

V12 ENGINE MODEL V12发动机模型【DM109】



(原理组装模型)
(PRINCIPLE ASSEMBLY MODEL)

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WhatApp: 0086-13924277386



WhatsApp



土星官网
OFFICIAL WEBSITE

版本号: DM109-2



**1:4
Scale**

**6H+
DIY TIME**

**800+
Pcs/Set**

STRUCTURAL FEATURES

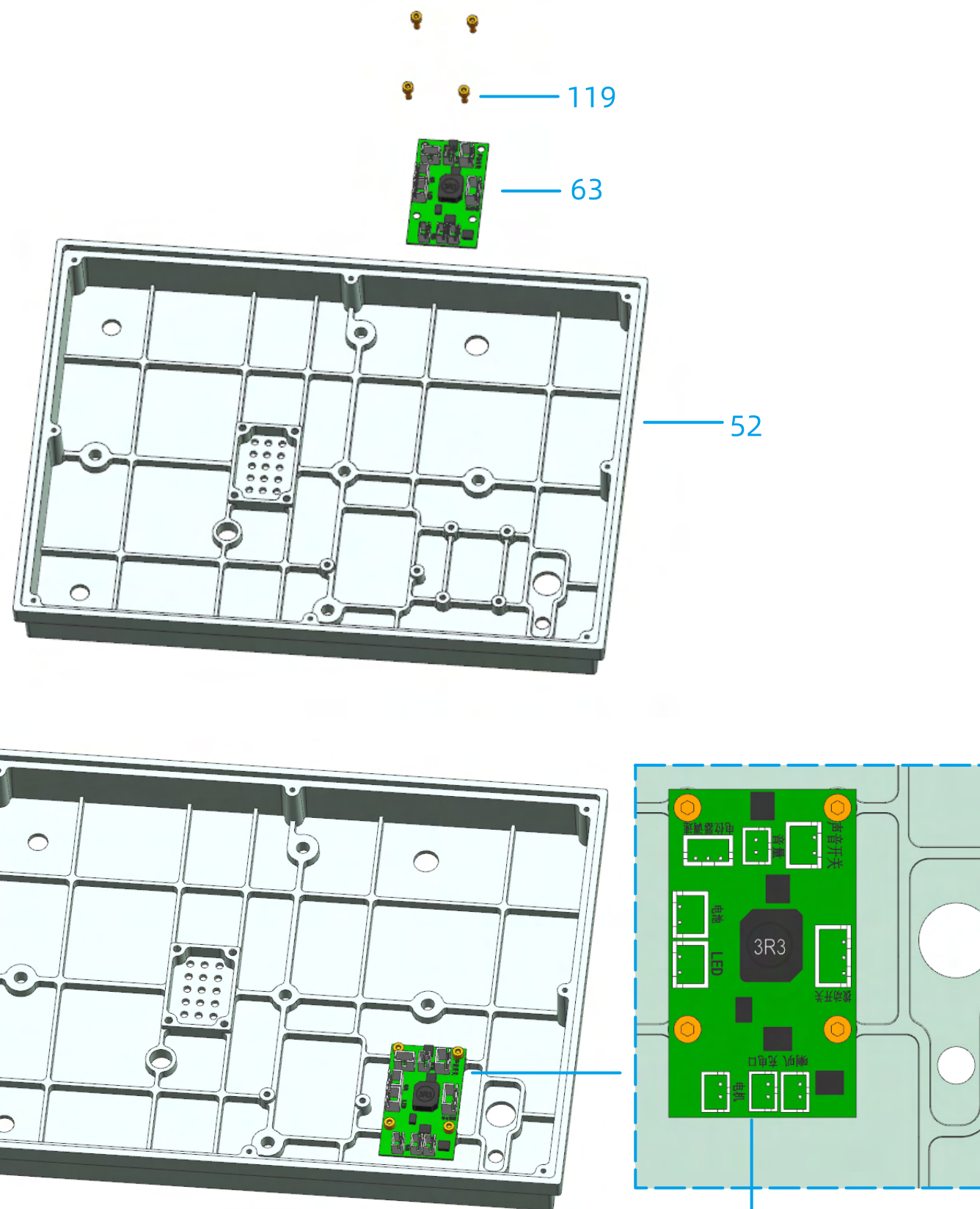
- *12cylinder V-type layout structure
- *Cam Overhead Valve Control Structure
- *Camshaft Chain Drive System
- *Natural aspiration and dual-valve mechanism

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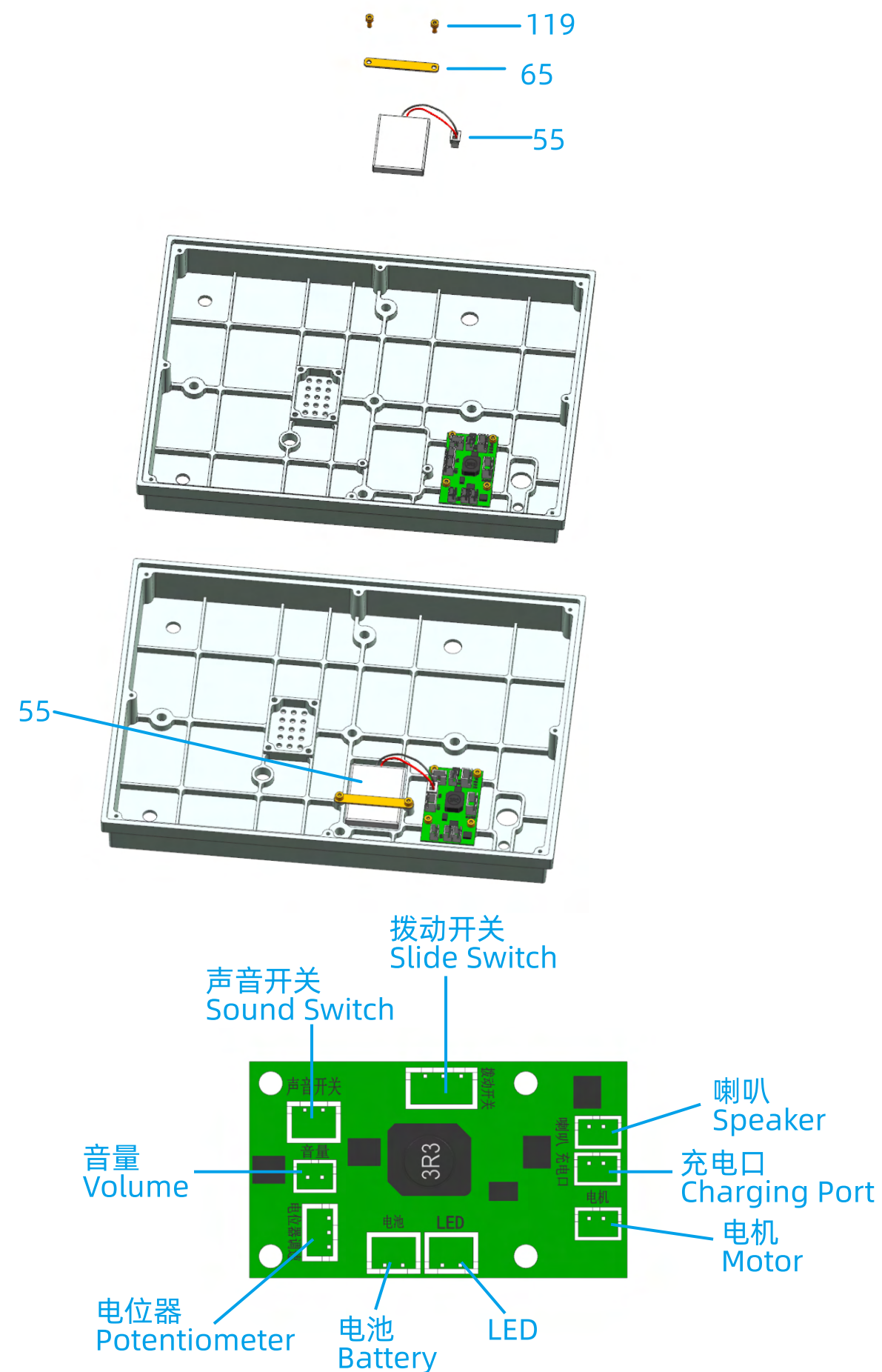
1.底座总成 Base Assembly

1.1 组装电路板 Assemble the Circuit Board

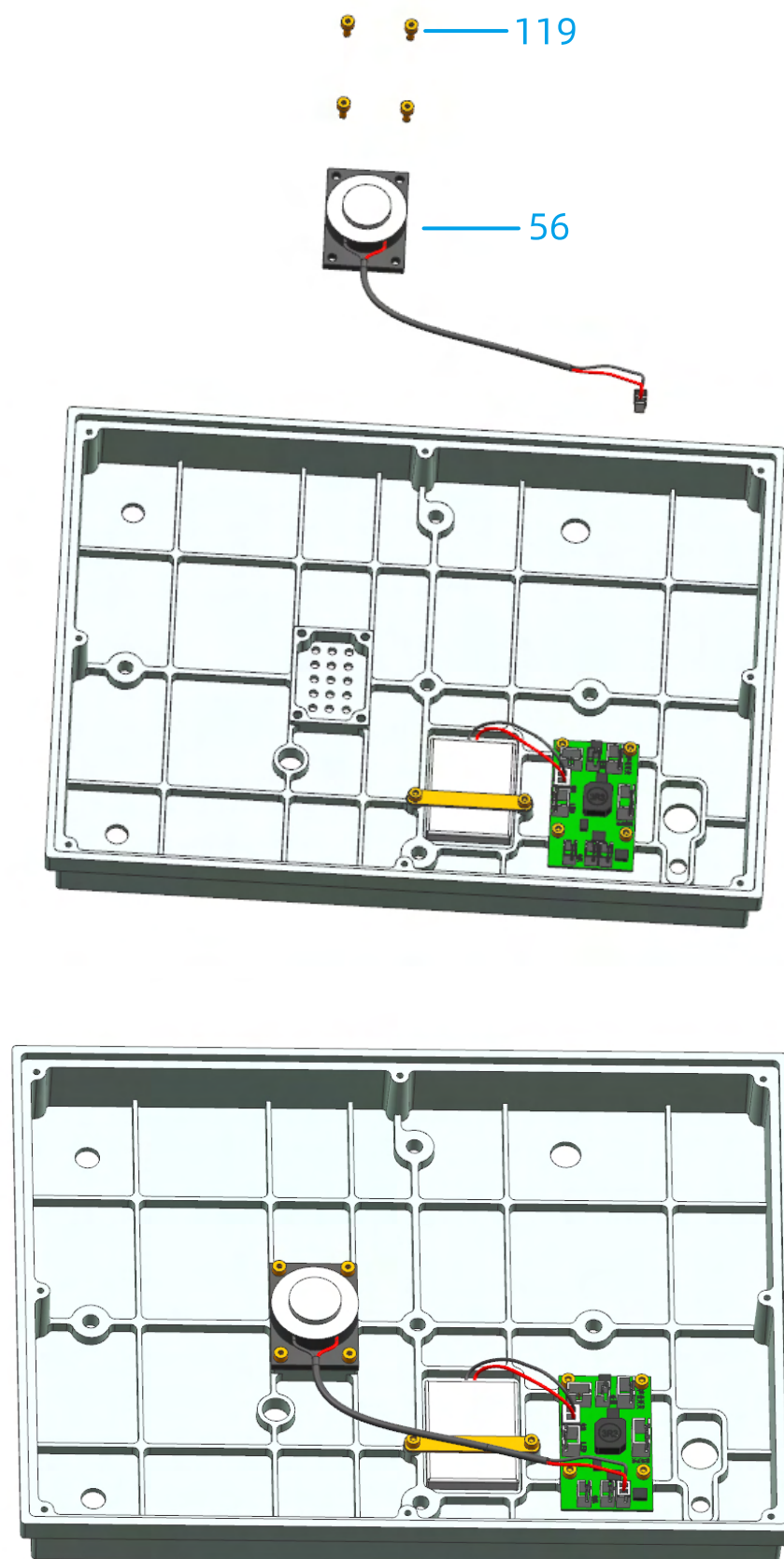


电路板边缘远离螺丝的部位需紧贴底座边框安装
The part of the circuit board edge that is far from the screws is installed close to the base frame

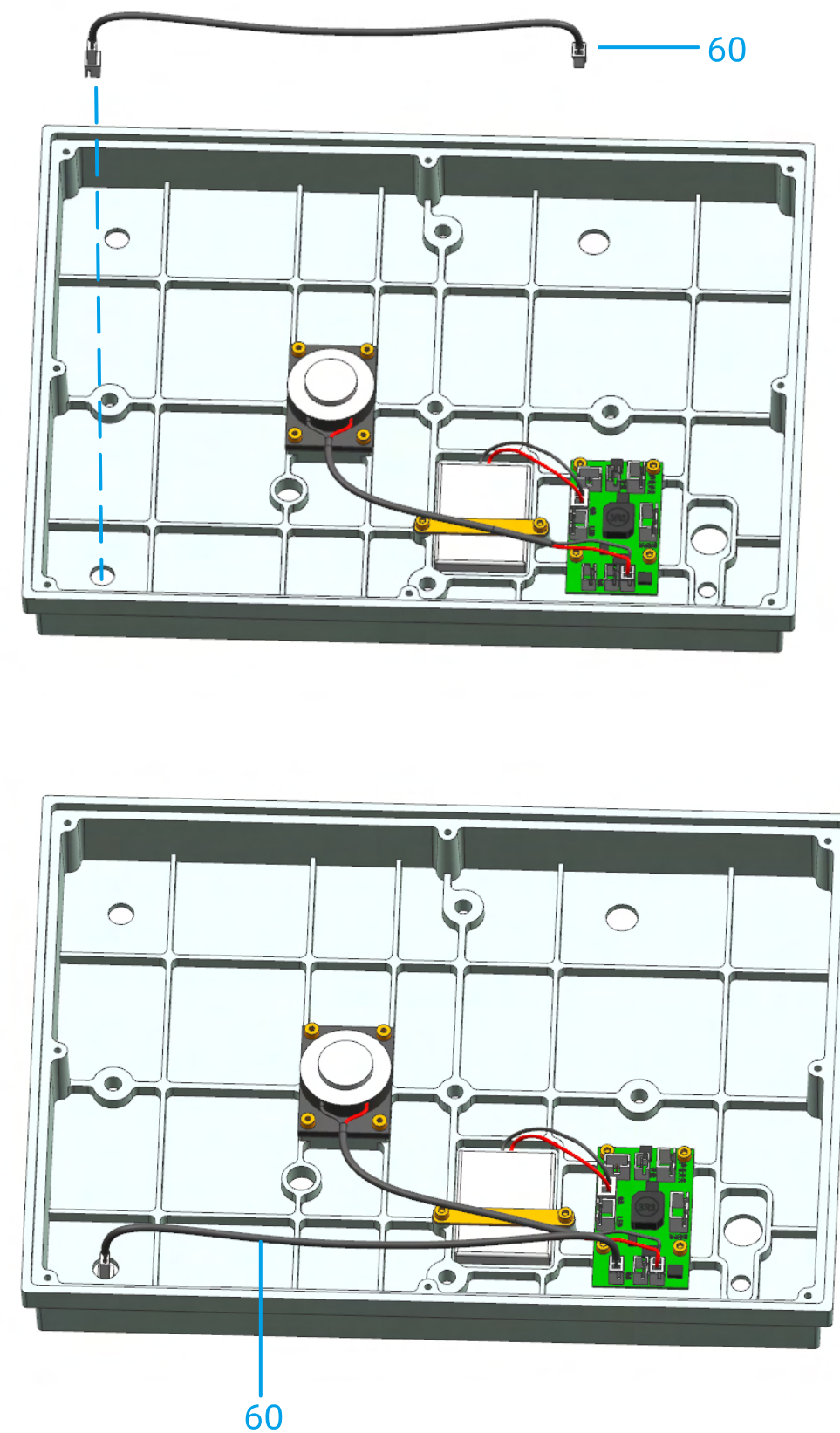
1.2 组装电池 Assemble the Battery



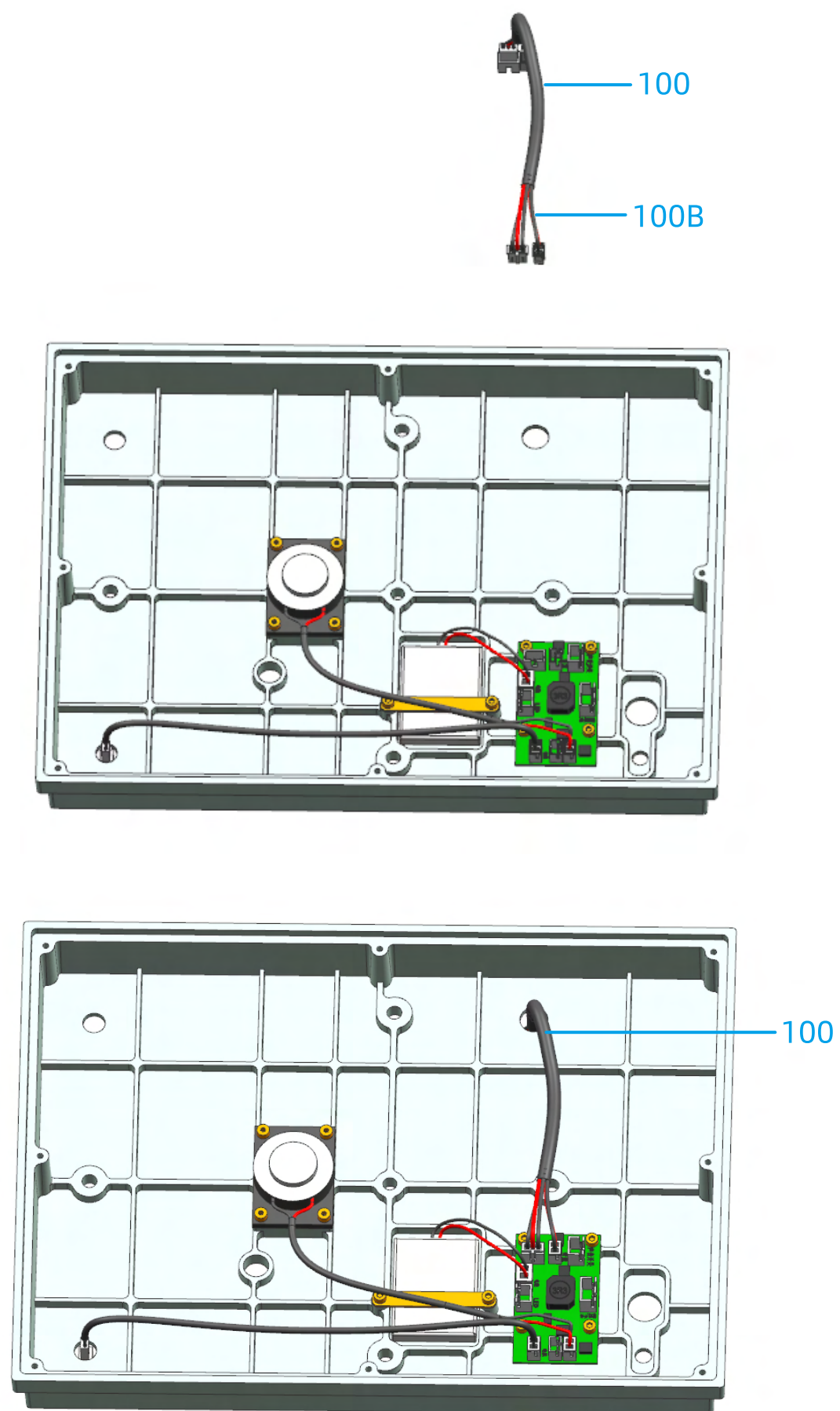
1.3 组装喇叭 Assemble the Speaker



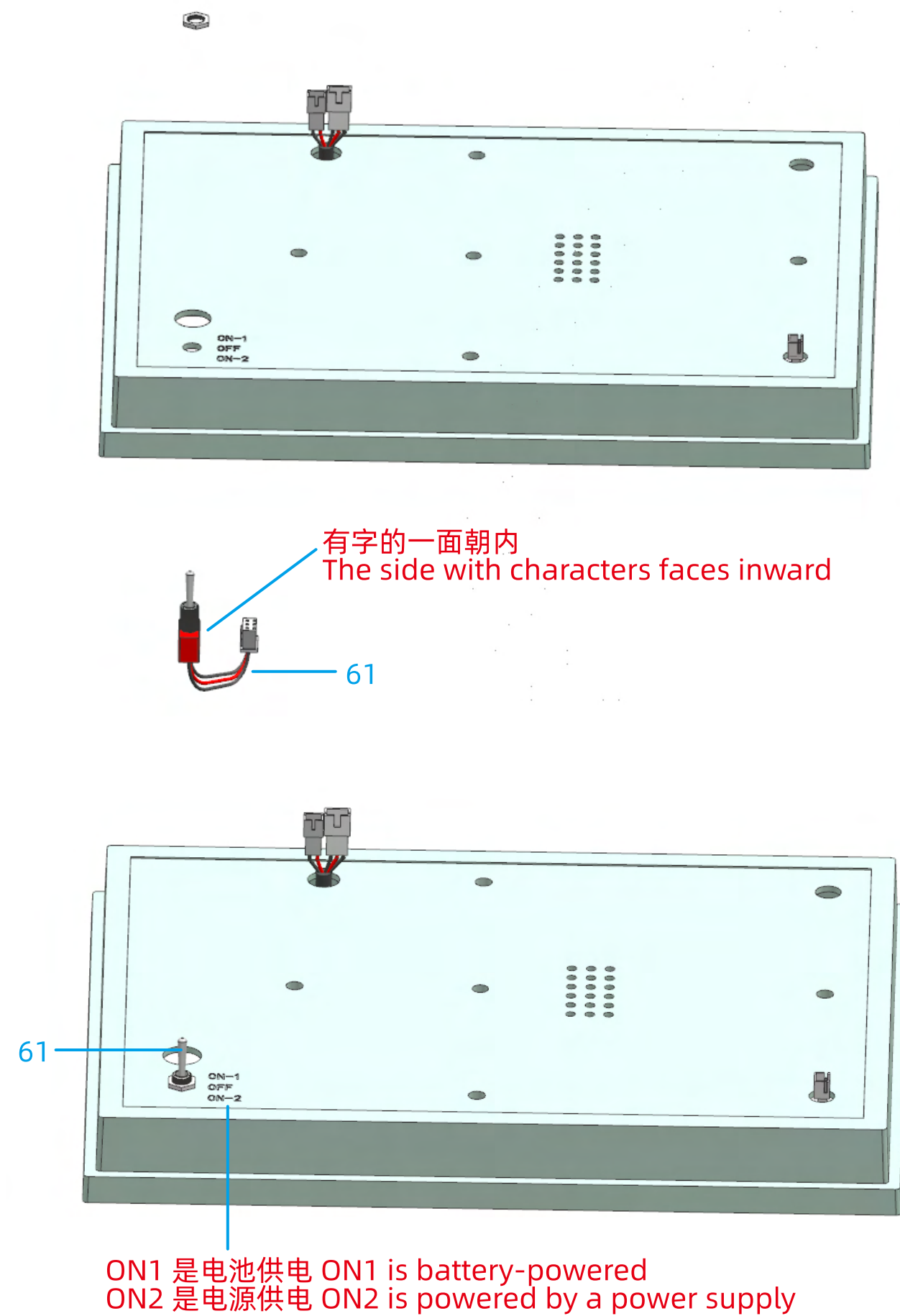
1.4 组装电机连接线 Assemble the Motor Connection Wire



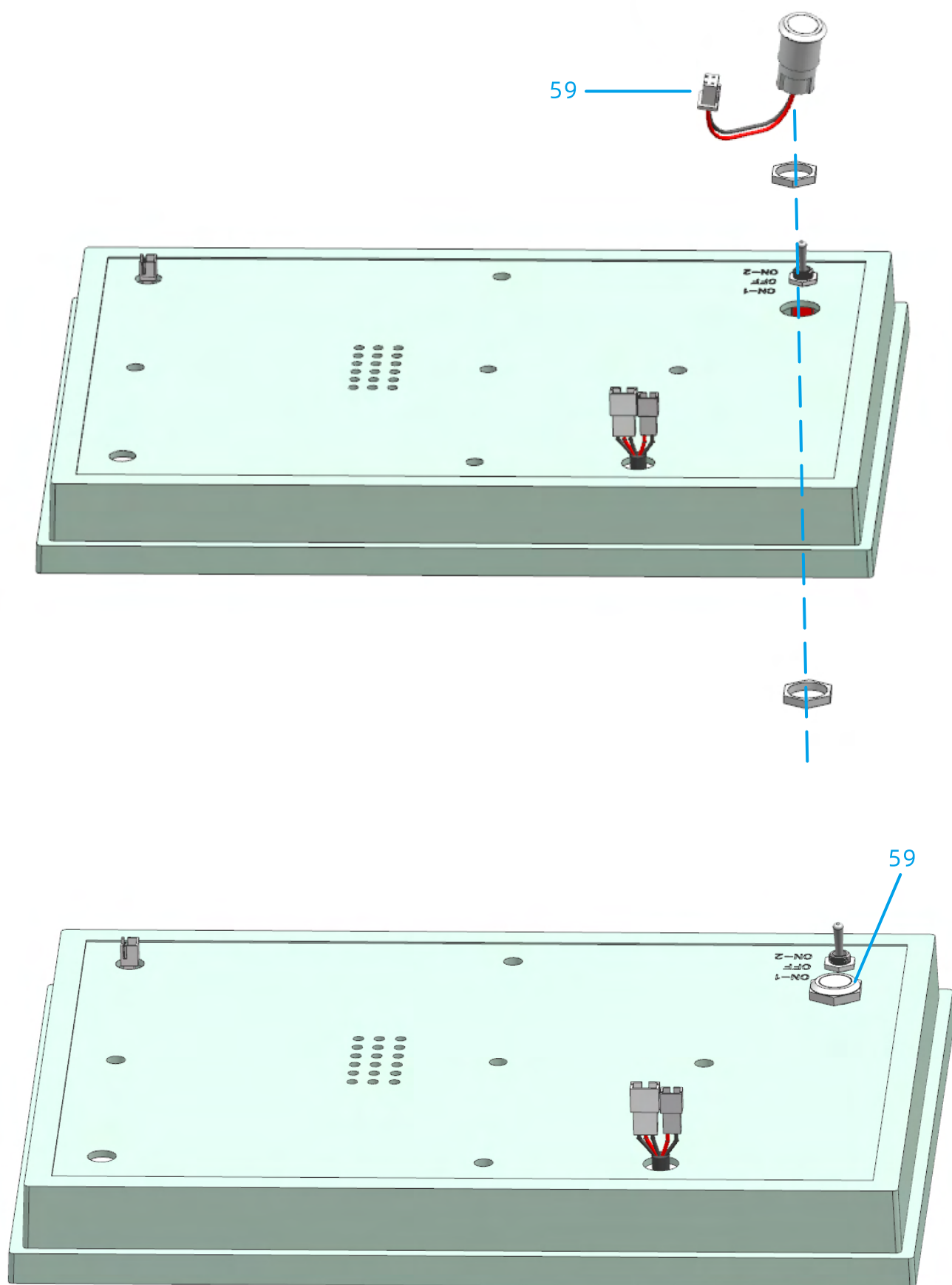
1.5 组装电位器连接线 Assemble the Potentiometer Connection Wire



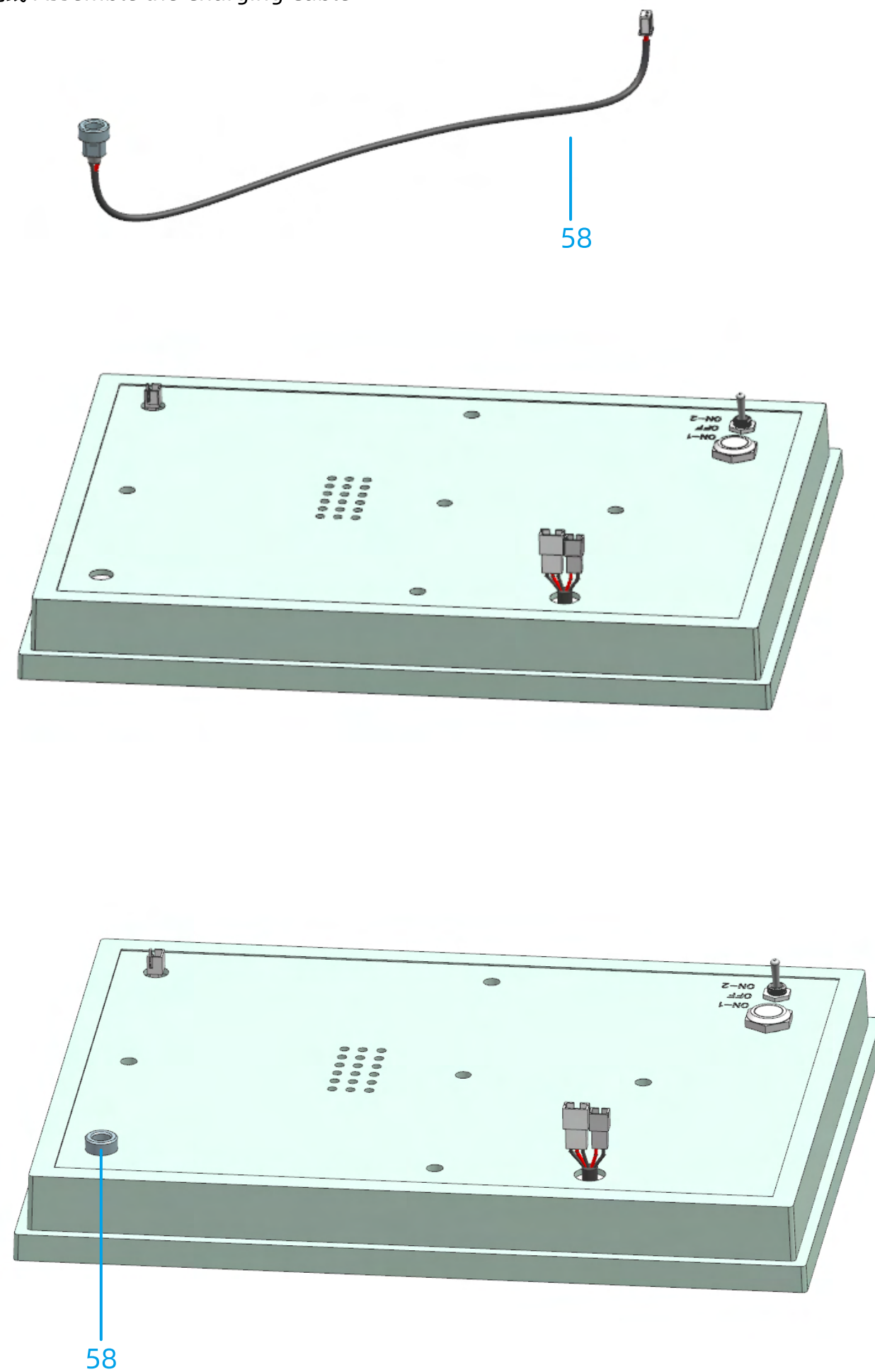
1.6 组装电源开关 Assemble the Power Switch



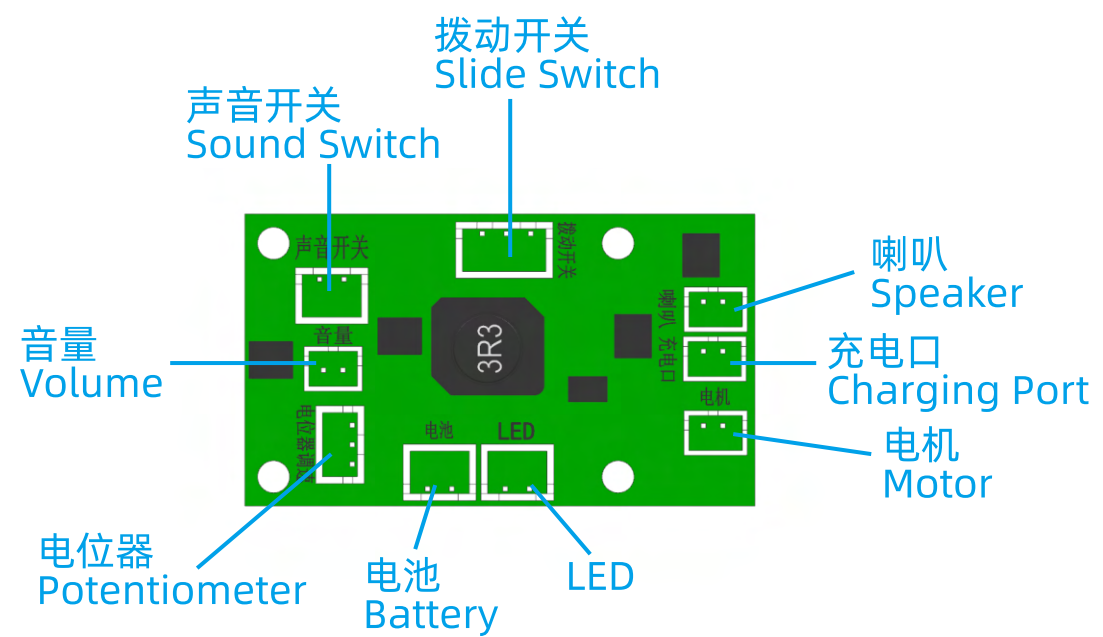
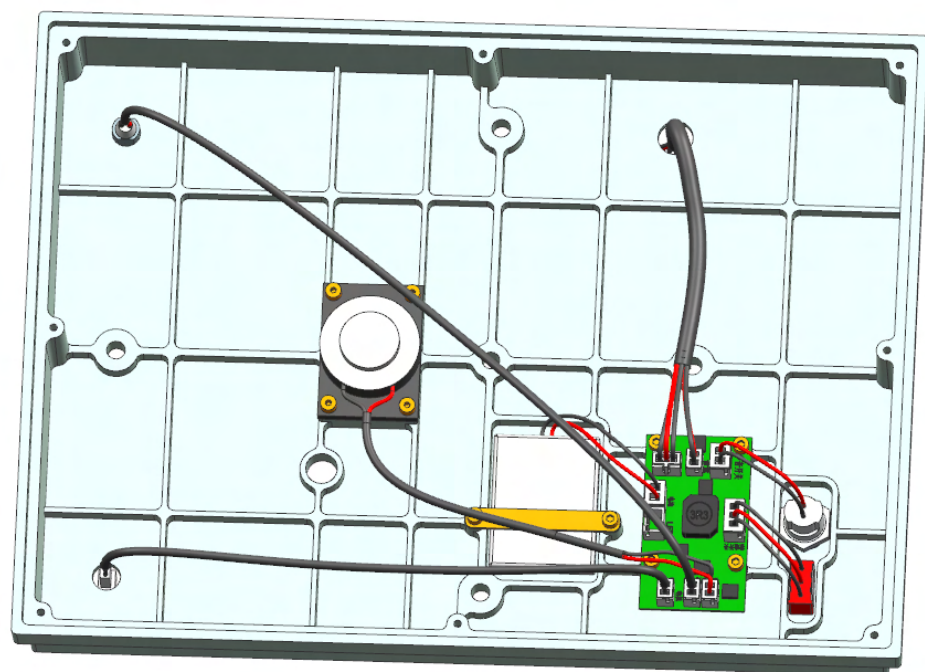
1.7 组装声音开关 Assemble the Sound Switch



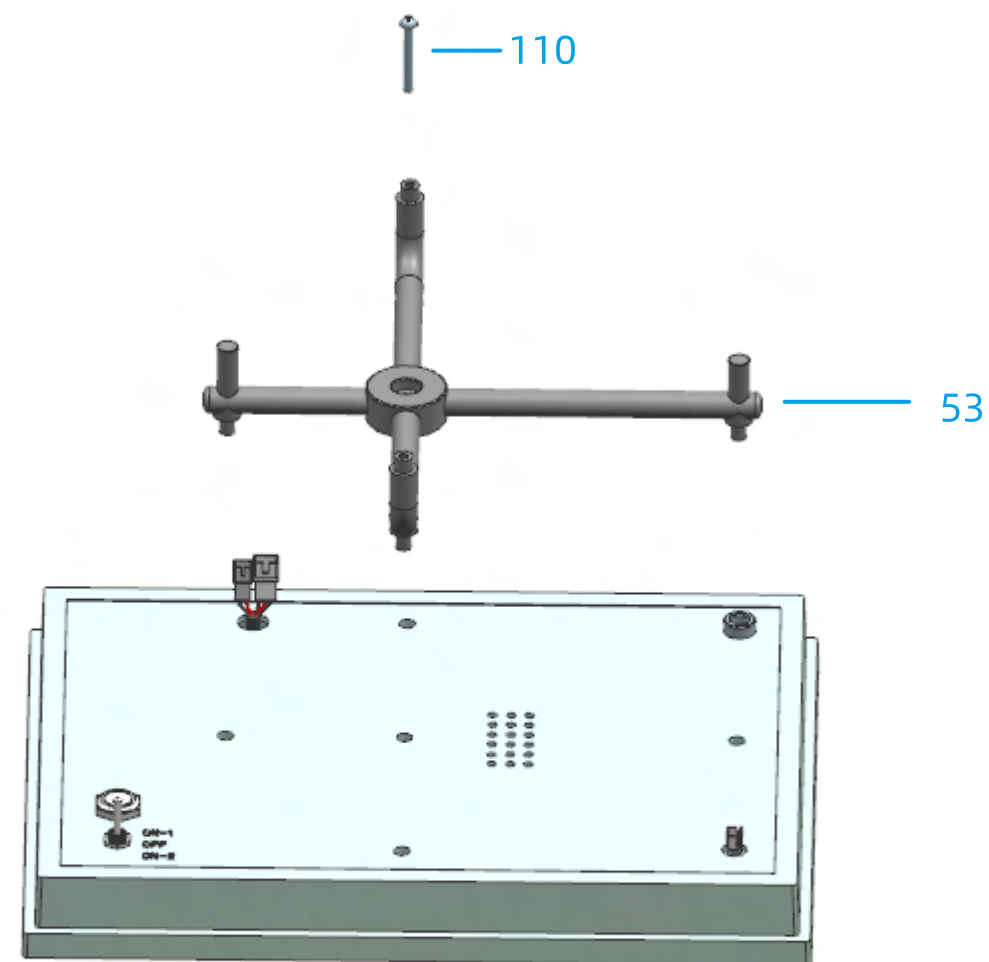
1.8 组装充电线 Assemble the Charging Cable



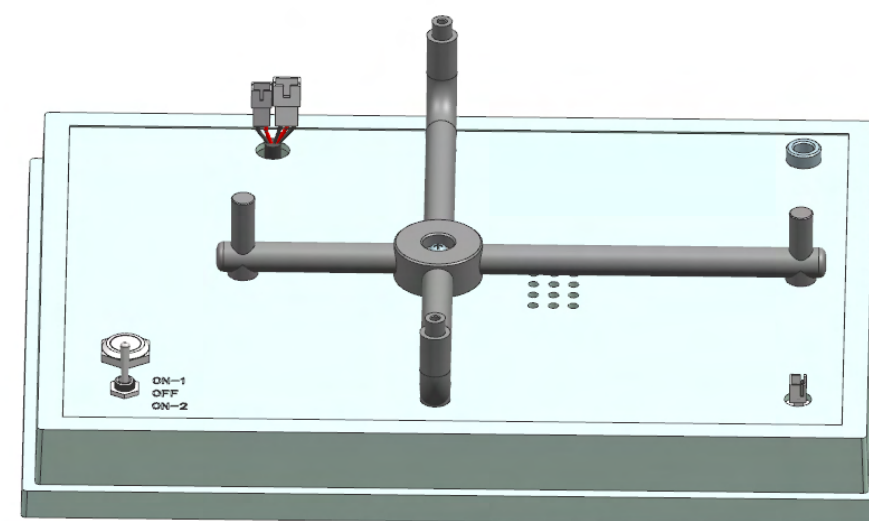
1.9 检查各接口是否安装正确 Check whether all interfaces are installed correctly



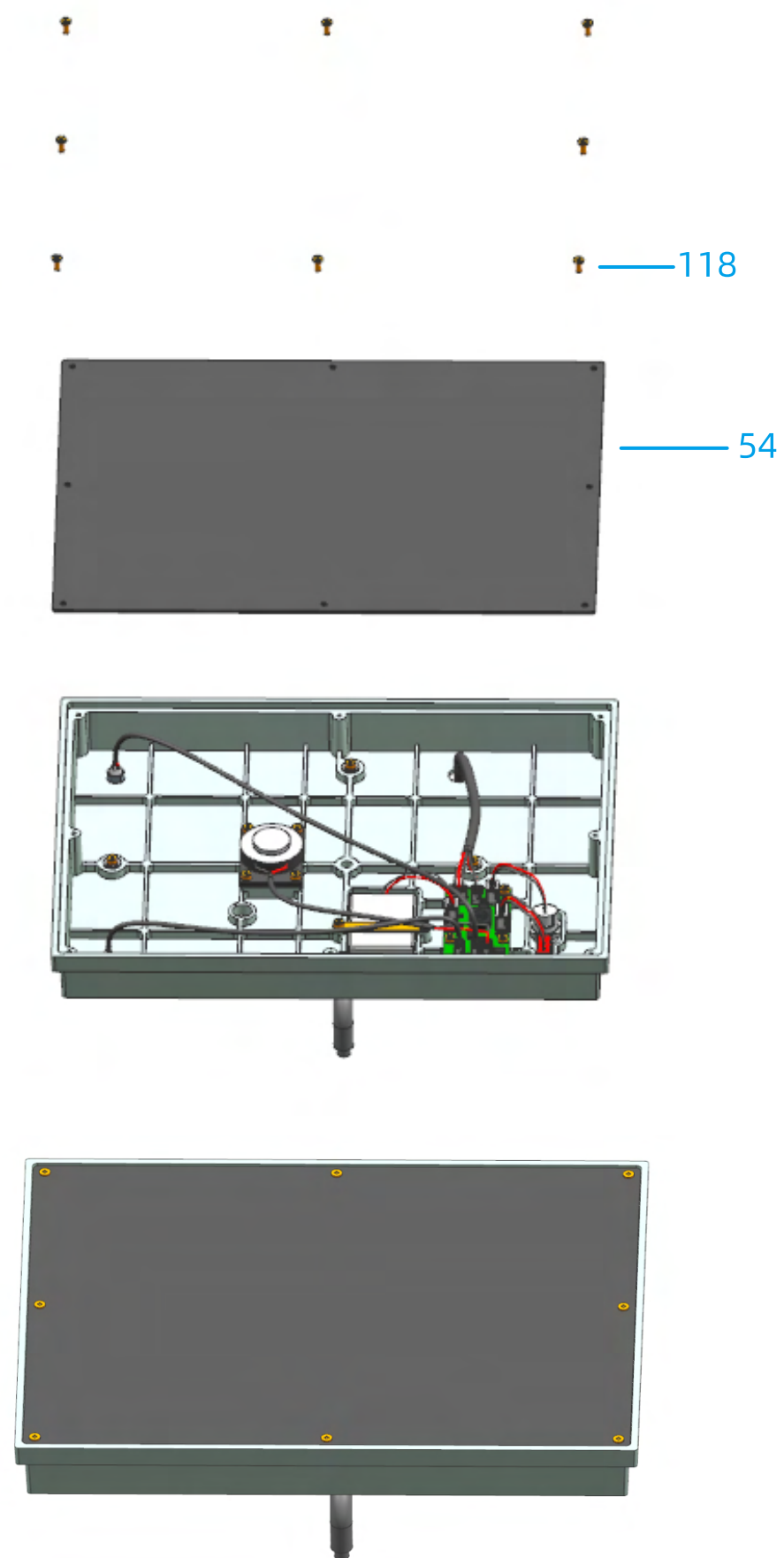
1.10 组装支架 Assemble the Bracket



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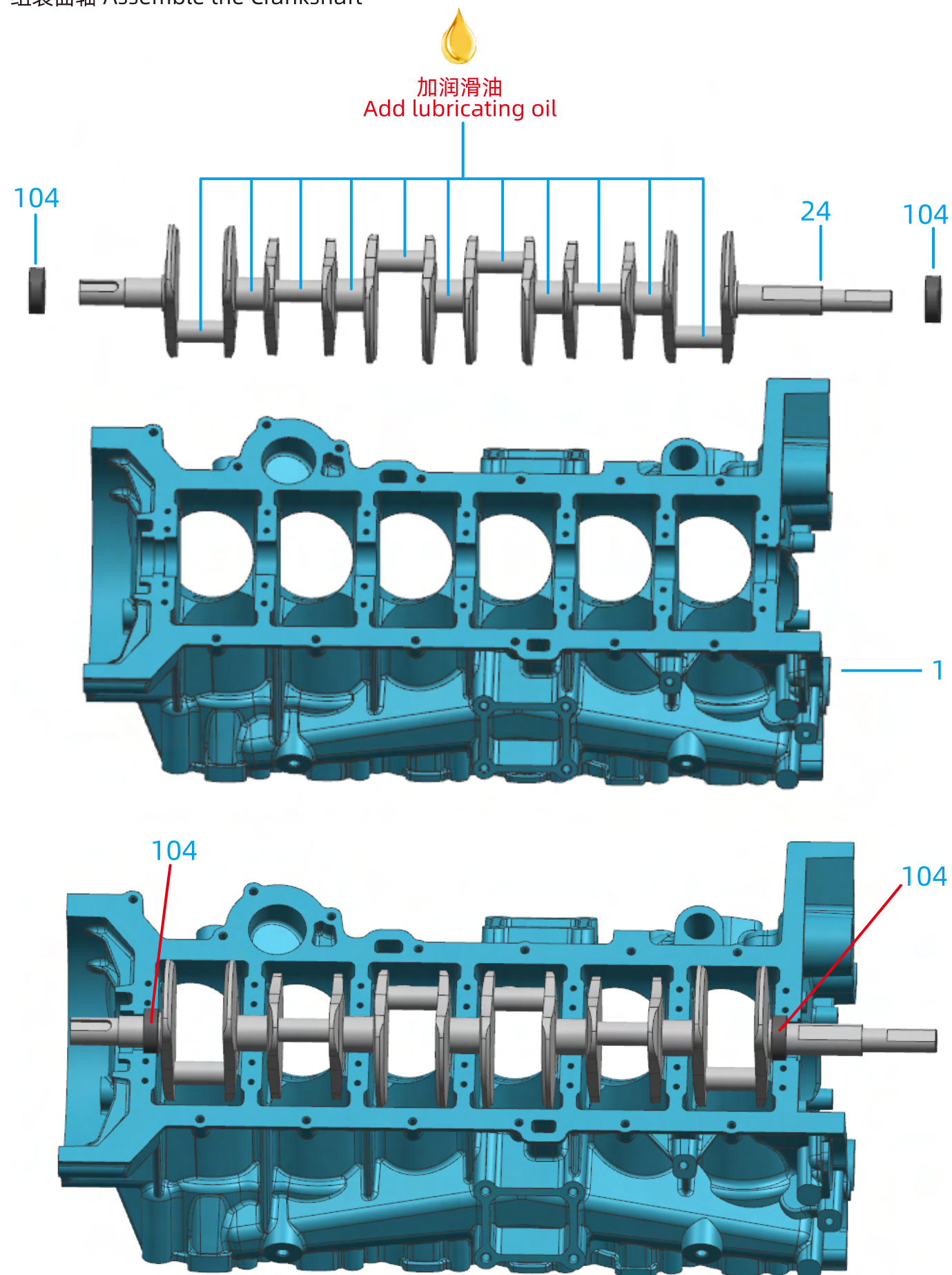


1.11 组装封板 Assemble the Sealing Plate

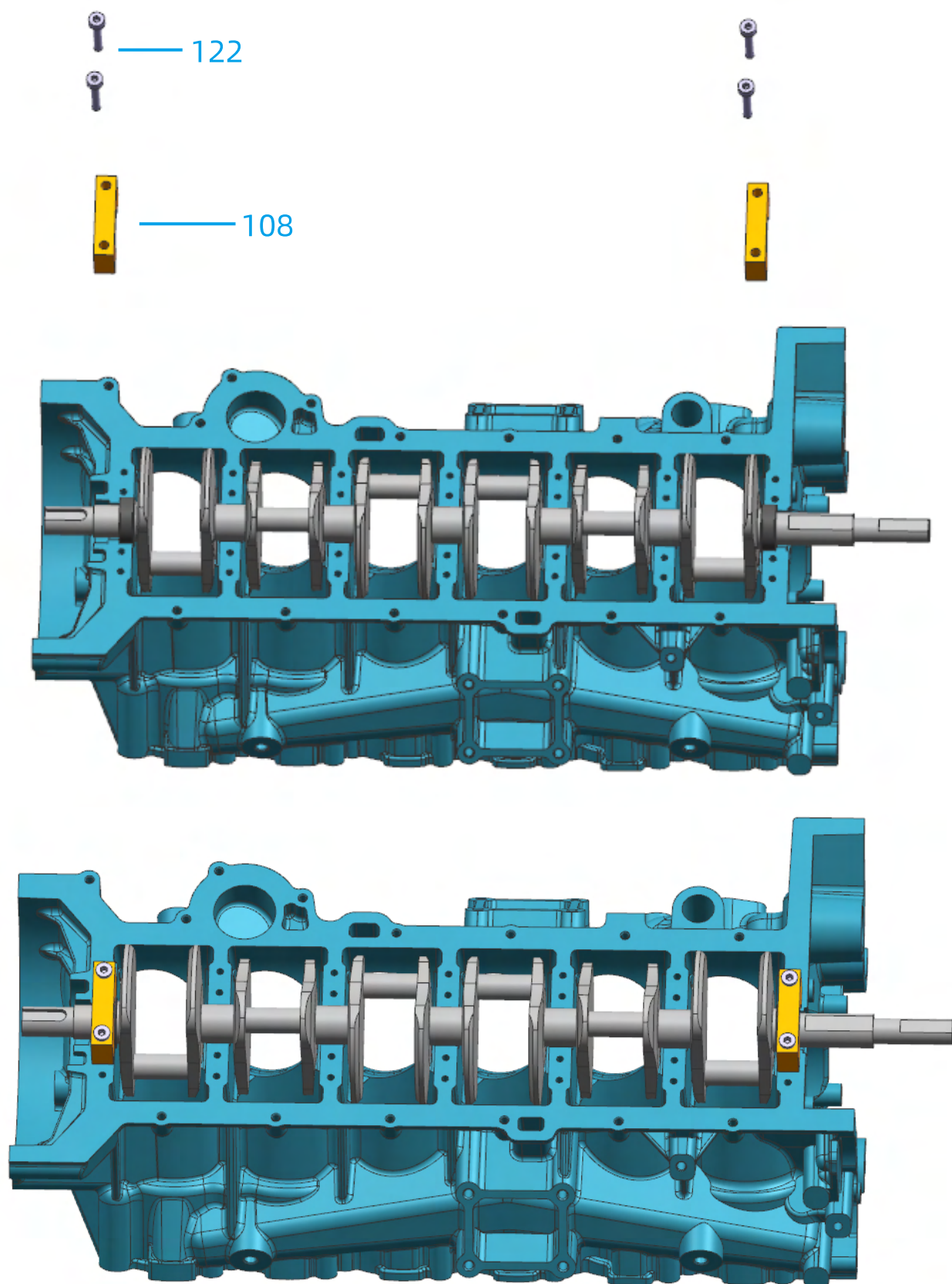


2. 曲轴连杆总成 Crankshaft and Connecting Rod Assembly

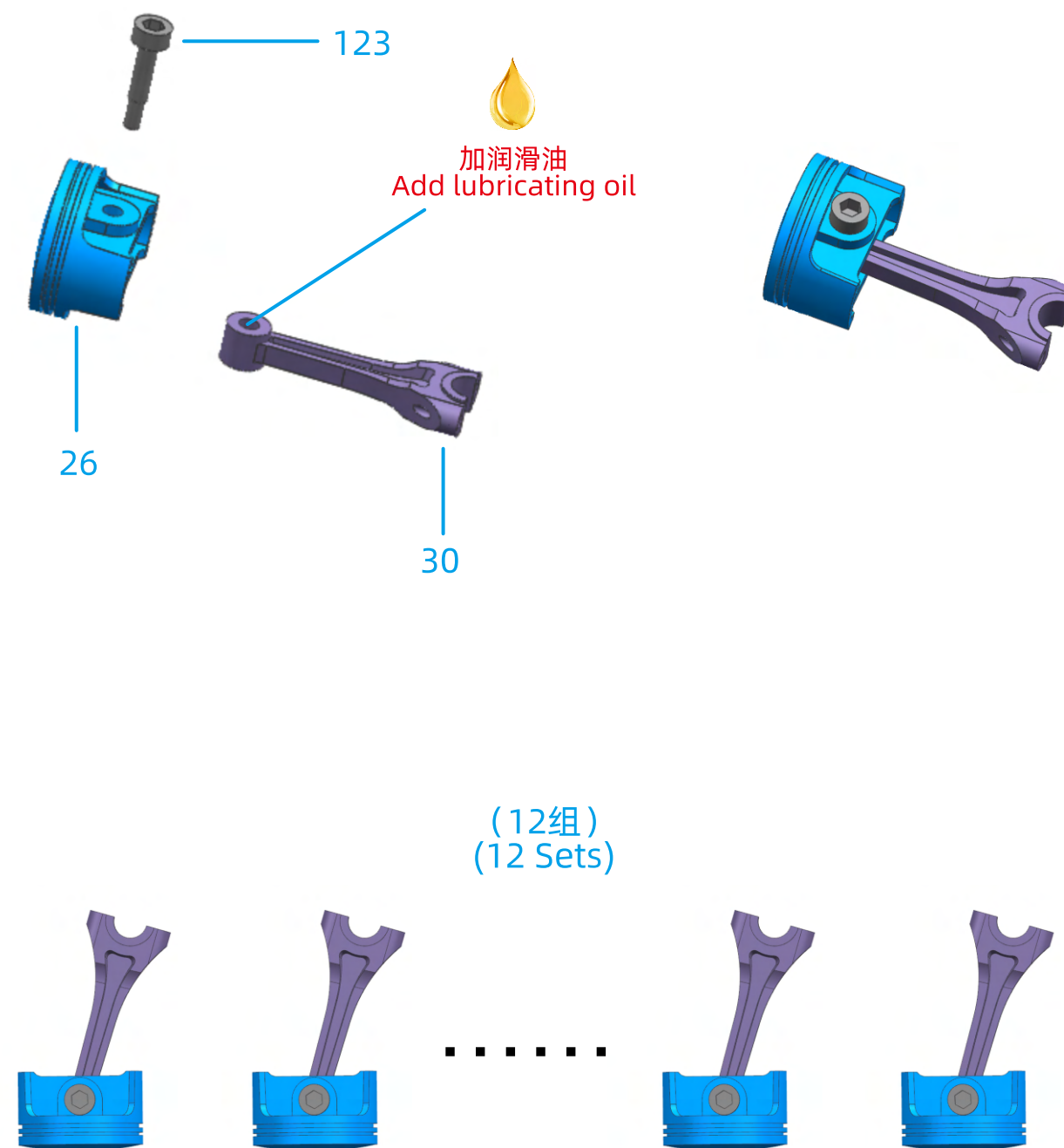
2.1 组装曲轴 Assemble the Crankshaft



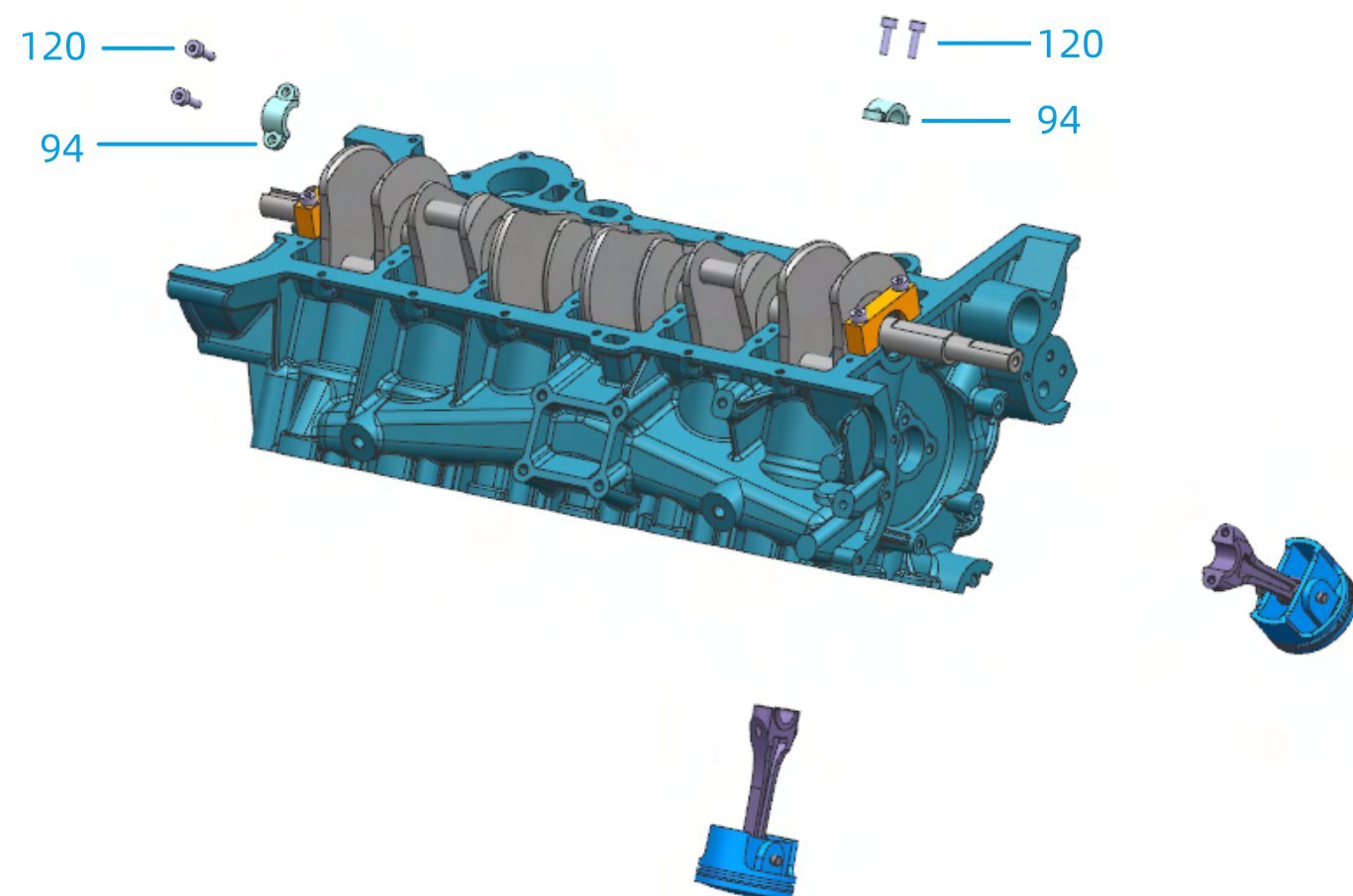
2.2 组装定位套 Assemble the Locating Sleeve



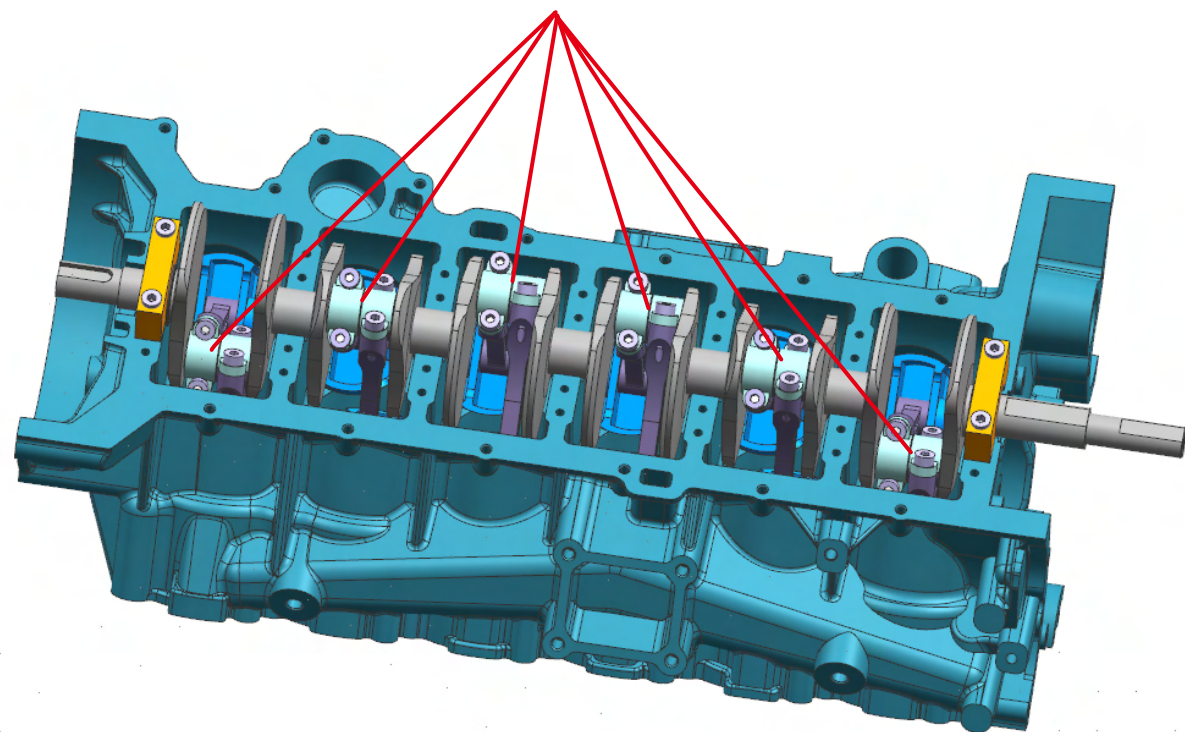
2.3 组装活塞与连杆 Assemble Piston and Connecting Rod



