grease (DAC-B) to the inner ring assembly of the inner and outer bearings to fill the space between the roller and the cage.

9. 轴管的准备工作

9. Preparation of shaft tube

1）清洁轴头，除去所有的铁锈以及其它的杂质，油封座圈也需要清洁。 1) Clean the shaft head, remove all rust and other impurities, and the oil seal seat ring also needs to be cleaned. 2）需要的话，可以使用清洗剂。 2) If necessary, you can use cleaning agent. 3）需要的话，可以使用纱布除去油封座圈上的污渍以及锈斑。 3) If necessary, gauze can be used to remove stains and rust spots on the oil seal seat ring. 4）如油封座圈已拆下，清理油封座圈内侧面的密封残胶，清理轴管上油封座圈安装位的残胶。 4) If the oil seal ring has been removed, clean up the seal residue glue on the inner side of the oil seal ring, and clean up the residual glue in the installation position of the oil seal ring on the shaft pipe.	

5）使用与轮毂润滑同样的油或者 2 级油脂对轴头以及轴承座进行轻微的润滑。 5) Use grade 2 grease to slightly and evenly lubricate the shaft head and bearing seat.	 DDAC-3104010-000045

安装步骤

Installation steps

1. 装轮毂总成

1. Install hub assembly

1.1 装轴承外圈

1.1 Install bearing outer ring

⚠ 警告:

如果使用压力机，要遵守压力机制造商所要求的所有警告和注意，避免造成零部件损坏和人身伤害。

If a press is used for disassembly, Comply with all warnings and precautions required by the press manufacturer to avoid damage to parts and personal injury.

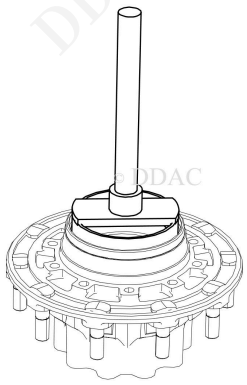
⚠ 注意:

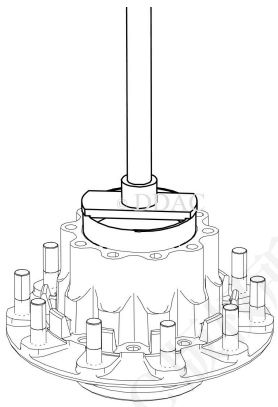
轴承外圈要一步压装到位，用 0.02 mm 塞尺检查轴承外圈与轮毂安装台阶面之间，不得有间隙。

The bearing outer ring should be pressed into place in one step. Check the bearing outer ring and the hub mounting step surface with 0.02 mm feeler, and there should be no gap.

采取措施避免损坏轮毂的轴承外圈孔和轴承安装轴肩。

Take measures to avoid damage to the bearing outer ring hole and bearing mounting shoulder of the hub.

1）轮毂端面朝下，将新轴承的外圈大径朝外，放入轮毂中，用工具与外圈大径帖合进行压装或用铜锤敲入。 1) The wheel hub end face down, The outer ring diameter of the new bearing is facing outwords, put it into the wheel hub, and use special tools to connect with the outer ring diameter for pressing or tapping in with the copper hammer.	 DDAC-3502365-000061

2）翻转轮毂用工具压装另一面轴承外圈。 2) Turn the hub and press the outer ring of the other bearing with the tool.	 DDAC-3502365-000062

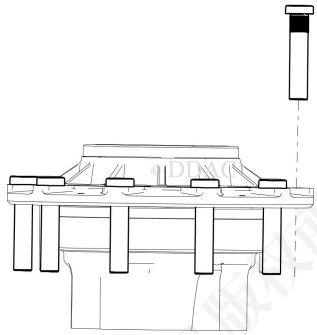
1.2 安装车轮螺栓

1.2 Install wheel bolts

⚠ 注意:

更换所有发生损坏、螺纹变形、断裂、弯曲或者腐蚀等问题的车轮螺栓，同时也需要更换受损螺栓两边相邻的螺栓，如果有两个或者两个以上的螺栓受损，应将所有的螺栓同时进行取下更换。

Replace all wheel bolts that are damaged, thread deformed, broken, bent, or corroded. Replace the adjacent bolts on both sides of the damaged bolt as well. If two or more bolts are damaged, remove and replace all bolts at the same time.

1）将新螺栓敲入或压入轮毂螺栓孔中，使螺栓完全安装到位，法兰面与轮毂端面贴合。 1) Knock or press the new bolt into the hub bolt hole, so that the bolt is fully installed in place and the flange surface is fitted to the wheel hub end face.	 DDAC-3104010-000039

1.3 装ABS齿圈

1.3 Install ABS ring gear

⚠ 警告:

如果使用压力机，要遵守压力机制造商所要求的所有警告和注意，避免造成零部件损坏和严重的人身伤害。

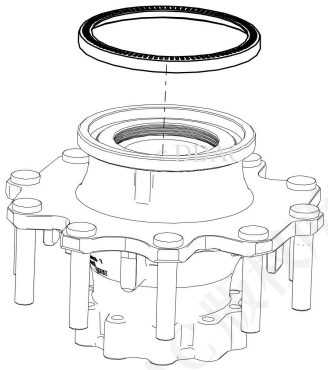
If the pressure machine is used, follow all warnings and cautions required by the press manufacturer to avoid damage to parts and personal injury.

加热法安装齿圈时需要配戴隔垫手套，防止手部造成烫伤伤害。

When installing the ring gear by heating method, you need to wear septum gloves to prevent hand burns.

严禁用乙炔等火烤方式加热。

It is strictly forbidden to use acetylene and other fire heating methods.

1）将新齿圈在烤箱中加热到 178℃，安装到轮毂齿圈安装位。 1）Heat the new gear ring in the oven to 178℃ and install it to the hub gear ring installation position. 2）检查齿圈是否装平，安装到位。 2) Check whether the gear ring is installed flat and in place.	 DDAC-3104010-000053

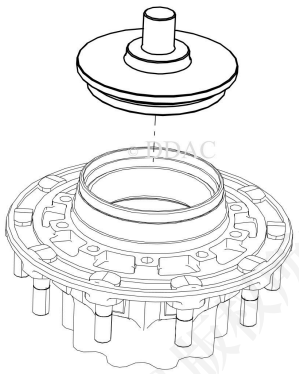
1.4 装油封总成

1.4 Install oil seal assembly

⚠ 注意:

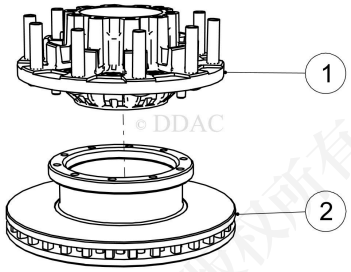
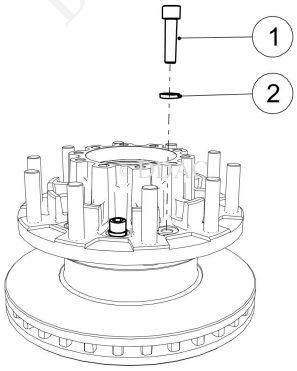
严禁直接敲击油封端面歪斜安装。

It is strictly prohibited to directly strike the oil seal end face for installation at a skew.

• 将油封外圆均匀的涂抹一层润滑油。 • Apply a layer of lubricating oil evenly to the outer circle of the oil seal. • 将油封放到轮毂油封安装位，用工具对正油封上部，并用铜锤敲击安装到位（外端面与轮毂油封安装面平齐）。 • Put the oil seal in the installation position of the hub oil seal, align the upper part of the oil seal with a tool, and install it in place by knocking it with a copper hammer (the outer end face is flush with the installation surface of the hub oil seal). • 在没有专用工具的情况下，可以使用平板和小木锤辅助安装油封，油封安装时必须是平上平下，不得直接敲击油封的端面进行安装，不得倾斜安装。 • In the absence of special tools, flat plates and small wooden hammers can be used to assist the installation of oil seals. The installation of oil seals must be flat and flat, and the end face of oil seals shall not be directly knocked for installation, and shall not be allowed to install at a skew. • 检查并确保油封没有翘起，油封内端面与内轴承能够自由转动。 • Check and ensure that the oil seal is not warped, strained and damaged, and the spring is not lost.	 DDAC-3502365-000063

1.5 装制动盘

1.5 Install brake disc

1）将制动盘螺纹孔对准轮毂（1）与制动盘连接螺纹，装上制动盘（2）。 1) Align the threaded hole of the brake disc with the connecting thread of the wheel hub (1) and the brake disc, and install the brake disc (2).	 DDAC-3502365-000044
2）装上垫圈（2），拧紧轮毂制动盘紧固螺栓（1）。 2) Install the washer (2) and tighten the fastening bolt (1) of the wheel hub brake disc.	 DDAC-3502365-000045

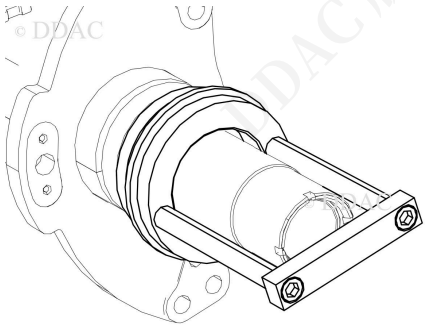
2. 装油封座圈

2. Install oil seal seat ring

⚠ 注意:

安装时不能损伤外圆密封面。

Do not damage the outer sealing surface during installation.

1）将油封座圈套在轴管上，用工具油封座圈套筒装到位。 1) Place the oil seal seat snare on the steering knuckle shaft rod, and install the oil seal seat ring sleeve in place with special tools.	 DDAC-3502365-000059

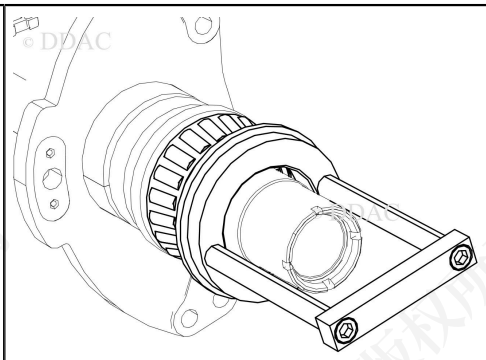
3. 装内轴承内圈总成

3. Install inner bearing inner ring assembly

⚠ 注意:

不要损伤轴承保持架。

Do not damage the bearing support frame.

1）在内轴承外圈上均匀涂抹少量润滑脂，用工具装内承内圈总成到轴管上。 1) Evenly apply a small amount of grease on the outer ring of the inner bearing, and load the inner ring assembly of the inner bearing with special tools.	 DDAC-3502365-000060

4 装轮毂制动盘总成

4.Install hub & brake disc assembly

⚠ 警告:

轮毂总成较重，需要 2 人或者起吊装设备进行安装。

The hub assembly is heavy and requires 2 people or lifting equipment to install.

⚠ 注意:

确保外轴承入位并避免造成油封翘曲。

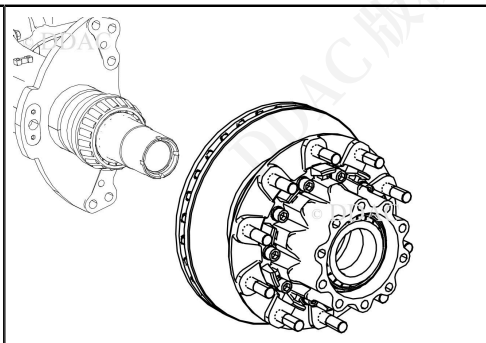
Ensure that the outer bearing is in position and avoid warping the oil seal.

不可使轮毂油封同轴管发生撞击，装配的过程中不得往复拉拽，猛拉猛推。

Do not make the hub oil seal skrike the axle tube, assembly process shall not reciprocate pull, pull and push.

一旦轮毂装在轴头上，不要拆下外侧轴承，拆下外侧轴承，会造成油封偏斜，导致油封过早失效，出现此种情况需重新更换油封重新装配。

Once the hub is installed on the shaft head, do not remove the lateral bearing, remove the lateral bearing, will cause the oil seal deflection, leading to premature failure of the oil seal, in this case, the oil seal needs to be replaced and reassembled.

• 装上外轴承内圈总成，动作轻缓，将总成慢慢往里推，装配过程中，若发生阻滞可用专用工具敲击轮毂外侧端面。 • Install the outer bearing inner ring assembly, and the action is light and slow. Push the hub assembly inward slowly. In the process of assembly, if block occurs, special tools can be used to knock the outer end face of the hub.	 DDAC-3502365-000064

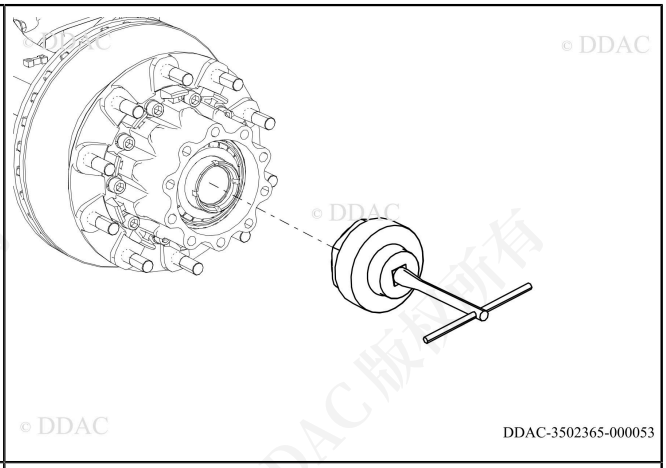
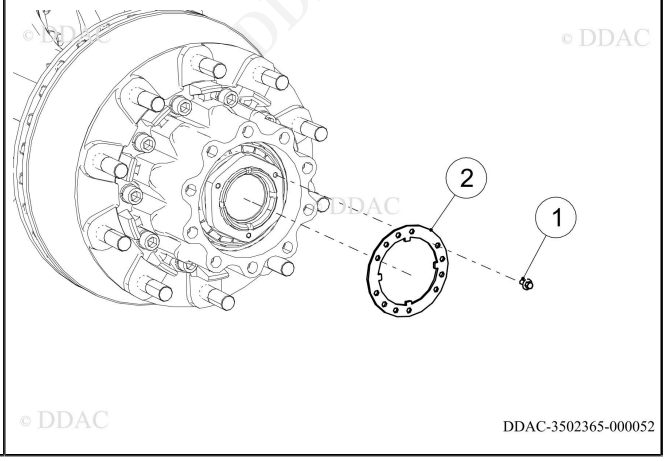
5. 装调整螺母

5. Install adjusting nut

⚠ 警告:

不按规范装配，可能导致轮端早期失效。

Not according to the standard assembly, can lead to premature failure of the wheel end.

1）将调整螺母旋入到轴管螺纹，正反转动轮毂制动盘总成，并用500~550 N.m 的力矩拧紧调整螺母，使轴承正确就位。 1) Screw the adjusting nut into the shaft pipe thread, rotate the hub assembly forward and backward, and tighten the adjusting nut with a torque is 500~550 N.m, so that the bearing is in position correctly. 2）转动轮毂总成，将调整螺母回退 60~90 °，使锁紧孔对齐，测量轮毂启动力约 30~65 N 范围内。 2) Rotate the hub assembly, roll back the adjusting nut by 60~90 °, then align the locking holes, and measure the hub starting force in the range of about 30~65 N.	 DDAC-3502365-000053
3）装锁紧垫圈（2），若需要对正锁紧垫片的螺钉孔，轴头螺母最多可以前进 10 ° 或者后退 10 °，保证锁片上 3 个螺钉孔与轴头螺母螺纹孔对正，拧紧螺钉（1），拧紧力矩：7～11 N.m。 3) Install the locking washer (2). If the screw holes of the locking washer need to be tightened, the shaft head nut can be advanced by 10 ° or backward by 10 ° at most, so that the three screw holes on the lock plate are aligned with the screw holes of the shaft head nut.Install and tighten the screws (1), tightening torque : 7-11N.m.	 DDAC-3502365-000052

最后步骤

The final step

1. 检查 ABS 传感器与 ABS 齿圈之间的间隙，不大于 0.7 mm。

1. Check that the clearance between the ABS sensor and the ABS ring is not greater than 0.7 mm.

2. 参阅半轴系统步骤，装上半轴。

2. Refer to the axle shaft system steps to install the axle shaft.

3. 参阅桥总成系统步骤，安装车轮。

3. Refer to the axle assembly system steps to install the wheels.

5 制动系统 (Braking System)

5.1 盘式制动器总成 (Disc Brake Assembly)

安全注意事项

Safety Precautions

1. 操作人员应提前熟悉此维修内容，严禁不熟悉此维修内容的人员操作。

1. The operator should be familiar with the maintenance content in advance, and it is strictly forbidden to operate the personnel who are not familiar with the maintenance content.

2. 维修作业应遵守本内容提及的警告与注意事项，避免造成零部件损坏或人身伤害。

2. Before maintenance, the warnings and precautions mentioned in this content shall be observed to avoid parts damage or personal injury.

3. 进行车辆维护或保养时，请始终佩戴护目镜，以防止对眼睛造成伤害。

3. When performing vehicle maintenance or maintenance, please always wear safety goggles to prevent damage to eyes.

4. 车辆应停放在水平地面上，在前桥轮胎下放置三角木防止车辆移动, 用安全支架支住车辆。

4.The vehicle should be parked on the horizontal ground, placed triangular wood under the front axle tire to prevent the vehicle from moving, with a safety frame to support the vehicle.

5. 在装配与拆除过程中应使用铜锤或合成材料制成的短锤，勿用钢锤直接敲打钢制部件，脱落的零件碎片可能造成人身伤害与部件损坏。所使用的其他工具需保证完好，损坏的工具可能导致作业质量不良或引起人员、零件损伤。

5.In the process of assembly and disassembly, Should be use a copper hammer or a short hammer made of synthetic materials. Do not hit steel parts directly with a steel hammer, as the broken parts may cause personal injury and component damage. Ensure that other tools are in good condition. Damaged tools may cause poor operation quality or damage to personnel and parts.

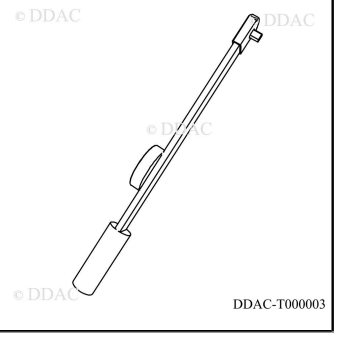
6. 溶剂清洗剂易燃、有毒，并可引起火灾，典型的溶剂清洗剂有四氯化碳、乳液型以及石油基型，使用溶剂清洗剂之前，仔细阅读制造商说明并严格遵守，同时也应遵循如下步骤：

6. Solvent cleaning agents are flammable, toxic, and can cause fires. Typical solvent cleaning agents include carbon tetrachloride, emulsion type, and petroleum based type. Before using solvent cleaning agents, carefully read the manufacturer's instructions and strictly follow them, and also follow the following steps:

- 着防护服，保护皮肤。
- Wear protective clothing to protect your skin.
- 在通风良好的环境下作业。
- Operate in a well-ventilated environment.
- 不能使用汽油或含有汽油的溶剂。汽油会发生爆炸。
- Do not use gasoline or solvents containing gasoline. The gas oil will explode.
- 务必正确使用热溶液槽和各种碱性溶液。使用前应仔细阅读制造商说明并严格遵守。
- Be sure to use hot solution tanks and alkaline solutions correctly. Read the manufacturer's instructions carefully and strictly follow them before use.
- 清洗磨削或抛光的零件不得使用热溶液槽、水及各种碱性溶液，否则会损坏零件。
- Do not use hot solution tanks, water and various alkaline solutions when cleaning grinding or polishing parts, otherwise the parts will be damaged.

通用工具

Universal tool

序号 No.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool model specifications	图示 Illustration
1	卡尺 Caliper	检查零件尺寸 Check part size	0~150mm	
2	扭矩扳手 Torque wrench	检测调整臂 Check the adjustment arm	75~500Nm	

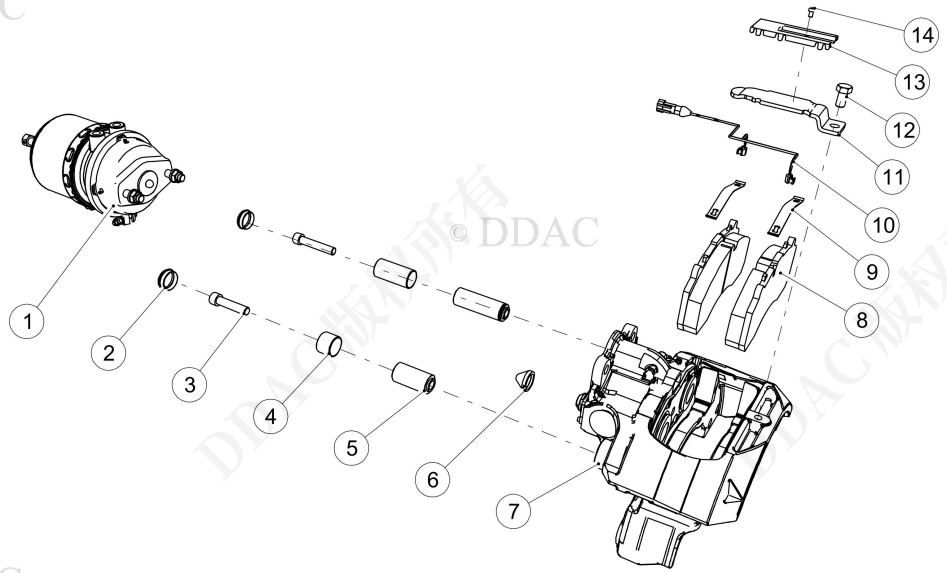
化学品
Chemical product

序号 No.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	润滑脂 Grease	用于润滑滑销 Used to lubricate the slip pin	适量 Right amount	DDAC-B
2	清洗剂 Cleaning agent	装配前对零件清洗 Clean the parts before assembly	适量 Right amount	硼酸或煤油、柴油 Boric acid or kerosene or diesel oil

易耗品
Consumable goods

序号 No.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	清洗剂 Cleaning agent	装配前对零件清洗 Clean the parts before assembly	适量 Right amount	硼酸或煤油、柴油 Boric acid or kerosene or diesel oil

分解图
Breakdown drawing



DDAC-3502410-000032

1.气室 1. Chamber Assembly	2.保护套 2. Protective jacket	3.滑销螺杆 3. Sliding pin screw
4.滑销衬套 4. Sliding pin bushing	5.滑销 5. Sliding pin	6.调整螺杆保护套 6. The protective cover of adjust screw
7.卡钳 7. Calliper	8.摩擦块 8. Brake Block	9.压簧 9. Pressure Spring
10.磨损报警器 10. Wear Alarm	11.支架 11. Bracket	12.六角螺栓 12. Bolt
13.盖板 13. Cover Plate	14.螺栓 14. Bolt	

拆卸前准备

Prepare before disassembly

注：

Note:

盘式制动器总成拆卸维修不需要拆卸轮毂系统。

Disc brake assembly is removed and repaired,Which needs not to remove the hub system.

1. 车轮拆卸步骤参阅：桥总成系统。

1. Wheel removal steps refer to: axle assembly system.

拆卸步骤

Disassembly steps

1. 脱开磨损报警线与整车连接的线束，剪断磨损报警线束线扎带。

1. Remove the wire harness connected with the wear alarm wire and the vehicle, and cut the cable tie of the wear alarm wire harness.

2. 拆盘式制动器总成。

2. Disassembly disc brake assembly.

⚠ 警告:

制动钳总成很重，需要 2 个人或者起吊机进行拆装。

Brake caliper assembly is very heavy and requires 2 persons or a crane to remove.

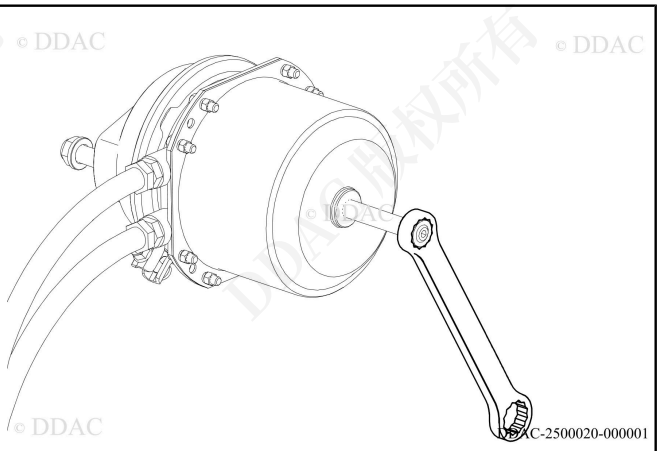
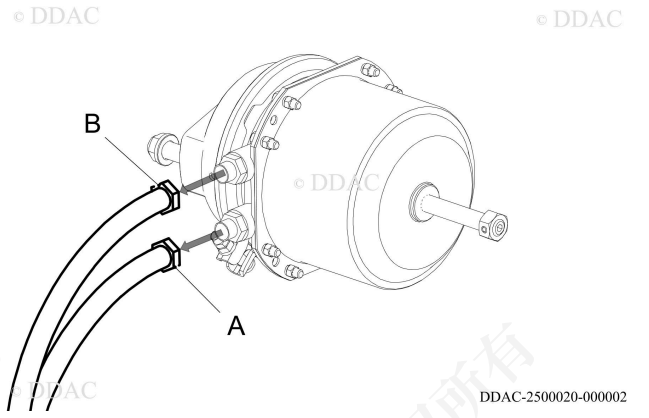
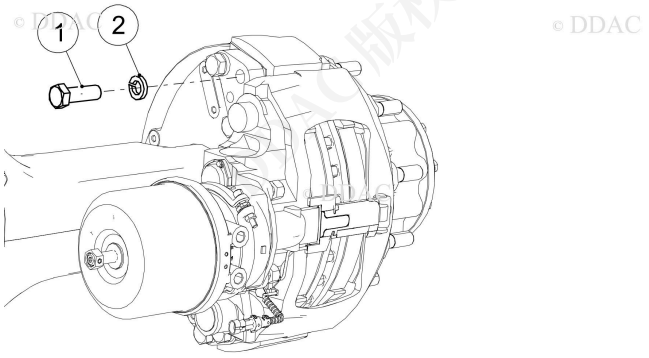
⚠ 注意:

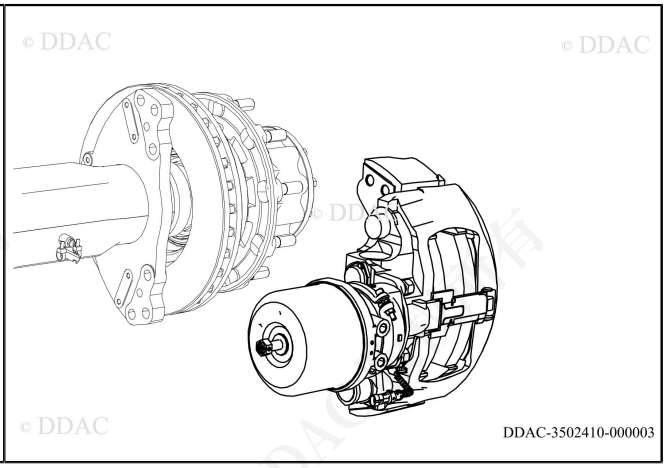
在拆解气管之前应将气管中残余的空气排尽。

Exhaust the remaining air in the trachea before disassembling it.