2.4 组装活塞连杆总成 Assemble Piston and Connecting Rod Assembly

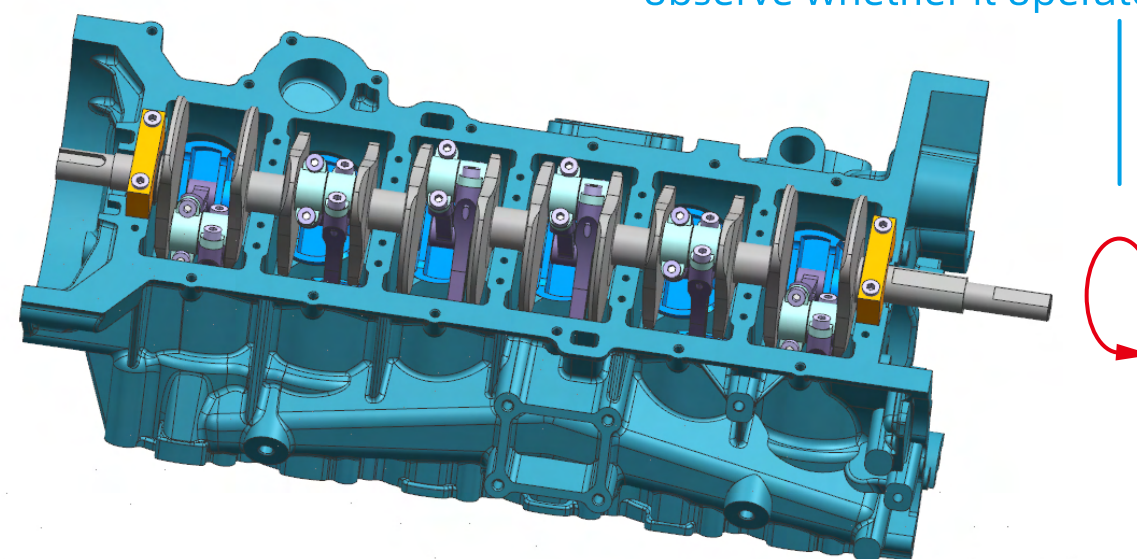


共12套
A total of 12 sets

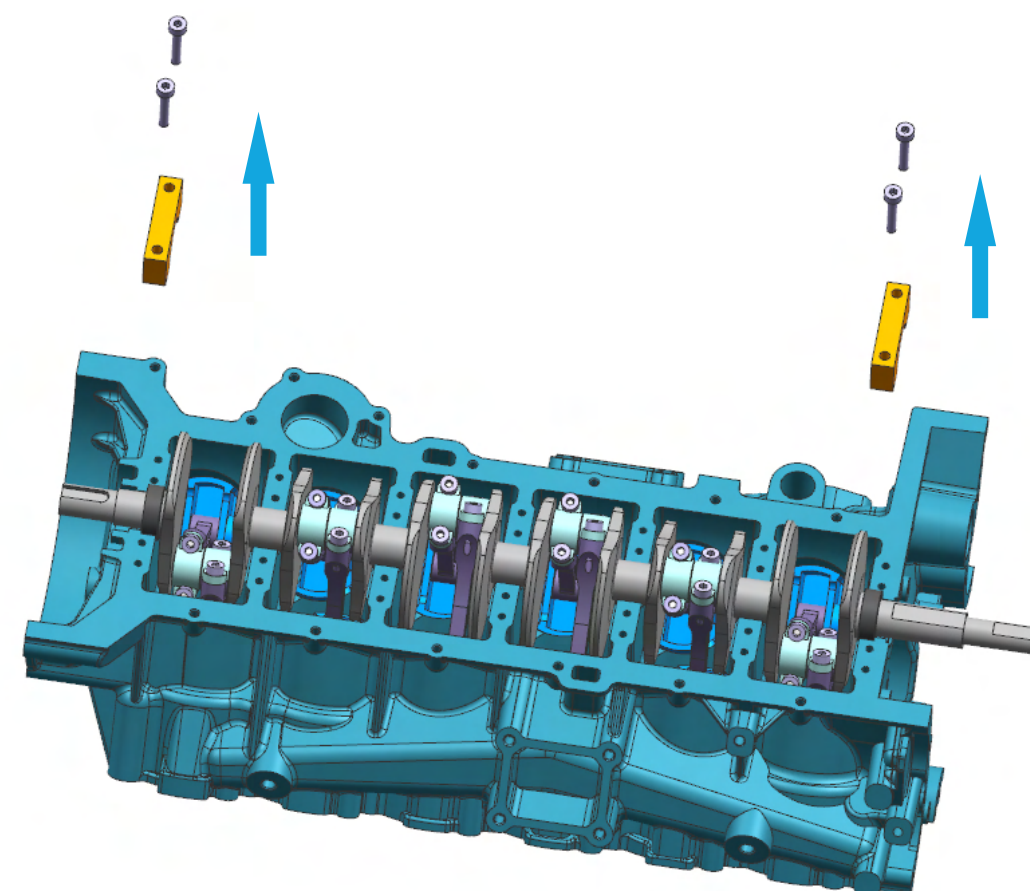


2.5 测试 Test

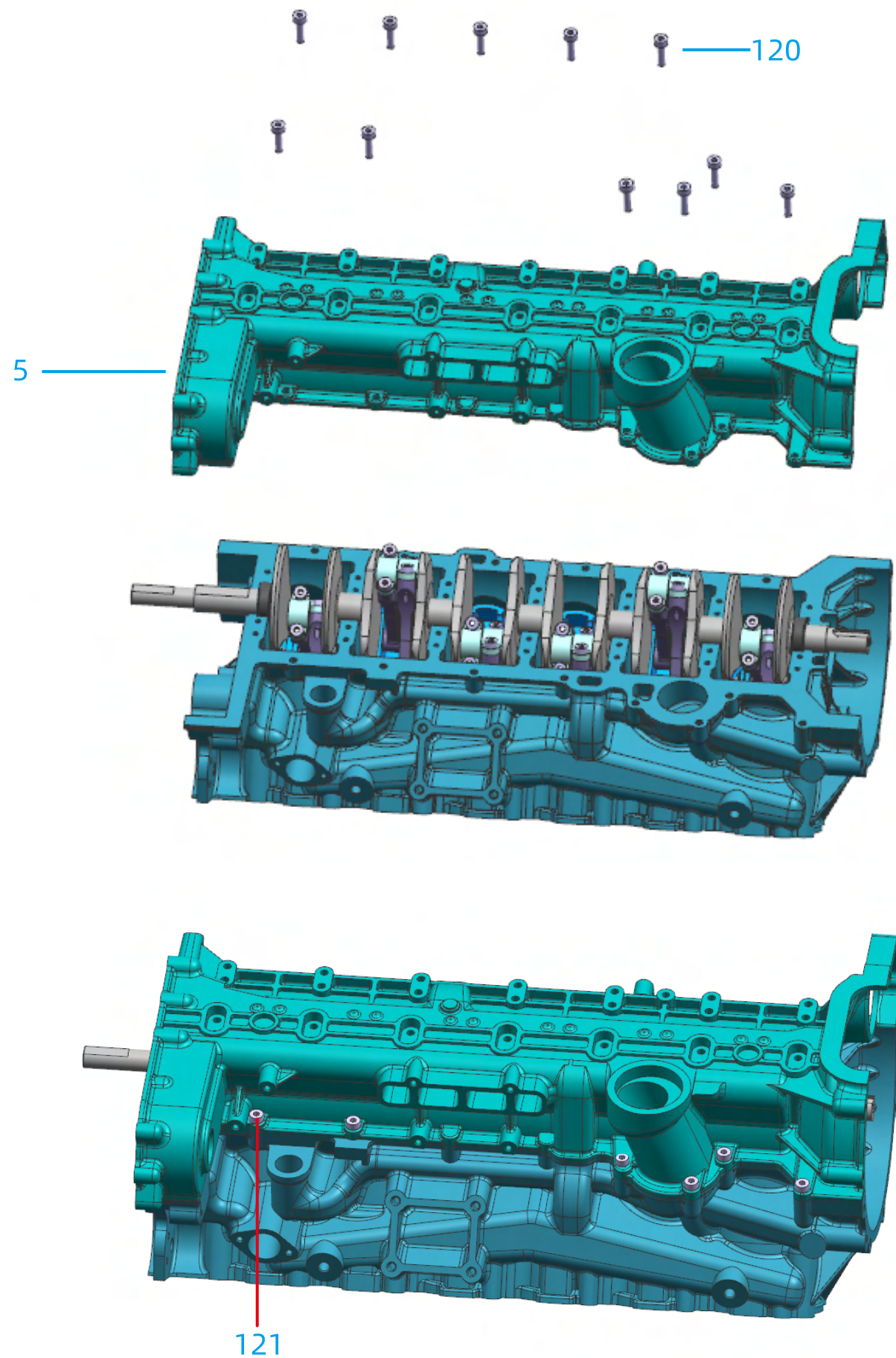
用手旋转曲轴，观察是否正常运转
Rotate the crankshaft by hand and observe whether it operates normally



2.6 拆除定位套 Remove the Locating Sleeve

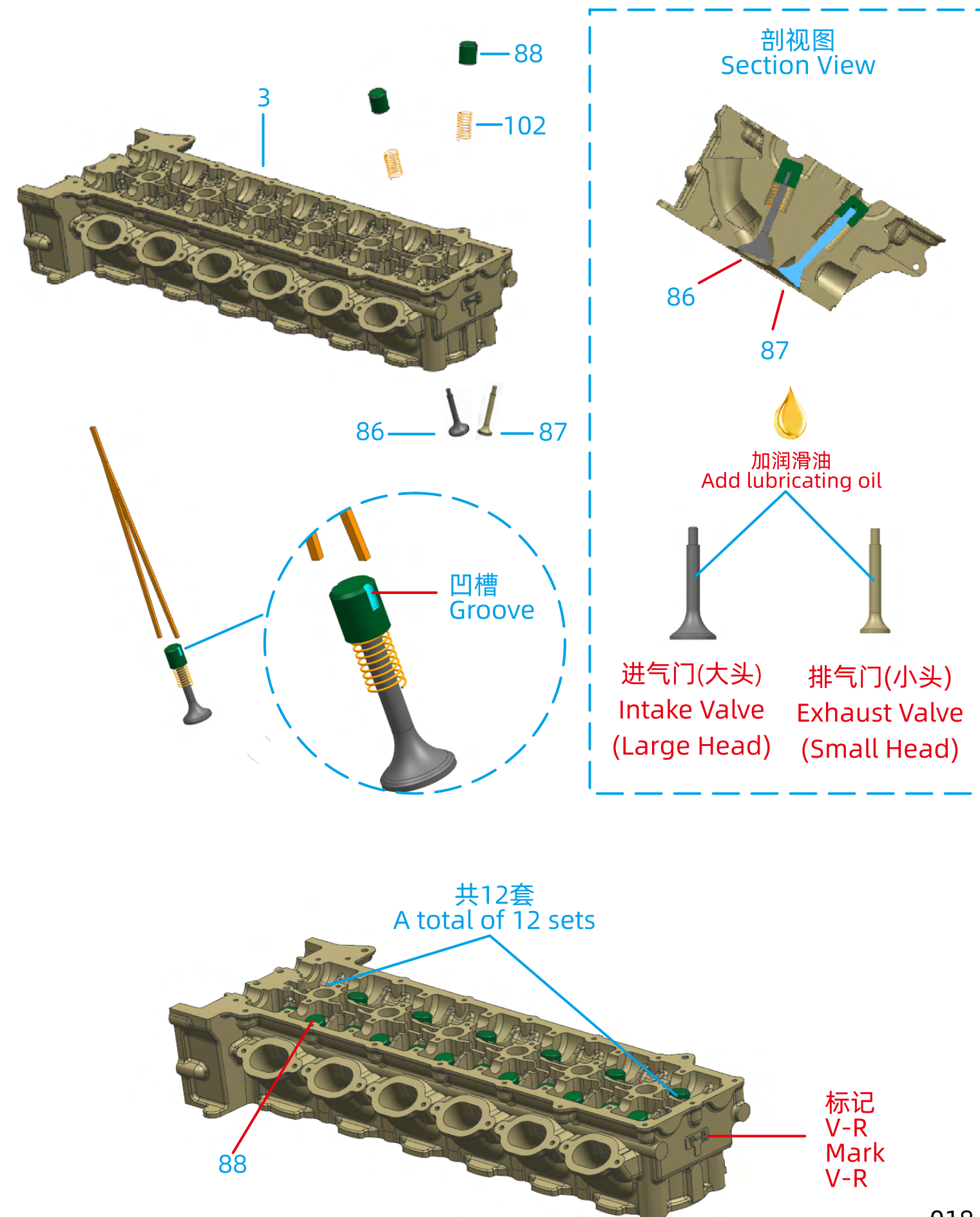


2.7 组装油底壳 Assemble the Oil Pan

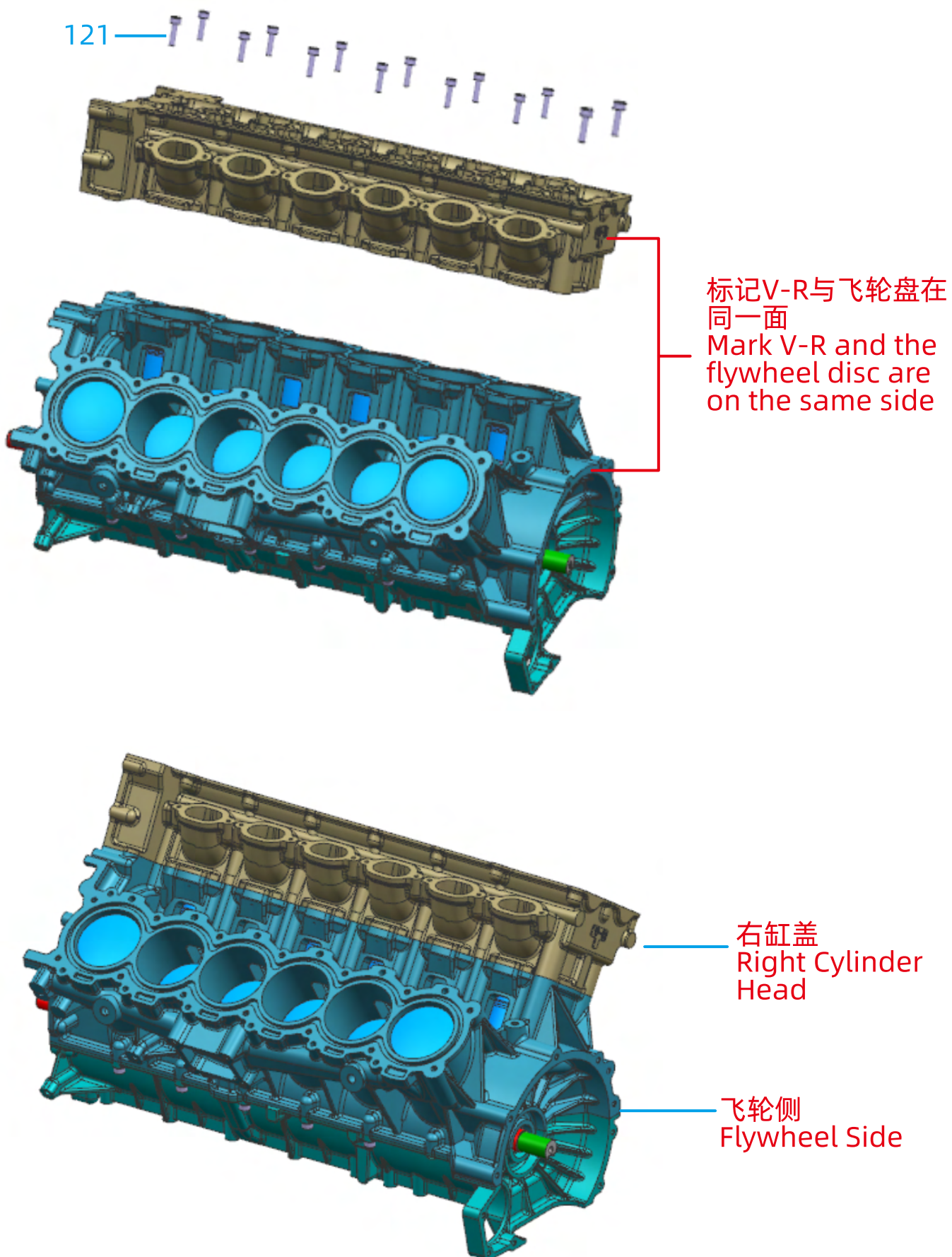


3. 气缸盖总成 Cylinder Assembly

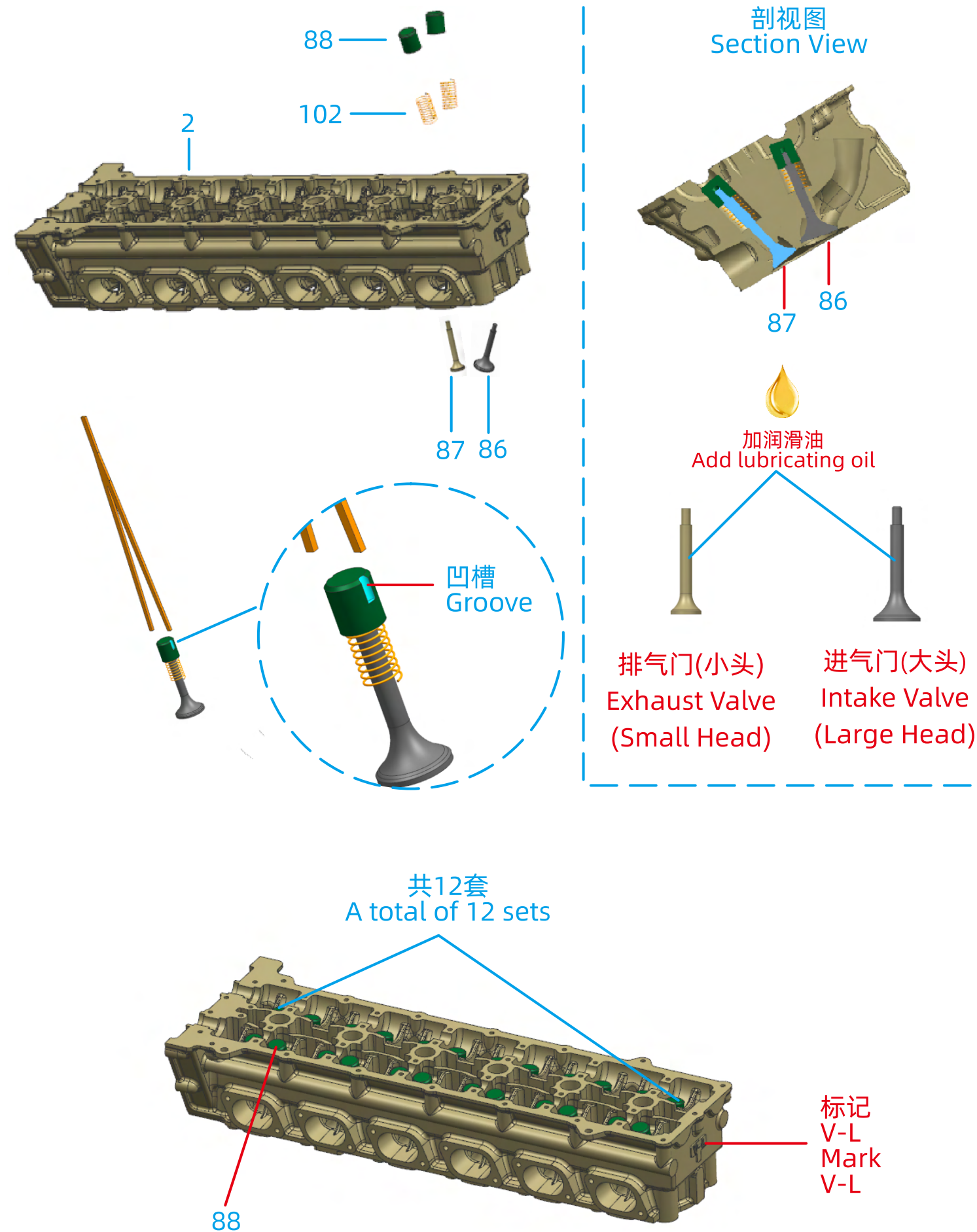
3.1 组装右缸盖的进气门与排气门 Assemble Intake Valve and Exhaust Valve of Right Cylinder Head



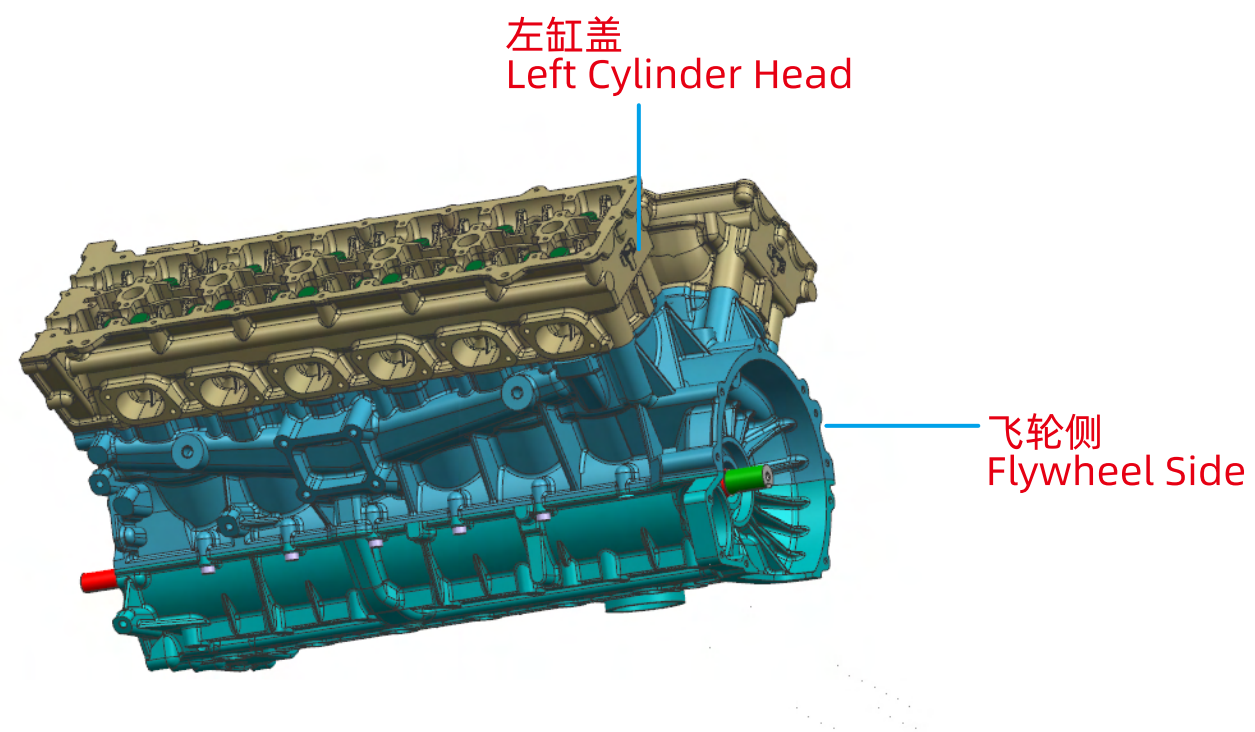
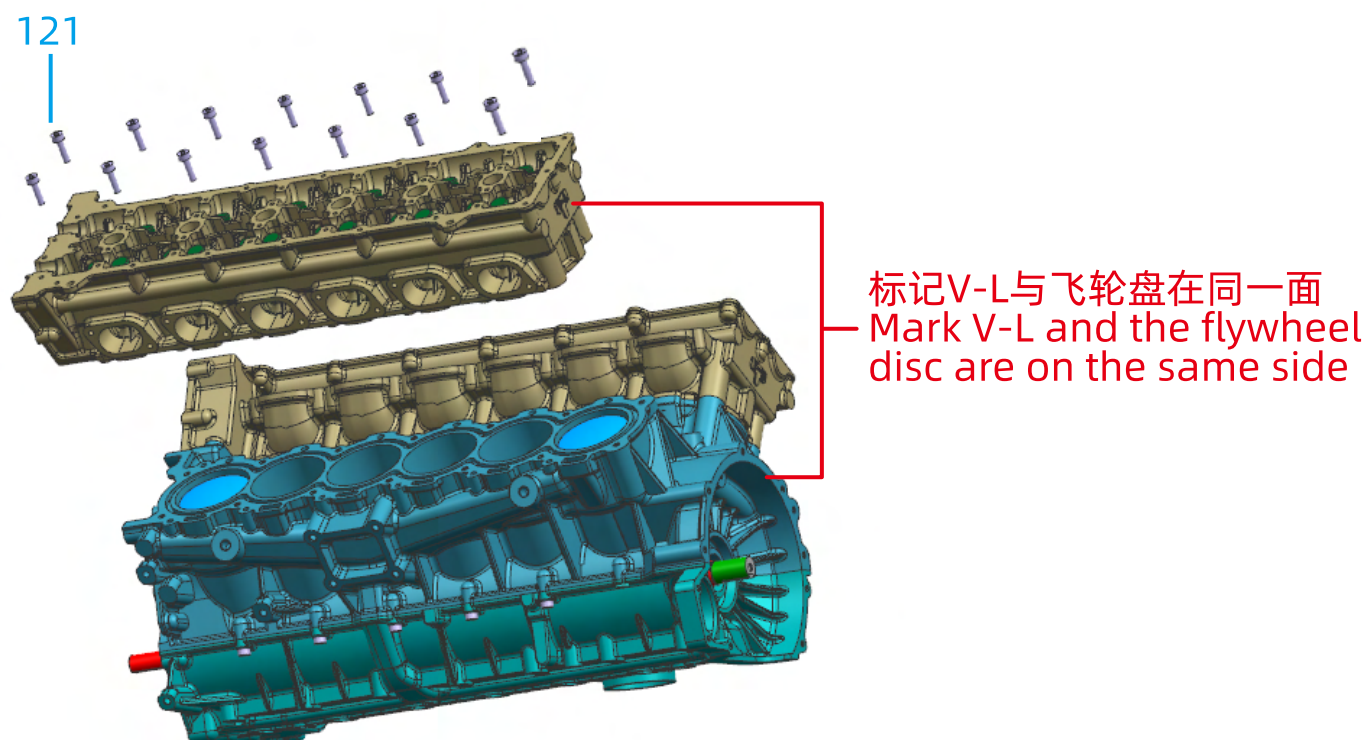
3.2 组装右缸盖 Assemble the Right Cylinder Head



3.3 组装左缸盖的进气门与排气门 Assemble Intake Valve and Exhaust Valve of Left Cylinder Head

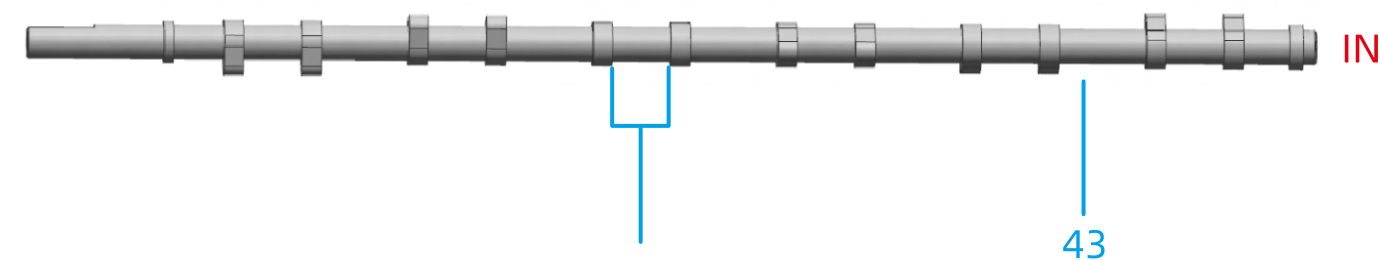


3.4 组装左缸盖 Assemble the Left Cylinder Head



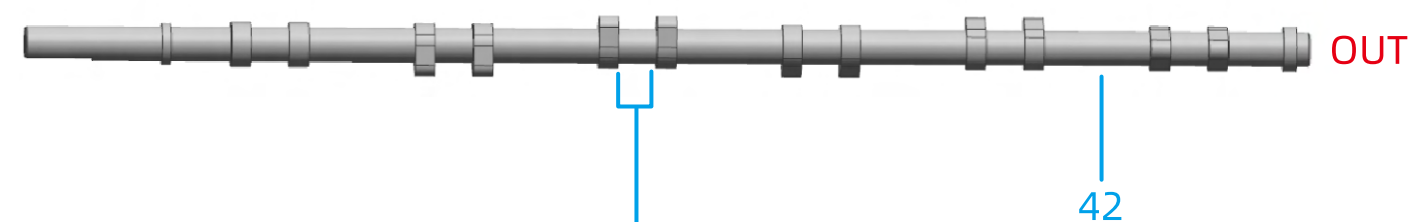
3.5 区分进气与排气凸轮轴 Distinguish Intake and Exhaust Camshafts

进气凸轮轴 Intake Camshaft



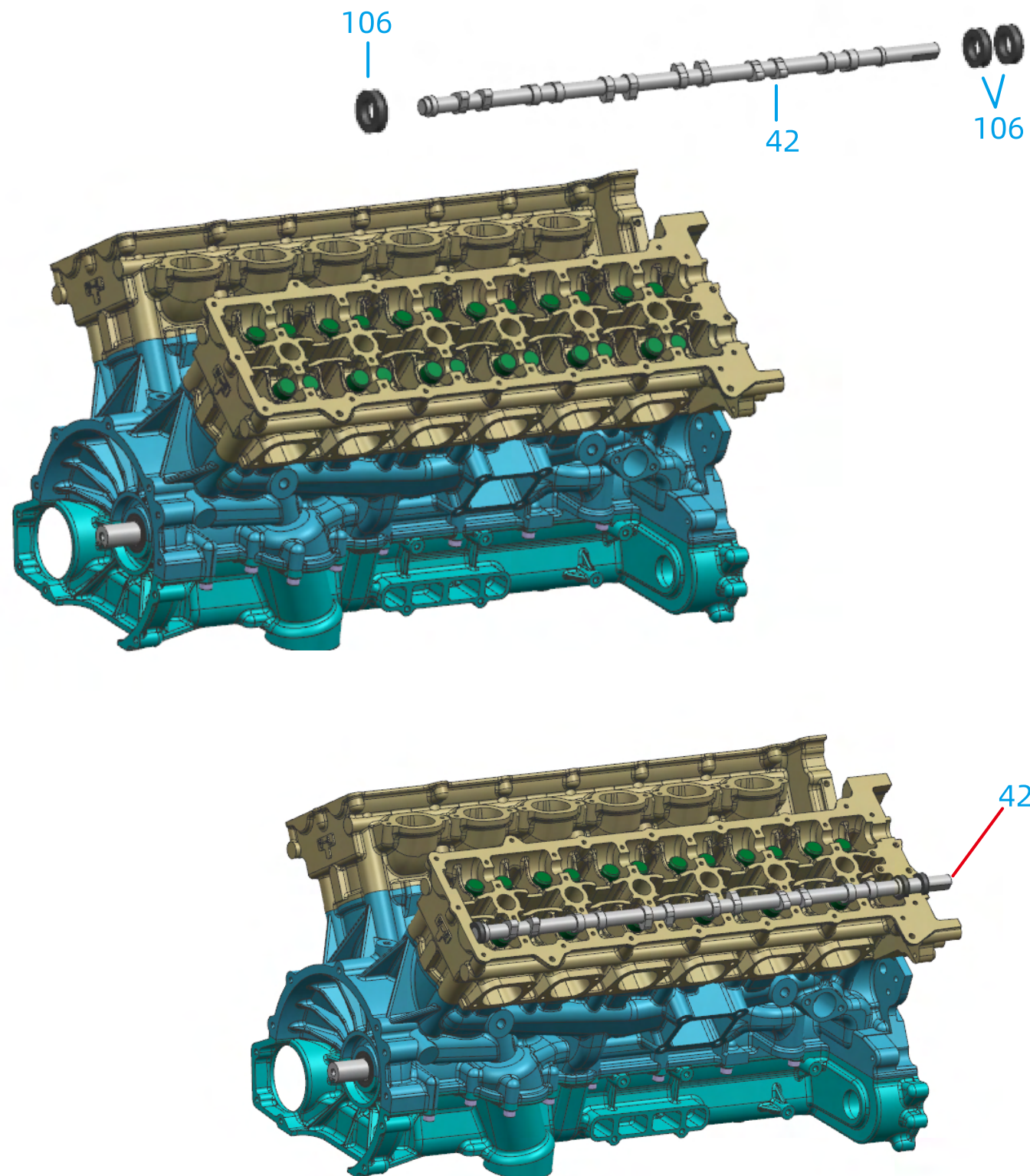
间距较大的为进气凸轮轴
The one with a larger spacing
is the intake camshaft

排气凸轮轴 Exhaust Camshaft

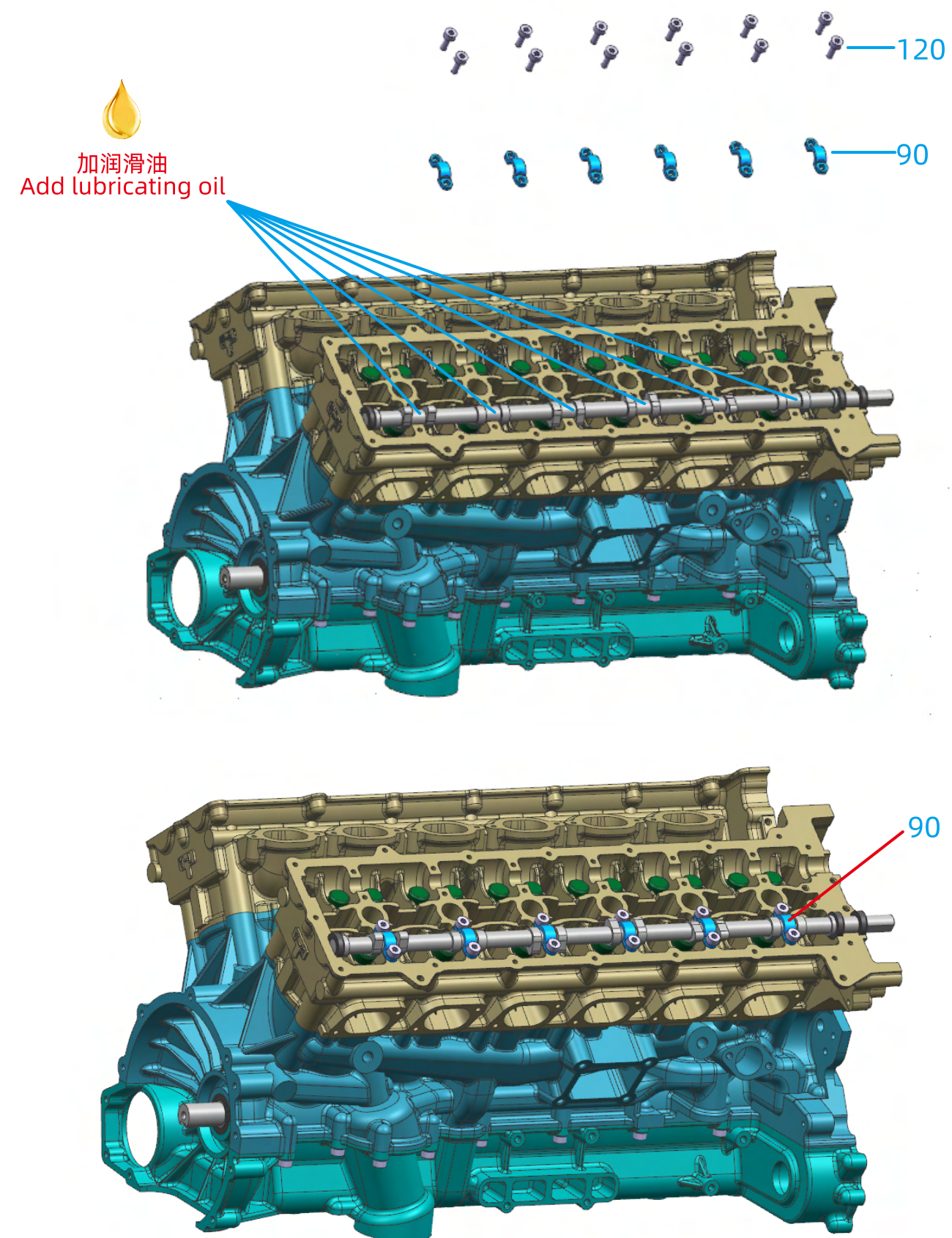


间距较小的为排气凸轮轴
The one with a smaller spacing
is the exhaust camshaft

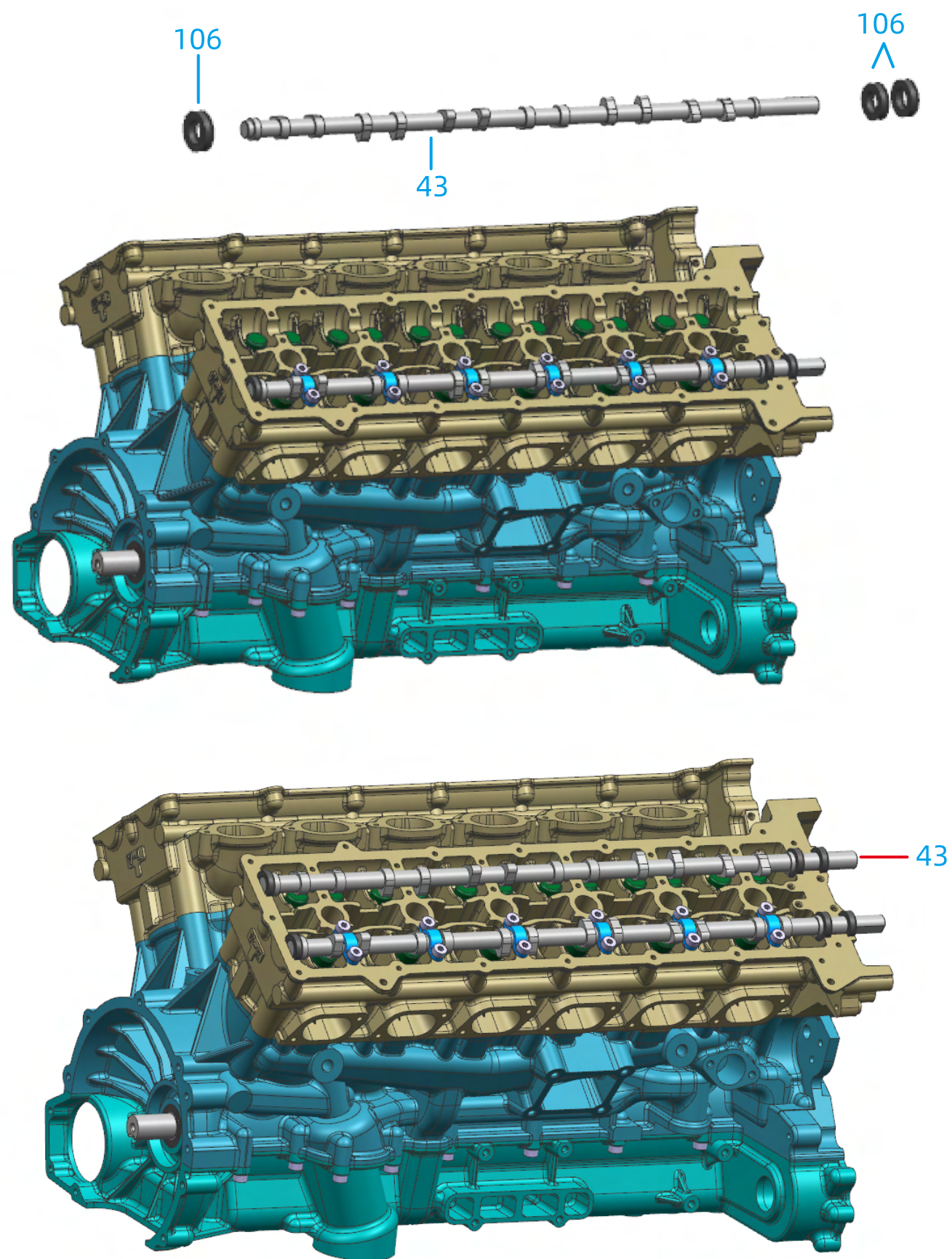
3.6 组装排气凸轮轴 Assemble Exhaust Camshaft



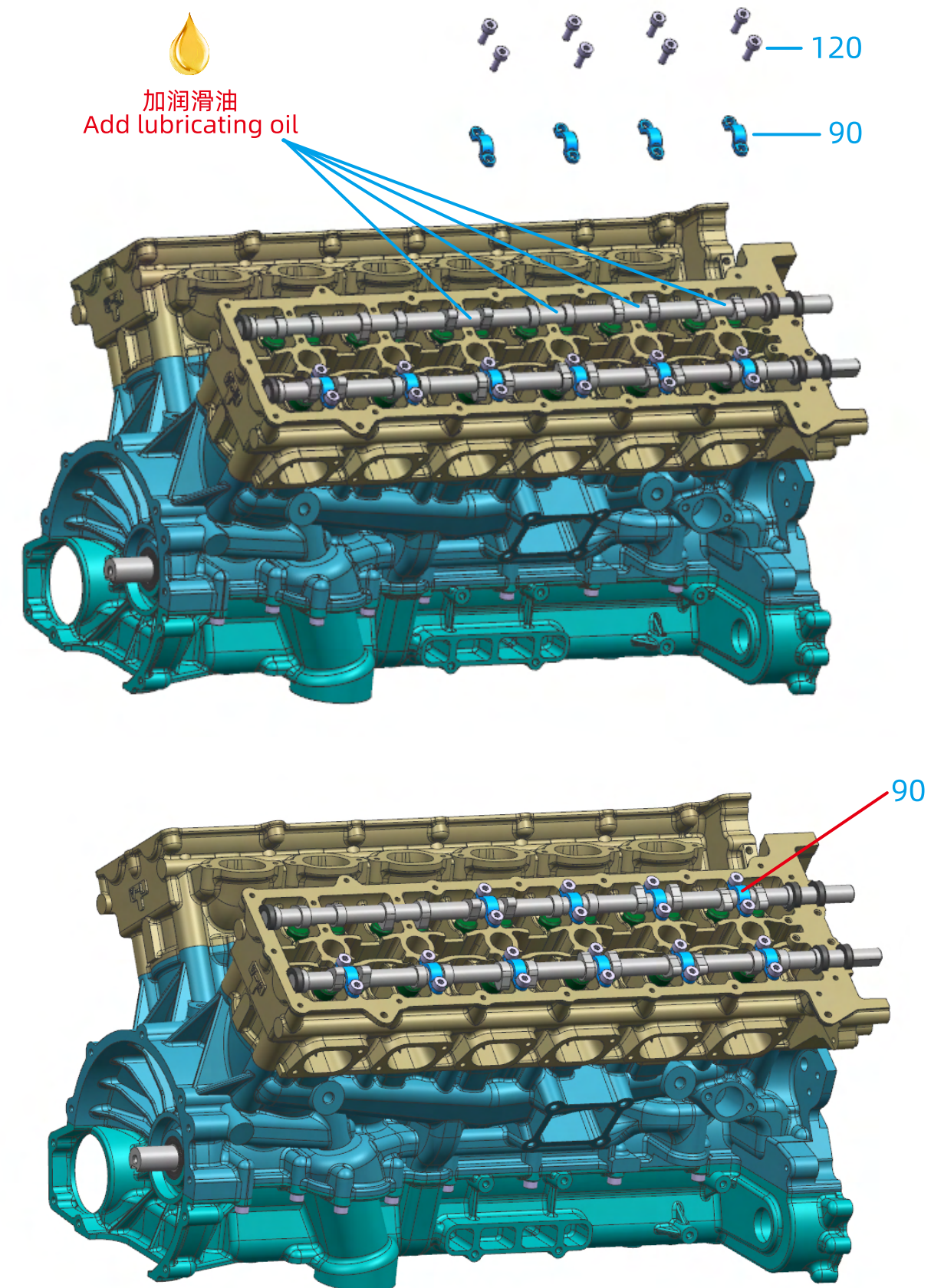
3.7 组装凸轮轴瓦 Assemble the Camshaft Bearing



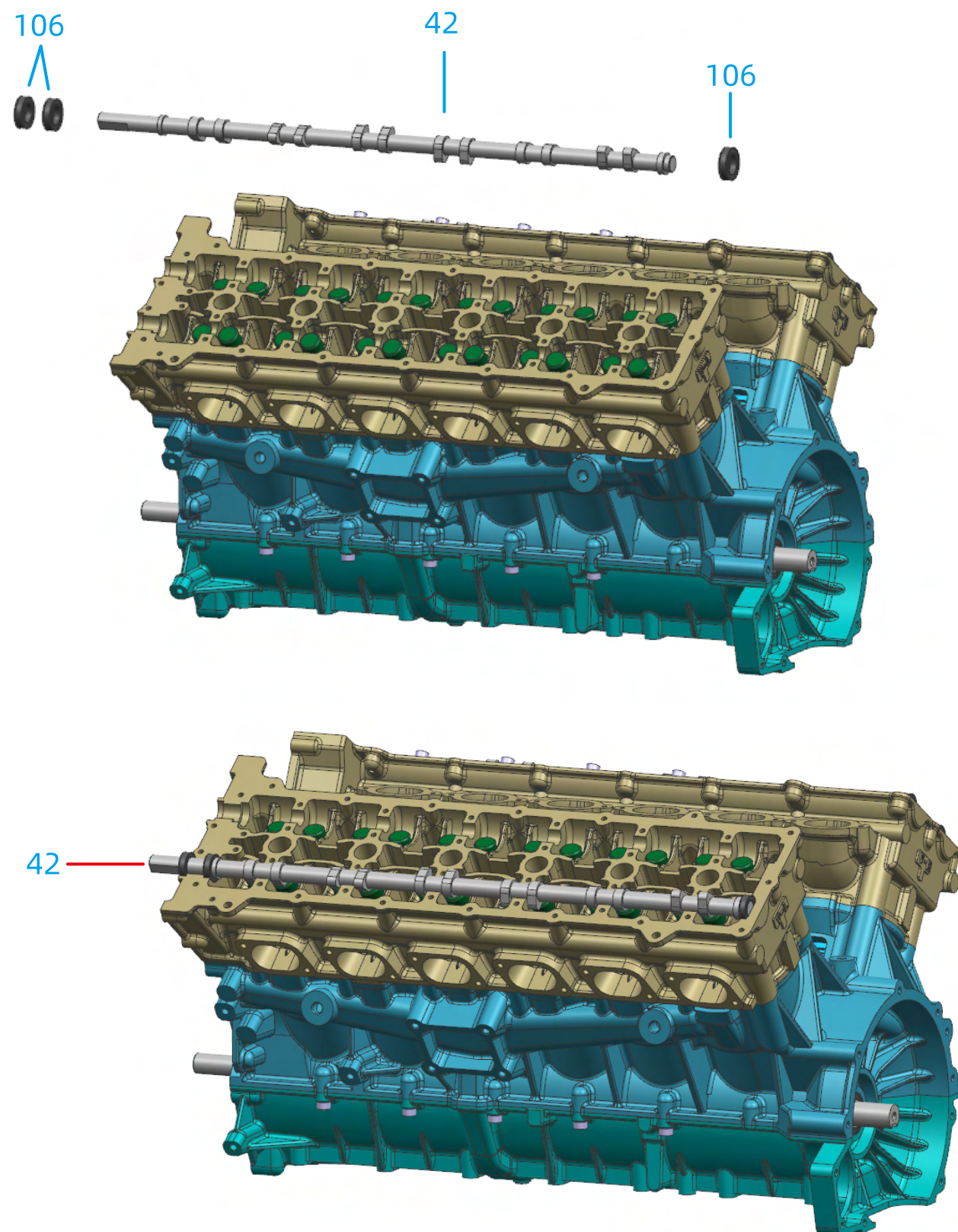
3.8 组装进气凸轮轴 Assemble the Intake Camshaft



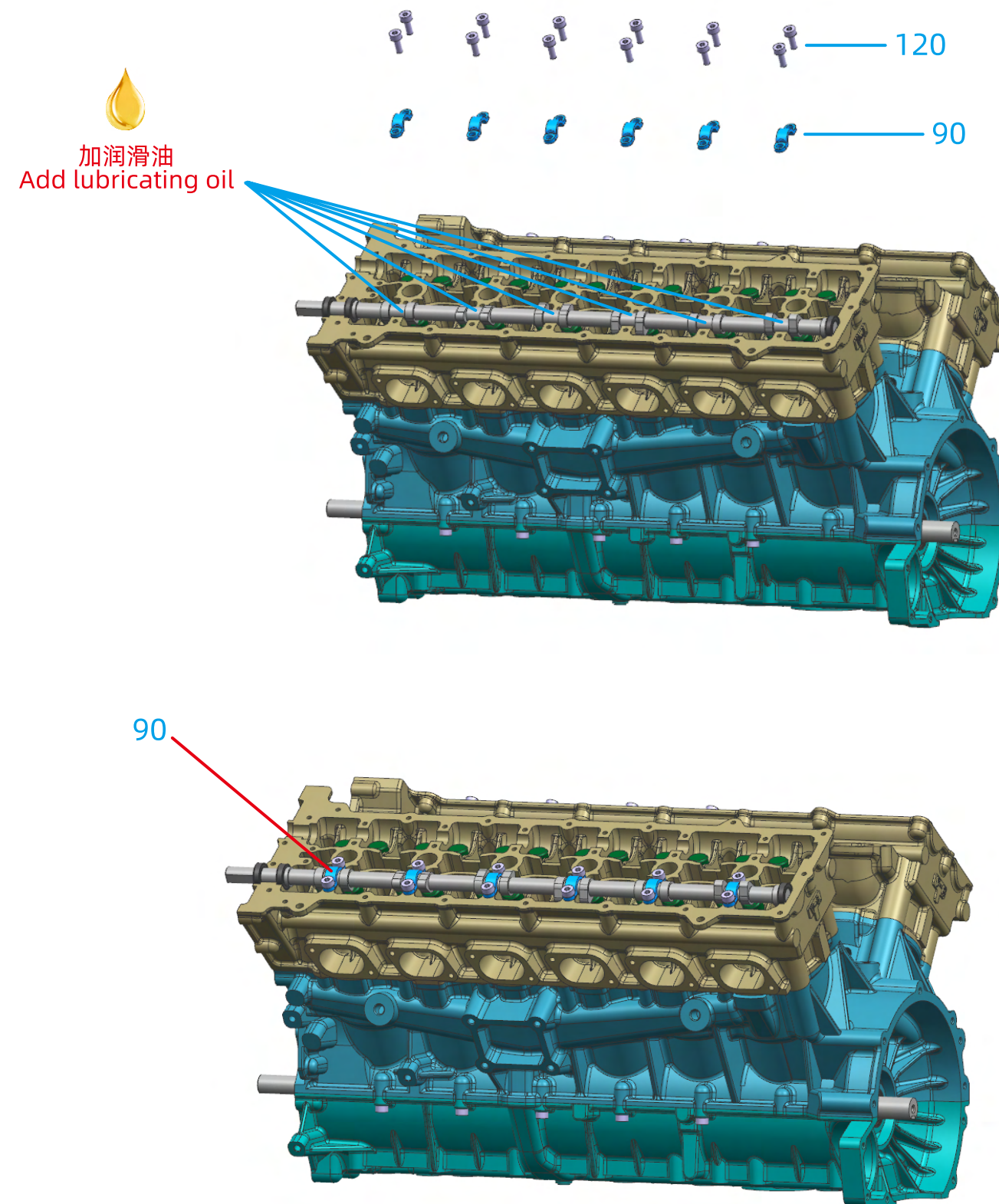
3.9 组装凸轮轴瓦 Assemble the Camshaft Bearing



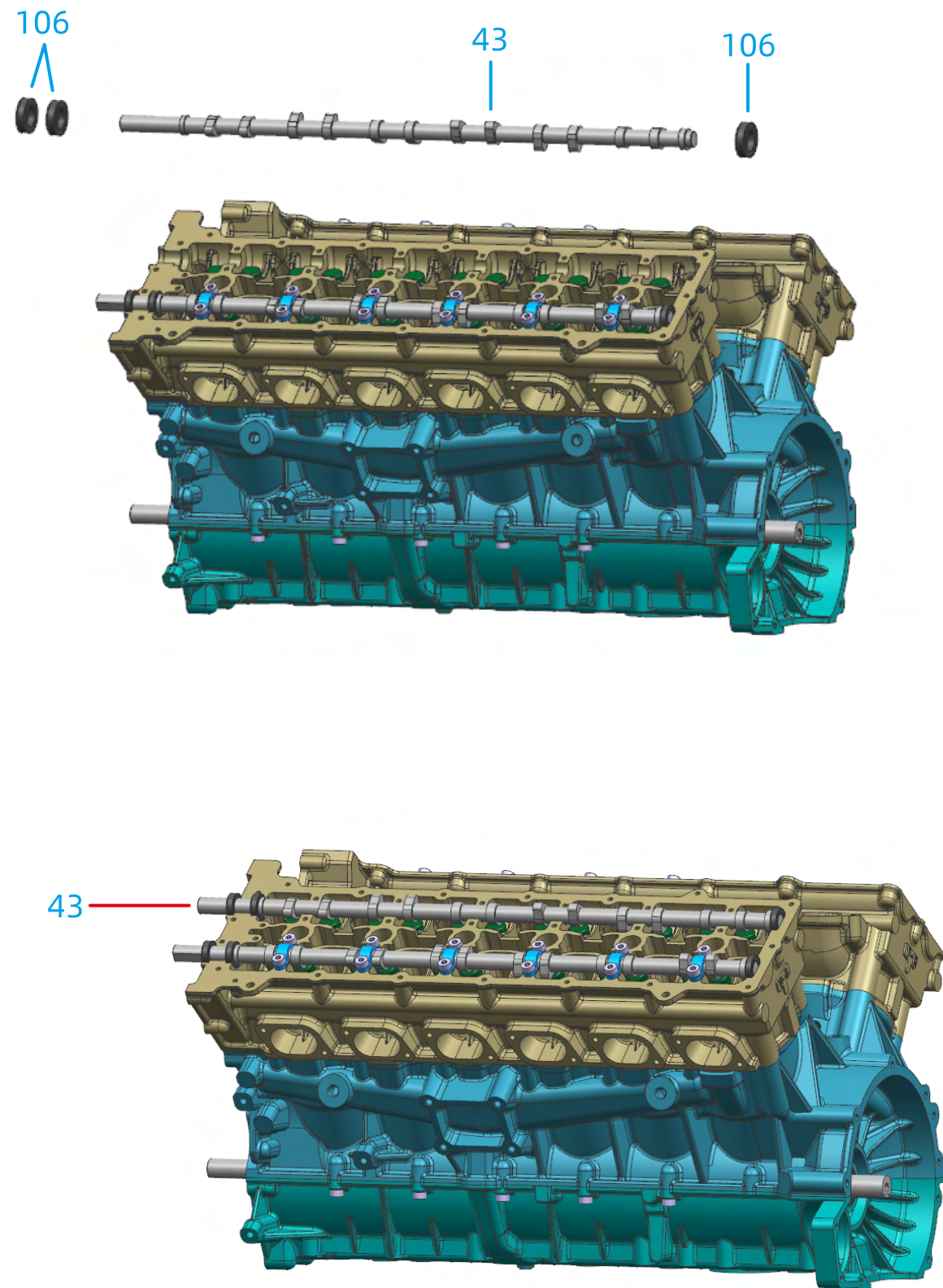
3.10 组装排气凸轮轴 Assemble the Exhaust Camshaft



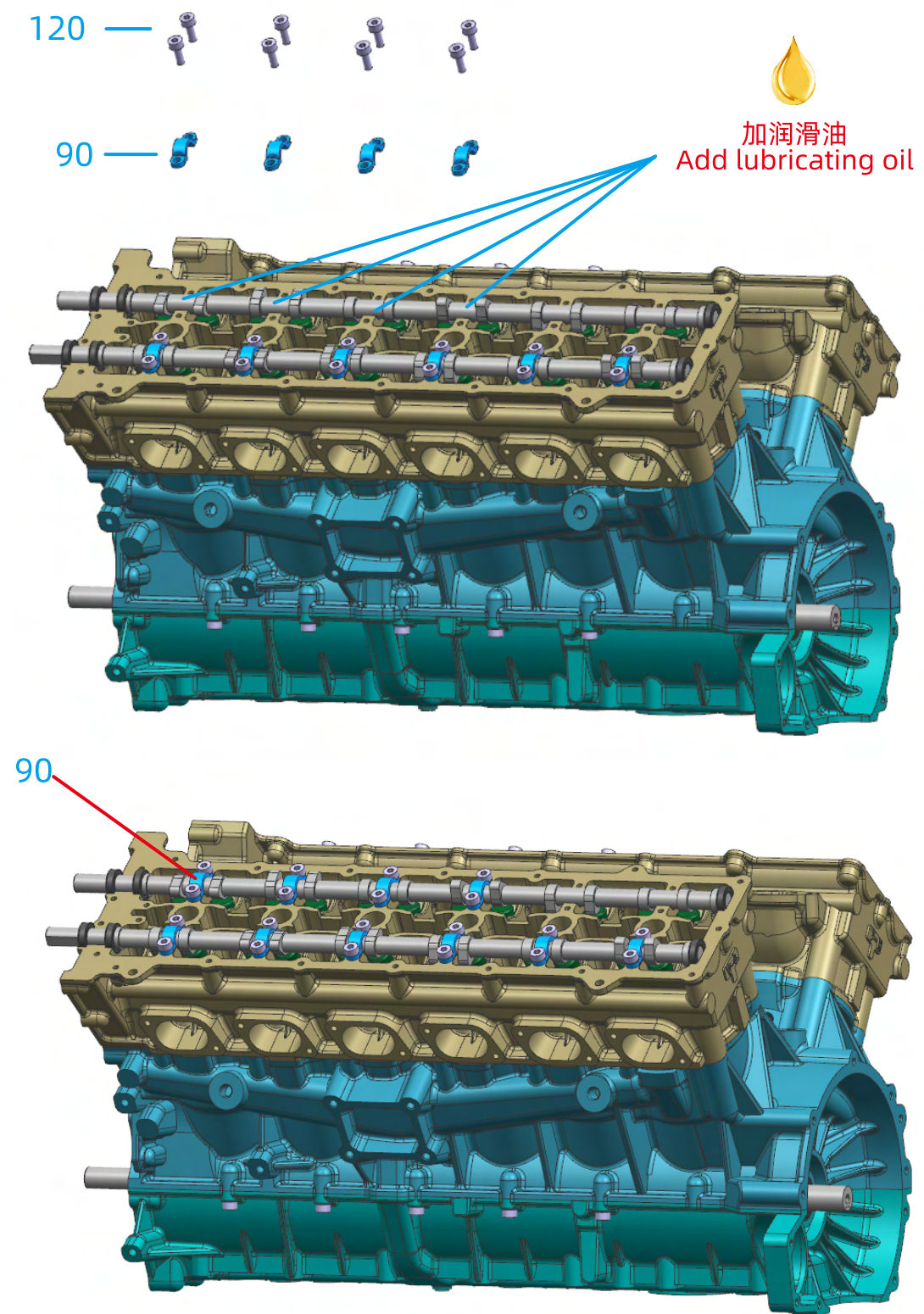
3.11 组装凸轮轴瓦 Assemble the Camshaft Bearing



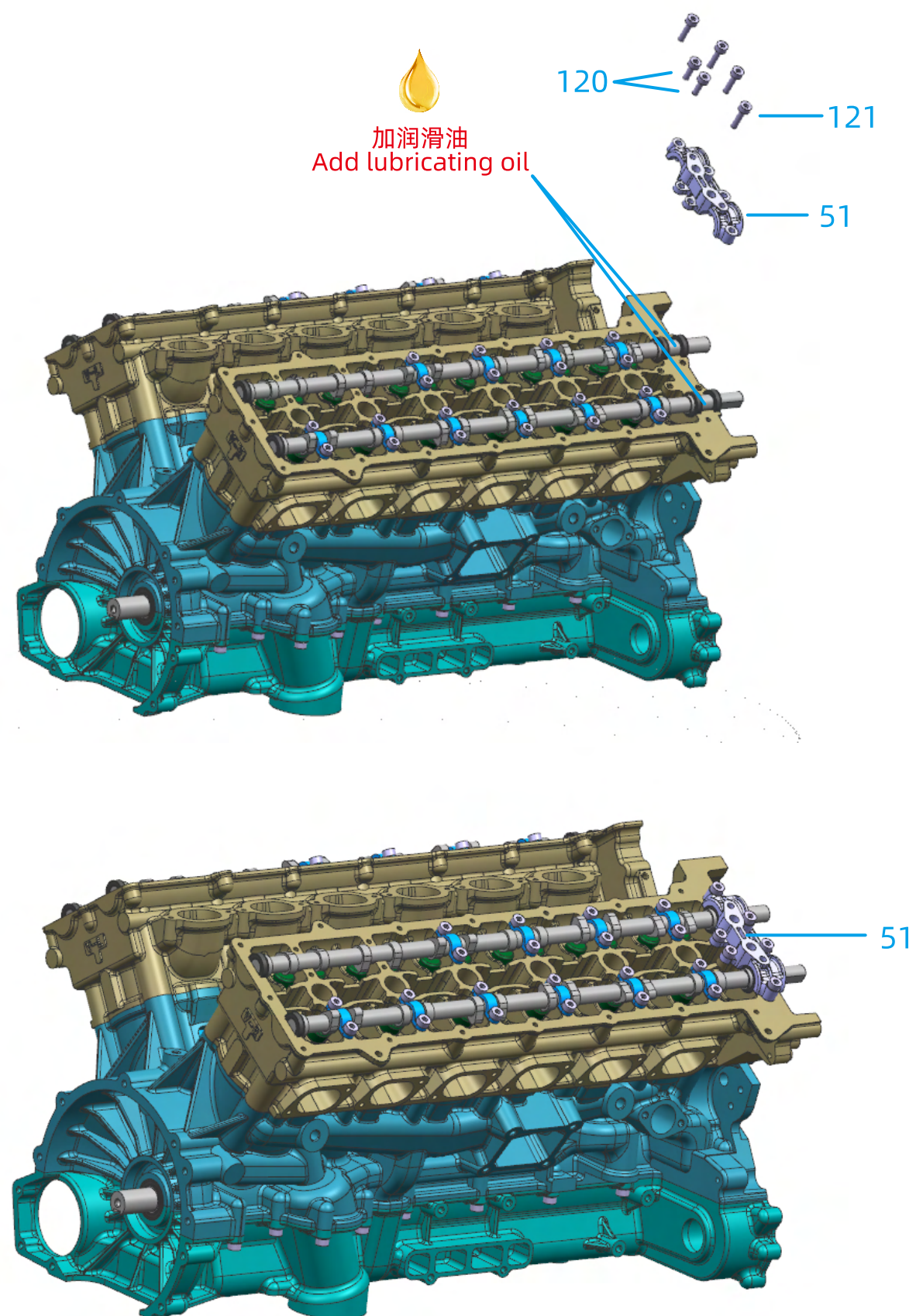
3.12 组装进气凸轮轴 Assemble the Intake Camshaft



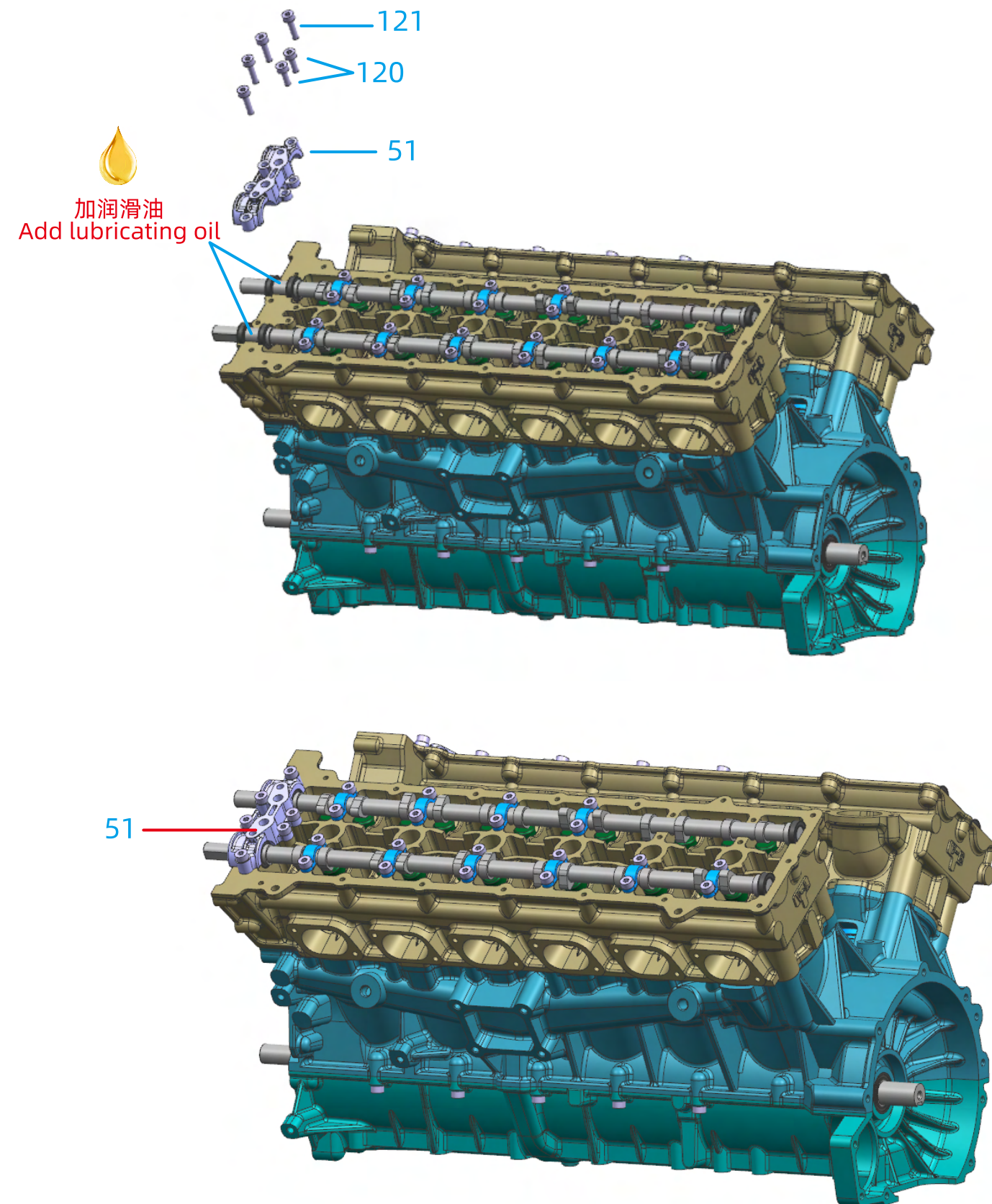
3.13 组装凸轮轴瓦 Assemble the Camshaft Bearing



3.14 组装左缸盖凸轮前传感器 Assemble Left Cylinder Head Front Cam Sensor

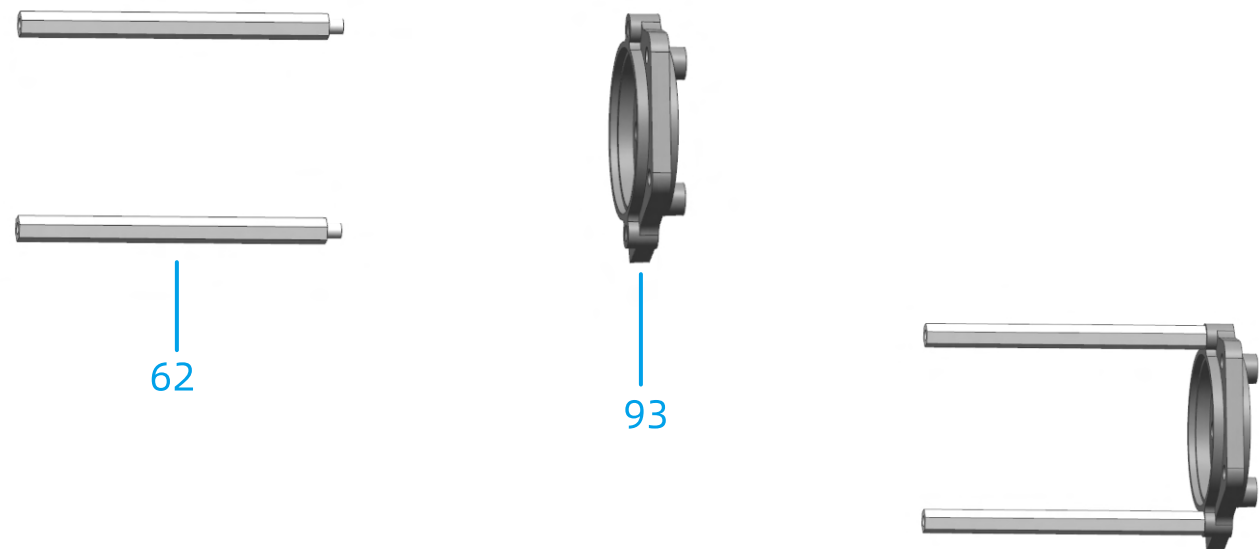


3.15 组装右缸体凸轮前传感器 Assemble Right Cylinder Block Front Cam Sensor

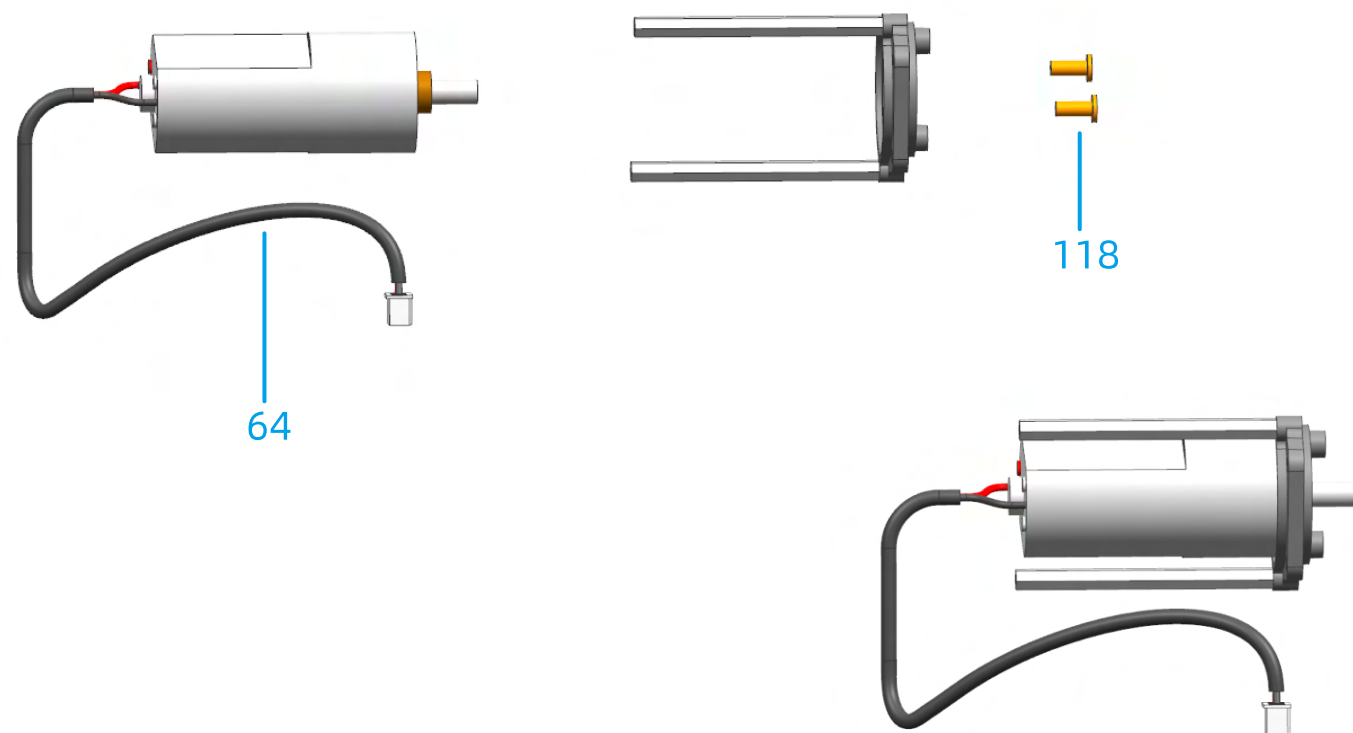


4.启动电机总成 Starter Motor Assembly

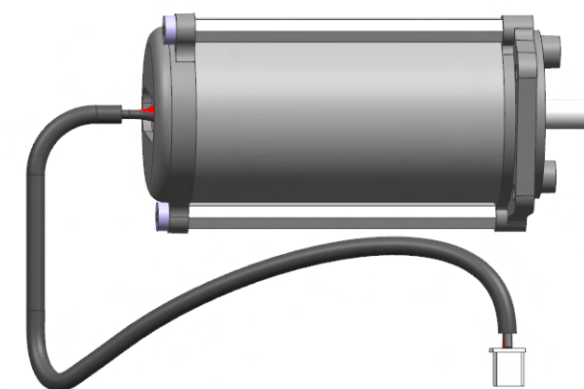
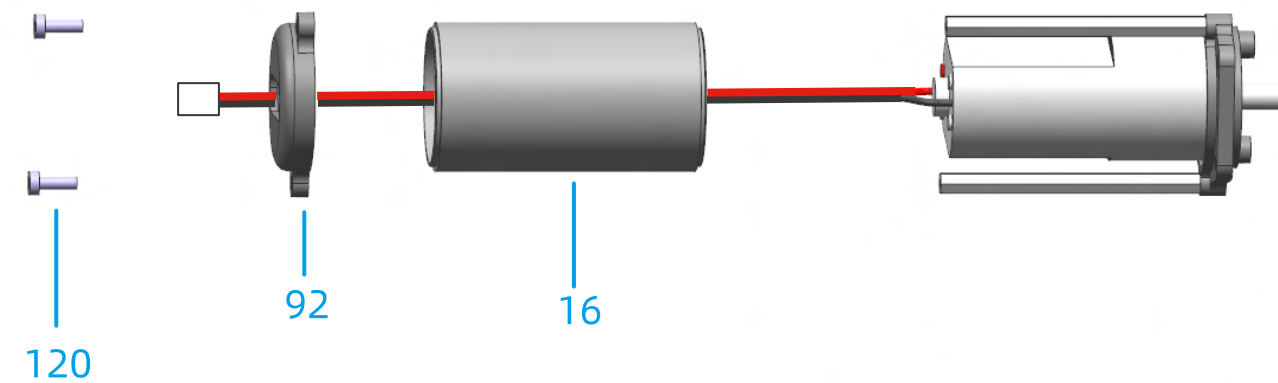
4.1 组装电机固定板 Assemble Motor Fixing Plate



4.2 组装电机套 Assemble Motor Sleeve

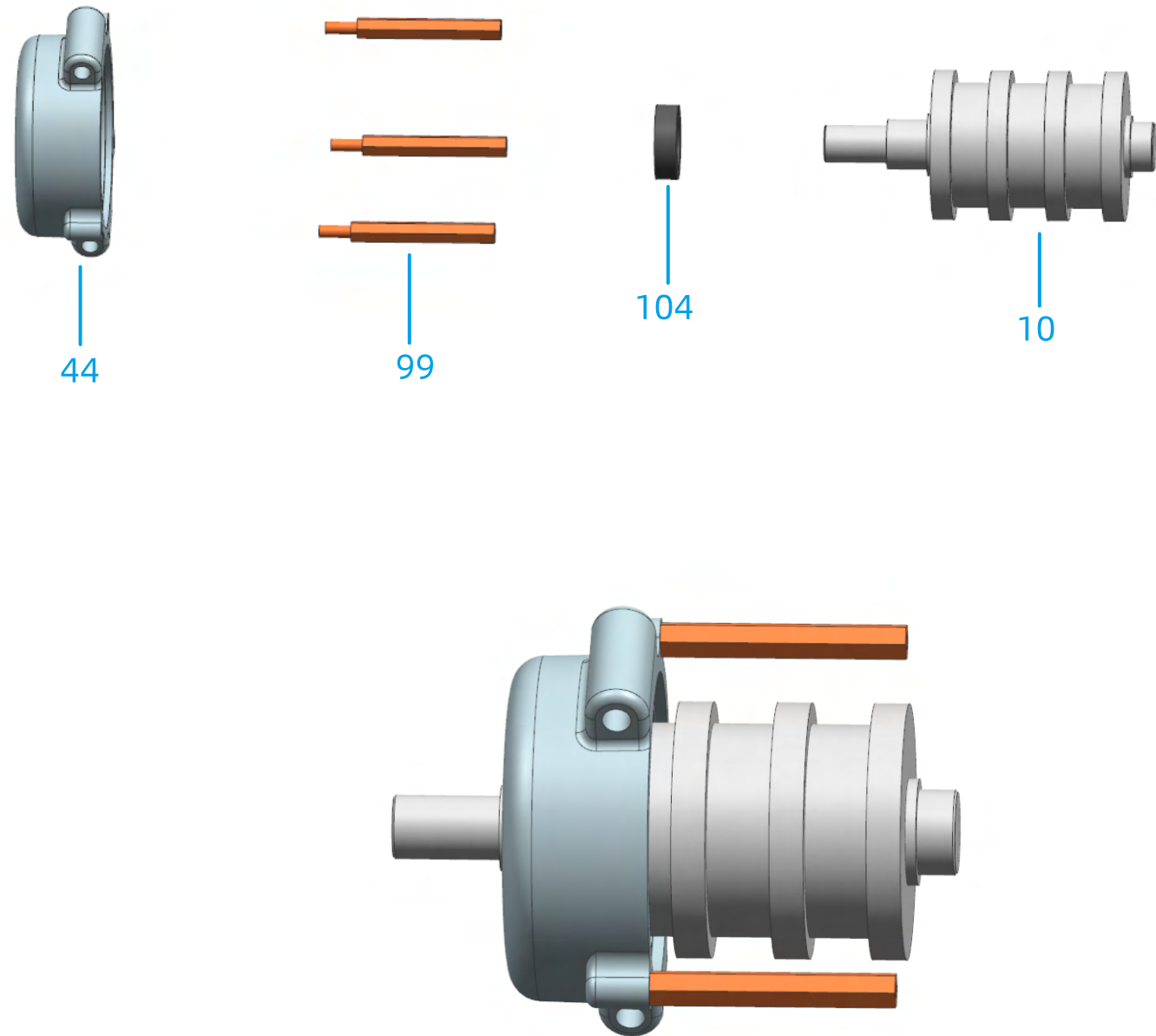


4.3 组装电机尾盖 Assemble the Motor Rear Cover

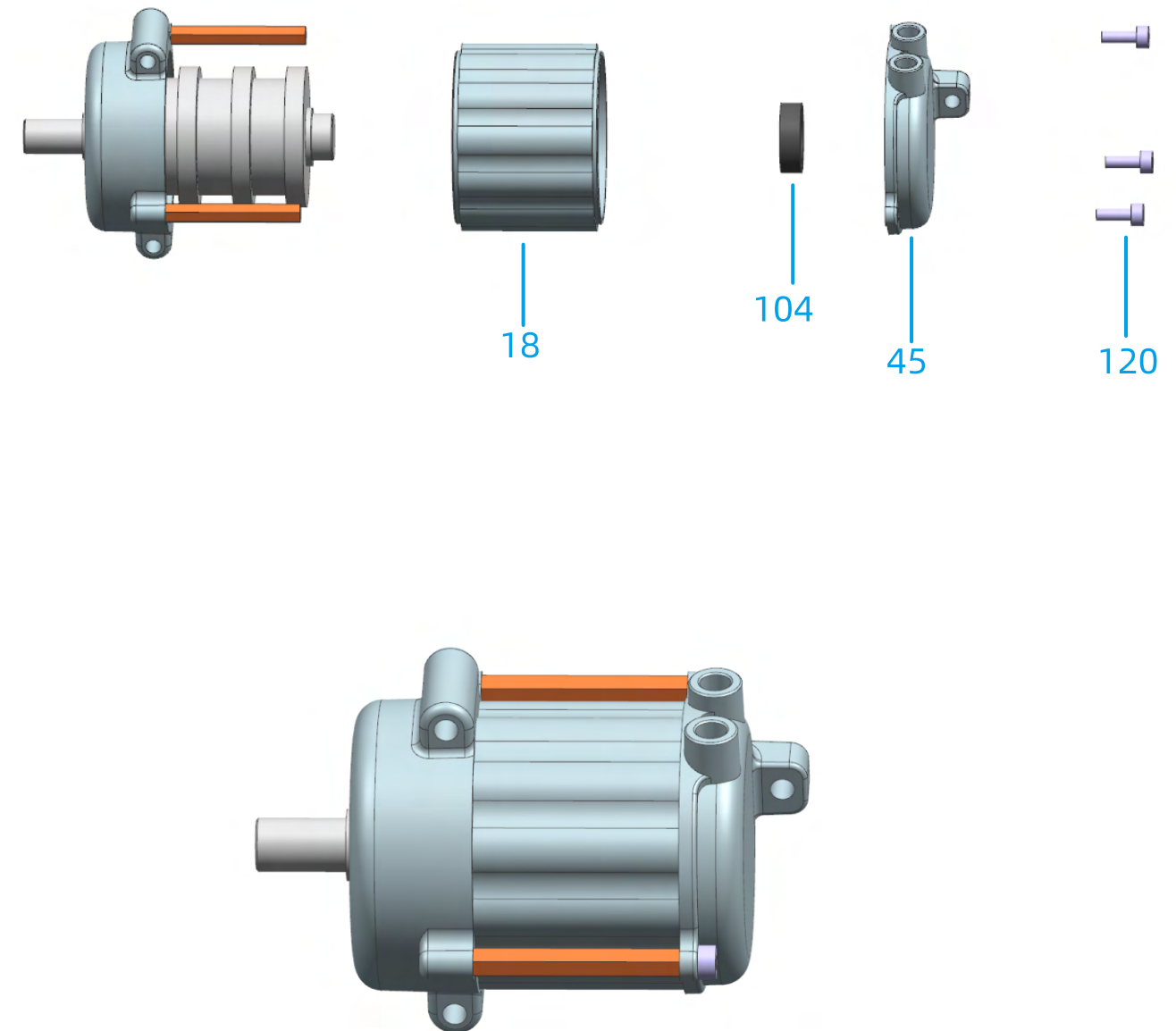


5.空压机总成 Air Compressor Assembly

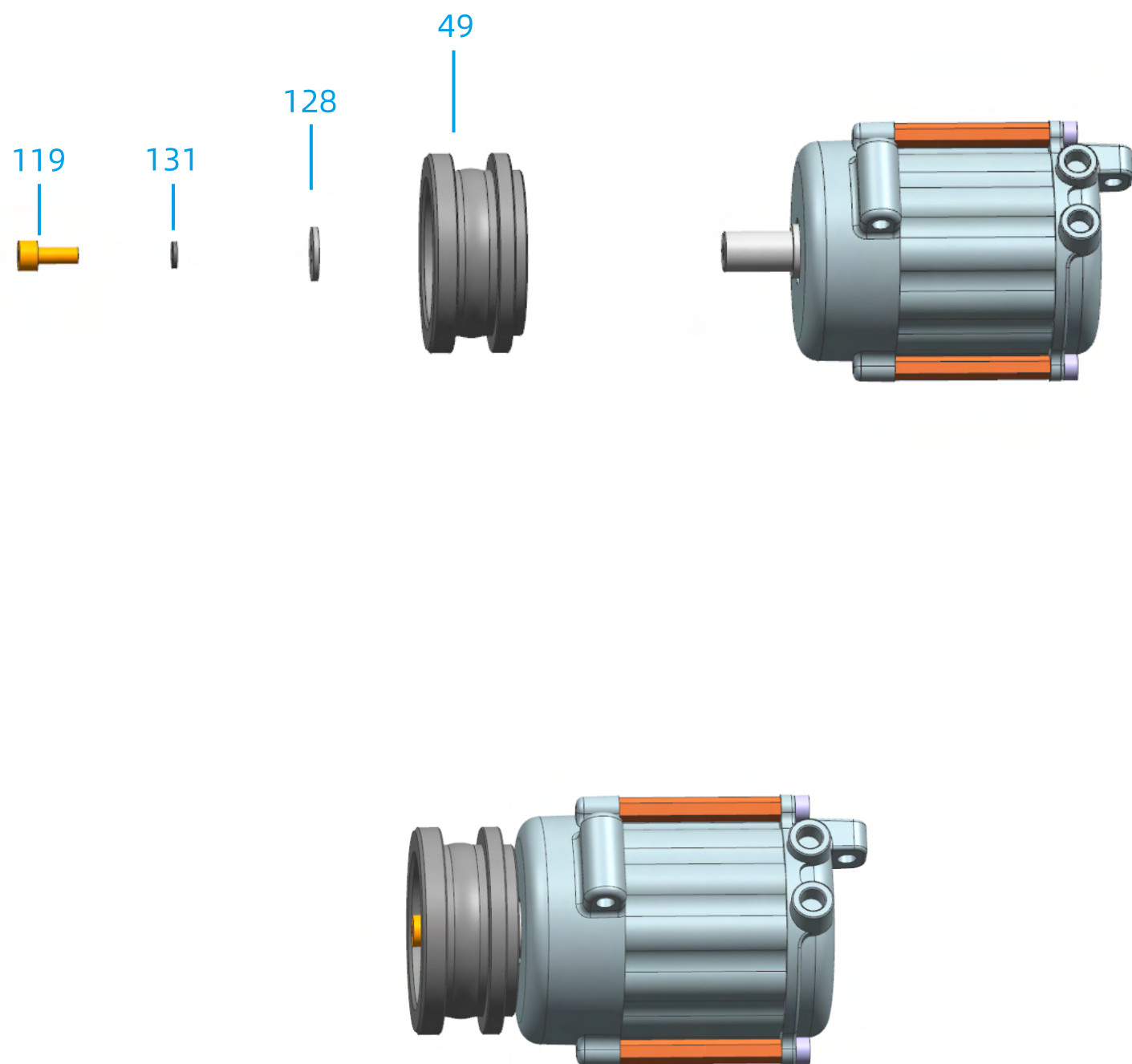
5.1 组装空压机轴 Assemble the Air Compressor Shaft



5.2 组装空压机后端盖 Assemble the Air Compressor Rear End Cover

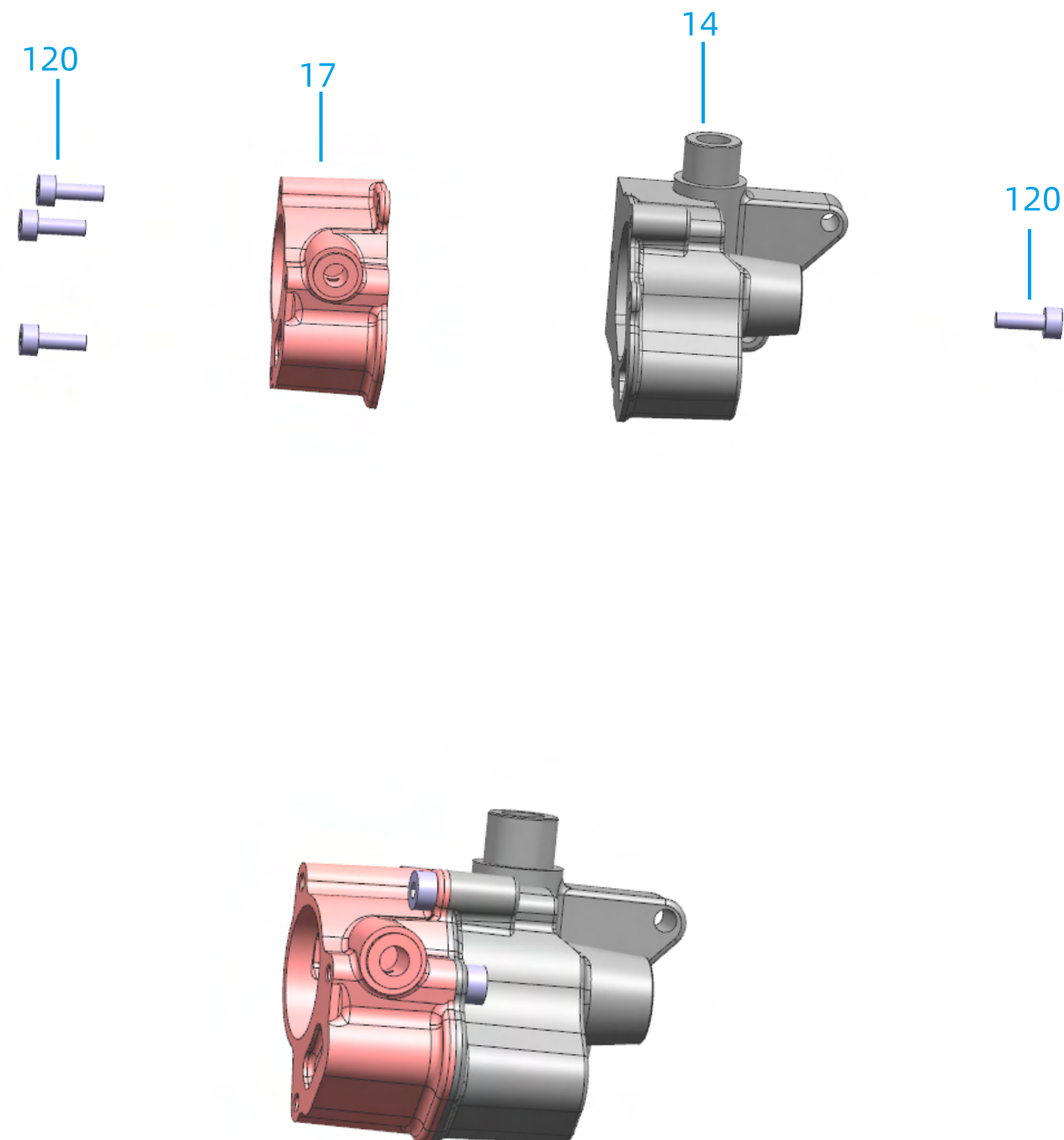


5.3 组装空压机皮带轮 Assemble the Air Compressor Pulley

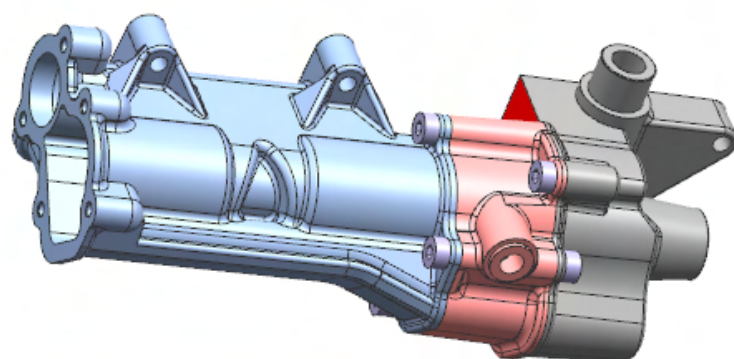
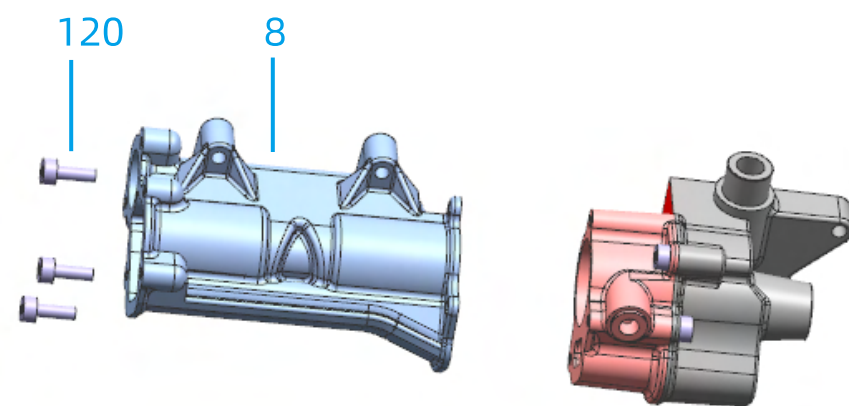


6. 机油泵总成 Oil Pump Assembly

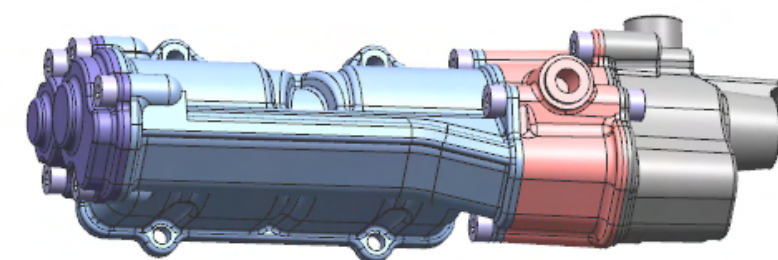
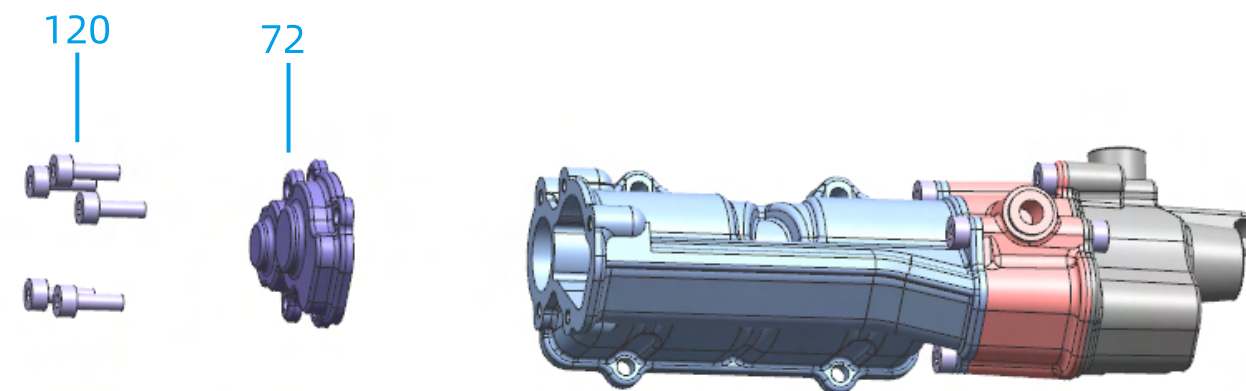
6.1 组装机油连接泵 Assemble the Engine Oil Connection Pump



6.2 组装机油泵箱体 Assemble the Engine Oil Pump Casing

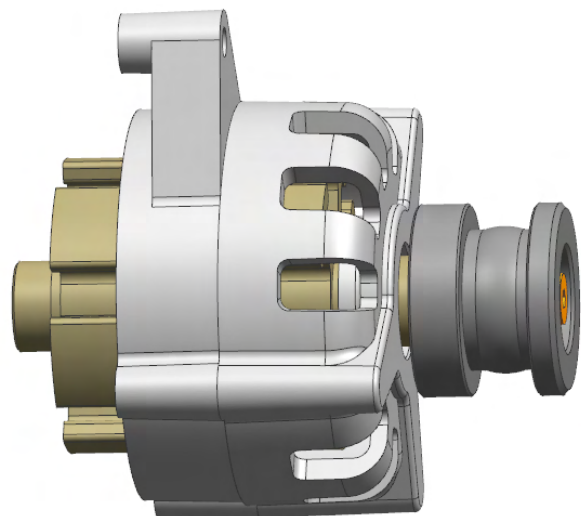
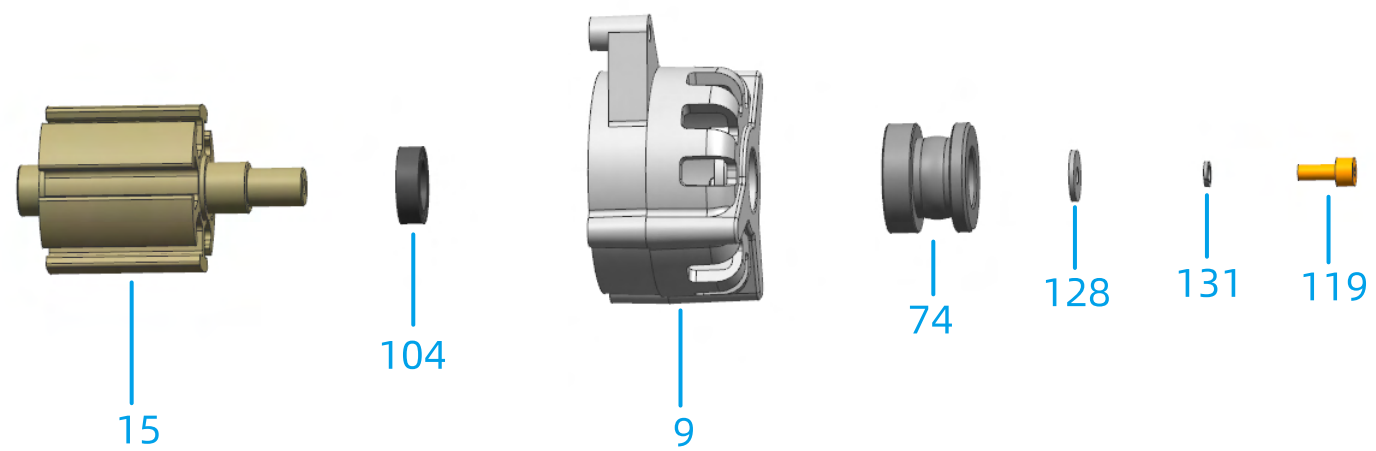


6.3 组装机油泵尾盖 Assemble the Engine Oil Pump Rear Cover

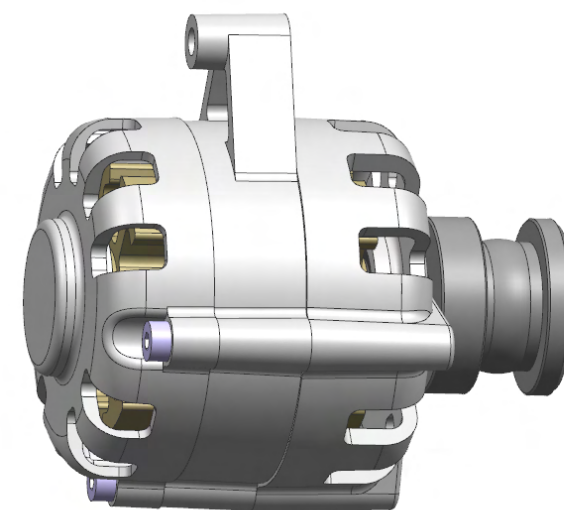
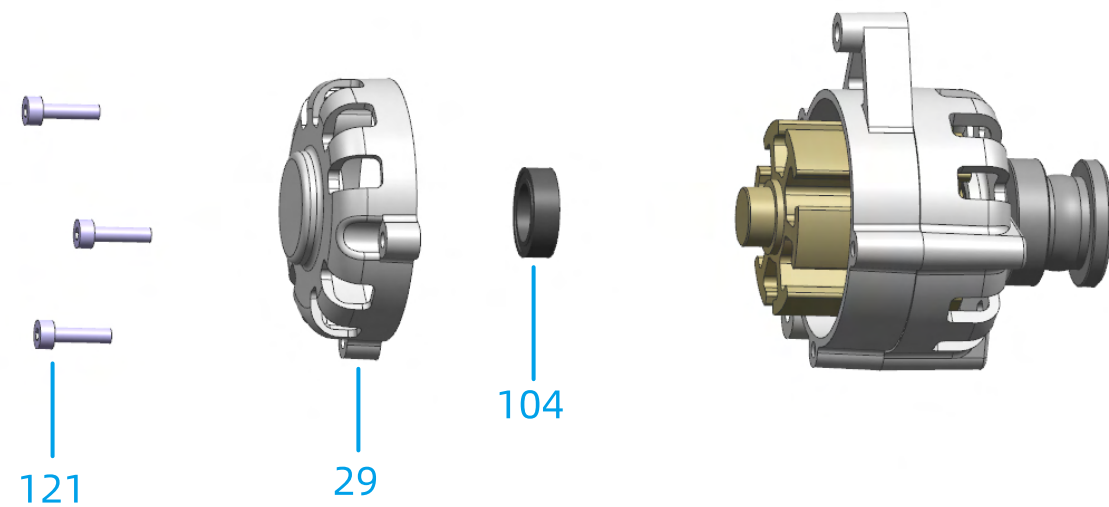


7.发电机总成 Generator Assembly

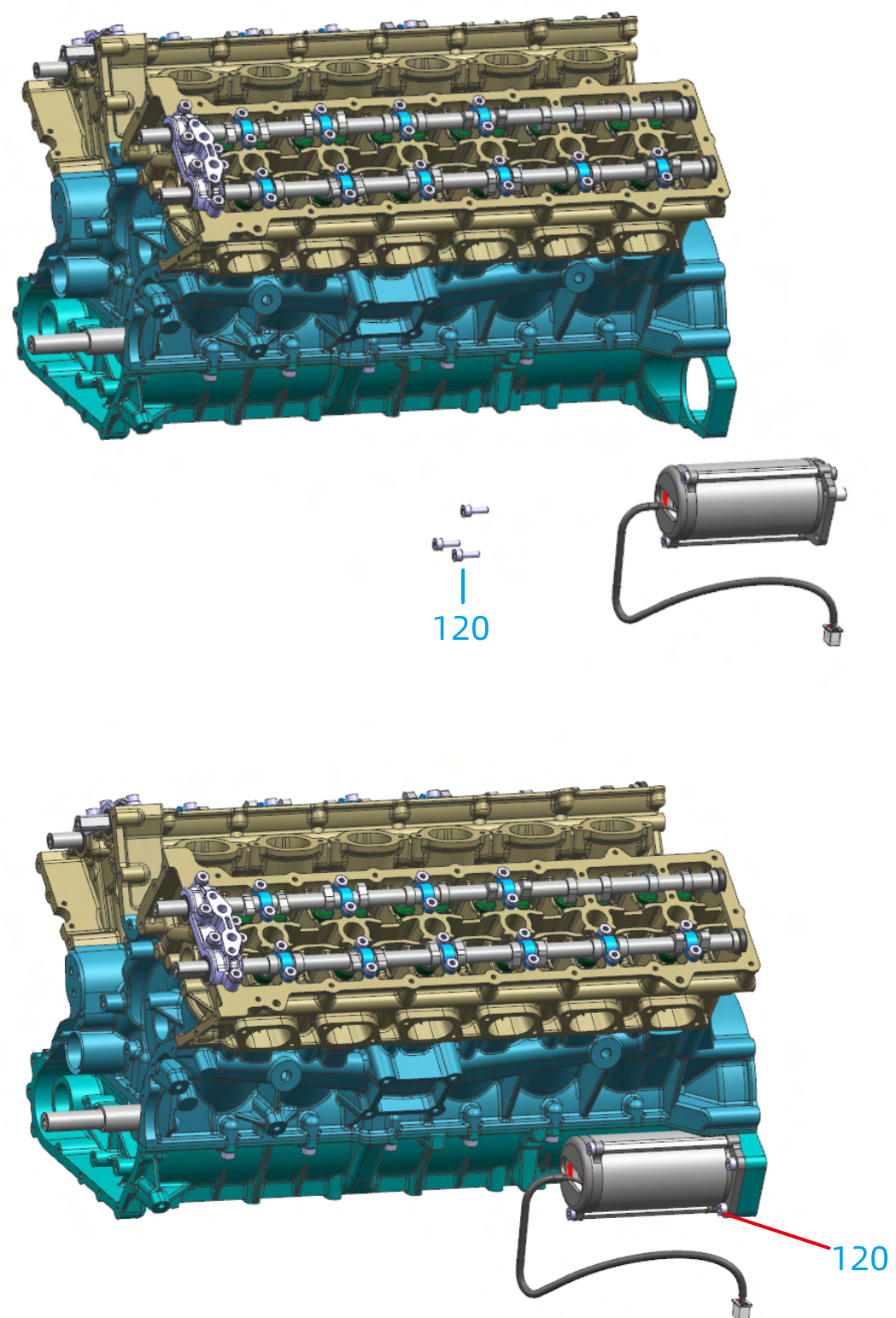
7.1 组装发电机 Assemble the Generator



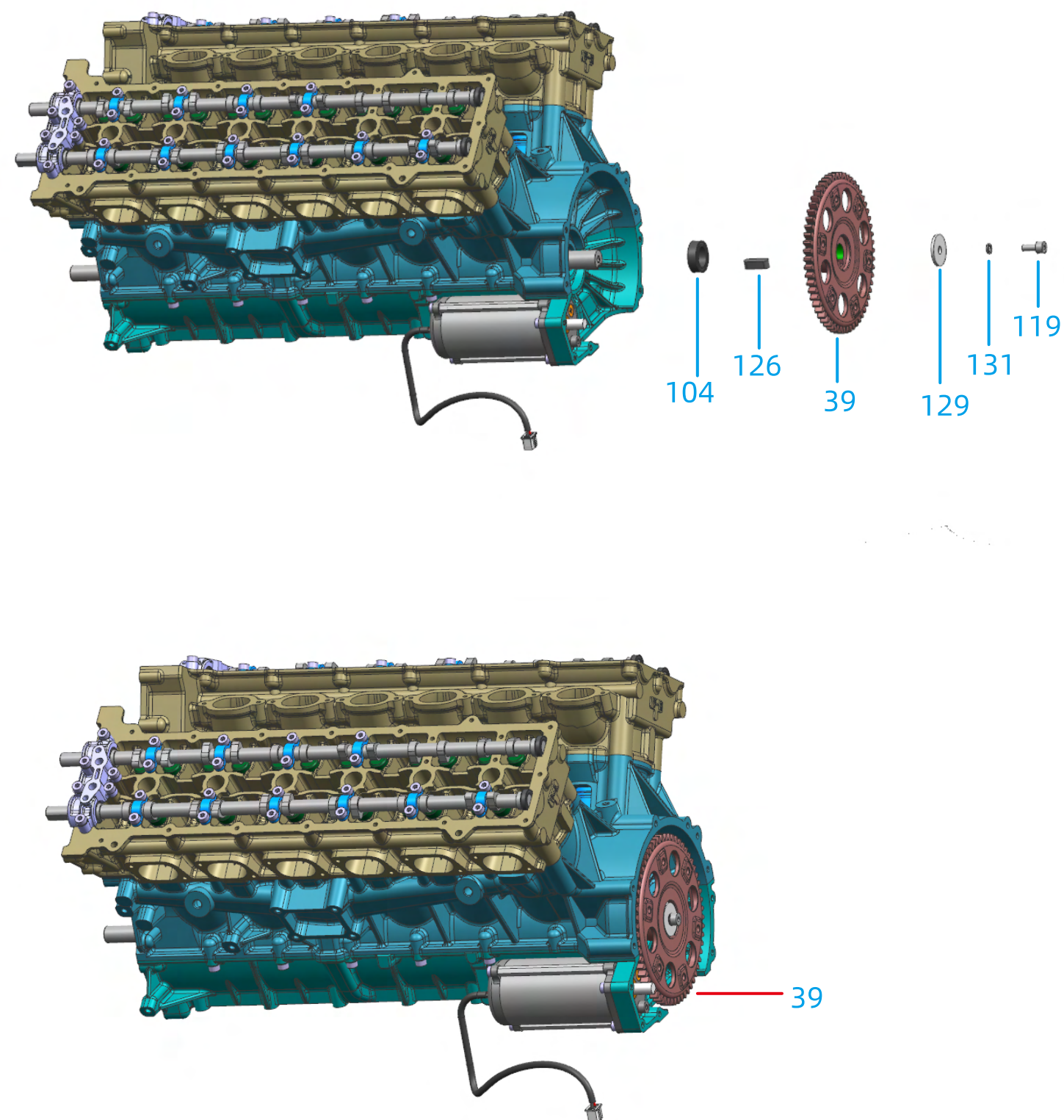
7.2 组装发电机皮带轮 Assemble Generator Pulley



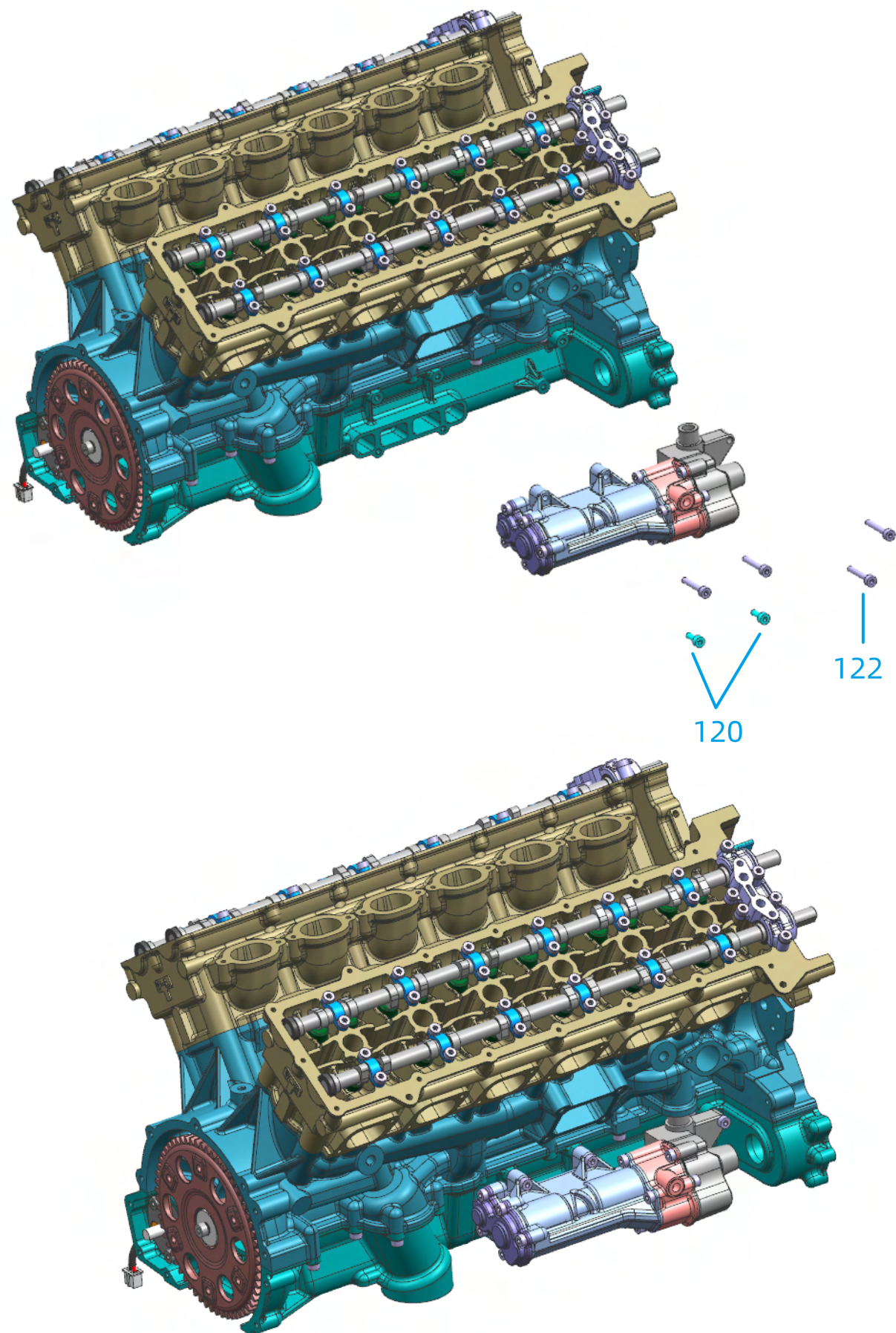
7.3 组装启动电机总成 Assemble Starter Motor Assembly



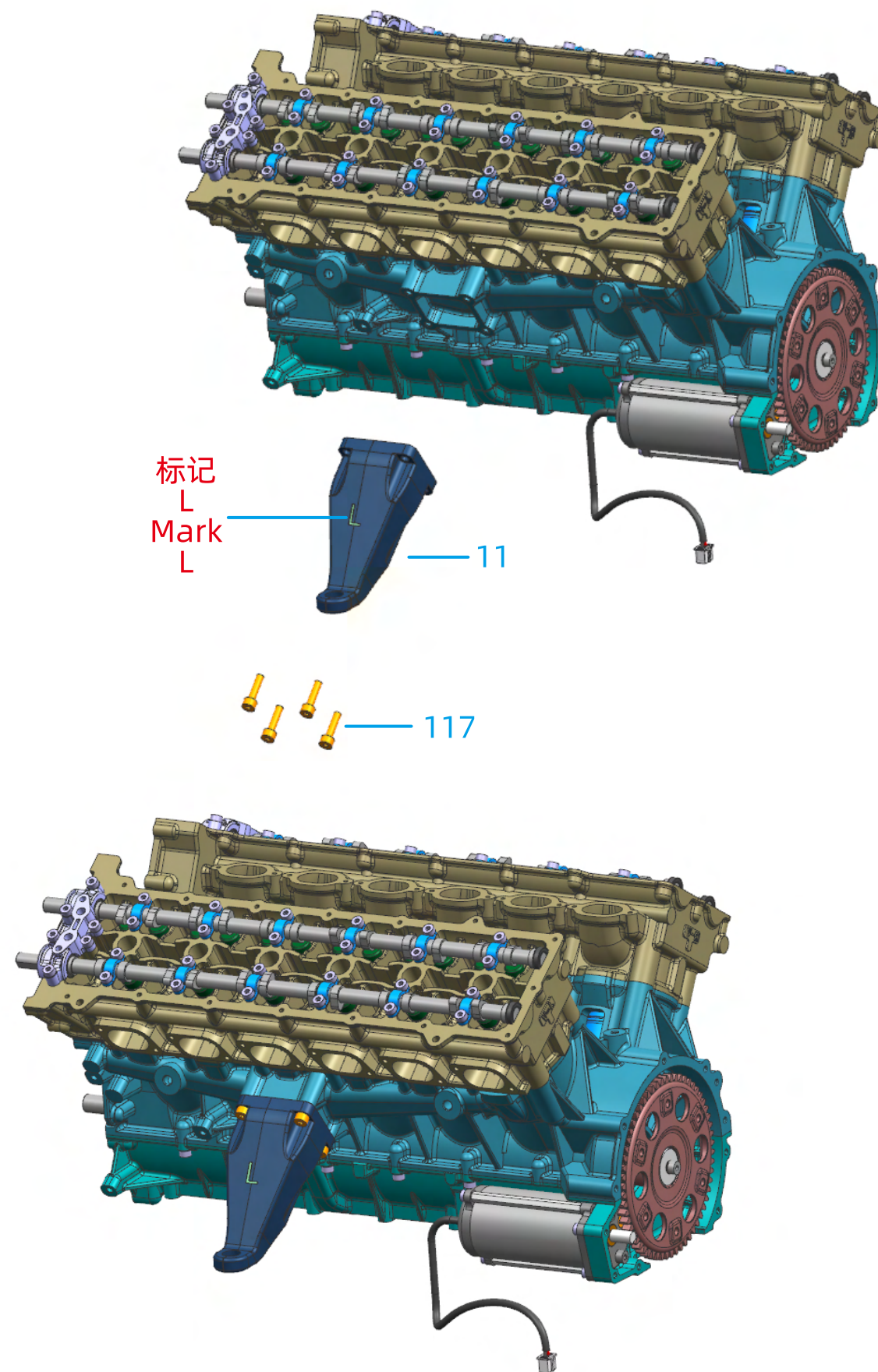
7.4 组装飞轮 Assemble Flywheel



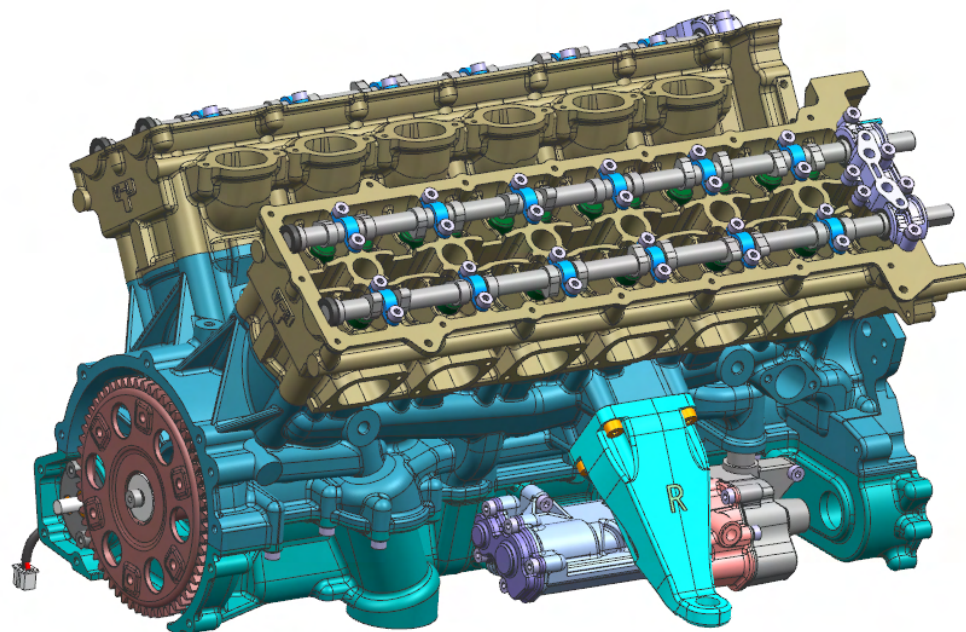
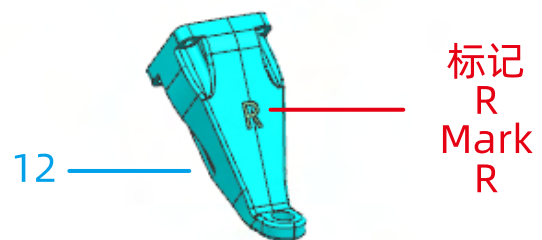
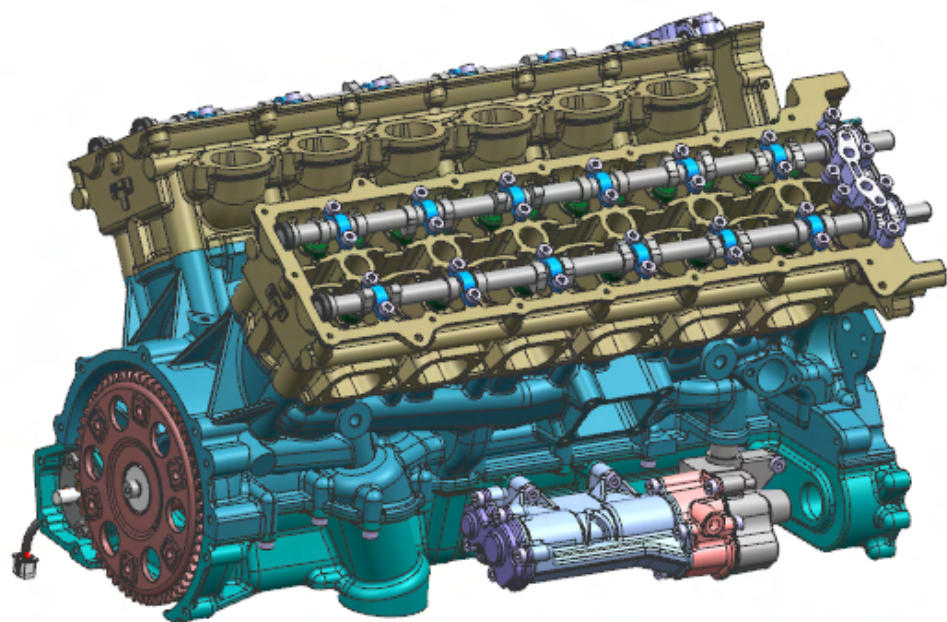
7.5 组装机油泵总成 Assemble Oil Pump Assembly



7.6 组装左支撑脚 Assemble Left Support Foot

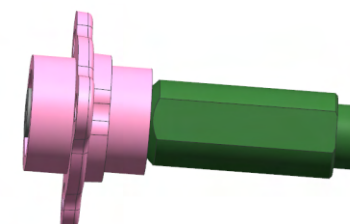
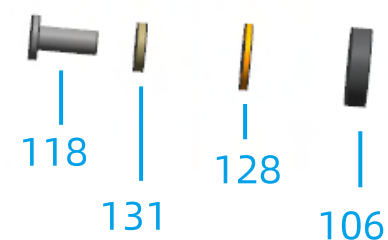