拆下气管时做好标识，与气室接口位置对应。

When the trachea is removed, make a mark corresponding to the interface position of the air chamber.

1）释放手刹，将制动气室螺杆完全旋出。 1) Release the handbrake and completely screw out the brake air chamber. **注：** **Note:** **不能采用风枪以免损坏气室。** **Do not use air gun to avoid damage to the air chamber.**	 DDAC-2500020-000001
2）拉起手刹，拆卸气室气管。 2) Pull the handbrake, remove the air chamber and air pipe.	 DDAC-2500020-000002
3）拆卸制动器安装螺栓（2）及垫圈（1）。 3) Remove the brake mounting bolt (2) and washer (1). **注：** **Note:** **螺栓可能很紧不易拆卸，选用合适的套筒工具与加力杠。** **Bolts may be tight and difficult to remove, so choose an appropriate sleeve tool and afterbar.**	 DDAC-3502410-000002

4）取下制动器总成。 4) Remove the brake assembly.	 DDAC-3502410-000003

安装前准备
Preparations for Installation

1. 安装前检查清除制动盘表面油污和其它防锈剂。
1. Check and remove oil and other rust inhibitors on the surface of brake disc before installation.
2. 确认制动器状态完好。
2. Confirm that the brake is in good condition.
3. 在摩擦块之间放置夹持垫块，防止摩擦块装配时脱落。
3. Place a clamping pad between the friction blocks to prevent the friction blocks from falling off during assembly.

安装步骤
Installation steps

⚠ 警告:

制动钳总成很重，需要 2 个人或者起吊机进行拆装。

Brake caliper assembly is very heavy and requires 2 persons or a crane to remove.

1. 将制动钳总成卡钳卡到制动盘，取下夹持垫块。
1. Clamp the caliper of the brake caliper assembly to the brake disc and remove the clamping pad.
2. 安装制动盘总成
2. Install the brake disc assembly

注：

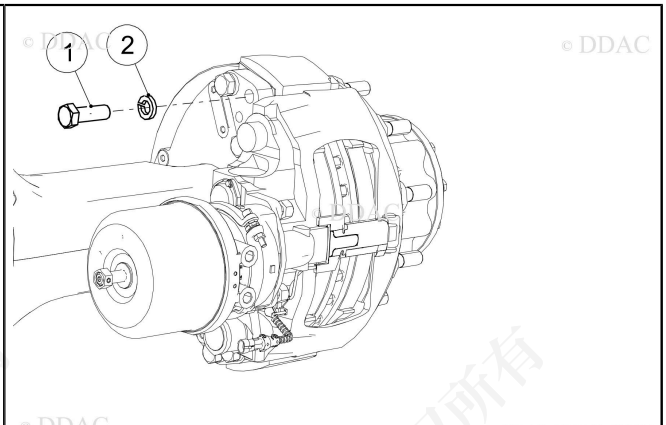
Note:

制动器安装螺栓要用新螺栓安装。

Brake must be installed with new bolts.

使用原螺栓须进行检查，螺栓无拉长或螺纹损坏。

The use of the original bolt must be checked that the bolt is not elongated or thread damaged.

1）卡钳位置，螺栓孔对正桥壳法兰螺孔位置，装上垫片（2），将安装螺栓（1）用手拧约 2~3 扣，再依次对称打紧，扭紧力矩参阅重要紧固件拧紧力矩表。 1) Adjust caliper position, bolt hole to flange hole position of main axle housing, install For gasket (2), screw the mounting bolt (1) by hand for about 2~3 buckles, and then tighten it symmetrically in turn.The tightening torque refers to important fastener tightening torque table.	 DDAC-3502410-000002

3. 安装制动气路

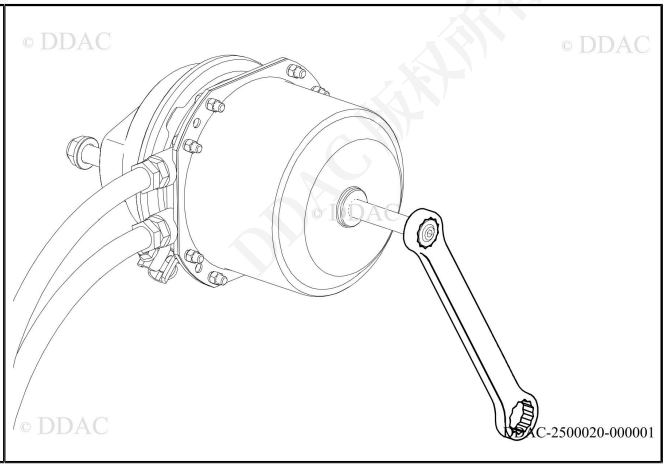
3. Install brake air circuit

注：

Note:

按拆卸标识安装气管。

Install the air pipe according to the removal label.

1）将气管接到接到气室气管接头上。 1) Connect the air pipe to the air pipe connector in the air chamber. 2）释放手刹，将限位螺杆全部旋进去。 2) Release the handbrake and rotate the limiting screw in.	

4. 连接磨损报警线与整车接头，用扎带按原位置束好磨损报警线。

4. Connect the wear alarm wire to the vehicle connector, and bundle the wear alarm wire according to the original position with the cable tie.

最后步骤

The final step

1. 调整制动间隙。

1. Adjust the brake clearance.

注：

Note:

制动间隙的调整步骤是制动系统维修后必须进行的步骤。

The adjustment step of brake gap is a necessary step after brake system is repaired.

⚠ **注意:** **不能使用气动扳手或者其他类似工具转动调整螺栓，防止自调机构损坏。** **Do not use a pneumatic wrench or other similar tool to turn the adjusting bolt.Prevent damage of self-adjusting mechanism.** 1）检查制动卡钳与制动盘之间的间隙，如果间隙小于1.2mm，先将间隙放大至 1.5mm 以上。 1) Check the gap between the brake caliper and the brake disc, if the gap is less than 1.2mm, first enlarge the gap to more than 1.5mm. • 拆下密封帽。 • Remove the sealing cap. • 用扳手逆时针旋转调整轴 180°，听到 “咔哒“声（增大间隙）。 • Rotate the adjustable shaft 180° counterclockwise with the wrench and hear a "click" sound(increase the gap). • 检查间隙。 • Check the gaps. 2）调整扳手不取下，在确保整车制动气压符合的情况下（≥ 0.6MPa）,原地施加 20 次制动，压力保持5S以上，制动频次保持在 2~3 秒/次，制动间隙可自动调整至正常范围。 2) The adjustable wrench is not removed. Under the condition that the braking pressure of the vehicle is consistent (≥ 0.6mpa), apply 20 braking times in place, the pressure is kept above 5S, the braking frequency is kept at 2-3 seconds/time, and the braking gap can be automatically adjusted to the normal range. 3）观察扳手应该会以较小的角度顺时针转动。 3) Observe that the wrench should turn clockwise at a smaller Angle. 4）若扳手不能转动，或仅第一次制动时转动，或每次制动时先向前再向后转动，这说明自动调整机构已失效，必须更换制动钳。 4) If the wrench can not rotate, or only the first brake rotation, or each time the brake first forward and then backward rotation, this indicates that the automatic adjustment mechanism has failed, must replace the brake pliers.	

2. 参阅桥总成系统步骤，安装车轮。

2. Refer to the axle assembly system steps to install the wheels.

5.2 气室总成 (Chamber Assembly)

安全注意事项
Safety Precautions

1. 操作人员应提前熟悉此维修内容，严禁不熟悉此维修内容的人员操作。

1. The operator should be familiar with the maintenance content in advance, and it is strictly forbidden to operate the personnel who are not familiar with the maintenance content.

2. 维修作业应遵守本内容提及的警告与注意事项，避免造成零部件损坏或人身伤害。

2. Before maintenance, the warnings and precautions mentioned in this content shall be observed to avoid parts damage or personal injury.

3. 进行车辆维护或保养时，请始终佩戴护目镜，以防止对眼睛造成伤害。

3. When performing vehicle maintenance or maintenance, please always wear safety goggles to prevent damage to eyes.

4. 车辆应停放在水平地面上，拉起手刹，在前桥轮胎下放置三角木防止车辆移动。

4.The vehicle should be parked on the horizontal ground, placed triangular wood under the front axle tire to prevent the vehicle from moving, with a safety frame to support the vehicle.

5. 在装配与拆除过程中应使用铜锤或合成材料制成的短锤，勿用钢锤直接敲打钢制部件，脱落的零件碎片可能造成人身伤害与部件损坏。所使用的其他工具需保证完好，损坏的工具可能导致作业质量不良或引起人员、零件损伤。

5.In the process of assembly and disassembly, Should be use a copper hammer or a short hammer made of synthetic materials. Do not hit steel parts directly with a steel hammer, as the broken parts may cause personal injury and component damage. Ensure that other tools are in good condition. Damaged tools may cause poor operation quality or damage to personnel and parts.

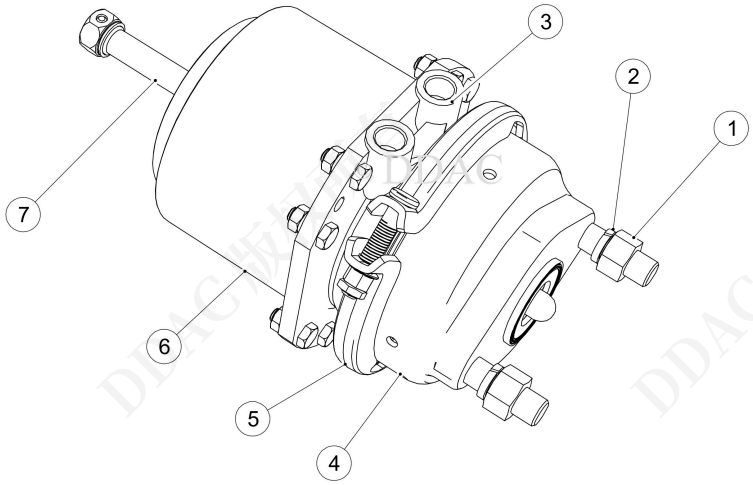
通用工具
Universal tool

序号 No.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool model specifications	图示 Illustration
1	扭矩扳手 Torque wrench	检测调整臂 Check the adjustment arm	0~300 N.m	 DDAC-T000003

化学品
Chemical product

序号 No.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	润滑脂 Grease	用于润滑推杆头部 Used to lubricate the push rod head	适量 Right amount	DDAC-B

分解图
Breakdown drawing



DDAC-3530010-000009

1.六角螺母 1. Nut	2.弹簧垫圈 2. Spring Washer	3.气室接口 3. Air chamber interface
4.行车制动腔 4. Service brake cavity	5.卡箍 5. Clamp	6.驻车制动腔 6. Parking brake cavity
7.限位螺杆 7. Limit screw		

拆卸前准备

Prepare before disassembly

注：

Note:

气室的拆卸维修不需要车轮。

The disassembly and maintenance of the gas chamber do not need wheels.

拆卸步骤

Disassembly steps

1. 拆卸气室总成

1. Remove the chamber assembly

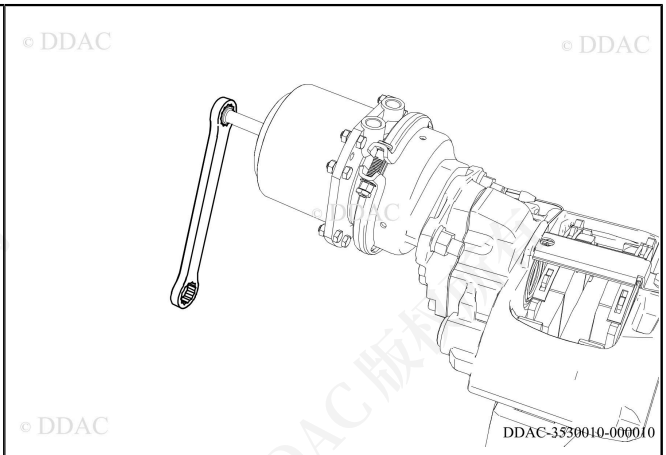
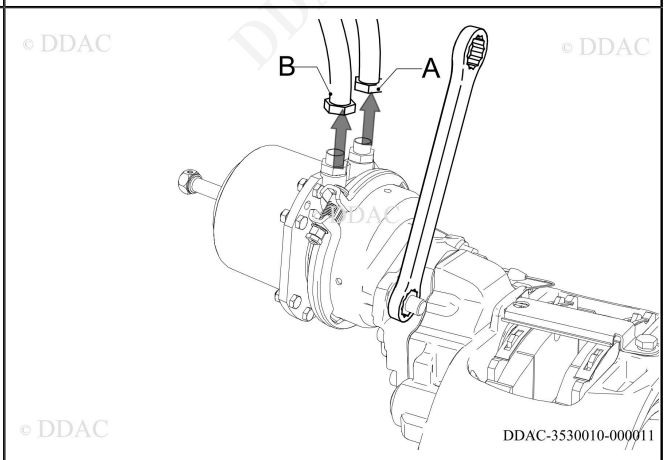
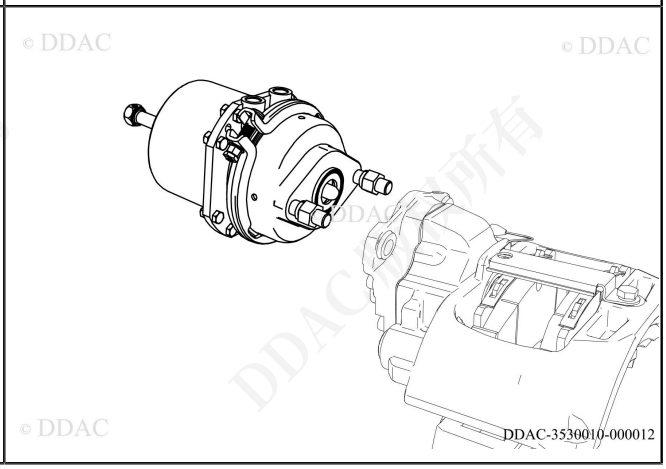
⚠ **注意:**

在拆解气管之前应将气管中残余的空气排尽。

Exhaust the remaining air in the trachea before disassembling it.

拆下气管时做好标识，与气室接口位置对应。

When the trachea is removed, make a mark corresponding to the interface position of the air chamber.

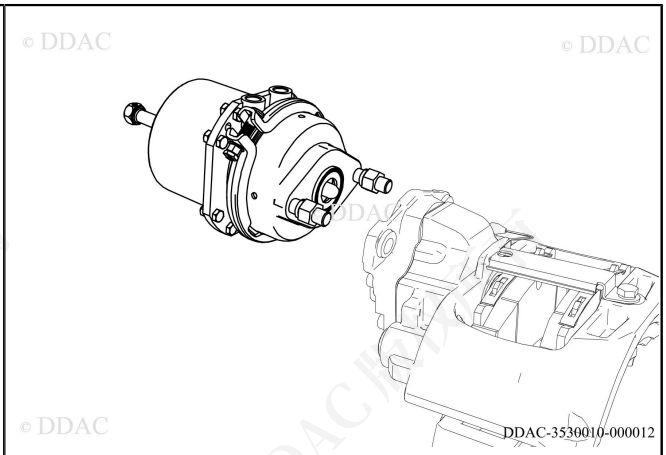
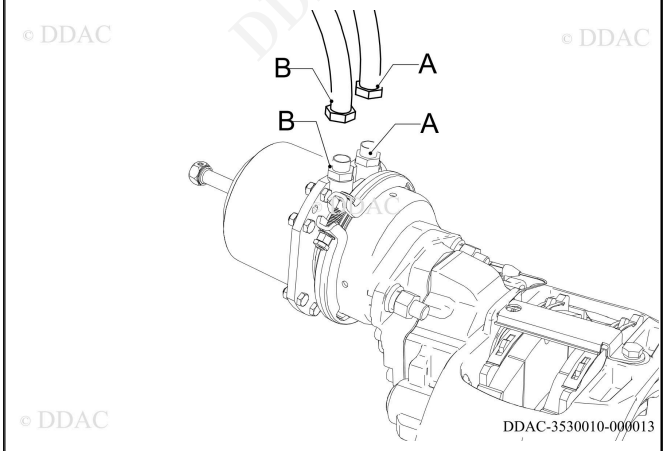
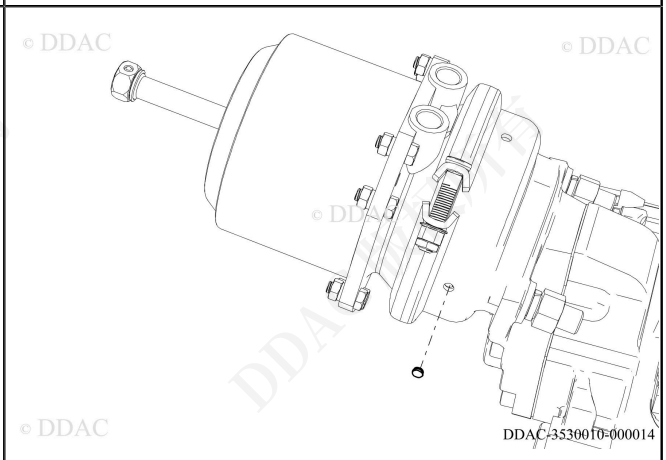
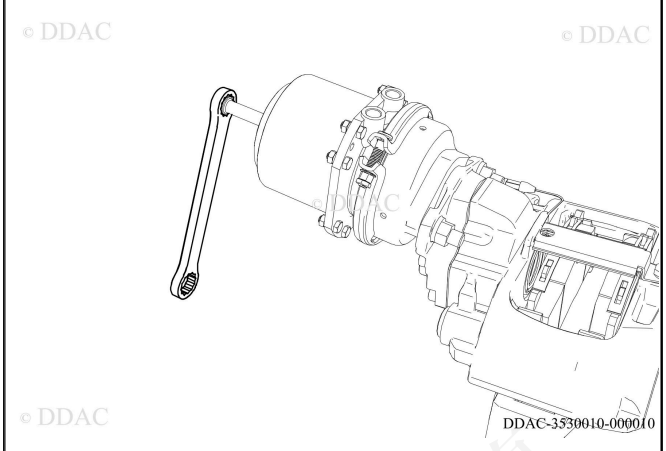
1）释放手刹，将制动气室螺杆完全旋出。 1) Release the handbrake and completely screw out the brake air chamber.	
2）拉起手刹，拆卸气室气管 A / B，拆卸气室安装螺母。 2) Pull up the handbrake, remove the air chamber pipe A/B, and remove the air chamber mounting nut. **注：** **Note:** **螺母可能不易拆卸，选用合适的套筒工具。** **Nuts may not be easy to disassemble, use a suitable sleeve tool.**	
3）取下气室总成。 3) Remove the air chamber assembly.	

安装前准备
Preparations for Installation

1. 制动钳上与气室配合面是否干净。
1. Whether the matching surface between the brake caliper and the air chamber is clean.
2. 检查制动杆的球槽处是否有润滑脂。
2. Check whether there is grease in the ball groove of the brake rod.
3. 确认制动气室选用原装气室或者指定气室。
3. Confirm that the original or designated brake air chamber is used.

安装步骤
Installation steps

1. 安装气室总成
1. Install the air chamber assembly

1）将气室安放到安装位，用螺母锁紧制动气室，安装力矩 250~280 N.m。 1) Place the air chamber in the installation position and lock the brake air chamber with a nut. The installation torque is 250~280 N.m.	
2）连接制动气室的气管。 2) Connect the air pipe of the brake air chamber. **注：** **Note:** **按拆卸标识安装气管。** **Install the air pipe according to the removal label.**	
3）拔掉制动气室取下方的堵塞。 3) Unplug the brake air chamber and remove the blockage below. **注：** **Note:** **下方堵塞可取下 1~2 处。** **Below the blockage can be removed 1 to 2 places.**	
4）拉起手刹，将气室限位螺杆完全拧入。 4) Pull up the handbrake and screw the air chamber limit screw completely into it.	

最后步骤

The final step

1. 检查制动间隙

1. Check the brake gap

注：

Note:

制动间隙的检查调整是制动系统维修后必须进行的步骤。

The check and adjustment of brake gap is a necessary step after brake system maintenance.

1）将制动卡钳拉或推动至与制动块一边接触，用塞尺检查间隙，保证间隙在 0.6~1.2 mm之间，如果间隙小于 0.6 mm，重新进行间隙的调整。

1)Pull or push the brake caliper to contact with the brake block, check the gap with a feeler to ensure that the gap is between 0.6 and 1.2mm, if the gap is less than 0.6mm, adjust the gap again.

5.3 制动块及磨损报警器 (Brake slipper and Wear alarm)

安全注意事项
Safety Precautions

1. 操作人员应提前熟悉此维修内容，严禁不熟悉此维修内容的人员操作。

1. The operator should be familiar with the maintenance content in advance, and it is strictly forbidden to operate the personnel who are not familiar with the maintenance content.

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2. Before maintenance, the warnings and precautions mentioned in this content shall be observed to avoid parts damage or personal injury.

3. 进行车辆维护或保养时，请始终佩戴护目镜，以防止对眼睛造成伤害。

3. When performing vehicle maintenance or maintenance, please always wear safety goggles to prevent damage to eyes.

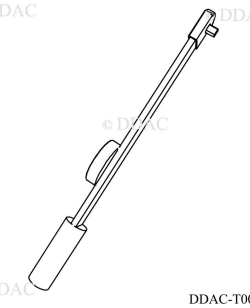
4. 车辆应停放在水平地面上，在前桥轮胎下放置三角木防止车辆移动, 用安全支架支住车辆。

4.The vehicle should be parked on the horizontal ground, placed triangular wood under the front axle tire to prevent the vehicle from moving, with a safety frame to support the vehicle.

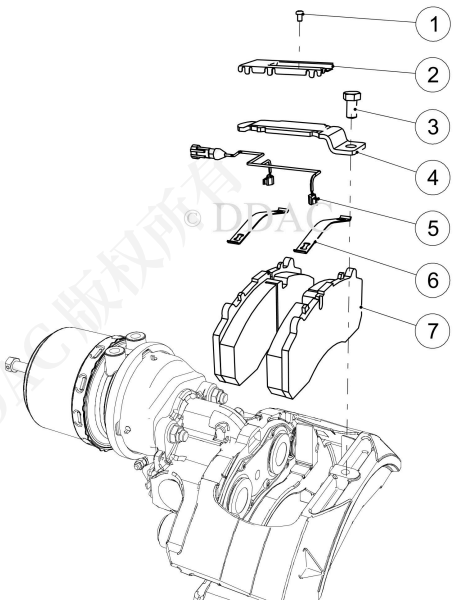
5. 在装配与拆除过程中应使用铜锤或合成材料制成的短锤，勿用钢锤直接敲打钢制部件，脱落的零件碎片可能造成人身伤害与部件损坏。所使用的其他工具需保证完好，损坏的工具可能导致作业质量不良或引起人员、零件损伤。

5.In the process of assembly and disassembly, Should be use a copper hammer or a short hammer made of synthetic materials. Do not hit steel parts directly with a steel hammer, as the broken parts may cause personal injury and component damage. Ensure that other tools are in good condition. Damaged tools may cause poor operation quality or damage to personnel and parts.

通用工具
Universal tool

序号 No.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool model specifications	图示 Illustration
1	卡尺 Caliper	检查零件尺寸 Check part size	0~150mm	 DDAC-T000002
2	扭矩扳手 Torque wrench	检测调整臂 Check the adjustment arm	75~500Nm	 DDAC-T000003

分解图
Breakdown drawing



DDAC-3502410-000033

1. 螺栓 1. Bolt	2. 盖板 2. Cover plate	3.六角螺栓 3. Bolt
4. 支架 4. Bracket	5. 磨损报警器 5. Wear alarm	6. 压簧 6. Pressure spring
7. 摩擦块 7. Friction block		

拆卸前准备
Prepare before disassembly

1. 车轮拆卸步骤参阅：桥总成系统。

1. Wheel removal steps refer to: axle assembly system.

2. 释放手刹。

2. Release the handbrake.

拆卸步骤
Disassembly steps

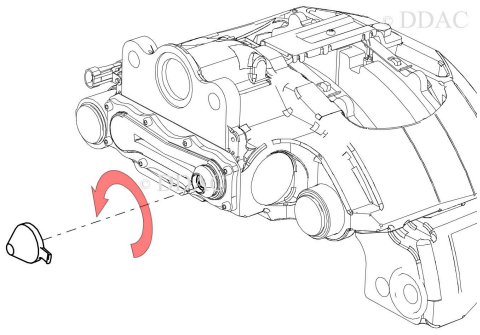
⚠ **注意:**

不能使用气动扳手或者其他类似工具转动调整螺栓，防止自调机构损坏。

Do not use pneumatic wrench or other similar tools to turn the adjusting bolt to prevent damage to the self-adjusting mechanism.

1）拆下密封帽，用扳手逆时针旋转调整轴，使制动块与制动盘之间有间隙并完全松开。

1) Remove the sealing cap and use a wrench to turn the adjustment shaft counterclockwise so that there is a gap between the brake block and the brake disc and it is completely released.



DDAC-3502410-000036

2）取下传感器盖板，拔出传感器线束的插座。

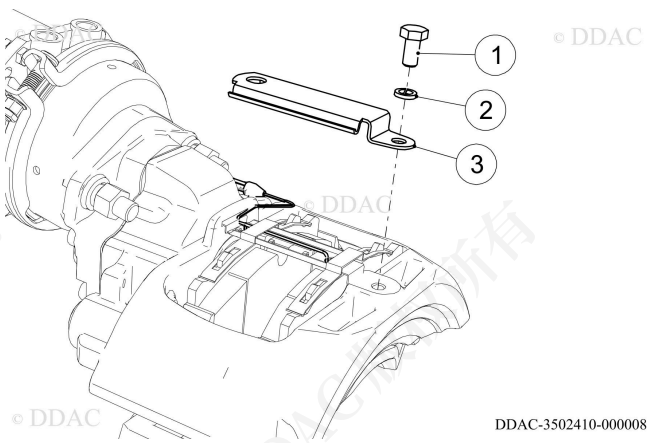
2) Remove the sensor cover plate and pull out the socket of the sensor wire harness.

注：

Note:

传感器护罩结构结构形式存在多种形式。

There are many types of sensor shield structure.