7.7 组装右支撑脚 Assemble Right Support Foot

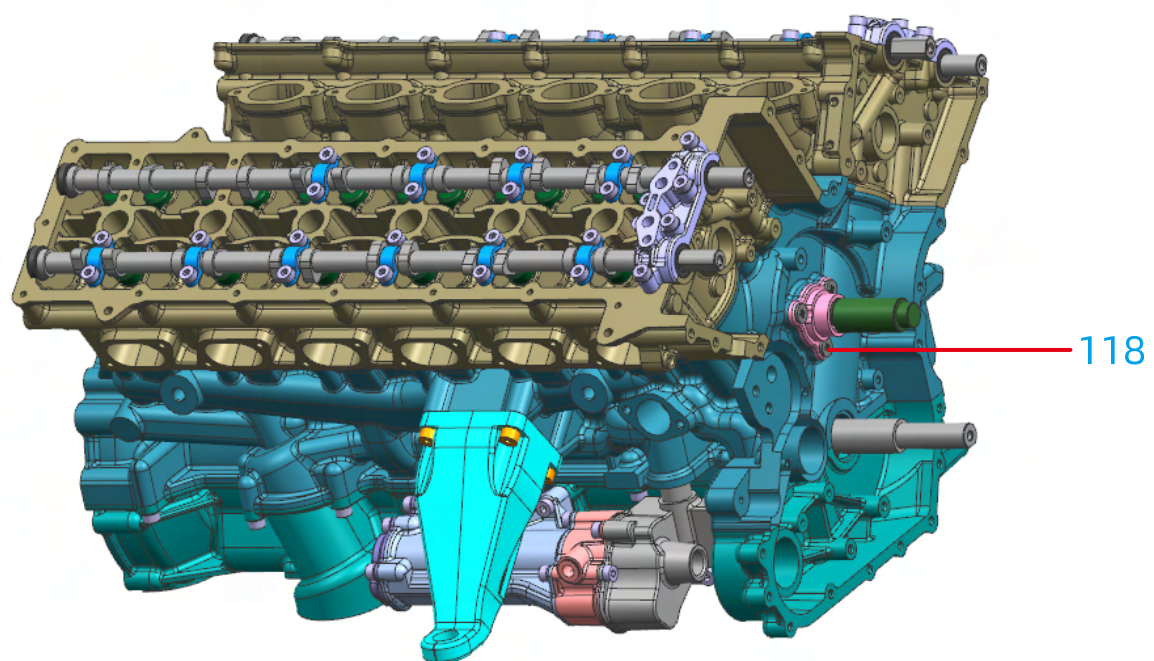
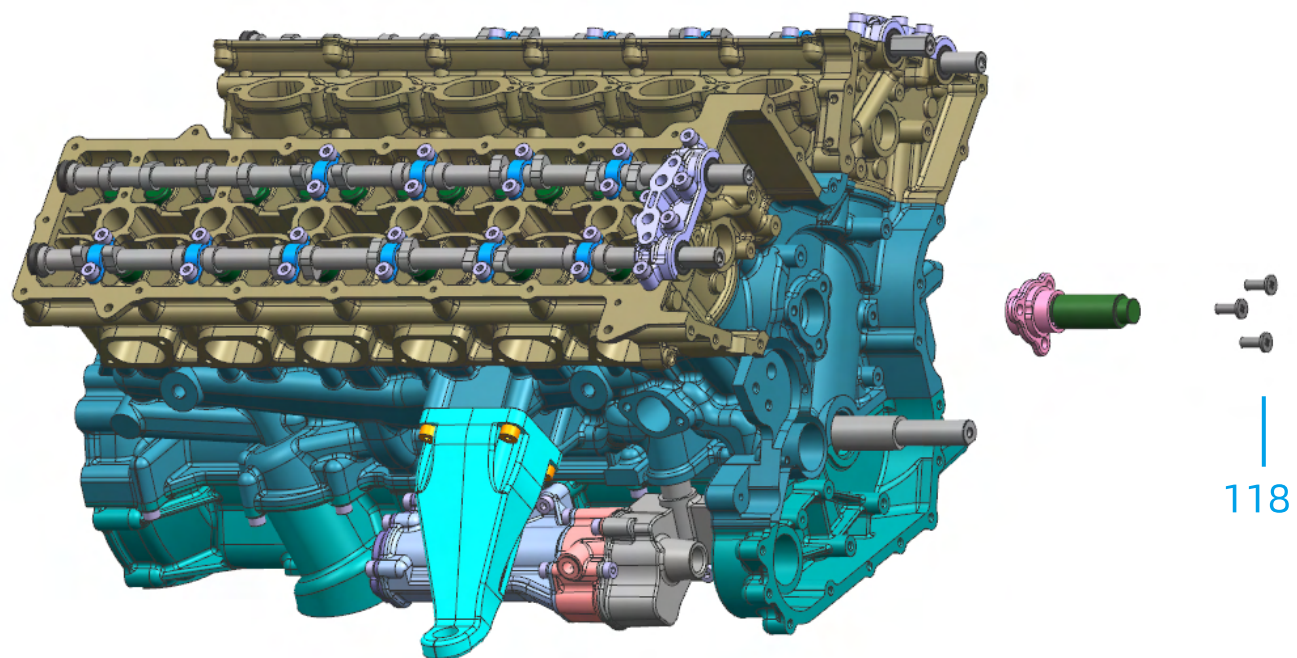


8.正时机构 Timing Mechanism

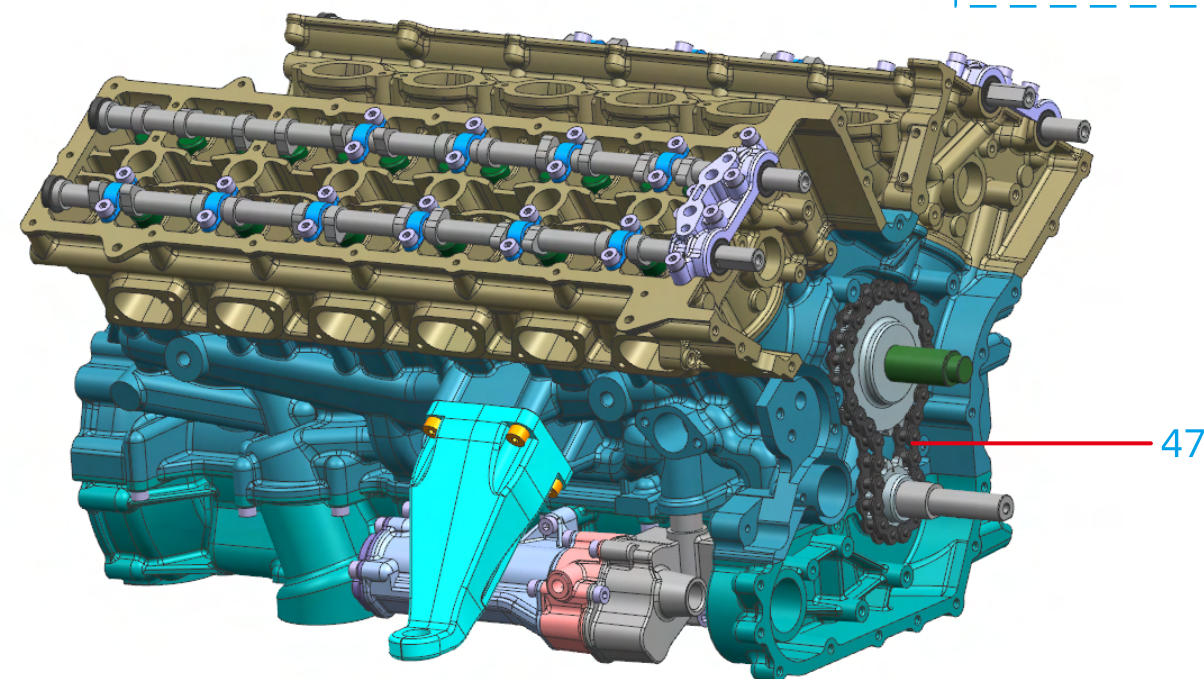
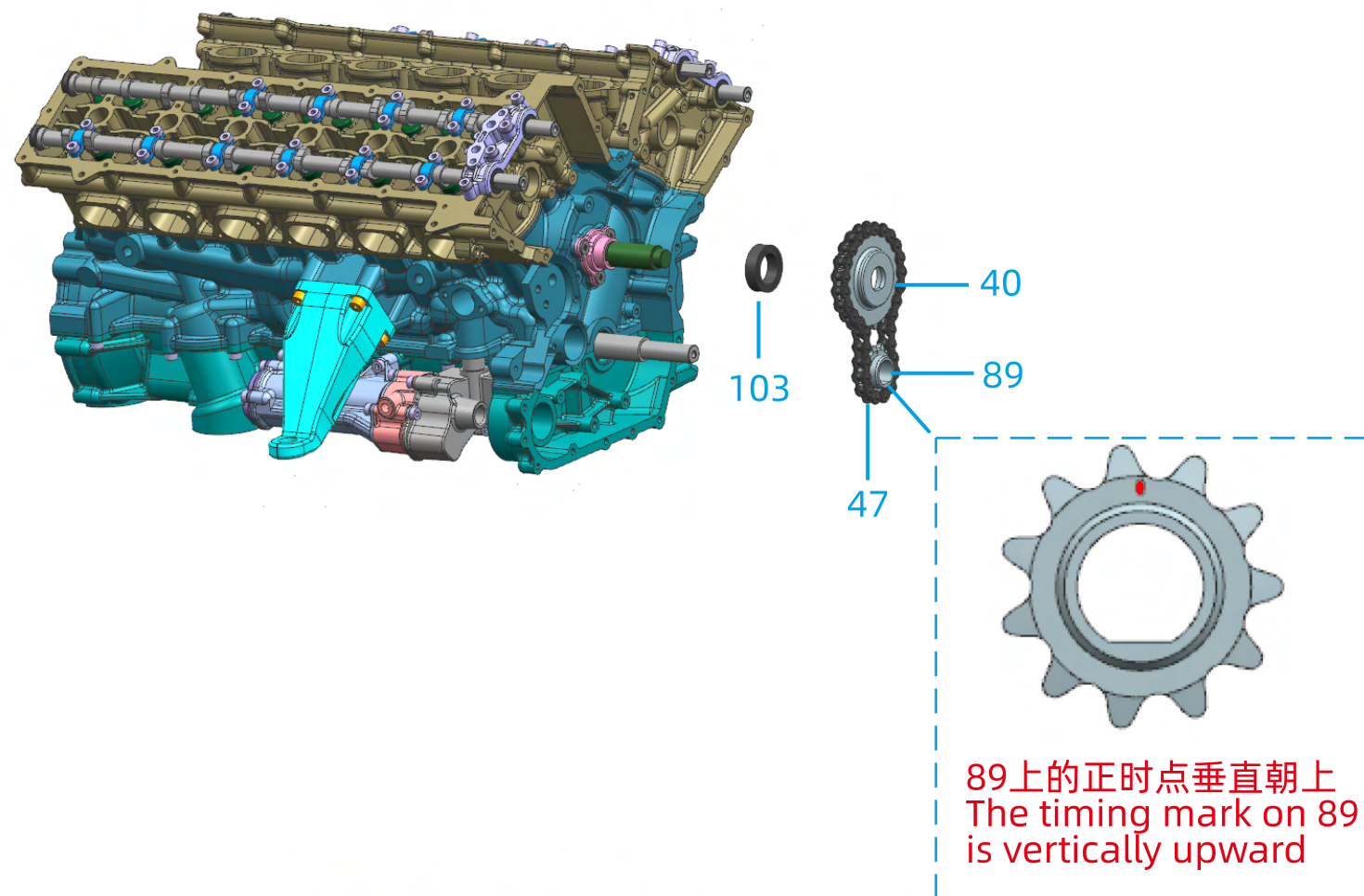
8.1 组装过渡轴 Assemble Transition Shaft



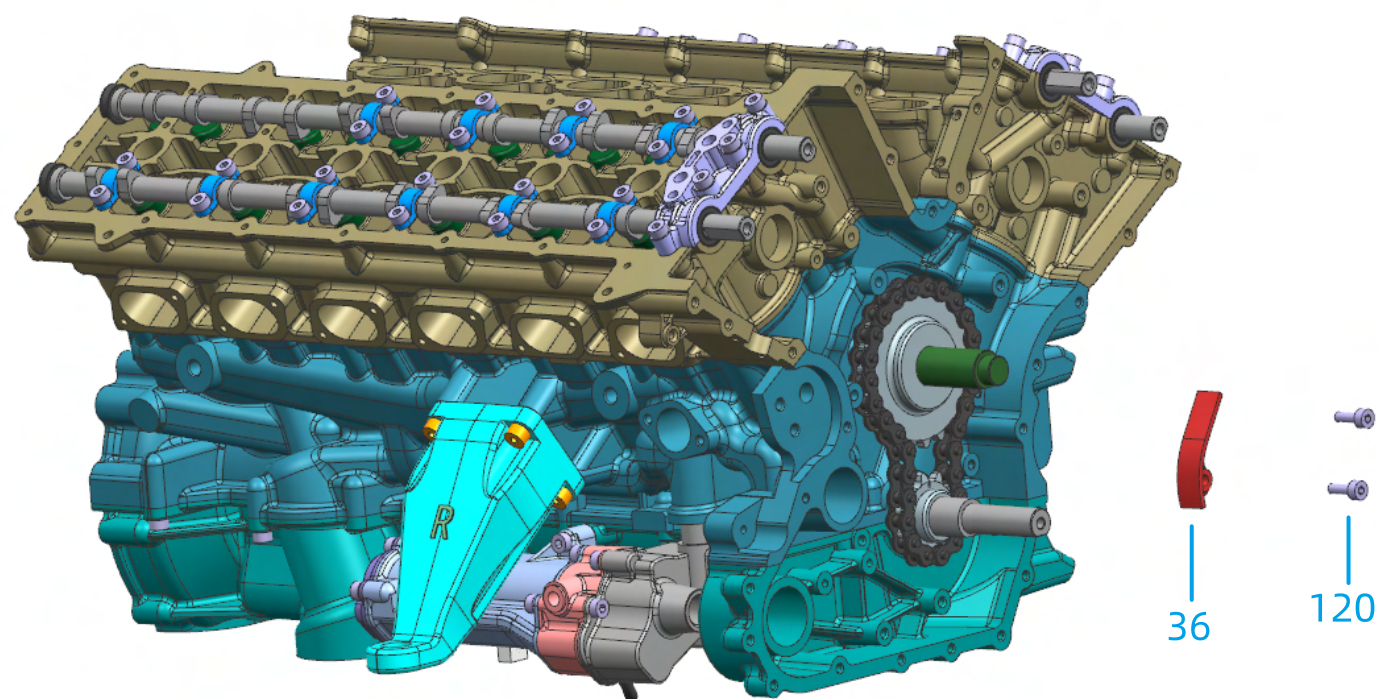
8.2 组装过渡轴承座 Assemble Transition Bearing Seat



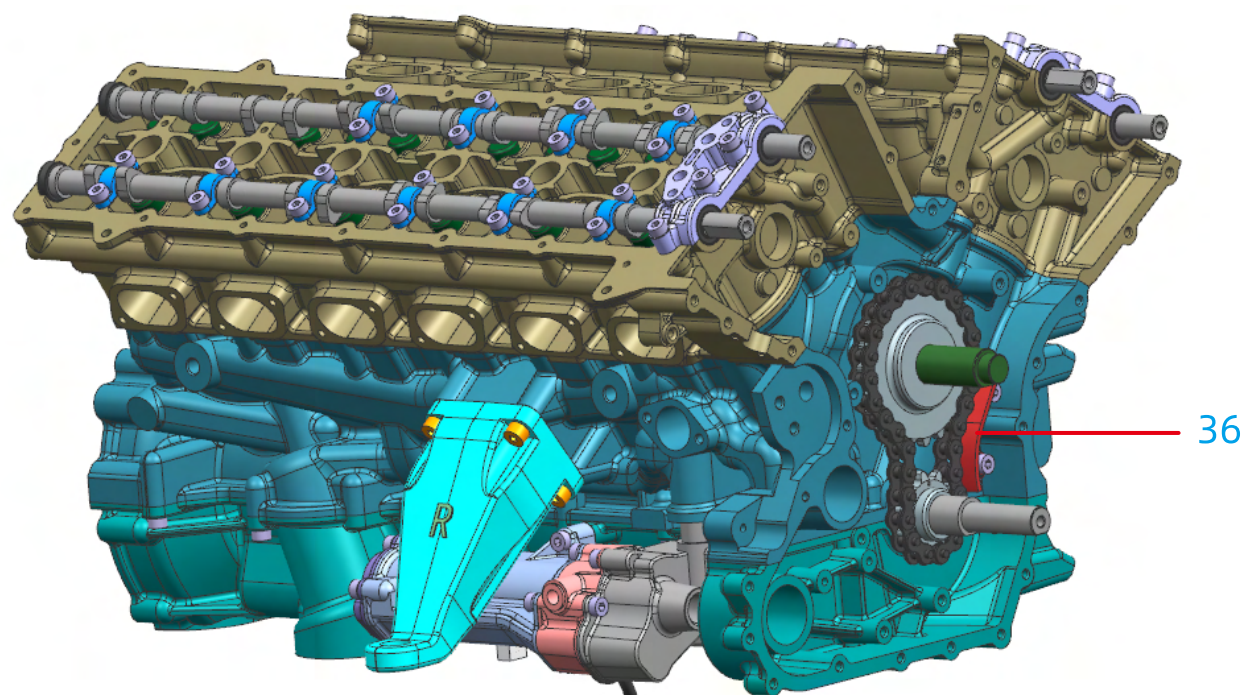
8.3 组装过渡轴链条 Assemble Transmission Shaft Chain



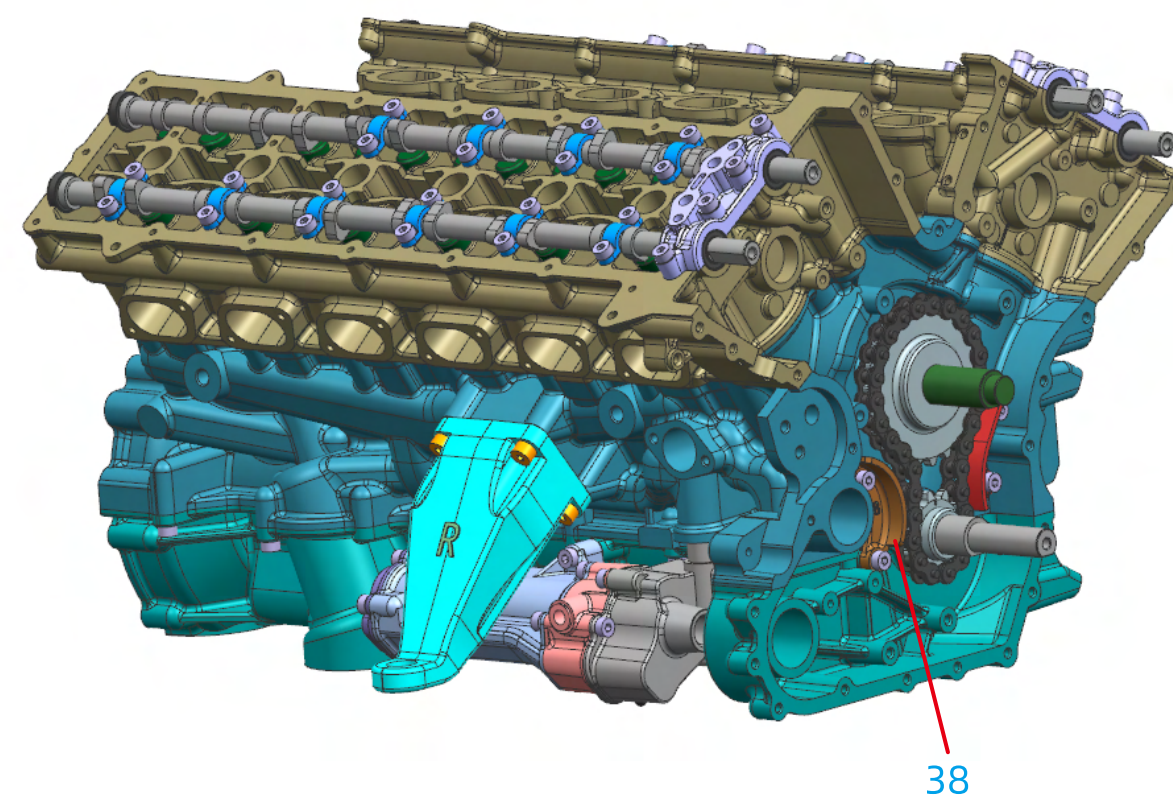
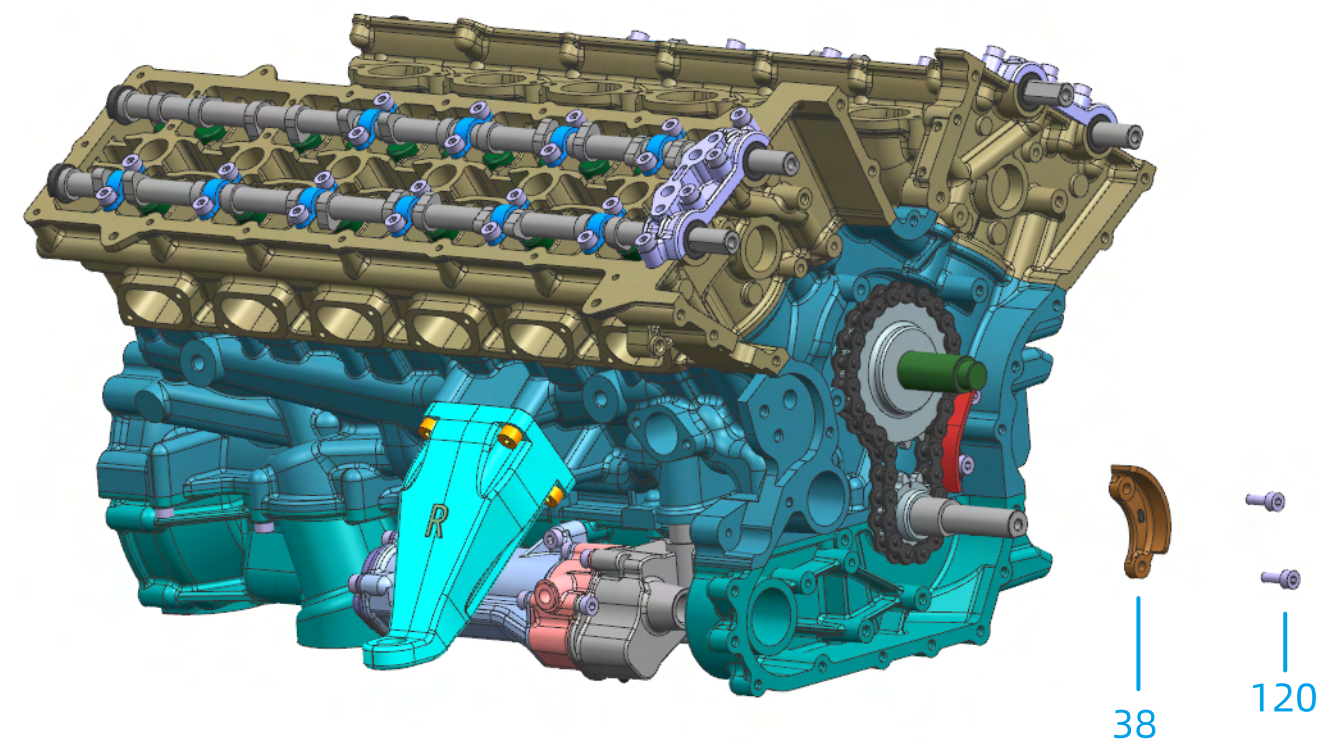
8.4 组装8号链条导向块 Assemble No.8 Chain Guide Block



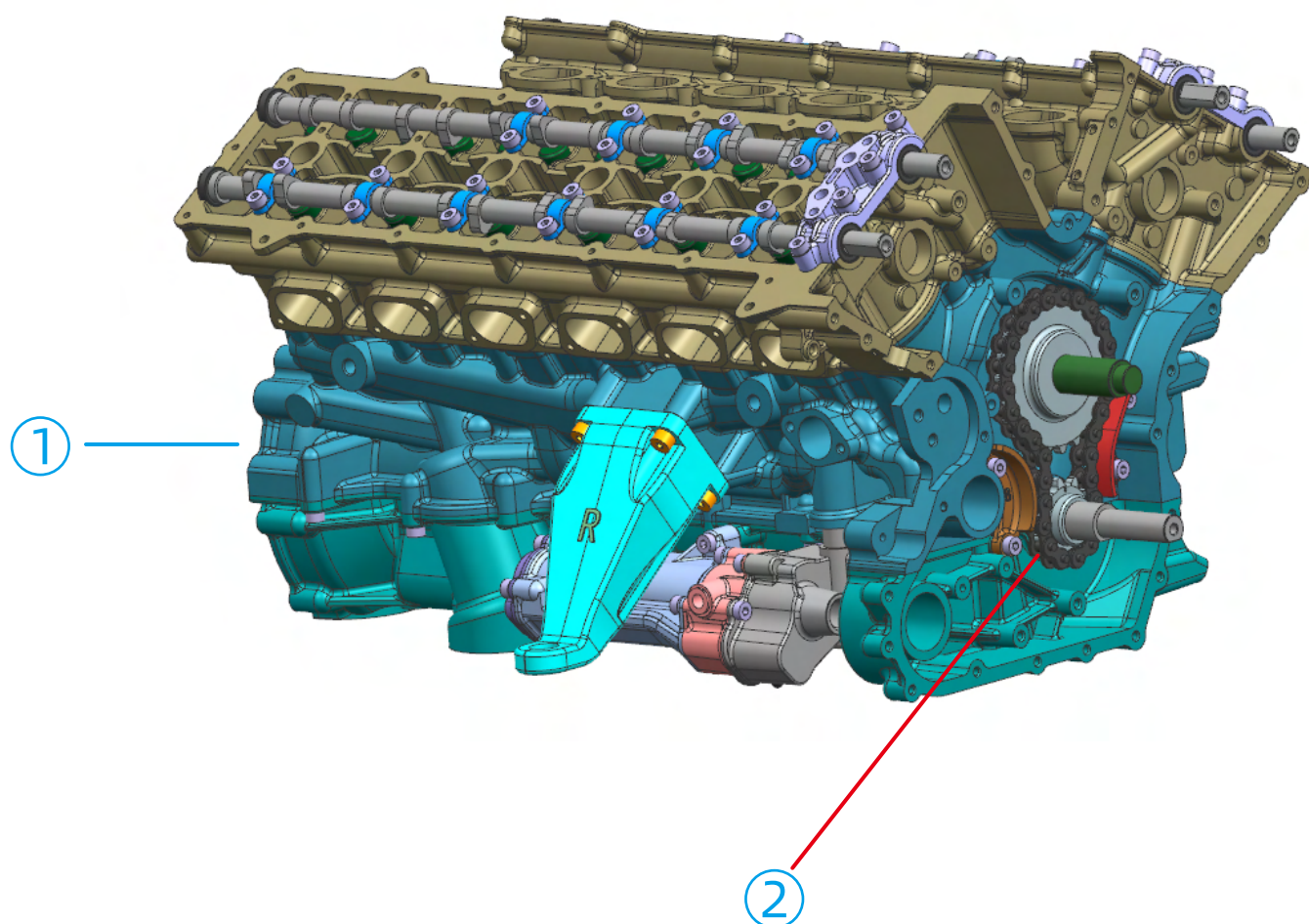
先锁上面螺丝，不要拧紧，再把36号零件往链条侧推到底，再锁紧下面螺丝，最后锁紧上面螺丝
First, tighten the top screws loosely (do not fully tighten them). Then push Part 36 all the way toward the chain side. Next, fully tighten the bottom screws. Finally, fully tighten the top screws.



8.5 组装6号链条导向块 Assemble No.6 Chain Guide Block

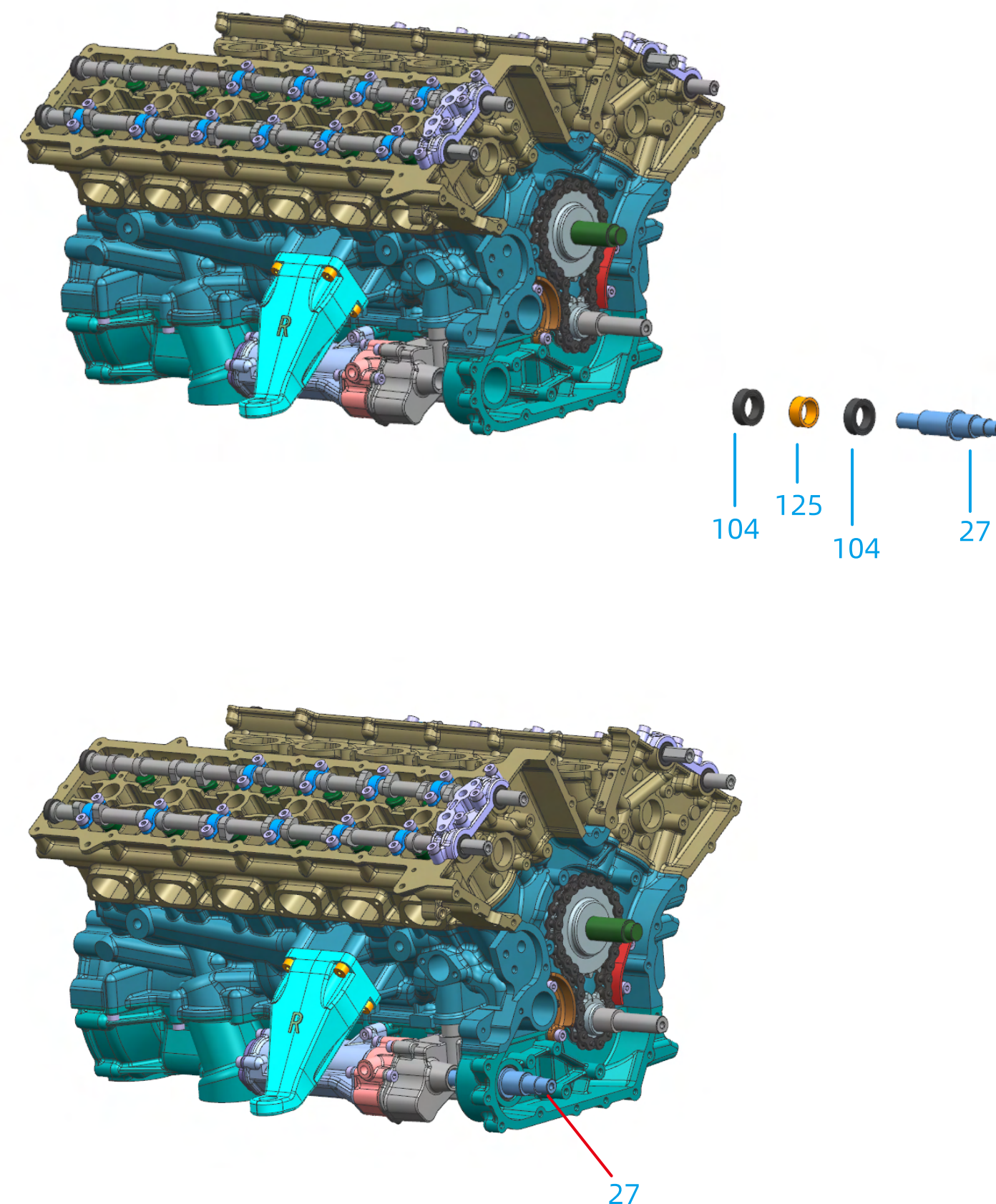


8.6 测试 Test

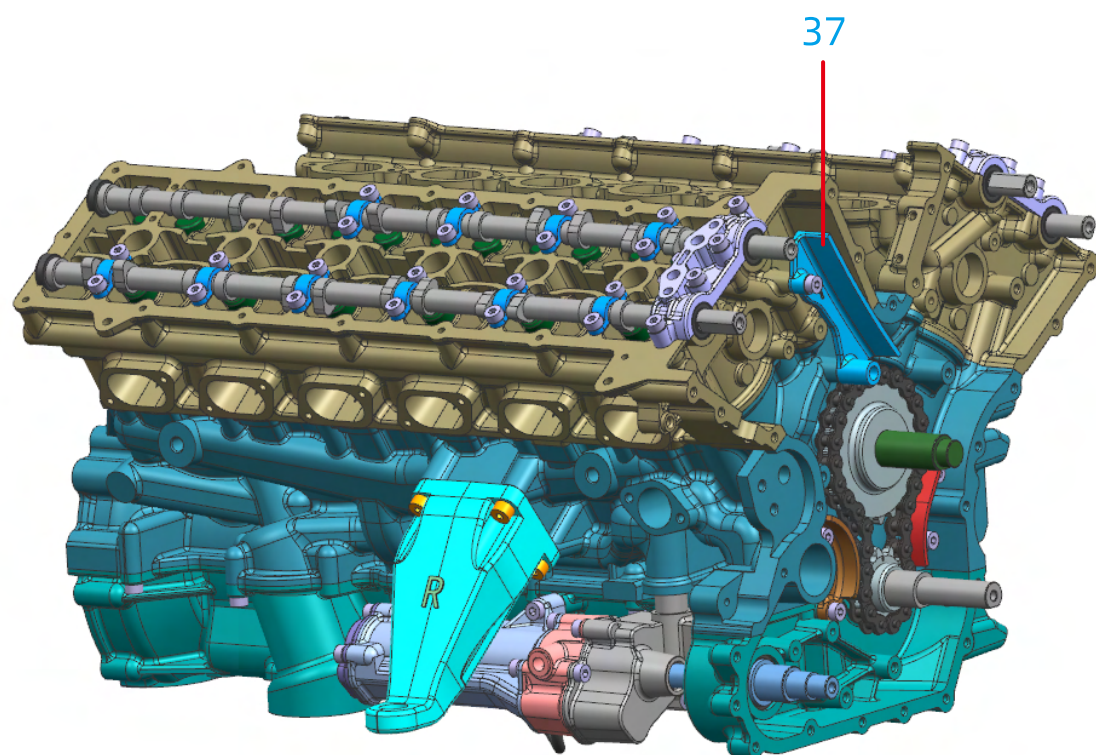
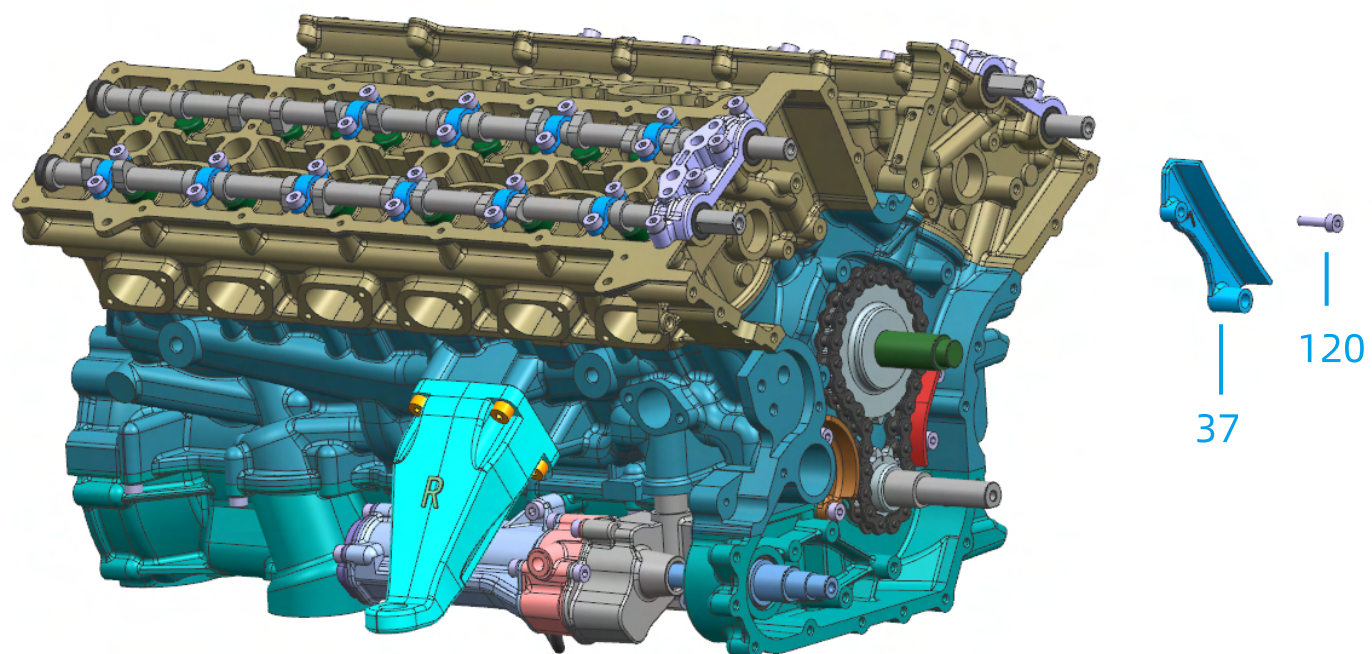


- 1、用手转动飞轮
- 2、观察链条是否正常顺畅转动
- 1、Turn the flywheel by hand
- 2、Observe whether the chain rotates normally and smoothly

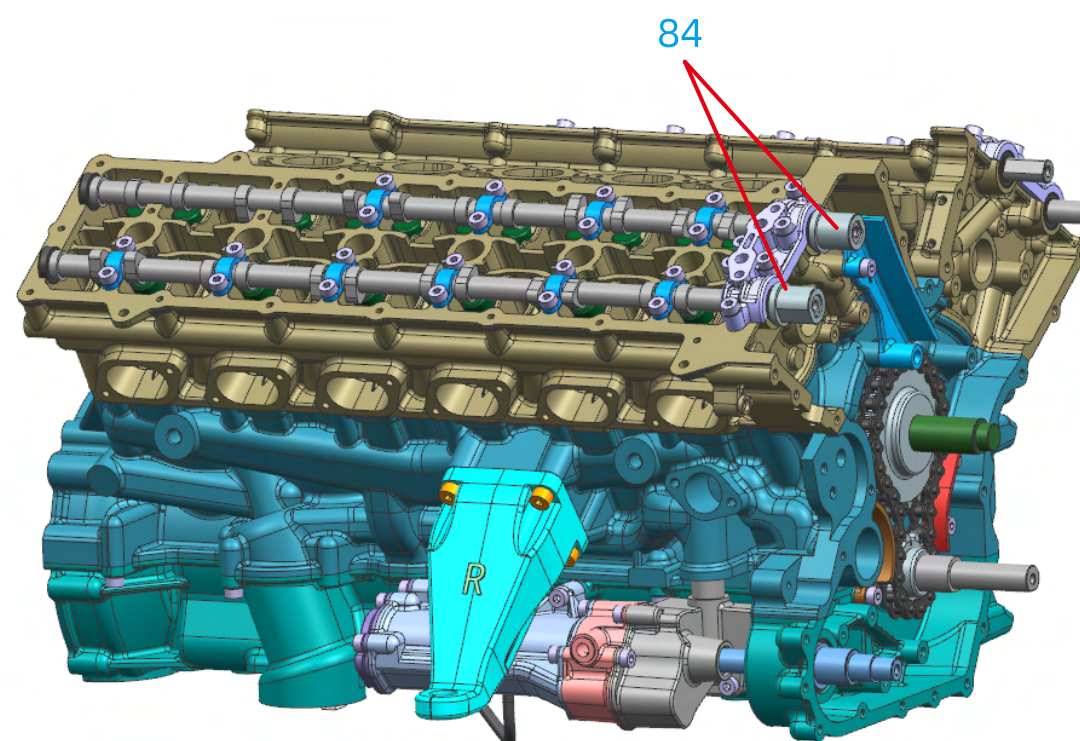
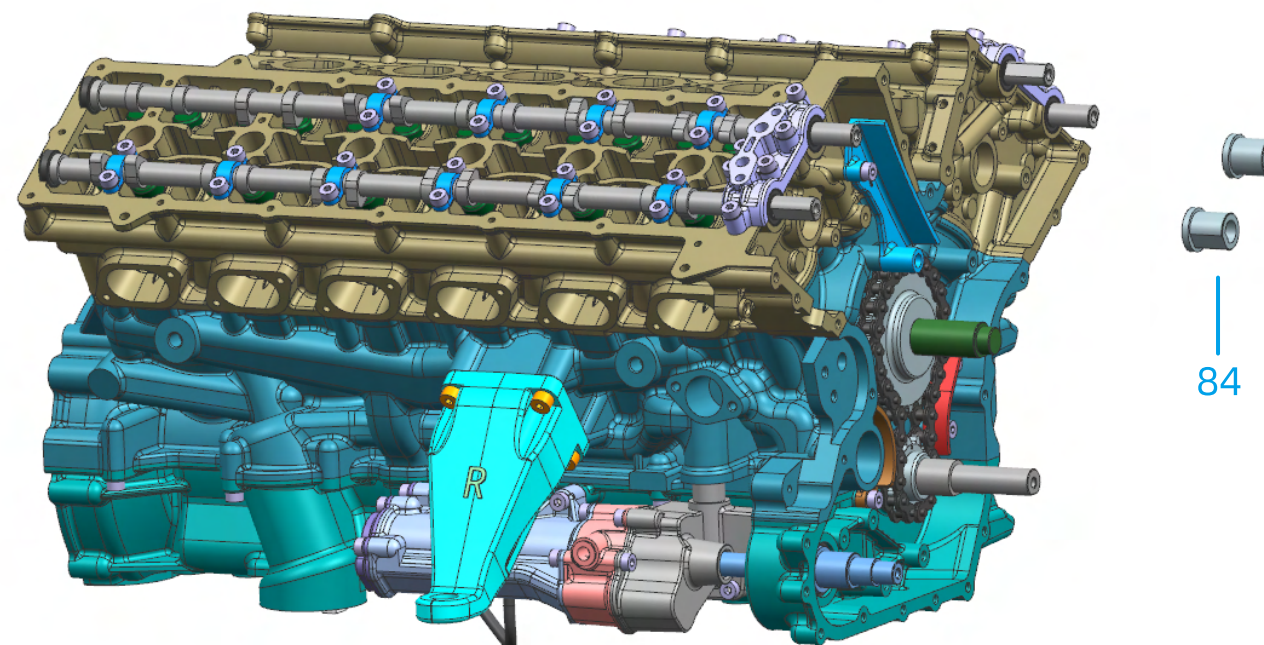
8.7 组装机油泵轴 Assemble the Engine Oil Pump Shaft



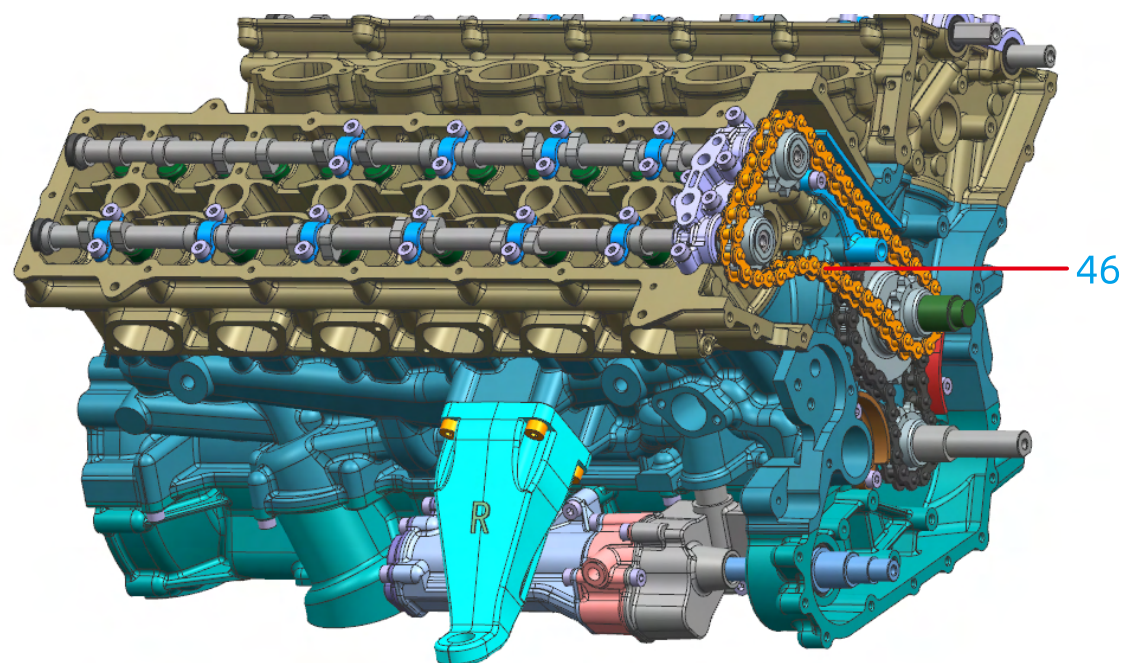
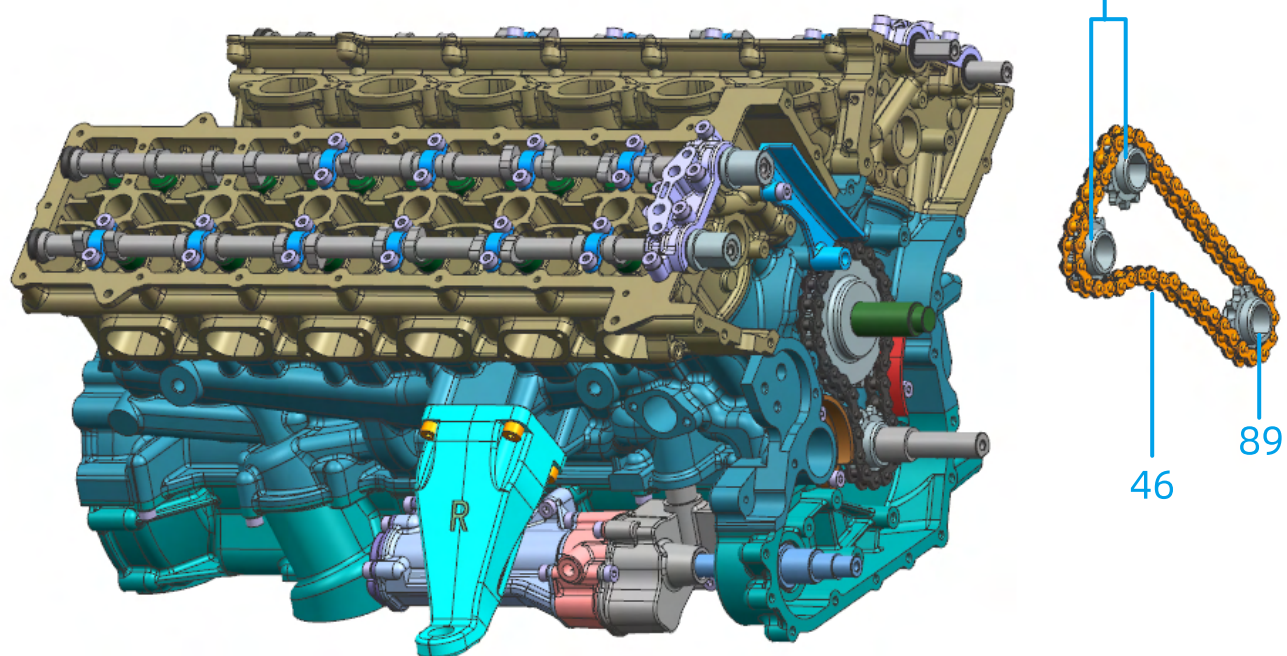
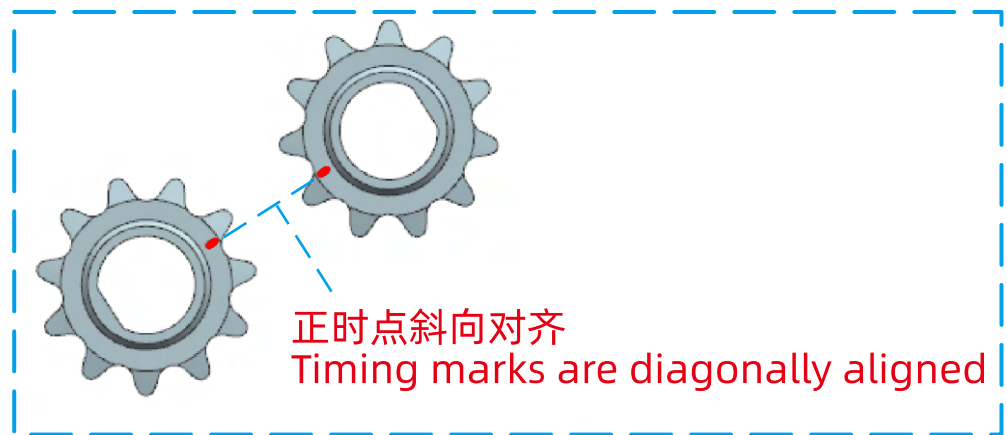
8.8 组装7号链条导向块 Assemble No.7 Chain Guide Block



8.9 组装右缸体凸轮连接套 Assemble Right Cylinder Block Cam Connecting Sleeve

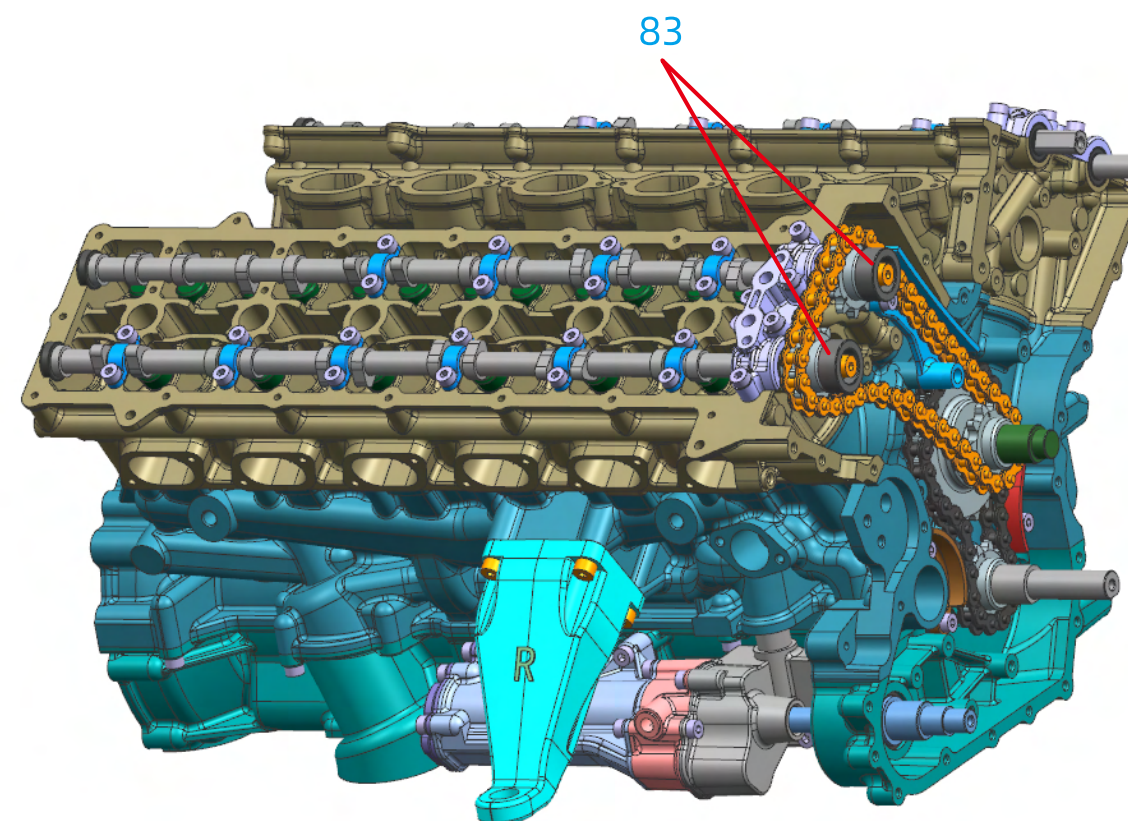
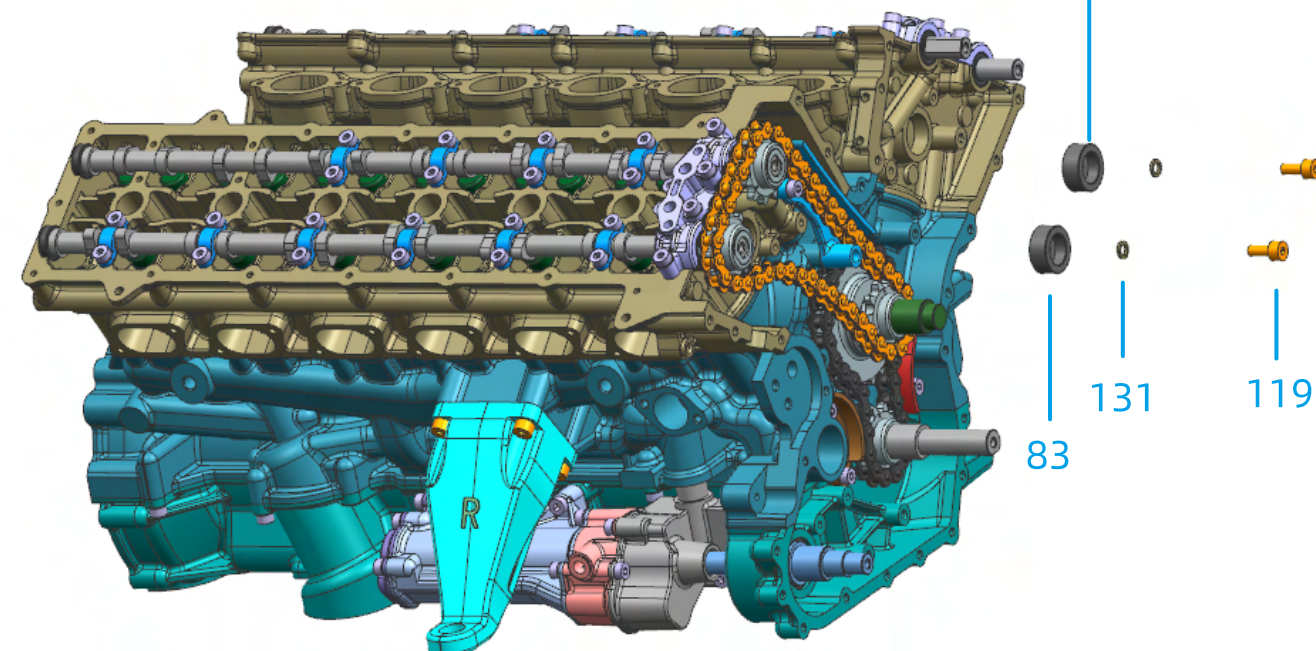


8.10 组装右缸盖链条 Assemble Right Cylinder Head Chain

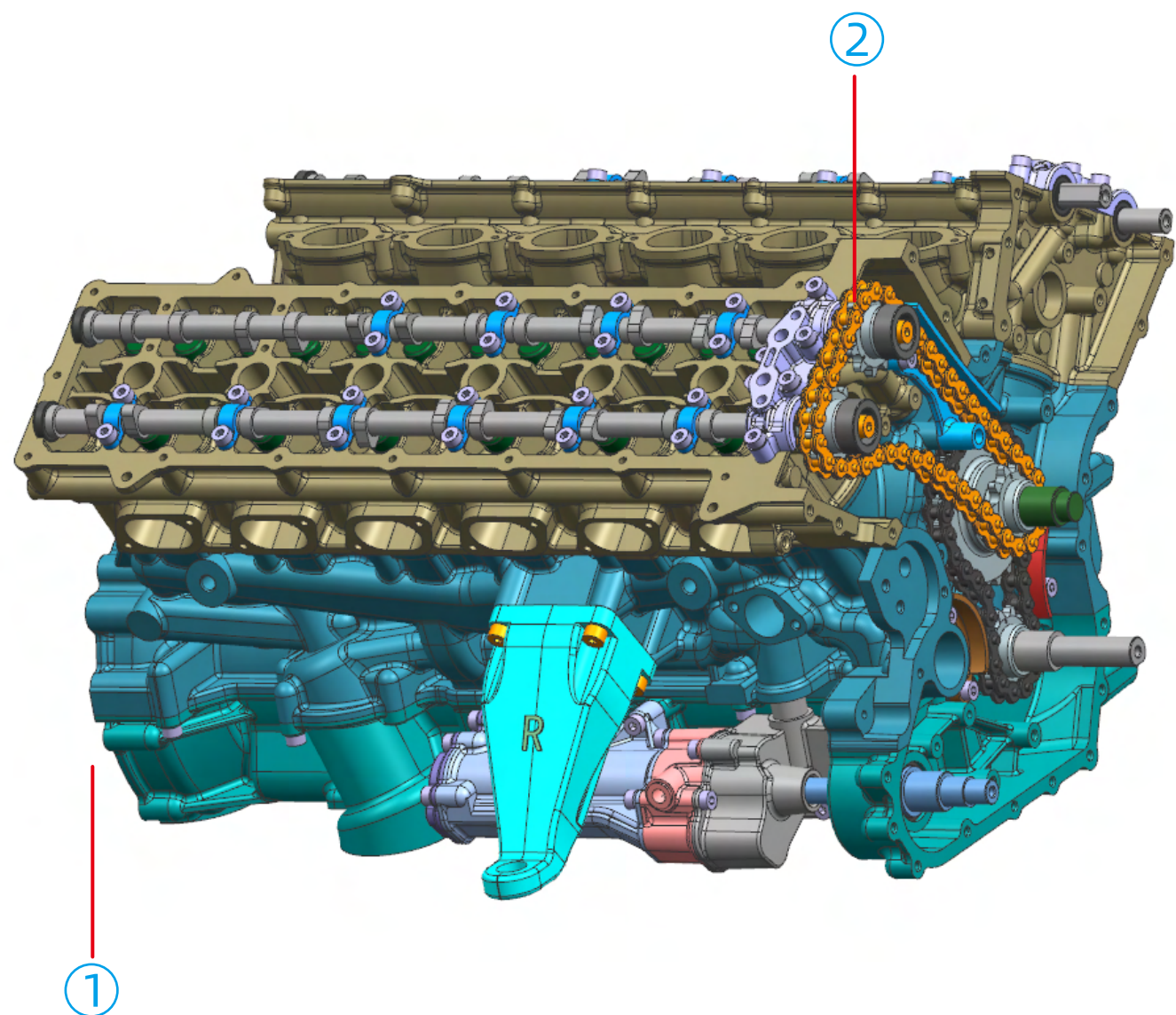


8.11 组装链轮盖 Assemble Sprocket Cover

凹槽朝外
The groove faces outward

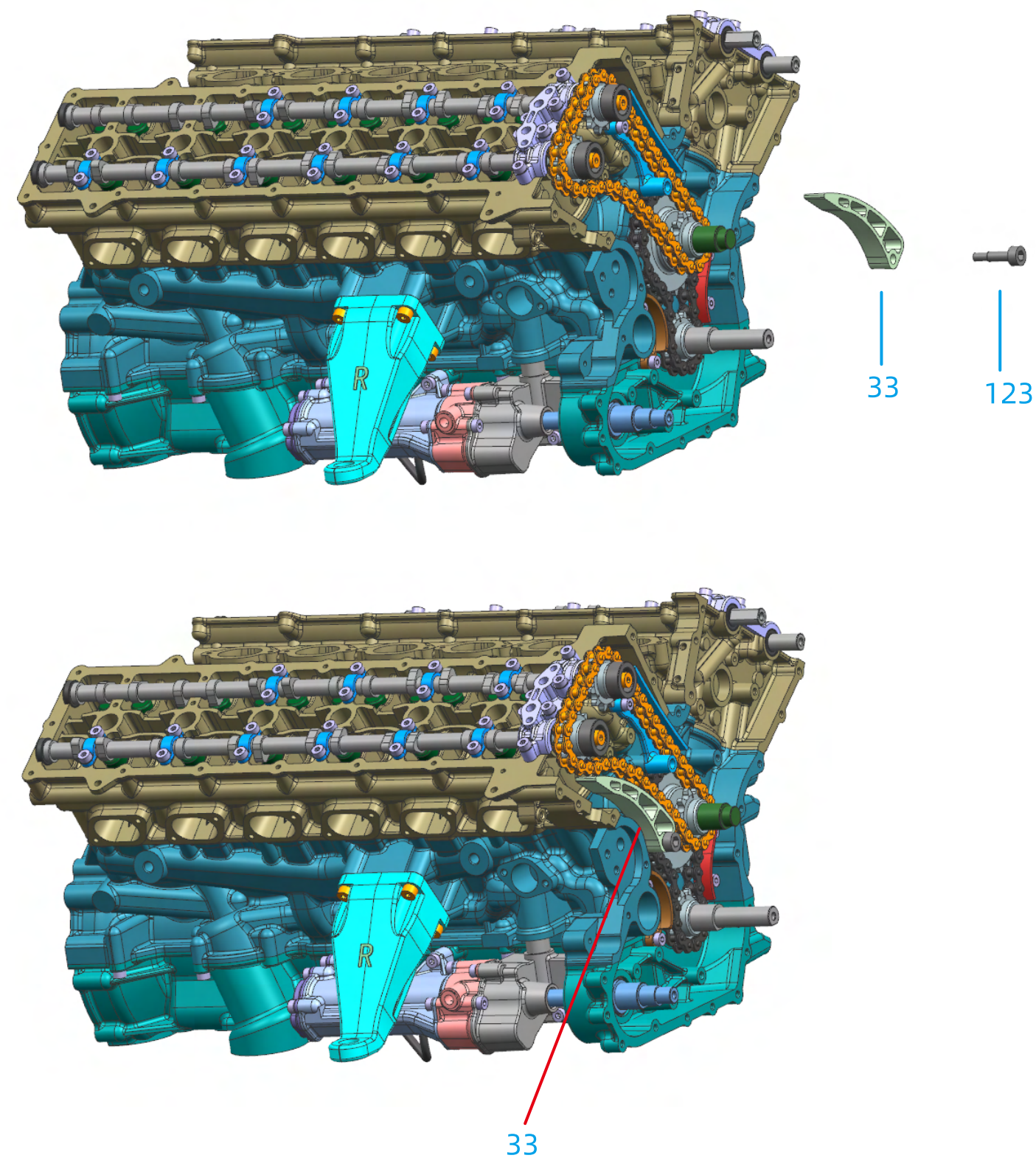


8.12 测试 Test

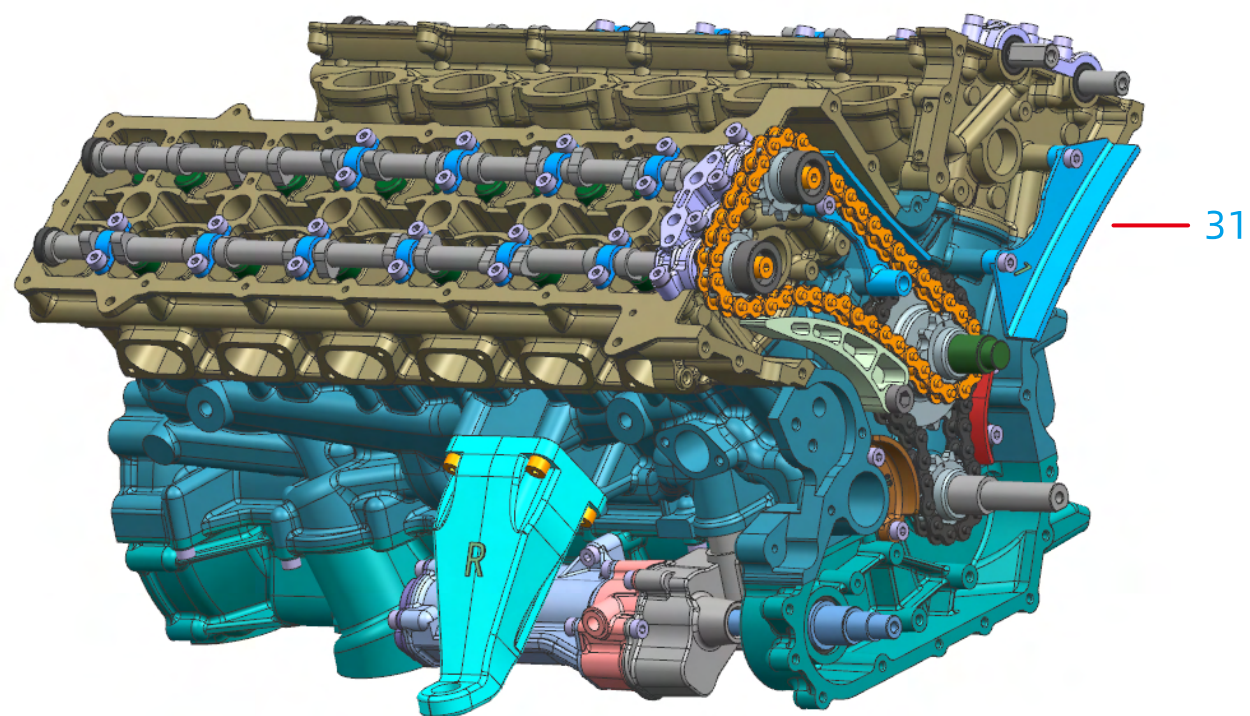
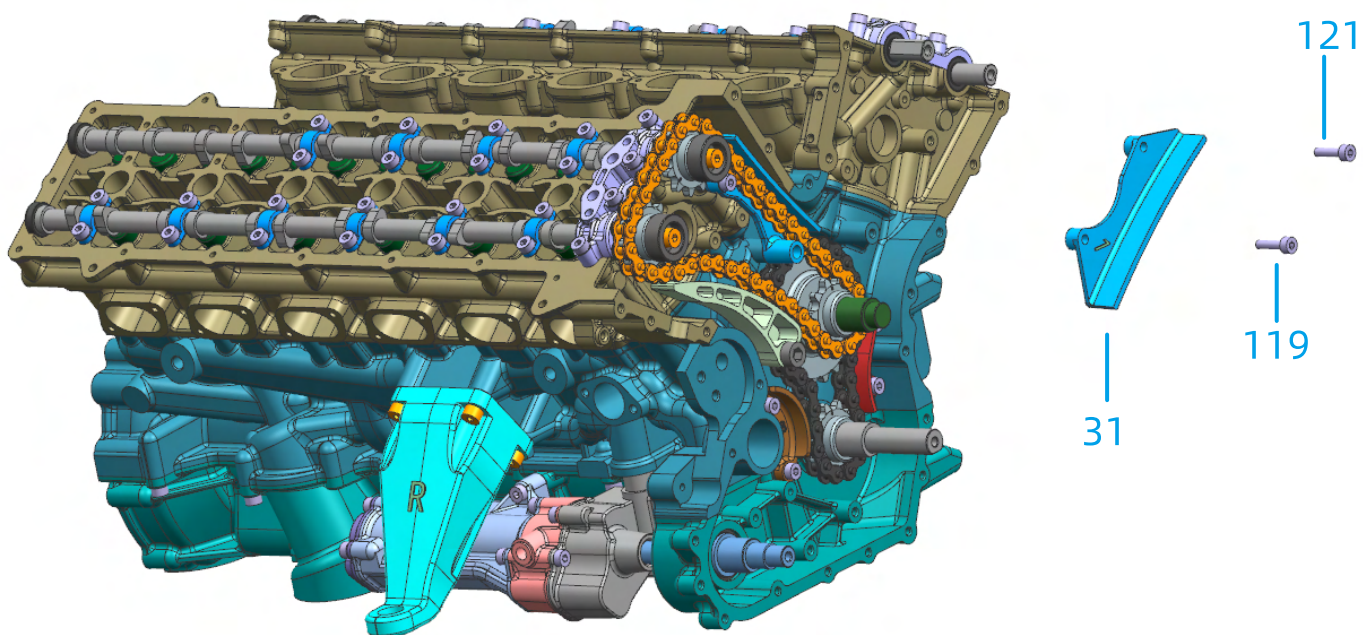