3）拆卸卡钳上支承架。

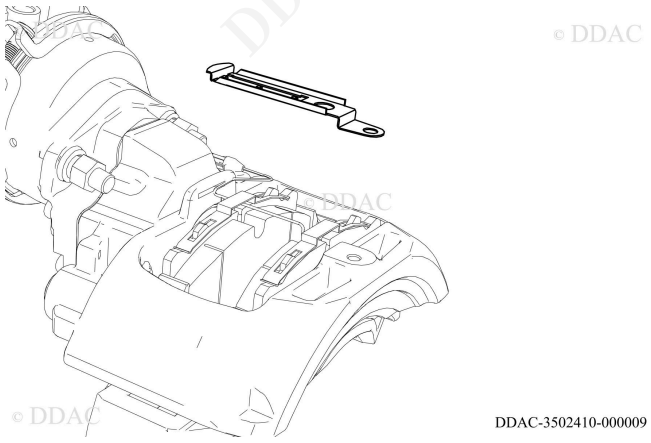
3) Remove the upper support frame of the caliper.

注：

Note:

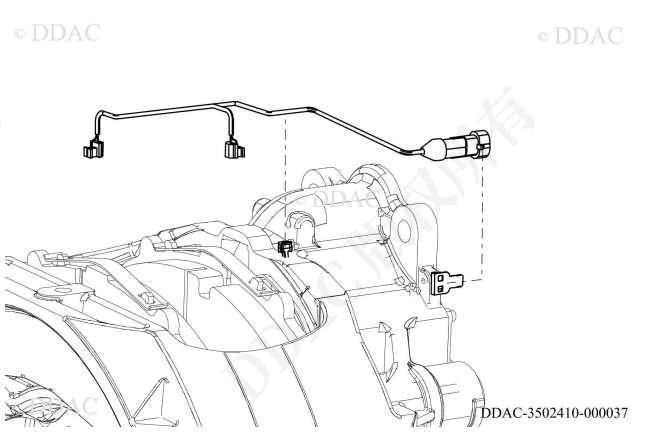
卡钳支架有螺栓固定式与销轴固定式。

Caliper bracket has bolt fixed type and pin fixed type.



4）拔掉磨损指示器插头与整车的电源线连接，使用螺丝刀将磨损指示器插头从制动块上取下，剪断线束扎带，取下磨损指示器。

4) Unplug the wear indicator and disconnect the power cable from the vehicle.Use a screwdriver to remove the wear indicator plug from the brake block,Cut the wire bundle and tie,Remove the wear indicator.



5）取下制动块上的压簧（1），取出制动块（2）。

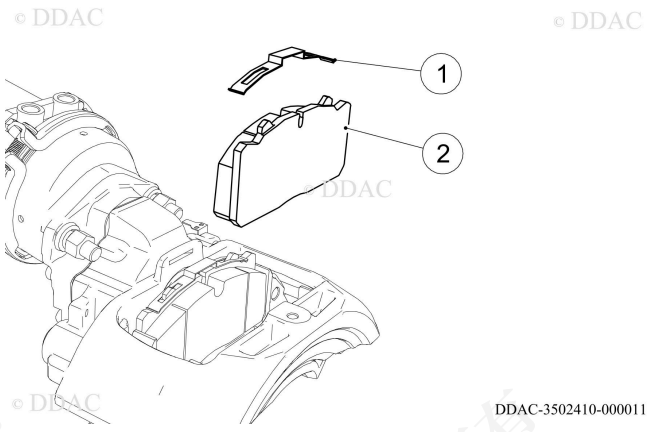
5) Remove the pressure spring (1) on the brake block and remove the brake block (2).

注：

Note:

也会有摩擦片和压簧合件结构。

There will be friction plate and pressure spring structure.



安装前准备

Preparations for Installation

注：

Note:

左右摩擦块必须同时更换。

The left and right friction blocks must be replaced simultaneously.

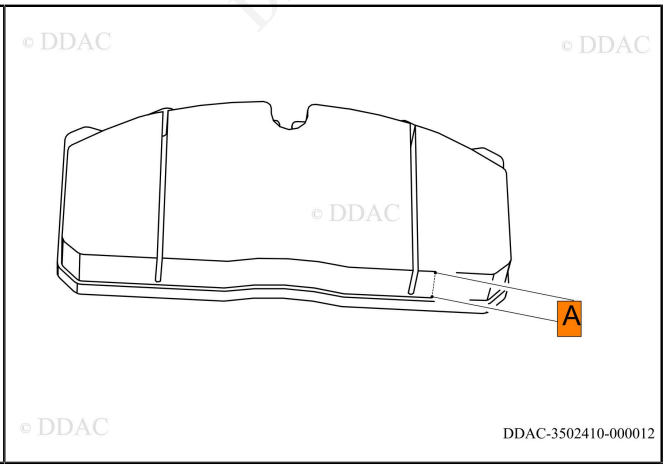
1. 测量制动块厚度

1. Measure the thickness of brake block

⚠ 注意:

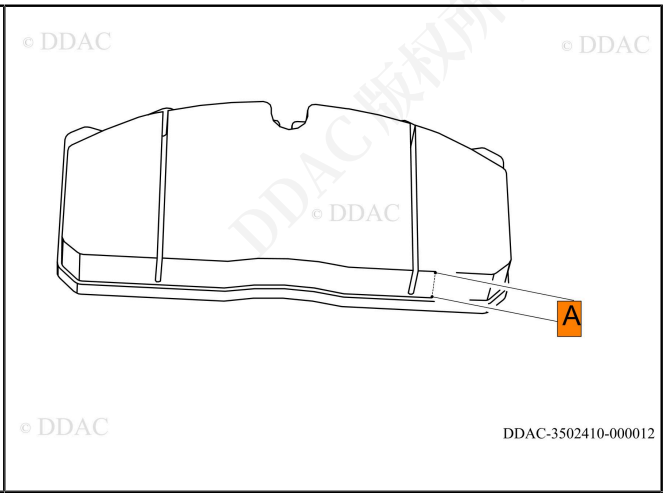
根据实际使用工况，如果摩擦材料已磨至最小厚度或在下一次检查前可能磨至最小厚度，则必须提前更换上新制动块总成。

According to the actual working conditions, if the friction material has been worn to the minimum thickness or may be worn to the minimum thickness before the next inspection, A new brake block assembly must be replaced in advance.

1）测量检查制动块摩擦材料厚度，最小厚度不小于 2 mm。 1) Measure and check the thickness of friction material of brake block, the minimum thickness is not less than 2mm.	

2. 测量检查制动块摩擦材料磨损是否均匀

2. Measure and check whether the friction material wear of brake block is uniform

1）测量检查制动块摩擦材料磨损是否均匀，测量 4 个点，如磨损不均匀超差、表面严重掉块，需更换制动块。 1) Measure and check whether the wear of friction material of brake block is uniform. The maximum allowable uneven amount of friction material is 1 mm. Measure 4 points. Such as wear uneven amount out of tolerance, surface serious block, need to replace the brake block. **注：内外摩擦块厚度差超过5mm，应将内外片换位安装。** **Note: If the thickness difference between internal and external friction blocks exceeds 5mm, the internal and external pieces should be replaced and installed.**	

3. 检查制动盘

3. Check the brake disc

1）检查制动盘是否有开裂或磨损划痕。

1) Check whether the brake disc has cracking or wear scratches.

A_1 =小裂纹在表面上延伸，此情况允许。

A1= Small cracks extend on the surface, which is allowed.

B_1 =小于 1.5 mm长、宽的裂纹径向延伸，此情况允许。

B1= radial extension of crack with length and width less than 1.5 mm, which is allowed.

C_1 =小于 1.5 mm深的环形槽，此情况允许。

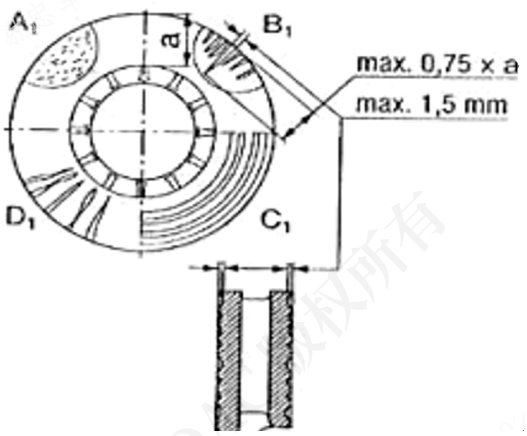
C1= annular groove less than 1.5 mm deep, this case is allowed.

D_1 =贯穿性裂纹是不允许的，制动盘必须更换。

D1= penetrating crack is not allowed, brake disc must be replaced.

制动盘总厚度 19.5 / 22.5 吋不小于 37 mm， 16 / 17.5 吋不小于 28 mm。

The total thickness of the brake disc is not less than 37 mm in 19.5/22.5 inches and not less than 28 mm in 16/17.5 inches.

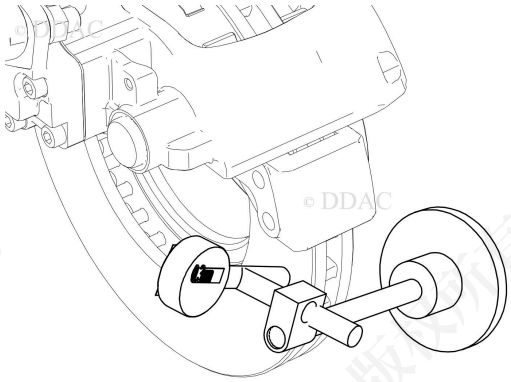


2）检查制动盘的跳动量。

2) Check the jerk value of brake disc.

用带有磁性座的百分表测头分别与制动盘的两摩擦面接触，并转动制动盘一周，测量制动盘的跳动，最大跳动不得超过 0.5 mm（减去轮毂轴向窜动量后）。

The dial gauge probe with magnetic seat is used to contact the two friction surfaces of the brake disc, and the brake disc is rotated for a week to measure the beating of the brake disc. The maximum beating shall not exceed 0.5mm (after subtracting the axial movement of the hub).

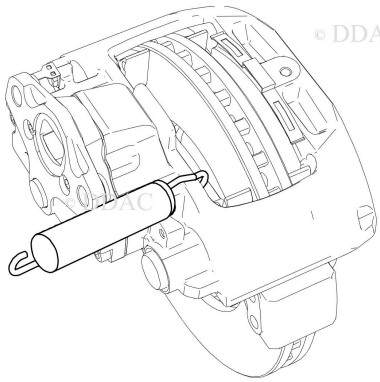


4. 检查制动钳的滑动功能

4. Check the sliding function of brake caliper

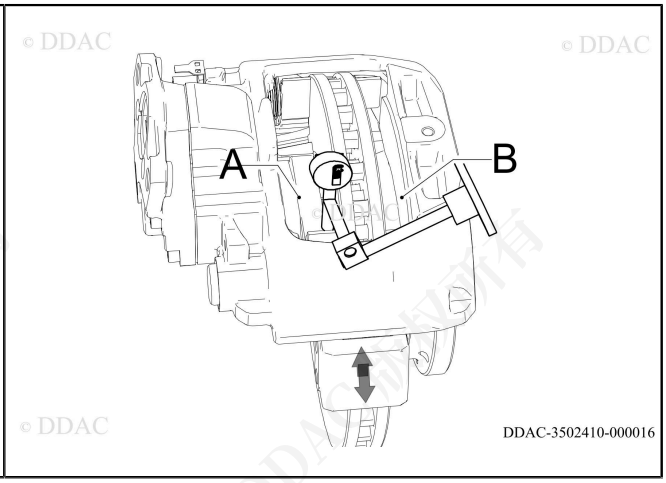
制动钳的最大滑动阻力为 100 N，如果滑动阻力超过 100 N，检查是否存在灰尘、杂物等妨碍了制动钳的滑动，检查滑销密封是否破损导致滑销生锈，影响制动钳的滑动。

The maximum sliding resistance of the brake caliper is 100 N. If the sliding resistance exceeds 100 N, check whether there is dust, debris, etc., which hinders the brake caliper Sliding, check whether the sliding pin seal is damaged, resulting in the sliding pin rust, affecting the sliding of the brake caliper.



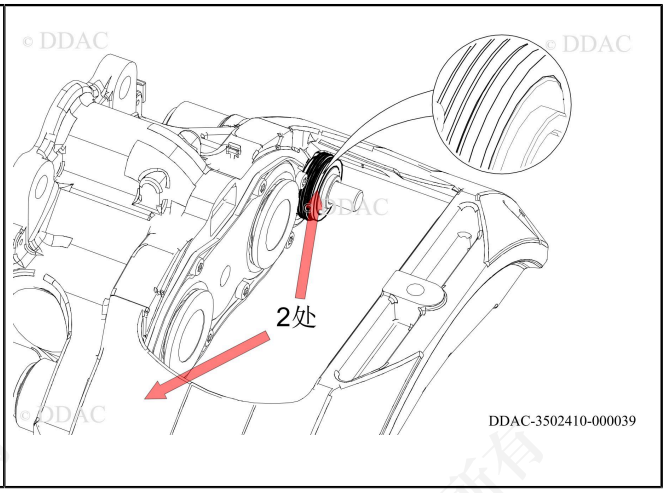
5. 检查滑销的间隙

5. Check the clearance of the sliding pin

1）图示 A 位置为检查外滑销的间隙，B 位置为检查内滑销的间隙，检查时百分表应放在刻度 0 点的位置,分别在 A、B 两位置通过杠杆提升和降低制动钳，测出两位置的最大间隙不得超过 1.0 mm。如果间隙超过 1.0 mm，必须更换滑销。 1) As shown in the figure, position A is to check the clearance of the external sliding pin, and position B is to check the clearance of the internal sliding pin. During the inspection, the dial indicator should be placed at the position of zero point of the scale. The brake caliper should be lifted and lowered by lever at positions A and B respectively, and the maximum clearance between the two positions should not exceed 1.0mm. If the gap exceeds 1.0mm, the sliding pin must be replaced.	

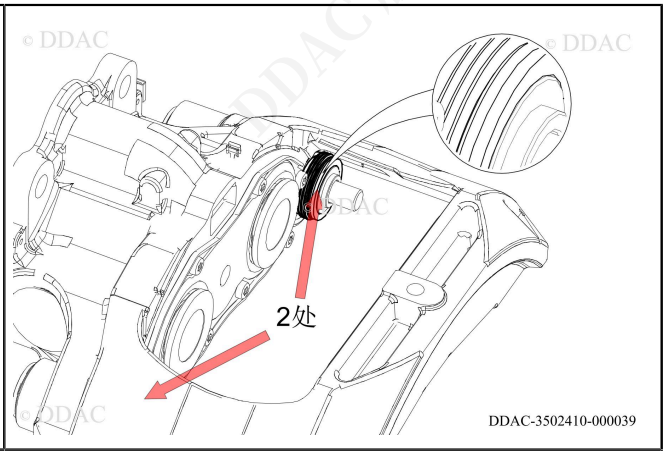
6. 检查滑销密封圈

6. Check the sealing ring of the sliding pin

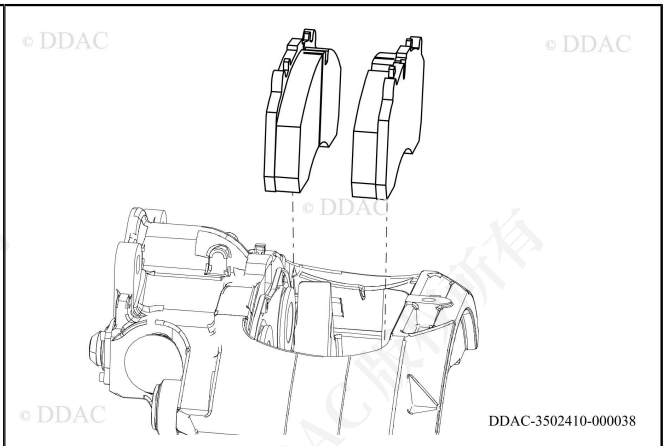
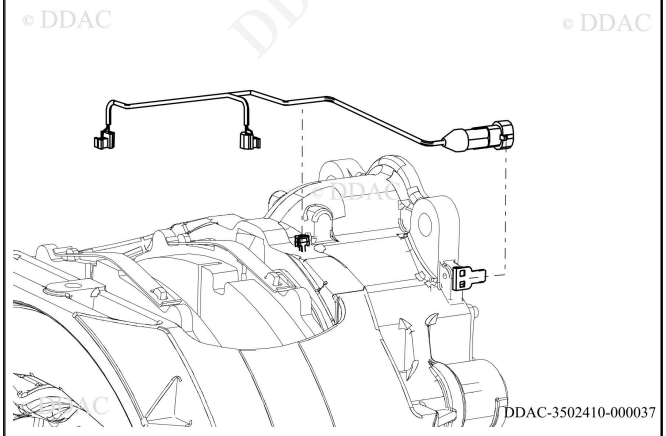
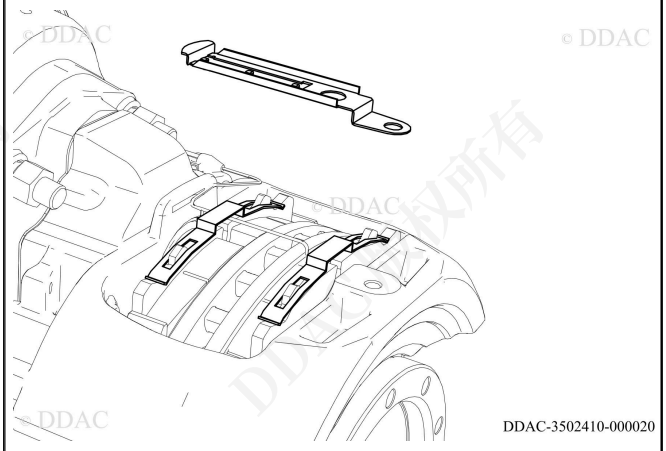
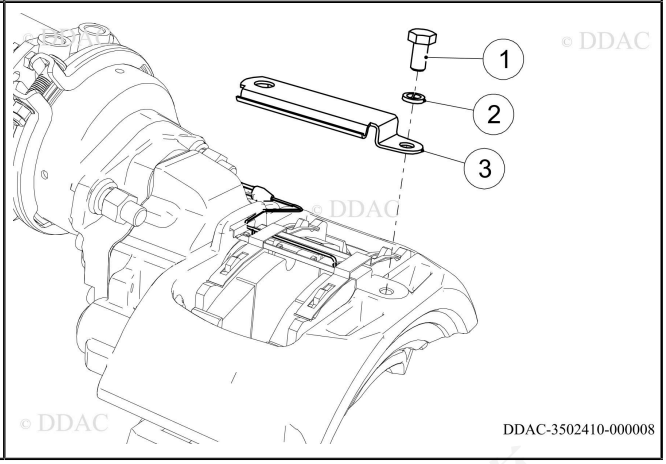
1）推动主、副钳体滑动，检查滑销密封圈，如存在裂纹和损伤及时给予更换。 1) Push the main and auxiliary pliers to slide, check the seal ring of the sliding pin, and replace it in time if there are cracks and damage.	

7. 检测调整螺杆密封套

7. Test and adjust screw sealing sleeve

1）用扳手顺时针旋转调整轴至螺杆密封圈完全外露，使推板从初始位置向外推出 20 mm，检查螺杆密封圈，如果存在裂纹或其它影响密封的损伤，必须进行更换。 1) Rotate the shaft clockwise with the wrench until the screw seal ring is completely exposed, so that the push plate is pushed out 20 mm from the initial position. Check the screw seal ring. If there is crack or other damage affecting the seal, it must be replaced.	

安装步骤
Installation steps

1. 把内外制动块放入制动钳。 1. Put the inner and outer brake blocks into the brake pliers.	 DDAC-3502410-000038
2. 在制动块上安装磨损指示器，归纳线束，按拆卸位置固定线束。 2. Install wear indicator on brake block, induce wiring harness, and fix wiring harness according to disassembly position.	 DDAC-3502410-000037
3. 安装内外制动块压弹簧，装上支架。 3. Install the inner and outer brake block pressure spring and install the bracket.	 DDAC-3502410-000020
4. 装好磨损报警线护罩，装内、外磨损报警器线束进行整理，盖好盖板。 4. Install the wear alarm wire shield, install the inside and outside wear alarm, arrange the wire harness, and cover the cover plate. **注：** **Note:** **磨损报警器护罩根据制动器产品有多种。** **Wear alarm cover according to the brake products have many varieties.**	 DDAC-3502410-000008

5. 连接磨损报警线与整车接头，用扎带按原位置束好磨损报警线。 5. Connect the wear alarm wire to the vehicle connector, and bundle the wear alarm wire according to the original position with the cable tie.	

最后步骤

The final step

1. 调整制动间隙。

1. Adjust the brake clearance.

注：

Note:

制动间隙的调整步骤是制动系统维修后必须进行的步骤。

The adjustment step of brake gap is a necessary step after brake system maintenance.

⚠ **注意:** **不能使用气动扳手或者其他类似工具转动调整螺栓，防止自调机构损坏。** **Do not use pneumatic wrench or other similar tools to turn the adjusting bolt to prevent damage to the self-adjusting mechanism.** 1）检查制动卡钳与制动盘之间的间隙，正常间隙0.6~1.2 mm，小于0.6mm时需手动调节。 1) Check the clearance between brake caliper and brake disc, normal clearance 0.6mm to 1.2 mm, if less than 0.6mm, manual adjustment is required. • 拆下密封帽。 • Remove the sealing cap. • 用扳手逆时针旋转调整轴 180°，听到 “咔哒“声（增大间隙）。 • Rotate the adjustable shaft 180° counterclockwise with the wrench and hear a "click" sound (increase the gap). • 检查间隙。 • Check the gaps. 2）调整扳手不取下，在确保整车制动气压符合的情况下（≥ 0.6 MPa）,原地施加 20 次制动，压力保持5S以上，制动频次保持在 2~3 秒/次，制动间隙可自动调整至正常范围。 2) The adjustable wrench is not removed. Under the condition that the braking pressure of the vehicle is consistent (≥ 0.6mpa), apply 20 braking times in place, the pressure is kept above 5S, the braking frequency is kept at 2-3 seconds/time, and the braking gap can be automatically adjusted to the normal range. 3）观察扳手应该会以较小的角度顺时针转动。 3) Observe that the wrench should turn clockwise at a smaller Angle. 4）若扳手不能转动，或仅第一次制动时转动，或每次制动时先向前再向后转动，这说明自动调整机构已失效，必须更换制动钳。 4) If the wrench can not rotate, or only the first brake rotation, or each time the brake first forward and then backward rotation, this indicates that the automatic adjustment mechanism has been lost. The brake clamp must be replaced.	

2. 参阅桥总成系统步骤，安装车轮。

2. Refer to the axle assembly system steps to install the wheels.

5.4 调整螺杆保护套 (Protective Sleeve for Adjusting Screw)

安全注意事项

Safety Precautions

1. 操作人员应提前熟悉此维修内容，严禁不熟悉此维修内容的人员操作。

1. The operator should be familiar with the maintenance content in advance, and it is strictly forbidden to operate the personnel who are not familiar with the maintenance content.

2. 维修作业应遵守本内容提及的警告与注意事项，避免造成零部件损坏或人身伤害。

2. Maintenance operations shall comply with the warnings and precautions mentioned herein to avoid damage to parts or personal injury.

3. 进行车辆维护或保养时，请始终佩戴护目镜，以防止对眼睛造成伤害。

3. Wear safety goggles at all times during vehicle maintenance or maintenance to prevent eye damage.

4. 车辆应停放在水平地面上，在轮胎下放置三角木防止车辆移动，车轮打起后要放置安全支架支住车辆。

4. The vehicle should be parked on the horizontal ground, placed triangular wood under the tire to prevent the vehicle from moving, and placed a safety bracket to support the vehicle after the wheel is lifted.

5. 在装配与拆除过程中应使用铜锤或合成材料制成的短锤，勿用钢锤直接敲打钢制部件，脱落的零件碎片可能造成人身伤害与部件损坏。所使用的其他工具需保证完好，损坏的工具可能导致作业质量不良或引起人员、零件损伤。

5. In the process of assembly and removal, a short hammer made of copper or synthetic materials should be used. Do not hit steel parts directly with steel hammer. May cause personal injury and component damage. Other tools used must be in good condition. Damaged tools may lead to poor operation quality or cause damage to people, parts damage.