- 1、用手转动飞轮
- 2、观察链条是否正常顺畅转动
- 1、Turn the flywheel by hand
- 2、Observe whether the chain rotates normally and smoothly

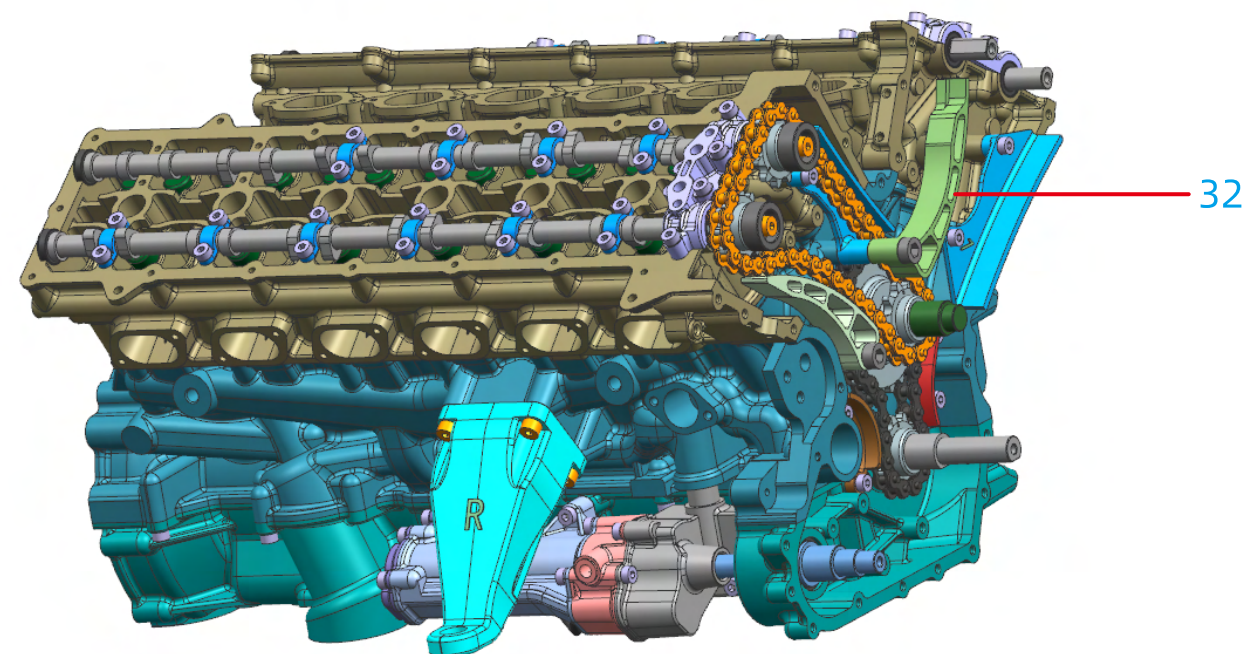
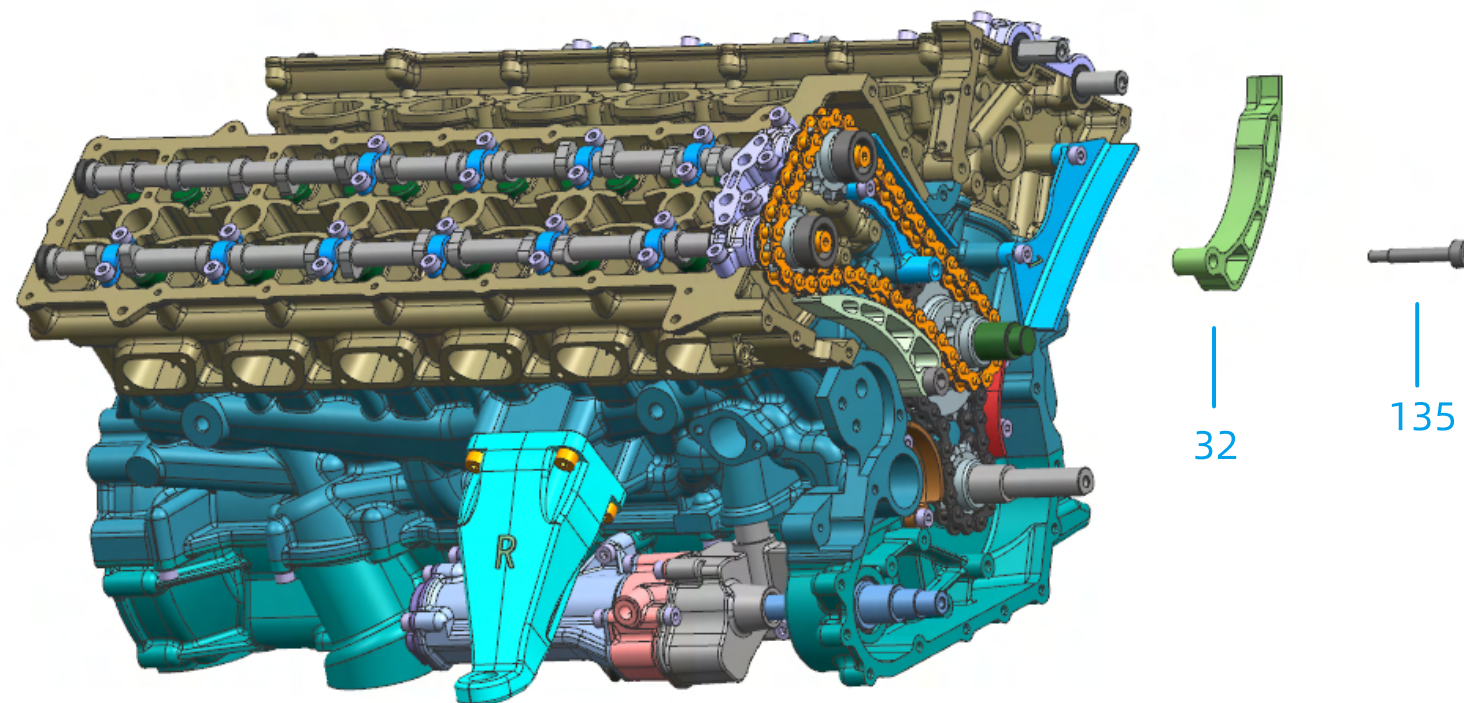
8.13 组装3号链条导向块 Assemble No.3 Chain Guide Block



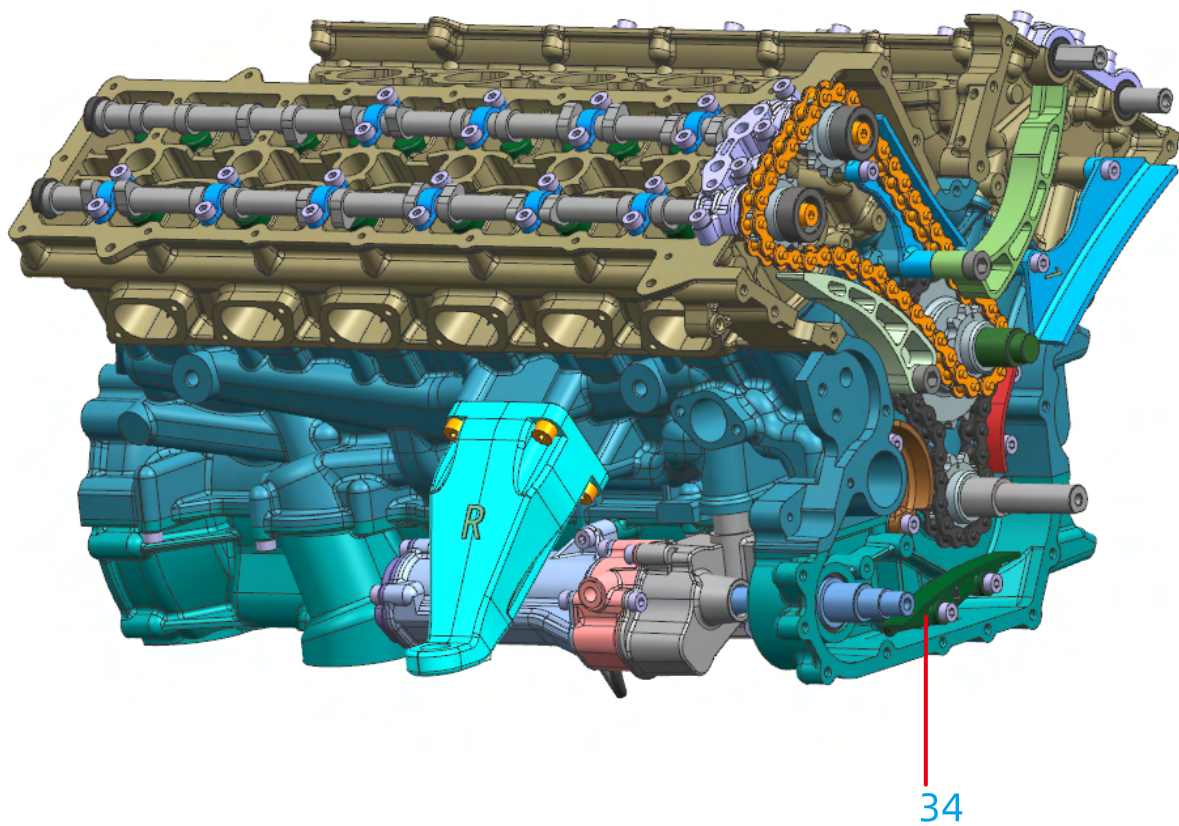
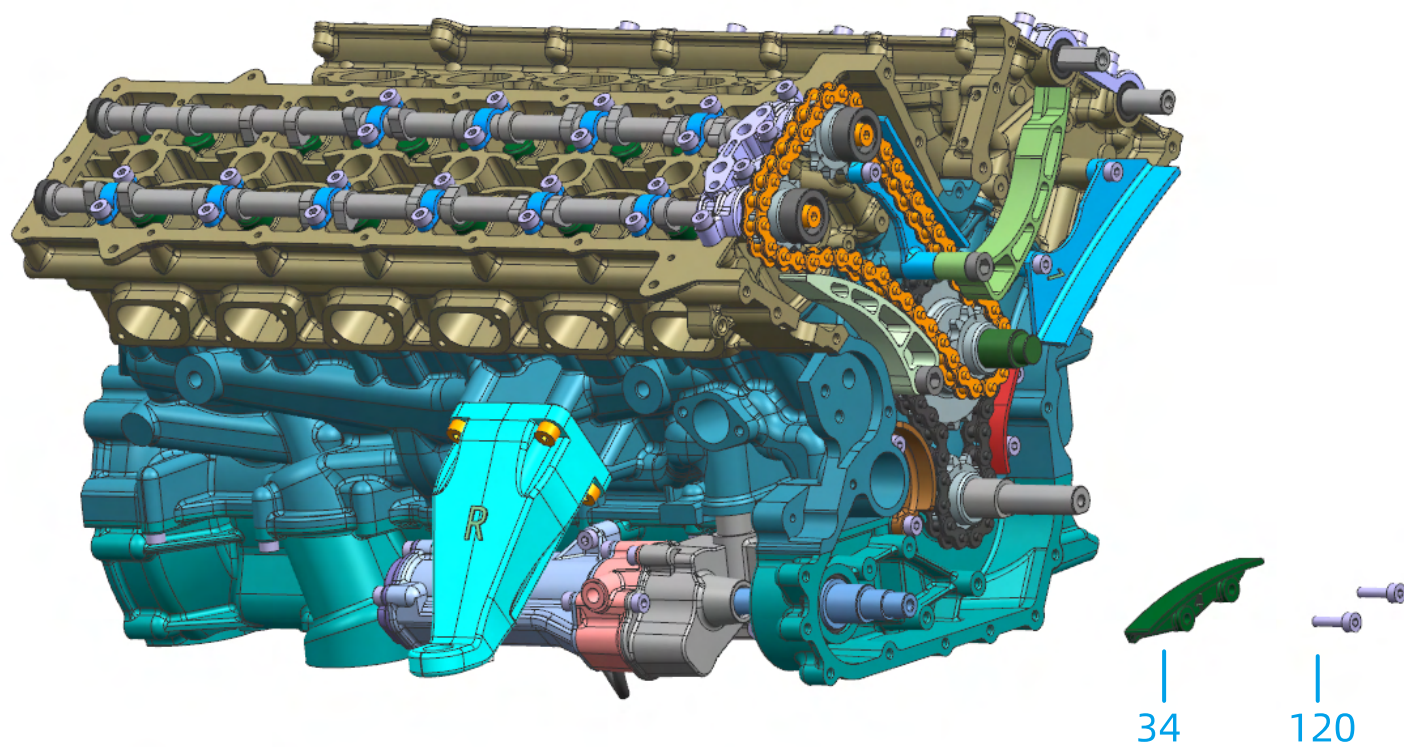
8.14 组装1号链条导向块 Assemble No.1 Chain Guide Block



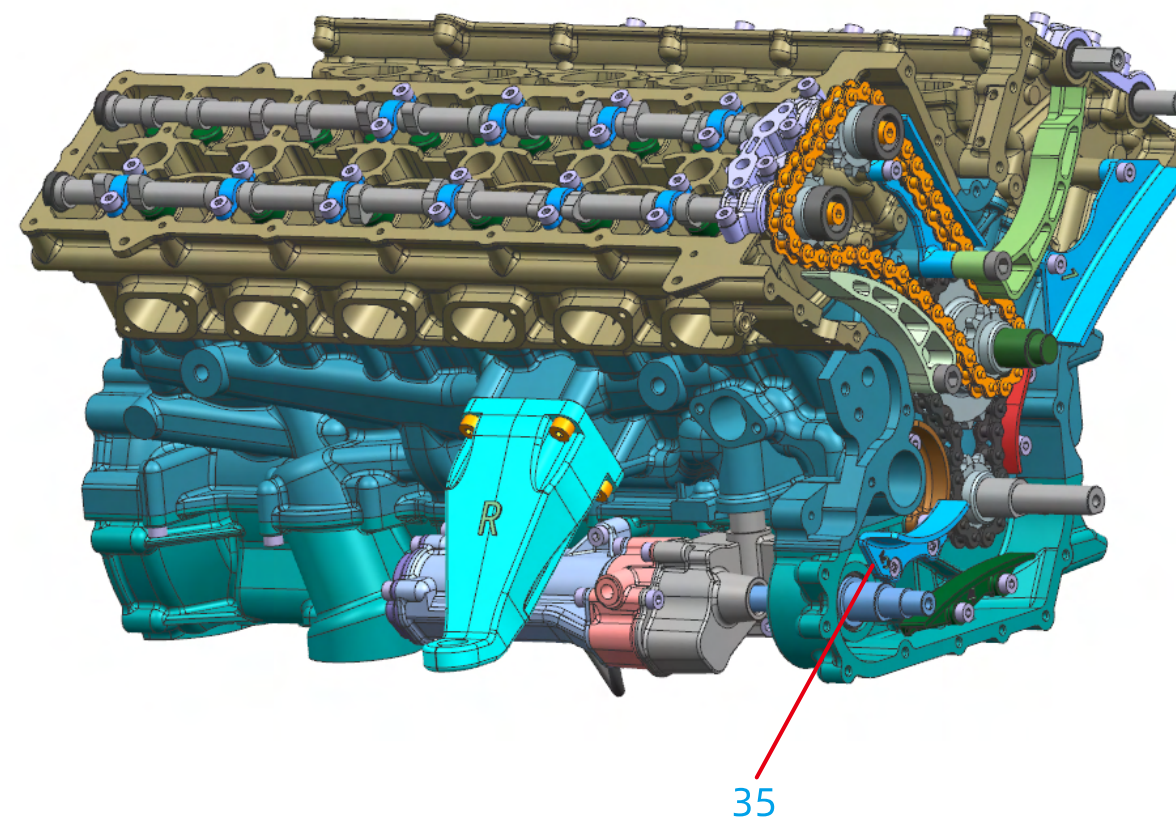
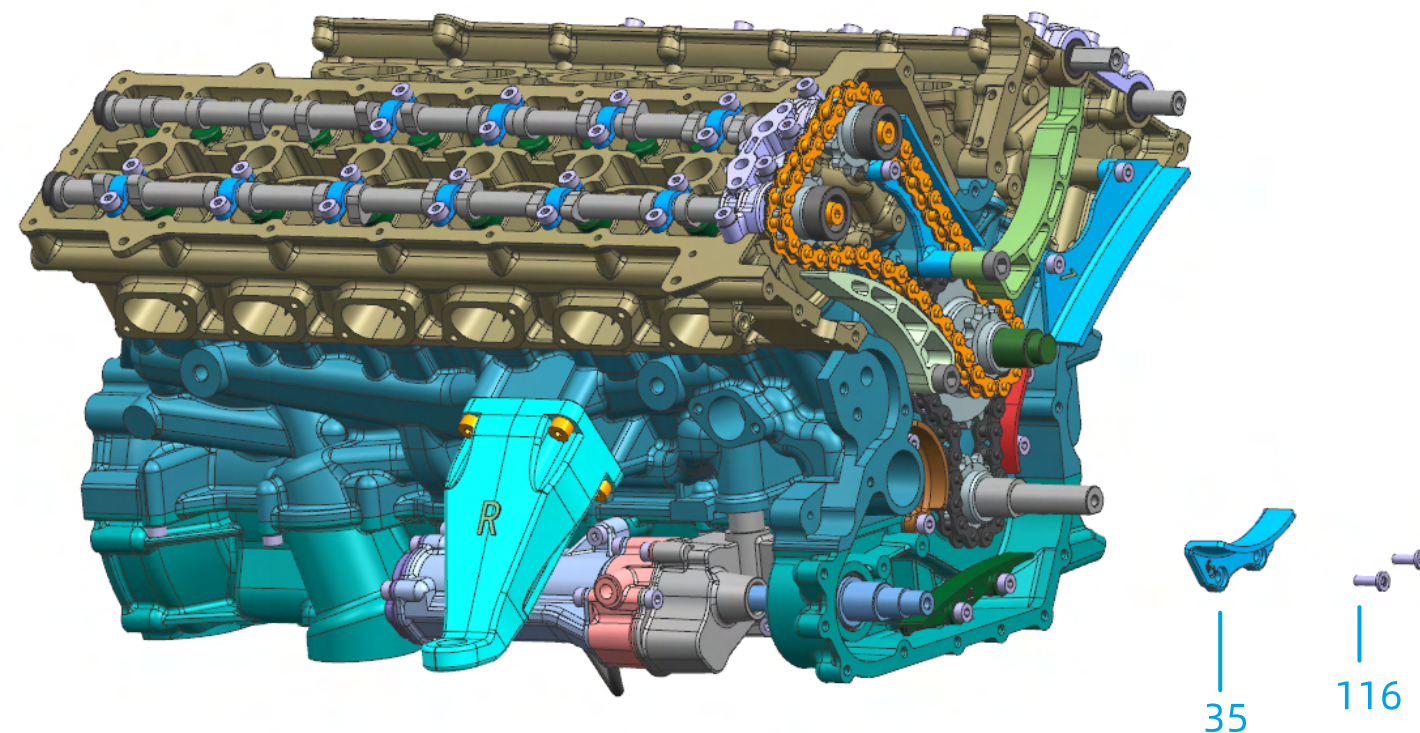
8.15 组装2号链条导向块 Assemble No.2 Chain Guide Block



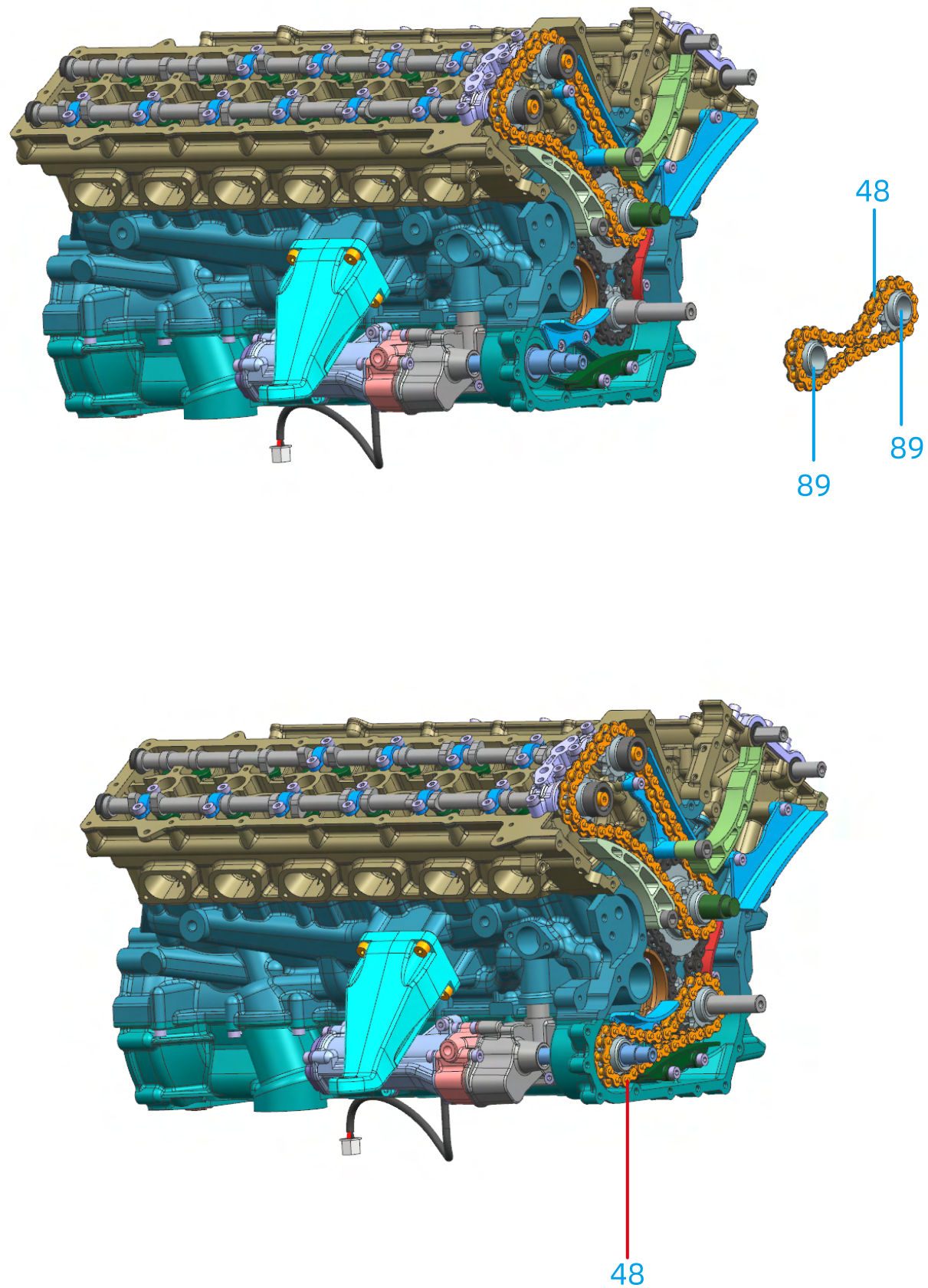
8.16 组装4号链条导向块 Assemble No.4 Chain Guide Block



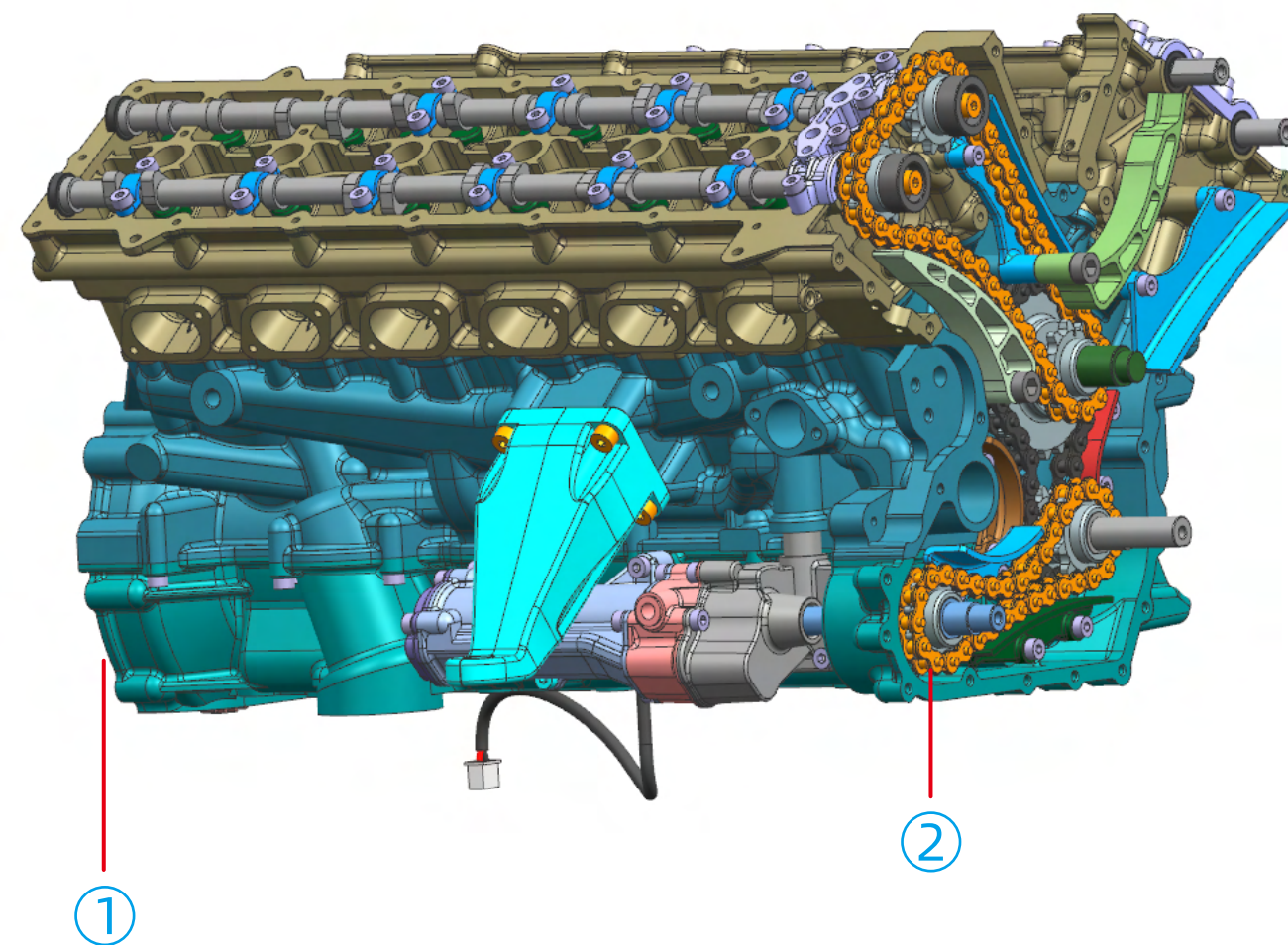
8.17 组装5号链条导向块 Assemble No.5 Chain Guide Block



8.18 组装机油泵链条 Assemble Oil Pump Chain

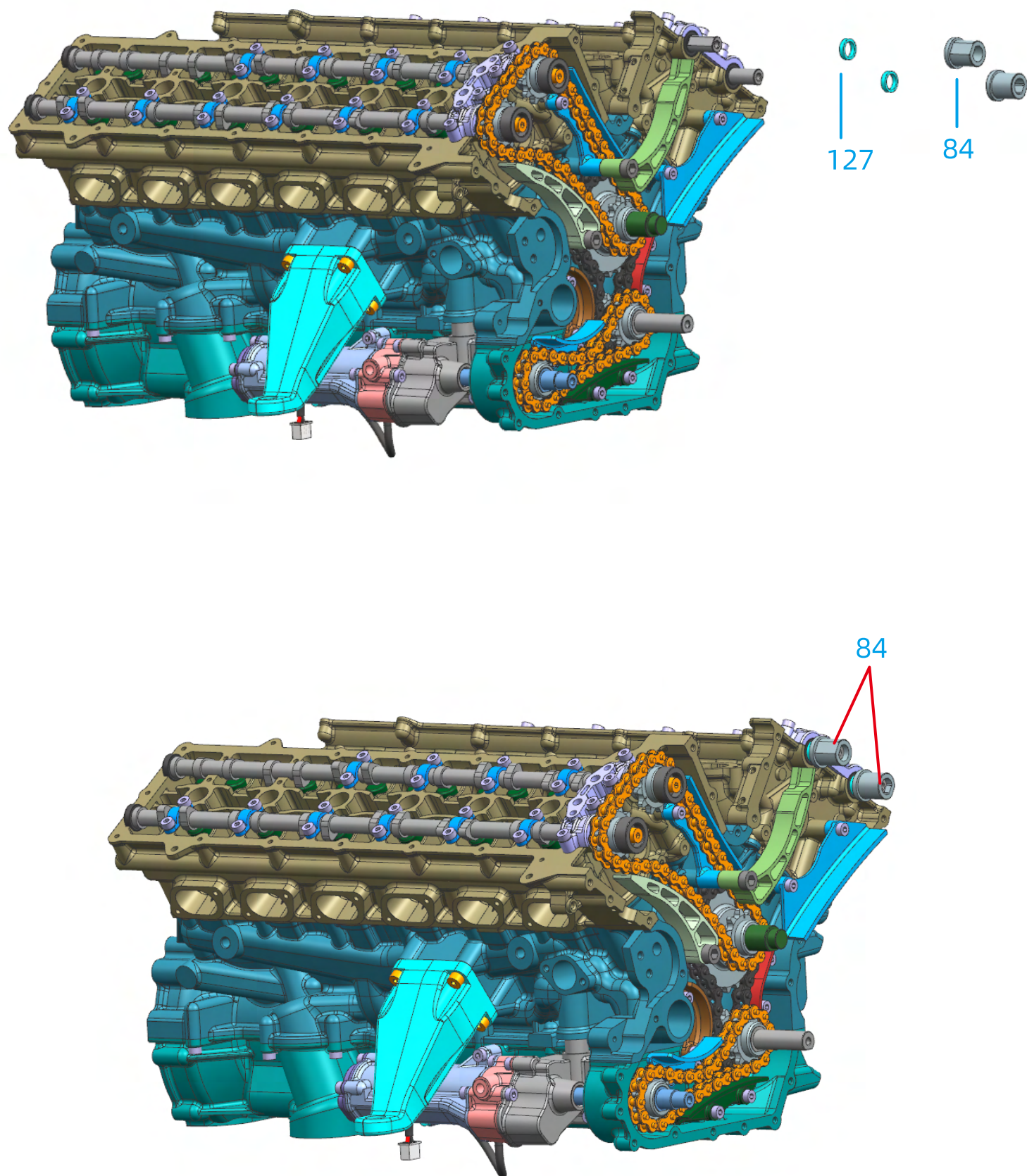


8.19 测试 Test

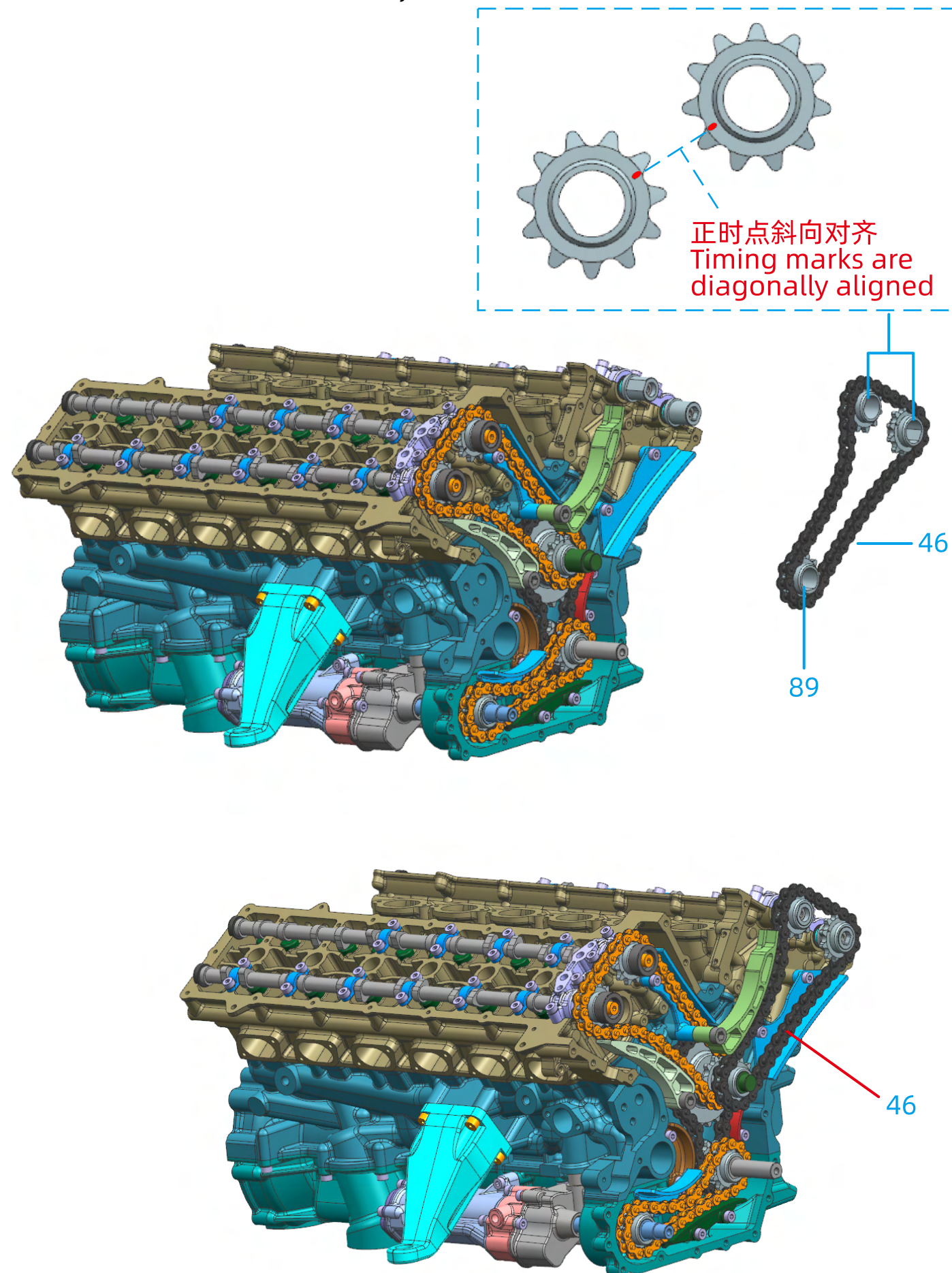


- 1、用手转动飞轮
- 2、观察链条是否正常顺畅转动
- 1、Turn the flywheel by hand
- 2、Observe whether the chain rotates normally and smoothly

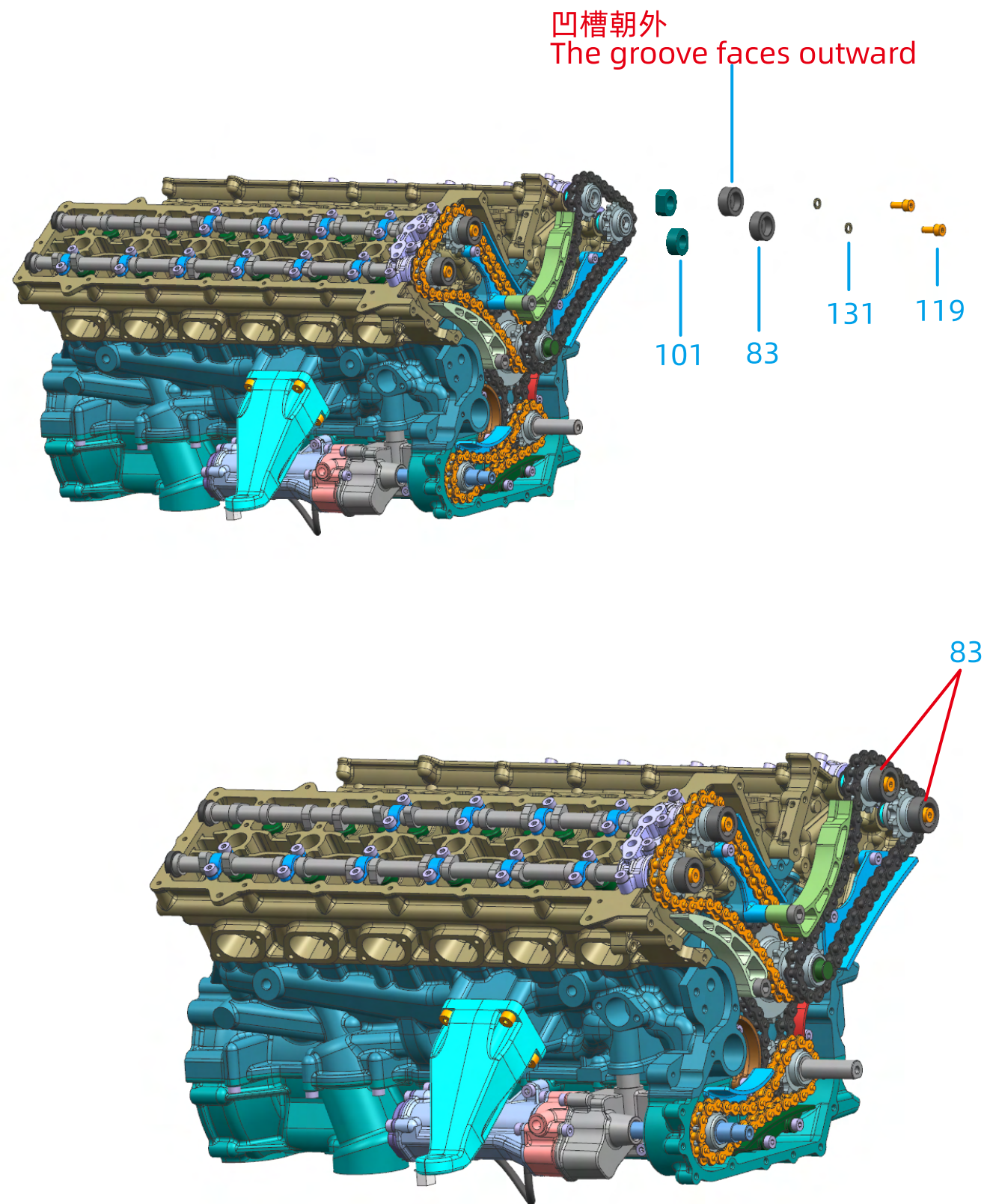
8.20 组装左缸体凸轮连接套 Assemble Left Cylinder Block Cam Connecting Sleeve



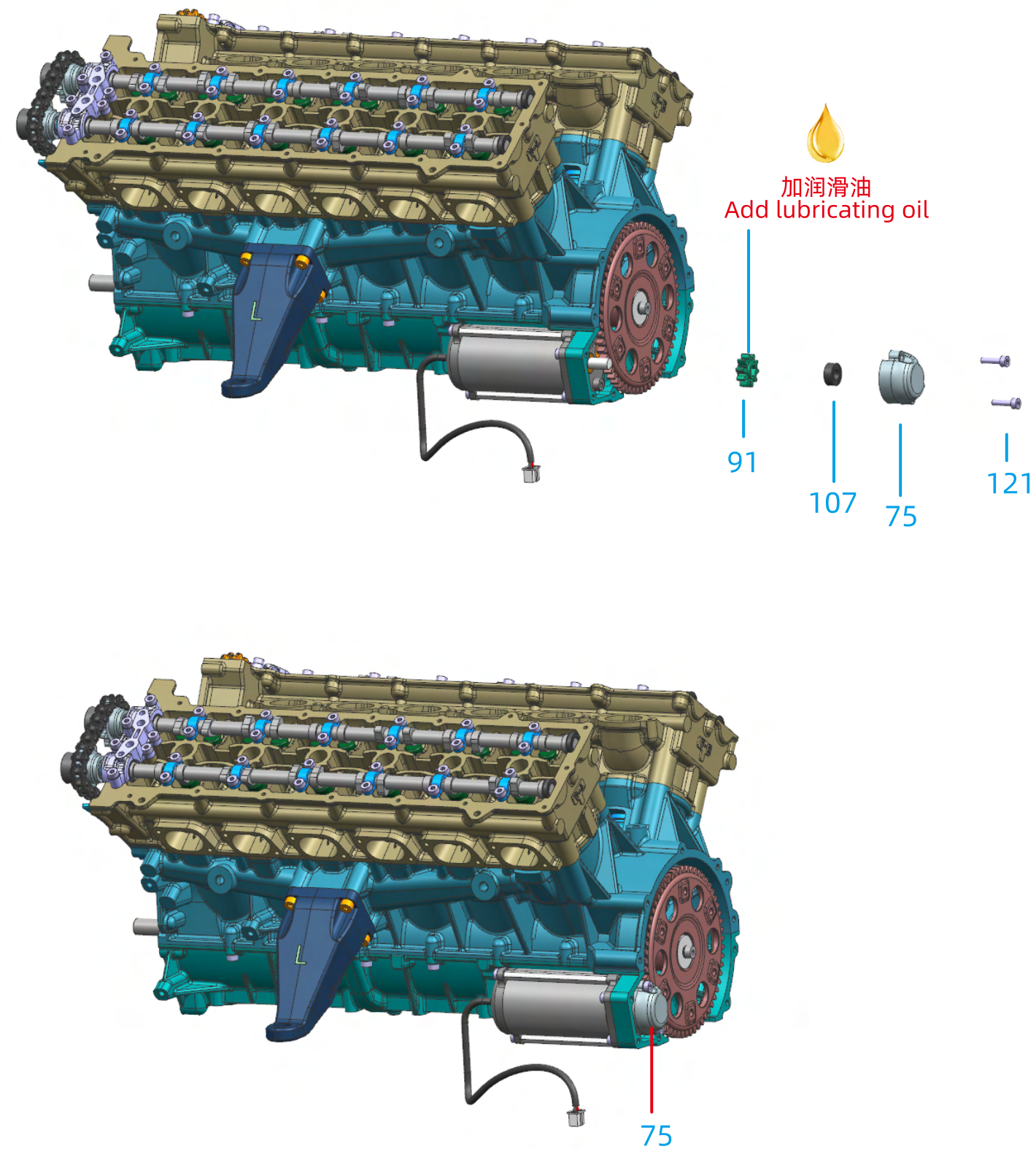
8.21 组装左缸盖链条 Assemble Left Cylinder Head Chain



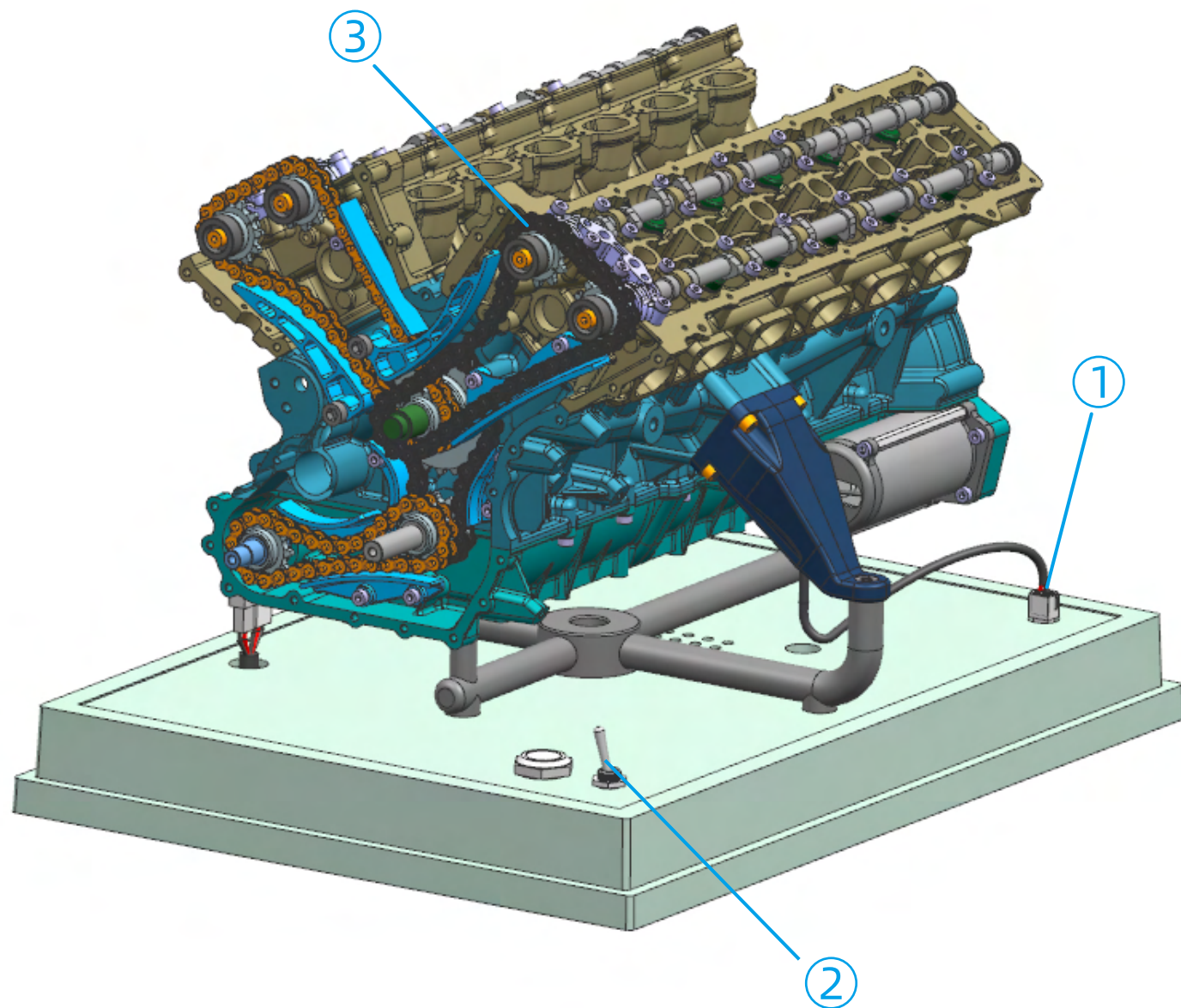
8.22 组装链轮盖 Assemble Sprocket Cover



8.23 组装启动机齿轮罩 Assemble Starter Gear Cover

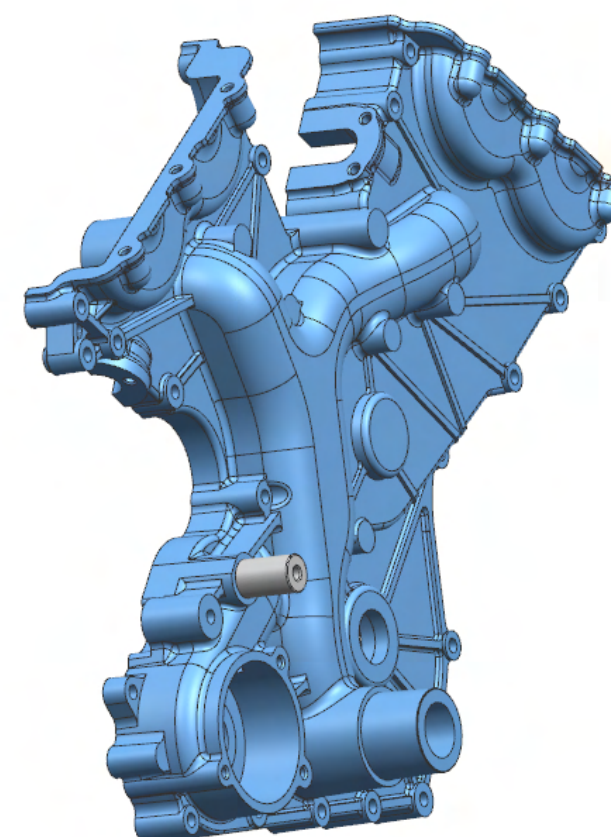
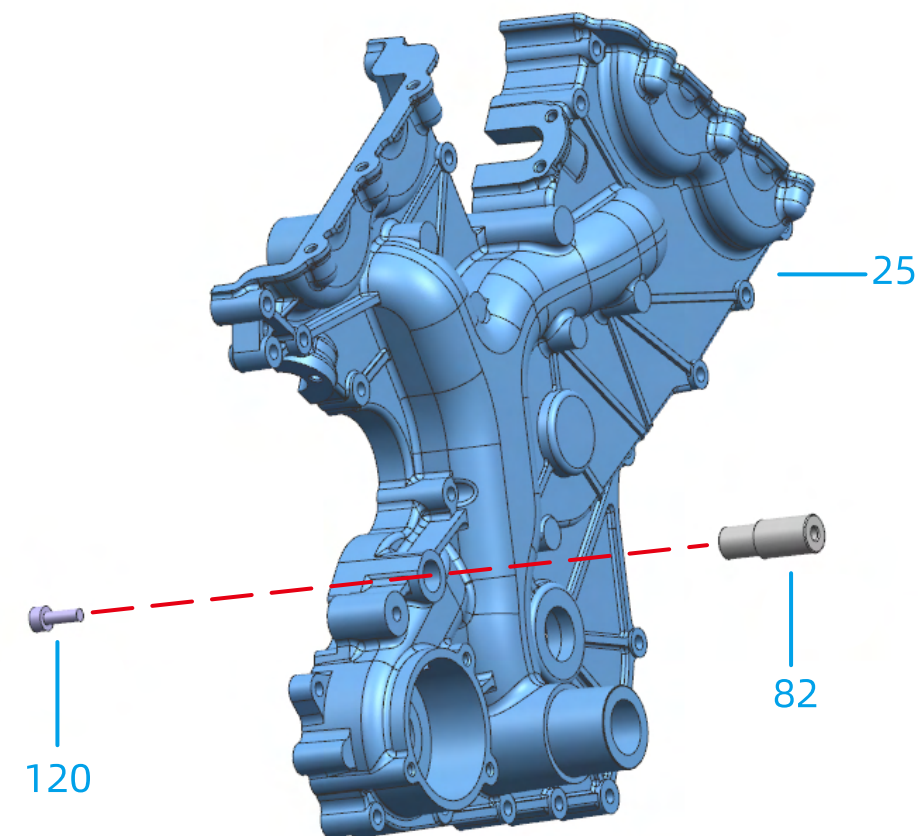


8.24 测试 Test

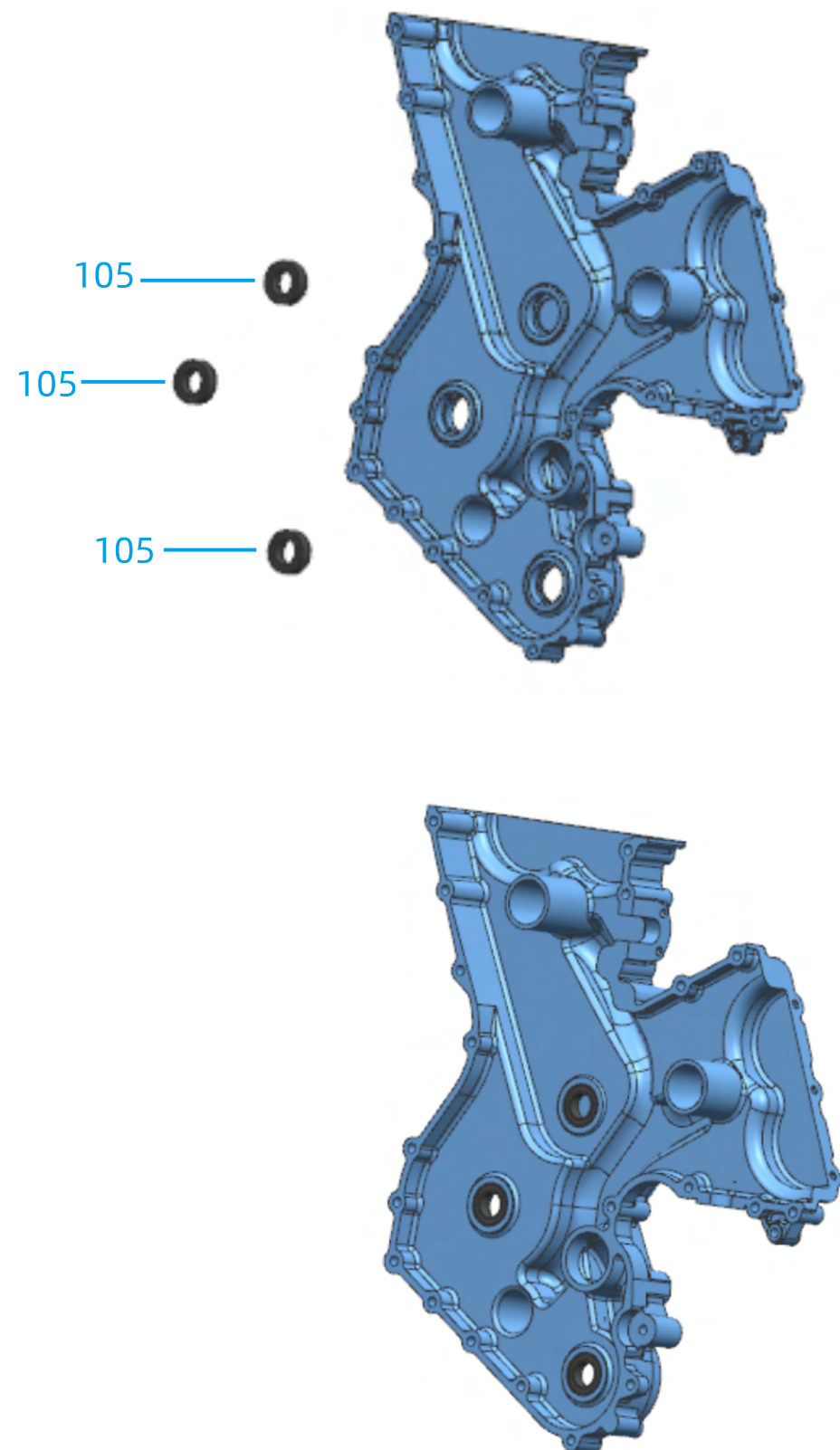


- 1、链接电机线
- 2、拨动开关
- 3、观察链条是否正常顺畅转动
- 1、Connect the motor wire
- 2、Toggle switch
- 3、Observe whether the chain rotates normally and smoothly