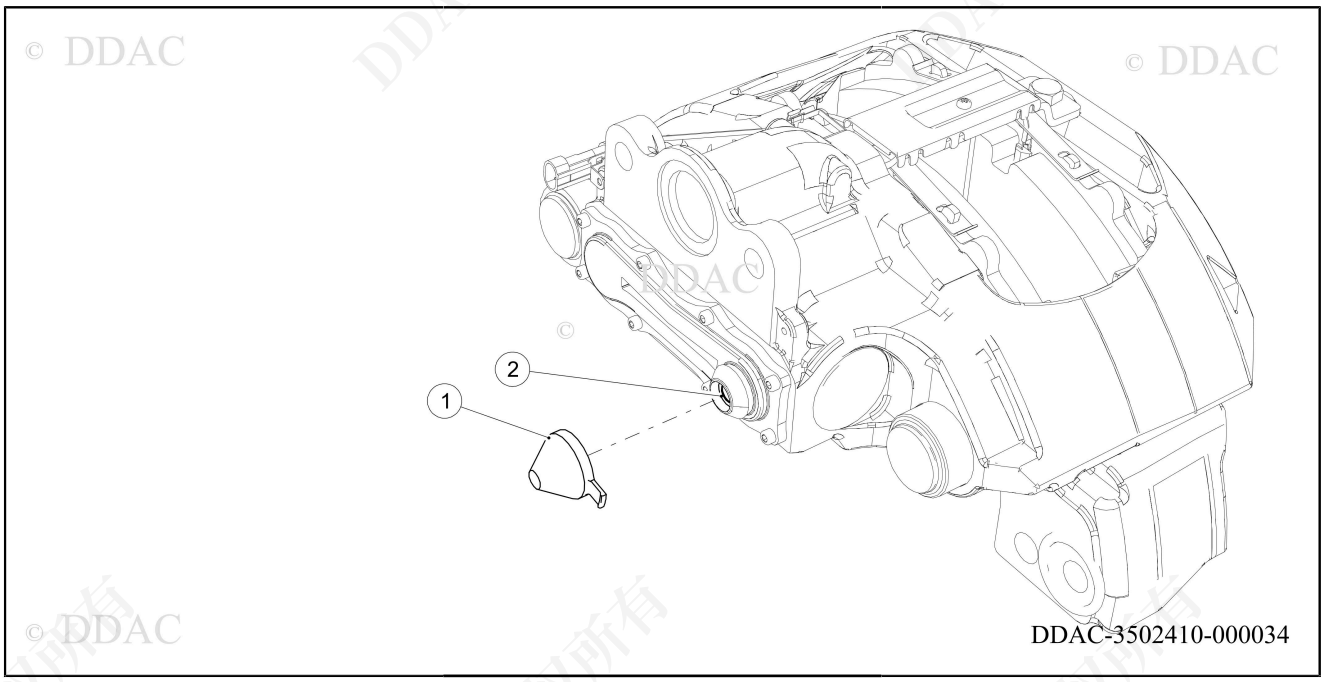
化学品

Chemical product

序号 No.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	润滑脂 Grease	用于润滑推杆头部 Used to lubricate the push rod head	适量 Right amount	DDAC-B

分解图

Breakdown drawing



1.调整螺杆保护套 1. Adjust the screw protective cover	2.调整螺杆(调整机构) 2. Adjusting screw (adjusting mechanism)	

拆卸前准备
Prepare before disassembly

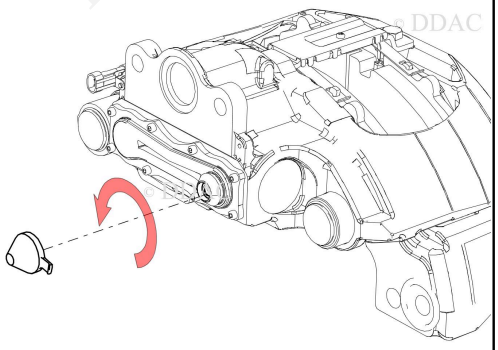
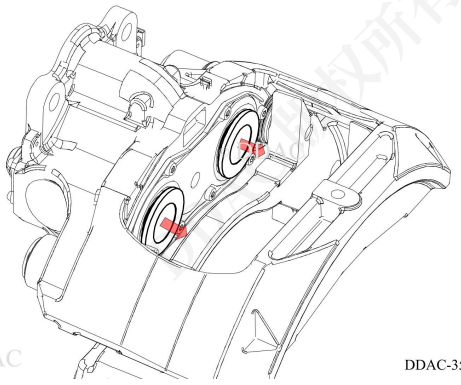
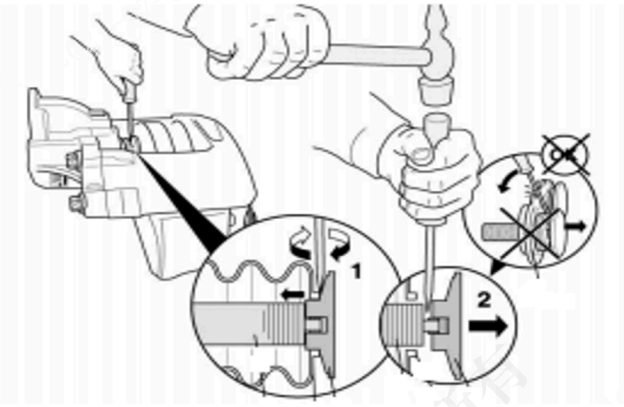
1. 按气室总成拆卸步骤，拆卸气室。

1. Disassemble the gas chamber according to the disassembly steps of the gas chamber assembly.

2. 按制动块及磨损报警指示器的拆卸步骤，拆卸制动块。

2. Disassemble the brake block according to the disassembly steps of the brake block and wear alarm indicator.

拆卸步骤
Disassembly steps

1. 取下密封帽，使用扳手顺时针旋转调整轴直至推板伸出 35~40 mm 处停止旋转。 1. Remove the sealing cap and rotate the adjusting shaft clockwise with a wrench until the pushing plate extends 35 to 40 mm.Then stop spinning.	 DDAC-3502410-000036
2. 用力将螺旋弹簧保护套向后拉出。 2. Pull out the coil spring protective cover with force.	 DDAC-3502410-000040
⚠ **注意:** **拆卸过程中应避免损坏调整螺杆和推板。** **Avoid damaging the adjusting screw and pushing plate during disassembly.** 3. 用螺丝刀将保护套和推板分开。 3. Use a screwdriver to separate the protective cover from the push plate.	

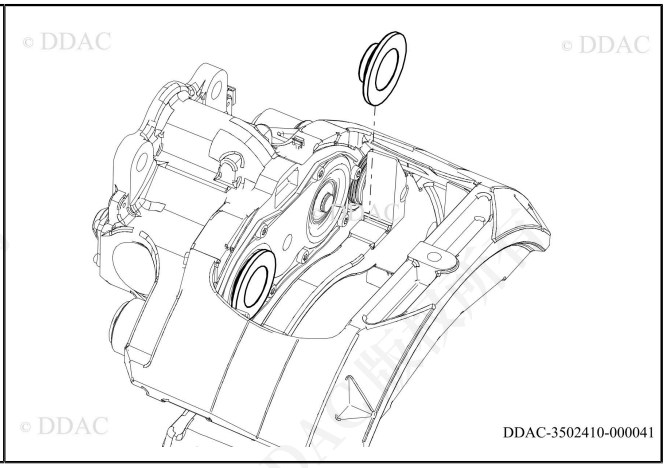
⚠ **注意:**

拆卸过程中应避免损坏密封配合面。

Avoid damaging the sealing mating surface during disassembly.

4. 逆时针旋转调整轴直至调整螺杆完全回位，将保护套从端盖上取下。

4.Turn the adjusting shaft counterclockwise until the adjusting screw fully returns, and remove the protective cover from the end cover.



安装前准备
Preparations for Installation

1. 检查端盖上的保护套安装面和推板上的安装面是否完好，不能有损伤。

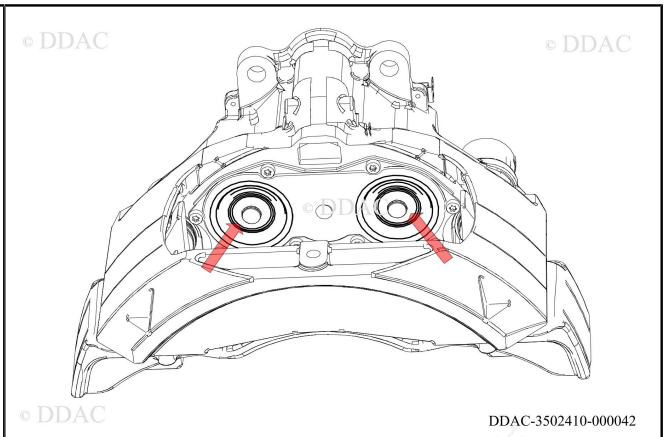
1. Check whether the installation surface of the protective sleeve on the end cover and the installation surface on the push plate are intact and can not be damaged.

2. 检查推板与调整螺杆的接触面是否完好，不能有破损。

2. Check whether the contact surface between the push plate and the adjustment screw is intact and can not be damaged.

3. 检查调整螺杆另一端的调整机构是否存在锈蚀、损坏和压痕，如存在锈蚀和损坏，更换新件。

3. Check the adjustment mechanism at the other end of the adjustment screw for corrosion, damage and indentation. If there is corrosion and damage, replace with new parts.



安装步骤
Installation steps

1. 在调整螺杆螺纹上涂抹专用润滑脂。

1. Apply special grease to the thread of the adjusting screw.

2. 将保护套安装在端盖上，然后压入安装槽内。

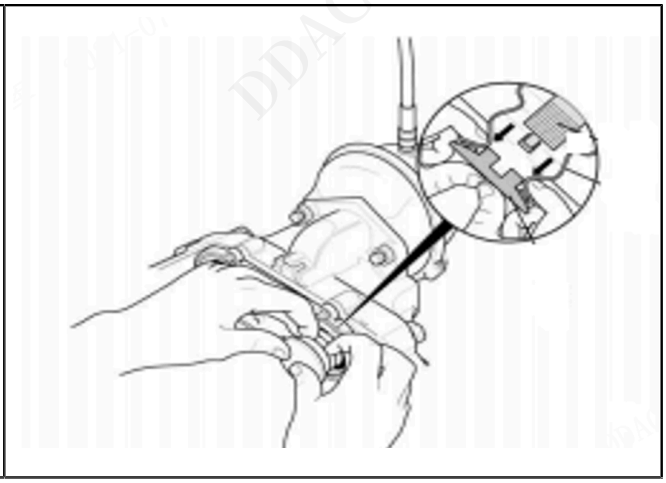
2. Install the protective cover on the end cover and press it into the installation slot.

3. 使用新的卡簧将保护套固定在调整螺杆上。

3. Fix the protective sleeve on the adjusting screw witha new clip spring.

4. 用手指将保护套压在推板上，然后将推板装在调整螺杆上。

4. Press the protective cover on the pushing plate with your fingers, and then install the pushing plate on the adjusting screw.



最后步骤
The final step

1. 按制动块及磨损报警器步骤，安装制块。

1. Install the block according to the steps of brake block and wear alarm.

2. 按气室总成步骤，安装制动气室。

2. Install the brake chamber according to the chamber assembly steps.

3. 检查调整制动间隙。

3. Check and adjust the brake clearance.

注：

Note:

制动间隙的检查调整是制动系统维修后必须进行的步骤。

The check and adjustment of brake gap is a necessary step after brake system maintenance.

将制动卡钳拉或推动至与制动块一边接触，用塞尺检查间隙，保证间隙在 0.6~1.2 mm 之间，如果间隙小于 0.6 mm，按制动间隙调整办法,逆时针旋转，放大间隙后重新进行间隙的调整。

Pull or push the brake caliper to contact with the brake block, check the gap with the feeler, ensure that the gap between 0.6~ 1.2mm, if the gap is less than 0.6mm, rotate counterclockwise according to the brake gap adjustment method, and adjust the gap again after enlarging the gap.

4. 装好调整螺杆密封帽。

4. Install the sealing cap of the adjusting screw.

5.5 滑销与滑销衬套 (Sliding Pin and Sliding Pin Bushing)

安全注意事项
Safety Precautions

1. 操作人员应提前熟悉此维修内容，严禁不熟悉此维修内容的人员操作。

1. The operator should be familiar with the maintenance content in advance, and it is strictly forbidden to operate the personnel who are not familiar with the maintenance content.

2. 维修作业应遵守本内容提及的警告与注意事项，避免造成零部件损坏或人身伤害。

2. Maintenance operations shall comply with the warnings and precautions mentioned herein to avoid damage to parts or personal injury.

3. 进行车辆维护或保养时，请始终佩戴护目镜，以防止对眼睛造成伤害。

3. Wear safety goggles at all times during vehicle maintenance or maintenance to prevent eye damage.

4. 车辆应停放在水平地面上，在轮胎下放置三角木防止车辆移动，车轮打起后要放置安全支架支住车辆。

4. The vehicle should be parked on the horizontal ground, placed triangular wood under the tire to prevent the vehicle from moving, and placed a safety bracket to support the vehicle after the wheel is lifted.

5. 在装配与拆除过程中应使用铜锤或合成材料制成的短锤，勿用钢锤直接敲打钢制部件，脱落的零件碎片可能造成人身伤害与部件损坏。所使用的其他工具需保证完好，损坏的工具可能导致作业质量不良或引起人员、零件损伤。

5. In the process of assembly and removal, a short hammer made of copper or synthetic materials should be used. Do not hit steel parts directly with steel hammer. May cause personal injury and component damage. Other tools used must be in good condition. Damaged tools may lead to poor operation quality or cause damage to people, parts damage.

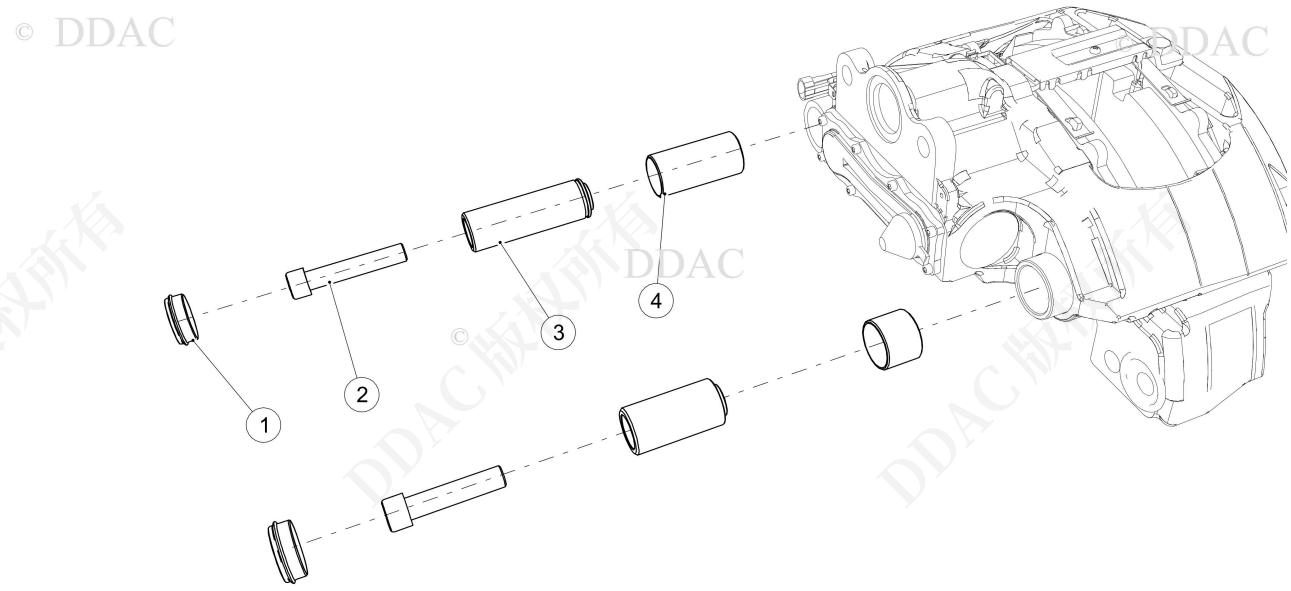
通用工具
Universal tool

序号 No.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool model specifications	图示 Illustration
1	扭矩扳手 Torque wrench	安装滑销螺栓 Install the sliding pin bolt	75~500Nm	

化学品
Chemical product

序号 No.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	润滑脂 Grease	用于润滑推杆头部 Used to lubricate the push rod head	适量 Right amount	DDAC-B

分解图
Breakdown drawing



DDAC-3502410-000035

1.保护套 1. Protective cove	2.滑销螺栓 2. Slide pin bolt	3.滑销 3. Slide pin
4.衬套 4.Bushing		

拆卸前准备

Prepare before disassembly

1. 按盘式制动器总成拆卸步骤，拆卸制动器总成。

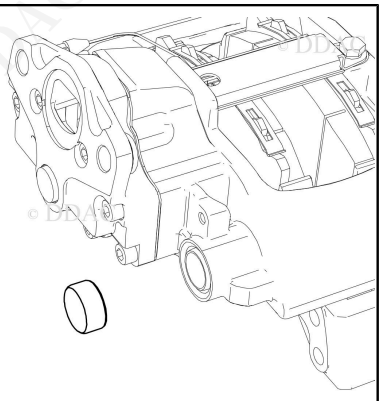
1. Disassemble the disc brake assembly according to the disassembly steps.

2. 按气室总成拆卸步骤，拆卸气室总成。

2. Remove the chamber assembly according to the removal steps of the chamber assembly.

拆卸步骤

Disassembly steps

1. 拆卸滑销密封盖。 1. Remove the sliding pin sealing cover.	 DDAC-3502410-000025

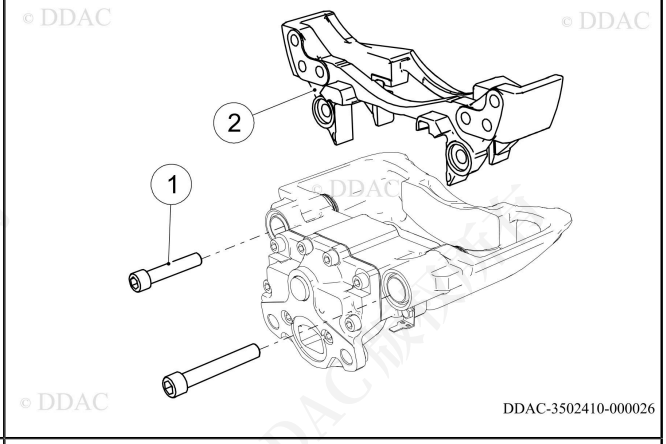
⚠ **注意:**

不要损坏滑销密封面。

Do not damage the sealing surface of the sliding pin.

2. 取出滑销固定螺栓（1），用力回推滑销，取下托架（2）。

2. Take out the sliding pin fixing bolt (1) and push the sliding pin back to remove the bracket(2).



DDAC-3502410-000026

⚠ **注意:**

不要损伤橡胶保护套，如有破损，须更换新的保护套。

Do not damage the rubber protective sleeve. If damaged, replace the protective sleeve.

3. 拆卸橡胶保护套（2）和滑销衬套（3）。

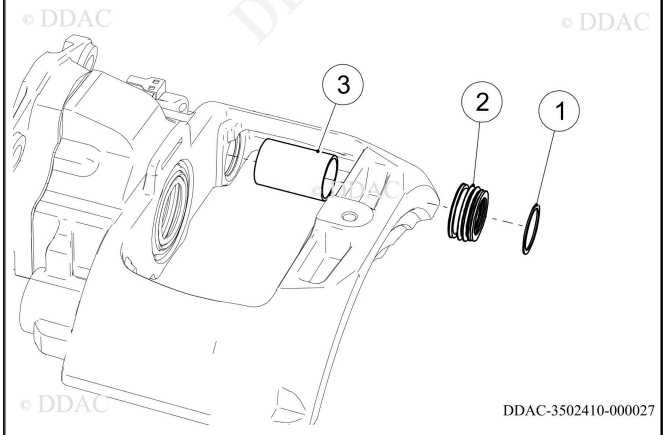
3. Remove the rubber protective sleeve (2) and sliding pin bushing (3).

注：

Note:

检查导销内孔，如衬套出现明显磨损再进行更换衬套，如导销出现明显磨损也需同步更换。

Check the inner hole of the guide pin. If the bushing is obviously worn, replace the bushing. If the guide pin is obviously worn, replace the bushing simultaneously.



DDAC-3502410-000027

安装前准备
Preparations for Installation

1. 检查制动器钳滑销密封盖，如出现松脱或者遗失及时给予更换或安装。

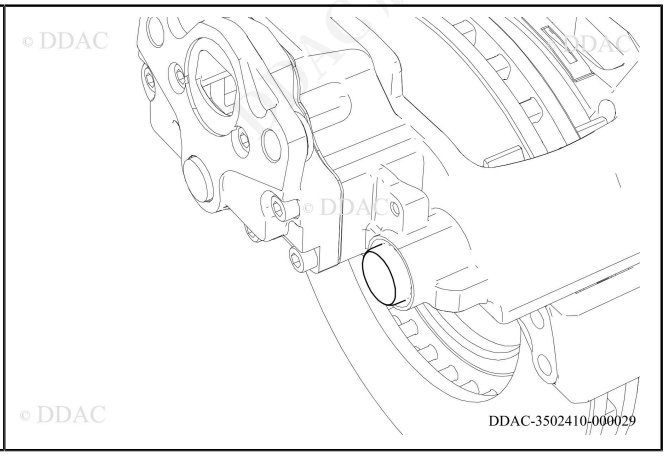
1. Check the seal cover of the sliding pin of the brake clamp, and replace or install it in time if it is loose or lost.

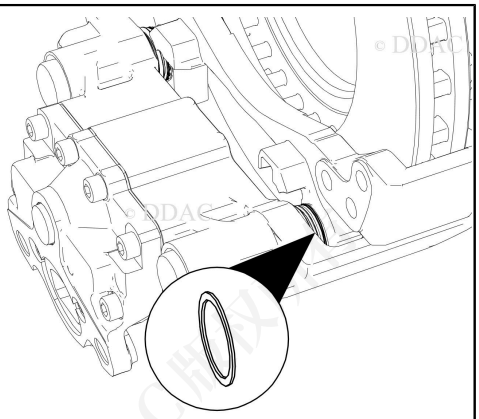
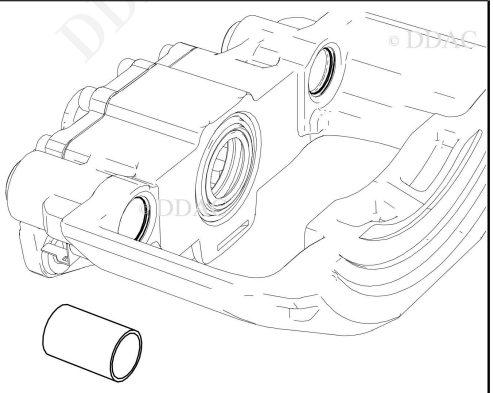
注：

Note:

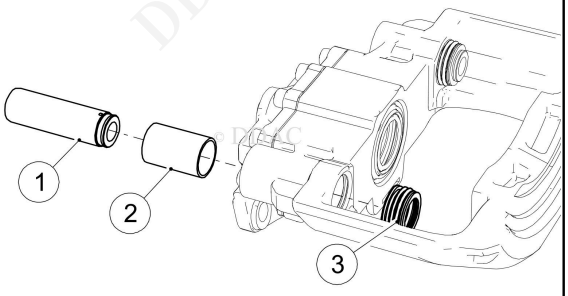
密封盖为一次性，一旦打开导销请同步换新。

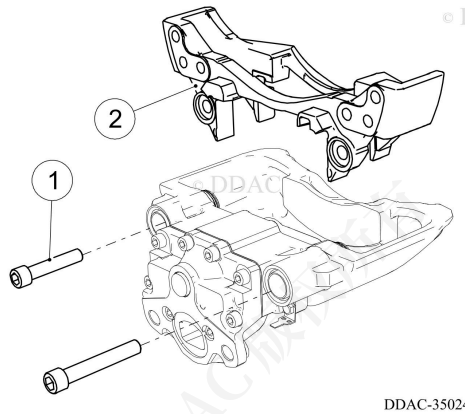
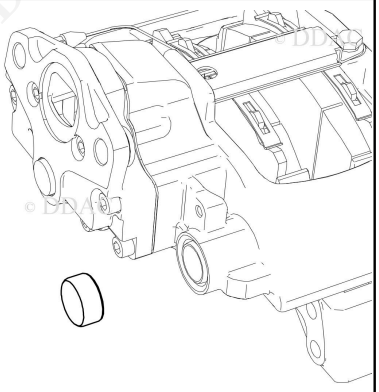
The seal cover is disposable. Once the guide pin is opened, please replace it simultaneously.


DDAC-3502410-000029

2. 推动主、副钳体滑动，检查滑销密封圈，如存在裂纹和损伤及时给予更换。 2. Push the main and auxiliary pliers to slide, check the seal ring of the sliding pin, and replace it in time if there are cracks and damage.	 DDAC-3502410-000030
3. 检查并清理、清洁制动钳与滑销衬套和橡胶套的接触面，不能有异物和损坏。 3. Check, clean, and clean the contact surface between brake pliers and sliding pin bushing and rubber bushing, without foreign bodies and damage.	 DDAC-3502410-000031
4. 清洁制动块与固定底板、制动钳及推板的接触面。 4. Clean the contact surface between brake block and fixed bottom plate, brake pliers and push plate.	

安装步骤
Installation steps

1. 在支架上安装滑销（1）、在钳体导销孔上安装滑销衬套（2）和橡胶套（3）。 1. Install the sliding pin (1) on the bracket, and install the sliding pin bushing (2) and rubber sleeve (3) on the guide pin hole of the clamp body.	 DDAC-3502410-000028

2. 向外推出滑销，将托架（2）放置在制动钳上的安装位置处，然后推入滑销，安装螺栓（1），安装扭矩280~320 N.m，锁住滑销。 2. Push out the sliding pin, place the bracket (2) in the mounting position on the brake caliper, then push in the sliding pin, install the bolt (1), the mounting torque is 280~320N.m, lock the sliding pin. **注：** **Note:** **在滑销表面，衬套内孔抹一层润滑脂。** **Apply a layer of grease to the sliding pin surface and the inner hole of the bushing.**	 DDAC-3502410-000026
3. 安装滑销密封盖，小心敲击密封盖，将密封盖安装在制动钳的滑销上。 3. Install the sliding pin seal cover. Knock the seal cover carefully and install the seal cover on the sliding pins of the brake pliers. **注：** **Note:** **密封盖必须与制动钳底部完全接触。** **The seal cover must be in full contact with the bottom of the brake caliper.** **有部分结构无盖帽限位孔，盖帽一般需要使用工装压装到位，工装保证盖帽压入深度。** **A part of the structure has no cap limit hole, and the cap generally needs to be pressed into place with tooling, which ensures the cap is pressed into depth.**	 DDAC-3502410-000025

最后步骤
The final step

1. 按气室总成步骤，安装制动气室。

1. Install the brake chamber according to the chamber assembly steps.

2. 按盘式制动器总成步骤，安装制动器总成。

2. Install the brake assembly according to the steps of disc brake assembly.

3. 按制动块及磨损报警器步骤，安装制动块及磨损报警器。

3. Install brake block and wear alarm according to the steps of brake block and wear alarm.

注：

Note:

制动间隙的检查调整是制动系统维修后必须进行的步骤。

The check and adjustment of brake gap is a necessary step after brake system maintenance.

将制动卡钳拉或推动至与制动块一边接触，用塞尺检查间隙，保证间隙在0.6~1.2 mm之间，如果间隙小于0.6 mm，按制动间隙调整办法重新进行间隙的调整。

Pull or push the brake caliper to contact with the brake block, check the gap with a feeler, ensure that the gap between 0.6~ 1.2mm, If the clearance is less than 0.6mm, adjust the clearance again according to the brake clearance adjustment method.

5.6 ABS传感器及ABS支架 (ABS Sensor and ABS Support)

安全注意事项

Safety Precautions

1. 操作人员应提前熟悉此维修内容，严禁不熟悉此维修内容的人员操作。

1. The operator should be familiar with the maintenance content in advance, and it is strictly forbidden to operate the personnel who are not familiar with the maintenance content.

2. 维修作业应遵守本内容提及的警告与注意事项，避免造成零部件损坏或人身伤害。

2. Maintenance operations shall comply with the warnings and precautions mentioned herein to avoid damage to parts or personal injury.

3. 进行车辆维护或保养时，请始终佩戴护目镜，以防止对眼睛造成伤害。

3. Wear safety goggles at all times during vehicle maintenance or maintenance to prevent eye damage.

4. 车辆应停放在水平地面上，在轮胎下放置三角木防止车辆移动，车轮打起后要放置安全支架支住车辆。

4. The vehicle should be parked on the horizontal ground, placed triangular wood under the tire to prevent the vehicle from moving, and placed a safety bracket to support the vehicle after the wheel is lifted.

5. 在装配与拆除过程中应使用铜锤或合成材料制成的短锤，勿用钢锤直接敲打钢制部件，脱落的零件碎片可能造成人身伤害与部件损坏。所使用的其他工具需保证完好，损坏的工具可能导致作业质量不良或引起人员、零件损伤。

5. In the process of assembly and removal, a short hammer made of copper or synthetic materials should be used. Do not hit steel parts directly with steel hammer. May cause personal injury and component damage. Other tools used must be in good condition. Damaged tools may lead to poor operation quality or cause damage to people, parts damage.