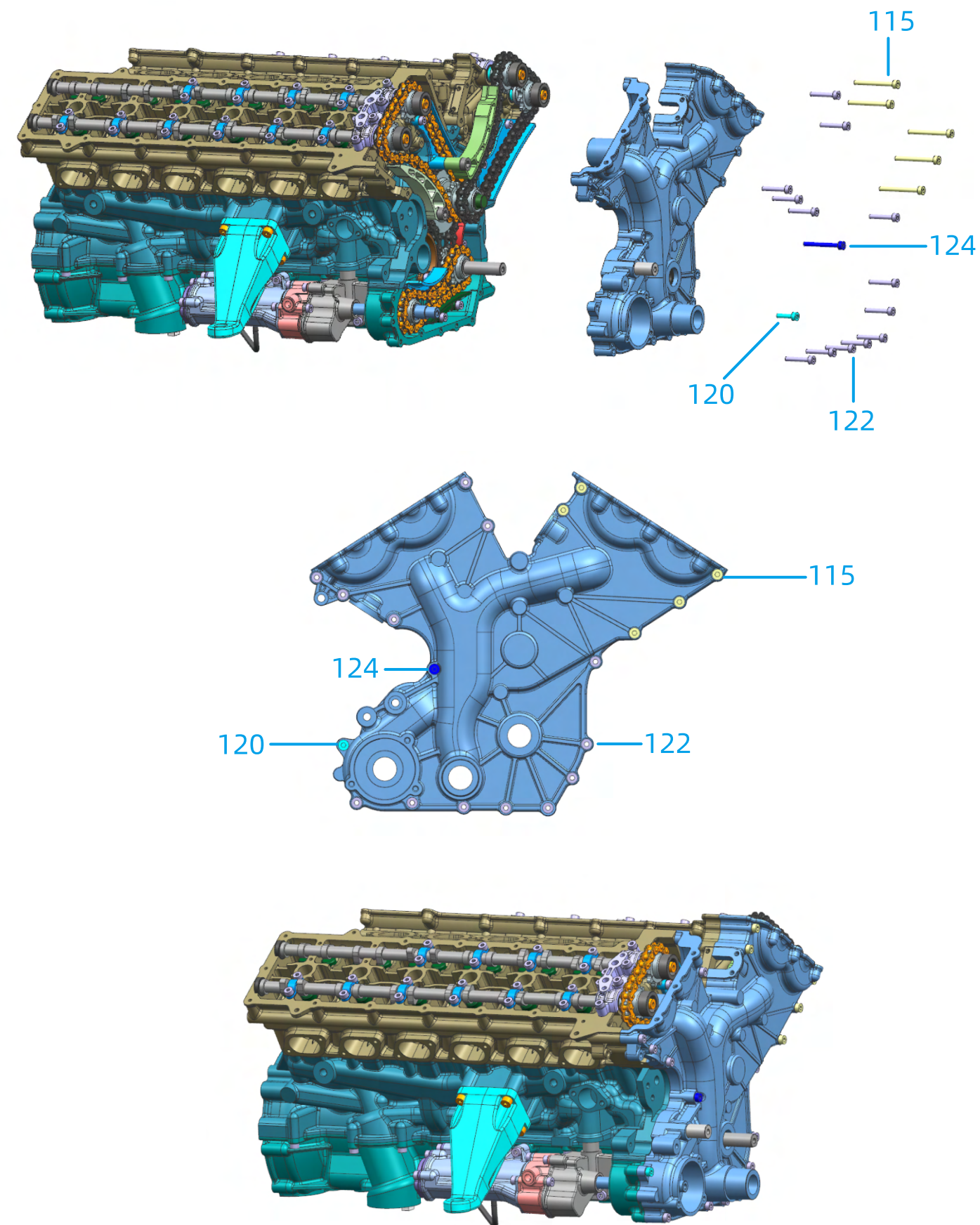
8.25 组装下张紧轮轴销 Assemble the Lower Tensioner Pulley Shaft Pin



8.26 组装链条盖轴承 Assemble Chain Cover Bearing

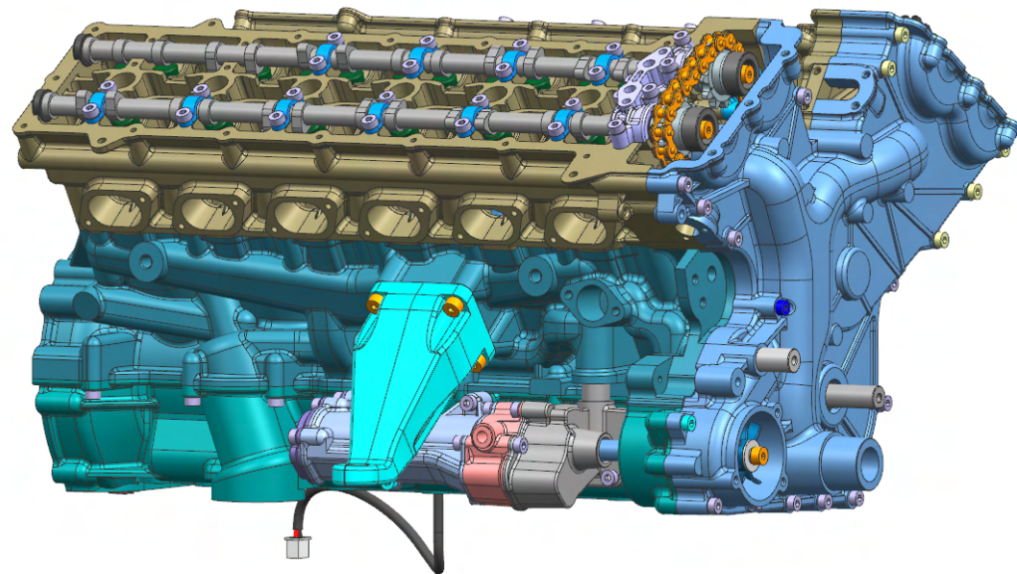
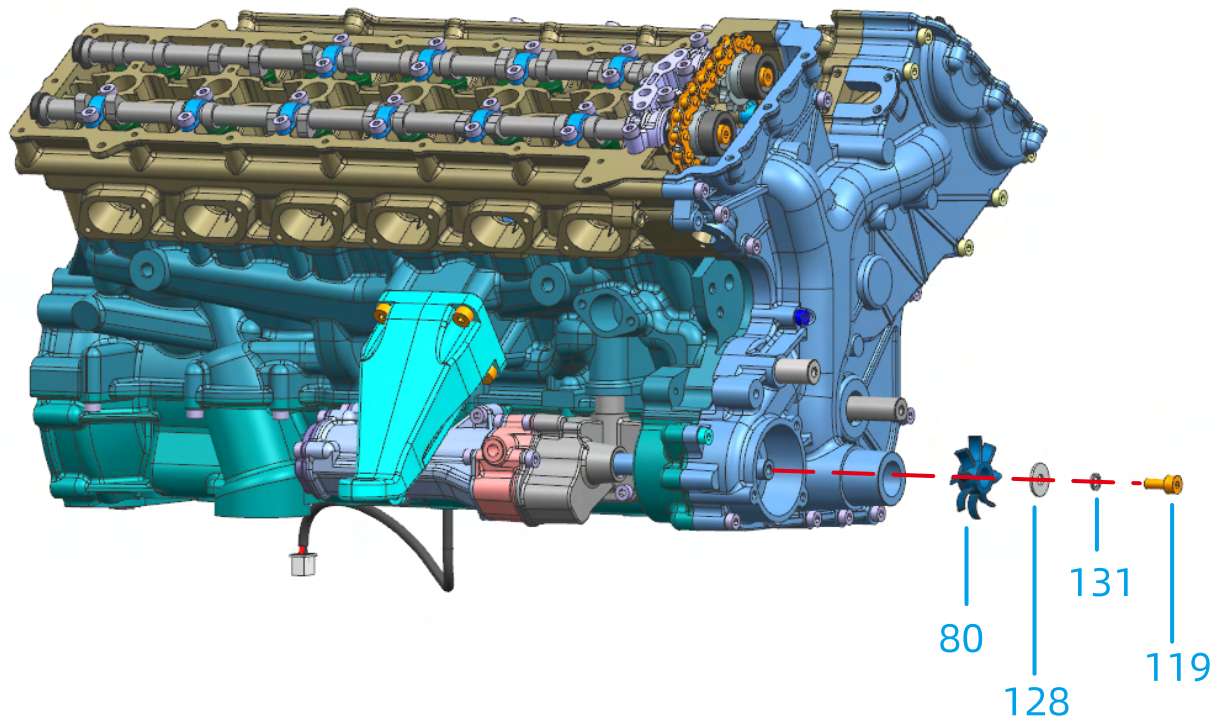


8.27 组装链条盖 Assemble the Chain Cover

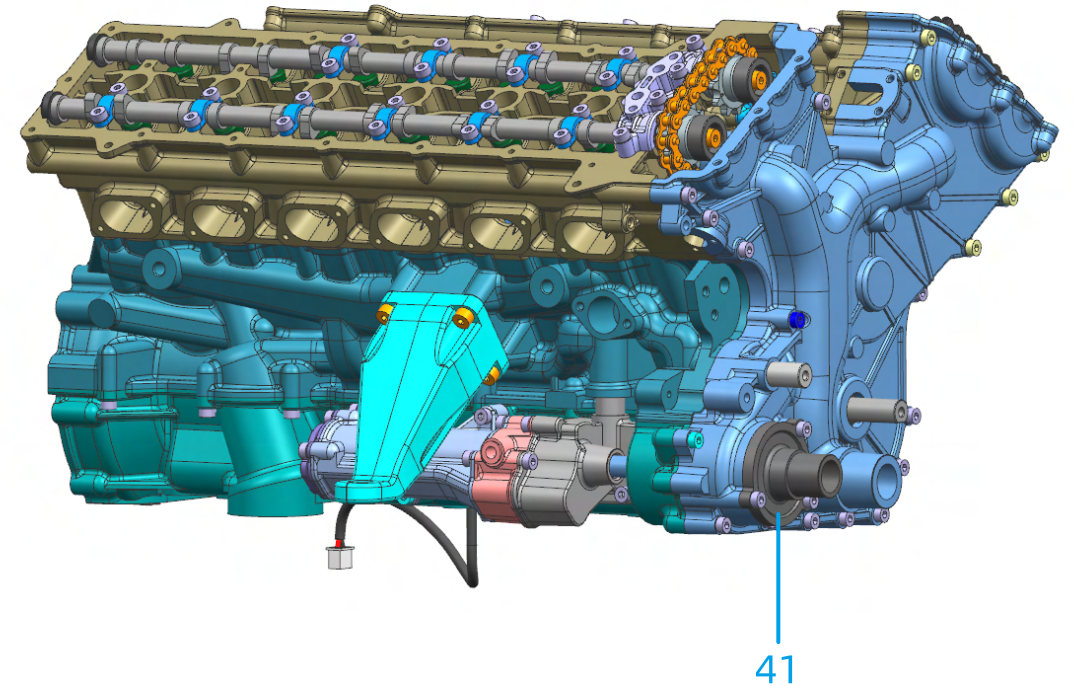
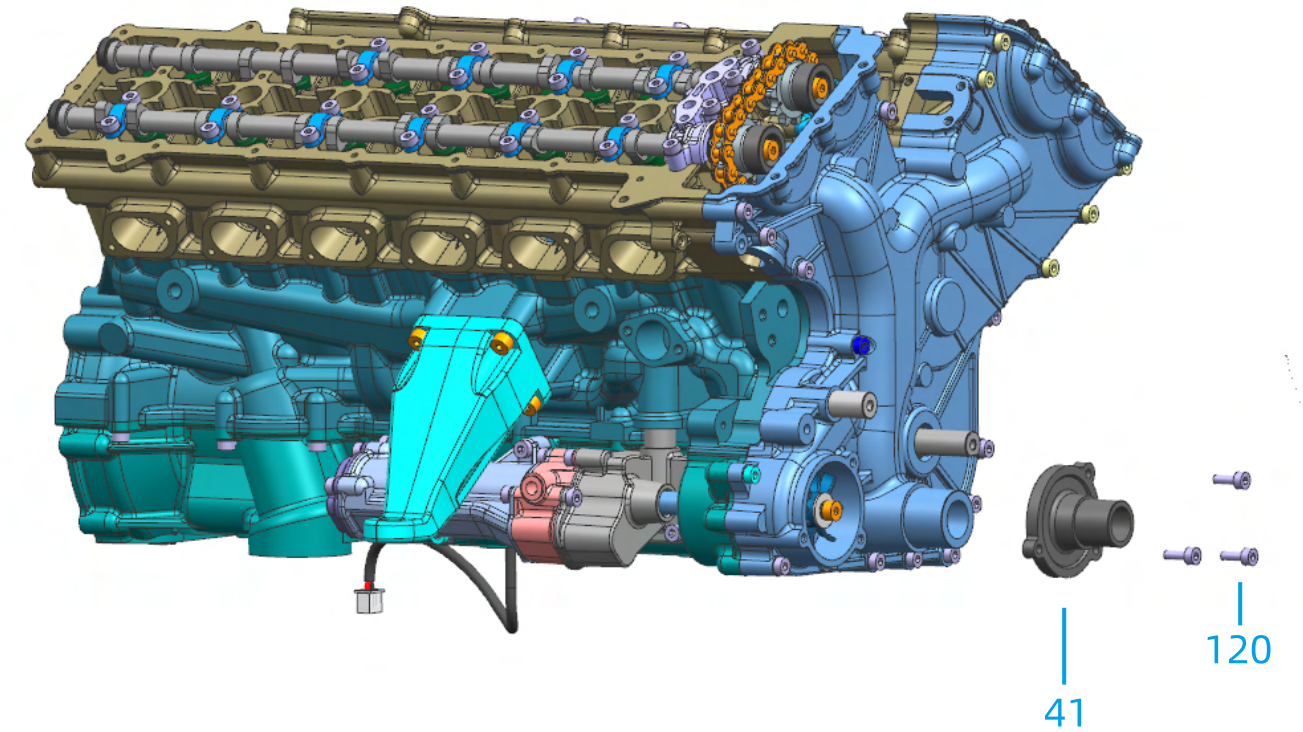


9.链条盖附件 Chain Cover Accessories

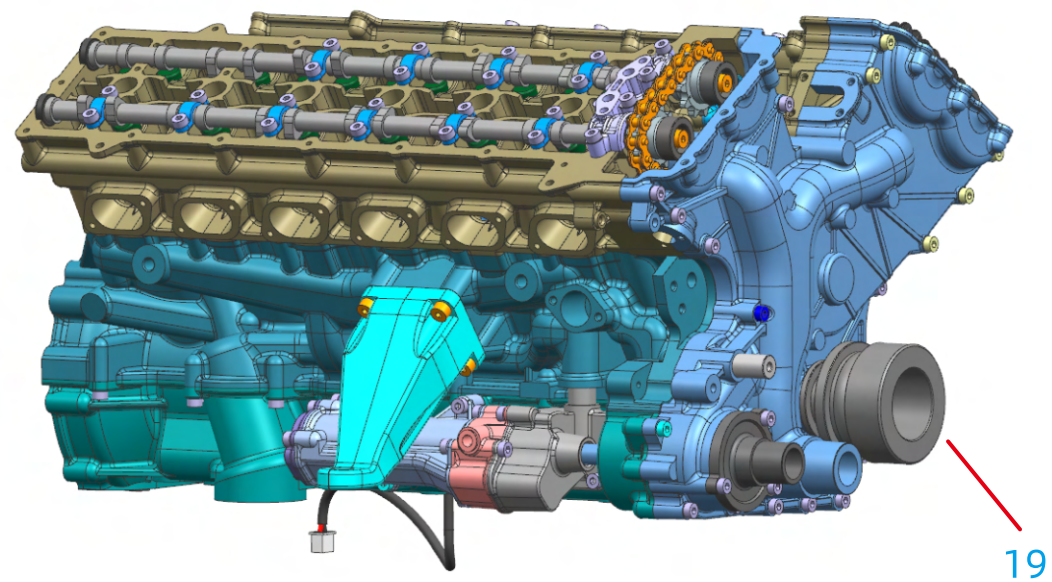
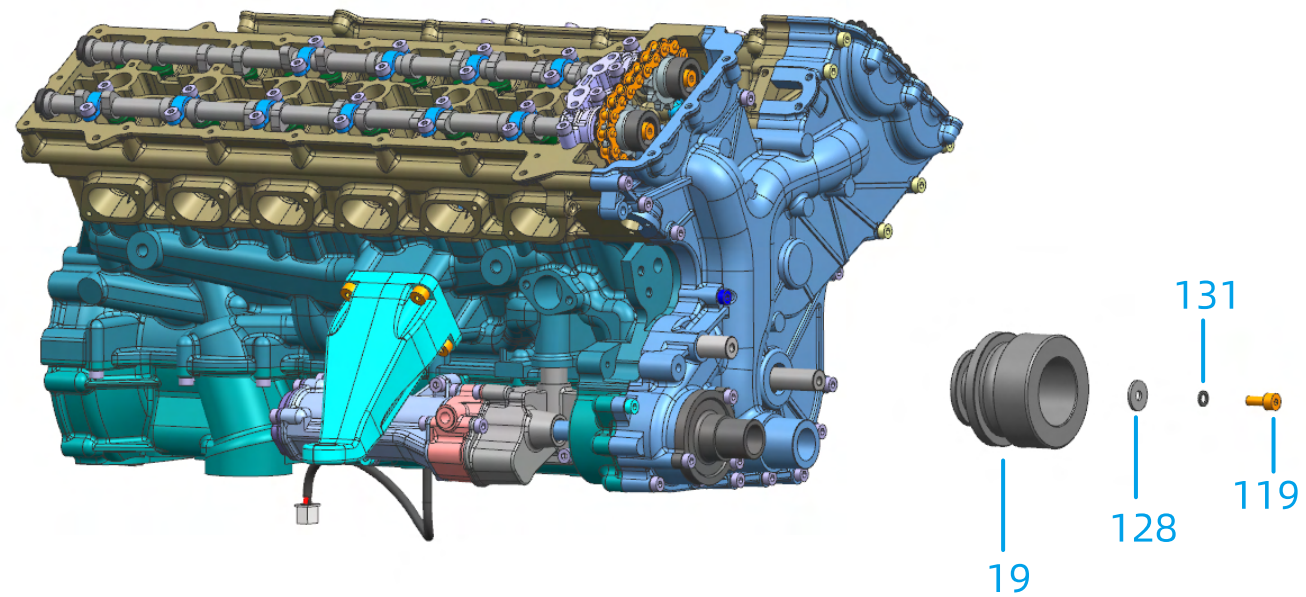
9.1 组装水泵叶轮 Assemble the Water Pump Impeller



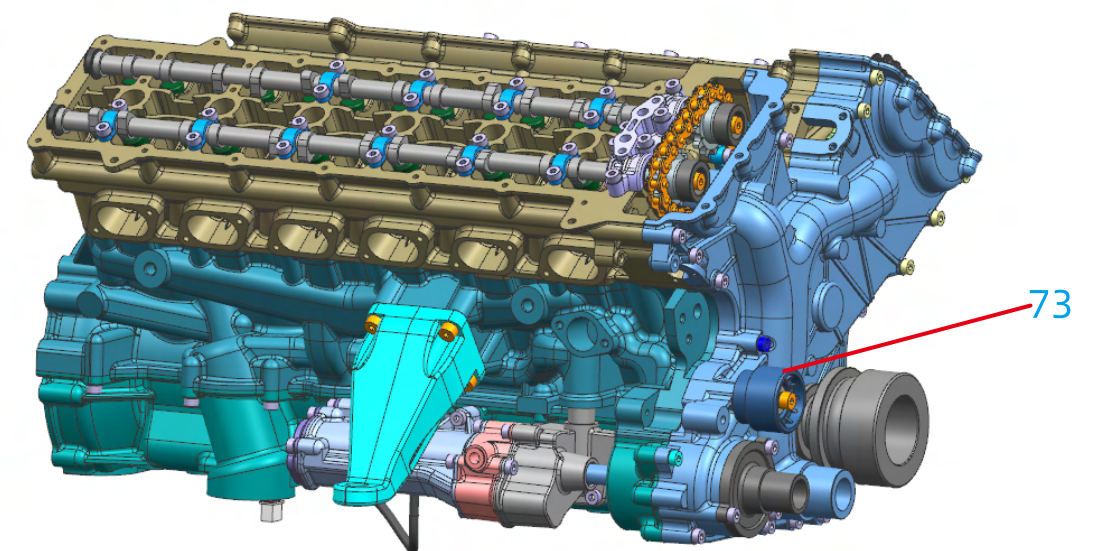
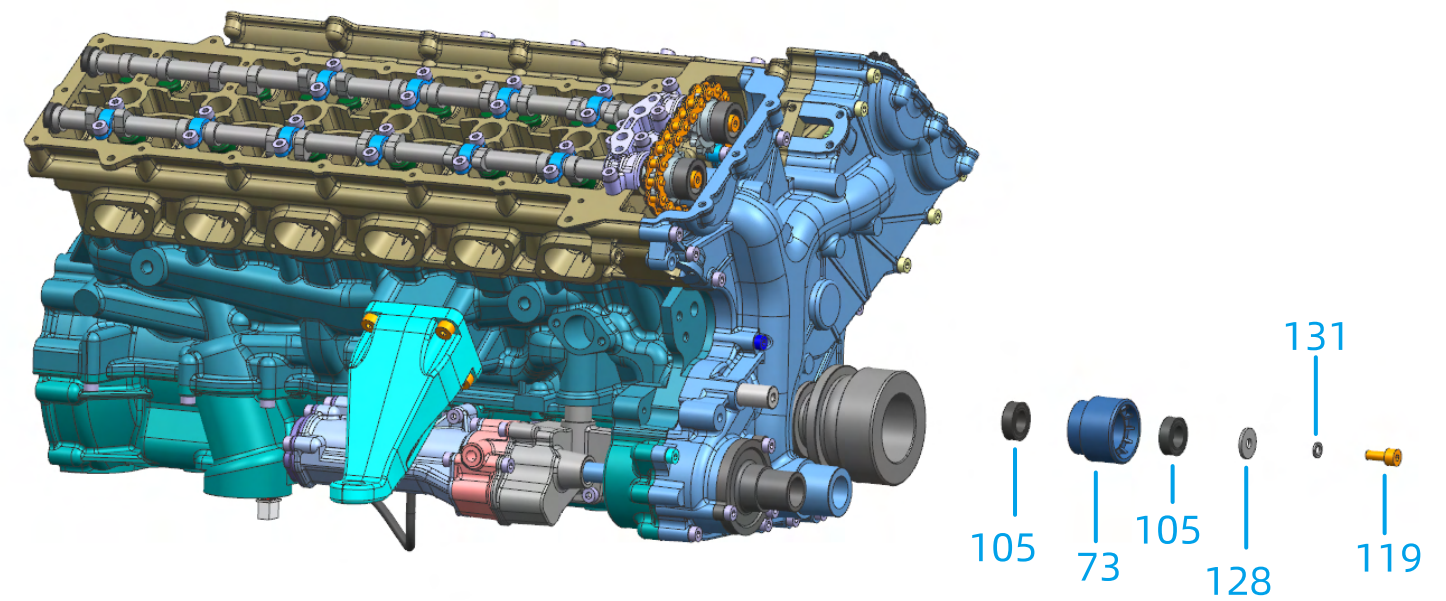
9.2 组装水泵端盖 Assemble the Water Pump End Cover



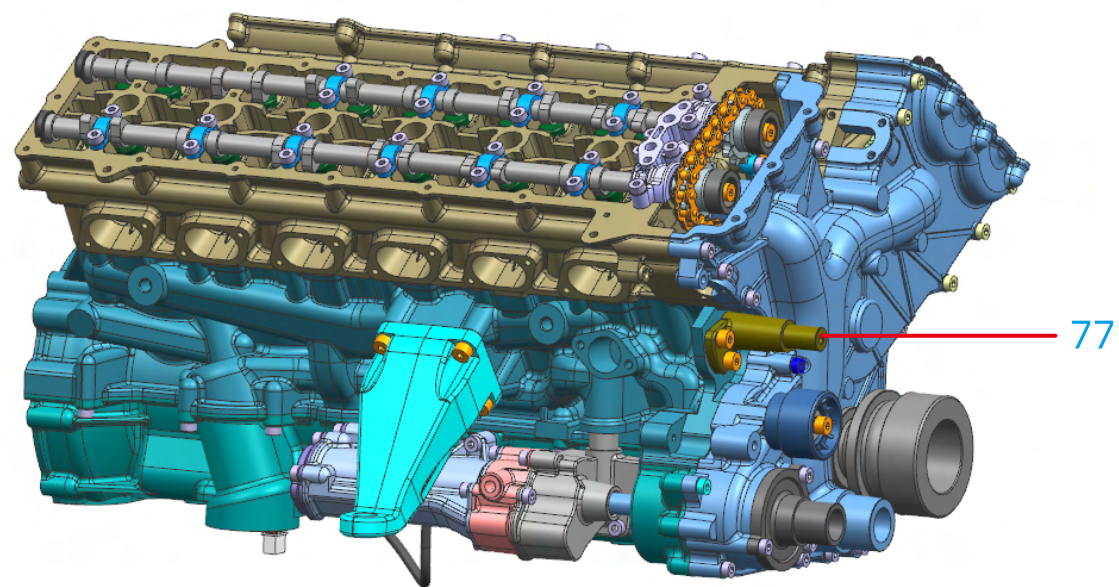
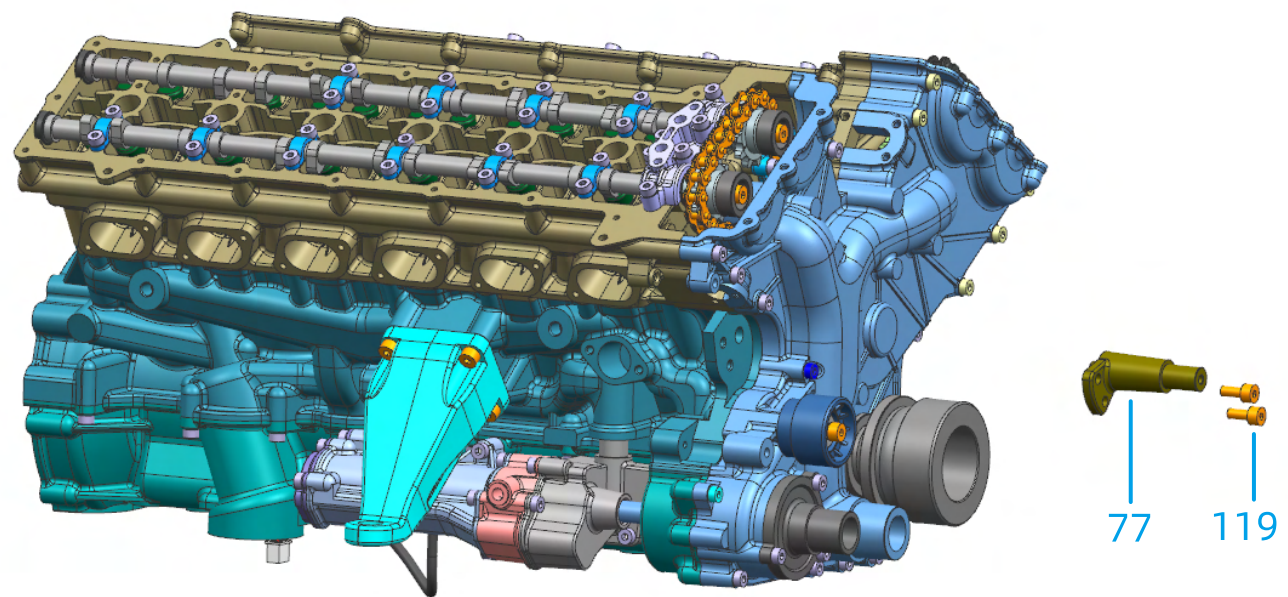
9.3 组装曲轴皮带轮 Assemble the Crankshaft Pulley



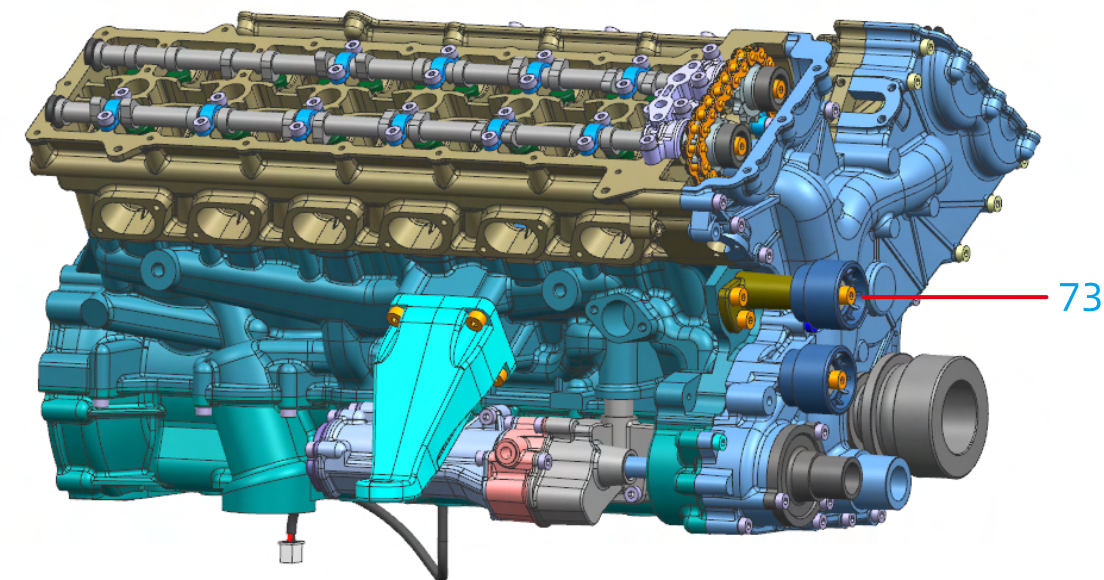
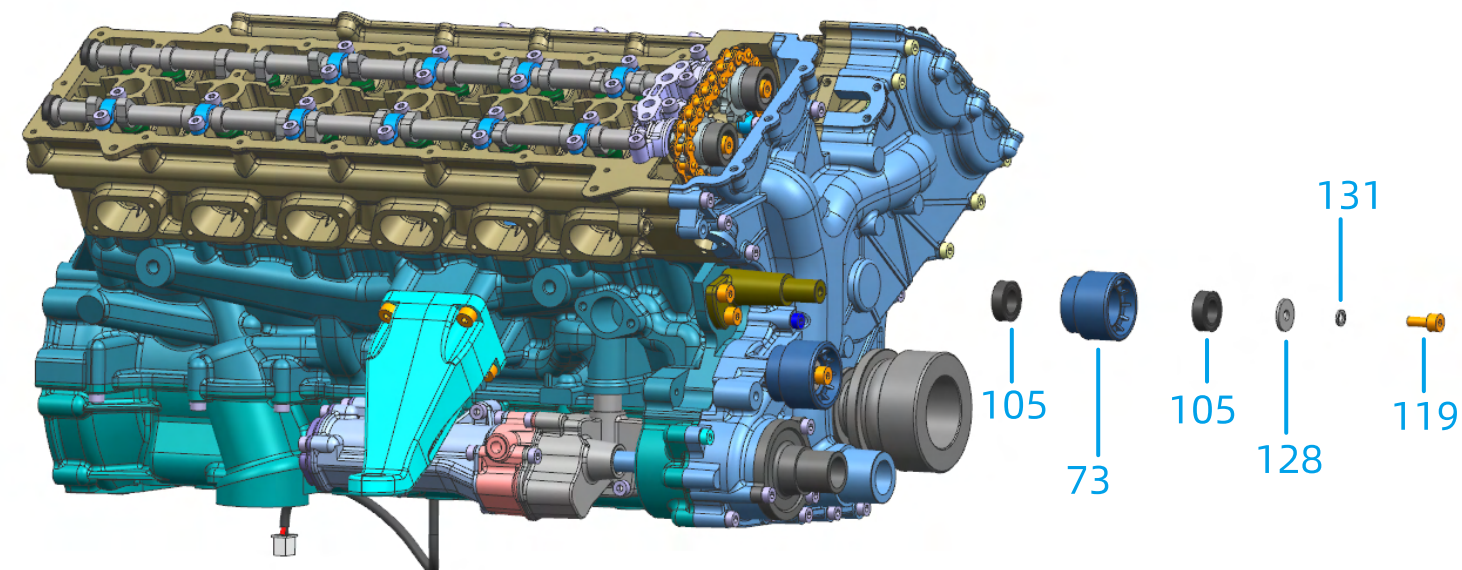
9.4 组装下张紧轮 Assembling the Next Tension Pulley



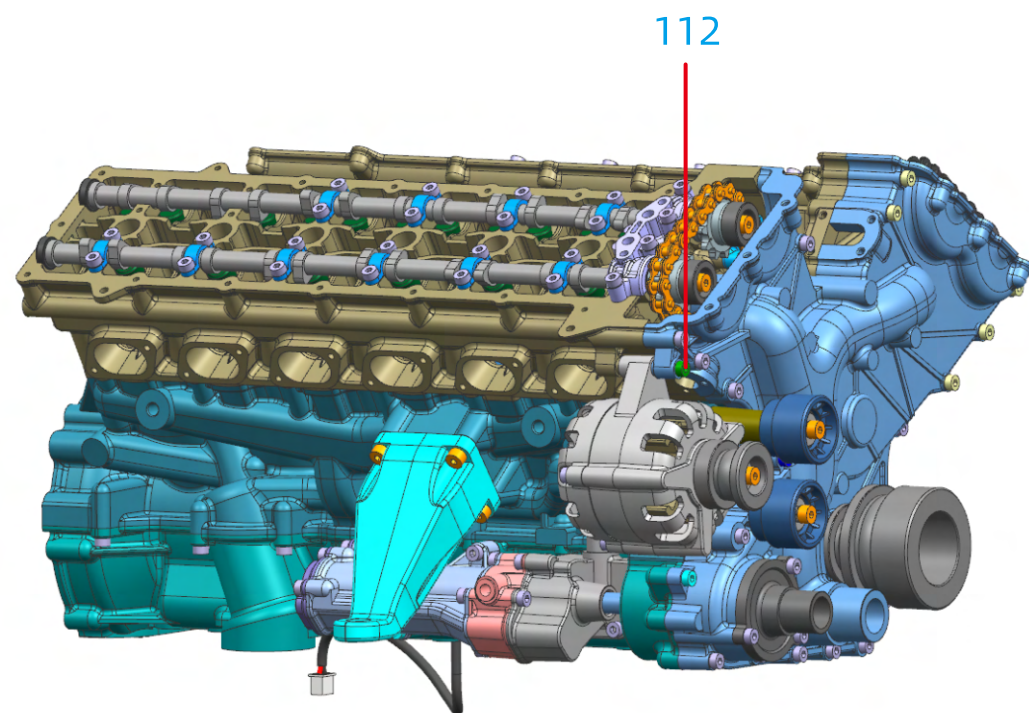
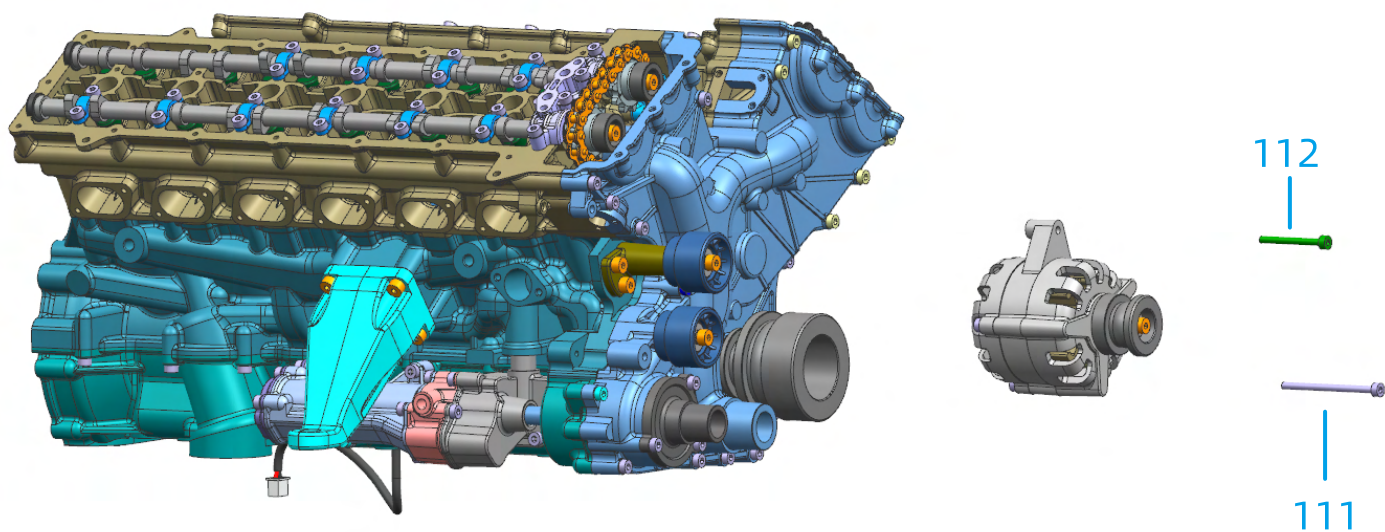
9.5 组装上张紧轮座 Assemble the Upper Tensioner Pulley Seat



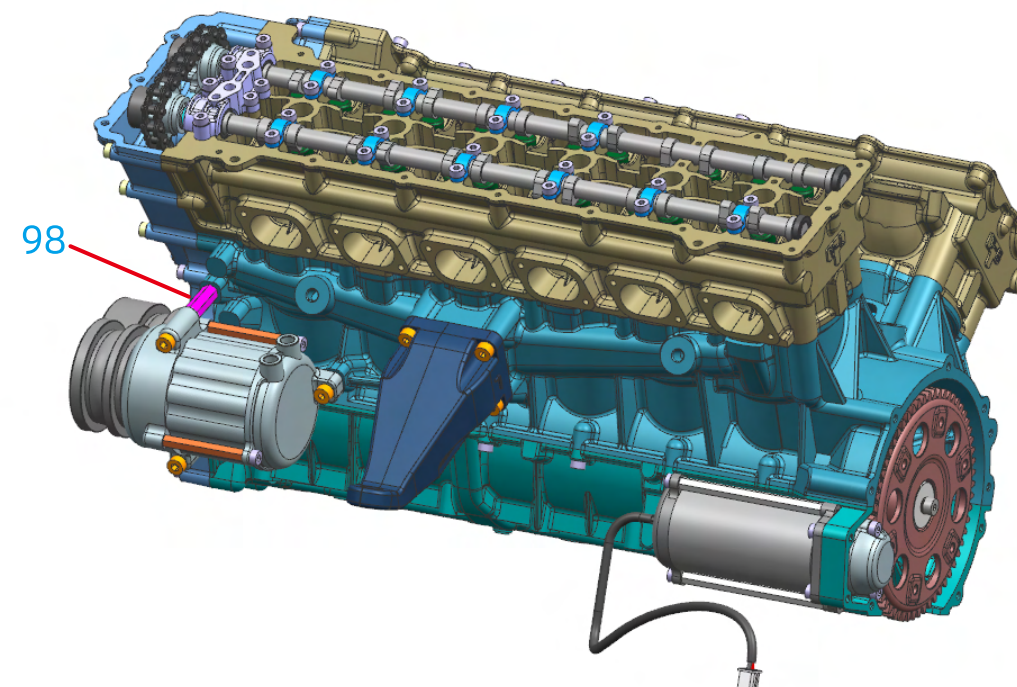
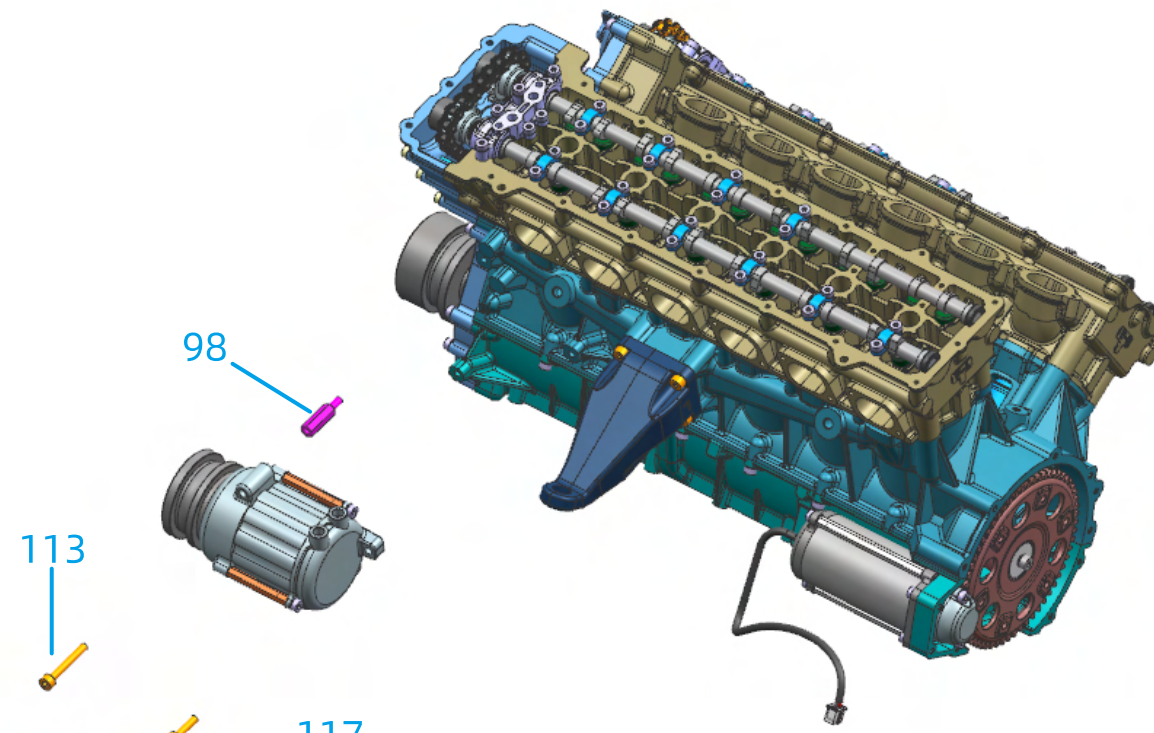
9.6 组装上张紧轮 Assemble the Tensioner Pulley



9.7 组装发电机总成 Assembling the Generator Assembly

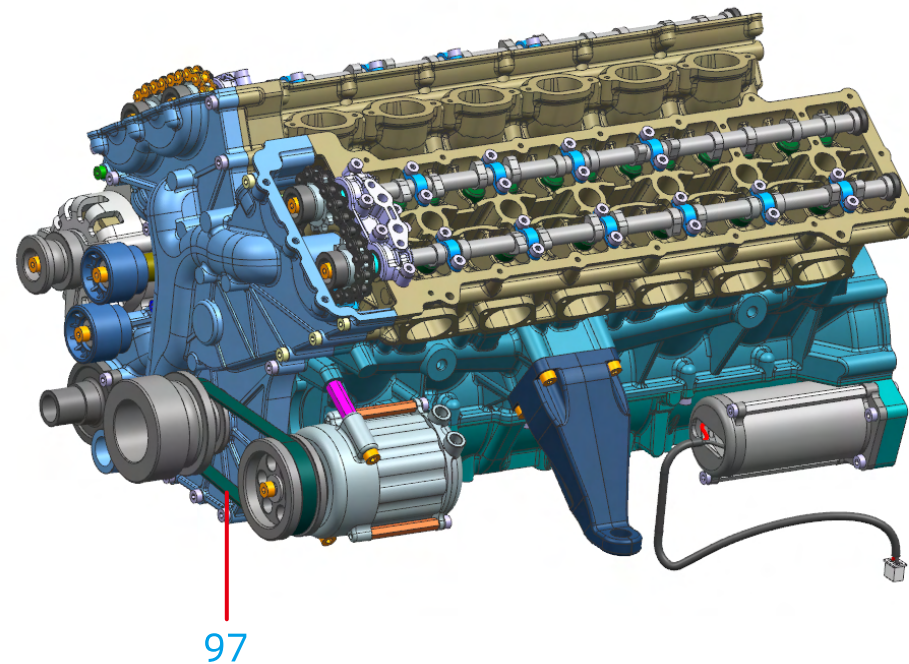
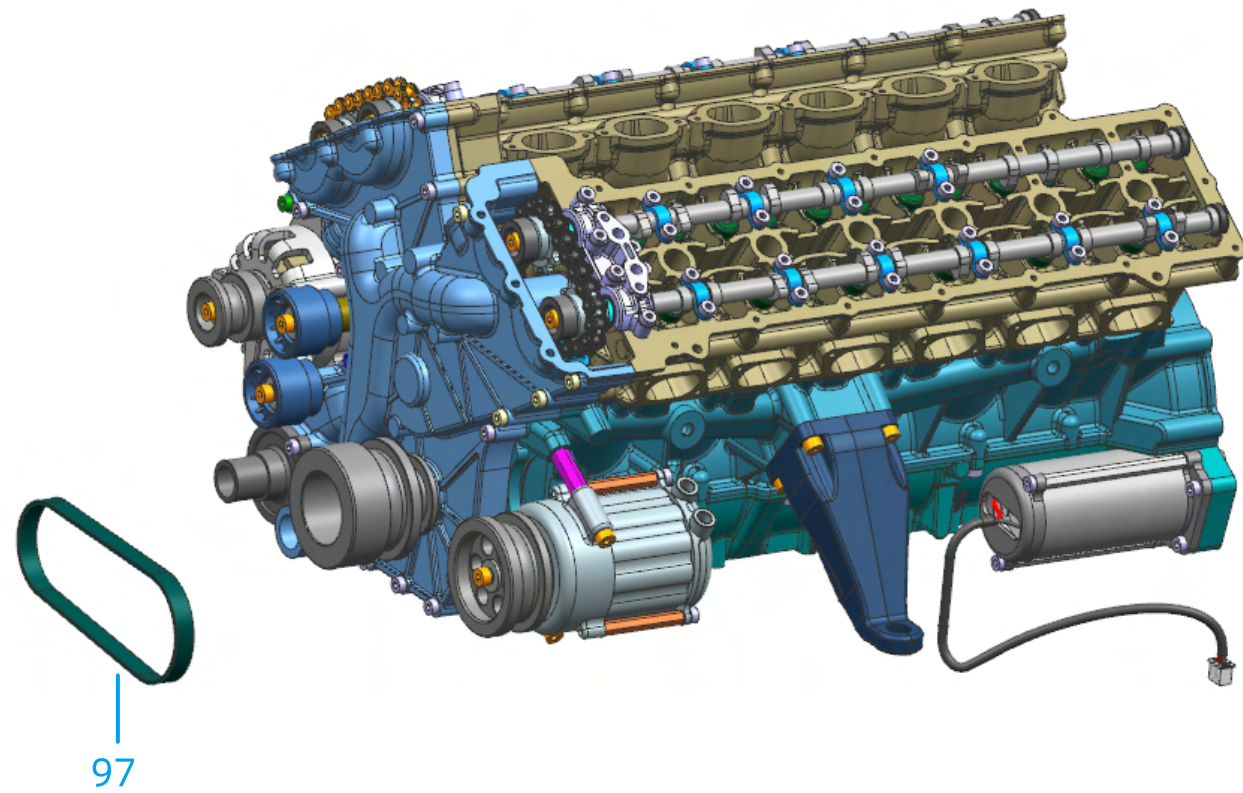


9.8 组装空压机总成 Assembling the Air Compressor Assembly

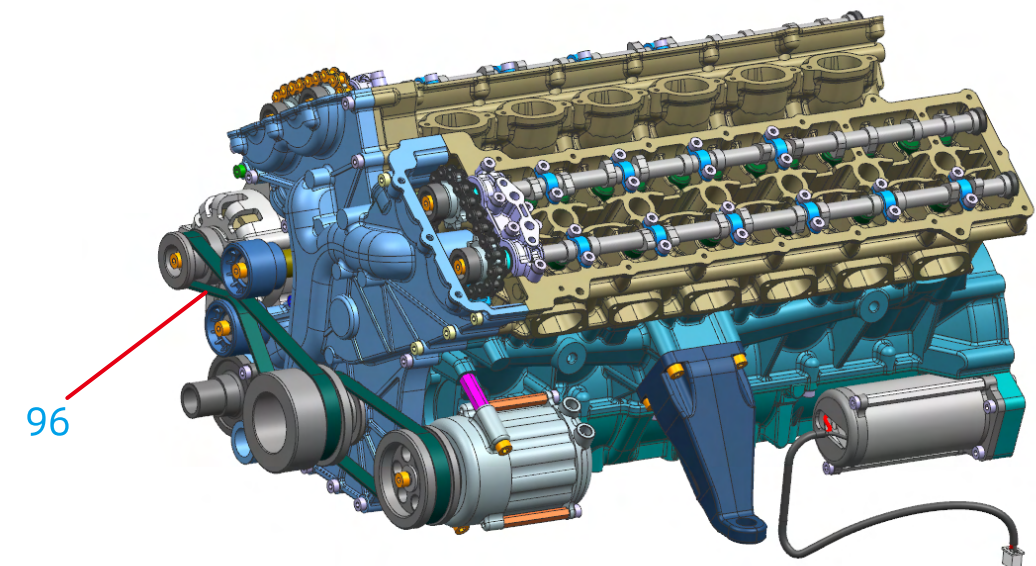
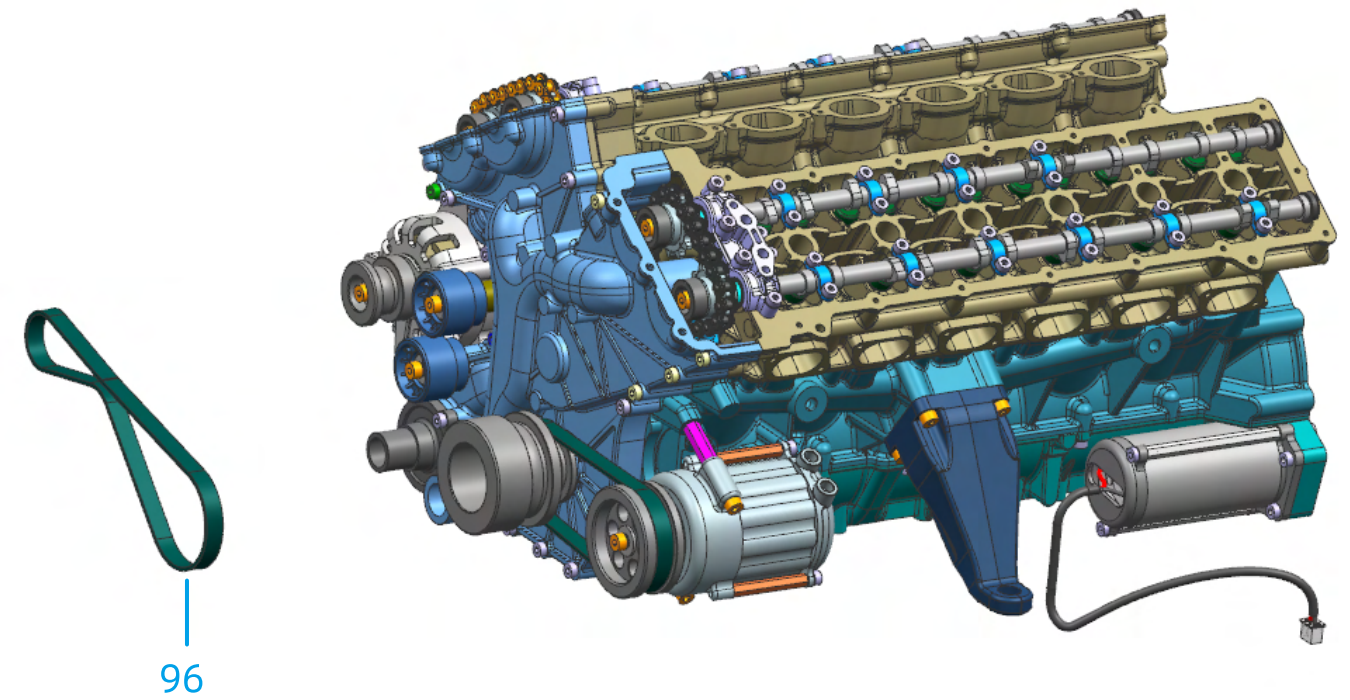


10. 皮带机构 Belt Mechanism

10.1 组装空压机皮带 Assemble Air Compressor Belt

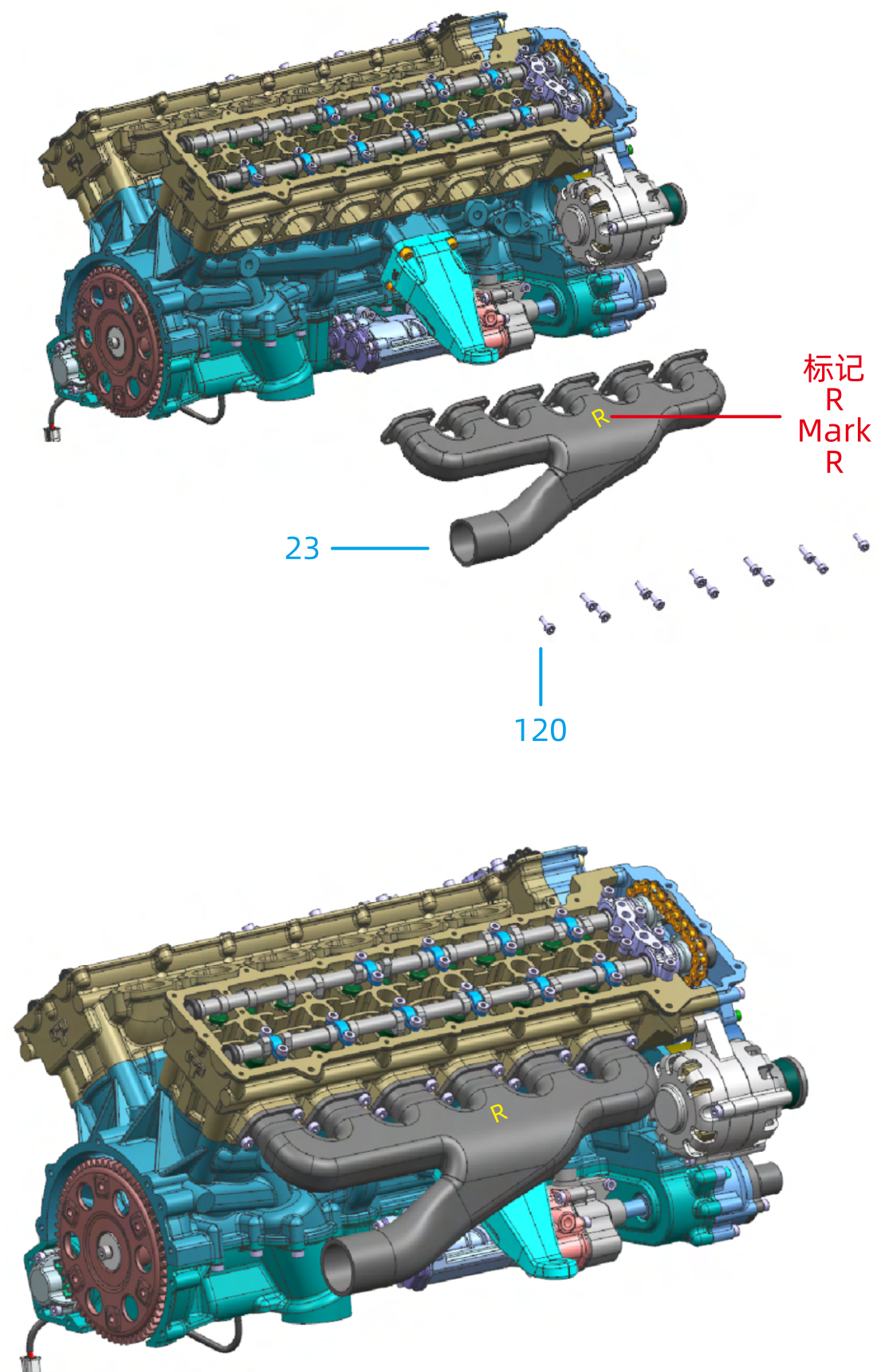


10.2 组装发电机皮带 Assemble Generator Belt

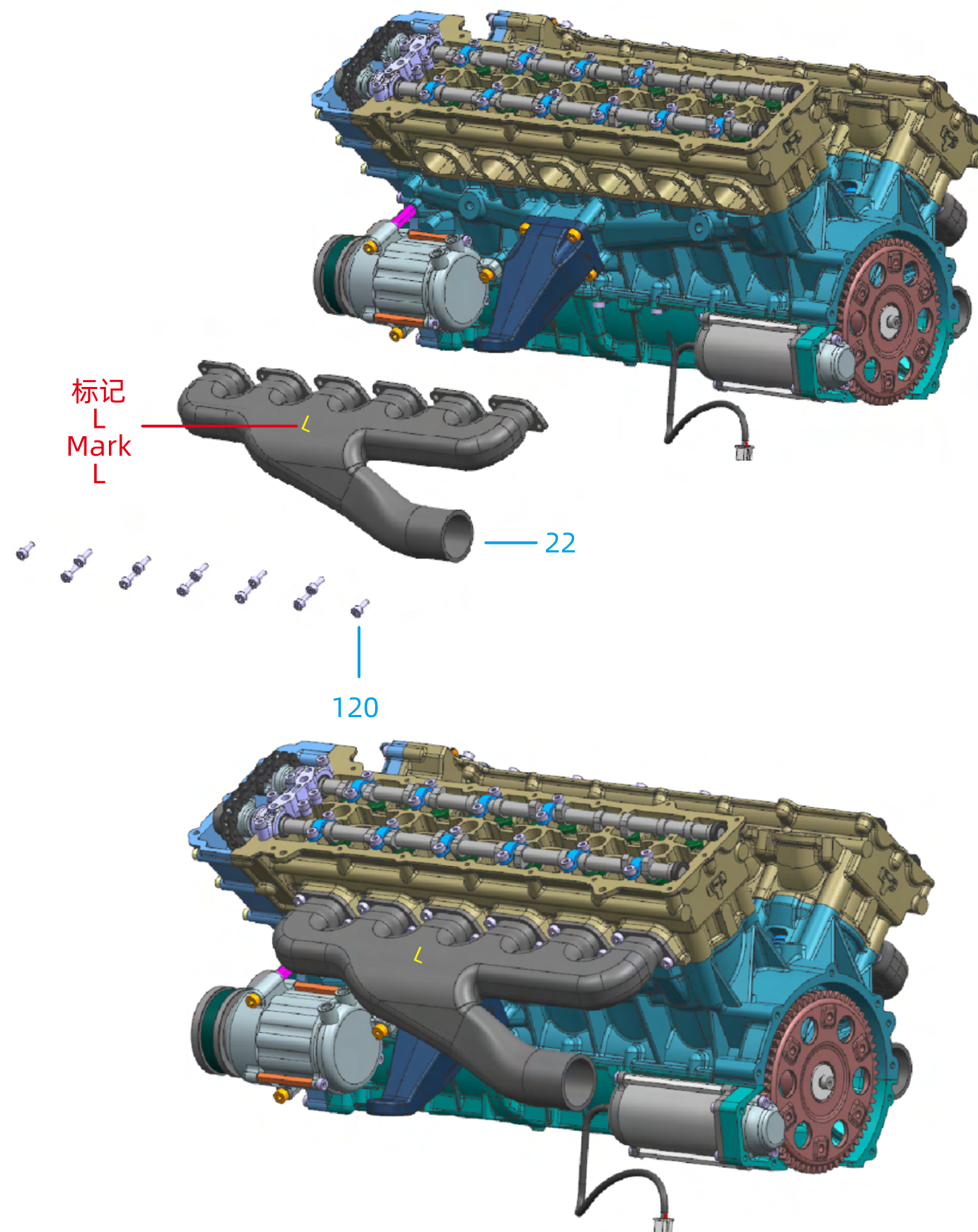


11.其它附件 Other Accessories

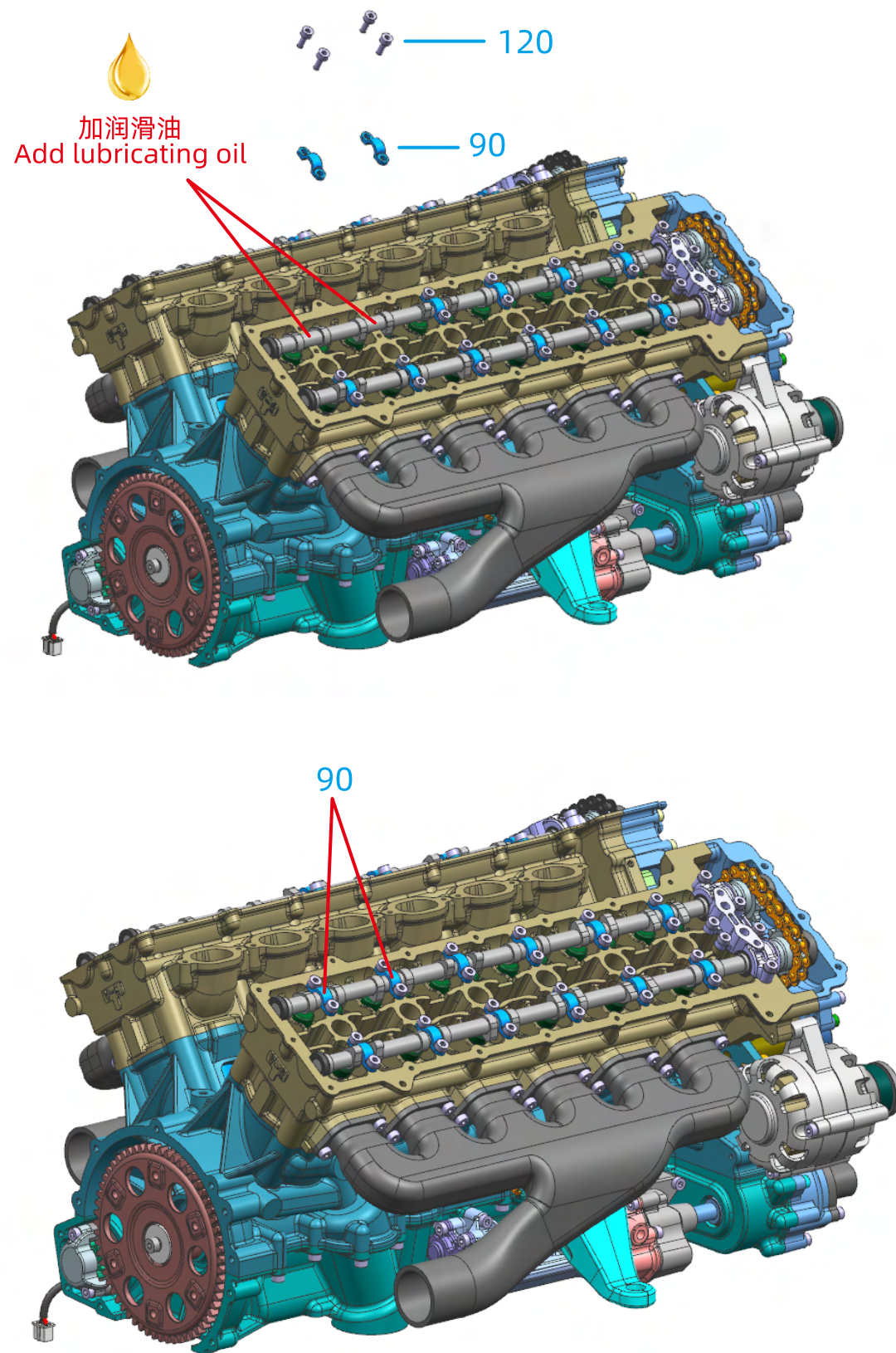
11.1 组装右排气管 Assemble the Right Exhaust Pipe



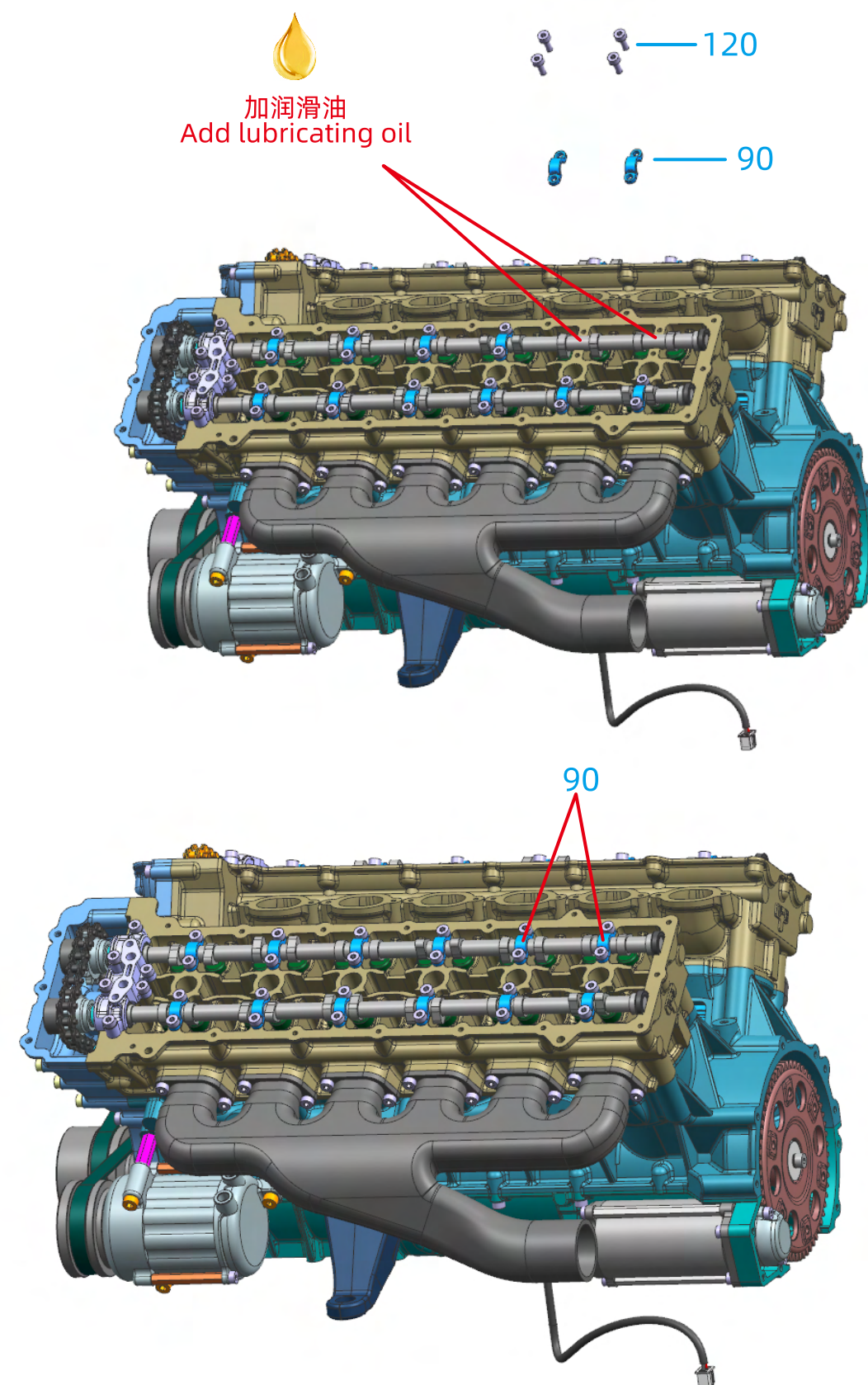
11.2 组装左排气管 Assemble the Left Exhaust Pipe



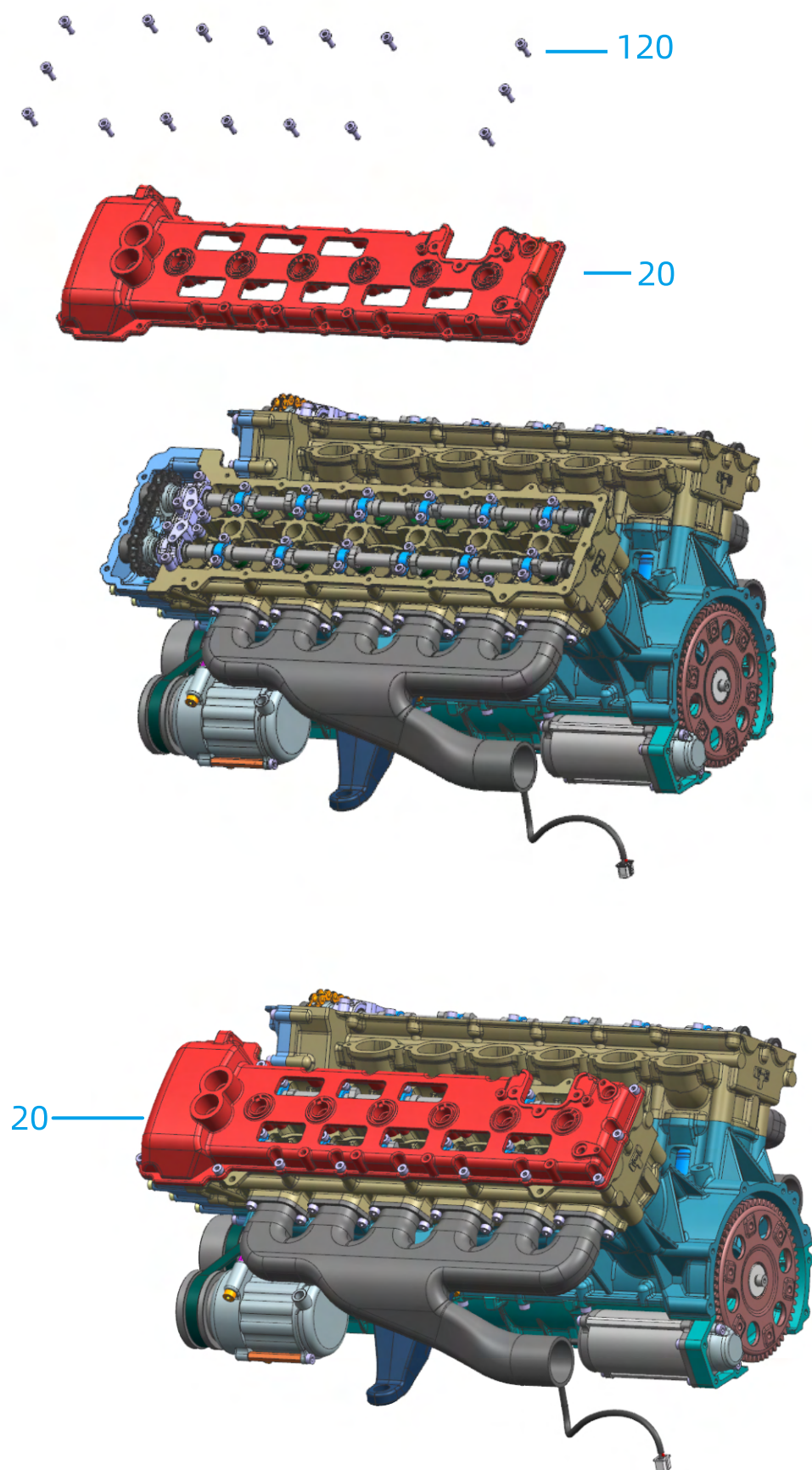
11.3 补装右凸轮轴瓦 Reinstall Right Camshaft Bearing Shell



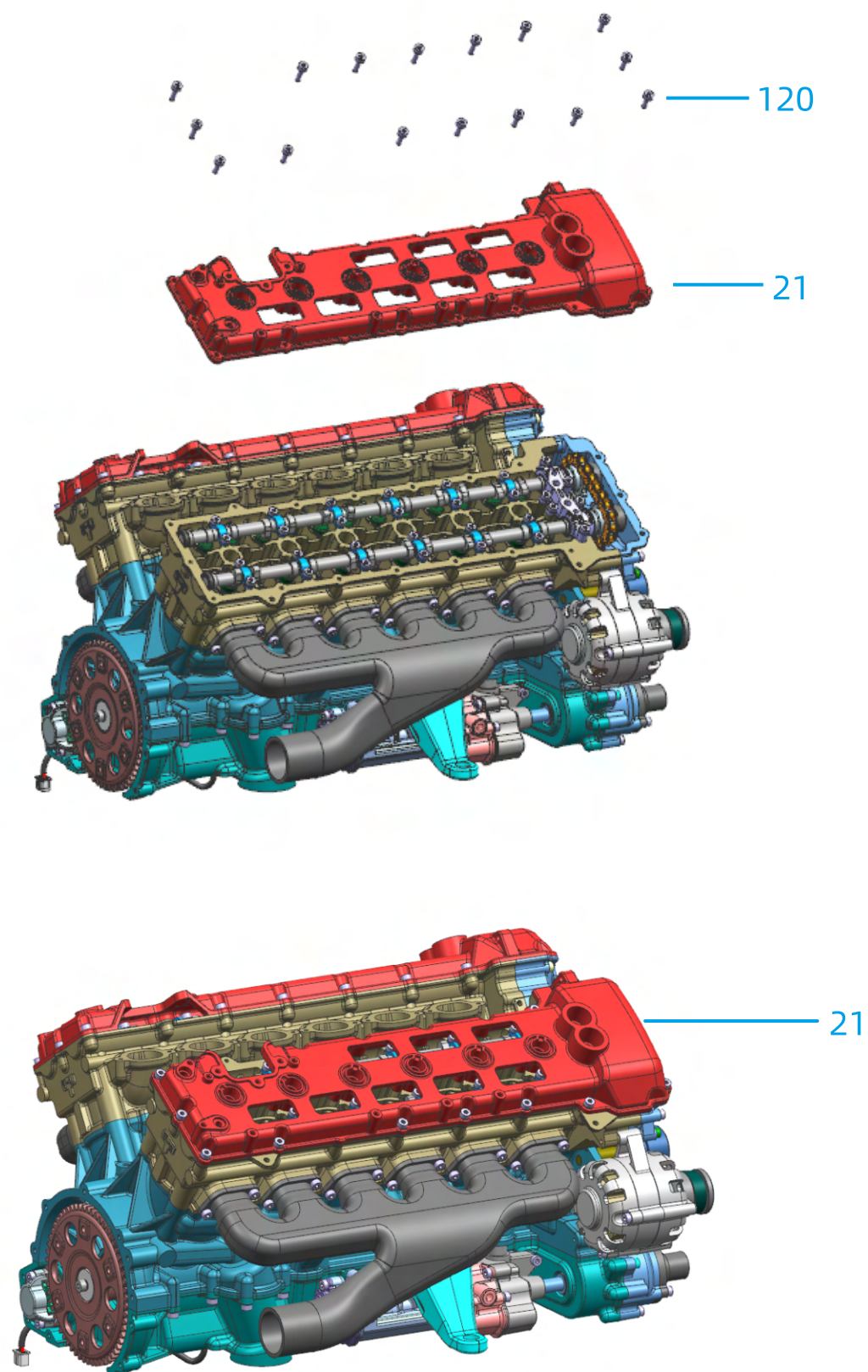
11.4 补装左凸轮轴瓦 Reinstall Left Camshaft Bearing Shell



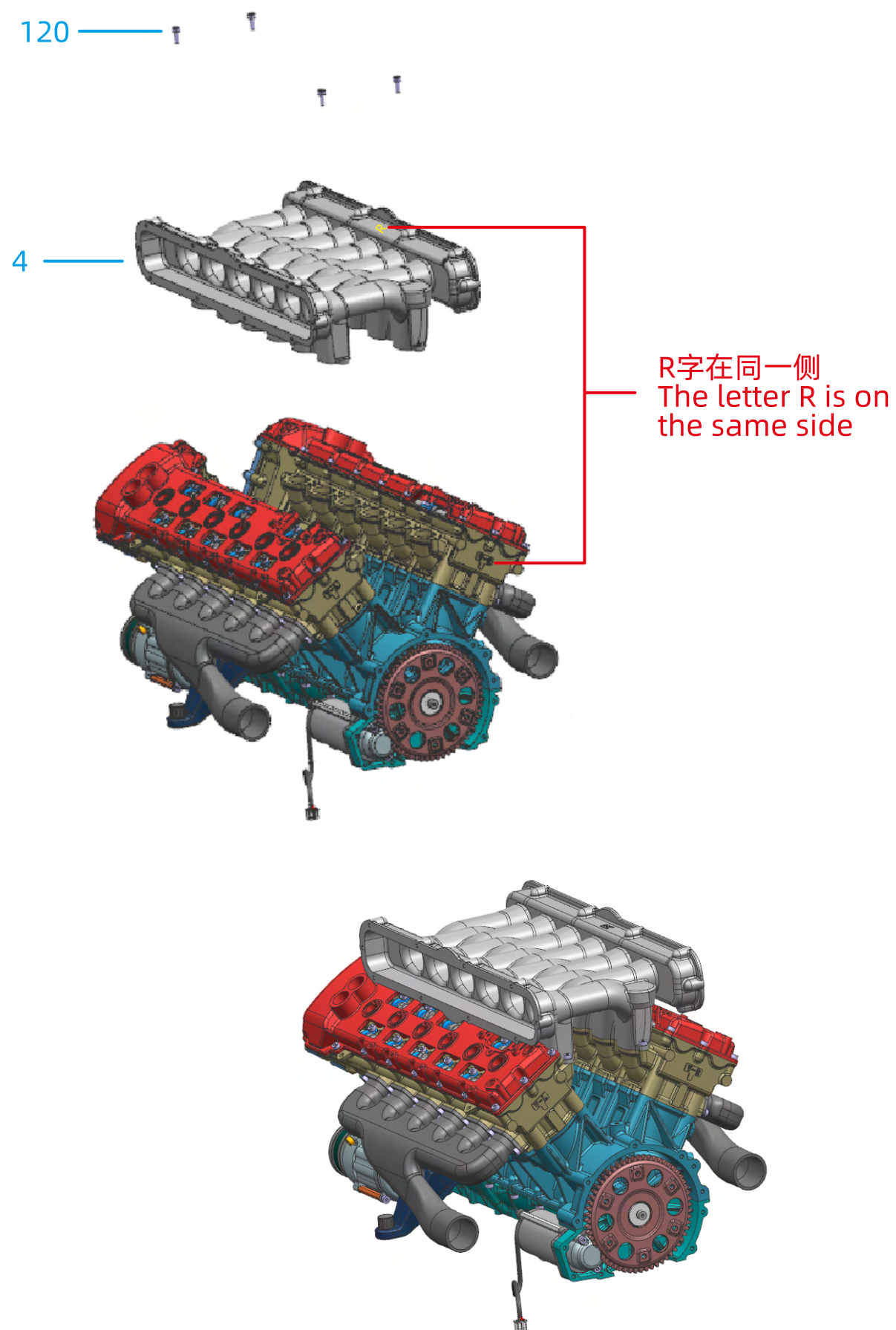
11.5 组装左气门室盖 Assemble the Left Valve Cover



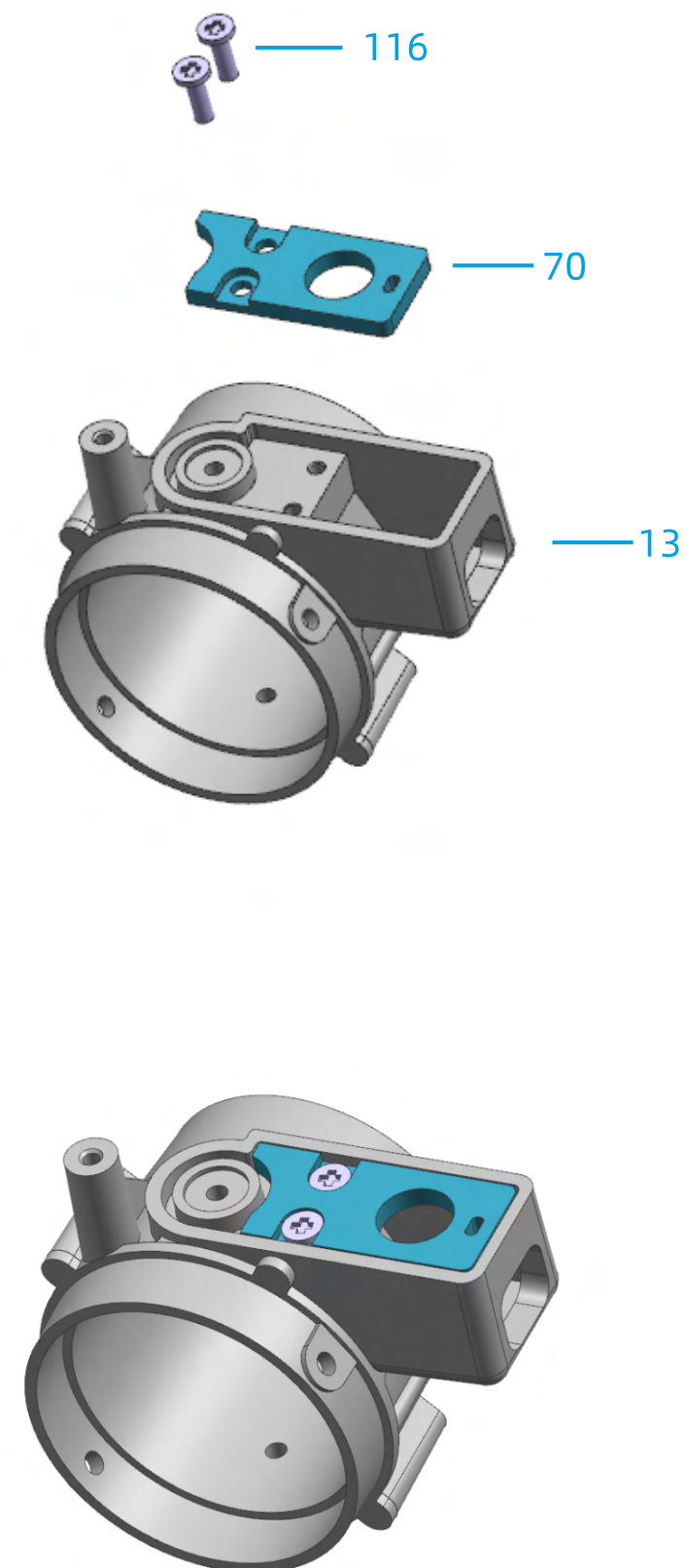
11.6 组装右气门室盖 Assemble the Right Valve Cover



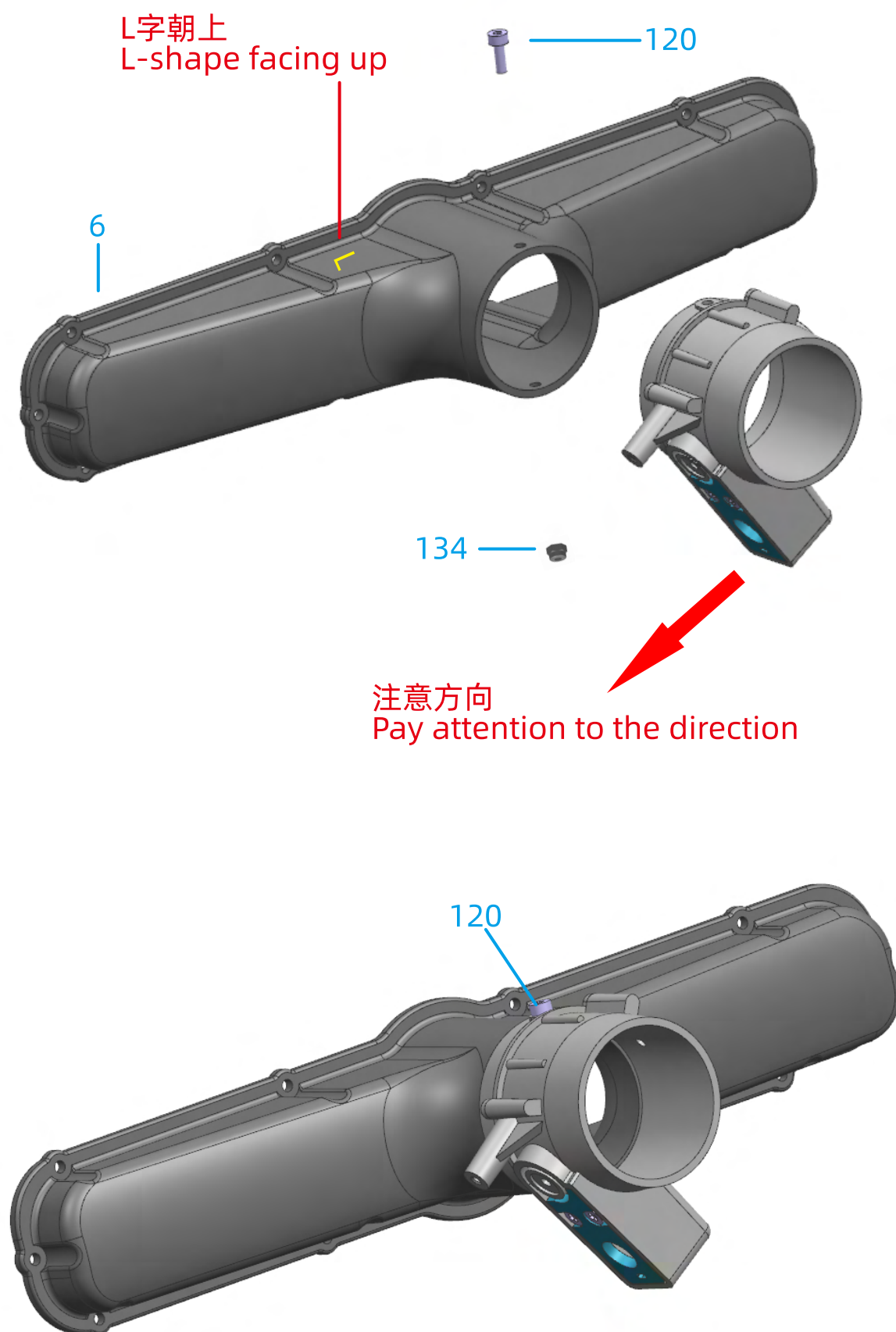
11.7 组装进气总管 Assemble the Intake Manifold



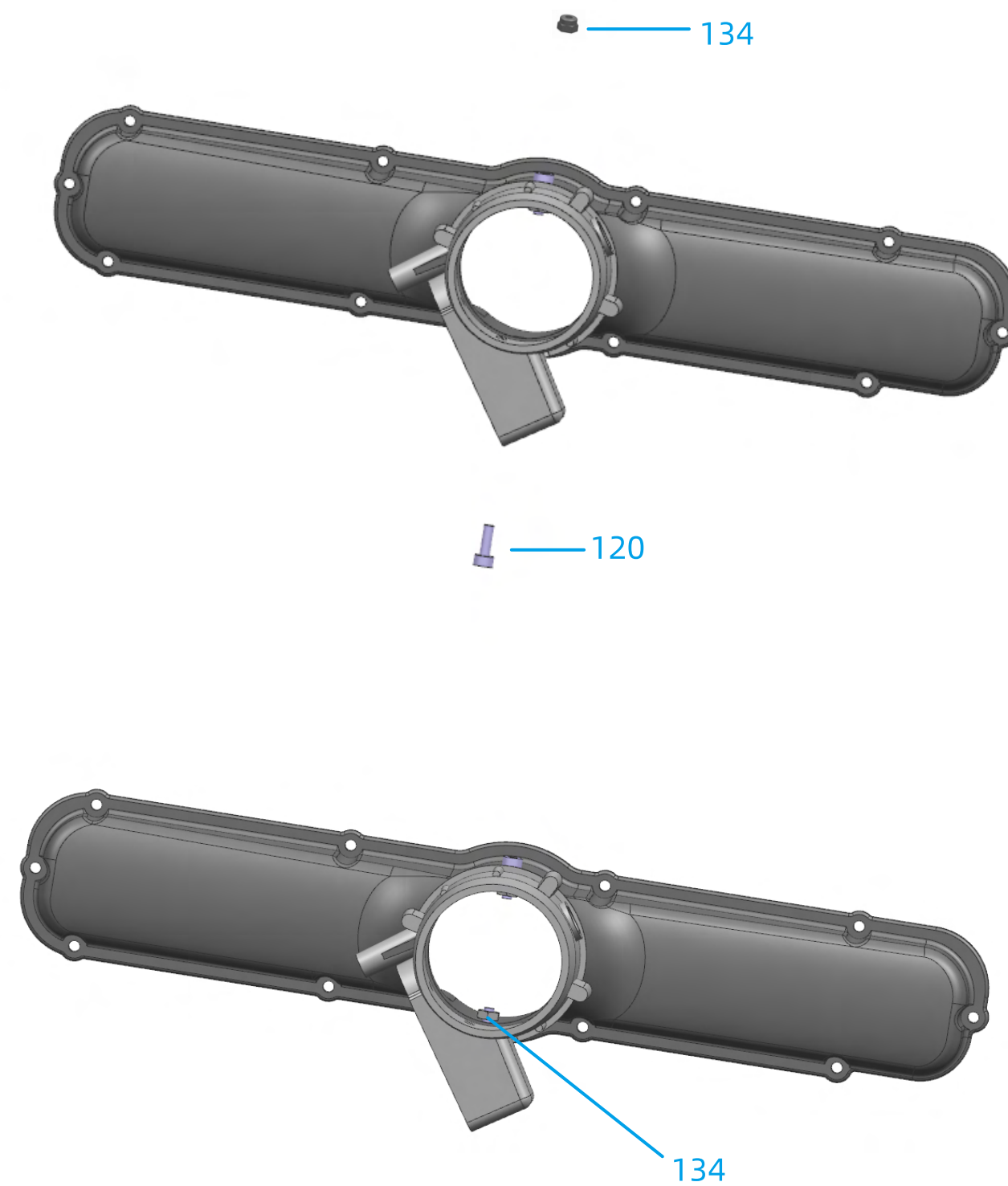
11.8 组装左节气门箱体 Assemble Left Throttle Body



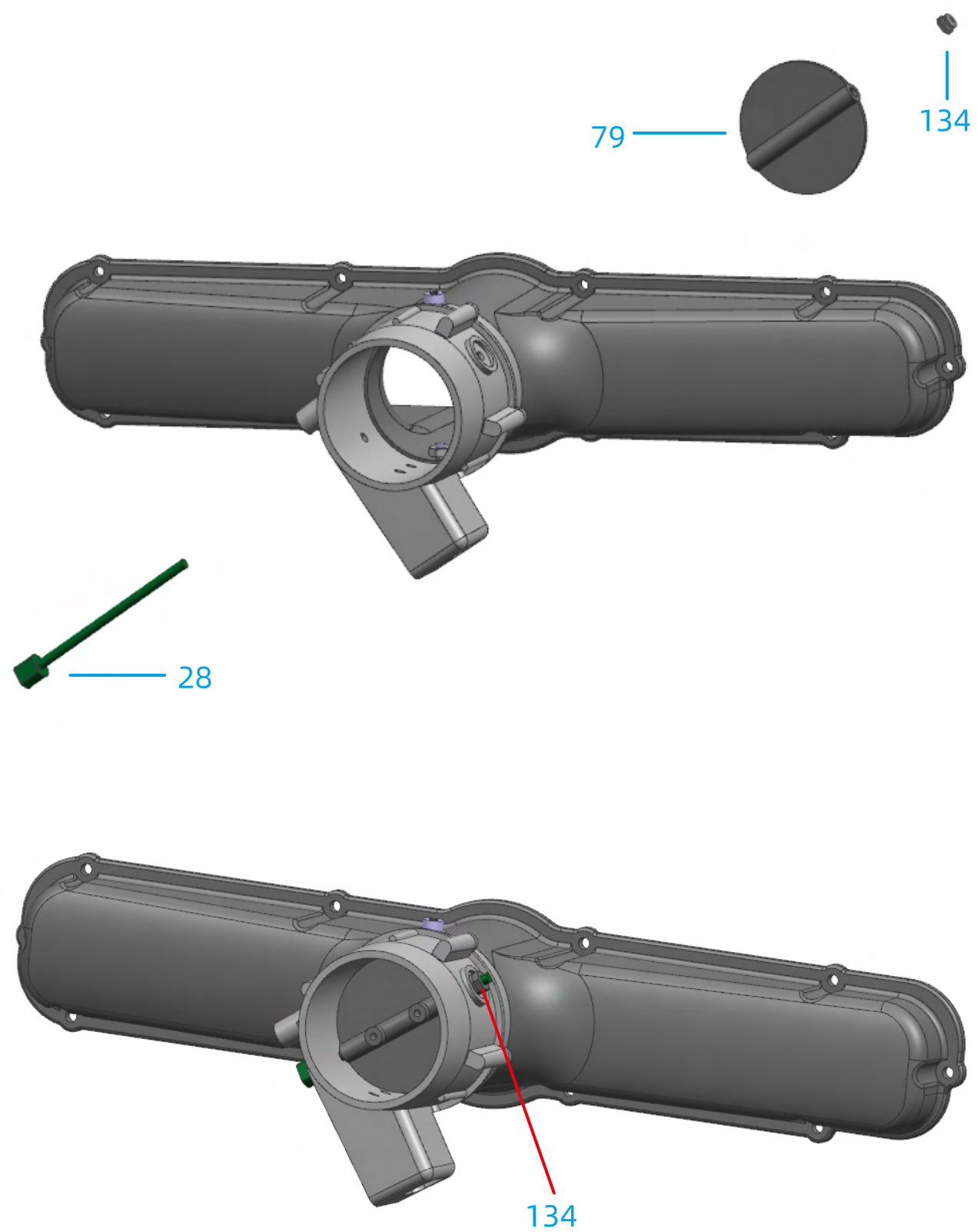
11.9 组装左节气门总成 Assemble Left Throttle Assembly



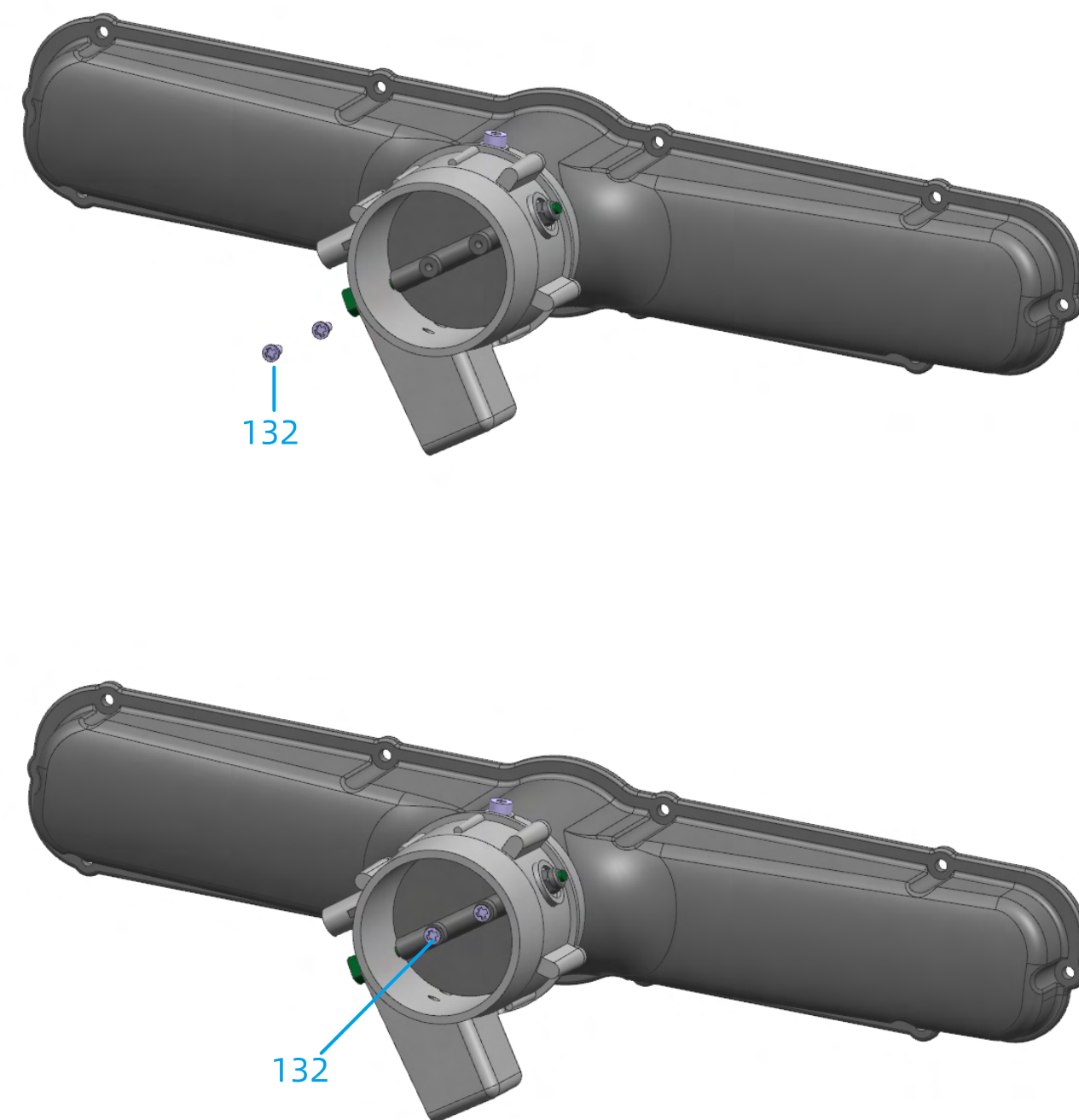
11.10 组装螺丝 Assemble the Screws



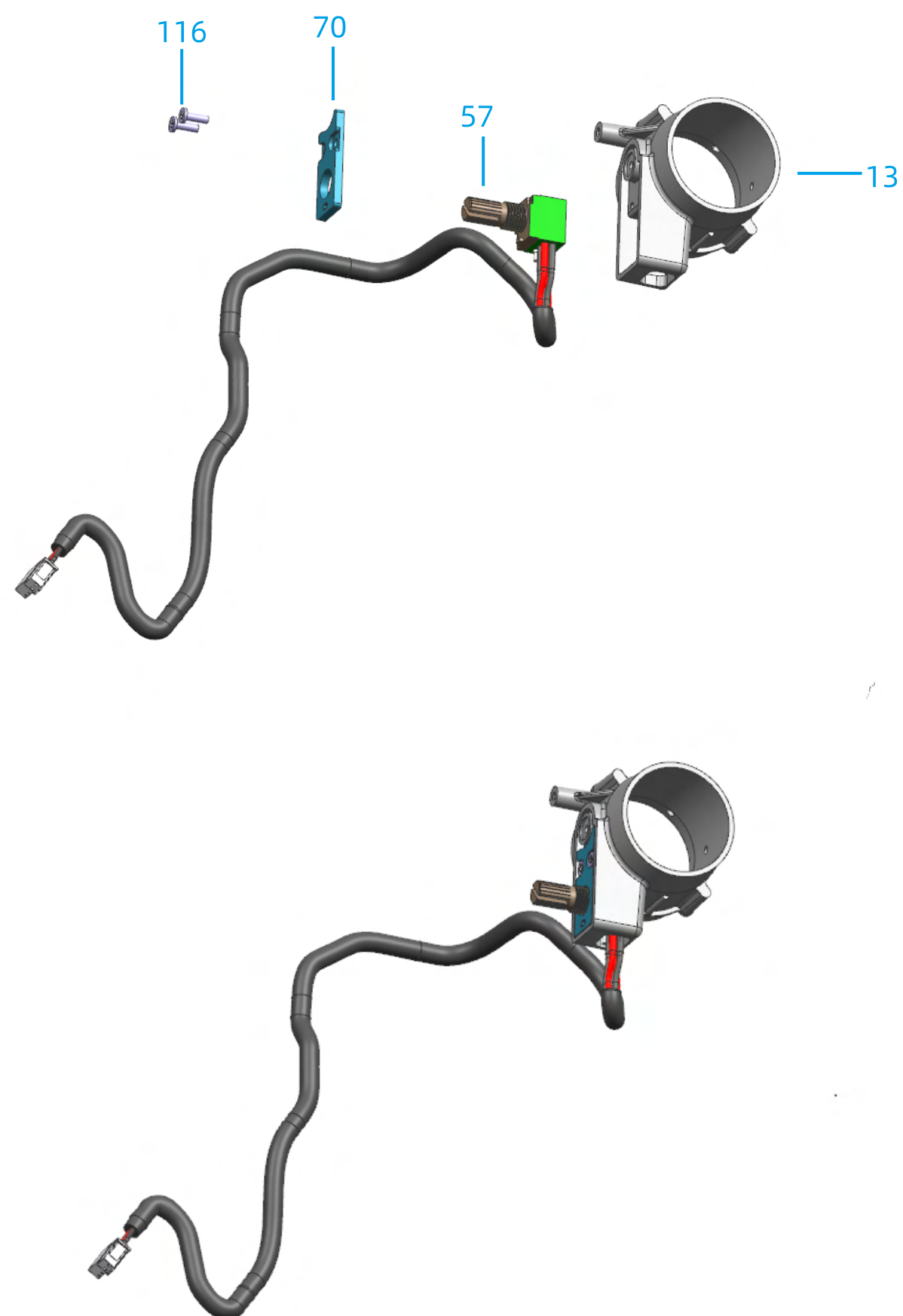
11.11 组装节气门 Assemble the Throttle Valve



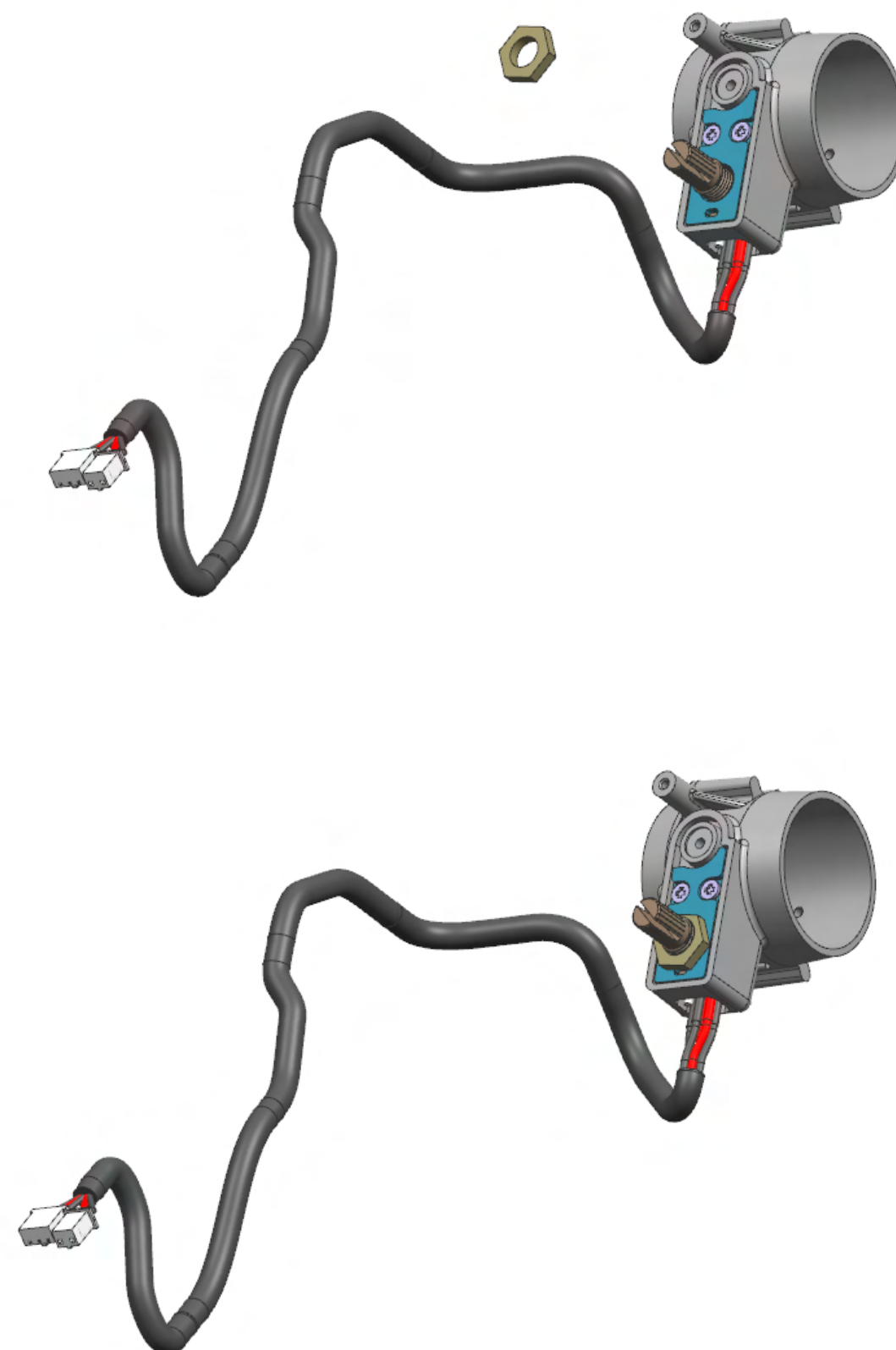
11.12 组装节气门固定螺丝 Assembling the Throttle Body Fixing Screws



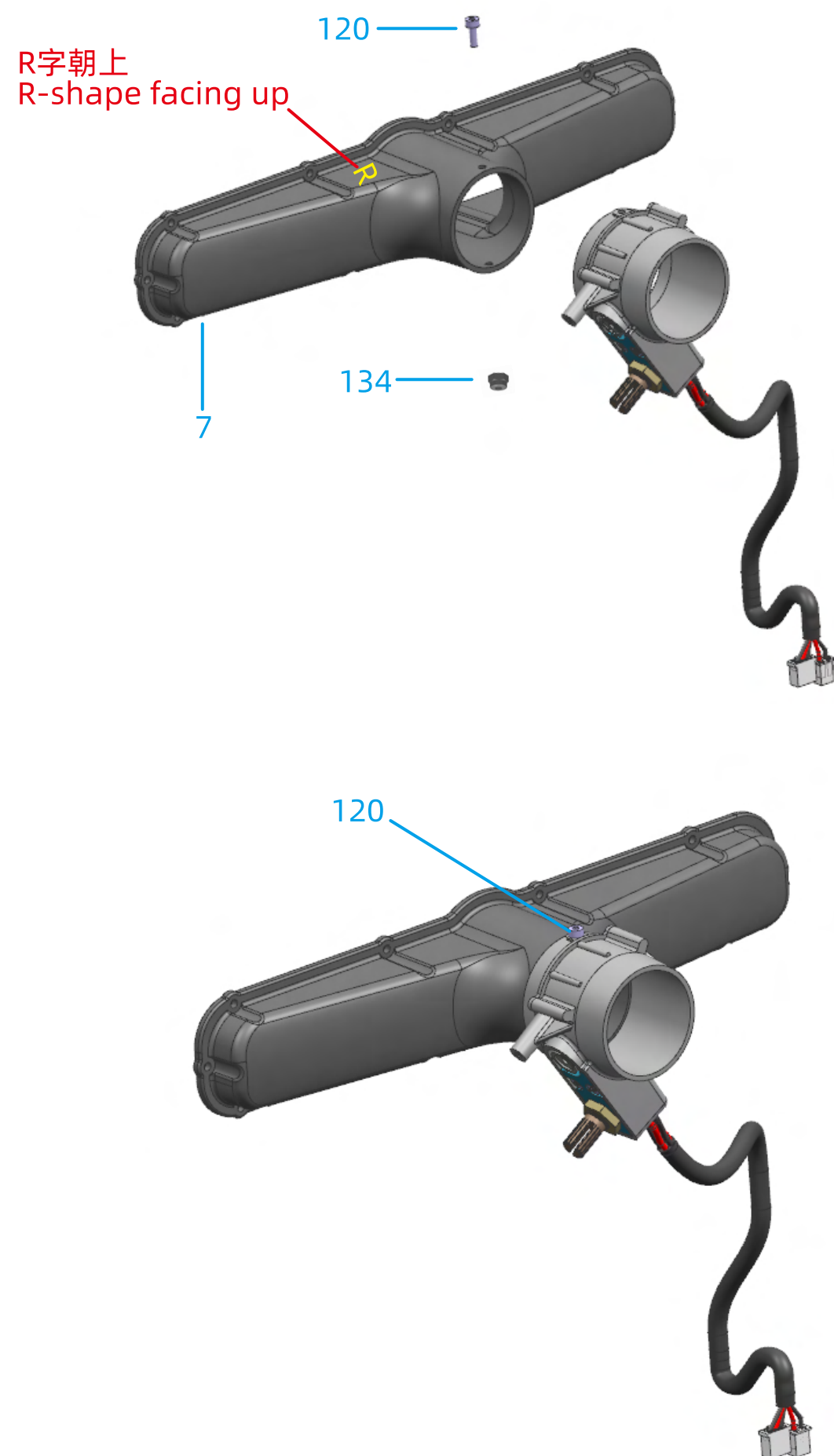
11.13 组装电位器 Assemble the Potentiometer



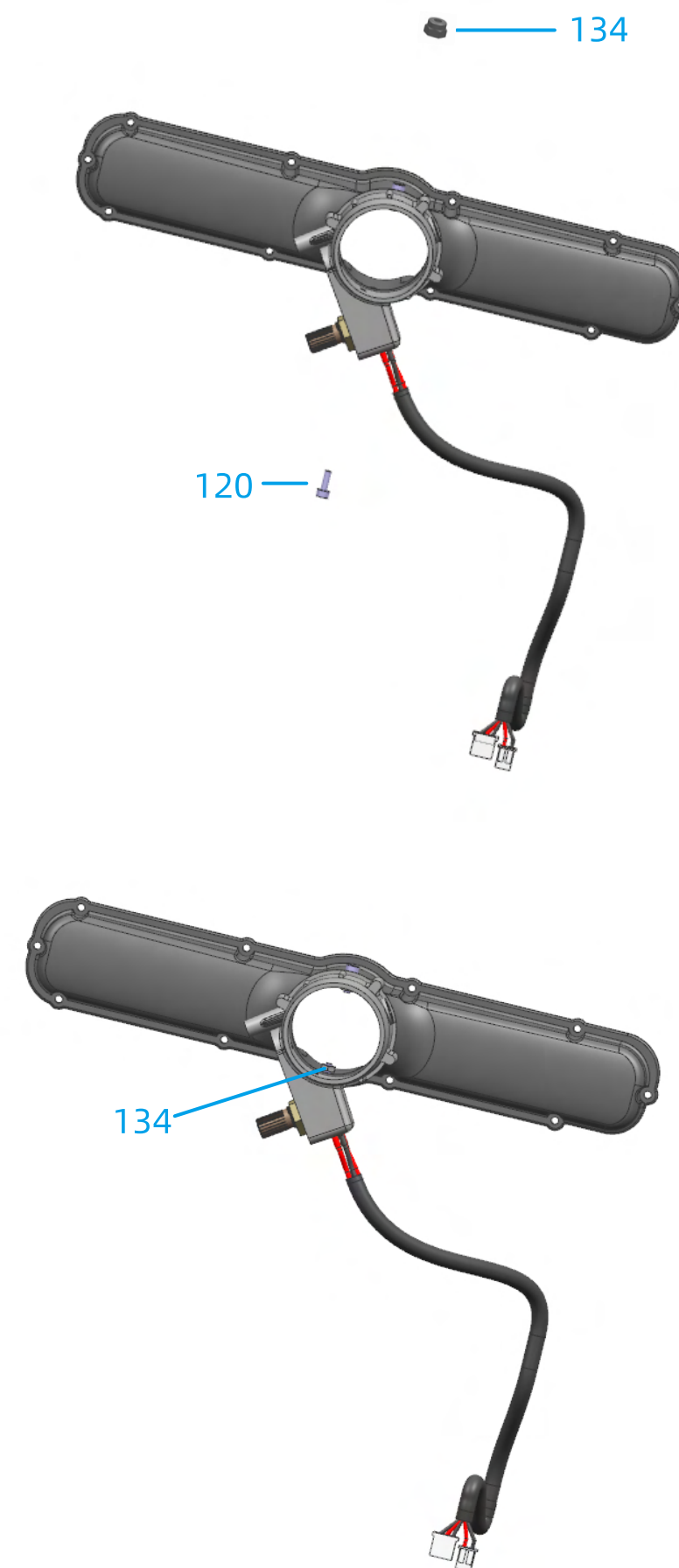
11.14 组装电位器螺母 Assembling the Potentiometer Nuts



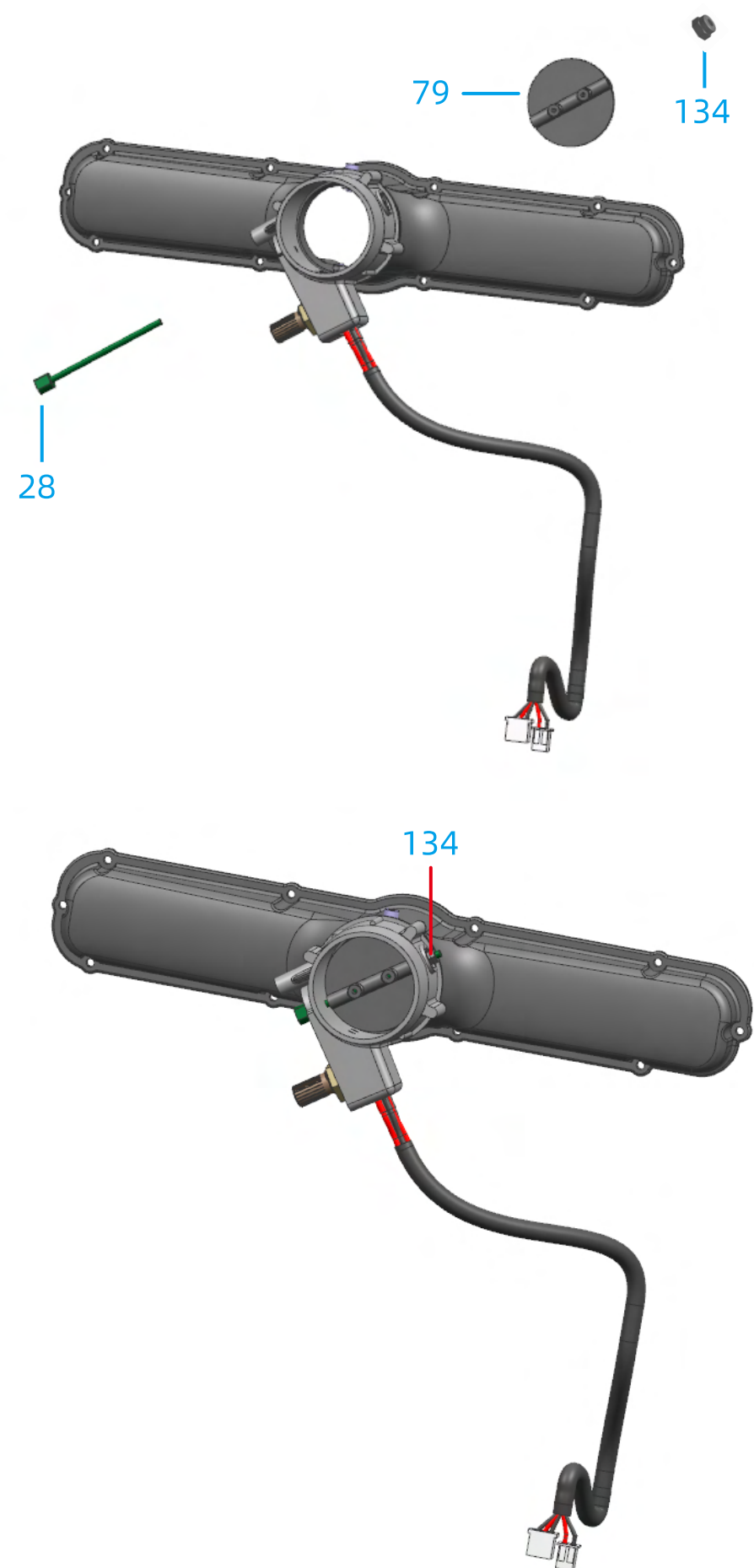
11.15 组装右节气门总成



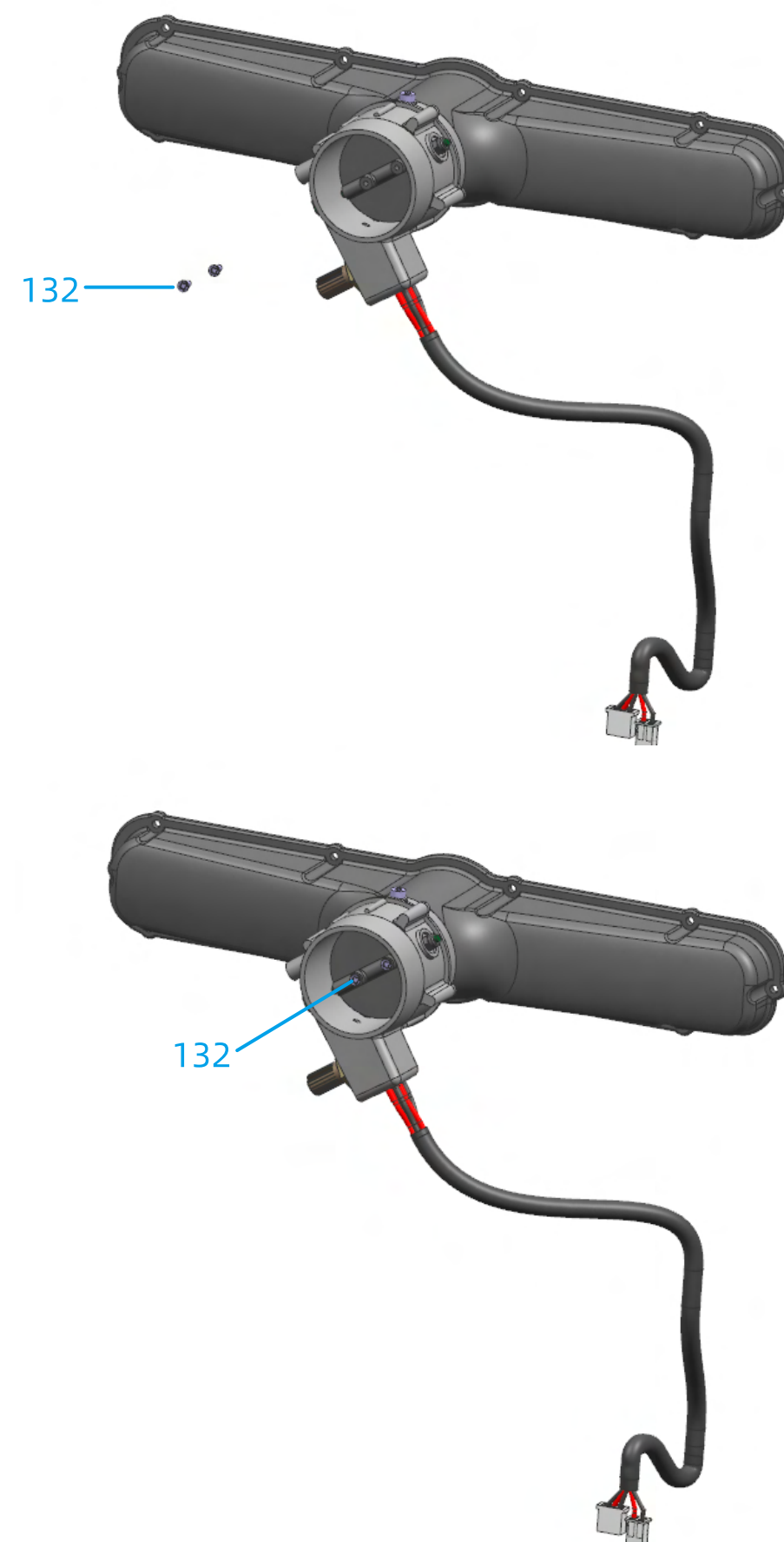
11.16 组装螺丝 Assemble the Screws



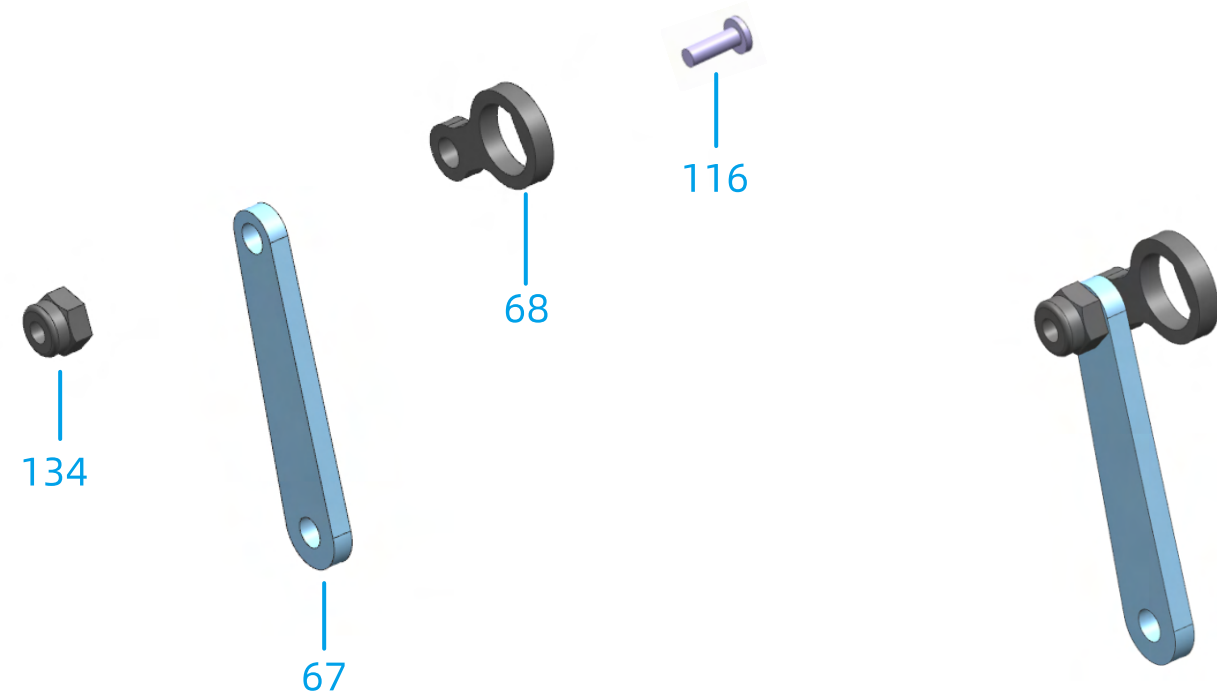
11.17 组装节气门 Assemble the Throttle Valve



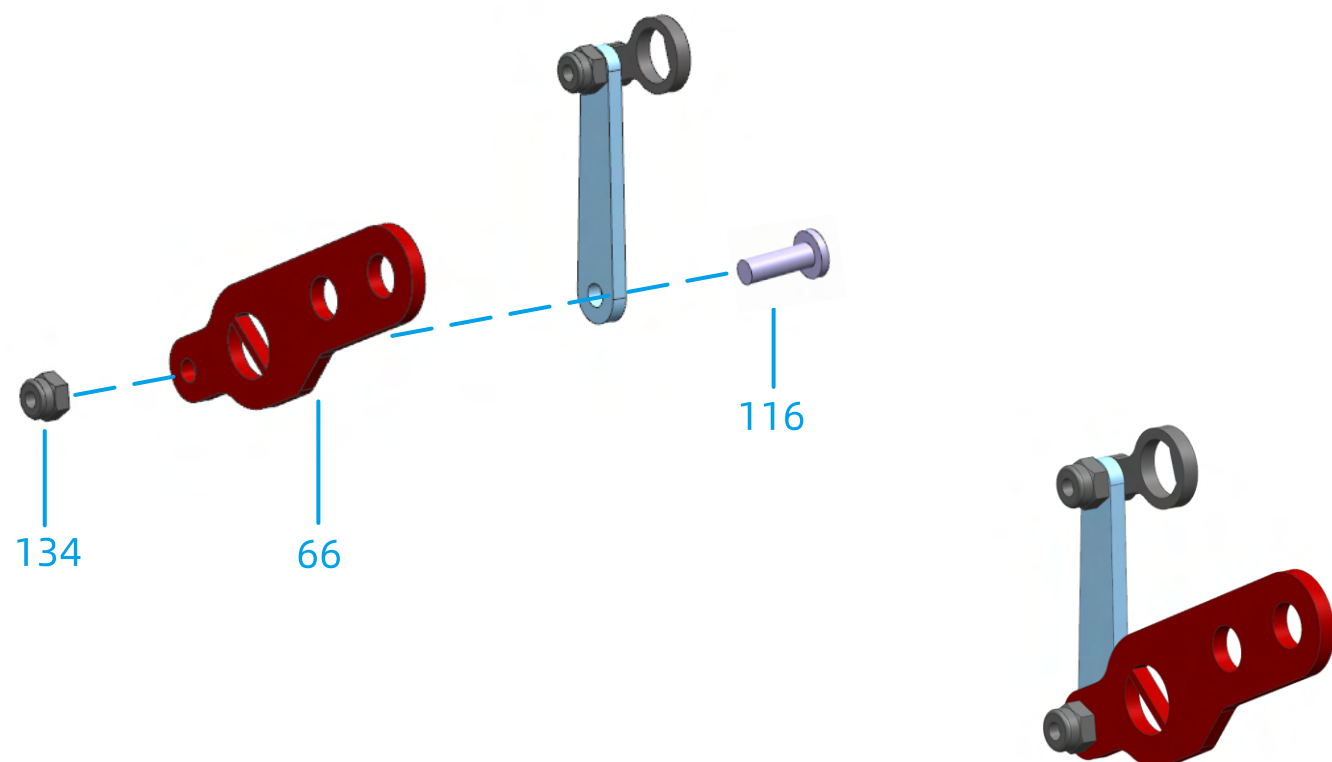
11.18 组装节气门固定螺丝 Assembling the Throttle Body Fixing Screws