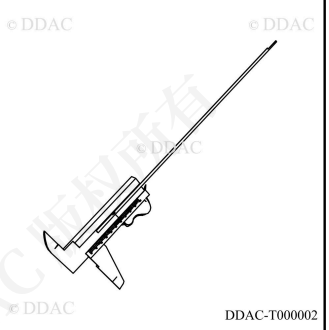
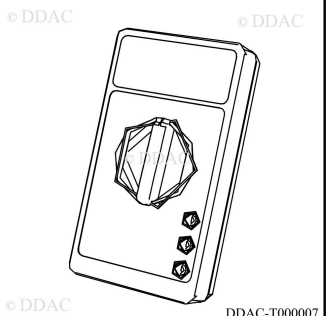
6. 溶剂清洗剂易燃、有毒，并可引起火灾，典型的溶剂清洗剂有四氯化碳、乳液型以及石油基型，使用溶剂清洗剂之前，仔细阅读制造商说明并严格遵守，同时也应遵循如下步骤：

6. Solvent cleaning agents are flammable, toxic, and can cause fires. Typical solvent cleaning agents include carbon tetrachloride, emulsion type, and petroleum based type. Before using solvent cleaning agents, carefully read the manufacturer's instructions and strictly follow them, and also follow the following steps:

- 着防护服，保护皮肤。
- Wear protective clothing to protect your skin.
- 在通风良好的环境下作业。
- Operate in a well-ventilated environment.
- 不能使用汽油或含有汽油的溶剂。汽油会发生爆炸。
- Do not use gasoline or solvents containing gasoline. The gas oil will explode.
- 务必正确使用热溶液槽和各种碱性溶液。使用前应仔细阅读制造商说明并严格遵守。
- Be sure to use hot solution tanks and alkaline solutions correctly. Read the manufacturer's instructions carefully and strictly follow them before use.
- 清洗磨削或抛光的零件不得使用热溶液槽、水及各种碱性溶液，否则会损坏零件。
- Do not use hot solution tanks, water and various alkaline solutions when cleaning grinding or polishing parts, otherwise the parts will be damaged.

通用工具

Universal tool

序号 No.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool model specifications	图示 Illustration
1	卡尺 Caliper	检查零件尺寸 Check part size	0~150mm	
2	万用表 MultimeterMultimete	检测 ABS Test ABS		

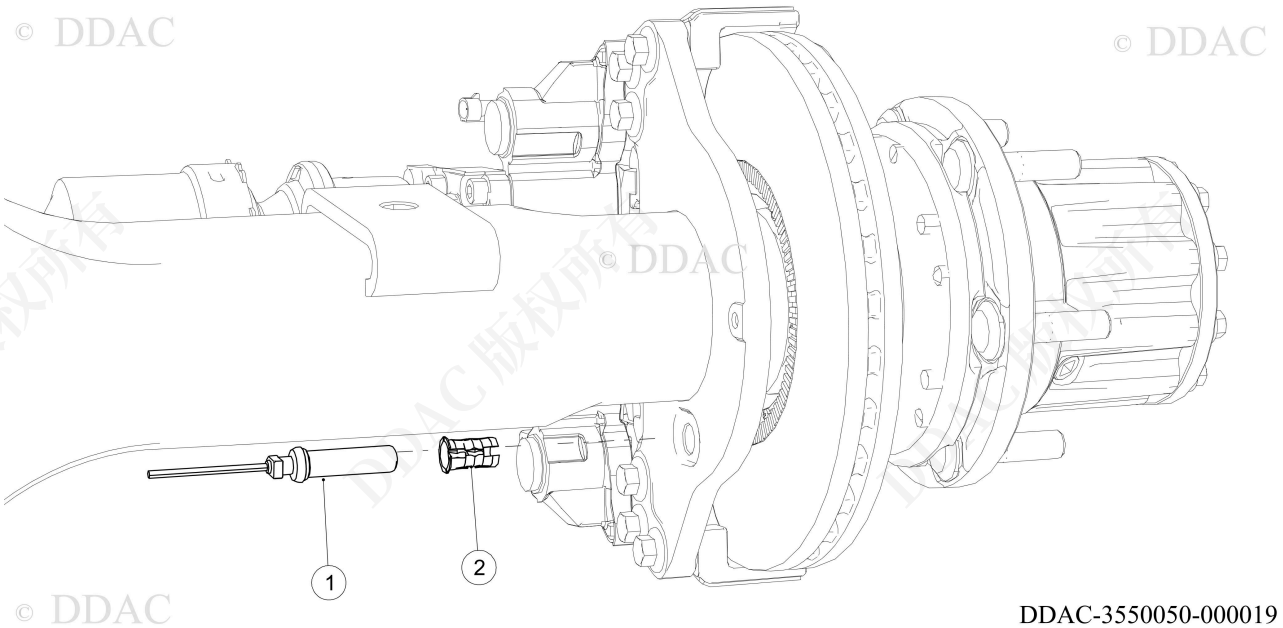
化学品
Chemical product

序号 No.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	润滑脂 Grease	用于润滑推杆头部 Used to lubricate the push rod head	适量 Right amount	DDAC-B
2	清洗剂 Cleaning agent	装配前对零件清洗 Clean the parts before assembly	适量 Right amount	硼酸或煤油、柴油 Boric acid or kerosene or diesel oil

易耗品
Consumable goods

序号 No.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	清洗剂 Cleaning agent	装配前对零件清洗 Clean the parts before assembly	适量 Right amount	硼酸或煤油、柴油 Boric acid or kerosene or diesel oil

分解图
Breakdown drawing



DDAC-3550050-000019

1. ABS传感器总成 1. ABS sensor assembly	2. 衬套-ABS孔 2. bushing

拆卸前准备
Prepare before disassembly

1. 检查确认 ABS 安装拆卸是否需要拆卸车轮。

1. Check whether the wheel needs to be removed for ABS installation and removal.

注：

Note:

拆卸前已确认 ABS 传感器或支架故障。

Failure of ABS sensor or bracket has been confirmed before disassembly.

车辆断电。

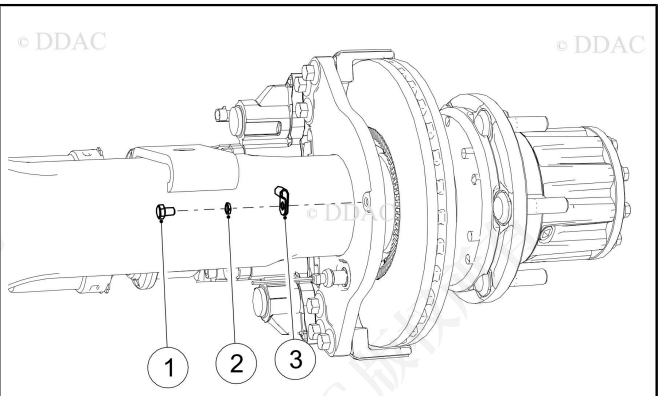
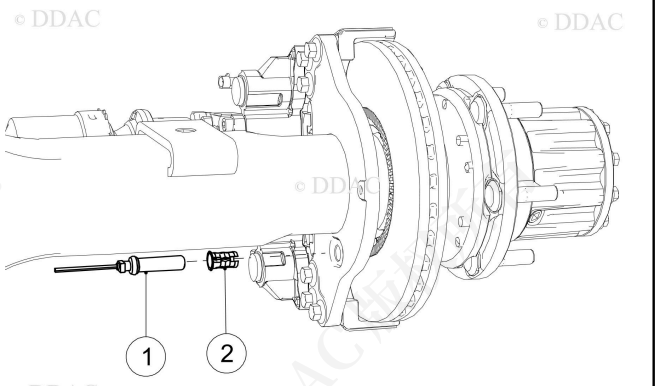
The vehicle is out of power.

拆卸步骤
Disassembly steps

1. 拆 ABS 传感器

1. Remove the ABS sensor

1）用扁嘴钳剪开捆扎 ABS 线束的扎带，使线束处于无束缚状态。 1) Cut the cable ties that is binded the ABS wire harness with the flat nose pliers, so that the wire harness is in an unbound state.	
2）拔下 ABS 线束与整车线束连接的插接头 2)Unplug the connector that is connected the ABS wiring harness with the vehicle wiring harness	

3）松开 ABS 在桥壳上的线束夹片。 3) Loosen the wire harness clamp of ABS on the axle housing.	 DDAC-3550050-000014
4）使 ABS 线束处于完全无固定状态。 4) The ABS wiring harness is in a completely unfixed state. **注：** **Note:** **妥善保管卡扣，防止丢失。** **Keep the buckle properly to prevent loss.** **妥善放置 ABS 线束，防止断裂。** **Place ABS harness properly to prevent breakage.**	
5）尾部拔出 ABS 传感器总成及 ABS 衬套。 5) Pull out ABS sensor assembly and ABS bushing at the tail.	 DDAC-3550050-000015

安装前准备

Preparations for Installation

1. 清洗并检查弹性衬套。

1. Clean and check the elastic bushing.

⚠ 注意:

弹性衬套有锈蚀或永久性弹性变形需要更换。

The elastic bushing needs to be replaced if it has corrosion or permanent elastic deformation.

⚠ 注意:

ABS 支架内孔生锈或内孔尺寸大于 18.11 mm，需更换新的支架。

If the inner hole of ABS bracket is rusted or the inner hole size is larger than 18.11 mm, a new bracket is required.

1）卡尺检查支架内孔，并检查是否有失圆，超出使用极限予于更换。

1) Check the inner hole of the bracket with calipers and check for out-of-roundness, and replace it if it exceeds the use limit.

2. 检查 ABS 传感器

2. Check the ABS sensor

⚠ 注意:

ABS 传感器检查合格后才能安装。

The ABS sensor can be installed only after it is qualified.

1）检查 ABS 传感器外观，头部不得有明显磕碰伤，凹陷痕迹。

1) Check the appearance of ABS sensor, and the head to make sure it i has not obvious scratches and depression marks.

2）用万用表电阻档测量传感器电阻，电阻在 1350~1650 欧姆之间。

2) Measure the resistance of the sensor with multimeter resistance file, and the resistance is between 1350 and 1650 ohms.

3）线束不得有破损。

3) The wiring harness shall not be damaged.

3. 清洁 ABS 齿圈

3. Clean ABS ring gear

1）用毛刷清洁干净ABS齿圈。

1) Clean ABS ring gear with a brush.

2）检查ABS齿圈缝隙中的异物。

2) Check the foreign bodies in the gaps of ABS ring teeth.

安装步骤

Installation steps

1. 装弹性衬套

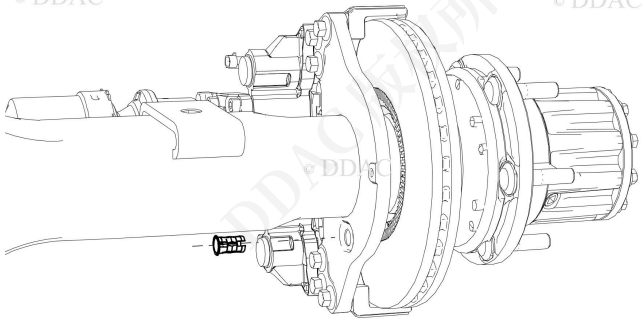
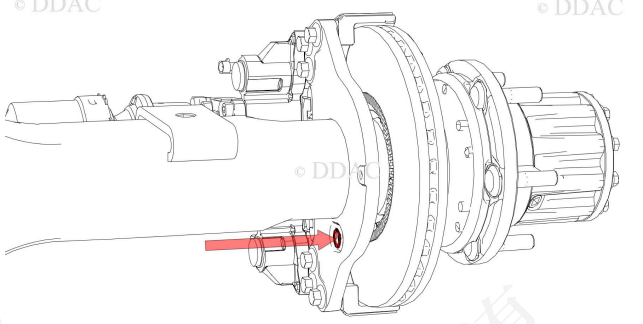
1. Install elastic bushing

注：

Note:

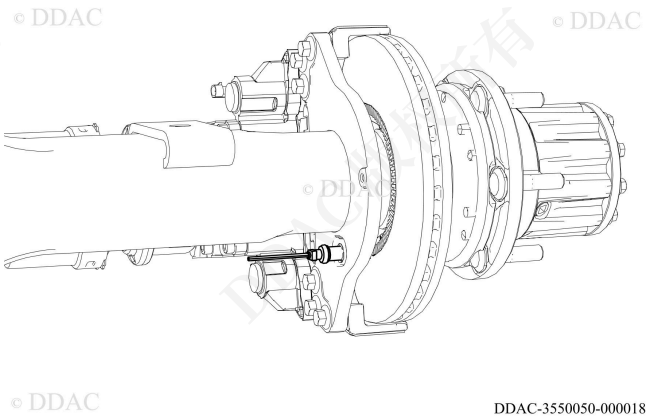
弹性衬套内档边在内侧。

The inner stop edge of the elastic bushing is on the inside.

1）将弹性衬套从底板安装孔内侧装入，直至档边档住。 1) The elastic bushing is loaded from the inner side of the bottom mounting hole until the gear edge is blocked.	 DDAC-3550050-000016
2）在弹性衬套内孔中均匀涂抹润滑脂 2) Evenly apply grease to the inner hole of the elastic bushing.	 DDAC-3550050-000017

2. 装 ABS 传感器

2. Install an ABS sensor

1）将传感器穿过制动底板孔。 1）Pass the sensor through the brake base plate hole.	
2）将传感器插入弹性衬套孔中，直至抵住 ABS 齿圈。 2) Insert the sensor into the elastic bushing hole until it reaches the ABS ring gear.	 DDAC-3550050-000018
3）车辆运动时，齿圈的端跳和车轮轴承间隙会自动推开传感器，使得传感器与齿圈之间形成一个小于0.7mm的间隙。但在装配轮毂与制动鼓总成时，齿圈会把传感器推开到一定的位置，如果传感器被推开的太远，超过了最大间隙，必须拆下重新安装。齿圈与传感器之间的最大间隙不大于1.2mm。 3) Slowly turn the wheel end to observe whether the ABS sensor will back off a small amount until there is a gap of less than 0.7mm with the gear ring.But in the assembly of the hub and brake drum assembly, the ring will push the sensor to a certain position, if the sensor is pushed too far, beyond the maximum clearance, must be removed and reinstalled. The maximum clearance between the ring gear and the sensor is not more than 1.2mm.	
4）ABS信号检测确认 4) ABS signal detection and confirmation 拔掉 ABS 传感器总成堵塞，将 ABS 信号测量仪快插接头插入到 ABS 传感器总成中,如果没有 ABS 信号测量仪，用万用表表针与 ABS 插头连接，将万用表拔至交流电电压档，转动轮端，如果表针在摆动，证明 ABS 传感器正常。 Unplug the ABS sensor assembly plug, ABS signal measuring instrument quick plug connector inserted into the ABS sensor assembly, if there is no ABS signal measuring instrument, connect the multimeter needle and ABS plug, pull the multimeter to the AC voltage file, rotate the wheel end, if the needle is swinging, prove that the ABS sensor is normal.	

3. 固定线束

3. Fix the wiring harness

⚠ 注意:

ABS 线束在整车上固定时不可有活摆现象。

ABS wire harness fixed on the vehicle can not have live pendulum phenomenon.

1）插上车整车连接的插接口，并按原位置束好 ABS 线束。 1) Plug in the plug interface connected with the vehicle, and bind the ABS wire harness according to the original position.	

最后步骤

The final step

1. 如拆卸车轮参阅：桥总成系统。

1. If the wheel is removed, refer to the axle assembly system.

6 主减速器系统 (Final drive system)

安全注意事项

Safety Precautions

1. 操作人员应提前熟悉此维修内容，严禁不熟悉此维修内容的人员操作。

1. Operators should be familiar with the maintenance content in advance, and personnel unfamiliar with the maintenance content are forbidden to operate.

2. 维修作业应遵守本内容提及的警告与注意事项，避免造成零部件损坏或人身伤害。

2. Maintenance operations shall comply with the warnings and precautions mentioned herein to avoid damage to parts or personal injury.

3. 进行车辆维护或保养时，请始终佩戴护目镜，防止对眼睛造成伤害。

3. Wear safety goggles at all times during vehicle maintenance to prevent eye damage.

4. 车辆应停放在水平地面上，在前桥轮胎下放置三角木防止车辆移动, 用安全支架支住车辆。

4. The vehicle should be parked on the level ground, triangle wood is placed under the front axle tire to prevent the vehicle from moving, and the vehicle is supported by a safety bracket.

5. 在装配与拆除过程中应使用铜锤或合成材料制成的短锤，勿用钢锤直接敲打钢制部件，脱落的零件碎片可能造成人身伤害与部件损坏。所使用的其他工具需保证完好，损坏的工具可能导致作业质量不良或引起人员、零件损伤。

5. In the process of assembly and disassembly, use copper hammers or short hammers made of synthetic materials. Do not hit steel components directly with steel hammers, as the broken parts may cause personal injury and component damage. Ensure that other tools are in good condition. Damaged tools may cause poor operation quality or damage to personnel or parts.

6. 溶剂清洗剂易燃、有毒，并可引起火灾，典型的溶剂清洗剂有四氯化碳、乳液型以及石油基型，使用溶剂清洗剂之前，仔细阅读制造商说明并严格遵守，同时也应遵循如下步骤：

6. Solvent cleaners are flammable, toxic, and can cause fire. Typical solvent cleaners include carbon tetrachloride, emulsion, and petroleum-based. Before using solvent cleaners, read the manufacturer's instructions carefully and strictly follow the following steps:

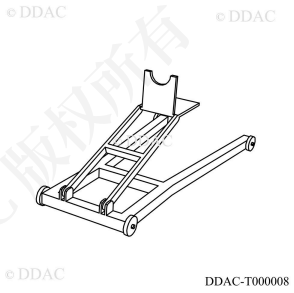
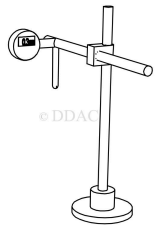
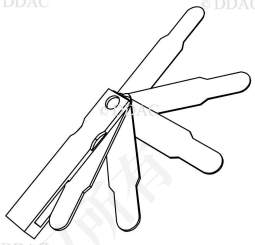
- 着防护服，保护皮肤。
- Wear protective clothing to protect your skin.
- 在通风良好的环境下作业。
- Operate in a well-ventilated environment.
- 不能使用汽油或含有汽油的溶剂。汽油会发生爆炸。
- Do not use gasoline or solvents containing gasoline. The gas will explode.
- 务必正确使用热溶液槽和各种碱性溶液。使用前应仔细阅读制造商说明并严格遵守。
- Be sure to use hot solution tanks and alkaline solutions correctly. Read the manufacturer's instructions carefully and strictly follow them before use.
- 清洗磨削或抛光的零件不得使用热溶液槽、水及各种碱性溶液，否则会损坏零件。
- Do not use hot solution tanks, water and various alkaline solutions when cleaning grinding or polishing parts, otherwise the parts will be damaged.

通用工具

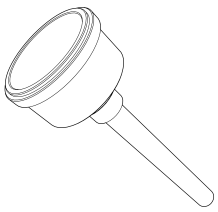
Universal tool

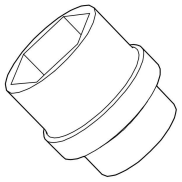
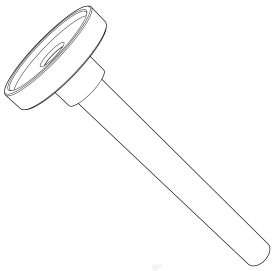
以下工具是本节中执行步骤的推荐的通用工具。

The following tools are the recommended universal tools for performing the steps in this section.

序号 NO.NO	工具名称 Tool name	工具用途 Tool use	工具规格 Tool model specificationsTool model specificatio	工具图示 Illustration
1	水平滑车 horizontal smooth car	用于拆卸减速器总成 Used to remove the reducer assembly	/	 DDAC-T000008
2	百分表及表座 Dial gauge and seat	用于测量齿侧间隙 Used to measure tooth side clearance	/	 DDAC-T000009
3	塞尺 Feeler	检查轴承装配间隙 Check bearing assembly clearance	/	 DDAC-T000004

专用工具
Special tool

序号 NO.	工具名称 Tool name	工具用途 Tool use	工具号 Tool number	工具图示 Illustration
1	主锥轴承内圈压头 Inner ring indenter for main cone bearing	用于安装主锥轴承内圈 Used for mounting main cone bearing inner ring	-	

序号 NO.	工具名称 Tool name	工具用途 Tool use	工具号 Tool number	工具图示 Illustration
2	后桥主锥后轴承内圈套筒 Rear axle main cone rear bearing inner ring sleeve	用于压装主锥后轴承内圈 Used for pressing the inner ring behind the main cone	-	
3	差速器轴承拆卸器 Differential bearing remover	用于拆卸差速器轴承 Used to remove differential bearings	-	
4	差速器轴承套筒 Differential bearing sleeve	用于压装轮间差速器轴承内圈 Used to press the inner ring of the interwheel differential bearing	-	

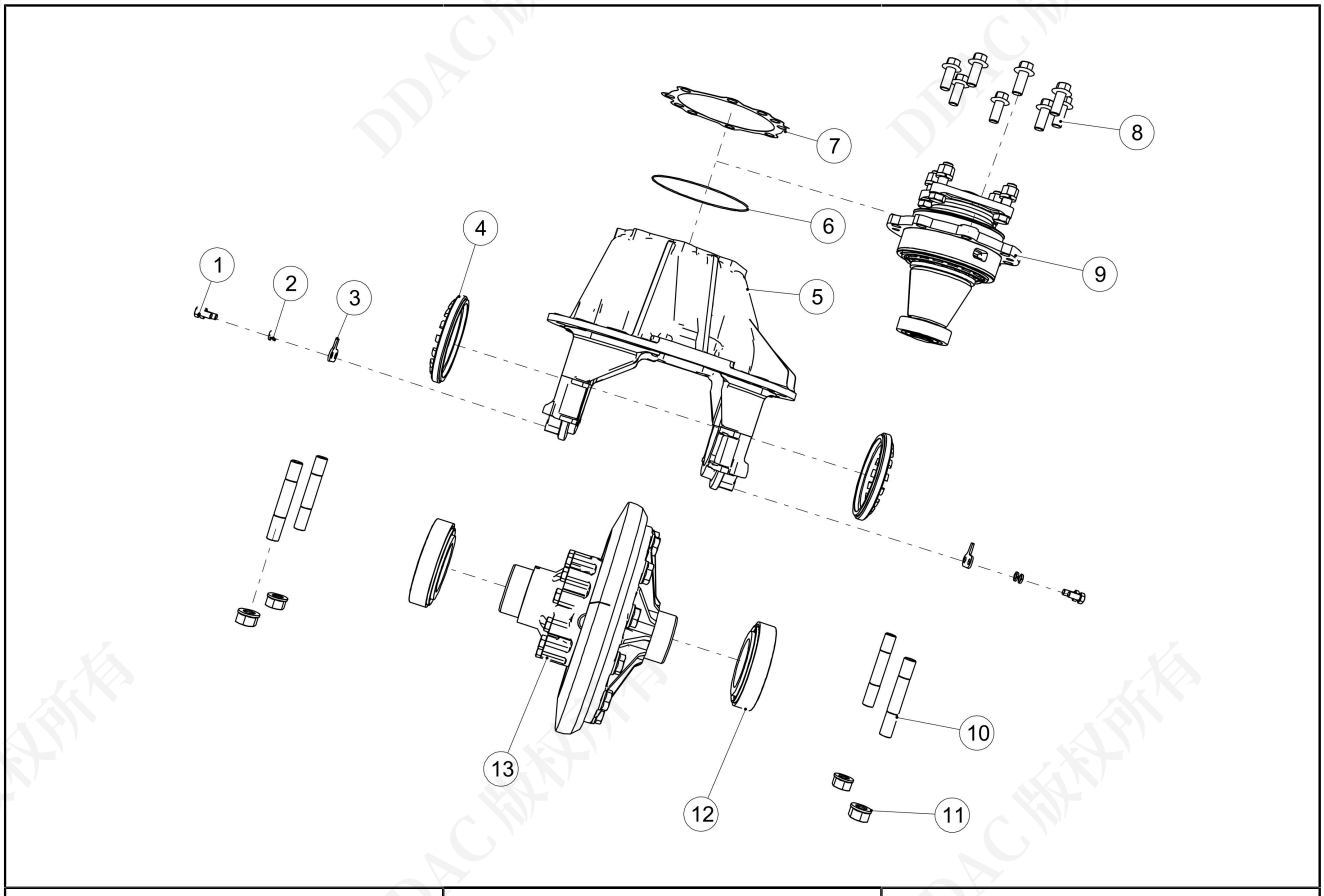
化学品
Chemical product

序号 No.	名称 Name	用途 Use	用量 Amount of consumption	规格型号 Model and specification
1	硅酮密封胶 Silicone sealant	需密封结合面 The joint surfaces need to be sealed	适量 Right amount	HZ-01
2	螺纹锁固胶 Thread lock glue	用于涂螺纹锁固胶螺栓螺母 For use on thread locking bolts and nuts	适量 Right amount	天山-1279 TianShan - 1279
3	润滑油 Lubricating oil	用于装配时零件需润滑部位 Used for parts to be lubricated during assembly	适量 Right amount	Gl-5
4	润滑脂 Grease	用于装配过程润滑 For lubrication during assembly	适量 Right amount	

易耗品
Consumable goods

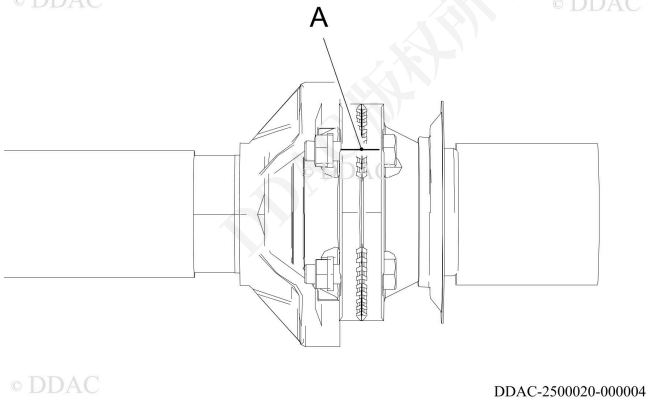
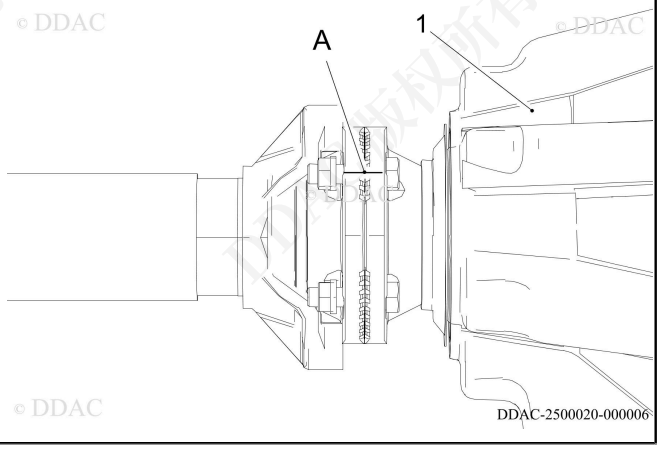
序号 No.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	清洗剂 Cleaning agent	装配前对零件清洗 Clean the parts before assembly	适量 Right amount	硼酸或轻质油 Boric acid or kerosene or diesel oil

分解图
Breakdown drawing



1. 螺栓 1. Bolt	2. 弹簧垫片 2. Spring Washer	3. 锁片 3. Locking Sheet
4. 调整螺母 4. Adjusting Nut	5. 减壳及轴承盖 5. Carrier Case & Bearing Cap	6. O 型圈 6. O-Ring
7. 调整垫片 7. Adjusting Gasket	8. 螺栓 8. Bolt	9. 主动锥齿轮及轴承座总成 9. Drive Pinion & Bearing Seat Assembly
10. 双头螺柱 10. Double-End Stud	11. 螺母 11. Nut	12. 轴承 12. Bearing
13. 差速器总成 13. Differential Assembly		

拆卸前准备
Prepare before disassembly

1. 减速器润滑油排放参阅步骤：排放润滑油。 1.Reducer lubricating oil discharge refer to step: discharge lubricating oil. 2. 拆卸半轴系统参阅步骤：半轴系统。 2. Remove the axle shaft system refer to step: Axle shaft system.	
3. 拆卸变速箱-中桥传动轴及中桥-后桥传动轴。 3. Remove the transmission - middle axle drive shaft and middle axle - rear axle drive shaft. ⚠ **注意:** **拆卸前，如果原传动轴上标记已损坏，需重新在突缘上做好匹配标记。** **Before removal, if the mark on the original drive shaft is damaged, it is necessary to make a matching mark on the flange again.** **注：** **Note:** **传动轴总成拆卸时，应从后到前（后桥→变速器）。** **The drive shaft assembly should be removed from back to front (rear axle → transmission).** 图注： Figure note: 1 - 变速器 1 - Transmission A - 匹配标记 A - Matches the tag	 DDAC-2500020-000004
图注： Figure note: 1 - 后桥主减 1 - Rear axle main subtraction A - 匹配标记 A - Matches the tag	 DDAC-2500020-000006

拆卸步骤

Remove the step

⚠ **注意:**

拆卸减速器时，注意不要损坏减速器和桥壳之间配合面，如果配合面损坏，将可能导致漏油。

When disassembling the reducer, be careful not to damage the mating surface between the reducer and the axle housing, if the mating surface is damaged, it may lead to oil leakage.