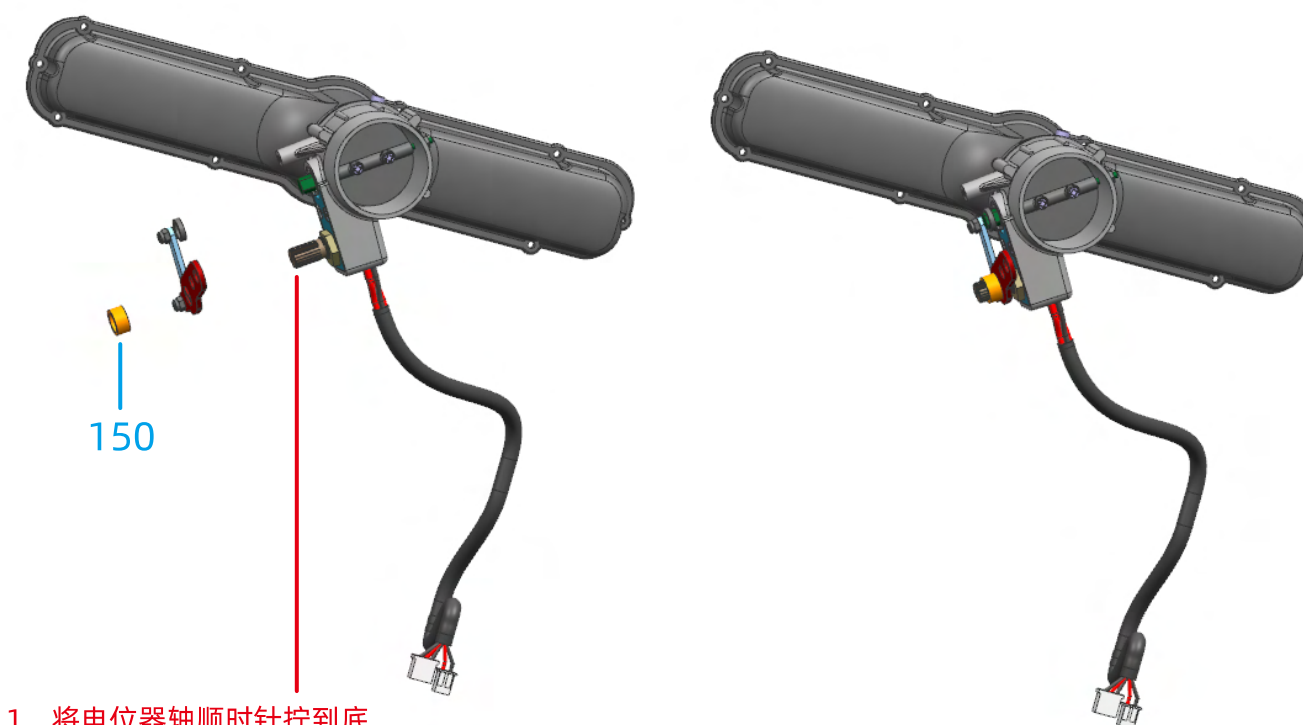
11.19 组装油门连杆 Assemble the Throttle Linkage



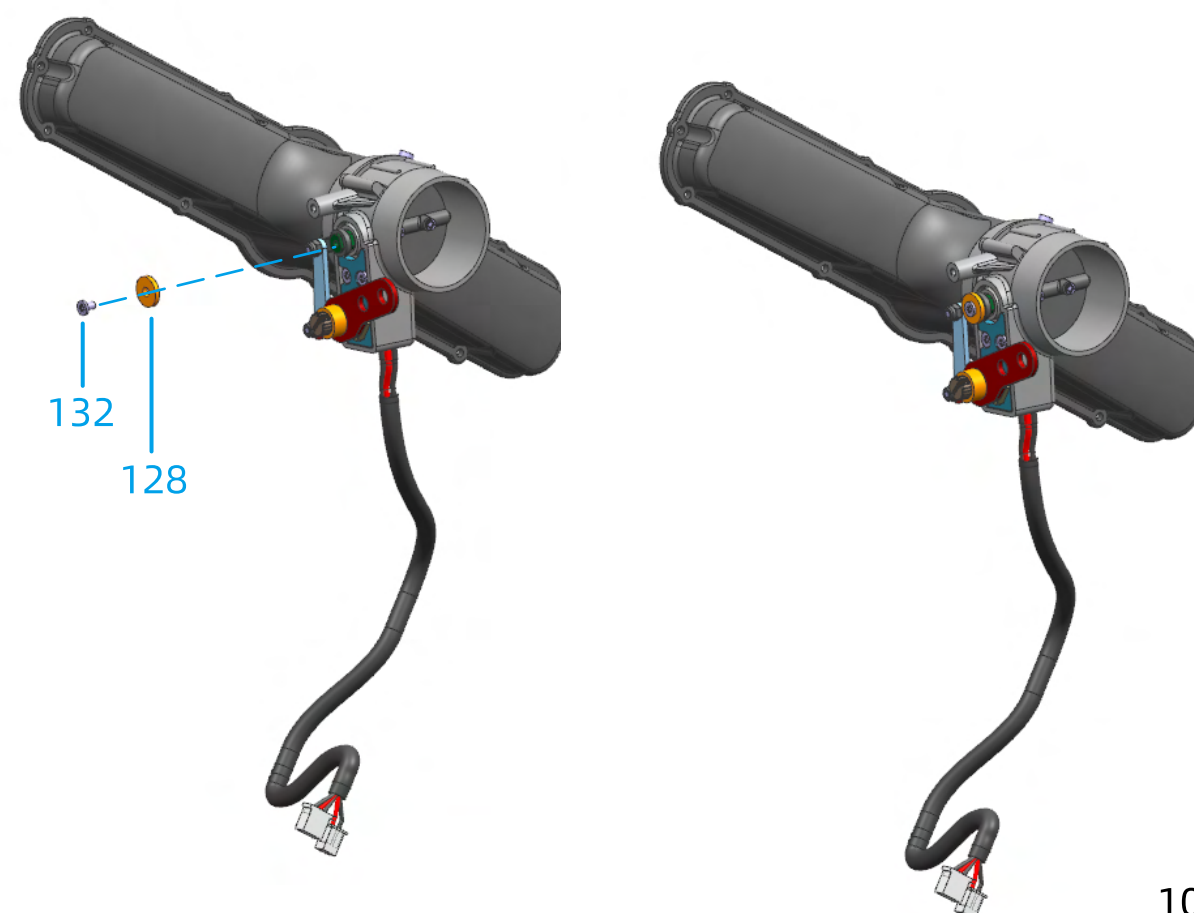
11.20 组装油门拨片 Assemble the Throttle Paddle



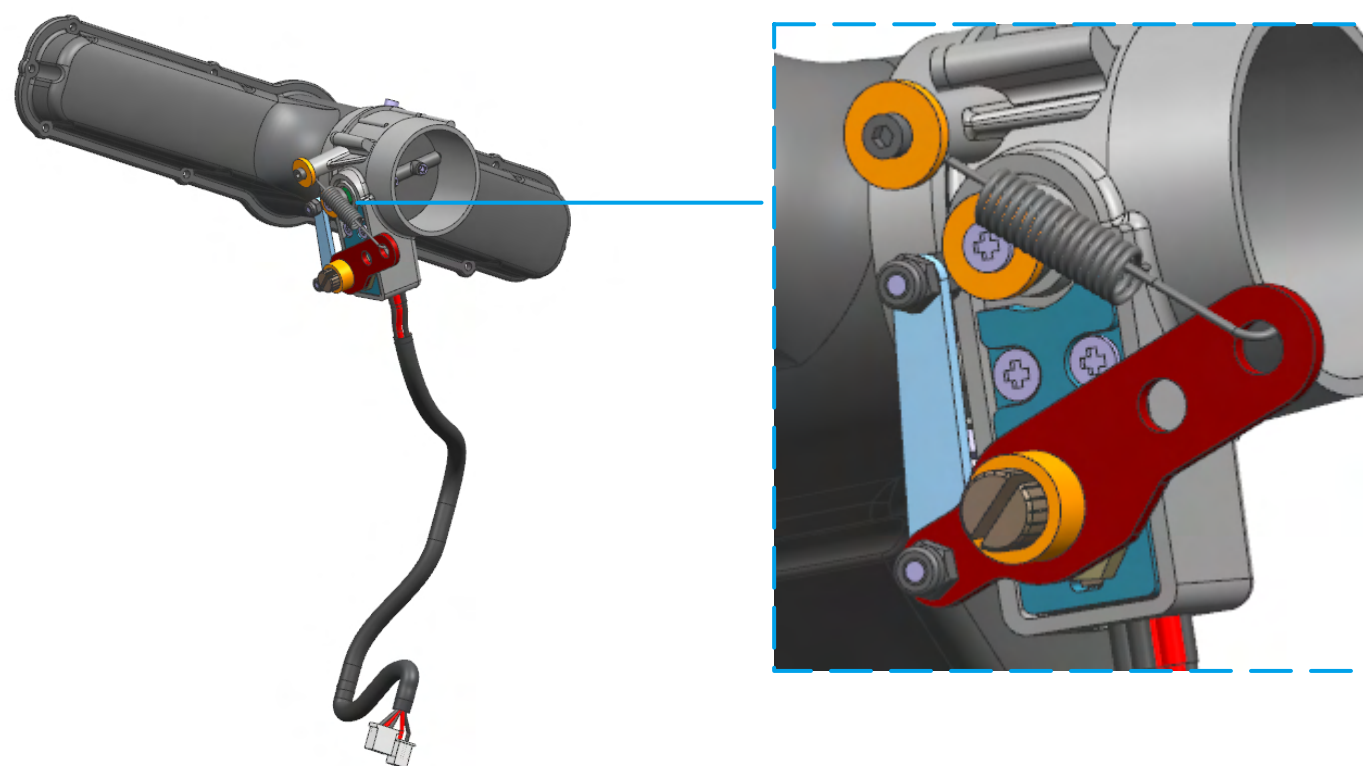
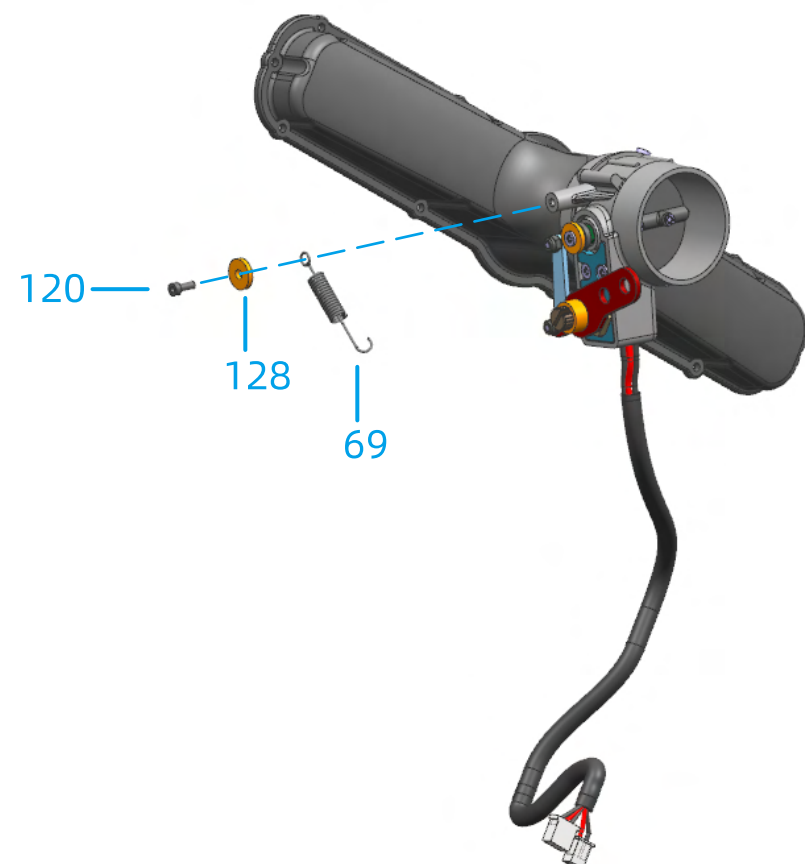
11.21 组装油门连杆总成 Assemble the Throttle Linkage Assembly



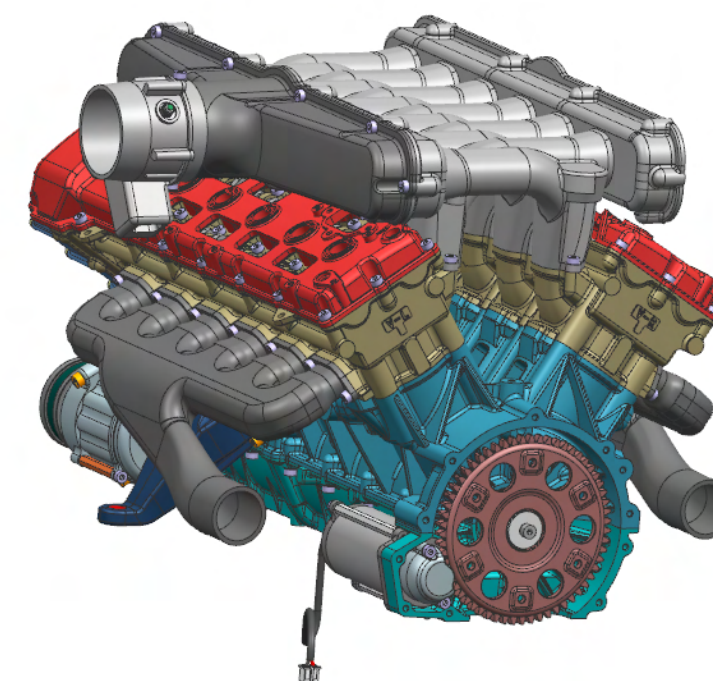
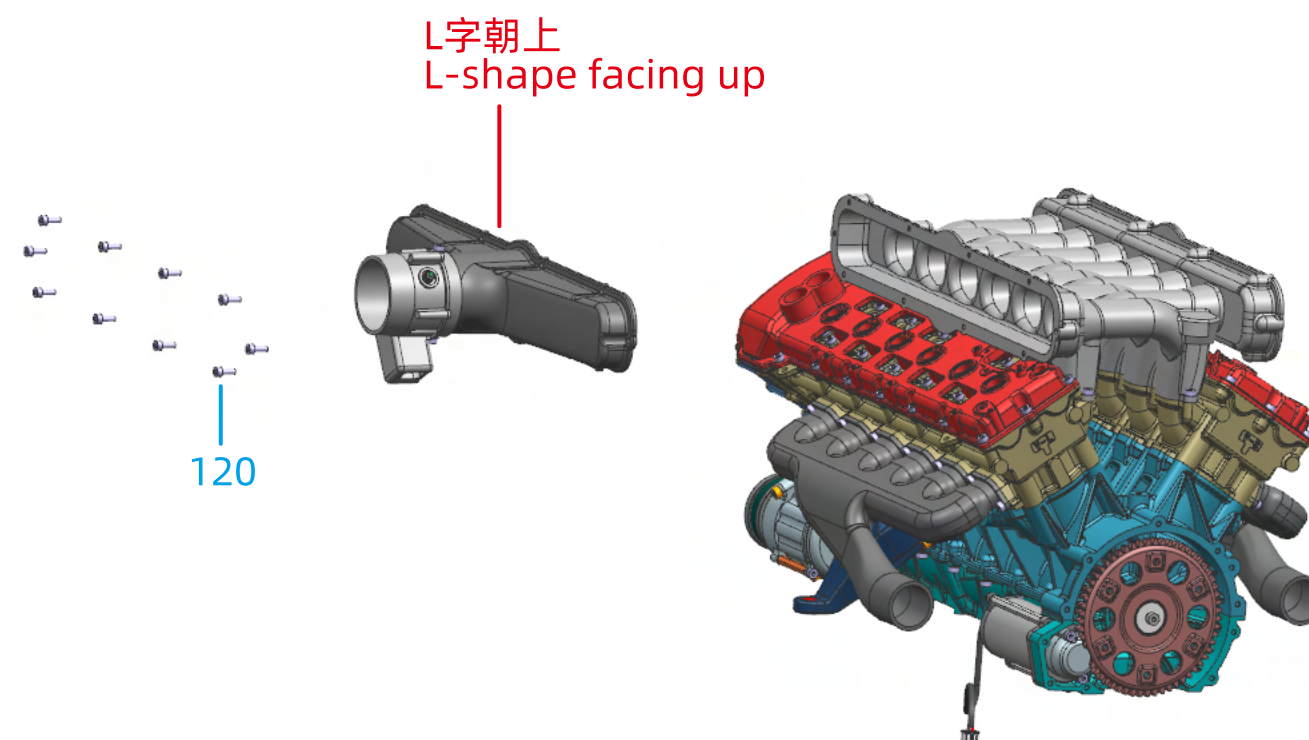
- 1、将电位器轴顺时针拧到底
- 2、再将电位器轴反转一定角度，使卡槽与66号件卡位对齐
- 3、将66号件卡入电位器轴
- 1、 Turn the potentiometer shaft clockwise all the way to the end
- 2、 Then reverse the potentiometer shaft by a certain angle, so that the clamping groove aligns with the clamping position of part No. 66
- 3、 Snap part No. 66 into the potentiometer shaft



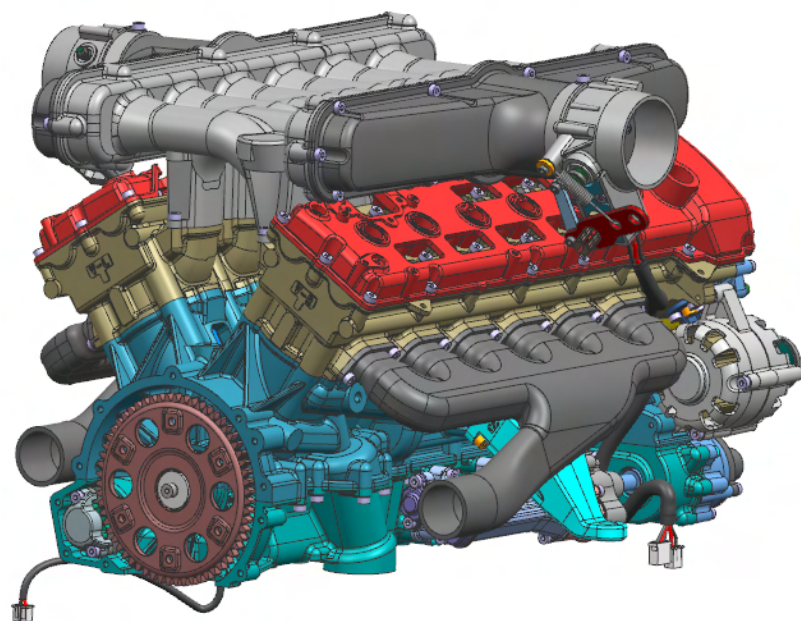
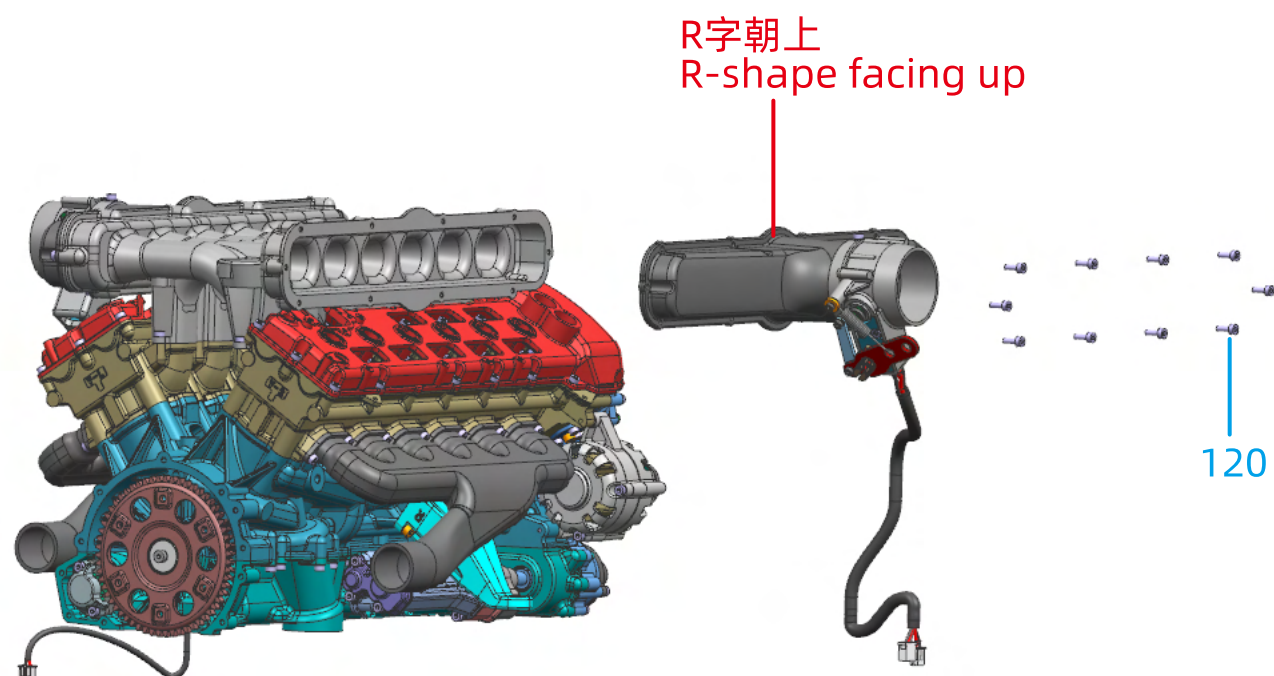
11.22 组装油门弹簧 Assemble the Throttle Spring



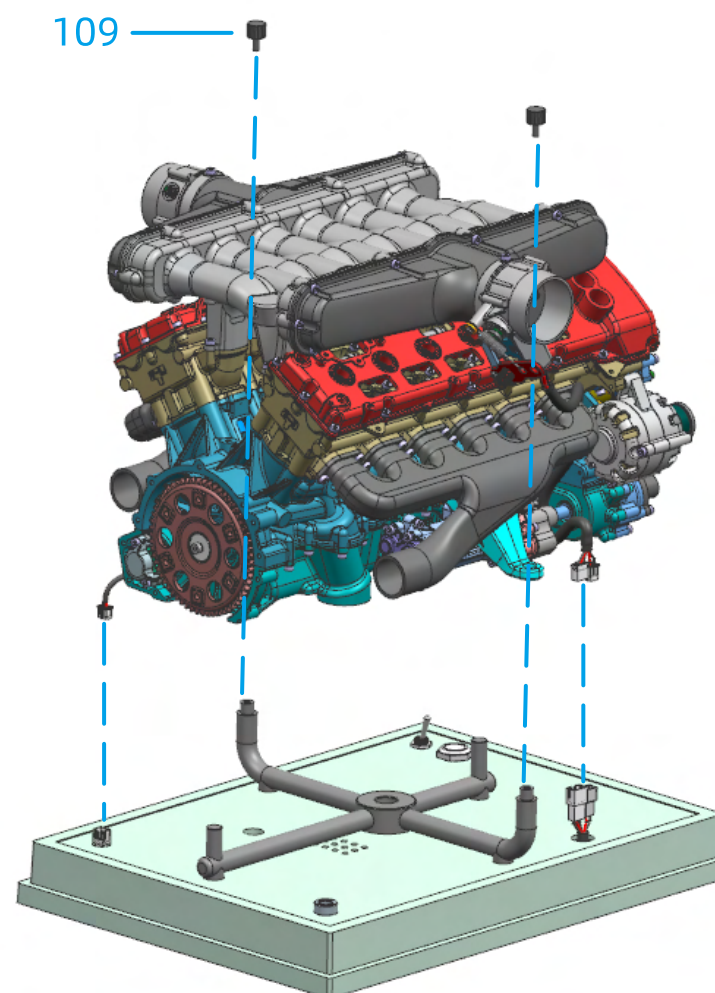
11.23 组装左进气支管 Assemble the Left Intake Manifold



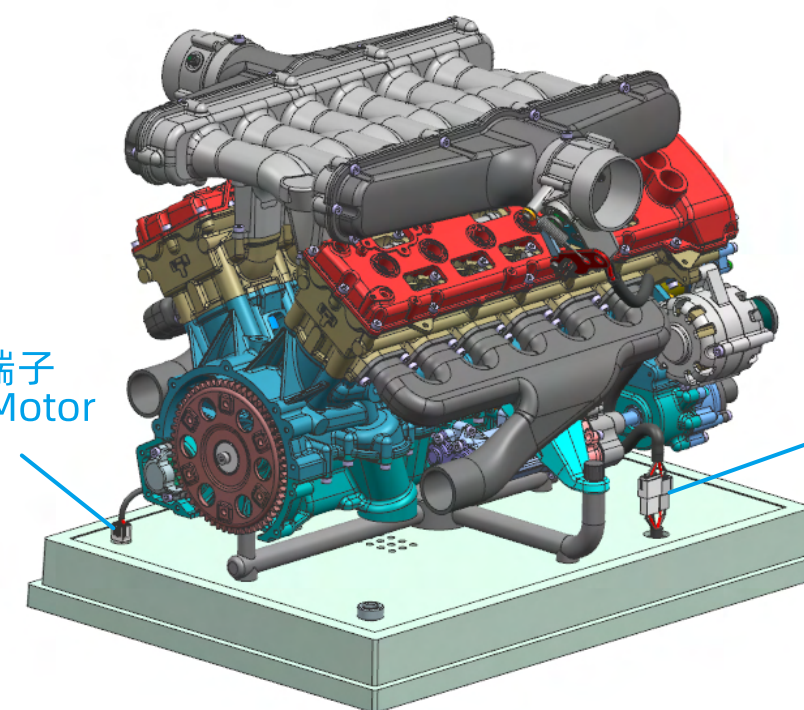
11.24 组装右进气支管 Assemble the Right Intake Manifold



11.25 组装底座 Assemble the Base

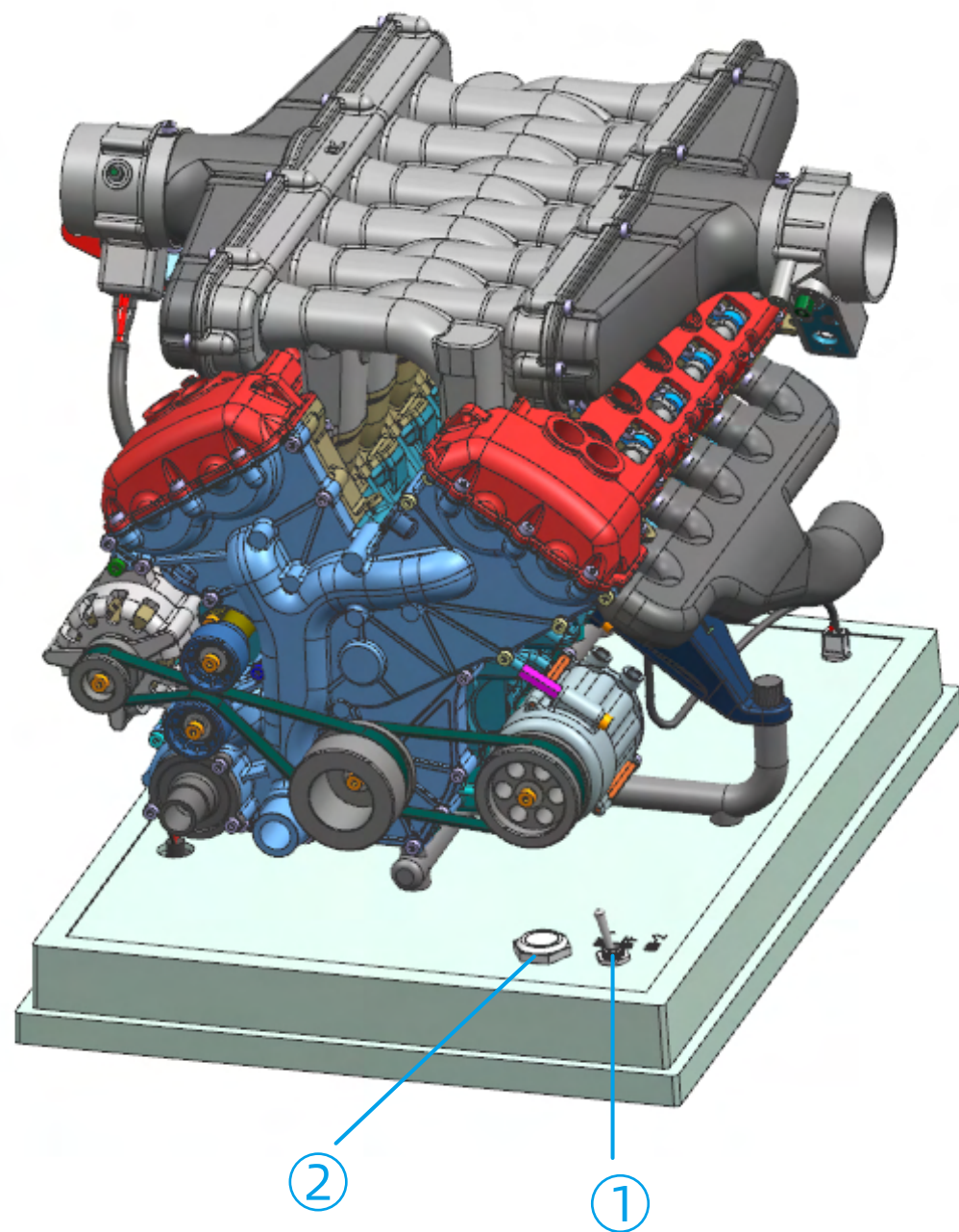


连接电机端子
Connect Motor
Terminal

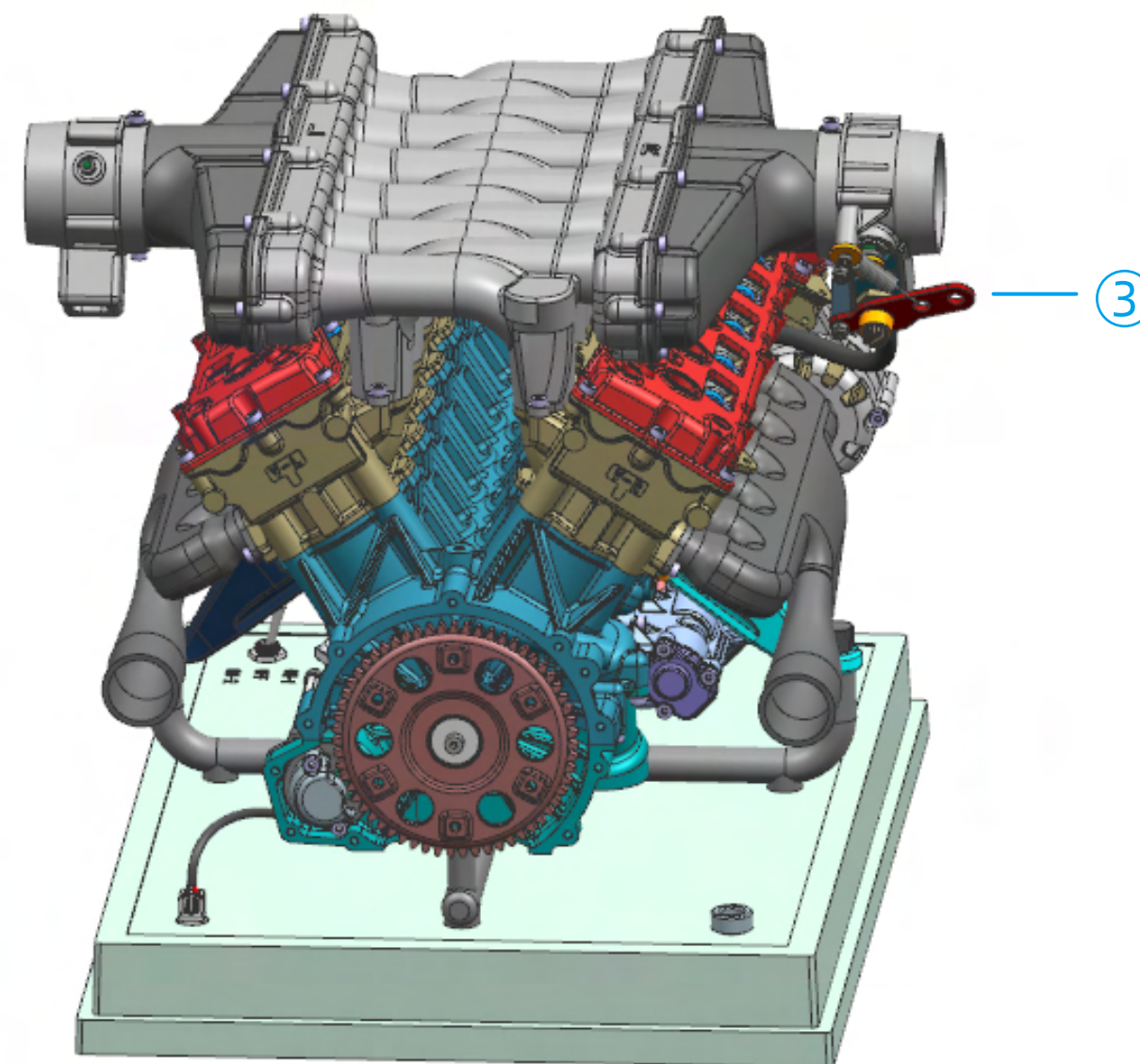


连接油门端子
Connect Throttle
Terminal

11.26 功能介绍 Function Introduction



- 1、拨动开关
- 2、声音开关
- 1、Toggle the switch
- 2、Sound switch



- 3、油门推杆.向下推电机加速, 同时声音加大
- Throttle push rod: Push it down to accelerate the motor, and the sound will become louder at the same time

产品基本信息

一、产品参数产

品名称:V12发动机模型

产品型号:DM109

主要材料:铝合金+锌合金+不锈钢

充电电压:直流5V

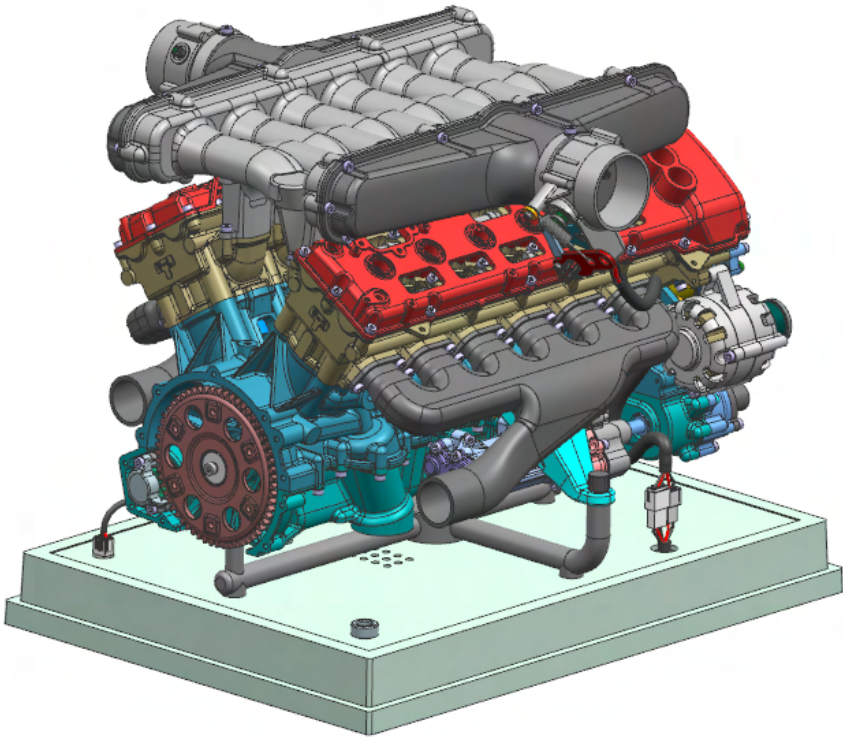
电池容量:800mAh

组装难度:III级

产品标准:GB/T9254-2008

GB/T17626.2-2006

质检:A



二、产品介绍

- 1.土星工匠师系列产品为金属机构组装模型。主要材料选用铝合金表面阳极氧化，产品结构采用真实的工业结构；
- 2.使用各种工具组装零件，安装工序及方法接近实际工业要求；
- 3.该系列产品主要用来提高用户的动手能力、专注力，培养严谨讲秩序的习惯；
- 4.认识各种工业机器，学习各种工业结构，提高用户的探究及创新力。

三、组装要求

- 1.组装前要认真阅读《标准件组装基础知识》，学会基本的标准件组装方法和工具使用；
- 2.要求组装时桌面整洁，防止丢失零件或错装。组装严谨有序，看图仔细，避免组装错误；
- 3.注意说明书中的提示语，注意零件的安装方向，防止理解错误。注意检测环节的要求；
- 4.摩擦部位尽量使用润滑油，防止运转时卡死。紧固螺丝必须安装到底，防止零件松动；
- 5.组装完成后要调试装配间隙及松紧度，有疑问可查询本公司相关网站或微信公众号；
- 6.鼓励在成人看护及确保安全的情况下，使用锉刀、砂纸等简单去材料工具，优化零件；
- 7.鼓励用户在没有安全隐患的情况下，将模型进行零部件修改或总体改装，及具备改装能力。
- 8.说明书后面附零件表，用户可根据列表拆散模型并重新装入盒中；
- 9.如果零件有丢失，可向我公司咨询或采购(土星官方网店)；
- 10.模型结构可能持续优化，如有说明书内容与实物不符，请参考公司最新组装资讯；
11. 本产品长期不使用可能会造成电池失效、润滑油干枯、产品间隙沉积灰尘等造成产品无法运行的，请更换电池或拆除零件进行清洗。

一、安全须知

- 1.请仔细阅读本手册中的内容，以确保您能够正面且安全的使用本产品；
- 2.该系列产品为工业级别金属机构模型，因此组装和使用该模型需要一定的安全意识，提高安全意识也是该模型的作用之一；
- 3.本模型适合16岁以上的用户使用，相关安全事项仔细阅读本说明提示；
- 4.严禁让儿童或宠物吞咬本产品或其备件，以免造其伤害；
- 5.合理使用组装工具，严格按说明书组装零件，避免强装硬拆，防止划伤。严禁工具或零件尖角部位离眼睛太近，以免挫身体；
- 6.本模型主要由金属零件组成，具有一定的硬度和重量，请妥善放置，避免产品及配件受到强烈冲击和震动，以免砸伤身体或损坏本产品；
- 7.机械运动时，请不要将手指或身体其它部位放入零件运动范围内，避免压伤；
- 8.电线接头须按说明书指示标记连接，避免错接引起电路短路或失灵；
- 9.电池充放电及放置方法请按要求进行，电池停用3个月以上建议更换电池；
- 10.请勿以任何形式强行阻碍零件运转，如需关闭请直接关闭电源即可；
- 11.如对模型进行改装，请留意相关零件参数，避免使用大功率电器动力零件或装置，导致意外；
- 12.请按说明书正确使用本产品的零件，切勿做其它用途。

二、电池和充电注意事项

- 1.本产品配备专用充电线，用户自备电源适配器，其输出DC电压需5V，其输出DC电流不小于1000mA;禁止使用高于6V的适配器给产品充电；
- 2.充电前请确保触点干燥，无脏污，产品不使用或维修拆机时请不要充电；
- 3.不可将电池投入火中，也不能将其暴露在诸如日照、火烤或类似过热的环境中，以免电池漏液、过热、爆裂或起火；
- 4.如果电池更换不当会有爆炸危险，只能用同样类型或等效型电池来更换；
- 5.本产品配备的锂电池，严禁拆卸、挤压、加热或燃烧电池，严禁使用尖锐物、螺丝刀等触碰、撬电池，以上操作可能会引起电池起火或燃烧；
- 6.如果电池在使用、充电或保存过程中有温度过高、变色、起鼓、漏液等异常现象，请停止使用并更换新电池，以免造成安全问题；
- 7.充电时，由于电池温度会升高，请不要将电池和易燃物放在一起(如:床头、衣物、书本等)，以免引发火灾；
- 8.请勿在高温、潮湿等环境中充电，温度以0至35摄氏度为宜;湿度应在65%以下，产品设计使用最高环境温度为45摄氏度；
- 9.为减少儿童触电危险，请在家长或其他监护人的指导下操作。

三、产品声明

- 1.使用本产品前，请您仔细阅读并遵守本手册中的各种说明及警示。对于不正确使用或不遵守本产品相关说明使用所造成的后果，本公司概不负责；
- 2.本产品适合于16岁以上用户使用。因使用本产品年龄偏小或将产品给对本产品相关安全要求不熟悉者使用，造成的安全问题本公司概不负责；
- 3.本产品是工业机构模型，仅作为学习和体验使用。不得将产品作为其它用途使用，否则本公司不承担任何责任；
- 4.本公司在不断提高、完善产品的设计和使用功能，如说明书所载内容与实际产品的内容略有不同，恕无法另行通知，敬请见谅。因此任何以本说明的数据、图片或文字描述为依据的索赔要求将不予受理；
- 5.本着不断完善，持续发展的原则，本公司保留在不预先通知的情况下，对本手册中描述的任何产品细节进行修改和改进的权利；
- 6.产品说明书中的图片用于指导用户操作，仅供参考，具体请以实物为准；
- 7.在使用法律允许的最大限度内，在任何情况下，本公司与其供应商均不对任何特殊、偶然、附带、或间接损失承担责任，无论该损失由何种原因引起；

本手册中含有重要信息，请保留备用。

General information about product

I. Product Parameters Production

Product Name: V12 Engine Metal Model Kit

Product Model: DM109

Materials: Aluminum alloy+zinc alloy
+stainless steel

Charging Voltage: 5V DC

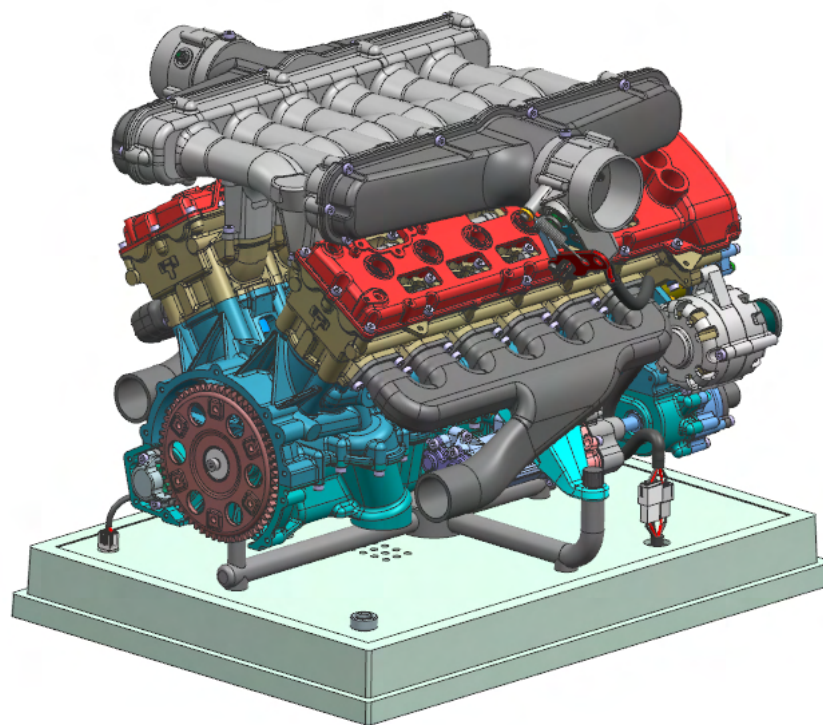
Battery Capacity: 800mAh

Assembly Difficulty: Level III

Product Standard: GB/T9254-2008

GB/T17626.2-2006

Quality Control: A



II. Product description

1. Teching Craftsman series of products are metal structure assembly models. Its primary material is aluminum alloy with anodized surface and the product structure is a real industrial structure;

2. Assemble parts using various tools with the installation procedures and methods substantially compliant with practical industrial requirements;

3. This series of products are principally designed to improve users' hands-on ability and concentration, and to develop habits of "preciseness and stress on discipline";

4. Learn about various industrial machines, and study various industrial structures to improve user's capability of research and innovation.

III. Assembly Requirements

1. Be sure to read the Basics of Standard Parts Assembly carefully to master basic standard parts assembly procedure and the usage of tools before assembly;

2. The table shall be kept tidy and clean during assembly to prevent parts being lost or incorrectly assembled. Assemble parts in a rigorous and orderly fashion, view the diagrams carefully, and avoid incorrect assembly;

3. Pay attention to the prompt text in instruction manual, carefully view the part installation orientation, and avoid incorrect comprehension. Pay attention to the requirements on testing;

4. Lubricating oil shall be applied to friction areas to the greatest extent to prevent jamming during operation. Fastening screws must be thoroughly mounted to prevent looseness of parts;

5. If you have any doubt when adjusting any assembly clearance or tightness after the completion of assembly, please refer to our website or WeChat public account;

6. Users are encouraged to optimize the parts using material removing tools like files and sand paper with adult care where the personal safety is guaranteed.

7. Users are encouraged to perform part modification or overall modification of model without potential safety hazard so as to develop modification capability as soon as possible;

8. The user may disassemble this model and put it in the package again according to the parts list attached hereto;

9. If any part is lost, please inquire of or purchase it from us (Teching official online store);

10. The model structure is subject to continual improvement. If the real object differs from the instruction manual, please refer to our latest assembly information;

11. Once the product fails to function due to battery failure, lubricating oil shortage or dust accumulation in product gaps because it is left unused for long, it's advisable to change the battery or disassemble and clean its parts.

Precautions

I. Safety Instruction

1. Please read this manual carefully so that you are in a position to use this product correctly and safely;

2. This series of products are industrial-level metal models, so its assembly and use requires certain safety awareness; improvement of safety awareness is also a function of the model;

3. This model is suitable for users aged 16 and over. Please read this manual carefully for relevant safety information;

4. Strictly prohibit children or pets swallowing or biting this product or its spare parts, since this may cause injury/damage;

5. Use assembly tools rationally, assemble the parts in strict conformity with the instruction manual, and avoid forcible handling to avoid scratches; keep sharp points of tools or parts away from the eyes to avoid contusions.

6. This model is made up of metallic parts mainly, and has a certain level of hardness and a certain weight; please place it properly to avoid bodily injuries; protect the products and accessories against intense shock and vibration so as to avoid personal injury and product damage;

7. During mechanical movement, do not put a finger or any other part of the body within the movement range to avoid contusions;

8. Wire connectors must be connected according to the marks specified in the instruction manual to avoid short-circuit or failure arising from wrong connection;

9. Charge, discharge and place the battery as required; it is advised to replace the battery when it has not been used for 3 months or more;

10. Do not prevent any part from running forcibly in any form; to do this, turn off the power directly;

11. To refit this model, please pay attention to the relevant part parameters, and avoid using any high-power electric part or device that may result in an accident;

12. Please use parts of this product properly as per instruction manual. Don't use them for other purposes.

II. Battery and charging precautions

1. This product is delivered with dedicated charging cable. Users shall use their own power adapters; output DC voltage: 5V; output DC current >1000mA;

2. Please make sure the contact is dry and free of dirt before charging. Please don't charge the battery if the product is not in use or is in repair

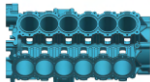
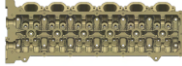
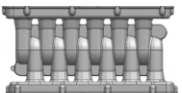
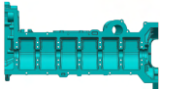
3. Don't put the battery in fire or have it exposed to sunlight, fire or similar excessively hot environment, since this may lead to leakage, excessively high temperature, bursting or ignition of battery;

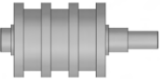
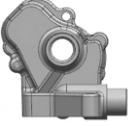
4. If improper change of battery may cause explosion, the battery must be replaced with one of identical or equivalent type;

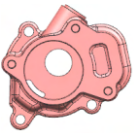
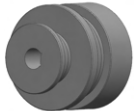
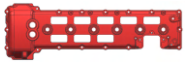
- 5.Never disassemble, squeeze, heat and set fire to the lithiumbattery delivered with this product, and never touch and pry thebattery using any sharp object or screwdriver, etc., since this maycause the battery to ignite or burn;
- 6.In the case of excessively high temperature, discolorationbulging, leakage and other anomalies during the use, charging orkeeping of battery, please take it out of service and change it with anew one to avoid safety problem;
- 7.Since the battery temperature rises when it's being charged,please don't have the batteryto come into contact withinflammables (e.g. bedside, clothing and books, etc.) since this mayresult in a fire;
- 8.Please don't charge the battery in a moist space with hightemperature; the temperature is recommended to be 0 35° C, andthe humidity shall not exceed 65%; the design max. ambienttemperature for using the product is 45° C;
- 9.To alleviate the risk of electric shock, children are not allowed touse the product without the help of their parents or other custodians.

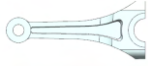
III.Product Declaration

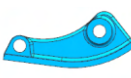
- 1.Please carefully read and observe various instructions andwarnings in this manual before using this product. Our companyshall not be held responsible for any consequence of failure toproperly use this product or observe related operating instructions;
- 2.This product is suitable for users aged 16 and over. Our companyshall not be held responsible for any safety problem arising from theuse of this product by too young users or userswho are not familiar with relevant safety requirements;
- 3.As a model in industrial structure, this product is designedexclusively for learning and experience. Do not use this product forother purposes; otherwise, we will assume no responsibility for any consequence thereof.
- 4.We have been improving the design and operation features ofour product, so separate notice will not be given for slight differencebetween instruction manual and actual product. Hence, any claimfor compensation filed based on the data, pictures or text of thisinstruction manual will be rejected;
- 5.For constant improvement and sustainable development, ourcompany reserves the right to modify and improve any productdetail aiven in this manual without prior notice;
- 6.The pictures in instruction manual guide users for operation, andare thus for indication only; the real product shall prevail;
7. Our company and its suppliers shall not be held responsible forany special, incidental, collateral or indirect loss in any case to thegreatest extent the law permits, regardless of its cause;
- Please keep this manual properly since it contains importantinformation.

序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
01		缸体 Cylinder Block	1
02		左缸盖 Left Cylinder Head	1
03		右缸盖 Right Cylinder Head	1
04		进气总管 Intake Manifold	1
05		油底壳 Oil Pan	1
06		左进气支管 Left Intake Branch Pipe	1
07		右进气支管 Right Intake Branch Pipe	1
08		机油泵箱体 Oil Pump Casing	1

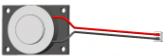
序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
09		发电机前盖 Front Cover of Generator	1
10		空压机轴 Air Compressor Shaft	1
11		左撑脚 Left Support Foot	1
12		右撑脚 Right Support Foot	1
13		节气门 Throttle Valve	2
14		机油泵前盖 Front Cover of Oil Pump	1
15		发电机 Generator	1
16		启动电机中套 Middle Sleeve of Starter Motor	1

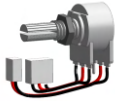
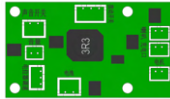
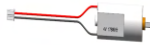
序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
17		机油连接泵 Oil Connection Pump	1
18		空压机中套 Middle Sleeve of Air Compressor	1
19		曲轴皮带轮 Crankshaft Pulley	1
20		左气门室盖 Left Valve Cover	1
21		右气门室盖 Right Valve Cover	1
22		左排气管 Left Exhaust Pipe	1
23		右排气管 Right Exhaust Pipe	1
24		曲轴 Crankshaft	1

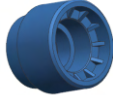
序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
25		链条盖 Chain Cover	1
26		活塞 Piston	12
27		机油泵轴 Oil Pump Shaft	1
28		节气门轴 Throttle Shaft	2
29		发电机后盖 Rear Cover of Generator	1
30		连杆 Connecting Rod	12
31		1号链条导向块 Chain Guide Block No.1	1
32		2号链条导向块 Chain Guide Block No.2	1

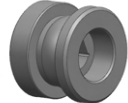
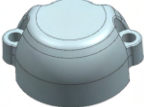
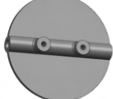
序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
33		3号链条导向块 Chain Guide Block No.3	1
34		4号链条导向块 Chain Guide Block No.4	1
35		5号链条导向块 Chain Guide Block No.5	1
36		6号链条导向块 Chain Guide Block No.6	1
37		7号链条导向块 Chain Guide Block No.7	1
38		8号链条导向块 Chain Guide Block No.8	1
39		飞轮 Flywheel	1
40		大链轮 Large Sprocket	1

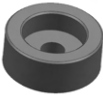
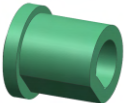
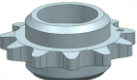
序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
41		水泵端盖 Water Pump End Cover	1
42		排气凸轮轴 Exhaust Camshaft	2
43		进气凸轮轴 Intake Camshaft	2
44		空压机前端盖 Front Cover of Air Compressor	1
45		空压机后端盖 Rear Cover of Air Compressor	1
46		凸轮链条 Cam Chain	2
47		过渡链条 Transition Chain	1
48		油泵链条 Oil Pump Chain	1

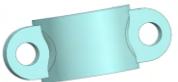
序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
49		空压机皮带轮 Air Compressor Pulley	1
50			
51		凸轮前传感器 Front Cam Sensor	2
52		底座 Base	1
53		支架 Bracket	1
54		封板 Sealing Plate	1
55		电池 Battery	1
56		喇叭 Horn	1

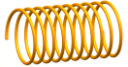
序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
57		电位器 Potentiometer	1
58		柱型充电线 Cylindrical Charging Cable	1
59		声音开关 Sound Switch	1
60		电机连接线 Motor Connection Wire	1
61		拨动开关 Toggle Switch	1
62		铜螺柱3 Copper Stud 3	2
63		电路板 Circuit Board	1
64		电机 Motor	1

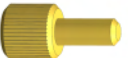
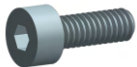
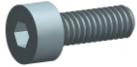
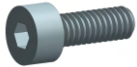
序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
65		电池压板 Battery Press Plate	1
66		油门拨片 Throttle Paddle	1
67		油门连杆1 Throttle Linkage 1	1
68		油门连杆2 Throttle Linkage 2	1
69		油门弹簧 Throttle Spring	1
70		张紧轮 Tensioner Pulley	2
72		机油泵尾盖 Oil Pump Tail Cover	1
73		节气门盖 Throttle Cover	2

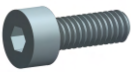
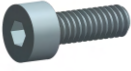
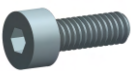
序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
74		水泵皮带轮 Water Pump Pulley	1
75		启动机齿轮罩 Starter Gear Cover	1
76		过度轴承座 Transitional Bearing Seat	1
77		上张紧轮座 Upper Tensioner Pulley Seat	1
78		过度轴 Transitional Shaft	1
79		节气门 Throttle Valve	2
80		水泵叶轮 Water Pump Impeller	1
82		下张紧轮轴销 Lower Tensioner Pulley Shaft Pin	1

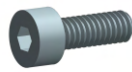
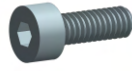
序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
83		小链轮盖 Small Sprocket Cover	4
84		凸轮连接套 Cam Connecting Sleeve	4
85			
86		进气门 Intake Valve	24
87		排气门 Exhaust Valve	24
88		气门帽 Valve Cap	48
89		小链轮 Small Sprocket	9
90		凸轮轴瓦 Camshaft Bearing Shell	2

序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
91		电机齿轮 Motor Gear	1
92		启动电机尾盖 Starter Motor Rear Cover	1
93		启动电机前盖 Starter Motor Front Cover	1
94		连杆轴瓦 Connecting Rod Bearing Shell	12
95			
96		皮带1 Belt 1	1
97		皮带2 Belt 2	1
98		铜螺柱1 Copper Stud 1	1

序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
99		铜螺柱2 Copper Stud 2	3
100		电位器连接线 Potentiometer Connection Wire	1
100B		电位器连接线 Potentiometer Connection Wire	1
101		小链轮盖垫片 Small Sprocket Cover Gasket	2
102		气门弹簧 Valve Spring	50
103		轴承10*15-4 Bearing 10*15-4	1
104		轴承8*12-3.5 Bearing 8*12-3.5	9
105		轴承6*10-3 Bearing 6*10-3	7

序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
106		轴承5*8-2 Bearing 5*8-2	14
107		轴承4*8-3 Bearing 4*8-3	1
108		压板 Locating Sleeve	2
109		手拧螺丝M3*6 Hand Screw	2
110		蘑菇头螺丝 mushroom head screw	1
111		M2.5*26	1
112		M2.5*20	1
113		M2.5*20	1

序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
114		M2.5*14	1
115		M2.0*18	7
116		CM2*6	8
117		M2.5*10	20
118		CM2.5*6	18
119		M2.5*6	260
120		M2.0*6	230
121		M2.0*8	80

序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
122		M2.0*12	25
123		塞打螺丝3*8*M2.5 Shoulder Screw	15
124		M2.0*16	30
125		限位套 Limit Sleeve	1
126		飞轮键 Flywheel Key	1
127		连接套垫片 Connecting Sleeve Gasket	2
128		垫片3*6.8-0.7 Gasket 3*6.8-0.7	18
129		垫片3*12-1 Gasket 3*12-1	1

序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
131		M2.5弹簧垫片 M2.5 Spring Washer	20
132		CM2*3	6
134		防松螺母M2.0 Lock Nut	15
135		塞打螺丝3*16*M2.5 Shoulder Screw	1
136		十字自攻螺丝M3*6 Phillips Self-tapping Screw	4
137		螺母M3.0 Nut M	3

序号 Serial Number	零件图片 Parts pictures	品名 Product Name	用量 Dosage
150		胶套 Rubber Sleeve	1