取下减总后在桥壳内腔可见两块磁铁，请予拿出来清理干净后放回原位。

After removing the reducer, two magnets are visible in the inner cavity of the axle housing, please take them out and put them back to the original position after cleaning it up.

1. 拆卸主减速器系统

1. Disassemble the main reducer system

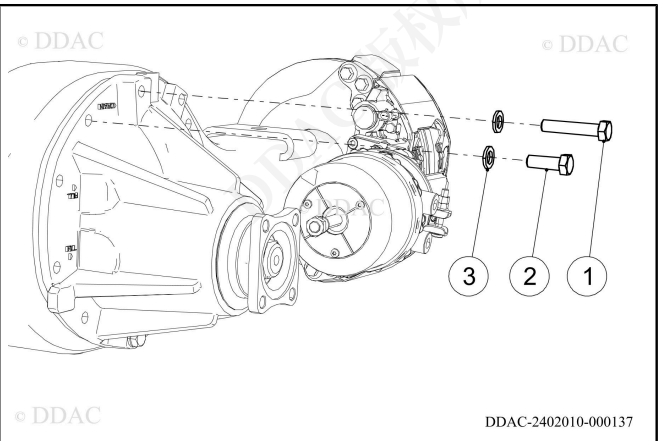
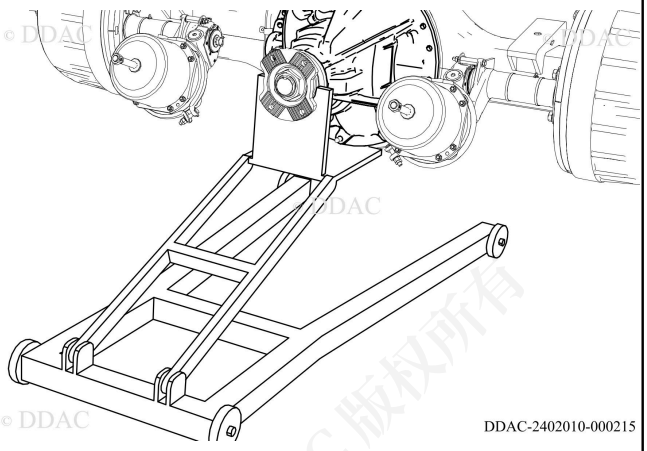
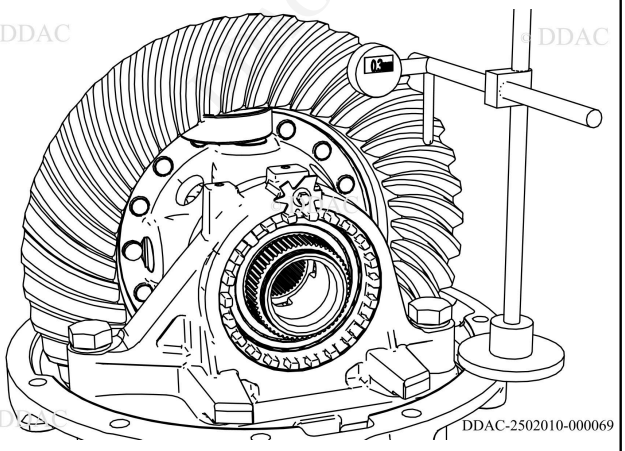
⚠ 注意:

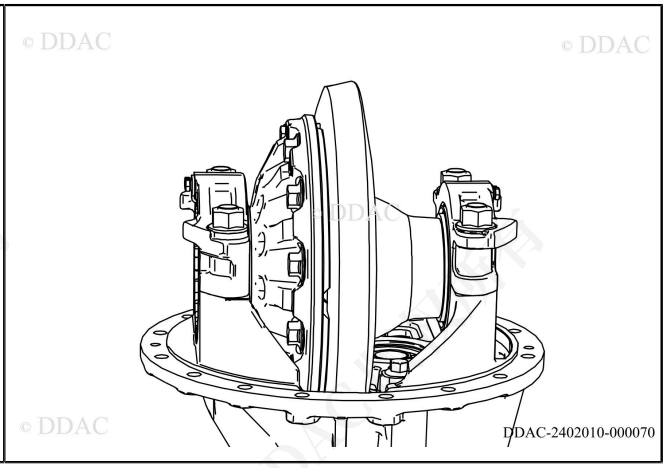
拆卸主减速器总成之前要锁住轮差锁。

Lock the wheel differential lock before disassembling the main gearbox assembly.

主减速器总成很重，需要起吊机进行拆除。

The main reducer assembly is heavy and requires a hoist for removal.

1）拆卸减速器总成与桥壳连接螺栓。 1) Remove the bolts attaching the reducer assembly to the axle housing.	 DDAC-2402010-000137
2）用水平滑车从桥壳上吊出主减速器总成。 2) Lift out the main reducer assembly from the axle housing with a hori zontal smooth car.	 DDAC-2402010-000215
3）主从动锥齿轮齿侧间隙检查。 3) Inspect Master and driven bevel gear tooth side clearance. **注：** **Note:** **检测时百分表测头应垂直大轮大端曲面。在被动锥齿轮圆周大致等距分布的 3 个方向各检测 1 到 2 齿。** **The dial gauge probe should be perpendicular to the large end surface of the wheel during the inspection. One to two teeth are inspected in each of the three directions of roughly equidistant distribution around the circumference of the passive bevel gear.**	 DDAC-2502010-000069

4）将主减速器总成放到拆解台上。 4) Place the main reducer assembly on the disassembly table.	

安装前准备
Preparations for Installation

1. 清理桥壳与主减速器总成结合面处的残胶，清理各结合面残存密封垫片。

1. Clean the residual glue at the joint surface between the axle housing and the main reducer assembly, and clean the residual sealing gaskets on each joint surface.

2. 桥壳的准备工作。

2. Preparation of axle housing.

1）清除桥壳法兰面上的残胶。

1) Remove the residual glue on the flange face of the axle housing.

2）清除法兰面上的附着（灰尘、污物、水分等）。

2) Remove the attachment (dust, dirt, moisture, etc.) on the flange surface.

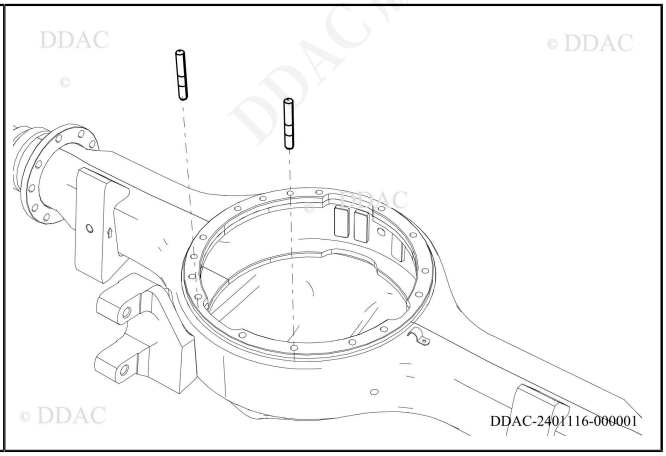
3）需要的话，可以使用清洗剂。

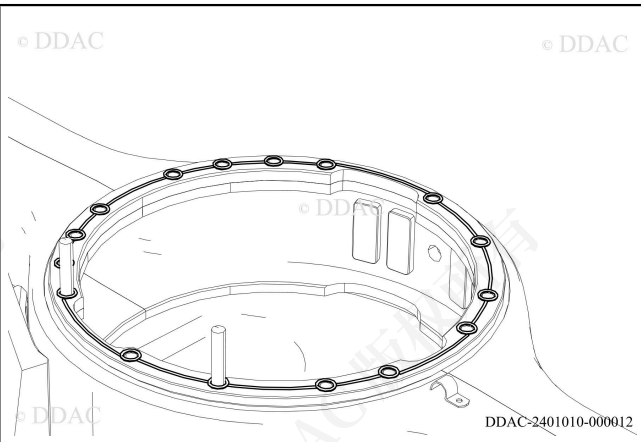
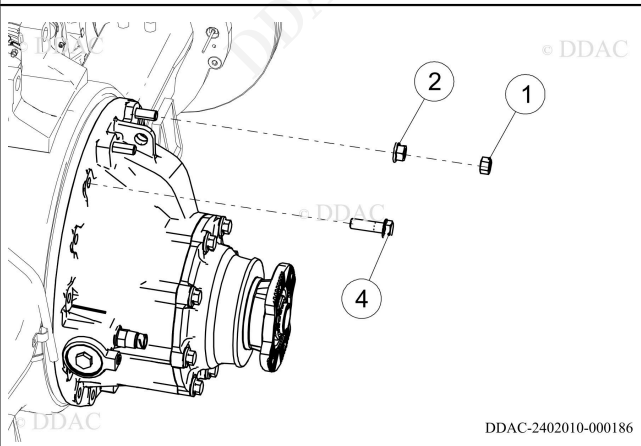
3) If necessary, you can use cleaning agent.

安装步骤
Installation steps

1. 安装后桥主减速器系统

1. Install the rear axle main reducer system

1）将双头螺栓涂胶端分别拧入桥壳中。 1) Screw the glued ends of the double-headed bolts into the axle housing separately.	

2）在桥壳法兰面上螺栓孔内外涂两圈耐油硅酮密封胶，胶带宽度不小于 3 mm。 2) Apply two circles of oil-resistant silicone sealant inside and outside the bolt holes on the flange face of the axle housing, and the width of the adhesive tape should not be less than 3 mm. **注：** **Note:** **涂胶带应连续无中断。** **The adhesive tape should be applied continuously without interruption.**	 DDAC-2401010-000012
3）用水平滑车将减速器吊起并使法兰面保持水平，通过双头螺柱的引导，把减速器总成顺利装配到位。装上相应的螺栓，并用 220~250 N.m 的力矩拧紧。 3) Lift the reducer with a hori zontal smooth cart and keep the flange level, and smoothly assemble the reducer assembly in place by guiding it with double-headed studs. Install the corresponding bolts and tighten them with a torque of 220~250 N.m.	 DDAC-2402010-000186

最后步骤

The final step

1. 安装传动轴同时对准匹配标记，拧紧法兰。

1. Align the drive shaft with the matching mark and tighten the flange.

2. 安装半轴系统参阅步骤：半轴系统。

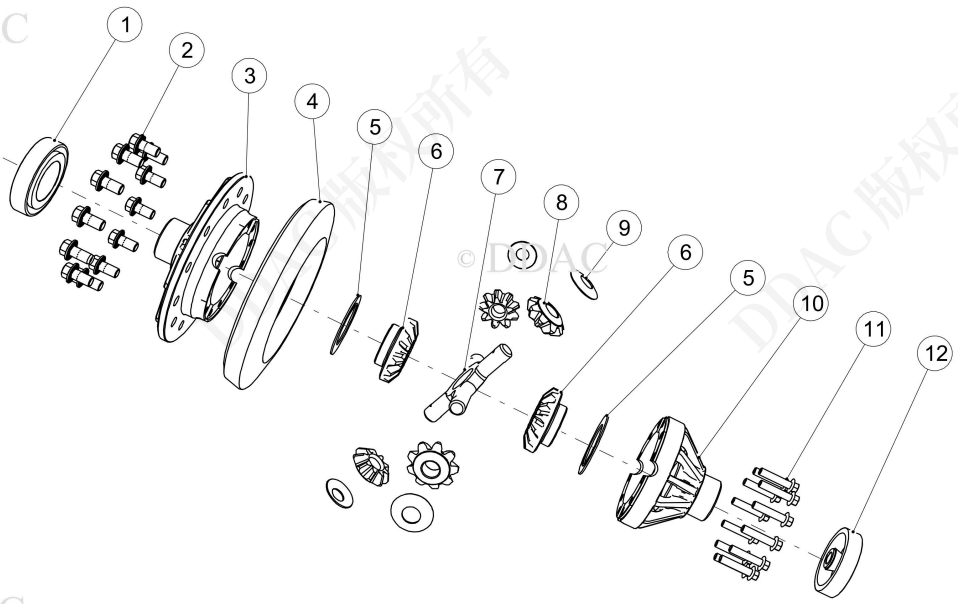
2. Install axle shaft system refer to step: Axle shaft system.

3. 减速器润滑油加注参阅步骤：加注润滑油。

3. Reducer lubricating oil filling refer to the steps: Filling lubricating oil.

6.1 轮间差速器总成 (Differential Assembly)

分解图
Breakdown drawing



DDAC-2402310-000001

1. 轴承总成 1. Bearing	2. 螺栓 2. Bolt	3. 差速器左壳 3. Differential Case-L
4. 从动锥齿轮 4. Driven Bevel Gear	5. 垫片-半轴齿轮 5. Supporting Washer	6. 半轴齿轮 6. Side Gear
7. 十字轴 7. Spider	8. 行星齿轮 8. Pinion Mate Gear	9. 支撑垫片 9. Supporting Washer
10. 差速器右壳 10. Differential Case-R	11. 螺栓 11. Bolt	12. 轴承总成 13. Bearing

拆卸前准备
Preparation before disassembly

1.按主减速器系统步骤，拆卸主减速器总成。

1. Remove the main reducer assembly according to the steps of the main reducer system.

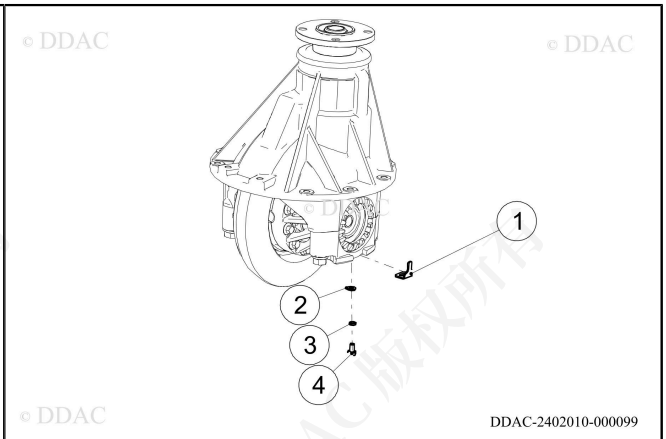
拆卸步骤
Remove the step

1. 拆卸轮间差速器

1. Remove the inter-wheel differential

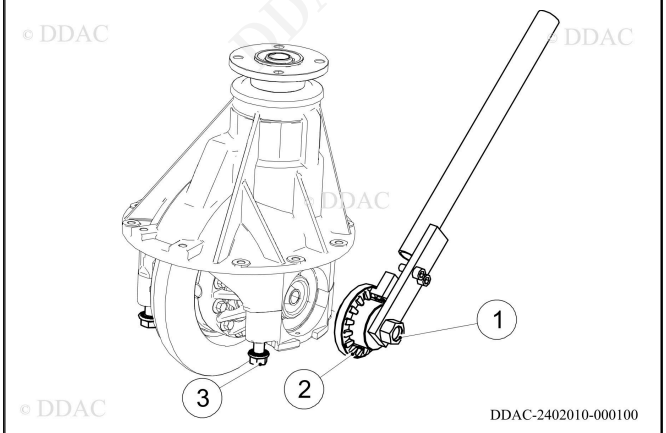
1）拆下差速器总成两端止动片紧固螺栓（4）、垫圈（2、3）及锁片（1）。

1）Remove the fastening bolts (4), washers (2、 3), and locks (1) at both ends of the differential assembly.



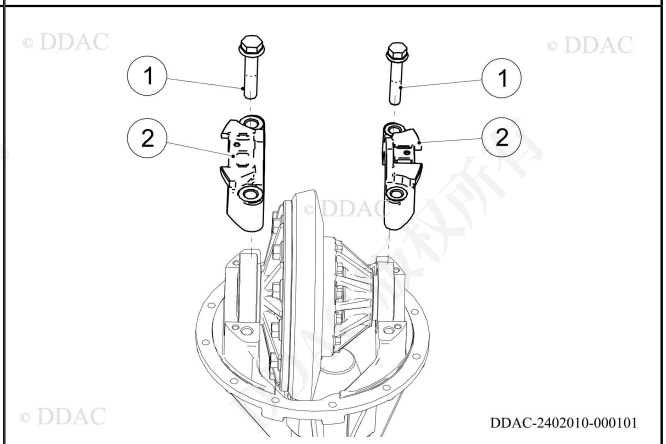
2）用轴承盖螺栓套筒拧松轴承盖螺栓（3），利用差速器调整扳手（1）拆下调整螺母（2）。

2) Loosen the bearing cap bolts(3) with the bearing cap bolt socket, and remove the adjusting nuts (2) with the differential adjusting wrench(1).



3）在左右轴承盖上分别做上标记，拆下螺栓（1）和轴承盖（2）。

3) Mark the left and right bearing caps and remove the bolts (1) and bearing caps (2).



⚠ **注意:**

差速器很重，需要起吊机进行装配。

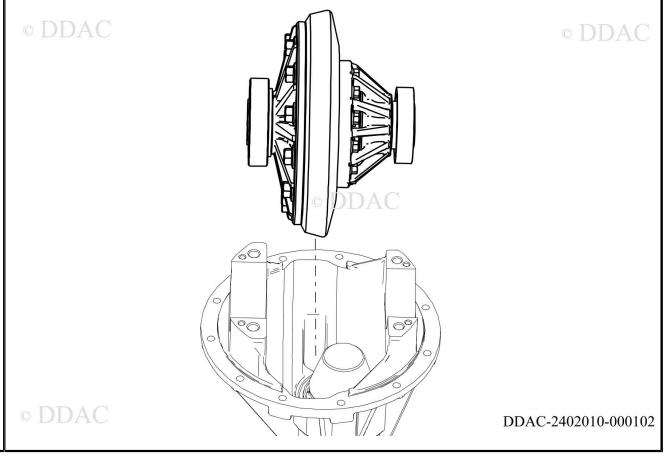
The differential is heavy and requires a hoist for assembly.

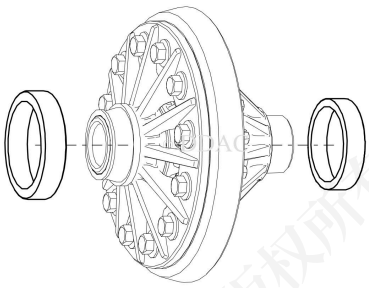
注意右轴承盖及右轴承外圈散落。

Be careful of the right bearing cover and right bearing outer ring falling apart.

4）用吊具将差速器从减壳上拆下。

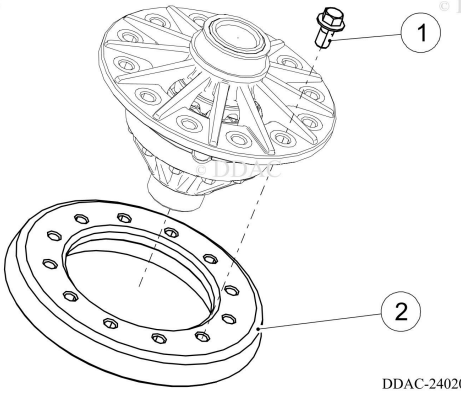
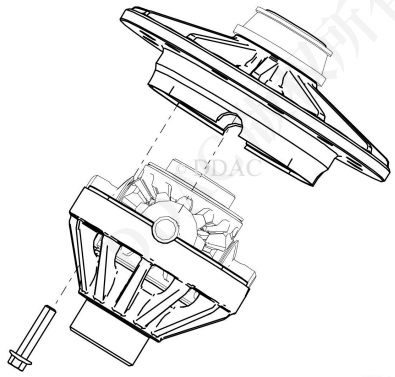
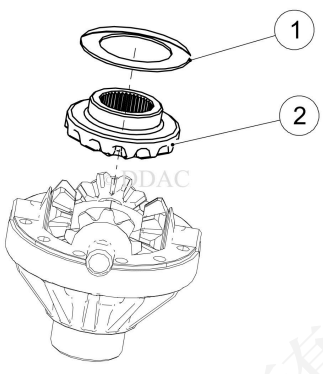
4) Remove the differential from the housing with a spreader.

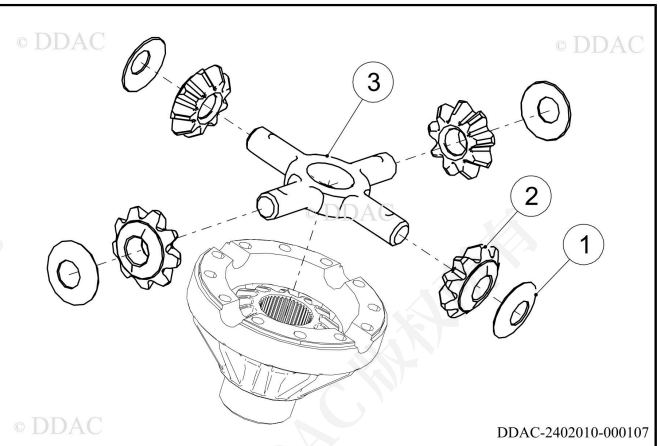
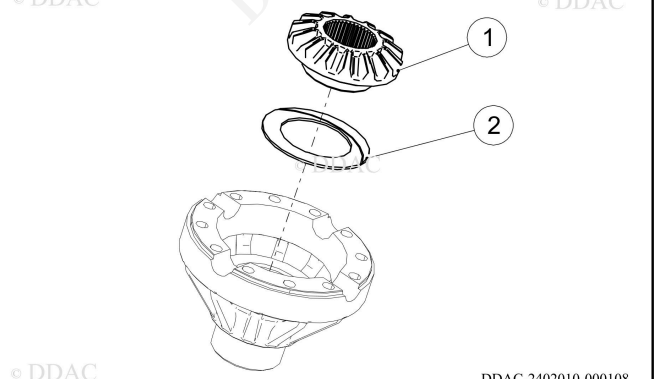
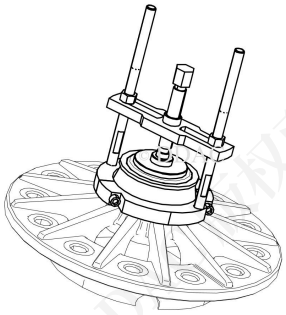


5）拆下轴承外圈。 5) Remove the bearing outer ring.	 DDAC-2402010-000103

2. 拆解轮间差速器总成

6) Remove the bearing outer ring.

1）拆下从动锥齿轮连接螺栓（1），被动齿轮（2）从右壳取下。 1）Remove the driven pinion connection bolt (1) and the driven gear (2) from the right case. **注：** **note:** **分解左右壳之前再左右壳上做配对记号。** **Mark the left and right case before remove it.**	 DDAC-2402010-000104
2）将差速器向下放置，取下差速器连接螺栓，使差速器左壳与右壳分离。 2) Place the differential downward and remove the differential connection bolt to separate the left and right shell of the differential.	 DDAC-2402010-000105
3）取出半轴齿轮支撑垫片（1）与左壳半轴齿轮（2）。 3) Remove the left housing supporting washer (1) and side gear (2).	 DDAC-2402010-000106

4）从差速器右壳中取下十字轴（3）带行星齿轮（2）及支撑垫片（1）。 4) Remove the cross shaft (3) with the star gear (2) and the support spacer (1) from the right housing of the differential.	 DDAC-2402010-000107
5）取出右侧半轴齿轮（1）和垫片（2）。 5) Take out the right side gear (1) and gasket (2).	 DDAC-2402010-000108
⚠ 警告: **如果使用压床拆卸，遵守冲压机制造商所要求的所有警告和注意，避免造成零部件损坏和人身伤害。** **If a press is used for disassembly, Comply with all warnings and precautions required by the press manufacturer to avoid damage to parts and personal injury.** **采用人工敲击拆卸外圈时，注意反弹伤人。** **When the outer ring is removed by manual tapping, pay attention to rebound injury.** 6）用差速器左/右轴承内圈拉拔器分别从左、右差速器壳上拆下轴承内圈。 6) Remove the bearing inner ring from the left and right differential housing using the left/right bearing inner ring pullers.	 DDAC-2402010-000109

安装前准备
Preparations for Installation

⚠ 警告:

严禁使用汽油清洗零件。

Do not use gasoline to clean parts.

1. 用清洁溶剂清洗解体零件。

1. Clean the disassembled parts with a cleaning solvent.

2. 让零件充分干燥，残留的溶液必须擦拭干净。

2. Let parts fully dry, residual solution must be wiped clean.

⚠ 警告:

如果你选择继续使用现有的轴承，这些轴承必须按照生产商建议的原则进行检查。

If you choose to continue using existing bearings, these bearings must be inspected in accordance with the principles recommended by the manufacturer.

当确定轴承内圈或外圈有损坏时，必须对内外轴承同时成套进行更换，同时必须更换轴承隔套。

When it is determined that the inner or outer ring of the bearing is damaged, the inner and outer bearings must be replaced in a complete set at the same time, and the bearing sleeve must be replaced at the same time.

3. 检查零件是否有划痕、裂纹、损伤等。

3. Check the parts for scratches, cracks, damage, etc.

4. 检查轴承外圈有无跑圈，如出现跑圈，请立即成对更换内外轴承。

4. Check whether the outer ring of the bearing has a running ring. If there is a running ring, please imediately replace the inner and outer bearings in pairs.

5. 检查主、从动锥齿轮、差速器壳、轴承等是否有裂纹。

5. Check whether there are cracks in the main and driven bevel gears, differential housing, bearings, etc.

注：

Note:

主、从动锥齿轮需成对更换。

Master and driven bevel gears need to be replaced in pairs.

主减速器壳与差速器轴承盖需成对更换。

The main reducer housing and differential bearing cover need to be replaced in pairs.

6. 安装轮间差速器总成前，需提前安装主动锥齿轮，步骤参阅：主动锥齿轮总成。

6. Before installing the inter-wheel differential assembly, install the driving bevel gear in advance. See: Driving bevel Gear Assembly.

安装步骤

Installation steps

1. 装配轮间差速器总成

1. Assemble inter-wheel differential assembly

⚠ 警告:

如果使用压力机，要遵守压力机制造商所要求的所有警告和注意，避免造成零部件损坏和人身伤害。

If using a press, follow all warnings and care required by the press manufacturer to avoid damage to parts and personal injury.

⚠ 注意:

压装轴承内圈时，不允许接触滚动体及保持架。

When pressing the inner ring of bearing, do not touch the rolling body and cage.

1）将左右轴承内圈均匀的涂抹一层润滑油，用差速器左右轴承套筒将左右差速器轴承内圈，分别压装到左右差速器壳的轴径上。

1) Evenly apply a layer of lubricating oil to the left and right bearing inner rings, and press the left and right bearing inner rings to the left with the left and right bearing sleeves of the differential on the axle diameter of the right differential housing.

注：

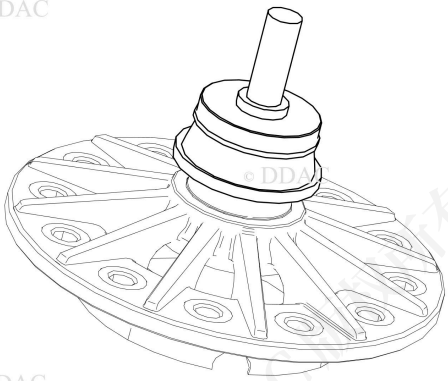
Note:

如采用轴承预热方式，则预热温度不应大于 100 °C，保温时间不少于 2 分钟。

If bearing preheating is adopted, the preheating temperature should not be greater than 100°C and the holding time should not be less than 2 minutes.

轴承内圈要一步压装到位，用 0.02 mm 塞尺检查后轴承内圈大端面与主动锥齿轮安装面之间，不得有间隙。

The bearing inner ring shall be pressed into place in one step. After checking the large end face of the bearing inner ring and the installation surface of the driving bevel gear with a 0.02 mm feeler, it shall not be allowed. There should be no clearance.



DDAC-2402010-000125

2）将被动轮（2）安装到差速器左壳上，用螺栓（1）拧紧，拧紧力矩 615~685 N.m。

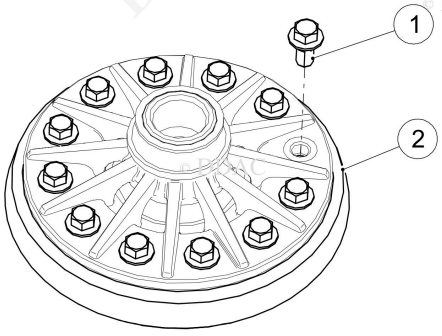
2) Install the passive wheel (2) on the left housing of the differential and tighten it with bolt (1). The tightening torque is 615~685 N.m.

注意：

Note:

螺栓复装前在螺纹头部周向涂抹螺纹锁固胶，不少于10个螺纹。

Apply thread locking glue around the head of thread before remounting bolts, at least 10 threads.



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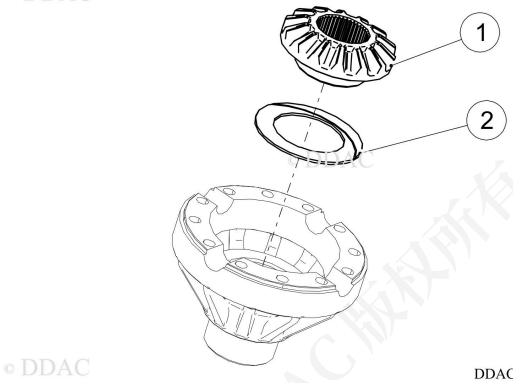
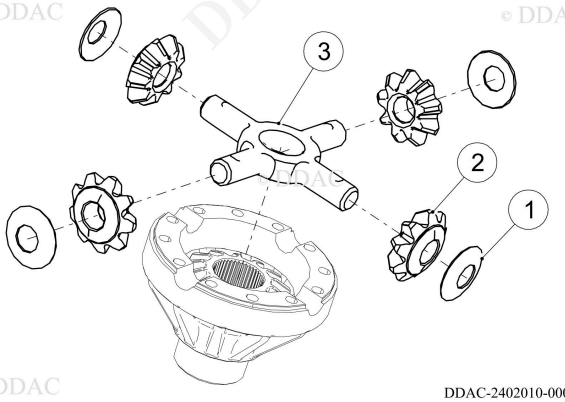
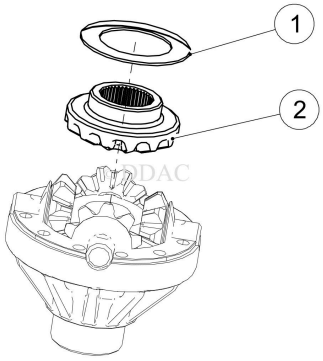
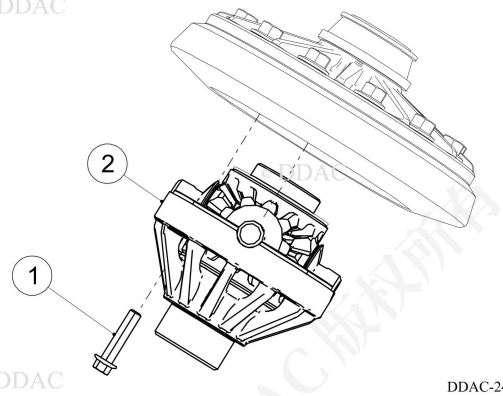
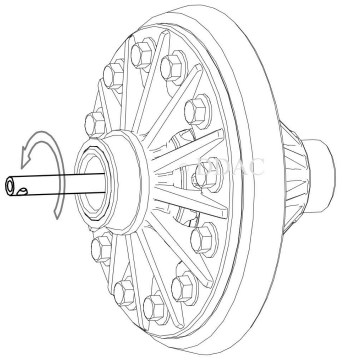
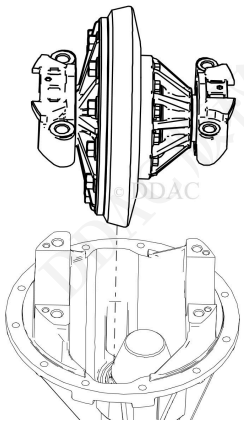
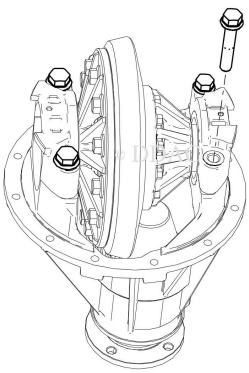
3）将润滑油均匀的涂抹在支撑垫片（1）、半轴齿轮（2）后，依次放置到差速器左壳中。 3) Apply lubricant evenly to the support gasket photographs (1) and axle-shaft gears (2) and then place them in the left housing of the differential in sequence. **注：** **Note:** **支撑垫片与差速器右壳、半轴齿轮与支撑垫片应完全贴合。** **The support spacer and the differential right housing, and the axle-shaft gear and the support spacer should fit completely.**	 DDAC-2402010-000108
4）将润滑脂均匀的涂抹在两组支撑垫片（1）与行星齿轮（2）后，套到十字轴（3）上，放置到差速器左壳。 4) Apply grease evenly to the two sets of support pads (1) and the star gear (2), then put them on the cross shaft (3) and place them in the left housing of the differential.	 DDAC-2402010-000107
5）测量行星齿轮与半轴齿轮的齿侧间隙（或者轴向间隙），正常范围 0.20～0.35 mm。 5) Measure the tooth clearance (or axial clearance) between planetary gear and axle shaft gear, and the normal range is 0.18 ~ 0.65mm. **注：** **Note:** **如超出齿侧间隙正常范围，则需拆卸后重新选装半轴齿轮支撑垫片。** **If it is beyond the normal range of the tooth side clearance, it is necessary to remove and reinstall the axle shaft gear support gasket.**	
6）在半轴齿轮齿面上润滑油，将半轴齿轮（2）及半轴齿轮垫片（1）放置到已装配好的行星齿轮上。 6) Lubricate the axle-shaft gear tooth face and place the axle-shaft gear (2) and axle-shaft gear spacer (1) on the assembled planetary gear.	 DDAC-2402010-000106

7）装上差速器左壳，拧紧螺栓，拧紧力矩 140~180 N.m。 7) Install the left housing of the differential gear and tighten the bolts with a tightening torque of 140~180 Nm. **注意：** **Note:** **螺栓复装前在螺纹头部周向涂抹螺纹锁固胶，不少于10个螺纹。** **Apply thread locking adhesive around the head of thread before remounting, with no less than 10 threads.**	 DDAC-2402010-000127

2. 安装轮间差速器总成

2. Installing the inter-wheel differential assembly.

1）用带有花键的轴，转动半轴齿轮，确保转动轻便，无明显发卡现象，如异常需重新进行拆装。 1) Use a splined shaft to turn the axle-shaft gears to ensure that they rotate easily and that there is no visible jamming. If abnormal, it is necessary to disassemble and assemble again.	 DDAC-2402010-000128
⚠ **注意:** **差速器很重，需要起吊机进行装配。** **The differential is heavy and requires a hoist for assembly.** 2）将左右侧差速器轴承外圈与差速器总成轴承外圈贴合，整体吊放到主减速器壳上。 2) Lift the differential assembly as a whole onto the main reducer housing.	 DDAC-2402010-000129
3）装上螺柱，预拧紧轴承盖安装螺母。 3) Put on the studs, and pre-tighten the bearing cap mounting nuts. **注意：** **Note:** **螺栓复装前在螺纹头部周向涂抹螺纹锁固胶，不少于10个螺纹。** **Apply thread locking adhesive around the head of thread before remounting, with no less than 10 threads.**	 DDAC-2402010-000130

4）用差速器调整扳手将左右差速器调整螺母分别安装到减壳上。

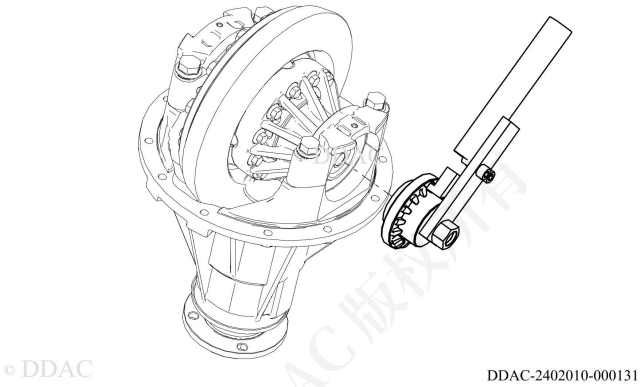
4）Install the left and right differential adjusting nuts on the reducing shell respectively with the differential adjusting wrench.

注：

Note:

拧紧调整螺母时，尽量使齿槽对准轴承盖上装止动片的位置。

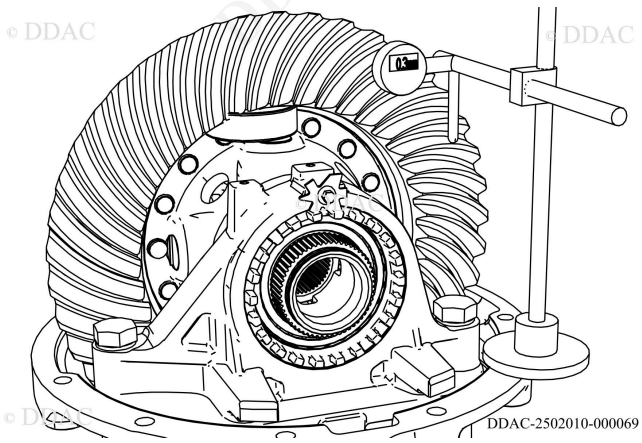
When tightening the adjusting nuts, try to align the tooth groove with the position on the bearing cover where the stop plate is installed.



5）调整齿侧间隙及轴承预紧

5) Adjust the tooth side clearance and bearing preload.

- 先拧紧左侧调整螺母至主被动齿轮无侧隙，然后回退左调整螺母和拧紧右调整螺母，调出要求的齿侧间隙，齿侧间隙：0.23~0.40 mm，以及大轮的启动力矩，大轮启动力矩满足 3.3~5.0 N.m。
- Tighten the left adjusting nut to the left side of the driven gear without side clearance, then retract the left adjusting nut and tighten the right adjusting nut to adjust the required tooth side clearance, tooth side clearance: 0.23~0.40 mm, and the starting torque of the large wheel, the starting torque of the large wheel is 3.3~5.0 N.m.



注：

Note:

一边的调整螺母拧出多少，则另一边的调整螺母必须相应拧进同一数值，从而保证已经调整好的差速器轴承预紧负荷不变，同时确保调整螺母的止动槽位置合适。

If the adjusting nut on one side is screwed out, the adjusting nut on the other side must be screwed into the same value accordingly, so as to ensure that the adjusted differential bearing preload remains unchanged. The preload of the differential bearing is unchanged, and at the same time ensure that the stop slot of the adjusting nut is properly positioned.

检测时百分表测头应垂直大轮大端曲面。

When testing, the percentage meter probe should be perpendicular to the big wheel big end surface.

主被锥齿轮齿侧间隙检测时在被动锥齿轮圆周大致均布的 3 个方向检测 1 到 2 齿。

The master and driven bevel gear tooth side clearance testing in the passive bevel gear circumference roughly evenly distributed in 3 directions to test 1 to 2 teeth.

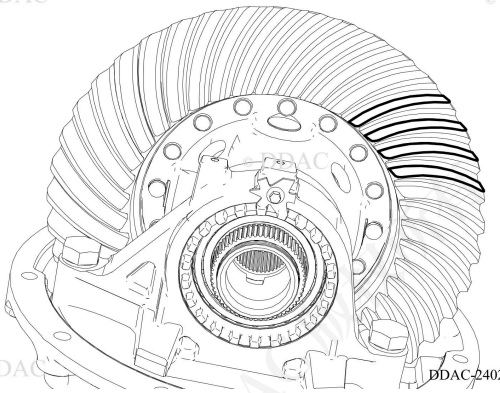
3. 主从动锥齿轮印迹及间隙调整

3. Master and driven bevel gear imprint and clearance adjustment

1）调整主从动锥齿轮接触印迹

1) Adjust the master and driven bevel gear contact marks

- 在3-4个从动轮齿上涂抹一层红丹粉，然后驱动（轻微负荷）主动锥齿轮，检查从动锥齿轮齿面接触印迹。
- Apply a layer of red tannin powder to 3-4 driven bevel gear teeth, and then drive (lightly loaded) the master bevel gear to check the contact marks of the driven bevel gear teeth.



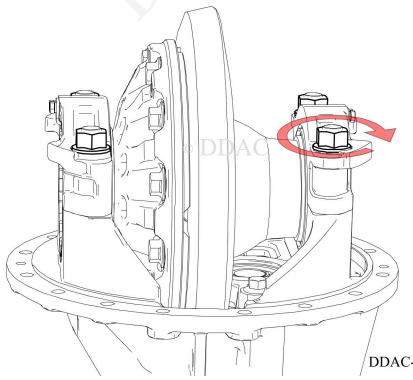
- 调整完成后拧紧轴承盖螺母，轴承盖力矩 500~550 N.m。
- Tighten the bearing cap nuts after the adjustment is completed, the bearing cap torque is 500~550 N.m.

注：

Note:

拧紧轴承盖螺栓前应检查轴承盖是否安装到位，如果轴承盖装配端面与轴承支座端面未贴合，应取下轴承盖，重新调整差速器左右调整螺母位置。

Check whether the bearing cover is installed in place before tightening the bearing cover bolts.If the bearing cover assembly end face and bearing support end face do not fit, the bearing cover should be removed and readjust the position of the differential left and right adjusting nuts.

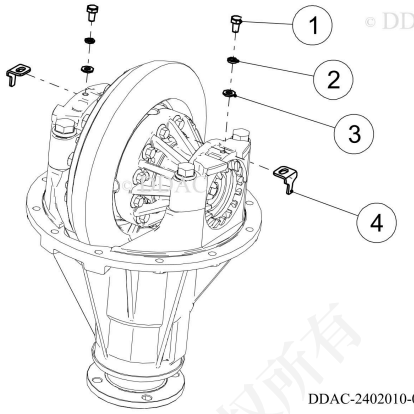


- 印迹标准调整方法：
- Imprinting standard adjustment method:

大轮接触区		调整方法
	理想接触区	不需要调整
	大端接触	松右侧，紧左侧
	小端接触	松左侧，紧右侧
	齿根接触	松左侧，紧右侧
	齿顶接触	松右侧，紧左侧

3）安装调整螺母止动片（4），将止动垫片卡入调整螺母凹槽中，用 12~18 N.m的力矩将止动片安装螺栓（1）拧紧。

3) Install the adjusting nut stop plate (4), clamp the stop gasket into the adjusting nut groove, and tighten the mounting bolt (1) of the stop plate with a torque of 12~18 N.m.



最后步骤

The final step

1.装配主减速器总成参阅：主减速器系统。

1. Assembly of main reducer assembly refer to: Main reducer system.

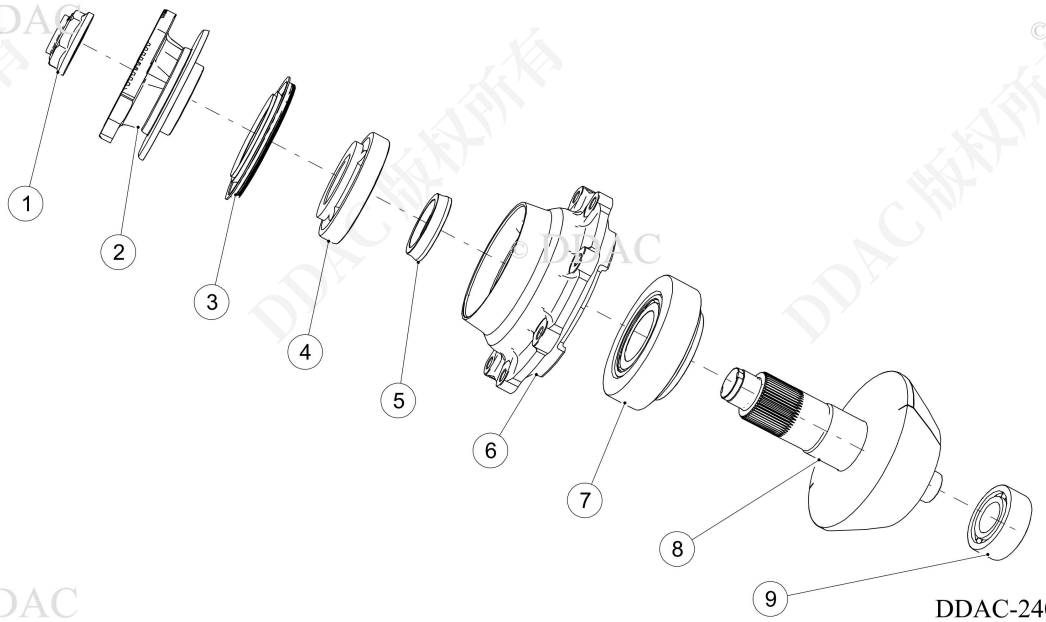
2.装配传动轴参阅：桥总成系统。

2. Assembly drive shaft refer to: axle assembly system.

6.2 主动锥齿轮总成 (Drive Pinion Assy)

分解图

Breakdown drawing



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1. 螺母 1. Nut	2. 突缘总成 2. Flange assembly	3. 油封 3. Oil seal assembly
4. 轴承总成 4. Bearing assembly	5. 隔套 5. Spacer	6. 轴承座 6. Bearing seat
7. 轴承总成 7. Bearing assembly	8. 主动锥齿轮 8. Drive pinion	9. 导向轴承 9. Guide bearing

拆卸前准备

Preparation before disassembly

1. 确认故障，主动锥齿轴副不更换不拆卸减速器总成。

1. Confirm the fault, if do not replace the active cone gear shaft pair ,do not remove the reducer assembly.

拆卸步骤

Remove the step

1. 拆卸主动锥齿轮总成

1. Remove the driving bevel gear assembly

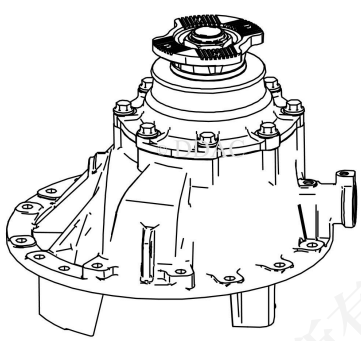
⚠ **注意:**

由于后桥减速器壳较高，为防止主动锥齿轮脱离后桥减速器壳后落地后损坏，必须按要求放置枕木。

Because the rear axle reducer housing is high, in order to prevent the driving bevel gear from falling out of the rear axle reducer housing and damage after landing, the sleeper must be placed as required.

1）翻转减速器壳。

1) Flip the reducer housing.



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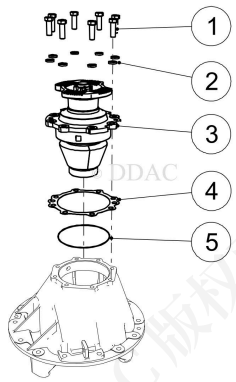
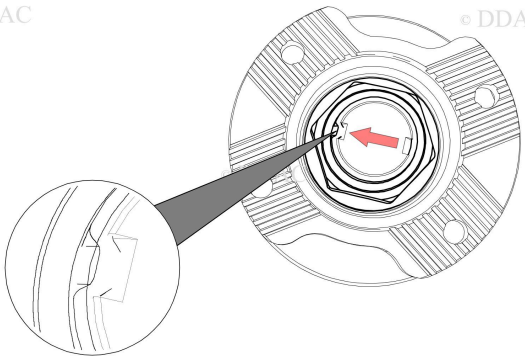
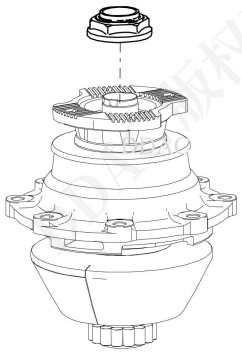
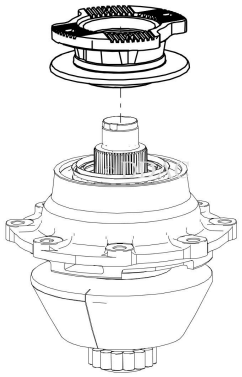
2）拆卸轴承座安装螺栓（1），拔出主动锥齿轮总成（2）。 2) Remove the bearing seat mounting bolt (1) and pull out the driving bevel gear assembly (2). **注：** **Note:** **同时取下调整垫片（ 3 ），并妥善放置，O 型密封圈取下检查。** **At the same time remove the adjusting gasket (3) and place it properly. Take off the O-ring for inspection.**	 DDAC-2402010-000162

2. 分解主动锥齿轮总成

2. Disassemble the driving bevel gear assembly

1）冲平螺母裙边冲铆部分。 1) Flush the rivet part of the nut skirt.	 DDAC-2502010-000008
2）用工具拆下螺母。 2) Remove the slotted nut.	 DDAC-2402010-000196
3）取出输入端突缘总成。 3) Take out the inlet end flange assembly.	 DDAC-2402010-000197

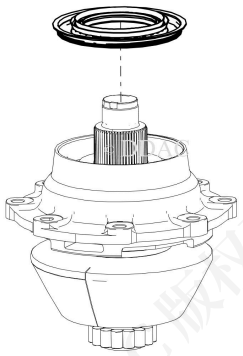
⚠ **注意:**

油封取下后必须更换新油封。

After the oil seal is removed, it must be replaced with a new oil seal.

4）用扁铲或平口螺丝刀撬出输入端油封总成。

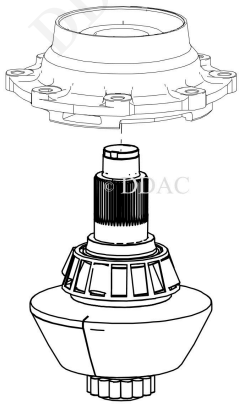
4) Pry out the oil seal assembly at the inlet end with a flat spade or flat screw pair.



DDAC-2402010-000198

5）用压头压出主锥带主锥后轴承内圈总成及中间隔套及调整垫片。

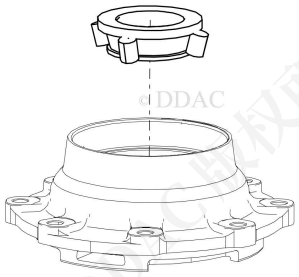
5) Use the pressure head to press out the inner ring assembly of the main cone bearing with the rear main cone, the middle spacer sleeve and the adjusting gasket.



DDAC-2402010-000199

6）从轴承座内取出主锥前轴承内圈。

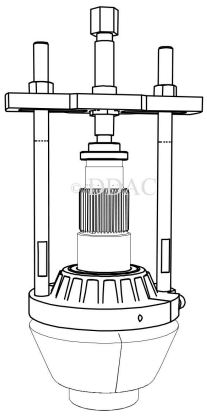
6) Take out the inner ring of the main cone front bearing from the bearing housing.



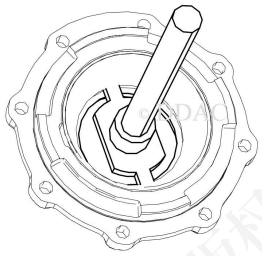
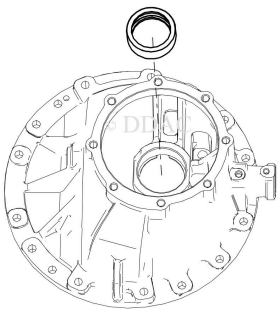
DDAC-2402010-000200

7）用后桥主锥后轴承内圈拉拔器，将主锥后轴承内圈从主锥上卸下。

7) Remove the inner ring of the rear bearing of the main cone from the main cone with the drawing device of the rear axle main cone.



DDAC-2402010-000054

8）用锥前轴承外圈压板、后桥主锥后轴承外环压板从轴承座中取出主锥前后轴承外圈。 8) Take out the main cone front and rear bearing outer rings from the bearing housing with the cone front bearing outer ring press plate and the rear axle main cone bearing outer ring press plate.	 DDAC-2402010-000204
9）从减速器壳中敲出导向轴承外圈。 9) Knock out the guide bearing outer ring from the reducer housing.	 DDAC-2402010-000201

安装前准备
Preparations for Installation

⚠ 警告:

严禁使用汽油清洗零件。

Use of gasoline to clean parts is strictly prohibited.

1. 用清洁溶剂清洗解体零件。

1. Clean the disassembled parts with a cleaning solvent.

2. 让零件充分干燥，残留的溶液必须擦拭干净。

2. Let parts fully dry, residual solution must be wiped clean.

⚠ 警告:

如果你选择继续使用现有的轴承，这些轴承必须按照生产商建议的原则进行检查。

If you choose to continue using existing bearings, these bearings must be inspected in accordance with the principles recommended by the manufacturer.

当确定轴承内圈或外圈有损坏时，必须对内外轴承同时成套进行更换，同时必须更换轴承隔套。

When it is determined that the inner or outer ring of the bearing is damaged, the inner and outer bearings must be replaced in a complete set at the same time, and the bearing sleeve must be replaced at the same time.

3. 检查零件是否有划痕、裂纹、损伤等。

3. Check the parts for scratches, cracks, damage, etc.

4. 检查轴承外圈有无跑圈，如出现跑圈，请立即成对更换内外轴承。

4. Check whether the outer ring of the bearing has a running ring. If there is a running ring, please immediately replace the inner and outer bearings in pairs.

5. 检查主、从动锥齿轮、差速器壳、轴承等是否有裂纹。

5. Check whether there are cracks in the main and driven bevel gears, differential housing, bearings, etc.

注：

Note:

主、从动锥齿轮需成对更换。

Master and driven bevel gears need to be replaced in pairs.

主减速器壳与差速器轴承盖需成对更换。

The main reducer housing and differential bearing cover need to be replaced in pairs.

6. 对调整垫片及调整隔套进行了计算预选，并准备好相应的备品。

6. Calculate and pre-select the adjustment gasket and the adjustment spacer, and prepare the corresponding spare parts.

7.对密封件进行更换。

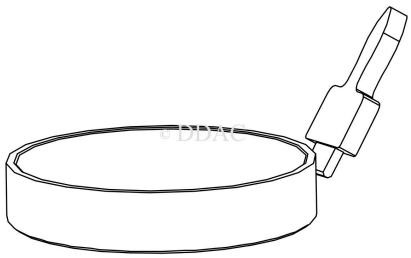
7. Replace the seal.

安装步骤

Installation steps

1. 安装主动锥齿轮总成

1. Install the driving bevel gear assembly

1）将轴承座固定在安装台上。 1) Fix the bearing pedestal on the mounting platform. 2）将前后轴承外圈均匀的涂抹一层润滑油。 2) Apply a layer of lubricating oil evenly to the front and rear bearing outer rings.	 DDAC-2402010-000141

⚠ 警告:

如果使用压力机，要遵守压力机制造商所要求的所有警告和注意，避免造成零部件损坏和人身伤害。

If using a press, follow all warnings and cautions required by the press manufacturer to avoid damage to parts and personal injury.

⚠ 注意:

压装轴承外圈时，不允许接触滚道。

When pressing the bearing outer ring, do not allow to contact the raceway.

采取措施避免损坏轴承外圈孔和轴承安装轴肩。

Take measures to avoid damage to the bearing outer ring hole and bearing mounting shaft shoulder.

3）用主锥后轴承外圈套筒，将后轴承外圈压入轴承座后轴承孔。

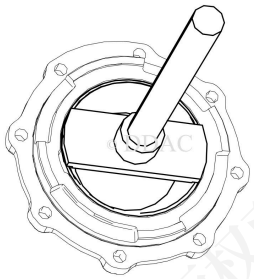
3) With the sleeve of the rear bearing outer ring of the main cone, press the rear bearing outer ring into the bearing hole behind the bearing seat.

注：

Note:

轴承外圈要一步压装到位，用 0.02 mm 塞尺检查轴承外圈与轴承座安装面之间，不得有间隙。

The bearing outer ring should be pressed into place in one step. Check the bearing outer ring and the mounting surface of the bearing seat with 0.02 mm feeler. There should be no clearance between the bearing outer ring and the bearing seat.



DDAC-2402010-000206

⚠ 警告:

如果使用压力机，要遵守压力机制造商所要求的所有警告和注意，避免造成零部件损坏和人身伤害。

If using a press, follow all warnings and cautions required by the press manufacturer to avoid damage to parts and personal injury.

⚠ 注意:

压装轴承外圈时，不允许接触滚道。

When pressing the bearing outer ring, do not allow to contact the raceway.

采取措施避免损坏轴承外圈孔和轴承安装轴肩。

Take measures to avoid damage to the bearing outer ring hole and bearing mounting shaft shoulder.

4）换个方向，用后桥主锥前轴承外圈套筒将前轴承外圈压入主锥轴承座前轴承孔。

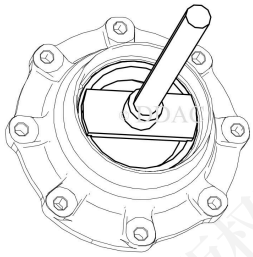
4) In another direction, use the rear axle main cone front bearing outer ring sleeve to press the front bearing ring into the front bearing hole of the main cone bearing seat.

注：

Note:

轴承外圈要一步压装到位，用 0.02 mm 塞尺检查轴承外圈与轴承座安装面之间，不得有间隙。

The bearing outer ring should be pressed into place in one step. Check the bearing outer ring and the mounting surface of the bearing seat with 0.02 mm feeler. There should be no clearance between the bearing outer ring and the bearing seat.



DDAC-2402010-000207

⚠ 警告:

如果使用压力机，要遵守压力机制造商所要求的所有警告和注意，避免造成零部件损坏和人身伤害。

If using a press, follow all warnings and cautions required by the press manufacturer to avoid damage to parts and personal injury.

⚠ 注意:

压装轴承内圈时，不允许接触滚动体及保持架。

When pressing the bearing outer ring, do not allow to contact the raceway.

5）将后轴承内圈均匀的涂抹一层润滑油，用主锥后轴承内圈套筒将主动锥齿轮后轴承内圈压装到主动锥齿轮轴颈上。

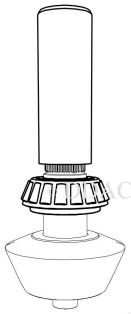
5) Apply a layer of lubricating oil evenly to the inner ring of the rear bearing, and press the inner ring of the rear bearing of the driving bevel gear onto the journal of the driving bevel gear with the inner ring sleeve of the main cone rear bearing.

注：

Note:

轴承内圈要一步压装到位，用 0.02 mm塞尺检查后轴承内圈大端面与主动锥齿轮安装之间，不得有间隙。

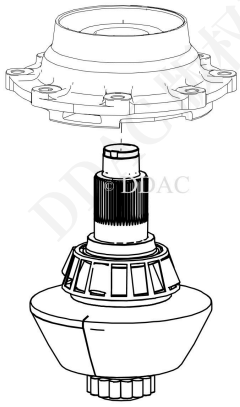
The inner ring of the bearing should be pressed into place in one step. After checking with 0.02 mm feeler, there should be no clearance between the large end face of the inner ring of the bearing and the installation of the driving bevel gear.



DDAC-2402010-000059

6）将主锥从装有轴承外圈的轴承座下方套入。

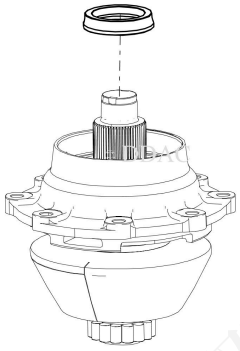
6) Insert the main cone from the lower part of the bearing housing with the outer ring of the bearing.



DDAC-2402010-000199

7）将调整隔套及调整垫片涂抹一层润滑油后，装到主锥上。

7) Apply a layer of lubricant to the adjusting spacer and selected adjusting pads, and then install them on the main cone.



DDAC-2402010-000220

⚠ 警告:

如果使用压力机，要遵守压力机制造商所要求的所有警告和注意，避免造成零部件损坏和人身伤害。

If using a press, follow all warnings and cautions required by the press manufacturer to avoid damage to parts and personal injury.

⚠ 注意:

压装轴承内圈时，不允许接触滚动体及保持架。

When pressing the bearing outer ring, do not allow to contact the raceway.

8）用主锥前轴承内圈套筒将主锥前轴承内圈缓慢压入。

8) Slowly press in the inner ring of the main tapered front bearing using the main tapered front bearing inner ring sleeve.

注：

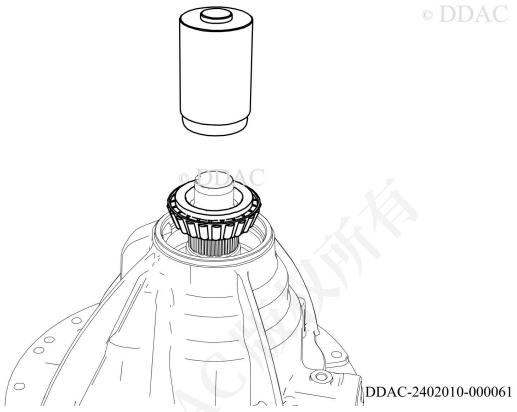
Note:

调整隔套装配后，需要根据主锥总成的启动力矩选择合适的调整隔套。

After the adjusting spacer is assembled, you need to select the appropriate adjusting spacer according to the starting torque of the main cone assembly.

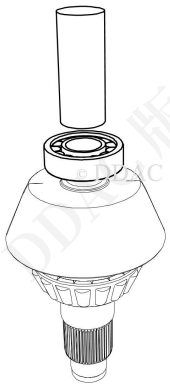
确保压装到位，限位接触区不留间隙。

Make sure that the press fit is in place and no clearance is left in the limit contact area.



9）压装主锥导向轴承内圈总成。

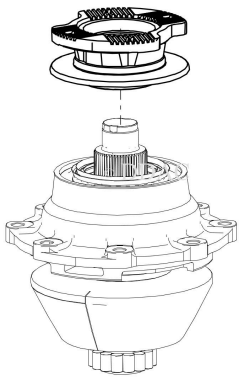
9) Press-fit the inner ring assembly of main taper guide bearing.



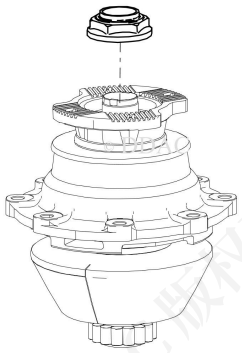
10）安装突缘总成

10) Install the flange assembly

- 手动调整突缘，使其对准主锥花键齿，并保持突缘端面水平后压装到位。
- Adjust the flange manually so that it is aligned with the main tapered spline teeth, and press it into place after keeping the face of the flange level.



- 用 1000~1500 N.m 的拧紧力矩拧紧形螺母，固定轴承座，用弹簧秤的一端钩在突缘的螺孔上，测量此时的预紧力距，要求 1.9～4.4 N.m，如果高动力矩过大，则应增加中间隔套，反之减少中间隔套垫片，调整完成拆下螺母，取出突缘。
- Install the flat washer, tighten the shaped nut with a tightening torque of 1000~1500 Nm, fix the bearing seat, hook one end of the spring scale on the screw hole of the protrating edge, and measure the pre-tightening distance at this time, which is required to be 1.5～3.5 N.m.If the dynamic torque is too large, the whole pad of the middle pad should be increased, on the contrary, the middle gasket should be reduced, the nut should be removed after adjustment, and the flange should be removed.



DDAC-2402010-000196

11）安装油封

11) Install the oil seal

⚠ **注意:**

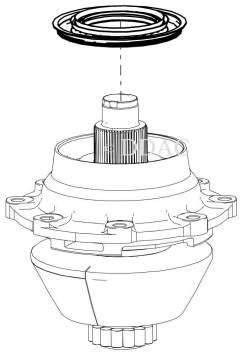
严禁直接敲击油封端面歪斜安装。

It is strictly forbidden to directly hit the end face of the oil seal for skewed installation.

装配后看油封弹簧是否脱落，若脱落换新油封重新装配。

After assembly, see whether the oil seal spring falls off. If it falls off, replace it with a new oil seal and assemble again.

- 装配前，在油封刃口涂一层锂基脂。
- Before assembly, apply a layer of lithium grease to the edge of the oil seal.
- 将油封放正后，用后桥主轴油封套筒压入到圆壳盖的油封位上，并用铜锤敲击安装到位。
- After setting the oil seal in place , press it into the oil seal position of the round shell cover with the rear axle spindle oil seal sleeve , and hammer it into place with copper hammer.
- 检查并确保油封没有翘起，油封内端面与内轴承能够自由转动。
- Check and ensure that the oil seal is not warped and the inner end face of the oil seal and the inner bearing can rotate freely.

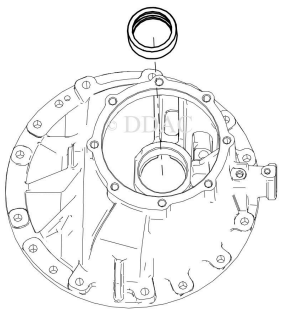


DDAC-2402010-000198

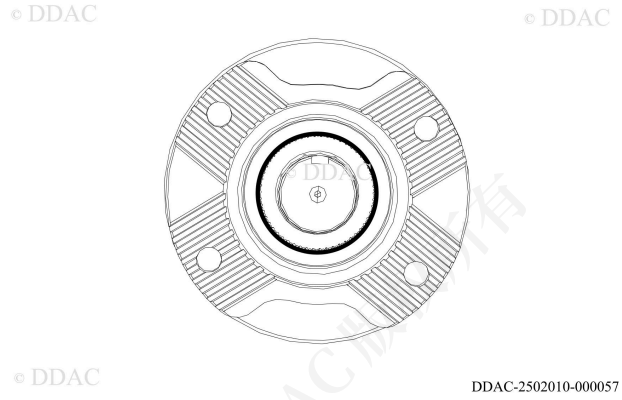
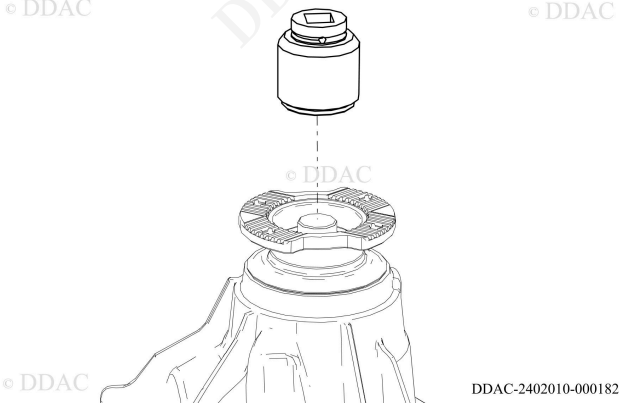
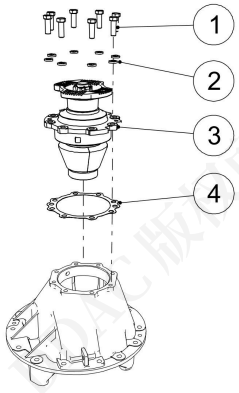
12）安装导向轴承

12）Install the guide bearing

- 压装导向轴承外圈装到减速器壳安装位。
- Press-fit the outer ring of the pilot bearing to the reducer housing mounting position.



DDAC-2402010-000201

• 在花键与突缘结合面涂抹密封胶。 • Apply sealant to the joint surface of spline and edge.	 DDAC-2502010-000057
13）重新装配突缘，按 1000~1500 N.m 拧紧螺母，冲铆螺母裙边至凹槽中，锁紧螺母。 13) Reassemble the edge, tighten the nut by 1000~1500 N.m, push the rivet nut skirt into the groove, and lock the nut.	 DDAC-2402010-000182
14）将选好调整垫片放到减壳安装面上，螺孔对齐，将主锥轴承座安装外圆，装到减壳上，拧紧轴承座安装螺栓，拧紧力矩：240~280 N.m。 14) Place the selected adjusting gasket on the shell reducing mounting surface, align the screw holes, install the selected division adjusting gasket, install the main cone bearing seat on the outer circle, install it on the shell reducing shell, and tighten the mounting bolts of the bearing seat.Tightening torque：240~280 N.m.	

最后步骤
The final step

1. 安装轮间差速器总成参阅：轮间差速器总成。

1. Install inter-wheel differential assembly refer to: Inter-wheel differential assembly.

7 桥壳系统 (Axle Housing system)

7.1 通气塞总成 (Air plug assembly)

安全注意事项

Safety Precautions

1. 操作人员应提前熟悉此维修内容，严禁不熟悉此维修内容的人员操作。

1. Operators should be familiar with the maintenance content in advance, and personnel unfamiliar with the maintenance content are forbidden to operate.

2. 维修作业应遵守本内容提及的警告与注意事项，避免造成零部件损坏或人身伤害。

2. Maintenance operations shall comply with the warnings and precautions mentioned herein to avoid damage to parts or personal injury.

3. 进行车辆维护或保养时，请始终佩戴护目镜，防止对眼睛造成伤害。

3. Wear safety goggles at all times during vehicle maintenance to prevent eye damage.

4. 车辆应停放在水平地面上，在轮胎下放置三角木防止车辆移动，用安全架支撑车辆，勿在仅有千斤顶支撑的车辆下作业，千斤顶可能打滑、翻倒并造成人身伤害和组件损坏。

4. The vehicle should be parked on the horizontal ground, placed triangle wood under the tire to prevent the vehicle from moving, with a safety frame to support the vehicle, do not operate under the vehicle supported only by the jack, the jack may slip, overturn and cause serious personal injury and component damage.

通用工具

Universal tool

序号 NO.	工具名称 Tool name	工具用途 Tool use	工具型号规格 Tool model specifications	图示 Illustration
1	力矩扳手 Torque wrench	用于检查安装力矩 Used to check and adjust screw mounting torque	0~150N.m/5N.m	

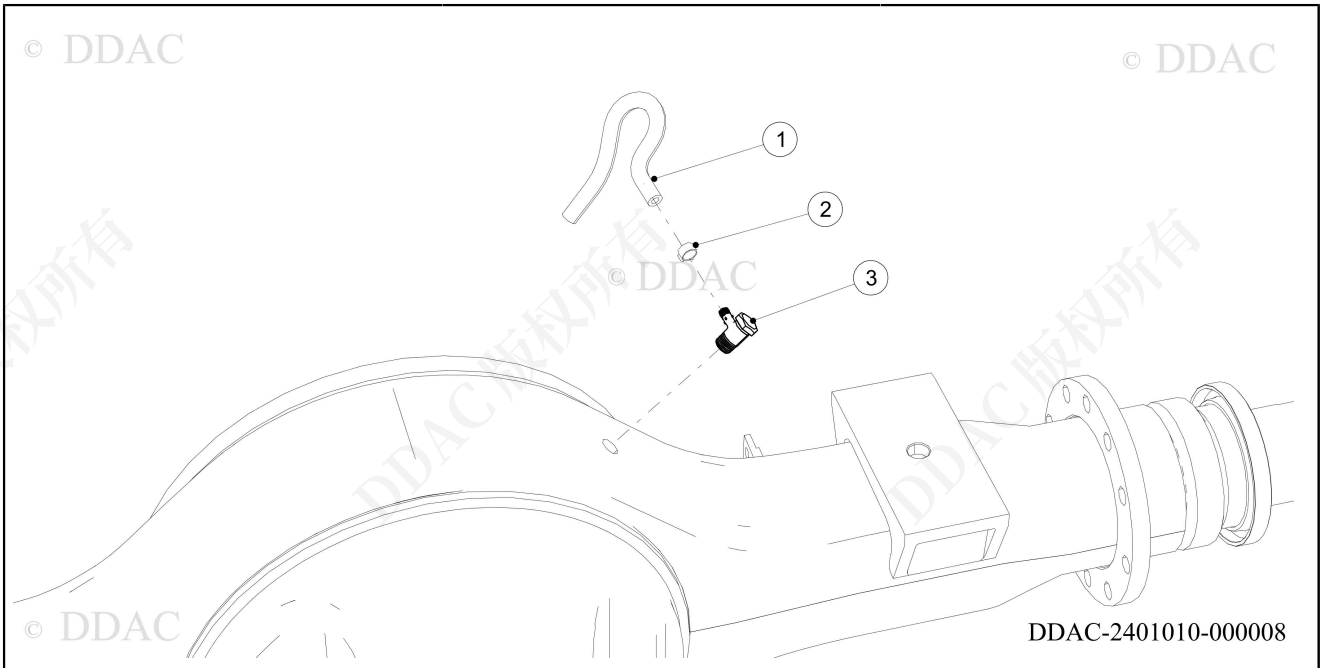
化学品

Chemical product

序号 No.	名称 Name	用途 Use	用量 Amount of consumption	型号规格 Model and specification
1	螺纹密封胶 Screw thread sealant	通气塞本体螺纹 Thread of vent plug body	适量 Right amount	Tianshan - 1279

分解图

Breakdown drawing



1.通气塞软管 1. Vent plug hose	2.弹性环箍 2. Elastic hoop	3.通气塞本体 3. Vent plug body

拆卸前准备
Prepare before disassembly

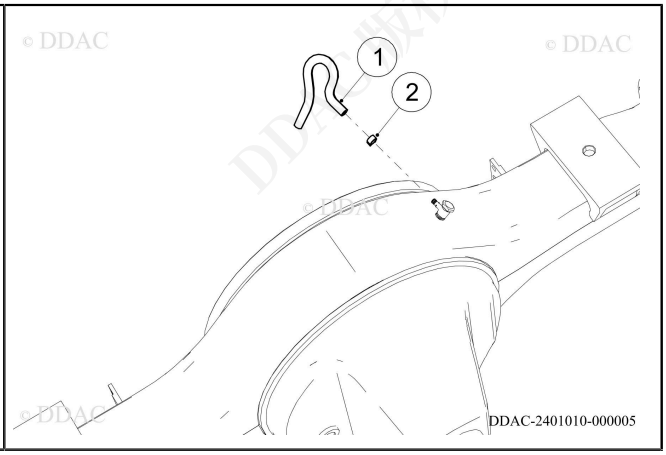
1. 清理清洁桥壳通气塞软管周边。

1. Clean and clean around the vent plug hose of the axle housing.

拆卸步骤
Disassembly steps

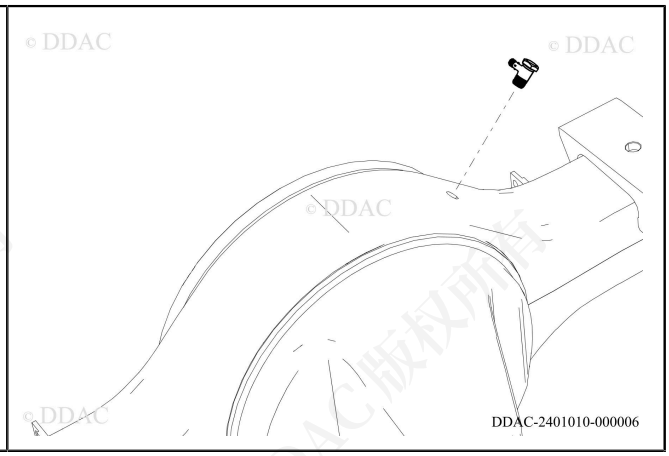
1. 拆通气软管

1. Remove the ventilation hose

1）捏住卡箍（2），从软管接头上拔下软管（1）。 1) Pinch the clamp (2) and remove the hose (1) From the hose connector.	

2. 拆通气塞本体

2. Remove the vent plug body

1）用 18 mm 开口扳手拆下软管接头。 1) Remove the hose connector with an 18 mm open spanner.	

安装前准备
Preparations for Installation

注:

Note:

通气软管较长，可用 0.1 Mpa 的压缩空气进行疏通。

The ventilation hose is long and can be dredged with 0.1mpa compressed air.

1. 清洁软管，检查是否有皲裂、老化。

1. Clean the ventilation hose to make check sure it is not for chapping and aging.

2. 检查疏通、通气塞本体。

2. Check the vent plug body to make sure it is unblocked.of dredging and ventilation plugs.

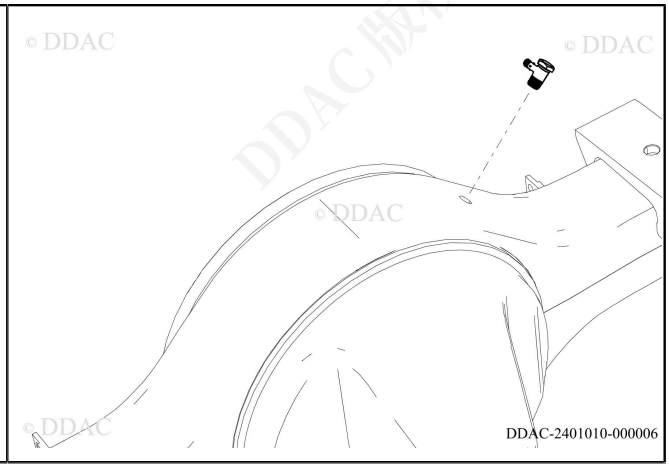
3. 检查通气塞本体与桥壳连接处是否有渗漏油。

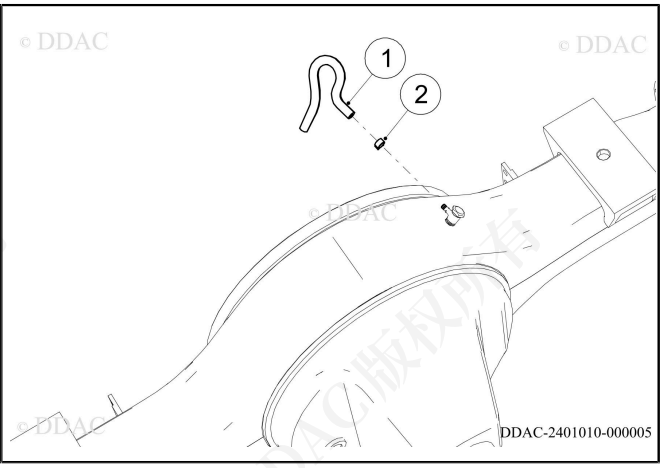
3. Check whether there is oil leakage at the connection between the vent plug body and the axle housing.

4. 清洁通气塞体体螺纹残胶，重新涂螺纹胶。

4. Clean the residual glue on the thread of the ventilation plug body and reapply the thread glue.

安装步骤
Installation steps

1. 将通气塞本体装到桥壳中，安装力矩要求 30~50 N.m。 1. Install the vent plug body into the axle housing. The installation torque must be 30 to 50N.m.	

2. 将软管 (1) 插到接头上，并装上卡箍(2)。 2. Connect the hose (1) to the connector and attach the clamp (2). **注：** **Note:** **软管出口方向朝向车辆后侧。** **Hose outlet direction towards rear of vehicle.**	

最后步骤
The final step

1. 清理通气塞周边。

1. Clean around the vent plug.